The Jillson Company, Inc.
P.O. Box 2135
Framingham, MA 01703
(781) 400-5946

October 16, 2018

Stormwater & Erosion Control Report

Project Site:
#497 Concord Avenue, Lexington, Mass.

Prepared For:

Atlas Contracting, Inc
P.O. Box 6366
Watertown, MA 02471

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A. Existing Conditions

Existing Conditions Summary
Hydrological Sub-Area Map

Project Site: #497 Concord Avenue, Lexington

Existing Conditions Summary

Lot Area:	124,040± ft^2
Use:	Single Family Residential Lot
Sub-Catchment Area:	114,055± ft^2
Buildings & Infrastructure:	The existing house is located in the rear of the property, approximately 650' from the sideline of Concord Avenue, approximately 47' from the rear lot line, and approximately 165' from the nearest side lot line. A 720' long gravel driveway provides access to the property. A sizable deck is attached to the eastern portion of the house and there is a modest patio located directly in front of the home. There are also several freestanding walls located along the perimeter of the lot.
Topography:	The property is mostly located on a small hillside that generally descends in a northeasterly direction. The surrounding area is a substantial ground moraine influenced by Route 2, a Massachusetts State Highway, which is just north of the property, and from surrounding land developments. Located just beyond the northeast lot corner and along a significant portion of the eastern lot line is a low lying area that contains a fairly large Bordering Vegetated Wetland (BVW). The area that encompasses the main approach of the gravel driveway undulates somewhat but overall it slopes in an easterly direction.
Vegetation:	Approximately 47% of the lot is wooded with the majority of the natural flora located in the eastern and western portions of the property. The existing lawn is approximately 51,445 ft^2 and is augmented with several landscaped areas.
Drainage Summary:	Surface stormwater runs in two general directions. The majority of the onsite runoff flows towards the northern lot line either directly or via a depression located in the northeast portion of the property. This depression when full overflows in a northerly direction. The remaining flows shed in an easterly direction either to the southeasterly BVW or towards the eastern lot line. Runoff generated in the vicinity of the main approach of the driveway also flows in an easterly direction but a portion

of this runoff is first collected in two small depressions that eventually overflow in an easterly direction as well.

Protectable Wetland Resources: As mentioned above, there is a sizable BVW located just beyond the northern lot line and in the southeastern portion of the property.

Regulated Wetland Areas: There are several regulated wetland areas onsite. These areas include the Lexington Conservation Commission's 25' "No Disturb" and 50' "No Build" Zones, as well as the MassDEP 100' Buffer Zone.

Soils Data:

Natural Resource Conservation Service Soils Data					
Mapping Unit	Soil Name	Hydrologic Group	Parent Material	Permeability (inches/hour)	Water Table (inches)
32D	Wareham Loamy Find Sand, 0%-5% Slopes	A/**D**	Loose sandy glaciofluvial deposits	6.00-20.00	6-18
631C	Charlton Urban Land Hollis Complex, 3%-15% Slopes	A	Charlton - Friable loamy eolian deposits over friable loamy basal till derived from granite and gneiss. Hollis – Friable, shallow basal till over granite and gneiss.	Charlton 0.60-6.00 Hollis 0.00-0.14	>80
656	Udorthents Urban land Complex	Assumed D	Loamy alluvium and/or sandy glaciofluvial deposits and/or loamy glaciolacustrine deposits and/or loamy marine deposits and/or loamy basal till and/or loamy lodgment till	Not Determined	>80

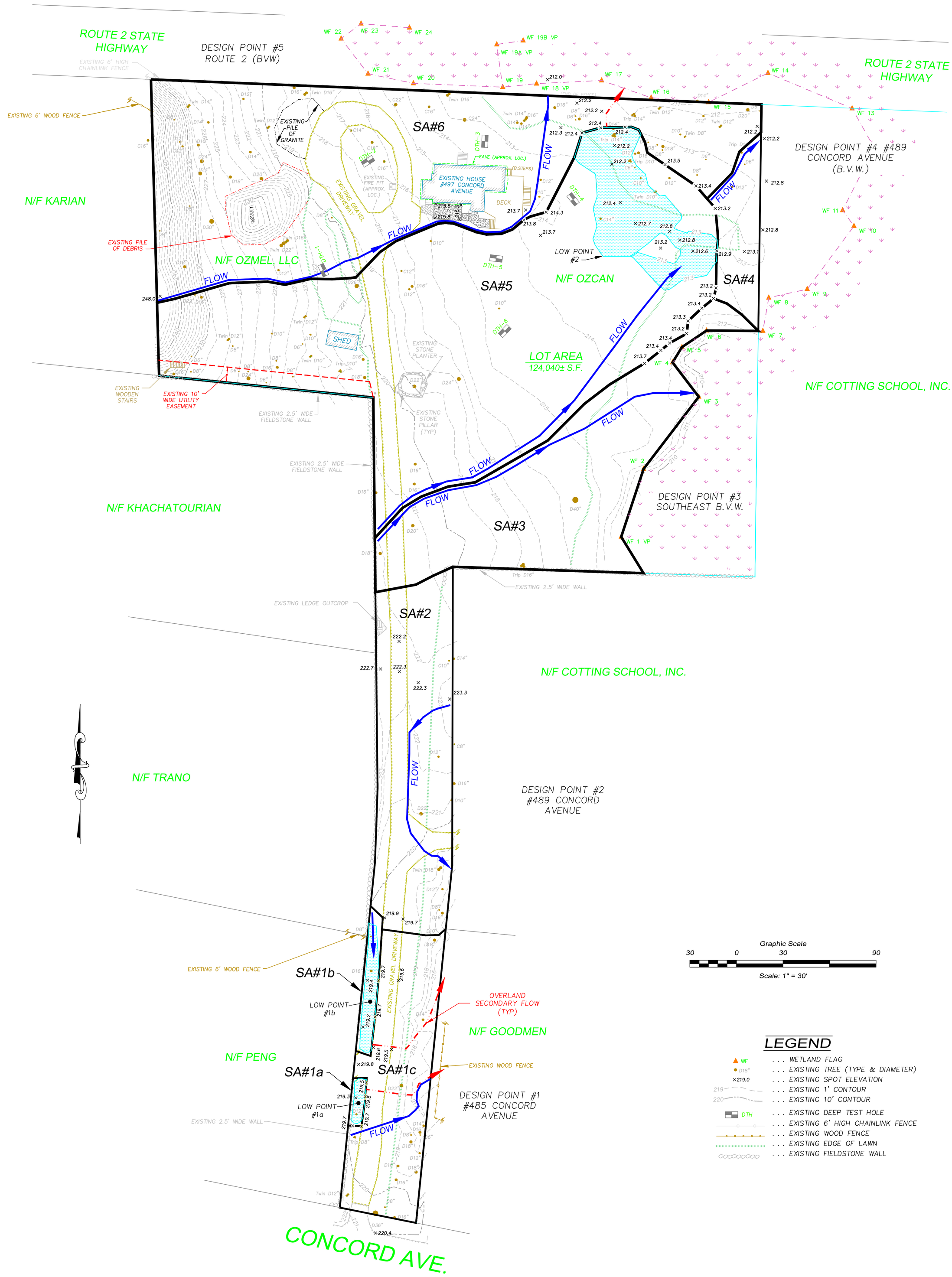
On-site Soil Testing: The parent soil material encountered during soil testing conducted in 2018 by The Jillson Company, Inc. had a loamy sand texture. Groundwater evidence varied throughout the testing area.

Hydrological Analysis: The design points for the hydrological analysis were placed in a manner to analyze runoff for the entire parcel up to the onsite BVW and it excludes all other lands.

Runoff Coefficients		
Description	Hydrologic Group	CN
Impervious Area (to include gravel driveway per Lexington Stormwater Regulations)	---	98.0
Lawn (>75% Coverage)	D	80.0
Woods/Landscape	D	30.0
Porous Asphalt/Grass Pavers	A	39.0
Lawn (>75% Coverage)	A	39.0
Woods/Landscape	A	30.0

Hydrological Analysis Methodology: The hydrological analysis for estimating stormwater runoff for the existing conditions of the property was performed using HydroCAD which employs Technical Release 20 (TR-20) for computations and the Natural Resource Conservation Service (NRCS) guidelines for analytical procedures. All of the measured and calculated input values to compute runoff rates and volumes, such as impervious area, time of concentration, weighted curve numbers are provided herein.

JOB #2764



Graphic Scale

30 0 30 90

Scale: 1" = 30'

LEGEND

- WF . . . WETLAND FLAG
- D18" . . . EXISTING TREE (TYPE & DIAMETER)
- ×219.0 . . . EXISTING SPOT ELEVATION
- 219 . . . EXISTING 1' CONTOUR
- 220 . . . EXISTING 10' CONTOUR
- DTH . . . EXISTING DEEP TEST HOLE
- . . . EXISTING 6' HIGH CHAINLINK FENCE
- . . . EXISTING WOOD FENCE
- . . . EXISTING EDGE OF LAWN
- . . . EXISTING FIELDSTONE WALL

NOTES

1. THIS PLAN SHALL NOT BE RECORDED OR USED TO ESTABLISH PROPERTY LINES.
2. FOR ADDITIONAL PROPERTY LINE INFORMATION REFER TO THE DEED IN BOOK 56582, PAGE 37 RECORDED AT THE MIDDLESEX REGISTRY OF DEEDS.
3. THIS PLAN REFERS TO THE TOWN OF LEXINGTON ASSESSOR'S MAP 11, LOT 31.
4. ZONING CLASSIFICATION: RO.
5. UNLESS OTHERWISE NOTED, THE EXISTING PLANIMETRIC SITE FEATURES AND TOPOGRAPHY SHOWN HEREON ARE BASED ON A FIELD INSTRUMENT SURVEY PERFORMED BY THE JILLSON COMPANY IN SEPTEMBER 2017.
6. THE BORDERING VEGETATED WETLAND DECLINATION SHOWN HEREON WAS PERFORMED BY DAVID BURKE, WETLAND SPECIALIST.
7. THE PROJECT SITE IS LOCATED IN 'ZONE X – OTHER AREAS' AS SHOWN ON FIRM FLOOD MAP NUMBER 25017C0411E, EFFECTIVE ON 06/04/10.

"No. 497 CONCORD AVE. EXISTING CONDITIONS HYDROLOGICAL SUB-AREA MAP"

PREPARED FOR: OHAN OZCAN
ATLAS CONTRACTING, INC
P.O. BOX 636
WATERTOWN, MA 02471

SCALE: 1" = 30' DATE: 16 OCTOBER 2018

PREPARED BY: THE JILLSON COMPANY, INC.
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B. Proposed Conditions

Proposed Conditions Summary
Hydrological Sub-Area Map

Proposed Conditions Summary

Lot Area:	Total: 124,040± ft^2 Lot #1: 35,150± ft^2 Lot #2: 59,316± ft^2 Right of Way: 29,574± ft^2
Use:	Single Family Residential Lot(s)
Sub-Catchment Area:	114,055± ft^2
Project Description:	The proposed development includes the subdivision of an existing residential lot into two separate residential lots and accompanying Right of Way. It also includes the construction of two separate Single Family Homes with associated infrastructure and site work under the provisions provided by the Town of Lexington Sensitive Site Development regulations and approval process.
Buildings & Infrastructure:	<u>Lot #1</u>: The proposed home and infrastructure will be constructed in the front half of the proposed lot, approximately 25' from the sideline of the proposed Right of Way and approximately 50' to the nearest side lot line. The proposed house will feature a front load garage, a new driveway, and new utilities. <u>Lot #2</u>: The proposed home and infrastructure will be constructed in the front half of the proposed lot, approximately 40' from the sideline of the proposed Right of Way and approximately 103' to the nearest side lot line. The proposed house will feature a front load garage, a new driveway, and new utilities. <u>Right of Way and other infrastructure</u>: The proposed right of way will feature a porous asphalt common driveway. A grass paver "Emergency Turnaround" will also be provided and will be located within an easement located on Lot#1. A recharge basin will be installed to mitigate any potential increase in stormwater and will be constructed in an easement located on Lot #1. The utility mains will be constructed within the Right of Way.

Topography:	There will be grading associated with the project mostly to elevate and/or level the existing topography in order to provide suitable areas for infrastructure installation.
Vegetation:	An extensive reworking of the onsite landscaping is proposed. For further information refer to the proposed site development plan.
Drainage Summary:	Due to watershed development (i.e., the addition of impervious area and groundcover changes), a stormwater collection and management system has been proposed to mitigate any potential increase in site runoff. Stormwater generated from the proposed houses, proposed driveways, and a portion of the "common driveway" will be collected and piped to a subsurface recharge basin. The "common driveway" will be constructed of porous asphalt and will be a substantial improvement, in terms of drainage mitigation, over the existing gravel driveway or a convention asphalt driveway. Uncontrolled runoff will by and large mimic existing conditions.
Protectable Wetland Resources:	See the Existing Conditions Summary for a description of the existing protectable wetland resources. No work is proposed within a protectable wetland resource. The creation of a protectable wetland resource is not proposed.
Regulated Wetland Areas:	See the Existing Conditions Summary for a description of the existing regulated areas. Restoration work is proposed within the 25' "No Disturb" Zone and site work is proposed within the 100' Buffer Zone; both will require MassDEP and Lexington Conservation Commission approval prior to construction. The creation of a regulated wetland area is not proposed.
Soil Summary:	See the Existing Conditions Summary for a description of the existing soil characteristics. The proposed work shall require grade changes. The proposed fill will be clean, well draining material. Furthermore, prior to the installation of the recharge basin, confirmatory soil inspections within its excavation shall be completed and documented by the design engineer.
Hydrological Analysis:	The design points for the hydrological analysis were placed in a manner to analyze runoff for the entire parcel up to the onsite BVW and it excludes all other lands.

Hydrological Analysis Methodology:	The hydrological analysis for estimating stormwater runoff for the proposed conditions of the property was performed using HydroCAD which employs Technical Release 20 (TR-20) for computations and the Natural Resource Conservation Service (NRCS) guidelines for analytical procedures. All of the measured and calculated input values to compute runoff rates and volumes, such as impervious area, time of concentration, weighted curve numbers are provided herein.

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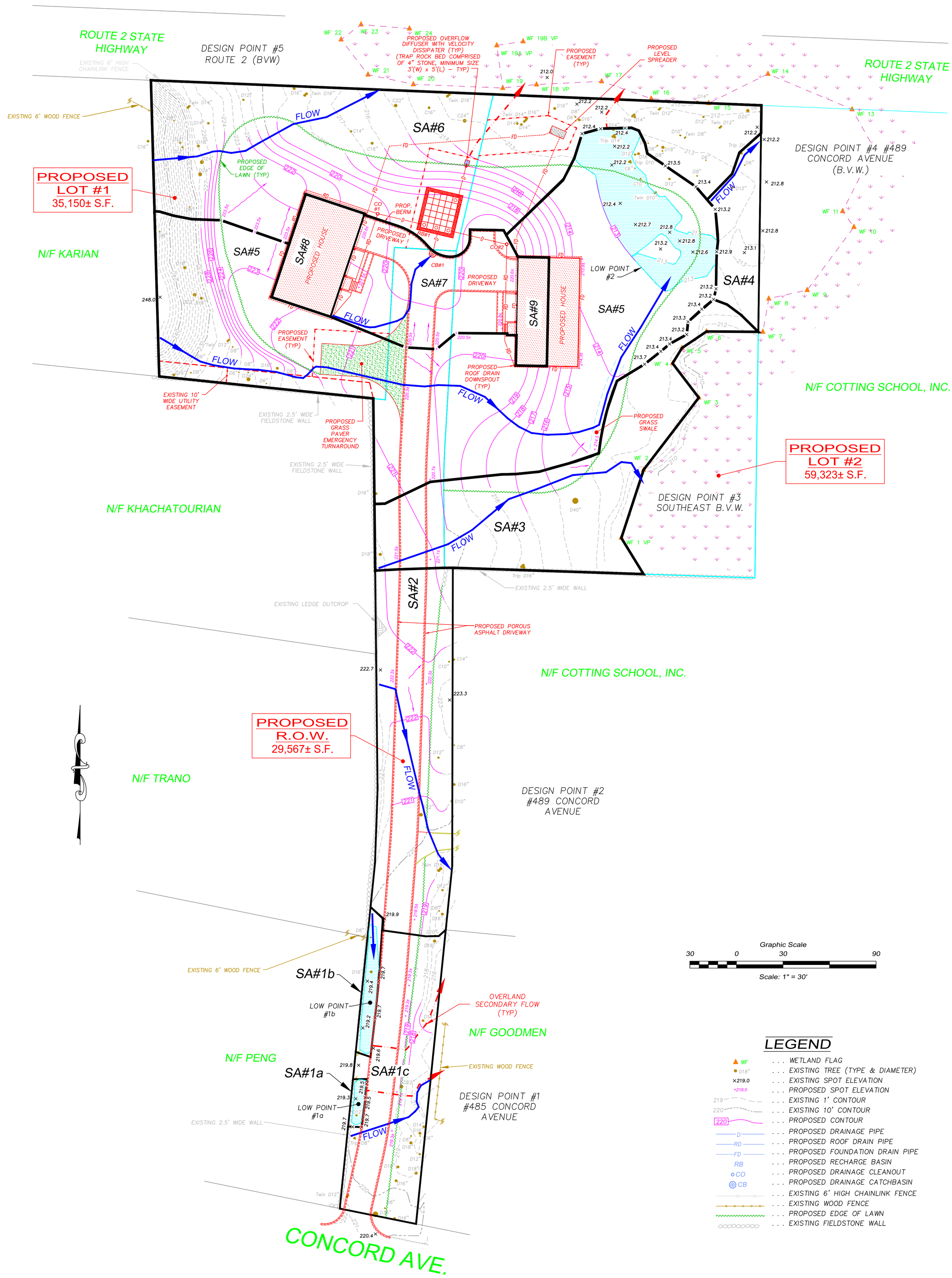

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219	. . . EXISTING 1' CONTOUR
220	. . . EXISTING 10' CONTOUR
220	. . . PROPOSED CONTOUR
D	. . . PROPOSED DRAINAGE PIPE
RD	. . . PROPOSED ROOF DRAIN PIPE
FD	. . . PROPOSED FOUNDATION DRAIN PIPE
RB	. . . PROPOSED RECHARGE BASIN
CO	. . . PROPOSED DRAINAGE CLEANOUT
CB	. . . PROPOSED DRAINAGE CATCHBASIN
	. . . EXISTING 6' HIGH CHAINLINK FENCE
	. . . EXISTING WOOD FENCE
	. . . PROPOSED EDGE OF LAWN
	. . . EXISTING FIELDSTONE WALL

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7. THE PROJECT SITE IS LOCATED IN 'ZONE X – OTHER AREAS' AS SHOWN ON FIRM FLOOD MAP NUMBER 25017C0411E, EFFECTIVE ON 06/04/10.
8. FOR FURTHER LOT DATA AND ROADWAY DEVELOPMENT INFORMATION, REFER TO LATEST LOTTING PLAN SHEET OF THE DEFINITIVE SUBDIVISION PLAN SET.

"No. 497 CONCORD AVE.
PROPOSED CONDITIONS
HYDROLOGICAL SUB-AREA MAP"

PREPARED FOR: OHAN OZCAN
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JOB #2764

C. Stormwater Summary

Stormwater Summary Tables
Recharge Basin(s) Summary Tables
TSS Removal Worksheets

Stormwater Summary Tables

Design Point #1: No. 485 Concord Avenue

Storm Event	Existing Conditions uncontrolled runoff		Proposed Conditions uncontrolled runoff		Reduction Percentage	
	(cfs)	(ft^3)	(cfs)	(ft^3)	(cfs)	(ft^3)
2 Year	0.0092	150.5	0.0000	0.0	100.0%	100.0%
10 Year	0.1071	565.8	0.0019	68.1	98.2%	88.0%
25 Year	0.2293	1,016.8	0.0127	240.0	94.5%	76.4%
100 Year	0.5242	2,210.8	0.1247	893.6	76.2%	59.6%

Design Point #2: No. 489 Concord Avenue

Storm Event	Existing Conditions uncontrolled runoff		Proposed Conditions uncontrolled runoff		Reduction Percentage	
	(cfs)	(ft^3)	(cfs)	(ft^3)	(cfs)	(ft^3)
2 Year	0.0079	159.0	0.0000	0.0	100.0%	100.0%
10 Year	0.1259	670.4	0.0031	116.4	97.5%	82.6%
25 Year	0.3008	1,244.2	0.0227	379.0	92.5%	69.5%
100 Year	0.7253	2,729.8	0.2399	1,274.1	66.9%	53.3%

Design Point #3: Southeast BVW

Storm Event	Existing Conditions uncontrolled runoff		Proposed Conditions uncontrolled runoff		Reduction Percentage	
	(cfs)	(ft^3)	(cfs)	(ft^3)	(cfs)	(ft^3)
2 Year	0.1944	808.9	0.1012	536.3	47.9%	33.7%
10 Year	0.5466	2,036.6	0.3923	1,507.6	28.2%	26.0%
25 Year	0.8612	3,197.7	0.6629	2,465.4	23.0%	22.9%
100 Year	1.5426	5,881.1	1.2673	4,744.7	17.8%	19.3%

Design Point #4: No. 489 Concord Avenue (BVW)

Storm Event	Existing Conditions uncontrolled runoff		Proposed Conditions uncontrolled runoff		Reduction Percentage	
	(cfs)	(ft^3)	(cfs)	(ft^3)	(cfs)	(ft^3)
2 Year	0.0705	284.8	0.0692	280.6	1.8%	1.5%
10 Year	0.1372	582.0	0.1357	576.0	1.1%	1.0%
25 Year	0.1922	839.8	0.1906	832.7	0.8%	0.8%
100 Year	0.3043	1,400.4	0.3026	1,391.9	0.6%	0.6%

Design Point #5: Route 2 (BVW)

Storm Event	Existing Conditions uncontrolled runoff (cfs)	(ft^3)	Proposed Conditions uncontrolled runoff (cfs)	(ft^3)	Reduction Percentage (cfs)	(ft^3)
2 Year	0.1084	1,497.8	0.0925	1,001.4	14.7%	33.1%
10 Year	1.0056	5,505.5	0.7120	3,851.1	29.2%	30.0%
25 Year	2.0621	9,810.4	1.4675	7,078.1	28.8%	27.9%
100 Year	4.6305	20,659.6	3.5280	16,221.3	23.8%	21.5%

As listed above, the summary tables demonstrate the proposed conditions will either mirror or reduce the peak rate and volume of runoff for any storm event. The effects of the proposed development will be offset by the drainage system, which conveys and disposes the stormwater into a subsurface recharge basin and incorporates a porous asphalt common driveway.

Recharge Basin Summary Tables

Recharge Basin #1

Storm Event	Proposed Conditions Runoff to Recharge Basin (cfs)	(ft^3)	Proposed Conditions Infiltration at Recharge Basin (cfs)	(ft^3)	Proposed Conditions Overflow at Recharge Basin (cfs)	(ft^3)
2 Year	0.3657	1,042.6	0.0373	1,042.6	0.0000	0.0
10 Year	0.4978	1,765.5	0.0373	1,765.5	0.0000	0.0
25 Year	0.6259	2,451.5	0.0373	2,414.4	0.0000	0.0
100 Year	1.0509	4,087.7	0.0373	2,647.5	0.1981	728.5

Total Available Storage = 1,357.7± ft^3
Recharge Basin drains fully in 5.0± hours

Recharge Basin Exfiltration Rates & Groundwater Elevations

Structure	**Footprint**	**Permeability of Soil*** *Inches per Hour*	*Feet Per Second*	**Exfiltration Rate**** *Cubic Feet Per Second*	**Bottom of System**	**Groundwater** ***
RB#1	24.0' x 28.0' 672.0 ft^2	2.40 in/hr	0.00005556 ft/sec	0.0373 ft^3/sec	213.0±	211.0± or deeper

**Permeability of soil derived from the Hydrologic Soils Properties Classified By Soil Texture table (Rawls, Brakensiek and Saxton, 1982) and Soil Testing performed in 2018 by the Jillson Company, Inc.*
*** Exfiltration rate through bottom area only*
**** Groundwater Elevation determined from Soil Testing performed in 2018 by The Jillson Company, Inc. (See the Existing Conditions Summary for a description of the existing soil characteristics)*

INSTRUCTIONS:
1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Version 1, Automated: Mar. 4, 2008

Location: Recharge Basin #1, Northern Drainage Easement

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**
Subsurface Infiltration Structure	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**

Total TSS Removal = **85%**

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

Project: **#497 Concord Avenue**
Prepared By: **The Jillson Company**
Date: **9/7/2018**

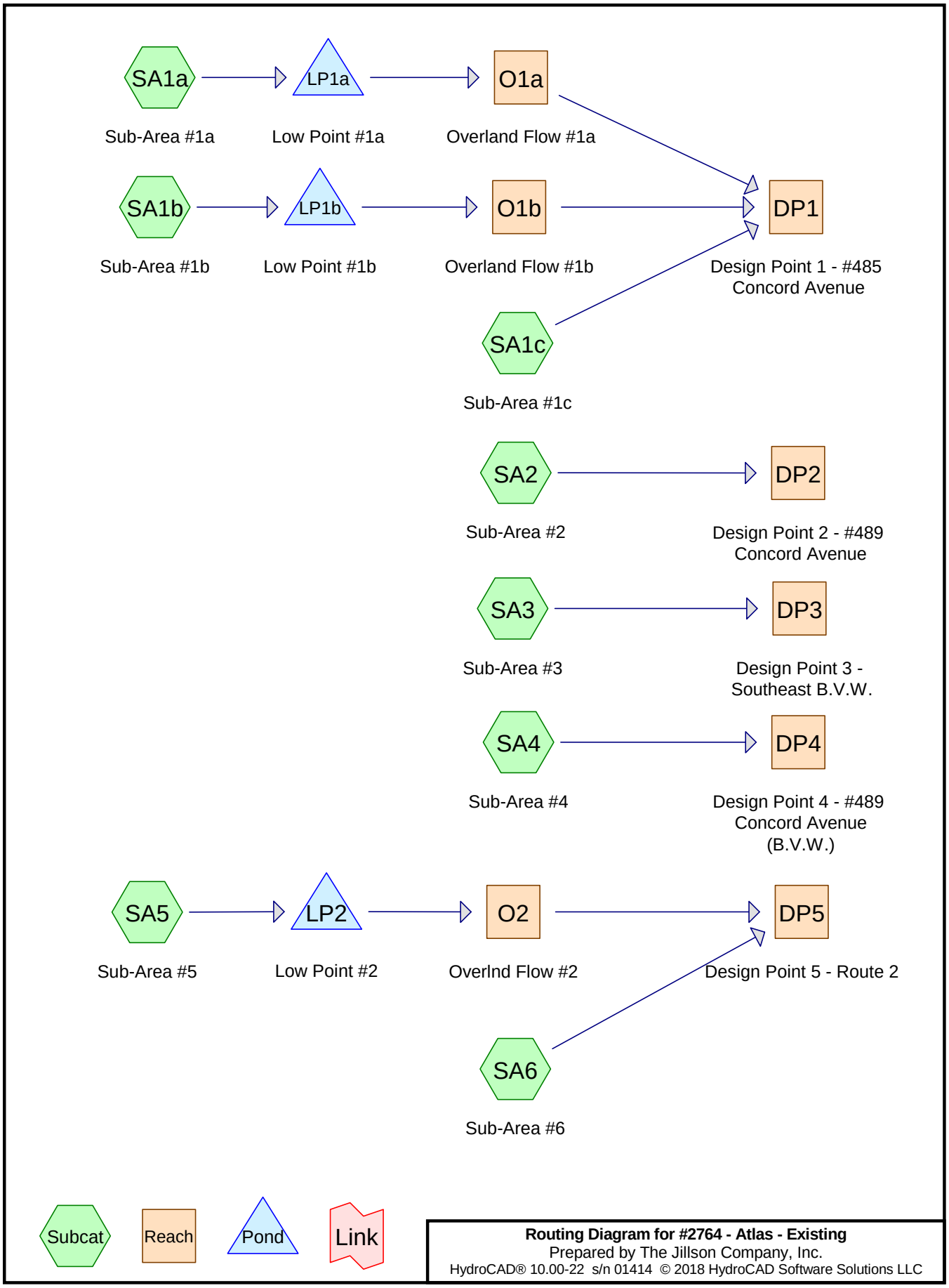
*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed
1. From MassDEP Stormwater Handbook Vol. 1

Mass. Dept. of Environmental Protection

D. Existing Conditions HydroCAD Printouts

2 Year Storm Event
10 Year Storm Event
25 Year Storm Event
100 Year Storm Event



Routing Diagram for #2764 - Atlas - Existing
Prepared by The Jillson Company, Inc.
HydroCAD® 10.00-22 s/n 01414 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
33,185.0	39.0	>75% Grass cover, Good, HSG A (SA1c, SA2, SA3, SA5, SA6)
18,260.0	80.0	>75% Grass cover, Good, HSG D (SA3, SA4, SA5, SA6)
14,140.0	98.0	Impervious (SA1a, SA1b, SA1c, SA2, SA3, SA5, SA6)
30,860.0	30.0	Woods/Landscape, Good, HSG A (SA1a, SA1b, SA1c, SA2, SA5, SA6)
17,610.0	77.0	Woods/Landscape, Good, HSG D (SA3, SA4, SA5, SA6)
114,055.0	**56.3**	**TOTAL AREA**

Summary for Subcatchment SA1a: Sub-Area #1a

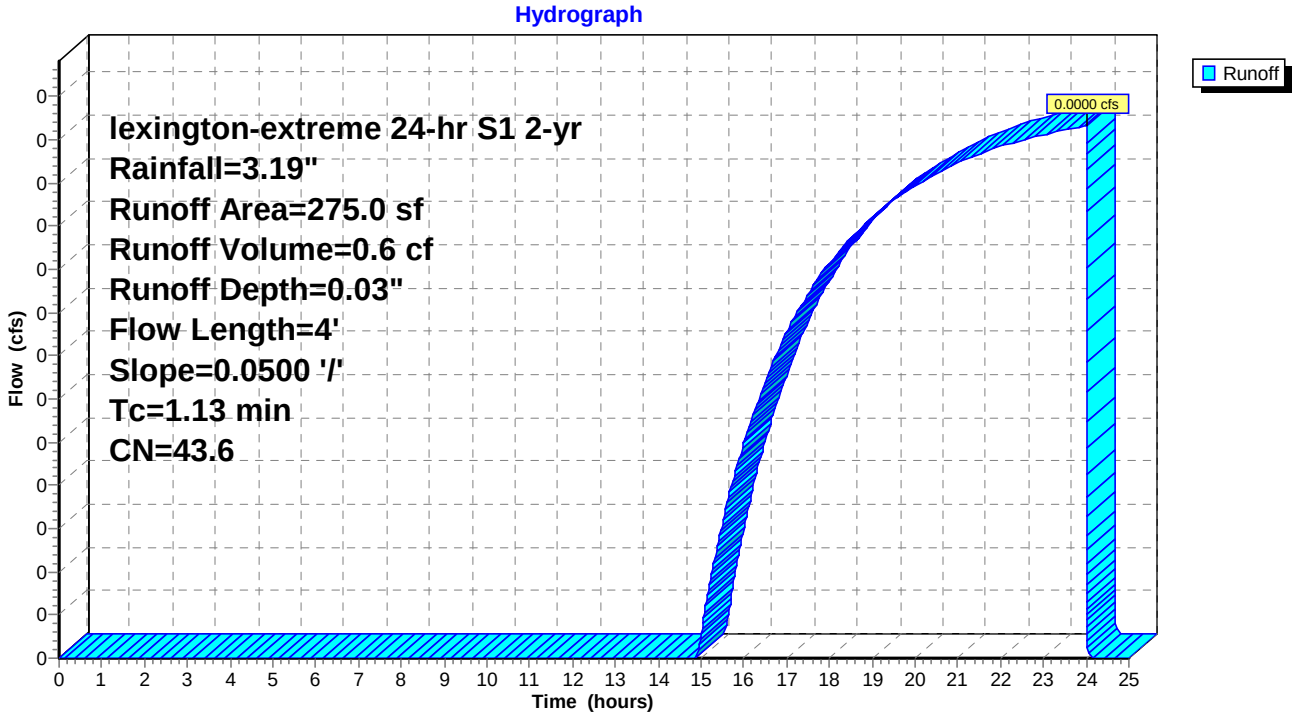
Runoff = 0.0000 cfs @ 24.00 hrs, Volume= 0.6 cf, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 2-yr Rainfall=3.19"

	Area (sf)	CN	Description
*	55.0	98.0	Impervious
*	220.0	30.0	Woods/Landscape, Good, HSG A
	275.0	43.6	Weighted Average
	220.0		80.00% Pervious Area
	55.0		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.13	4	0.0500	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment SA1a: Sub-Area #1a



Summary for Subcatchment SA1b: Sub-Area #1b

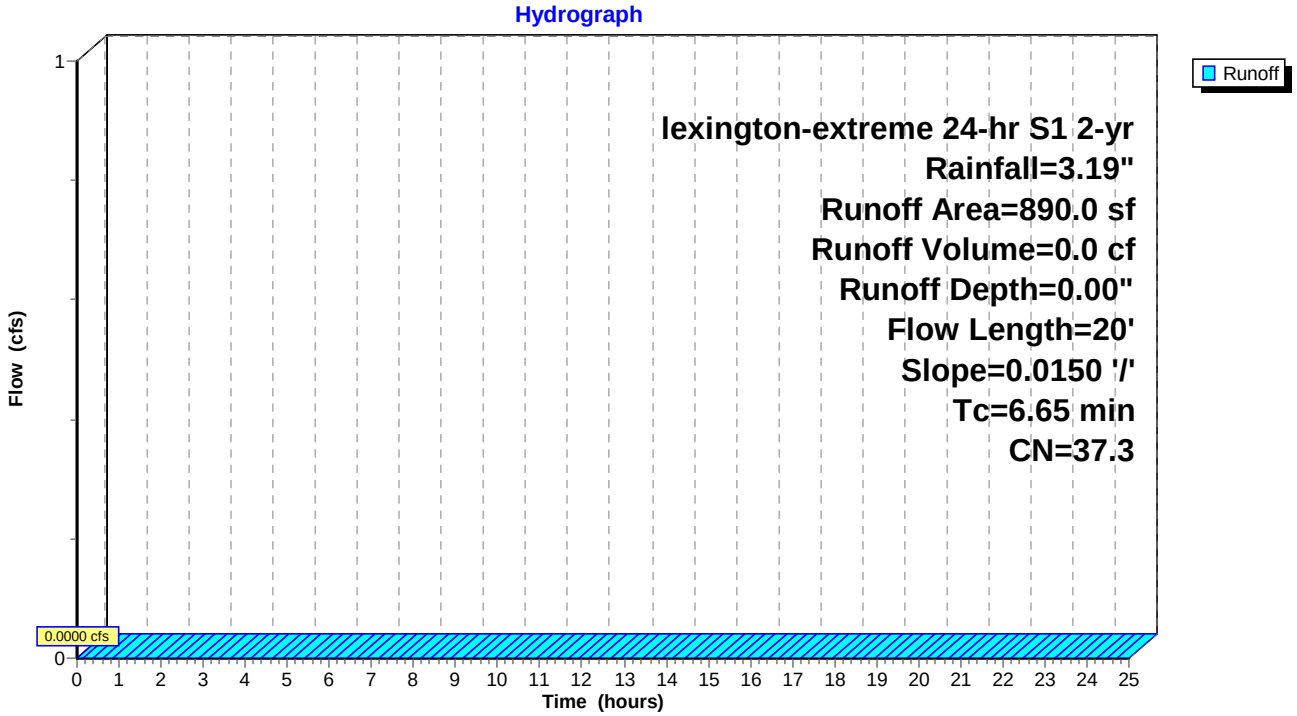
Runoff = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 2-yr Rainfall=3.19"

	Area (sf)	CN	Description
*	95.0	98.0	Impervious
*	795.0	30.0	Woods/Landscape, Good, HSG A
	890.0	37.3	Weighted Average
	795.0		89.33% Pervious Area
	95.0		10.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.65	20	0.0150	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment SA1b: Sub-Area #1b



Summary for Subcatchment SA1c: Sub-Area #1c

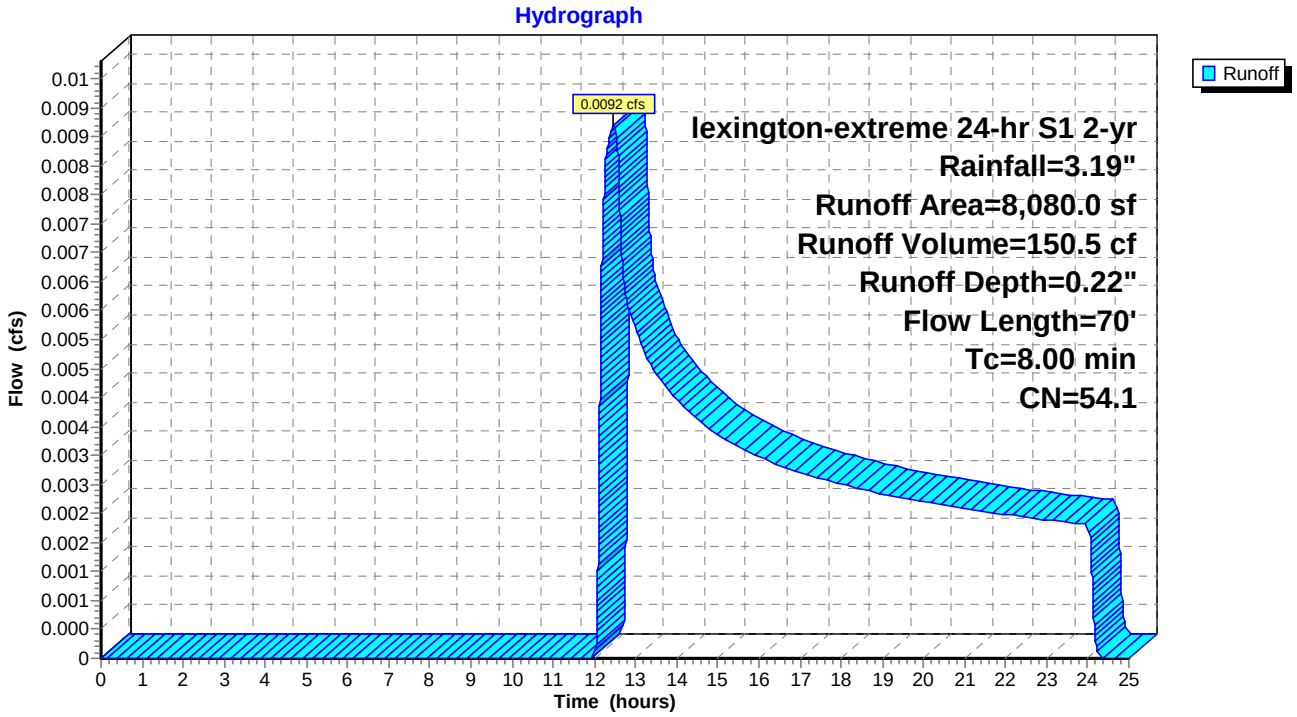
Runoff = 0.0092 cfs @ 12.47 hrs, Volume= 150.5 cf, Depth= 0.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 2-yr Rainfall=3.19"

	Area (sf)	CN	Description
*	2,635.0	98.0	Impervious
	1,760.0	39.0	>75% Grass cover, Good, HSG A
*	3,685.0	30.0	Woods/Landscape, Good, HSG A
	8,080.0	54.1	Weighted Average
	5,445.0		67.39% Pervious Area
	2,635.0		32.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.93	7	0.0143	0.0		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.92	15	0.0067	0.3		**Sheet Flow, Segment 2 - Gravel** n= 0.030 P2= 3.20"
1.00	10	0.0600	0.2		**Sheet Flow, Segment 3 - Lawn** Grass: Short n= 0.150 P2= 3.20"
2.38	16	0.1250	0.1		**Sheet Flow, Segment 4 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.77	22	0.0091	0.5		**Shallow Concentrated Flow, Segment 5 - Woods** Woodland Kv= 5.00 fps
8.00	70	Total			

Subcatchment SA1c: Sub-Area #1c



Summary for Subcatchment SA2: Sub-Area #2

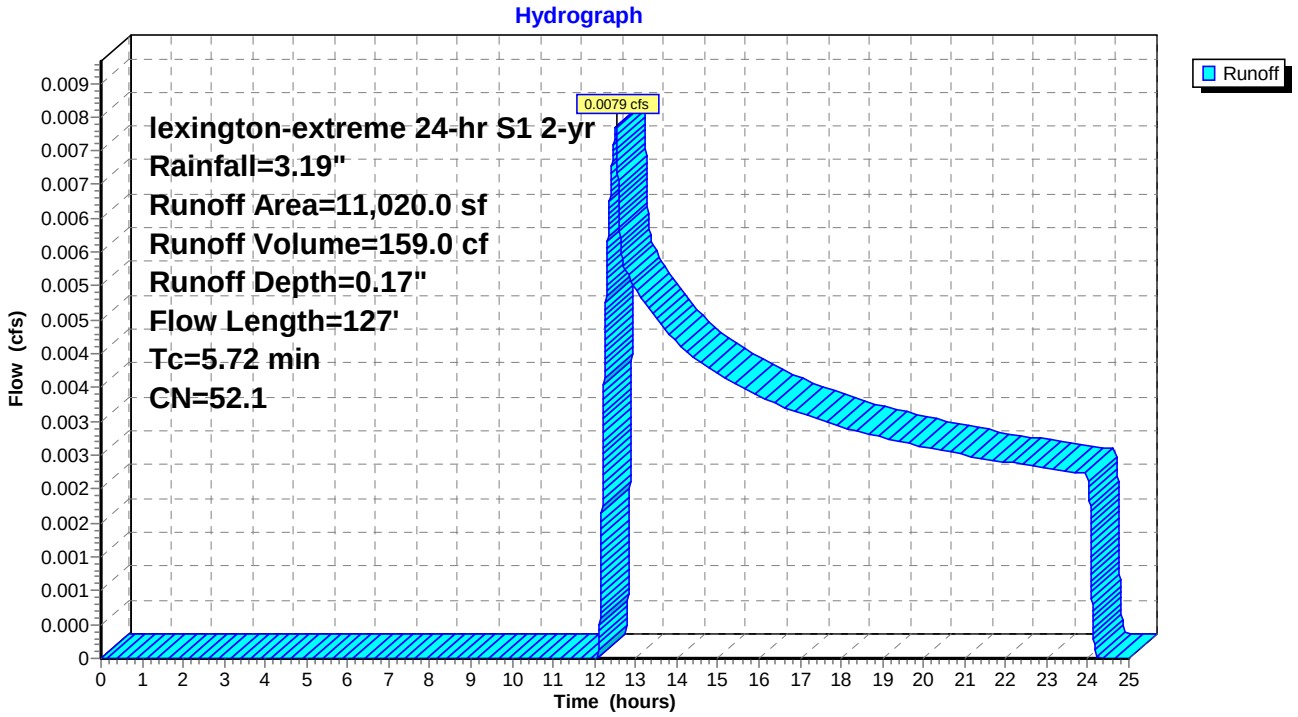
Runoff = 0.0079 cfs @ 12.53 hrs, Volume= 159.0 cf, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 2-yr Rainfall=3.19"

	Area (sf)	CN	Description
*	3,240.0	98.0	Impervious
	2,550.0	39.0	>75% Grass cover, Good, HSG A
*	5,230.0	30.0	Woods/Landscape, Good, HSG A
	11,020.0	52.1	Weighted Average
	7,780.0		70.60% Pervious Area
	3,240.0		29.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.23	13	0.0385	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
1.45	13	0.0400	0.1		**Sheet Flow, Segment 2 - Gravel** Grass: Short n= 0.150 P2= 3.20"
0.62	36	0.0194	1.0		**Shallow Concentrated Flow, Segment 3 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.26	48	0.0375	3.1		**Shallow Concentrated Flow, Segment 4 - Gravel** Unpaved Kv= 16.10 fps
0.16	17	0.1235	1.8		**Shallow Concentrated Flow, Segment 5 - Woods** Woodland Kv= 5.00 fps
5.72	127	Total			

Subcatchment SA2: Sub-Area #2



Summary for Subcatchment SA3: Sub-Area #3

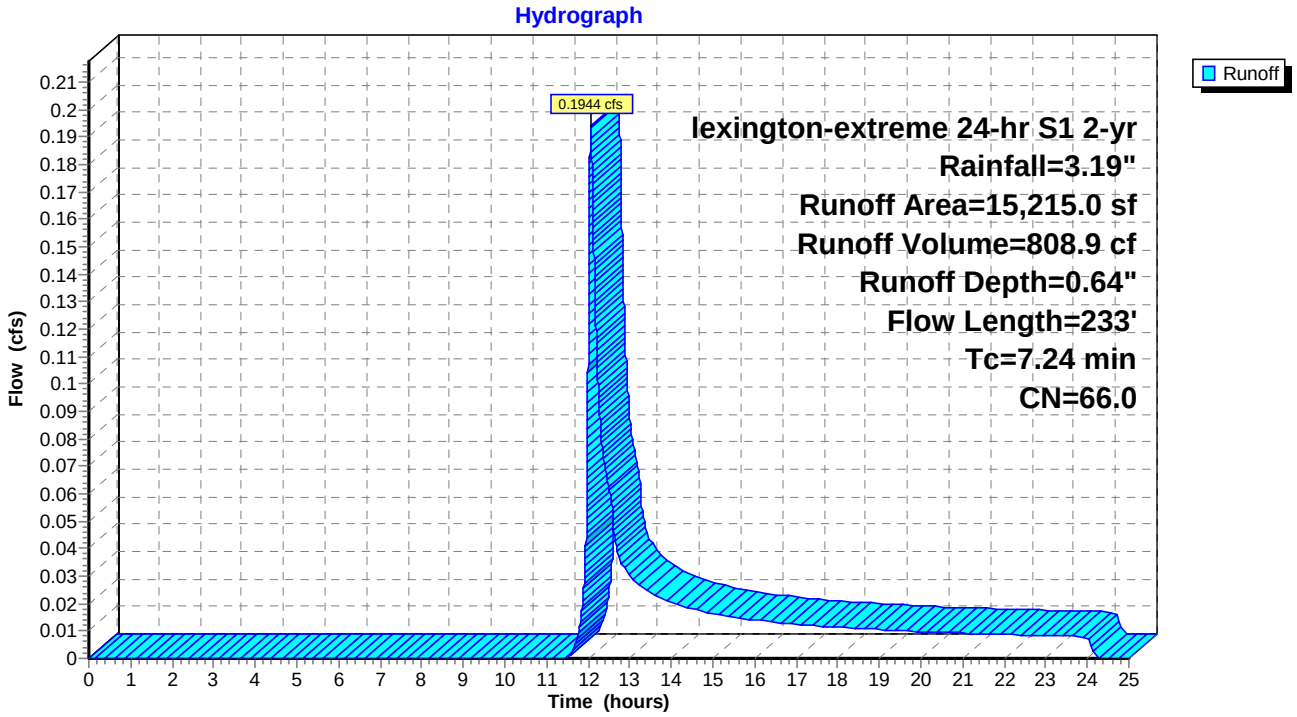
Runoff = 0.1944 cfs @ 12.06 hrs, Volume= 808.9 cf, Depth= 0.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 2-yr Rainfall=3.19"

	Area (sf)	CN	Description
*	700.0	98.0	Impervious
	3,225.0	80.0	>75% Grass cover, Good, HSG D
*	6,230.0	77.0	Woods/Landscape, Good, HSG D
	5,060.0	39.0	>75% Grass cover, Good, HSG A
	15,215.0	66.0	Weighted Average
	14,515.0		95.40% Pervious Area
	700.0		4.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.80	8	0.0625	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.64	16	0.0188	0.4		**Sheet Flow, Segment 2 - Gravel** n= 0.030 P2= 3.20"
2.42	27	0.0480	0.2		**Sheet Flow, Segment 3 - Lawn** Grass: Short n= 0.150 P2= 3.20"
1.11	106	0.0519	1.6		**Shallow Concentrated Flow, Segment 4 - Lawn** Short Grass Pasture Kv= 7.00 fps
1.27	76	0.0395	1.0		**Shallow Concentrated Flow, Segment 5 - Woods** Woodland Kv= 5.00 fps
7.24	233	Total			

Subcatchment SA3: Sub-Area #3



Summary for Subcatchment SA4: Sub-Area #4

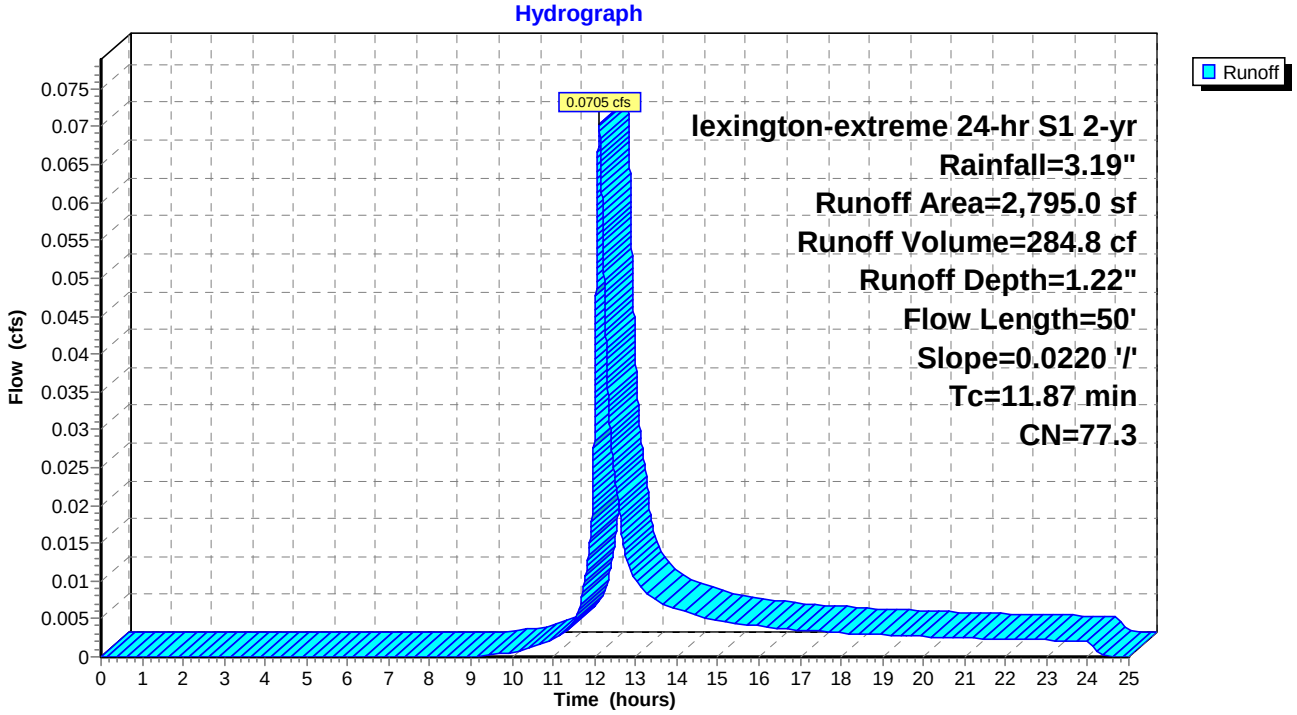
Runoff = 0.0705 cfs @ 12.12 hrs, Volume= 284.8 cf, Depth= 1.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 2-yr Rainfall=3.19"

	Area (sf)	CN	Description
	255.0	80.0	>75% Grass cover, Good, HSG D
*	2,540.0	77.0	Woods/Landscape, Good, HSG D
	2,795.0	77.3	Weighted Average
	2,795.0		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.87	50	0.0220	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment SA4: Sub-Area #4



Summary for Subcatchment SA5: Sub-Area #5

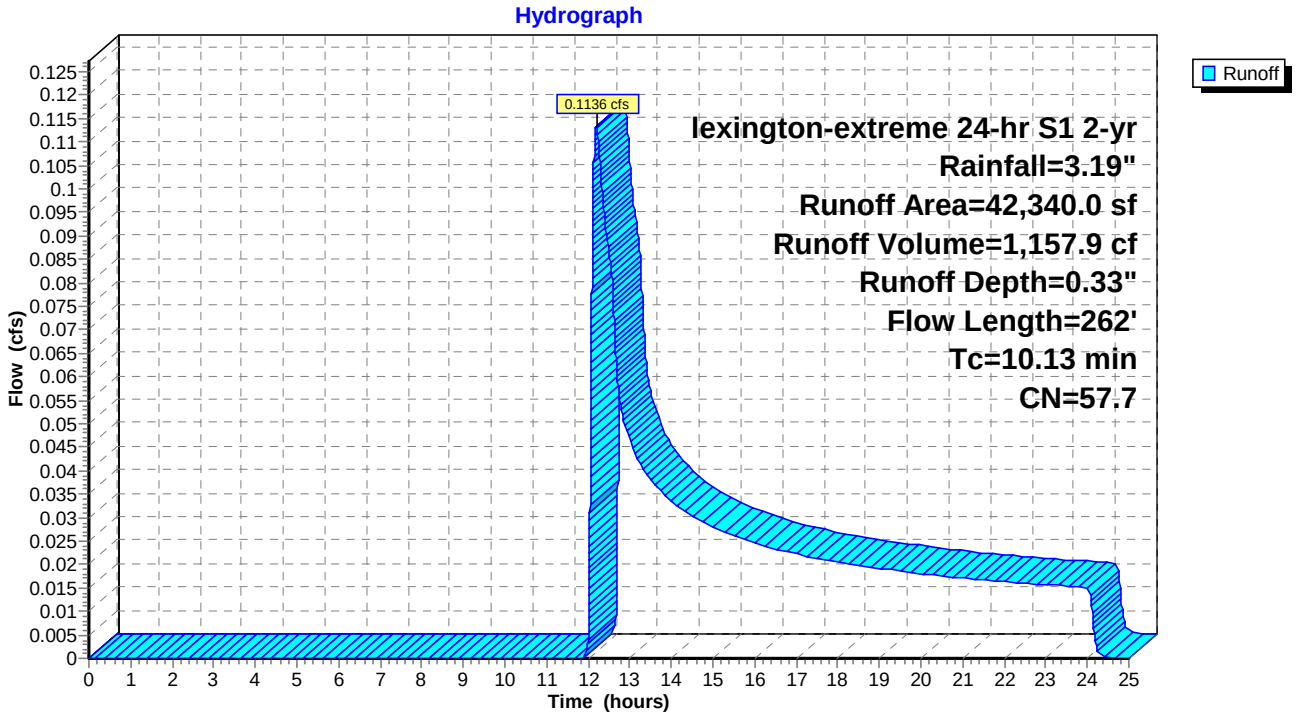
Runoff = 0.1136 cfs @ 12.19 hrs, Volume= 1,157.9 cf, Depth= 0.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 2-yr Rainfall=3.19"

	Area (sf)	CN	Description
*	2,295.0	98.0	Impervious
	13,820.0	80.0	>75% Grass cover, Good, HSG D
*	4,225.0	77.0	Woods/Landscape, Good, HSG D
	14,160.0	39.0	>75% Grass cover, Good, HSG A
*	7,840.0	30.0	Woods/Landscape, Good, HSG A
	42,340.0	57.7	Weighted Average
	40,045.0		94.58% Pervious Area
	2,295.0		5.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.22	7	0.0286	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.59	15	0.0200	0.4		**Sheet Flow, Segment 2 - Gravel Drive** n= 0.030 P2= 3.20"
4.54	28	0.0107	0.1		**Sheet Flow, Segment 3 - Lawn** Grass: Short n= 0.150 P2= 3.20"
2.78	212	0.0330	1.3		**Shallow Concentrated Flow, Segment 4 - Lawn** Short Grass Pasture Kv= 7.00 fps
10.13	262	Total			

Subcatchment SA5: Sub-Area #5



Summary for Subcatchment SA6: Sub-Area #6

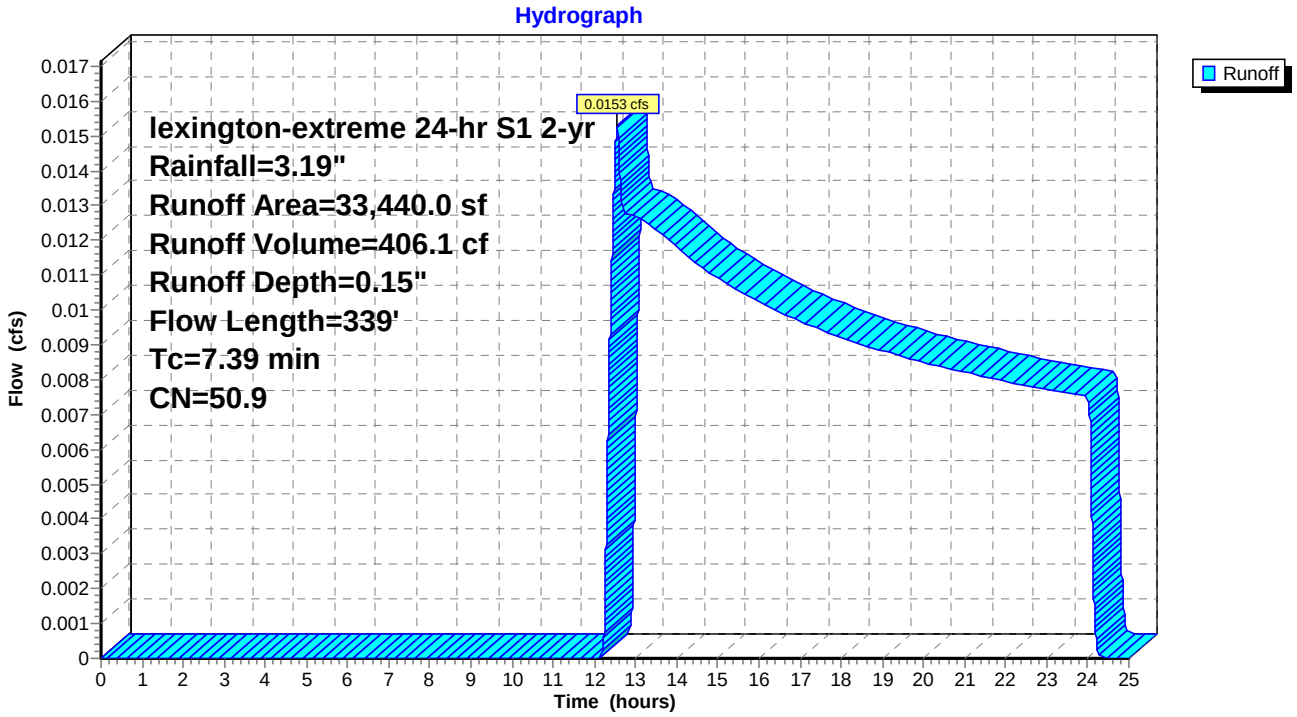
Runoff = 0.0153 cfs @ 12.55 hrs, Volume= 406.1 cf, Depth= 0.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 2-yr Rainfall=3.19"

	Area (sf)	CN	Description
*	5,120.0	98.0	Impervious
	960.0	80.0	>75% Grass cover, Good, HSG D
*	4,615.0	77.0	Woods/Landscape, Good, HSG D
	9,655.0	39.0	>75% Grass cover, Good, HSG A
*	13,090.0	30.0	Woods/Landscape, Good, HSG A
	33,440.0	50.9	Weighted Average
	28,320.0		84.69% Pervious Area
	5,120.0		15.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.67	50	0.4140	0.2		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.53	50	0.0980	1.6		**Shallow Concentrated Flow, Segment 2 - Woods** Woodland Kv= 5.00 fps
0.19	21	0.0714	1.9		**Shallow Concentrated Flow, Segment 3 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.08	8	0.1250	1.8		**Shallow Concentrated Flow, Segment 4 - Woods** Woodland Kv= 5.00 fps
0.12	5	0.0100	0.7		**Shallow Concentrated Flow, Segment 5 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.14	37	0.0700	4.3		**Shallow Concentrated Flow, Segment 6 - Gravel Drive** Unpaved Kv= 16.10 fps
1.94	144	0.0313	1.2		**Shallow Concentrated Flow, Segment 7 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.72	24	0.0125	0.6		**Shallow Concentrated Flow, Segment 8 - Woods** Woodland Kv= 5.00 fps
7.39	339	Total			

Subcatchment SA6: Sub-Area #6

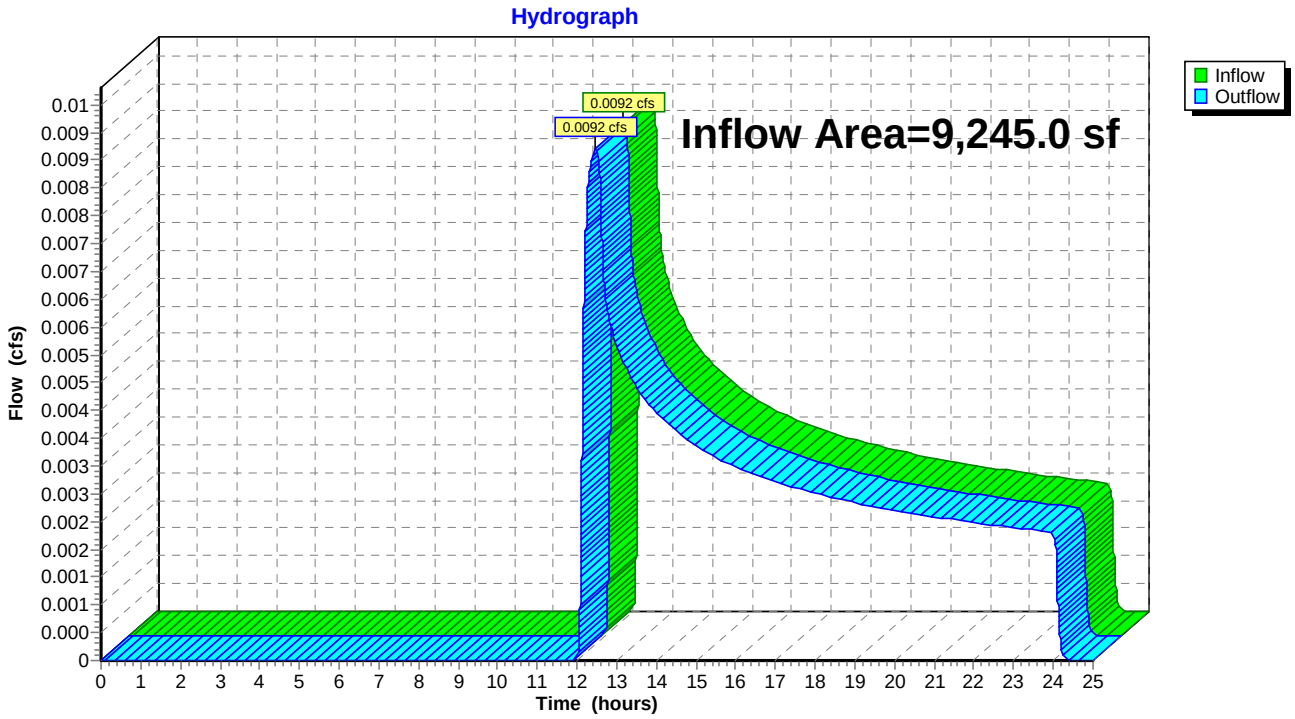


Summary for Reach DP1: Design Point 1 - #485 Concord Avenue

Inflow Area = 9,245.0 sf, 30.12% Impervious, Inflow Depth = 0.20" for 2-yr event
Inflow = 0.0092 cfs @ 12.47 hrs, Volume= 150.5 cf
Outflow = 0.0092 cfs @ 12.47 hrs, Volume= 150.5 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP1: Design Point 1 - #485 Concord Avenue

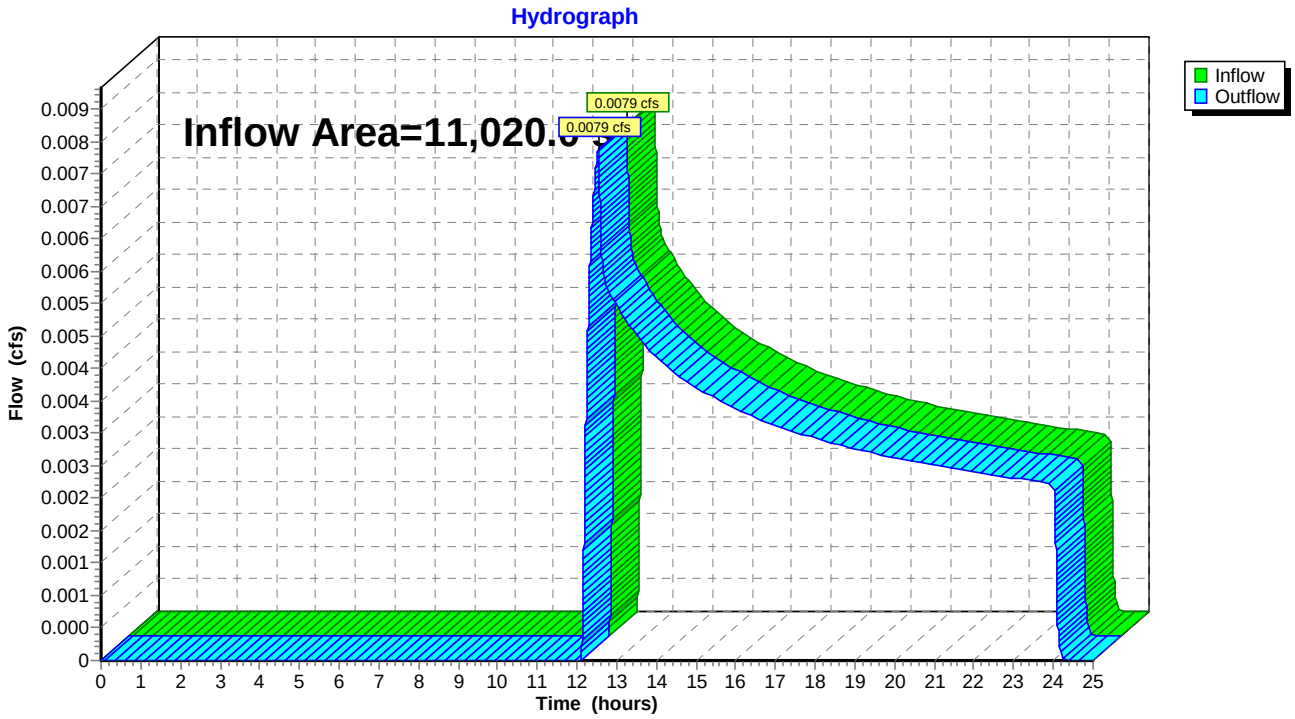


Summary for Reach DP2: Design Point 2 - #489 Concord Avenue

Inflow Area = 11,020.0 sf, 29.40% Impervious, Inflow Depth = 0.17" for 2-yr event
Inflow = 0.0079 cfs @ 12.53 hrs, Volume= 159.0 cf
Outflow = 0.0079 cfs @ 12.53 hrs, Volume= 159.0 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP2: Design Point 2 - #489 Concord Avenue

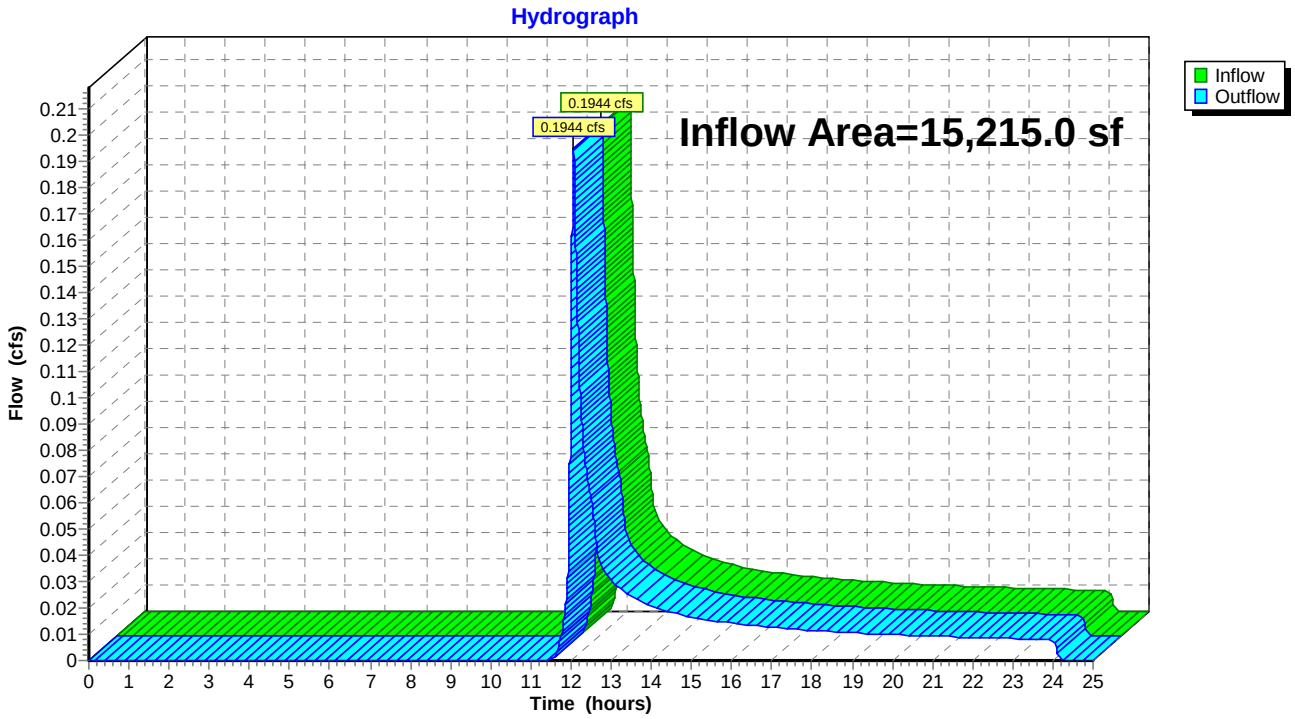


Summary for Reach DP3: Design Point 3 - Southeast B.V.W.

Inflow Area =	15,215.0 sf,	4.60% Impervious,	Inflow Depth =	0.64"	for 2-yr event
Inflow =	0.1944 cfs @	12.06 hrs,	Volume=	808.9 cf	
Outflow =	0.1944 cfs @	12.06 hrs,	Volume=	808.9 cf,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP3: Design Point 3 - Southeast B.V.W.

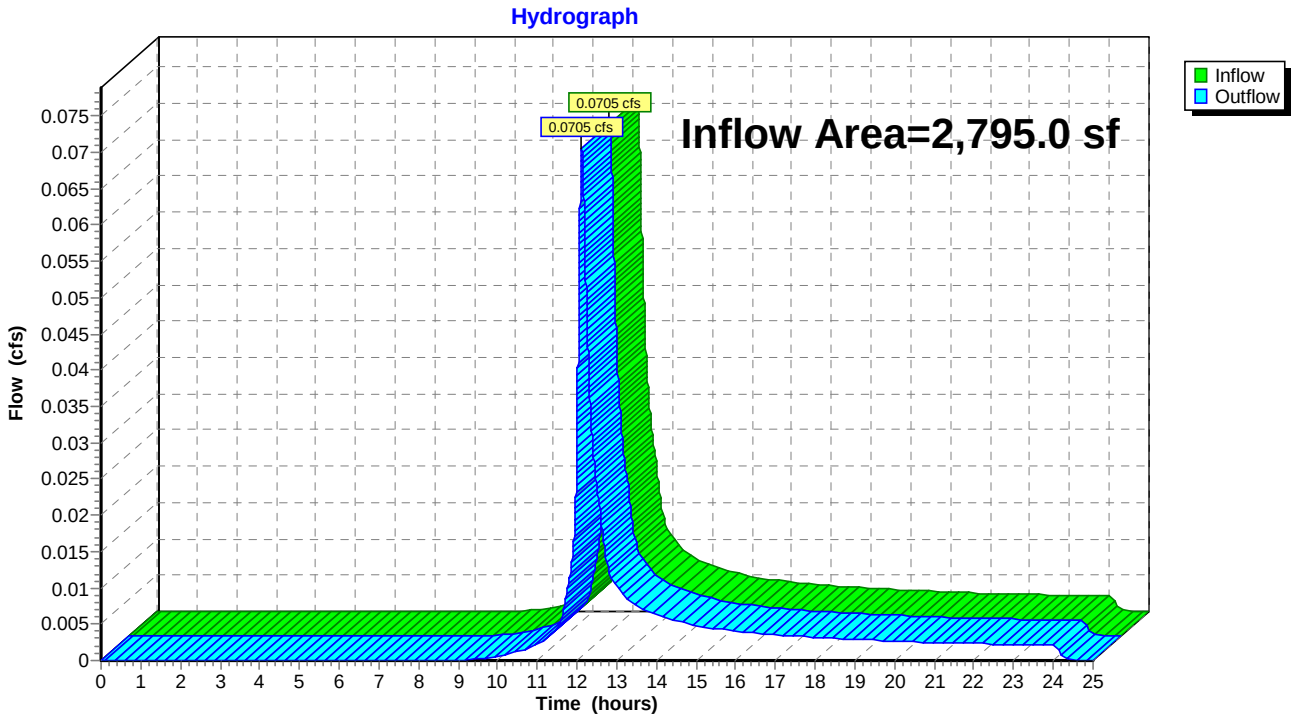


Summary for Reach DP4: Design Point 4 - #489 Concord Avenue (B.V.W.)

Inflow Area =	2,795.0 sf,	0.00% Impervious,	Inflow Depth =	1.22"	for 2-yr event
Inflow =	0.0705 cfs @	12.12 hrs,	Volume=	284.8 cf	
Outflow =	0.0705 cfs @	12.12 hrs,	Volume=	284.8 cf,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP4: Design Point 4 - #489 Concord Avenue (B.V.W.)

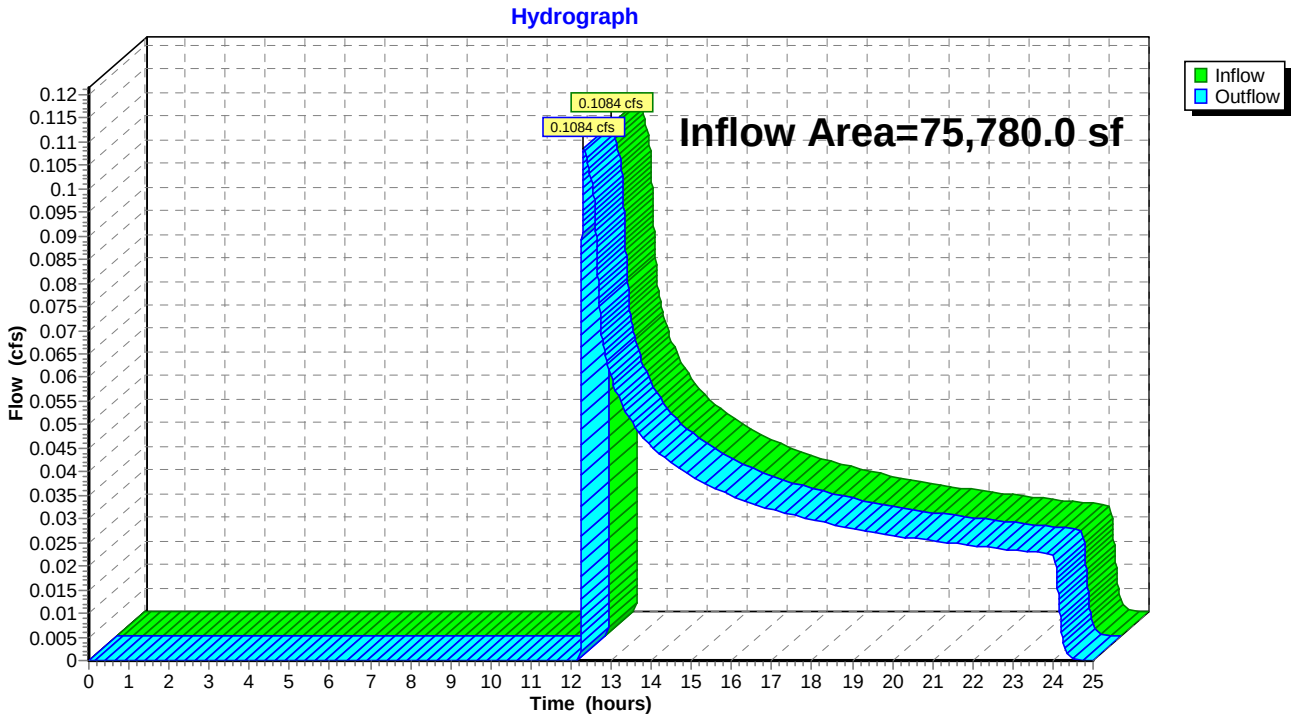


Summary for Reach DP5: Design Point 5 - Route 2

Inflow Area = 75,780.0 sf, 9.78% Impervious, Inflow Depth > 0.24" for 2-yr event
Inflow = 0.1084 cfs @ 12.32 hrs, Volume= 1,497.8 cf
Outflow = 0.1084 cfs @ 12.32 hrs, Volume= 1,497.8 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP5: Design Point 5 - Route 2



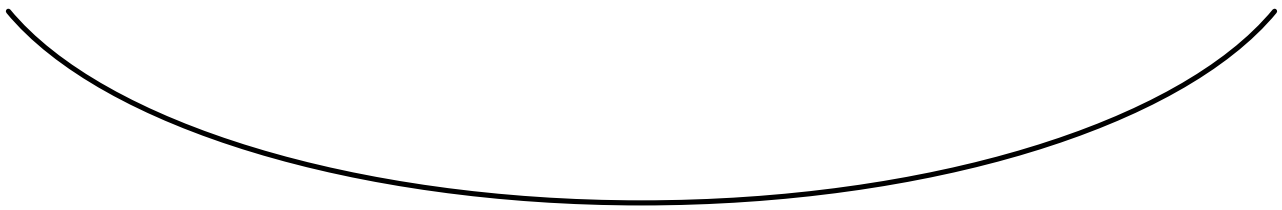
Summary for Reach O1a: Overland Flow #1a

Inflow Area = 275.0 sf, 20.00% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf
Outflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0.0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.10' Flow Area= 0.7 sf, Capacity= 1.3810 cfs

10.00' x 0.10' deep Parabolic Channel, n= 0.028 Overland Flow #1a
Length= 47.0' Slope= 0.0564 '/'
Inlet Invert= 219.45', Outlet Invert= 216.80'



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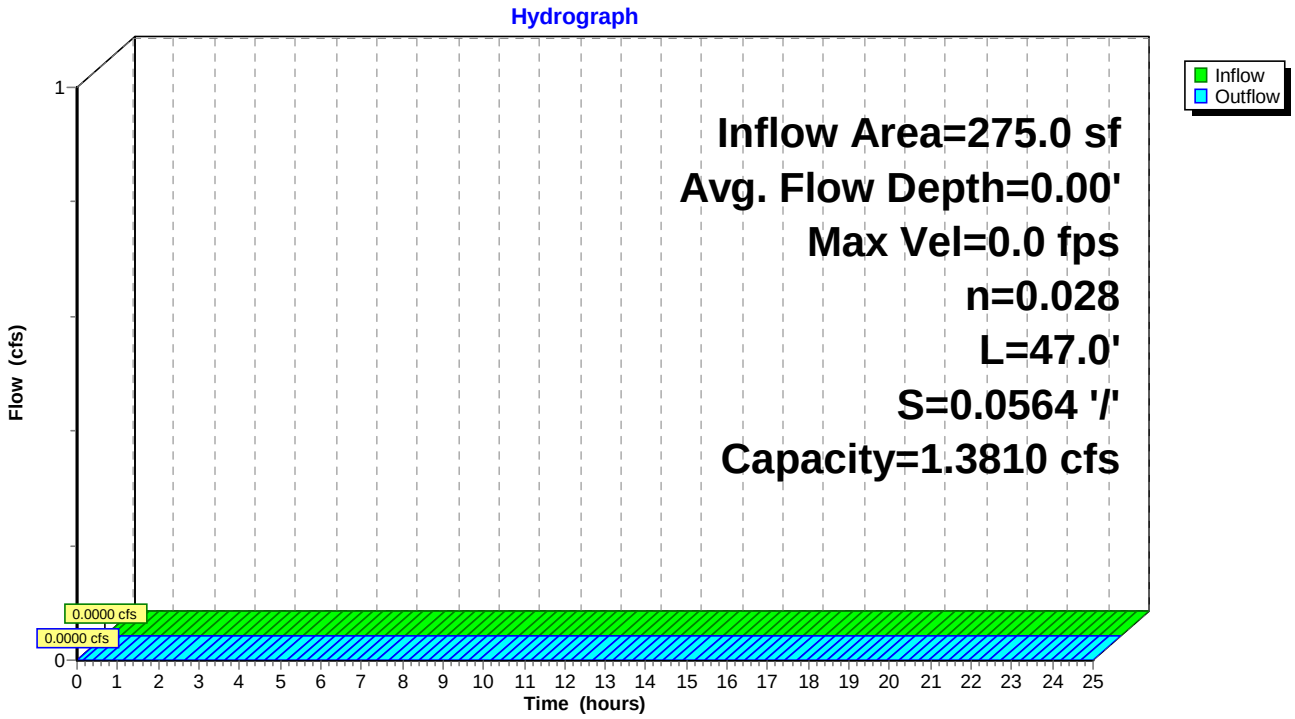
Reach O1a: Overland Flow #1a



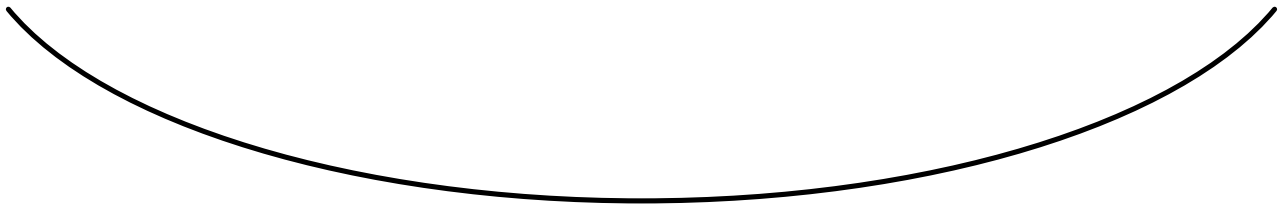
Summary for Reach O1b: Overland Flow #1b

Inflow Area = 890.0 sf, 10.67% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf
Outflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0.0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.10' Flow Area= 1.0 sf, Capacity= 1.9819 cfs

15.00' x 0.10' deep Parabolic Channel, n= 0.030 Overland Flow #1b
Length= 65.0' Slope= 0.0592 '/'
Inlet Invert= 219.55', Outlet Invert= 215.70'



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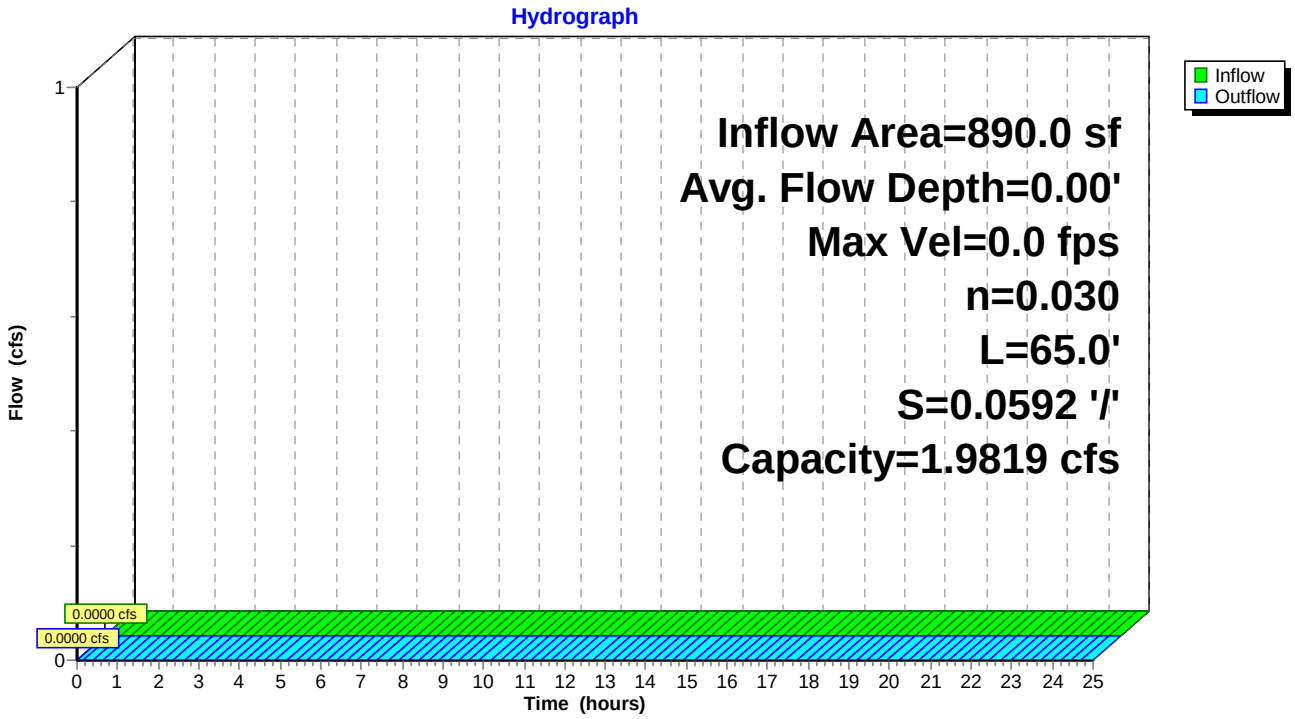
Reach O1b: Overland Flow #1b



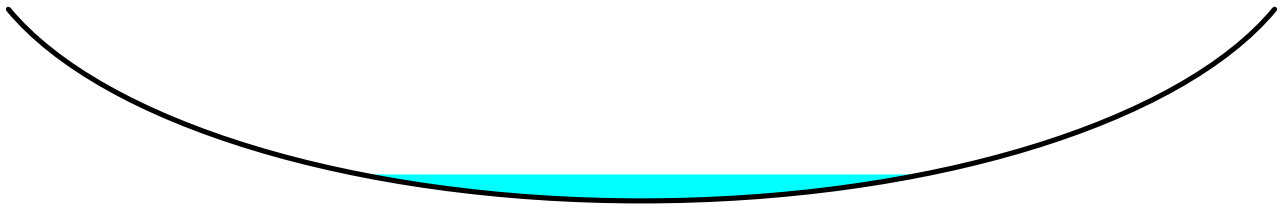
Summary for Reach O2: OverInd Flow #2

Inflow Area = 42,340.0 sf, 5.42% Impervious, Inflow Depth > 0.31" for 2-yr event
Inflow = 0.1036 cfs @ 12.30 hrs, Volume= 1,091.7 cf
Outflow = 0.1031 cfs @ 12.31 hrs, Volume= 1,091.7 cf, Atten= 1%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 0.5 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 0.3 fps, Avg. Travel Time= 1.2 min

Peak Storage= 4.5 cf @ 12.31 hrs
Average Depth at Peak Storage= 0.03'
Bank-Full Depth= 0.20' Flow Area= 4.3 sf, Capacity= 7.6508 cfs

32.00' x 0.20' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 21.0' Slope= 0.0262 '/'
Inlet Invert= 212.35', Outlet Invert= 211.80'



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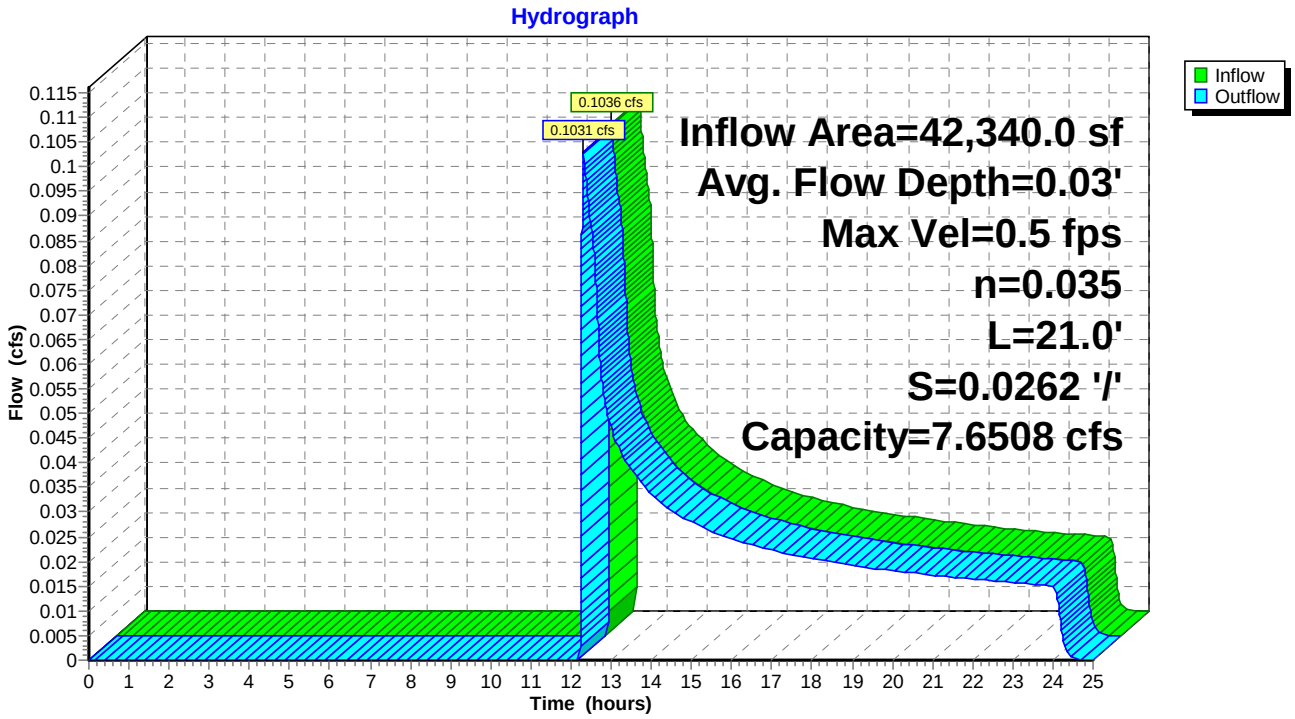
Reach O2: OverInd Flow #2



Summary for Pond LP1a: Low Point #1a

Inflow Area = 275.0 sf, 20.00% Impervious, Inflow Depth = 0.03" for 2-yr event
Inflow = 0.0000 cfs @ 24.00 hrs, Volume= 0.6 cf
Outflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 219.36' @ 24.07 hrs Surf.Area= 32.8 sf Storage= 0.6 cf

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

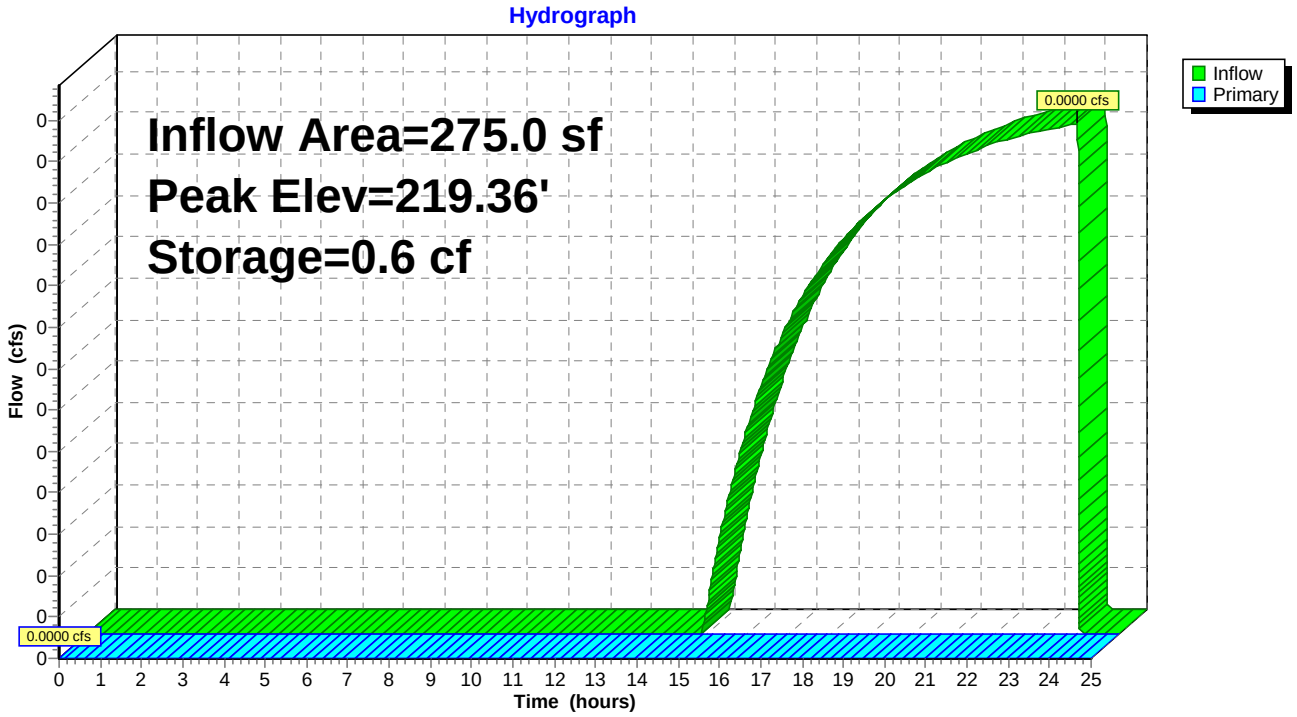
Volume	Invert	Avail.Storage	Storage Description
#1	219.30'	57.0 cf	**Low Point #1a (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
219.30	0.0	0.0	0.0	0.0	0.0
219.40	104.0	50.0	3.5	3.5	199.0
219.50	176.0	62.0	13.8	17.3	306.1
219.60	200.0	68.0	18.8	36.1	368.5
219.70	219.0	75.0	20.9	57.0	448.4

Device	Routing	Invert	Outlet Devices
#1	Primary	219.50'	**LP#1a Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.20 Width (feet) 10.00 35.00

Primary OutFlow Max=0.0000 cfs @ 0.00 hrs HW=219.30' TW=219.45' (Dynamic Tailwater)
└─**1=LP#1a Weir** (Controls 0.0000 cfs)

Pond LP1a: Low Point #1a



Summary for Pond LP1b: Low Point #1b

Inflow Area = 890.0 sf, 10.67% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf
Outflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 219.20' @ 0.00 hrs Surf.Area= 0.0 sf Storage= 0.0 cf

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

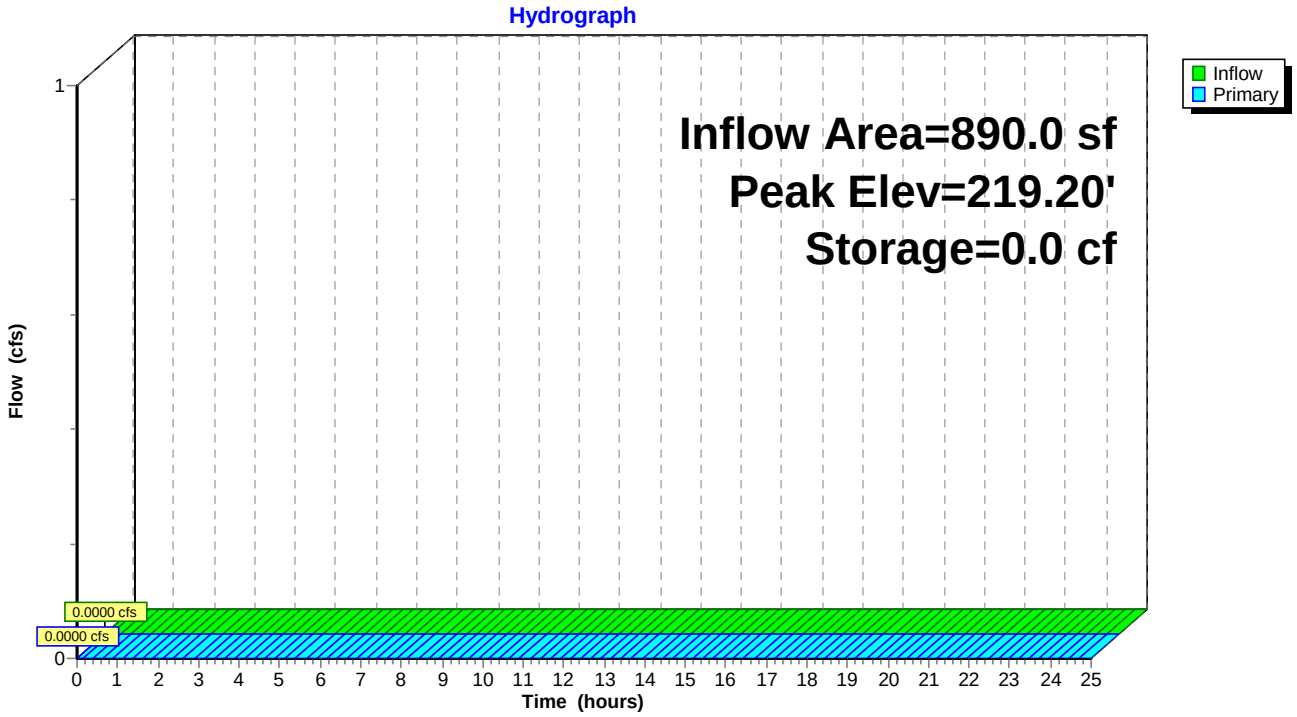
Volume	Invert	Avail.Storage	Storage Description
#1	219.20'	270.8 cf	**Low Point #1b (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
219.20	0.0	0.0	0.0	0.0	0.0
219.30	74.0	52.0	2.5	2.5	215.2
219.40	161.0	86.0	11.5	13.9	588.6
219.50	305.0	122.0	22.9	36.9	1,184.6
219.60	472.0	151.0	38.5	75.4	1,814.8
219.70	632.0	180.0	55.0	130.4	2,578.8
219.80	708.0	192.0	67.0	197.4	2,934.5
219.90	761.0	204.0	73.4	270.8	3,313.2

Device	Routing	Invert	Outlet Devices
#1	Primary	219.60'	**LP#1b Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.20 Width (feet) 15.00 48.00

Primary OutFlow Max=0.0000 cfs @ 0.00 hrs HW=219.20' TW=219.55' (Dynamic Tailwater)
└**1=LP#1b Weir** (Controls 0.0000 cfs)

Pond LP1b: Low Point #1b



Summary for Pond LP2: Low Point #2

Inflow Area =	42,340.0 sf,	5.42% Impervious,	Inflow Depth =	0.33"	for 2-yr event
Inflow =	0.1136 cfs @	12.19 hrs,	Volume=	1,157.9 cf	
Outflow =	0.1036 cfs @	12.30 hrs,	Volume=	1,091.7 cf,	Atten= 9%, Lag= 6.5 min
Primary =	0.1036 cfs @	12.30 hrs,	Volume=	1,091.7 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 212.41' @ 12.30 hrs Surf.Area= 785.5 sf Storage= 73.8 cf

Plug-Flow detention time= 43.4 min calculated for 1,091.7 cf (94% of inflow)
Center-of-Mass det. time= 17.6 min (1,004.4 - 986.9)

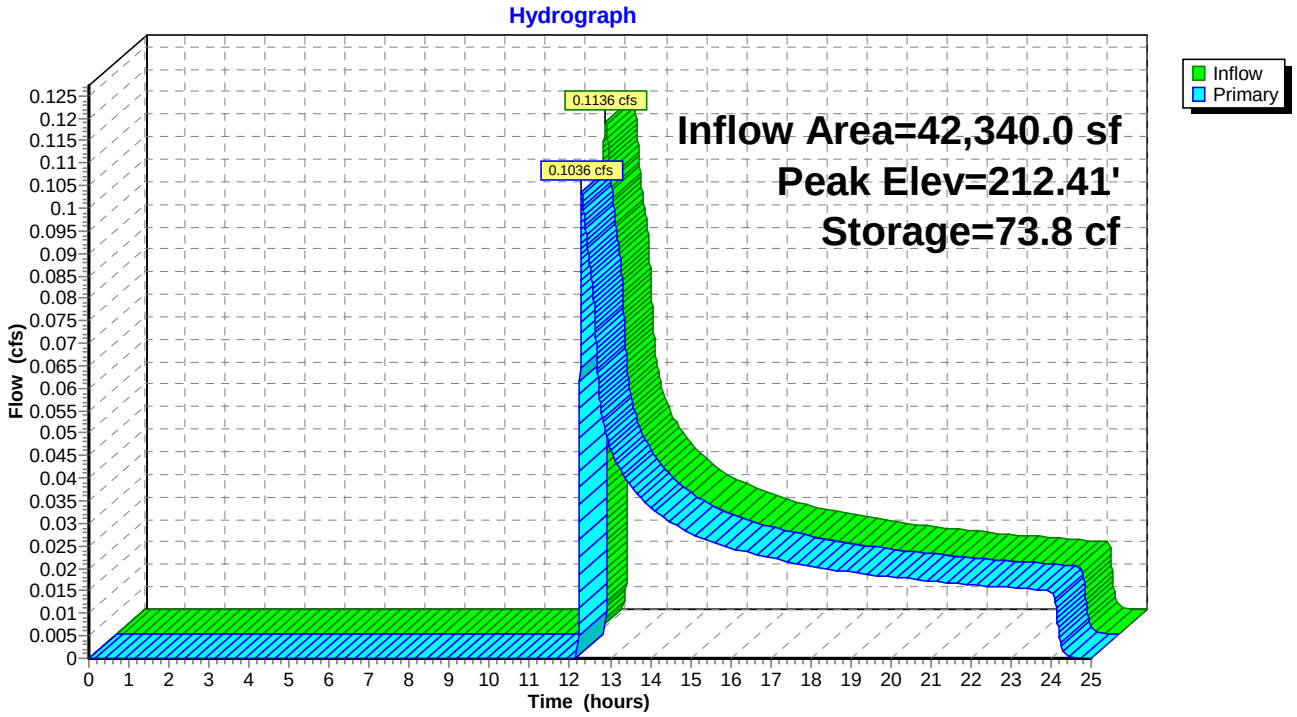
Volume	Invert	Avail.Storage	Storage Description
#1	212.20'	1,293.1 cf	**Low Point #2 (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
212.20	44.0	28.0	0.0	0.0	44.0
212.40	765.0	155.0	66.2	66.2	1,893.6
212.60	1,231.0	170.0	197.8	263.9	2,282.8
212.80	2,414.0	308.0	357.9	621.8	7,532.3
213.00	4,397.0	423.0	671.3	1,293.1	14,222.4

Device	Routing	Invert	Outlet Devices
#1	Primary	212.40'	**LP#1b Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.20 Width (feet) 32.00 38.00

Primary OutFlow Max=0.1036 cfs @ 12.30 hrs HW=212.41' TW=212.38' (Dynamic Tailwater)
└─**1=LP#1b Weir** (Weir Controls 0.1036 cfs @ 0.3 fps)

Pond LP2: Low Point #2



Summary for Subcatchment SA1a: Sub-Area #1a

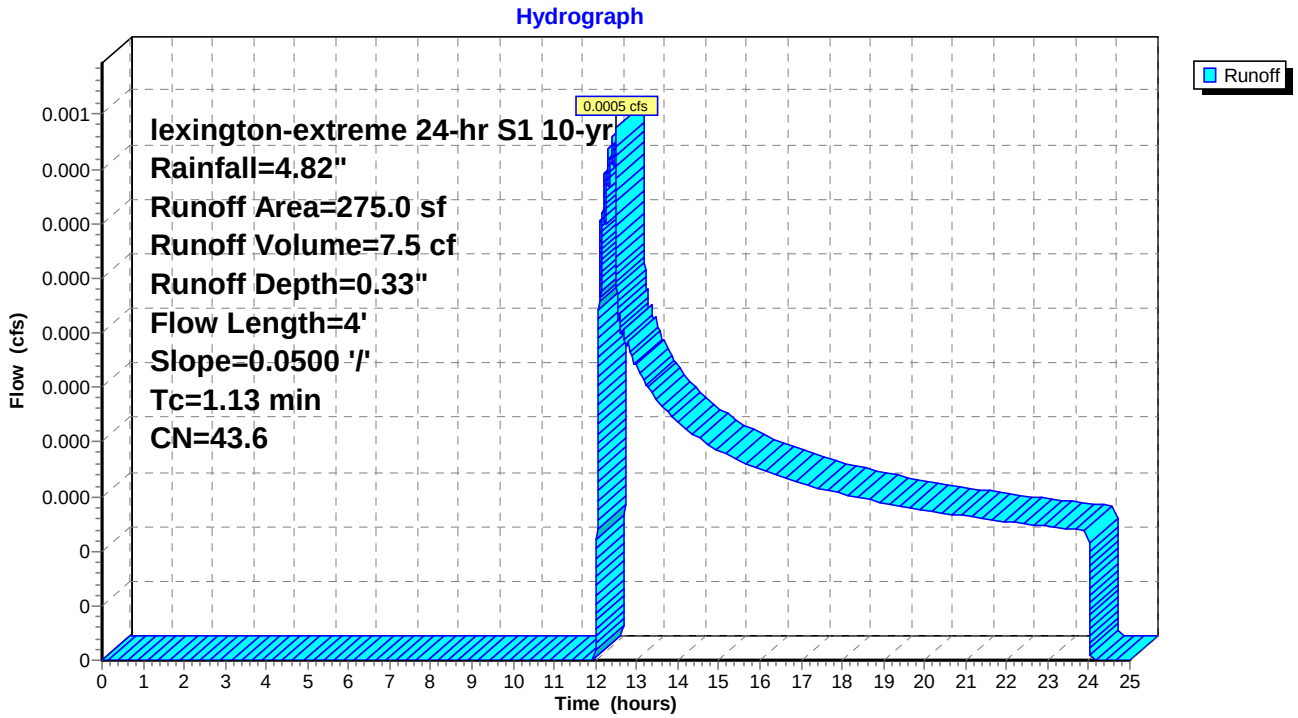
Runoff = 0.0005 cfs @ 12.50 hrs, Volume= 7.5 cf, Depth= 0.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 10-yr Rainfall=4.82"

	Area (sf)	CN	Description
*	55.0	98.0	Impervious
*	220.0	30.0	Woods/Landscape, Good, HSG A
	275.0	43.6	Weighted Average
	220.0		80.00% Pervious Area
	55.0		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.13	4	0.0500	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment SA1a: Sub-Area #1a



Summary for Subcatchment SA1b: Sub-Area #1b

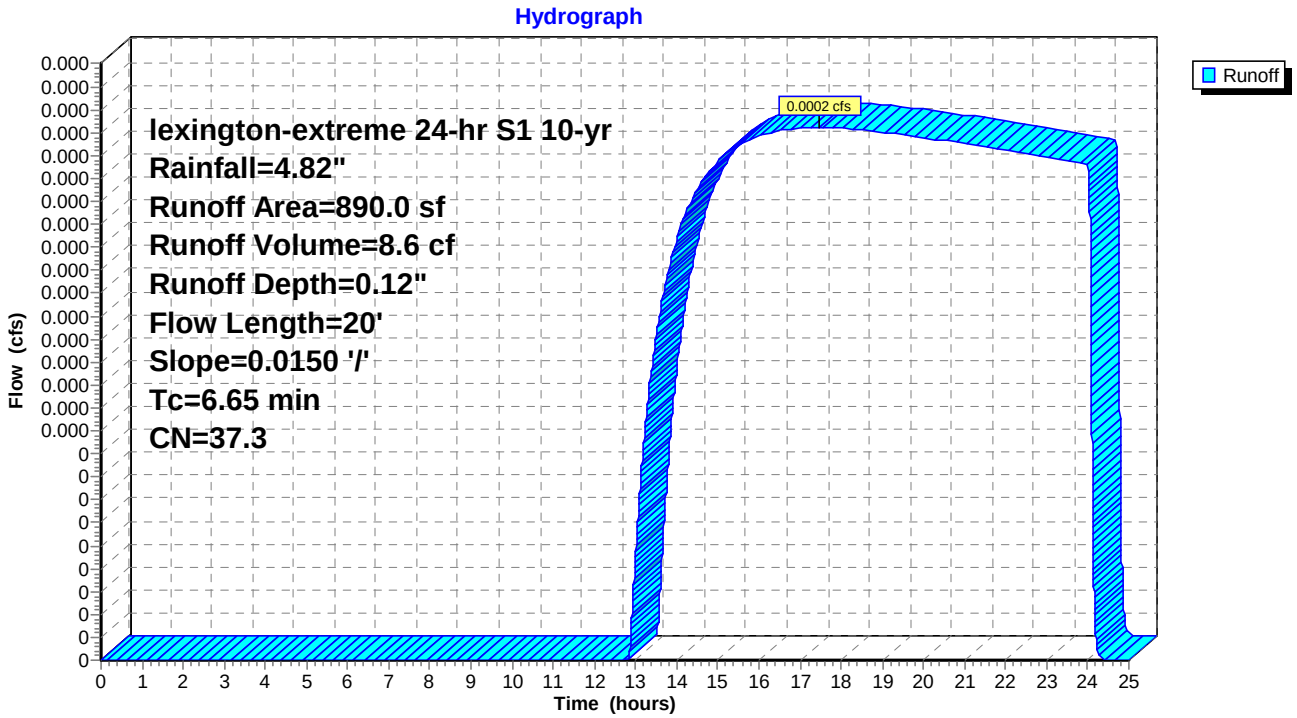
Runoff = 0.0002 cfs @ 17.45 hrs, Volume= 8.6 cf, Depth= 0.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 10-yr Rainfall=4.82"

	Area (sf)	CN	Description
*	95.0	98.0	Impervious
*	795.0	30.0	Woods/Landscape, Good, HSG A
	890.0	37.3	Weighted Average
	795.0		89.33% Pervious Area
	95.0		10.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.65	20	0.0150	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment SA1b: Sub-Area #1b



Summary for Subcatchment SA1c: Sub-Area #1c

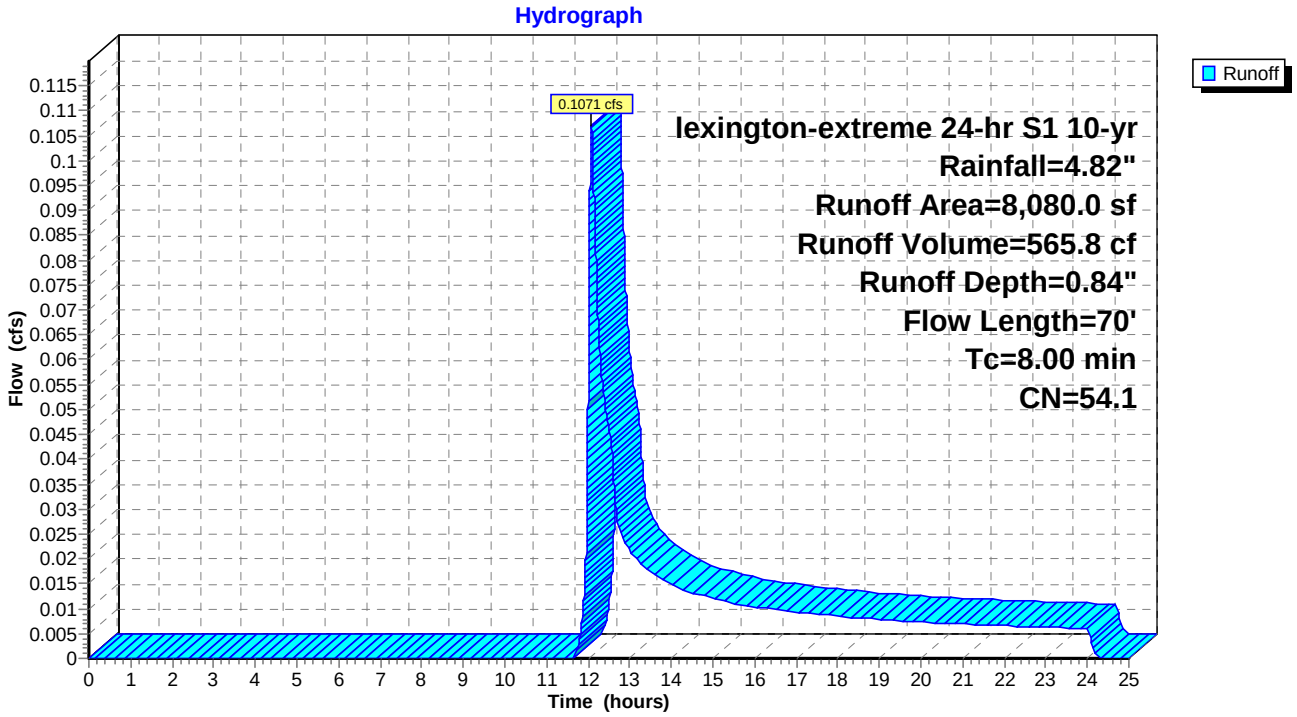
Runoff = 0.1071 cfs @ 12.08 hrs, Volume= 565.8 cf, Depth= 0.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 10-yr Rainfall=4.82"

	Area (sf)	CN	Description
*	2,635.0	98.0	Impervious
	1,760.0	39.0	>75% Grass cover, Good, HSG A
*	3,685.0	30.0	Woods/Landscape, Good, HSG A
	8,080.0	54.1	Weighted Average
	5,445.0		67.39% Pervious Area
	2,635.0		32.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.93	7	0.0143	0.0		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.92	15	0.0067	0.3		**Sheet Flow, Segment 2 - Gravel** n= 0.030 P2= 3.20"
1.00	10	0.0600	0.2		**Sheet Flow, Segment 3 - Lawn** Grass: Short n= 0.150 P2= 3.20"
2.38	16	0.1250	0.1		**Sheet Flow, Segment 4 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.77	22	0.0091	0.5		**Shallow Concentrated Flow, Segment 5 - Woods** Woodland Kv= 5.00 fps
8.00	70	Total			

Subcatchment SA1c: Sub-Area #1c



Summary for Subcatchment SA2: Sub-Area #2

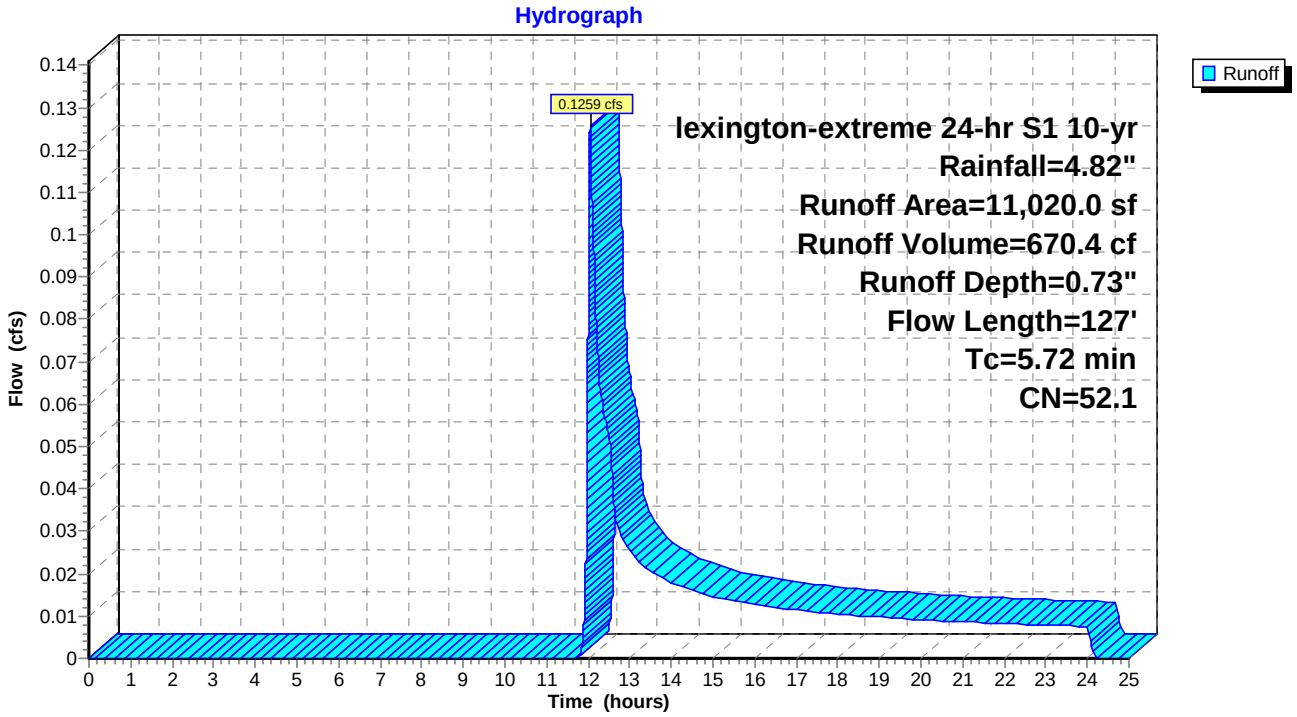
Runoff = 0.1259 cfs @ 12.05 hrs, Volume= 670.4 cf, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 10-yr Rainfall=4.82"

	Area (sf)	CN	Description
*	3,240.0	98.0	Impervious
	2,550.0	39.0	>75% Grass cover, Good, HSG A
*	5,230.0	30.0	Woods/Landscape, Good, HSG A
	11,020.0	52.1	Weighted Average
	7,780.0		70.60% Pervious Area
	3,240.0		29.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.23	13	0.0385	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
1.45	13	0.0400	0.1		**Sheet Flow, Segment 2 - Gravel** Grass: Short n= 0.150 P2= 3.20"
0.62	36	0.0194	1.0		**Shallow Concentrated Flow, Segment 3 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.26	48	0.0375	3.1		**Shallow Concentrated Flow, Segment 4 - Gravel** Unpaved Kv= 16.10 fps
0.16	17	0.1235	1.8		**Shallow Concentrated Flow, Segment 5 - Woods** Woodland Kv= 5.00 fps
5.72	127	Total			

Subcatchment SA2: Sub-Area #2



Summary for Subcatchment SA3: Sub-Area #3

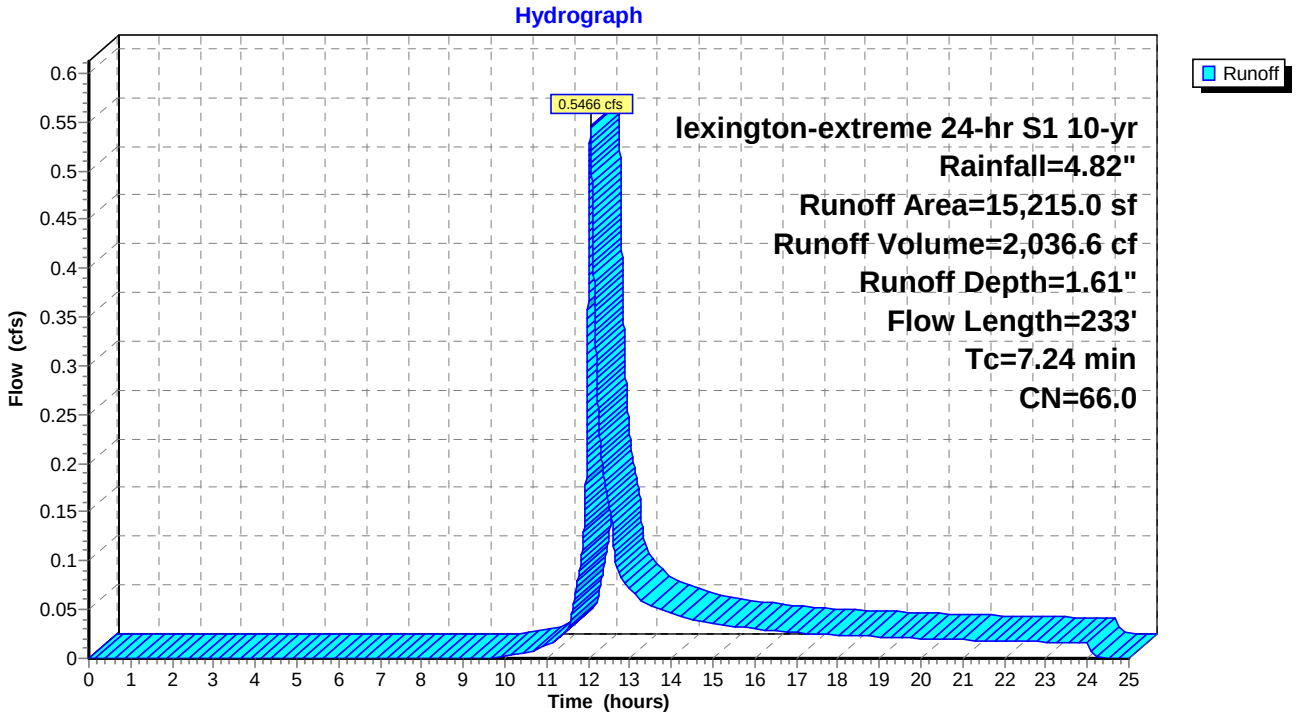
Runoff = 0.5466 cfs @ 12.06 hrs, Volume= 2,036.6 cf, Depth= 1.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 10-yr Rainfall=4.82"

	Area (sf)	CN	Description
*	700.0	98.0	Impervious
	3,225.0	80.0	>75% Grass cover, Good, HSG D
*	6,230.0	77.0	Woods/Landscape, Good, HSG D
	5,060.0	39.0	>75% Grass cover, Good, HSG A
	15,215.0	66.0	Weighted Average
	14,515.0		95.40% Pervious Area
	700.0		4.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.80	8	0.0625	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.64	16	0.0188	0.4		**Sheet Flow, Segment 2 - Gravel** n= 0.030 P2= 3.20"
2.42	27	0.0480	0.2		**Sheet Flow, Segment 3 - Lawn** Grass: Short n= 0.150 P2= 3.20"
1.11	106	0.0519	1.6		**Shallow Concentrated Flow, Segment 4 - Lawn** Short Grass Pasture Kv= 7.00 fps
1.27	76	0.0395	1.0		**Shallow Concentrated Flow, Segment 5 - Woods** Woodland Kv= 5.00 fps
7.24	233	Total			

Subcatchment SA3: Sub-Area #3



Summary for Subcatchment SA4: Sub-Area #4

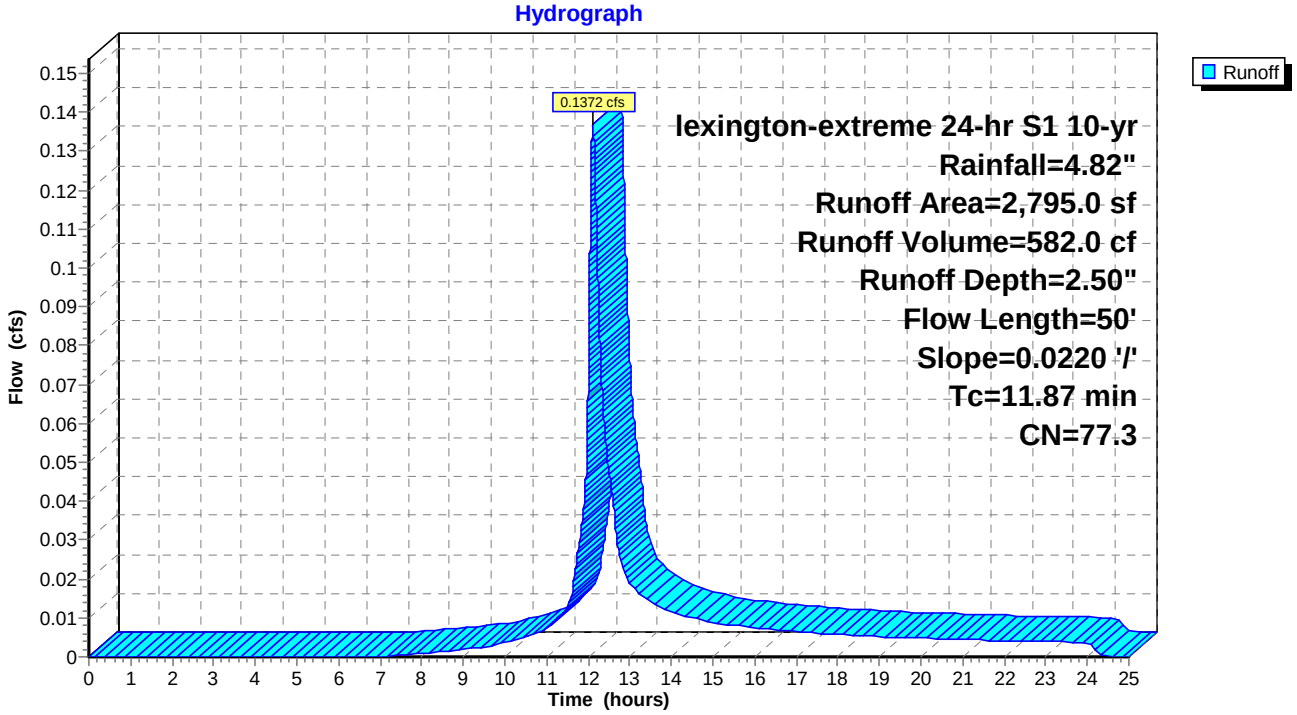
Runoff = 0.1372 cfs @ 12.12 hrs, Volume= 582.0 cf, Depth= 2.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 10-yr Rainfall=4.82"

	Area (sf)	CN	Description
	255.0	80.0	>75% Grass cover, Good, HSG D
*	2,540.0	77.0	Woods/Landscape, Good, HSG D
	2,795.0	77.3	Weighted Average
	2,795.0		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.87	50	0.0220	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment SA4: Sub-Area #4



Summary for Subcatchment SA5: Sub-Area #5

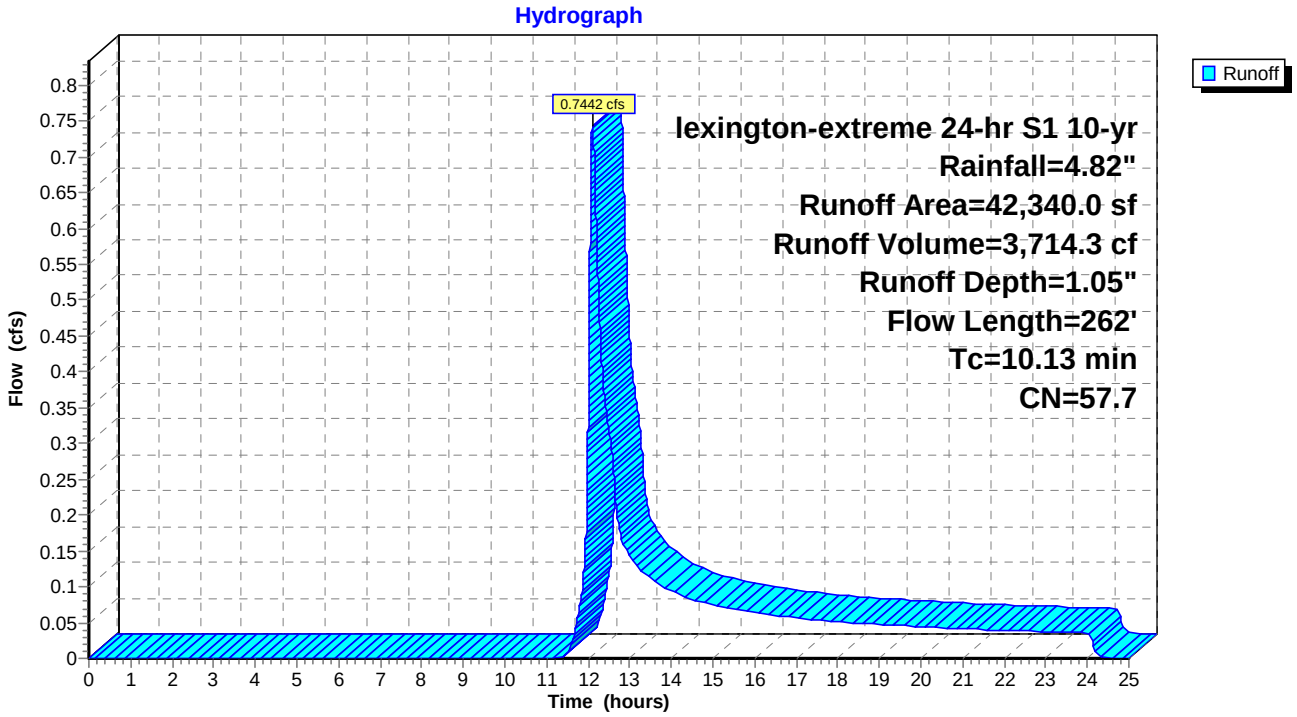
Runoff = 0.7442 cfs @ 12.10 hrs, Volume= 3,714.3 cf, Depth= 1.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 10-yr Rainfall=4.82"

	Area (sf)	CN	Description
*	2,295.0	98.0	Impervious
	13,820.0	80.0	>75% Grass cover, Good, HSG D
*	4,225.0	77.0	Woods/Landscape, Good, HSG D
	14,160.0	39.0	>75% Grass cover, Good, HSG A
*	7,840.0	30.0	Woods/Landscape, Good, HSG A
	42,340.0	57.7	Weighted Average
	40,045.0		94.58% Pervious Area
	2,295.0		5.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.22	7	0.0286	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.59	15	0.0200	0.4		**Sheet Flow, Segment 2 - Gravel Drive** n= 0.030 P2= 3.20"
4.54	28	0.0107	0.1		**Sheet Flow, Segment 3 - Lawn** Grass: Short n= 0.150 P2= 3.20"
2.78	212	0.0330	1.3		**Shallow Concentrated Flow, Segment 4 - Lawn** Short Grass Pasture Kv= 7.00 fps
10.13	262	Total			

Subcatchment SA5: Sub-Area #5



Summary for Subcatchment SA6: Sub-Area #6

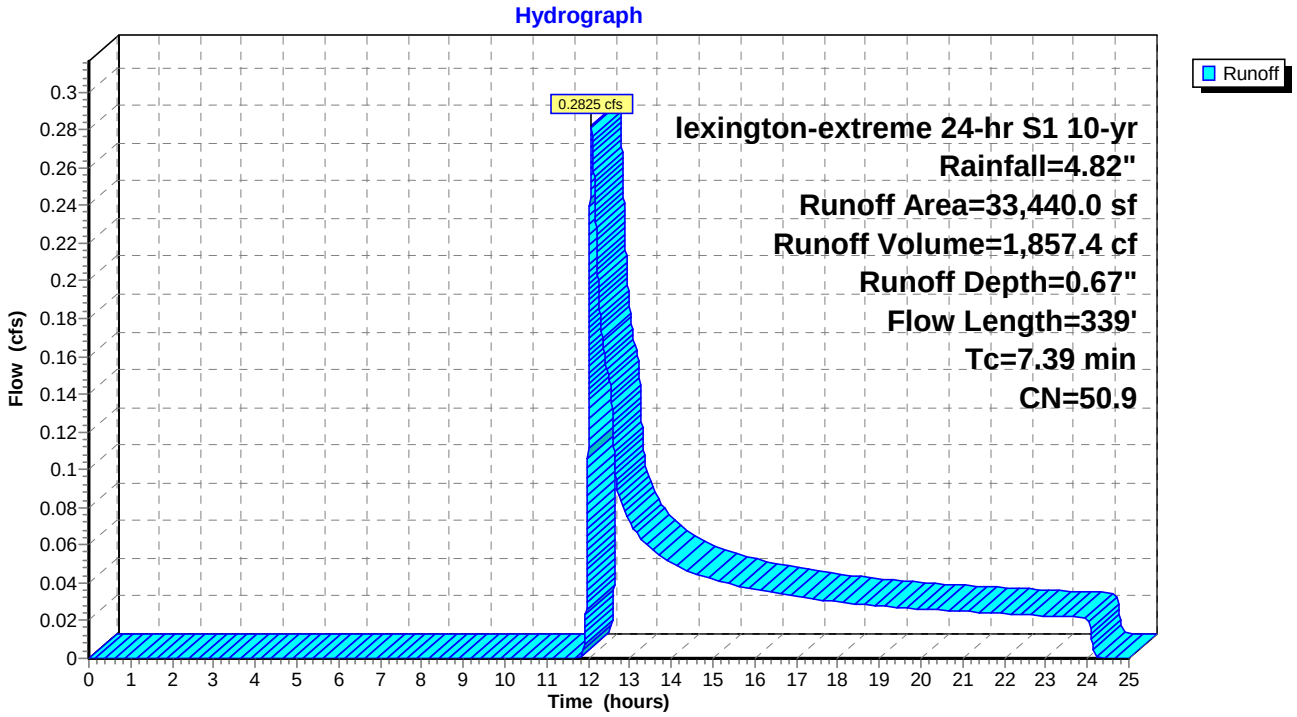
Runoff = 0.2825 cfs @ 12.08 hrs, Volume= 1,857.4 cf, Depth= 0.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 10-yr Rainfall=4.82"

	Area (sf)	CN	Description
*	5,120.0	98.0	Impervious
	960.0	80.0	>75% Grass cover, Good, HSG D
*	4,615.0	77.0	Woods/Landscape, Good, HSG D
	9,655.0	39.0	>75% Grass cover, Good, HSG A
*	13,090.0	30.0	Woods/Landscape, Good, HSG A
	33,440.0	50.9	Weighted Average
	28,320.0		84.69% Pervious Area
	5,120.0		15.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.67	50	0.4140	0.2		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.53	50	0.0980	1.6		**Shallow Concentrated Flow, Segment 2 - Woods** Woodland Kv= 5.00 fps
0.19	21	0.0714	1.9		**Shallow Concentrated Flow, Segment 3 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.08	8	0.1250	1.8		**Shallow Concentrated Flow, Segment 4 - Woods** Woodland Kv= 5.00 fps
0.12	5	0.0100	0.7		**Shallow Concentrated Flow, Segment 5 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.14	37	0.0700	4.3		**Shallow Concentrated Flow, Segment 6 - Gravel Drive** Unpaved Kv= 16.10 fps
1.94	144	0.0313	1.2		**Shallow Concentrated Flow, Segment 7 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.72	24	0.0125	0.6		**Shallow Concentrated Flow, Segment 8 - Woods** Woodland Kv= 5.00 fps
7.39	339	Total			

Subcatchment SA6: Sub-Area #6

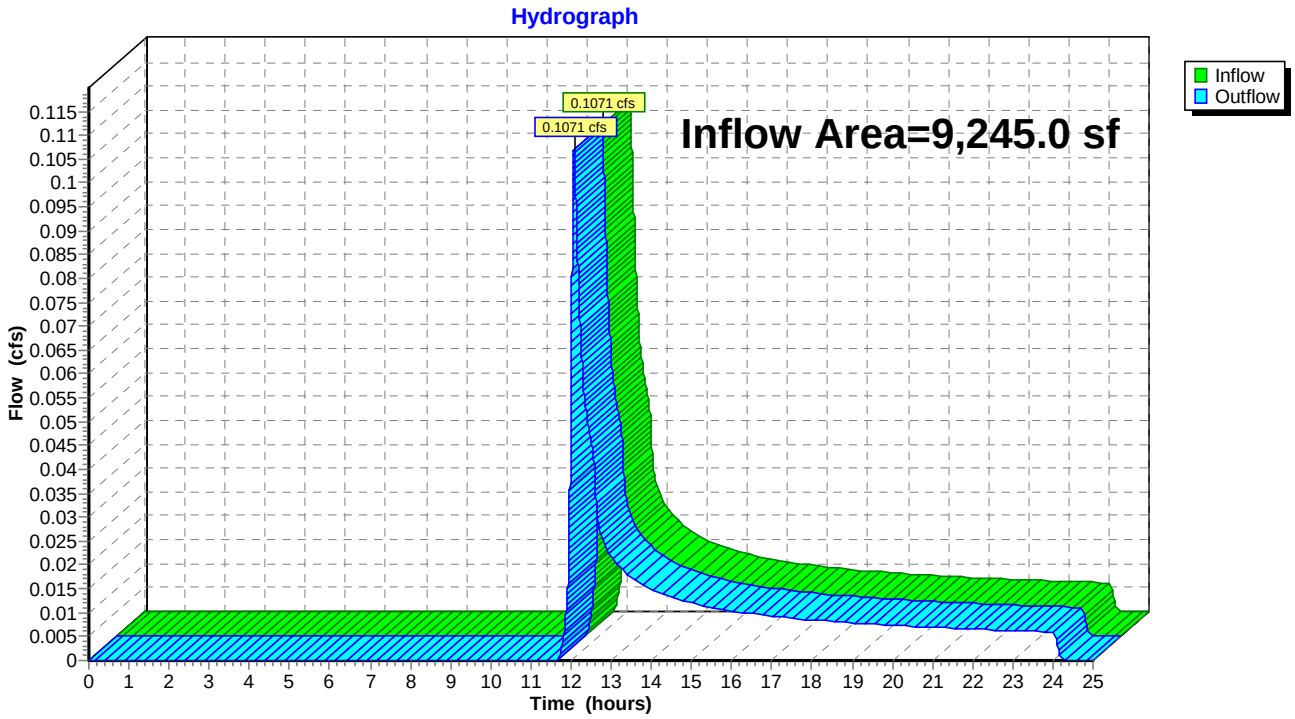


Summary for Reach DP1: Design Point 1 - #485 Concord Avenue

Inflow Area = 9,245.0 sf, 30.12% Impervious, Inflow Depth = 0.73" for 10-yr event
Inflow = 0.1071 cfs @ 12.08 hrs, Volume= 565.8 cf
Outflow = 0.1071 cfs @ 12.08 hrs, Volume= 565.8 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP1: Design Point 1 - #485 Concord Avenue

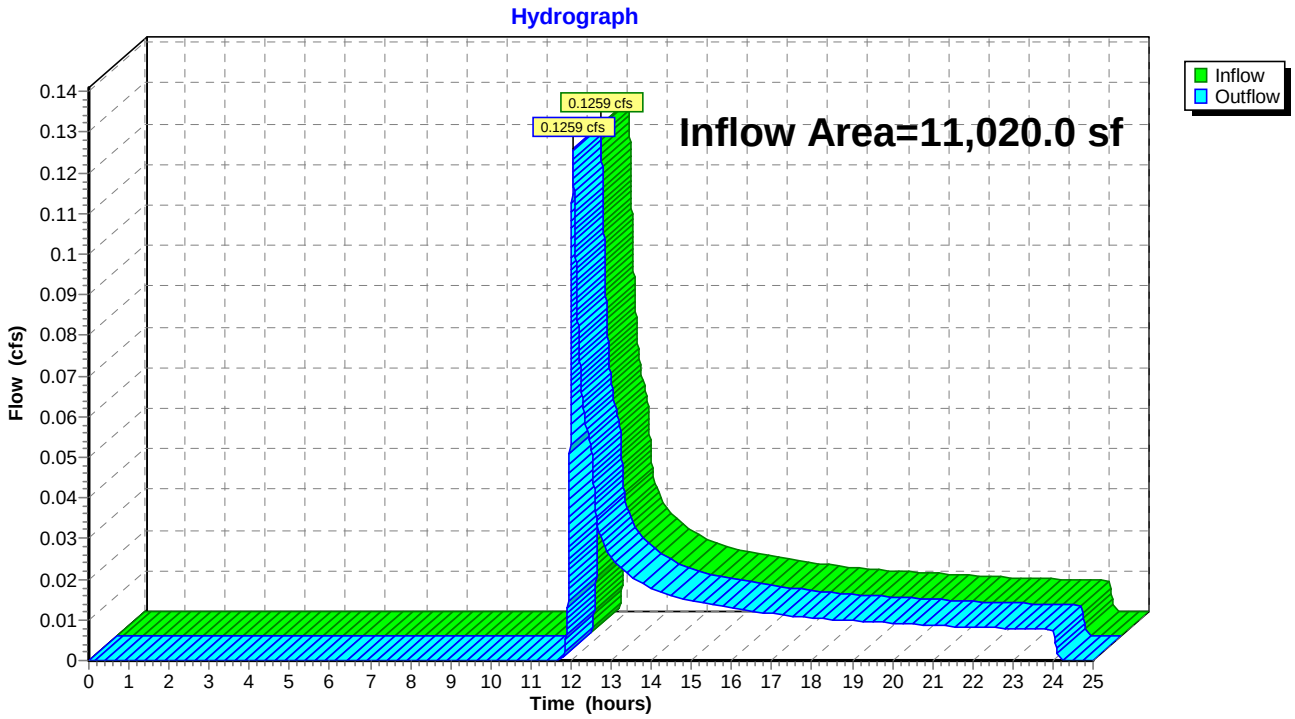


Summary for Reach DP2: Design Point 2 - #489 Concord Avenue

Inflow Area = 11,020.0 sf, 29.40% Impervious, Inflow Depth = 0.73" for 10-yr event
Inflow = 0.1259 cfs @ 12.05 hrs, Volume= 670.4 cf
Outflow = 0.1259 cfs @ 12.05 hrs, Volume= 670.4 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP2: Design Point 2 - #489 Concord Avenue

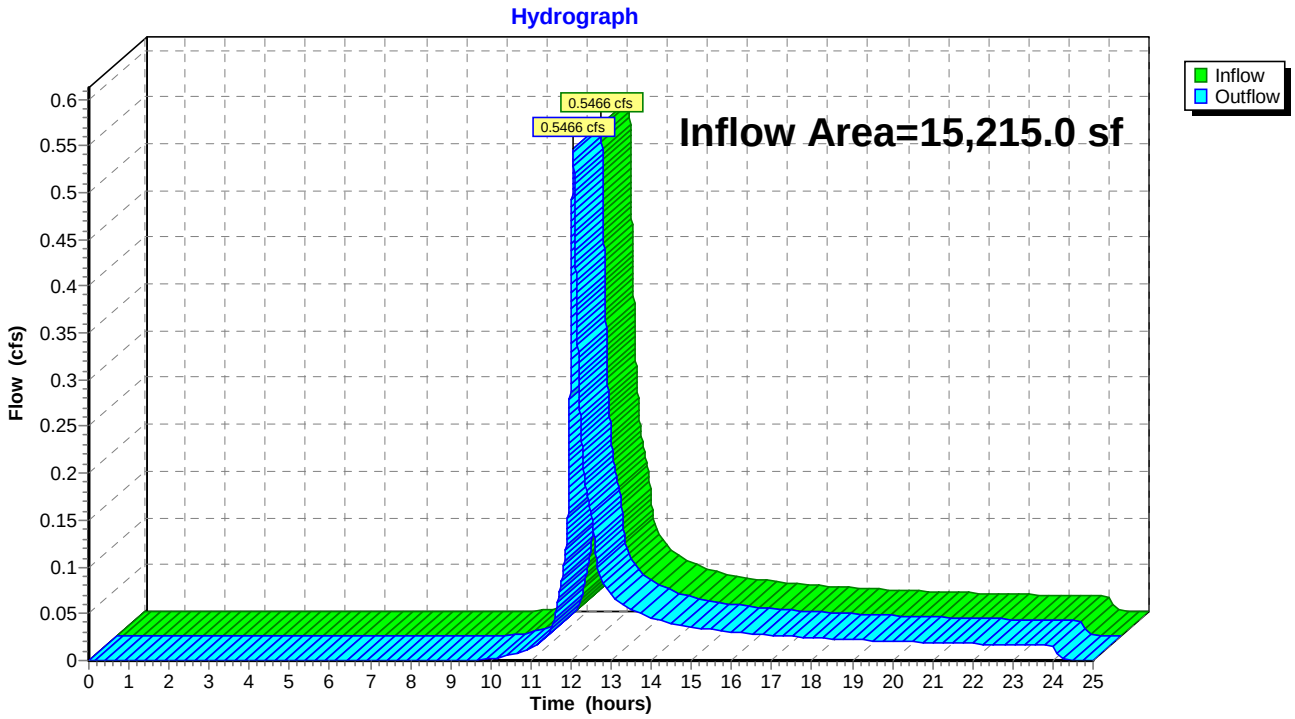


Summary for Reach DP3: Design Point 3 - Southeast B.V.W.

Inflow Area = 15,215.0 sf, 4.60% Impervious, Inflow Depth = 1.61" for 10-yr event
Inflow = 0.5466 cfs @ 12.06 hrs, Volume= 2,036.6 cf
Outflow = 0.5466 cfs @ 12.06 hrs, Volume= 2,036.6 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP3: Design Point 3 - Southeast B.V.W.

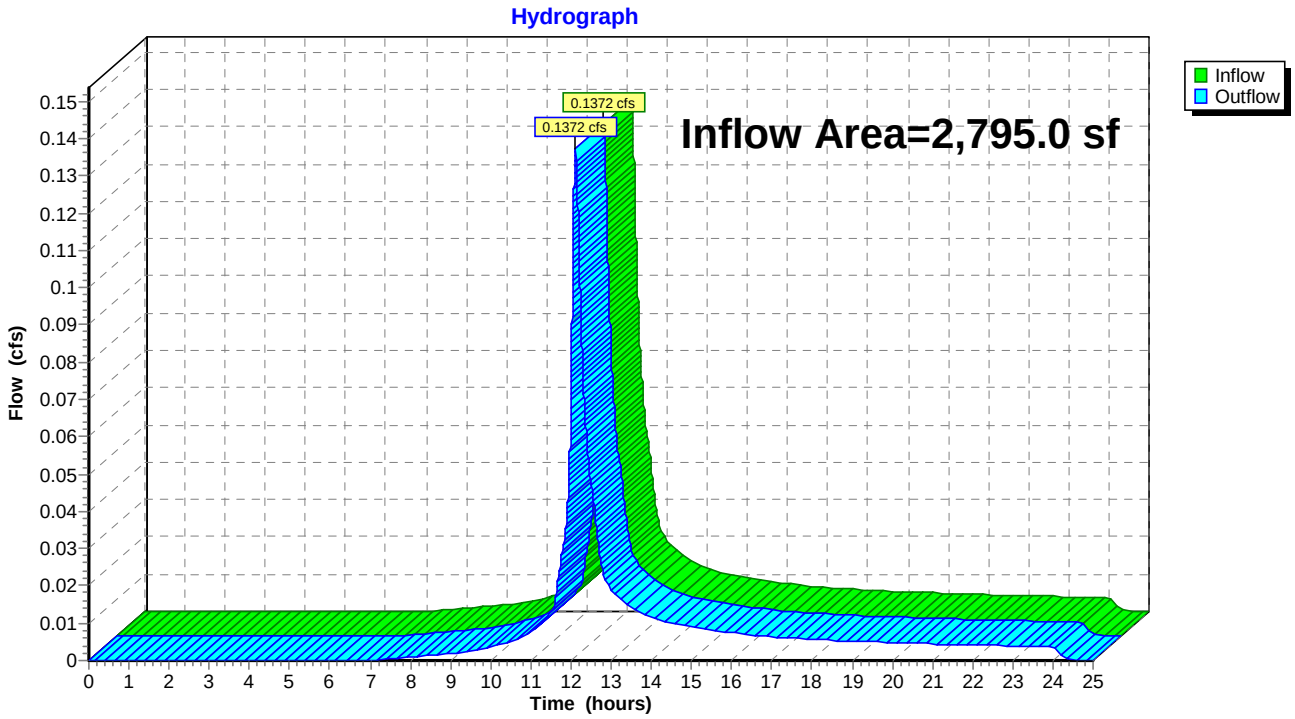


Summary for Reach DP4: Design Point 4 - #489 Concord Avenue (B.V.W.)

Inflow Area = 2,795.0 sf, 0.00% Impervious, Inflow Depth = 2.50" for 10-yr event
Inflow = 0.1372 cfs @ 12.12 hrs, Volume= 582.0 cf
Outflow = 0.1372 cfs @ 12.12 hrs, Volume= 582.0 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP4: Design Point 4 - #489 Concord Avenue (B.V.W.)

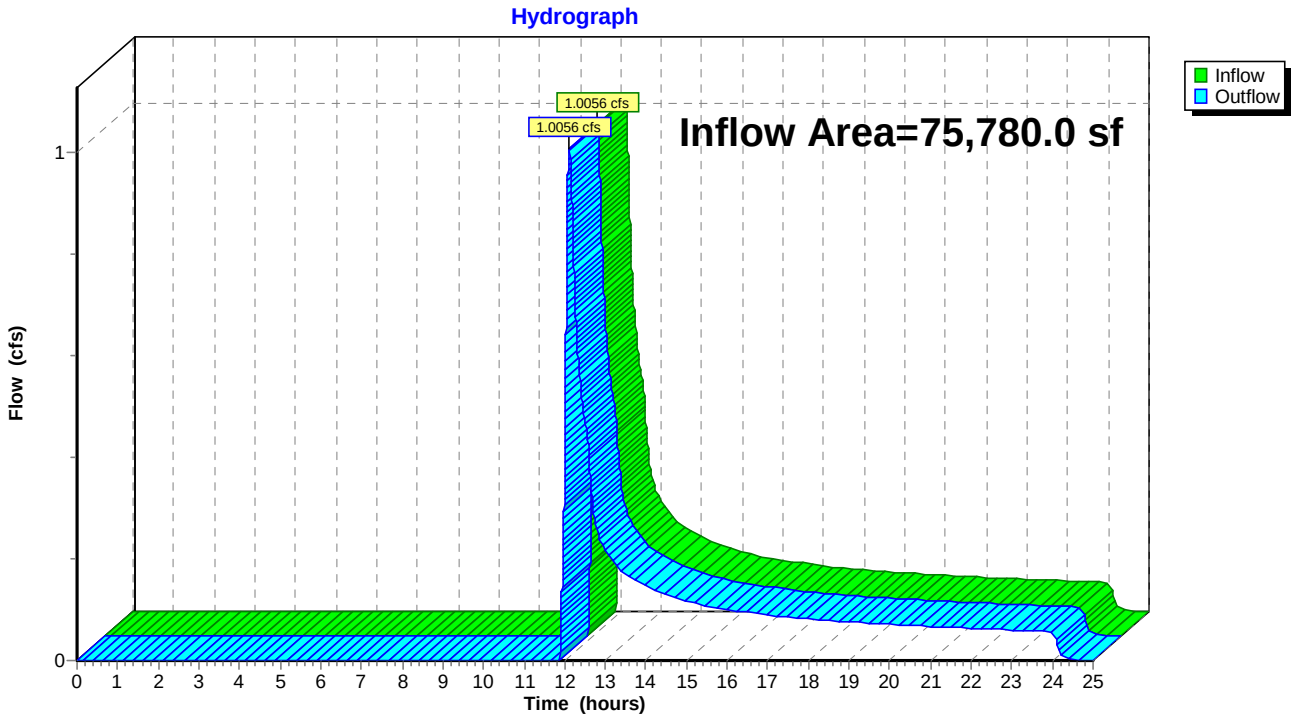


Summary for Reach DP5: Design Point 5 - Route 2

Inflow Area =	75,780.0 sf,	9.78% Impervious,	Inflow Depth =	0.87"	for 10-yr event
Inflow =	1.0056 cfs @	12.11 hrs,	Volume=	5,505.5 cf	
Outflow =	1.0056 cfs @	12.11 hrs,	Volume=	5,505.5 cf,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP5: Design Point 5 - Route 2



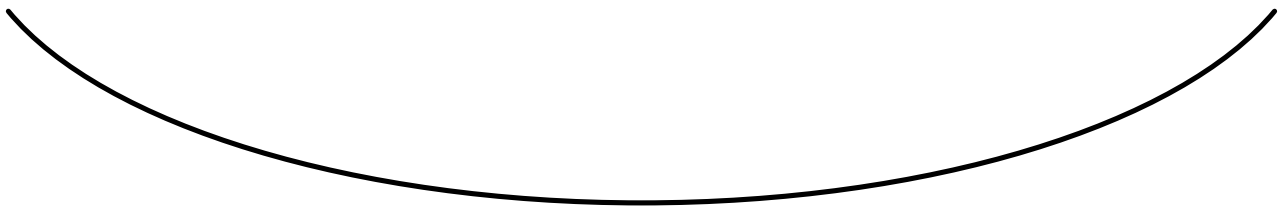
Summary for Reach O1a: Overland Flow #1a

Inflow Area = 275.0 sf, 20.00% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf
Outflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0.0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.10' Flow Area= 0.7 sf, Capacity= 1.3810 cfs

10.00' x 0.10' deep Parabolic Channel, n= 0.028 Overland Flow #1a
Length= 47.0' Slope= 0.0564 '/'
Inlet Invert= 219.45', Outlet Invert= 216.80'



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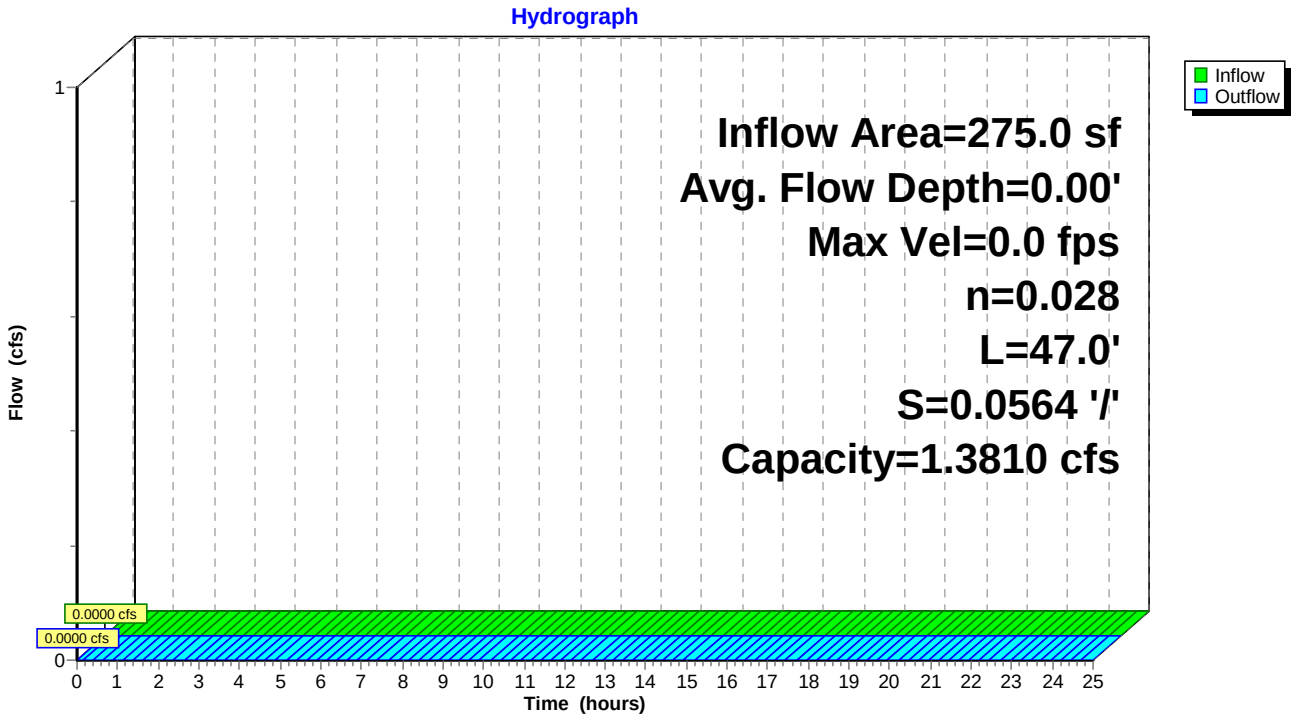
Reach O1a: Overland Flow #1a



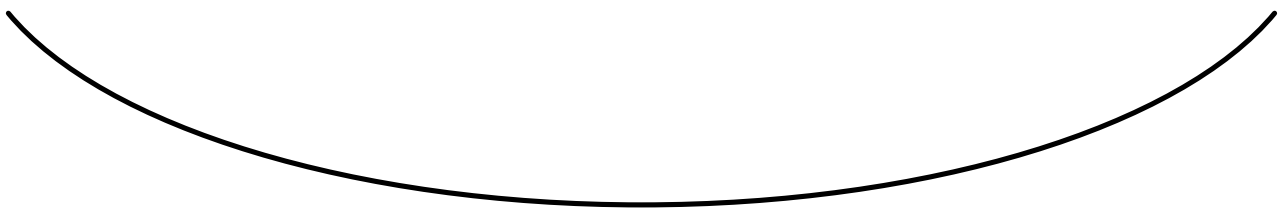
Summary for Reach O1b: Overland Flow #1b

Inflow Area = 890.0 sf, 10.67% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf
Outflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0.0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.10' Flow Area= 1.0 sf, Capacity= 1.9819 cfs

15.00' x 0.10' deep Parabolic Channel, n= 0.030 Overland Flow #1b
Length= 65.0' Slope= 0.0592 '/'
Inlet Invert= 219.55', Outlet Invert= 215.70'



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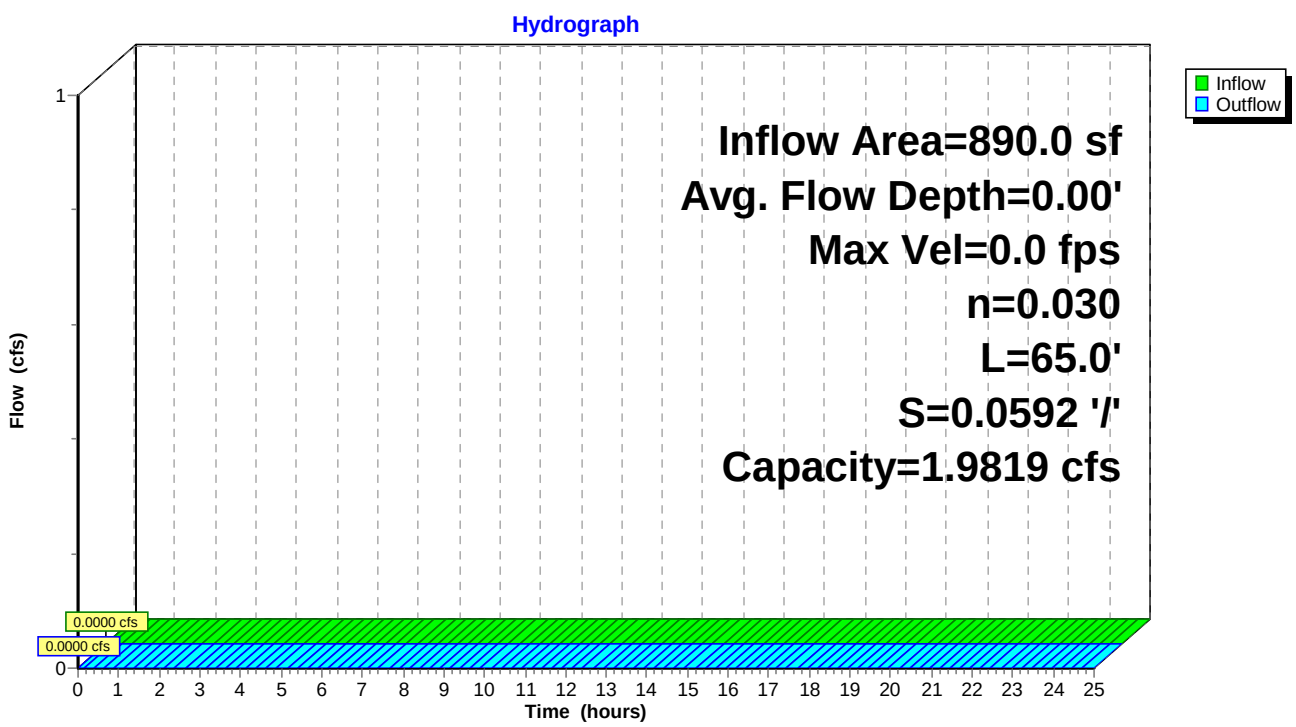
Reach O1b: Overland Flow #1b



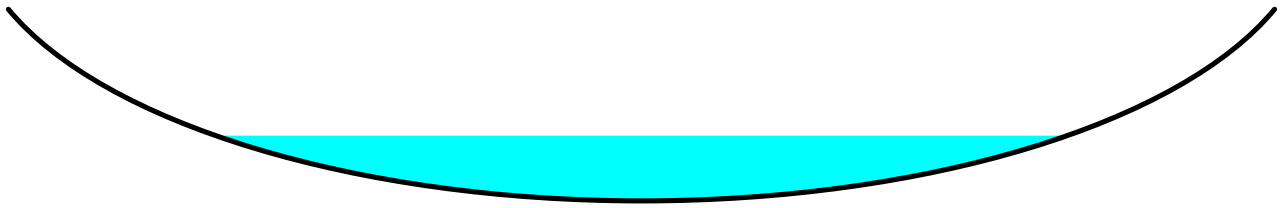
Summary for Reach O2: OverInd Flow #2

Inflow Area = 42,340.0 sf, 5.42% Impervious, Inflow Depth = 1.03" for 10-yr event
Inflow = 0.7374 cfs @ 12.12 hrs, Volume= 3,648.1 cf
Outflow = 0.7367 cfs @ 12.12 hrs, Volume= 3,648.1 cf, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 0.9 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.4 fps, Avg. Travel Time= 0.9 min

Peak Storage= 17.7 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.07'
Bank-Full Depth= 0.20' Flow Area= 4.3 sf, Capacity= 7.6508 cfs

32.00' x 0.20' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 21.0' Slope= 0.0262 '/'
Inlet Invert= 212.35', Outlet Invert= 211.80'



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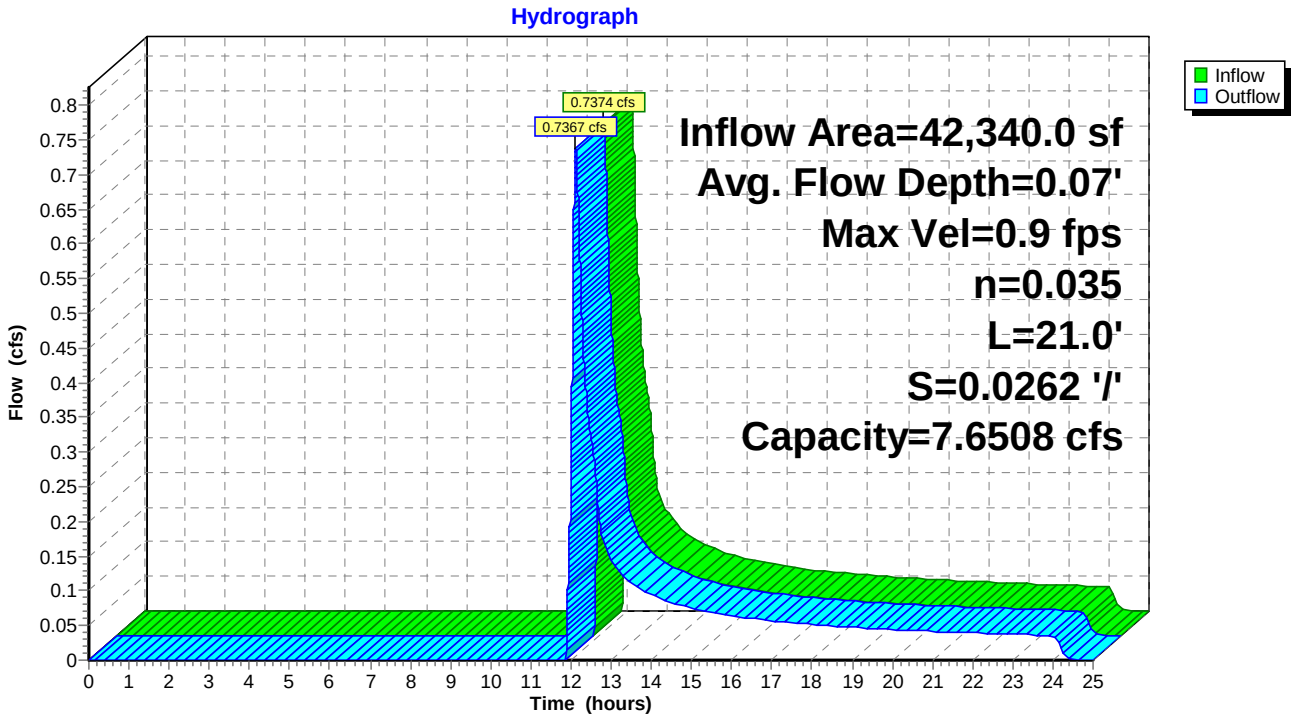
Reach O2: OverInd Flow #2



Summary for Pond LP1a: Low Point #1a

Inflow Area = 275.0 sf, 20.00% Impervious, Inflow Depth = 0.33" for 10-yr event
Inflow = 0.0005 cfs @ 12.50 hrs, Volume= 7.5 cf
Outflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 219.44' @ 24.07 hrs Surf.Area= 127.2 sf Storage= 7.5 cf

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

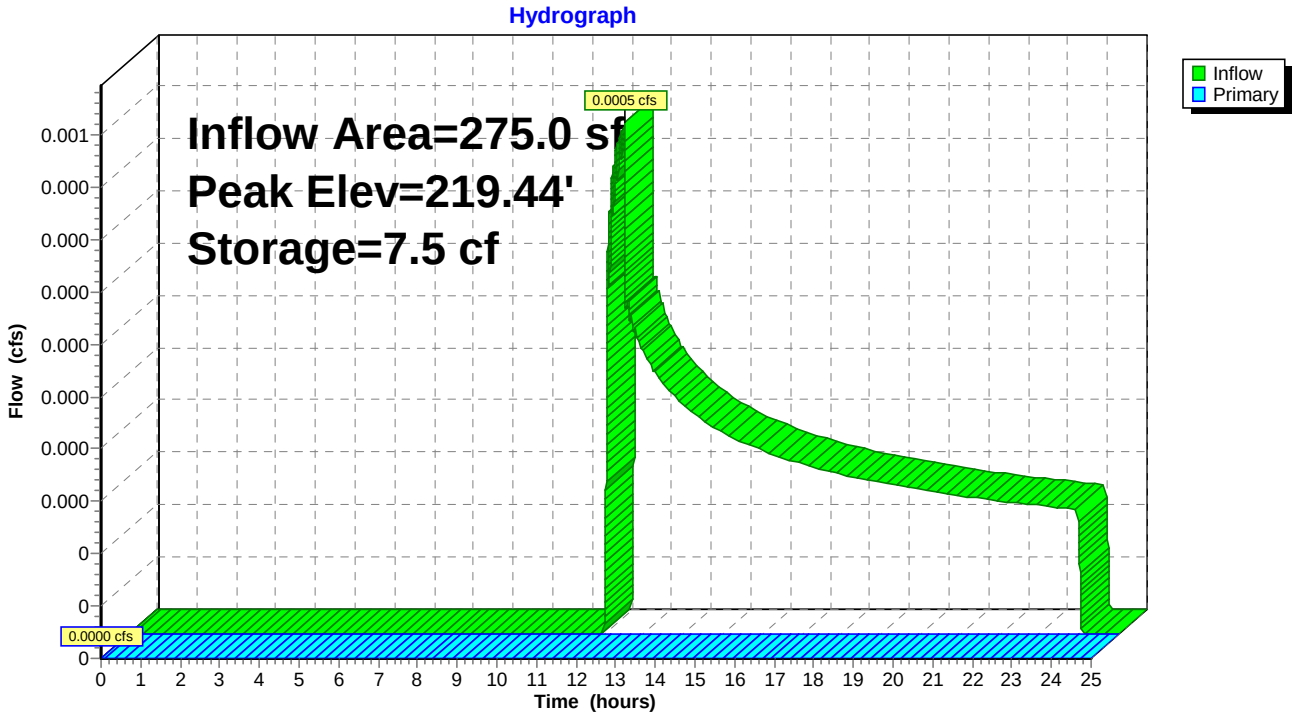
Volume	Invert	Avail.Storage	Storage Description
#1	219.30'	57.0 cf	**Low Point #1a (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
219.30	0.0	0.0	0.0	0.0	0.0
219.40	104.0	50.0	3.5	3.5	199.0
219.50	176.0	62.0	13.8	17.3	306.1
219.60	200.0	68.0	18.8	36.1	368.5
219.70	219.0	75.0	20.9	57.0	448.4

Device	Routing	Invert	Outlet Devices
#1	Primary	219.50'	**LP#1a Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.20 Width (feet) 10.00 35.00

Primary OutFlow Max=0.0000 cfs @ 0.00 hrs HW=219.30' TW=219.45' (Dynamic Tailwater)
└─**1=LP#1a Weir** (Controls 0.0000 cfs)

Pond LP1a: Low Point #1a



Summary for Pond LP1b: Low Point #1b

Inflow Area = 890.0 sf, 10.67% Impervious, Inflow Depth = 0.12" for 10-yr event
Inflow = 0.0002 cfs @ 17.45 hrs, Volume= 8.6 cf
Outflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 219.36' @ 24.38 hrs Surf.Area= 124.7 sf Storage= 8.6 cf

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

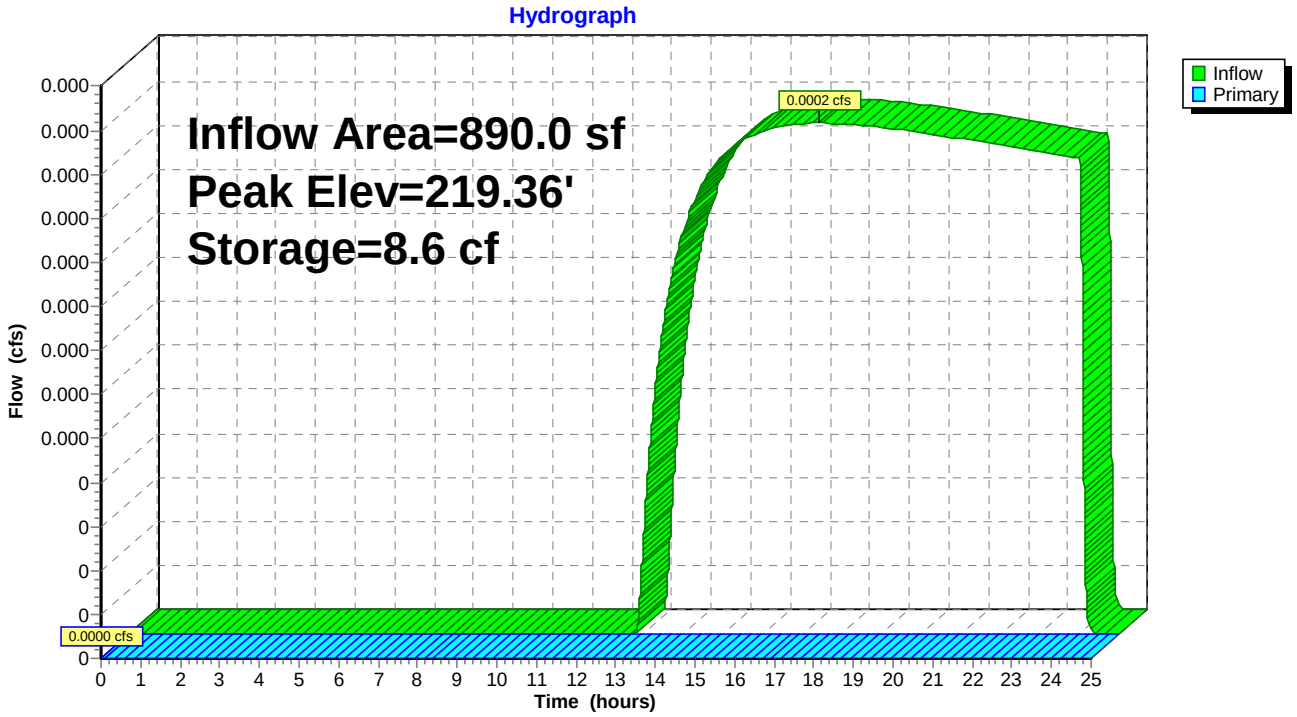
Volume	Invert	Avail.Storage	Storage Description
#1	219.20'	270.8 cf	**Low Point #1b (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
219.20	0.0	0.0	0.0	0.0	0.0
219.30	74.0	52.0	2.5	2.5	215.2
219.40	161.0	86.0	11.5	13.9	588.6
219.50	305.0	122.0	22.9	36.9	1,184.6
219.60	472.0	151.0	38.5	75.4	1,814.8
219.70	632.0	180.0	55.0	130.4	2,578.8
219.80	708.0	192.0	67.0	197.4	2,934.5
219.90	761.0	204.0	73.4	270.8	3,313.2

Device	Routing	Invert	Outlet Devices
#1	Primary	219.60'	**LP#1b Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.20 Width (feet) 15.00 48.00

Primary OutFlow Max=0.0000 cfs @ 0.00 hrs HW=219.20' TW=219.55' (Dynamic Tailwater)
└─**1=LP#1b Weir** (Controls 0.0000 cfs)

Pond LP1b: Low Point #1b



Summary for Pond LP2: Low Point #2

Inflow Area =	42,340.0 sf,	5.42% Impervious,	Inflow Depth =	1.05"	for 10-yr event
Inflow =	0.7442 cfs @	12.10 hrs,	Volume=	3,714.3 cf	
Outflow =	0.7374 cfs @	12.12 hrs,	Volume=	3,648.1 cf,	Atten= 1%, Lag= 0.9 min
Primary =	0.7374 cfs @	12.12 hrs,	Volume=	3,648.1 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 212.44' @ 12.12 hrs Surf.Area= 846.9 sf Storage= 97.5 cf

Plug-Flow detention time= 14.5 min calculated for 3,648.0 cf (98% of inflow)
Center-of-Mass det. time= 5.3 min (935.1 - 929.8)

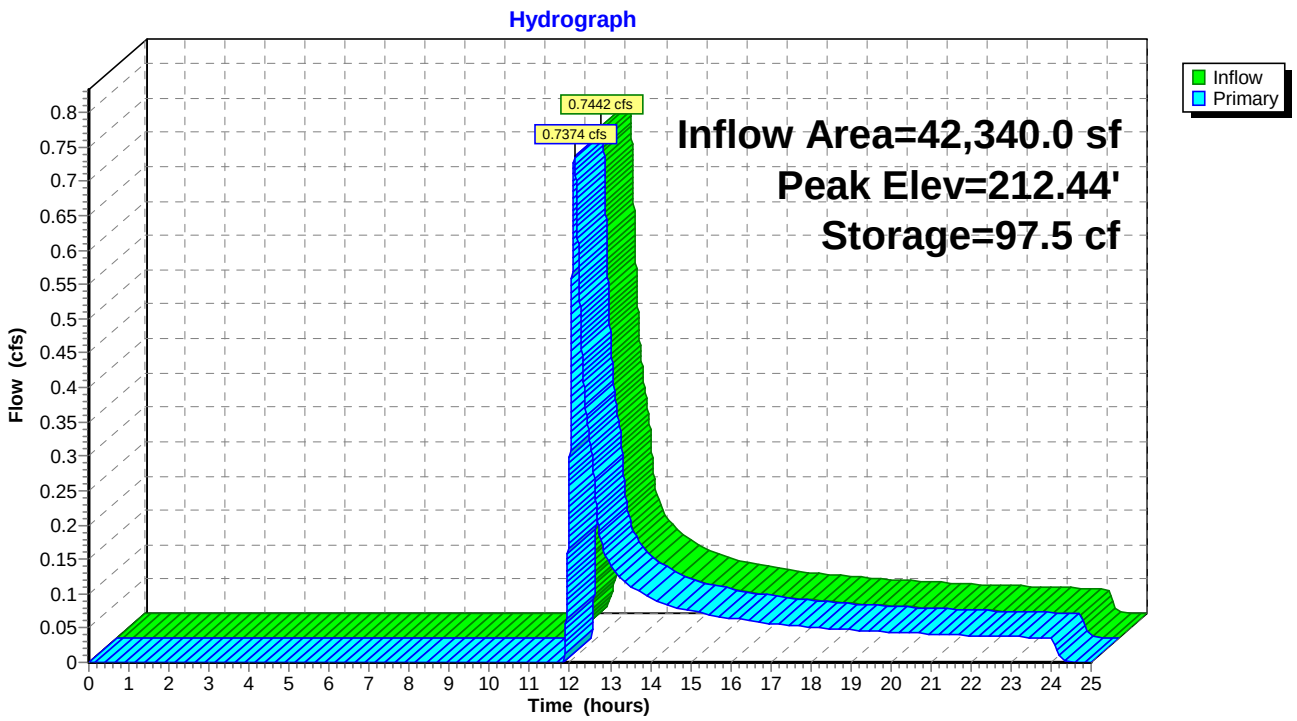
Volume	Invert	Avail.Storage	Storage Description
#1	212.20'	1,293.1 cf	**Low Point #2 (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
212.20	44.0	28.0	0.0	0.0	44.0
212.40	765.0	155.0	66.2	66.2	1,893.6
212.60	1,231.0	170.0	197.8	263.9	2,282.8
212.80	2,414.0	308.0	357.9	621.8	7,532.3
213.00	4,397.0	423.0	671.3	1,293.1	14,222.4

Device	Routing	Invert	Outlet Devices
#1	Primary	212.40'	**LP#1b Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.20 Width (feet) 32.00 38.00

Primary OutFlow Max=0.7372 cfs @ 12.12 hrs HW=212.44' TW=212.42' (Dynamic Tailwater)
└─**1=LP#1b Weir** (Weir Controls 0.7372 cfs @ 0.6 fps)

Pond LP2: Low Point #2



Summary for Subcatchment SA1a: Sub-Area #1a

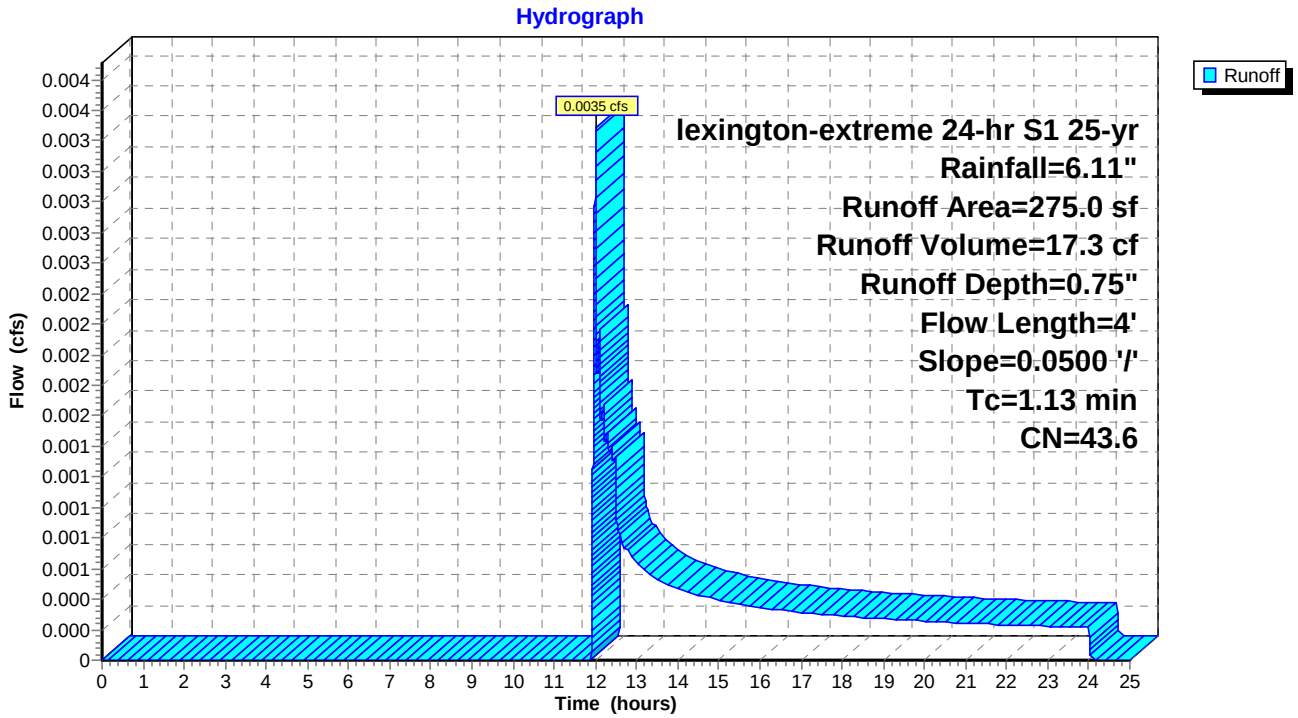
Runoff = 0.0035 cfs @ 12.01 hrs, Volume= 17.3 cf, Depth= 0.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 25-yr Rainfall=6.11"

	Area (sf)	CN	Description
*	55.0	98.0	Impervious
*	220.0	30.0	Woods/Landscape, Good, HSG A
	275.0	43.6	Weighted Average
	220.0		80.00% Pervious Area
	55.0		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.13	4	0.0500	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment SA1a: Sub-Area #1a



Summary for Subcatchment SA1b: Sub-Area #1b

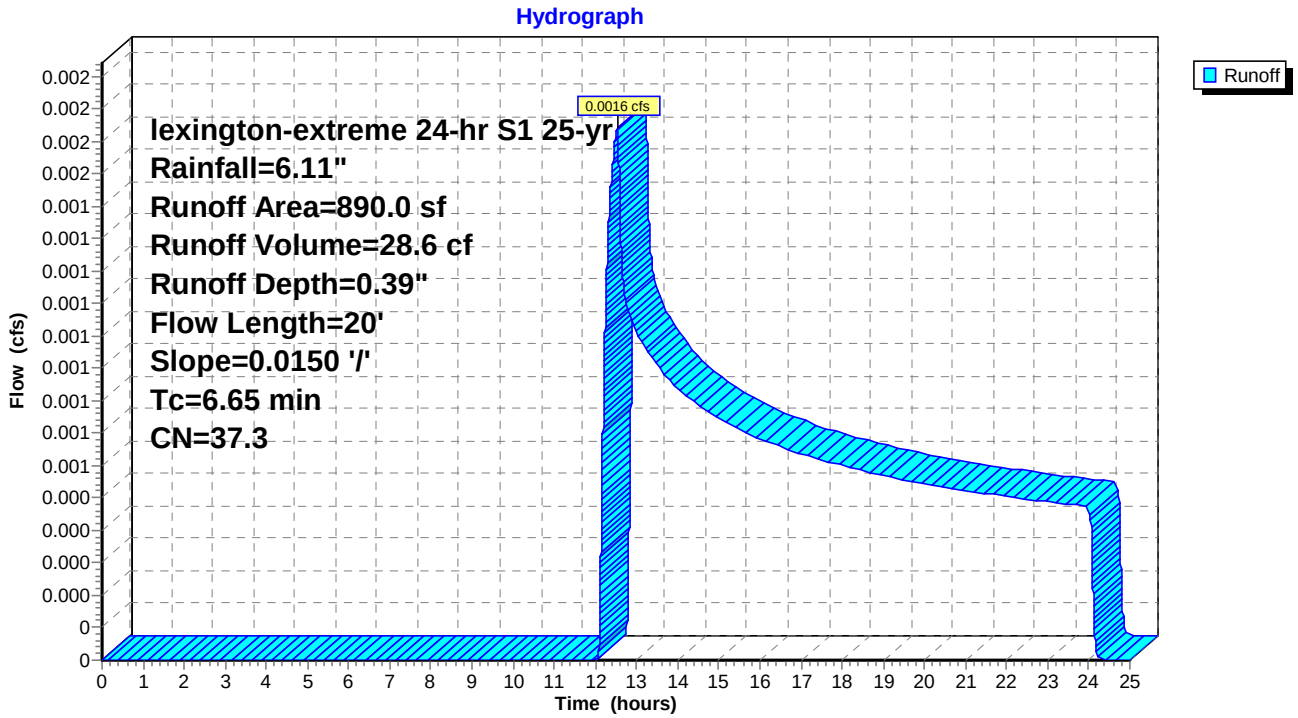
Runoff = 0.0016 cfs @ 12.53 hrs, Volume= 28.6 cf, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 25-yr Rainfall=6.11"

	Area (sf)	CN	Description
*	95.0	98.0	Impervious
*	795.0	30.0	Woods/Landscape, Good, HSG A
	890.0	37.3	Weighted Average
	795.0		89.33% Pervious Area
	95.0		10.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.65	20	0.0150	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment SA1b: Sub-Area #1b



Summary for Subcatchment SA1c: Sub-Area #1c

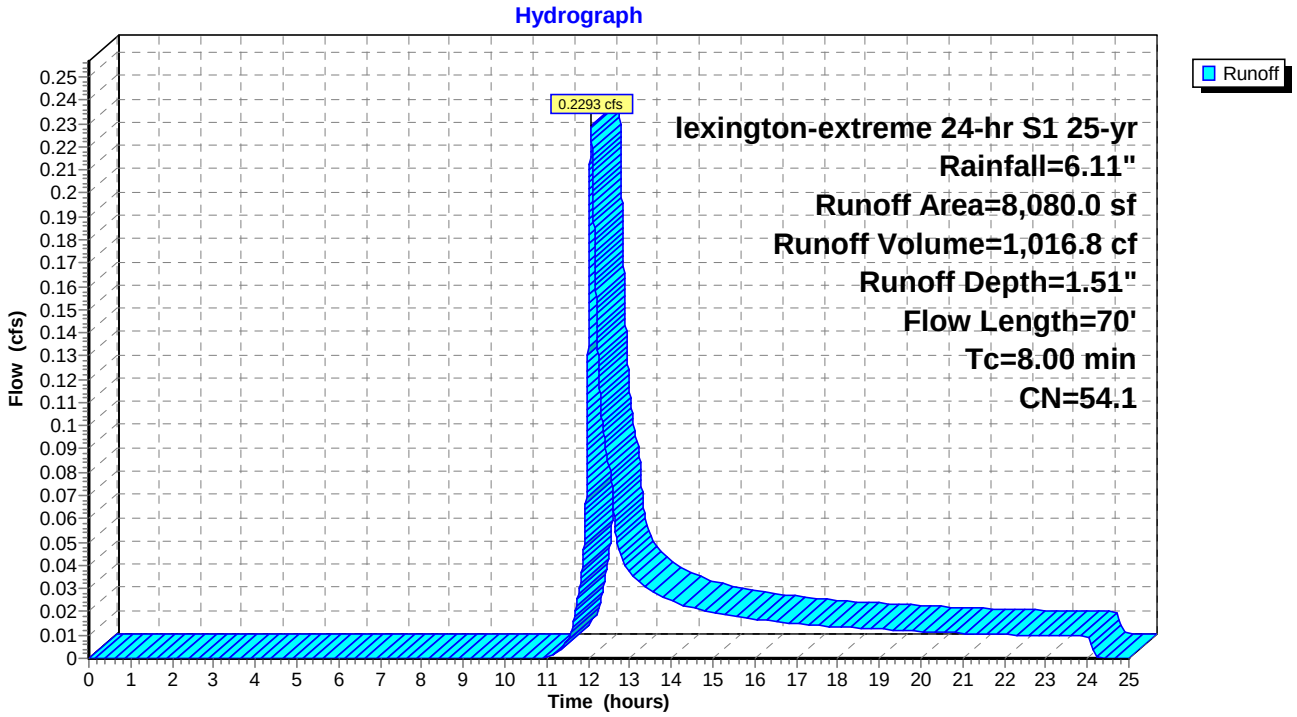
Runoff = 0.2293 cfs @ 12.07 hrs, Volume= 1,016.8 cf, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 25-yr Rainfall=6.11"

	Area (sf)	CN	Description
*	2,635.0	98.0	Impervious
	1,760.0	39.0	>75% Grass cover, Good, HSG A
*	3,685.0	30.0	Woods/Landscape, Good, HSG A
	8,080.0	54.1	Weighted Average
	5,445.0		67.39% Pervious Area
	2,635.0		32.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.93	7	0.0143	0.0		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.92	15	0.0067	0.3		**Sheet Flow, Segment 2 - Gravel** n= 0.030 P2= 3.20"
1.00	10	0.0600	0.2		**Sheet Flow, Segment 3 - Lawn** Grass: Short n= 0.150 P2= 3.20"
2.38	16	0.1250	0.1		**Sheet Flow, Segment 4 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.77	22	0.0091	0.5		**Shallow Concentrated Flow, Segment 5 - Woods** Woodland Kv= 5.00 fps
8.00	70	Total			

Subcatchment SA1c: Sub-Area #1c



Summary for Subcatchment SA2: Sub-Area #2

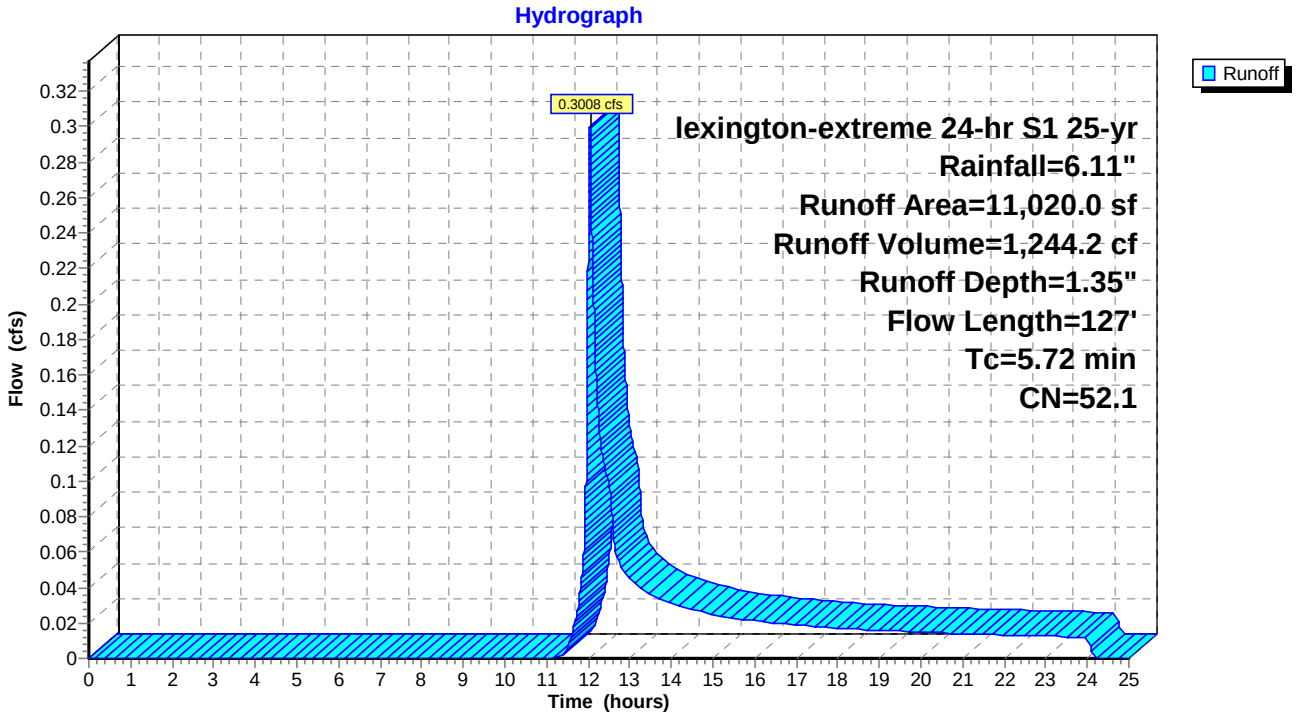
Runoff = 0.3008 cfs @ 12.04 hrs, Volume= 1,244.2 cf, Depth= 1.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 25-yr Rainfall=6.11"

	Area (sf)	CN	Description
*	3,240.0	98.0	Impervious
	2,550.0	39.0	>75% Grass cover, Good, HSG A
*	5,230.0	30.0	Woods/Landscape, Good, HSG A
	11,020.0	52.1	Weighted Average
	7,780.0		70.60% Pervious Area
	3,240.0		29.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.23	13	0.0385	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
1.45	13	0.0400	0.1		**Sheet Flow, Segment 2 - Gravel** Grass: Short n= 0.150 P2= 3.20"
0.62	36	0.0194	1.0		**Shallow Concentrated Flow, Segment 3 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.26	48	0.0375	3.1		**Shallow Concentrated Flow, Segment 4 - Gravel** Unpaved Kv= 16.10 fps
0.16	17	0.1235	1.8		**Shallow Concentrated Flow, Segment 5 - Woods** Woodland Kv= 5.00 fps
5.72	127	Total			

Subcatchment SA2: Sub-Area #2



Summary for Subcatchment SA3: Sub-Area #3

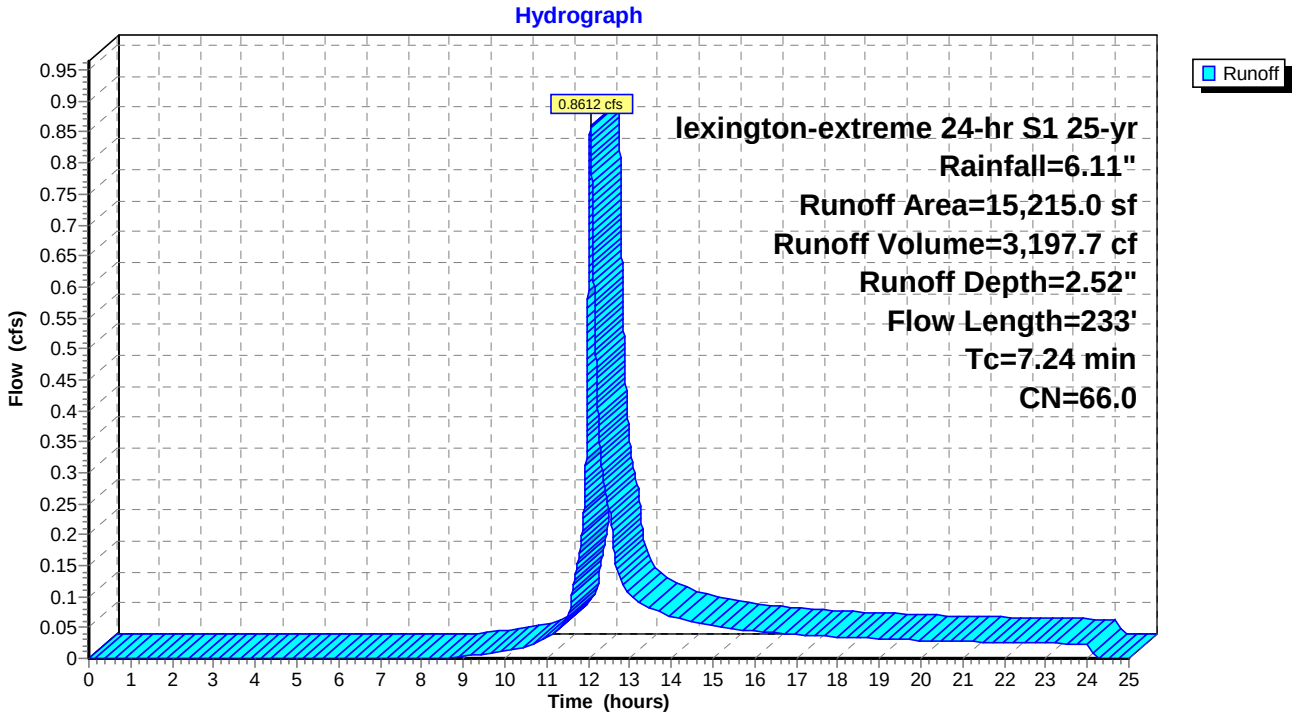
Runoff = 0.8612 cfs @ 12.06 hrs, Volume= 3,197.7 cf, Depth= 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 25-yr Rainfall=6.11"

	Area (sf)	CN	Description
*	700.0	98.0	Impervious
	3,225.0	80.0	>75% Grass cover, Good, HSG D
*	6,230.0	77.0	Woods/Landscape, Good, HSG D
	5,060.0	39.0	>75% Grass cover, Good, HSG A
	15,215.0	66.0	Weighted Average
	14,515.0		95.40% Pervious Area
	700.0		4.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.80	8	0.0625	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.64	16	0.0188	0.4		**Sheet Flow, Segment 2 - Gravel** n= 0.030 P2= 3.20"
2.42	27	0.0480	0.2		**Sheet Flow, Segment 3 - Lawn** Grass: Short n= 0.150 P2= 3.20"
1.11	106	0.0519	1.6		**Shallow Concentrated Flow, Segment 4 - Lawn** Short Grass Pasture Kv= 7.00 fps
1.27	76	0.0395	1.0		**Shallow Concentrated Flow, Segment 5 - Woods** Woodland Kv= 5.00 fps
7.24	233	Total			

Subcatchment SA3: Sub-Area #3



Summary for Subcatchment SA4: Sub-Area #4

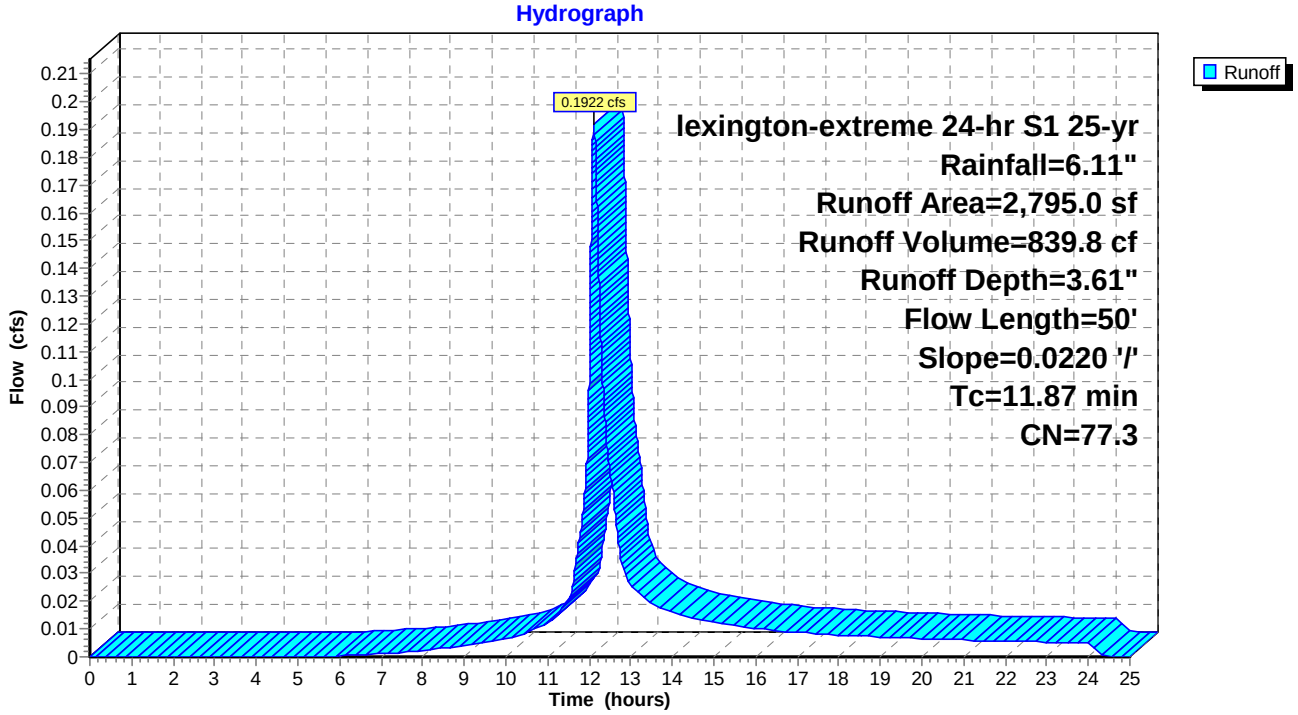
Runoff = 0.1922 cfs @ 12.12 hrs, Volume= 839.8 cf, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 25-yr Rainfall=6.11"

	Area (sf)	CN	Description
	255.0	80.0	>75% Grass cover, Good, HSG D
*	2,540.0	77.0	Woods/Landscape, Good, HSG D
	2,795.0	77.3	Weighted Average
	2,795.0		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.87	50	0.0220	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment SA4: Sub-Area #4



Summary for Subcatchment SA5: Sub-Area #5

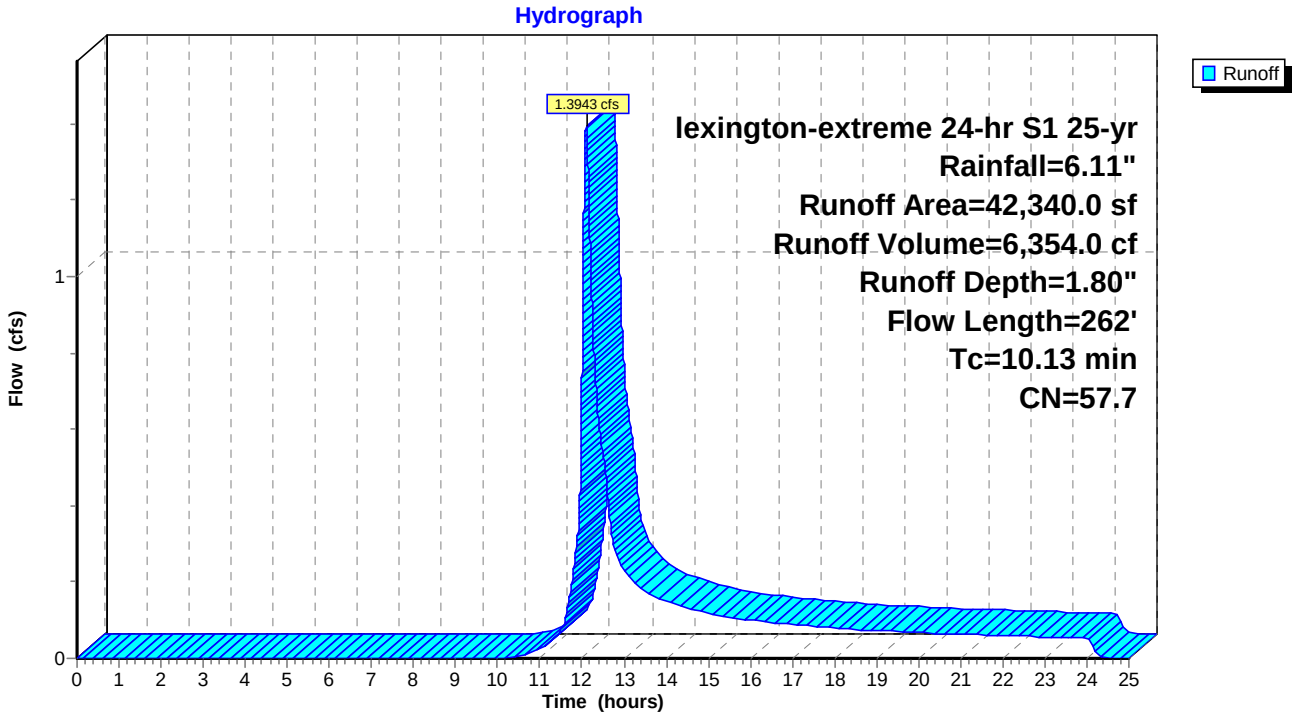
Runoff = 1.3943 cfs @ 12.10 hrs, Volume= 6,354.0 cf, Depth= 1.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 25-yr Rainfall=6.11"

	Area (sf)	CN	Description
*	2,295.0	98.0	Impervious
	13,820.0	80.0	>75% Grass cover, Good, HSG D
*	4,225.0	77.0	Woods/Landscape, Good, HSG D
	14,160.0	39.0	>75% Grass cover, Good, HSG A
*	7,840.0	30.0	Woods/Landscape, Good, HSG A
	42,340.0	57.7	Weighted Average
	40,045.0		94.58% Pervious Area
	2,295.0		5.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.22	7	0.0286	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.59	15	0.0200	0.4		**Sheet Flow, Segment 2 - Gravel Drive** n= 0.030 P2= 3.20"
4.54	28	0.0107	0.1		**Sheet Flow, Segment 3 - Lawn** Grass: Short n= 0.150 P2= 3.20"
2.78	212	0.0330	1.3		**Shallow Concentrated Flow, Segment 4 - Lawn** Short Grass Pasture Kv= 7.00 fps
10.13	262	Total			

Subcatchment SA5: Sub-Area #5



Summary for Subcatchment SA6: Sub-Area #6

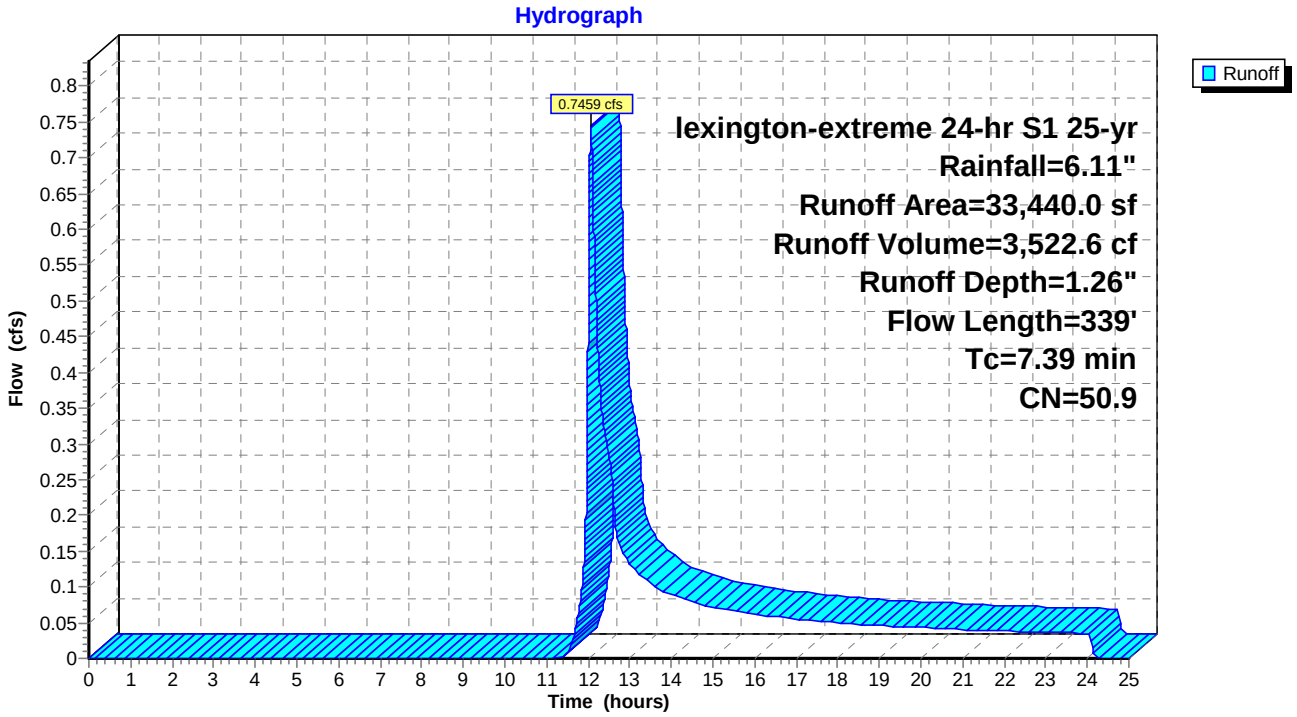
Runoff = 0.7459 cfs @ 12.06 hrs, Volume= 3,522.6 cf, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 25-yr Rainfall=6.11"

	Area (sf)	CN	Description
*	5,120.0	98.0	Impervious
	960.0	80.0	>75% Grass cover, Good, HSG D
*	4,615.0	77.0	Woods/Landscape, Good, HSG D
	9,655.0	39.0	>75% Grass cover, Good, HSG A
*	13,090.0	30.0	Woods/Landscape, Good, HSG A
	33,440.0	50.9	Weighted Average
	28,320.0		84.69% Pervious Area
	5,120.0		15.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.67	50	0.4140	0.2		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.53	50	0.0980	1.6		**Shallow Concentrated Flow, Segment 2 - Woods** Woodland Kv= 5.00 fps
0.19	21	0.0714	1.9		**Shallow Concentrated Flow, Segment 3 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.08	8	0.1250	1.8		**Shallow Concentrated Flow, Segment 4 - Woods** Woodland Kv= 5.00 fps
0.12	5	0.0100	0.7		**Shallow Concentrated Flow, Segment 5 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.14	37	0.0700	4.3		**Shallow Concentrated Flow, Segment 6 - Gravel Drive** Unpaved Kv= 16.10 fps
1.94	144	0.0313	1.2		**Shallow Concentrated Flow, Segment 7 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.72	24	0.0125	0.6		**Shallow Concentrated Flow, Segment 8 - Woods** Woodland Kv= 5.00 fps
7.39	339	Total			

Subcatchment SA6: Sub-Area #6

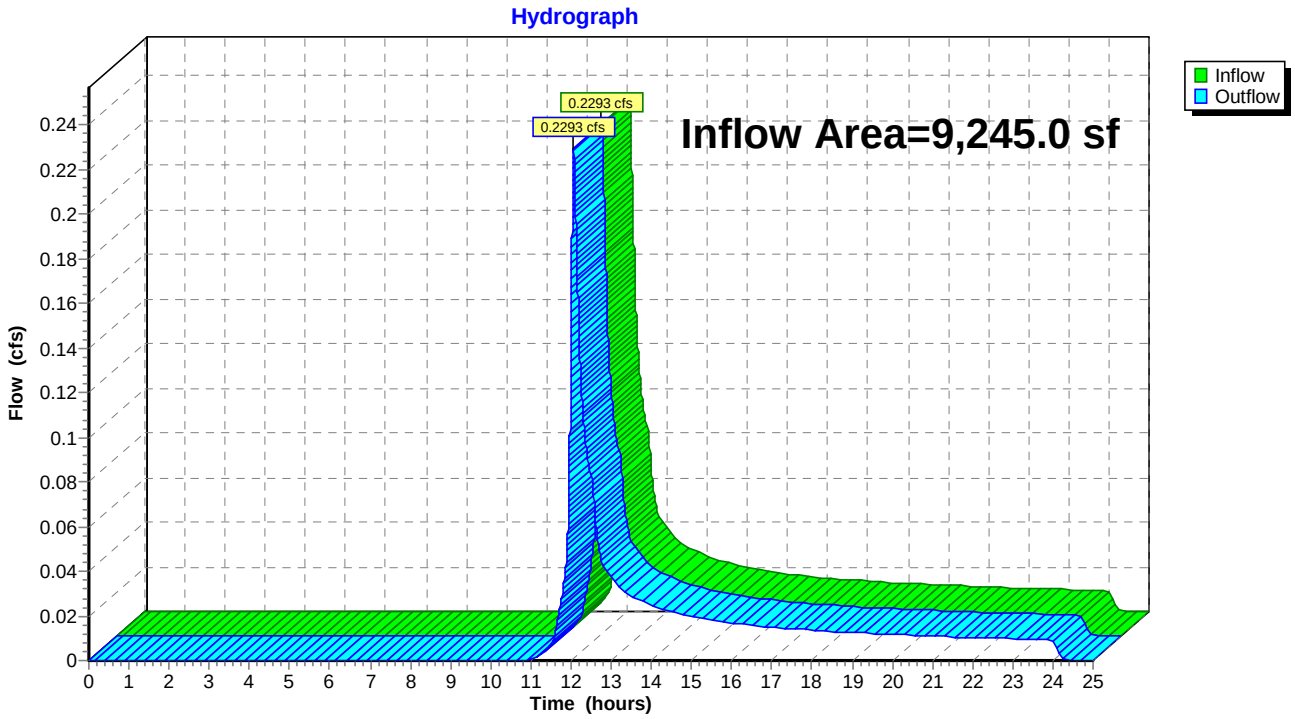


Summary for Reach DP1: Design Point 1 - #485 Concord Avenue

Inflow Area = 9,245.0 sf, 30.12% Impervious, Inflow Depth = 1.32" for 25-yr event
Inflow = 0.2293 cfs @ 12.07 hrs, Volume= 1,016.8 cf
Outflow = 0.2293 cfs @ 12.07 hrs, Volume= 1,016.8 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP1: Design Point 1 - #485 Concord Avenue

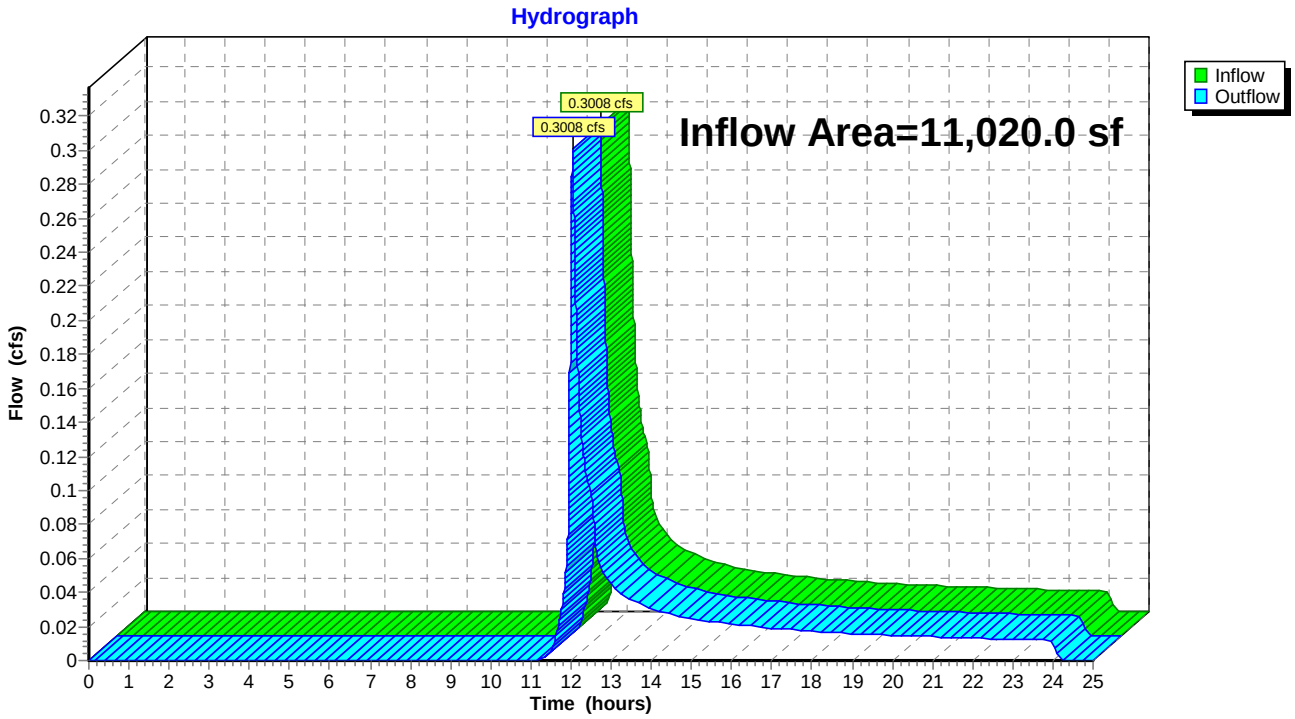


Summary for Reach DP2: Design Point 2 - #489 Concord Avenue

Inflow Area = 11,020.0 sf, 29.40% Impervious, Inflow Depth = 1.35" for 25-yr event
Inflow = 0.3008 cfs @ 12.04 hrs, Volume= 1,244.2 cf
Outflow = 0.3008 cfs @ 12.04 hrs, Volume= 1,244.2 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP2: Design Point 2 - #489 Concord Avenue

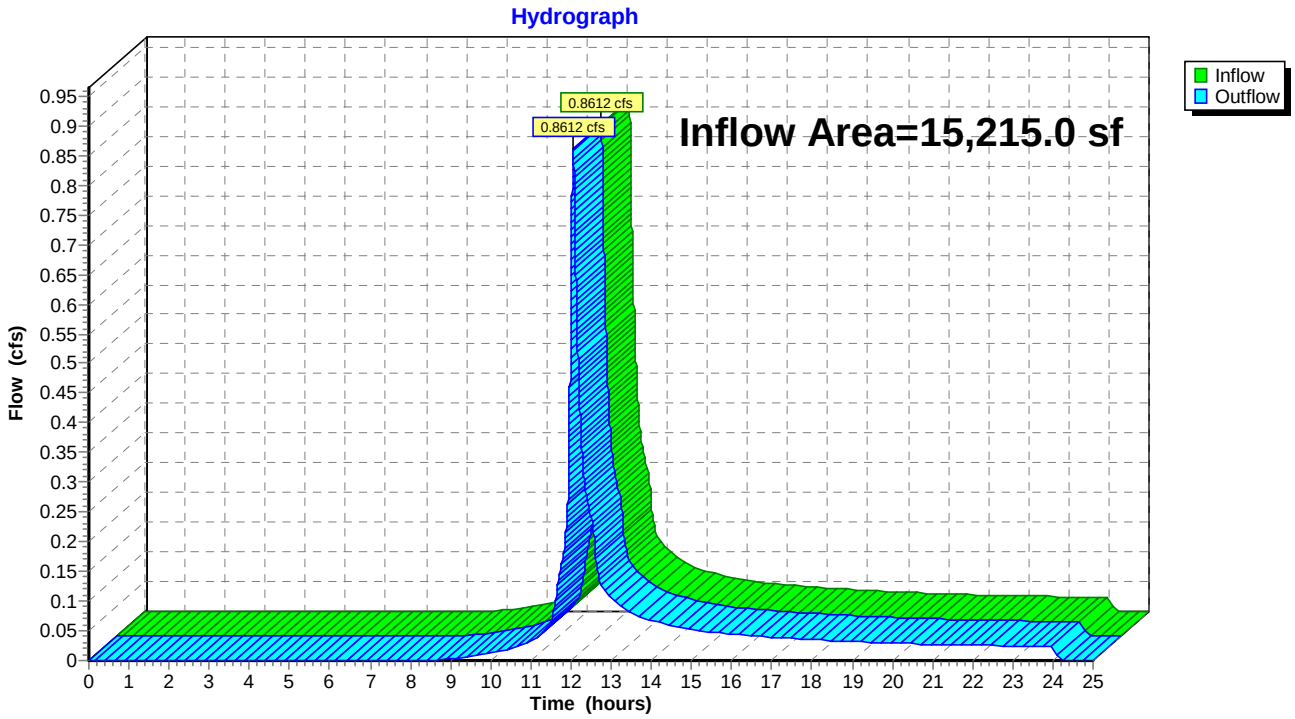


Summary for Reach DP3: Design Point 3 - Southeast B.V.W.

Inflow Area = 15,215.0 sf, 4.60% Impervious, Inflow Depth = 2.52" for 25-yr event
Inflow = 0.8612 cfs @ 12.06 hrs, Volume= 3,197.7 cf
Outflow = 0.8612 cfs @ 12.06 hrs, Volume= 3,197.7 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP3: Design Point 3 - Southeast B.V.W.

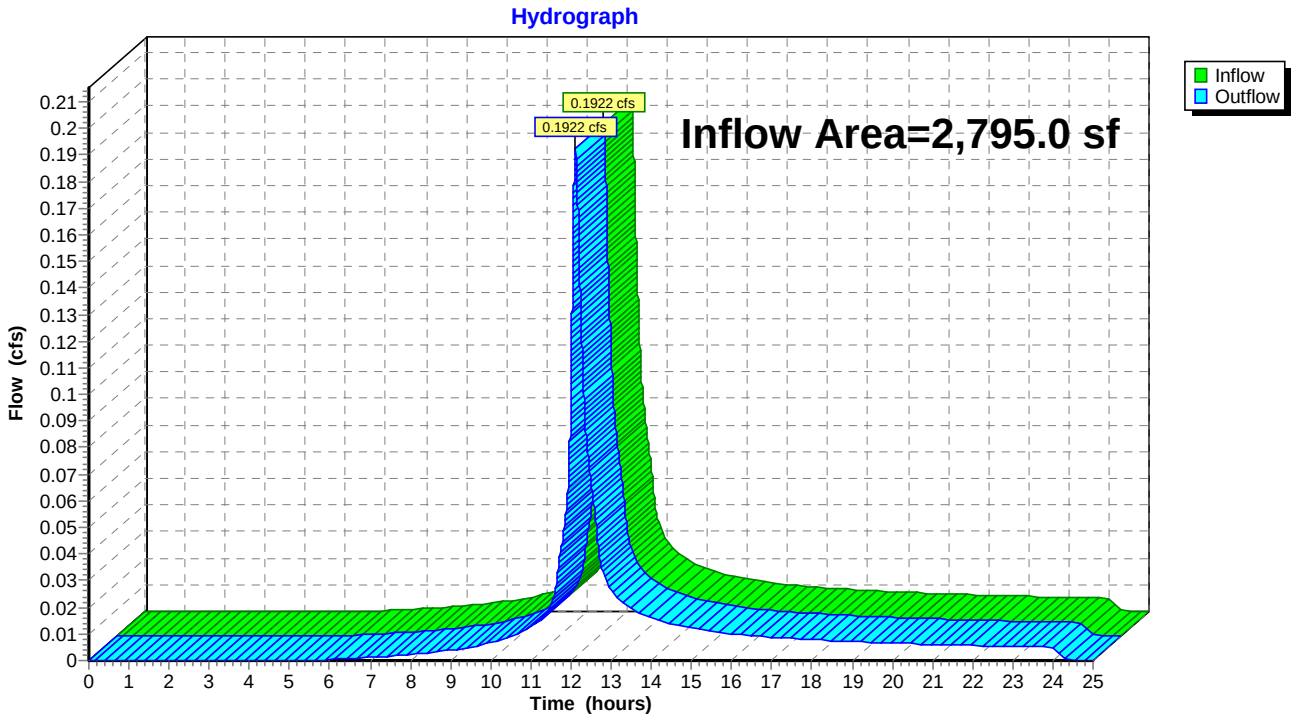


Summary for Reach DP4: Design Point 4 - #489 Concord Avenue (B.V.W.)

Inflow Area =	2,795.0 sf,	0.00% Impervious,	Inflow Depth =	3.61"	for 25-yr event
Inflow =	0.1922 cfs @	12.12 hrs,	Volume=	839.8 cf	
Outflow =	0.1922 cfs @	12.12 hrs,	Volume=	839.8 cf,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP4: Design Point 4 - #489 Concord Avenue (B.V.W.)

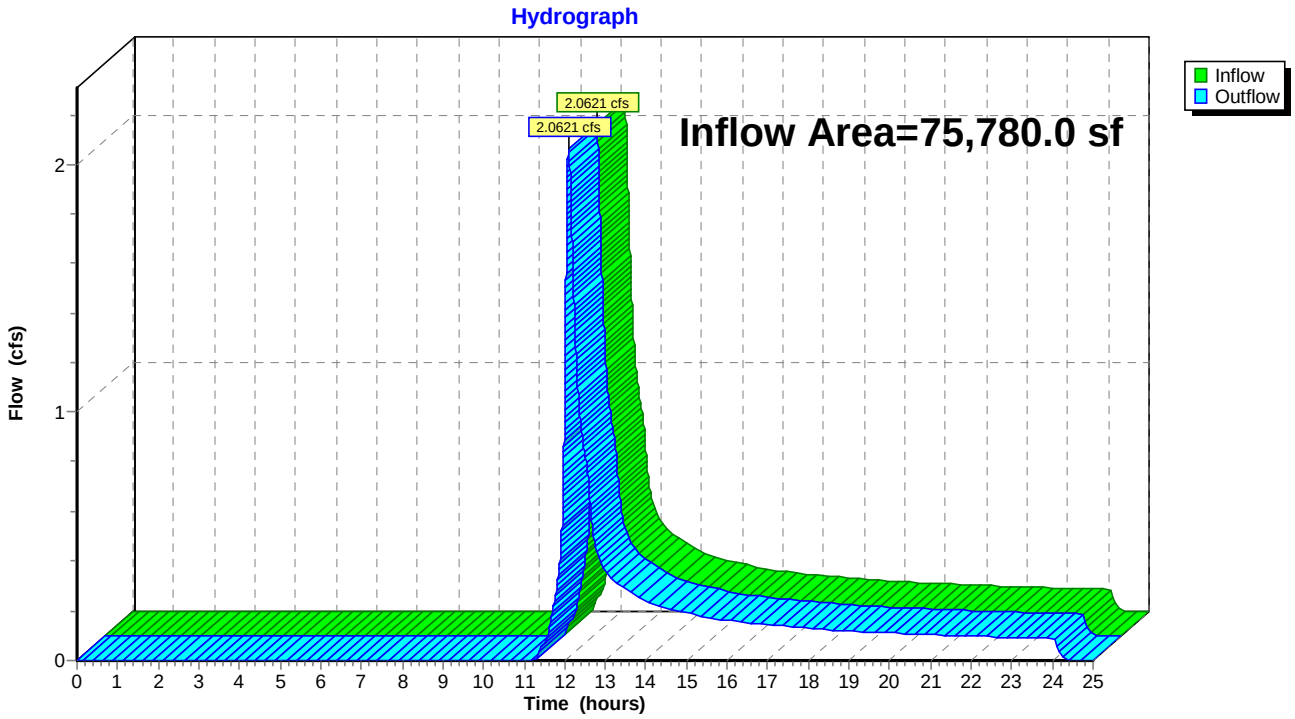


Summary for Reach DP5: Design Point 5 - Route 2

Inflow Area = 75,780.0 sf, 9.78% Impervious, Inflow Depth = 1.55" for 25-yr event
Inflow = 2.0621 cfs @ 12.10 hrs, Volume= 9,810.4 cf
Outflow = 2.0621 cfs @ 12.10 hrs, Volume= 9,810.4 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP5: Design Point 5 - Route 2



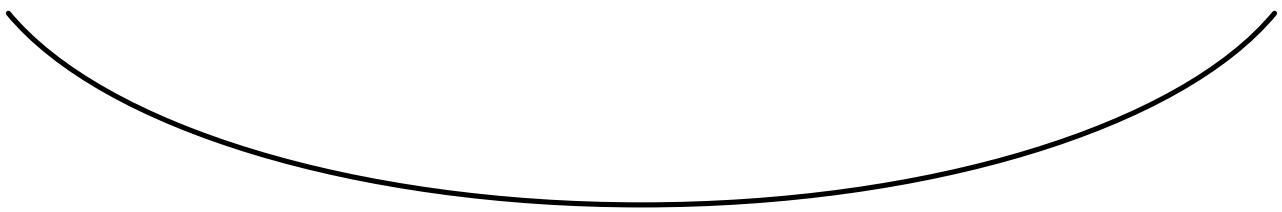
Summary for Reach O1a: Overland Flow #1a

Inflow Area = 275.0 sf, 20.00% Impervious, Inflow Depth = 0.00" for 25-yr event
Inflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf
Outflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0.0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.10' Flow Area= 0.7 sf, Capacity= 1.3810 cfs

10.00' x 0.10' deep Parabolic Channel, n= 0.028 Overland Flow #1a
Length= 47.0' Slope= 0.0564 '/'
Inlet Invert= 219.45', Outlet Invert= 216.80'



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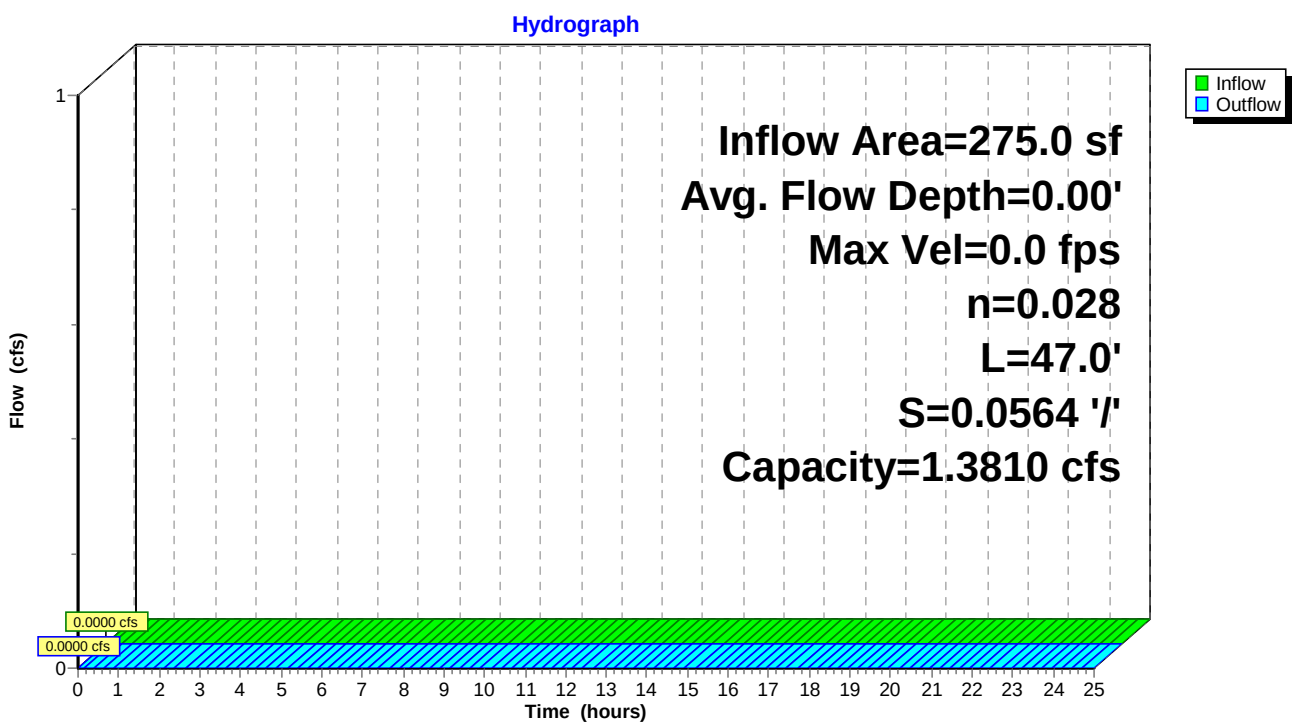
Reach O1a: Overland Flow #1a



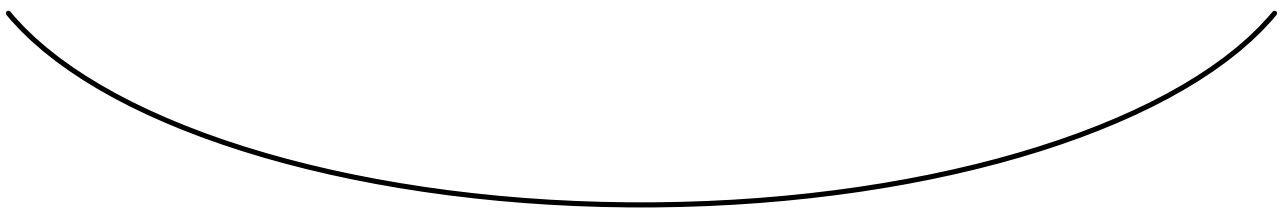
Summary for Reach O1b: Overland Flow #1b

Inflow Area = 890.0 sf, 10.67% Impervious, Inflow Depth = 0.00" for 25-yr event
Inflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf
Outflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0.0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.10' Flow Area= 1.0 sf, Capacity= 1.9819 cfs

15.00' x 0.10' deep Parabolic Channel, n= 0.030 Overland Flow #1b
Length= 65.0' Slope= 0.0592 '/'
Inlet Invert= 219.55', Outlet Invert= 215.70'



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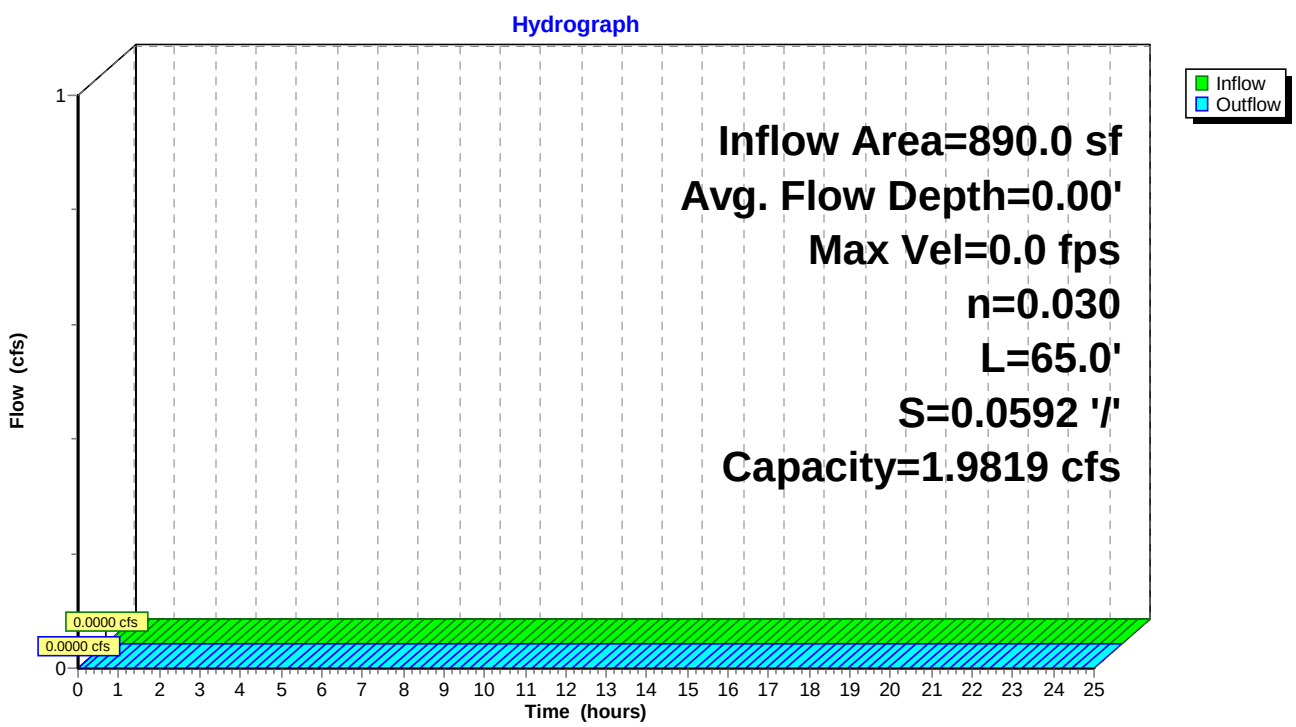
Reach O1b: Overland Flow #1b



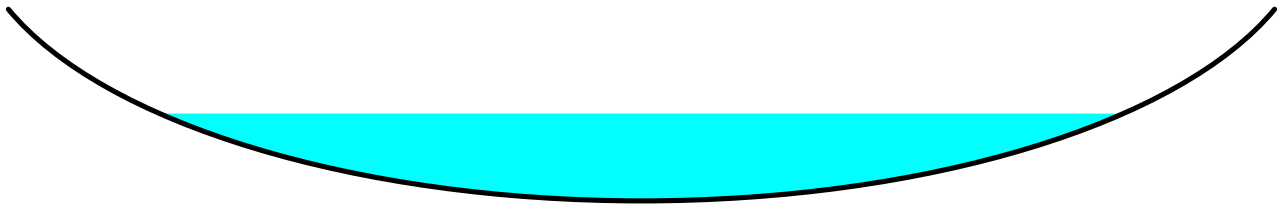
Summary for Reach O2: OverInd Flow #2

Inflow Area = 42,340.0 sf, 5.42% Impervious, Inflow Depth = 1.78" for 25-yr event
Inflow = 1.3823 cfs @ 12.11 hrs, Volume= 6,287.8 cf
Outflow = 1.3811 cfs @ 12.11 hrs, Volume= 6,287.8 cf, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 1.1 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.5 fps, Avg. Travel Time= 0.8 min

Peak Storage= 27.4 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.09'
Bank-Full Depth= 0.20' Flow Area= 4.3 sf, Capacity= 7.6508 cfs

32.00' x 0.20' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 21.0' Slope= 0.0262 '/'
Inlet Invert= 212.35', Outlet Invert= 211.80'



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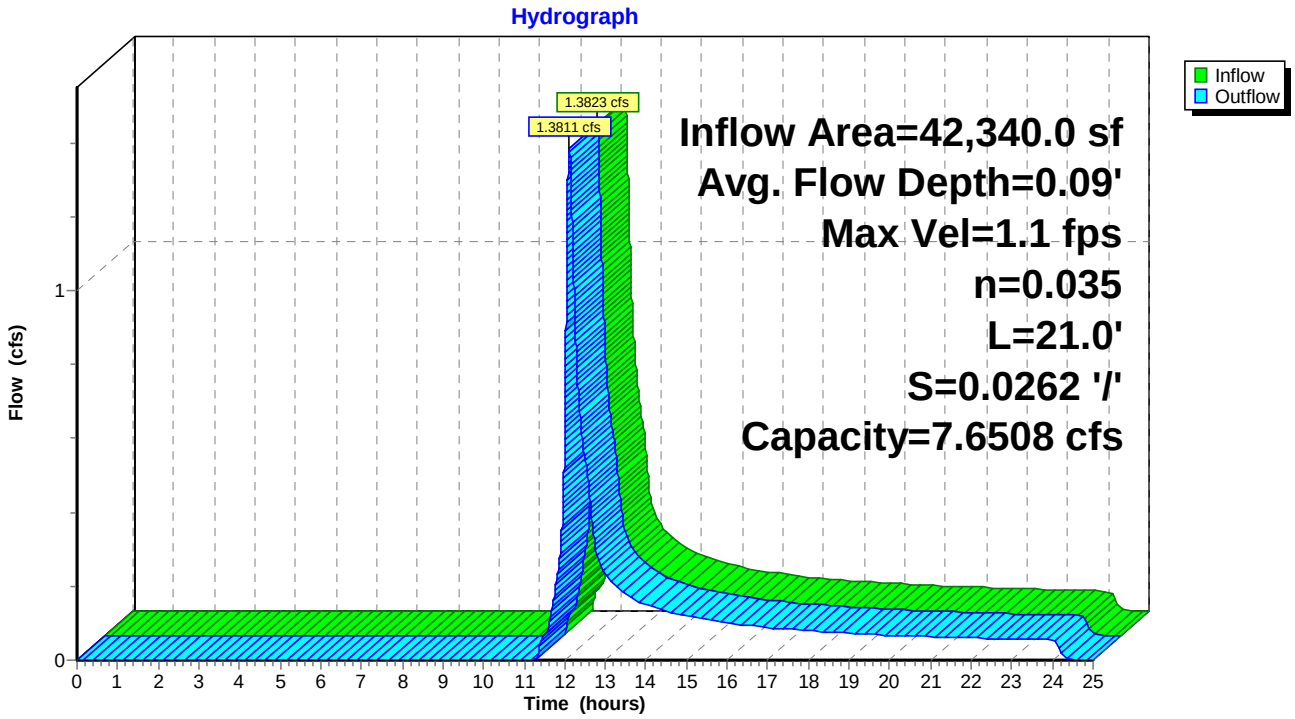
Reach O2: OverInd Flow #2



Summary for Pond LP1a: Low Point #1a

Inflow Area = 275.0 sf, 20.00% Impervious, Inflow Depth = 0.75" for 25-yr event
Inflow = 0.0035 cfs @ 12.01 hrs, Volume= 17.3 cf
Outflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 219.50' @ 24.07 hrs Surf.Area= 175.9 sf Storage= 17.3 cf

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

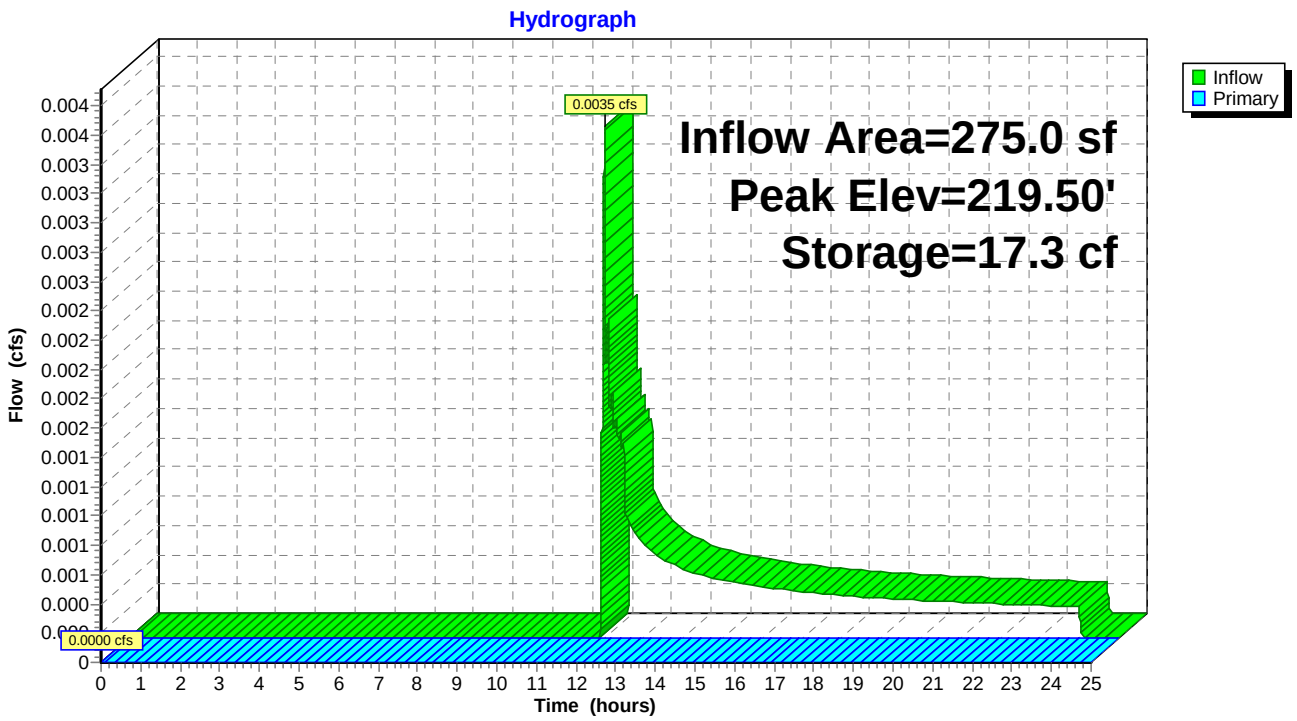
Volume	Invert	Avail.Storage	Storage Description
#1	219.30'	57.0 cf	**Low Point #1a (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
219.30	0.0	0.0	0.0	0.0	0.0
219.40	104.0	50.0	3.5	3.5	199.0
219.50	176.0	62.0	13.8	17.3	306.1
219.60	200.0	68.0	18.8	36.1	368.5
219.70	219.0	75.0	20.9	57.0	448.4

Device	Routing	Invert	Outlet Devices
#1	Primary	219.50'	**LP#1a Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.20 Width (feet) 10.00 35.00

Primary OutFlow Max=0.0000 cfs @ 0.00 hrs HW=219.30' TW=219.45' (Dynamic Tailwater)
└─**1=LP#1a Weir** (Controls 0.0000 cfs)

Pond LP1a: Low Point #1a



Summary for Pond LP1b: Low Point #1b

Inflow Area = 890.0 sf, 10.67% Impervious, Inflow Depth = 0.39" for 25-yr event
Inflow = 0.0016 cfs @ 12.53 hrs, Volume= 28.6 cf
Outflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 219.47' @ 24.38 hrs Surf.Area= 258.2 sf Storage= 28.6 cf

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

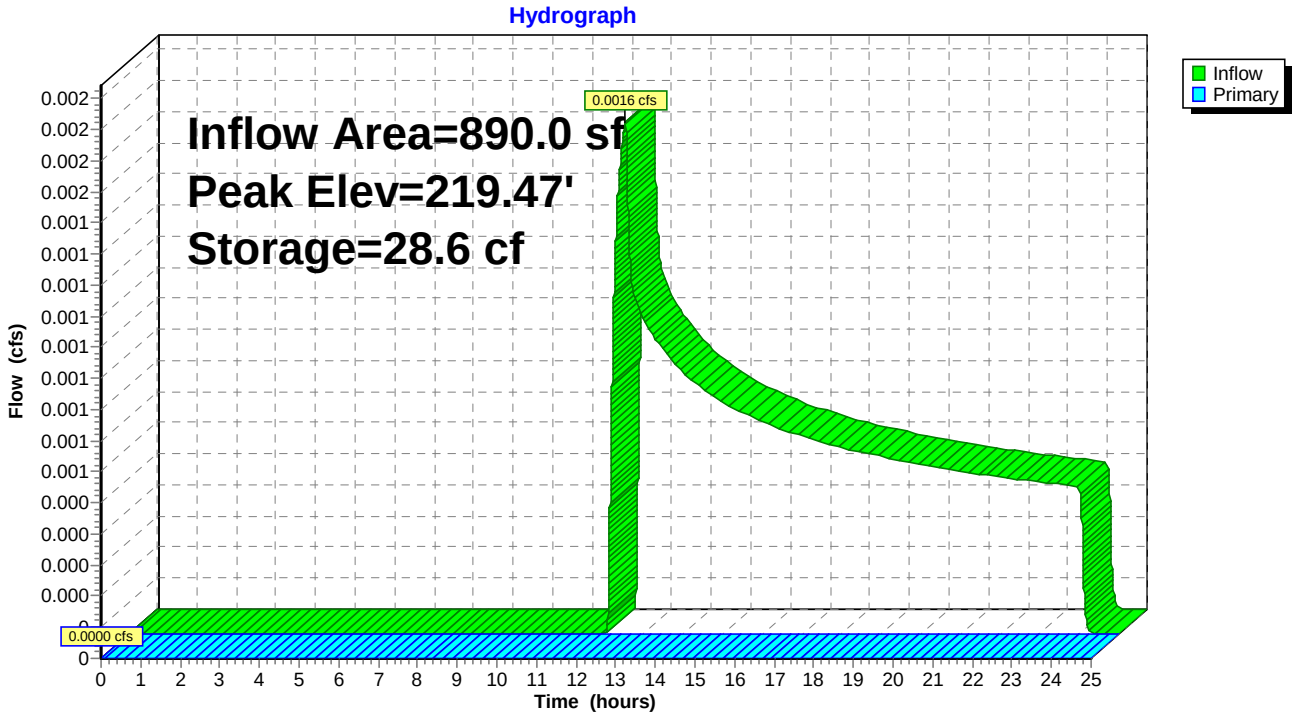
Volume	Invert	Avail.Storage	Storage Description
#1	219.20'	270.8 cf	**Low Point #1b (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
219.20	0.0	0.0	0.0	0.0	0.0
219.30	74.0	52.0	2.5	2.5	215.2
219.40	161.0	86.0	11.5	13.9	588.6
219.50	305.0	122.0	22.9	36.9	1,184.6
219.60	472.0	151.0	38.5	75.4	1,814.8
219.70	632.0	180.0	55.0	130.4	2,578.8
219.80	708.0	192.0	67.0	197.4	2,934.5
219.90	761.0	204.0	73.4	270.8	3,313.2

Device	Routing	Invert	Outlet Devices
#1	Primary	219.60'	**LP#1b Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.20 Width (feet) 15.00 48.00

Primary OutFlow Max=0.0000 cfs @ 0.00 hrs HW=219.20' TW=219.55' (Dynamic Tailwater)
└**1=LP#1b Weir** (Controls 0.0000 cfs)

Pond LP1b: Low Point #1b



Summary for Pond LP2: Low Point #2

Inflow Area =	42,340.0 sf,	5.42% Impervious,	Inflow Depth =	1.80"	for 25-yr event
Inflow =	1.3943 cfs @	12.10 hrs,	Volume=	6,354.0 cf	
Outflow =	1.3823 cfs @	12.11 hrs,	Volume=	6,287.8 cf,	Atten= 1%, Lag= 0.4 min
Primary =	1.3823 cfs @	12.11 hrs,	Volume=	6,287.8 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 212.46' @ 12.11 hrs Surf.Area= 902.0 sf Storage= 119.4 cf

Plug-Flow detention time= 9.2 min calculated for 6,287.8 cf (99% of inflow)
Center-of-Mass det. time= 3.7 min (912.2 - 908.6)

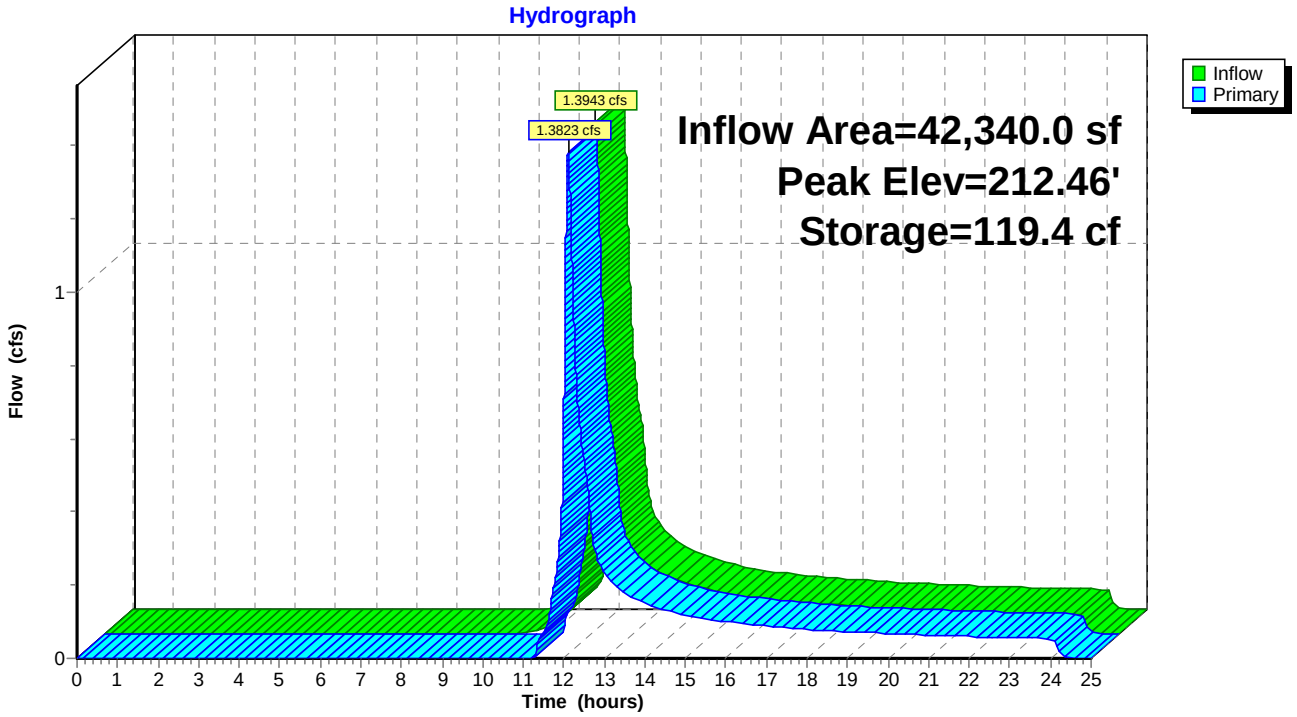
Volume	Invert	Avail.Storage	Storage Description
#1	212.20'	1,293.1 cf	**Low Point #2 (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
212.20	44.0	28.0	0.0	0.0	44.0
212.40	765.0	155.0	66.2	66.2	1,893.6
212.60	1,231.0	170.0	197.8	263.9	2,282.8
212.80	2,414.0	308.0	357.9	621.8	7,532.3
213.00	4,397.0	423.0	671.3	1,293.1	14,222.4

Device	Routing	Invert	Outlet Devices
#1	Primary	212.40'	**LP#1b Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.20 Width (feet) 32.00 38.00

Primary OutFlow Max=1.3818 cfs @ 12.11 hrs HW=212.46' TW=212.44' (Dynamic Tailwater)
└─**1=LP#1b Weir** (Weir Controls 1.3818 cfs @ 0.7 fps)

Pond LP2: Low Point #2



Summary for Subcatchment SA1a: Sub-Area #1a

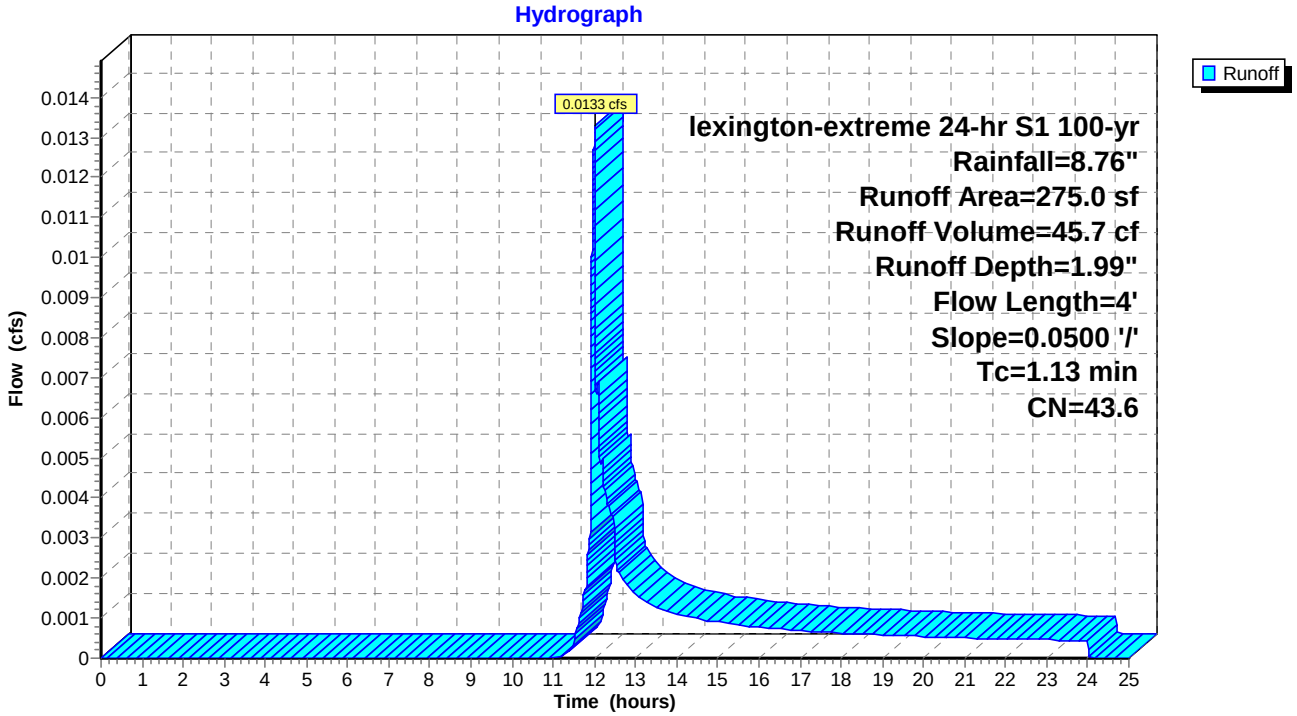
Runoff = 0.0133 cfs @ 12.00 hrs, Volume= 45.7 cf, Depth= 1.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 100-yr Rainfall=8.76"

	Area (sf)	CN	Description
*	55.0	98.0	Impervious
*	220.0	30.0	Woods/Landscape, Good, HSG A
	275.0	43.6	Weighted Average
	220.0		80.00% Pervious Area
	55.0		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.13	4	0.0500	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment SA1a: Sub-Area #1a



Summary for Subcatchment SA1b: Sub-Area #1b

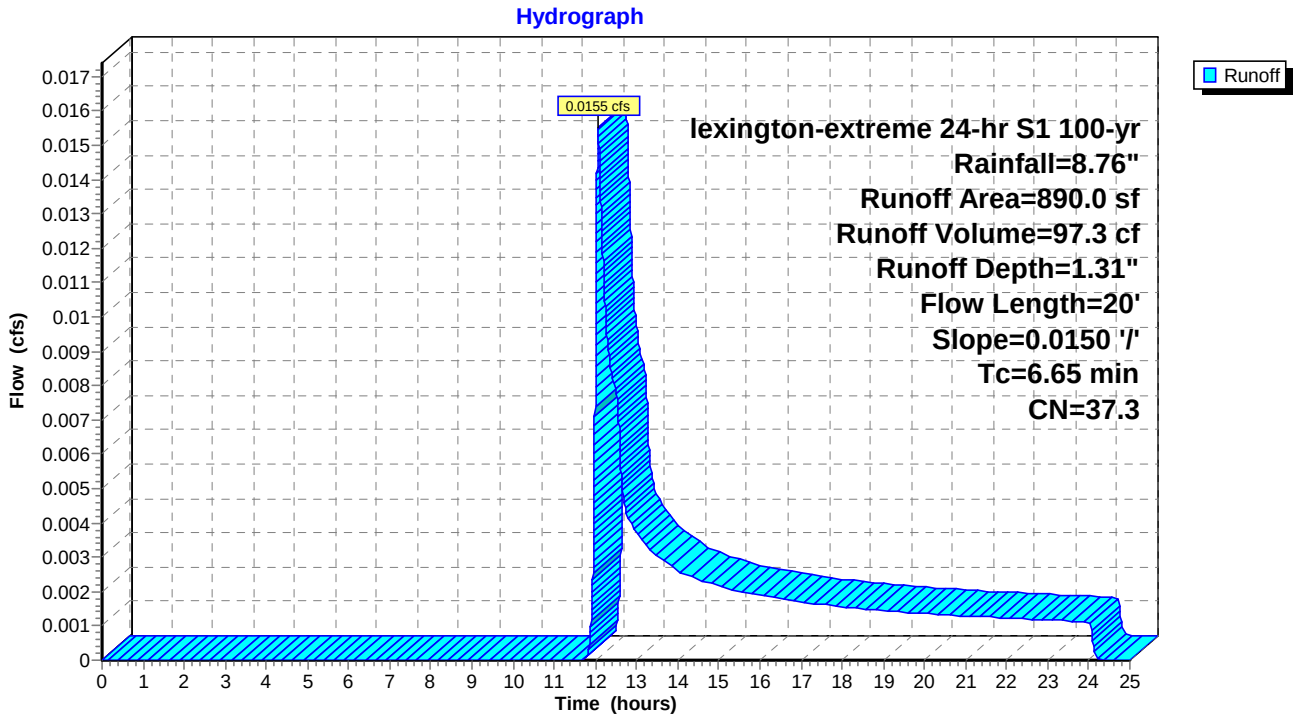
Runoff = 0.0155 cfs @ 12.07 hrs, Volume= 97.3 cf, Depth= 1.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 100-yr Rainfall=8.76"

	Area (sf)	CN	Description
*	95.0	98.0	Impervious
*	795.0	30.0	Woods/Landscape, Good, HSG A
	890.0	37.3	Weighted Average
	795.0		89.33% Pervious Area
	95.0		10.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.65	20	0.0150	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment SA1b: Sub-Area #1b



Summary for Subcatchment SA1c: Sub-Area #1c

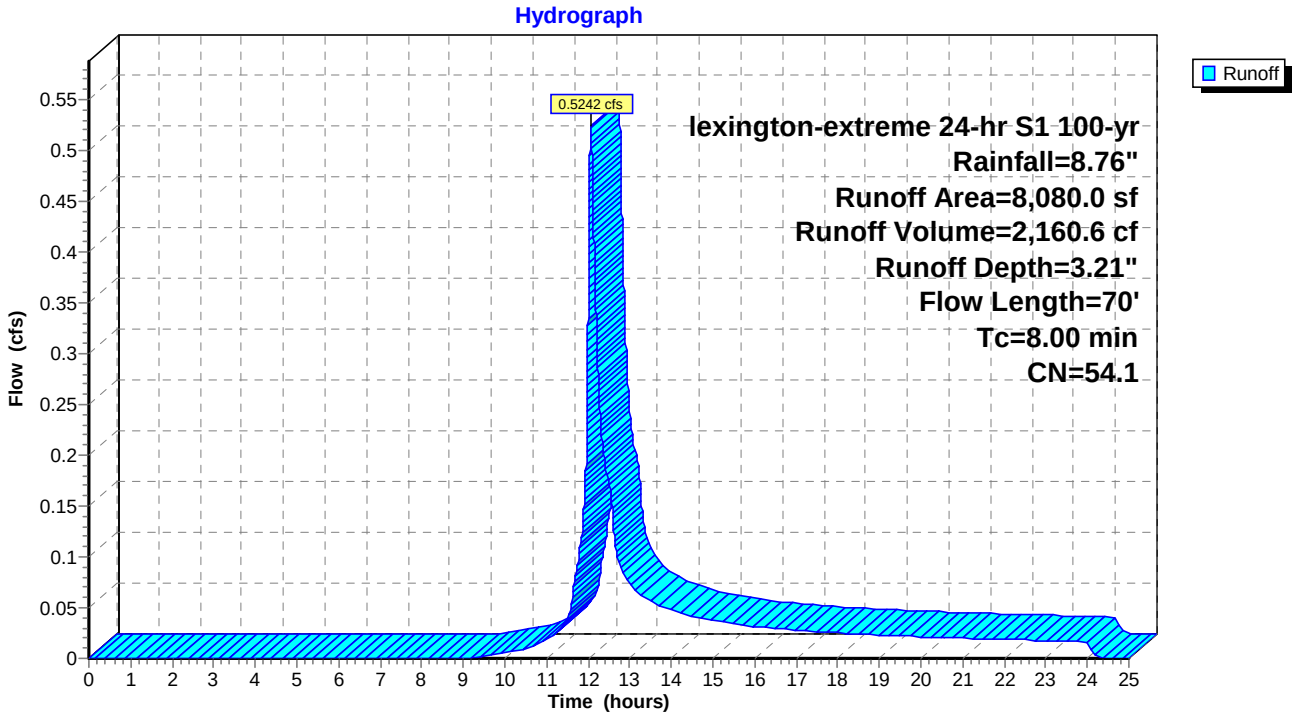
Runoff = 0.5242 cfs @ 12.06 hrs, Volume= 2,160.6 cf, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 100-yr Rainfall=8.76"

	Area (sf)	CN	Description
*	2,635.0	98.0	Impervious
	1,760.0	39.0	>75% Grass cover, Good, HSG A
*	3,685.0	30.0	Woods/Landscape, Good, HSG A
	8,080.0	54.1	Weighted Average
	5,445.0		67.39% Pervious Area
	2,635.0		32.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.93	7	0.0143	0.0		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.92	15	0.0067	0.3		**Sheet Flow, Segment 2 - Gravel** n= 0.030 P2= 3.20"
1.00	10	0.0600	0.2		**Sheet Flow, Segment 3 - Lawn** Grass: Short n= 0.150 P2= 3.20"
2.38	16	0.1250	0.1		**Sheet Flow, Segment 4 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.77	22	0.0091	0.5		**Shallow Concentrated Flow, Segment 5 - Woods** Woodland Kv= 5.00 fps
8.00	70	Total			

Subcatchment SA1c: Sub-Area #1c



Summary for Subcatchment SA2: Sub-Area #2

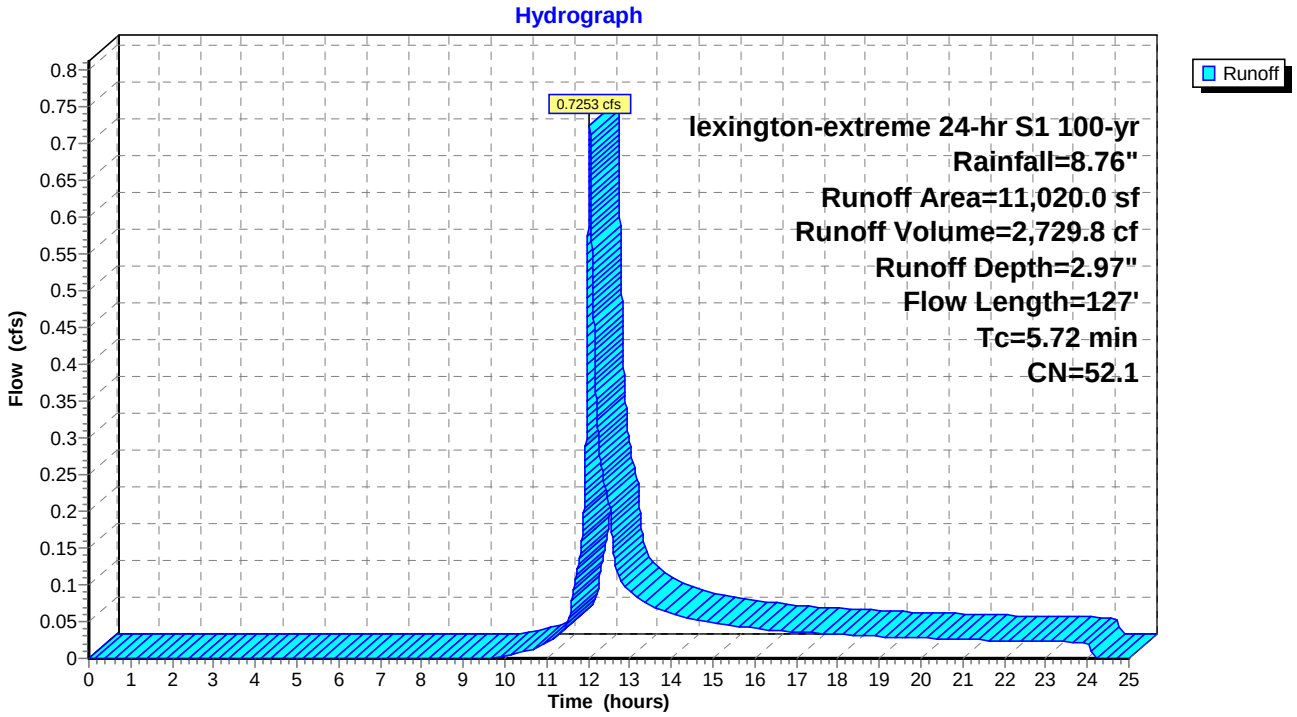
Runoff = 0.7253 cfs @ 12.04 hrs, Volume= 2,729.8 cf, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 100-yr Rainfall=8.76"

	Area (sf)	CN	Description
*	3,240.0	98.0	Impervious
	2,550.0	39.0	>75% Grass cover, Good, HSG A
*	5,230.0	30.0	Woods/Landscape, Good, HSG A
	11,020.0	52.1	Weighted Average
	7,780.0		70.60% Pervious Area
	3,240.0		29.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.23	13	0.0385	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
1.45	13	0.0400	0.1		**Sheet Flow, Segment 2 - Gravel** Grass: Short n= 0.150 P2= 3.20"
0.62	36	0.0194	1.0		**Shallow Concentrated Flow, Segment 3 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.26	48	0.0375	3.1		**Shallow Concentrated Flow, Segment 4 - Gravel** Unpaved Kv= 16.10 fps
0.16	17	0.1235	1.8		**Shallow Concentrated Flow, Segment 5 - Woods** Woodland Kv= 5.00 fps
5.72	127	Total			

Subcatchment SA2: Sub-Area #2



Summary for Subcatchment SA3: Sub-Area #3

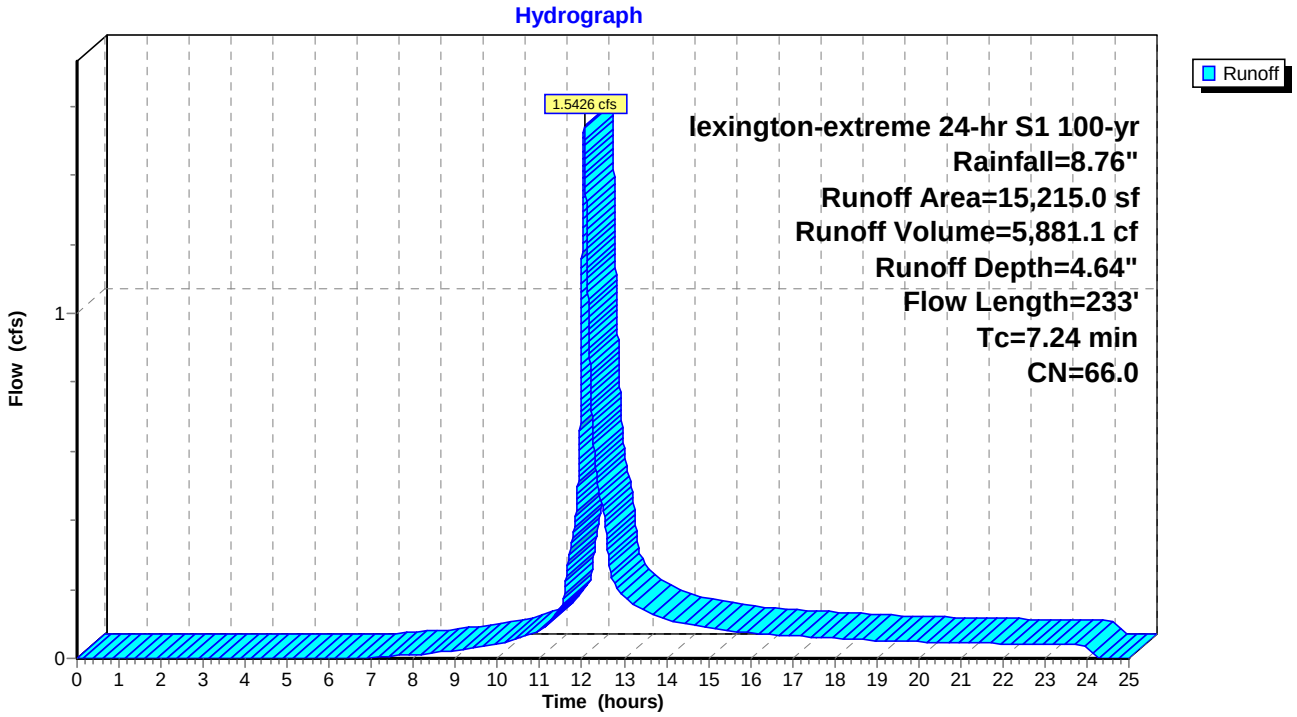
Runoff = 1.5426 cfs @ 12.05 hrs, Volume= 5,881.1 cf, Depth= 4.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 100-yr Rainfall=8.76"

	Area (sf)	CN	Description
*	700.0	98.0	Impervious
	3,225.0	80.0	>75% Grass cover, Good, HSG D
*	6,230.0	77.0	Woods/Landscape, Good, HSG D
	5,060.0	39.0	>75% Grass cover, Good, HSG A
	15,215.0	66.0	Weighted Average
	14,515.0		95.40% Pervious Area
	700.0		4.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.80	8	0.0625	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.64	16	0.0188	0.4		**Sheet Flow, Segment 2 - Gravel** n= 0.030 P2= 3.20"
2.42	27	0.0480	0.2		**Sheet Flow, Segment 3 - Lawn** Grass: Short n= 0.150 P2= 3.20"
1.11	106	0.0519	1.6		**Shallow Concentrated Flow, Segment 4 - Lawn** Short Grass Pasture Kv= 7.00 fps
1.27	76	0.0395	1.0		**Shallow Concentrated Flow, Segment 5 - Woods** Woodland Kv= 5.00 fps
7.24	233	Total			

Subcatchment SA3: Sub-Area #3



Summary for Subcatchment SA4: Sub-Area #4

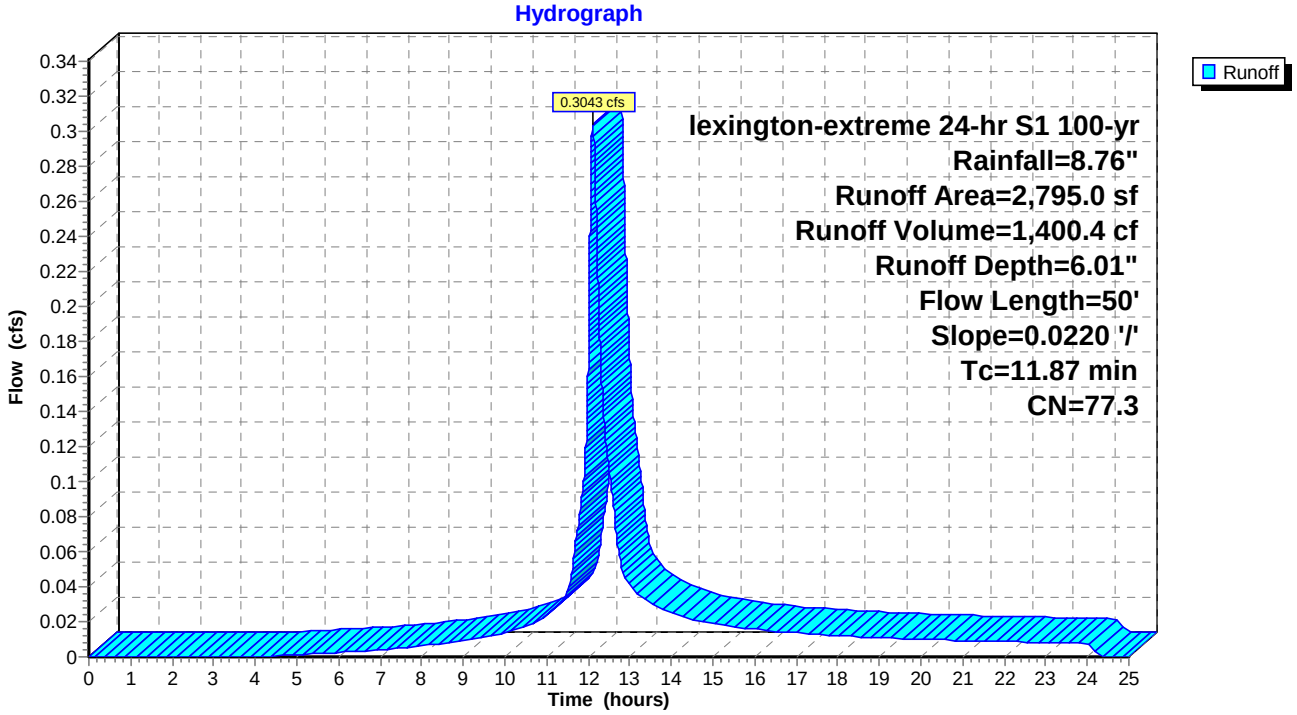
Runoff = 0.3043 cfs @ 12.11 hrs, Volume= 1,400.4 cf, Depth= 6.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 100-yr Rainfall=8.76"

	Area (sf)	CN	Description
	255.0	80.0	>75% Grass cover, Good, HSG D
*	2,540.0	77.0	Woods/Landscape, Good, HSG D
	2,795.0	77.3	Weighted Average
	2,795.0		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.87	50	0.0220	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment SA4: Sub-Area #4



Summary for Subcatchment SA5: Sub-Area #5

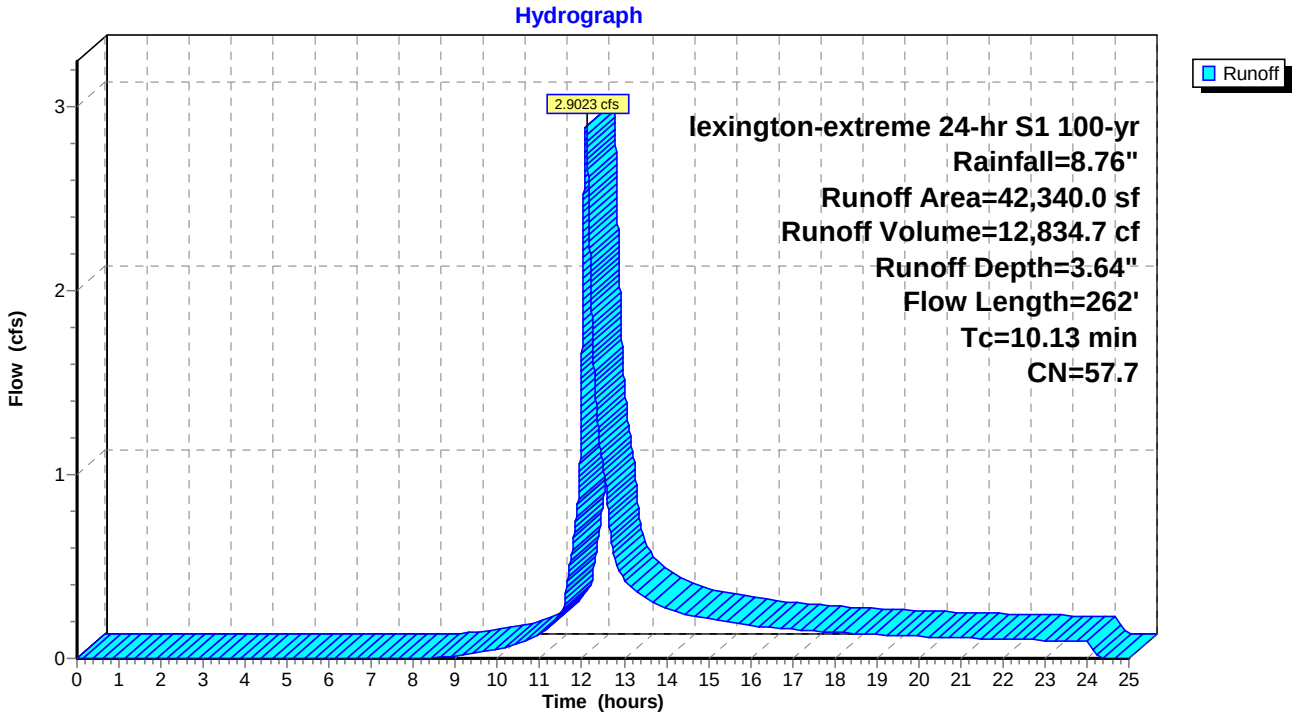
Runoff = 2.9023 cfs @ 12.10 hrs, Volume= 12,834.7 cf, Depth= 3.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 100-yr Rainfall=8.76"

	Area (sf)	CN	Description
*	2,295.0	98.0	Impervious
	13,820.0	80.0	>75% Grass cover, Good, HSG D
*	4,225.0	77.0	Woods/Landscape, Good, HSG D
	14,160.0	39.0	>75% Grass cover, Good, HSG A
*	7,840.0	30.0	Woods/Landscape, Good, HSG A
	42,340.0	57.7	Weighted Average
	40,045.0		94.58% Pervious Area
	2,295.0		5.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.22	7	0.0286	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.59	15	0.0200	0.4		**Sheet Flow, Segment 2 - Gravel Drive** n= 0.030 P2= 3.20"
4.54	28	0.0107	0.1		**Sheet Flow, Segment 3 - Lawn** Grass: Short n= 0.150 P2= 3.20"
2.78	212	0.0330	1.3		**Shallow Concentrated Flow, Segment 4 - Lawn** Short Grass Pasture Kv= 7.00 fps
10.13	262	Total			

Subcatchment SA5: Sub-Area #5



Summary for Subcatchment SA6: Sub-Area #6

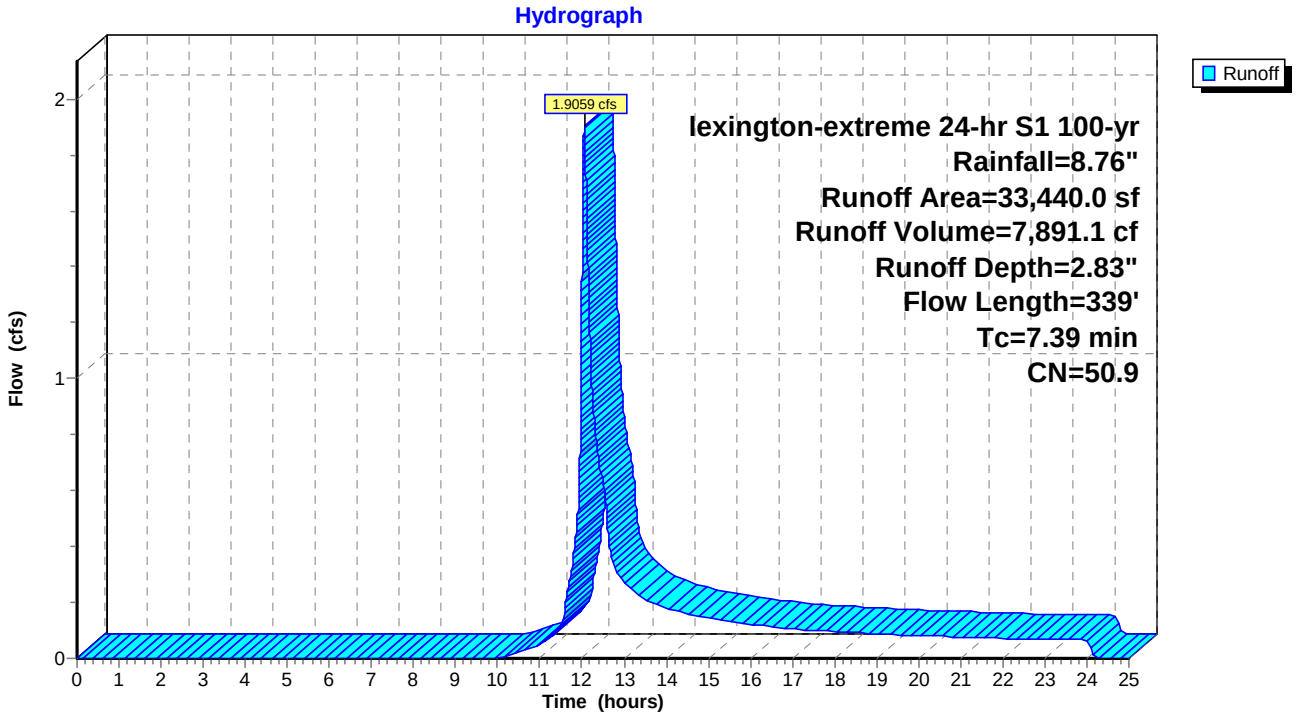
Runoff = 1.9059 cfs @ 12.06 hrs, Volume= 7,891.1 cf, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 100-yr Rainfall=8.76"

	Area (sf)	CN	Description
*	5,120.0	98.0	Impervious
	960.0	80.0	>75% Grass cover, Good, HSG D
*	4,615.0	77.0	Woods/Landscape, Good, HSG D
	9,655.0	39.0	>75% Grass cover, Good, HSG A
*	13,090.0	30.0	Woods/Landscape, Good, HSG A
	33,440.0	50.9	Weighted Average
	28,320.0		84.69% Pervious Area
	5,120.0		15.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.67	50	0.4140	0.2		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.53	50	0.0980	1.6		**Shallow Concentrated Flow, Segment 2 - Woods** Woodland Kv= 5.00 fps
0.19	21	0.0714	1.9		**Shallow Concentrated Flow, Segment 3 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.08	8	0.1250	1.8		**Shallow Concentrated Flow, Segment 4 - Woods** Woodland Kv= 5.00 fps
0.12	5	0.0100	0.7		**Shallow Concentrated Flow, Segment 5 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.14	37	0.0700	4.3		**Shallow Concentrated Flow, Segment 6 - Gravel Drive** Unpaved Kv= 16.10 fps
1.94	144	0.0313	1.2		**Shallow Concentrated Flow, Segment 7 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.72	24	0.0125	0.6		**Shallow Concentrated Flow, Segment 8 - Woods** Woodland Kv= 5.00 fps
7.39	339	Total			

Subcatchment SA6: Sub-Area #6

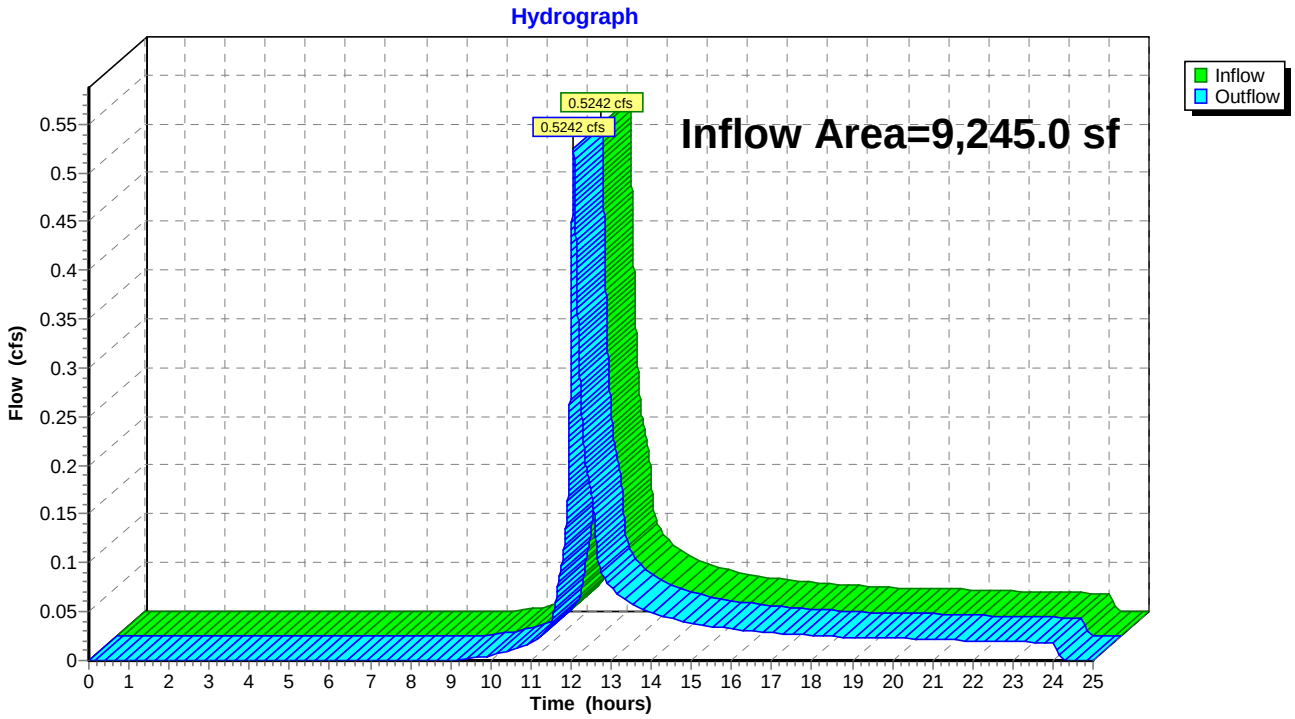


Summary for Reach DP1: Design Point 1 - #485 Concord Avenue

Inflow Area = 9,245.0 sf, 30.12% Impervious, Inflow Depth = 2.87" for 100-yr event
Inflow = 0.5242 cfs @ 12.06 hrs, Volume= 2,210.8 cf
Outflow = 0.5242 cfs @ 12.06 hrs, Volume= 2,210.8 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP1: Design Point 1 - #485 Concord Avenue

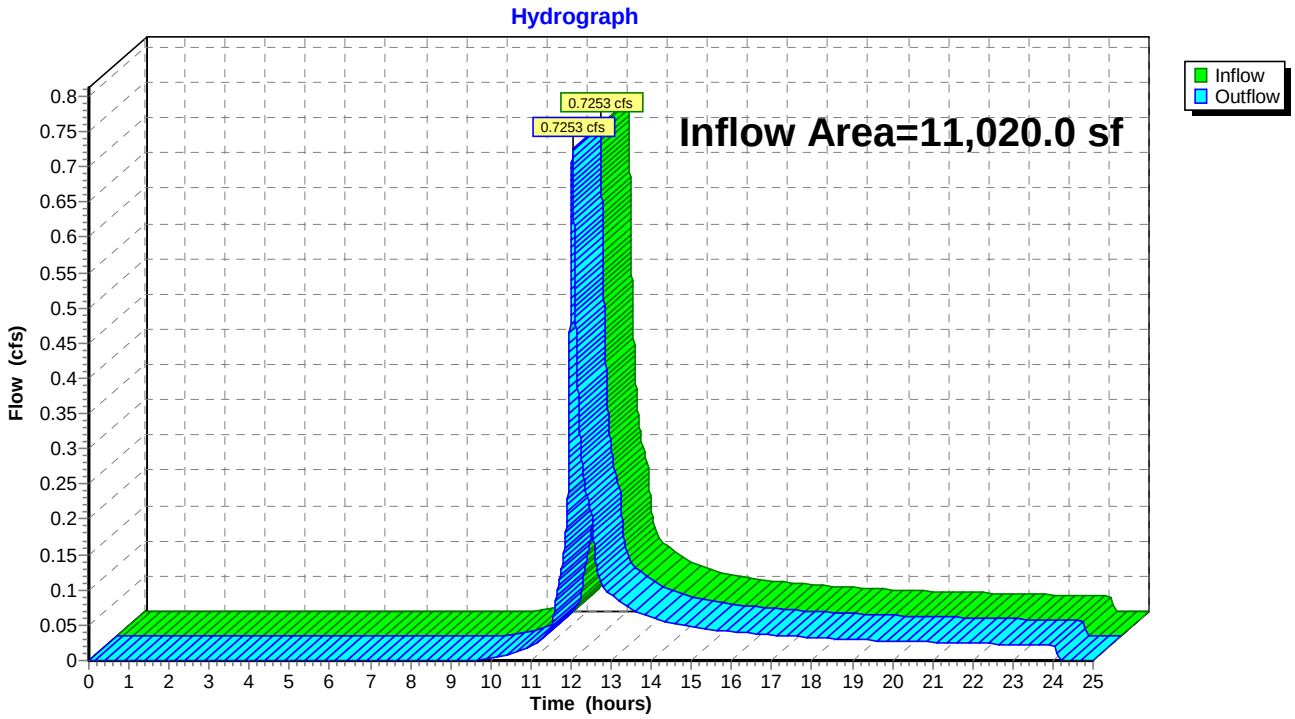


Summary for Reach DP2: Design Point 2 - #489 Concord Avenue

Inflow Area = 11,020.0 sf, 29.40% Impervious, Inflow Depth = 2.97" for 100-yr event
Inflow = 0.7253 cfs @ 12.04 hrs, Volume= 2,729.8 cf
Outflow = 0.7253 cfs @ 12.04 hrs, Volume= 2,729.8 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP2: Design Point 2 - #489 Concord Avenue

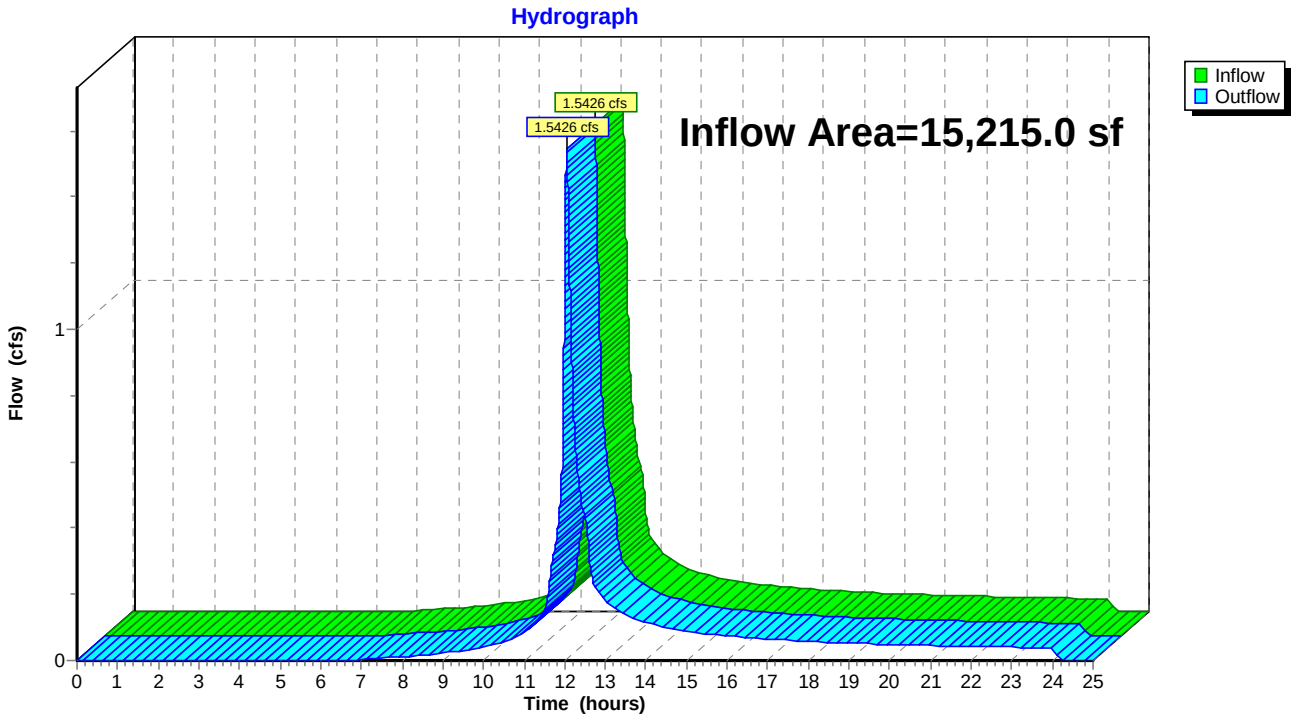


Summary for Reach DP3: Design Point 3 - Southeast B.V.W.

Inflow Area =	15,215.0 sf,	4.60% Impervious,	Inflow Depth =	4.64"	for 100-yr event
Inflow =	1.5426 cfs @	12.05 hrs,	Volume=	5,881.1 cf	
Outflow =	1.5426 cfs @	12.05 hrs,	Volume=	5,881.1 cf,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP3: Design Point 3 - Southeast B.V.W.

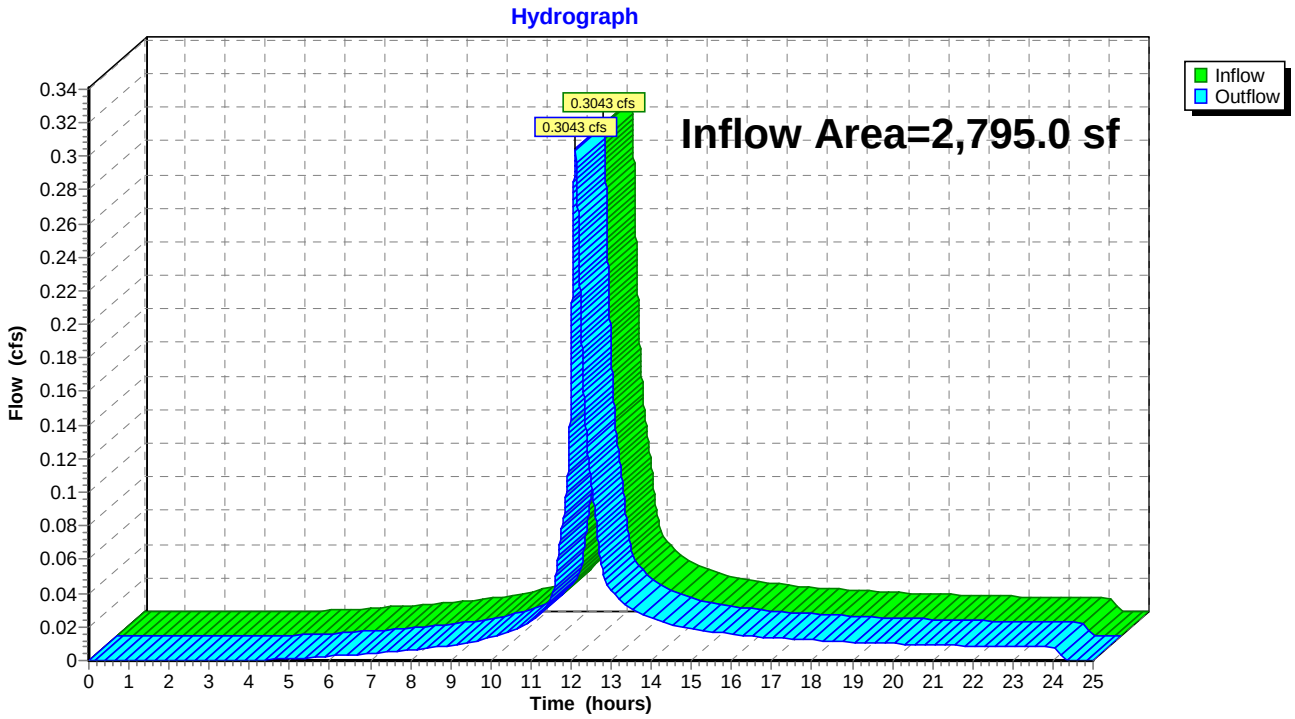


Summary for Reach DP4: Design Point 4 - #489 Concord Avenue (B.V.W.)

Inflow Area =	2,795.0 sf,	0.00% Impervious,	Inflow Depth =	6.01"	for 100-yr event
Inflow =	0.3043 cfs @	12.11 hrs,	Volume=	1,400.4 cf	
Outflow =	0.3043 cfs @	12.11 hrs,	Volume=	1,400.4 cf,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP4: Design Point 4 - #489 Concord Avenue (B.V.W.)

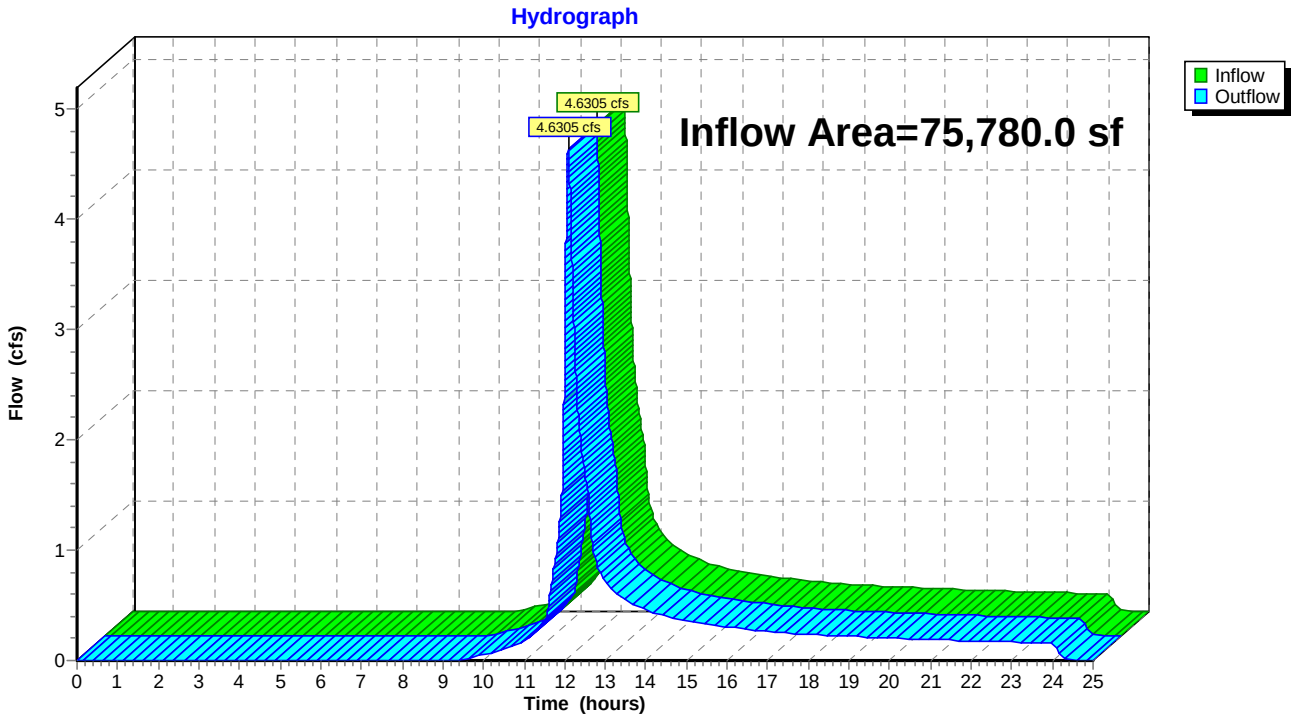


Summary for Reach DP5: Design Point 5 - Route 2

Inflow Area = 75,780.0 sf, 9.78% Impervious, Inflow Depth = 3.27" for 100-yr event
Inflow = 4.6305 cfs @ 12.08 hrs, Volume= 20,659.6 cf
Outflow = 4.6305 cfs @ 12.08 hrs, Volume= 20,659.6 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP5: Design Point 5 - Route 2



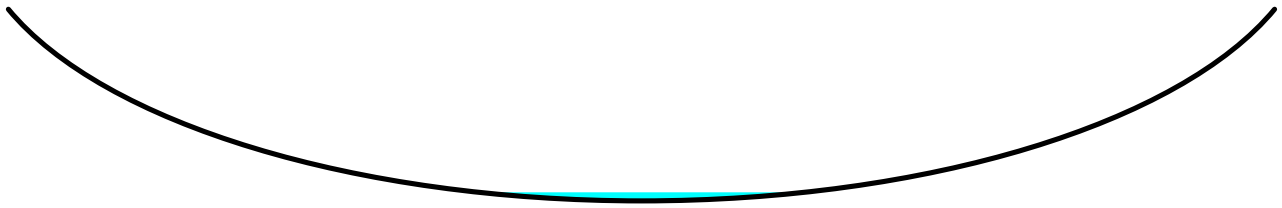
Summary for Reach O1a: Overland Flow #1a

Inflow Area = 275.0 sf, 20.00% Impervious, Inflow Depth > 1.24" for 100-yr event
Inflow = 0.0016 cfs @ 13.01 hrs, Volume= 28.4 cf
Outflow = 0.0016 cfs @ 13.05 hrs, Volume= 28.4 cf, Atten= 3%, Lag= 2.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 0.3 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 0.2 fps, Avg. Travel Time= 4.0 min

Peak Storage= 0.3 cf @ 13.05 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.10' Flow Area= 0.7 sf, Capacity= 1.3810 cfs

10.00' x 0.10' deep Parabolic Channel, n= 0.028 Overland Flow #1a
Length= 47.0' Slope= 0.0564 '/'
Inlet Invert= 219.45', Outlet Invert= 216.80'



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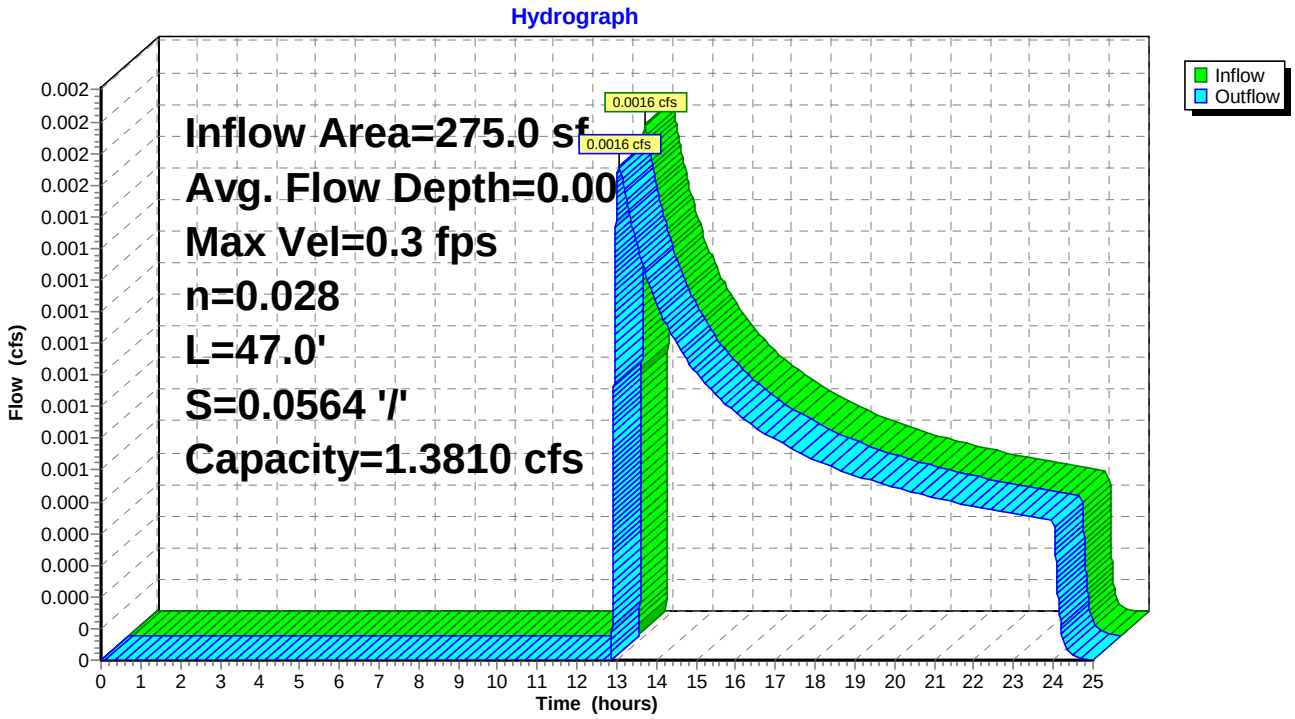
Reach O1a: Overland Flow #1a



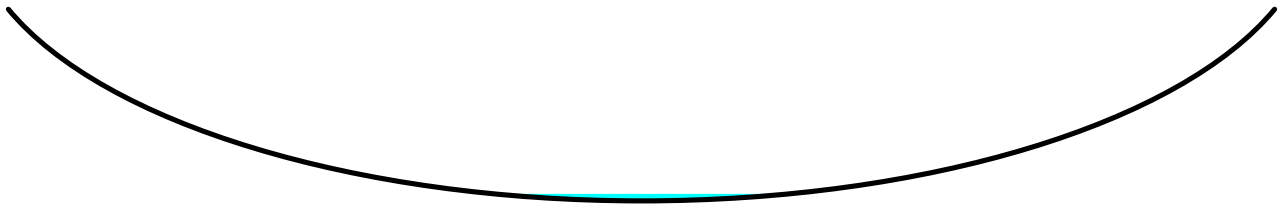
Summary for Reach O1b: Overland Flow #1b

Inflow Area = 890.0 sf, 10.67% Impervious, Inflow Depth > 0.30" for 100-yr event
Inflow = 0.0014 cfs @ 19.62 hrs, Volume= 21.9 cf
Outflow = 0.0014 cfs @ 19.76 hrs, Volume= 21.9 cf, Atten= 0%, Lag= 8.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 0.2 fps, Min. Travel Time= 5.1 min
Avg. Velocity = 0.2 fps, Avg. Travel Time= 5.7 min

Peak Storage= 0.4 cf @ 19.76 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.10' Flow Area= 1.0 sf, Capacity= 1.9819 cfs

15.00' x 0.10' deep Parabolic Channel, n= 0.030 Overland Flow #1b
Length= 65.0' Slope= 0.0592 '/'
Inlet Invert= 219.55', Outlet Invert= 215.70'



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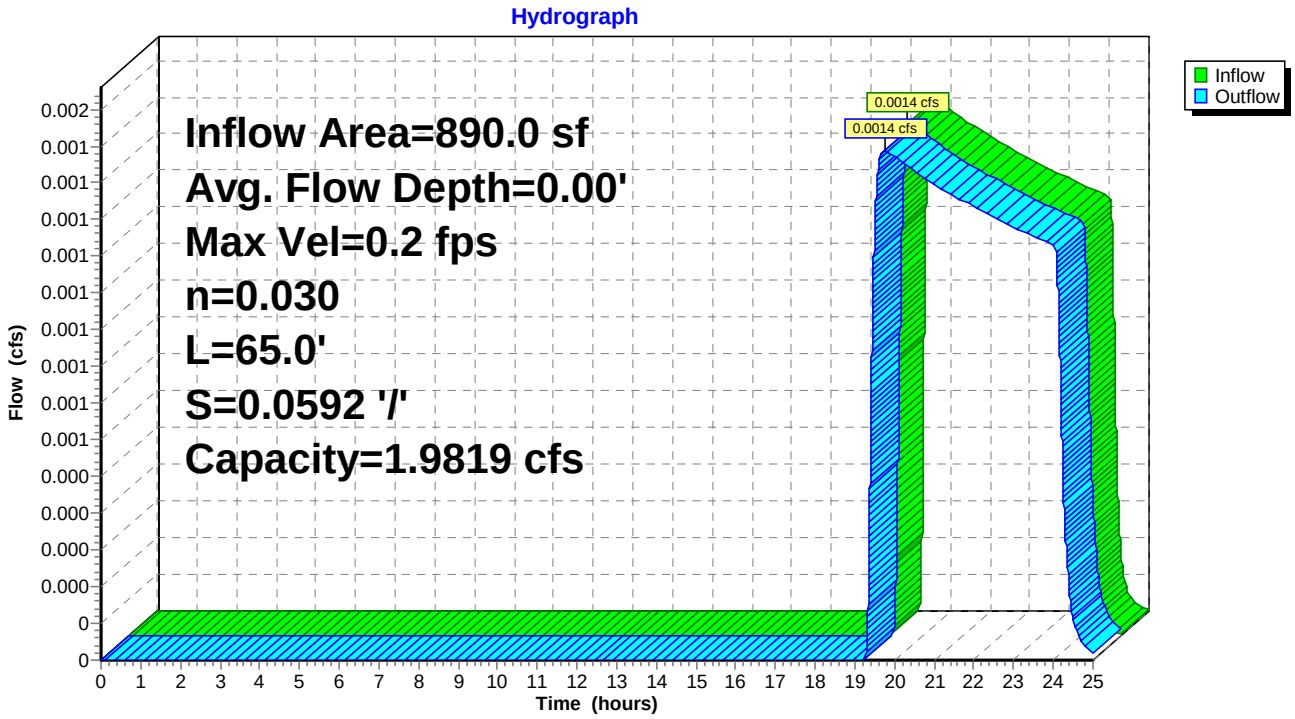
Reach O1b: Overland Flow #1b



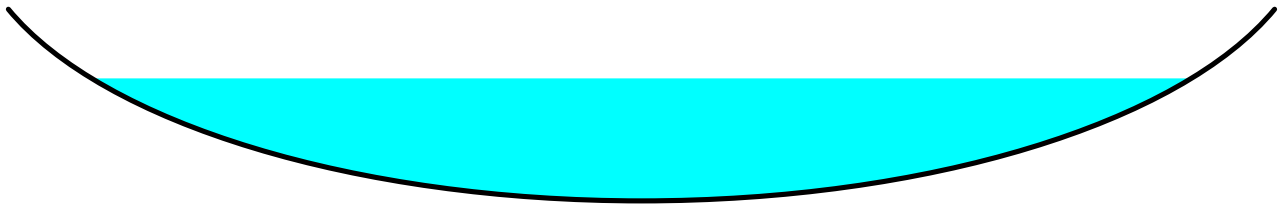
Summary for Reach O2: OverInd Flow #2

Inflow Area = 42,340.0 sf, 5.42% Impervious, Inflow Depth = 3.62" for 100-yr event
Inflow = 2.8912 cfs @ 12.10 hrs, Volume= 12,768.5 cf
Outflow = 2.8889 cfs @ 12.10 hrs, Volume= 12,768.5 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 1.3 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.5 fps, Avg. Travel Time= 0.6 min

Peak Storage= 45.7 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 0.20' Flow Area= 4.3 sf, Capacity= 7.6508 cfs

32.00' x 0.20' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 21.0' Slope= 0.0262 '/'
Inlet Invert= 212.35', Outlet Invert= 211.80'



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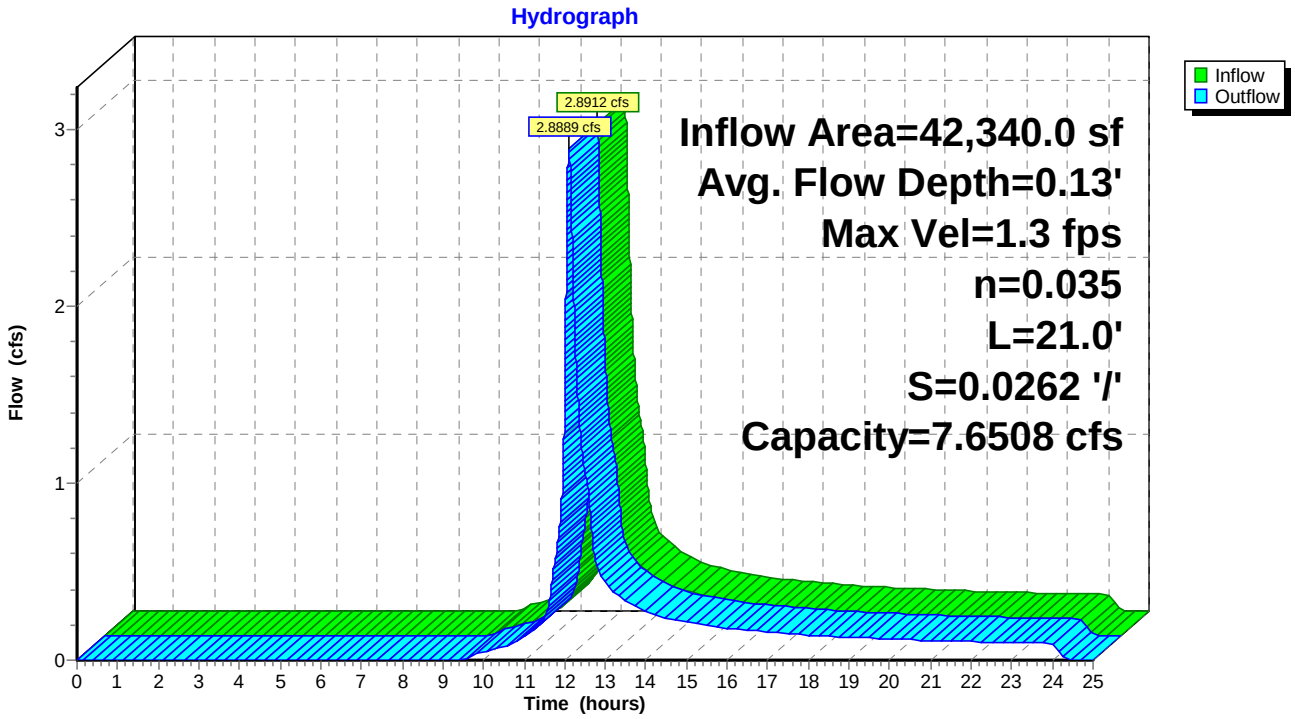
Reach O2: OverInd Flow #2



Summary for Pond LP1a: Low Point #1a

Inflow Area = 275.0 sf, 20.00% Impervious, Inflow Depth = 1.99" for 100-yr event
Inflow = 0.0133 cfs @ 12.00 hrs, Volume= 45.7 cf
Outflow = 0.0016 cfs @ 13.01 hrs, Volume= 28.4 cf, Atten= 88%, Lag= 60.3 min
Primary = 0.0016 cfs @ 13.01 hrs, Volume= 28.4 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 219.50' @ 13.01 hrs Surf.Area= 176.3 sf Storage= 17.5 cf

Plug-Flow detention time= 268.0 min calculated for 28.4 cf (62% of inflow)
Center-of-Mass det. time= 120.4 min (1,042.2 - 921.8)

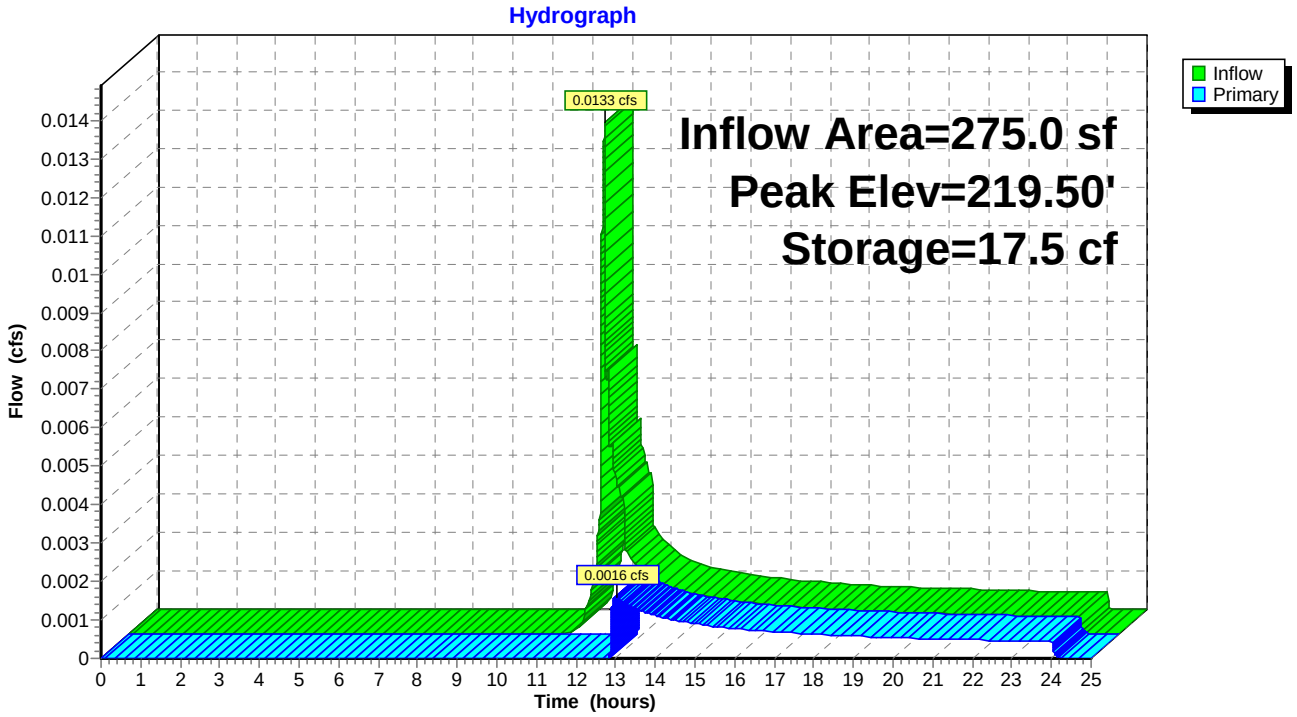
Volume	Invert	Avail.Storage	Storage Description
#1	219.30'	57.0 cf	**Low Point #1a (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
219.30	0.0	0.0	0.0	0.0	0.0
219.40	104.0	50.0	3.5	3.5	199.0
219.50	176.0	62.0	13.8	17.3	306.1
219.60	200.0	68.0	18.8	36.1	368.5
219.70	219.0	75.0	20.9	57.0	448.4

Device	Routing	Invert	Outlet Devices
#1	Primary	219.50'	**LP#1a Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.20 Width (feet) 10.00 35.00

Primary OutFlow Max=0.0016 cfs @ 13.01 hrs HW=219.50' TW=219.45' (Dynamic Tailwater)
└─**1=LP#1a Weir** (Weir Controls 0.0016 cfs @ 0.1 fps)

Pond LP1a: Low Point #1a



Summary for Pond LP1b: Low Point #1b

Inflow Area = 890.0 sf, 10.67% Impervious, Inflow Depth = 1.31" for 100-yr event
Inflow = 0.0155 cfs @ 12.07 hrs, Volume= 97.3 cf
Outflow = 0.0014 cfs @ 19.62 hrs, Volume= 21.9 cf, Atten= 91%, Lag= 453.4 min
Primary = 0.0014 cfs @ 19.62 hrs, Volume= 21.9 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 219.60' @ 19.62 hrs Surf.Area= 473.4 sf Storage= 75.8 cf

Plug-Flow detention time= 567.4 min calculated for 21.9 cf (23% of inflow)
Center-of-Mass det. time= 340.8 min (1,300.4 - 959.6)

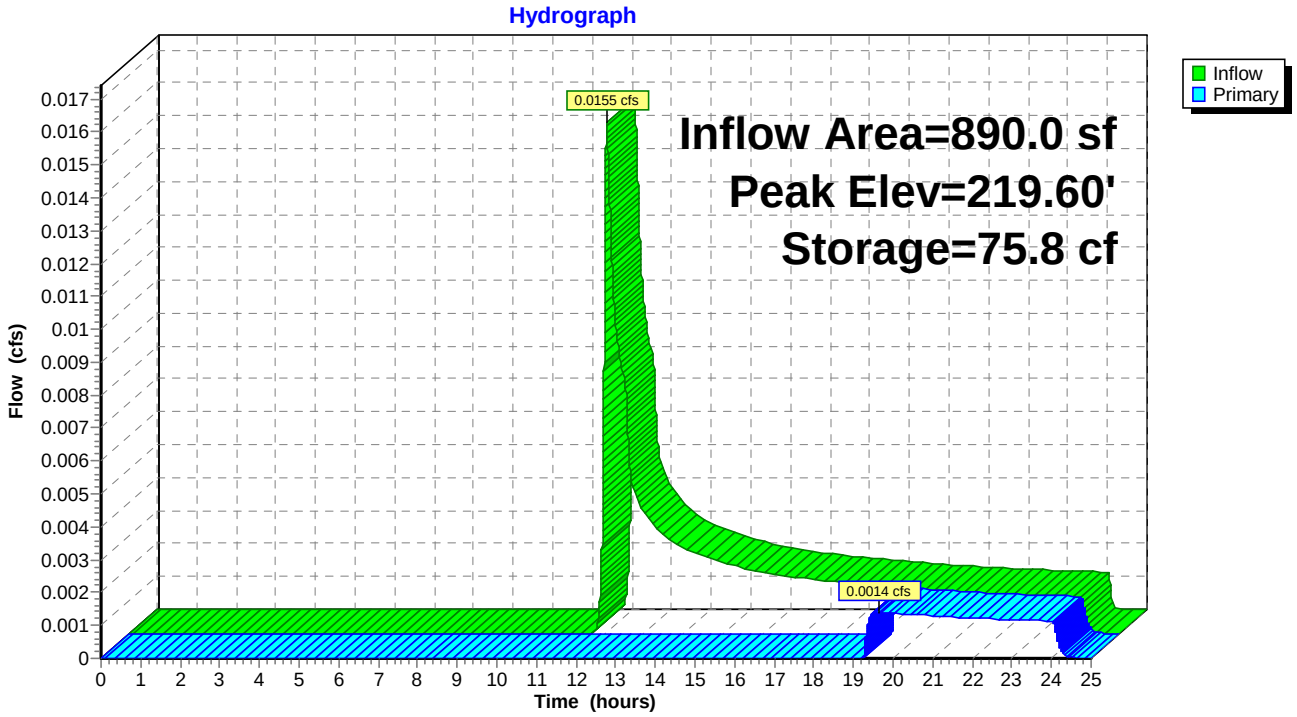
Volume	Invert	Avail.Storage	Storage Description
#1	219.20'	270.8 cf	**Low Point #1b (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
219.20	0.0	0.0	0.0	0.0	0.0
219.30	74.0	52.0	2.5	2.5	215.2
219.40	161.0	86.0	11.5	13.9	588.6
219.50	305.0	122.0	22.9	36.9	1,184.6
219.60	472.0	151.0	38.5	75.4	1,814.8
219.70	632.0	180.0	55.0	130.4	2,578.8
219.80	708.0	192.0	67.0	197.4	2,934.5
219.90	761.0	204.0	73.4	270.8	3,313.2

Device	Routing	Invert	Outlet Devices
#1	Primary	219.60'	**LP#1b Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.20 Width (feet) 15.00 48.00

Primary OutFlow Max=0.0014 cfs @ 19.62 hrs HW=219.60' TW=219.55' (Dynamic Tailwater)
└─**1=LP#1b Weir** (Weir Controls 0.0014 cfs @ 0.1 fps)

Pond LP1b: Low Point #1b



Summary for Pond LP2: Low Point #2

Inflow Area =	42,340.0 sf,	5.42% Impervious,	Inflow Depth =	3.64"	for 100-yr event
Inflow =	2.9023 cfs @	12.10 hrs,	Volume=	12,834.7 cf	
Outflow =	2.8912 cfs @	12.10 hrs,	Volume=	12,768.5 cf,	Atten= 0%, Lag= 0.1 min
Primary =	2.8912 cfs @	12.10 hrs,	Volume=	12,768.5 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 212.51' @ 12.10 hrs Surf.Area= 1,005.9 sf Storage= 162.6 cf

Plug-Flow detention time= 5.5 min calculated for 12,768.0 cf (99% of inflow)
Center-of-Mass det. time= 2.6 min (884.8 - 882.2)

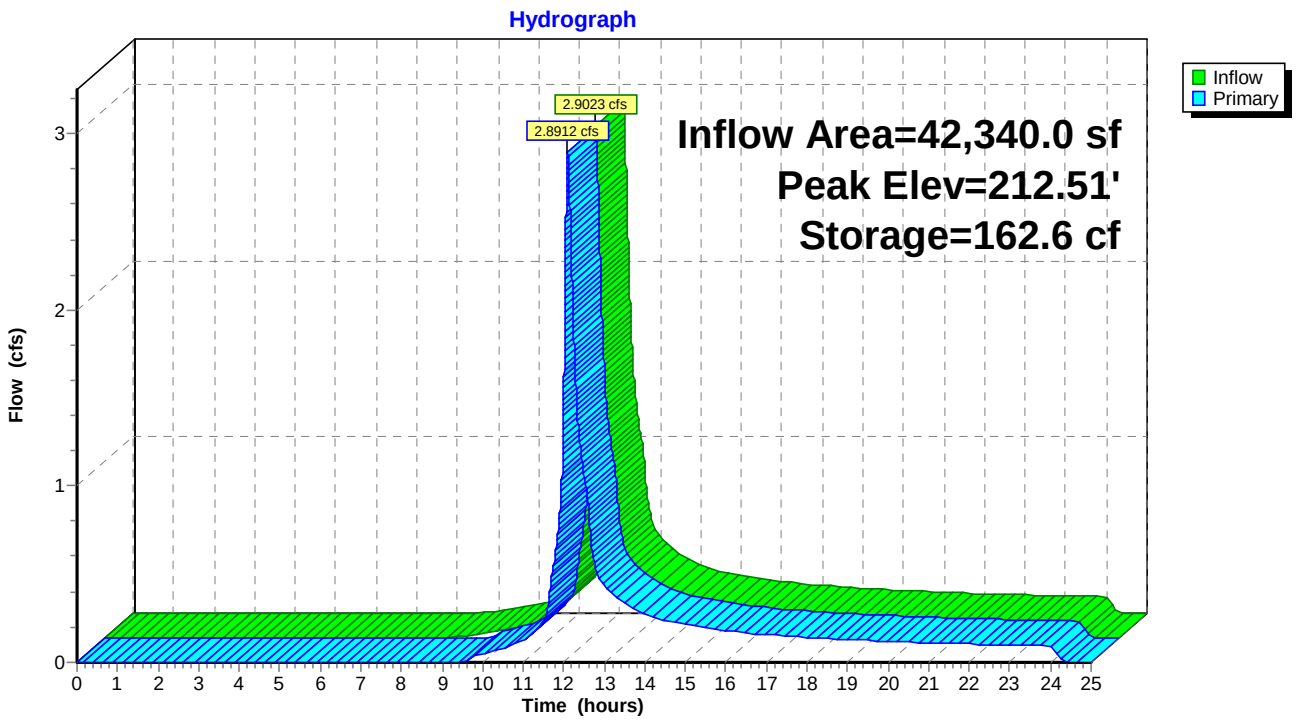
Volume	Invert	Avail.Storage	Storage Description
#1	212.20'	1,293.1 cf	**Low Point #2 (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
212.20	44.0	28.0	0.0	0.0	44.0
212.40	765.0	155.0	66.2	66.2	1,893.6
212.60	1,231.0	170.0	197.8	263.9	2,282.8
212.80	2,414.0	308.0	357.9	621.8	7,532.3
213.00	4,397.0	423.0	671.3	1,293.1	14,222.4

Device	Routing	Invert	Outlet Devices
#1	Primary	212.40'	**LP#1b Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.20 Width (feet) 32.00 38.00

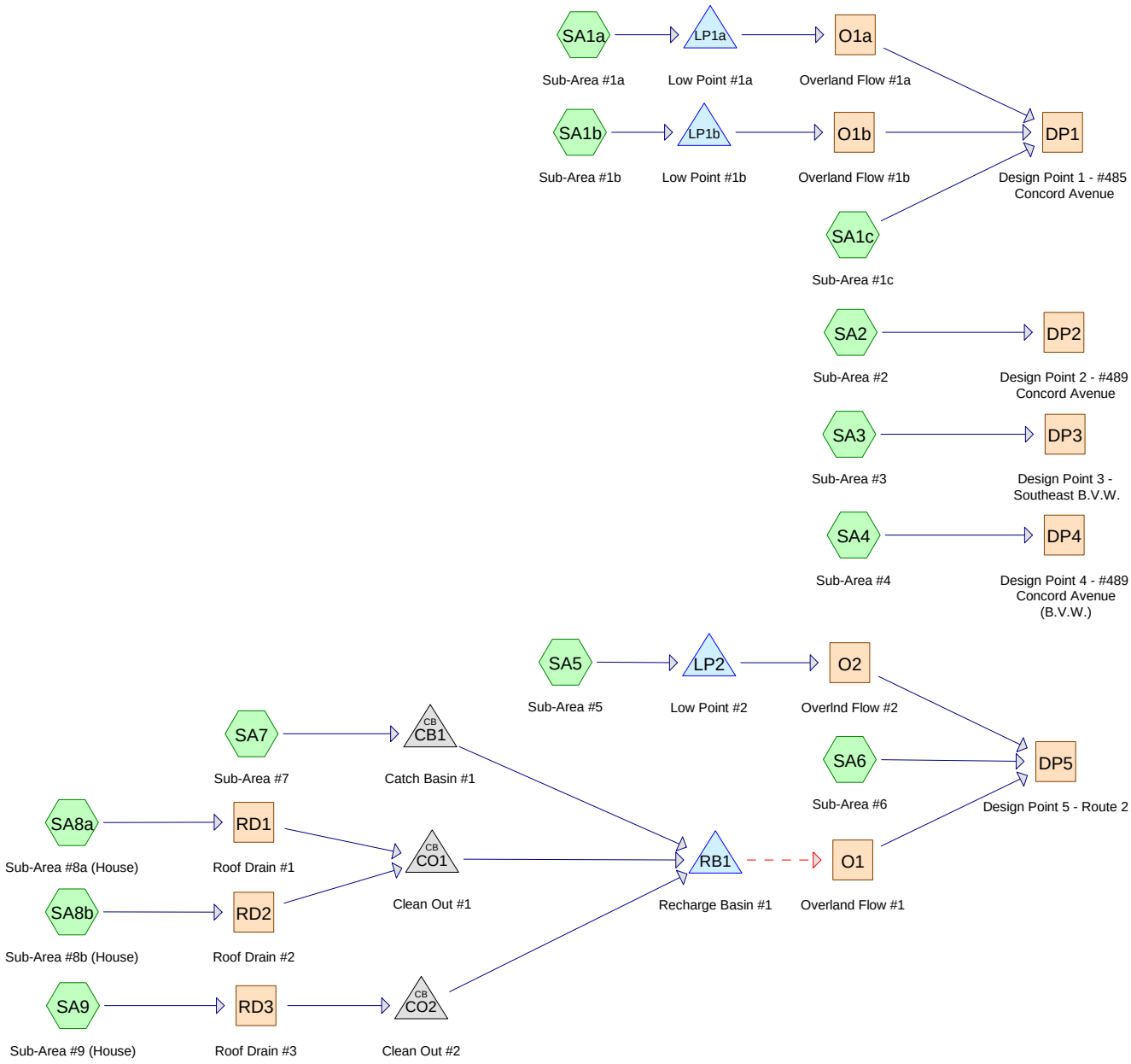
Primary OutFlow Max=2.8900 cfs @ 12.10 hrs HW=212.51' TW=212.48' (Dynamic Tailwater)
└─**1=LP#1b Weir** (Weir Controls 2.8900 cfs @ 0.8 fps)

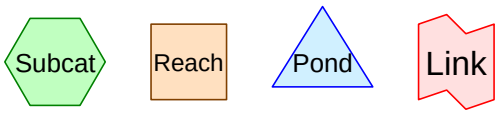
Pond LP2: Low Point #2



E. Proposed Conditions HydroCAD Printouts

2 Year Storm Event
10 Year Storm Event
25 Year Storm Event
100 Year Storm Event





Routing Diagram for #2764 - Atlas - DSN5
Prepared by The Jillson Company, Inc.
HydroCAD® 10.00-22 s/n 01414 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
24,760.0	39.0	>75% Grass cover, Good, HSG A (SA1c, SA2, SA3, SA5, SA6, SA7)
14,215.0	80.0	>75% Grass cover, Good, HSG D (SA3, SA5, SA6, SA7)
7,140.0	98.0	Impervious (SA1a, SA1b, SA1c, SA2, SA3, SA5, SA7, SA8a, SA8b, SA9)
15,175.0	39.0	Porous Asphalt/Grass Pavers (SA1c, SA2, SA3, SA5, SA7)
33,435.0	30.0	Woods/Landscape, Good, HSG A (SA1a, SA1b, SA1c, SA2, SA3, SA5, SA6)
19,330.0	77.0	Woods/Landscape, Good, HSG D (SA3, SA4, SA5, SA6)
114,055.0	**51.6**	**TOTAL AREA**

Summary for Subcatchment SA1a: Sub-Area #1a

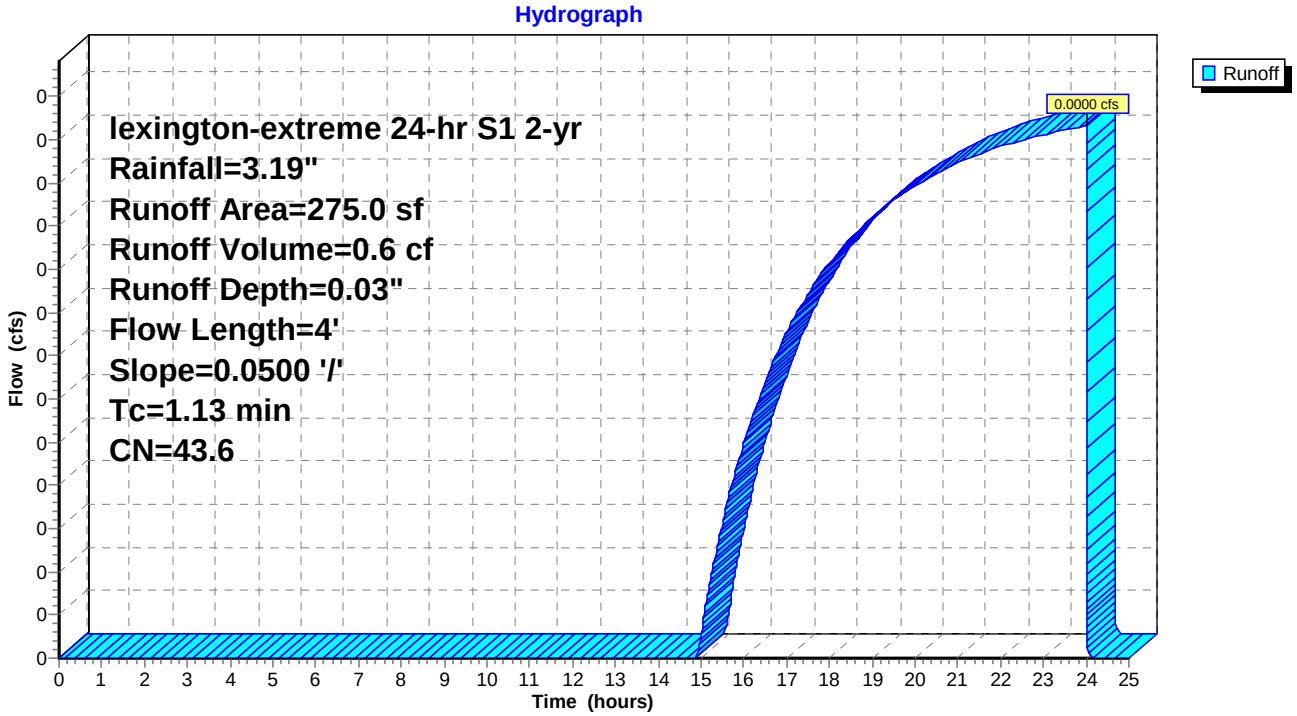
Runoff = 0.0000 cfs @ 24.00 hrs, Volume= 0.6 cf, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 2-yr Rainfall=3.19"

	Area (sf)	CN	Description
*	55.0	98.0	Impervious
*	220.0	30.0	Woods/Landscape, Good, HSG A
	275.0	43.6	Weighted Average
	220.0		80.00% Pervious Area
	55.0		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.13	4	0.0500	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment SA1a: Sub-Area #1a



Summary for Subcatchment SA1b: Sub-Area #1b

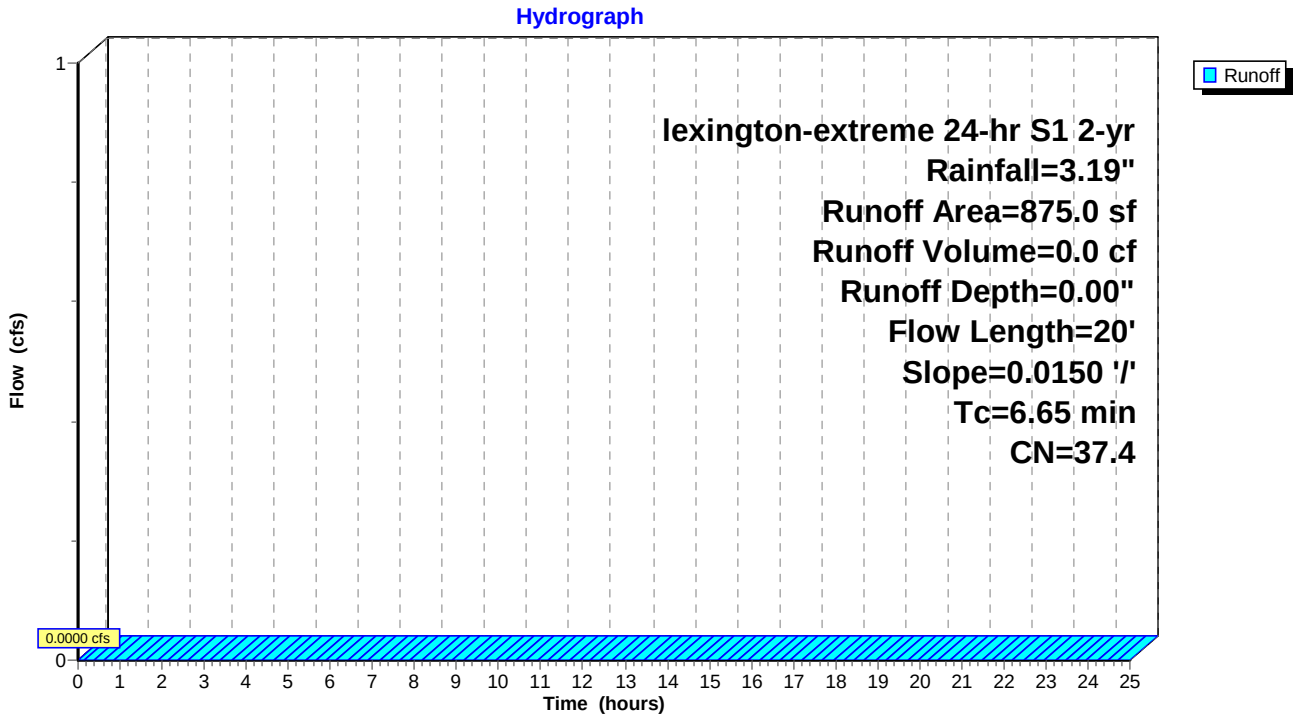
Runoff = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 2-yr Rainfall=3.19"

	Area (sf)	CN	Description
*	95.0	98.0	Impervious
*	780.0	30.0	Woods/Landscape, Good, HSG A
	875.0	37.4	Weighted Average
	780.0		89.14% Pervious Area
	95.0		10.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.65	20	0.0150	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment SA1b: Sub-Area #1b



Summary for Subcatchment SA1c: Sub-Area #1c

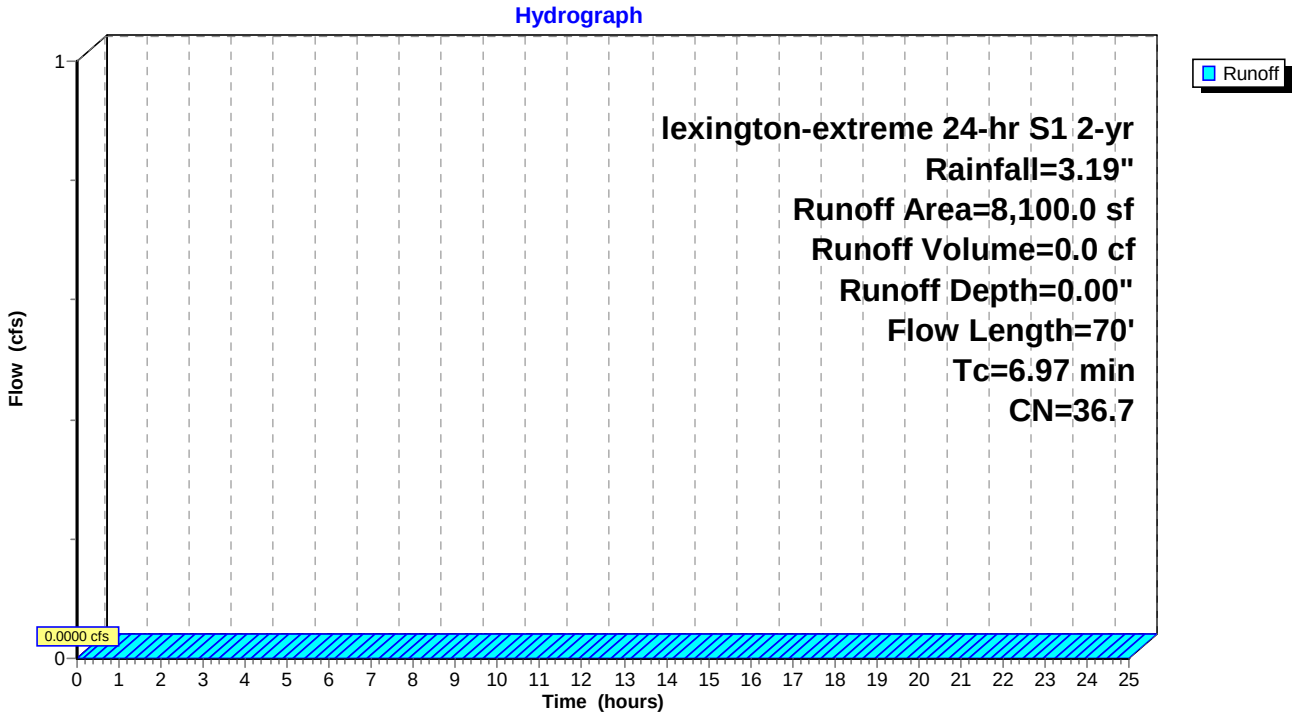
Runoff = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 2-yr Rainfall=3.19"

	Area (sf)	CN	Description
*	230.0	98.0	Impervious
*	3,280.0	39.0	Porous Asphalt/Grass Pavers
	1,000.0	39.0	>75% Grass cover, Good, HSG A
*	3,590.0	30.0	Woods/Landscape, Good, HSG A
	8,100.0	36.7	Weighted Average
	7,870.0		97.16% Pervious Area
	230.0		2.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.93	7	0.0143	0.0		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.38	20	0.0150	0.9		**Sheet Flow, Segment 2 - Porous Asphalt** Smooth surfaces n= 0.011 P2= 3.20"
0.51	5	0.0800	0.2		**Sheet Flow, Segment 3 - Lawn** Grass: Short n= 0.150 P2= 3.20"
2.38	16	0.1250	0.1		**Sheet Flow, Segment 4 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.77	22	0.0091	0.5		**Shallow Concentrated Flow, Segment 5 - Woods** Woodland Kv= 5.00 fps
6.97	70	Total			

Subcatchment SA1c: Sub-Area #1c



Summary for Subcatchment SA2: Sub-Area #2

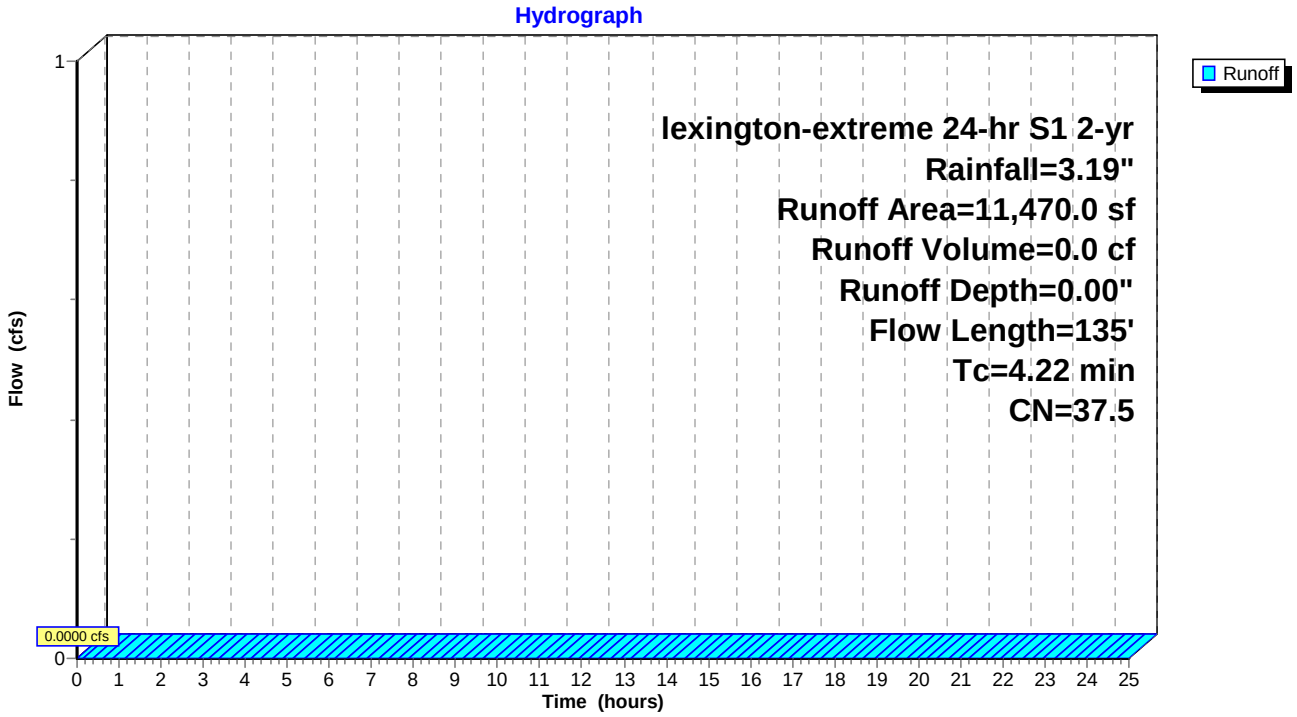
Runoff = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 2-yr Rainfall=3.19"

	Area (sf)	CN	Description
*	510.0	98.0	Impervious
*	4,225.0	39.0	Porous Asphalt/Grass Pavers
	1,425.0	39.0	>75% Grass cover, Good, HSG A
*	5,310.0	30.0	Woods/Landscape, Good, HSG A
	11,470.0	37.5	Weighted Average
	10,960.0		95.55% Pervious Area
	510.0		4.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.89	11	0.0364	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.60	39	0.0179	1.1		**Sheet Flow, Segment 2 - Porous Asphalt** Smooth surfaces n= 0.011 P2= 3.20"
0.20	31	0.0161	2.6		**Shallow Concentrated Flow, Segment 3 - Porous Asphalt** Paved Kv= 20.30 fps
0.25	19	0.0316	1.2		**Shallow Concentrated Flow, Segment 4 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.08	7	0.0857	1.5		**Shallow Concentrated Flow, Segment 5 - Woods** Woodland Kv= 5.00 fps
0.06	13	0.0538	3.7		**Shallow Concentrated Flow, Segment 6 - Gravel** Unpaved Kv= 16.10 fps
0.14	15	0.1267	1.8		**Shallow Concentrated Flow, Segment 7 - Woods** Woodland Kv= 5.00 fps
4.22	135	Total			

Subcatchment SA2: Sub-Area #2



Summary for Subcatchment SA3: Sub-Area #3

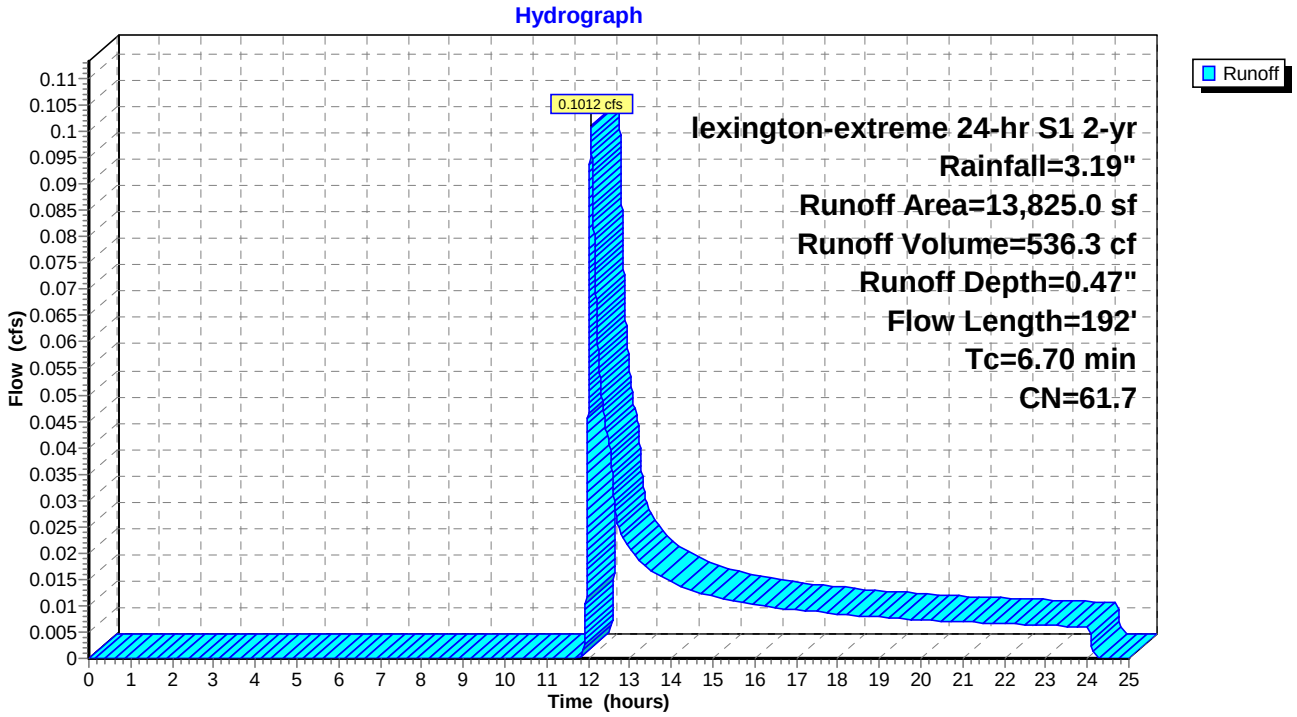
Runoff = 0.1012 cfs @ 12.07 hrs, Volume= 536.3 cf, Depth= 0.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 2-yr Rainfall=3.19"

	Area (sf)	CN	Description
*	180.0	98.0	Impervious
	2,015.0	80.0	>75% Grass cover, Good, HSG D
*	5,965.0	77.0	Woods/Landscape, Good, HSG D
*	915.0	39.0	Porous Asphalt/Grass Pavers
	4,095.0	39.0	>75% Grass cover, Good, HSG A
*	655.0	30.0	Woods/Landscape, Good, HSG A
	13,825.0	61.7	Weighted Average
	13,645.0		98.70% Pervious Area
	180.0		1.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.03	15	0.0600	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.42	19	0.0105	0.8		**Sheet Flow, Segment 2 - Porous Asphalt** Smooth surfaces n= 0.011 P2= 3.20"
1.76	16	0.0375	0.2		**Sheet Flow, Segment 3 - Lawn** Grass: Short n= 0.150 P2= 3.20"
1.04	100	0.0520	1.6		**Shallow Concentrated Flow, Segment 4 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.45	42	0.0976	1.6		**Shallow Concentrated Flow, Segment 5 - Woods** Woodland Kv= 5.00 fps
6.70	192	Total			

Subcatchment SA3: Sub-Area #3



Summary for Subcatchment SA4: Sub-Area #4

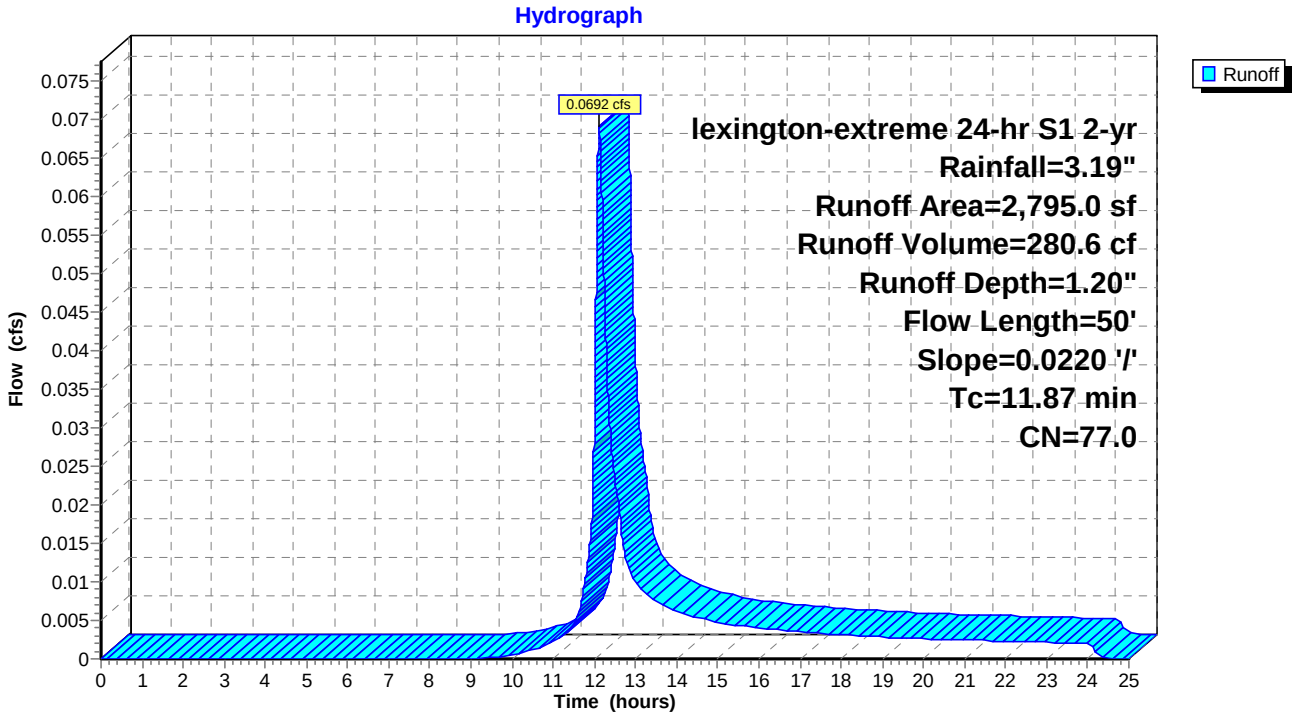
Runoff = 0.0692 cfs @ 12.12 hrs, Volume= 280.6 cf, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 2-yr Rainfall=3.19"

	Area (sf)	CN	Description
*	2,795.0	77.0	Woods/Landscape, Good, HSG D
	2,795.0		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.87	50	0.0220	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment SA4: Sub-Area #4



Summary for Subcatchment SA5: Sub-Area #5

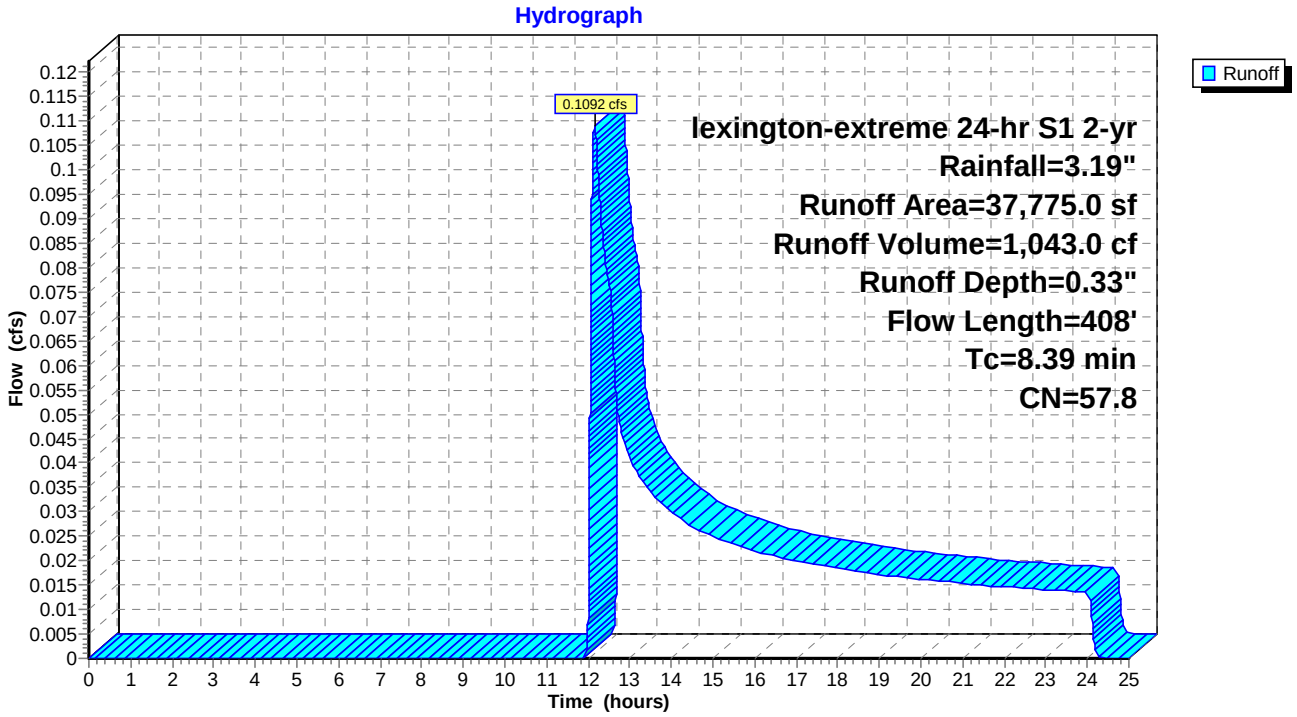
Runoff = 0.1092 cfs @ 12.16 hrs, Volume= 1,043.0 cf, Depth= 0.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 2-yr Rainfall=3.19"

	Area (sf)	CN	Description
*	1,520.0	98.0	Impervious
	12,120.0	80.0	>75% Grass cover, Good, HSG D
*	5,145.0	77.0	Woods/Landscape, Good, HSG D
*	3,030.0	39.0	Porous Asphalt/Grass Pavers
	8,060.0	39.0	>75% Grass cover, Good, HSG A
*	7,900.0	30.0	Woods/Landscape, Good, HSG A
	37,775.0	57.8	Weighted Average
	36,255.0		95.98% Pervious Area
	1,520.0		4.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.98	50	0.3380	0.2		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.60	57	0.1018	1.6		**Shallow Concentrated Flow, Segment 2 - Woods** Woodland Kv= 5.00 fps
0.08	6	0.0333	1.3		**Shallow Concentrated Flow, Segment 3 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.43	73	0.0190	2.8		**Shallow Concentrated Flow, Segment 4 - Porous Asphalt** Paved Kv= 20.30 fps
1.33	121	0.0471	1.5		**Shallow Concentrated Flow, Segment 5 - Lawn** Short Grass Pasture Kv= 7.00 fps
1.97	101	0.0149	0.9		**Shallow Concentrated Flow, Segment 6 - Grass Swale** Short Grass Pasture Kv= 7.00 fps
8.39	408	Total			

Subcatchment SA5: Sub-Area #5



Summary for Subcatchment SA6: Sub-Area #6

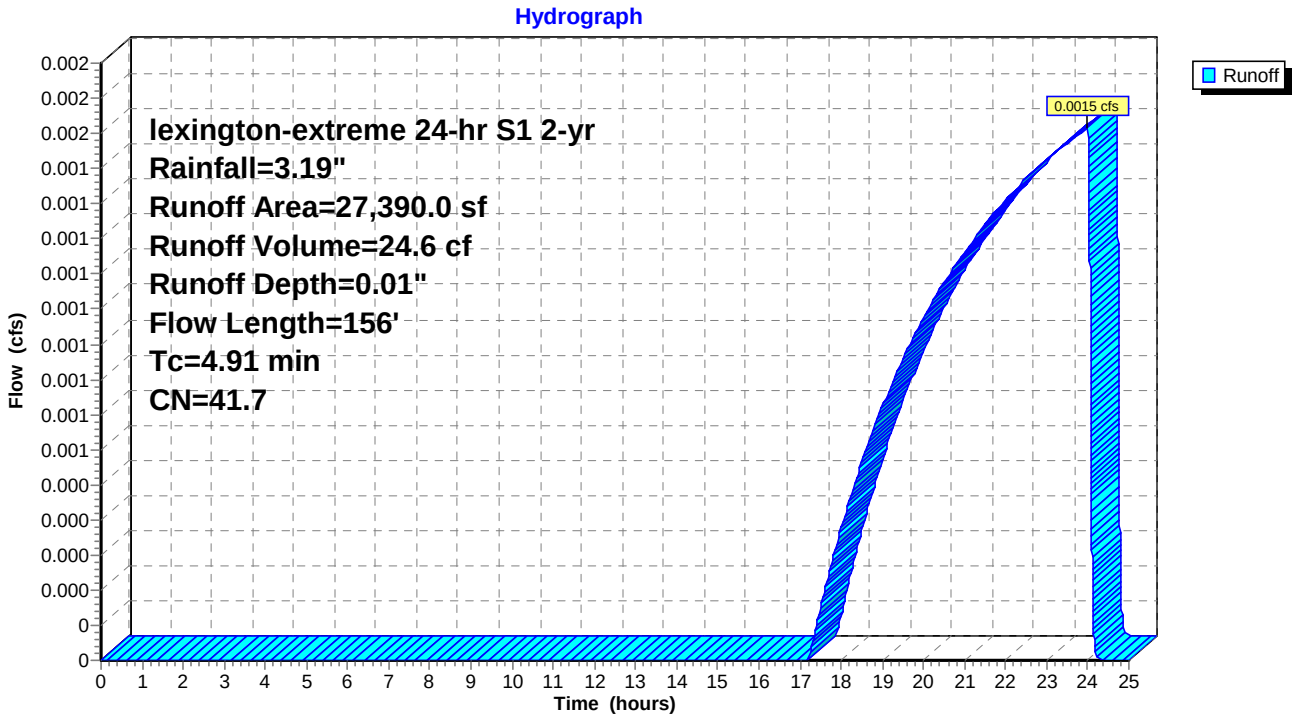
Runoff = 0.0015 cfs @ 24.00 hrs, Volume= 24.6 cf, Depth= 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 2-yr Rainfall=3.19"

	Area (sf)	CN	Description
	70.0	80.0	>75% Grass cover, Good, HSG D
*	5,425.0	77.0	Woods/Landscape, Good, HSG D
	6,915.0	39.0	>75% Grass cover, Good, HSG A
*	14,980.0	30.0	Woods/Landscape, Good, HSG A
	27,390.0	41.7	Weighted Average
	27,390.0		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.66	50	0.4180	0.2		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
1.25	106	0.0793	1.4		**Shallow Concentrated Flow, Segment 2 - Woods** Woodland Kv= 5.00 fps
4.91	156	Total			

Subcatchment SA6: Sub-Area #6



Summary for Subcatchment SA7: Sub-Area #7

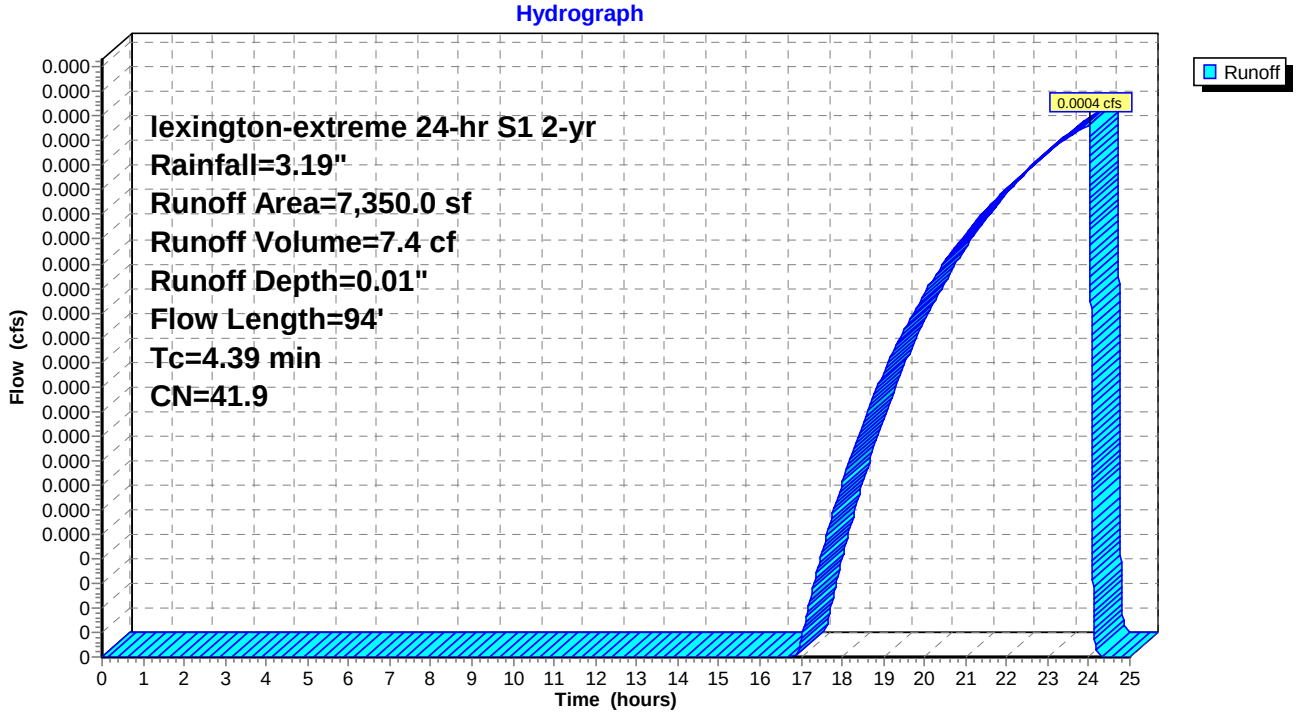
Runoff = 0.0004 cfs @ 24.00 hrs, Volume= 7.4 cf, Depth= 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 2-yr Rainfall=3.19"

	Area (sf)	CN	Description
*	350.0	98.0	Impervious
	10.0	80.0	>75% Grass cover, Good, HSG D
*	3,725.0	39.0	Porous Asphalt/Grass Pavers
	3,265.0	39.0	>75% Grass cover, Good, HSG A
	7,350.0	41.9	Weighted Average
	7,000.0		95.24% Pervious Area
	350.0		4.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.06	48	0.0417	0.2		**Sheet Flow, Segment 1 - Lawn** Grass: Short n= 0.150 P2= 3.20"
0.33	46	0.0130	2.3		**Shallow Concentrated Flow, Segment 2 - Porous Asphalt** Paved Kv= 20.30 fps
4.39	94	Total			

Subcatchment SA7: Sub-Area #7



Summary for Subcatchment SA8a: Sub-Area #8a (House)

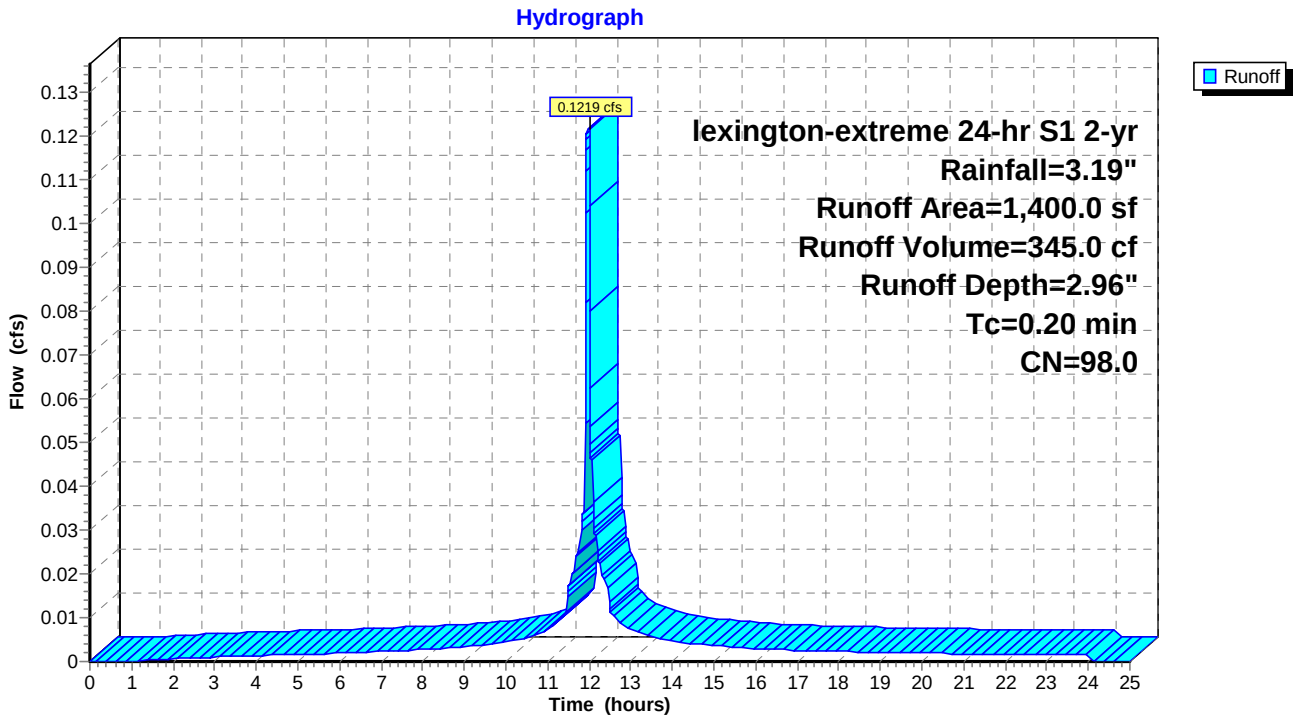
Runoff = 0.1219 cfs @ 12.00 hrs, Volume= 345.0 cf, Depth= 2.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 2-yr Rainfall=3.19"

	Area (sf)	CN	Description
*	1,400.0	98.0	Impervious
	1,400.0		100.00% Impervious Area

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

Subcatchment SA8a: Sub-Area #8a (House)



Summary for Subcatchment SA8b: Sub-Area #8b (House)

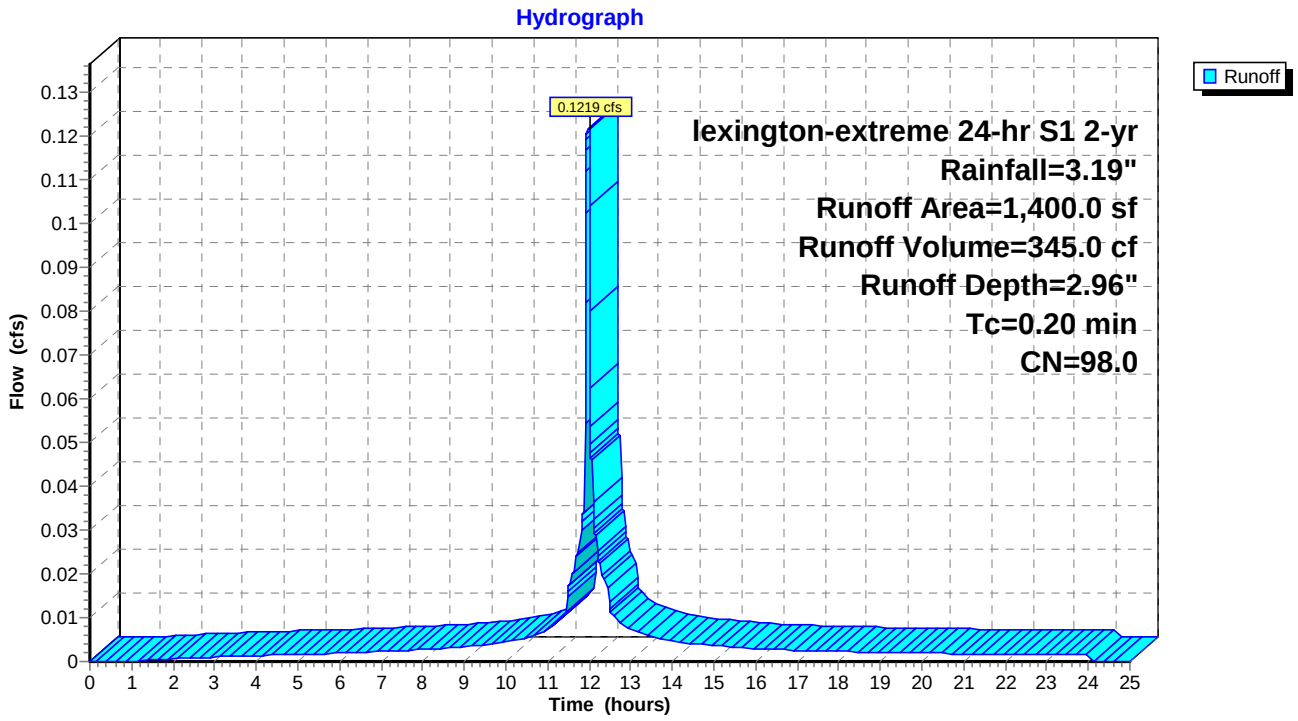
Runoff = 0.1219 cfs @ 12.00 hrs, Volume= 345.0 cf, Depth= 2.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 2-yr Rainfall=3.19"

	Area (sf)	CN	Description
*	1,400.0	98.0	Impervious
	1,400.0		100.00% Impervious Area

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

Subcatchment SA8b: Sub-Area #8b (House)



Summary for Subcatchment SA9: Sub-Area #9 (House)

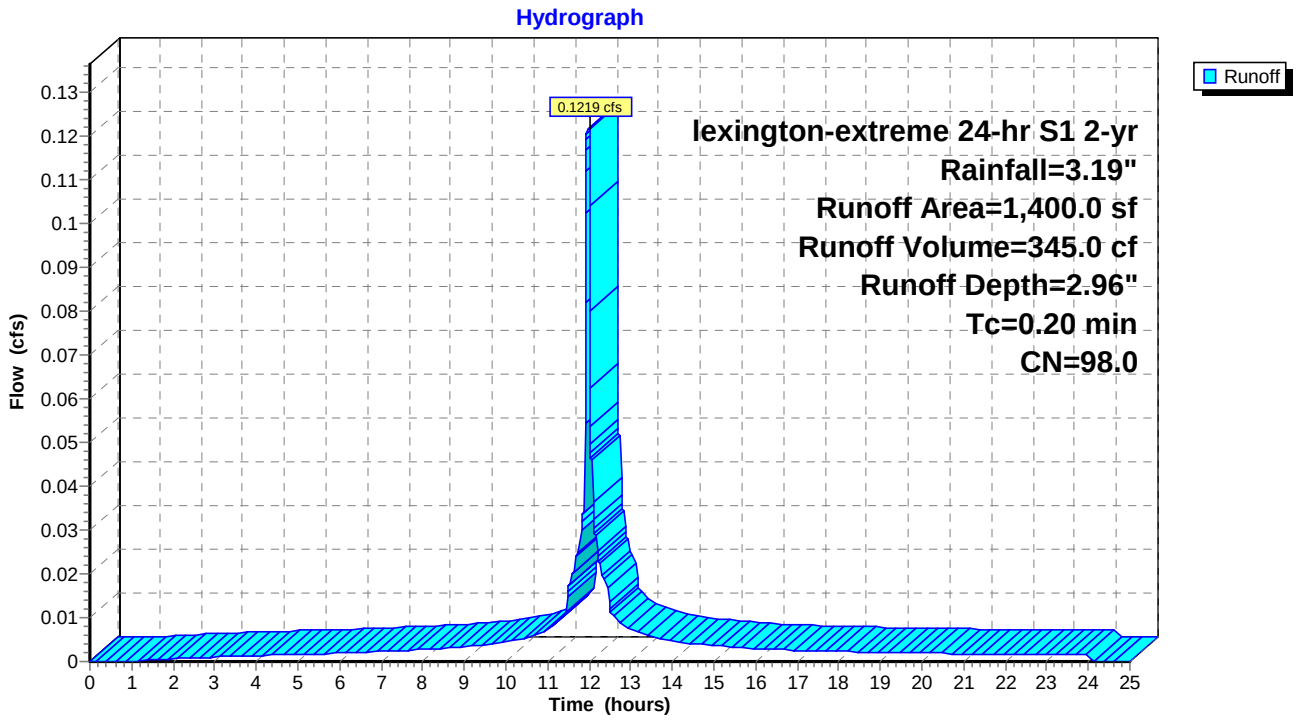
Runoff = 0.1219 cfs @ 12.00 hrs, Volume= 345.0 cf, Depth= 2.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 2-yr Rainfall=3.19"

	Area (sf)	CN	Description
*	1,400.0	98.0	Impervious
	1,400.0		100.00% Impervious Area

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

Subcatchment SA9: Sub-Area #9 (House)

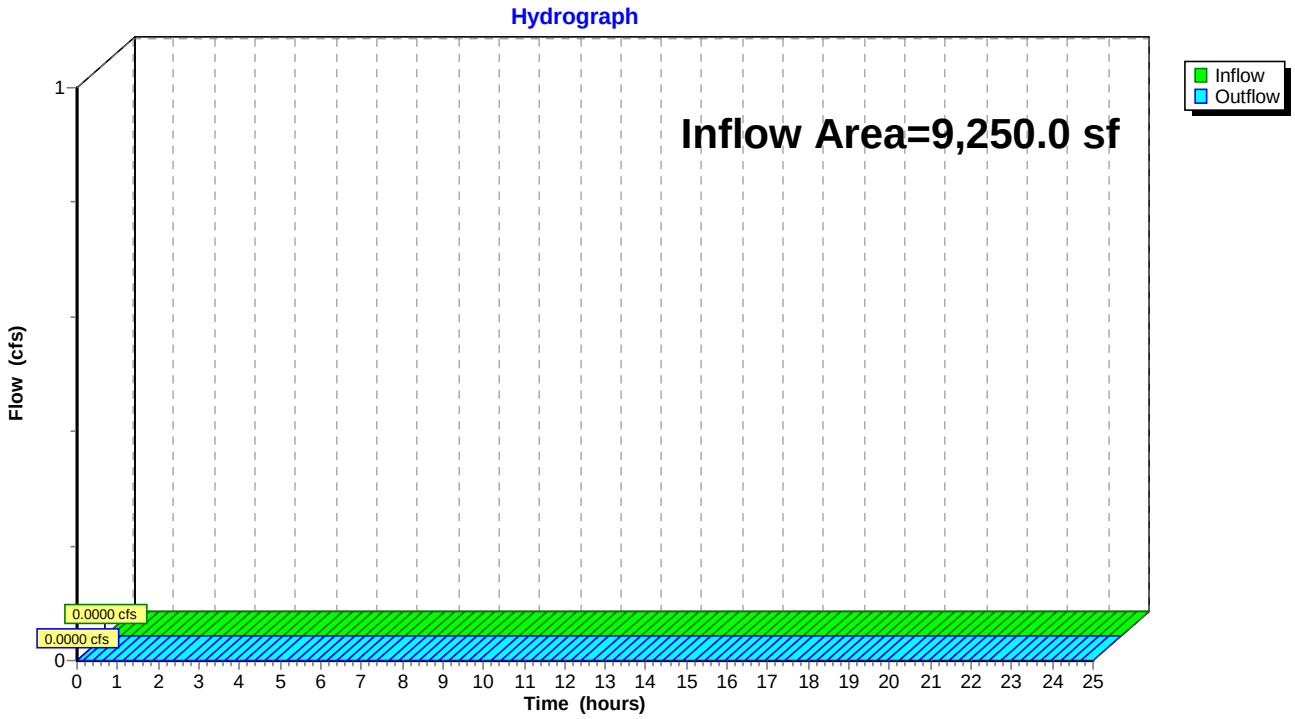


Summary for Reach DP1: Design Point 1 - #485 Concord Avenue

Inflow Area =	9,250.0 sf,	4.11% Impervious,	Inflow Depth =	0.00"	for 2-yr event
Inflow =	0.0000 cfs @	0.00 hrs,	Volume=	0.0 cf	
Outflow =	0.0000 cfs @	0.00 hrs,	Volume=	0.0 cf,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP1: Design Point 1 - #485 Concord Avenue

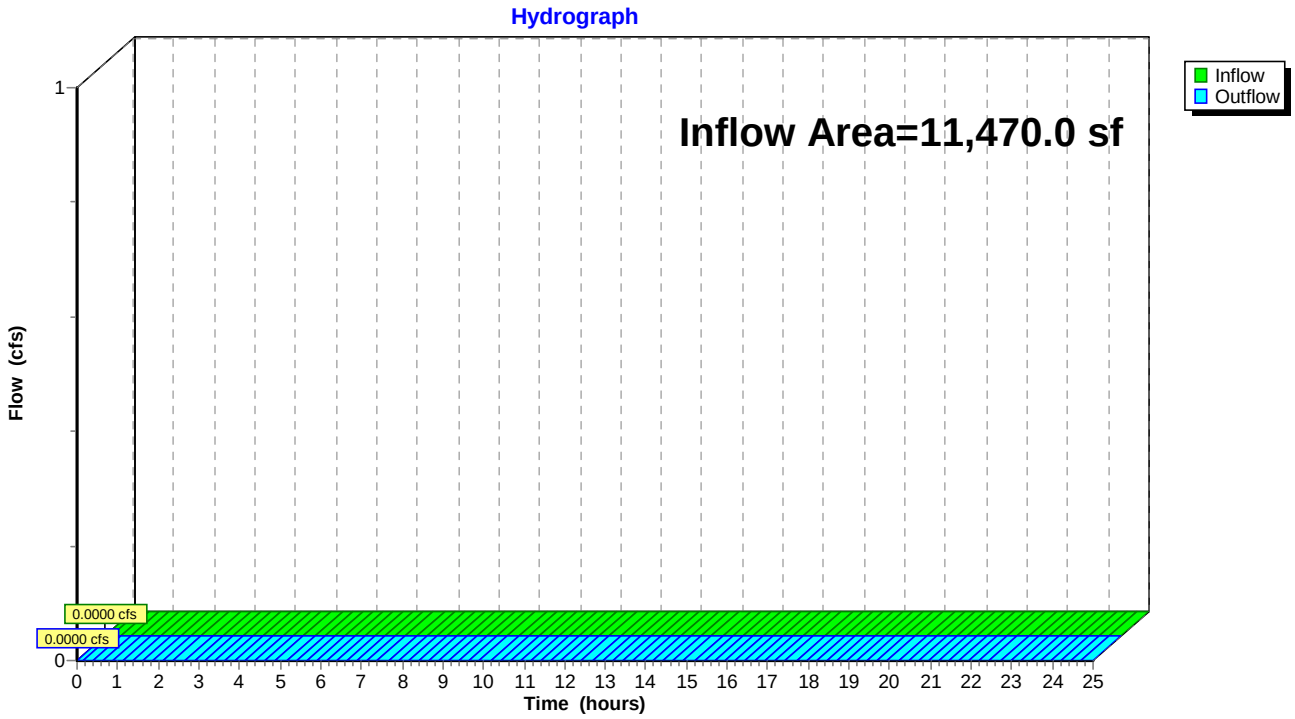


Summary for Reach DP2: Design Point 2 - #489 Concord Avenue

Inflow Area =	11,470.0 sf,	4.45% Impervious,	Inflow Depth =	0.00"	for 2-yr event
Inflow =	0.0000 cfs @	0.00 hrs,	Volume=	0.0 cf	
Outflow =	0.0000 cfs @	0.00 hrs,	Volume=	0.0 cf,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP2: Design Point 2 - #489 Concord Avenue

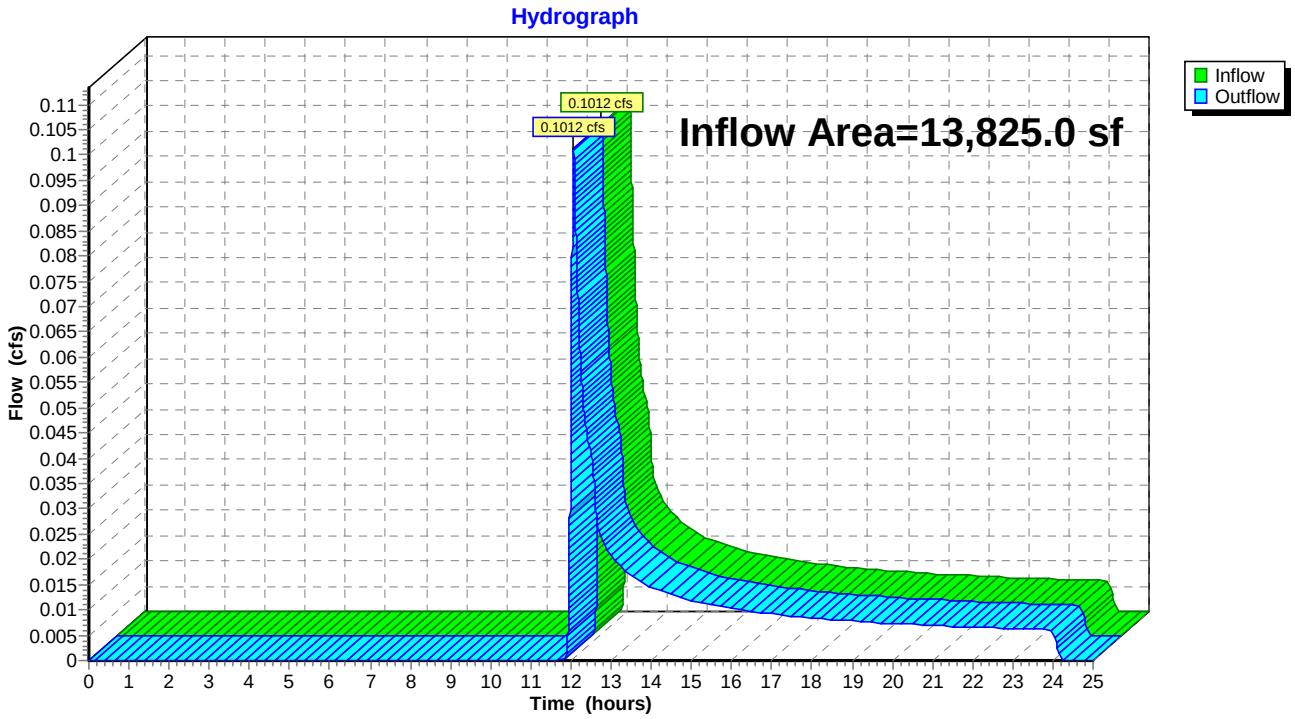


Summary for Reach DP3: Design Point 3 - Southeast B.V.W.

Inflow Area =	13,825.0 sf,	1.30% Impervious,	Inflow Depth =	0.47"	for 2-yr event
Inflow =	0.1012 cfs @	12.07 hrs,	Volume=	536.3 cf	
Outflow =	0.1012 cfs @	12.07 hrs,	Volume=	536.3 cf,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP3: Design Point 3 - Southeast B.V.W.

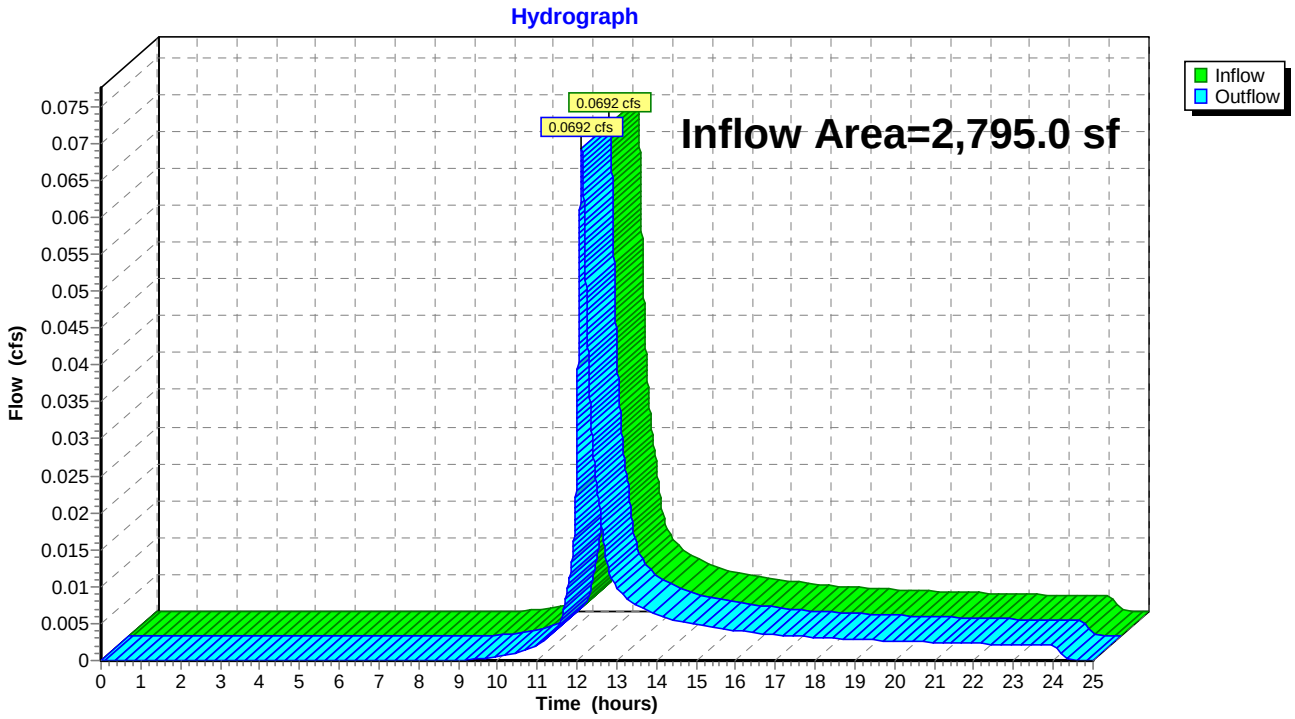


Summary for Reach DP4: Design Point 4 - #489 Concord Avenue (B.V.W.)

Inflow Area =	2,795.0 sf,	0.00% Impervious,	Inflow Depth =	1.20"	for 2-yr event
Inflow =	0.0692 cfs @	12.12 hrs,	Volume=	280.6 cf	
Outflow =	0.0692 cfs @	12.12 hrs,	Volume=	280.6 cf,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP4: Design Point 4 - #489 Concord Avenue (B.V.W.)

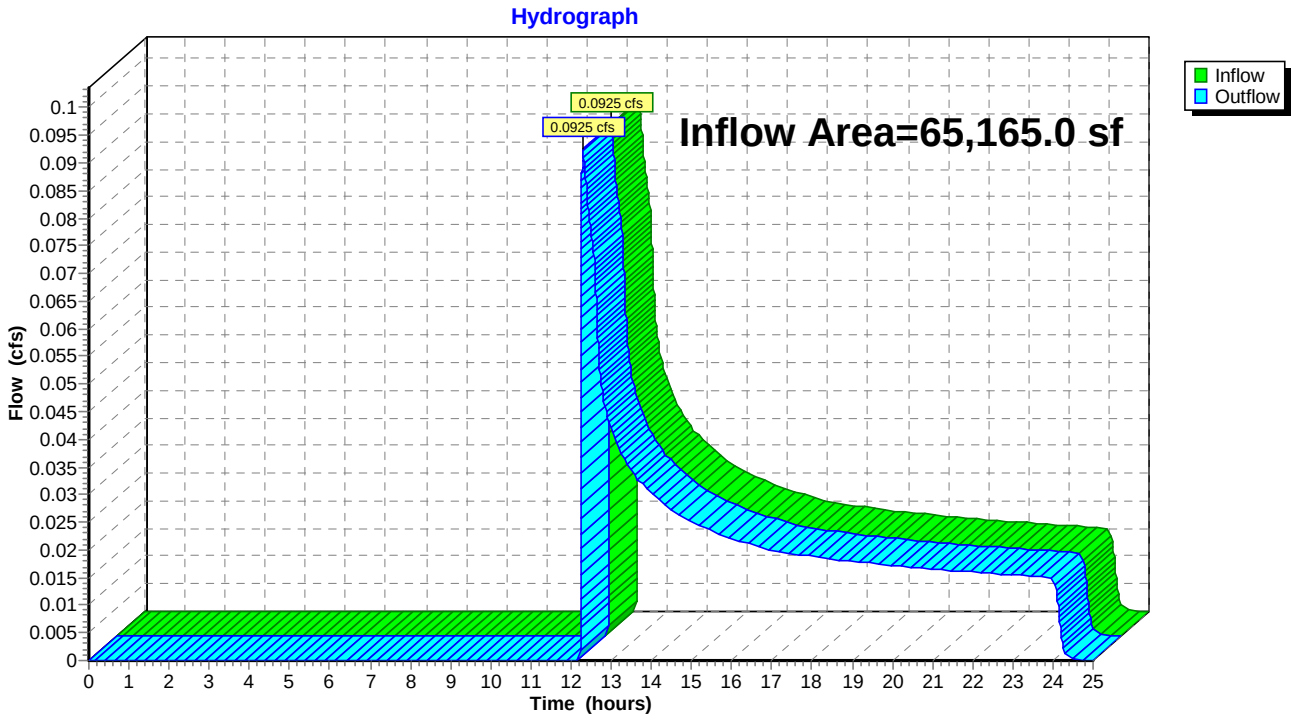


Summary for Reach DP5: Design Point 5 - Route 2

Inflow Area = 65,165.0 sf, 2.33% Impervious, Inflow Depth > 0.18" for 2-yr event
Inflow = 0.0925 cfs @ 12.30 hrs, Volume= 1,001.4 cf
Outflow = 0.0925 cfs @ 12.30 hrs, Volume= 1,001.4 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP5: Design Point 5 - Route 2



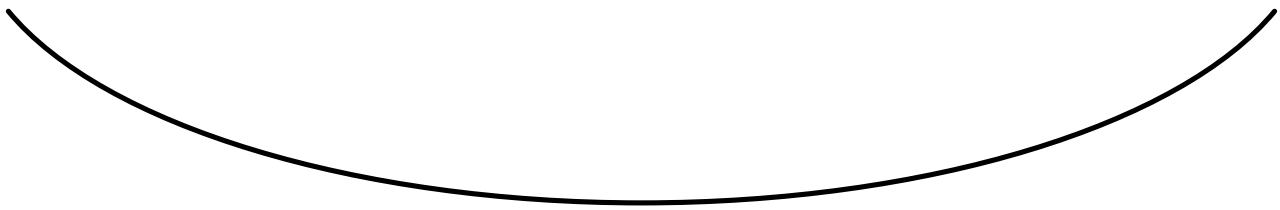
Summary for Reach O1: Overland Flow #1

Inflow	=	0.0000 cfs @	0.00 hrs,	Volume=	0.0 cf
Outflow	=	0.0000 cfs @	0.00 hrs,	Volume=	0.0 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0.0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.20' Flow Area= 0.4 sf, Capacity= 0.9748 cfs

3.00' x 0.20' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 57.0' Slope= 0.0491 '/'
Inlet Invert= 215.10', Outlet Invert= 212.30'



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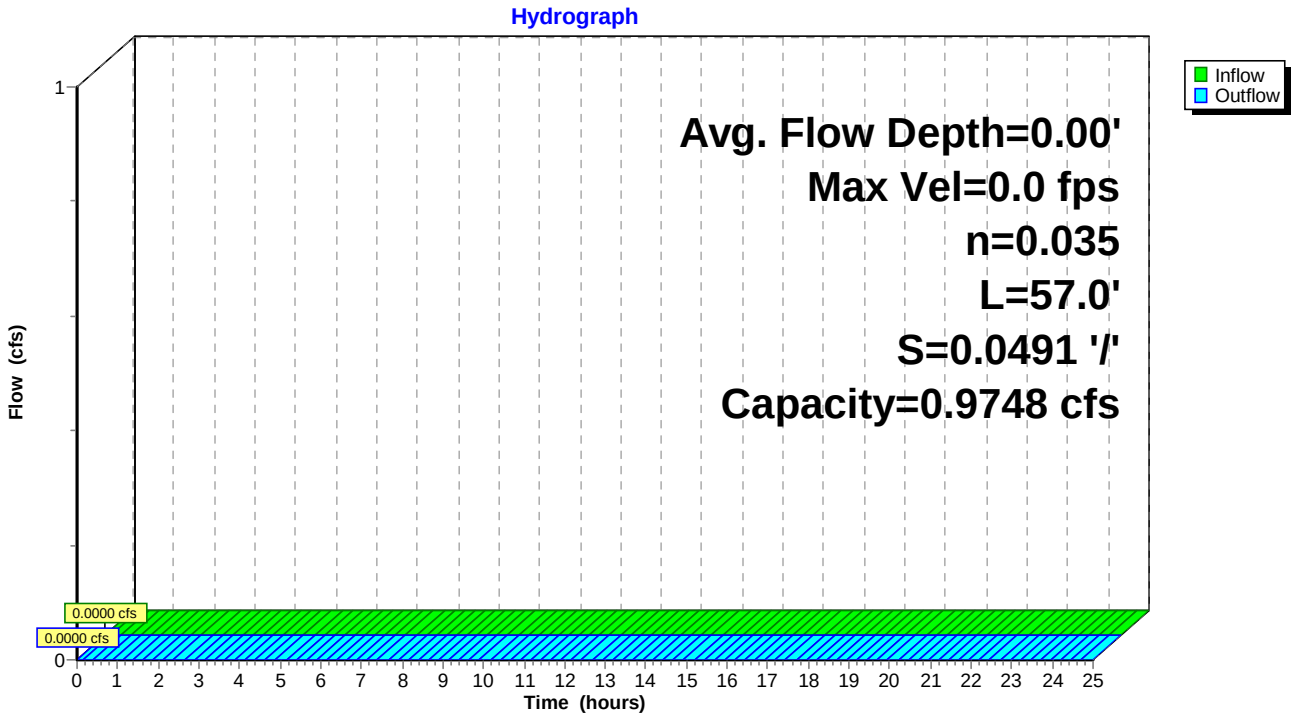
Reach O1: Overland Flow #1



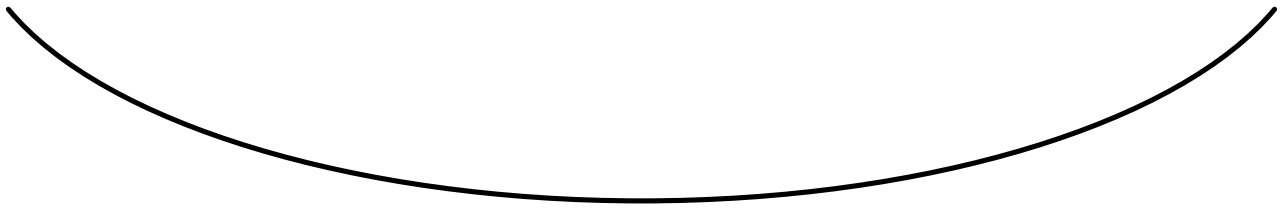
Summary for Reach O1a: Overland Flow #1a

Inflow Area = 275.0 sf, 20.00% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf
Outflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0.0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.10' Flow Area= 0.7 sf, Capacity= 1.4873 cfs

10.00' x 0.10' deep Parabolic Channel, n= 0.026
Length= 47.0' Slope= 0.0564 '/'
Inlet Invert= 219.45', Outlet Invert= 216.80'



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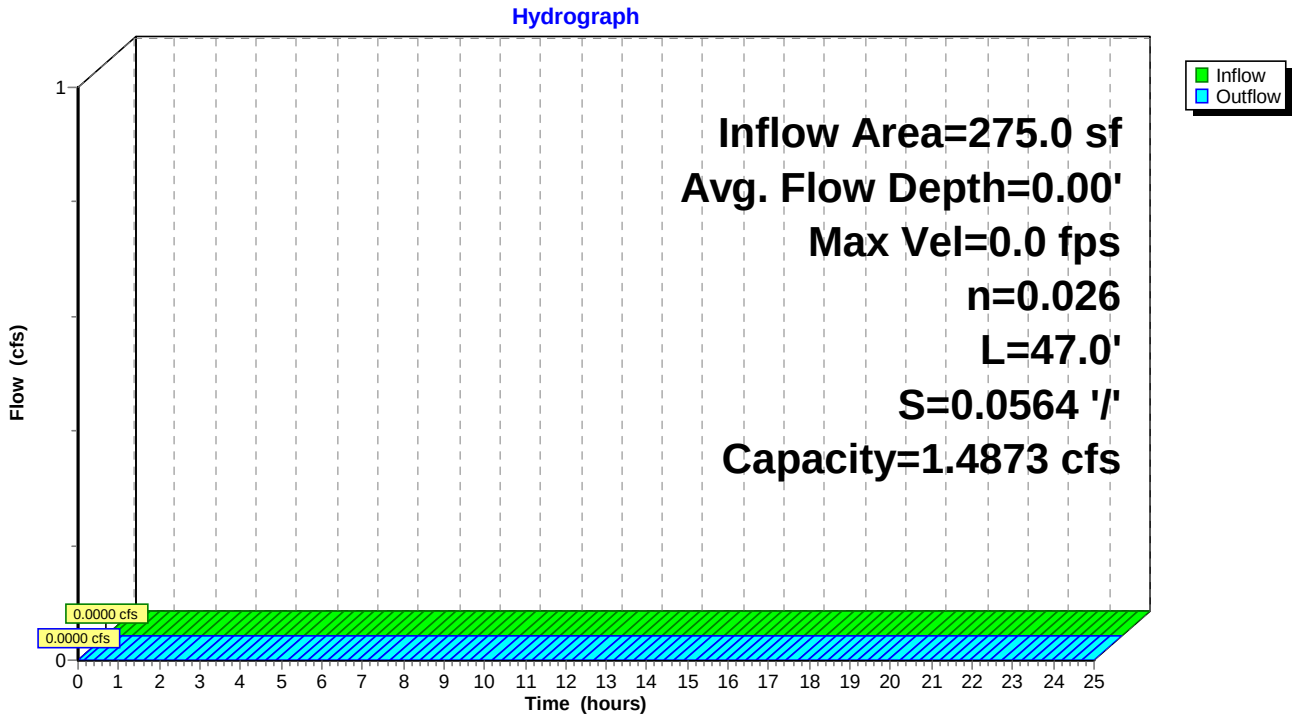
Reach O1a: Overland Flow #1a



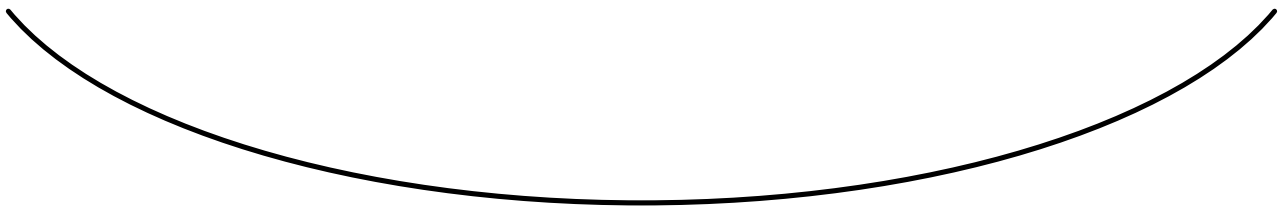
Summary for Reach O1b: Overland Flow #1b

Inflow Area = 875.0 sf, 10.86% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf
Outflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0.0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.10' Flow Area= 1.0 sf, Capacity= 2.0502 cfs

15.00' x 0.10' deep Parabolic Channel, n= 0.029
Length= 65.0' Slope= 0.0592 '/'
Inlet Invert= 219.55', Outlet Invert= 215.70'



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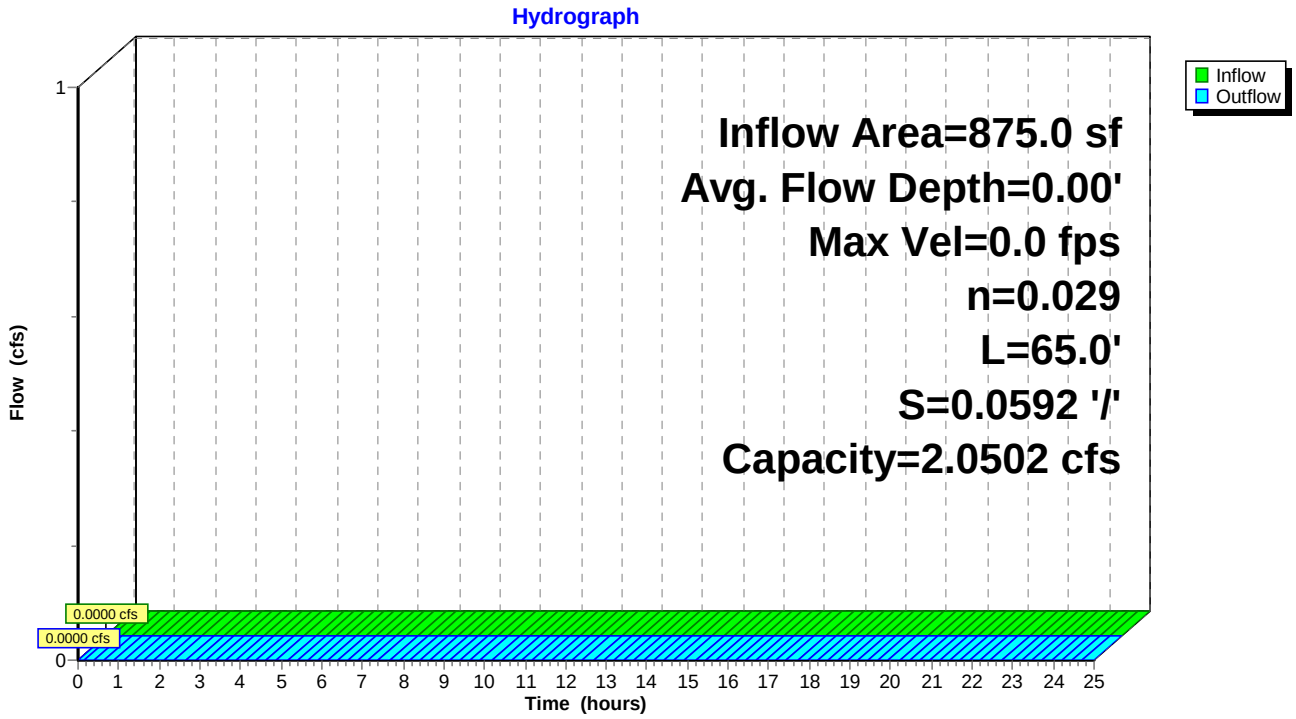
Reach O1b: Overland Flow #1b



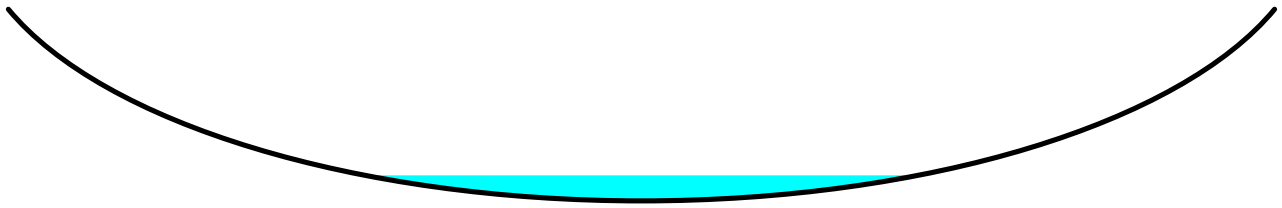
Summary for Reach O2: OverInd Flow #2

Inflow Area = 37,775.0 sf, 4.02% Impervious, Inflow Depth > 0.31" for 2-yr event
Inflow = 0.0931 cfs @ 12.28 hrs, Volume= 976.8 cf
Outflow = 0.0925 cfs @ 12.30 hrs, Volume= 976.8 cf, Atten= 1%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 0.5 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 0.3 fps, Avg. Travel Time= 1.2 min

Peak Storage= 4.2 cf @ 12.30 hrs
Average Depth at Peak Storage= 0.03'
Bank-Full Depth= 0.20' Flow Area= 4.3 sf, Capacity= 7.6508 cfs

32.00' x 0.20' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 21.0' Slope= 0.0262 '/'
Inlet Invert= 212.35', Outlet Invert= 211.80'



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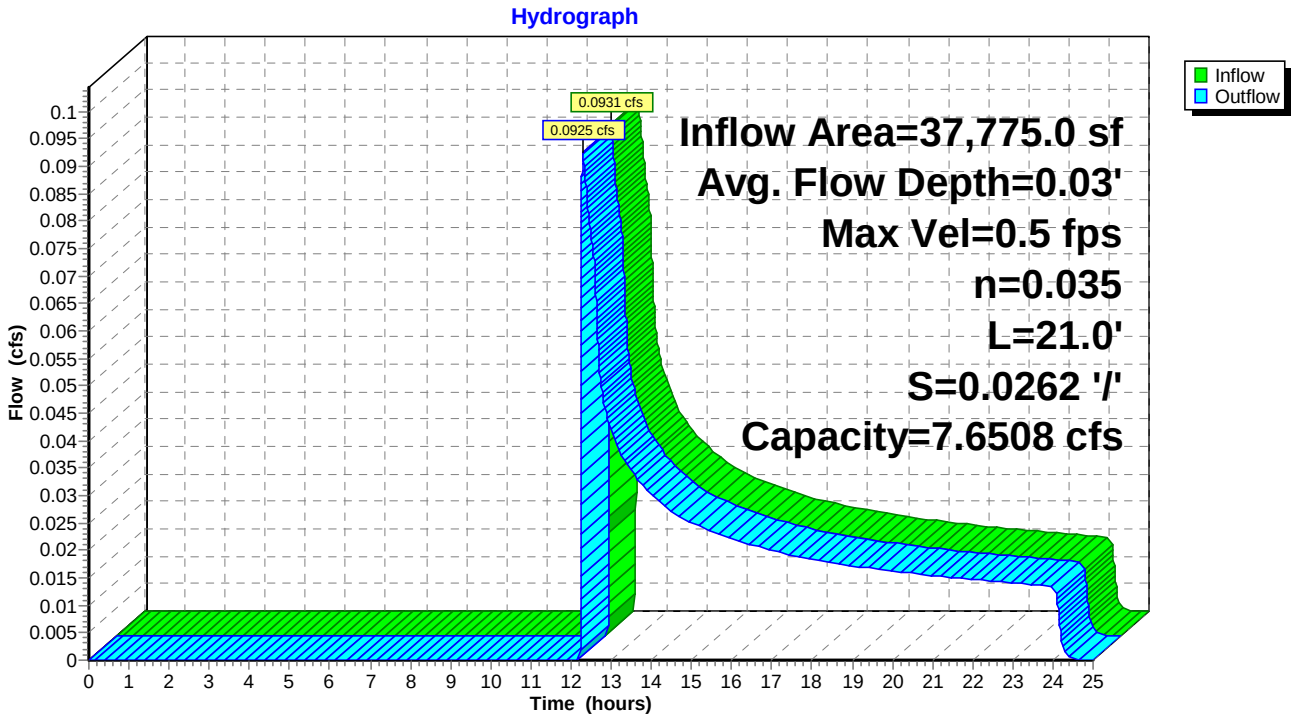
Reach O2: OverInd Flow #2



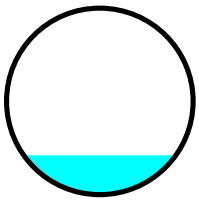
Summary for Reach RD1: Roof Drain #1

Inflow Area = 1,400.0 sf,100.00% Impervious, Inflow Depth = 2.96" for 2-yr event
Inflow = 0.1219 cfs @ 12.00 hrs, Volume= 345.0 cf
Outflow = 0.1219 cfs @ 12.00 hrs, Volume= 345.0 cf, Atten= 0%, Lag= 0.1 min

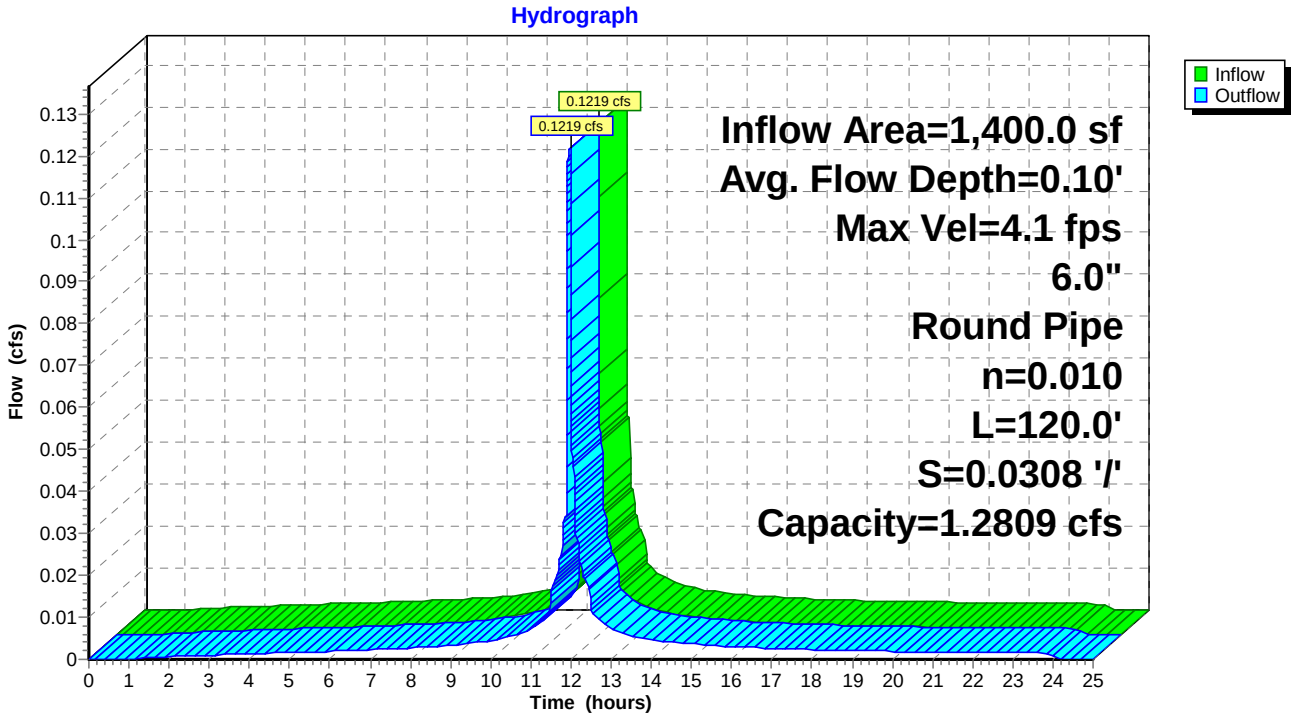
Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 4.1 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.3 fps, Avg. Travel Time= 1.5 min

Peak Storage= 3.6 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 1.2809 cfs

6.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 120.0' Slope= 0.0308 '/'
Inlet Invert= 222.00', Outlet Invert= 218.30'



Reach RD1: Roof Drain #1



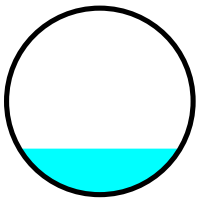
Summary for Reach RD2: Roof Drain #2

Inflow Area = 1,400.0 sf,100.00% Impervious, Inflow Depth = 2.96" for 2-yr event
Inflow = 0.1219 cfs @ 12.00 hrs, Volume= 345.0 cf
Outflow = 0.1219 cfs @ 12.00 hrs, Volume= 345.0 cf, Atten= 0%, Lag= 0.1 min

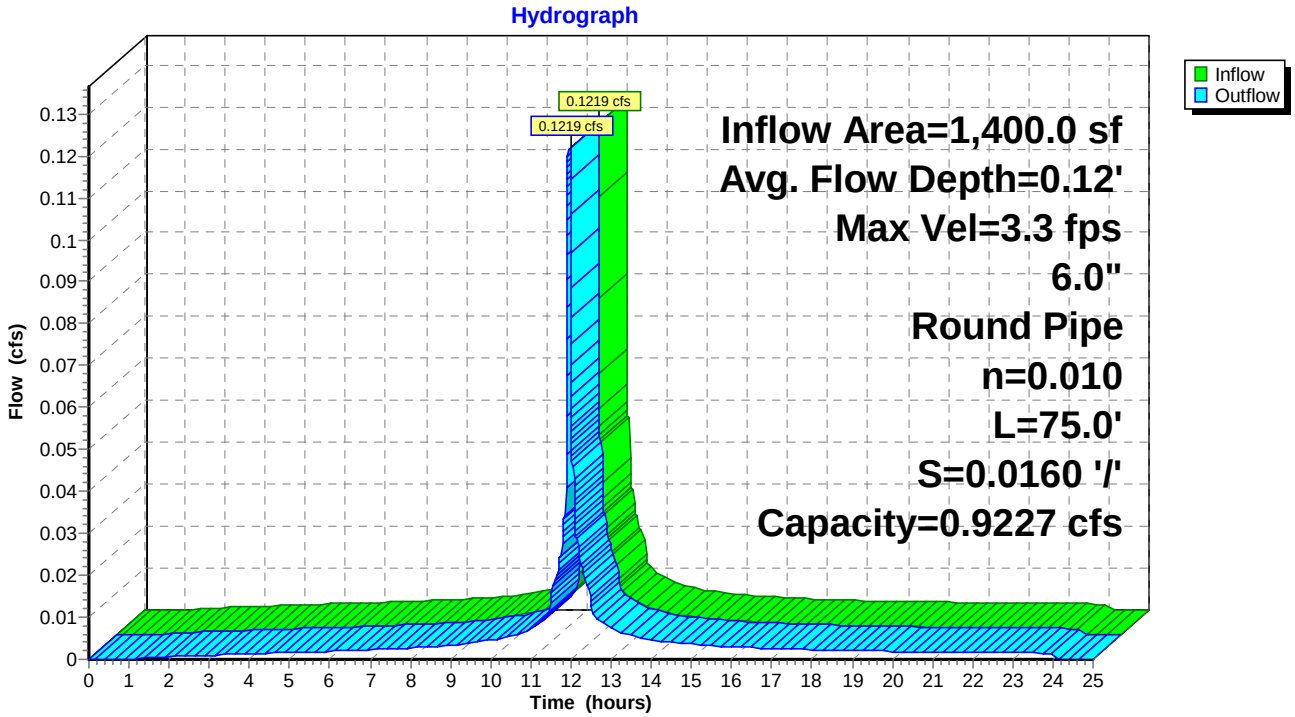
Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 3.3 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.0 fps, Avg. Travel Time= 1.2 min

Peak Storage= 2.8 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.9227 cfs

6.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 75.0' Slope= 0.0160 '/'
Inlet Invert= 219.50', Outlet Invert= 218.30'



Reach RD2: Roof Drain #2



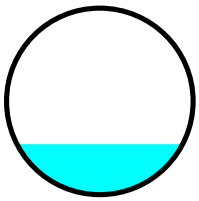
Summary for Reach RD3: Roof Drain #3

Inflow Area = 1,400.0 sf,100.00% Impervious, Inflow Depth = 2.96" for 2-yr event
Inflow = 0.1219 cfs @ 12.00 hrs, Volume= 345.0 cf
Outflow = 0.1219 cfs @ 12.00 hrs, Volume= 345.0 cf, Atten= 0%, Lag= 0.1 min

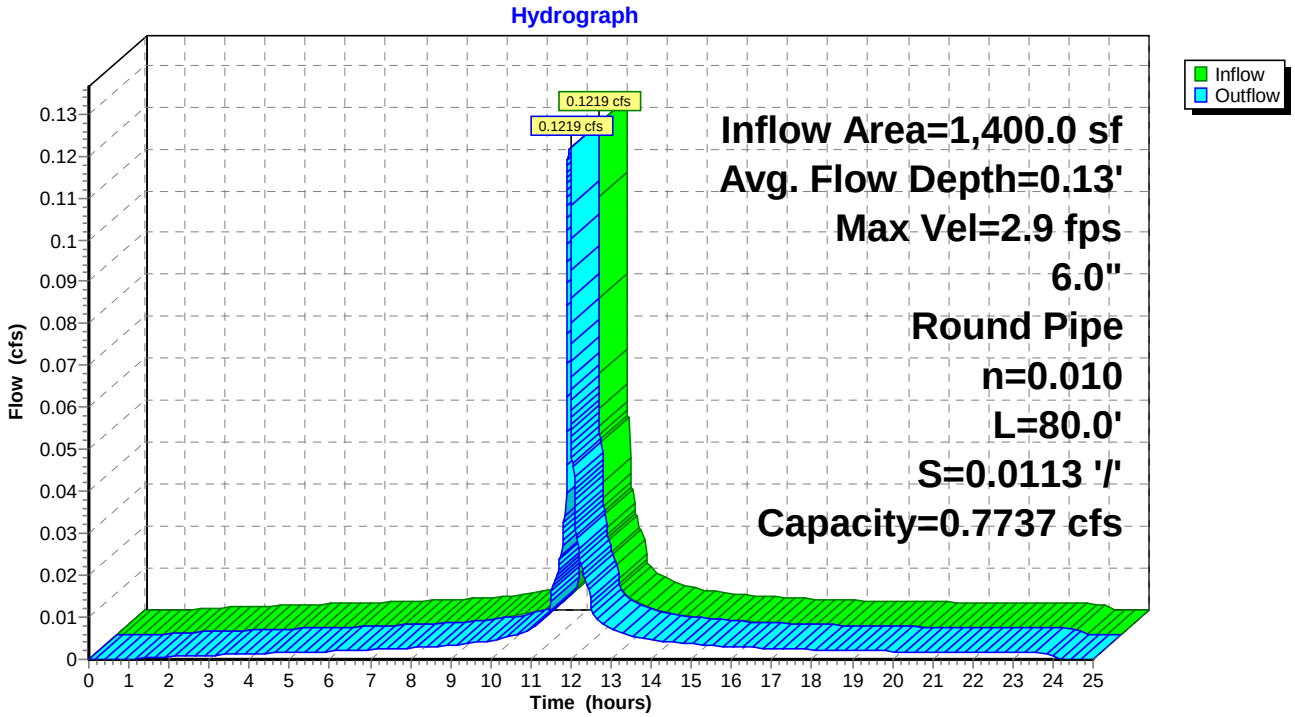
Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 2.9 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.9 fps, Avg. Travel Time= 1.4 min

Peak Storage= 3.4 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.7737 cfs

6.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 80.0' Slope= 0.0113 '/'
Inlet Invert= 218.50', Outlet Invert= 217.60'



Reach RD3: Roof Drain #3



Summary for Pond CB1: Catch Basin #1

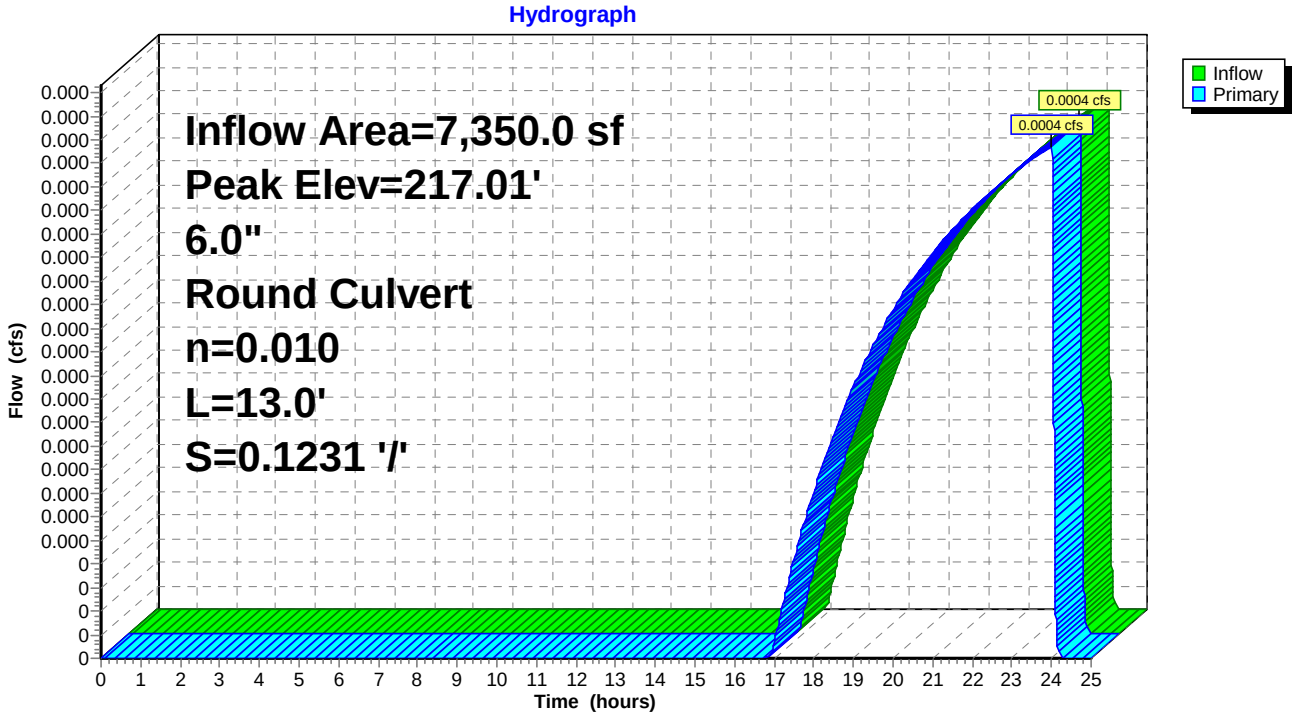
Inflow Area =	7,350.0 sf,	4.76% Impervious,	Inflow Depth =	0.01"	for 2-yr event
Inflow =	0.0004 cfs @	24.00 hrs,	Volume=	7.4 cf	
Outflow =	0.0004 cfs @	24.00 hrs,	Volume=	7.4 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.0004 cfs @	24.00 hrs,	Volume=	7.4 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 217.01' @ 24.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	217.00'	**6.0" Round Culvert** L= 13.0' Ke= 0.100 Inlet / Outlet Invert= 217.00' / 215.40' S= 0.1231 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.0004 cfs @ 24.00 hrs HW=217.01' TW=213.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.0004 cfs @ 0.5 fps)

Pond CB1: Catch Basin #1



Summary for Pond CO1: Clean Out #1

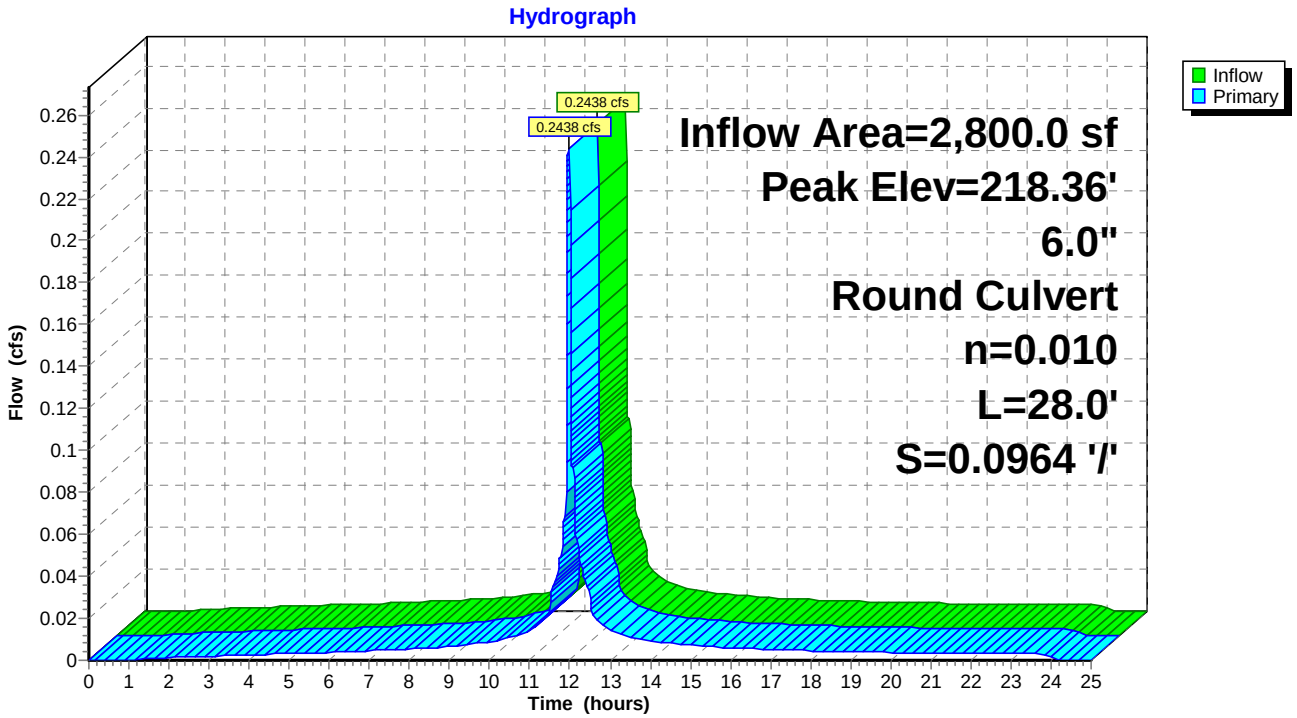
Inflow Area =	2,800.0 sf,100.00% Impervious,	Inflow Depth =	2.96"	for 2-yr event	
Inflow =	0.2438 cfs @	12.00 hrs,	Volume=	690.1 cf	
Outflow =	0.2438 cfs @	12.00 hrs,	Volume=	690.1 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.2438 cfs @	12.00 hrs,	Volume=	690.1 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 218.36' @ 12.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	218.10'	**6.0" Round Culvert** L= 28.0' Ke= 0.100 Inlet / Outlet Invert= 218.10' / 215.40' S= 0.0964 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.2438 cfs @ 12.00 hrs HW=218.36' TW=213.55' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.2438 cfs @ 2.4 fps)

Pond CO1: Clean Out #1



Summary for Pond CO2: Clean Out #2

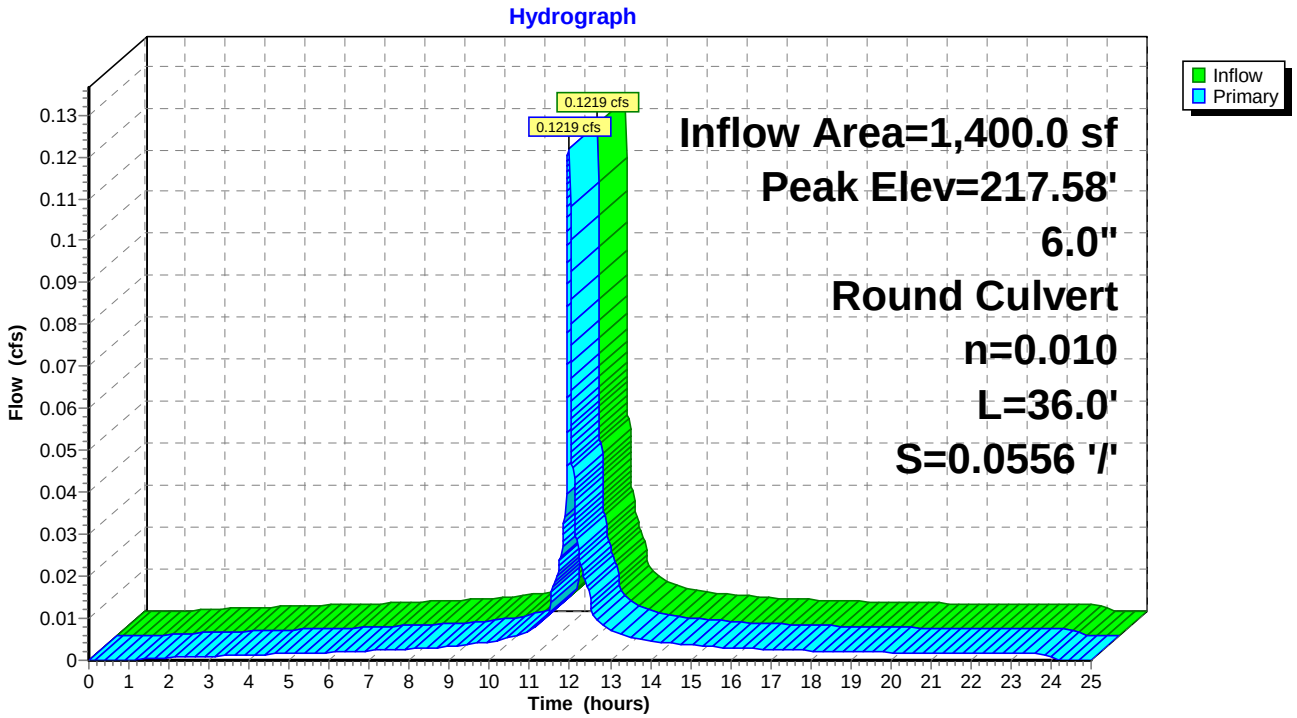
Inflow Area =	1,400.0 sf,100.00% Impervious,	Inflow Depth =	2.96"	for 2-yr event	
Inflow =	0.1219 cfs @	12.00 hrs,	Volume=	345.0 cf	
Outflow =	0.1219 cfs @	12.00 hrs,	Volume=	345.0 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.1219 cfs @	12.00 hrs,	Volume=	345.0 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 217.58' @ 12.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	217.40'	**6.0" Round Culvert** L= 36.0' Ke= 0.100 Inlet / Outlet Invert= 217.40' / 215.40' S= 0.0556 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.1219 cfs @ 12.00 hrs HW=217.58' TW=213.55' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.1219 cfs @ 2.0 fps)

Pond CO2: Clean Out #2



Summary for Pond LP1a: Low Point #1a

Inflow Area = 275.0 sf, 20.00% Impervious, Inflow Depth = 0.03" for 2-yr event
Inflow = 0.0000 cfs @ 24.00 hrs, Volume= 0.6 cf
Outflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 219.36' @ 24.07 hrs Surf.Area= 32.8 sf Storage= 0.6 cf

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

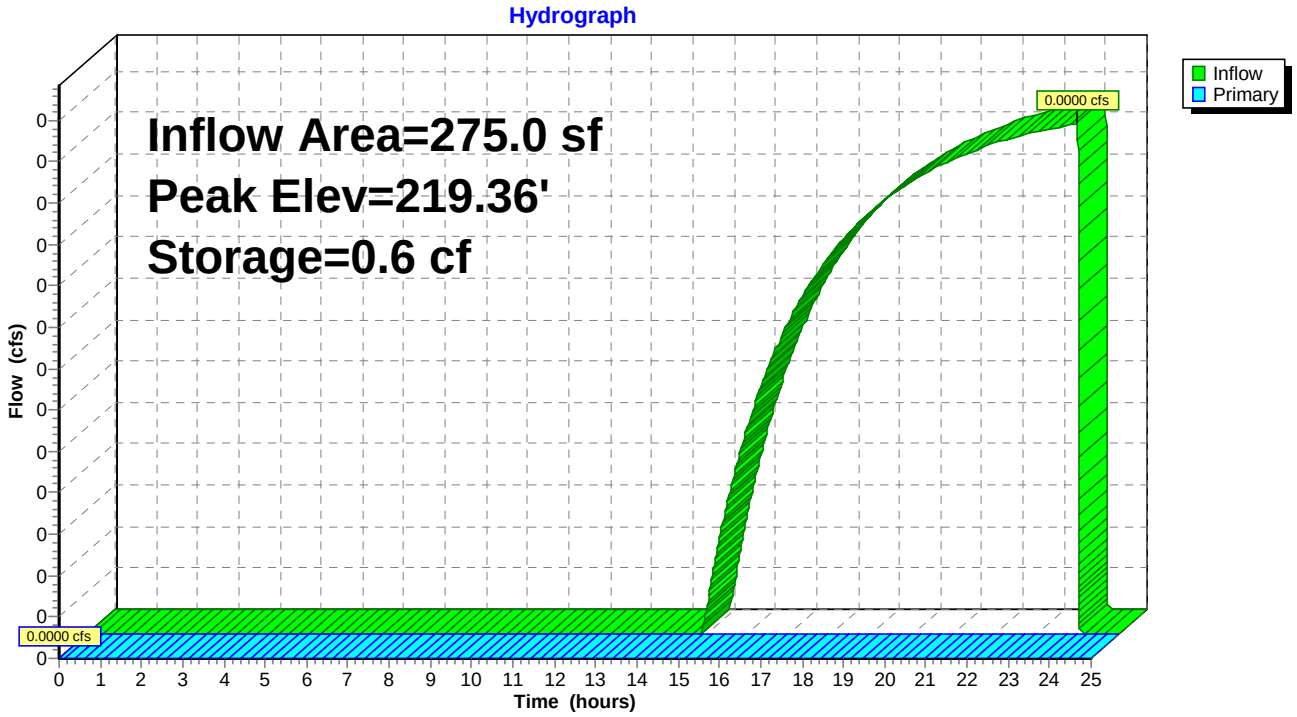
Volume	Invert	Avail.Storage	Storage Description
#1	219.30'	57.0 cf	**Low Point #1a (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
219.30	0.0	0.0	0.0	0.0	0.0
219.40	104.0	50.0	3.5	3.5	199.0
219.50	176.0	62.0	13.8	17.3	306.1
219.60	200.0	68.0	18.8	36.1	368.5
219.70	219.0	75.0	20.9	57.0	448.4

Device	Routing	Invert	Outlet Devices
#1	Primary	219.50'	**LP#1a Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.20 Width (feet) 10.00 35.00

Primary OutFlow Max=0.0000 cfs @ 0.00 hrs HW=219.30' TW=219.45' (Dynamic Tailwater)
└─**1=LP#1a Weir** (Controls 0.0000 cfs)

Pond LP1a: Low Point #1a



Summary for Pond LP1b: Low Point #1b

Inflow Area = 875.0 sf, 10.86% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf
Outflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 219.20' @ 0.00 hrs Surf.Area= 0.0 sf Storage= 0.0 cf

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

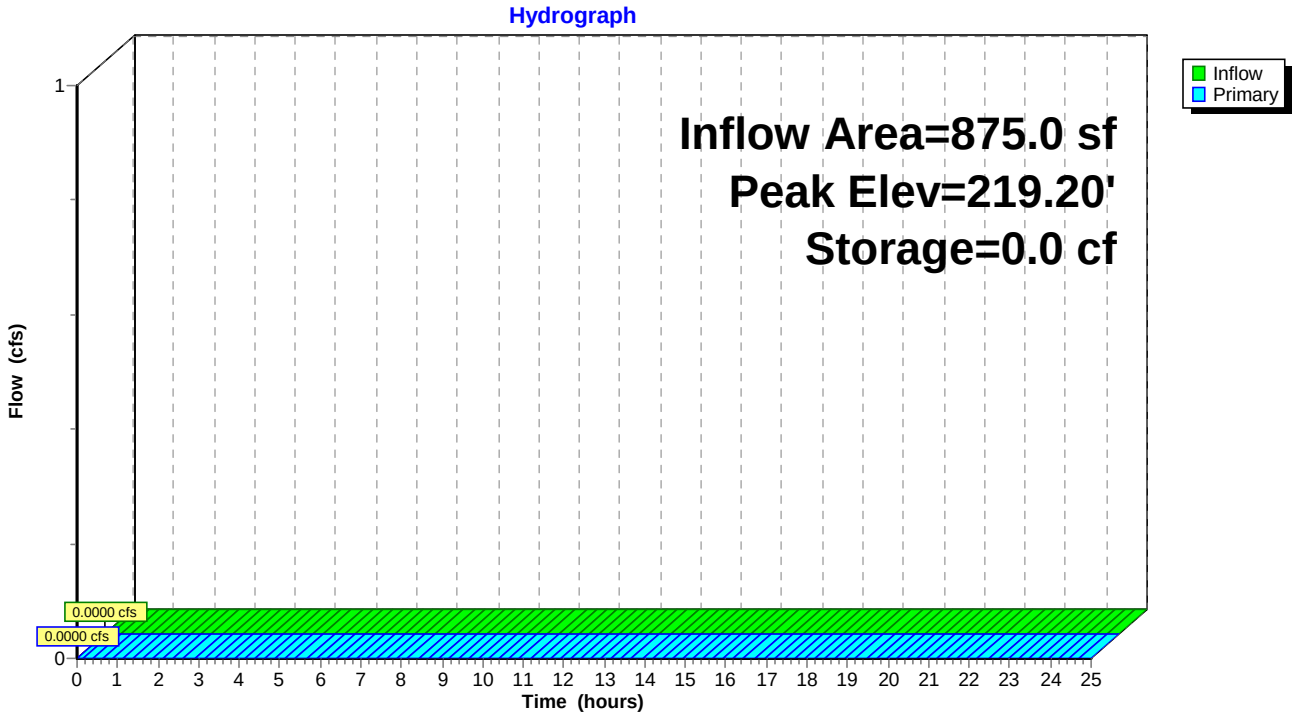
Volume	Invert	Avail.Storage	Storage Description
#1	219.20'	267.0 cf	**Low Point #1b (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
219.20	0.0	0.0	0.0	0.0	0.0
219.30	74.0	52.0	2.5	2.5	215.2
219.40	161.0	86.0	11.5	13.9	588.6
219.50	305.0	122.0	22.9	36.9	1,184.6
219.60	463.0	151.0	38.1	75.0	1,814.8
219.70	609.0	179.0	53.4	128.4	2,550.2
219.80	707.0	192.0	65.7	194.2	2,934.5
219.90	750.0	203.0	72.8	267.0	3,280.8

Device	Routing	Invert	Outlet Devices
#1	Primary	219.60'	**LP#1b Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.20 Width (feet) 15.00 48.00

Primary OutFlow Max=0.0000 cfs @ 0.00 hrs HW=219.20' TW=219.55' (Dynamic Tailwater)
└**1=LP#1b Weir** (Controls 0.0000 cfs)

Pond LP1b: Low Point #1b



Summary for Pond LP2: Low Point #2

Inflow Area =	37,775.0 sf,	4.02% Impervious,	Inflow Depth =	0.33"	for 2-yr event
Inflow =	0.1092 cfs @	12.16 hrs,	Volume=	1,043.0 cf	
Outflow =	0.0931 cfs @	12.28 hrs,	Volume=	976.8 cf,	Atten= 15%, Lag= 7.7 min
Primary =	0.0931 cfs @	12.28 hrs,	Volume=	976.8 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 212.41' @ 12.28 hrs Surf.Area= 784.1 sf Storage= 73.3 cf

Plug-Flow detention time= 48.0 min calculated for 976.8 cf (94% of inflow)
Center-of-Mass det. time= 19.4 min (1,003.8 - 984.4)

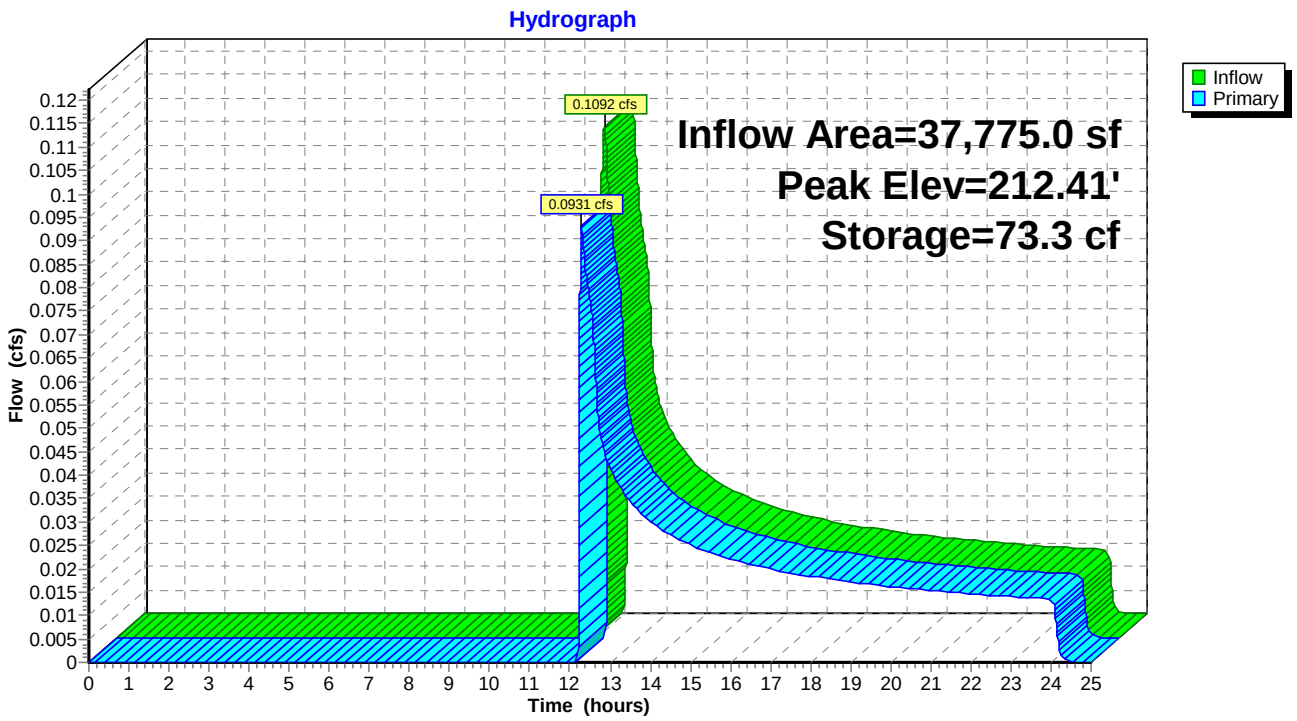
Volume	Invert	Avail.Storage	Storage Description
#1	212.20'	1,246.7 cf	**Low Point #2 (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
212.20	44.0	28.0	0.0	0.0	44.0
212.40	765.0	155.0	66.2	66.2	1,893.6
212.60	1,231.0	170.0	197.8	263.9	2,282.8
212.80	2,386.0	307.0	355.4	619.3	7,483.4
213.00	3,953.0	406.0	627.3	1,246.7	13,101.0

Device	Routing	Invert	Outlet Devices
#1	Primary	212.40'	**LP#1b Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.20 Width (feet) 32.00 38.00

Primary OutFlow Max=0.0931 cfs @ 12.28 hrs HW=212.41' TW=212.38' (Dynamic Tailwater)
└─**1=LP#1b Weir** (Weir Controls 0.0931 cfs @ 0.3 fps)

Pond LP2: Low Point #2



Summary for Pond RB1: Recharge Basin #1

Inflow Area =	11,550.0 sf, 39.39% Impervious, Inflow Depth = 1.08" for 2-yr event				
Inflow =	0.3657 cfs @	12.00 hrs,	Volume=	1,042.6 cf	
Outflow =	0.0373 cfs @	11.63 hrs,	Volume=	1,042.6 cf,	Atten= 90%, Lag= 0.0 min
Discarded =	0.0373 cfs @	11.63 hrs,	Volume=	1,042.6 cf	
Secondary =	0.0000 cfs @	0.00 hrs,	Volume=	0.0 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 213.74' @ 12.52 hrs Surf.Area= 672.0 sf Storage= 247.1 cf

Plug-Flow detention time= 34.1 min calculated for 1,042.6 cf (100% of inflow)
Center-of-Mass det. time= 34.1 min (792.7 - 758.7)

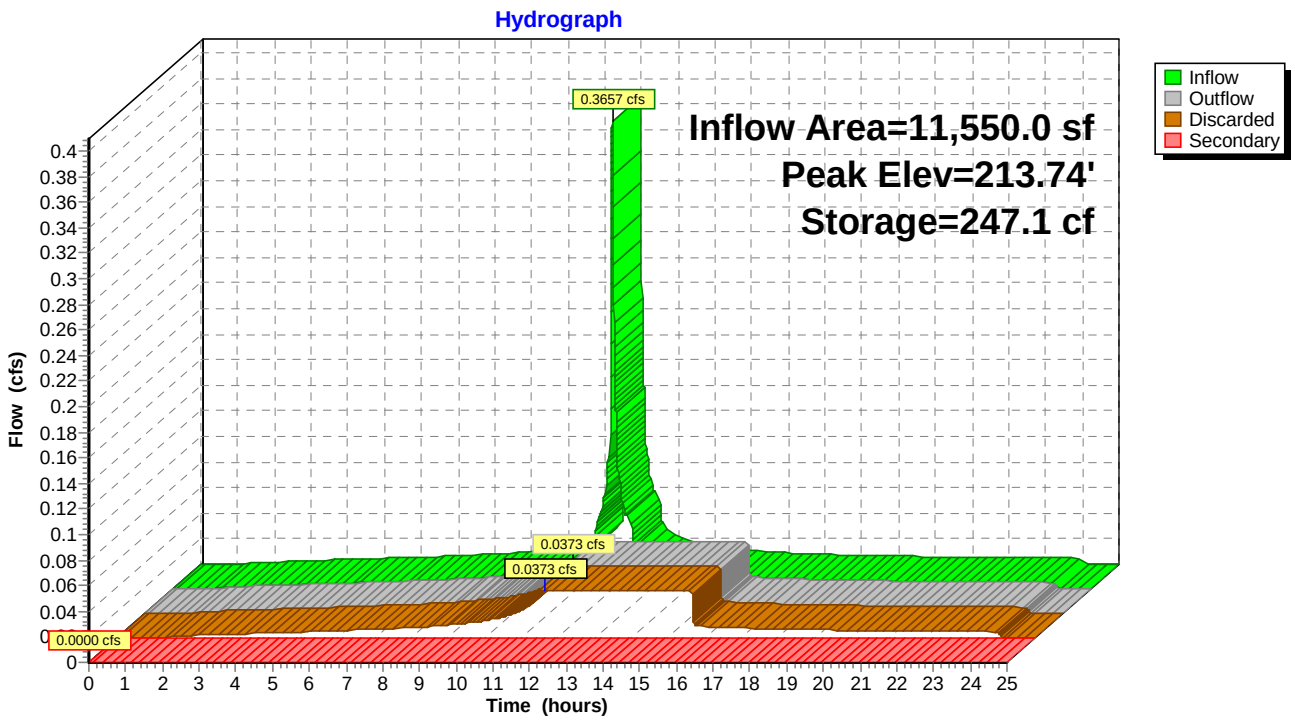
Volume	Invert	Avail.Storage	Storage Description
#1	213.00'	422.0 cf	**24.00'W x 28.00'L x 3.50'H Prismatoid** 2,352.0 cf Overall - 1,297.1 cf Embedded = 1,054.9 cf x 40.0% Voids
#2	213.50'	935.7 cf	**Concrete Galley 4x4x3** x 30 Inside #1 Inside= 42.0"W x 30.0"H => 8.91 sf x 3.50'L = 31.2 cf Outside= 48.0"W x 36.0"H => 10.81 sf x 4.00'L = 43.2 cf
		1,357.7 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	213.00'	**0.0373 cfs Exfiltration when above 213.00'** Phase-In= 0.01'
#2	Secondary	215.40'	**6.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 215.40' / 215.20' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.0373 cfs @ 11.63 hrs HW=213.04' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.0373 cfs)

Secondary OutFlow Max=0.0000 cfs @ 0.00 hrs HW=213.00' TW=215.10' (Dynamic Tailwater)
└─**2=Culvert** (Controls 0.0000 cfs)

Pond RB1: Recharge Basin #1



Summary for Subcatchment SA1a: Sub-Area #1a

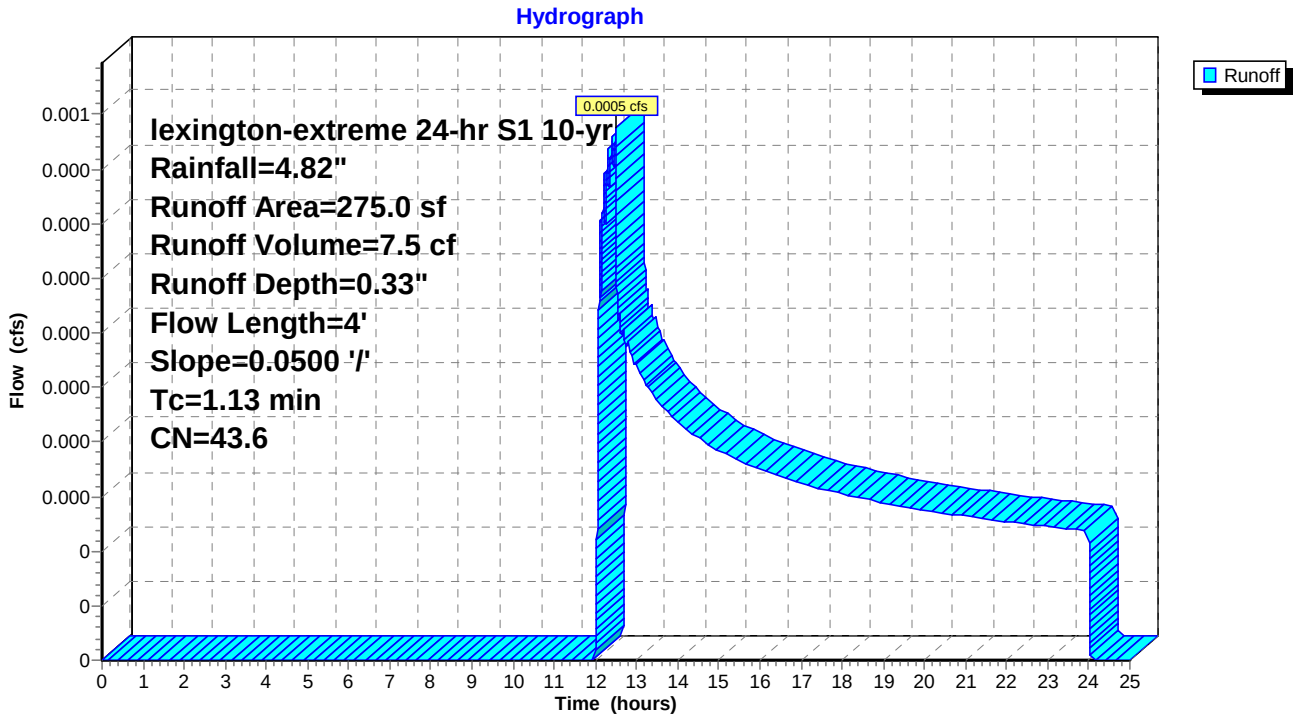
Runoff = 0.0005 cfs @ 12.50 hrs, Volume= 7.5 cf, Depth= 0.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 10-yr Rainfall=4.82"

	Area (sf)	CN	Description
*	55.0	98.0	Impervious
*	220.0	30.0	Woods/Landscape, Good, HSG A
	275.0	43.6	Weighted Average
	220.0		80.00% Pervious Area
	55.0		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.13	4	0.0500	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment SA1a: Sub-Area #1a



Summary for Subcatchment SA1b: Sub-Area #1b

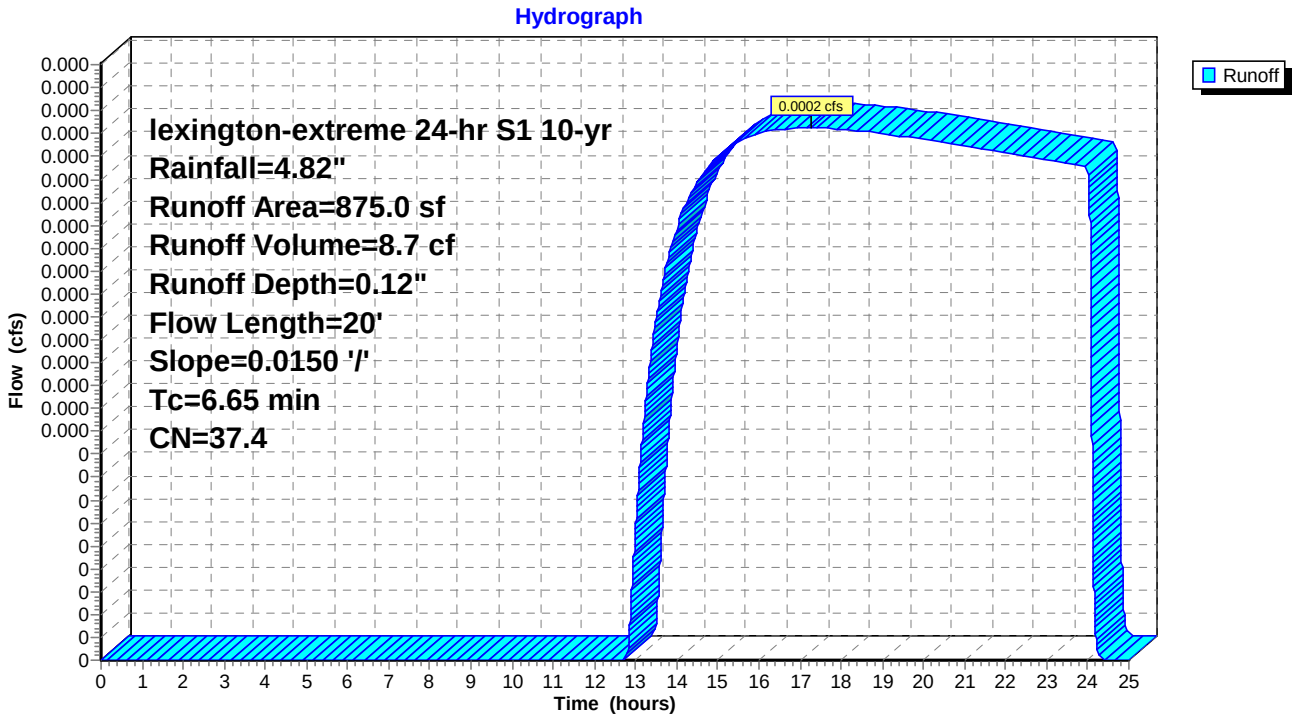
Runoff = 0.0002 cfs @ 17.25 hrs, Volume= 8.7 cf, Depth= 0.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 10-yr Rainfall=4.82"

	Area (sf)	CN	Description
*	95.0	98.0	Impervious
*	780.0	30.0	Woods/Landscape, Good, HSG A
	875.0	37.4	Weighted Average
	780.0		89.14% Pervious Area
	95.0		10.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.65	20	0.0150	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment SA1b: Sub-Area #1b



Summary for Subcatchment SA1c: Sub-Area #1c

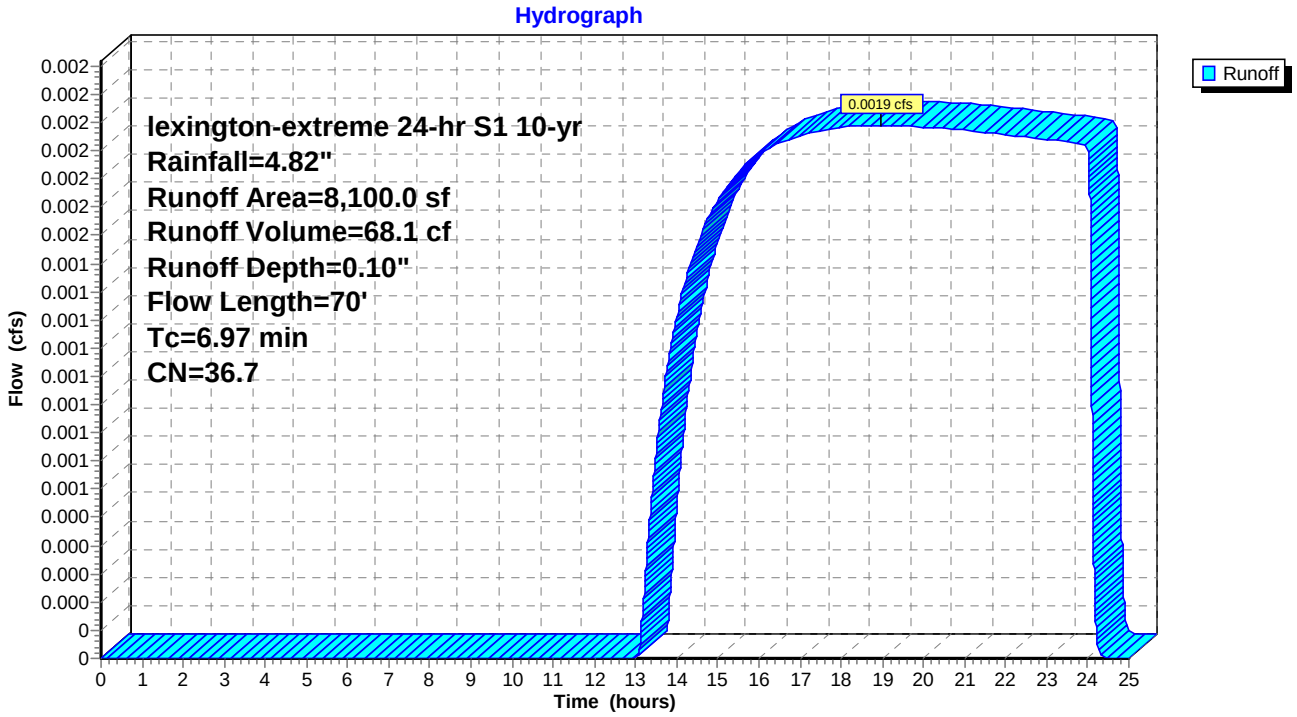
Runoff = 0.0019 cfs @ 18.95 hrs, Volume= 68.1 cf, Depth= 0.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 10-yr Rainfall=4.82"

	Area (sf)	CN	Description
*	230.0	98.0	Impervious
*	3,280.0	39.0	Porous Asphalt/Grass Pavers
	1,000.0	39.0	>75% Grass cover, Good, HSG A
*	3,590.0	30.0	Woods/Landscape, Good, HSG A
	8,100.0	36.7	Weighted Average
	7,870.0		97.16% Pervious Area
	230.0		2.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.93	7	0.0143	0.0		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.38	20	0.0150	0.9		**Sheet Flow, Segment 2 - Porous Asphalt** Smooth surfaces n= 0.011 P2= 3.20"
0.51	5	0.0800	0.2		**Sheet Flow, Segment 3 - Lawn** Grass: Short n= 0.150 P2= 3.20"
2.38	16	0.1250	0.1		**Sheet Flow, Segment 4 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.77	22	0.0091	0.5		**Shallow Concentrated Flow, Segment 5 - Woods** Woodland Kv= 5.00 fps
6.97	70	Total			

Subcatchment SA1c: Sub-Area #1c



Summary for Subcatchment SA2: Sub-Area #2

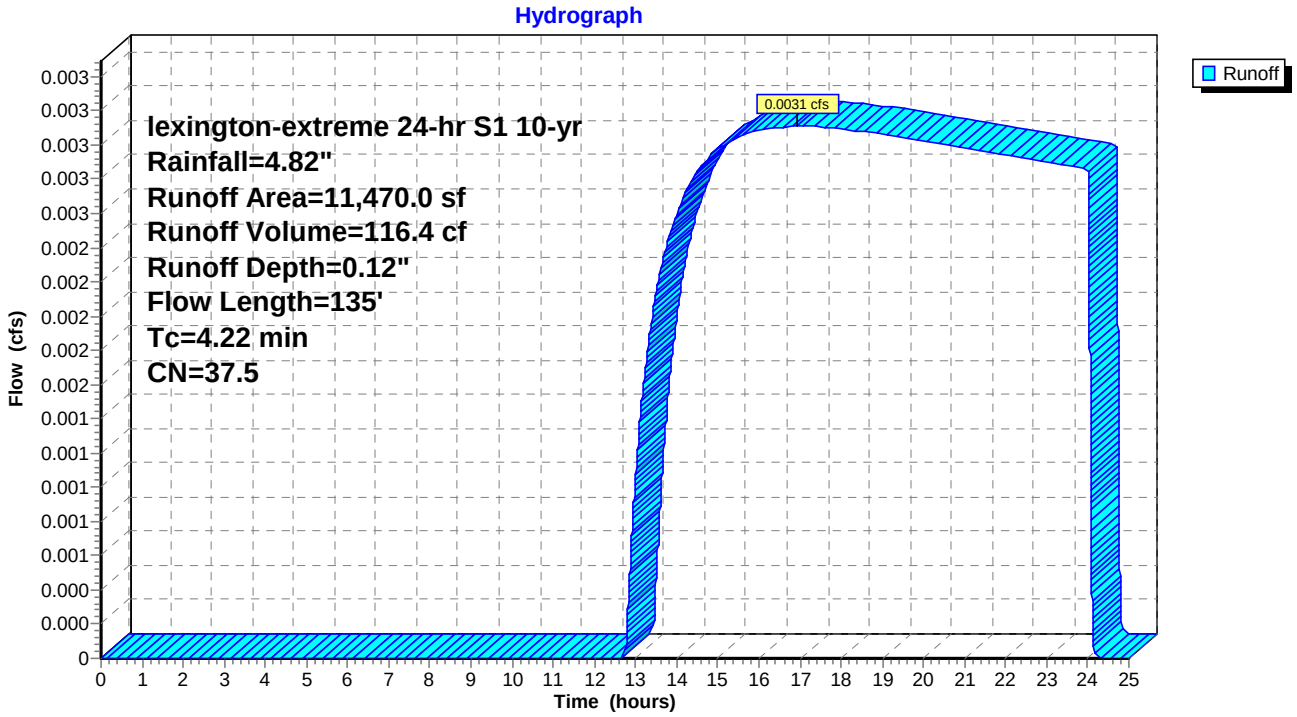
Runoff = 0.0031 cfs @ 16.93 hrs, Volume= 116.4 cf, Depth= 0.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 10-yr Rainfall=4.82"

	Area (sf)	CN	Description
*	510.0	98.0	Impervious
*	4,225.0	39.0	Porous Asphalt/Grass Pavers
	1,425.0	39.0	>75% Grass cover, Good, HSG A
*	5,310.0	30.0	Woods/Landscape, Good, HSG A
	11,470.0	37.5	Weighted Average
	10,960.0		95.55% Pervious Area
	510.0		4.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.89	11	0.0364	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.60	39	0.0179	1.1		**Sheet Flow, Segment 2 - Porous Asphalt** Smooth surfaces n= 0.011 P2= 3.20"
0.20	31	0.0161	2.6		**Shallow Concentrated Flow, Segment 3 - Porous Asphalt** Paved Kv= 20.30 fps
0.25	19	0.0316	1.2		**Shallow Concentrated Flow, Segment 4 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.08	7	0.0857	1.5		**Shallow Concentrated Flow, Segment 5 - Woods** Woodland Kv= 5.00 fps
0.06	13	0.0538	3.7		**Shallow Concentrated Flow, Segment 6 - Gravel** Unpaved Kv= 16.10 fps
0.14	15	0.1267	1.8		**Shallow Concentrated Flow, Segment 7 - Woods** Woodland Kv= 5.00 fps
4.22	135	Total			

Subcatchment SA2: Sub-Area #2



Summary for Subcatchment SA3: Sub-Area #3

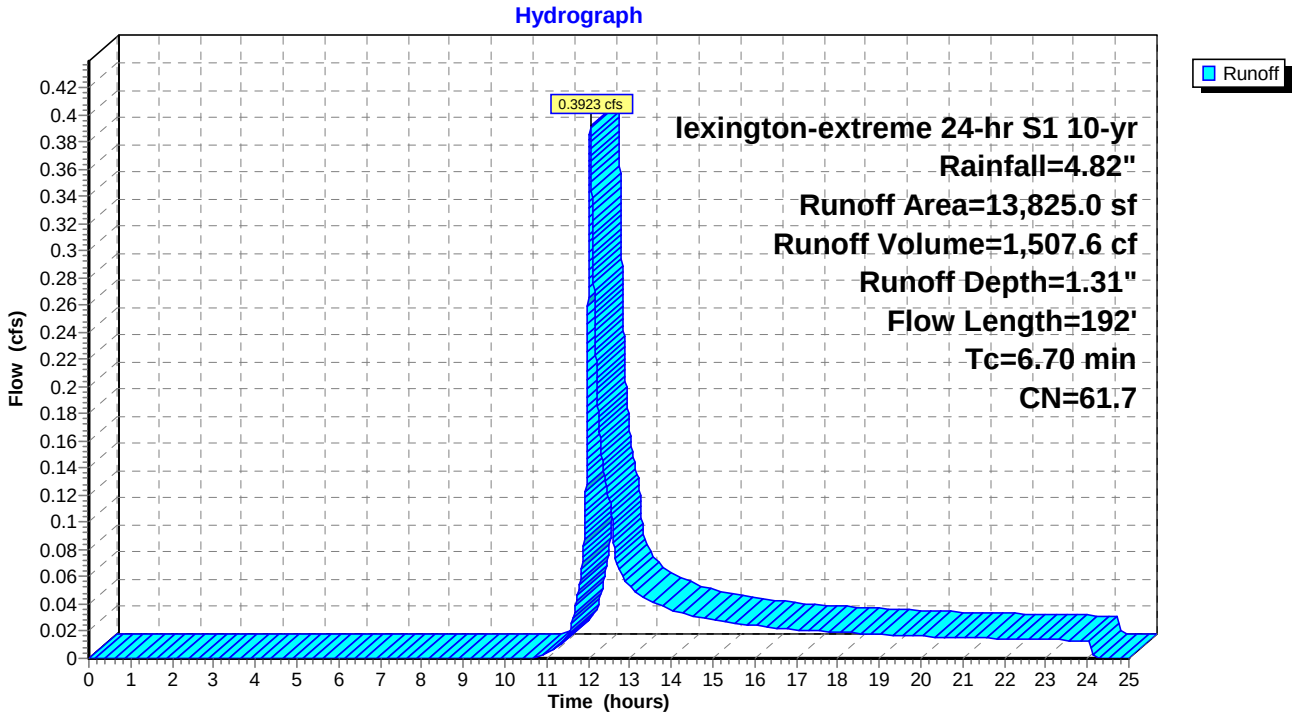
Runoff = 0.3923 cfs @ 12.05 hrs, Volume= 1,507.6 cf, Depth= 1.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 10-yr Rainfall=4.82"

	Area (sf)	CN	Description
*	180.0	98.0	Impervious
	2,015.0	80.0	>75% Grass cover, Good, HSG D
*	5,965.0	77.0	Woods/Landscape, Good, HSG D
*	915.0	39.0	Porous Asphalt/Grass Pavers
	4,095.0	39.0	>75% Grass cover, Good, HSG A
*	655.0	30.0	Woods/Landscape, Good, HSG A
	13,825.0	61.7	Weighted Average
	13,645.0		98.70% Pervious Area
	180.0		1.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.03	15	0.0600	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.42	19	0.0105	0.8		**Sheet Flow, Segment 2 - Porous Asphalt** Smooth surfaces n= 0.011 P2= 3.20"
1.76	16	0.0375	0.2		**Sheet Flow, Segment 3 - Lawn** Grass: Short n= 0.150 P2= 3.20"
1.04	100	0.0520	1.6		**Shallow Concentrated Flow, Segment 4 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.45	42	0.0976	1.6		**Shallow Concentrated Flow, Segment 5 - Woods** Woodland Kv= 5.00 fps
6.70	192	Total			

Subcatchment SA3: Sub-Area #3



Summary for Subcatchment SA4: Sub-Area #4

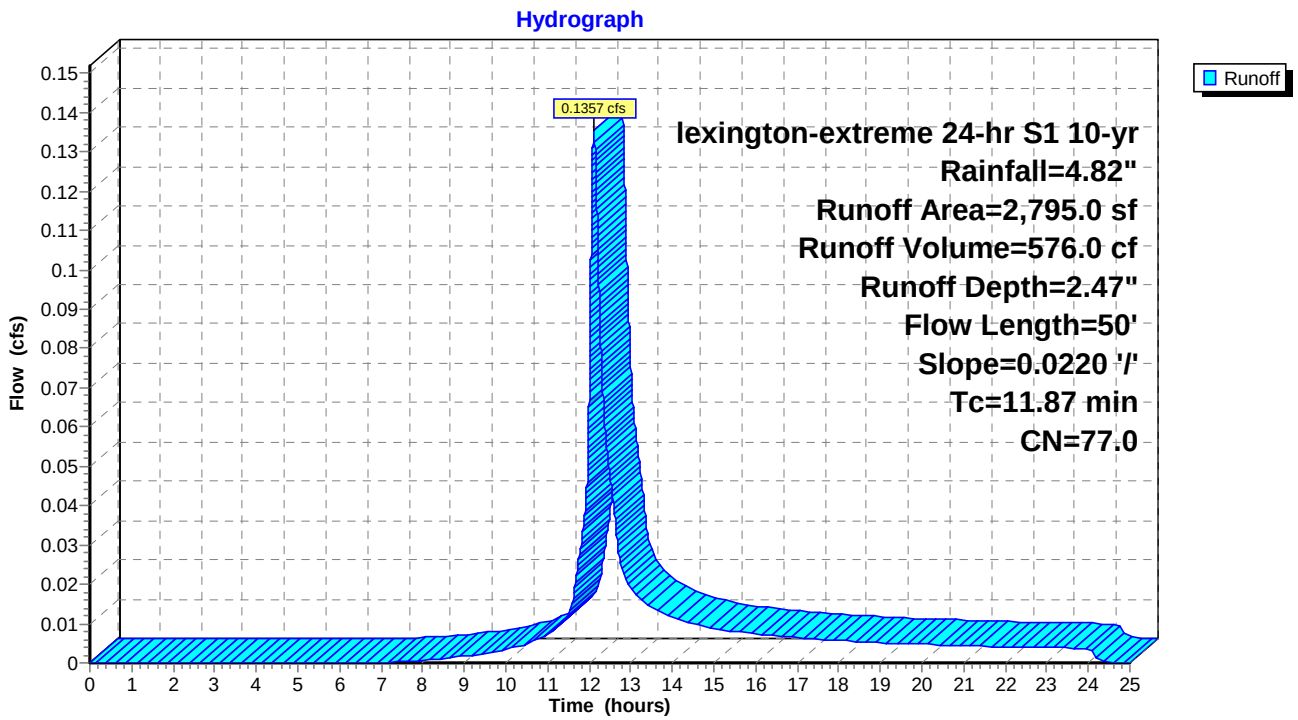
Runoff = 0.1357 cfs @ 12.12 hrs, Volume= 576.0 cf, Depth= 2.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 10-yr Rainfall=4.82"

	Area (sf)	CN	Description
*	2,795.0	77.0	Woods/Landscape, Good, HSG D
	2,795.0		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.87	50	0.0220	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment SA4: Sub-Area #4



Summary for Subcatchment SA5: Sub-Area #5

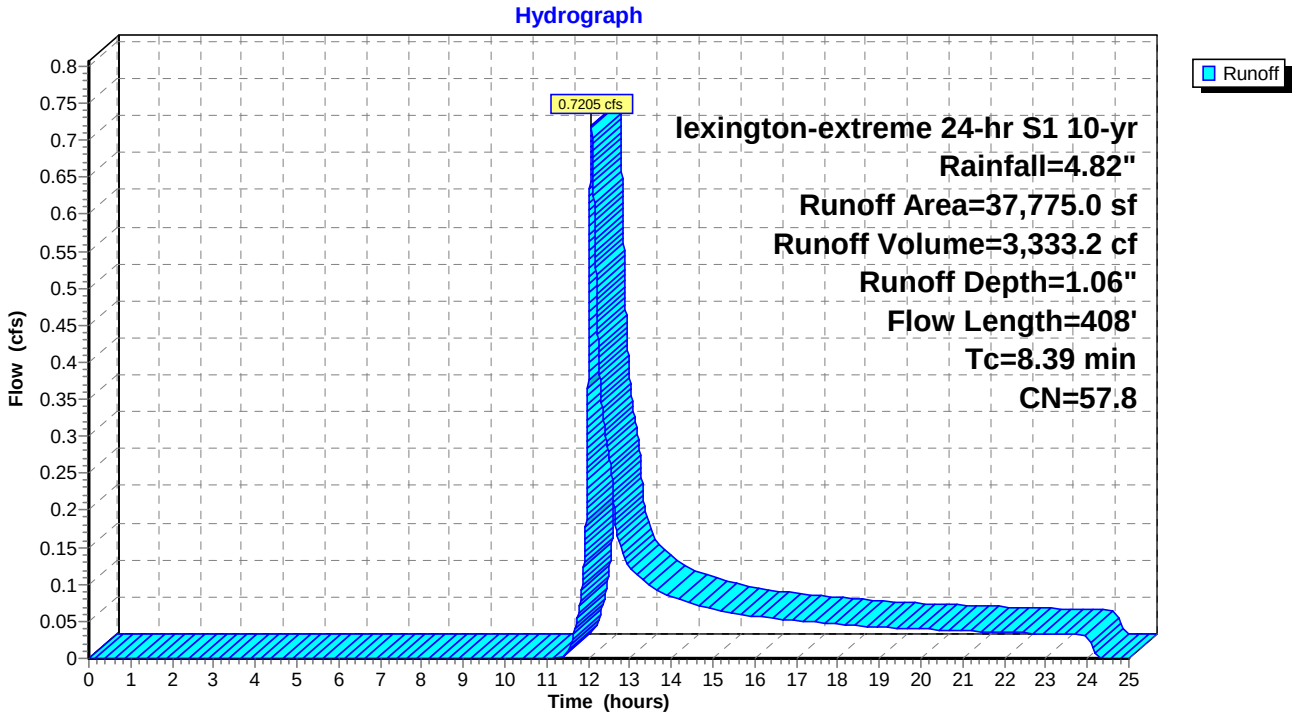
Runoff = 0.7205 cfs @ 12.07 hrs, Volume= 3,333.2 cf, Depth= 1.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 10-yr Rainfall=4.82"

	Area (sf)	CN	Description
*	1,520.0	98.0	Impervious
	12,120.0	80.0	>75% Grass cover, Good, HSG D
*	5,145.0	77.0	Woods/Landscape, Good, HSG D
*	3,030.0	39.0	Porous Asphalt/Grass Pavers
	8,060.0	39.0	>75% Grass cover, Good, HSG A
*	7,900.0	30.0	Woods/Landscape, Good, HSG A
	37,775.0	57.8	Weighted Average
	36,255.0		95.98% Pervious Area
	1,520.0		4.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.98	50	0.3380	0.2		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.60	57	0.1018	1.6		**Shallow Concentrated Flow, Segment 2 - Woods** Woodland Kv= 5.00 fps
0.08	6	0.0333	1.3		**Shallow Concentrated Flow, Segment 3 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.43	73	0.0190	2.8		**Shallow Concentrated Flow, Segment 4 - Porous Asphalt** Paved Kv= 20.30 fps
1.33	121	0.0471	1.5		**Shallow Concentrated Flow, Segment 5 - Lawn** Short Grass Pasture Kv= 7.00 fps
1.97	101	0.0149	0.9		**Shallow Concentrated Flow, Segment 6 - Grass Swale** Short Grass Pasture Kv= 7.00 fps
8.39	408	Total			

Subcatchment SA5: Sub-Area #5



Summary for Subcatchment SA6: Sub-Area #6

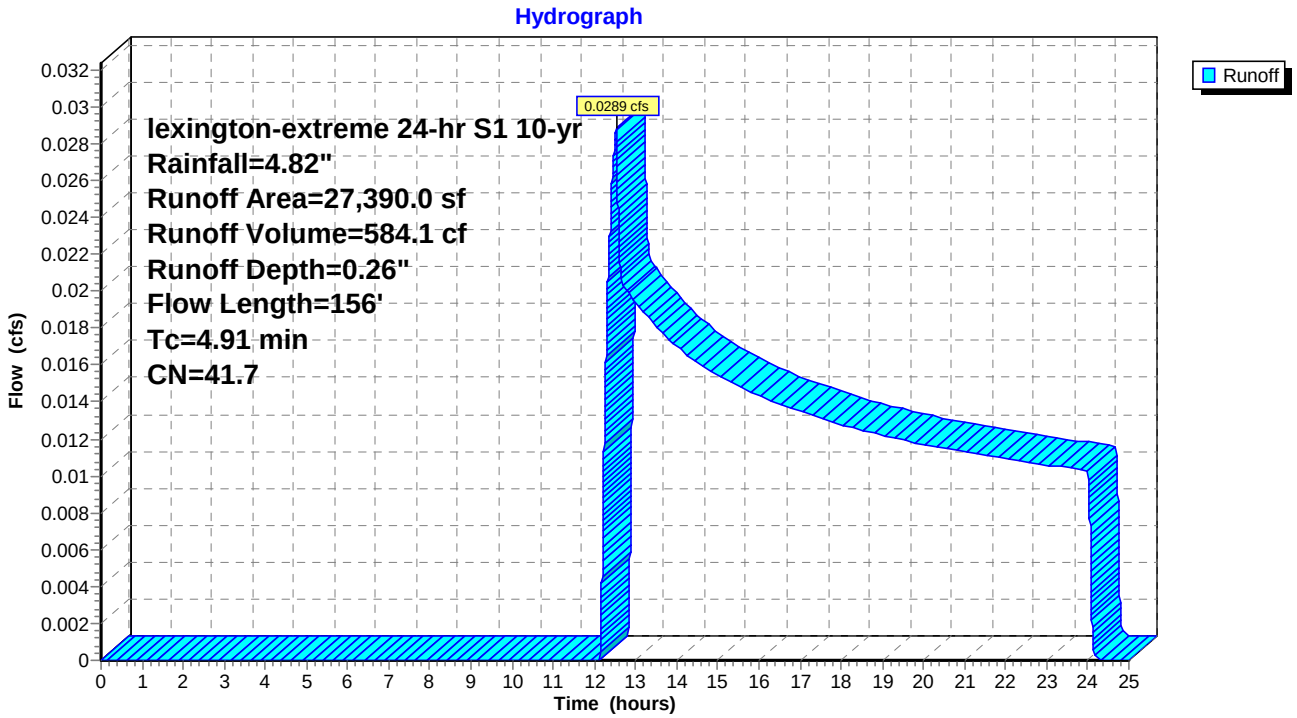
Runoff = 0.0289 cfs @ 12.52 hrs, Volume= 584.1 cf, Depth= 0.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 10-yr Rainfall=4.82"

	Area (sf)	CN	Description
	70.0	80.0	>75% Grass cover, Good, HSG D
*	5,425.0	77.0	Woods/Landscape, Good, HSG D
	6,915.0	39.0	>75% Grass cover, Good, HSG A
*	14,980.0	30.0	Woods/Landscape, Good, HSG A
	27,390.0	41.7	Weighted Average
	27,390.0		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.66	50	0.4180	0.2		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
1.25	106	0.0793	1.4		**Shallow Concentrated Flow, Segment 2 - Woods** Woodland Kv= 5.00 fps
4.91	156	Total			

Subcatchment SA6: Sub-Area #6



Summary for Subcatchment SA7: Sub-Area #7

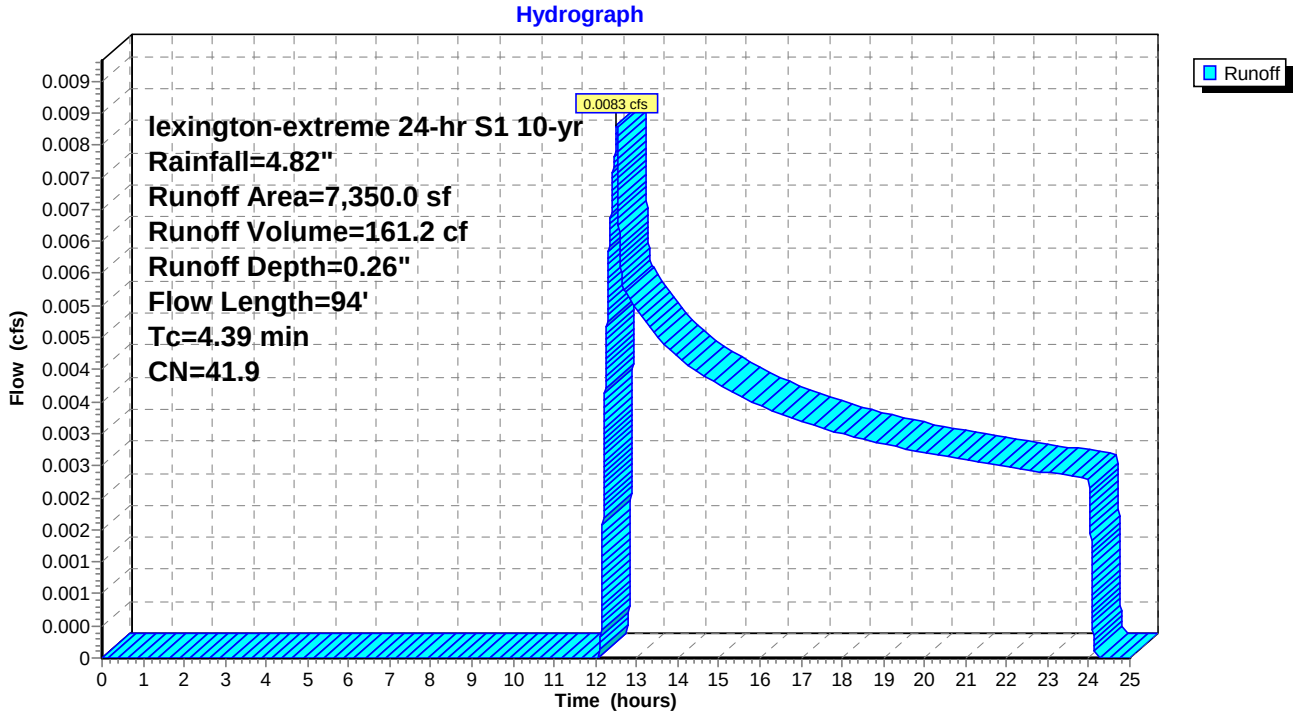
Runoff = 0.0083 cfs @ 12.52 hrs, Volume= 161.2 cf, Depth= 0.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 10-yr Rainfall=4.82"

	Area (sf)	CN	Description
*	350.0	98.0	Impervious
	10.0	80.0	>75% Grass cover, Good, HSG D
*	3,725.0	39.0	Porous Asphalt/Grass Pavers
	3,265.0	39.0	>75% Grass cover, Good, HSG A
	7,350.0	41.9	Weighted Average
	7,000.0		95.24% Pervious Area
	350.0		4.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.06	48	0.0417	0.2		**Sheet Flow, Segment 1 - Lawn** Grass: Short n= 0.150 P2= 3.20"
0.33	46	0.0130	2.3		**Shallow Concentrated Flow, Segment 2 - Porous Asphalt** Paved Kv= 20.30 fps
4.39	94	Total			

Subcatchment SA7: Sub-Area #7



Summary for Subcatchment SA8a: Sub-Area #8a (House)

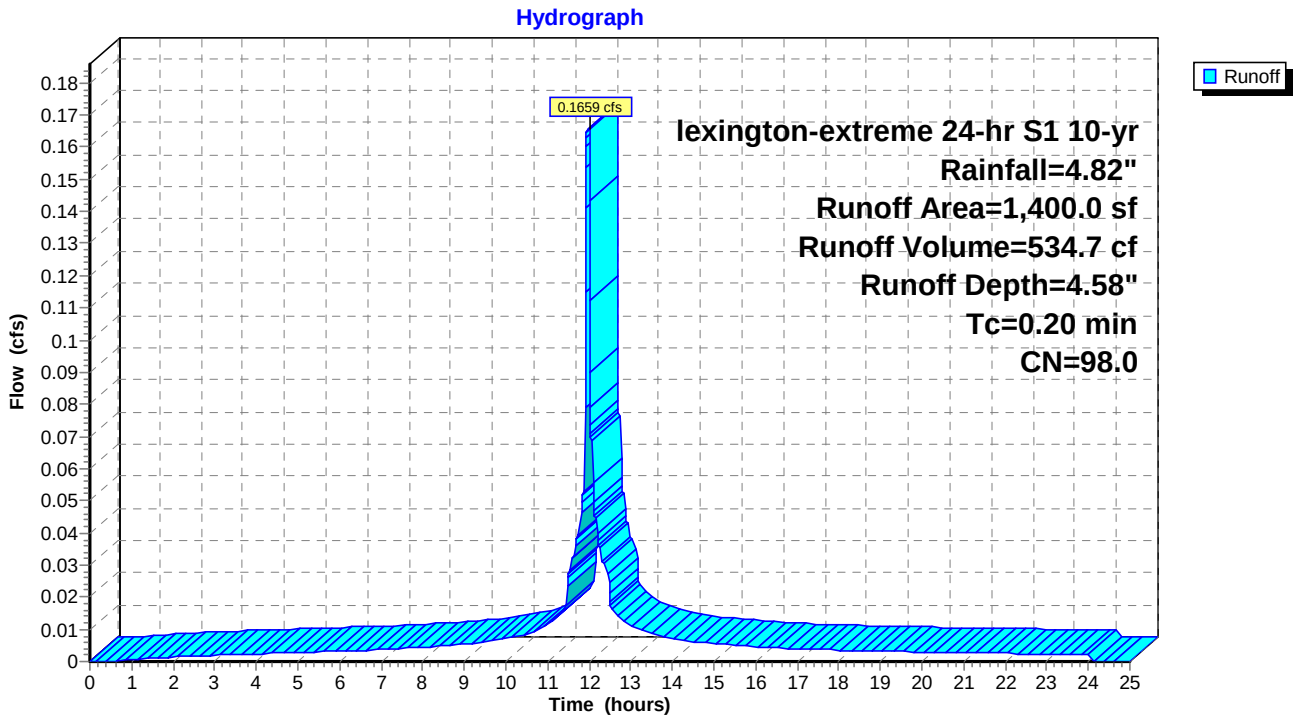
Runoff = 0.1659 cfs @ 12.00 hrs, Volume= 534.7 cf, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 10-yr Rainfall=4.82"

	Area (sf)	CN	Description
*	1,400.0	98.0	Impervious
	1,400.0		100.00% Impervious Area

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

Subcatchment SA8a: Sub-Area #8a (House)



Summary for Subcatchment SA8b: Sub-Area #8b (House)

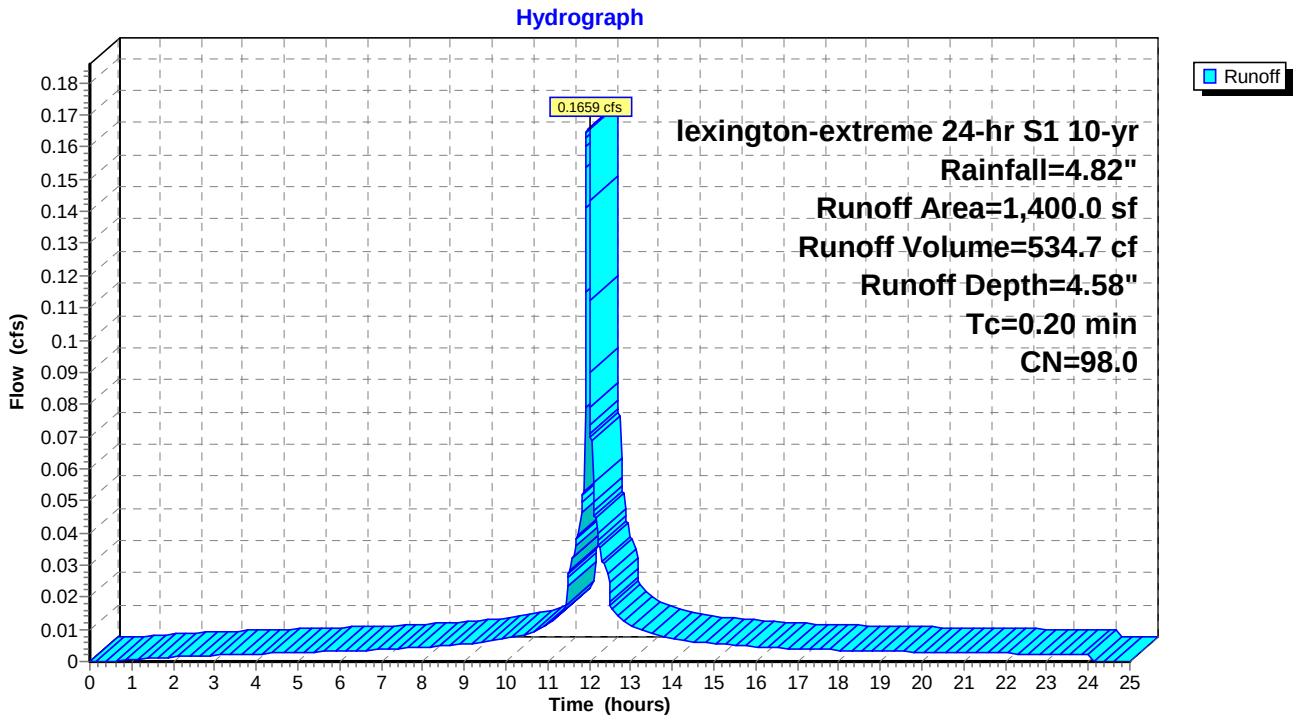
Runoff = 0.1659 cfs @ 12.00 hrs, Volume= 534.7 cf, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 10-yr Rainfall=4.82"

	Area (sf)	CN	Description
*	1,400.0	98.0	Impervious
	1,400.0		100.00% Impervious Area

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

Subcatchment SA8b: Sub-Area #8b (House)



Summary for Subcatchment SA9: Sub-Area #9 (House)

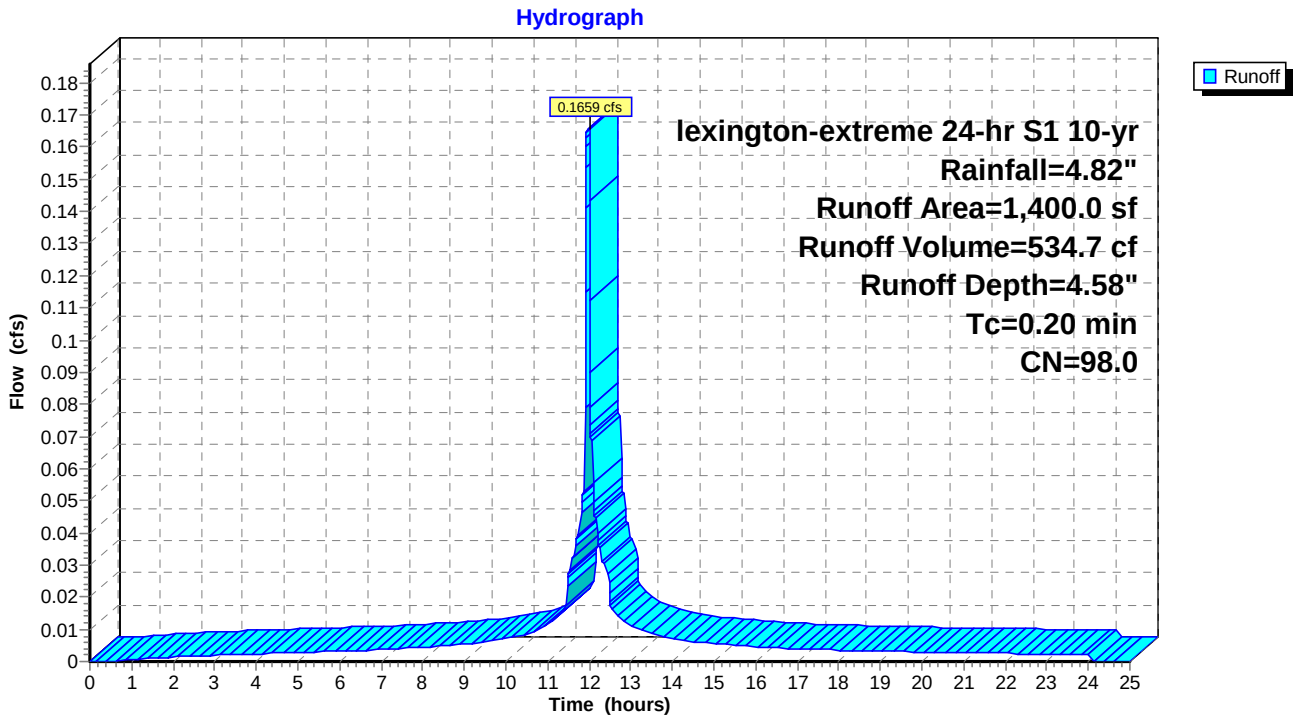
Runoff = 0.1659 cfs @ 12.00 hrs, Volume= 534.7 cf, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 10-yr Rainfall=4.82"

	Area (sf)	CN	Description
*	1,400.0	98.0	Impervious
	1,400.0		100.00% Impervious Area

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

Subcatchment SA9: Sub-Area #9 (House)

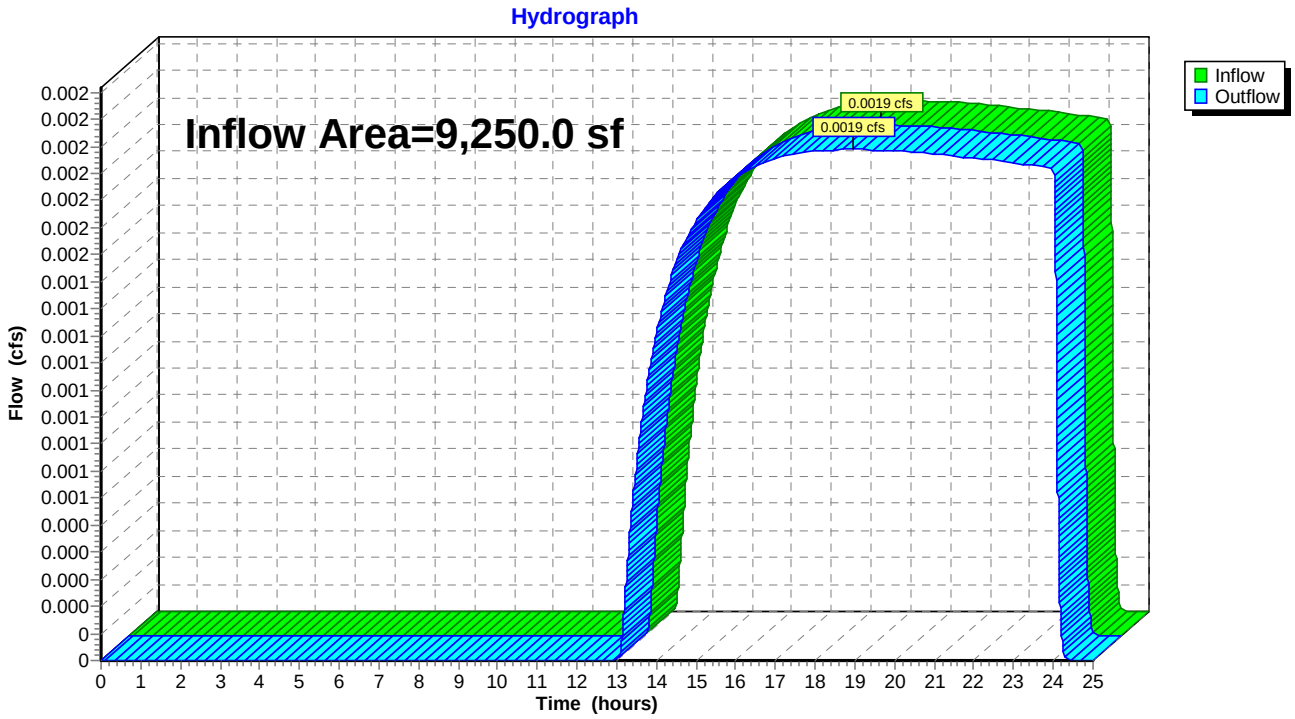


Summary for Reach DP1: Design Point 1 - #485 Concord Avenue

Inflow Area =	9,250.0 sf,	4.11% Impervious,	Inflow Depth =	0.09"	for 10-yr event
Inflow =	0.0019 cfs @	18.95 hrs,	Volume=	68.1 cf	
Outflow =	0.0019 cfs @	18.95 hrs,	Volume=	68.1 cf,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP1: Design Point 1 - #485 Concord Avenue

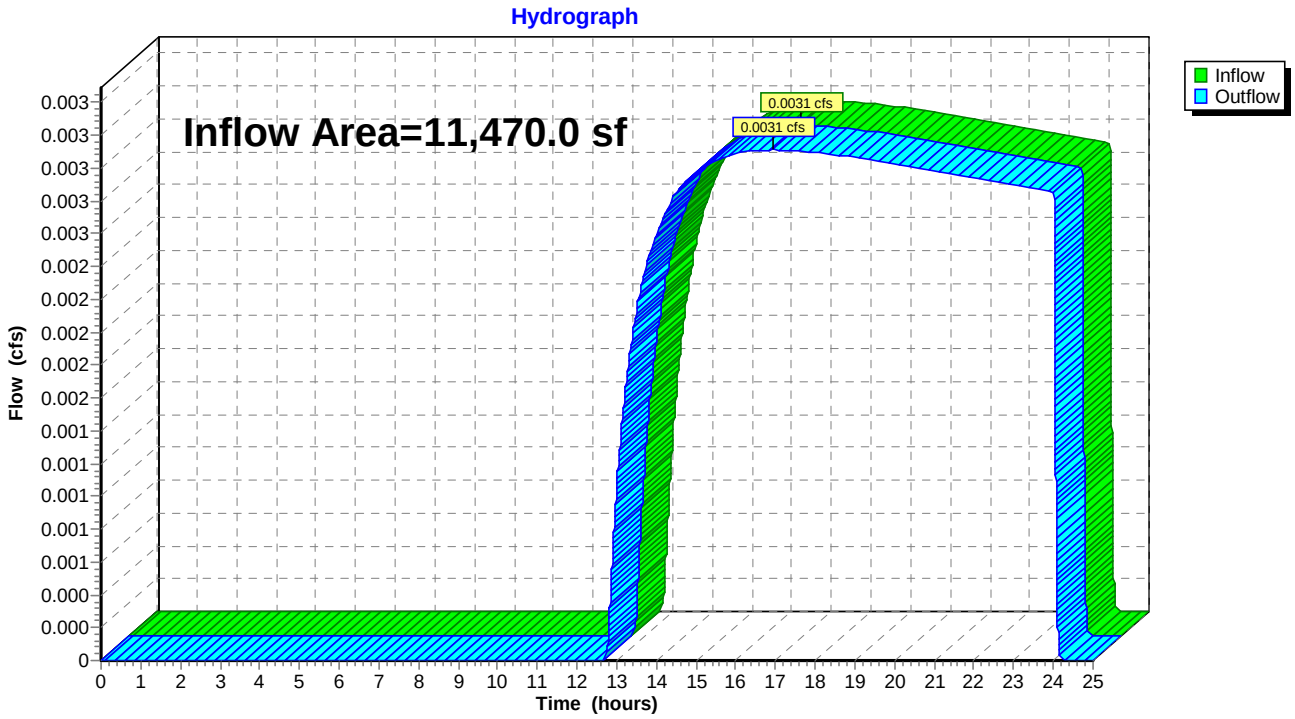


Summary for Reach DP2: Design Point 2 - #489 Concord Avenue

Inflow Area = 11,470.0 sf, 4.45% Impervious, Inflow Depth = 0.12" for 10-yr event
Inflow = 0.0031 cfs @ 16.93 hrs, Volume= 116.4 cf
Outflow = 0.0031 cfs @ 16.93 hrs, Volume= 116.4 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP2: Design Point 2 - #489 Concord Avenue

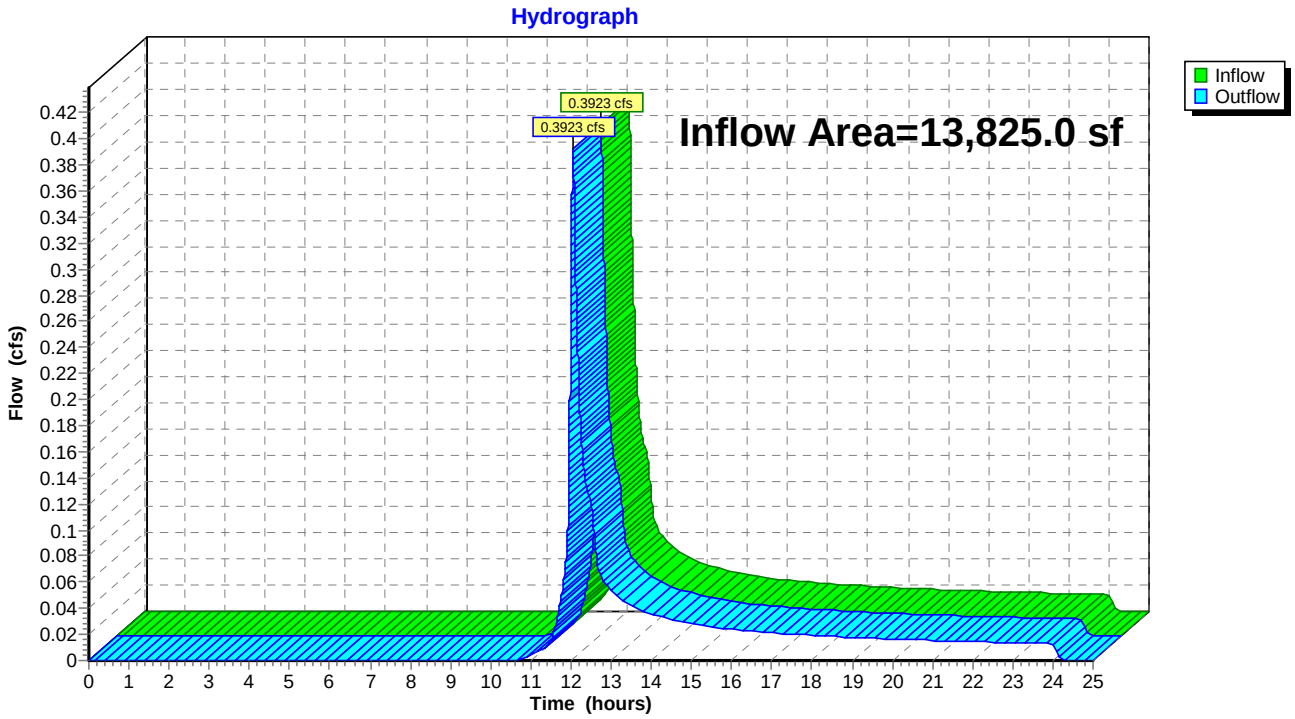


Summary for Reach DP3: Design Point 3 - Southeast B.V.W.

Inflow Area =	13,825.0 sf,	1.30% Impervious,	Inflow Depth =	1.31"	for 10-yr event
Inflow =	0.3923 cfs @	12.05 hrs,	Volume=	1,507.6 cf	
Outflow =	0.3923 cfs @	12.05 hrs,	Volume=	1,507.6 cf,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP3: Design Point 3 - Southeast B.V.W.

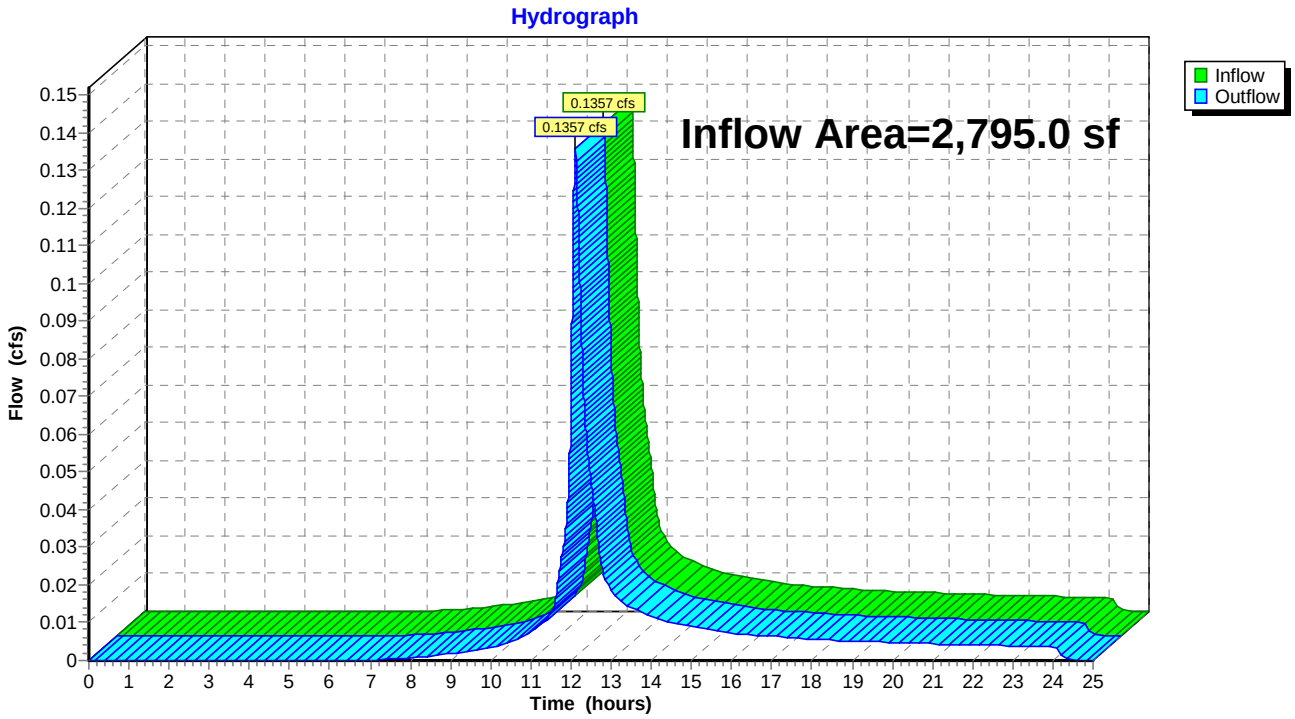


Summary for Reach DP4: Design Point 4 - #489 Concord Avenue (B.V.W.)

Inflow Area =	2,795.0 sf,	0.00% Impervious,	Inflow Depth =	2.47"	for 10-yr event
Inflow =	0.1357 cfs @	12.12 hrs,	Volume=	576.0 cf	
Outflow =	0.1357 cfs @	12.12 hrs,	Volume=	576.0 cf,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP4: Design Point 4 - #489 Concord Avenue (B.V.W.)

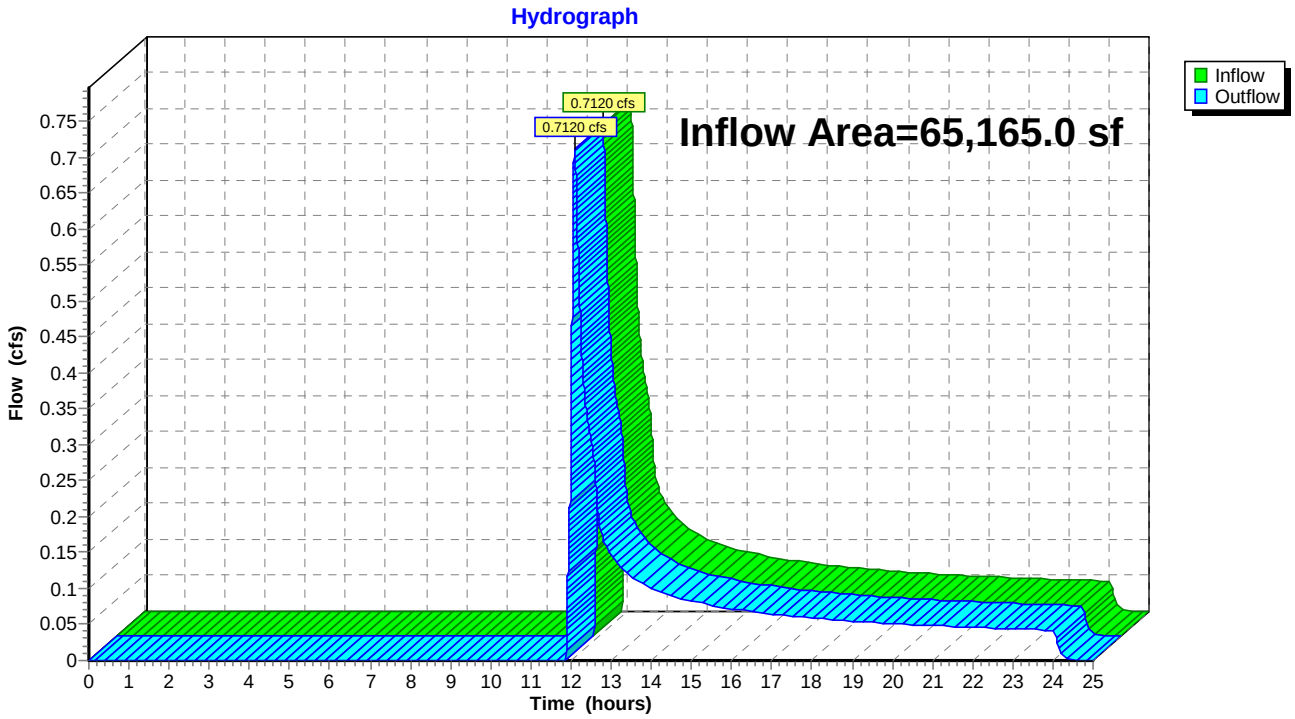


Summary for Reach DP5: Design Point 5 - Route 2

Inflow Area = 65,165.0 sf, 2.33% Impervious, Inflow Depth = 0.71" for 10-yr event
Inflow = 0.7120 cfs @ 12.09 hrs, Volume= 3,851.1 cf
Outflow = 0.7120 cfs @ 12.09 hrs, Volume= 3,851.1 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP5: Design Point 5 - Route 2



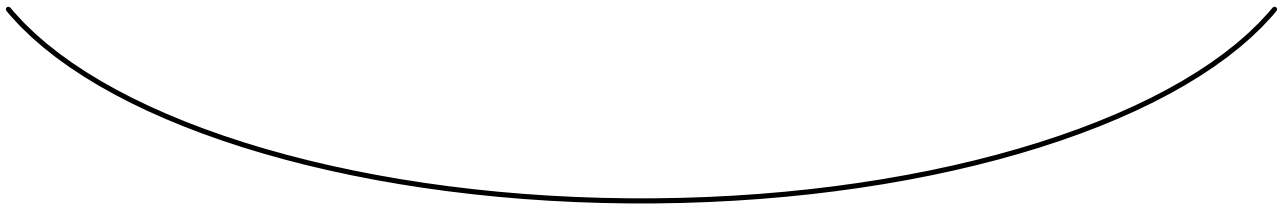
Summary for Reach O1: Overland Flow #1

Inflow	=	0.0000 cfs @	0.00 hrs,	Volume=	0.0 cf
Outflow	=	0.0000 cfs @	0.00 hrs,	Volume=	0.0 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0.0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.20' Flow Area= 0.4 sf, Capacity= 0.9748 cfs

3.00' x 0.20' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 57.0' Slope= 0.0491 '/'
Inlet Invert= 215.10', Outlet Invert= 212.30'



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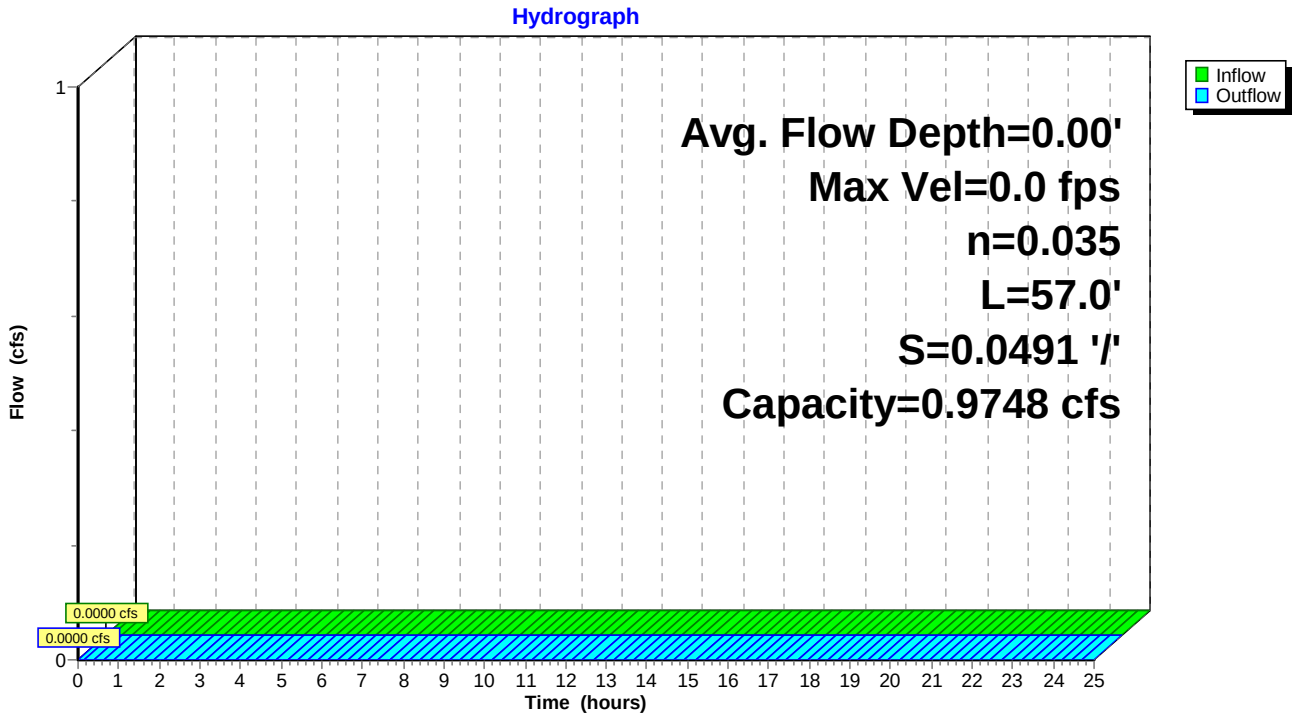
Reach O1: Overland Flow #1



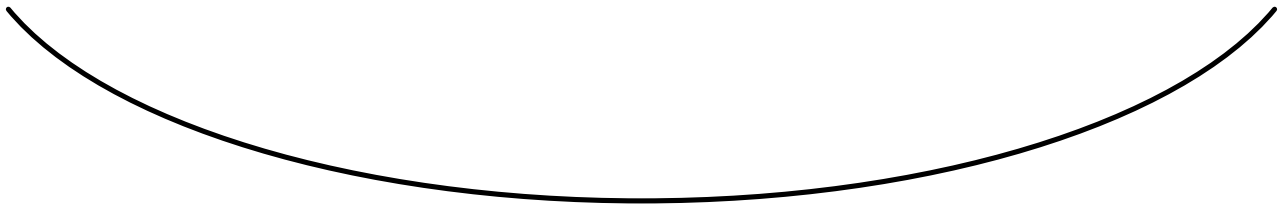
Summary for Reach O1a: Overland Flow #1a

Inflow Area = 275.0 sf, 20.00% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf
Outflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0.0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.10' Flow Area= 0.7 sf, Capacity= 1.4873 cfs

10.00' x 0.10' deep Parabolic Channel, n= 0.026
Length= 47.0' Slope= 0.0564 '/'
Inlet Invert= 219.45', Outlet Invert= 216.80'



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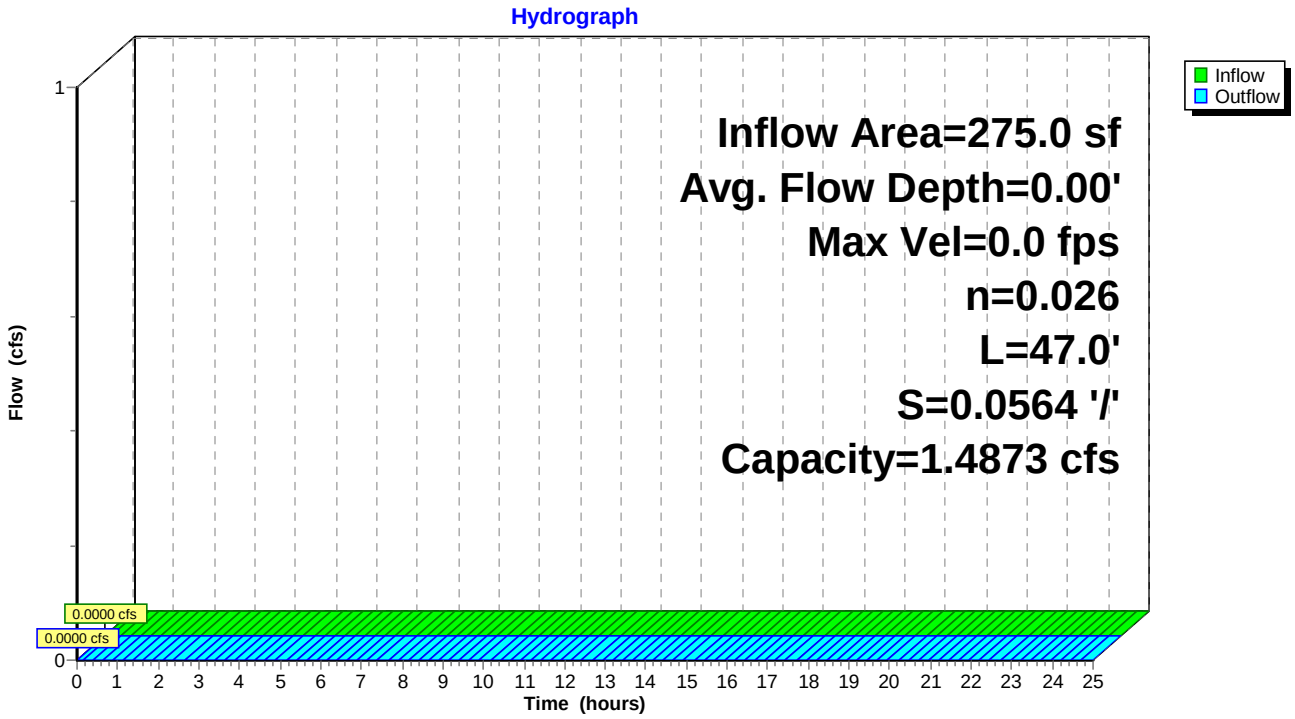
Reach O1a: Overland Flow #1a



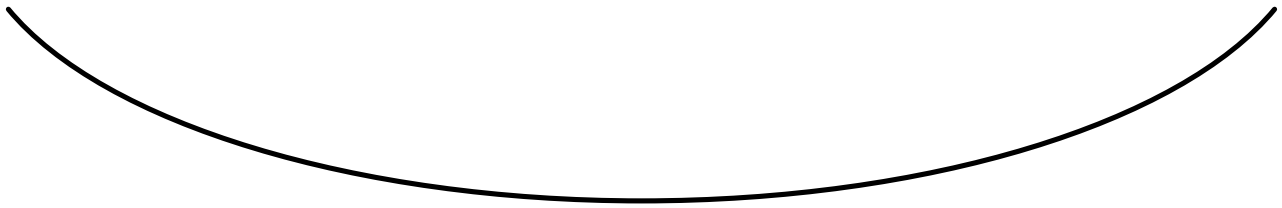
Summary for Reach O1b: Overland Flow #1b

Inflow Area = 875.0 sf, 10.86% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf
Outflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0.0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.10' Flow Area= 1.0 sf, Capacity= 2.0502 cfs

15.00' x 0.10' deep Parabolic Channel, n= 0.029
Length= 65.0' Slope= 0.0592 '/'
Inlet Invert= 219.55', Outlet Invert= 215.70'



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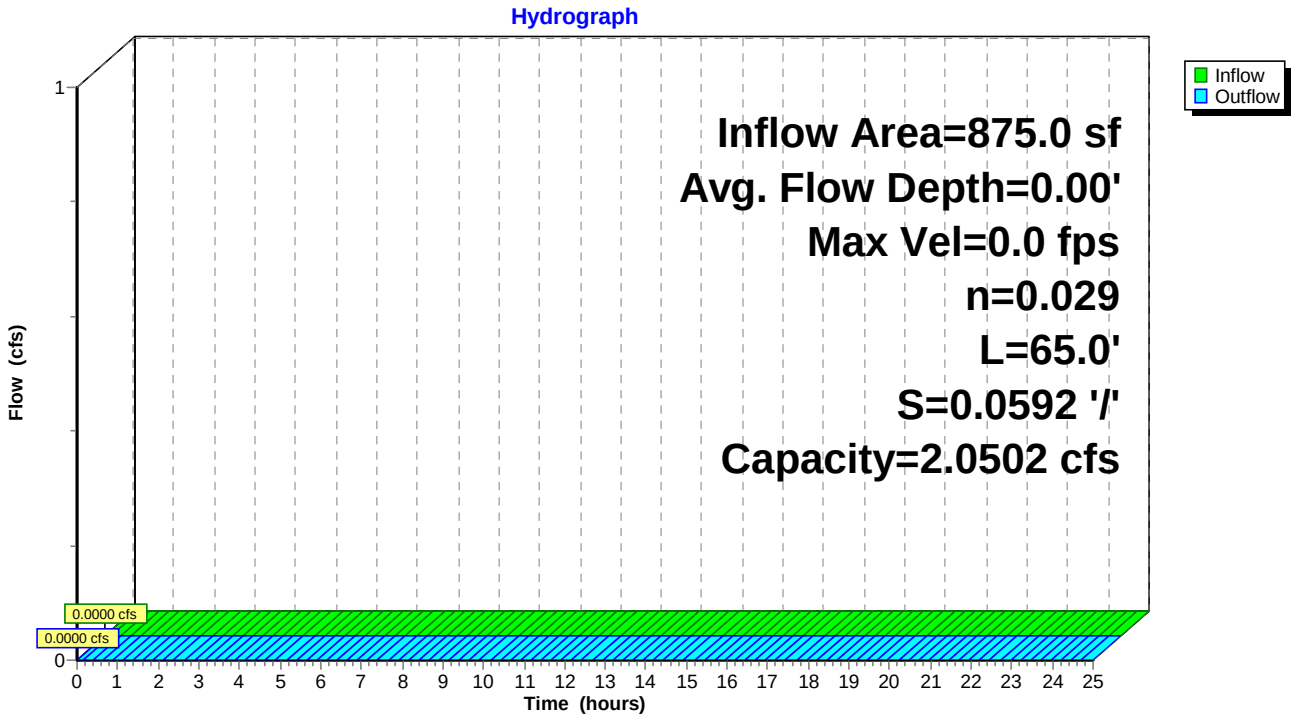
Reach O1b: Overland Flow #1b



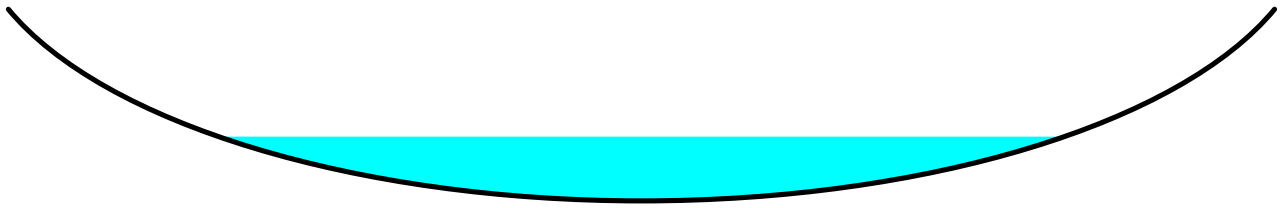
Summary for Reach O2: OverInd Flow #2

Inflow Area = 37,775.0 sf, 4.02% Impervious, Inflow Depth = 1.04" for 10-yr event
Inflow = 0.7130 cfs @ 12.09 hrs, Volume= 3,267.0 cf
Outflow = 0.7120 cfs @ 12.09 hrs, Volume= 3,267.0 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 0.9 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.4 fps, Avg. Travel Time= 0.9 min

Peak Storage= 17.3 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.07'
Bank-Full Depth= 0.20' Flow Area= 4.3 sf, Capacity= 7.6508 cfs

32.00' x 0.20' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 21.0' Slope= 0.0262 '/'
Inlet Invert= 212.35', Outlet Invert= 211.80'



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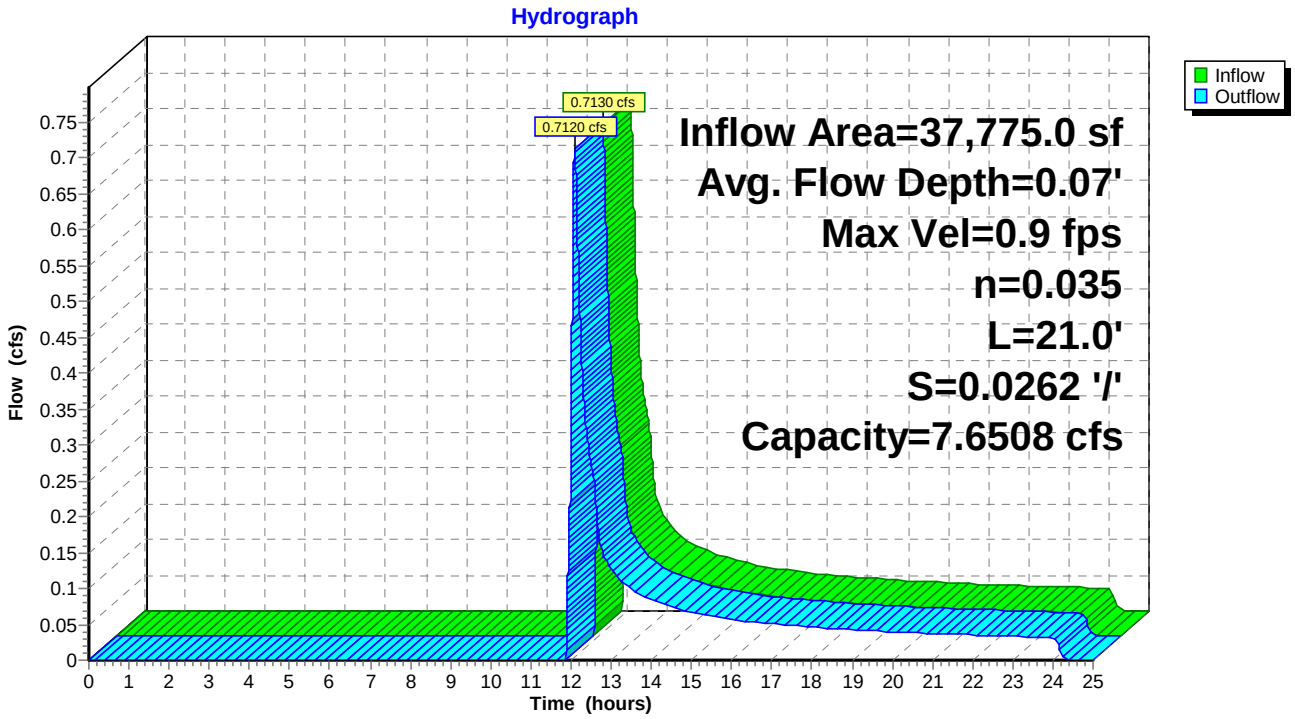
Reach O2: OverInd Flow #2



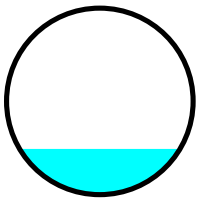
Summary for Reach RD1: Roof Drain #1

Inflow Area = 1,400.0 sf,100.00% Impervious, Inflow Depth = 4.58" for 10-yr event
Inflow = 0.1659 cfs @ 12.00 hrs, Volume= 534.7 cf
Outflow = 0.1659 cfs @ 12.00 hrs, Volume= 534.7 cf, Atten= 0%, Lag= 0.1 min

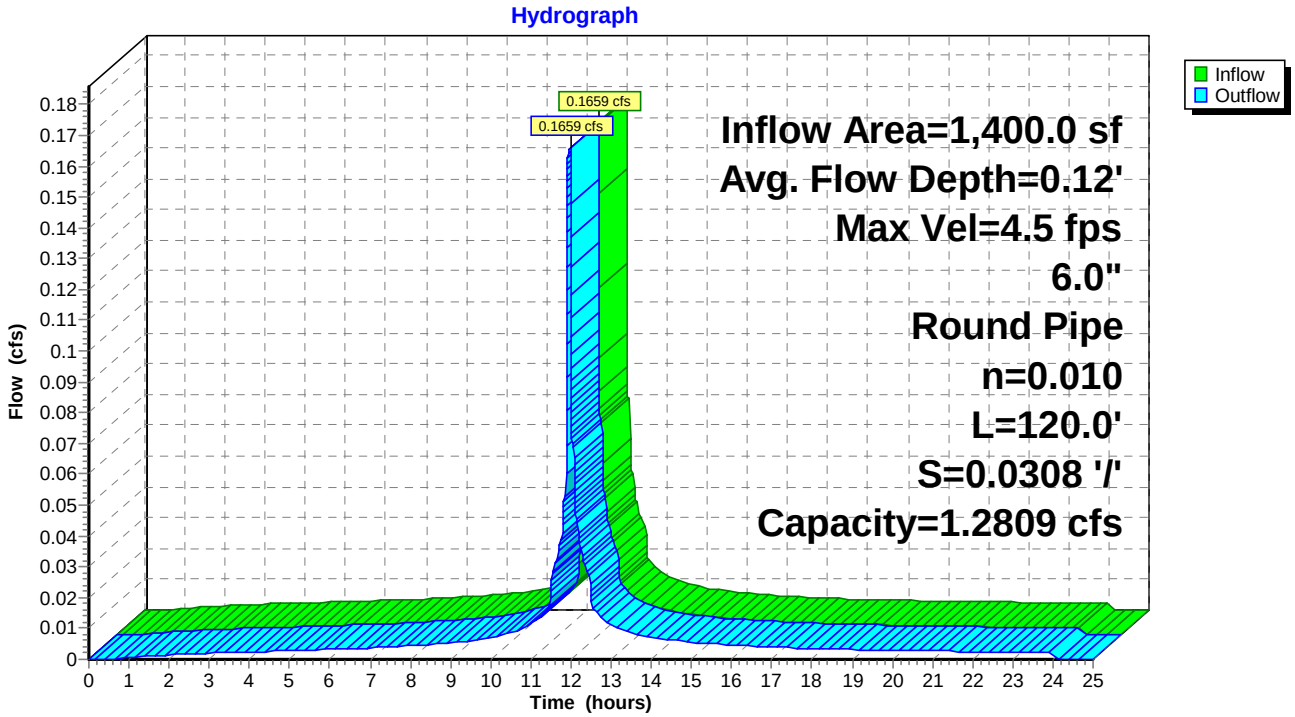
Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 4.5 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.5 fps, Avg. Travel Time= 1.3 min

Peak Storage= 4.4 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 1.2809 cfs

6.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 120.0' Slope= 0.0308 '/'
Inlet Invert= 222.00', Outlet Invert= 218.30'



Reach RD1: Roof Drain #1



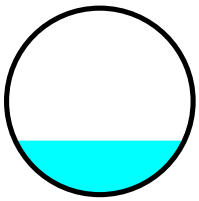
Summary for Reach RD2: Roof Drain #2

Inflow Area = 1,400.0 sf,100.00% Impervious, Inflow Depth = 4.58" for 10-yr event
Inflow = 0.1659 cfs @ 12.00 hrs, Volume= 534.7 cf
Outflow = 0.1659 cfs @ 12.00 hrs, Volume= 534.7 cf, Atten= 0%, Lag= 0.1 min

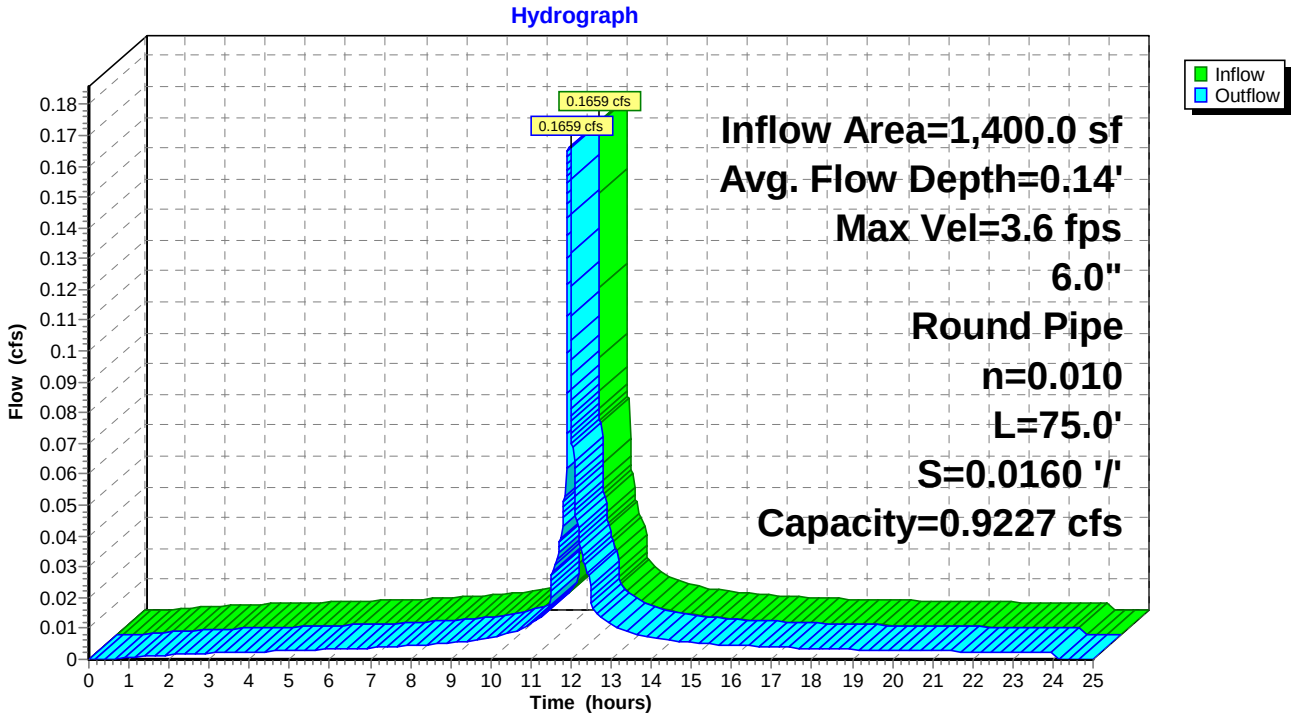
Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 3.6 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.2 fps, Avg. Travel Time= 1.0 min

Peak Storage= 3.5 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.9227 cfs

6.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 75.0' Slope= 0.0160 '/'
Inlet Invert= 219.50', Outlet Invert= 218.30'



Reach RD2: Roof Drain #2



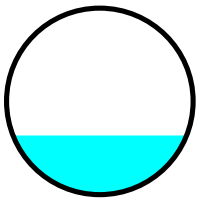
Summary for Reach RD3: Roof Drain #3

Inflow Area = 1,400.0 sf,100.00% Impervious, Inflow Depth = 4.58" for 10-yr event
Inflow = 0.1659 cfs @ 12.00 hrs, Volume= 534.7 cf
Outflow = 0.1659 cfs @ 12.00 hrs, Volume= 534.7 cf, Atten= 0%, Lag= 0.1 min

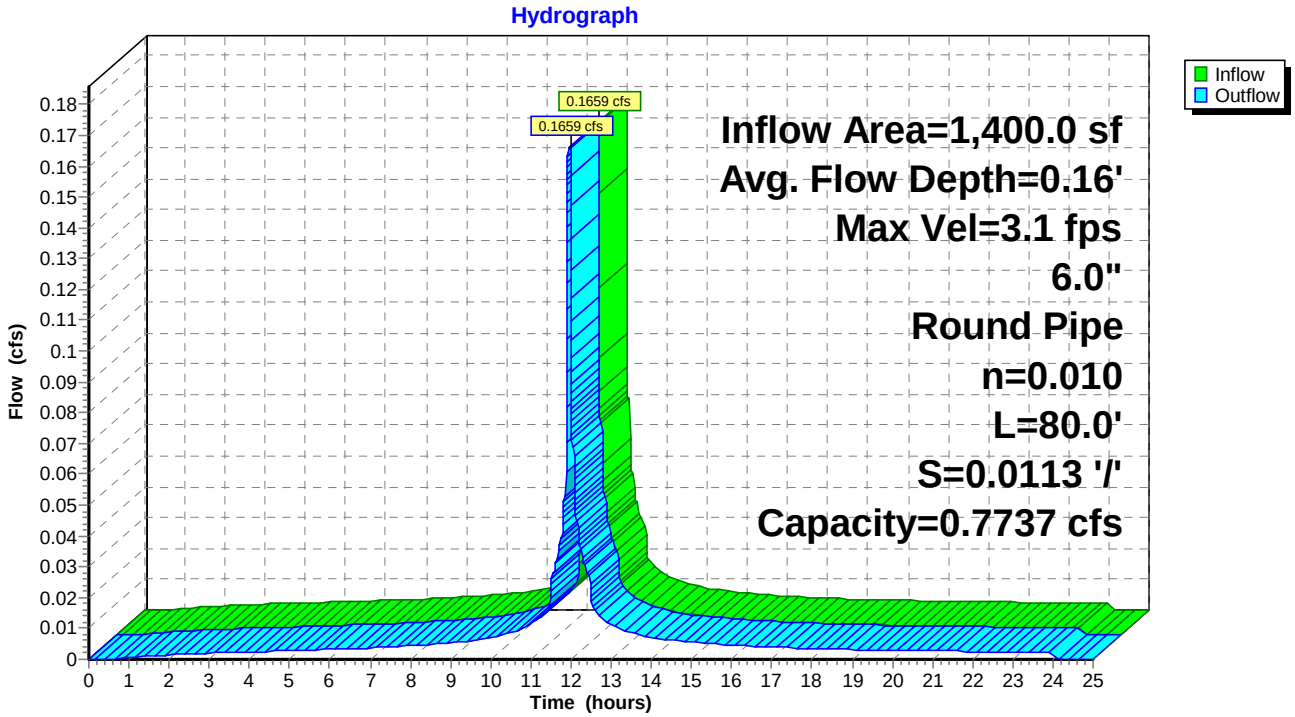
Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 3.1 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.1 fps, Avg. Travel Time= 1.3 min

Peak Storage= 4.2 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.7737 cfs

6.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 80.0' Slope= 0.0113 '/'
Inlet Invert= 218.50', Outlet Invert= 217.60'



Reach RD3: Roof Drain #3



Summary for Pond CB1: Catch Basin #1

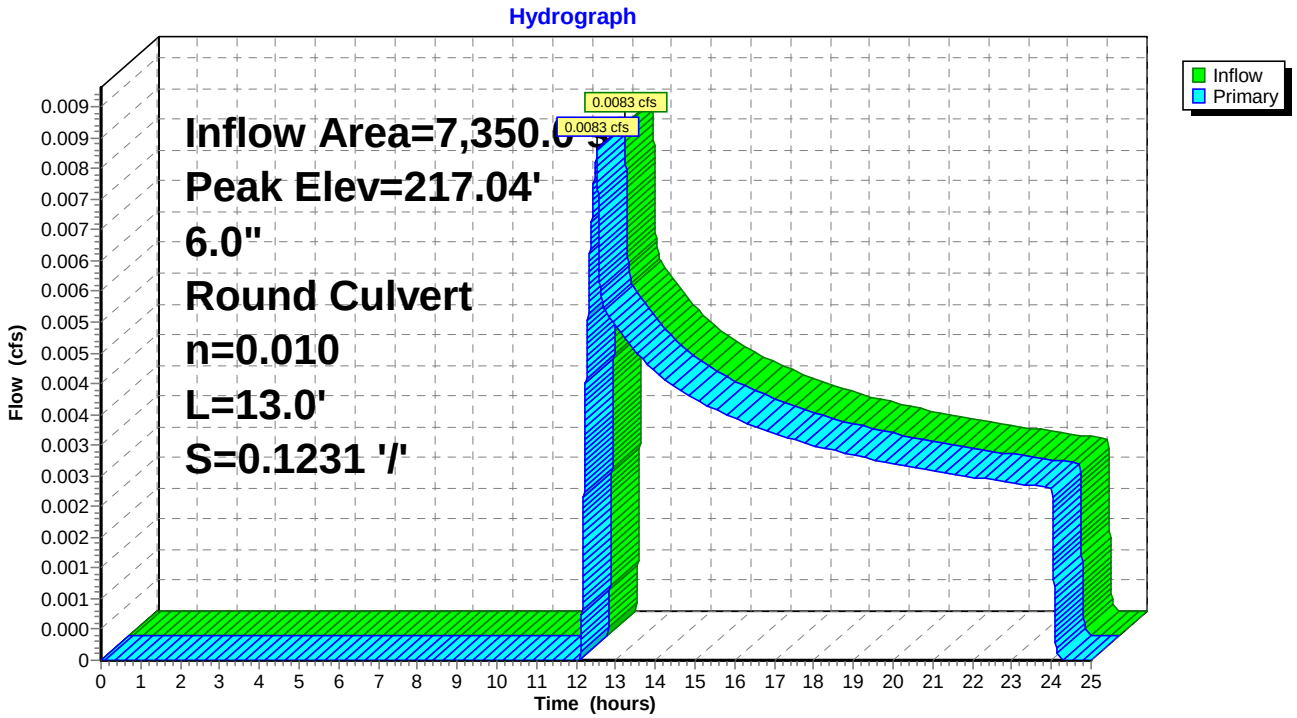
Inflow Area =	7,350.0 sf,	4.76% Impervious,	Inflow Depth =	0.26"	for 10-yr event
Inflow =	0.0083 cfs @	12.52 hrs,	Volume=	161.2 cf	
Outflow =	0.0083 cfs @	12.52 hrs,	Volume=	161.2 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.0083 cfs @	12.52 hrs,	Volume=	161.2 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 217.04' @ 12.52 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	217.00'	**6.0" Round Culvert** L= 13.0' Ke= 0.100 Inlet / Outlet Invert= 217.00' / 215.40' S= 0.1231 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.0083 cfs @ 12.52 hrs HW=217.04' TW=214.17' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.0083 cfs @ 1.0 fps)

Pond CB1: Catch Basin #1



Summary for Pond CO1: Clean Out #1

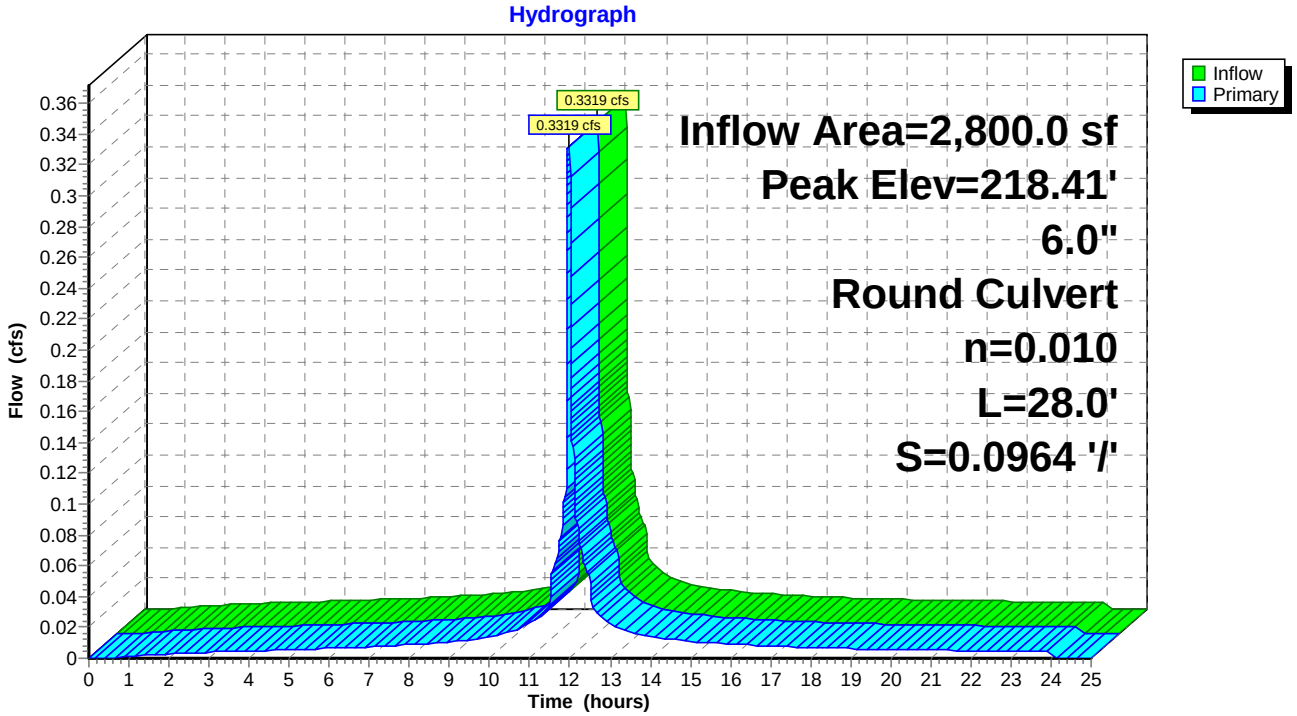
Inflow Area =	2,800.0 sf,100.00% Impervious,	Inflow Depth =	4.58"	for	10-yr event
Inflow =	0.3319 cfs @	12.00 hrs,	Volume=	1,069.5 cf	
Outflow =	0.3319 cfs @	12.00 hrs,	Volume=	1,069.5 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.3319 cfs @	12.00 hrs,	Volume=	1,069.5 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 218.41' @ 12.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	218.10'	**6.0" Round Culvert** L= 28.0' Ke= 0.100 Inlet / Outlet Invert= 218.10' / 215.40' S= 0.0964 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.3319 cfs @ 12.00 hrs HW=218.41' TW=213.79' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.3319 cfs @ 2.6 fps)

Pond CO1: Clean Out #1



Summary for Pond CO2: Clean Out #2

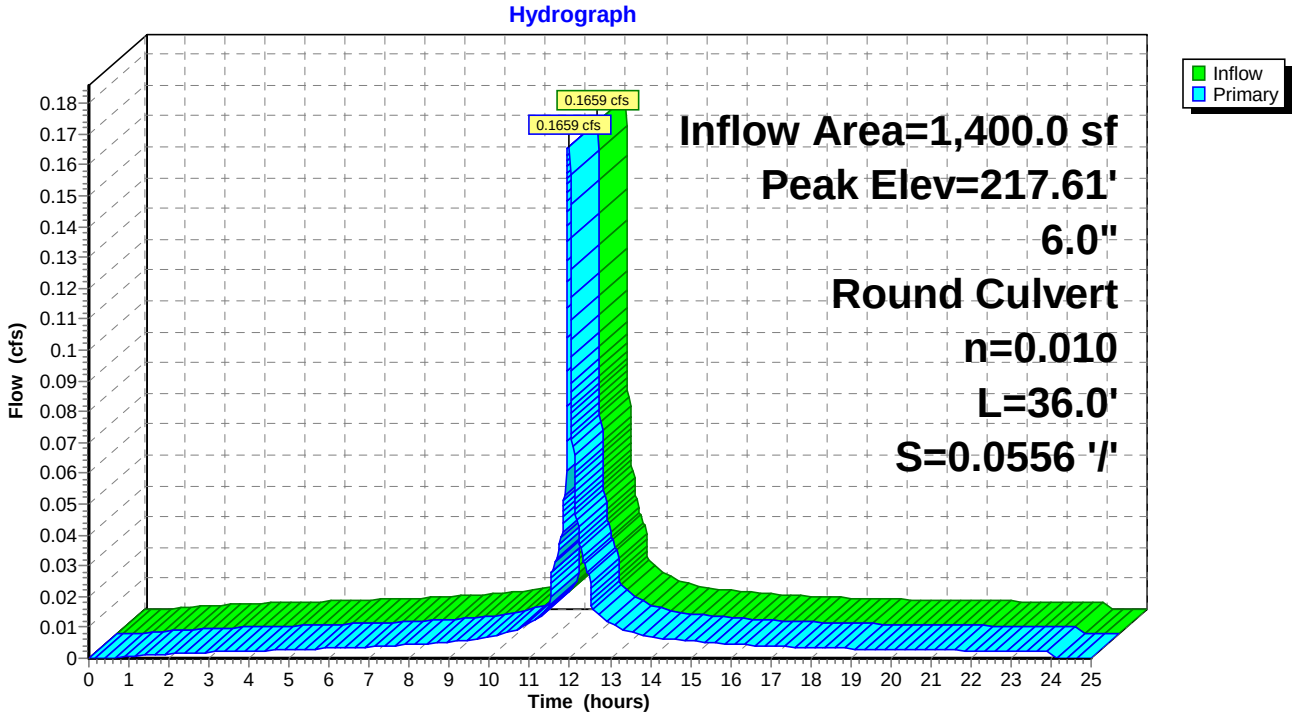
Inflow Area =	1,400.0 sf,100.00% Impervious,	Inflow Depth =	4.58"	for 10-yr event	
Inflow =	0.1659 cfs @	12.00 hrs,	Volume=	534.7 cf	
Outflow =	0.1659 cfs @	12.00 hrs,	Volume=	534.7 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.1659 cfs @	12.00 hrs,	Volume=	534.7 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 217.61' @ 12.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	217.40'	**6.0" Round Culvert** L= 36.0' Ke= 0.100 Inlet / Outlet Invert= 217.40' / 215.40' S= 0.0556 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.1659 cfs @ 12.00 hrs HW=217.61' TW=213.79' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.1659 cfs @ 2.1 fps)

Pond CO2: Clean Out #2



Summary for Pond LP1a: Low Point #1a

Inflow Area = 275.0 sf, 20.00% Impervious, Inflow Depth = 0.33" for 10-yr event
Inflow = 0.0005 cfs @ 12.50 hrs, Volume= 7.5 cf
Outflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 219.44' @ 24.07 hrs Surf.Area= 127.2 sf Storage= 7.5 cf

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

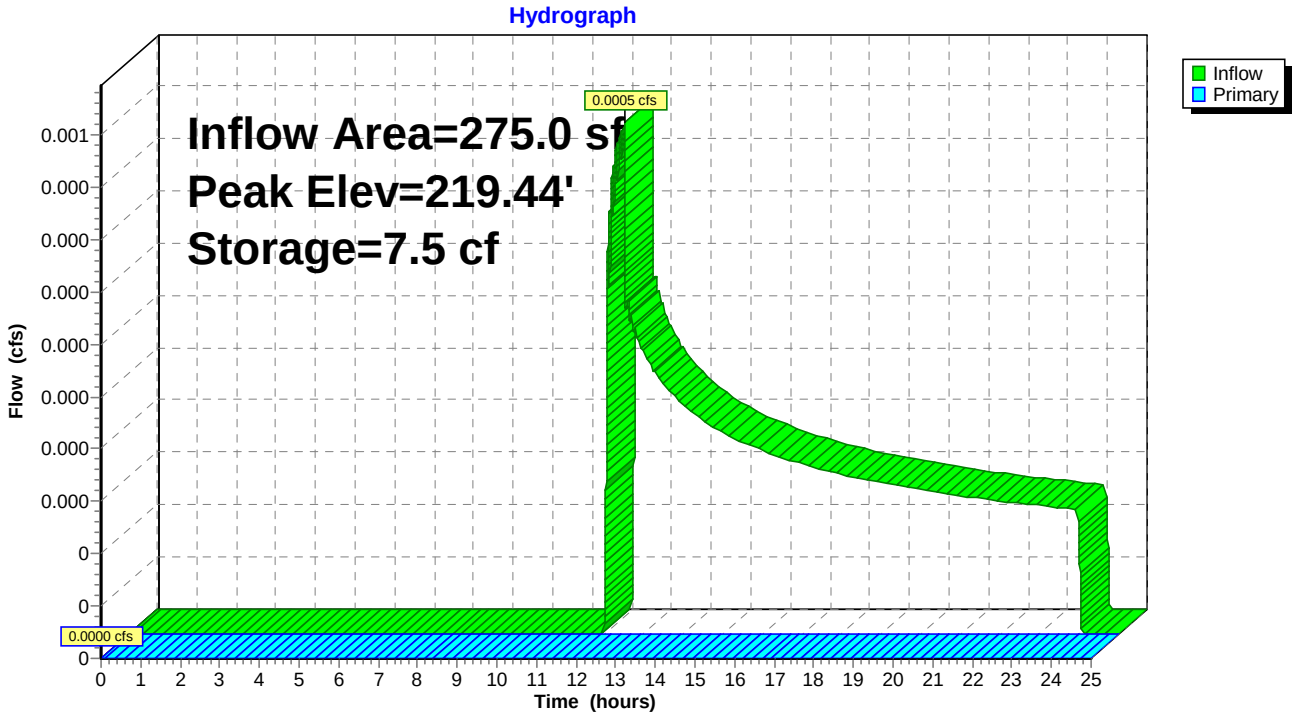
Volume	Invert	Avail.Storage	Storage Description
#1	219.30'	57.0 cf	**Low Point #1a (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
219.30	0.0	0.0	0.0	0.0	0.0
219.40	104.0	50.0	3.5	3.5	199.0
219.50	176.0	62.0	13.8	17.3	306.1
219.60	200.0	68.0	18.8	36.1	368.5
219.70	219.0	75.0	20.9	57.0	448.4

Device	Routing	Invert	Outlet Devices
#1	Primary	219.50'	**LP#1a Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.20 Width (feet) 10.00 35.00

Primary OutFlow Max=0.0000 cfs @ 0.00 hrs HW=219.30' TW=219.45' (Dynamic Tailwater)
└─**1=LP#1a Weir** (Controls 0.0000 cfs)

Pond LP1a: Low Point #1a



Summary for Pond LP1b: Low Point #1b

Inflow Area = 875.0 sf, 10.86% Impervious, Inflow Depth = 0.12" for 10-yr event
Inflow = 0.0002 cfs @ 17.25 hrs, Volume= 8.7 cf
Outflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 219.36' @ 24.38 hrs Surf.Area= 125.0 sf Storage= 8.7 cf

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

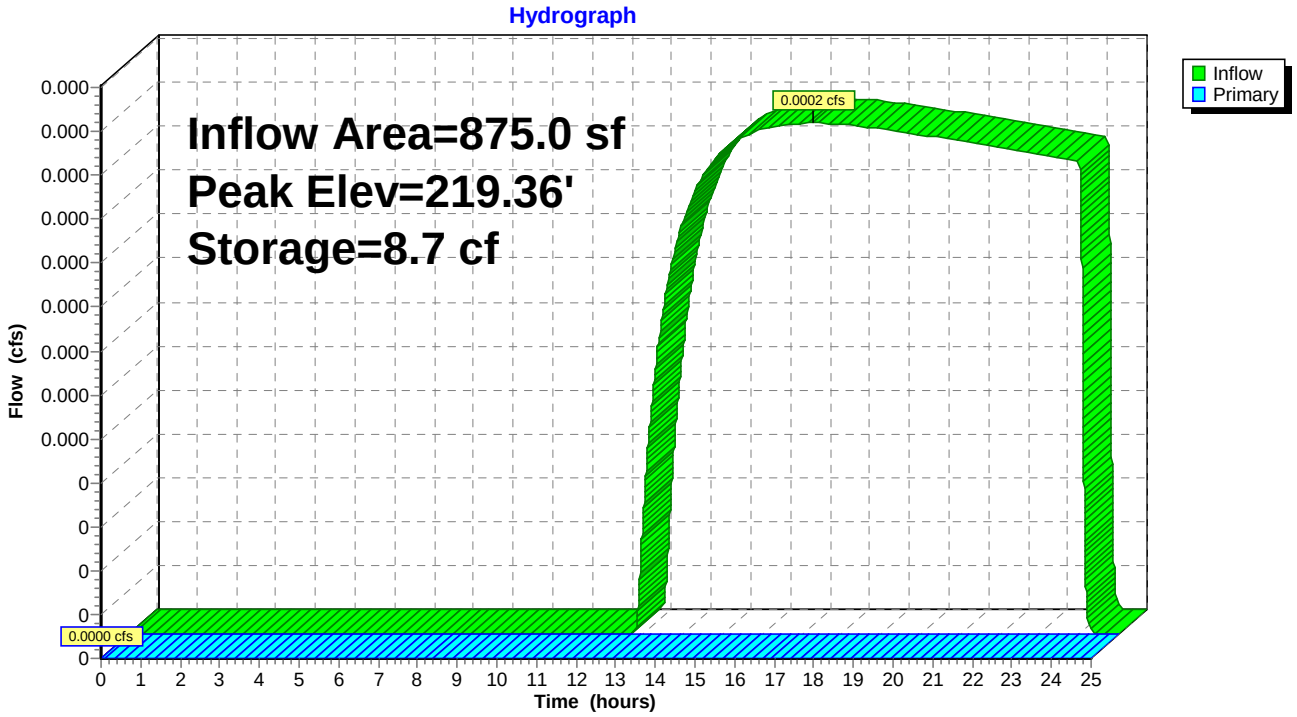
Volume	Invert	Avail.Storage	Storage Description
#1	219.20'	267.0 cf	**Low Point #1b (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
219.20	0.0	0.0	0.0	0.0	0.0
219.30	74.0	52.0	2.5	2.5	215.2
219.40	161.0	86.0	11.5	13.9	588.6
219.50	305.0	122.0	22.9	36.9	1,184.6
219.60	463.0	151.0	38.1	75.0	1,814.8
219.70	609.0	179.0	53.4	128.4	2,550.2
219.80	707.0	192.0	65.7	194.2	2,934.5
219.90	750.0	203.0	72.8	267.0	3,280.8

Device	Routing	Invert	Outlet Devices
#1	Primary	219.60'	**LP#1b Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.20 Width (feet) 15.00 48.00

Primary OutFlow Max=0.0000 cfs @ 0.00 hrs HW=219.20' TW=219.55' (Dynamic Tailwater)
└─**1=LP#1b Weir** (Controls 0.0000 cfs)

Pond LP1b: Low Point #1b



Summary for Pond LP2: Low Point #2

Inflow Area =	37,775.0 sf,	4.02% Impervious,	Inflow Depth =	1.06"	for 10-yr event
Inflow =	0.7205 cfs @	12.07 hrs,	Volume=	3,333.2 cf	
Outflow =	0.7130 cfs @	12.09 hrs,	Volume=	3,267.0 cf,	Atten= 1%, Lag= 1.0 min
Primary =	0.7130 cfs @	12.09 hrs,	Volume=	3,267.0 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 212.44' @ 12.09 hrs Surf.Area= 844.7 sf Storage= 96.6 cf

Plug-Flow detention time= 16.0 min calculated for 3,266.9 cf (98% of inflow)
Center-of-Mass det. time= 5.8 min (933.5 - 927.7)

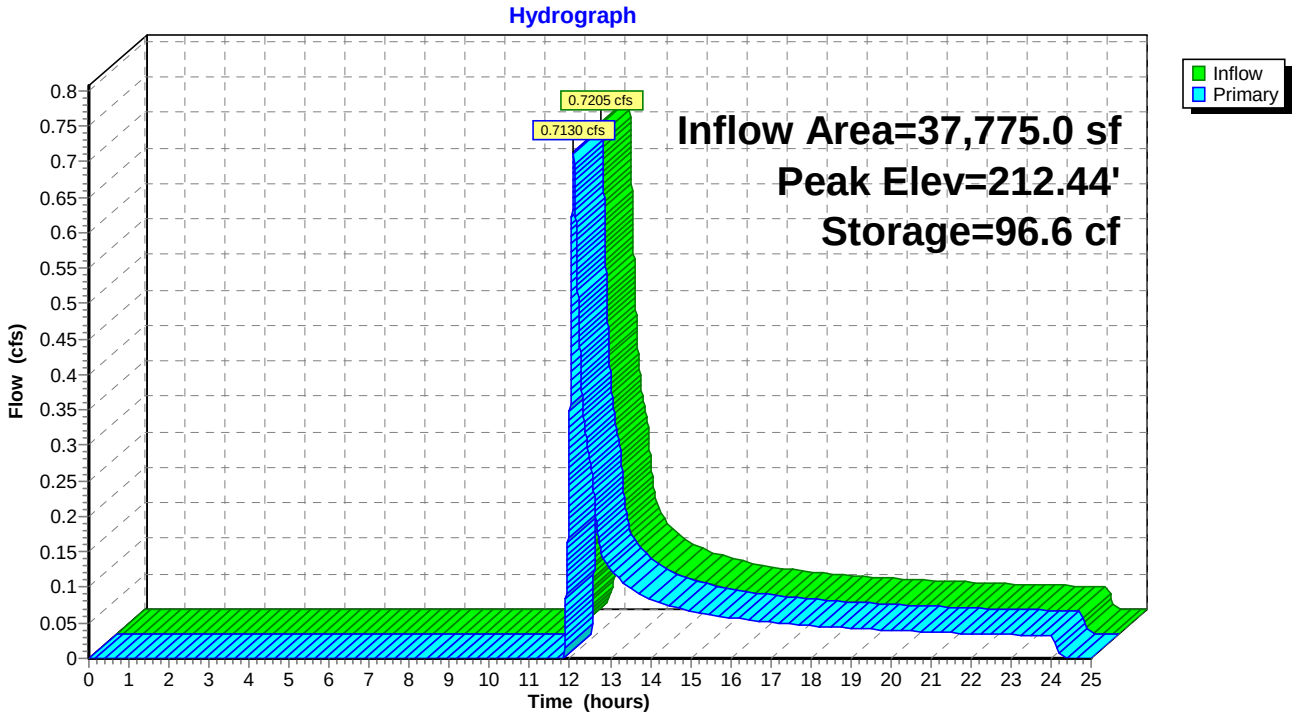
Volume	Invert	Avail.Storage	Storage Description
#1	212.20'	1,246.7 cf	**Low Point #2 (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
212.20	44.0	28.0	0.0	0.0	44.0
212.40	765.0	155.0	66.2	66.2	1,893.6
212.60	1,231.0	170.0	197.8	263.9	2,282.8
212.80	2,386.0	307.0	355.4	619.3	7,483.4
213.00	3,953.0	406.0	627.3	1,246.7	13,101.0

Device	Routing	Invert	Outlet Devices
#1	Primary	212.40'	**LP#1b Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.20 Width (feet) 32.00 38.00

Primary OutFlow Max=0.7128 cfs @ 12.09 hrs HW=212.44' TW=212.42' (Dynamic Tailwater)
└─**1=LP#1b Weir** (Weir Controls 0.7128 cfs @ 0.6 fps)

Pond LP2: Low Point #2



Summary for Pond RB1: Recharge Basin #1

Inflow Area =	11,550.0 sf, 39.39% Impervious, Inflow Depth = 1.83" for 10-yr event				
Inflow =	0.4978 cfs @	12.00 hrs,	Volume=	1,765.5 cf	
Outflow =	0.0373 cfs @	11.45 hrs,	Volume=	1,765.5 cf,	Atten= 93%, Lag= 0.0 min
Discarded =	0.0373 cfs @	11.45 hrs,	Volume=	1,765.5 cf	
Secondary =	0.0000 cfs @	0.00 hrs,	Volume=	0.0 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 214.21' @ 13.11 hrs Surf.Area= 672.0 sf Storage= 470.2 cf

Plug-Flow detention time= 82.5 min calculated for 1,765.4 cf (100% of inflow)
Center-of-Mass det. time= 82.5 min (855.3 - 772.8)

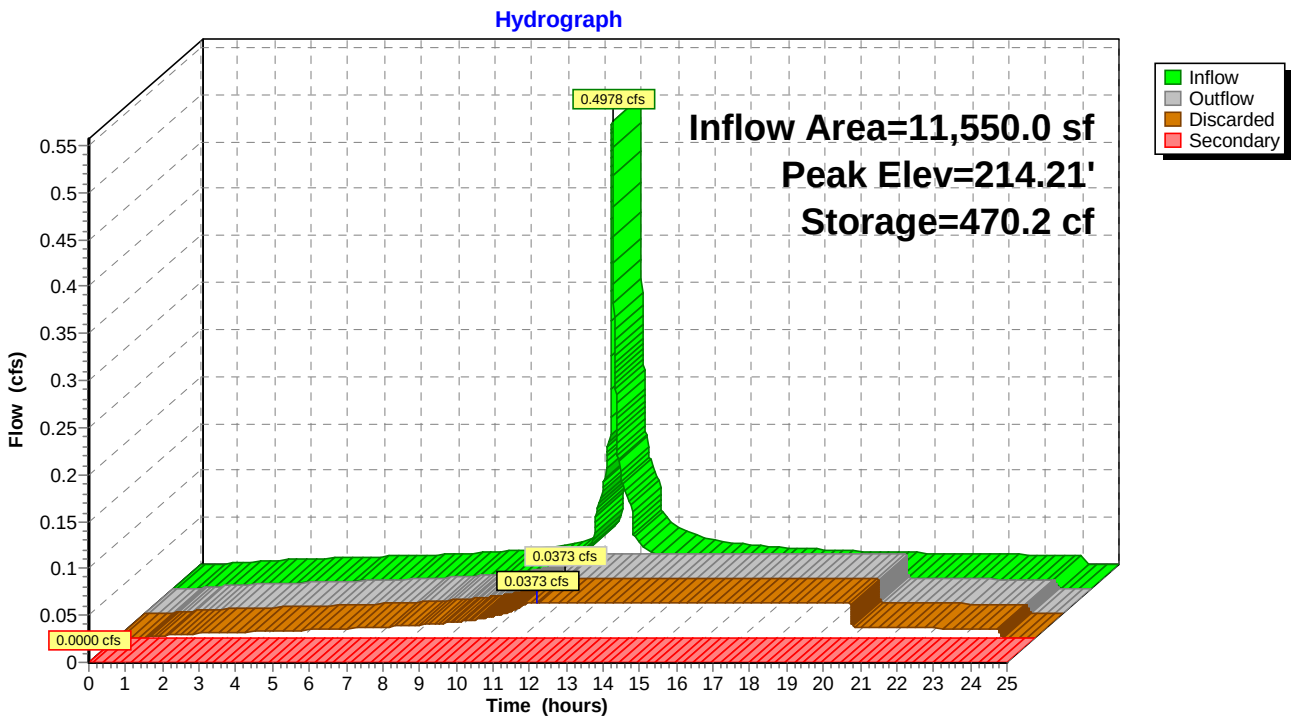
Volume	Invert	Avail.Storage	Storage Description
#1	213.00'	422.0 cf	**24.00'W x 28.00'L x 3.50'H Prismatoid** 2,352.0 cf Overall - 1,297.1 cf Embedded = 1,054.9 cf x 40.0% Voids
#2	213.50'	935.7 cf	**Concrete Galley 4x4x3** x 30 Inside #1 Inside= 42.0"W x 30.0"H => 8.91 sf x 3.50'L = 31.2 cf Outside= 48.0"W x 36.0"H => 10.81 sf x 4.00'L = 43.2 cf
		1,357.7 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	213.00'	**0.0373 cfs Exfiltration when above 213.00'** Phase-In= 0.01'
#2	Secondary	215.40'	**6.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 215.40' / 215.20' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.0373 cfs @ 11.45 hrs HW=213.04' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.0373 cfs)

Secondary OutFlow Max=0.0000 cfs @ 0.00 hrs HW=213.00' TW=215.10' (Dynamic Tailwater)
└─**2=Culvert** (Controls 0.0000 cfs)

Pond RB1: Recharge Basin #1



Summary for Subcatchment SA1a: Sub-Area #1a

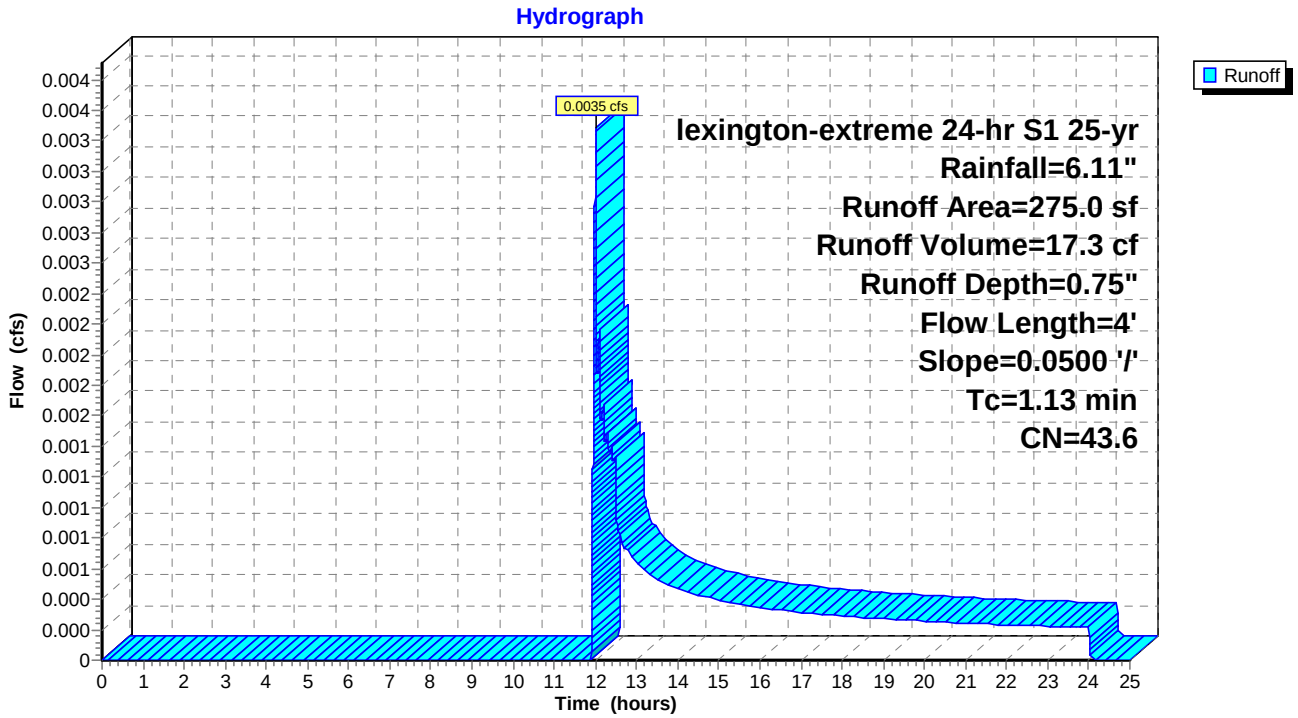
Runoff = 0.0035 cfs @ 12.01 hrs, Volume= 17.3 cf, Depth= 0.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 25-yr Rainfall=6.11"

	Area (sf)	CN	Description
*	55.0	98.0	Impervious
*	220.0	30.0	Woods/Landscape, Good, HSG A
	275.0	43.6	Weighted Average
	220.0		80.00% Pervious Area
	55.0		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.13	4	0.0500	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment SA1a: Sub-Area #1a



Summary for Subcatchment SA1b: Sub-Area #1b

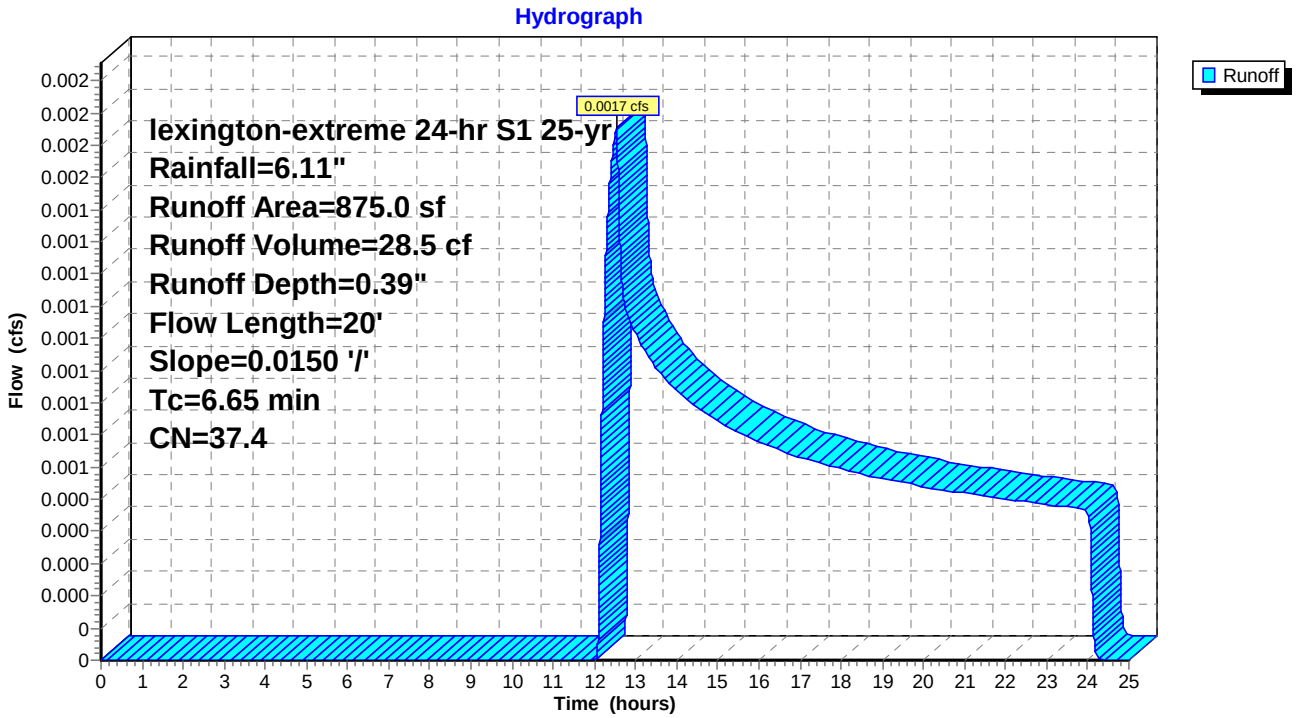
Runoff = 0.0017 cfs @ 12.52 hrs, Volume= 28.5 cf, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 25-yr Rainfall=6.11"

	Area (sf)	CN	Description
*	95.0	98.0	Impervious
*	780.0	30.0	Woods/Landscape, Good, HSG A
	875.0	37.4	Weighted Average
	780.0		89.14% Pervious Area
	95.0		10.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.65	20	0.0150	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment SA1b: Sub-Area #1b



Summary for Subcatchment SA1c: Sub-Area #1c

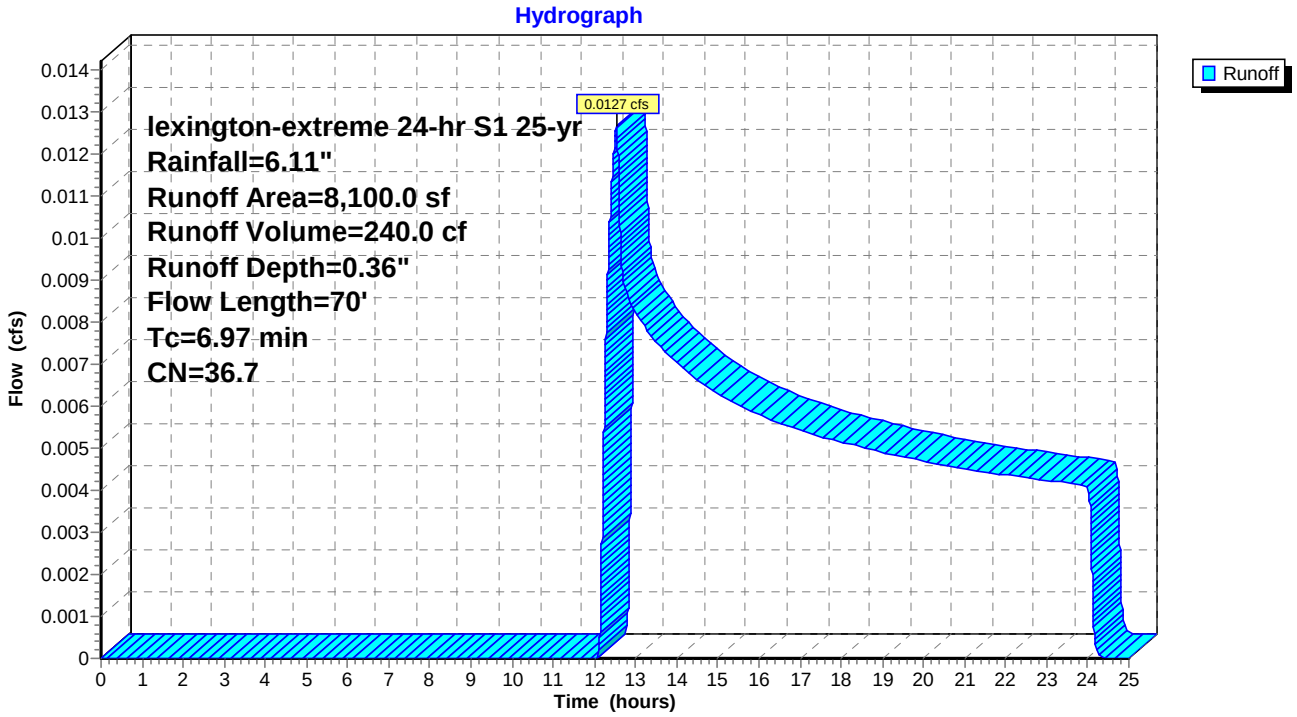
Runoff = 0.0127 cfs @ 12.54 hrs, Volume= 240.0 cf, Depth= 0.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 25-yr Rainfall=6.11"

	Area (sf)	CN	Description
*	230.0	98.0	Impervious
*	3,280.0	39.0	Porous Asphalt/Grass Pavers
	1,000.0	39.0	>75% Grass cover, Good, HSG A
*	3,590.0	30.0	Woods/Landscape, Good, HSG A
	8,100.0	36.7	Weighted Average
	7,870.0		97.16% Pervious Area
	230.0		2.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.93	7	0.0143	0.0		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.38	20	0.0150	0.9		**Sheet Flow, Segment 2 - Porous Asphalt** Smooth surfaces n= 0.011 P2= 3.20"
0.51	5	0.0800	0.2		**Sheet Flow, Segment 3 - Lawn** Grass: Short n= 0.150 P2= 3.20"
2.38	16	0.1250	0.1		**Sheet Flow, Segment 4 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.77	22	0.0091	0.5		**Shallow Concentrated Flow, Segment 5 - Woods** Woodland Kv= 5.00 fps
6.97	70	Total			

Subcatchment SA1c: Sub-Area #1c



Summary for Subcatchment SA2: Sub-Area #2

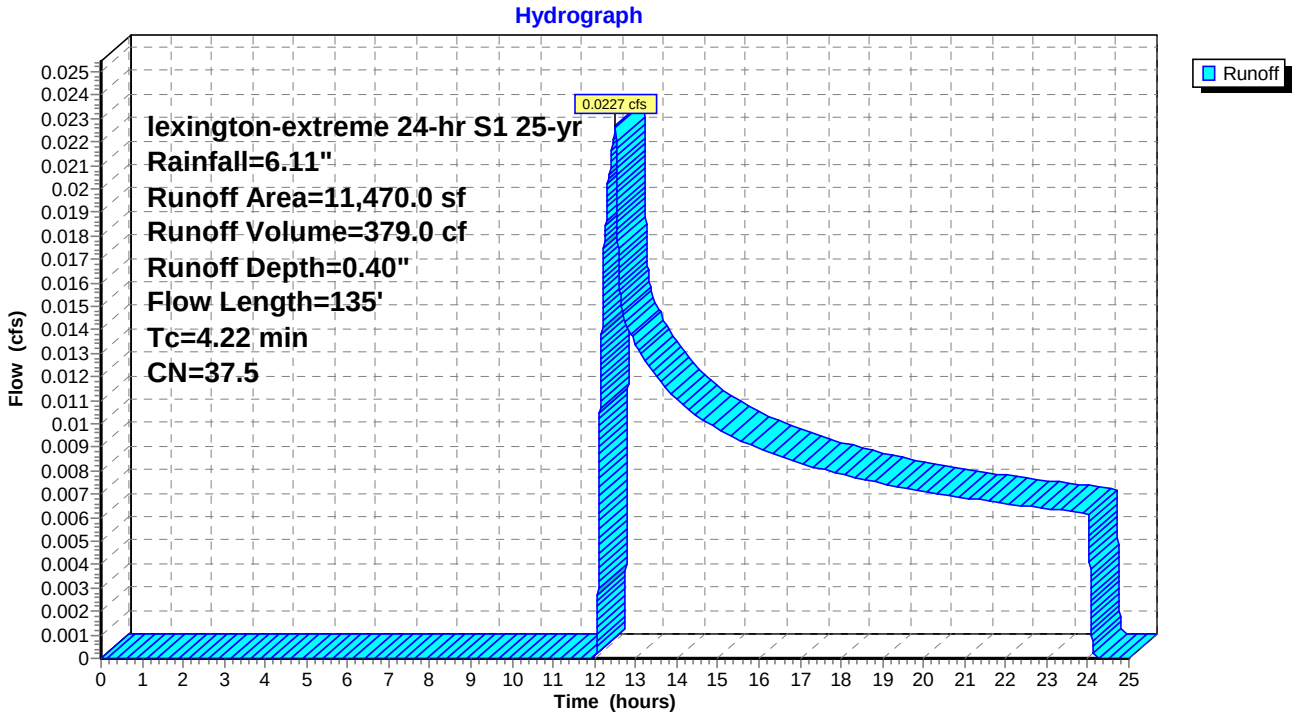
Runoff = 0.0227 cfs @ 12.52 hrs, Volume= 379.0 cf, Depth= 0.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 25-yr Rainfall=6.11"

	Area (sf)	CN	Description
*	510.0	98.0	Impervious
*	4,225.0	39.0	Porous Asphalt/Grass Pavers
	1,425.0	39.0	>75% Grass cover, Good, HSG A
*	5,310.0	30.0	Woods/Landscape, Good, HSG A
	11,470.0	37.5	Weighted Average
	10,960.0		95.55% Pervious Area
	510.0		4.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.89	11	0.0364	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.60	39	0.0179	1.1		**Sheet Flow, Segment 2 - Porous Asphalt** Smooth surfaces n= 0.011 P2= 3.20"
0.20	31	0.0161	2.6		**Shallow Concentrated Flow, Segment 3 - Porous Asphalt** Paved Kv= 20.30 fps
0.25	19	0.0316	1.2		**Shallow Concentrated Flow, Segment 4 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.08	7	0.0857	1.5		**Shallow Concentrated Flow, Segment 5 - Woods** Woodland Kv= 5.00 fps
0.06	13	0.0538	3.7		**Shallow Concentrated Flow, Segment 6 - Gravel** Unpaved Kv= 16.10 fps
0.14	15	0.1267	1.8		**Shallow Concentrated Flow, Segment 7 - Woods** Woodland Kv= 5.00 fps
4.22	135	Total			

Subcatchment SA2: Sub-Area #2



Summary for Subcatchment SA3: Sub-Area #3

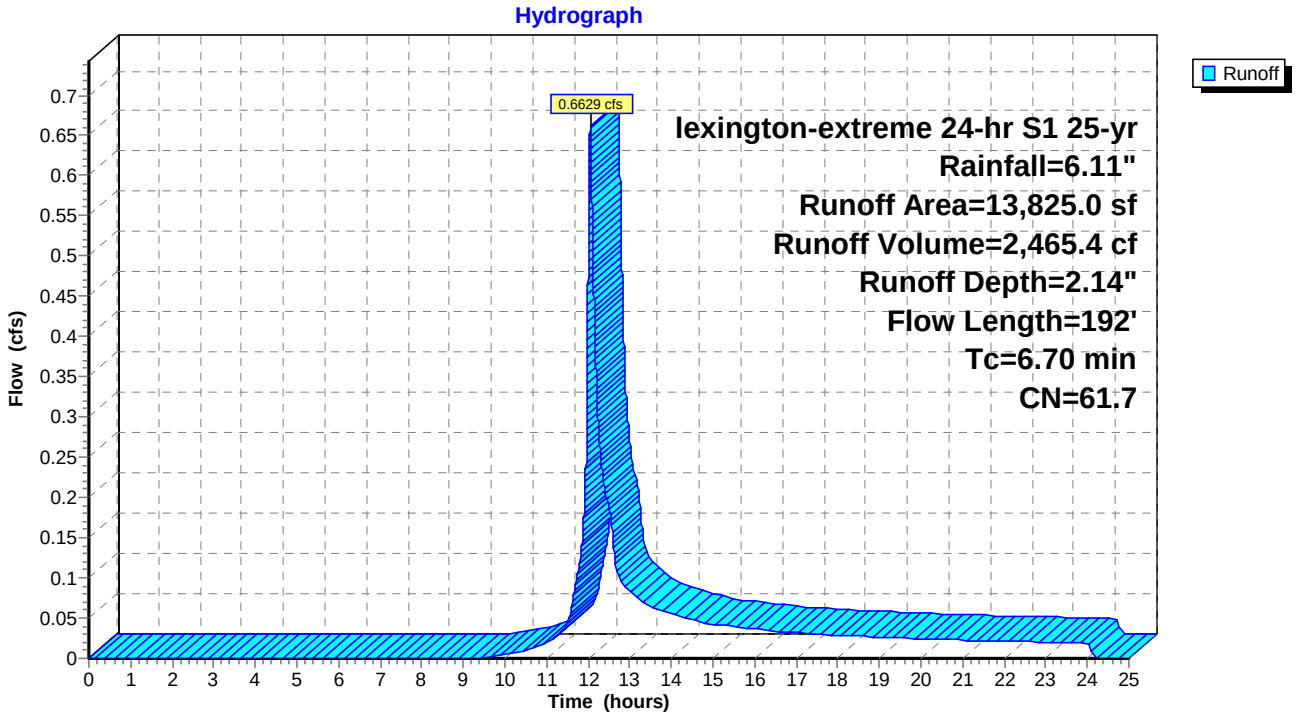
Runoff = 0.6629 cfs @ 12.05 hrs, Volume= 2,465.4 cf, Depth= 2.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 25-yr Rainfall=6.11"

	Area (sf)	CN	Description
*	180.0	98.0	Impervious
	2,015.0	80.0	>75% Grass cover, Good, HSG D
*	5,965.0	77.0	Woods/Landscape, Good, HSG D
*	915.0	39.0	Porous Asphalt/Grass Pavers
	4,095.0	39.0	>75% Grass cover, Good, HSG A
*	655.0	30.0	Woods/Landscape, Good, HSG A
	13,825.0	61.7	Weighted Average
	13,645.0		98.70% Pervious Area
	180.0		1.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.03	15	0.0600	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.42	19	0.0105	0.8		**Sheet Flow, Segment 2 - Porous Asphalt** Smooth surfaces n= 0.011 P2= 3.20"
1.76	16	0.0375	0.2		**Sheet Flow, Segment 3 - Lawn** Grass: Short n= 0.150 P2= 3.20"
1.04	100	0.0520	1.6		**Shallow Concentrated Flow, Segment 4 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.45	42	0.0976	1.6		**Shallow Concentrated Flow, Segment 5 - Woods** Woodland Kv= 5.00 fps
6.70	192	Total			

Subcatchment SA3: Sub-Area #3



Summary for Subcatchment SA4: Sub-Area #4

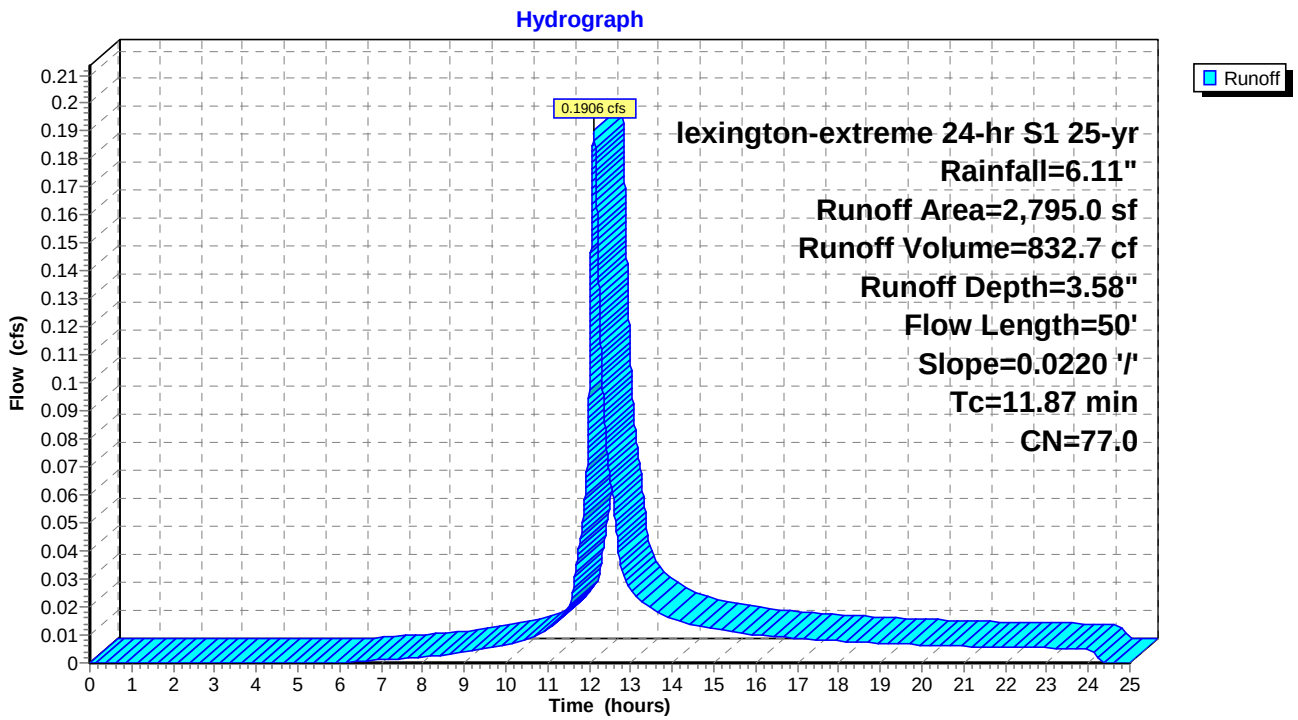
Runoff = 0.1906 cfs @ 12.12 hrs, Volume= 832.7 cf, Depth= 3.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 25-yr Rainfall=6.11"

	Area (sf)	CN	Description
*	2,795.0	77.0	Woods/Landscape, Good, HSG D
	2,795.0		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.87	50	0.0220	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment SA4: Sub-Area #4



Summary for Subcatchment SA5: Sub-Area #5

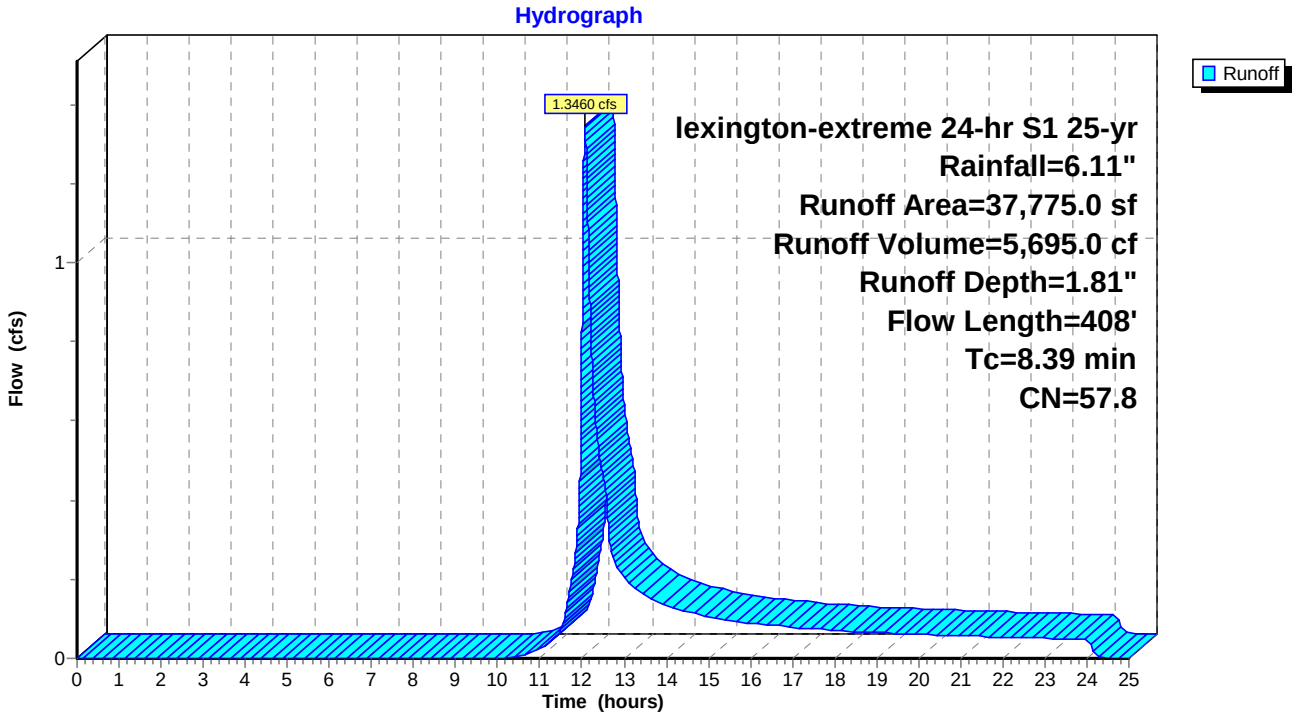
Runoff = 1.3460 cfs @ 12.07 hrs, Volume= 5,695.0 cf, Depth= 1.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 25-yr Rainfall=6.11"

	Area (sf)	CN	Description
*	1,520.0	98.0	Impervious
	12,120.0	80.0	>75% Grass cover, Good, HSG D
*	5,145.0	77.0	Woods/Landscape, Good, HSG D
*	3,030.0	39.0	Porous Asphalt/Grass Pavers
	8,060.0	39.0	>75% Grass cover, Good, HSG A
*	7,900.0	30.0	Woods/Landscape, Good, HSG A
	37,775.0	57.8	Weighted Average
	36,255.0		95.98% Pervious Area
	1,520.0		4.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.98	50	0.3380	0.2		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.60	57	0.1018	1.6		**Shallow Concentrated Flow, Segment 2 - Woods** Woodland Kv= 5.00 fps
0.08	6	0.0333	1.3		**Shallow Concentrated Flow, Segment 3 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.43	73	0.0190	2.8		**Shallow Concentrated Flow, Segment 4 - Porous Asphalt** Paved Kv= 20.30 fps
1.33	121	0.0471	1.5		**Shallow Concentrated Flow, Segment 5 - Lawn** Short Grass Pasture Kv= 7.00 fps
1.97	101	0.0149	0.9		**Shallow Concentrated Flow, Segment 6 - Grass Swale** Short Grass Pasture Kv= 7.00 fps
8.39	408	Total			

Subcatchment SA5: Sub-Area #5



Summary for Subcatchment SA6: Sub-Area #6

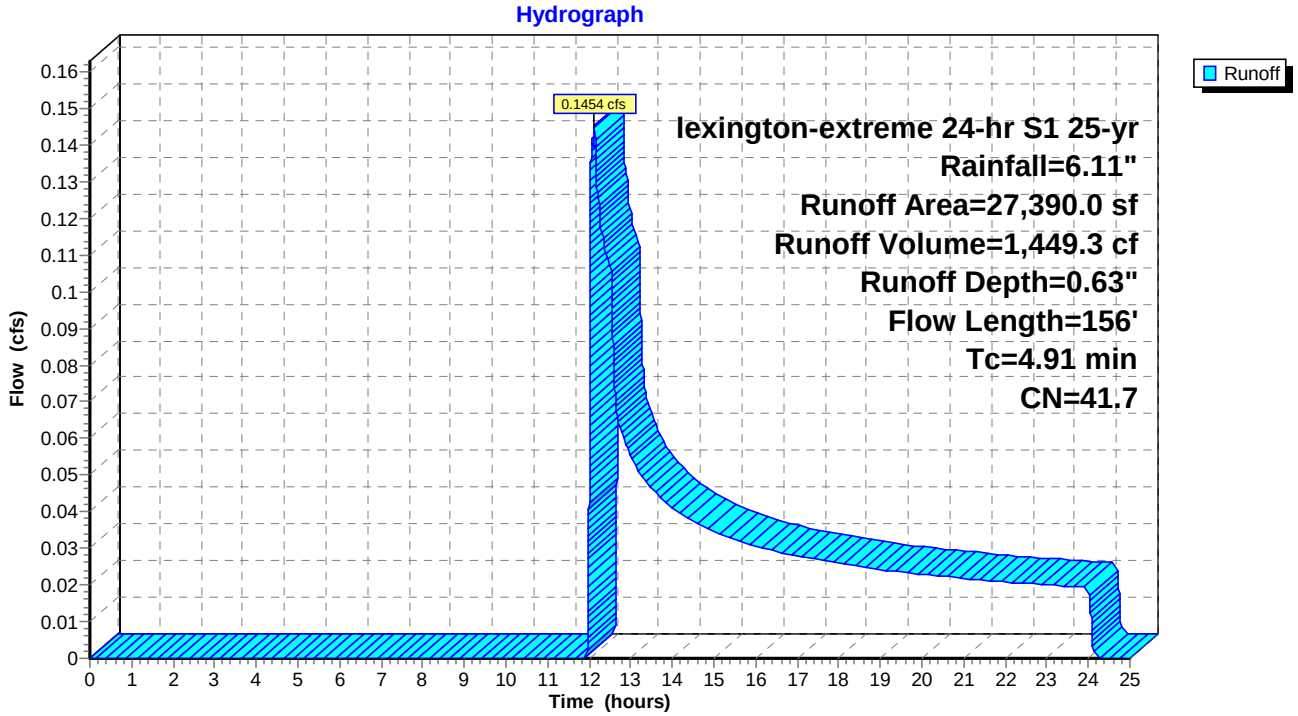
Runoff = 0.1454 cfs @ 12.13 hrs, Volume= 1,449.3 cf, Depth= 0.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 25-yr Rainfall=6.11"

	Area (sf)	CN	Description
	70.0	80.0	>75% Grass cover, Good, HSG D
*	5,425.0	77.0	Woods/Landscape, Good, HSG D
	6,915.0	39.0	>75% Grass cover, Good, HSG A
*	14,980.0	30.0	Woods/Landscape, Good, HSG A
	27,390.0	41.7	Weighted Average
	27,390.0		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.66	50	0.4180	0.2		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
1.25	106	0.0793	1.4		**Shallow Concentrated Flow, Segment 2 - Woods** Woodland Kv= 5.00 fps
4.91	156	Total			

Subcatchment SA6: Sub-Area #6



Summary for Subcatchment SA7: Sub-Area #7

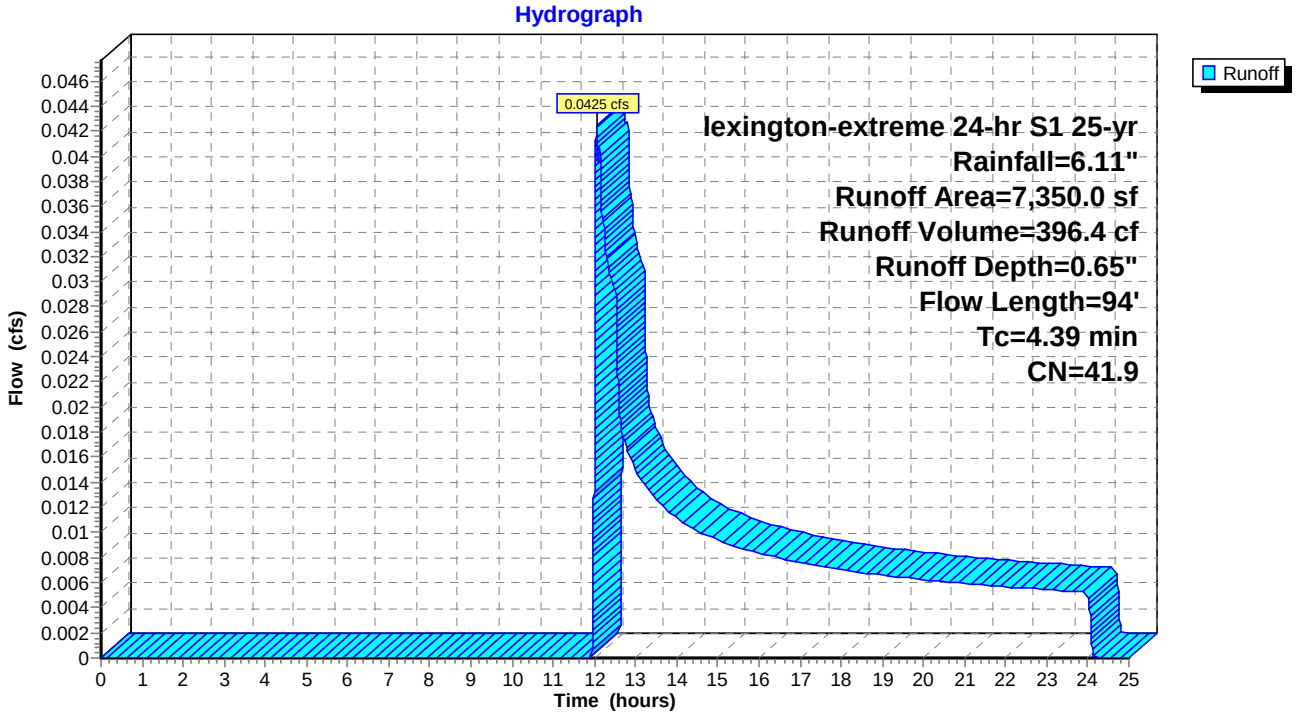
Runoff = 0.0425 cfs @ 12.05 hrs, Volume= 396.4 cf, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 25-yr Rainfall=6.11"

	Area (sf)	CN	Description
*	350.0	98.0	Impervious
	10.0	80.0	>75% Grass cover, Good, HSG D
*	3,725.0	39.0	Porous Asphalt/Grass Pavers
	3,265.0	39.0	>75% Grass cover, Good, HSG A
	7,350.0	41.9	Weighted Average
	7,000.0		95.24% Pervious Area
	350.0		4.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.06	48	0.0417	0.2		**Sheet Flow, Segment 1 - Lawn** Grass: Short n= 0.150 P2= 3.20"
0.33	46	0.0130	2.3		**Shallow Concentrated Flow, Segment 2 - Porous Asphalt** Paved Kv= 20.30 fps
4.39	94	Total			

Subcatchment SA7: Sub-Area #7



Summary for Subcatchment SA8a: Sub-Area #8a (House)

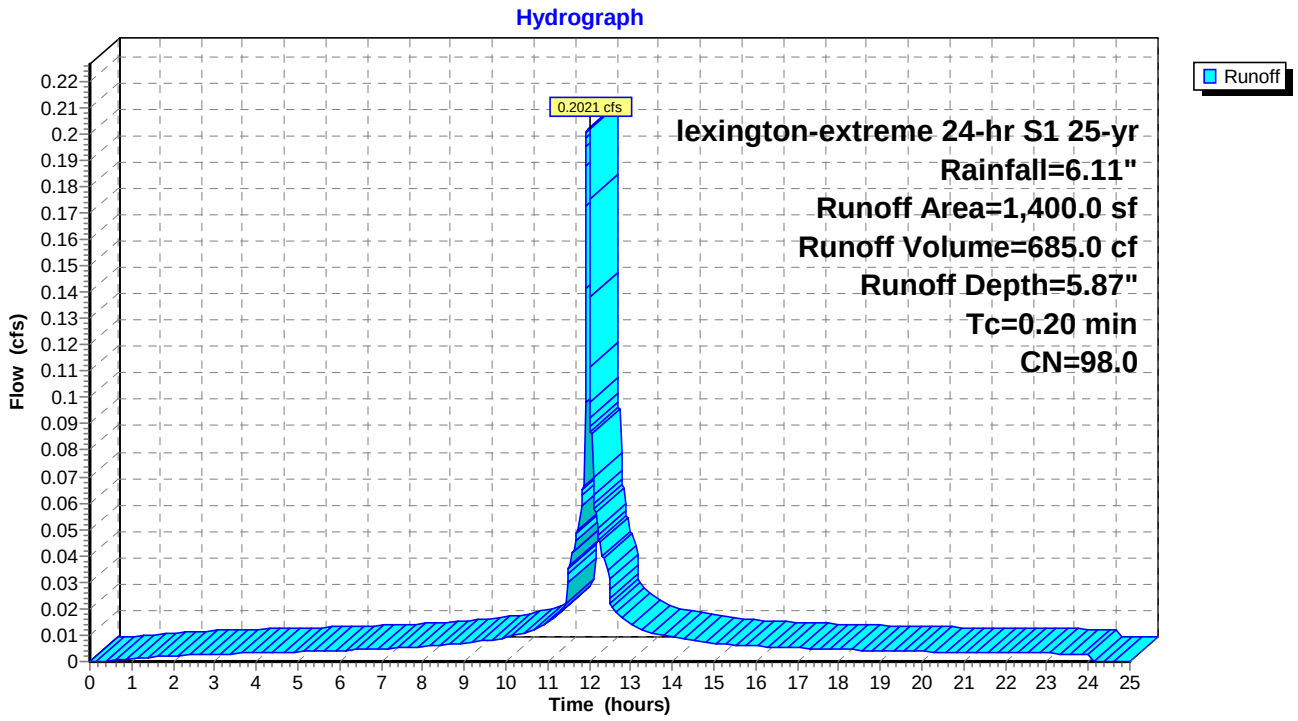
Runoff = 0.2021 cfs @ 12.00 hrs, Volume= 685.0 cf, Depth= 5.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 25-yr Rainfall=6.11"

	Area (sf)	CN	Description
*	1,400.0	98.0	Impervious
	1,400.0		100.00% Impervious Area

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

Subcatchment SA8a: Sub-Area #8a (House)



Summary for Subcatchment SA8b: Sub-Area #8b (House)

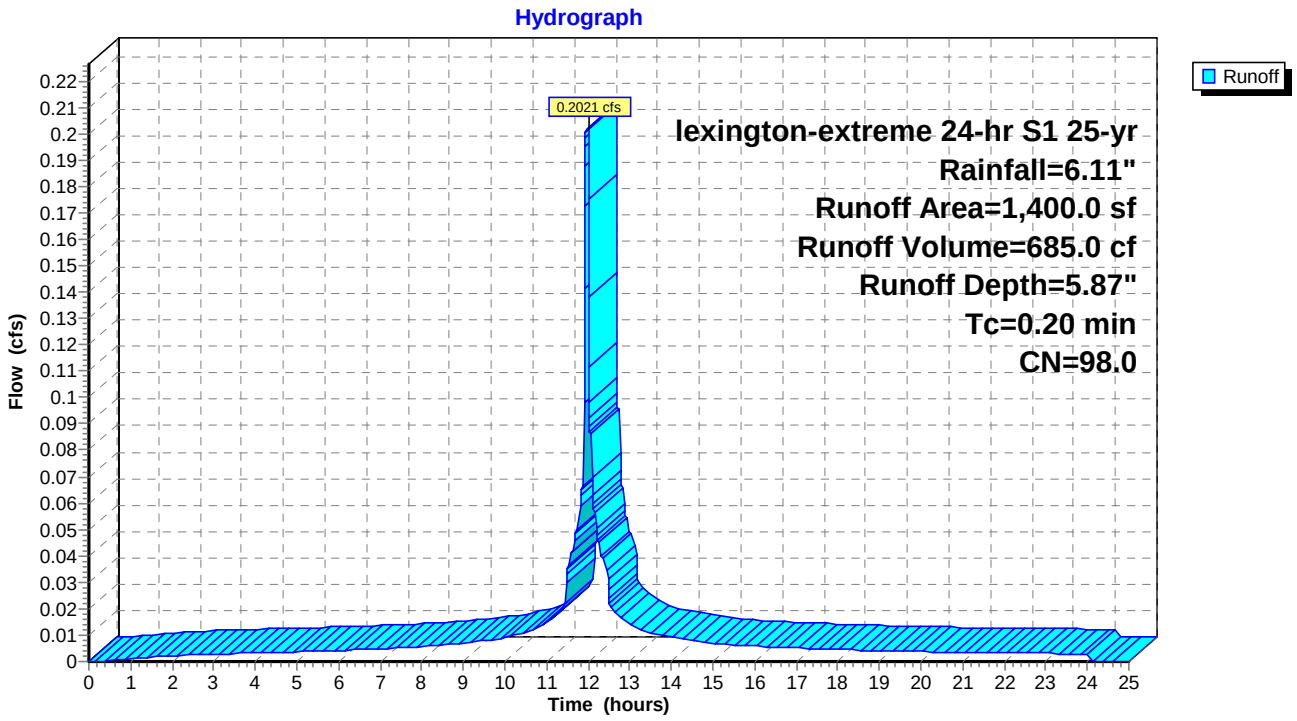
Runoff = 0.2021 cfs @ 12.00 hrs, Volume= 685.0 cf, Depth= 5.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 25-yr Rainfall=6.11"

	Area (sf)	CN	Description
*	1,400.0	98.0	Impervious
	1,400.0		100.00% Impervious Area

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

Subcatchment SA8b: Sub-Area #8b (House)



Summary for Subcatchment SA9: Sub-Area #9 (House)

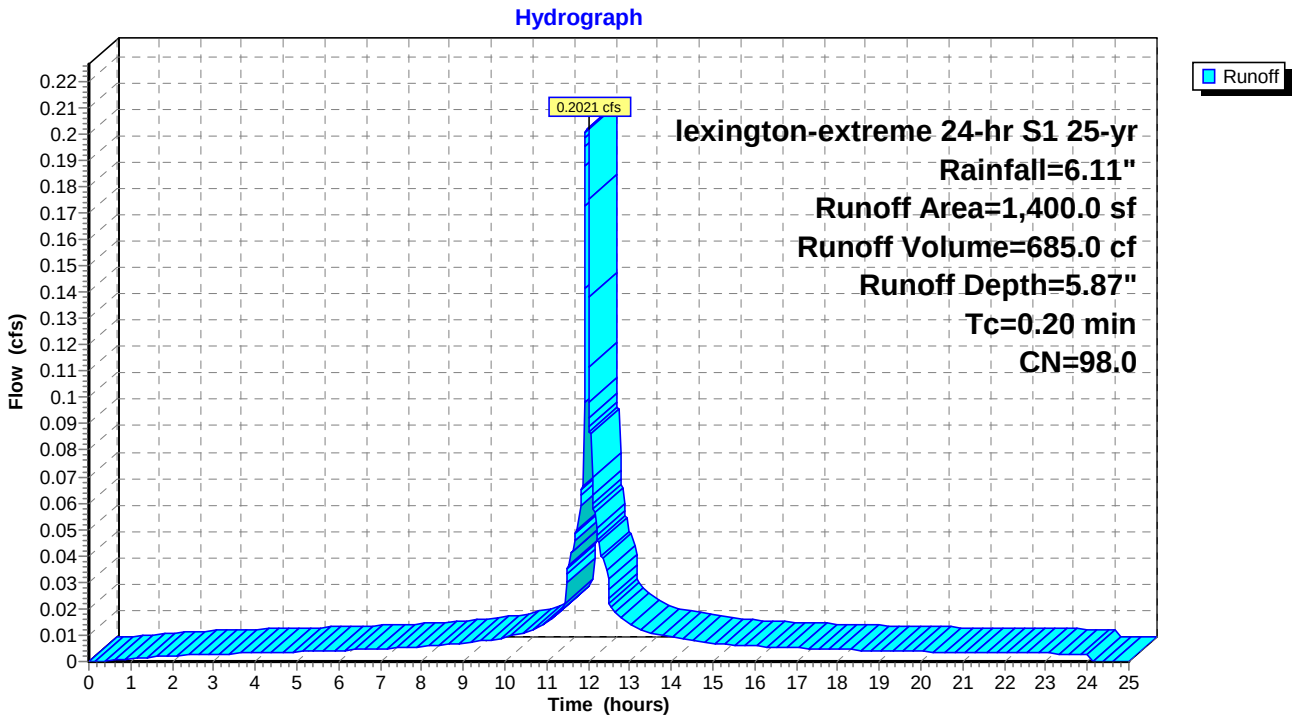
Runoff = 0.2021 cfs @ 12.00 hrs, Volume= 685.0 cf, Depth= 5.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 25-yr Rainfall=6.11"

	Area (sf)	CN	Description
*	1,400.0	98.0	Impervious
	1,400.0		100.00% Impervious Area

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

Subcatchment SA9: Sub-Area #9 (House)

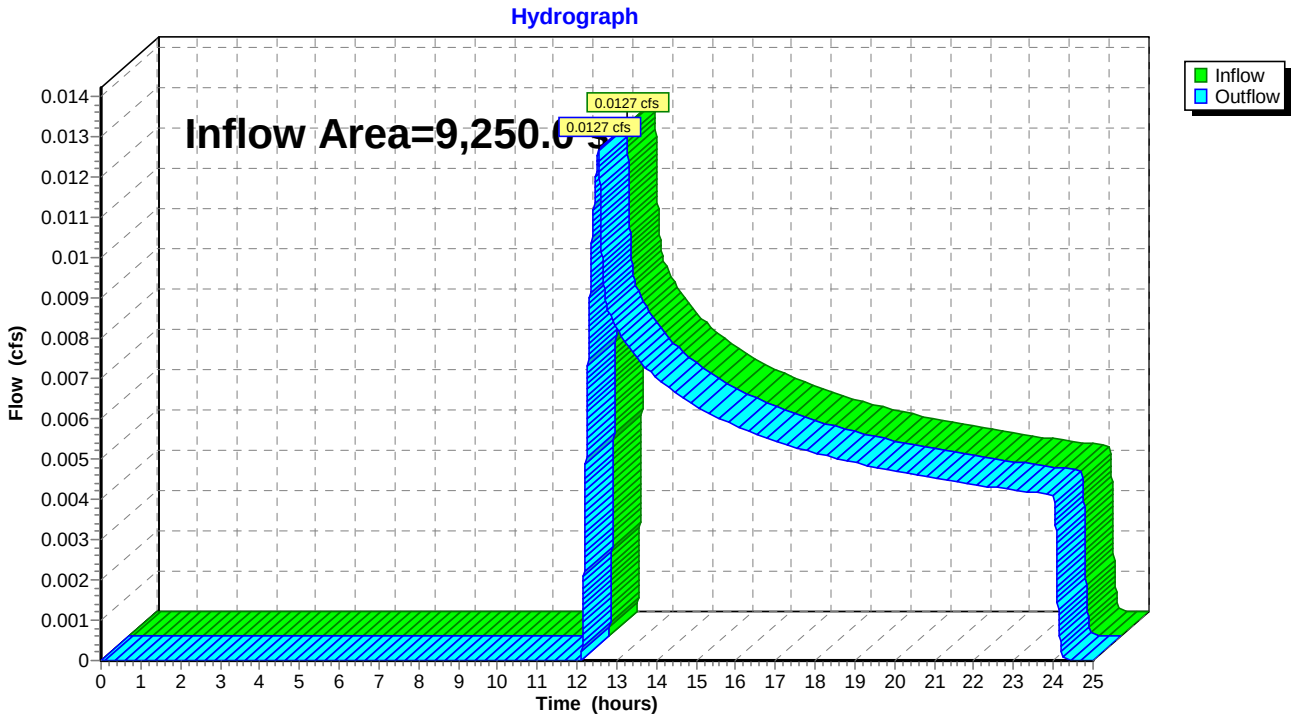


Summary for Reach DP1: Design Point 1 - #485 Concord Avenue

Inflow Area = 9,250.0 sf, 4.11% Impervious, Inflow Depth = 0.31" for 25-yr event
Inflow = 0.0127 cfs @ 12.54 hrs, Volume= 240.0 cf
Outflow = 0.0127 cfs @ 12.54 hrs, Volume= 240.0 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP1: Design Point 1 - #485 Concord Avenue

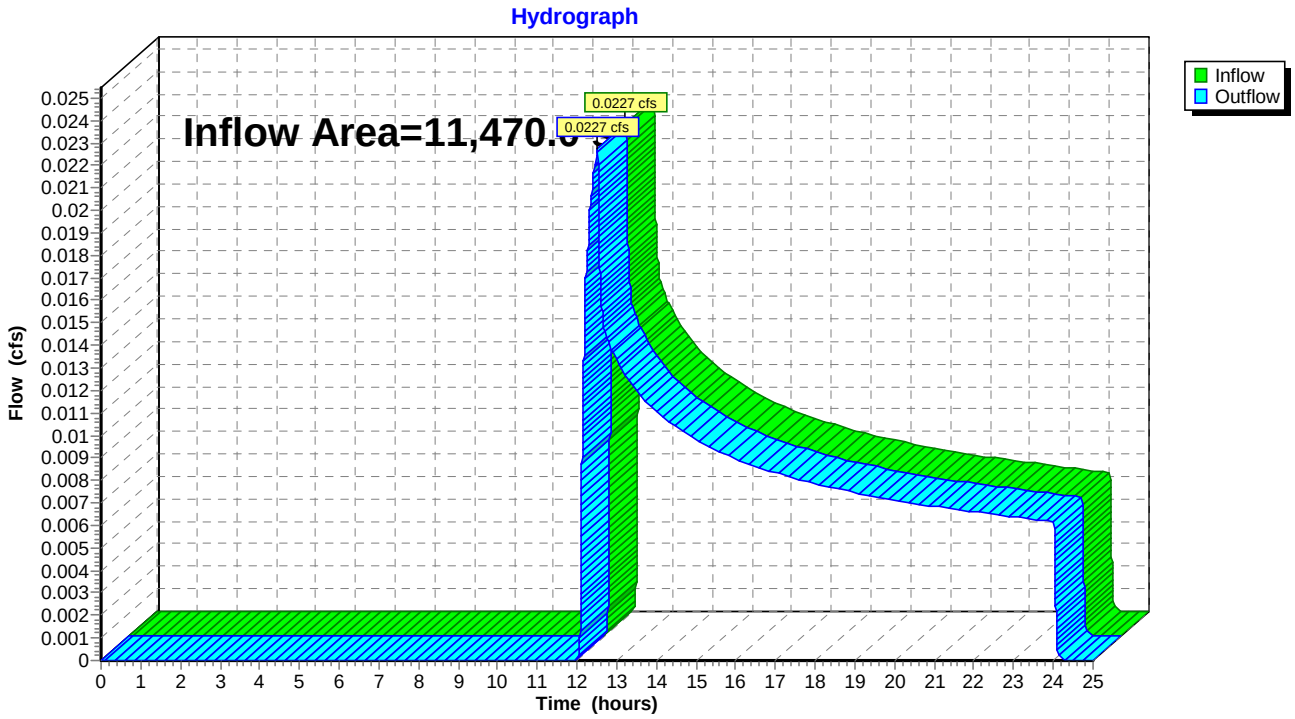


Summary for Reach DP2: Design Point 2 - #489 Concord Avenue

Inflow Area =	11,470.0 sf,	4.45% Impervious,	Inflow Depth =	0.40"	for 25-yr event
Inflow =	0.0227 cfs @	12.52 hrs,	Volume=	379.0 cf	
Outflow =	0.0227 cfs @	12.52 hrs,	Volume=	379.0 cf,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP2: Design Point 2 - #489 Concord Avenue

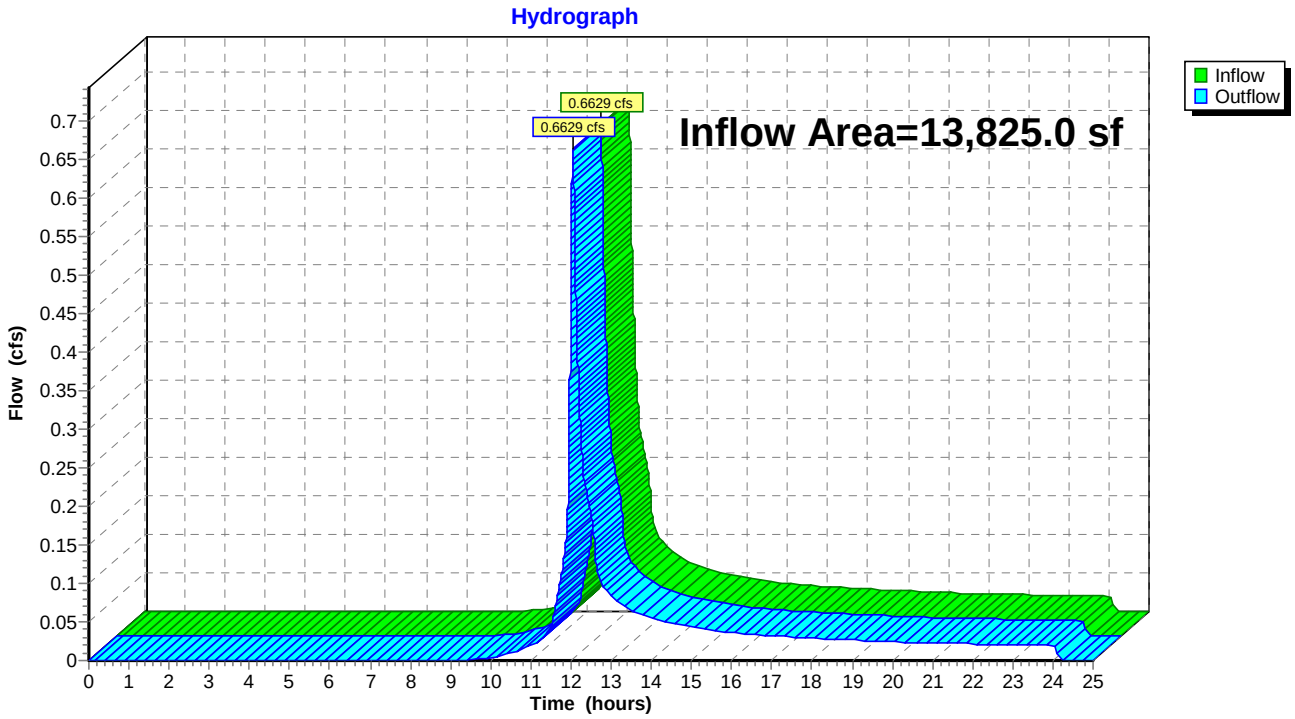


Summary for Reach DP3: Design Point 3 - Southeast B.V.W.

Inflow Area =	13,825.0 sf,	1.30% Impervious,	Inflow Depth =	2.14"	for 25-yr event
Inflow =	0.6629 cfs @	12.05 hrs,	Volume=	2,465.4 cf	
Outflow =	0.6629 cfs @	12.05 hrs,	Volume=	2,465.4 cf,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP3: Design Point 3 - Southeast B.V.W.

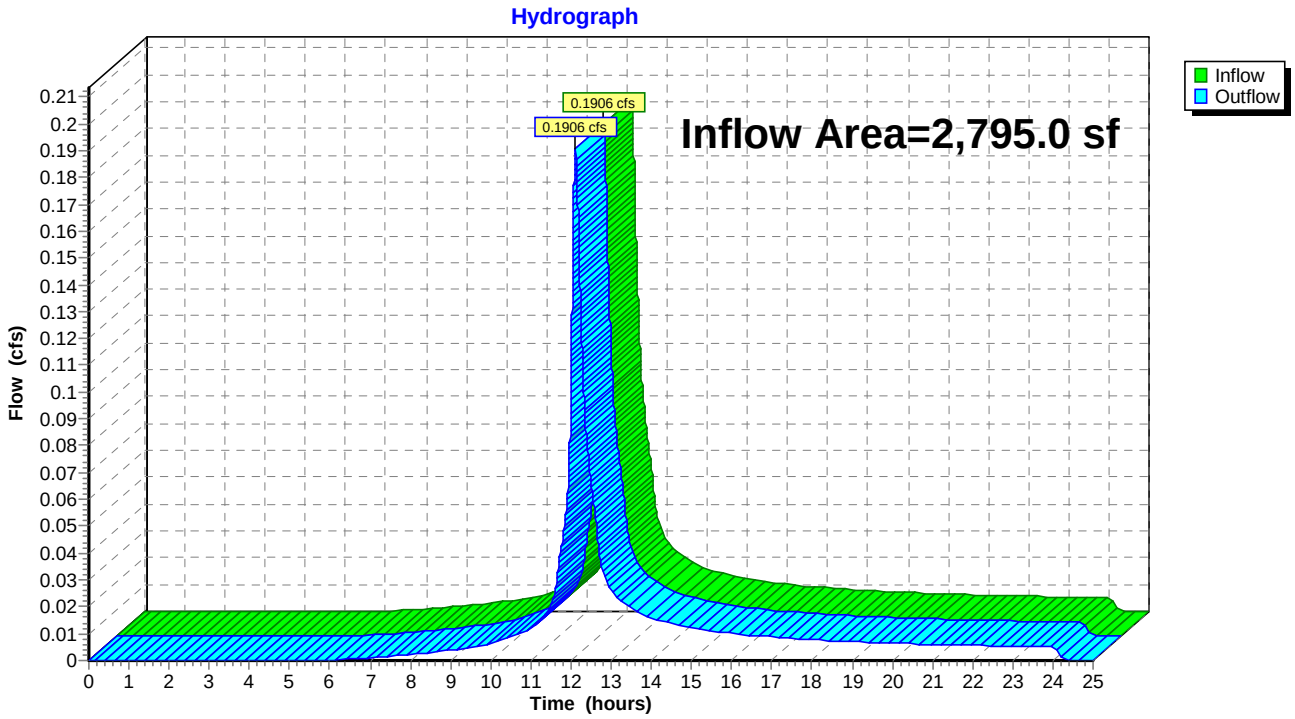


Summary for Reach DP4: Design Point 4 - #489 Concord Avenue (B.V.W.)

Inflow Area =	2,795.0 sf,	0.00% Impervious,	Inflow Depth =	3.58"	for 25-yr event
Inflow =	0.1906 cfs @	12.12 hrs,	Volume=	832.7 cf	
Outflow =	0.1906 cfs @	12.12 hrs,	Volume=	832.7 cf,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP4: Design Point 4 - #489 Concord Avenue (B.V.W.)

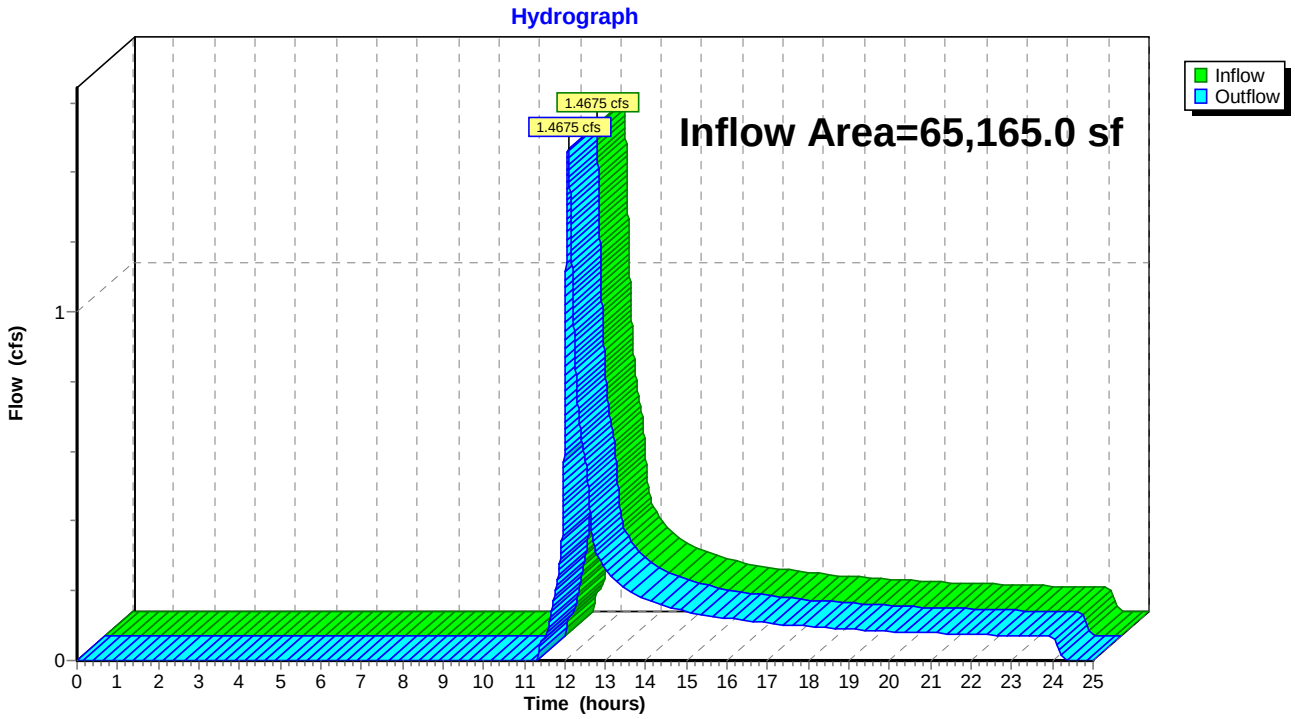


Summary for Reach DP5: Design Point 5 - Route 2

Inflow Area = 65,165.0 sf, 2.33% Impervious, Inflow Depth = 1.30" for 25-yr event
Inflow = 1.4675 cfs @ 12.09 hrs, Volume= 7,078.1 cf
Outflow = 1.4675 cfs @ 12.09 hrs, Volume= 7,078.1 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP5: Design Point 5 - Route 2



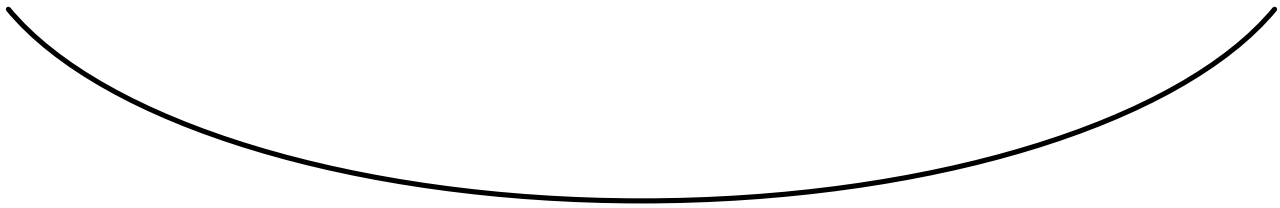
Summary for Reach O1: Overland Flow #1

Inflow	=	0.0000 cfs @	0.00 hrs,	Volume=	0.0 cf
Outflow	=	0.0000 cfs @	0.00 hrs,	Volume=	0.0 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0.0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.20' Flow Area= 0.4 sf, Capacity= 0.9748 cfs

3.00' x 0.20' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 57.0' Slope= 0.0491 '/'
Inlet Invert= 215.10', Outlet Invert= 212.30'



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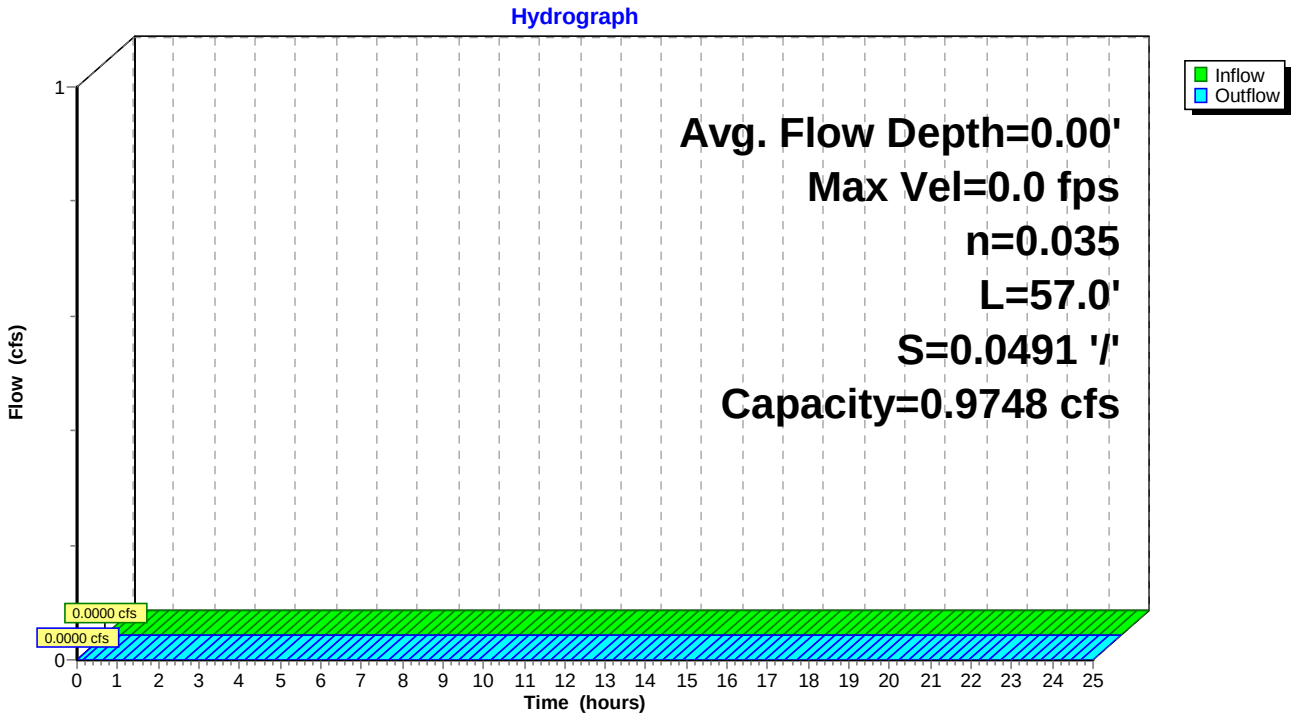
Reach O1: Overland Flow #1



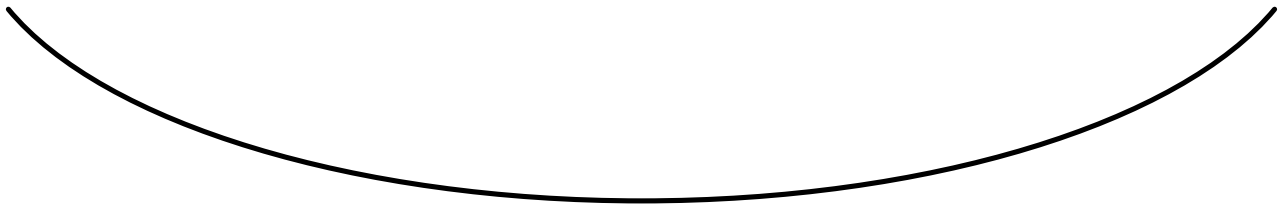
Summary for Reach O1a: Overland Flow #1a

Inflow Area = 275.0 sf, 20.00% Impervious, Inflow Depth = 0.00" for 25-yr event
Inflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf
Outflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0.0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.10' Flow Area= 0.7 sf, Capacity= 1.4873 cfs

10.00' x 0.10' deep Parabolic Channel, n= 0.026
Length= 47.0' Slope= 0.0564 '/'
Inlet Invert= 219.45', Outlet Invert= 216.80'



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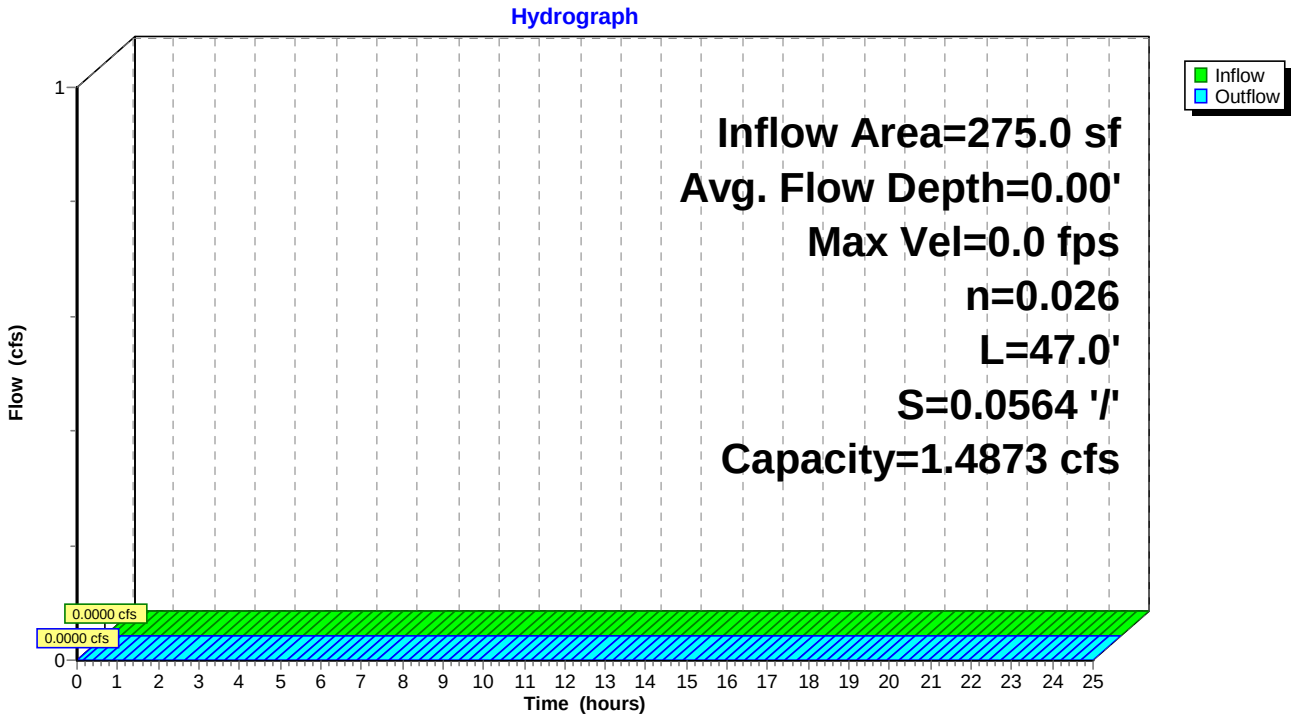
Reach O1a: Overland Flow #1a



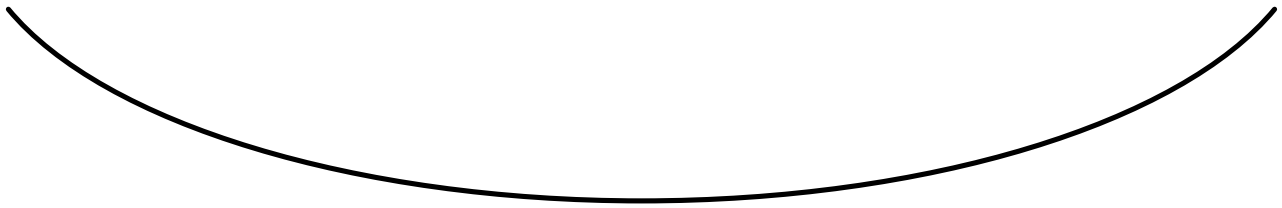
Summary for Reach O1b: Overland Flow #1b

Inflow Area = 875.0 sf, 10.86% Impervious, Inflow Depth = 0.00" for 25-yr event
Inflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf
Outflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 0.0 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.0 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0.0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.10' Flow Area= 1.0 sf, Capacity= 2.0502 cfs

15.00' x 0.10' deep Parabolic Channel, n= 0.029
Length= 65.0' Slope= 0.0592 '/'
Inlet Invert= 219.55', Outlet Invert= 215.70'



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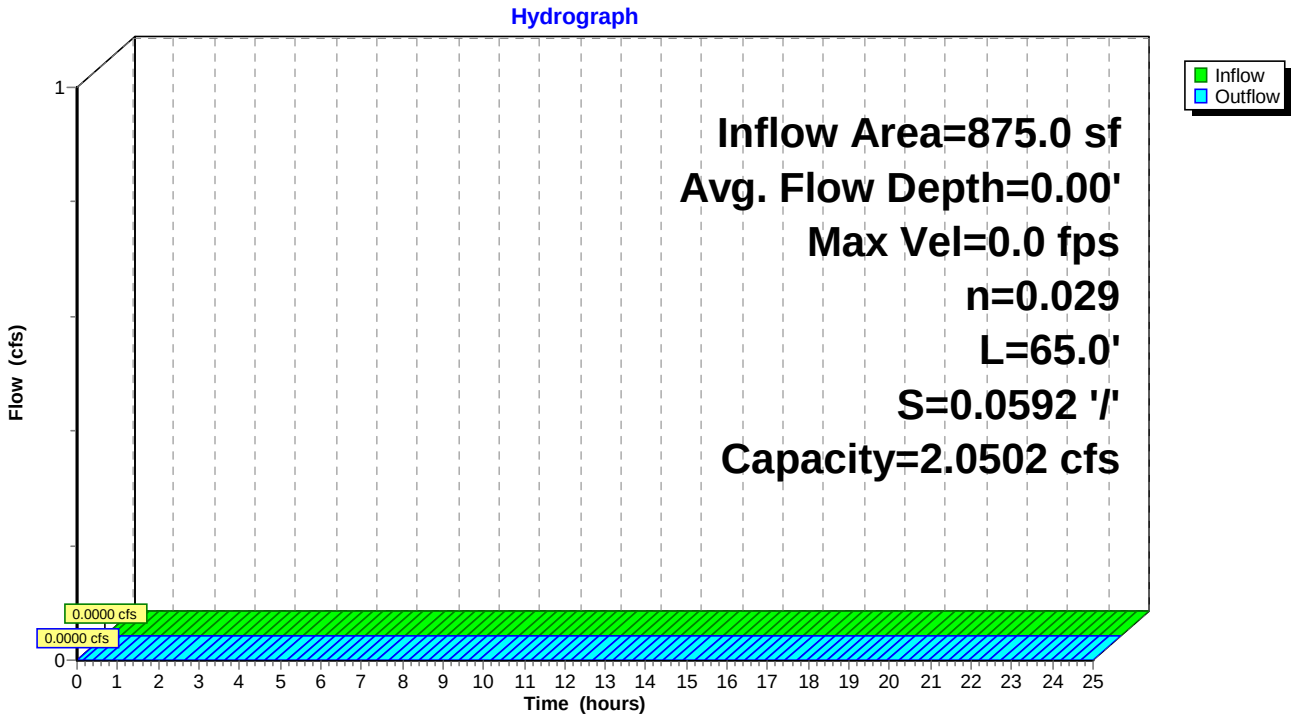
Reach O1b: Overland Flow #1b



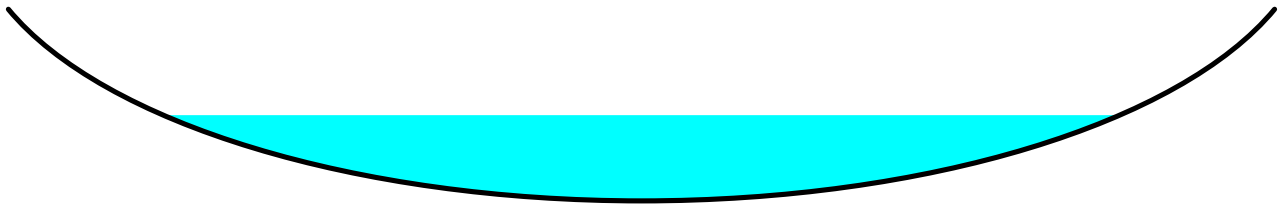
Summary for Reach O2: OverInd Flow #2

Inflow Area = 37,775.0 sf, 4.02% Impervious, Inflow Depth = 1.79" for 25-yr event
Inflow = 1.3301 cfs @ 12.08 hrs, Volume= 5,628.8 cf
Outflow = 1.3285 cfs @ 12.09 hrs, Volume= 5,628.8 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 1.0 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.4 fps, Avg. Travel Time= 0.8 min

Peak Storage= 26.7 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.09'
Bank-Full Depth= 0.20' Flow Area= 4.3 sf, Capacity= 7.6508 cfs

32.00' x 0.20' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 21.0' Slope= 0.0262 '/'
Inlet Invert= 212.35', Outlet Invert= 211.80'



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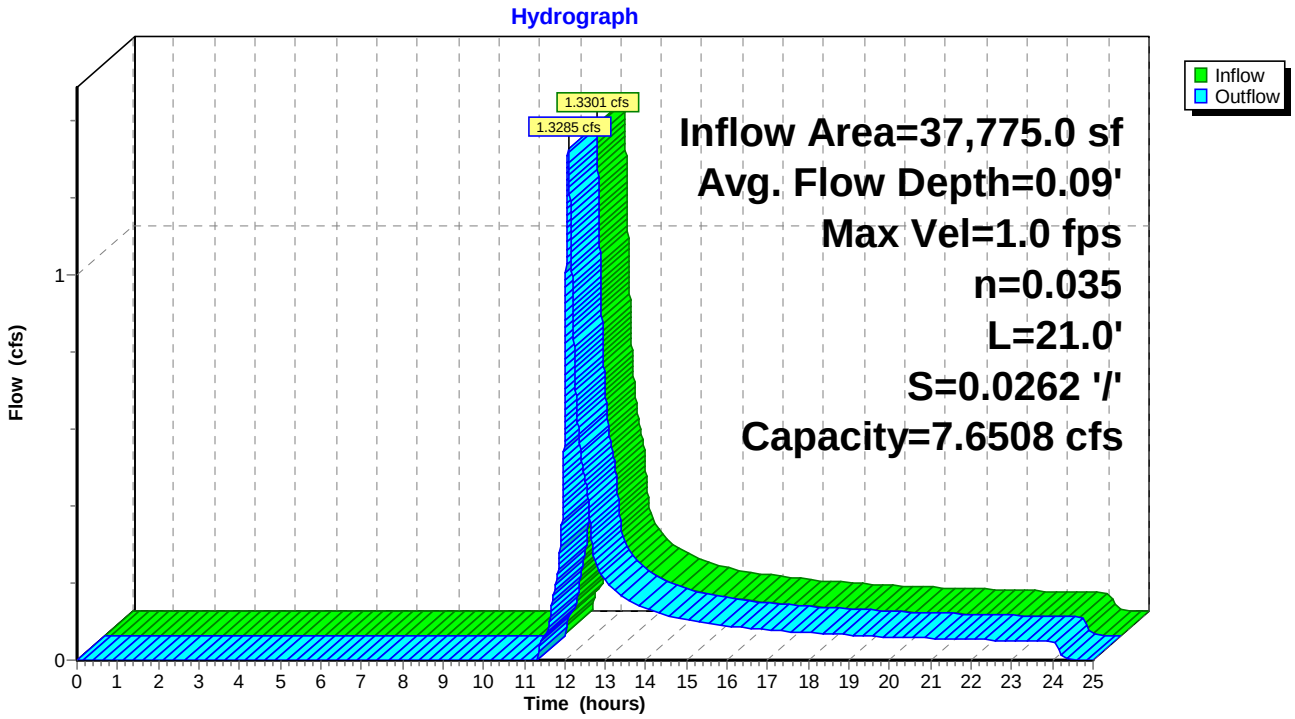
Reach O2: OverInd Flow #2



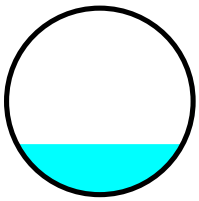
Summary for Reach RD1: Roof Drain #1

Inflow Area = 1,400.0 sf,100.00% Impervious, Inflow Depth = 5.87" for 25-yr event
Inflow = 0.2021 cfs @ 12.00 hrs, Volume= 685.0 cf
Outflow = 0.2021 cfs @ 12.00 hrs, Volume= 685.0 cf, Atten= 0%, Lag= 0.1 min

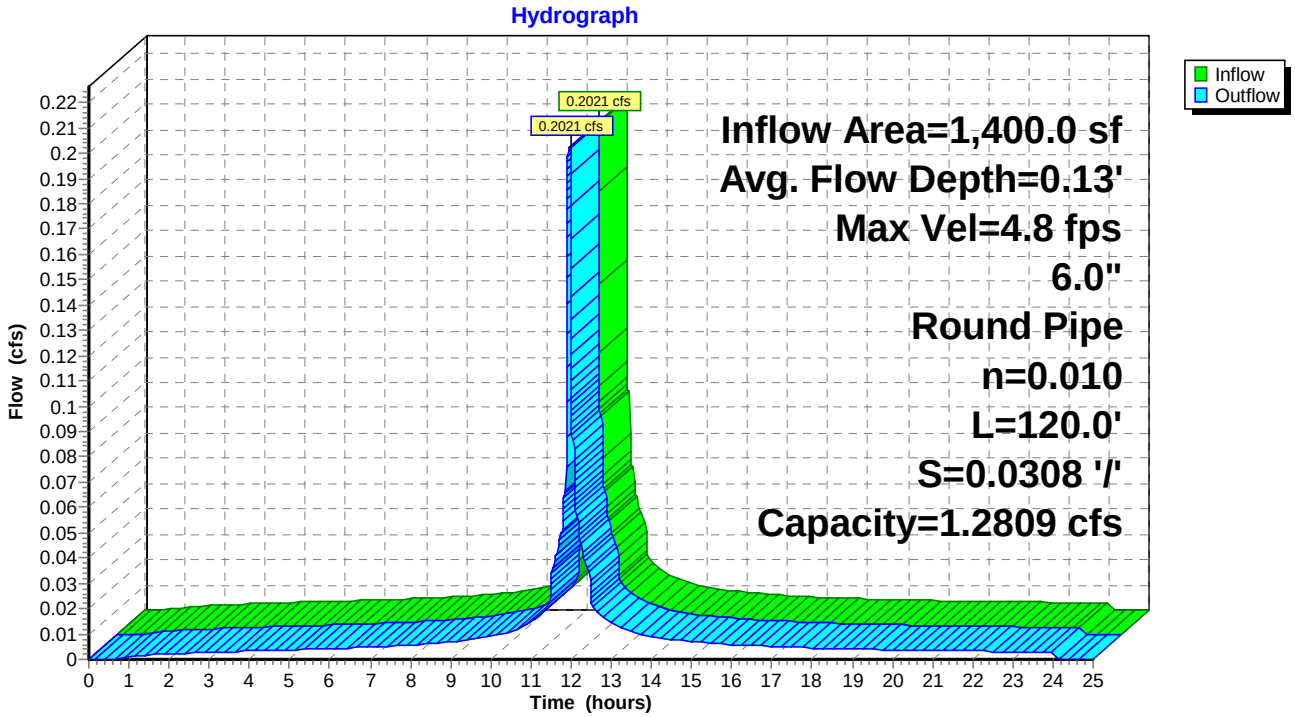
Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 4.8 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.6 fps, Avg. Travel Time= 1.2 min

Peak Storage= 5.1 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 1.2809 cfs

6.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 120.0' Slope= 0.0308 '/'
Inlet Invert= 222.00', Outlet Invert= 218.30'



Reach RD1: Roof Drain #1



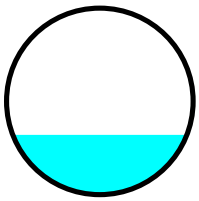
Summary for Reach RD2: Roof Drain #2

Inflow Area = 1,400.0 sf,100.00% Impervious, Inflow Depth = 5.87" for 25-yr event
Inflow = 0.2021 cfs @ 12.00 hrs, Volume= 685.0 cf
Outflow = 0.2021 cfs @ 12.00 hrs, Volume= 685.0 cf, Atten= 0%, Lag= 0.1 min

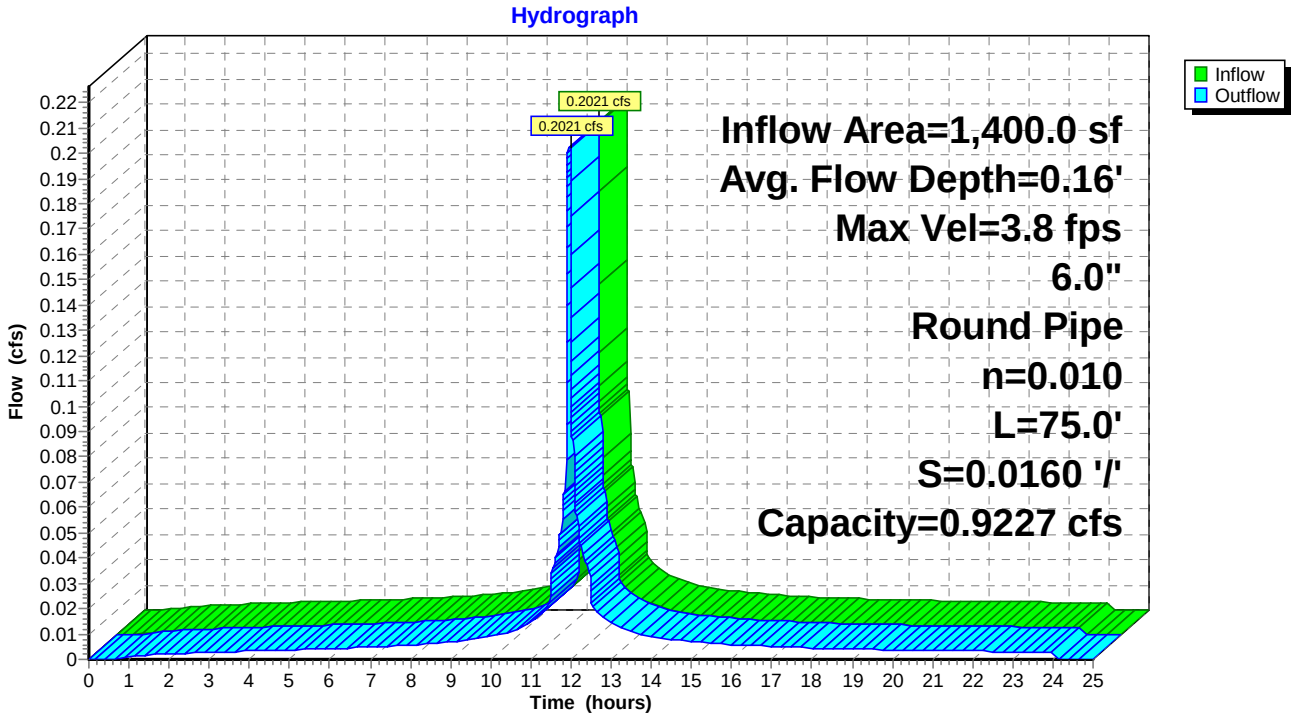
Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 3.8 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.3 fps, Avg. Travel Time= 1.0 min

Peak Storage= 4.0 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.9227 cfs

6.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 75.0' Slope= 0.0160 '/'
Inlet Invert= 219.50', Outlet Invert= 218.30'



Reach RD2: Roof Drain #2



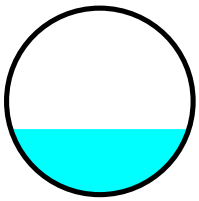
Summary for Reach RD3: Roof Drain #3

Inflow Area = 1,400.0 sf,100.00% Impervious, Inflow Depth = 5.87" for 25-yr event
Inflow = 0.2021 cfs @ 12.00 hrs, Volume= 685.0 cf
Outflow = 0.2021 cfs @ 12.00 hrs, Volume= 685.0 cf, Atten= 0%, Lag= 0.1 min

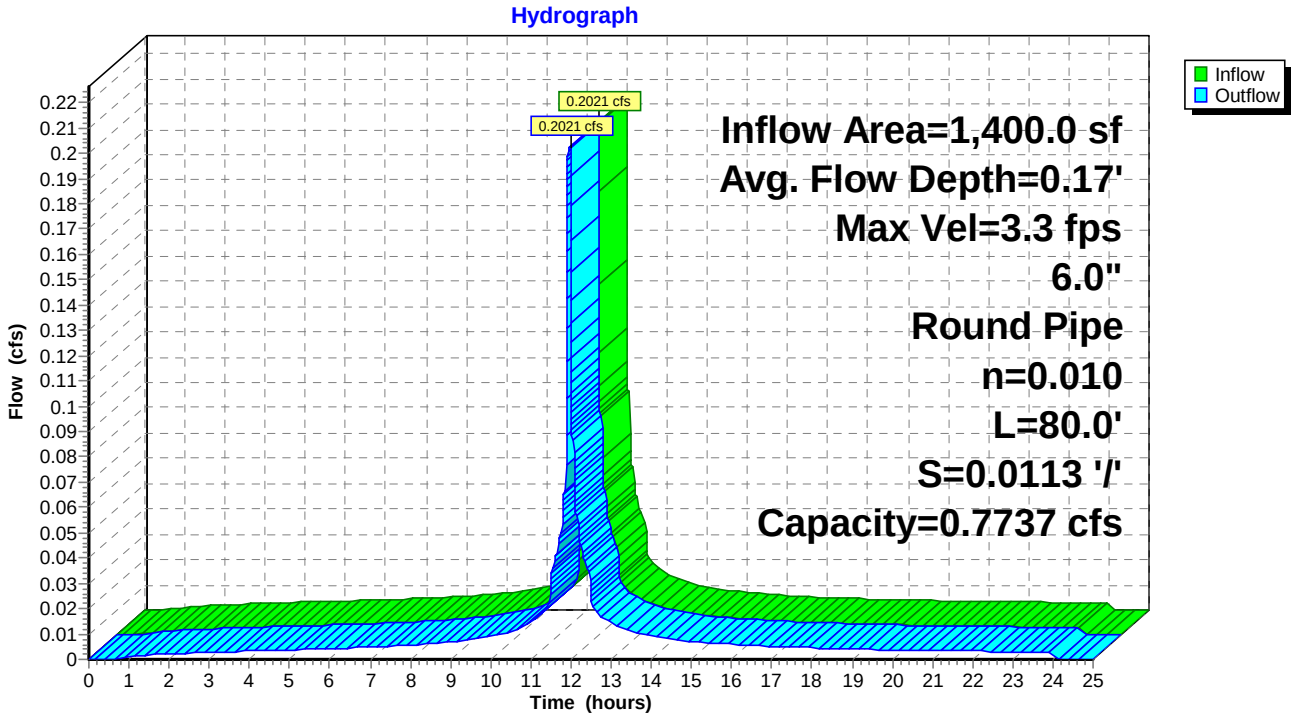
Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 3.3 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.1 fps, Avg. Travel Time= 1.2 min

Peak Storage= 4.9 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.7737 cfs

6.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 80.0' Slope= 0.0113 '/'
Inlet Invert= 218.50', Outlet Invert= 217.60'



Reach RD3: Roof Drain #3



Summary for Pond CB1: Catch Basin #1

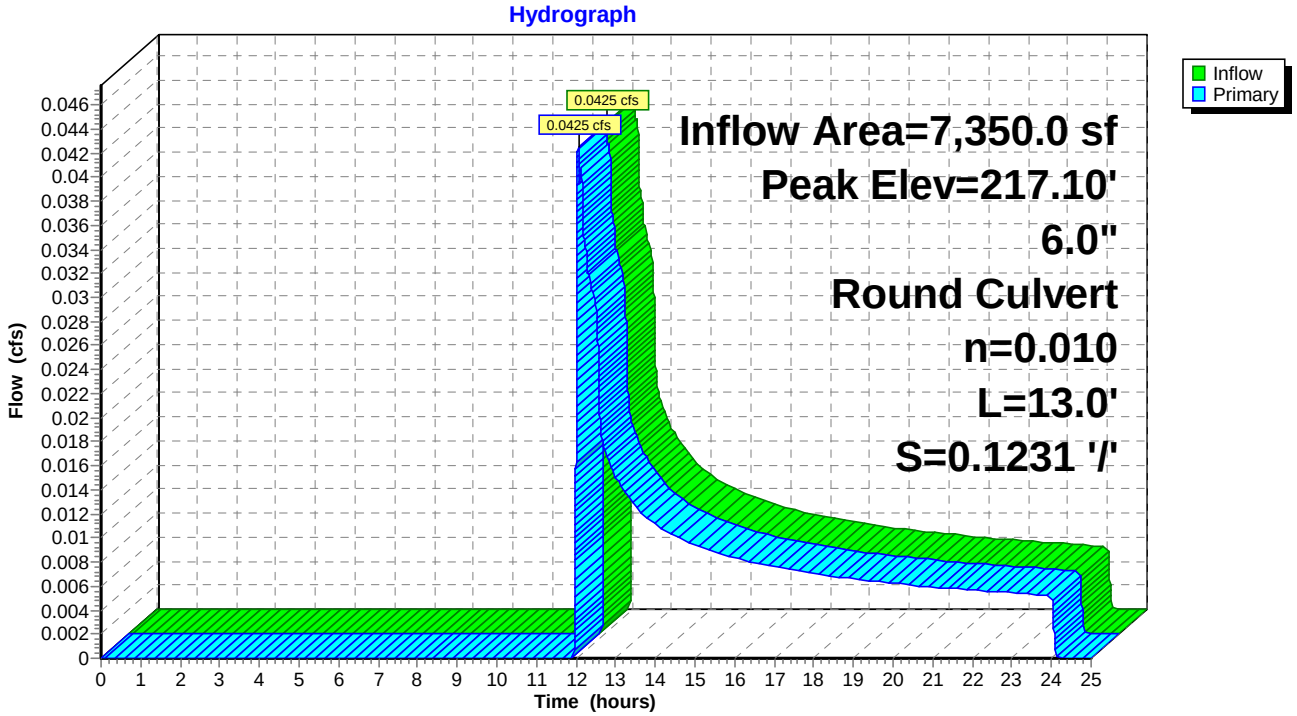
Inflow Area =	7,350.0 sf,	4.76% Impervious,	Inflow Depth =	0.65"	for 25-yr event
Inflow =	0.0425 cfs @	12.05 hrs,	Volume=	396.4 cf	
Outflow =	0.0425 cfs @	12.05 hrs,	Volume=	396.4 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.0425 cfs @	12.05 hrs,	Volume=	396.4 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 217.10' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	217.00'	**6.0" Round Culvert** L= 13.0' Ke= 0.100 Inlet / Outlet Invert= 217.00' / 215.40' S= 0.1231 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.0425 cfs @ 12.05 hrs HW=217.10' TW=214.13' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.0425 cfs @ 1.5 fps)

Pond CB1: Catch Basin #1



Summary for Pond CO1: Clean Out #1

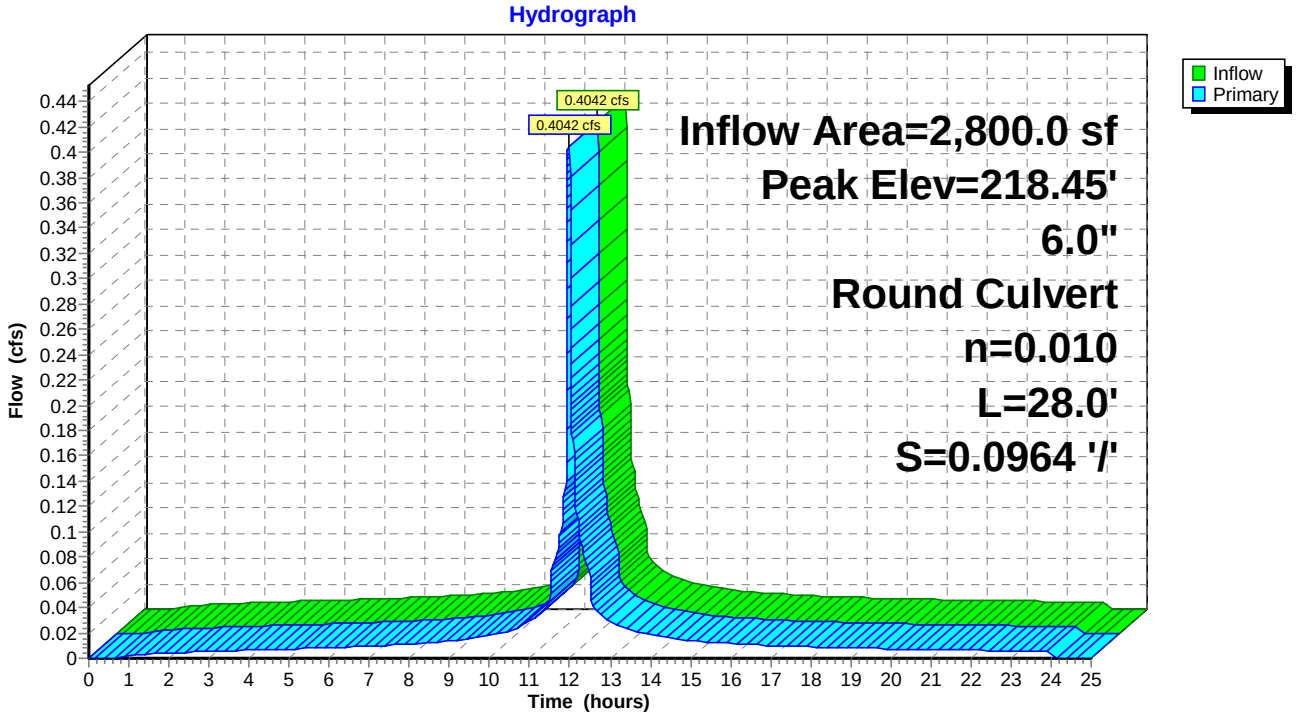
Inflow Area =	2,800.0 sf,100.00% Impervious,	Inflow Depth =	5.87"	for	25-yr event
Inflow =	0.4042 cfs @	12.00 hrs,	Volume=	1,370.1 cf	
Outflow =	0.4042 cfs @	12.00 hrs,	Volume=	1,370.1 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.4042 cfs @	12.00 hrs,	Volume=	1,370.1 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 218.45' @ 12.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	218.10'	**6.0" Round Culvert** L= 28.0' Ke= 0.100 Inlet / Outlet Invert= 218.10' / 215.40' S= 0.0964 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.4042 cfs @ 12.00 hrs HW=218.45' TW=214.02' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.4042 cfs @ 2.7 fps)

Pond CO1: Clean Out #1



Summary for Pond CO2: Clean Out #2

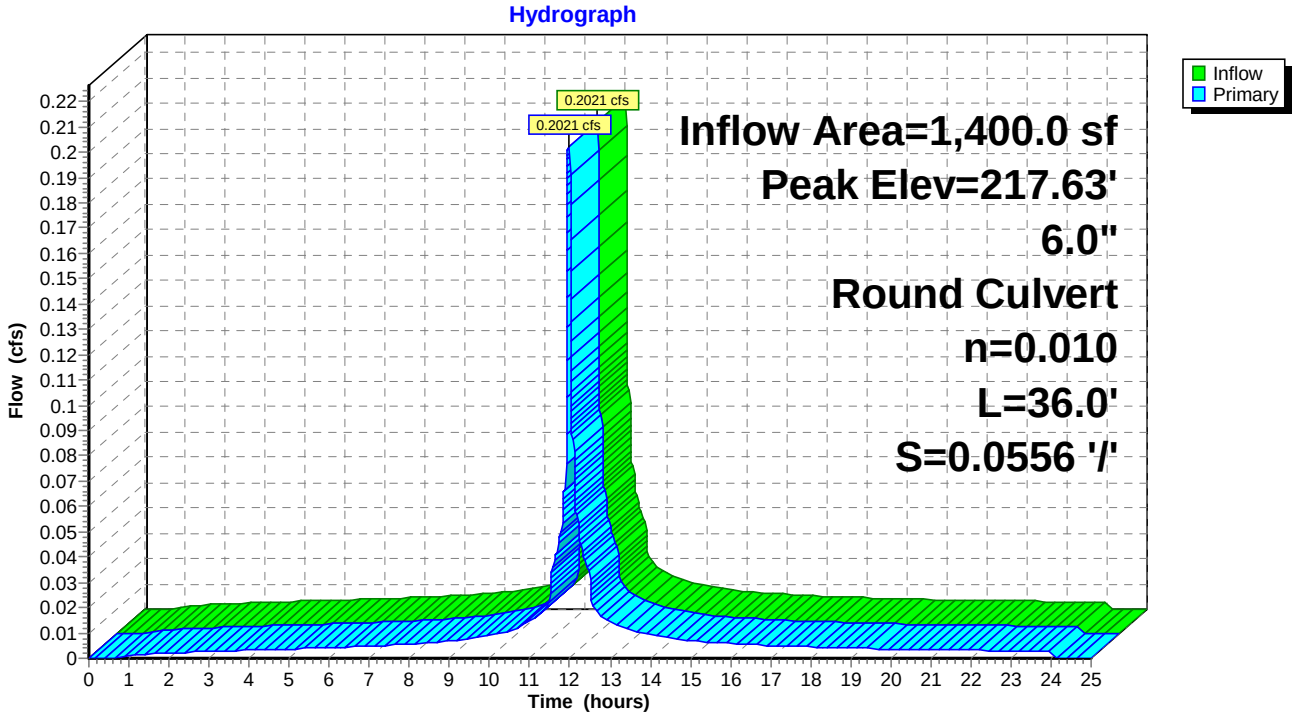
Inflow Area =	1,400.0 sf,100.00% Impervious,	Inflow Depth =	5.87"	for 25-yr event	
Inflow =	0.2021 cfs @	12.00 hrs,	Volume=	685.0 cf	
Outflow =	0.2021 cfs @	12.00 hrs,	Volume=	685.0 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.2021 cfs @	12.00 hrs,	Volume=	685.0 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 217.63' @ 12.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	217.40'	**6.0" Round Culvert** L= 36.0' Ke= 0.100 Inlet / Outlet Invert= 217.40' / 215.40' S= 0.0556 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.2021 cfs @ 12.00 hrs HW=217.63' TW=214.02' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.2021 cfs @ 2.2 fps)

Pond CO2: Clean Out #2



Summary for Pond LP1a: Low Point #1a

Inflow Area = 275.0 sf, 20.00% Impervious, Inflow Depth = 0.75" for 25-yr event
Inflow = 0.0035 cfs @ 12.01 hrs, Volume= 17.3 cf
Outflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 219.50' @ 24.07 hrs Surf.Area= 175.9 sf Storage= 17.3 cf

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

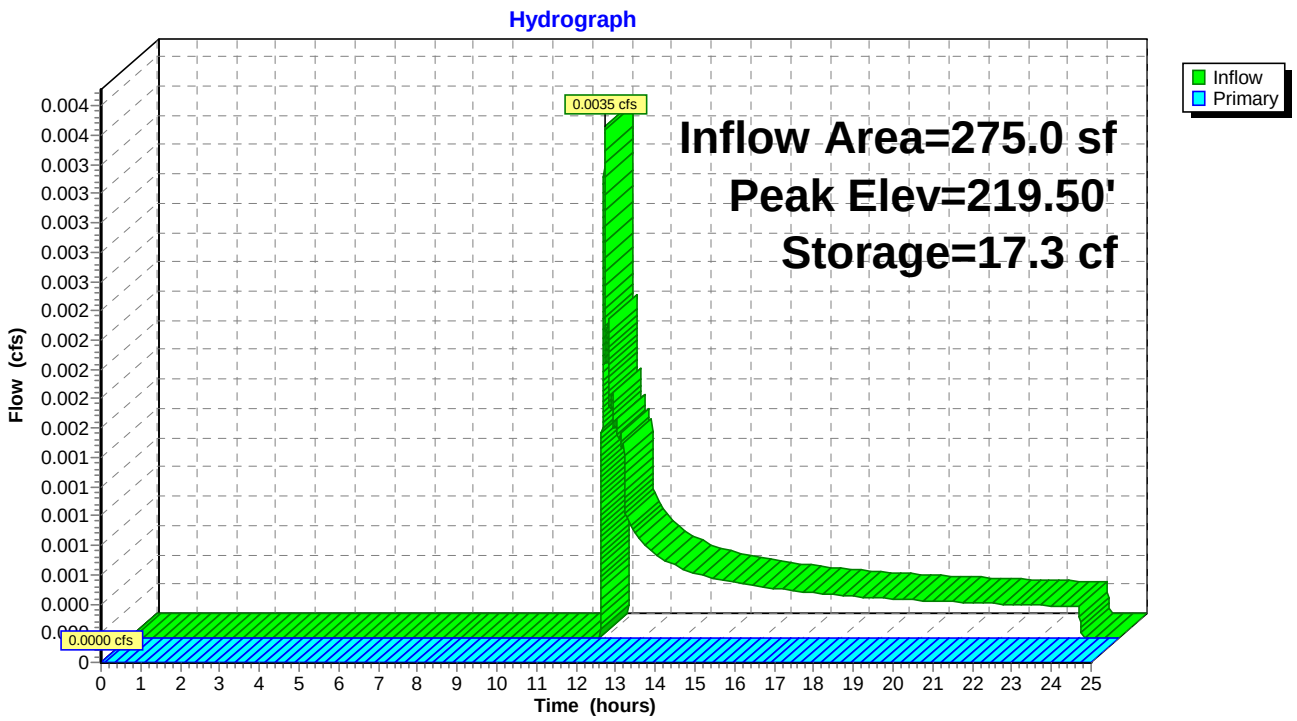
Volume	Invert	Avail.Storage	Storage Description
#1	219.30'	57.0 cf	**Low Point #1a (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
219.30	0.0	0.0	0.0	0.0	0.0
219.40	104.0	50.0	3.5	3.5	199.0
219.50	176.0	62.0	13.8	17.3	306.1
219.60	200.0	68.0	18.8	36.1	368.5
219.70	219.0	75.0	20.9	57.0	448.4

Device	Routing	Invert	Outlet Devices
#1	Primary	219.50'	**LP#1a Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.20 Width (feet) 10.00 35.00

Primary OutFlow Max=0.0000 cfs @ 0.00 hrs HW=219.30' TW=219.45' (Dynamic Tailwater)
└─**1=LP#1a Weir** (Controls 0.0000 cfs)

Pond LP1a: Low Point #1a



Summary for Pond LP1b: Low Point #1b

Inflow Area = 875.0 sf, 10.86% Impervious, Inflow Depth = 0.39" for 25-yr event
Inflow = 0.0017 cfs @ 12.52 hrs, Volume= 28.5 cf
Outflow = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.0000 cfs @ 0.00 hrs, Volume= 0.0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 219.47' @ 24.38 hrs Surf.Area= 257.6 sf Storage= 28.5 cf

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

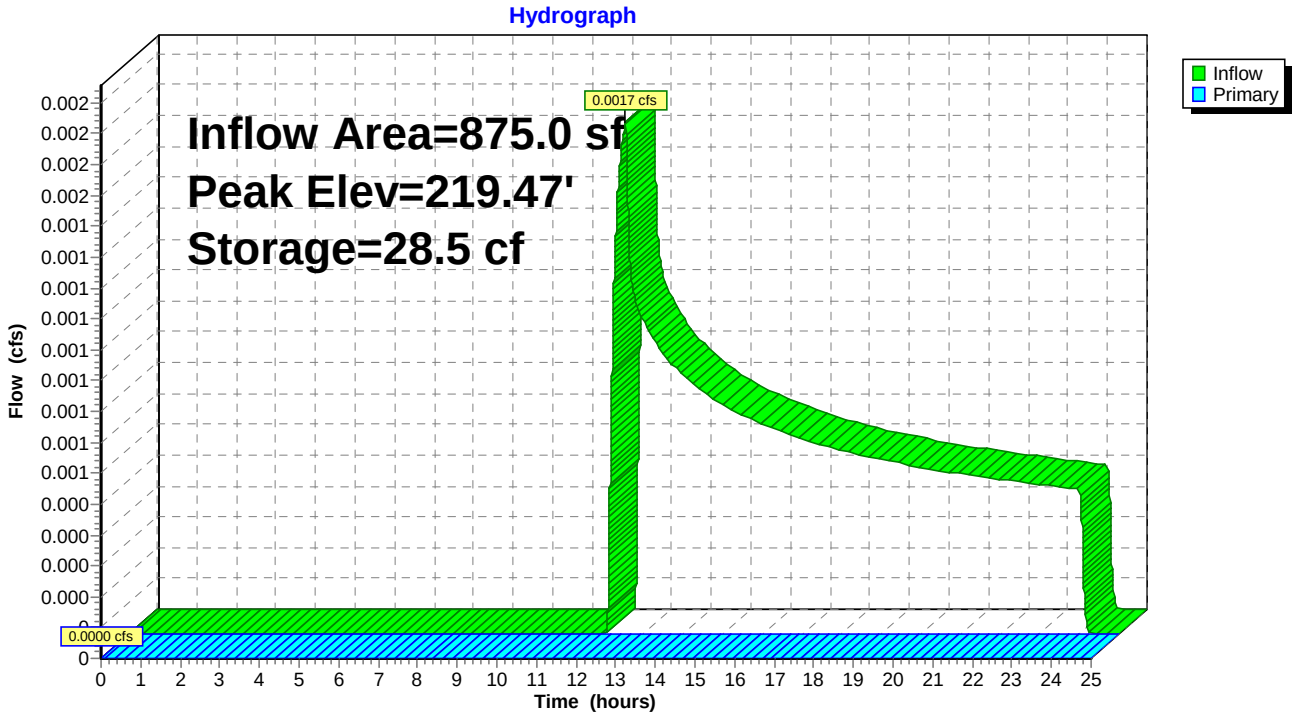
Volume	Invert	Avail.Storage	Storage Description
#1	219.20'	267.0 cf	**Low Point #1b (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
219.20	0.0	0.0	0.0	0.0	0.0
219.30	74.0	52.0	2.5	2.5	215.2
219.40	161.0	86.0	11.5	13.9	588.6
219.50	305.0	122.0	22.9	36.9	1,184.6
219.60	463.0	151.0	38.1	75.0	1,814.8
219.70	609.0	179.0	53.4	128.4	2,550.2
219.80	707.0	192.0	65.7	194.2	2,934.5
219.90	750.0	203.0	72.8	267.0	3,280.8

Device	Routing	Invert	Outlet Devices
#1	Primary	219.60'	**LP#1b Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.20 Width (feet) 15.00 48.00

Primary OutFlow Max=0.0000 cfs @ 0.00 hrs HW=219.20' TW=219.55' (Dynamic Tailwater)
└**1=LP#1b Weir** (Controls 0.0000 cfs)

Pond LP1b: Low Point #1b



Summary for Pond LP2: Low Point #2

Inflow Area =	37,775.0 sf,	4.02% Impervious,	Inflow Depth =	1.81"	for 25-yr event
Inflow =	1.3460 cfs @	12.07 hrs,	Volume=	5,695.0 cf	
Outflow =	1.3301 cfs @	12.08 hrs,	Volume=	5,628.8 cf,	Atten= 1%, Lag= 0.6 min
Primary =	1.3301 cfs @	12.08 hrs,	Volume=	5,628.8 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 212.46' @ 12.08 hrs Surf.Area= 897.8 sf Storage= 117.7 cf

Plug-Flow detention time= 10.2 min calculated for 5,628.6 cf (99% of inflow)
Center-of-Mass det. time= 4.0 min (910.6 - 906.6)

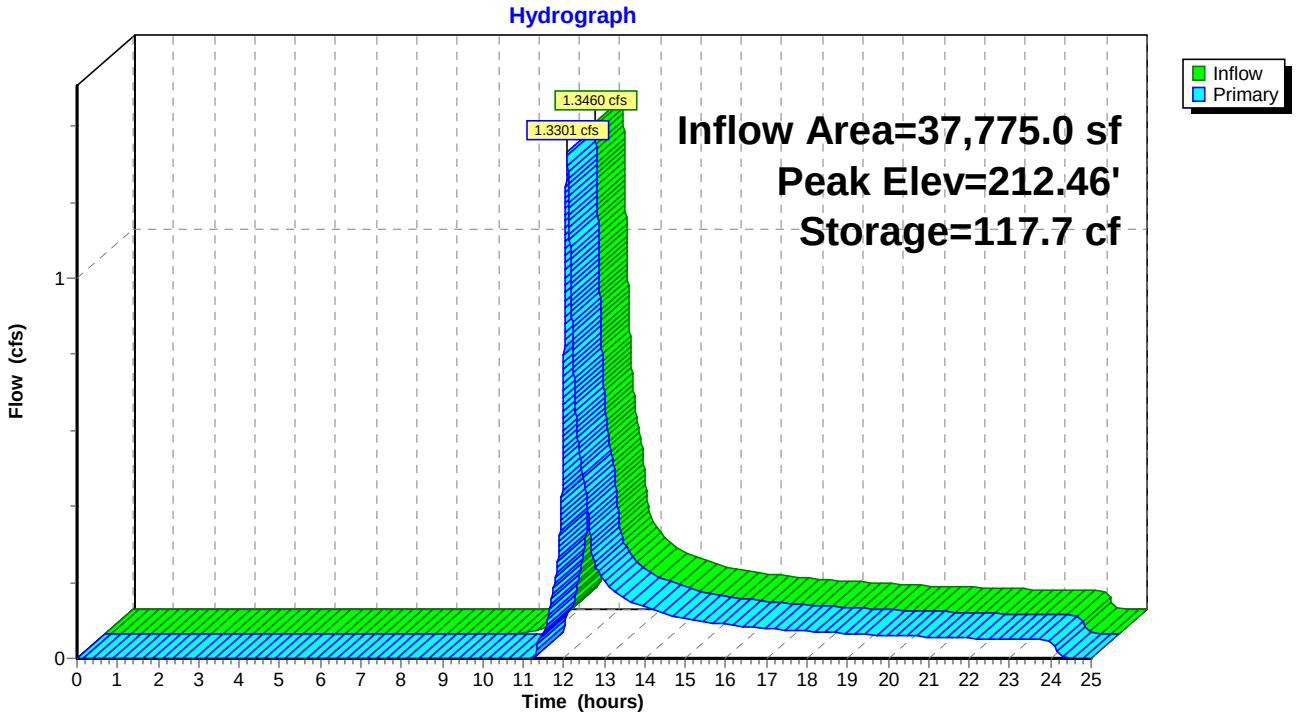
Volume	Invert	Avail.Storage	Storage Description
#1	212.20'	1,246.7 cf	**Low Point #2 (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
212.20	44.0	28.0	0.0	0.0	44.0
212.40	765.0	155.0	66.2	66.2	1,893.6
212.60	1,231.0	170.0	197.8	263.9	2,282.8
212.80	2,386.0	307.0	355.4	619.3	7,483.4
213.00	3,953.0	406.0	627.3	1,246.7	13,101.0

Device	Routing	Invert	Outlet Devices
#1	Primary	212.40'	**LP#1b Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.20 Width (feet) 32.00 38.00

Primary OutFlow Max=1.3295 cfs @ 12.08 hrs HW=212.46' TW=212.44' (Dynamic Tailwater)
└─**1=LP#1b Weir** (Weir Controls 1.3295 cfs @ 0.7 fps)

Pond LP2: Low Point #2



Summary for Pond RB1: Recharge Basin #1

Inflow Area =	11,550.0 sf, 39.39% Impervious, Inflow Depth = 2.55" for 25-yr event				
Inflow =	0.6259 cfs @	12.00 hrs,	Volume=	2,451.5 cf	
Outflow =	0.0373 cfs @	11.14 hrs,	Volume=	2,414.4 cf,	Atten= 94%, Lag= 0.0 min
Discarded =	0.0373 cfs @	11.14 hrs,	Volume=	2,414.4 cf	
Secondary =	0.0000 cfs @	0.00 hrs,	Volume=	0.0 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 214.84' @ 14.11 hrs Surf.Area= 672.0 sf Storage= 768.7 cf

Plug-Flow detention time= 169.6 min calculated for 2,414.3 cf (98% of inflow)
Center-of-Mass det. time= 159.7 min (940.3 - 780.6)

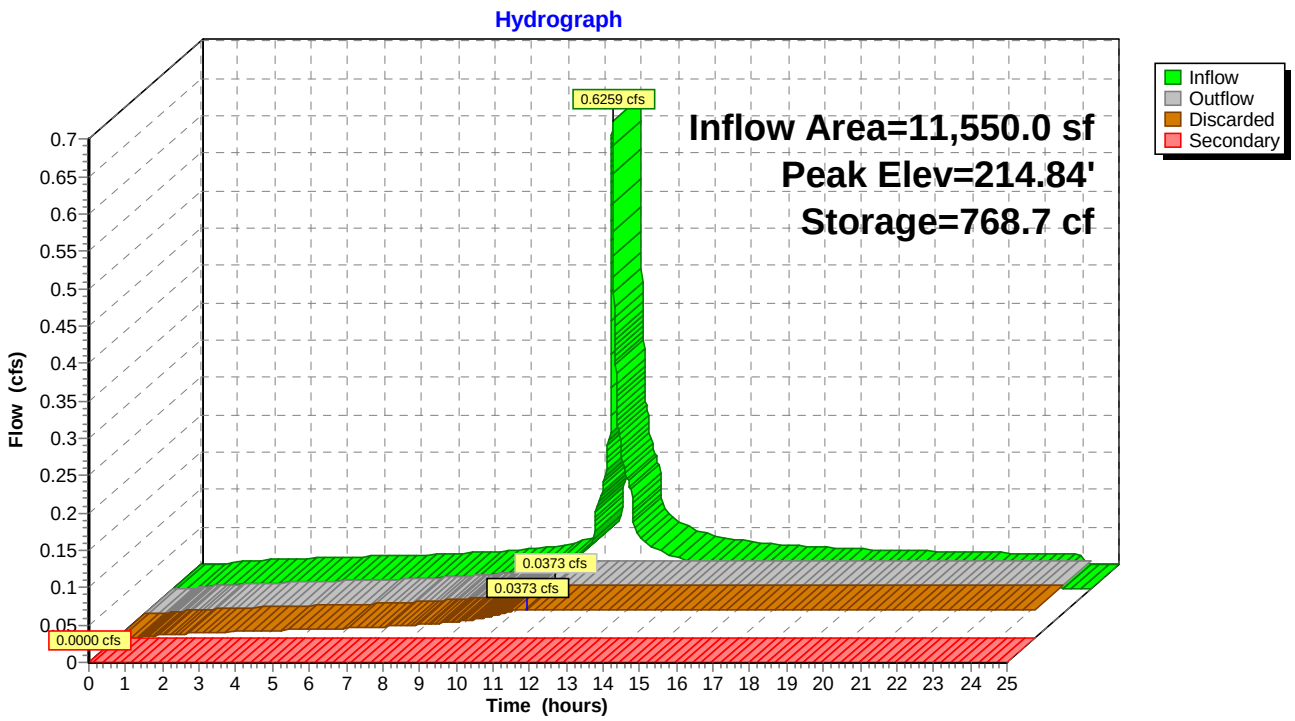
Volume	Invert	Avail.Storage	Storage Description
#1	213.00'	422.0 cf	**24.00'W x 28.00'L x 3.50'H Prismatoid** 2,352.0 cf Overall - 1,297.1 cf Embedded = 1,054.9 cf x 40.0% Voids
#2	213.50'	935.7 cf	**Concrete Galley 4x4x3** x 30 Inside #1 Inside= 42.0"W x 30.0"H => 8.91 sf x 3.50'L = 31.2 cf Outside= 48.0"W x 36.0"H => 10.81 sf x 4.00'L = 43.2 cf
		1,357.7 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	213.00'	**0.0373 cfs Exfiltration when above 213.00'** Phase-In= 0.01'
#2	Secondary	215.40'	**6.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 215.40' / 215.20' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.0373 cfs @ 11.14 hrs HW=213.04' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.0373 cfs)

Secondary OutFlow Max=0.0000 cfs @ 0.00 hrs HW=213.00' TW=215.10' (Dynamic Tailwater)
└─**2=Culvert** (Controls 0.0000 cfs)

Pond RB1: Recharge Basin #1



Summary for Subcatchment SA1a: Sub-Area #1a

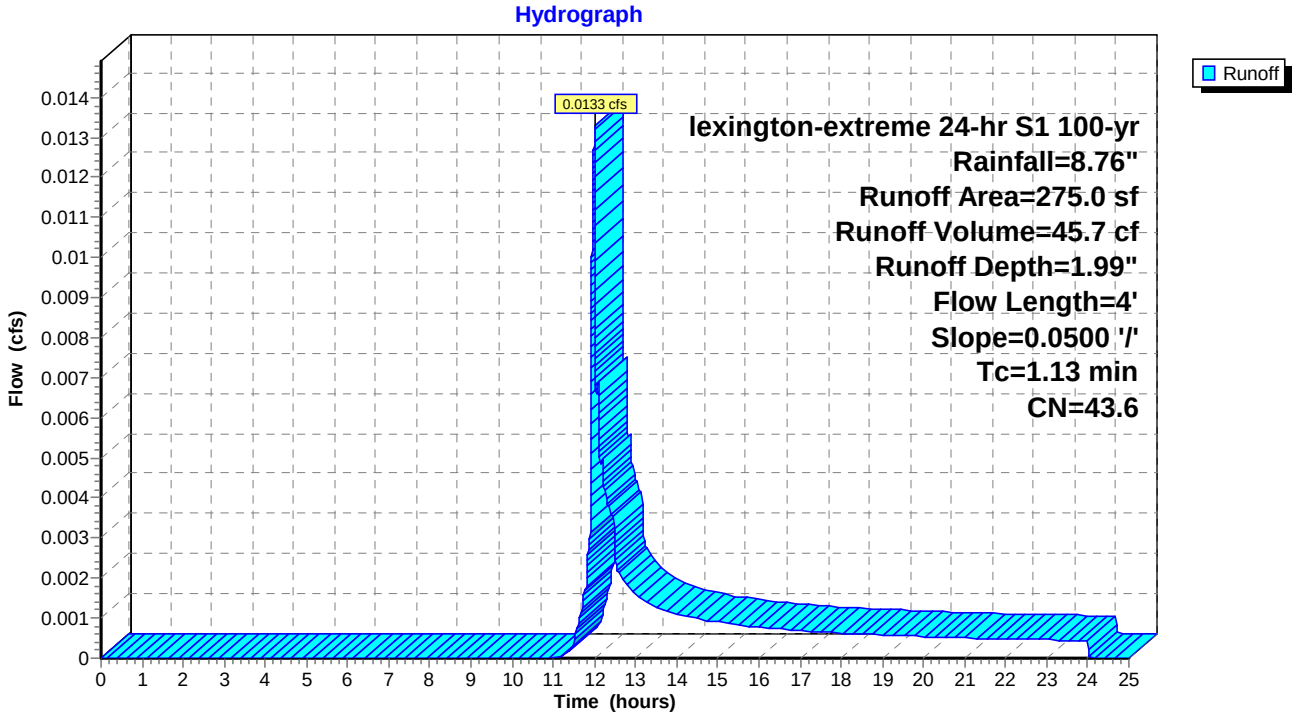
Runoff = 0.0133 cfs @ 12.00 hrs, Volume= 45.7 cf, Depth= 1.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 100-yr Rainfall=8.76"

	Area (sf)	CN	Description
*	55.0	98.0	Impervious
*	220.0	30.0	Woods/Landscape, Good, HSG A
	275.0	43.6	Weighted Average
	220.0		80.00% Pervious Area
	55.0		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.13	4	0.0500	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment SA1a: Sub-Area #1a



Summary for Subcatchment SA1b: Sub-Area #1b

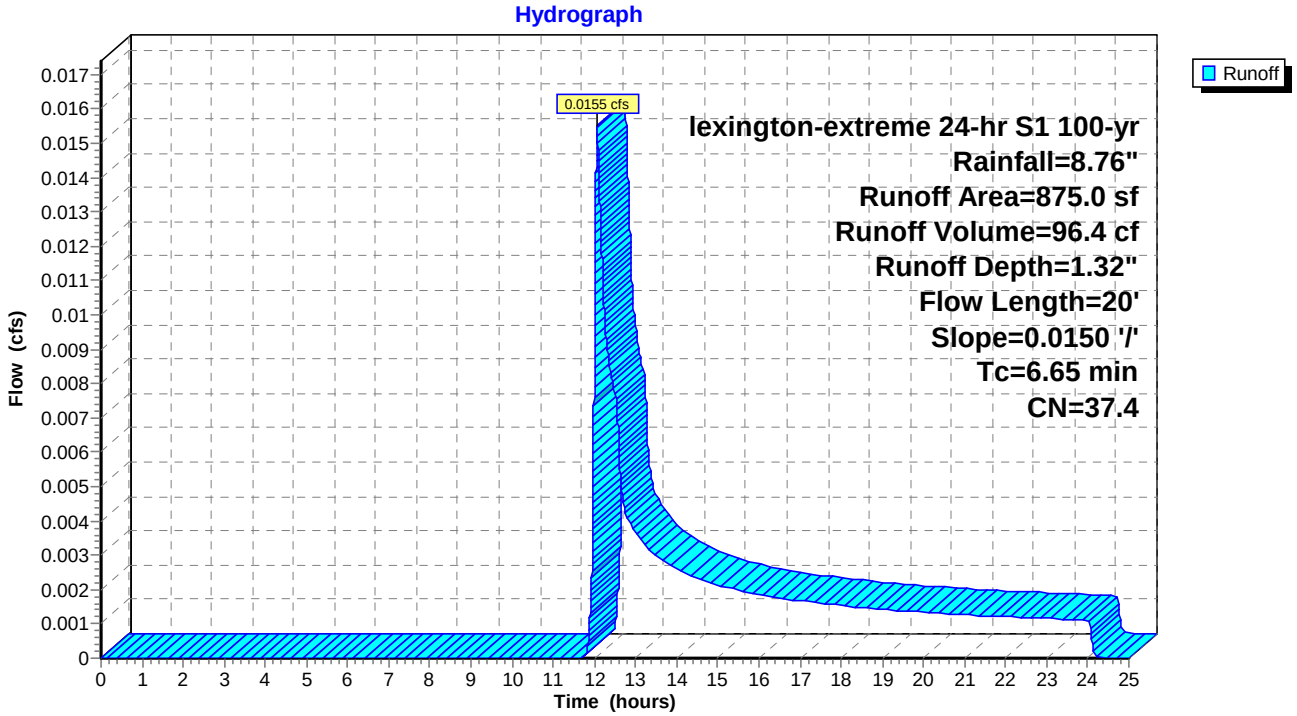
Runoff = 0.0155 cfs @ 12.07 hrs, Volume= 96.4 cf, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 100-yr Rainfall=8.76"

	Area (sf)	CN	Description
*	95.0	98.0	Impervious
*	780.0	30.0	Woods/Landscape, Good, HSG A
	875.0	37.4	Weighted Average
	780.0		89.14% Pervious Area
	95.0		10.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.65	20	0.0150	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment SA1b: Sub-Area #1b



Summary for Subcatchment SA1c: Sub-Area #1c

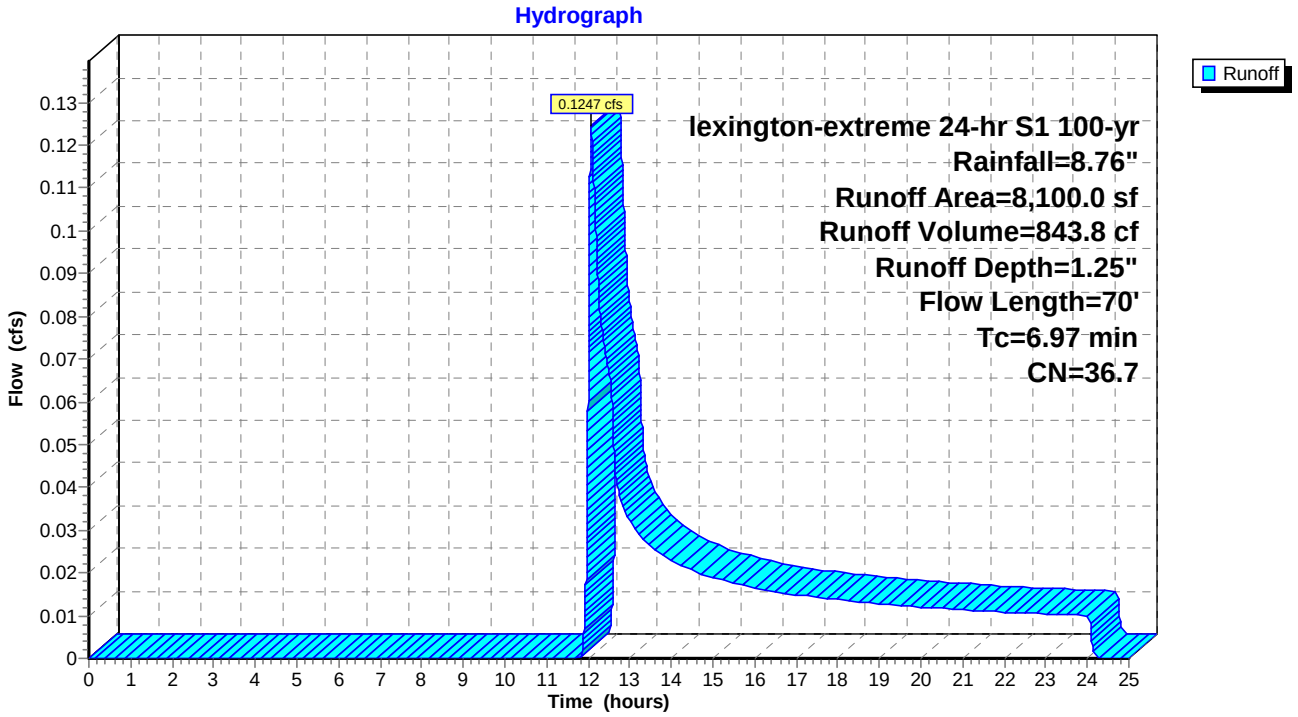
Runoff = 0.1247 cfs @ 12.07 hrs, Volume= 843.8 cf, Depth= 1.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 100-yr Rainfall=8.76"

	Area (sf)	CN	Description
*	230.0	98.0	Impervious
*	3,280.0	39.0	Porous Asphalt/Grass Pavers
	1,000.0	39.0	>75% Grass cover, Good, HSG A
*	3,590.0	30.0	Woods/Landscape, Good, HSG A
	8,100.0	36.7	Weighted Average
	7,870.0		97.16% Pervious Area
	230.0		2.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.93	7	0.0143	0.0		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.38	20	0.0150	0.9		**Sheet Flow, Segment 2 - Porous Asphalt** Smooth surfaces n= 0.011 P2= 3.20"
0.51	5	0.0800	0.2		**Sheet Flow, Segment 3 - Lawn** Grass: Short n= 0.150 P2= 3.20"
2.38	16	0.1250	0.1		**Sheet Flow, Segment 4 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.77	22	0.0091	0.5		**Shallow Concentrated Flow, Segment 5 - Woods** Woodland Kv= 5.00 fps
6.97	70	Total			

Subcatchment SA1c: Sub-Area #1c



Summary for Subcatchment SA2: Sub-Area #2

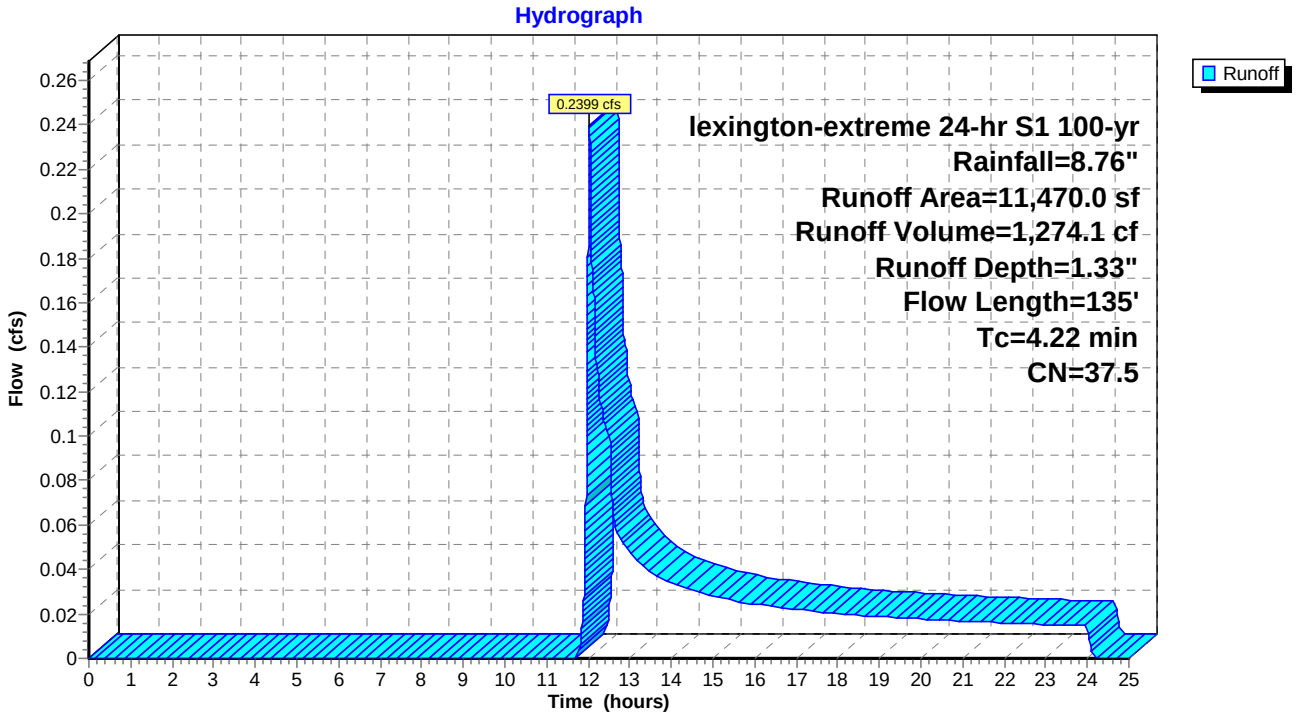
Runoff = 0.2399 cfs @ 12.03 hrs, Volume= 1,274.1 cf, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 100-yr Rainfall=8.76"

	Area (sf)	CN	Description
*	510.0	98.0	Impervious
*	4,225.0	39.0	Porous Asphalt/Grass Pavers
	1,425.0	39.0	>75% Grass cover, Good, HSG A
*	5,310.0	30.0	Woods/Landscape, Good, HSG A
	11,470.0	37.5	Weighted Average
	10,960.0		95.55% Pervious Area
	510.0		4.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.89	11	0.0364	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.60	39	0.0179	1.1		**Sheet Flow, Segment 2 - Porous Asphalt** Smooth surfaces n= 0.011 P2= 3.20"
0.20	31	0.0161	2.6		**Shallow Concentrated Flow, Segment 3 - Porous Asphalt** Paved Kv= 20.30 fps
0.25	19	0.0316	1.2		**Shallow Concentrated Flow, Segment 4 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.08	7	0.0857	1.5		**Shallow Concentrated Flow, Segment 5 - Woods** Woodland Kv= 5.00 fps
0.06	13	0.0538	3.7		**Shallow Concentrated Flow, Segment 6 - Gravel** Unpaved Kv= 16.10 fps
0.14	15	0.1267	1.8		**Shallow Concentrated Flow, Segment 7 - Woods** Woodland Kv= 5.00 fps
4.22	135	Total			

Subcatchment SA2: Sub-Area #2



Summary for Subcatchment SA3: Sub-Area #3

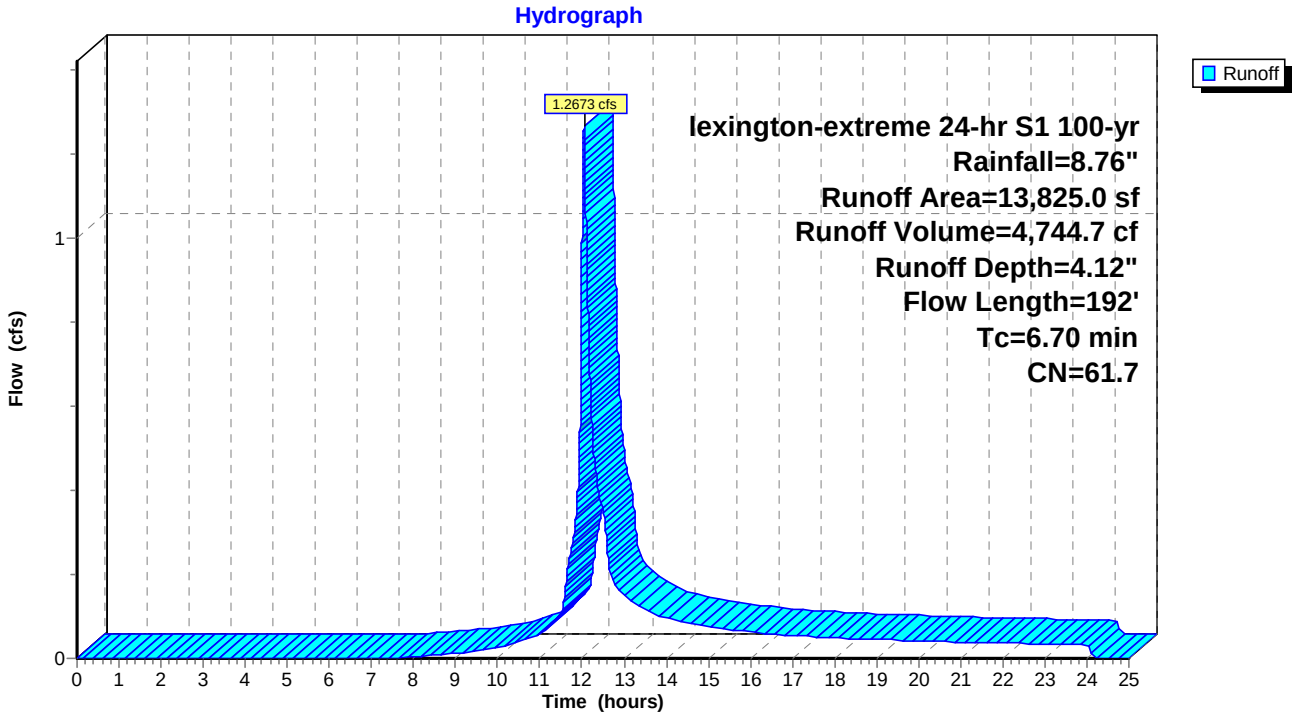
Runoff = 1.2673 cfs @ 12.05 hrs, Volume= 4,744.7 cf, Depth= 4.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 100-yr Rainfall=8.76"

	Area (sf)	CN	Description
*	180.0	98.0	Impervious
	2,015.0	80.0	>75% Grass cover, Good, HSG D
*	5,965.0	77.0	Woods/Landscape, Good, HSG D
*	915.0	39.0	Porous Asphalt/Grass Pavers
	4,095.0	39.0	>75% Grass cover, Good, HSG A
*	655.0	30.0	Woods/Landscape, Good, HSG A
	13,825.0	61.7	Weighted Average
	13,645.0		98.70% Pervious Area
	180.0		1.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.03	15	0.0600	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.42	19	0.0105	0.8		**Sheet Flow, Segment 2 - Porous Asphalt** Smooth surfaces n= 0.011 P2= 3.20"
1.76	16	0.0375	0.2		**Sheet Flow, Segment 3 - Lawn** Grass: Short n= 0.150 P2= 3.20"
1.04	100	0.0520	1.6		**Shallow Concentrated Flow, Segment 4 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.45	42	0.0976	1.6		**Shallow Concentrated Flow, Segment 5 - Woods** Woodland Kv= 5.00 fps
6.70	192	Total			

Subcatchment SA3: Sub-Area #3



Summary for Subcatchment SA4: Sub-Area #4

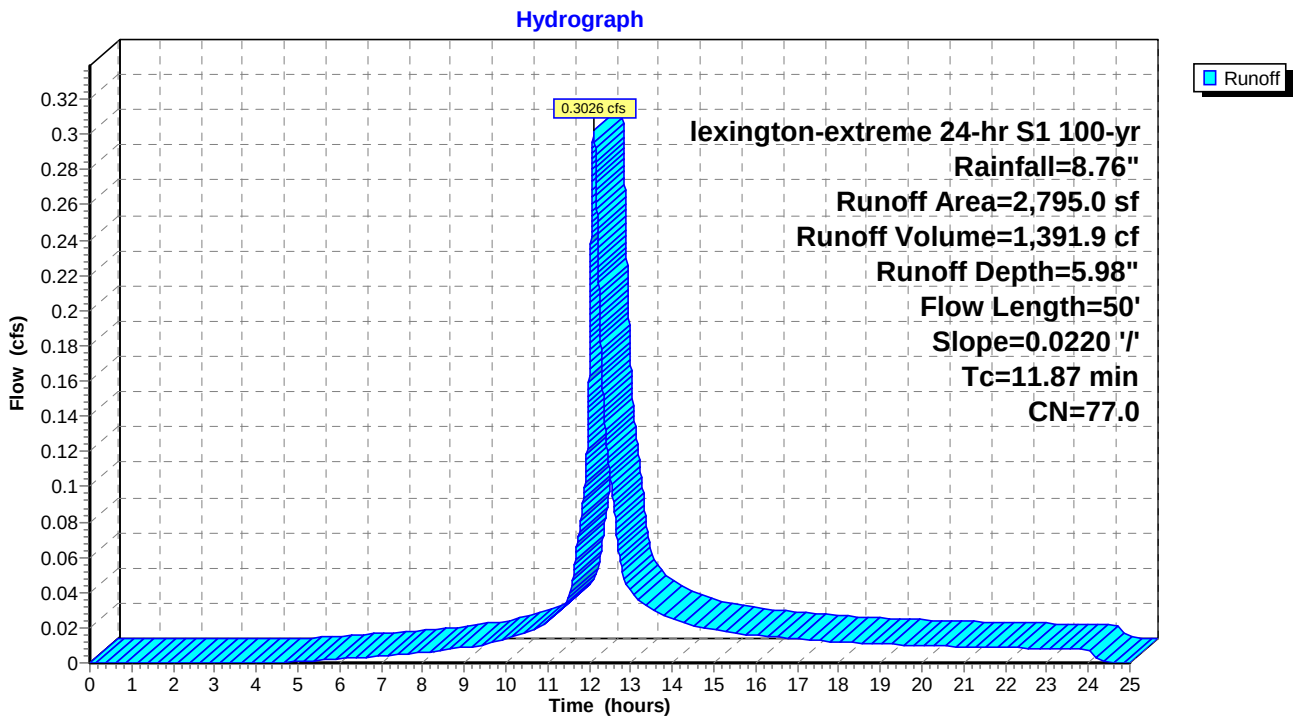
Runoff = 0.3026 cfs @ 12.12 hrs, Volume= 1,391.9 cf, Depth= 5.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 100-yr Rainfall=8.76"

	Area (sf)	CN	Description
*	2,795.0	77.0	Woods/Landscape, Good, HSG D
	2,795.0		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.87	50	0.0220	0.1		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"

Subcatchment SA4: Sub-Area #4



Summary for Subcatchment SA5: Sub-Area #5

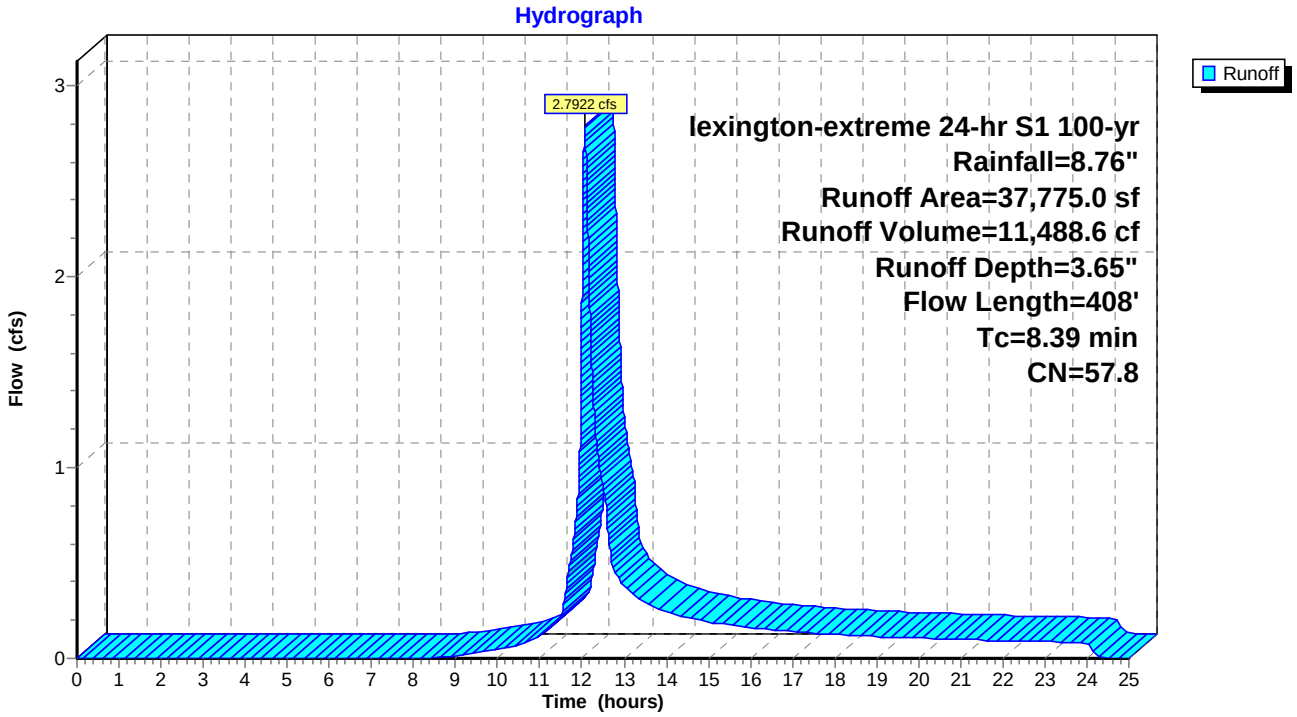
Runoff = 2.7922 cfs @ 12.07 hrs, Volume= 11,488.6 cf, Depth= 3.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 100-yr Rainfall=8.76"

	Area (sf)	CN	Description
*	1,520.0	98.0	Impervious
	12,120.0	80.0	>75% Grass cover, Good, HSG D
*	5,145.0	77.0	Woods/Landscape, Good, HSG D
*	3,030.0	39.0	Porous Asphalt/Grass Pavers
	8,060.0	39.0	>75% Grass cover, Good, HSG A
*	7,900.0	30.0	Woods/Landscape, Good, HSG A
	37,775.0	57.8	Weighted Average
	36,255.0		95.98% Pervious Area
	1,520.0		4.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.98	50	0.3380	0.2		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
0.60	57	0.1018	1.6		**Shallow Concentrated Flow, Segment 2 - Woods** Woodland Kv= 5.00 fps
0.08	6	0.0333	1.3		**Shallow Concentrated Flow, Segment 3 - Lawn** Short Grass Pasture Kv= 7.00 fps
0.43	73	0.0190	2.8		**Shallow Concentrated Flow, Segment 4 - Porous Asphalt** Paved Kv= 20.30 fps
1.33	121	0.0471	1.5		**Shallow Concentrated Flow, Segment 5 - Lawn** Short Grass Pasture Kv= 7.00 fps
1.97	101	0.0149	0.9		**Shallow Concentrated Flow, Segment 6 - Grass Swale** Short Grass Pasture Kv= 7.00 fps
8.39	408	Total			

Subcatchment SA5: Sub-Area #5



Summary for Subcatchment SA6: Sub-Area #6

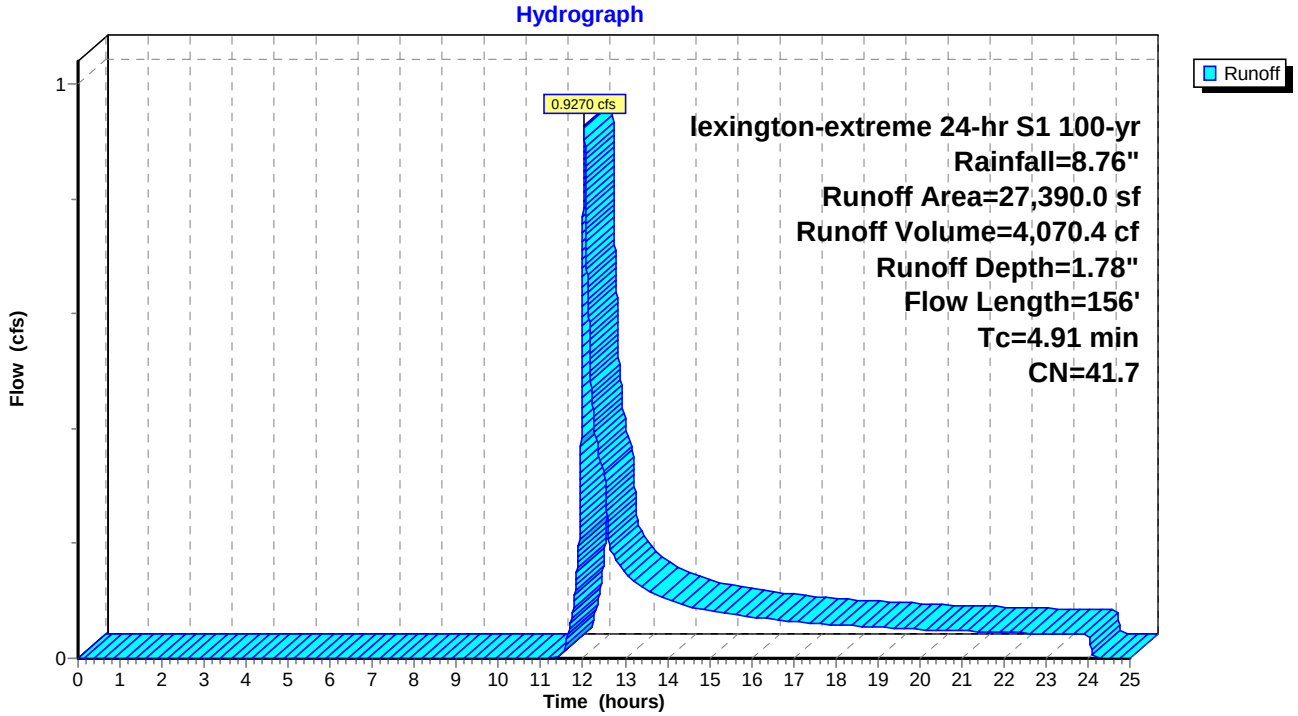
Runoff = 0.9270 cfs @ 12.04 hrs, Volume= 4,070.4 cf, Depth= 1.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 100-yr Rainfall=8.76"

	Area (sf)	CN	Description
	70.0	80.0	>75% Grass cover, Good, HSG D
*	5,425.0	77.0	Woods/Landscape, Good, HSG D
	6,915.0	39.0	>75% Grass cover, Good, HSG A
*	14,980.0	30.0	Woods/Landscape, Good, HSG A
	27,390.0	41.7	Weighted Average
	27,390.0		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.66	50	0.4180	0.2		**Sheet Flow, Segment 1 - Woods** Woods: Light underbrush n= 0.400 P2= 3.20"
1.25	106	0.0793	1.4		**Shallow Concentrated Flow, Segment 2 - Woods** Woodland Kv= 5.00 fps
4.91	156	Total			

Subcatchment SA6: Sub-Area #6



Summary for Subcatchment SA7: Sub-Area #7

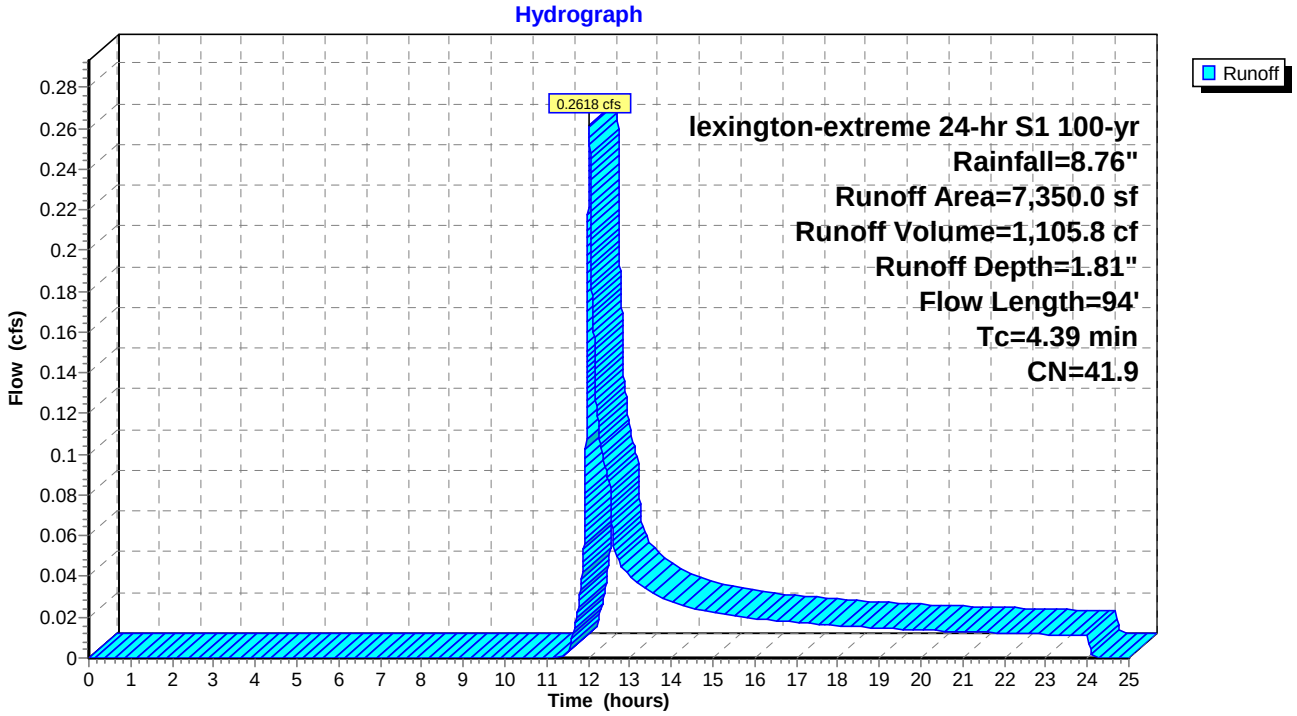
Runoff = 0.2618 cfs @ 12.03 hrs, Volume= 1,105.8 cf, Depth= 1.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 100-yr Rainfall=8.76"

	Area (sf)	CN	Description
*	350.0	98.0	Impervious
	10.0	80.0	>75% Grass cover, Good, HSG D
*	3,725.0	39.0	Porous Asphalt/Grass Pavers
	3,265.0	39.0	>75% Grass cover, Good, HSG A
	7,350.0	41.9	Weighted Average
	7,000.0		95.24% Pervious Area
	350.0		4.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.06	48	0.0417	0.2		**Sheet Flow, Segment 1 - Lawn** Grass: Short n= 0.150 P2= 3.20"
0.33	46	0.0130	2.3		**Shallow Concentrated Flow, Segment 2 - Porous Asphalt** Paved Kv= 20.30 fps
4.39	94	Total			

Subcatchment SA7: Sub-Area #7



Summary for Subcatchment SA8a: Sub-Area #8a (House)

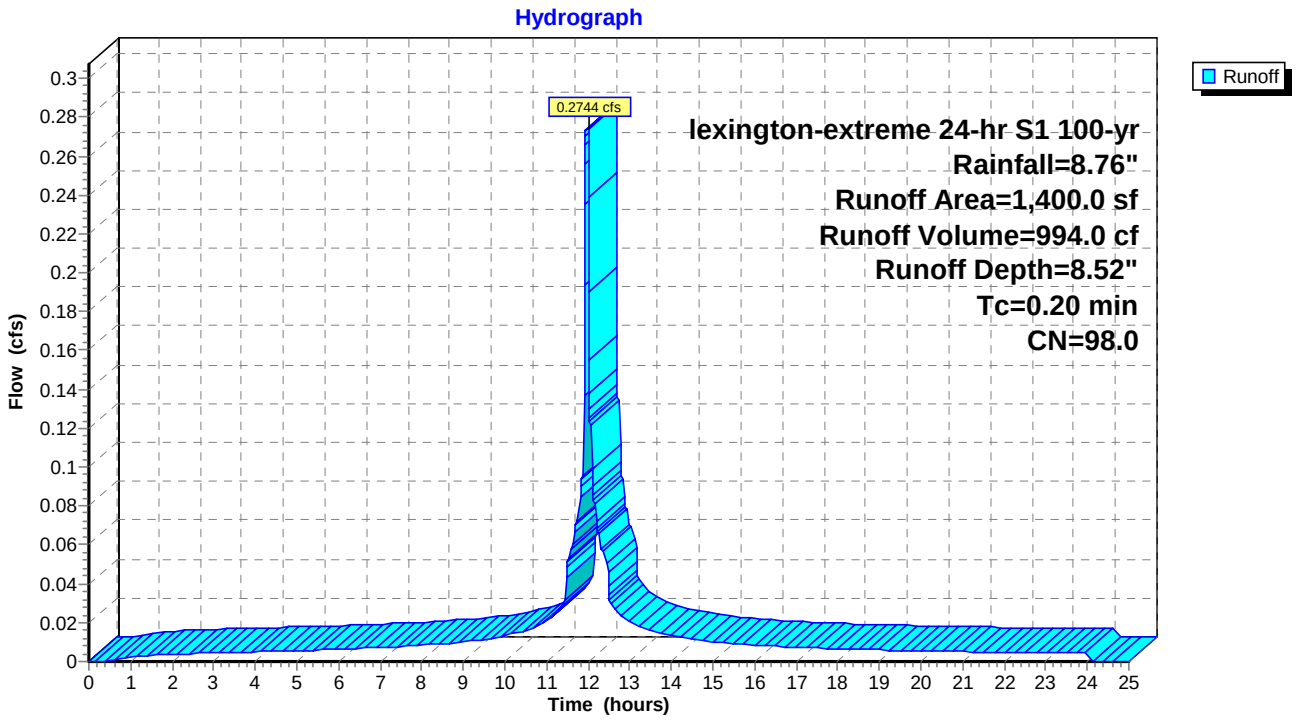
Runoff = 0.2744 cfs @ 12.00 hrs, Volume= 994.0 cf, Depth= 8.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 100-yr Rainfall=8.76"

	Area (sf)	CN	Description
*	1,400.0	98.0	Impervious
	1,400.0		100.00% Impervious Area

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

Subcatchment SA8a: Sub-Area #8a (House)



Summary for Subcatchment SA8b: Sub-Area #8b (House)

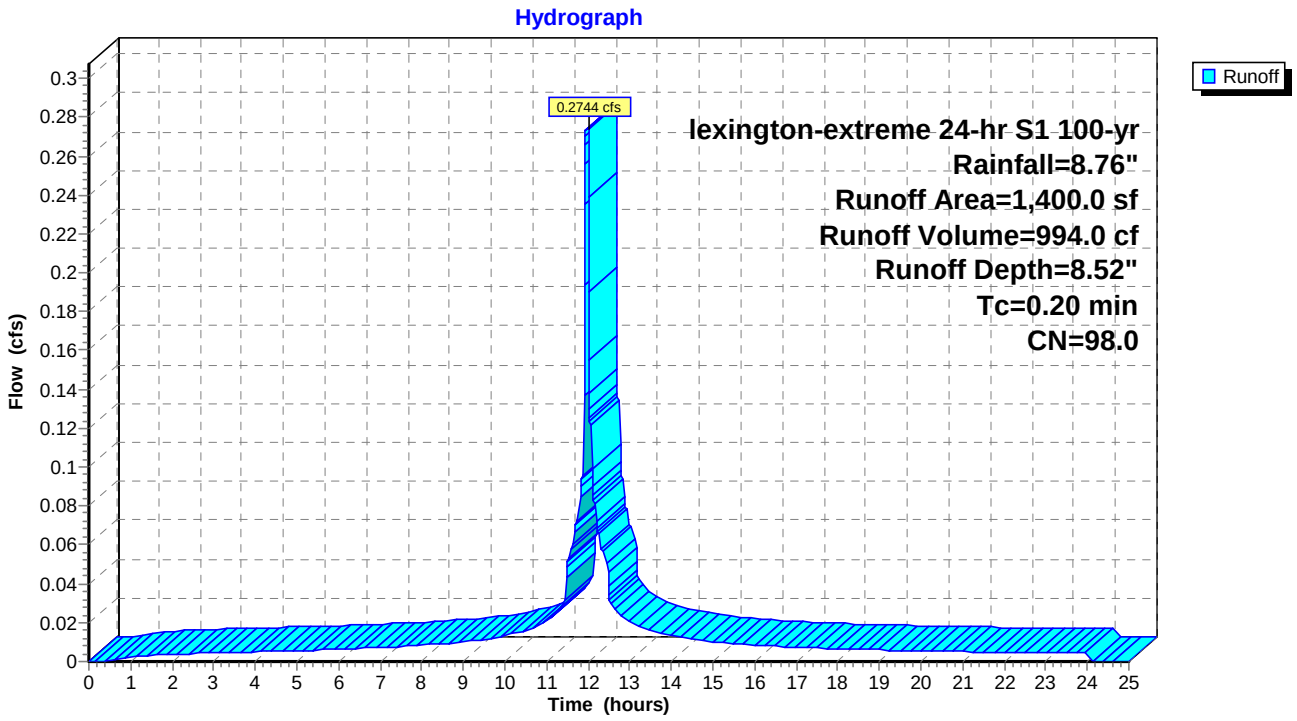
Runoff = 0.2744 cfs @ 12.00 hrs, Volume= 994.0 cf, Depth= 8.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 100-yr Rainfall=8.76"

	Area (sf)	CN	Description
*	1,400.0	98.0	Impervious
	1,400.0		100.00% Impervious Area

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

Subcatchment SA8b: Sub-Area #8b (House)



Summary for Subcatchment SA9: Sub-Area #9 (House)

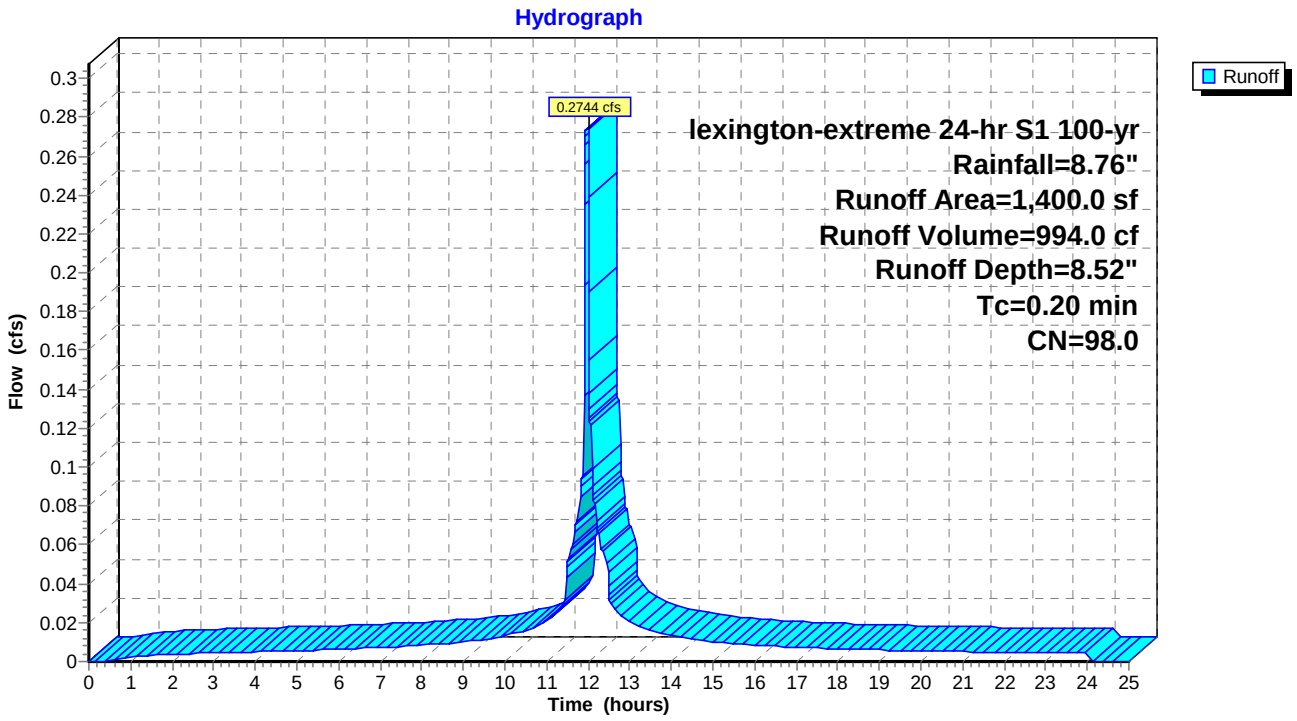
Runoff = 0.2744 cfs @ 12.00 hrs, Volume= 994.0 cf, Depth= 8.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
lexington-extreme 24-hr S1 100-yr Rainfall=8.76"

	Area (sf)	CN	Description
*	1,400.0	98.0	Impervious
	1,400.0		100.00% Impervious Area

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

Subcatchment SA9: Sub-Area #9 (House)

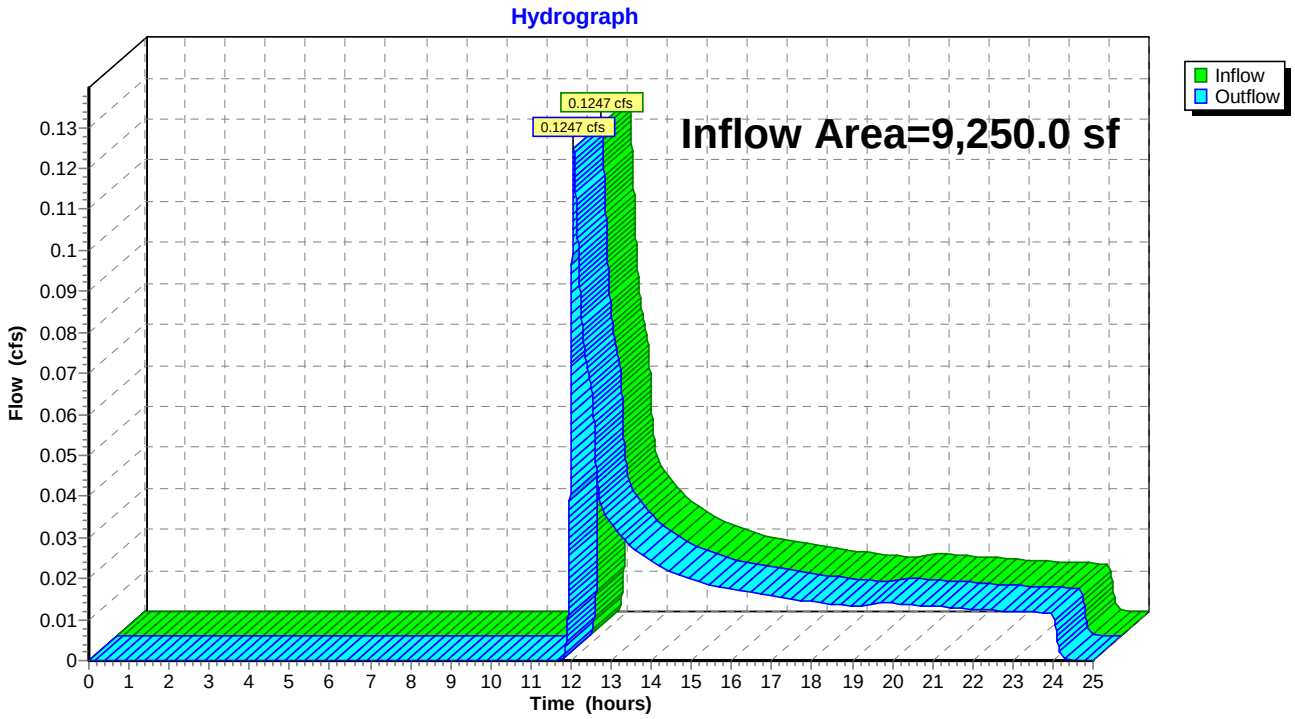


Summary for Reach DP1: Design Point 1 - #485 Concord Avenue

Inflow Area =	9,250.0 sf,	4.11% Impervious,	Inflow Depth >	1.16"	for 100-yr event
Inflow =	0.1247 cfs @	12.07 hrs,	Volume=	893.6 cf	
Outflow =	0.1247 cfs @	12.07 hrs,	Volume=	893.6 cf,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP1: Design Point 1 - #485 Concord Avenue

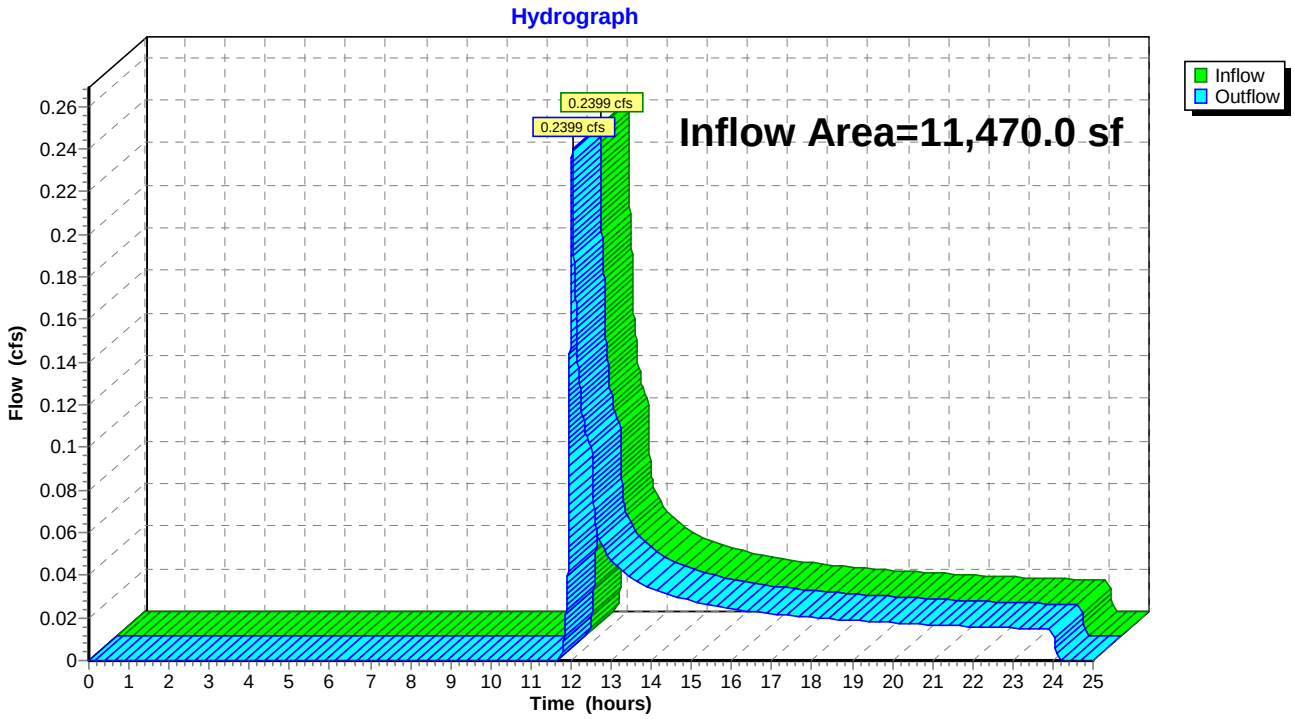


Summary for Reach DP2: Design Point 2 - #489 Concord Avenue

Inflow Area =	11,470.0 sf,	4.45% Impervious,	Inflow Depth =	1.33"	for 100-yr event
Inflow =	0.2399 cfs @	12.03 hrs,	Volume=	1,274.1 cf	
Outflow =	0.2399 cfs @	12.03 hrs,	Volume=	1,274.1 cf,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP2: Design Point 2 - #489 Concord Avenue

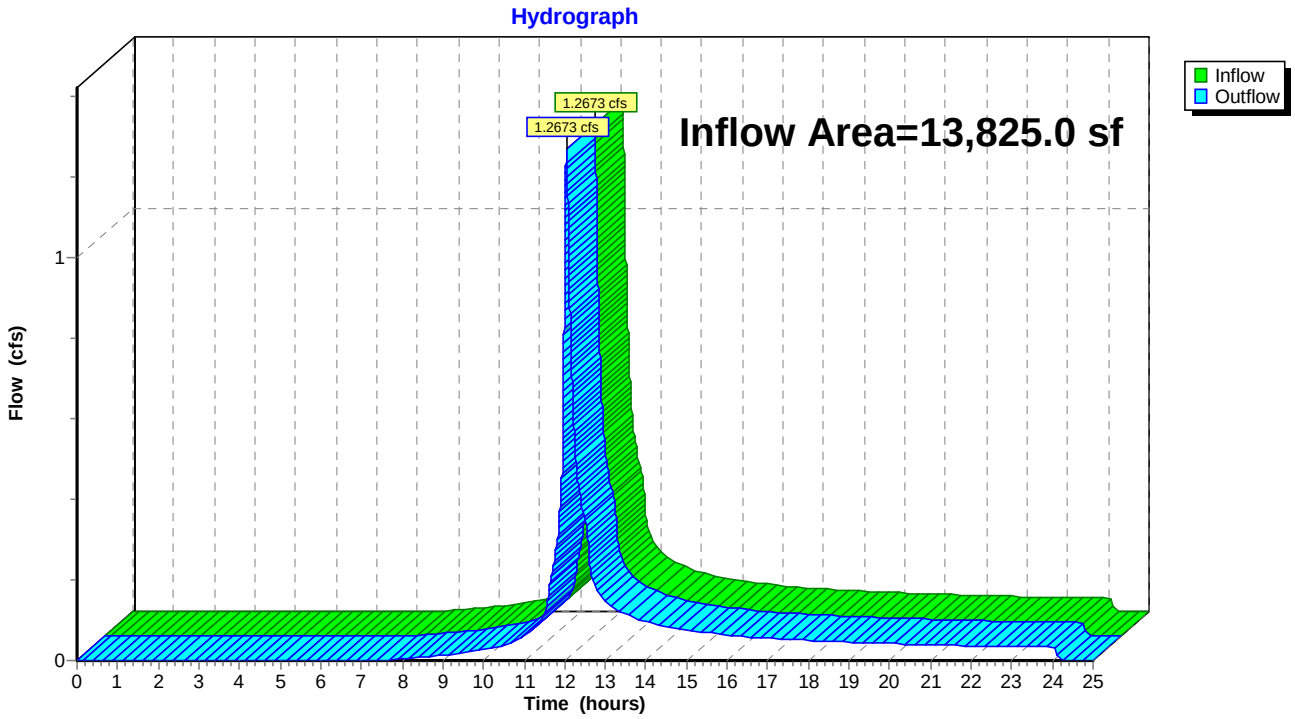


Summary for Reach DP3: Design Point 3 - Southeast B.V.W.

Inflow Area =	13,825.0 sf,	1.30% Impervious,	Inflow Depth =	4.12"	for 100-yr event
Inflow =	1.2673 cfs @	12.05 hrs,	Volume=	4,744.7 cf	
Outflow =	1.2673 cfs @	12.05 hrs,	Volume=	4,744.7 cf,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP3: Design Point 3 - Southeast B.V.W.

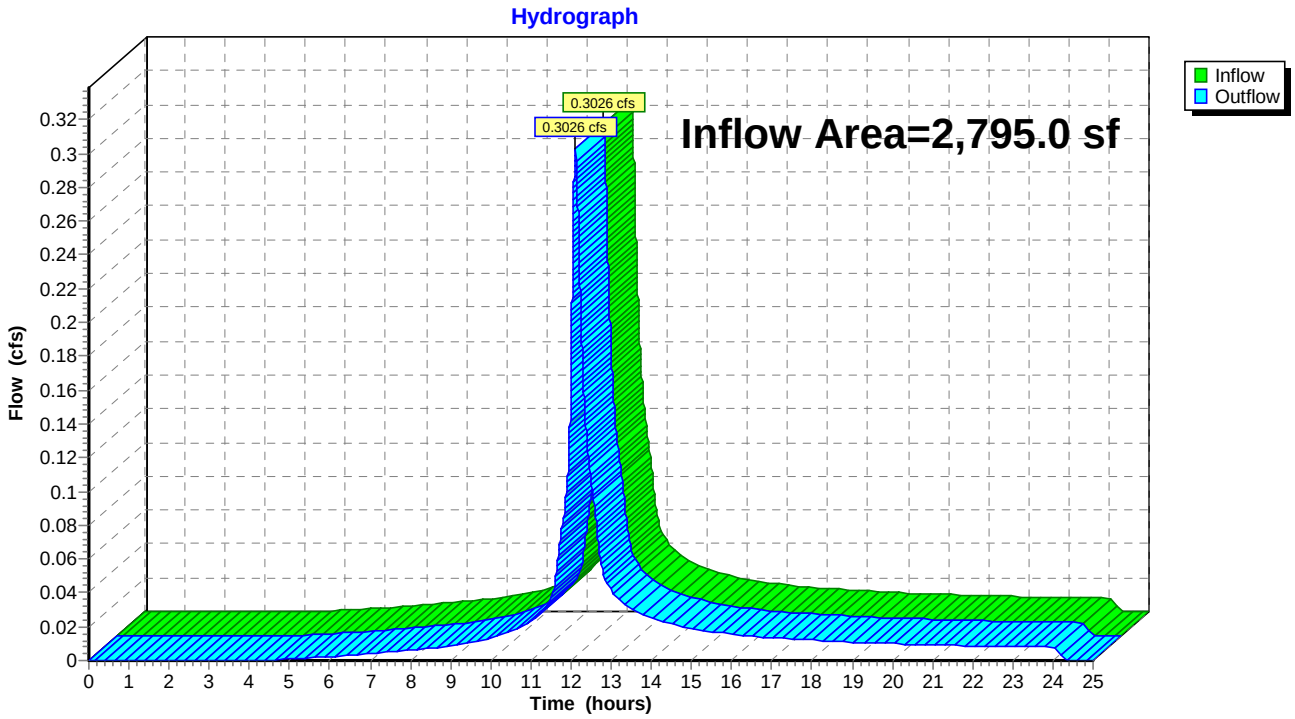


Summary for Reach DP4: Design Point 4 - #489 Concord Avenue (B.V.W.)

Inflow Area =	2,795.0 sf,	0.00% Impervious,	Inflow Depth =	5.98"	for 100-yr event
Inflow =	0.3026 cfs @	12.12 hrs,	Volume=	1,391.9 cf	
Outflow =	0.3026 cfs @	12.12 hrs,	Volume=	1,391.9 cf,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP4: Design Point 4 - #489 Concord Avenue (B.V.W.)

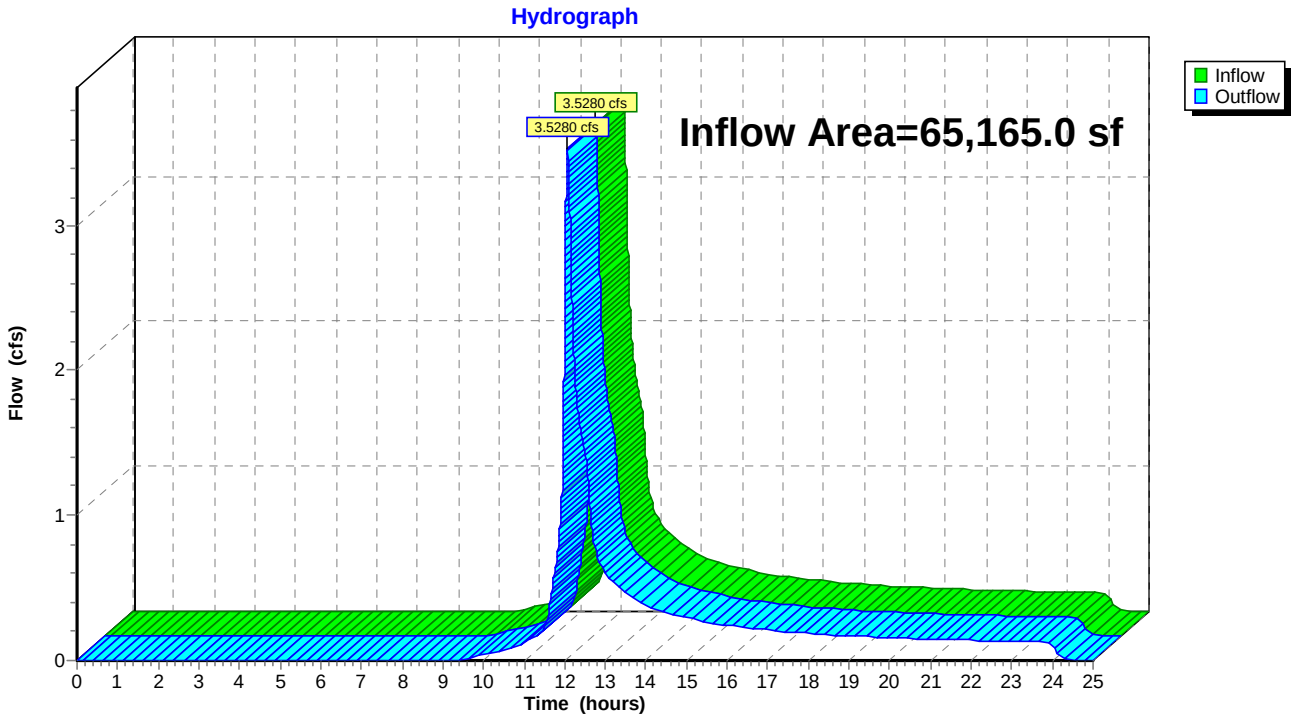


Summary for Reach DP5: Design Point 5 - Route 2

Inflow Area = 65,165.0 sf, 2.33% Impervious, Inflow Depth = 2.99" for 100-yr event
Inflow = 3.5280 cfs @ 12.07 hrs, Volume= 16,221.3 cf
Outflow = 3.5280 cfs @ 12.07 hrs, Volume= 16,221.3 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs

Reach DP5: Design Point 5 - Route 2



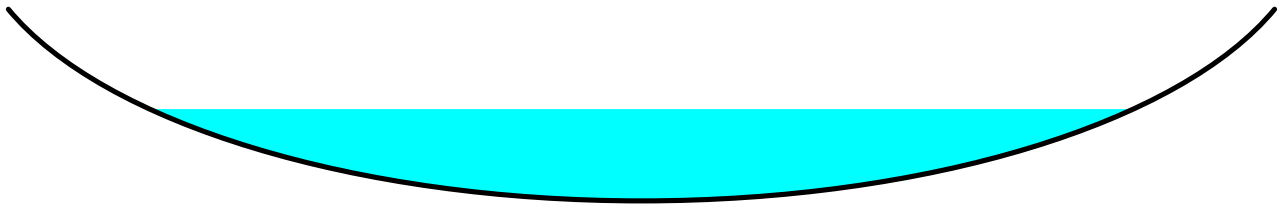
Summary for Reach O1: Overland Flow #1

Inflow	=	0.1981 cfs @	12.50 hrs,	Volume=	728.5 cf
Outflow	=	0.1979 cfs @	12.51 hrs,	Volume=	728.5 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 1.5 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 0.7 fps, Avg. Travel Time= 1.4 min

Peak Storage= 7.5 cf @ 12.51 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 0.20' Flow Area= 0.4 sf, Capacity= 0.9748 cfs

3.00' x 0.20' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 57.0' Slope= 0.0491 '/'
Inlet Invert= 215.10', Outlet Invert= 212.30'



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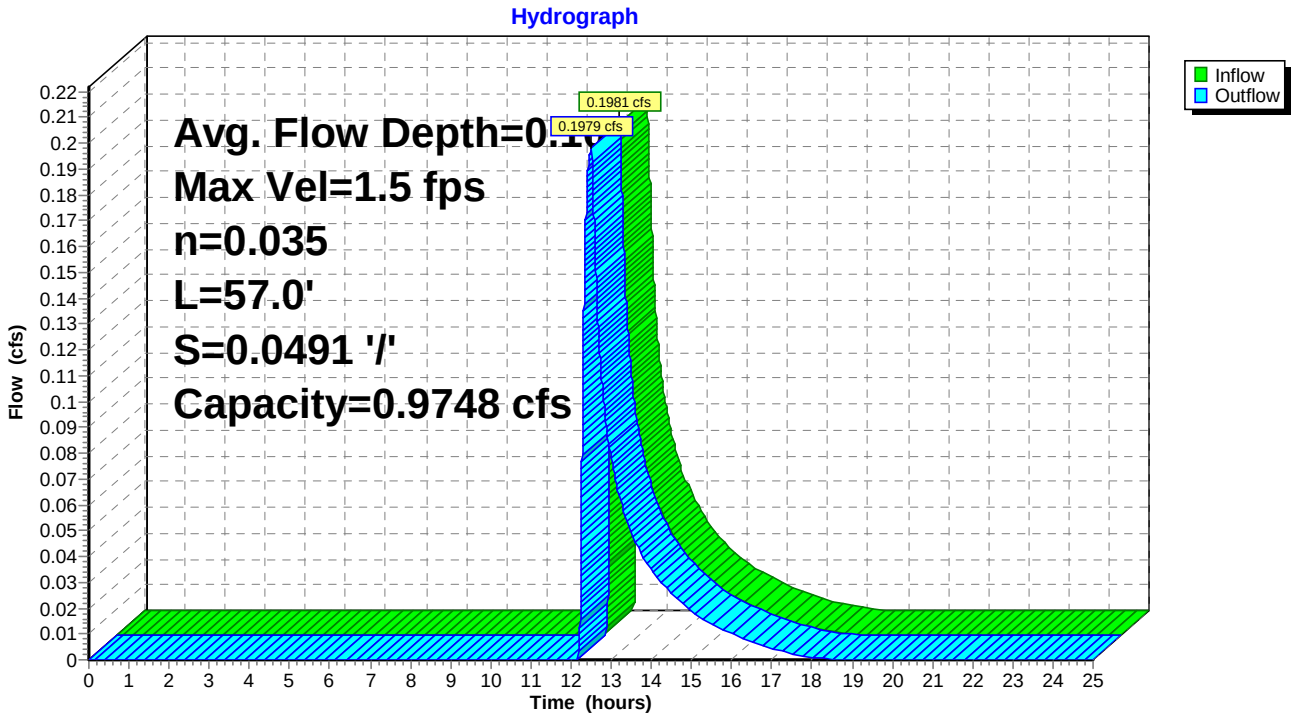
Reach O1: Overland Flow #1



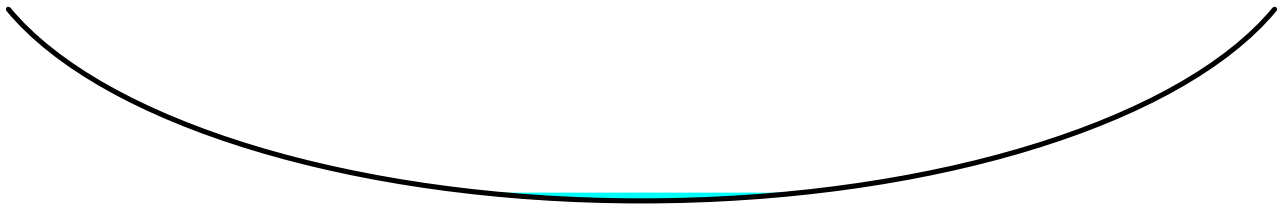
Summary for Reach O1a: Overland Flow #1a

Inflow Area = 275.0 sf, 20.00% Impervious, Inflow Depth > 1.24" for 100-yr event
Inflow = 0.0016 cfs @ 13.01 hrs, Volume= 28.4 cf
Outflow = 0.0016 cfs @ 13.04 hrs, Volume= 28.4 cf, Atten= 3%, Lag= 2.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 0.3 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 0.2 fps, Avg. Travel Time= 3.8 min

Peak Storage= 0.3 cf @ 13.04 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.10' Flow Area= 0.7 sf, Capacity= 1.4873 cfs

10.00' x 0.10' deep Parabolic Channel, n= 0.026
Length= 47.0' Slope= 0.0564 '/'
Inlet Invert= 219.45', Outlet Invert= 216.80'



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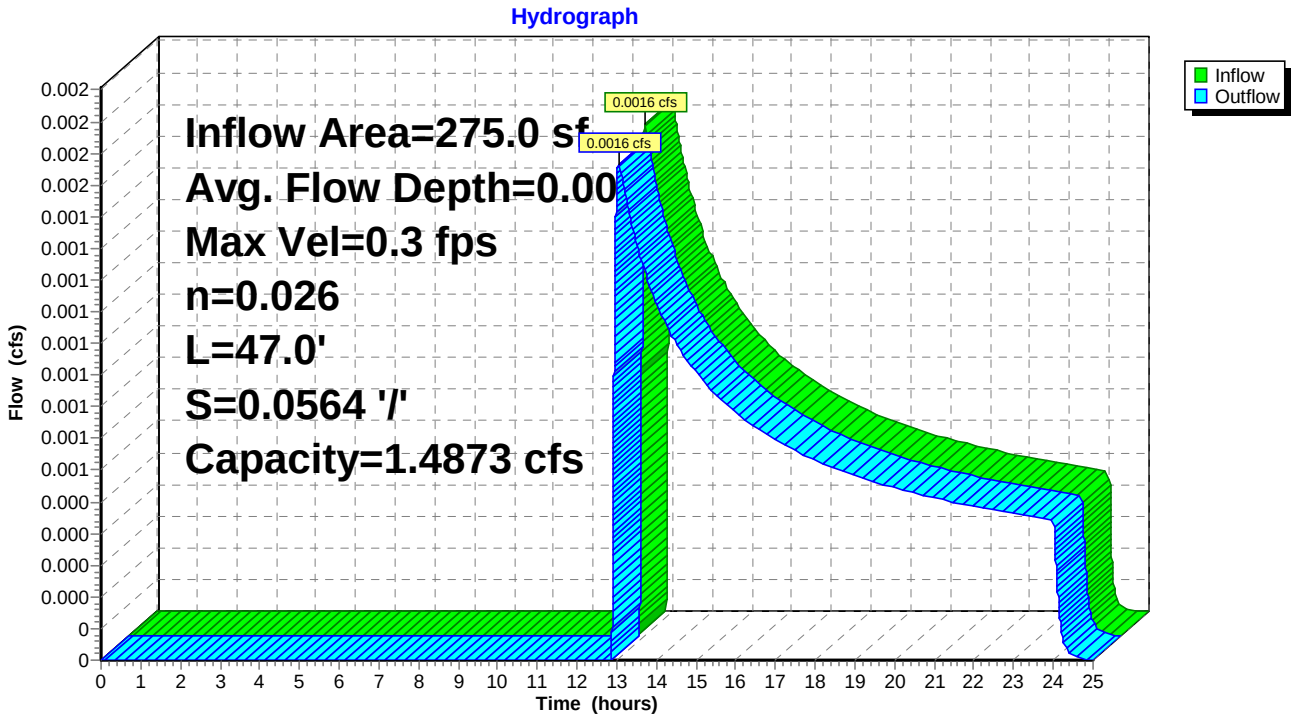
Reach O1a: Overland Flow #1a



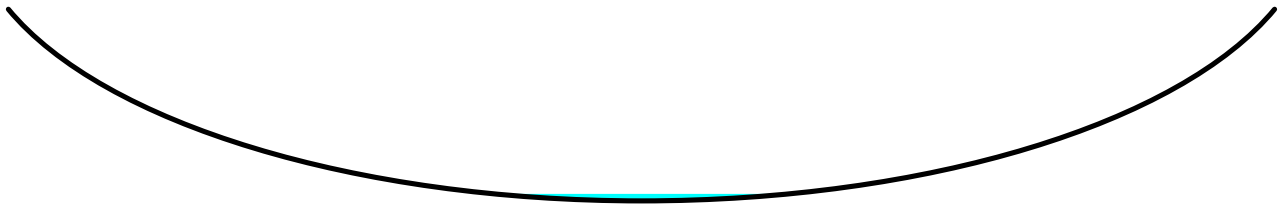
Summary for Reach O1b: Overland Flow #1b

Inflow Area = 875.0 sf, 10.86% Impervious, Inflow Depth > 0.29" for 100-yr event
Inflow = 0.0014 cfs @ 19.66 hrs, Volume= 21.4 cf
Outflow = 0.0014 cfs @ 19.79 hrs, Volume= 21.4 cf, Atten= 0%, Lag= 7.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 0.2 fps, Min. Travel Time= 5.0 min
Avg. Velocity = 0.2 fps, Avg. Travel Time= 5.6 min

Peak Storage= 0.4 cf @ 19.79 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.10' Flow Area= 1.0 sf, Capacity= 2.0502 cfs

15.00' x 0.10' deep Parabolic Channel, n= 0.029
Length= 65.0' Slope= 0.0592 '/'
Inlet Invert= 219.55', Outlet Invert= 215.70'



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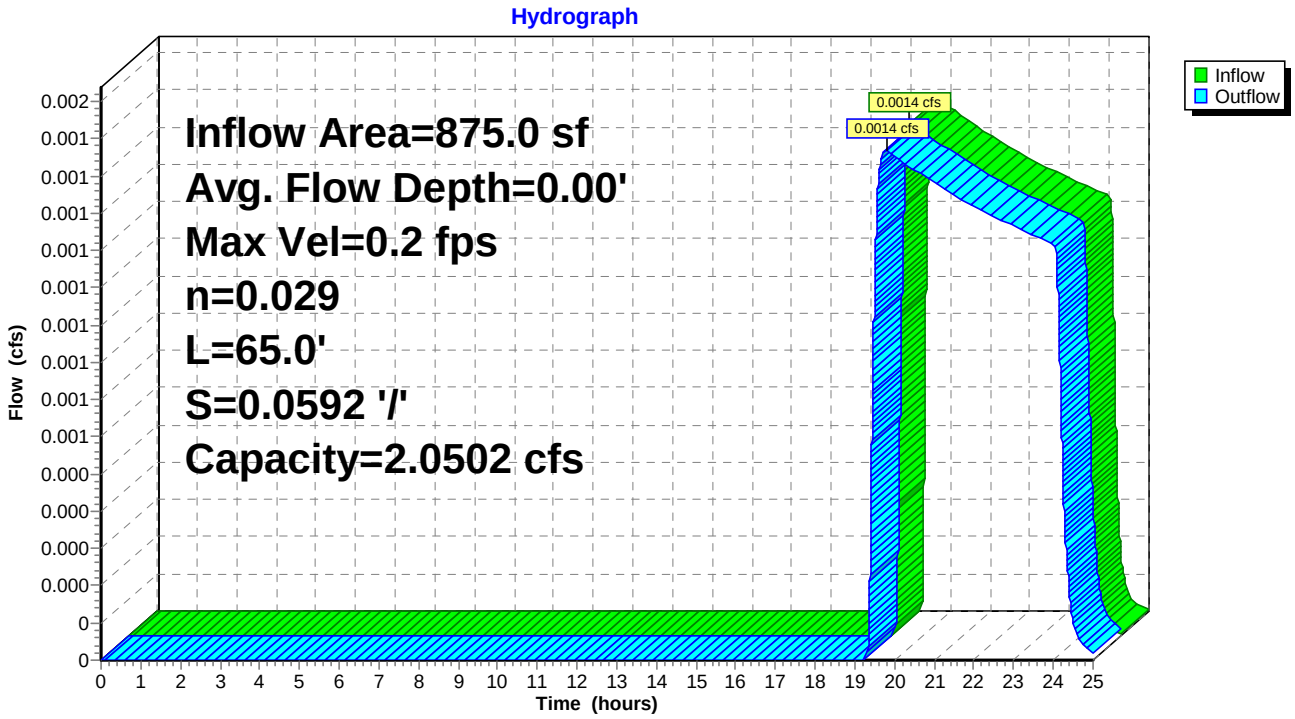
Reach O1b: Overland Flow #1b



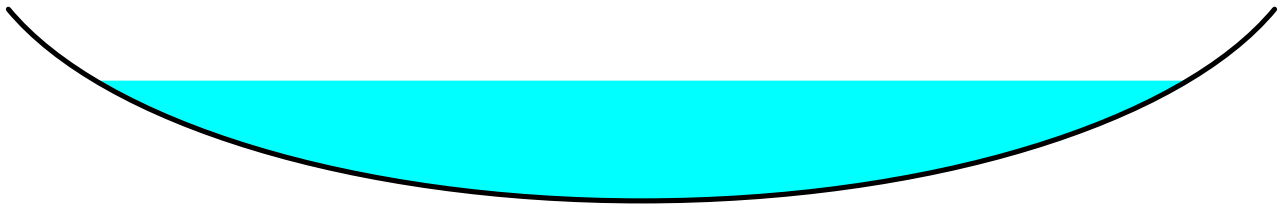
Summary for Reach O2: OverInd Flow #2

Inflow Area = 37,775.0 sf, 4.02% Impervious, Inflow Depth = 3.63" for 100-yr event
Inflow = 2.7699 cfs @ 12.08 hrs, Volume= 11,422.4 cf
Outflow = 2.7674 cfs @ 12.08 hrs, Volume= 11,422.4 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 1.3 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.5 fps, Avg. Travel Time= 0.7 min

Peak Storage= 44.3 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 0.20' Flow Area= 4.3 sf, Capacity= 7.6508 cfs

32.00' x 0.20' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 21.0' Slope= 0.0262 '/'
Inlet Invert= 212.35', Outlet Invert= 211.80'



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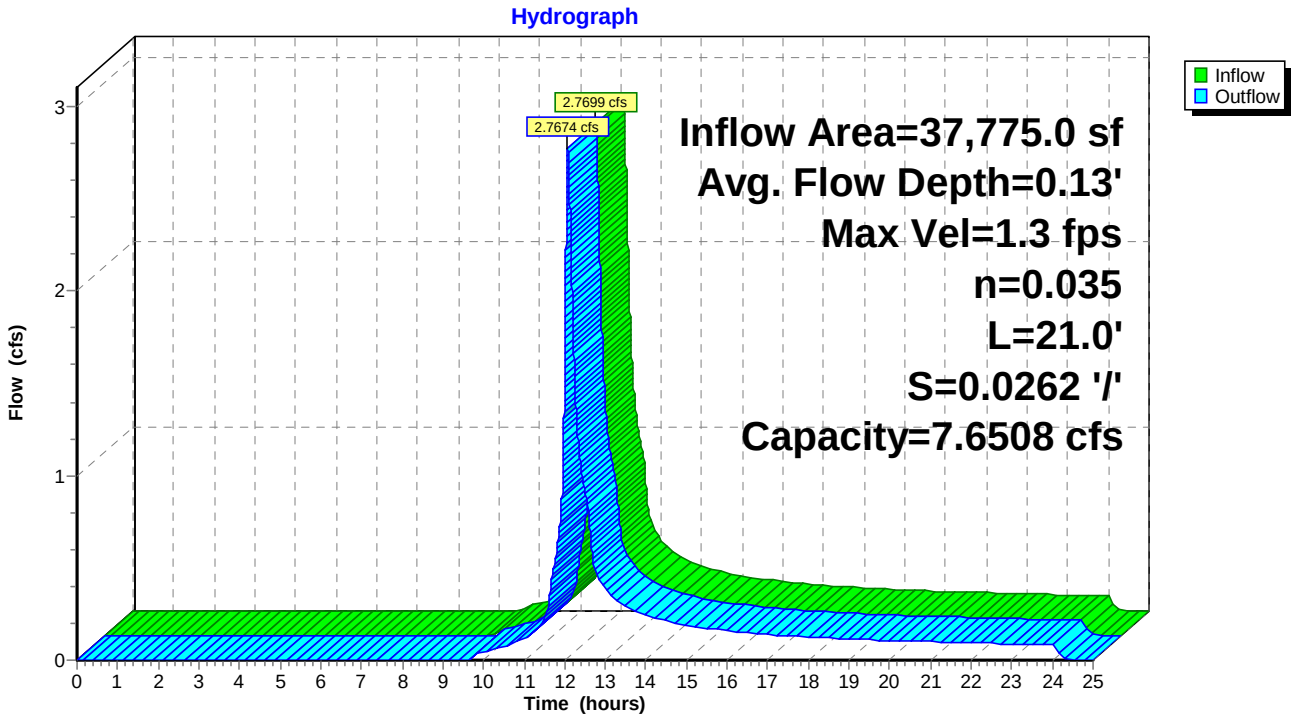
Reach O2: OverInd Flow #2



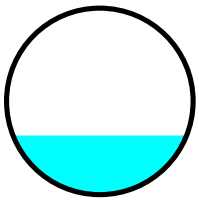
Summary for Reach RD1: Roof Drain #1

Inflow Area = 1,400.0 sf,100.00% Impervious, Inflow Depth = 8.52" for 100-yr event
Inflow = 0.2744 cfs @ 12.00 hrs, Volume= 994.0 cf
Outflow = 0.2744 cfs @ 12.00 hrs, Volume= 994.0 cf, Atten= 0%, Lag= 0.1 min

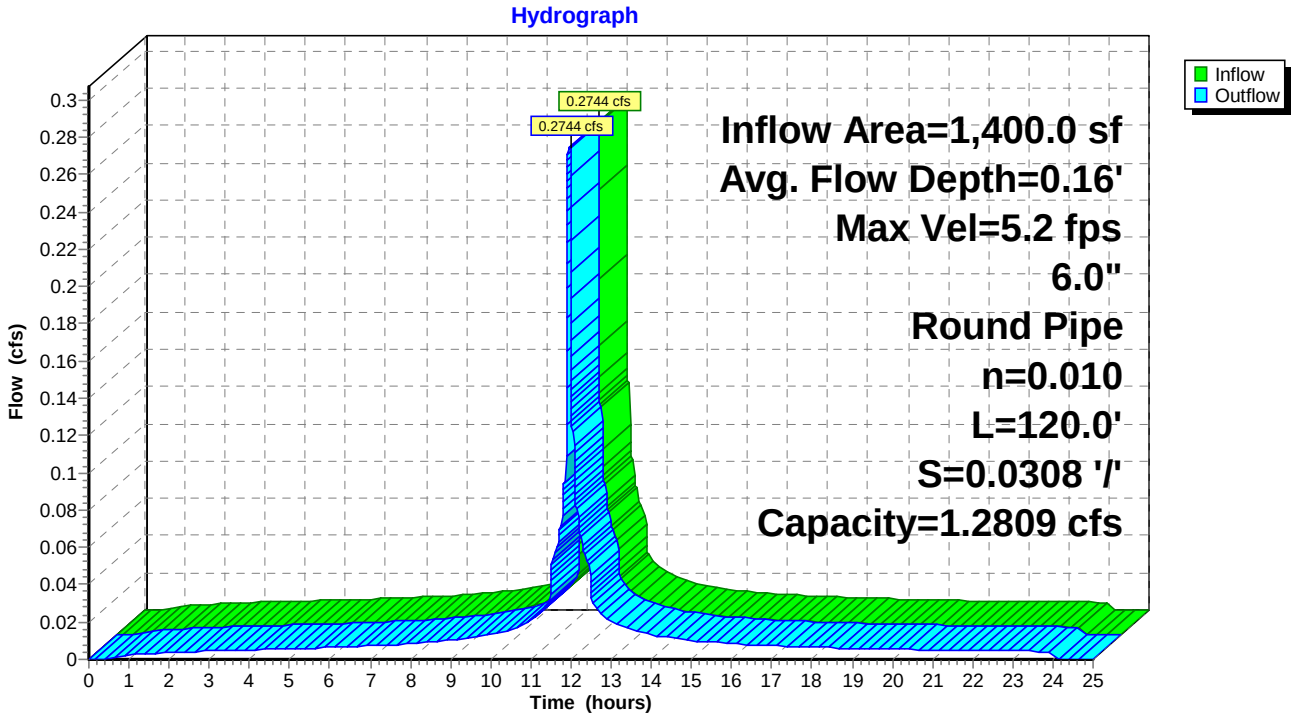
Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 5.2 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.8 fps, Avg. Travel Time= 1.1 min

Peak Storage= 6.3 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 1.2809 cfs

6.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 120.0' Slope= 0.0308 '/'
Inlet Invert= 222.00', Outlet Invert= 218.30'



Reach RD1: Roof Drain #1



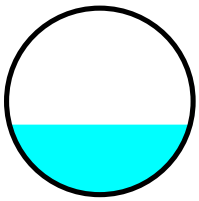
Summary for Reach RD2: Roof Drain #2

Inflow Area = 1,400.0 sf,100.00% Impervious, Inflow Depth = 8.52" for 100-yr event
Inflow = 0.2744 cfs @ 12.00 hrs, Volume= 994.0 cf
Outflow = 0.2744 cfs @ 12.00 hrs, Volume= 994.0 cf, Atten= 0%, Lag= 0.1 min

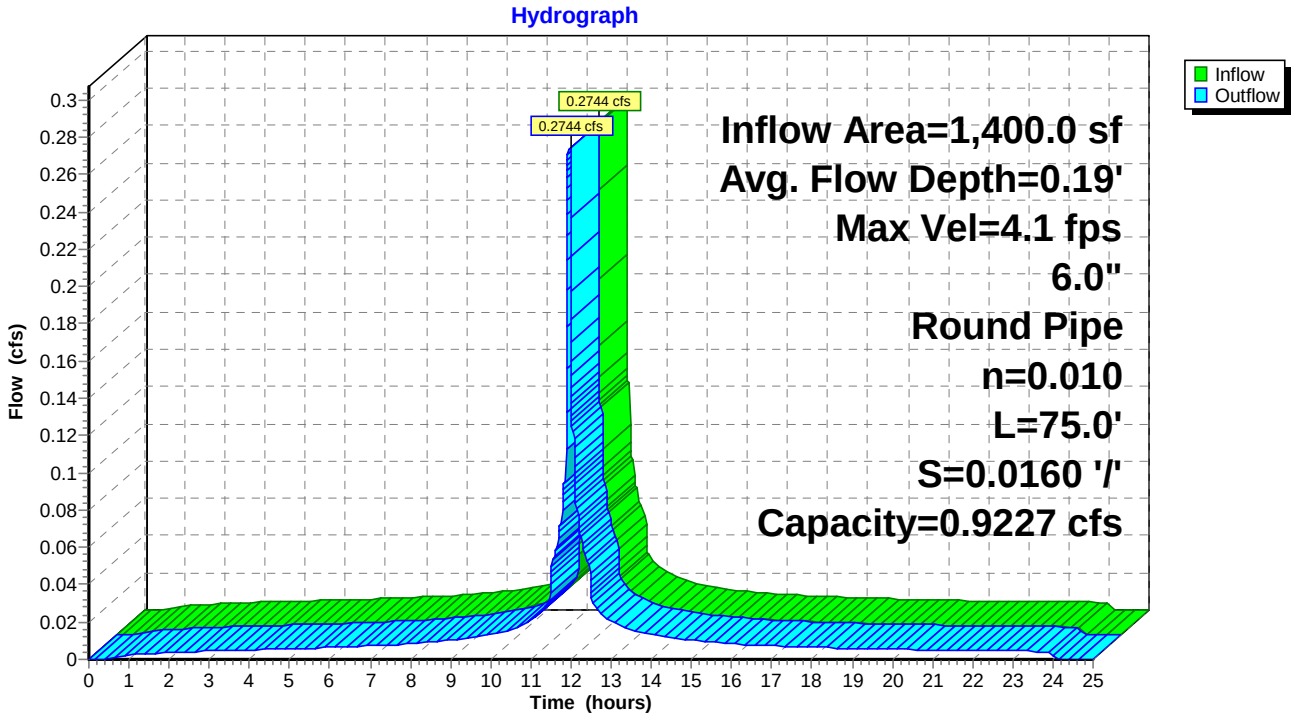
Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 4.1 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.5 fps, Avg. Travel Time= 0.9 min

Peak Storage= 5.0 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.9227 cfs

6.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 75.0' Slope= 0.0160 '/'
Inlet Invert= 219.50', Outlet Invert= 218.30'



Reach RD2: Roof Drain #2



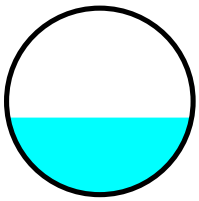
Summary for Reach RD3: Roof Drain #3

Inflow Area = 1,400.0 sf,100.00% Impervious, Inflow Depth = 8.52" for 100-yr event
Inflow = 0.2744 cfs @ 12.00 hrs, Volume= 994.0 cf
Outflow = 0.2744 cfs @ 12.00 hrs, Volume= 994.0 cf, Atten= 0%, Lag= 0.1 min

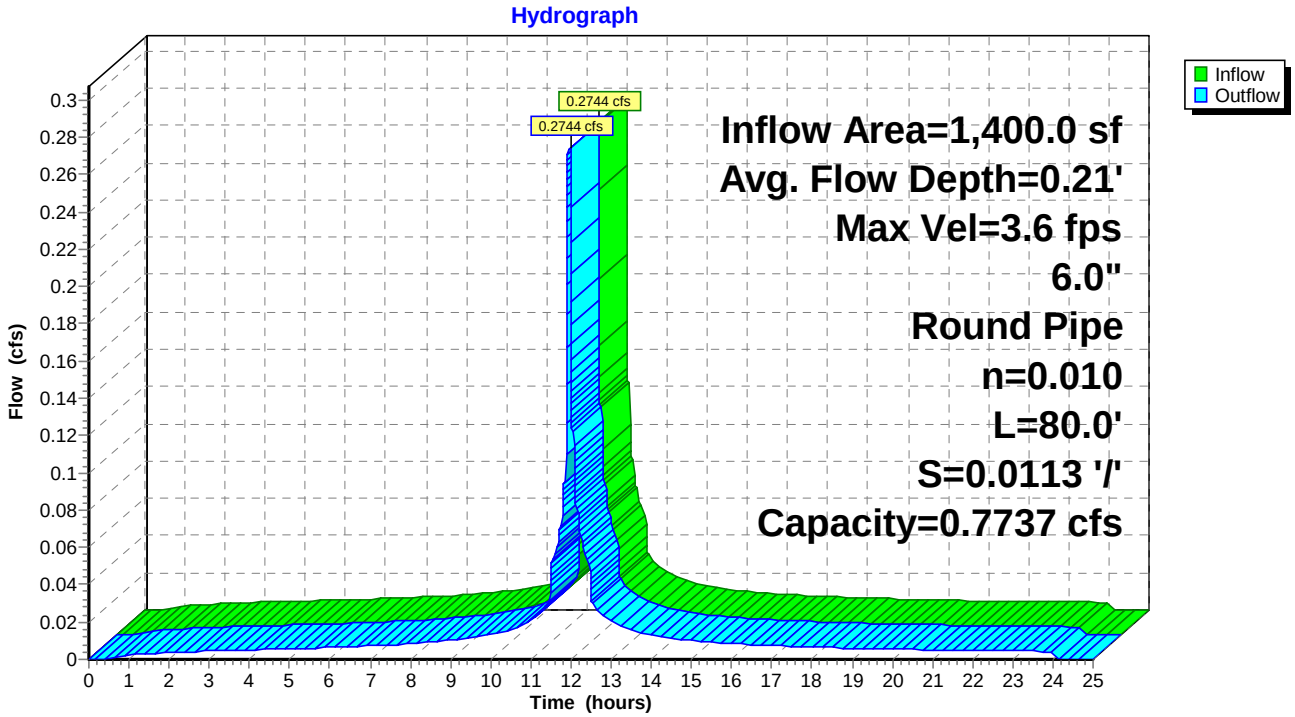
Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Max. Velocity= 3.6 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.3 fps, Avg. Travel Time= 1.0 min

Peak Storage= 6.1 cf @ 12.00 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.7737 cfs

6.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 80.0' Slope= 0.0113 '/'
Inlet Invert= 218.50', Outlet Invert= 217.60'



Reach RD3: Roof Drain #3



Summary for Pond CB1: Catch Basin #1

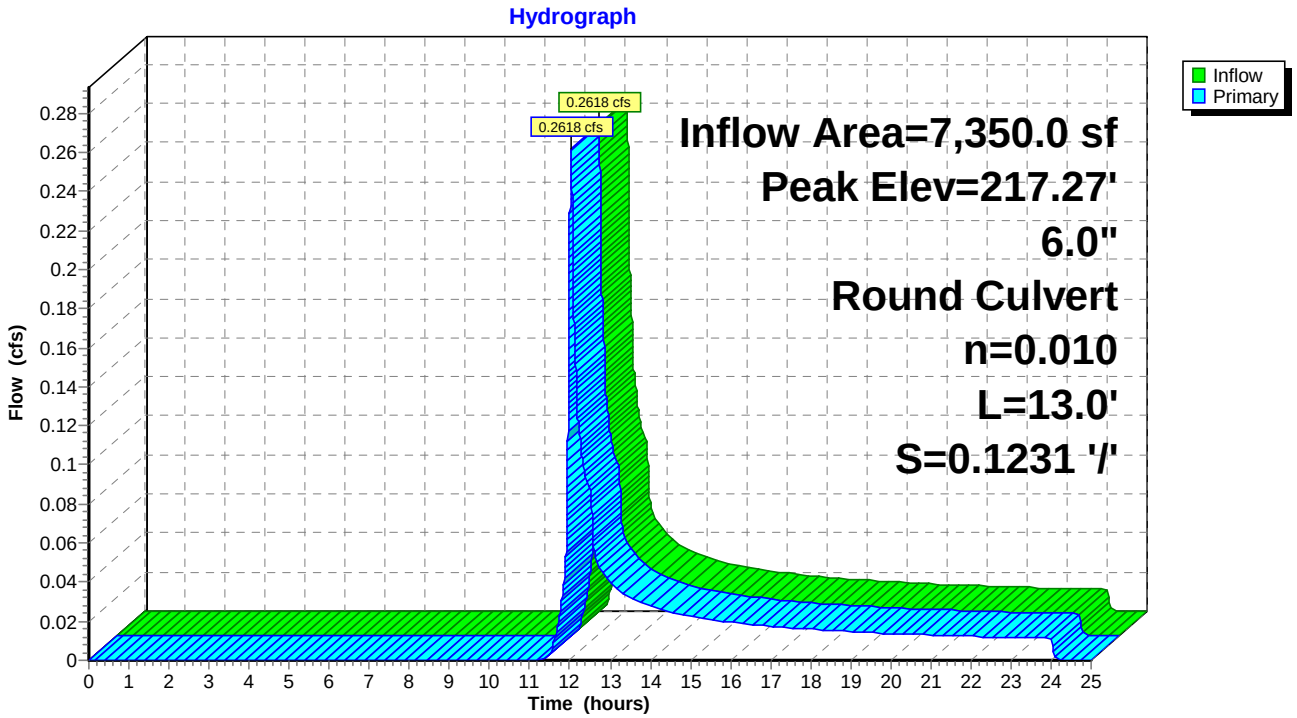
Inflow Area =	7,350.0 sf,	4.76% Impervious,	Inflow Depth =	1.81"	for 100-yr event
Inflow =	0.2618 cfs @	12.03 hrs,	Volume=	1,105.8 cf	
Outflow =	0.2618 cfs @	12.03 hrs,	Volume=	1,105.8 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.2618 cfs @	12.03 hrs,	Volume=	1,105.8 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 217.27' @ 12.03 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	217.00'	**6.0" Round Culvert** L= 13.0' Ke= 0.100 Inlet / Outlet Invert= 217.00' / 215.40' S= 0.1231 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.2618 cfs @ 12.03 hrs HW=217.27' TW=214.86' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.2618 cfs @ 2.4 fps)

Pond CB1: Catch Basin #1



Summary for Pond CO1: Clean Out #1

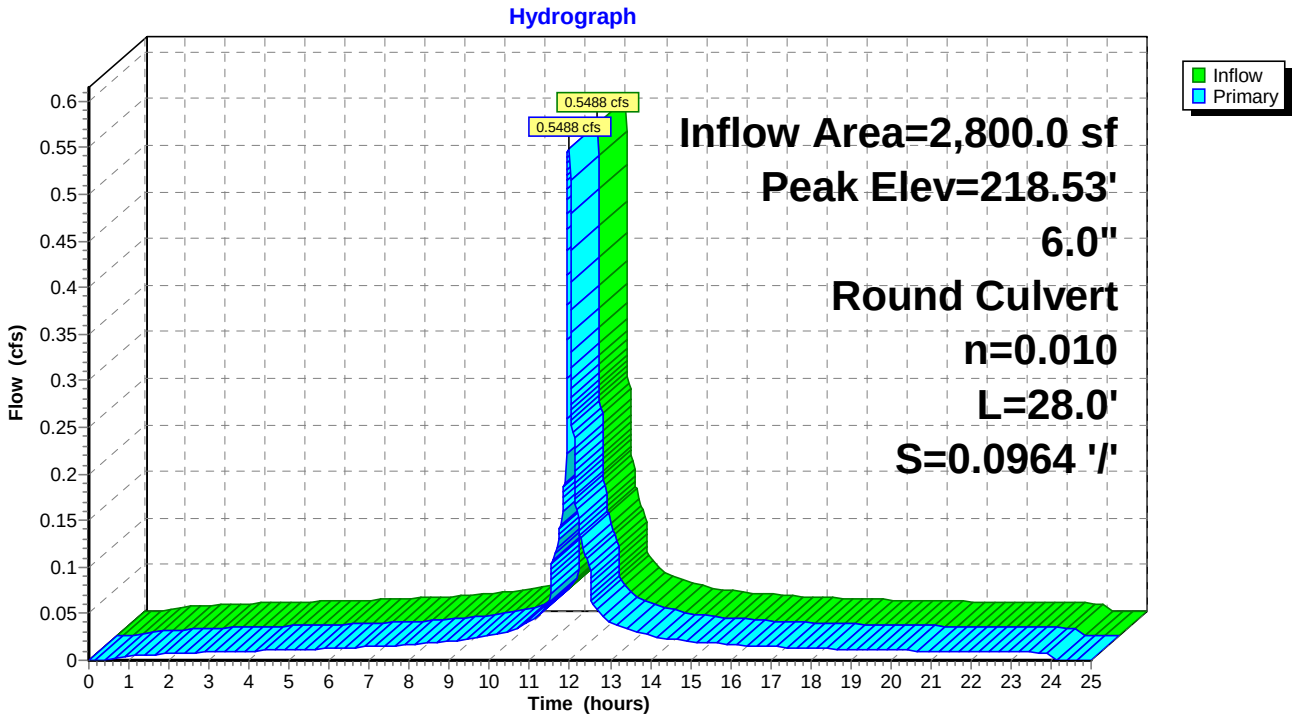
Inflow Area =	2,800.0 sf,100.00% Impervious,	Inflow Depth =	8.52"	for	100-yr event
Inflow =	0.5488 cfs @	12.00 hrs,	Volume=	1,987.9 cf	
Outflow =	0.5488 cfs @	12.00 hrs,	Volume=	1,987.9 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.5488 cfs @	12.00 hrs,	Volume=	1,987.9 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 218.53' @ 12.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	218.10'	**6.0" Round Culvert** L= 28.0' Ke= 0.100 Inlet / Outlet Invert= 218.10' / 215.40' S= 0.0964 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.5488 cfs @ 12.00 hrs HW=218.53' TW=214.70' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.5488 cfs @ 3.0 fps)

Pond CO1: Clean Out #1



Summary for Pond CO2: Clean Out #2

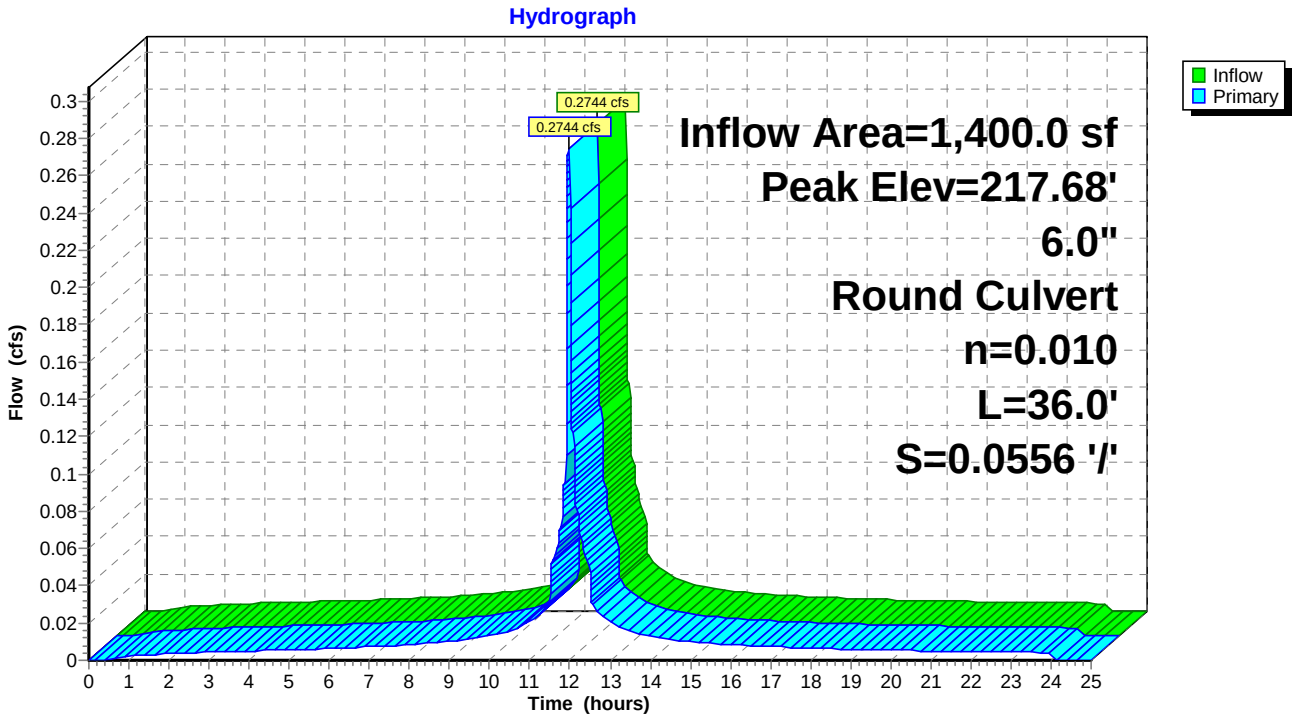
Inflow Area =	1,400.0 sf,100.00% Impervious,	Inflow Depth =	8.52"	for	100-yr event
Inflow =	0.2744 cfs @	12.00 hrs,	Volume=	994.0 cf	
Outflow =	0.2744 cfs @	12.00 hrs,	Volume=	994.0 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.2744 cfs @	12.00 hrs,	Volume=	994.0 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 217.68' @ 12.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	217.40'	**6.0" Round Culvert** L= 36.0' Ke= 0.100 Inlet / Outlet Invert= 217.40' / 215.40' S= 0.0556 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.2744 cfs @ 12.00 hrs HW=217.68' TW=214.70' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.2744 cfs @ 2.4 fps)

Pond CO2: Clean Out #2



Summary for Pond LP1a: Low Point #1a

Inflow Area = 275.0 sf, 20.00% Impervious, Inflow Depth = 1.99" for 100-yr event
Inflow = 0.0133 cfs @ 12.00 hrs, Volume= 45.7 cf
Outflow = 0.0016 cfs @ 13.01 hrs, Volume= 28.4 cf, Atten= 88%, Lag= 60.3 min
Primary = 0.0016 cfs @ 13.01 hrs, Volume= 28.4 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 219.50' @ 13.01 hrs Surf.Area= 176.3 sf Storage= 17.5 cf

Plug-Flow detention time= 268.0 min calculated for 28.4 cf (62% of inflow)
Center-of-Mass det. time= 120.4 min (1,042.2 - 921.8)

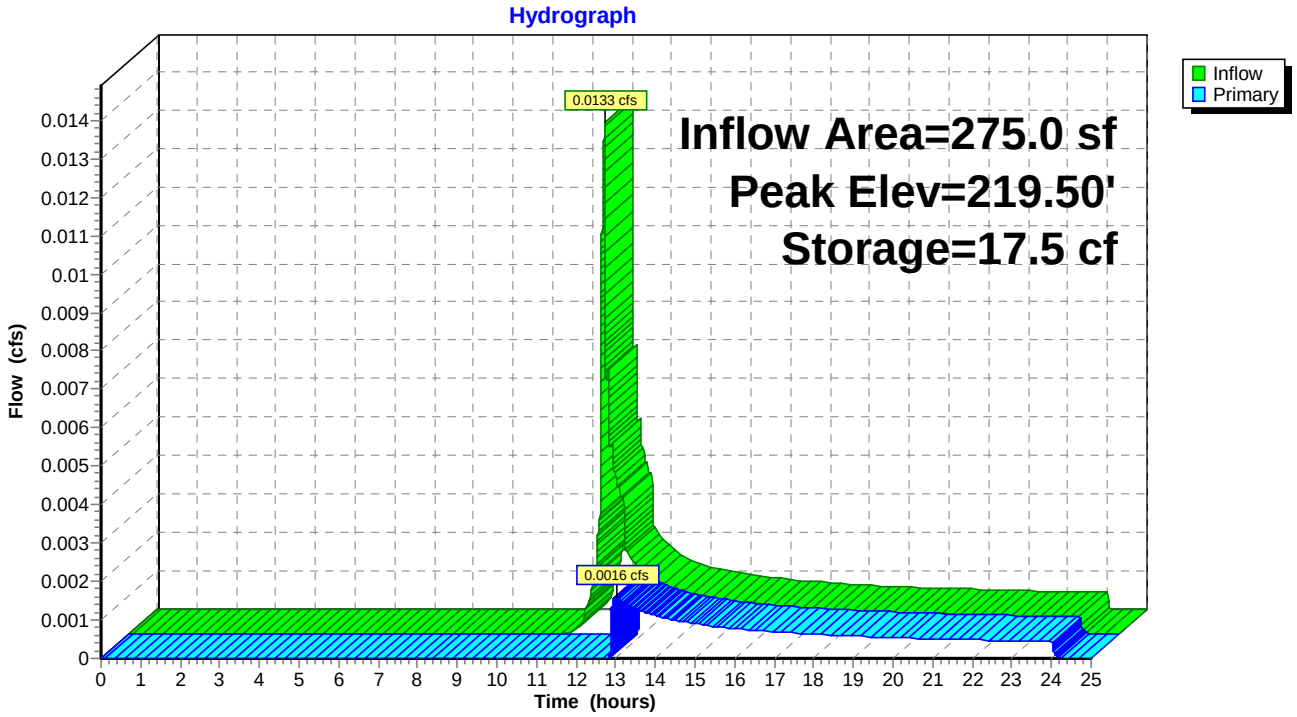
Volume	Invert	Avail.Storage	Storage Description
#1	219.30'	57.0 cf	**Low Point #1a (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
219.30	0.0	0.0	0.0	0.0	0.0
219.40	104.0	50.0	3.5	3.5	199.0
219.50	176.0	62.0	13.8	17.3	306.1
219.60	200.0	68.0	18.8	36.1	368.5
219.70	219.0	75.0	20.9	57.0	448.4

Device	Routing	Invert	Outlet Devices
#1	Primary	219.50'	**LP#1a Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.20 Width (feet) 10.00 35.00

Primary OutFlow Max=0.0016 cfs @ 13.01 hrs HW=219.50' TW=219.45' (Dynamic Tailwater)
└─**1=LP#1a Weir** (Weir Controls 0.0016 cfs @ 0.1 fps)

Pond LP1a: Low Point #1a



Summary for Pond LP1b: Low Point #1b

Inflow Area = 875.0 sf, 10.86% Impervious, Inflow Depth = 1.32" for 100-yr event
Inflow = 0.0155 cfs @ 12.07 hrs, Volume= 96.4 cf
Outflow = 0.0014 cfs @ 19.66 hrs, Volume= 21.4 cf, Atten= 91%, Lag= 455.9 min
Primary = 0.0014 cfs @ 19.66 hrs, Volume= 21.4 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 219.60' @ 19.66 hrs Surf.Area= 464.3 sf Storage= 75.4 cf

Plug-Flow detention time= 569.0 min calculated for 21.4 cf (22% of inflow)
Center-of-Mass det. time= 342.6 min (1,301.6 - 958.9)

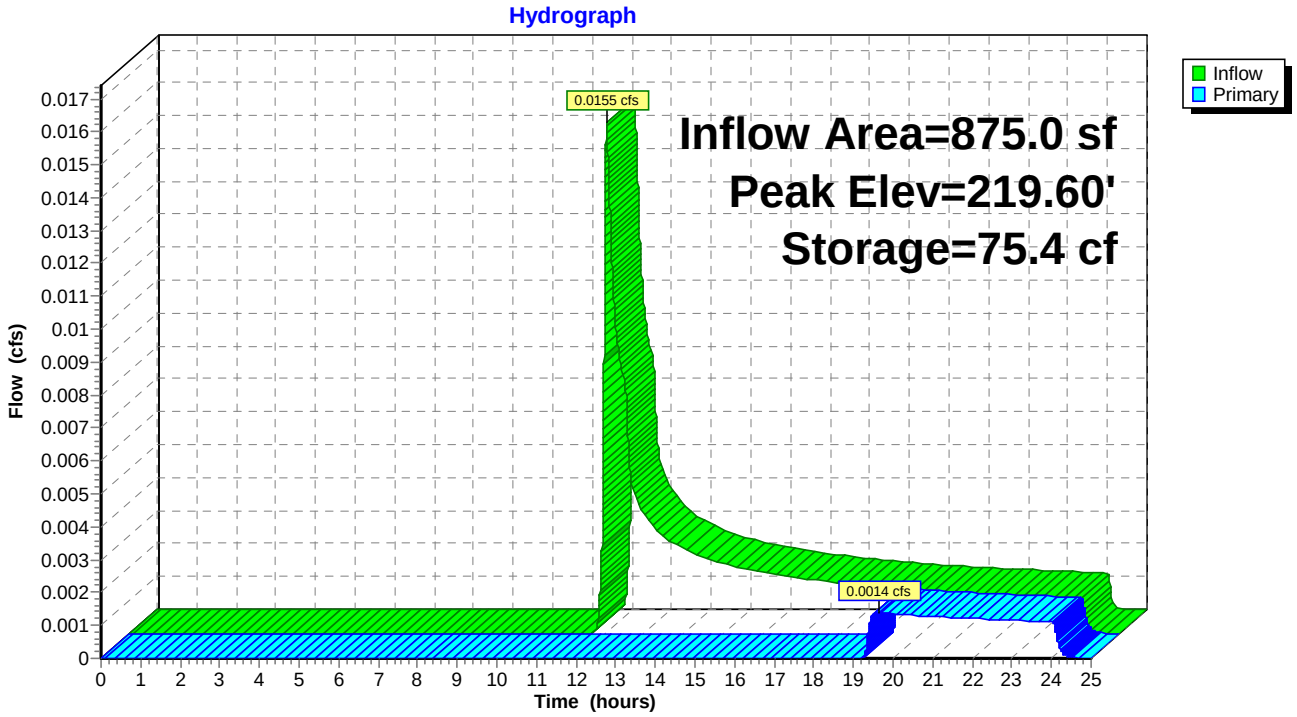
Volume	Invert	Avail.Storage	Storage Description
#1	219.20'	267.0 cf	**Low Point #1b (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
219.20	0.0	0.0	0.0	0.0	0.0
219.30	74.0	52.0	2.5	2.5	215.2
219.40	161.0	86.0	11.5	13.9	588.6
219.50	305.0	122.0	22.9	36.9	1,184.6
219.60	463.0	151.0	38.1	75.0	1,814.8
219.70	609.0	179.0	53.4	128.4	2,550.2
219.80	707.0	192.0	65.7	194.2	2,934.5
219.90	750.0	203.0	72.8	267.0	3,280.8

Device	Routing	Invert	Outlet Devices
#1	Primary	219.60'	**LP#1b Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.20 Width (feet) 15.00 48.00

Primary OutFlow Max=0.0014 cfs @ 19.66 hrs HW=219.60' TW=219.55' (Dynamic Tailwater)
└─**1=LP#1b Weir** (Weir Controls 0.0014 cfs @ 0.1 fps)

Pond LP1b: Low Point #1b



Summary for Pond LP2: Low Point #2

Inflow Area =	37,775.0 sf,	4.02% Impervious,	Inflow Depth =	3.65"	for 100-yr event
Inflow =	2.7922 cfs @	12.07 hrs,	Volume=	11,488.6 cf	
Outflow =	2.7699 cfs @	12.08 hrs,	Volume=	11,422.4 cf,	Atten= 1%, Lag= 0.3 min
Primary =	2.7699 cfs @	12.08 hrs,	Volume=	11,422.4 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 212.51' @ 12.08 hrs Surf.Area= 998.3 sf Storage= 159.4 cf

Plug-Flow detention time= 6.1 min calculated for 11,421.9 cf (99% of inflow)
Center-of-Mass det. time= 2.8 min (883.1 - 880.3)

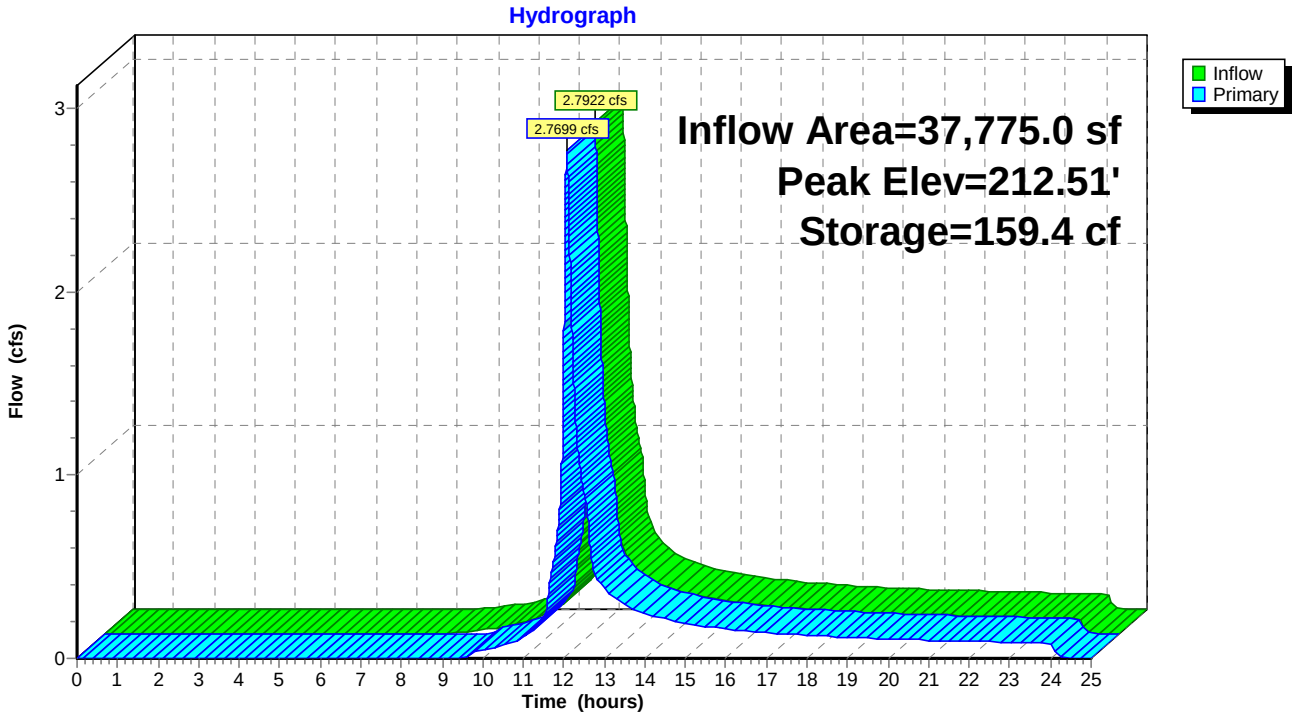
Volume	Invert	Avail.Storage	Storage Description
#1	212.20'	1,246.7 cf	**Low Point #2 (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
212.20	44.0	28.0	0.0	0.0	44.0
212.40	765.0	155.0	66.2	66.2	1,893.6
212.60	1,231.0	170.0	197.8	263.9	2,282.8
212.80	2,386.0	307.0	355.4	619.3	7,483.4
213.00	3,953.0	406.0	627.3	1,246.7	13,101.0

Device	Routing	Invert	Outlet Devices
#1	Primary	212.40'	**LP#1b Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.20 Width (feet) 32.00 38.00

Primary OutFlow Max=2.7683 cfs @ 12.08 hrs HW=212.51' TW=212.48' (Dynamic Tailwater)
└─**1=LP#1b Weir** (Weir Controls 2.7683 cfs @ 0.8 fps)

Pond LP2: Low Point #2



Summary for Pond RB1: Recharge Basin #1

Inflow Area =	11,550.0 sf, 39.39% Impervious, Inflow Depth = 4.25" for 100-yr event				
Inflow =	1.0509 cfs @	12.00 hrs,	Volume=	4,087.7 cf	
Outflow =	0.2354 cfs @	12.50 hrs,	Volume=	3,376.0 cf,	Atten= 78%, Lag= 30.1 min
Discarded =	0.0373 cfs @	10.35 hrs,	Volume=	2,647.5 cf	
Secondary =	0.1981 cfs @	12.50 hrs,	Volume=	728.5 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.001 hrs
Peak Elev= 215.68' @ 12.50 hrs Surf.Area= 672.0 sf Storage= 1,157.5 cf

Plug-Flow detention time= 175.4 min calculated for 3,376.0 cf (83% of inflow)
Center-of-Mass det. time= 83.8 min (872.8 - 789.0)

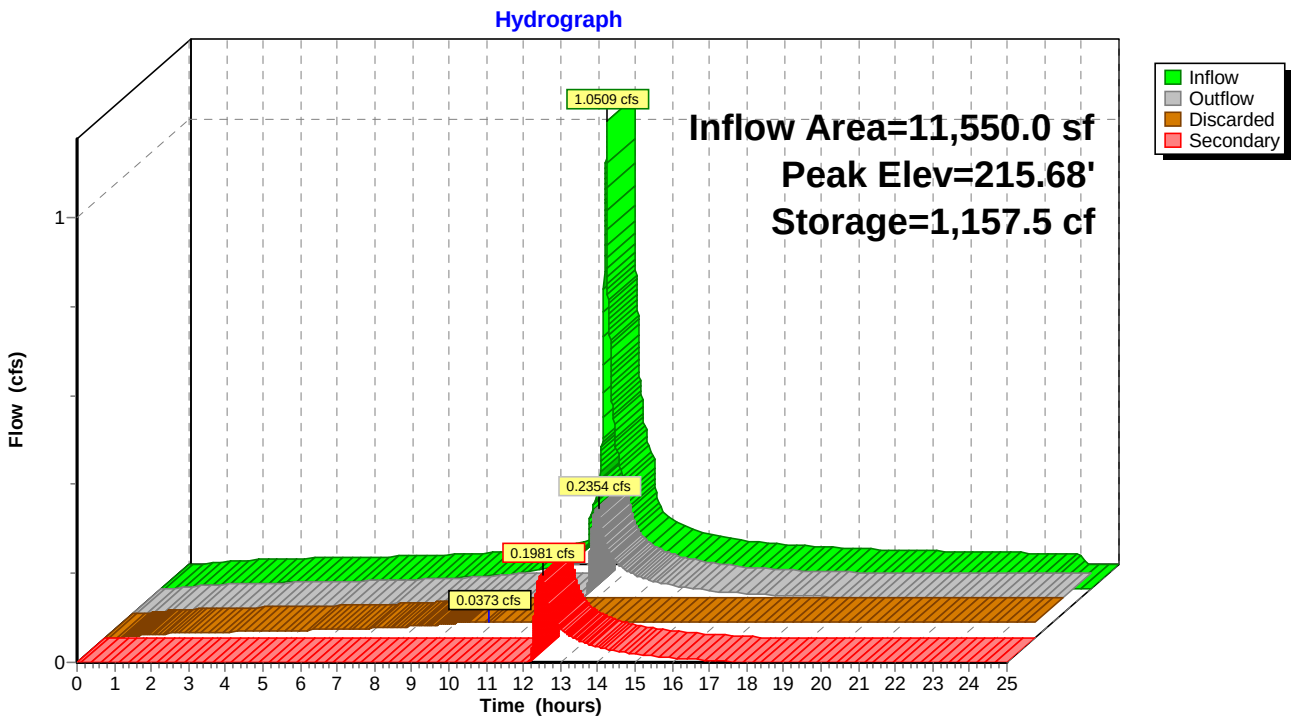
Volume	Invert	Avail.Storage	Storage Description
#1	213.00'	422.0 cf	**24.00'W x 28.00'L x 3.50'H Prismatoid** 2,352.0 cf Overall - 1,297.1 cf Embedded = 1,054.9 cf x 40.0% Voids
#2	213.50'	935.7 cf	**Concrete Galley 4x4x3** x 30 Inside #1 Inside= 42.0"W x 30.0"H => 8.91 sf x 3.50'L = 31.2 cf Outside= 48.0"W x 36.0"H => 10.81 sf x 4.00'L = 43.2 cf
		1,357.7 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	213.00'	**0.0373 cfs Exfiltration when above 213.00'** Phase-In= 0.01'
#2	Secondary	215.40'	**6.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 215.40' / 215.20' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.0373 cfs @ 10.35 hrs HW=213.04' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.0373 cfs)

Secondary OutFlow Max=0.1981 cfs @ 12.50 hrs HW=215.68' TW=215.20' (Dynamic Tailwater)
└─**2=Culvert** (Barrel Controls 0.1981 cfs @ 2.6 fps)

Pond RB1: Recharge Basin #1



F. Soil Information

NRCS Soil Survey Map
Soil Series Description
Soil Logs

Soil Map—Middlesex County, Massachusetts
(#497 Concord Avenue, Lexington)

Map Scale: 1:1,540 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Middlesex County, Massachusetts
Survey Area Data: Version 15, Sep 28, 2015

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

Date(s) aerial images were photographed: Aug 10, 2014—Aug 25, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Middlesex County, Massachusetts (MA017)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
32B	Wareham loamy fine sand, 0 to 5 percent slopes	0.9	10.4%
223A	Scio very fine sandy loam, 0 to 3 percent slopes	1.4	17.4%
631C	Charlton-Urban land-Hollis complex, 3 to 15 percent slopes, rocky	5.3	64.5%
656	Udorthents-Urban land complex	0.6	7.7%
Totals for Area of Interest		**8.2**	**100.0%**

Hydrologic Soil Group—Middlesex County, Massachusetts
(#497 Concord Avenue, Lexington)

Map Scale: 1:1,540 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Middlesex County, Massachusetts
Survey Area Data: Version 15, Sep 28, 2015

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

Date(s) aerial images were photographed: Aug 10, 2014—Aug 25, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Middlesex County, Massachusetts (MA017)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
32B	Wareham loamy fine sand, 0 to 5 percent slopes	A/D	0.9	10.4%
223A	Scio very fine sandy loam, 0 to 3 percent slopes	B/D	1.4	17.4%
631C	Charlton-Urban land-Hollis complex, 3 to 15 percent slopes, rocky	A	5.3	64.5%
656	Udorthents-Urban land complex		0.6	7.7%
Totals for Area of Interest			**8.2**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

Middlesex County, Massachusetts

32B—Wareham loamy fine sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: vqnd
Elevation: 0 to 2,100 feet
Mean annual precipitation: 45 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Wareham and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wareham

Setting

Landform: Depressions, terraces, deltas
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loose sandy glaciofluvial deposits

Typical profile

H1 - 0 to 10 inches: loamy fine sand
H2 - 10 to 24 inches: loamy sand
H3 - 24 to 34 inches: stratified sand to fine sand
H4 - 34 to 65 inches: stratified coarse sand to sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D

Minor Components

Sudbury

Percent of map unit: 10 percent
Landform: Plains, terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear
Across-slope shape: Concave

Scarboro

Percent of map unit: 5 percent
Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear

Deerfield

Percent of map unit: 5 percent
Landform: Deltas, depressions, stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave

Data Source Information

Soil Survey Area: Middlesex County, Massachusetts
Survey Area Data: Version 15, Sep 28, 2015

Middlesex County, Massachusetts

631C—Charlton-Urban land-Hollis complex, 3 to 15 percent slopes, rocky

Map Unit Setting

National map unit symbol: vr1g
Elevation: 0 to 1,000 feet
Mean annual precipitation: 32 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 110 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 40 percent
Charlton and similar soils: 40 percent
Hollis and similar soils: 10 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton

Setting

Landform: Drumlins, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Friable loamy eolian deposits over friable loamy basal till derived from granite and gneiss

Typical profile

H1 - 0 to 5 inches: fine sandy loam
H2 - 5 to 22 inches: sandy loam
H3 - 22 to 65 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A

Description of Urban Land

Setting

Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Excavated and filled land

Description of Hollis

Setting

Landform: Ridges, hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Friable, shallow loamy basal till over granite and gneiss

Typical profile

H1 - 0 to 2 inches: fine sandy loam
H2 - 2 to 14 inches: fine sandy loam
H3 - 14 to 18 inches: unweathered bedrock

Properties and qualities

Slope: 3 to 15 percent
Percent of area covered with surface fragments: 9.0 percent
Depth to restrictive feature: 8 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D

Minor Components

Canton

Percent of map unit: 4 percent
Landform: Hills
Landform position (two-dimensional): Backslope, toeslope
Landform position (three-dimensional): Side slope, base slope
Down-slope shape: Linear
Across-slope shape: Convex

Udorthents, loamy

Percent of map unit: 2 percent

Rock outcrop

Percent of map unit: 2 percent
Landform: Ledges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Head slope
Down-slope shape: Concave
Across-slope shape: Concave

Scituate

Percent of map unit: 1 percent
Landform: Depressions, hillslopes
Landform position (two-dimensional): Toeslope, summit
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Linear
Across-slope shape: Concave

Montauk

Percent of map unit: 1 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Nose slope, head slope
Down-slope shape: Convex
Across-slope shape: Convex

Data Source Information

Soil Survey Area: Middlesex County, Massachusetts
Survey Area Data: Version 15, Sep 28, 2015

Middlesex County, Massachusetts

656—Udorthents-Urban land complex

Map Unit Setting

National map unit symbol: 995k
Elevation: 0 to 3,000 feet
Mean annual precipitation: 32 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 110 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 40 percent
Udorthents and similar soils: 40 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Parent material: Loamy alluvium and/or sandy glaciofluvial deposits and/or loamy glaciolacustrine deposits and/or loamy marine deposits and/or loamy basal till and/or loamy lodgment till

Properties and qualities

Slope: 0 to 15 percent
Depth to restrictive feature: More than 80 inches
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Description of Urban Land

Setting

Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Excavated and filled land

Minor Components

Canton

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Toeslope, backslope
Landform position (three-dimensional): Side slope, base slope
Down-slope shape: Linear
Across-slope shape: Convex

Merrimac

Percent of map unit: 5 percent
Landform: Terraces, plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread, rise
Down-slope shape: Convex
Across-slope shape: Convex

Paxton

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Head slope, side slope
Down-slope shape: Convex
Across-slope shape: Convex

Data Source Information

Soil Survey Area: Middlesex County, Massachusetts
Survey Area Data: Version 15, Sep 28, 2015

Soil Logs:

See Associated Site Plan for Soil Logs

G. Erosion Control Management

Site Disturbance

Total Proposed Permanent and Temporary Disturbance Area: 78,200± sq. ft.

Erosion Control Management BMPs

Stabilized Construction Exit

Existing Pavement/Stabilized Gravel Pad

BMP Description: The existing driveway location shall be utilized to enter and exit the project site. If the existing pavement falls into disrepair, the site contractor shall add gravel and filter fabric to create a proper stabilized construction access point. As vehicles drive over the driveway/gravel pads, mud and sediment are removed from the wheels and soil transport offsite is reduced.

Installation Schedule:	To be augmented at the beginning of the project.
Maintenance and Inspection:	Maintain stabilization of the site entrances until construction is complete. Sweep up soil tracked offsite immediately for proper disposal. Repair as needed.
Responsible Staff:	Atlas Contracting, Inc.

Erosion Control

Erosion Control Barrier, Filter Mitt™

***BMP Description*:** A compost filter sock is a type of contained compost filter berm. It is a mesh tube filled with composted material that is placed perpendicular to sheet-flow runoff to control erosion and retain sediment in disturbed areas. The compost filter sock, which is oval to round in cross section, provides a three-dimensional filter that retains sediment and other pollutants (e.g., suspended solids, nutrients, and motor oil) while allowing the cleaned water to flow through (Tyler and Faucette, 2005). The filter sock can be used in place of a traditional sediment and erosion control tool such as a silt fence or straw bale barrier. Filter Mitt™ erosion control barriers will be installed in the locations depicted on and in accordance with the site plan(s).

***Installation Schedule*:**	The erosion control barriers will be installed prior to construction.
***Maintenance and Inspection*:**	The Filter Mitt™ should be inspected weekly, as well as after every storm event to ensure that they are intact and the area behind the Filter Mitt ™ is not filled with sediment. If there is excessive ponding behind the Filter Mitt™ or accumulated sediments reach the top, an additional Filter Mitt ™ should be

	added on top or in front of the existing one in these areas without disturbing the soil or accumulated sediment. If the Filter Mitt™ was overtopped during a storm event, the operator should consider installing an additional Filter Mitt™ on top of the original, placing an additional Filter Mitt™ further up the slope, or using an additional BMP.
***Responsible Staff*:**	Atlas Contracting, Inc.

Straw Wattles

***BMP Description*:** A straw wattle can be used in place of a traditional sediment and erosion control tool such as a silt fence or straw bale barrier. Straw wattles will be installed in the locations depicted on and in accordance with the site plan. Furthermore, all stockpiled materials shall be encircled on the down gradient side with straw wattles and/or other erosion control measures. Straw wattles shall be installed as needed to augment on site erosion control measures.

***Installation Schedule*:**	Straw Wattles shall be installed prior to construction and at the time of the stockpiling.
***Maintenance and Inspection*:**	Straw Wattles should be inspected weekly and after every storm event to ensure that they are intact and not filled with sediment. Straw Wattles should be replaced as soon as they are full of sediment and/or begin to deteriorate.
***Responsible Staff*:**	Atlas Contracting, Inc.

Slope Stabilization and Dust Control

Slope Stabilization and Jute Netting

***BMP Description*:** All slopes shall be stabilized where construction activities have ceased for seven or more days. Disturbed areas with slopes greater than 15% shall be stabilized with Jute Netting. Jute Netting anchoring staples shall be a minimum of 6” in length and .1” in diameter. Staples shall be placed perpendicular to the slope and have a grid spacing of 1’.

***Installation Schedule*:**	Slope Stabilization shall be implemented as needed once site grading has begun.
***Maintenance and Inspection*:**	Areas shall be inspected weekly and after every storm event to check for erosion. If washout, breakage or erosion occurs, the surface will be repaired and if applicable, new Jute Netting installed.
***Responsible Staff*:**	Atlas Contracting, Inc.

Dust Control

BMP Description: Dust from the site shall be controlled by using a mobile pressure-type distributor truck or equivalent means to apply potable water to disturbed areas. Water shall be applied in a manner that will prevent runoff and ponding. Trucks hauling imported or exported fill and/or debris shall be covered.

Installation Schedule:	Dust control shall be implemented as needed once site grading has begun.
Responsible Staff:	Atlas Contracting, Inc.

Material handling and Waste Management

Waste Materials

BMP Description: All waste material will be collected and disposed within the on-site dumpster(s). Only trash and construction debris will be disposed within the dumpster(s). Dumpster(s) shall be placed away from stormwater conveyances and shall meet all federal, state and local solid-waste management regulations.

Installation Schedule:	Dumpster(s) shall be installed prior to construction.
Maintenance and Inspection:	Dumpster(s) shall be inspected weekly and after every storm event. Dumpsters shall be emptied as needed and their contents transported off-site and disposed of properly.
Responsible Staff:	Atlas Contracting, Inc.

Hazardous Waste

BMP Description: All hazardous waste such as petroleum products, paint and equipment maintenance fluids will be stored in structurally sound and seal containers. Hazardous material shall not be disposed of within the on-site dumpster(s) and shall be disposed of in accordance with federal, state and local regulations. These materials will be removed from the site when they are no longer needed.

Installation Schedule:	Prior to construction.
Maintenance and Inspection:	Storage areas shall be inspected weekly and after every storm event. Material safety data sheets, material inventory and emergency contact numbers will be maintained in the office trailer or other pre-designated on-site area.
Responsible Staff:	Atlas Contracting, Inc.

Sanitary Waste

BMP Description: Portable toilets will be provided. Toilets will be located away from concentrated drainage flow paths and traffic areas and will have collection pans underneath.	
Installation Schedule:	Prior to construction.
Maintenance and Inspection:	Portable toilets shall be inspected weekly and after every storm event. They shall be emptied as needed and their contents transported off-site and disposed of properly. Any leaking toilet will be removed from the site and replaced.
Responsible Staff:	Atlas Contracting, Inc.

H. Estimated Construction Phasing

Estimated Construction Phasing

- Erosion Controls Installed
- Temporary Driveway/Site Access Installed
- Demolition of the Existing House
- Foundation(s) Installation and Building(s) Construction
- Drainage and Recharge Basin Installation
- Additional Site Infrastructure / Utility Installation
- Final Site Stabilization