

**Stormwater Management Report
1060 Main Street Elderly Housing
1060 Main Street
South Windsor, Connecticut**

Prepared by:

**Design Professionals, Inc.
21 Jeffrey Drive
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June 1, 2021



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Introduction

Up Realty, LLC, is proposing a re-development of the existing building located at 1060 Main Street, South Windsor, Connecticut. The properties are referenced on the Town of South Windsor Tax Assessors map as GIS No. 54901060. The proposed development will include the conversion of the existing 31,495 SF building, to an Elderly Housing Apartment Complex. Associated site improvements will include but not be limited to new drive aisles, parking areas, sidewalks, landscaping, lighting, and stormwater management BMP's.

The subject property is 13.10 acres $\pm$, 3.03 acres $\pm$ of which is proposed to be disturbed during construction. For more information, please refer to the plans entitled "1060 Main Street ~ Site Plan Modification & Special Exception ~ 1060 Main Street ~ South Windsor, CT" prepared by Design Professionals, Inc., and dated June 1, 2021, as amended.

Pre-Development Site Conditions

The existing surficial characteristics of the property can be primarily classified as partially developed and undisturbed woodland area. The western portion of the property closest to Main Street makes up the developed site. This area includes the existing building, other impervious surfaces, and grass areas. The rear / eastern portion of the site is undisturbed woodland area. A wetland boundary was identified at the eastern end of the parcel. This wetland boundary was selected as one of the design points for evaluating impacts to the peak stormwater flows leaving the site. After further evaluation site topography, this design point and two others were identified. All three design points considered are explained below:

- **Design Point 1** – Southern property line
- **Design Point 2** – Eastern wetland boundary
- **Design Point 3** – Northern property line

All stormwater leaving the site at each design point, flows to the Newberry Brook, and ultimately reaches the Connecticut River (Local basin ID 4000-21-1). Existing conditions watershed delineations are identified in the Existing Conditions Drainage Map located in **Appendix F**.

Based on Natural Resources Conservation Service (NRCS) Hydrologic Soil Group (HSG) mapping, soil types B, C, & C/ D are located on site. See **Appendix C** for The NRCS Soil Map & Data.

An evaluation was performed to quantify the peak rate of stormwater discharge offsite to the design points. The Natural Resources Conservation Service's TR-55 Manual was followed in predicting the peak rates of runoff and volumes. HydroCAD computer modeling software was utilized. Peak rates of stormwater runoff were evaluated for the 2-, 10-, 25-, 50- and 100-year storm events. For more information, please refer to the enclosed Pre-Development Drainage and Pond HydroCAD Report located in **Appendix A**.

Post-Development Site Conditions

The proposed development includes the conversion of the existing 31,495 SF building to an Elderly Housing Apartment Complex. Associated site improvements will include but not be limited to new drive aisles, parking areas, sidewalks, landscaping, lighting, and stormwater management BMP's.

Three deep test pits and a percolation test were conducted behind the existing building (east side) to assess the sites' ability to infiltrate stormwater. This testing location was selected to minimize disturbance of the existing site. Test pit observations indicated the presence of the sandy loam conditions, consistent with the web soil survey for the area. No mottling was observed, but groundwater was present at $90'' \pm$ below existing grade on the east side of the building. The soil achieved a percolation rate of about $4.11 \pm$ in/min ($247 \pm$ in/hour). Soil logs and percolation test results are included in **Appendix D** of this report.

Soil map data indicated that three soil types are present in the development area. All three soil types are expected to have the capacity to transmit water. Two existing drywells were also identified on site, further indicating the expectation of the site to infiltrate water. No deep test pits or percolations tests were conducted around the two drywells. The web soil survey results indicated a soil profile of either sandy loamy fine sand or coarse gravely sand at $25'' - 26''$ below existing the grade, for all three soil types. The percolation test was conducted within the sandy loam strata identified from test pit observations at $34'' \pm$ below the existing surface ($48'' \pm$ to bottom of perc hole). We anticipate that the percolation test results witnessed would then be a conservative approximation of the infiltration potential for the coarse gravely sand conditions, and close approximation of the infiltration potential for sandy loam locations on site. With this a design infiltration rate of 120 in/hr (observing a factor of safety of 2) was used in the model of both the existing and proposed ponds.

The two existing drywells are proposed to remain. Two new stilling basins are proposed to provide attenuation of increased peak stormwater flows from the increased impervious areas. The bottom of each of the stilling basin was set $36'' \pm$ below the existing surface to provide adequate separation to the observed groundwater conditions to allow infiltration.

See **Appendix B** for the Post Development Condition and Pond summary HydroCAD reports. The Proposed Conditions Drainage Map for the site can be found in **Appendix F**.

Analysis of Results

The pre-development and post-development conditions were analyzed using HydroCAD consistent with National Resource Conservation Service (NRCS) hydrology methods. Three discharge locations were identified as points of interest for assessing downstream effects. The following table contains the data generated from the HydroCAD software:

Reach		2 year	10 year	25 year	50 year	100 year
DP#1 – Southern Property Line	Pre	0.55	2.40	4.00	5.23	6.66
	Post	0.05	0.32	1.42	3.63	6.06
DP#2 – Eastern Wetland Boundary	Pre	0.54	2.37	3.88	5.08	6.50
	Post	0.52	2.32	3.79	4.96	6.34
DP#3 – Northern Property Line	Pre	1.19	4.14	5.89	7.20	8.69
	Post	0.22	3.09	4.51	5.56	6.75

As seen in the table above, the subject project will result in peak runoff rates in the proposed condition that are less than the peak runoff rates of the existing condition for 2-, 10-, 25- and 100-year design storms. Pond reports also indicate a decrease in the existing condition pond elevations for the depressions related to both existing dry wells.

Water Quality

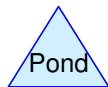
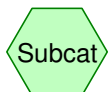
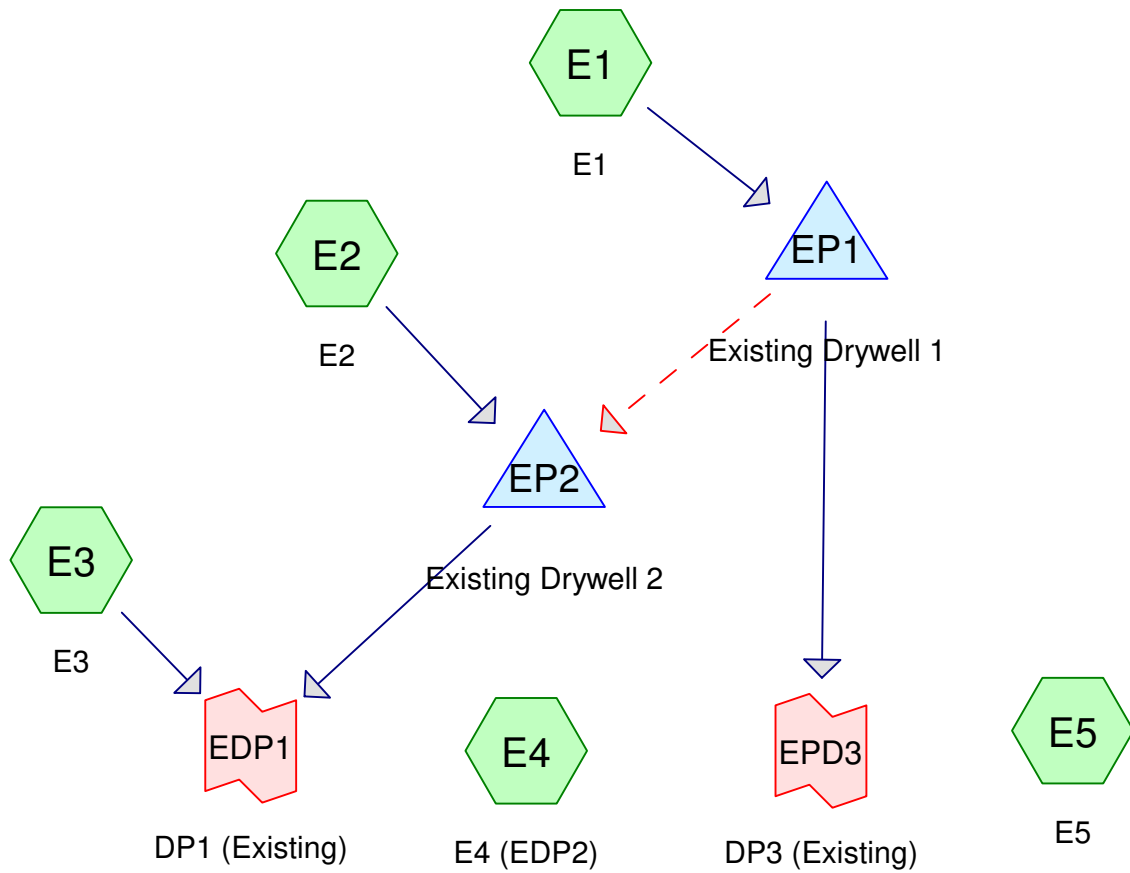
The proposed two stilling basins were sized in accordance with the 2004 Connecticut Stormwater Quality Manual, to provide more than 100% of the determined water quality volume for the site. See **Appendix E** for calculations. The proposed temporary sediment trap was sized in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.

Conclusion

The proposed stormwater management system as discussed herein and shown on the referenced plans is appropriate for the proposed development on the subject site and should not pose any detrimental impacts to the environment.

APPENDIX A
Watershed Computations
(Pre-Development Drainage HydroCAD Report)

Existing Conditions



Routing Diagram for 4512 - HydroCAD

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4512 - HydroCAD

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Existing Conditions
Type III 24-hr 2-yr Rainfall=3.09"

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Time span=0.00-36.00 hrs, dt=0.02 hrs, 1801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E1: E1

Runoff Area=1.981 ac 33.42% Impervious Runoff Depth=1.02"
Flow Length=273' Tc=13.1 min CN=75 Runoff=1.78 cfs 0.168 af

Subcatchment E2: E2

Runoff Area=1.392 ac 34.84% Impervious Runoff Depth=1.02"
Flow Length=296' Tc=23.2 min CN=75 Runoff=1.00 cfs 0.118 af

Subcatchment E3: E3

Runoff Area=1.552 ac 21.59% Impervious Runoff Depth=0.59"
Flow Length=202' Tc=21.4 min CN=66 Runoff=0.55 cfs 0.076 af

Subcatchment E4: E4 (EDP2)

Runoff Area=5.156 ac 2.77% Impervious Runoff Depth=0.40"
Flow Length=598' Tc=76.4 min CN=61 Runoff=0.54 cfs 0.172 af

Subcatchment E5: E5

Runoff Area=0.368 ac 70.11% Impervious Runoff Depth=1.82"
Tc=10.0 min CN=87 Runoff=0.68 cfs 0.056 af

Pond EP1: Existing Drywell 1

Peak Elev=36.62' Storage=1,446 cf Inflow=1.78 cfs 0.168 af
Discarded=0.18 cfs 0.130 af Primary=1.19 cfs 0.039 af Secondary=0.00 cfs 0.000 af Outflow=1.36 cfs 0.168 af

Pond EP2: Existing Drywell 2

Peak Elev=36.48' Storage=1,200 cf Inflow=1.00 cfs 0.118 af
Discarded=0.31 cfs 0.118 af Primary=0.00 cfs 0.000 af Outflow=0.31 cfs 0.118 af

Link EDP1: DP1 (Existing)

Inflow=0.55 cfs 0.076 af
Primary=0.55 cfs 0.076 af

Link EPD3: DP3 (Existing)

Inflow=1.19 cfs 0.039 af
Primary=1.19 cfs 0.039 af

4512 - HydroCAD

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Existing Conditions
Type III 24-hr 10-yr Rainfall=4.89"

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Time span=0.00-36.00 hrs, dt=0.02 hrs, 1801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E1: E1

Runoff Area=1.981 ac 33.42% Impervious Runoff Depth=2.36"
Flow Length=273' Tc=13.1 min CN=75 Runoff=4.34 cfs 0.390 af

Subcatchment E2: E2

Runoff Area=1.392 ac 34.84% Impervious Runoff Depth=2.36"
Flow Length=296' Tc=23.2 min CN=75 Runoff=2.42 cfs 0.274 af

Subcatchment E3: E3

Runoff Area=1.552 ac 21.59% Impervious Runoff Depth=1.65"
Flow Length=202' Tc=21.4 min CN=66 Runoff=1.87 cfs 0.214 af

Subcatchment E4: E4 (EDP2)

Runoff Area=5.156 ac 2.77% Impervious Runoff Depth=1.30"
Flow Length=598' Tc=76.4 min CN=61 Runoff=2.37 cfs 0.560 af

Subcatchment E5: E5

Runoff Area=0.368 ac 70.11% Impervious Runoff Depth=3.46"
Tc=10.0 min CN=87 Runoff=1.28 cfs 0.106 af

Pond EP1: Existing Drywell 1

Peak Elev=36.65' Storage=1,603 cf Inflow=4.34 cfs 0.390 af
Discarded=0.18 cfs 0.188 af Primary=4.14 cfs 0.202 af Secondary=0.00 cfs 0.000 af Outflow=4.31 cfs 0.390 af

Pond EP2: Existing Drywell 2

Peak Elev=36.76' Storage=2,782 cf Inflow=2.42 cfs 0.274 af
Discarded=0.31 cfs 0.196 af Primary=1.05 cfs 0.078 af Outflow=1.37 cfs 0.274 af

Link EDP1: DP1 (Existing)

Inflow=2.40 cfs 0.291 af
Primary=2.40 cfs 0.291 af

Link EPD3: DP3 (Existing)

Inflow=4.14 cfs 0.202 af
Primary=4.14 cfs 0.202 af

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Existing Conditions
Type III 24-hr 25-yr Rainfall=6.02"

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Time span=0.00-36.00 hrs, dt=0.02 hrs, 1801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E1: E1

Runoff Area=1.981 ac 33.42% Impervious Runoff Depth=3.30"
Flow Length=273' Tc=13.1 min CN=75 Runoff=6.10 cfs 0.545 af

Subcatchment E2: E2

Runoff Area=1.392 ac 34.84% Impervious Runoff Depth=3.30"
Flow Length=296' Tc=23.2 min CN=75 Runoff=3.40 cfs 0.383 af

Subcatchment E3: E3

Runoff Area=1.552 ac 21.59% Impervious Runoff Depth=2.46"
Flow Length=202' Tc=21.4 min CN=66 Runoff=2.86 cfs 0.318 af

Subcatchment E4: E4 (EDP2)

Runoff Area=5.156 ac 2.77% Impervious Runoff Depth=2.02"
Flow Length=598' Tc=76.4 min CN=61 Runoff=3.88 cfs 0.867 af

Subcatchment E5: E5

Runoff Area=0.368 ac 70.11% Impervious Runoff Depth=4.54"
Tc=10.0 min CN=87 Runoff=1.66 cfs 0.139 af

Pond EP1: Existing Drywell 1

Peak Elev=36.66' Storage=1,681 cf Inflow=6.10 cfs 0.545 af
Discarded=0.18 cfs 0.216 af Primary=5.89 cfs 0.329 af Secondary=0.00 cfs 0.000 af Outflow=6.07 cfs 0.545 af

Pond EP2: Existing Drywell 2

Peak Elev=36.86' Storage=3,697 cf Inflow=3.40 cfs 0.383 af
Discarded=0.31 cfs 0.236 af Primary=1.79 cfs 0.147 af Outflow=2.10 cfs 0.383 af

Link EDP1: DP1 (Existing)

Inflow=4.00 cfs 0.464 af
Primary=4.00 cfs 0.464 af

Link EPD3: DP3 (Existing)

Inflow=5.89 cfs 0.329 af
Primary=5.89 cfs 0.329 af

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Existing Conditions
Type III 24-hr 50-yr Rainfall=6.84"

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Time span=0.00-36.00 hrs, dt=0.02 hrs, 1801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E1: E1

Runoff Area=1.981 ac 33.42% Impervious Runoff Depth=4.01"
Flow Length=273' Tc=13.1 min CN=75 Runoff=7.41 cfs 0.662 af

Subcatchment E2: E2

Runoff Area=1.392 ac 34.84% Impervious Runoff Depth=4.01"
Flow Length=296' Tc=23.2 min CN=75 Runoff=4.14 cfs 0.465 af

Subcatchment E3: E3

Runoff Area=1.552 ac 21.59% Impervious Runoff Depth=3.08"
Flow Length=202' Tc=21.4 min CN=66 Runoff=3.63 cfs 0.398 af

Subcatchment E4: E4 (EDP2)

Runoff Area=5.156 ac 2.77% Impervious Runoff Depth=2.59"
Flow Length=598' Tc=76.4 min CN=61 Runoff=5.08 cfs 1.112 af

Subcatchment E5: E5

Runoff Area=0.368 ac 70.11% Impervious Runoff Depth=5.32"
Tc=10.0 min CN=87 Runoff=1.94 cfs 0.163 af

Pond EP1: Existing Drywell 1

Peak Elev=36.67' Storage=1,737 cf Inflow=7.41 cfs 0.662 af
Discarded=0.18 cfs 0.233 af Primary=7.20 cfs 0.429 af Secondary=0.00 cfs 0.000 af Outflow=7.38 cfs 0.662 af

Pond EP2: Existing Drywell 2

Peak Elev=36.93' Storage=4,381 cf Inflow=4.14 cfs 0.465 af
Discarded=0.31 cfs 0.262 af Primary=2.33 cfs 0.203 af Outflow=2.65 cfs 0.465 af

Link EDP1: DP1 (Existing)

Inflow=5.23 cfs 0.601 af
Primary=5.23 cfs 0.601 af

Link EPD3: DP3 (Existing)

Inflow=7.20 cfs 0.429 af
Primary=7.20 cfs 0.429 af

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Existing Conditions
Type III 24-hr 100-yr Rainfall=7.76"

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Time span=0.00-36.00 hrs, dt=0.02 hrs, 1801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment E1: E1

Runoff Area=1.981 ac 33.42% Impervious Runoff Depth=4.83"
Flow Length=273' Tc=13.1 min CN=75 Runoff=8.90 cfs 0.797 af

Subcatchment E2: E2

Runoff Area=1.392 ac 34.84% Impervious Runoff Depth=4.83"
Flow Length=296' Tc=23.2 min CN=75 Runoff=4.98 cfs 0.560 af

Subcatchment E3: E3

Runoff Area=1.552 ac 21.59% Impervious Runoff Depth=3.81"
Flow Length=202' Tc=21.4 min CN=66 Runoff=4.52 cfs 0.493 af

Subcatchment E4: E4 (EDP2)

Runoff Area=5.156 ac 2.77% Impervious Runoff Depth=3.26"
Flow Length=598' Tc=76.4 min CN=61 Runoff=6.50 cfs 1.402 af

Subcatchment E5: E5

Runoff Area=0.368 ac 70.11% Impervious Runoff Depth=6.22"
Tc=10.0 min CN=87 Runoff=2.24 cfs 0.191 af

Pond EP1: Existing Drywell 1

Peak Elev=36.68' Storage=1,797 cf Inflow=8.90 cfs 0.797 af
Discarded=0.18 cfs 0.247 af Primary=8.69 cfs 0.549 af Secondary=0.00 cfs 0.000 af Outflow=8.87 cfs 0.797 af

Pond EP2: Existing Drywell 2

Peak Elev=37.01' Storage=5,165 cf Inflow=4.98 cfs 0.560 af
Discarded=0.31 cfs 0.289 af Primary=2.95 cfs 0.271 af Outflow=3.26 cfs 0.560 af

Link EDP1: DP1 (Existing)

Inflow=6.66 cfs 0.764 af
Primary=6.66 cfs 0.764 af

Link EPD3: DP3 (Existing)

Inflow=8.69 cfs 0.549 af
Primary=8.69 cfs 0.549 af

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Existing Conditions
Type III 24-hr 2-yr Rainfall=3.09"

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Summary for Subcatchment E1: E1

Runoff = 1.78 cfs @ 12.19 hrs, Volume= 0.168 af, Depth= 1.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-yr Rainfall=3.09"

Area (ac)	CN	Description
0.759	61	>75% Grass cover, Good, HSG B
0.305	74	>75% Grass cover, Good, HSG C
0.208	55	Woods, Good, HSG B
0.047	70	Woods, Good, HSG C
* 0.662	98	IMPERVIOUS
1.981	75	Weighted Average
1.319		66.58% Pervious Area
0.662		33.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0400	0.15		Sheet Flow, Grass SF Grass: Dense n= 0.240 P2= 3.09"
0.4	30	0.0400	1.40		Shallow Concentrated Flow, Grass SCF Short Grass Pasture Kv= 7.0 fps
0.6	25	0.0200	0.71		Shallow Concentrated Flow, Woodland SCF Woodland Kv= 5.0 fps
0.3	15	0.0200	0.99		Shallow Concentrated Flow, Grass SCF Short Grass Pasture Kv= 7.0 fps
0.8	103	0.0160	2.04		Shallow Concentrated Flow, PVMT SCF Unpaved Kv= 16.1 fps
13.1	273	Total			

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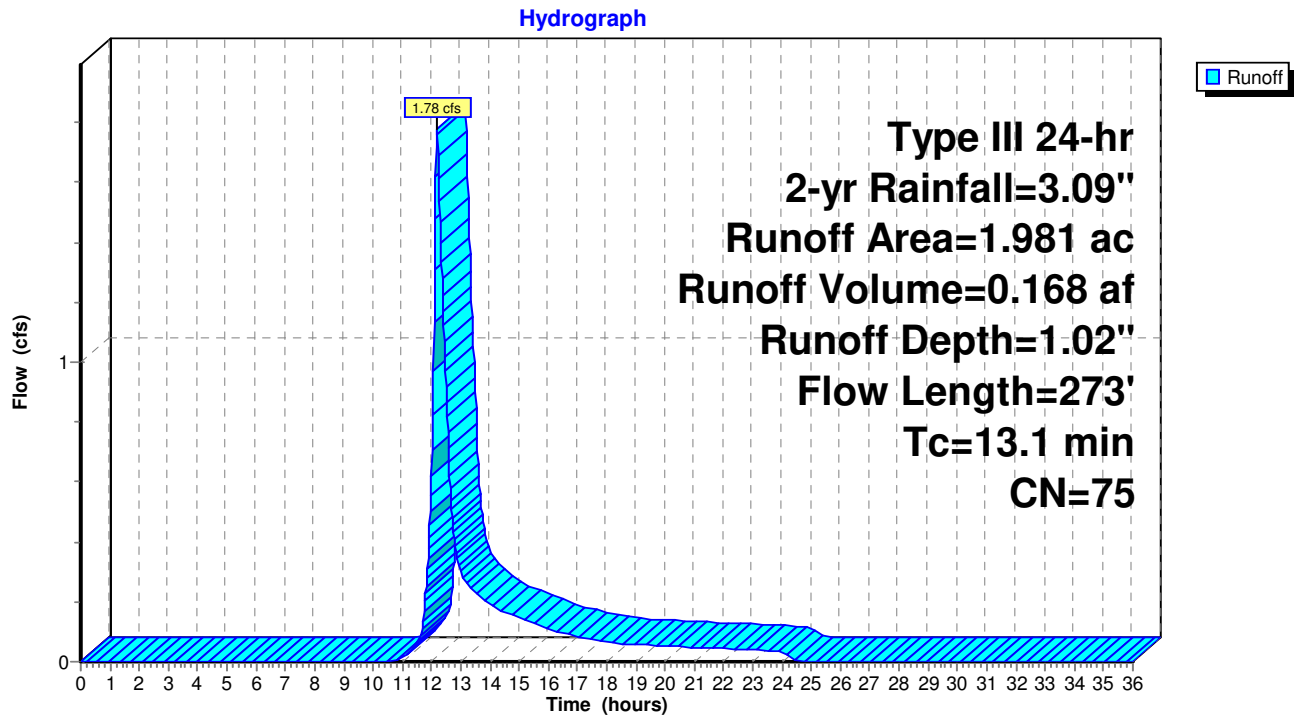
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Existing Conditions
Type III 24-hr 2-yr Rainfall=3.09"

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Subcatchment E1: E1



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Existing Conditions
Type III 24-hr 2-yr Rainfall=3.09"

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Summary for Subcatchment E2: E2

Runoff = 1.00 cfs @ 12.35 hrs, Volume= 0.118 af, Depth= 1.02"

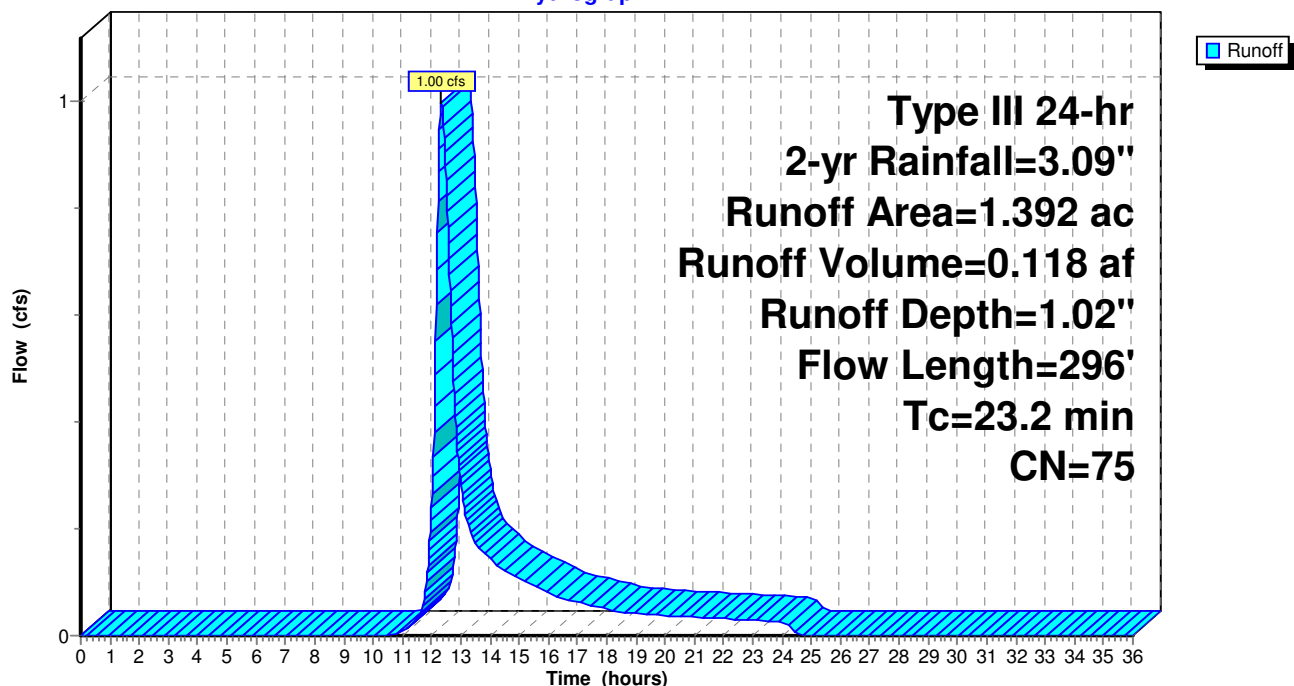
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-yr Rainfall=3.09"

Area (ac)	CN	Description
0.737	61	>75% Grass cover, Good, HSG B
0.170	74	>75% Grass cover, Good, HSG C
* 0.485	98	IMPERVIOUS
1.392	75	Weighted Average
0.907		65.16% Pervious Area
0.485		34.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.0	100	0.0080	0.08		Sheet Flow, Grass SF Grass: Dense n= 0.240 P2= 3.09"
1.8	126	0.0280	1.17		Shallow Concentrated Flow, Grass SCF Short Grass Pasture Kv= 7.0 fps
0.4	70	0.0250	3.21		Shallow Concentrated Flow, PVMT SCF Paved Kv= 20.3 fps
23.2	296	Total			

Subcatchment E2: E2

Hydrograph



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Existing Conditions
Type III 24-hr 2-yr Rainfall=3.09"

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Summary for Subcatchment E3: E3

Runoff = 0.55 cfs @ 12.37 hrs, Volume= 0.076 af, Depth= 0.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-yr Rainfall=3.09"

Area (ac)	CN	Description
0.225	61	>75% Grass cover, Good, HSG B
0.042	74	>75% Grass cover, Good, HSG C
0.939	55	Woods, Good, HSG B
0.011	70	Woods, Good, HSG C
* 0.335	98	IMPERVIOUS
1.552	66	Weighted Average
1.217		78.41% Pervious Area
0.335		21.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	32	0.0120	0.11		Sheet Flow, Grass SF Grass: Short n= 0.150 P2= 3.09"
0.6	37	0.0140	0.96		Sheet Flow, PVM T SF Smooth surfaces n= 0.011 P2= 3.09"
12.5	35	0.0100	0.05		Sheet Flow, Woodland SF Woods: Light underbrush n= 0.400 P2= 3.09"
3.4	98	0.0090	0.47		Shallow Concentrated Flow, Woodland SCF Woodland Kv= 5.0 fps
21.4	202	Total			

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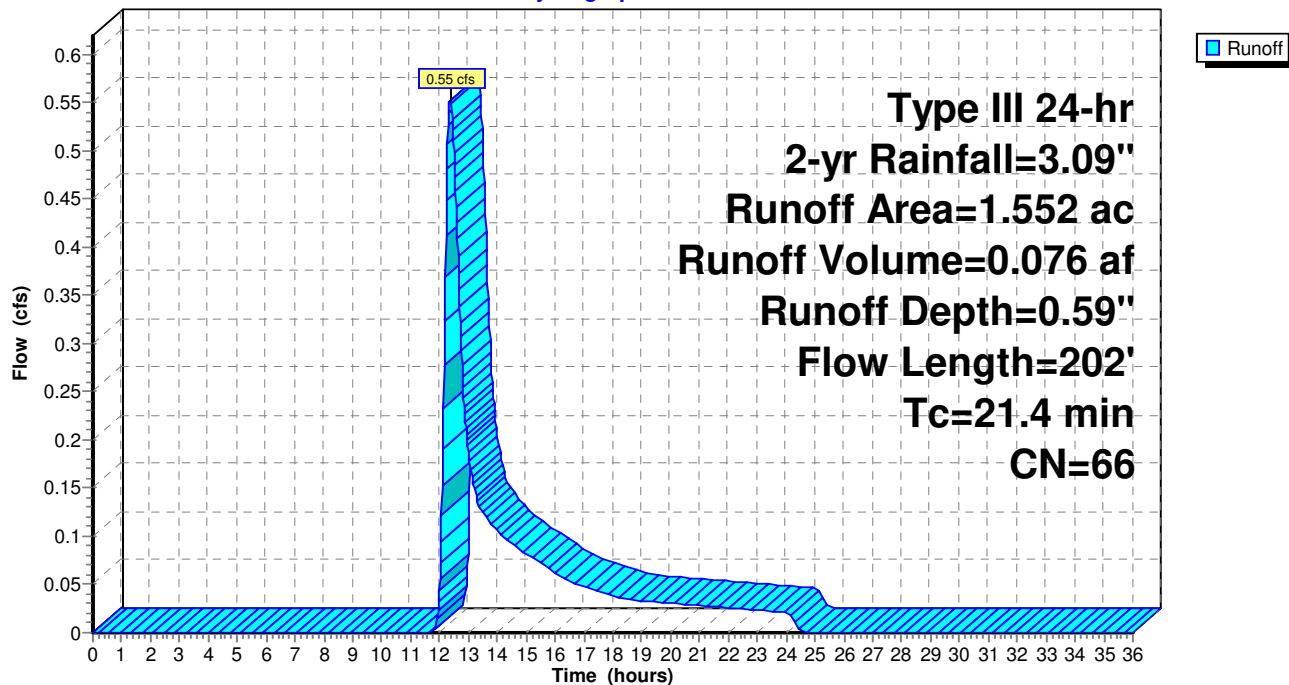
Existing Conditions
Type III 24-hr 2-yr Rainfall=3.09"

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Subcatchment E3: E3

Hydrograph



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Existing Conditions
Type III 24-hr 2-yr Rainfall=3.09"

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Summary for Subcatchment E4: E4 (EDP2)

Runoff = 0.54 cfs @ 13.32 hrs, Volume= 0.172 af, Depth= 0.40"

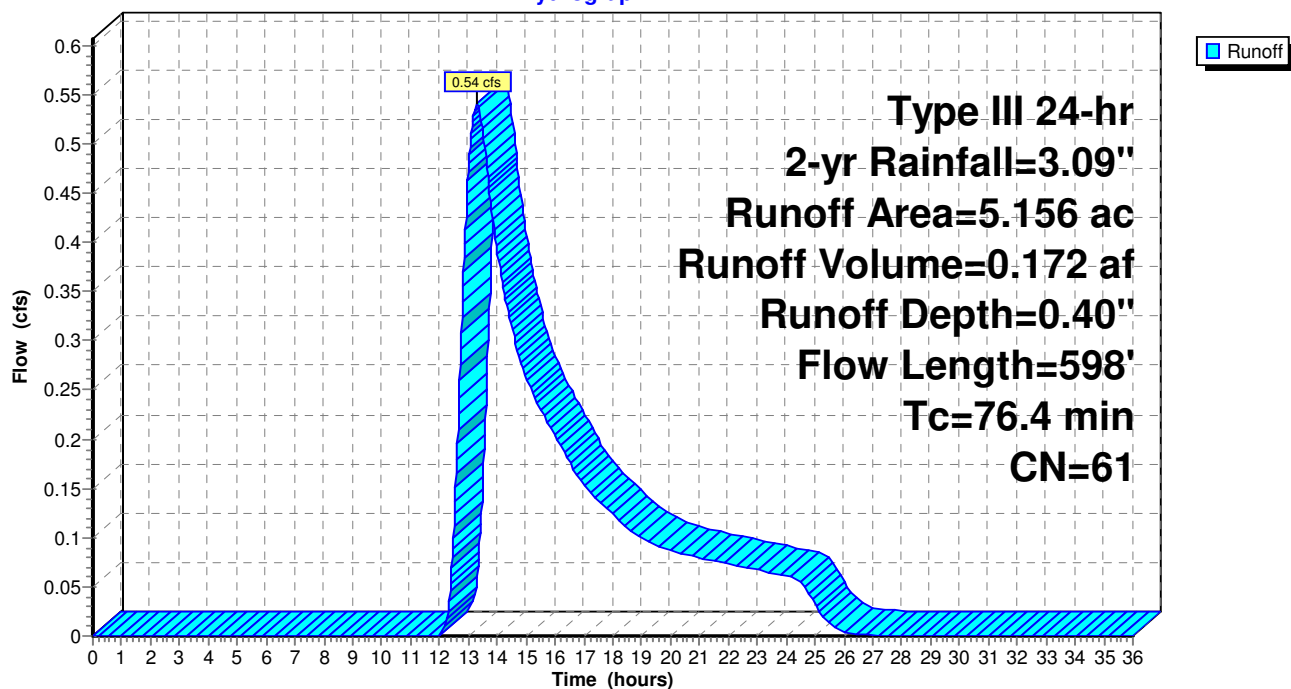
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-yr Rainfall=3.09"

Area (ac)	CN	Description
0.188	61	>75% Grass cover, Good, HSG B
3.495	55	Woods, Good, HSG B
* 1.330	74	Woods, Good, HSG C/D
* 0.143	98	IMPERVIOUS
5.156	61	Weighted Average
5.013		97.23% Pervious Area
0.143		2.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	41	0.0120	0.08		Sheet Flow, Grass SF Grass: Dense n= 0.240 P2= 3.09"
30.6	59	0.0120	0.03		Sheet Flow, Wood SF Woods: Dense underbrush n= 0.800 P2= 3.09"
37.1	498	0.0080	0.22		Shallow Concentrated Flow, Woodland SCF Forest w/Heavy Litter Kv= 2.5 fps
76.4	598	Total			

Subcatchment E4: E4 (EDP2)

Hydrograph



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Existing Conditions
Type III 24-hr 2-yr Rainfall=3.09"

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Summary for Subcatchment E5: E5

Runoff = 0.68 cfs @ 12.14 hrs, Volume= 0.056 af, Depth= 1.82"

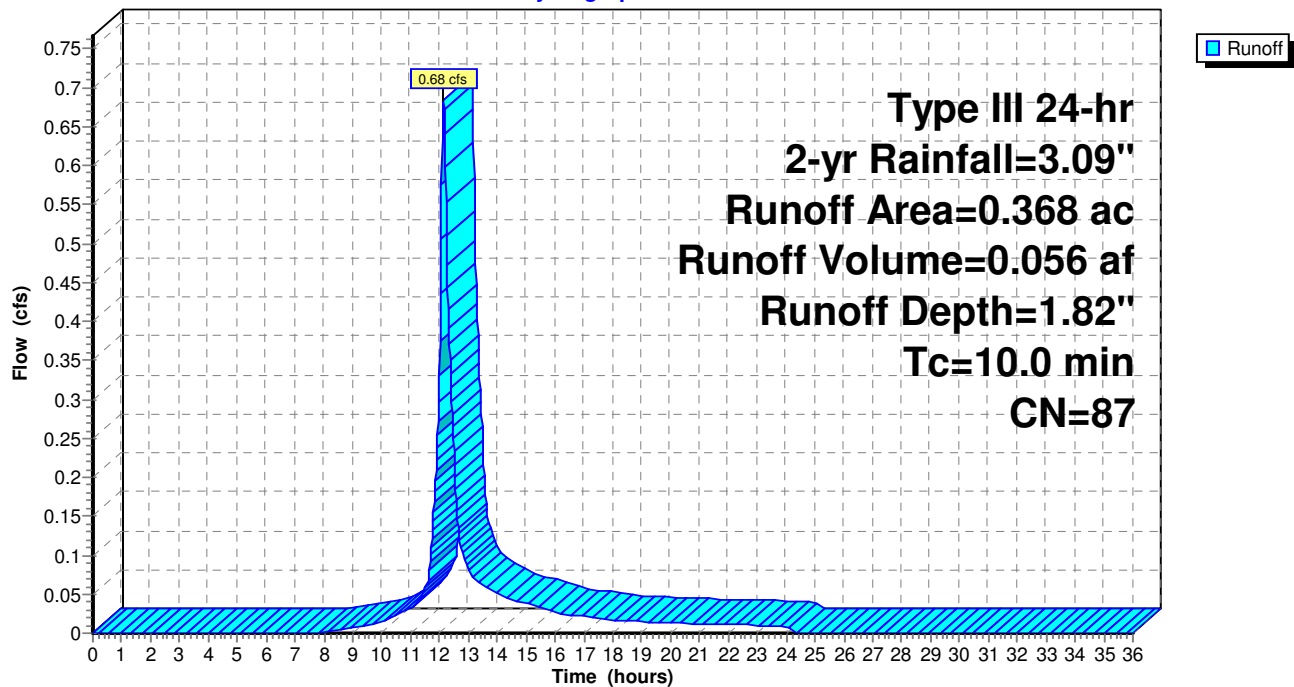
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-yr Rainfall=3.09"

Area (ac)	CN	Description
0.110	61	>75% Grass cover, Good, HSG B
* 0.258	98	IMPERVIOUS
0.368	87	Weighted Average
0.110		29.89% Pervious Area
0.258		70.11% Impervious Area

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

Subcatchment E5: E5

Hydrograph



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Summary for Pond EP1: Existing Drywell 1

Inflow Area = 1.981 ac, 33.42% Impervious, Inflow Depth = 1.02" for 2-yr event
 Inflow = 1.78 cfs @ 12.19 hrs, Volume= 0.168 af
 Outflow = 1.36 cfs @ 12.33 hrs, Volume= 0.168 af, Atten= 23%, Lag= 8.5 min
 Discarded = 0.18 cfs @ 11.84 hrs, Volume= 0.130 af
 Primary = 1.19 cfs @ 12.33 hrs, Volume= 0.039 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Peak Elev= 36.62' @ 12.33 hrs Surf.Area= 28 sf Storage= 1,446 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 57.7 min (925.3 - 867.6)

Volume	Invert	Avail.Storage	Storage Description
#1	33.00'	8 cf	6.00'D x 1.85'H Vertical Cone/Cylinder 52 cf Overall - 32 cf Embedded = 21 cf x 40.0% Voids
#2	33.00'	23 cf	4.00'D x 1.85'H Vertical Cone/Cylinder Inside #1 32 cf Overall - 4.0" Wall Thickness = 23 cf
#3	34.85'	3 cf	2.00'D x 1.00'H Vertical Cone/Cylinder -Impervious
#4	35.85'	23,050 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		23,085 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
35.85	12	0	0
36.00	13	2	2
36.50	3,433	862	863
37.00	12,642	4,019	4,882
37.50	24,994	9,409	14,291
37.60	27,388	2,619	16,910
37.70	31,031	2,921	19,831
37.80	33,354	3,219	23,050

Device	Routing	Invert	Outlet Devices
#1	Discarded	33.00'	120.000 in/hr Exfiltration over Wetted area
#2	Primary	36.60'	150.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#3	Secondary	37.60'	39.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

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Existing Conditions
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Discarded OutFlow Max=0.18 cfs @ 11.84 hrs HW=36.01' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.18 cfs)

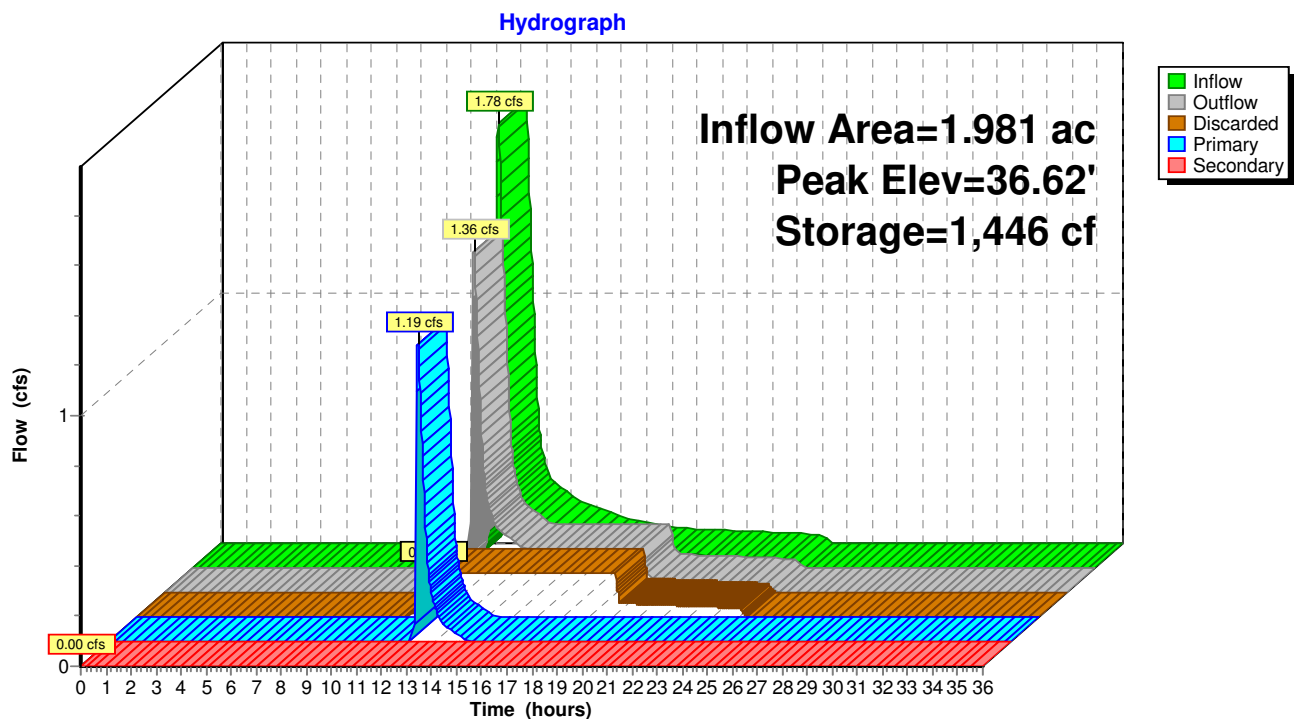
Primary OutFlow Max=1.18 cfs @ 12.33 hrs HW=36.62' TW=0.00' (Dynamic Tailwater)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 1.18 cfs @ 0.39 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=33.00' TW=30.10' (Dynamic Tailwater)

↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond EP1: Existing Drywell 1



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Summary for Pond EP2: Existing Drywell 2

Inflow Area = 1.392 ac, 34.84% Impervious, Inflow Depth = 1.02" for 2-yr event
 Inflow = 1.00 cfs @ 12.35 hrs, Volume= 0.118 af
 Outflow = 0.31 cfs @ 12.12 hrs, Volume= 0.118 af, Atten= 69%, Lag= 0.0 min
 Discarded = 0.31 cfs @ 12.12 hrs, Volume= 0.118 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Peak Elev= 36.48' @ 12.95 hrs Surf.Area= 28 sf Storage= 1,200 cf

Plug-Flow detention time= 24.9 min calculated for 0.118 af (100% of inflow)

Center-of-Mass det. time= 24.9 min (901.8 - 876.9)

Volume	Invert	Avail.Storage	Storage Description
#1	30.10'	20 cf	6.00'D x 4.49'H Vertical Cone/Cylinder 127 cf Overall - 77 cf Embedded = 50 cf x 40.0% Voids
#2	30.10'	56 cf	4.00'D x 4.49'H Vertical Cone/Cylinder Inside #1 77 cf Overall - 4.0" Wall Thickness = 56 cf
#3	34.59'	3 cf	2.00'D x 1.00'H Vertical Cone/Cylinder -Impervious
#4	35.59'	12,344 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		12,423 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
35.59	12	0	0
36.00	362	77	77
36.50	4,053	1,104	1,180
37.00	11,319	3,843	5,023
37.50	17,962	7,320	12,344

Device	Routing	Invert	Outlet Devices
#1	Discarded	30.10'	120.000 in/hr Exfiltration over Wetted area
#2	Primary	36.50'	3.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.31 cfs @ 12.12 hrs HW=34.98' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.31 cfs)**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=30.10' TW=0.00' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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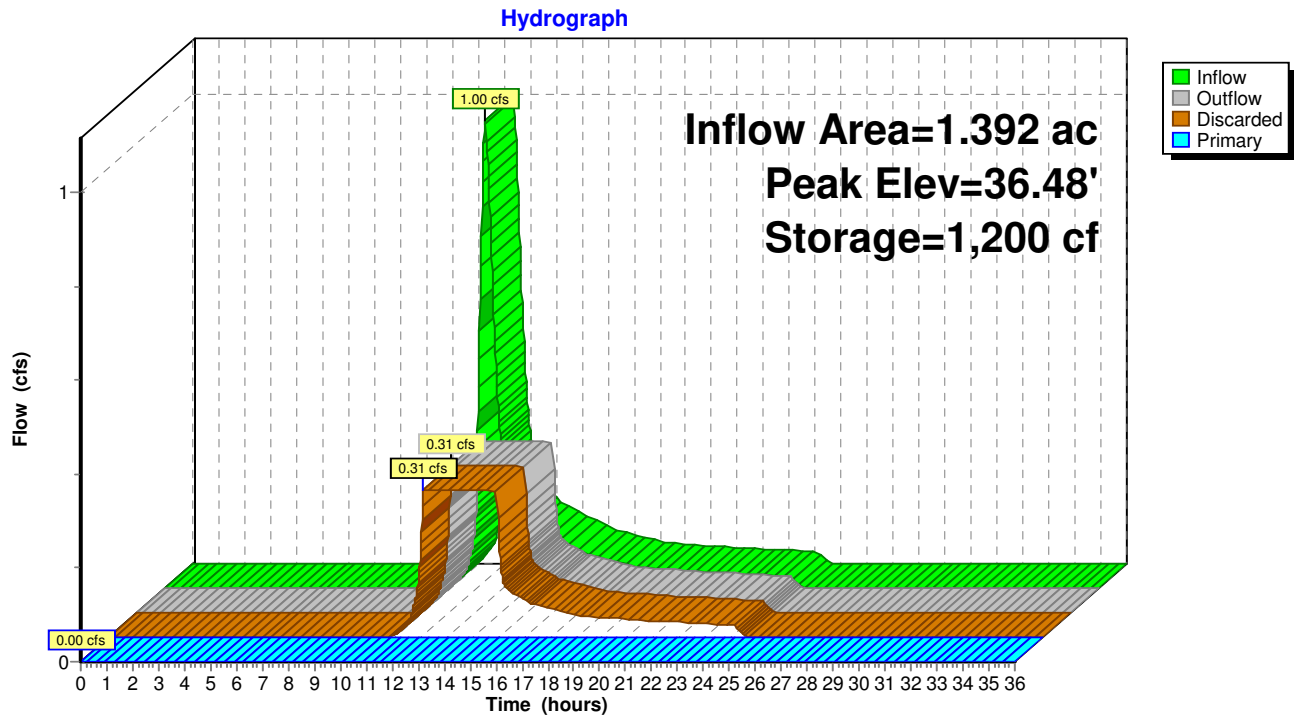
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Pond EP2: Existing Drywell 2



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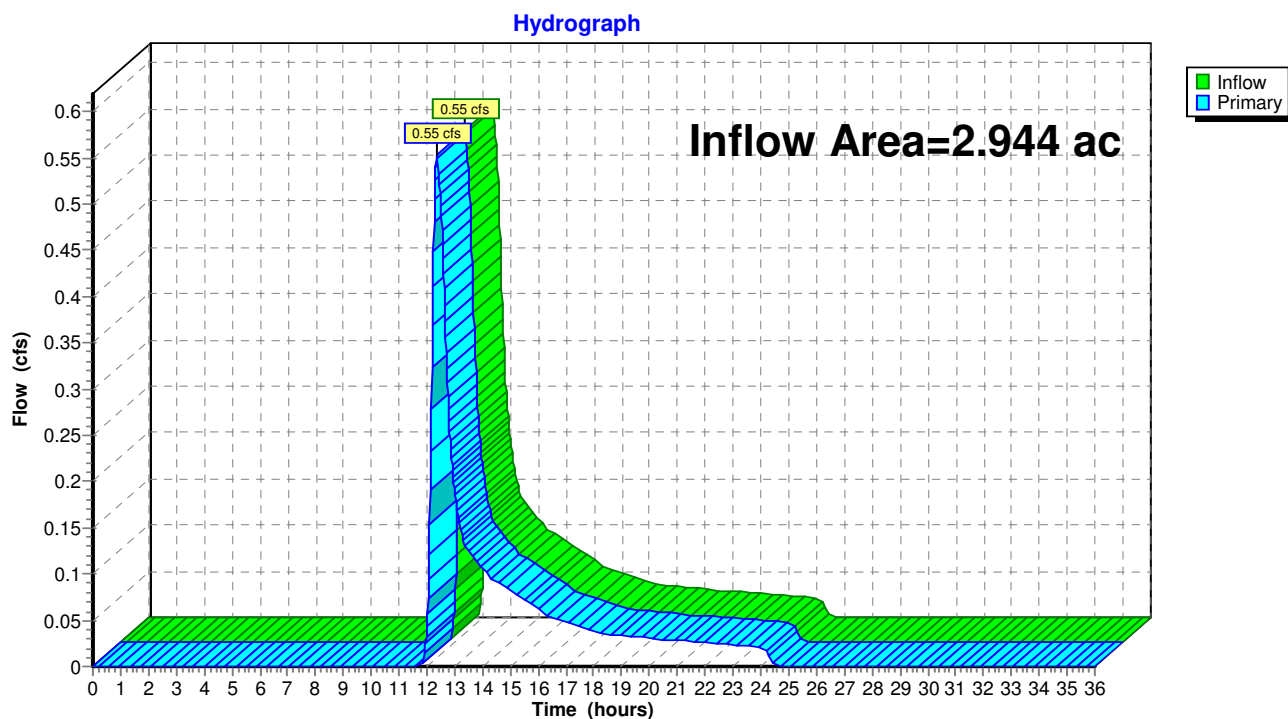
Page 18

Summary for Link EDP1: DP1 (Existing)

Inflow Area = 2.944 ac, 27.85% Impervious, Inflow Depth = 0.31" for 2-yr event
Inflow = 0.55 cfs @ 12.37 hrs, Volume= 0.076 af
Primary = 0.55 cfs @ 12.37 hrs, Volume= 0.076 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Link EDP1: DP1 (Existing)



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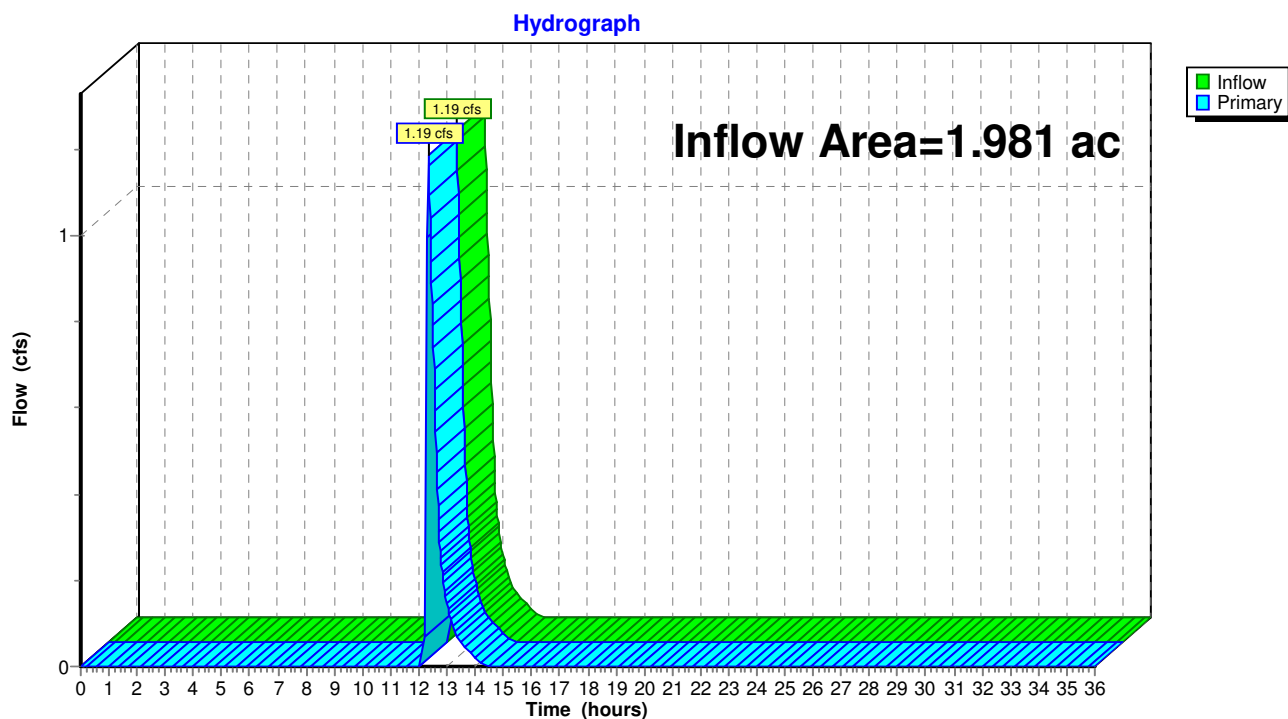
Page 19

Summary for Link EPD3: DP3 (Existing)

Inflow Area = 1.981 ac, 33.42% Impervious, Inflow Depth = 0.23" for 2-yr event
Inflow = 1.19 cfs @ 12.33 hrs, Volume= 0.039 af
Primary = 1.19 cfs @ 12.33 hrs, Volume= 0.039 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Link EPD3: DP3 (Existing)



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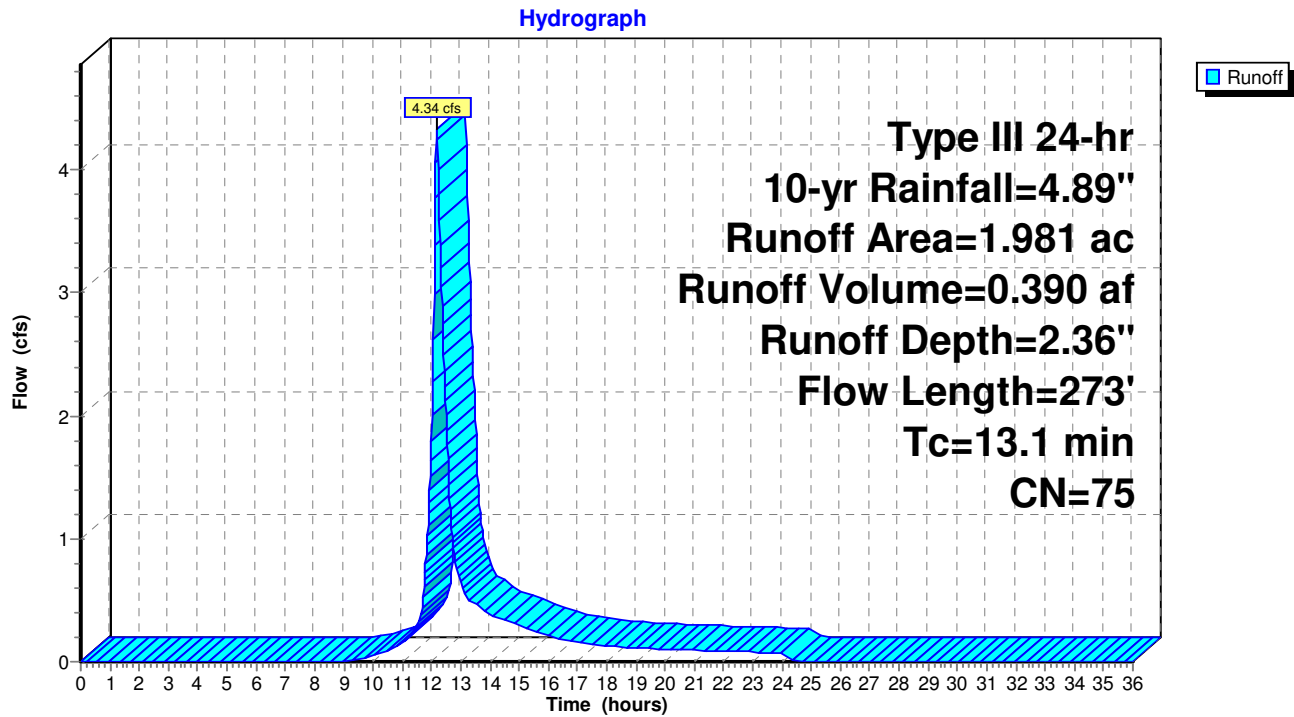
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Existing Conditions
Type III 24-hr 10-yr Rainfall=4.89"

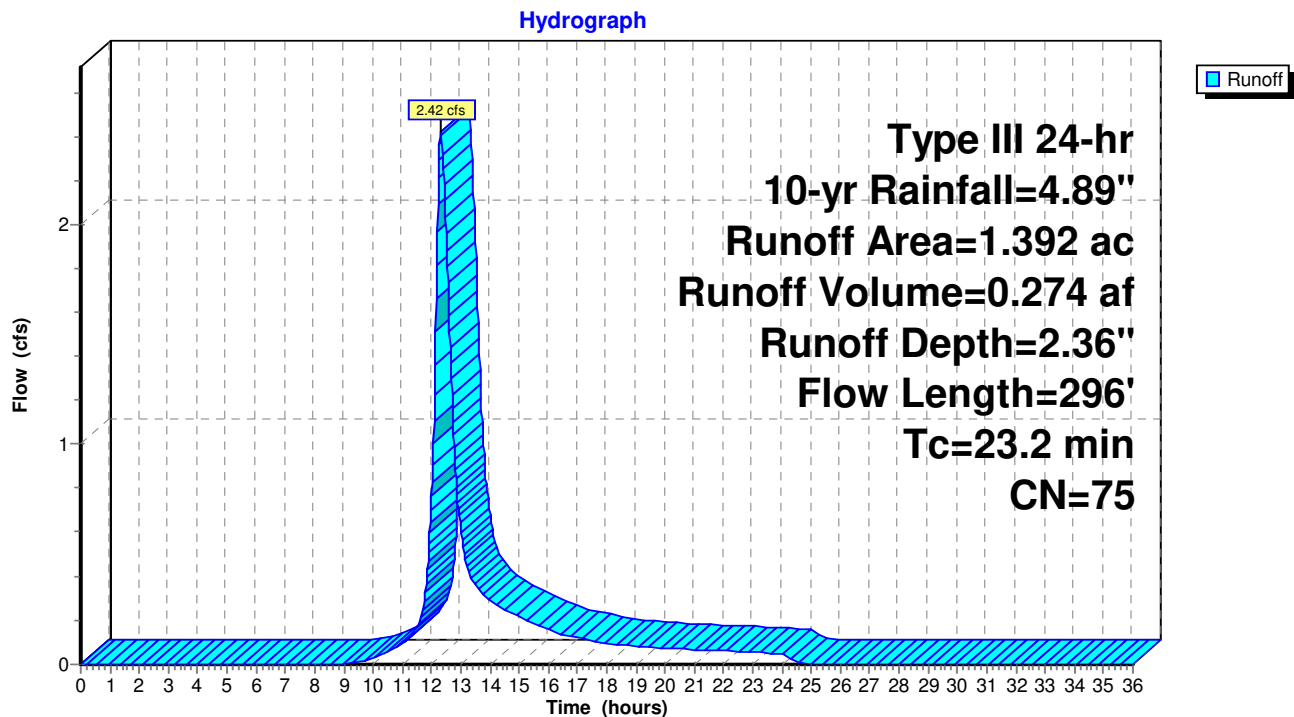
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Subcatchment E1: E1



Subcatchment E2: E2



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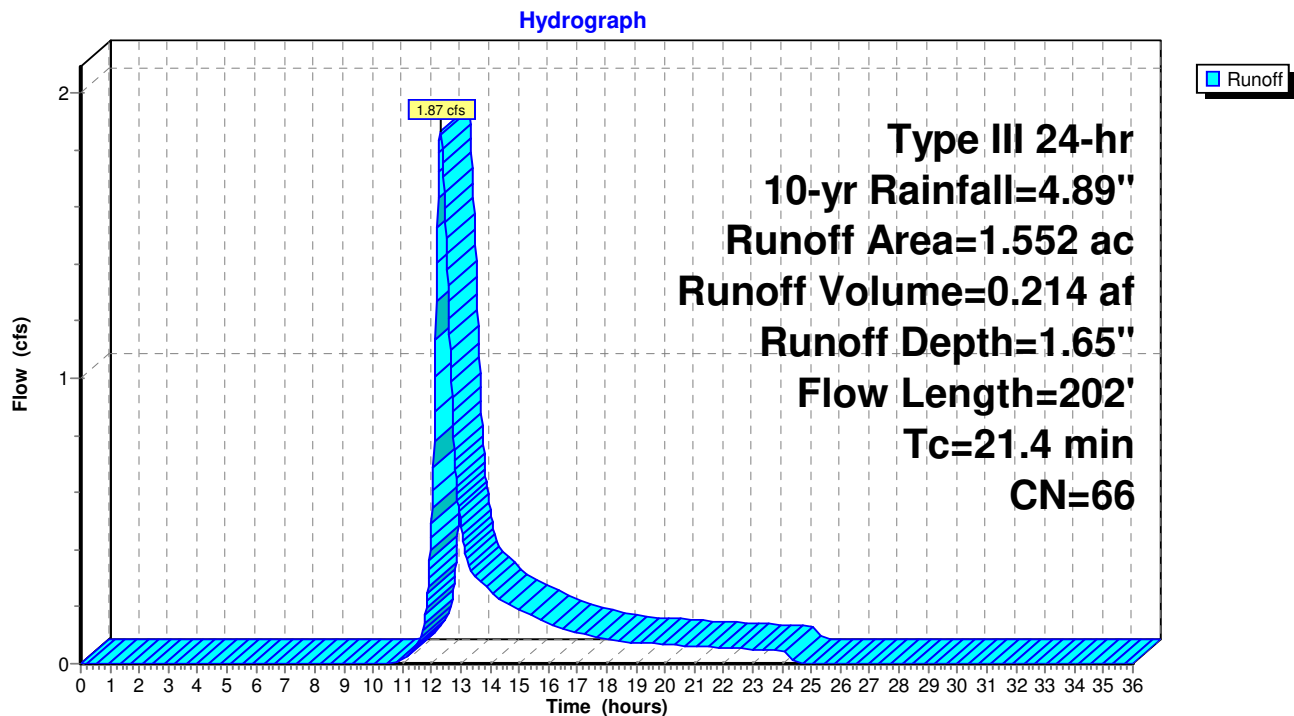
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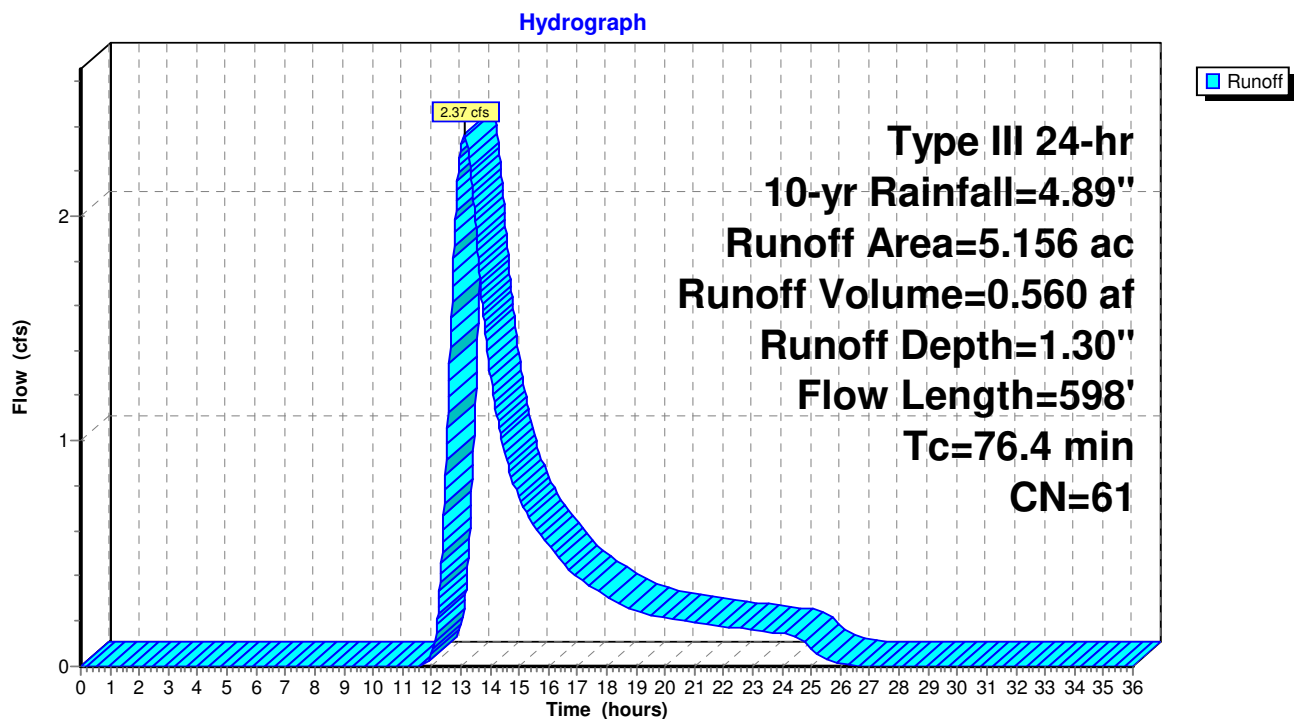
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Subcatchment E3: E3



Subcatchment E4: E4 (EDP2)



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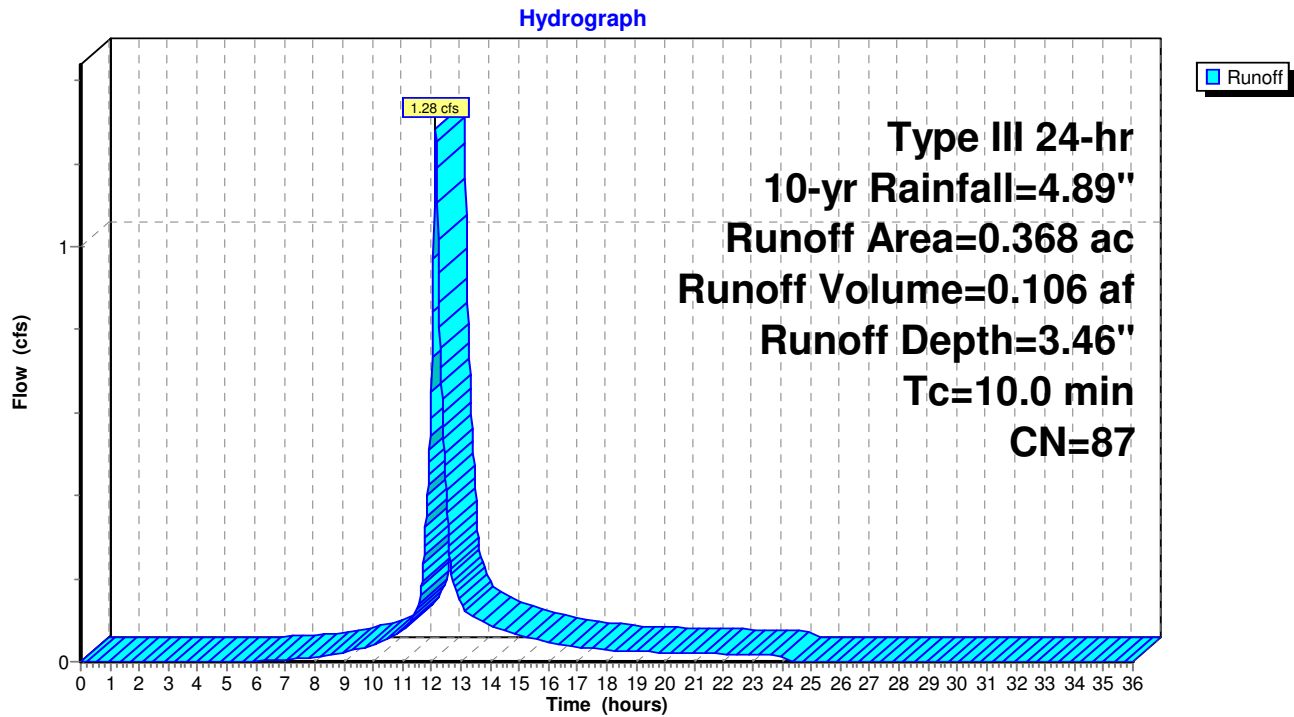
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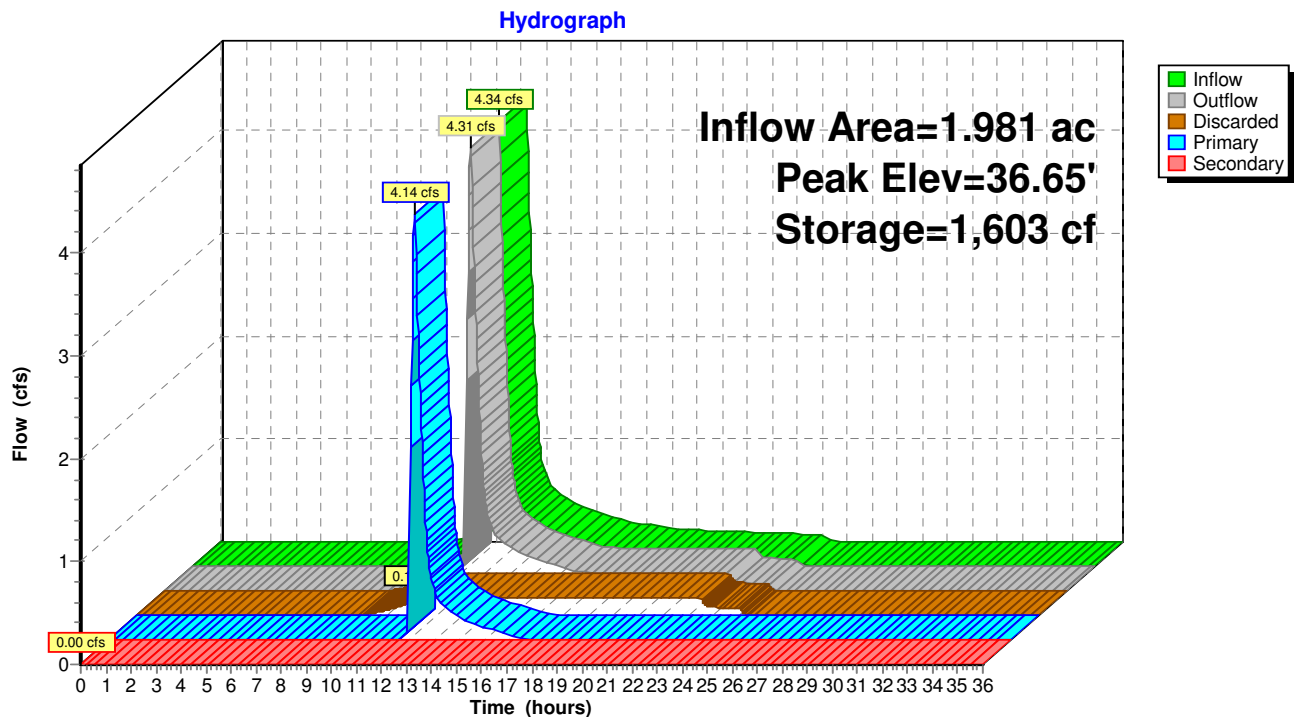
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Subcatchment E5: E5



Pond EP1: Existing Drywell 1



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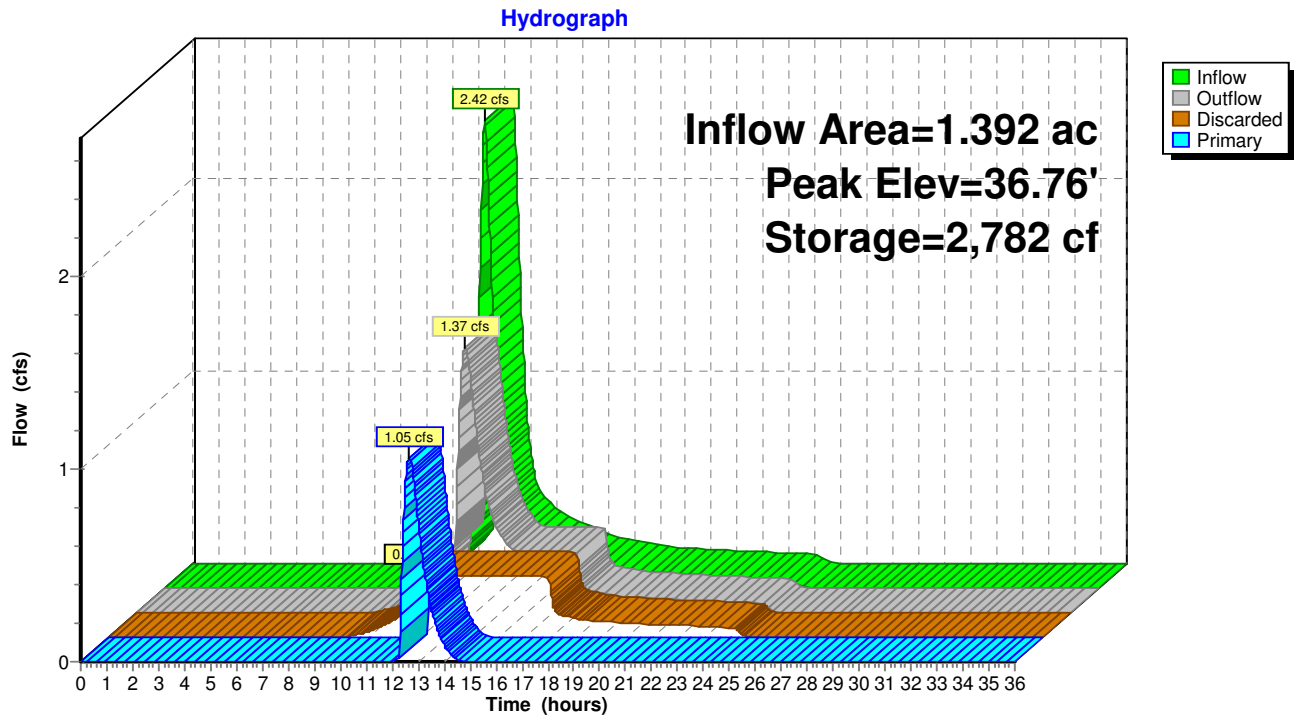
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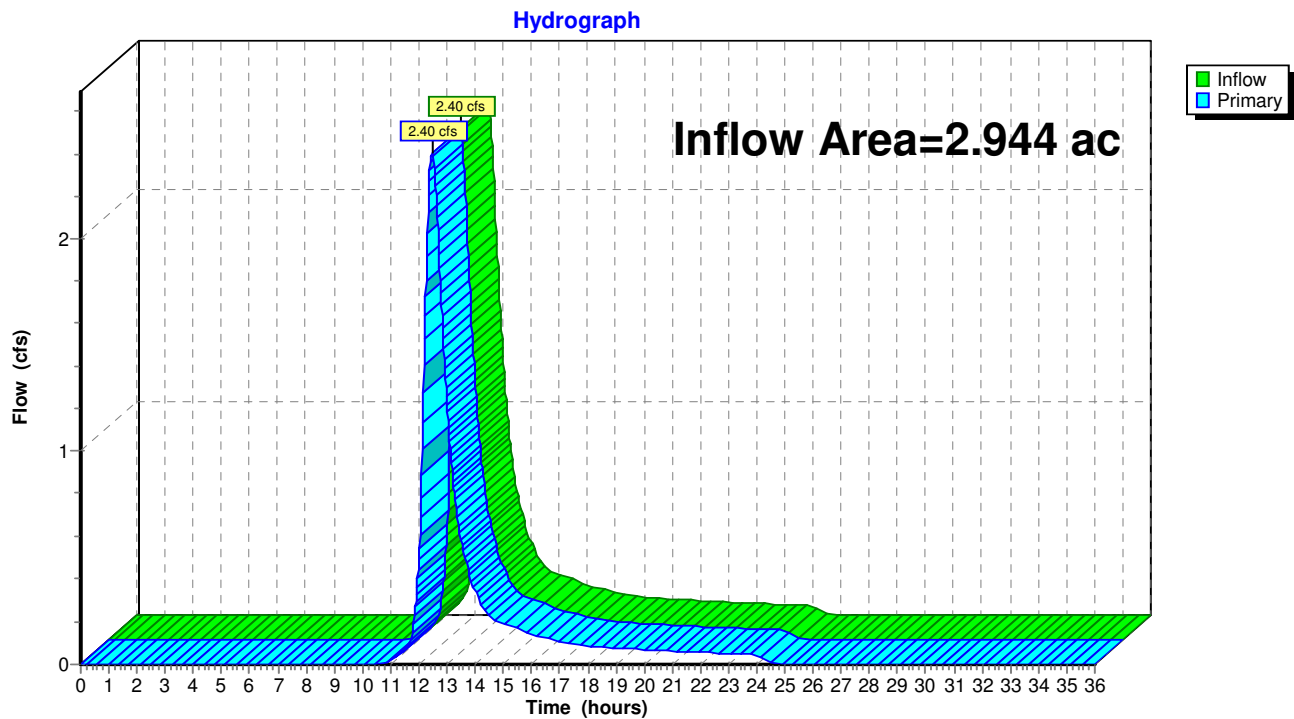
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Pond EP2: Existing Drywell 2



Link EDP1: DP1 (Existing)



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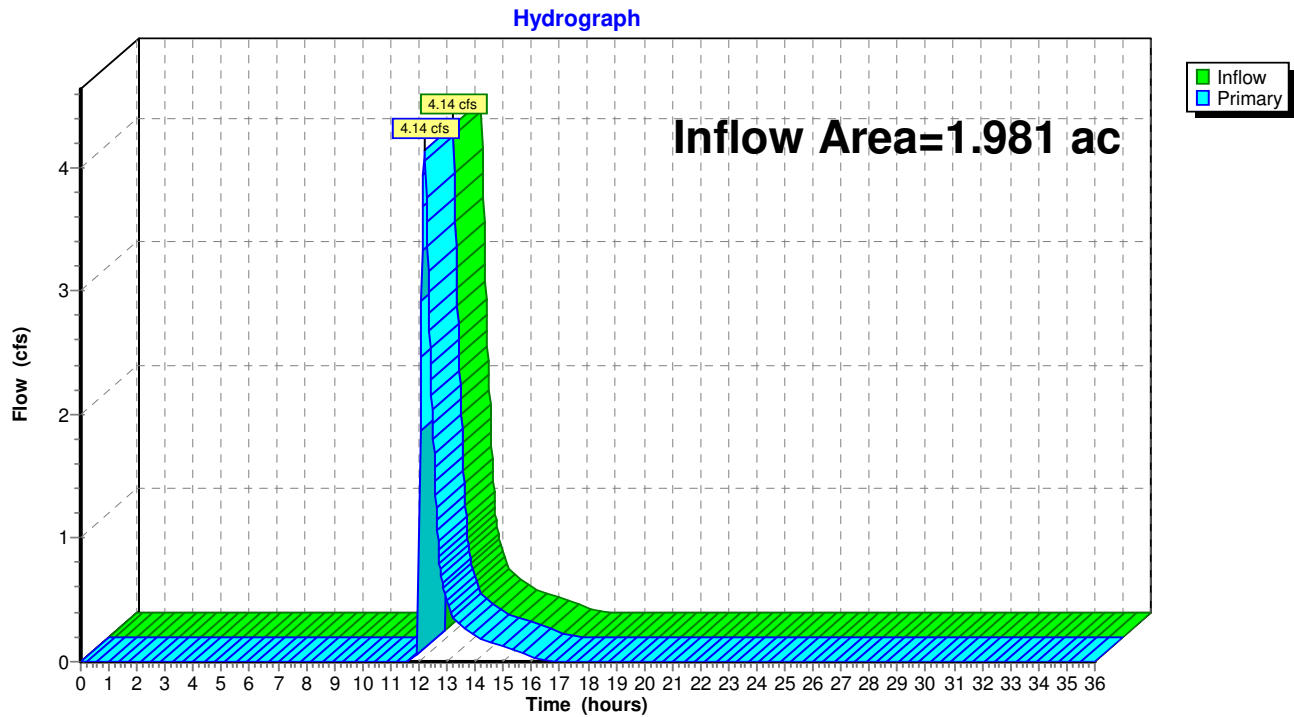
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Link EPD3: DP3 (Existing)



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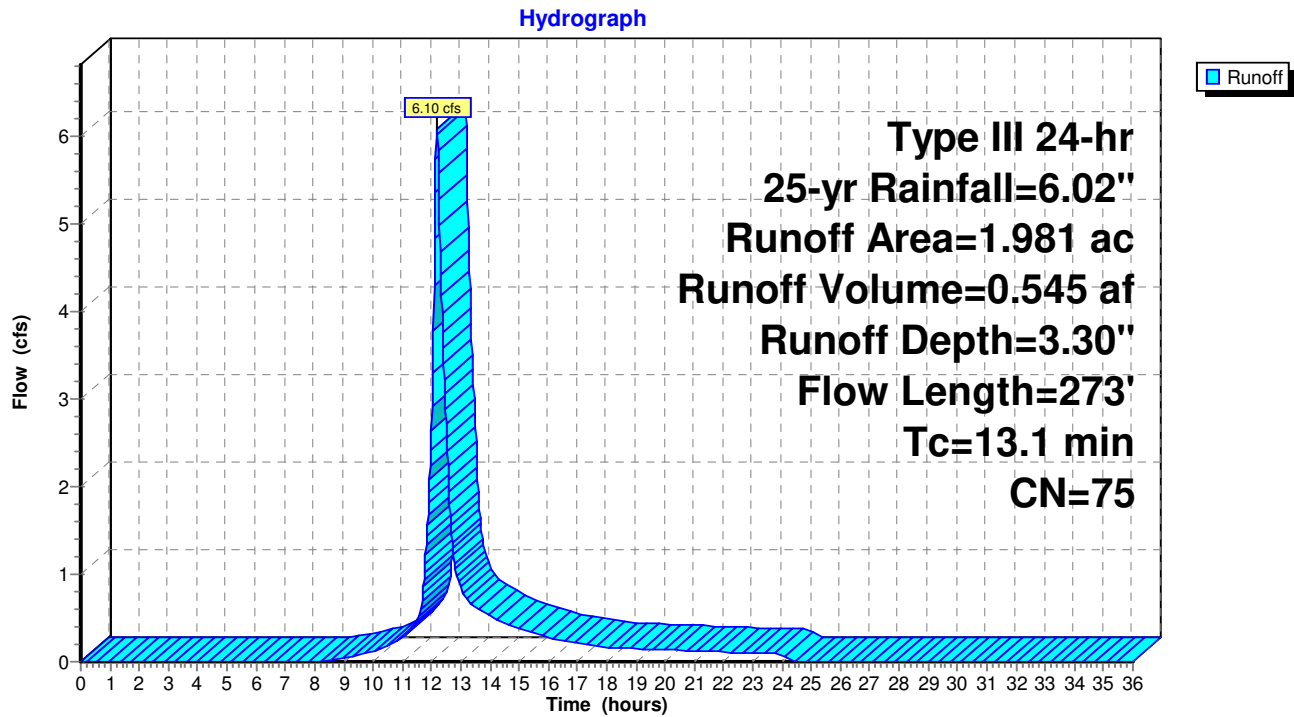
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Existing Conditions
Type III 24-hr 25-yr Rainfall=6.02"

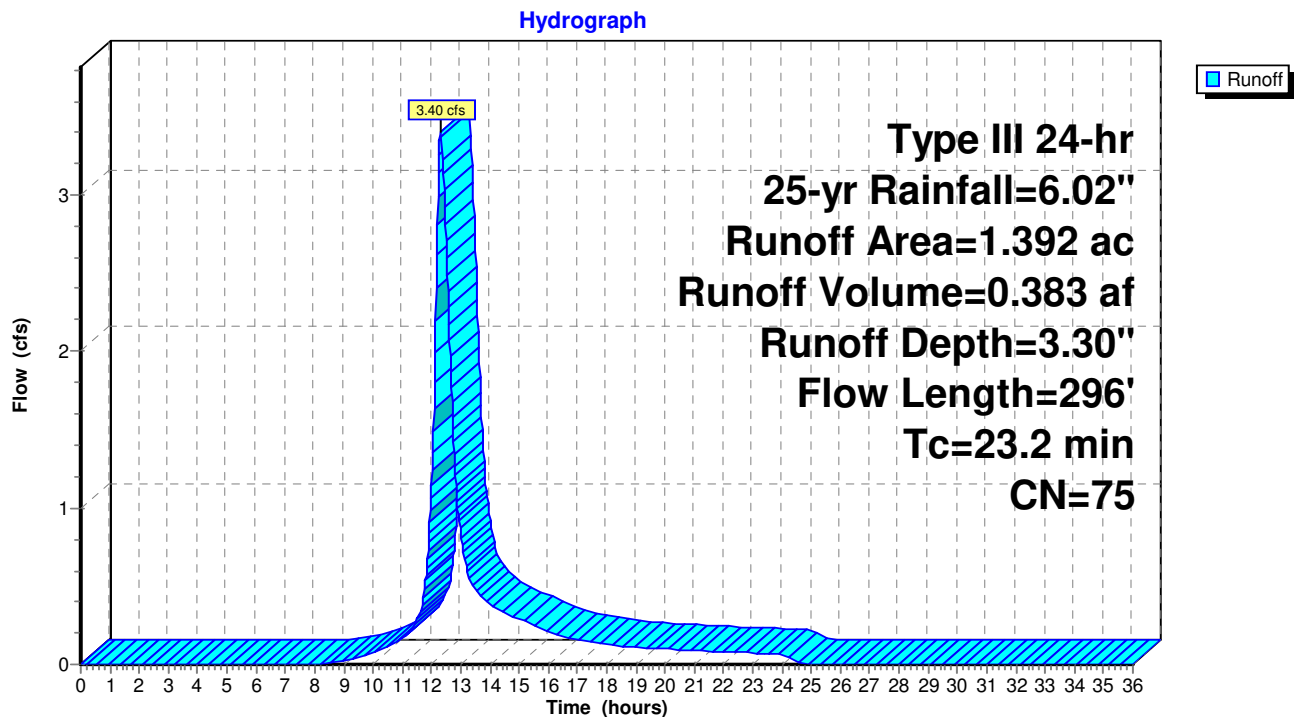
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Subcatchment E1: E1



Subcatchment E2: E2



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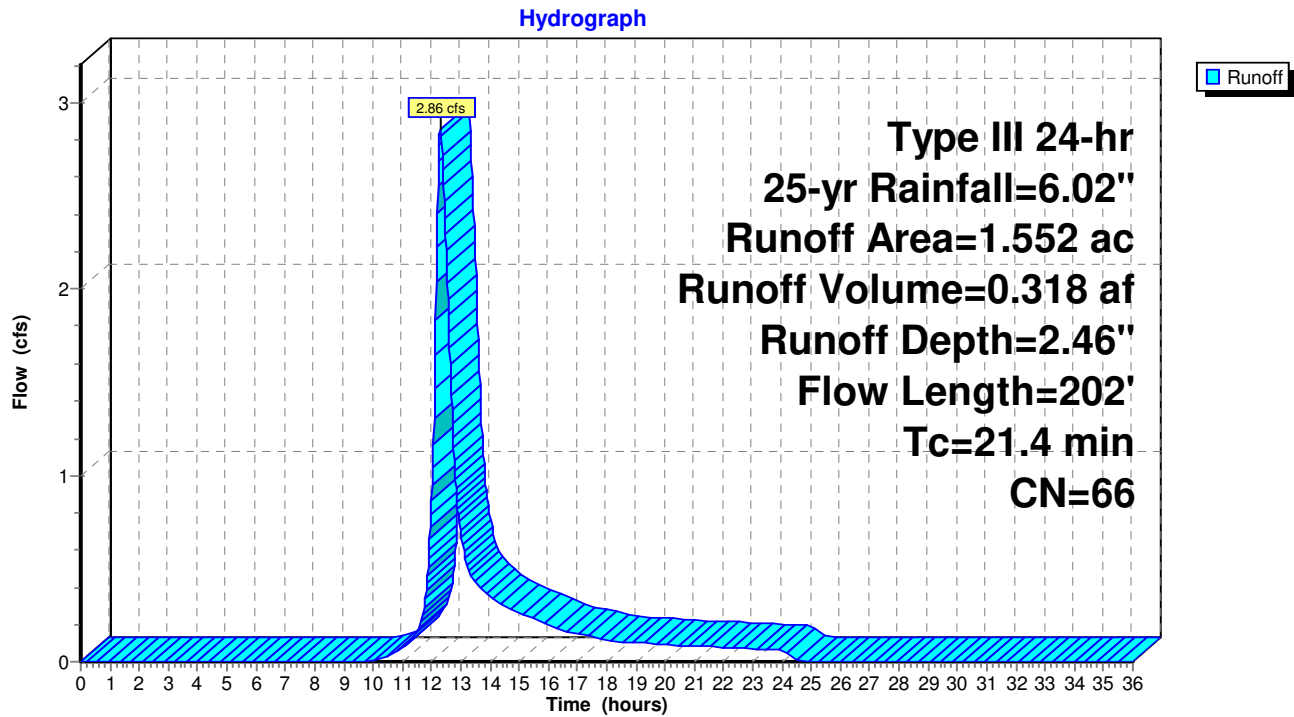
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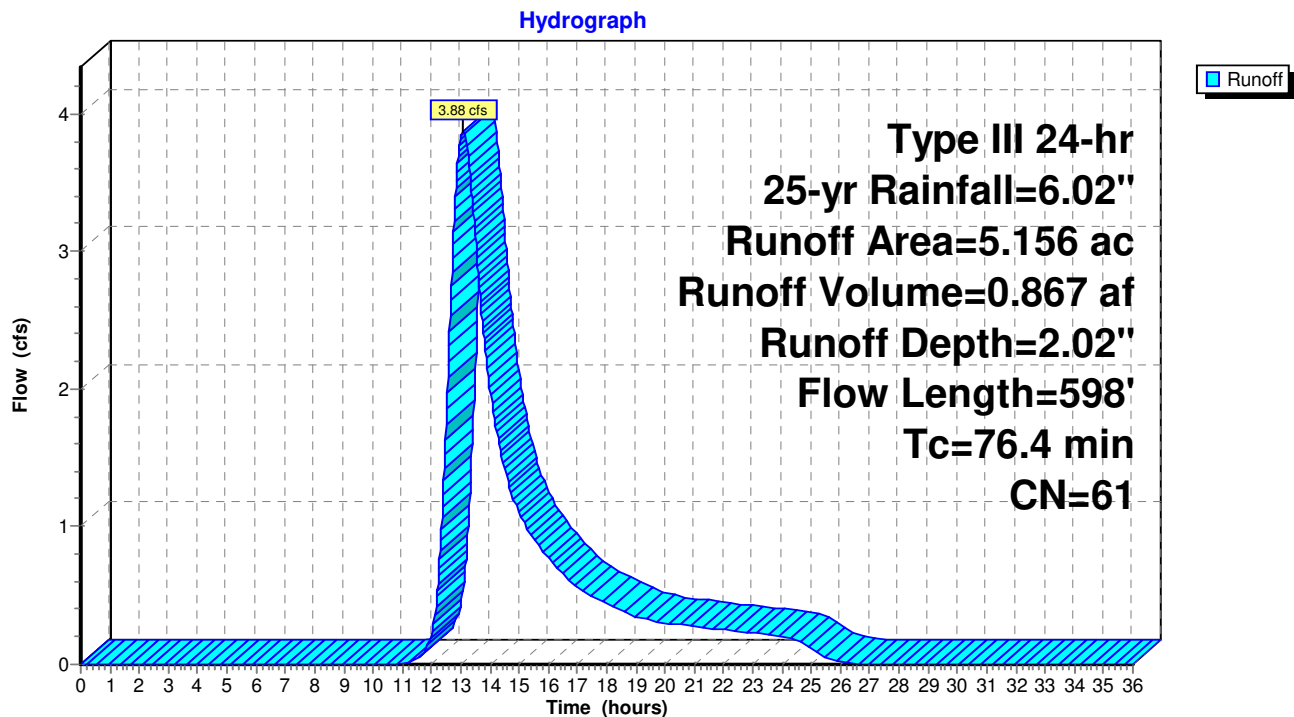
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Subcatchment E3: E3



Subcatchment E4: E4 (EDP2)



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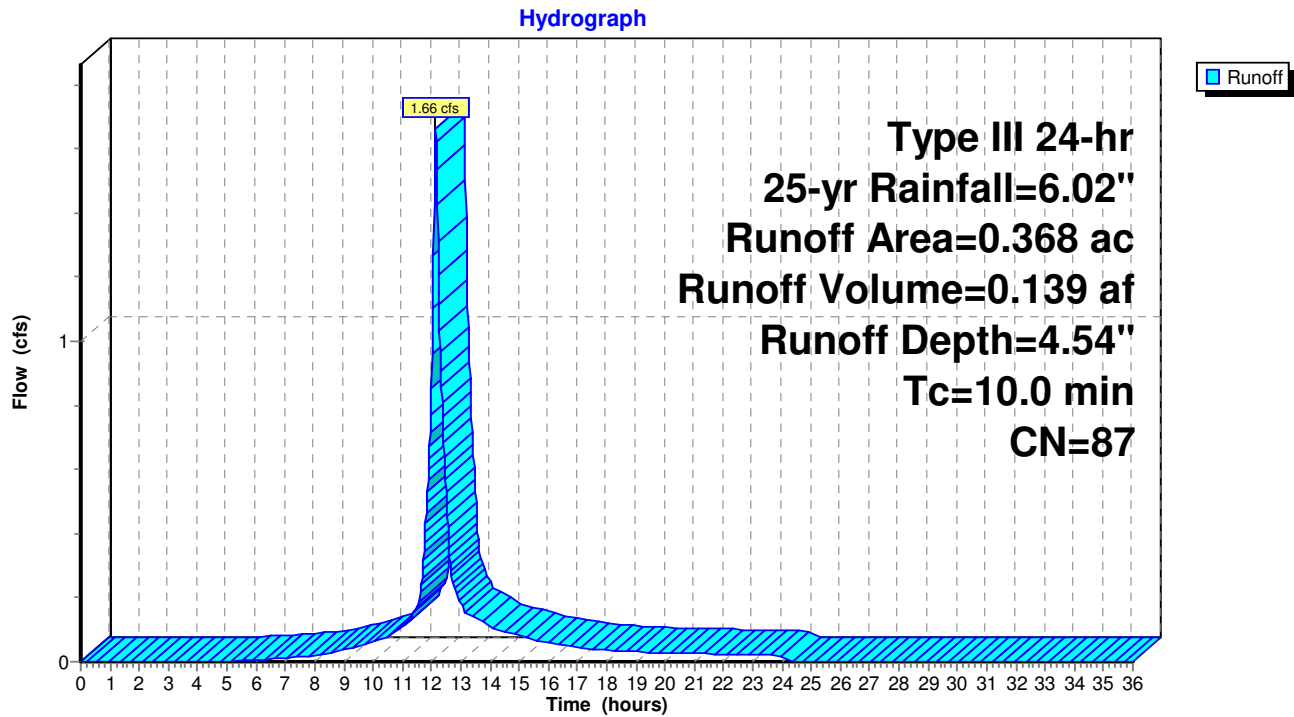
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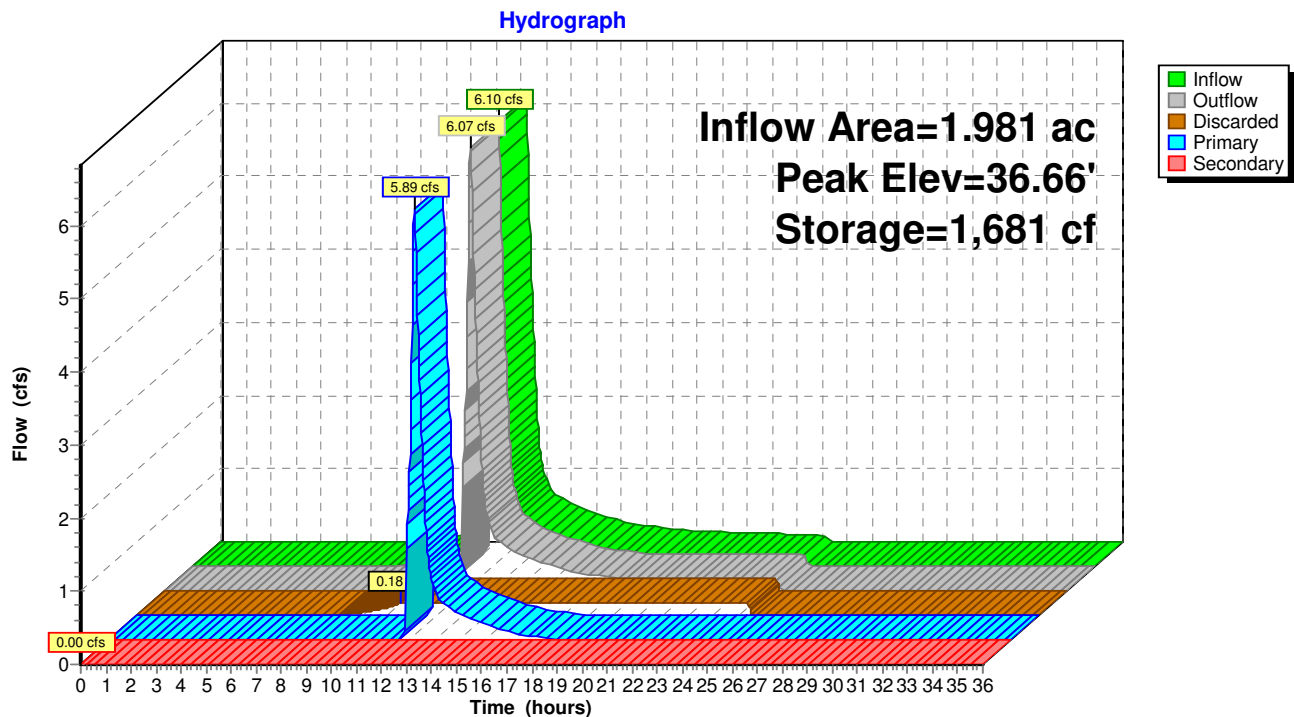
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Subcatchment E5: E5



Pond EP1: Existing Drywell 1



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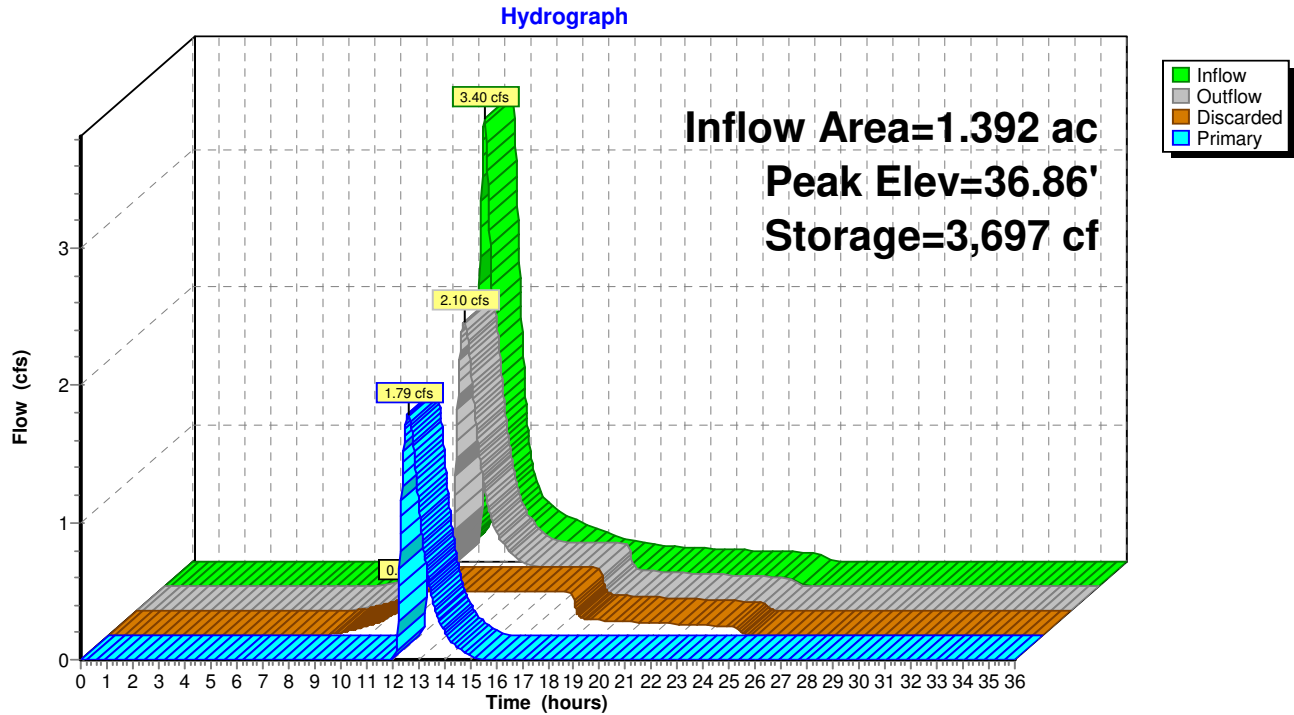
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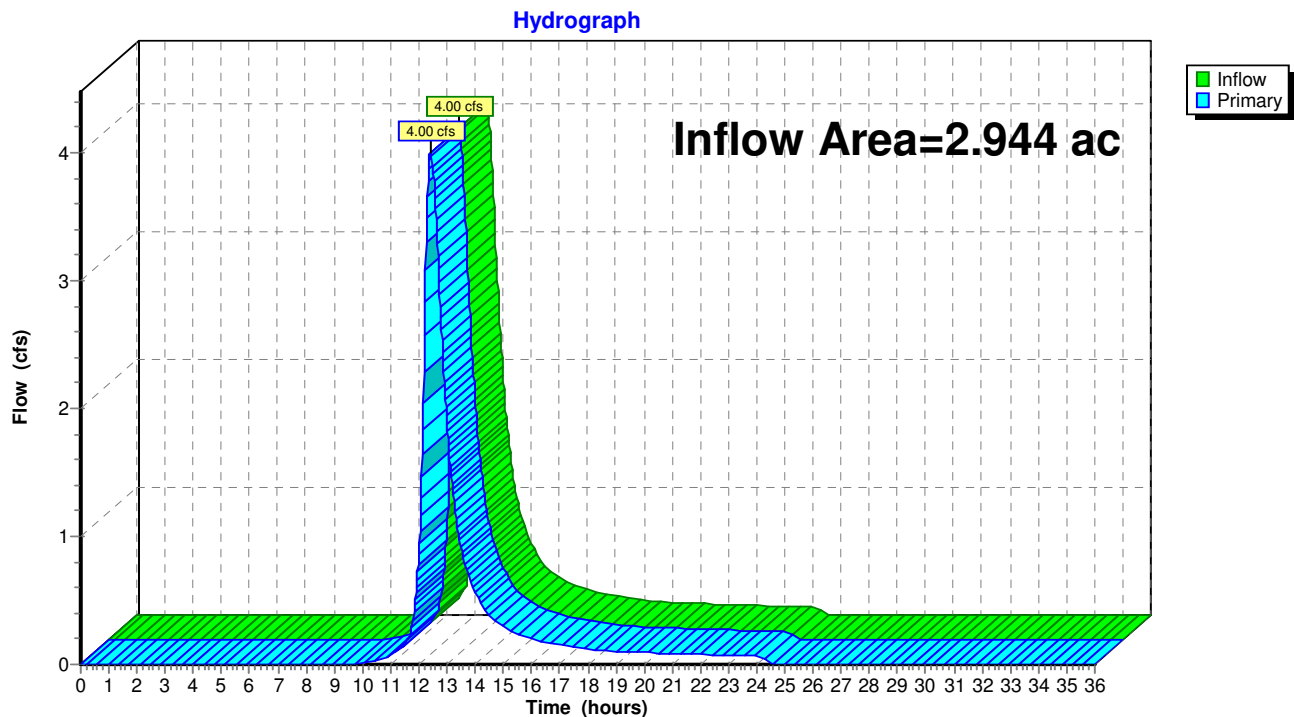
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Pond EP2: Existing Drywell 2



Link EDP1: DP1 (Existing)



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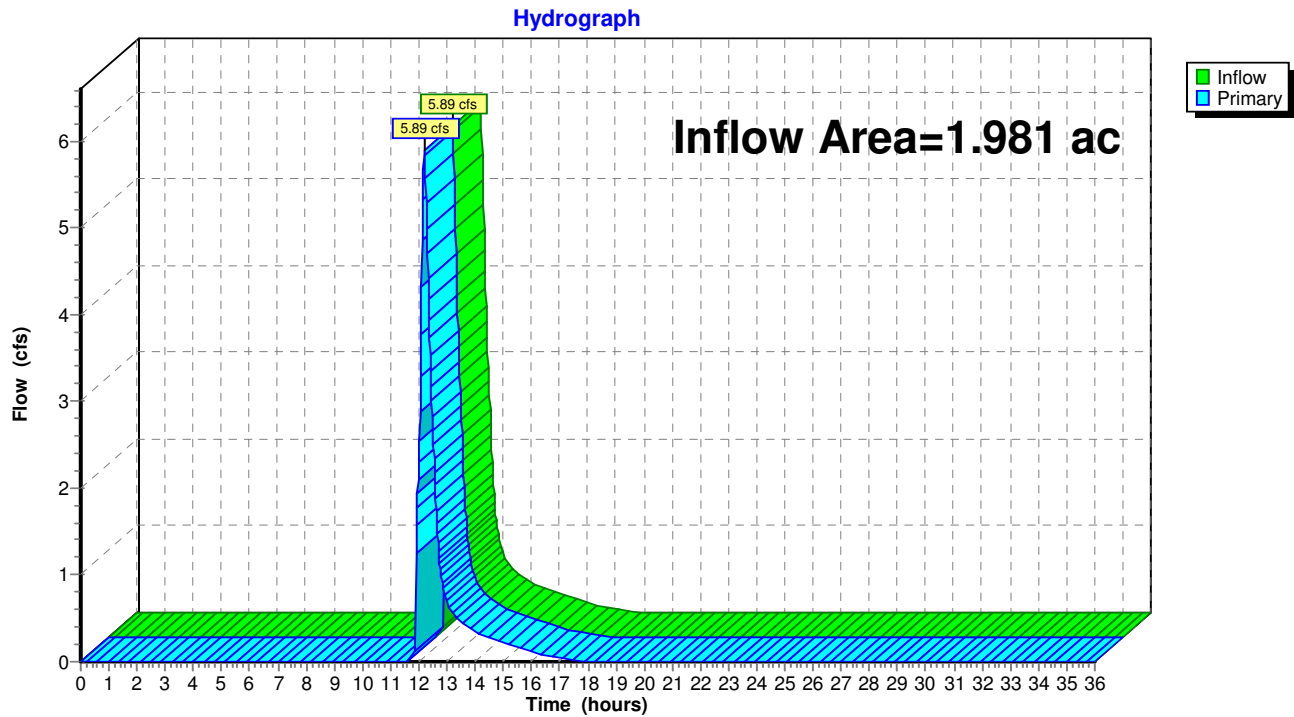
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Link EPD3: DP3 (Existing)



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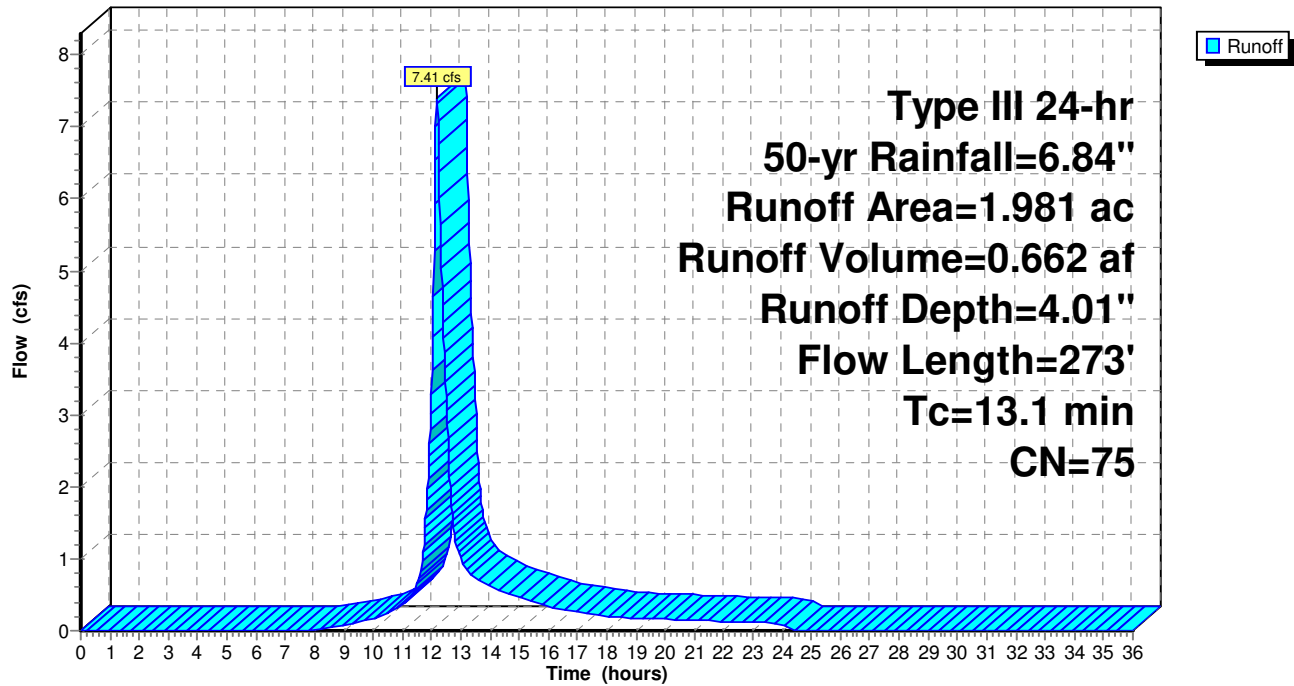
Existing Conditions
Type III 24-hr 50-yr Rainfall=6.84"

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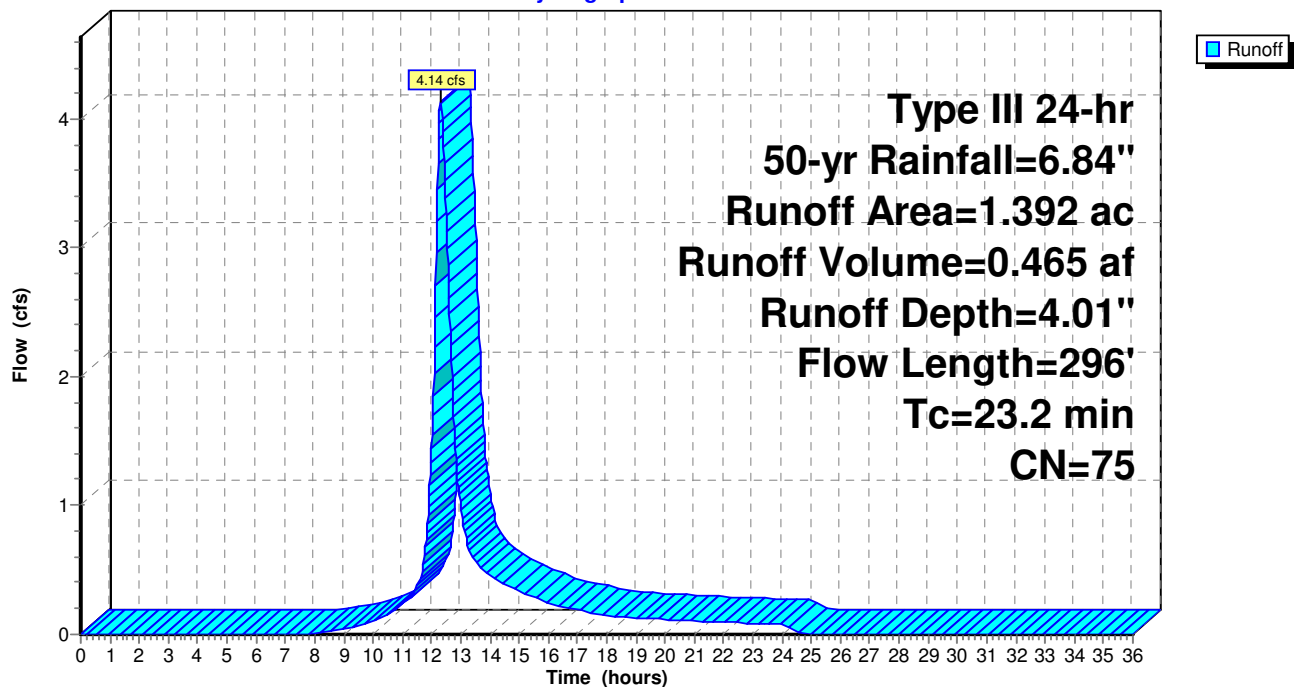
Subcatchment E1: E1

Hydrograph



Subcatchment E2: E2

Hydrograph



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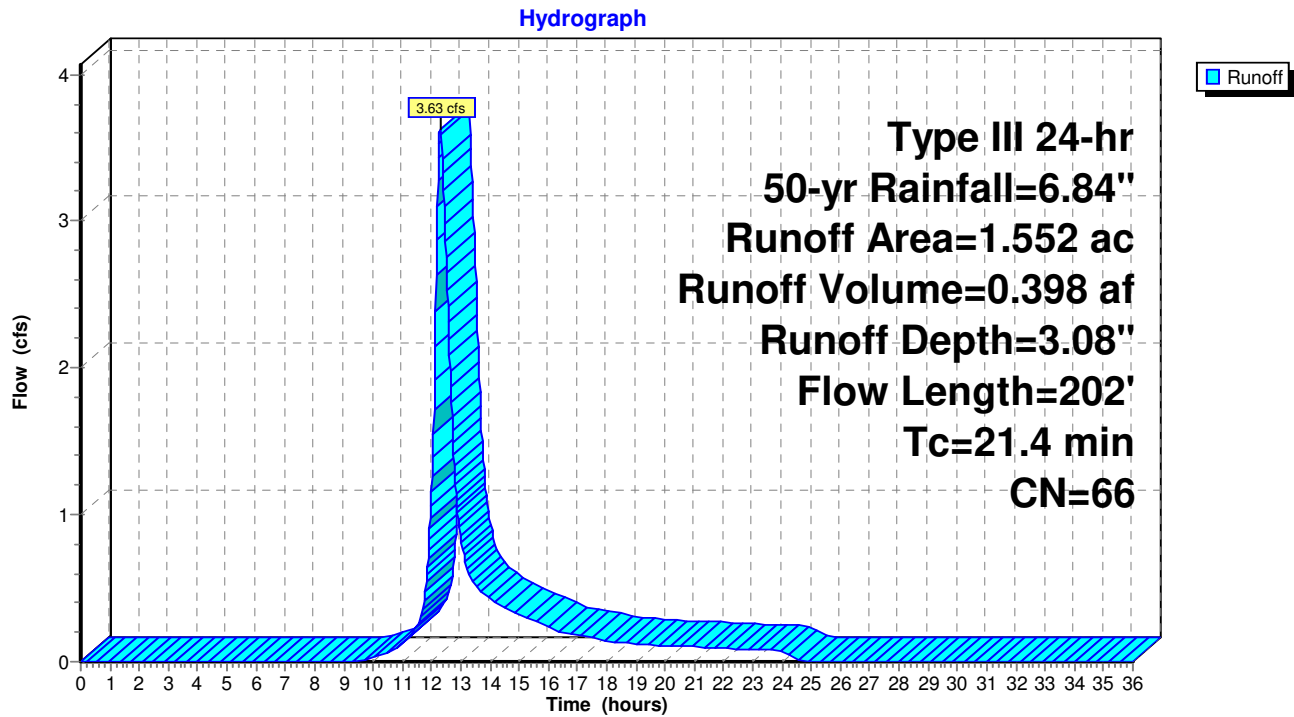
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Type III 24-hr 50-yr Rainfall=6.84"

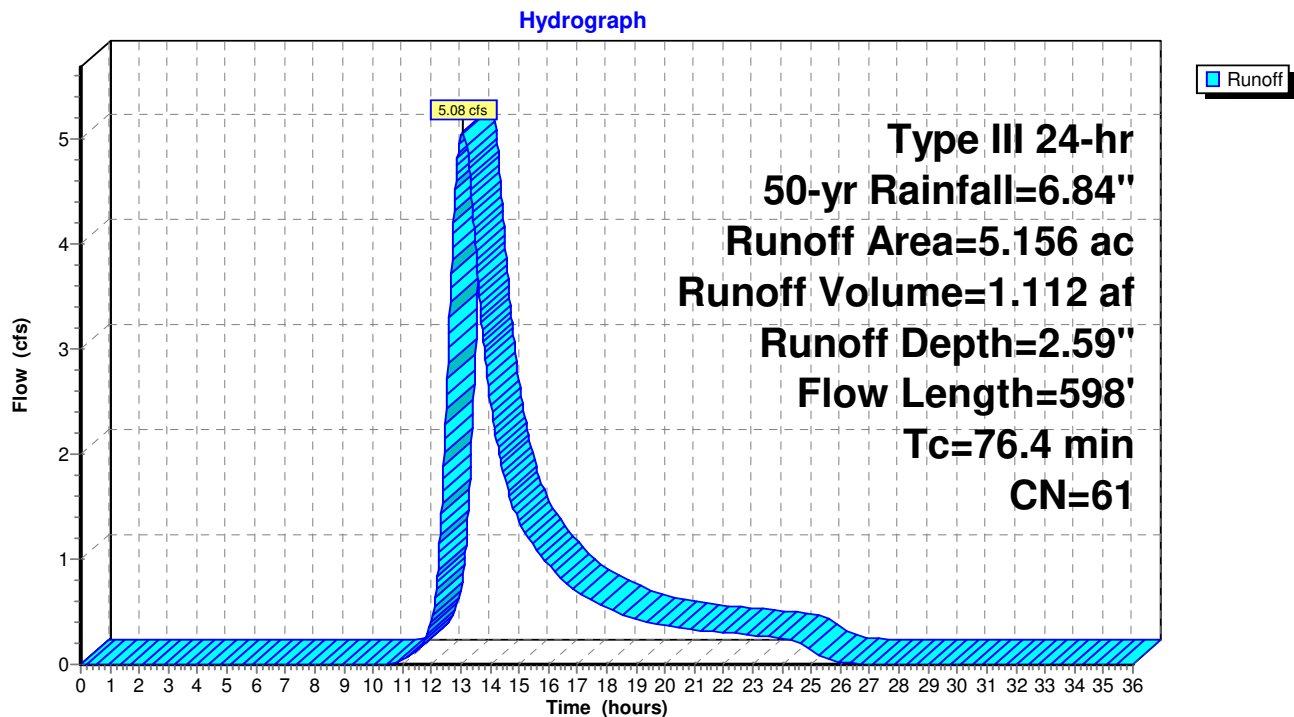
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Subcatchment E3: E3



Subcatchment E4: E4 (EDP2)



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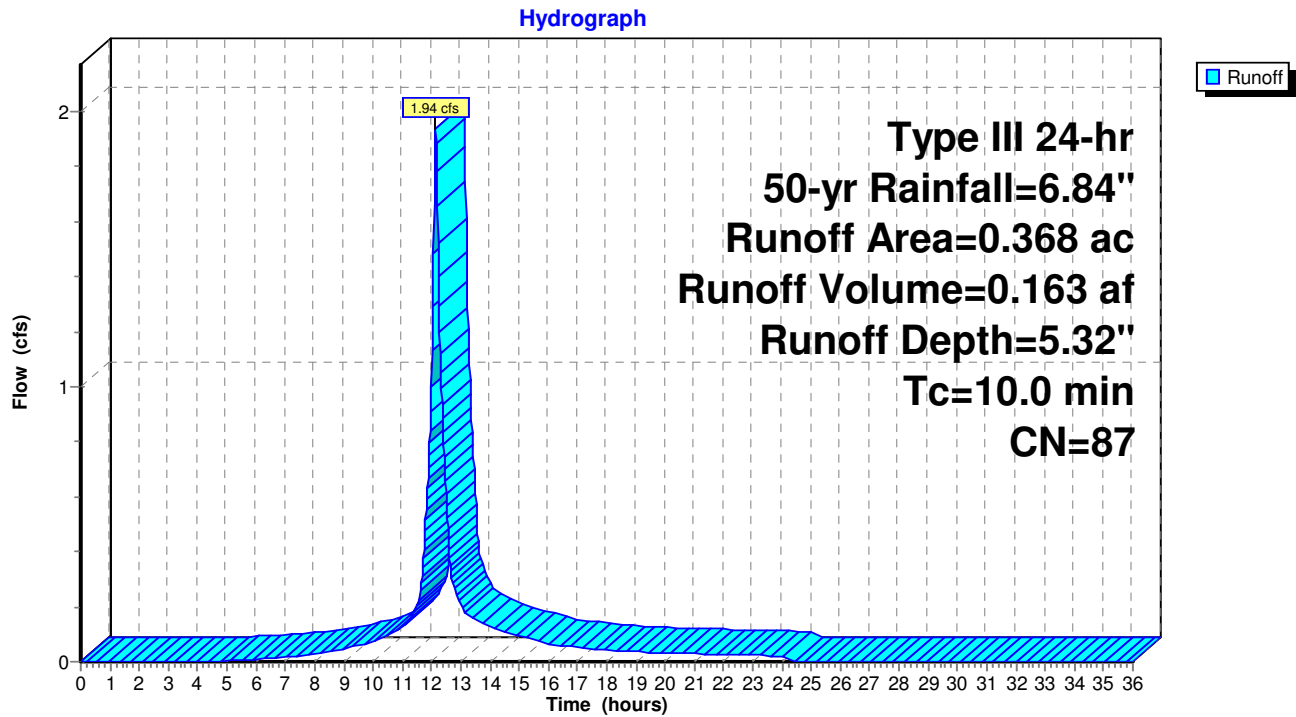
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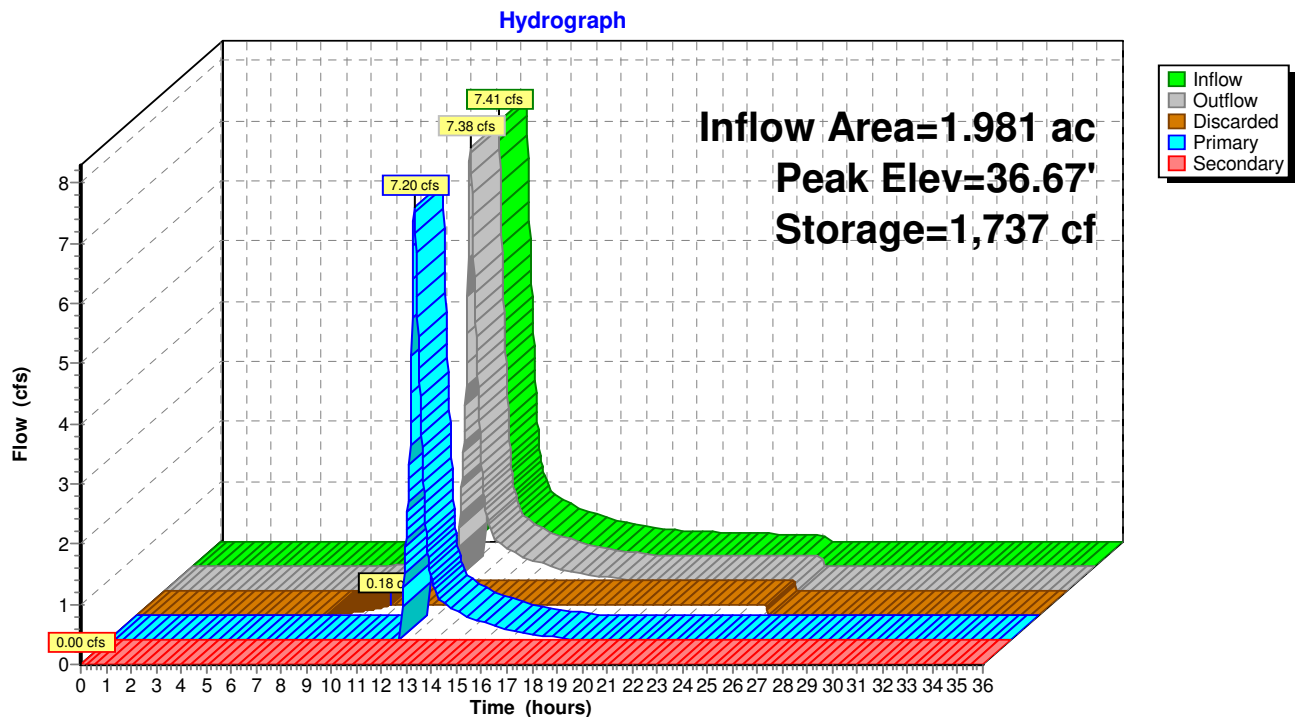
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Subcatchment E5: E5



Pond EP1: Existing Drywell 1



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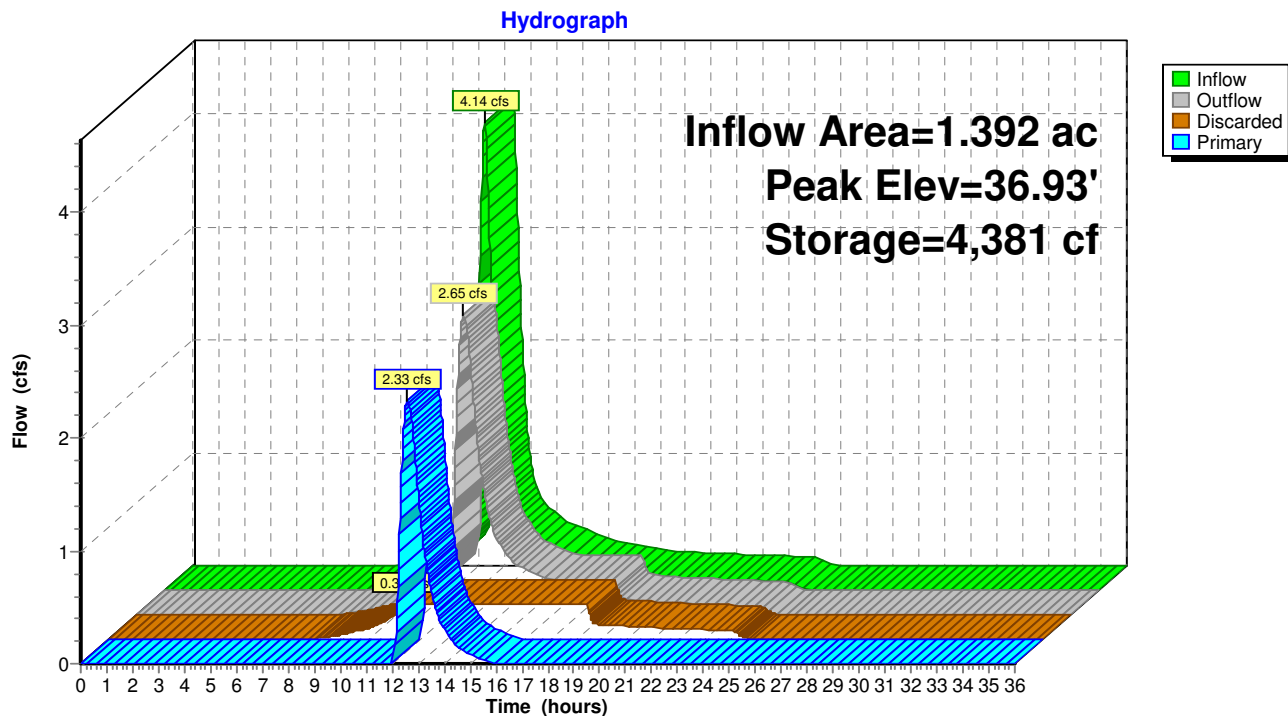
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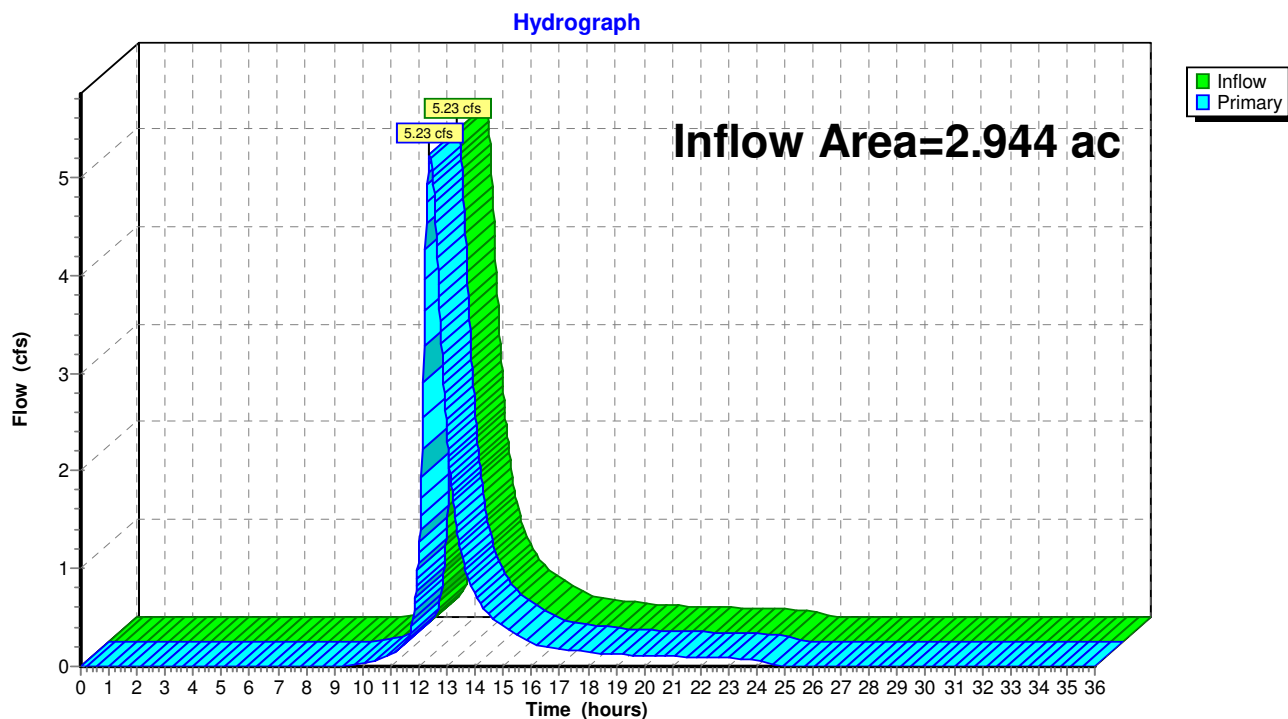
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Pond EP2: Existing Drywell 2



Link EDP1: DP1 (Existing)



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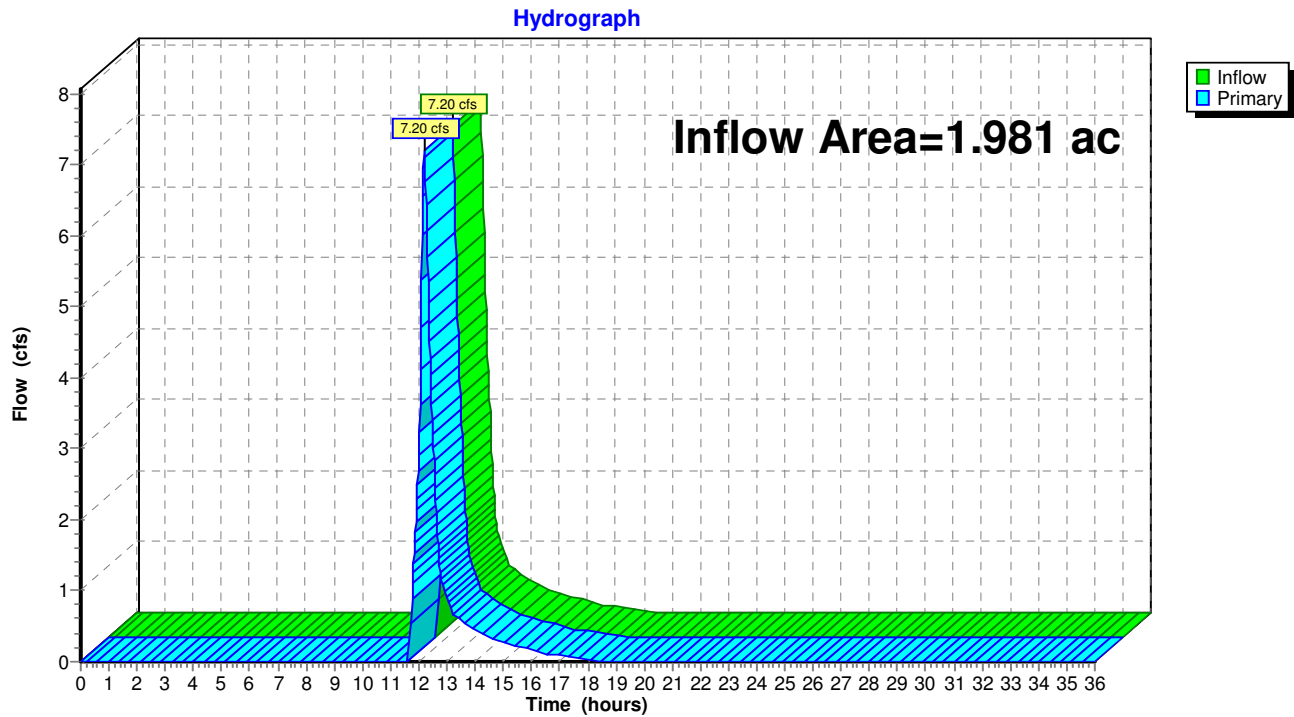
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Link EPD3: DP3 (Existing)



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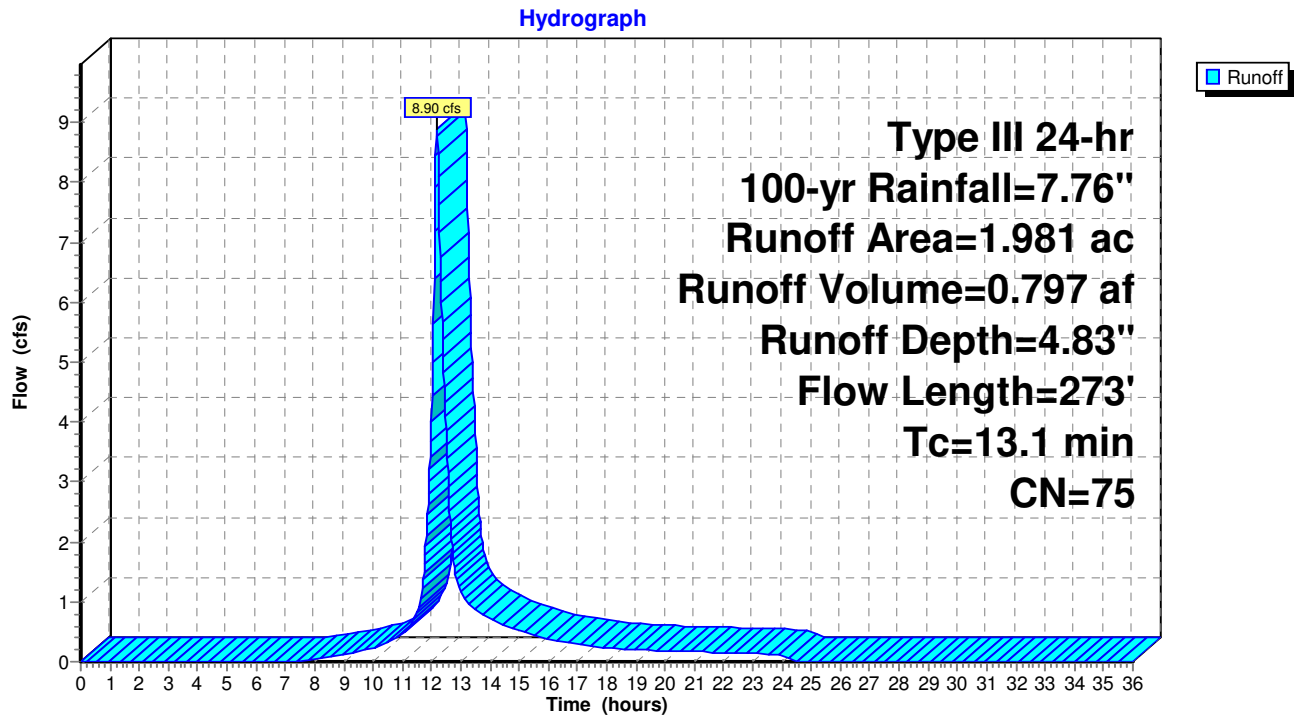
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Existing Conditions
Type III 24-hr 100-yr Rainfall=7.76"

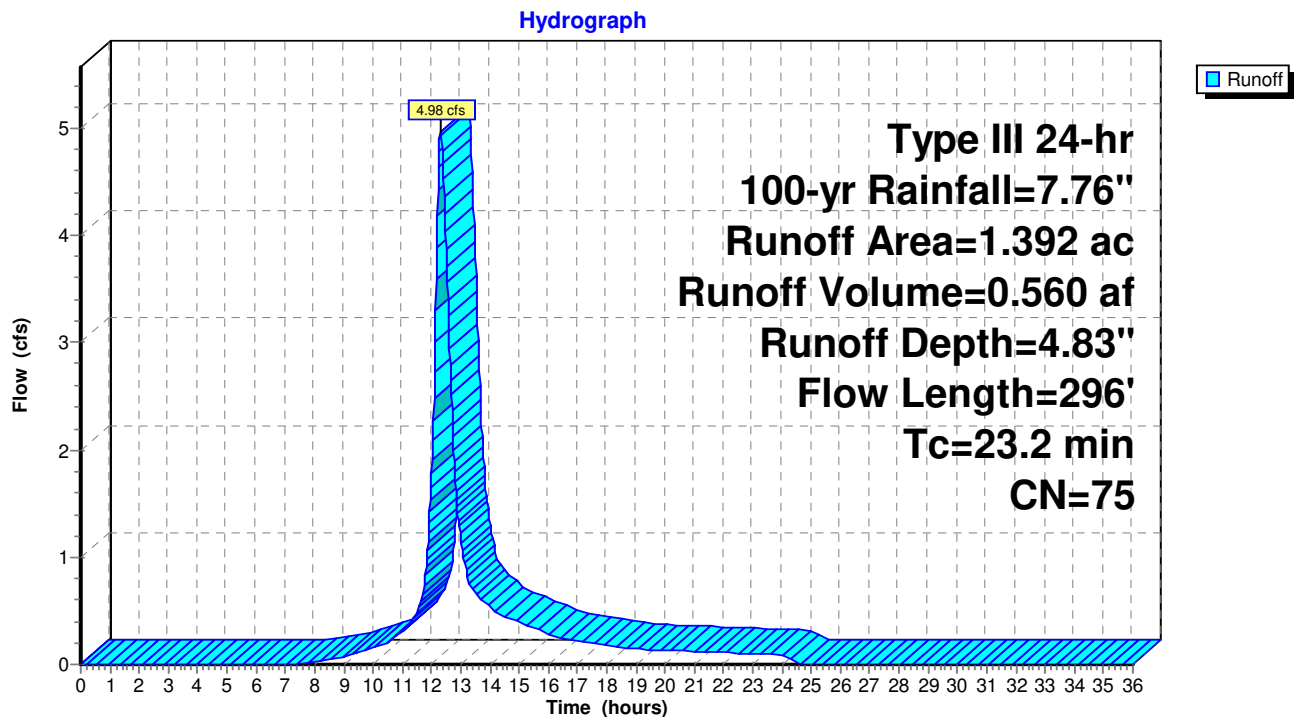
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Subcatchment E1: E1



Subcatchment E2: E2



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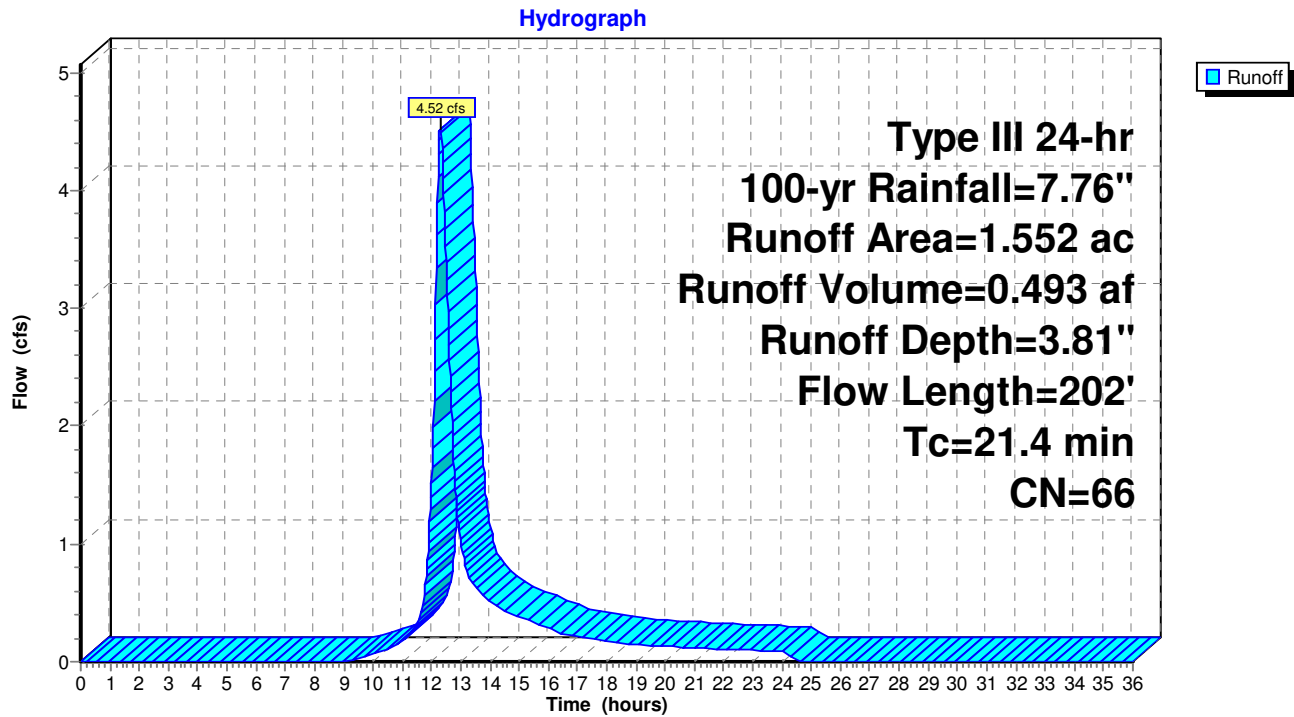
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Existing Conditions
Type III 24-hr 100-yr Rainfall=7.76"

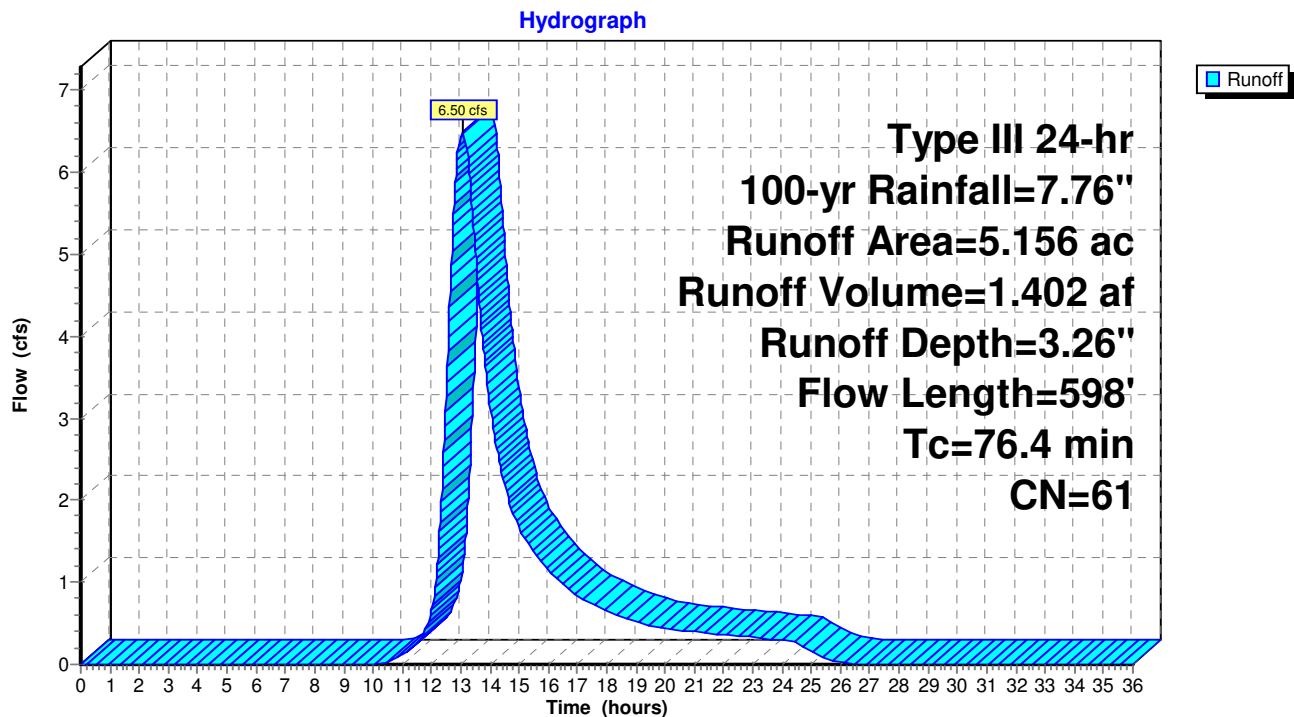
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Subcatchment E3: E3



Subcatchment E4: E4 (EDP2)



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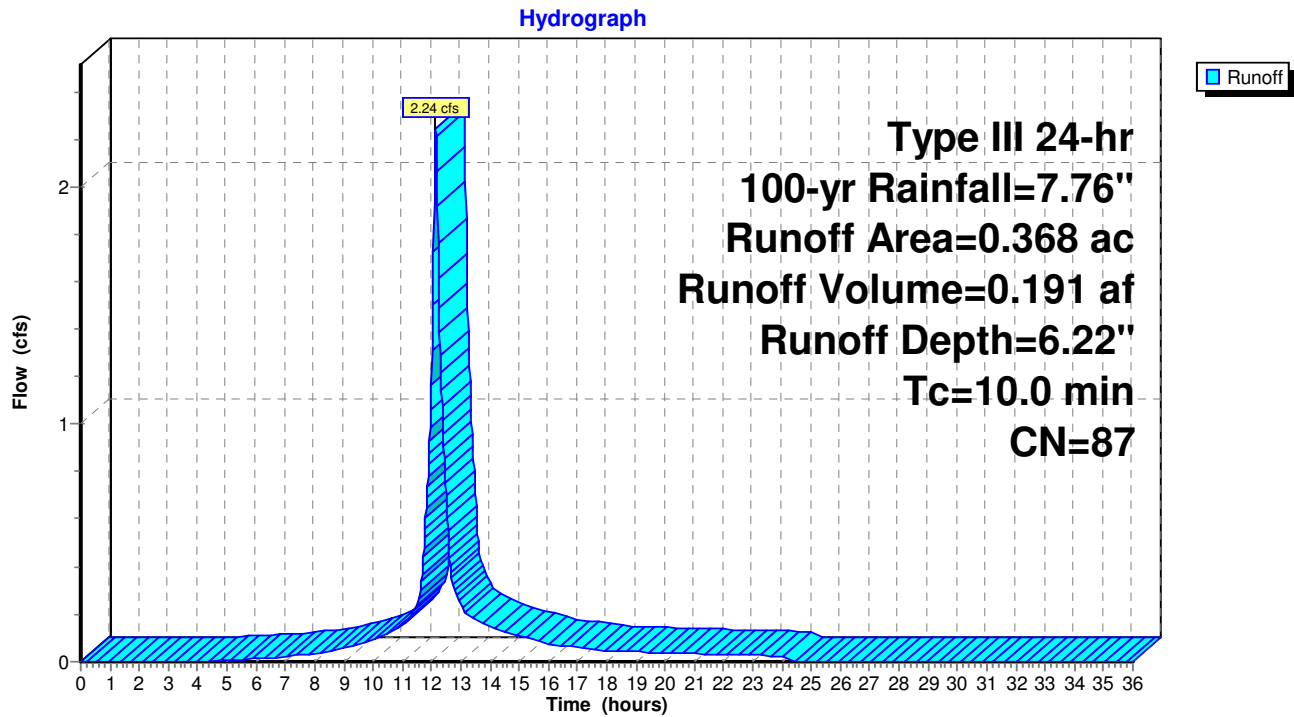
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Type III 24-hr 100-yr Rainfall=7.76"

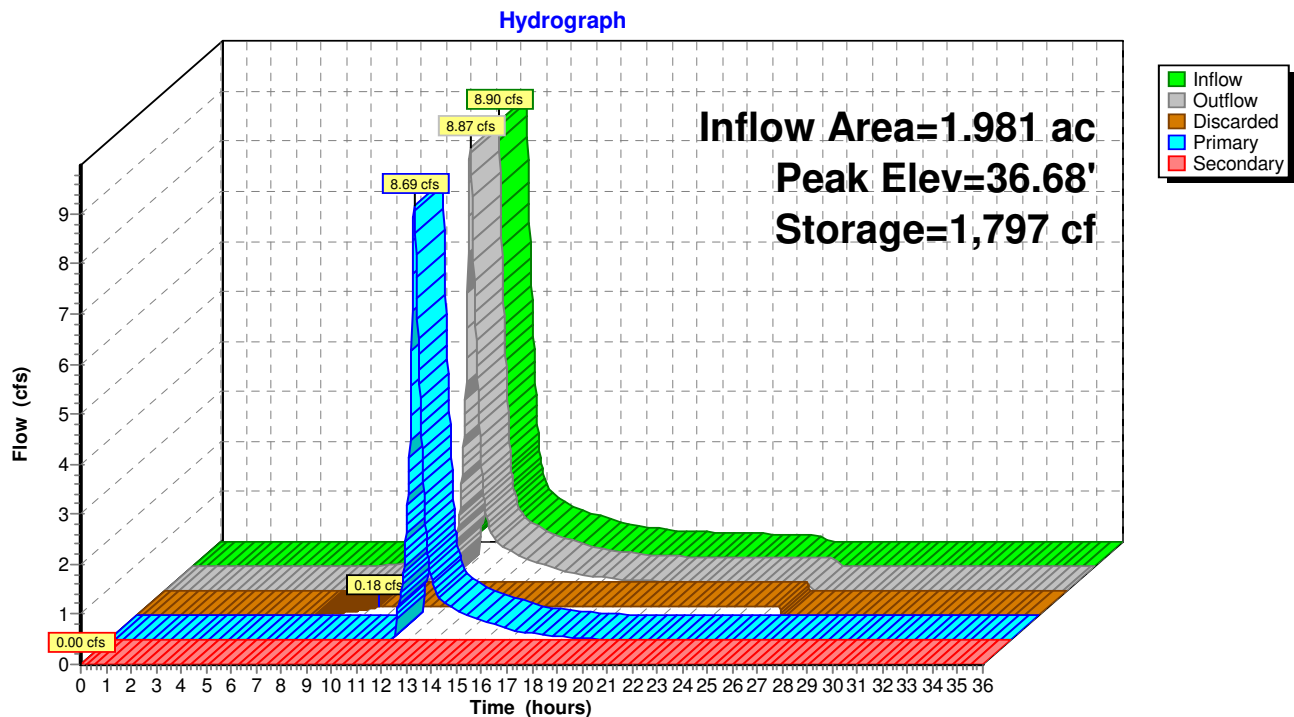
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Subcatchment E5: E5



Pond EP1: Existing Drywell 1



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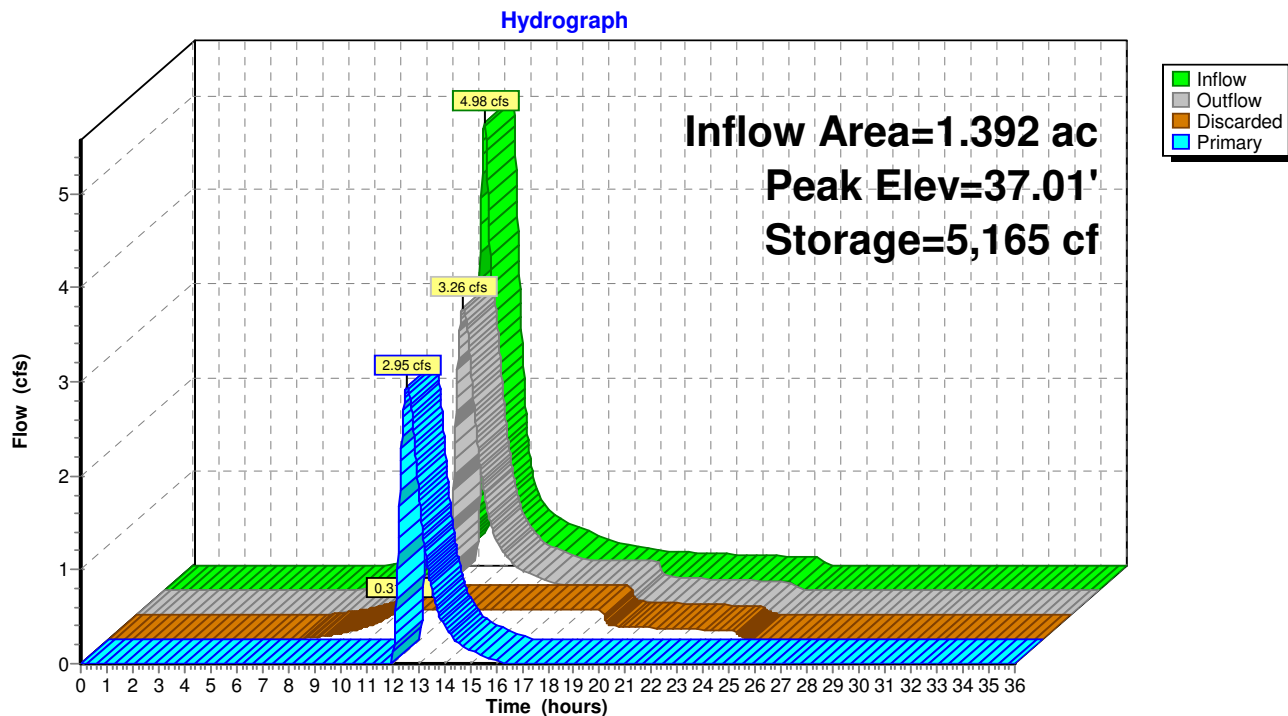
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Existing Conditions
Type III 24-hr 100-yr Rainfall=7.76"

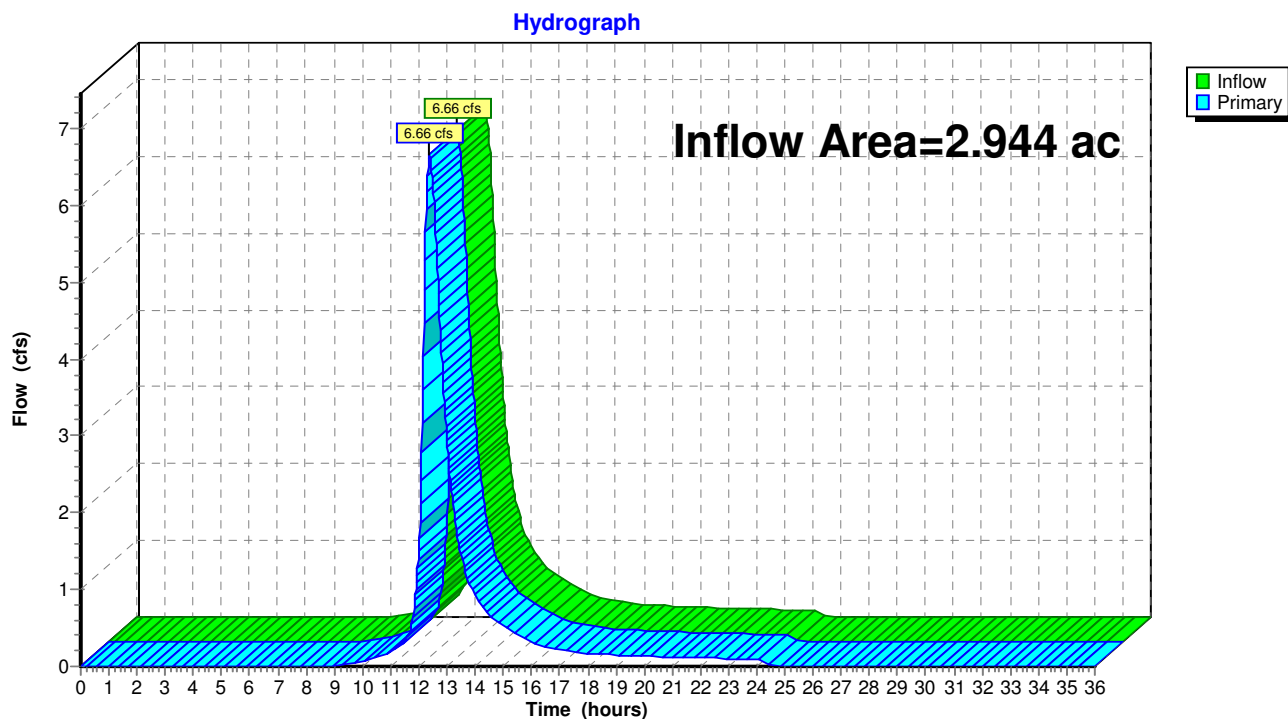
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Pond EP2: Existing Drywell 2



Link EDP1: DP1 (Existing)



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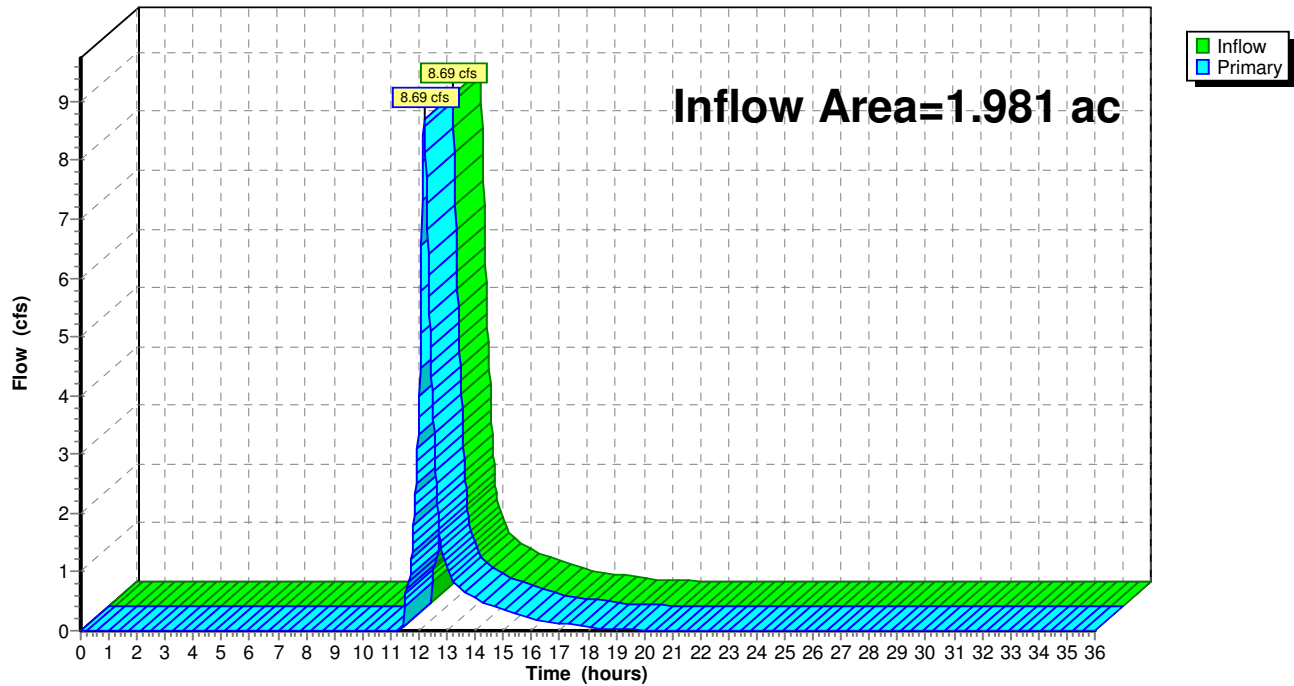
Existing Conditions
Type III 24-hr 100-yr Rainfall=7.76"

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Link EPD3: DP3 (Existing)

Hydrograph



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Existing Conditions
Type III 24-hr 100-yr Rainfall=7.76"

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Summary for Pond EP1: Existing Drywell 1

Inflow Area = 1.981 ac, 33.42% Impervious, Inflow Depth = 4.83" for 100-yr event
 Inflow = 8.90 cfs @ 12.18 hrs, Volume= 0.797 af
 Outflow = 8.87 cfs @ 12.19 hrs, Volume= 0.797 af, Atten= 0%, Lag= 0.7 min
 Discarded = 0.18 cfs @ 9.66 hrs, Volume= 0.247 af
 Primary = 8.69 cfs @ 12.19 hrs, Volume= 0.549 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Peak Elev= 36.68' @ 12.19 hrs Surf.Area= 28 sf Storage= 1,797 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 32.2 min (854.1 - 822.0)

Volume	Invert	Avail.Storage	Storage Description
#1	33.00'	8 cf	6.00'D x 1.85'H Vertical Cone/Cylinder 52 cf Overall - 32 cf Embedded = 21 cf x 40.0% Voids
#2	33.00'	23 cf	4.00'D x 1.85'H Vertical Cone/Cylinder Inside #1 32 cf Overall - 4.0" Wall Thickness = 23 cf
#3	34.85'	3 cf	2.00'D x 1.00'H Vertical Cone/Cylinder -Impervious
#4	35.85'	23,050 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		23,085 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
35.85	12	0	0
36.00	13	2	2
36.50	3,433	862	863
37.00	12,642	4,019	4,882
37.50	24,994	9,409	14,291
37.60	27,388	2,619	16,910
37.70	31,031	2,921	19,831
37.80	33,354	3,219	23,050

Device	Routing	Invert	Outlet Devices
#1	Discarded	33.00'	120.000 in/hr Exfiltration over Wetted area
#2	Primary	36.60'	150.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#3	Secondary	37.60'	39.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

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Existing Conditions
Type III 24-hr 100-yr Rainfall=7.76"

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Discarded OutFlow Max=0.18 cfs @ 9.66 hrs HW=35.06' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.18 cfs)

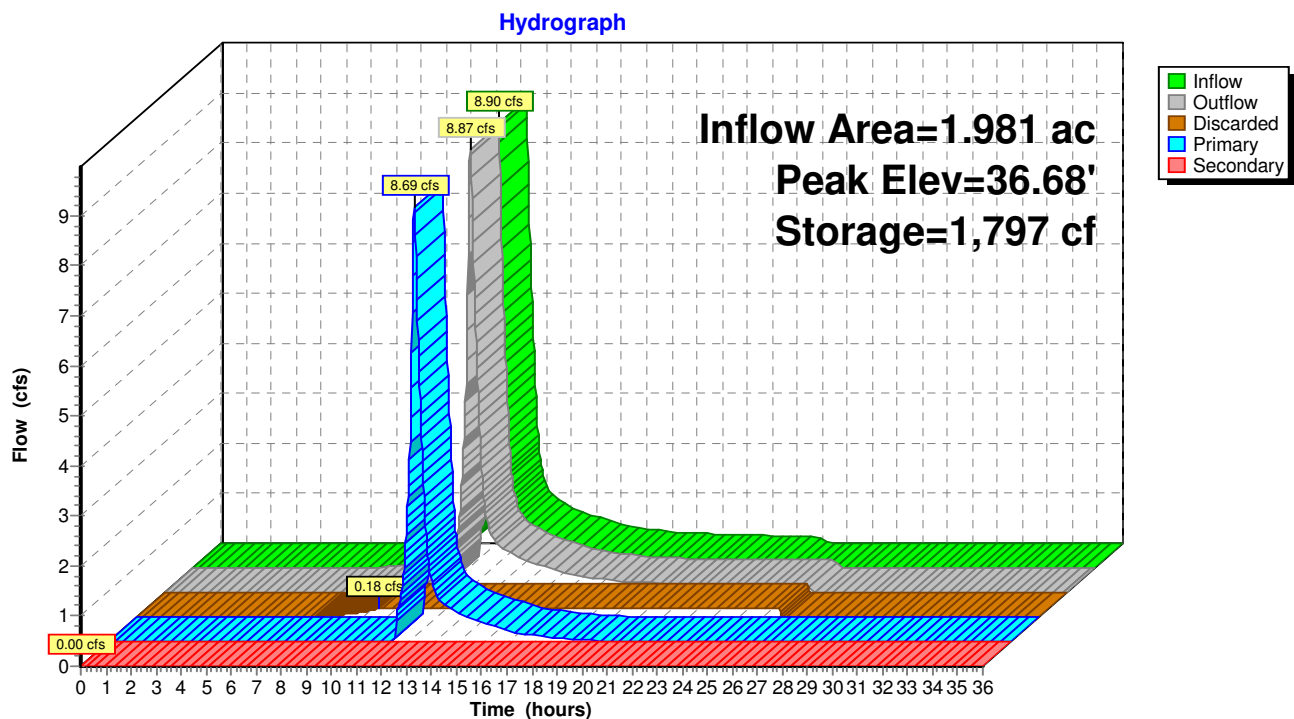
Primary OutFlow Max=8.67 cfs @ 12.19 hrs HW=36.68' TW=0.00' (Dynamic Tailwater)

↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 8.67 cfs @ 0.75 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=33.00' TW=30.10' (Dynamic Tailwater)

↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond EP1: Existing Drywell 1



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Summary for Pond EP2: Existing Drywell 2

Inflow Area = 1.392 ac, 34.84% Impervious, Inflow Depth = 4.83" for 100-yr event
 Inflow = 4.98 cfs @ 12.31 hrs, Volume= 0.560 af
 Outflow = 3.26 cfs @ 12.58 hrs, Volume= 0.560 af, Atten= 34%, Lag= 15.9 min
 Discarded = 0.31 cfs @ 11.16 hrs, Volume= 0.289 af
 Primary = 2.95 cfs @ 12.58 hrs, Volume= 0.271 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Peak Elev= 37.01' @ 12.58 hrs Surf.Area= 28 sf Storage= 5,165 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 31.4 min (862.7 - 831.3)

Volume	Invert	Avail.Storage	Storage Description
#1	30.10'	20 cf	6.00'D x 4.49'H Vertical Cone/Cylinder 127 cf Overall - 77 cf Embedded = 50 cf x 40.0% Voids
#2	30.10'	56 cf	4.00'D x 4.49'H Vertical Cone/Cylinder Inside #1 77 cf Overall - 4.0" Wall Thickness = 56 cf
#3	34.59'	3 cf	2.00'D x 1.00'H Vertical Cone/Cylinder -Impervious
#4	35.59'	12,344 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		12,423 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
35.59	12	0	0
36.00	362	77	77
36.50	4,053	1,104	1,180
37.00	11,319	3,843	5,023
37.50	17,962	7,320	12,344

Device	Routing	Invert	Outlet Devices
#1	Discarded	30.10'	120.000 in/hr Exfiltration over Wetted area
#2	Primary	36.50'	3.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.31 cfs @ 11.16 hrs HW=35.04' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.31 cfs)**Primary OutFlow** Max=2.95 cfs @ 12.58 hrs HW=37.01' TW=0.00' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 2.95 cfs @ 1.95 fps)

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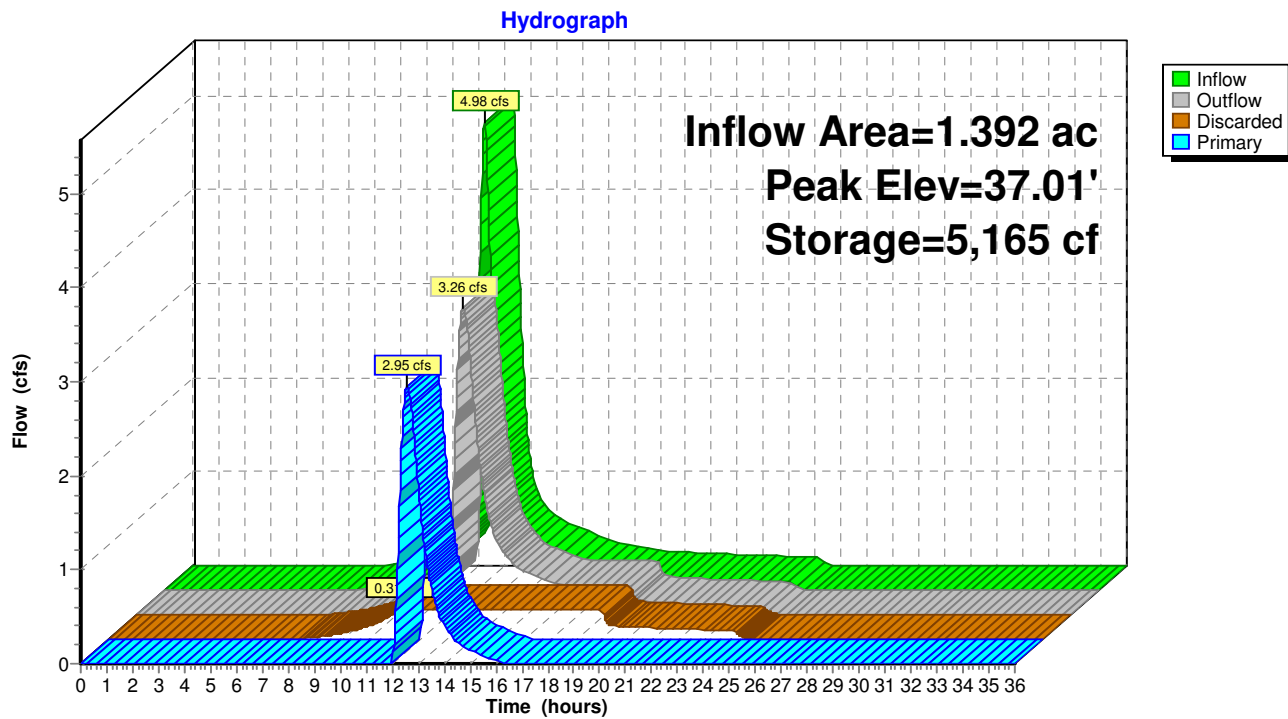
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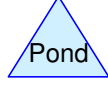
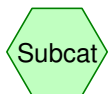
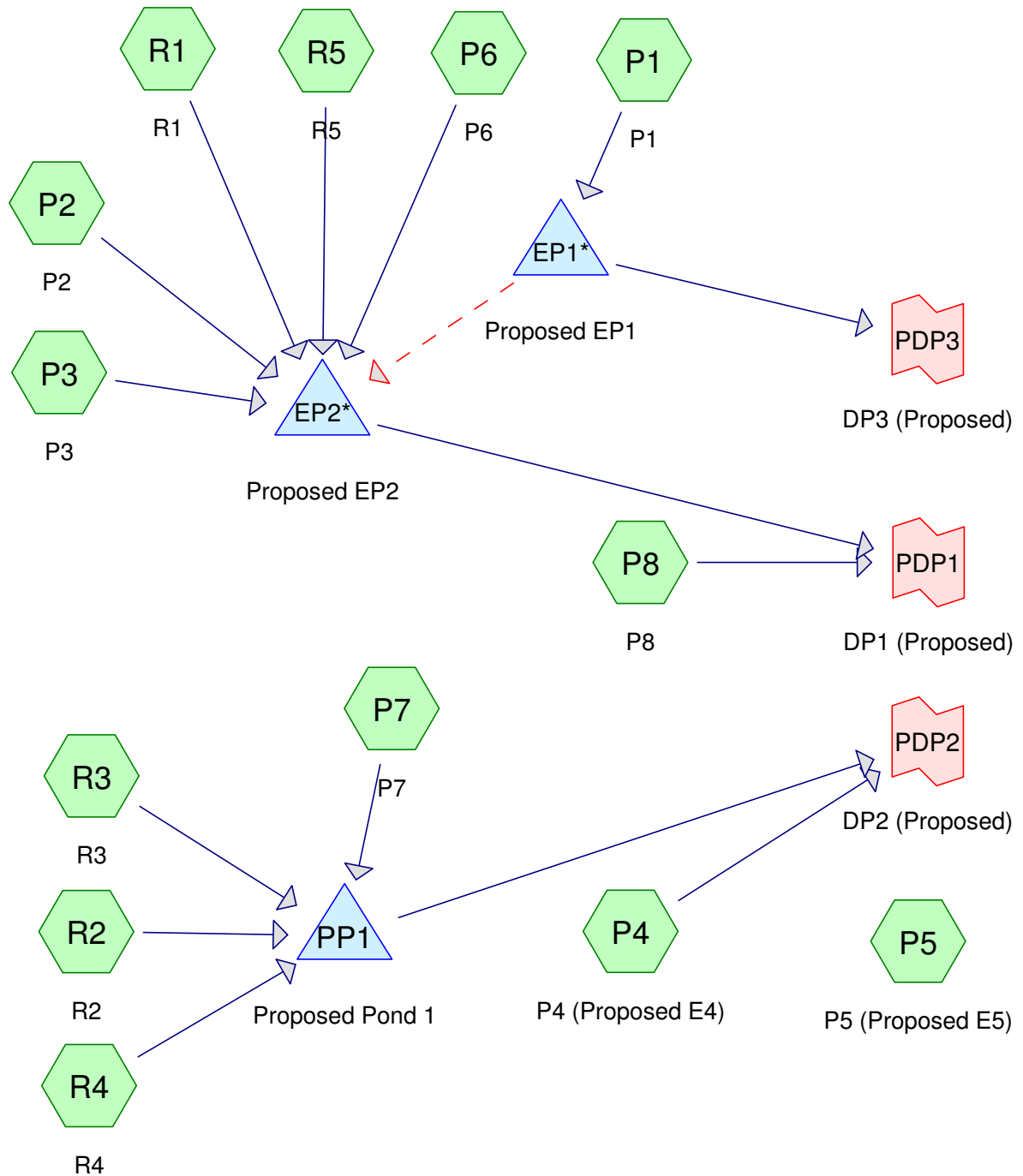
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Pond EP2: Existing Drywell 2



APPENDIX B
Watershed Computations
(Post-Development Drainage HydroCAD Report)

Proposed Conditions



Routing Diagram for 4512 - HydroCAD

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Proposed Conditions
Type III 24-hr 2-yr Rainfall=3.09"

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Page 2

Time span=0.00-36.00 hrs, dt=0.02 hrs, 1801 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P1: P1	Runoff Area=1.559 ac 41.18% Impervious Runoff Depth=1.19" Flow Length=273' Tc=13.1 min CN=78 Runoff=1.68 cfs 0.155 af
Subcatchment P2: P2	Runoff Area=1.314 ac 34.09% Impervious Runoff Depth=1.02" Flow Length=296' Tc=23.2 min CN=75 Runoff=0.94 cfs 0.112 af
Subcatchment P3: P3	Runoff Area=0.676 ac 43.64% Impervious Runoff Depth=1.13" Tc=8.0 min CN=77 Runoff=0.81 cfs 0.064 af
Subcatchment P4: P4 (Proposed E4)	Runoff Area=4.412 ac 0.00% Impervious Runoff Depth=0.40" Flow Length=533' Tc=62.3 min CN=61 Runoff=0.52 cfs 0.147 af
Subcatchment P5: P5 (Proposed E5)	Runoff Area=0.368 ac 70.11% Impervious Runoff Depth=1.82" Tc=10.0 min CN=87 Runoff=0.68 cfs 0.056 af
Subcatchment P6: P6	Runoff Area=0.267 ac 59.55% Impervious Runoff Depth=1.74" Tc=6.0 min CN=86 Runoff=0.54 cfs 0.039 af
Subcatchment P7: P7	Runoff Area=0.631 ac 35.02% Impervious Runoff Depth=0.91" Tc=8.0 min CN=73 Runoff=0.58 cfs 0.048 af
Subcatchment P8: P8	Runoff Area=0.739 ac 0.00% Impervious Runoff Depth=0.25" Flow Length=181' Slope=0.0160 '/' Tc=45.9 min CN=56 Runoff=0.05 cfs 0.015 af
Subcatchment R1: R1	Runoff Area=0.067 ac 100.00% Impervious Runoff Depth=2.86" Tc=6.0 min CN=98 Runoff=0.20 cfs 0.016 af
Subcatchment R2: R2	Runoff Area=0.050 ac 100.00% Impervious Runoff Depth=2.86" Tc=6.0 min CN=98 Runoff=0.15 cfs 0.012 af
Subcatchment R3: R3	Runoff Area=0.091 ac 100.00% Impervious Runoff Depth=2.86" Tc=6.0 min CN=98 Runoff=0.27 cfs 0.022 af
Subcatchment R4: R4	Runoff Area=0.117 ac 100.00% Impervious Runoff Depth=2.86" Tc=6.0 min CN=98 Runoff=0.35 cfs 0.028 af
Subcatchment R5: R5	Runoff Area=0.164 ac 100.00% Impervious Runoff Depth=2.86" Tc=6.0 min CN=98 Runoff=0.49 cfs 0.039 af
Pond EP1*: Proposed EP1	Peak Elev=36.61' Storage=988 cf Inflow=1.68 cfs 0.155 af Discarded=0.70 cfs 0.153 af Primary=0.22 cfs 0.002 af Secondary=0.00 cfs 0.000 af Outflow=0.92 cfs 0.155 af
Pond EP2*: Proposed EP2	Peak Elev=34.95' Storage=4,142 cf Inflow=2.42 cfs 0.269 af Discarded=0.39 cfs 0.269 af Primary=0.00 cfs 0.000 af Outflow=0.39 cfs 0.269 af
Pond PP1: Proposed Pond 1	Peak Elev=33.48' Storage=764 cf Inflow=1.32 cfs 0.109 af Discarded=0.72 cfs 0.109 af Primary=0.00 cfs 0.000 af Outflow=0.72 cfs 0.109 af

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Type III 24-hr 2-yr Rainfall=3.09"

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Link PDP1: DP1 (Proposed)

Inflow=0.05 cfs 0.015 af

Primary=0.05 cfs 0.015 af

Link PDP2: DP2 (Proposed)

Inflow=0.52 cfs 0.147 af

Primary=0.52 cfs 0.147 af

Link PDP3: DP3 (Proposed)

Inflow=0.22 cfs 0.002 af

Primary=0.22 cfs 0.002 af

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Proposed Conditions
Type III 24-hr 10-yr Rainfall=4.89"

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Time span=0.00-36.00 hrs, dt=0.02 hrs, 1801 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P1: P1	Runoff Area=1.559 ac 41.18% Impervious Runoff Depth=2.62" Flow Length=273' Tc=13.1 min CN=78 Runoff=3.81 cfs 0.340 af
Subcatchment P2: P2	Runoff Area=1.314 ac 34.09% Impervious Runoff Depth=2.36" Flow Length=296' Tc=23.2 min CN=75 Runoff=2.29 cfs 0.258 af
Subcatchment P3: P3	Runoff Area=0.676 ac 43.64% Impervious Runoff Depth=2.53" Tc=8.0 min CN=77 Runoff=1.87 cfs 0.143 af
Subcatchment P4: P4 (Proposed E4)	Runoff Area=4.412 ac 0.00% Impervious Runoff Depth=1.30" Flow Length=533' Tc=62.3 min CN=61 Runoff=2.32 cfs 0.479 af
Subcatchment P5: P5 (Proposed E5)	Runoff Area=0.368 ac 70.11% Impervious Runoff Depth=3.46" Tc=10.0 min CN=87 Runoff=1.28 cfs 0.106 af
Subcatchment P6: P6	Runoff Area=0.267 ac 59.55% Impervious Runoff Depth=3.36" Tc=6.0 min CN=86 Runoff=1.04 cfs 0.075 af
Subcatchment P7: P7	Runoff Area=0.631 ac 35.02% Impervious Runoff Depth=2.19" Tc=8.0 min CN=73 Runoff=1.50 cfs 0.115 af
Subcatchment P8: P8	Runoff Area=0.739 ac 0.00% Impervious Runoff Depth=0.99" Flow Length=181' Slope=0.0160 '/' Tc=45.9 min CN=56 Runoff=0.32 cfs 0.061 af
Subcatchment R1: R1	Runoff Area=0.067 ac 100.00% Impervious Runoff Depth=4.65" Tc=6.0 min CN=98 Runoff=0.32 cfs 0.026 af
Subcatchment R2: R2	Runoff Area=0.050 ac 100.00% Impervious Runoff Depth=4.65" Tc=6.0 min CN=98 Runoff=0.24 cfs 0.019 af
Subcatchment R3: R3	Runoff Area=0.091 ac 100.00% Impervious Runoff Depth=4.65" Tc=6.0 min CN=98 Runoff=0.43 cfs 0.035 af
Subcatchment R4: R4	Runoff Area=0.117 ac 100.00% Impervious Runoff Depth=4.65" Tc=6.0 min CN=98 Runoff=0.56 cfs 0.045 af
Subcatchment R5: R5	Runoff Area=0.164 ac 100.00% Impervious Runoff Depth=4.65" Tc=6.0 min CN=98 Runoff=0.78 cfs 0.064 af
Pond EP1*: Proposed EP1	Peak Elev=36.64' Storage=1,132 cf Inflow=3.81 cfs 0.340 af Discarded=0.70 cfs 0.259 af Primary=3.09 cfs 0.081 af Secondary=0.00 cfs 0.000 af Outflow=3.79 cfs 0.340 af
Pond EP2*: Proposed EP2	Peak Elev=36.15' Storage=12,358 cf Inflow=5.13 cfs 0.565 af Discarded=0.39 cfs 0.565 af Primary=0.00 cfs 0.000 af Outflow=0.39 cfs 0.565 af
Pond PP1: Proposed Pond 1	Peak Elev=33.93' Storage=1,597 cf Inflow=2.68 cfs 0.215 af Discarded=1.45 cfs 0.215 af Primary=0.00 cfs 0.000 af Outflow=1.45 cfs 0.215 af

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Type III 24-hr 10-yr Rainfall=4.89"

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Link PDP1: DP1 (Proposed)

Inflow=0.32 cfs 0.061 af

Primary=0.32 cfs 0.061 af

Link PDP2: DP2 (Proposed)

Inflow=2.32 cfs 0.479 af

Primary=2.32 cfs 0.479 af

Link PDP3: DP3 (Proposed)

Inflow=3.09 cfs 0.081 af

Primary=3.09 cfs 0.081 af

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Proposed Conditions
Type III 24-hr 25-yr Rainfall=6.02"

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Time span=0.00-36.00 hrs, dt=0.02 hrs, 1801 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P1: P1	Runoff Area=1.559 ac 41.18% Impervious Runoff Depth=3.60" Flow Length=273' Tc=13.1 min CN=78 Runoff=5.23 cfs 0.467 af
Subcatchment P2: P2	Runoff Area=1.314 ac 34.09% Impervious Runoff Depth=3.30" Flow Length=296' Tc=23.2 min CN=75 Runoff=3.21 cfs 0.361 af
Subcatchment P3: P3	Runoff Area=0.676 ac 43.64% Impervious Runoff Depth=3.50" Tc=8.0 min CN=77 Runoff=2.58 cfs 0.197 af
Subcatchment P4: P4 (Proposed E4)	Runoff Area=4.412 ac 0.00% Impervious Runoff Depth=2.02" Flow Length=533' Tc=62.3 min CN=61 Runoff=3.79 cfs 0.742 af
Subcatchment P5: P5 (Proposed E5)	Runoff Area=0.368 ac 70.11% Impervious Runoff Depth=4.54" Tc=10.0 min CN=87 Runoff=1.66 cfs 0.139 af
Subcatchment P6: P6	Runoff Area=0.267 ac 59.55% Impervious Runoff Depth=4.43" Tc=6.0 min CN=86 Runoff=1.35 cfs 0.099 af
Subcatchment P7: P7	Runoff Area=0.631 ac 35.02% Impervious Runoff Depth=3.11" Tc=8.0 min CN=73 Runoff=2.14 cfs 0.163 af
Subcatchment P8: P8	Runoff Area=0.739 ac 0.00% Impervious Runoff Depth=1.61" Flow Length=181' Slope=0.0160 '/' Tc=45.9 min CN=56 Runoff=0.58 cfs 0.099 af
Subcatchment R1: R1	Runoff Area=0.067 ac 100.00% Impervious Runoff Depth=5.78" Tc=6.0 min CN=98 Runoff=0.39 cfs 0.032 af
Subcatchment R2: R2	Runoff Area=0.050 ac 100.00% Impervious Runoff Depth=5.78" Tc=6.0 min CN=98 Runoff=0.29 cfs 0.024 af
Subcatchment R3: R3	Runoff Area=0.091 ac 100.00% Impervious Runoff Depth=5.78" Tc=6.0 min CN=98 Runoff=0.54 cfs 0.044 af
Subcatchment R4: R4	Runoff Area=0.117 ac 100.00% Impervious Runoff Depth=5.78" Tc=6.0 min CN=98 Runoff=0.69 cfs 0.056 af
Subcatchment R5: R5	Runoff Area=0.164 ac 100.00% Impervious Runoff Depth=5.78" Tc=6.0 min CN=98 Runoff=0.97 cfs 0.079 af
Pond EP1*: Proposed EP1	Peak Elev=36.65' Storage=1,187 cf Inflow=5.23 cfs 0.467 af Discarded=0.70 cfs 0.323 af Primary=4.51 cfs 0.144 af Secondary=0.00 cfs 0.000 af Outflow=5.21 cfs 0.467 af
Pond EP2*: Proposed EP2	Peak Elev=36.25' Storage=13,901 cf Inflow=6.95 cfs 0.768 af Discarded=0.39 cfs 0.634 af Primary=1.89 cfs 0.134 af Outflow=2.28 cfs 0.768 af
Pond PP1: Proposed Pond 1	Peak Elev=34.21' Storage=2,171 cf Inflow=3.59 cfs 0.288 af Discarded=1.94 cfs 0.288 af Primary=0.00 cfs 0.000 af Outflow=1.94 cfs 0.288 af

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Link PDP1: DP1 (Proposed)

Inflow=2.47 cfs 0.233 af

Primary=2.47 cfs 0.233 af

Link PDP2: DP2 (Proposed)

Inflow=3.79 cfs 0.742 af

Primary=3.79 cfs 0.742 af

Link PDP3: DP3 (Proposed)

Inflow=4.51 cfs 0.144 af

Primary=4.51 cfs 0.144 af

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Type III 24-hr 50-yr Rainfall=6.84"

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Time span=0.00-36.00 hrs, dt=0.02 hrs, 1801 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P1: P1	Runoff Area=1.559 ac 41.18% Impervious Runoff Depth=4.33" Flow Length=273' Tc=13.1 min CN=78 Runoff=6.28 cfs 0.563 af
Subcatchment P2: P2	Runoff Area=1.314 ac 34.09% Impervious Runoff Depth=4.01" Flow Length=296' Tc=23.2 min CN=75 Runoff=3.91 cfs 0.439 af
Subcatchment P3: P3	Runoff Area=0.676 ac 43.64% Impervious Runoff Depth=4.22" Tc=8.0 min CN=77 Runoff=3.11 cfs 0.238 af
Subcatchment P4: P4 (Proposed E4)	Runoff Area=4.412 ac 0.00% Impervious Runoff Depth=2.59" Flow Length=533' Tc=62.3 min CN=61 Runoff=4.96 cfs 0.951 af
Subcatchment P5: P5 (Proposed E5)	Runoff Area=0.368 ac 70.11% Impervious Runoff Depth=5.32" Tc=10.0 min CN=87 Runoff=1.94 cfs 0.163 af
Subcatchment P6: P6	Runoff Area=0.267 ac 59.55% Impervious Runoff Depth=5.21" Tc=6.0 min CN=86 Runoff=1.58 cfs 0.116 af
Subcatchment P7: P7	Runoff Area=0.631 ac 35.02% Impervious Runoff Depth=3.80" Tc=8.0 min CN=73 Runoff=2.62 cfs 0.200 af
Subcatchment P8: P8	Runoff Area=0.739 ac 0.00% Impervious Runoff Depth=2.11" Flow Length=181' Slope=0.0160 '/' Tc=45.9 min CN=56 Runoff=0.78 cfs 0.130 af
Subcatchment R1: R1	Runoff Area=0.067 ac 100.00% Impervious Runoff Depth=6.60" Tc=6.0 min CN=98 Runoff=0.45 cfs 0.037 af
Subcatchment R2: R2	Runoff Area=0.050 ac 100.00% Impervious Runoff Depth=6.60" Tc=6.0 min CN=98 Runoff=0.34 cfs 0.028 af
Subcatchment R3: R3	Runoff Area=0.091 ac 100.00% Impervious Runoff Depth=6.60" Tc=6.0 min CN=98 Runoff=0.61 cfs 0.050 af
Subcatchment R4: R4	Runoff Area=0.117 ac 100.00% Impervious Runoff Depth=6.60" Tc=6.0 min CN=98 Runoff=0.78 cfs 0.064 af
Subcatchment R5: R5	Runoff Area=0.164 ac 100.00% Impervious Runoff Depth=6.60" Tc=6.0 min CN=98 Runoff=1.10 cfs 0.090 af
Pond EP1*: Proposed EP1	Peak Elev=36.66' Storage=1,225 cf Inflow=6.28 cfs 0.563 af Discarded=0.70 cfs 0.369 af Primary=5.56 cfs 0.194 af Secondary=0.00 cfs 0.000 af Outflow=6.26 cfs 0.563 af
Pond EP2*: Proposed EP2	Peak Elev=36.29' Storage=14,518 cf Inflow=8.30 cfs 0.920 af Discarded=0.39 cfs 0.668 af Primary=4.15 cfs 0.252 af Outflow=4.53 cfs 0.920 af
Pond PP1: Proposed Pond 1	Peak Elev=34.41' Storage=2,602 cf Inflow=4.28 cfs 0.342 af Discarded=2.30 cfs 0.342 af Primary=0.00 cfs 0.000 af Outflow=2.30 cfs 0.342 af

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Type III 24-hr 50-yr Rainfall=6.84"

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Link PDP1: DP1 (Proposed)

Inflow=4.83 cfs 0.382 af

Primary=4.83 cfs 0.382 af

Link PDP2: DP2 (Proposed)

Inflow=4.96 cfs 0.951 af

Primary=4.96 cfs 0.951 af

Link PDP3: DP3 (Proposed)

Inflow=5.56 cfs 0.194 af

Primary=5.56 cfs 0.194 af

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Type III 24-hr 100-yr Rainfall=7.76"

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Time span=0.00-36.00 hrs, dt=0.02 hrs, 1801 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment P1: P1	Runoff Area=1.559 ac 41.18% Impervious Runoff Depth=5.17" Flow Length=273' Tc=13.1 min CN=78 Runoff=7.47 cfs 0.672 af
Subcatchment P2: P2	Runoff Area=1.314 ac 34.09% Impervious Runoff Depth=4.83" Flow Length=296' Tc=23.2 min CN=75 Runoff=4.70 cfs 0.528 af
Subcatchment P3: P3	Runoff Area=0.676 ac 43.64% Impervious Runoff Depth=5.05" Tc=8.0 min CN=77 Runoff=3.71 cfs 0.285 af
Subcatchment P4: P4 (Proposed E4)	Runoff Area=4.412 ac 0.00% Impervious Runoff Depth=3.26" Flow Length=533' Tc=62.3 min CN=61 Runoff=6.34 cfs 1.200 af
Subcatchment P5: P5 (Proposed E5)	Runoff Area=0.368 ac 70.11% Impervious Runoff Depth=6.22" Tc=10.0 min CN=87 Runoff=2.24 cfs 0.191 af
Subcatchment P6: P6	Runoff Area=0.267 ac 59.55% Impervious Runoff Depth=6.10" Tc=6.0 min CN=86 Runoff=1.83 cfs 0.136 af
Subcatchment P7: P7	Runoff Area=0.631 ac 35.02% Impervious Runoff Depth=4.60" Tc=8.0 min CN=73 Runoff=3.17 cfs 0.242 af
Subcatchment P8: P8	Runoff Area=0.739 ac 0.00% Impervious Runoff Depth=2.73" Flow Length=181' Slope=0.0160 '/' Tc=45.9 min CN=56 Runoff=1.03 cfs 0.168 af
Subcatchment R1: R1	Runoff Area=0.067 ac 100.00% Impervious Runoff Depth=7.52" Tc=6.0 min CN=98 Runoff=0.51 cfs 0.042 af
Subcatchment R2: R2	Runoff Area=0.050 ac 100.00% Impervious Runoff Depth=7.52" Tc=6.0 min CN=98 Runoff=0.38 cfs 0.031 af
Subcatchment R3: R3	Runoff Area=0.091 ac 100.00% Impervious Runoff Depth=7.52" Tc=6.0 min CN=98 Runoff=0.69 cfs 0.057 af
Subcatchment R4: R4	Runoff Area=0.117 ac 100.00% Impervious Runoff Depth=7.52" Tc=6.0 min CN=98 Runoff=0.89 cfs 0.073 af
Subcatchment R5: R5	Runoff Area=0.164 ac 100.00% Impervious Runoff Depth=7.52" Tc=6.0 min CN=98 Runoff=1.25 cfs 0.103 af
Pond EP1*: Proposed EP1	Peak Elev=36.67' Storage=1,267 cf Inflow=7.47 cfs 0.672 af Discarded=0.70 cfs 0.418 af Primary=6.75 cfs 0.253 af Secondary=0.00 cfs 0.000 af Outflow=7.45 cfs 0.672 af
Pond EP2*: Proposed EP2	Peak Elev=36.32' Storage=15,063 cf Inflow=9.83 cfs 1.094 af Discarded=0.39 cfs 0.702 af Primary=6.45 cfs 0.392 af Outflow=6.83 cfs 1.094 af
Pond PP1: Proposed Pond 1	Peak Elev=34.62' Storage=3,100 cf Inflow=5.05 cfs 0.403 af Discarded=2.71 cfs 0.403 af Primary=0.00 cfs 0.000 af Outflow=2.71 cfs 0.403 af

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Type III 24-hr 100-yr Rainfall=7.76"

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Link PDP1: DP1 (Proposed)

Inflow=7.21 cfs 0.560 af

Primary=7.21 cfs 0.560 af

Link PDP2: DP2 (Proposed)

Inflow=6.34 cfs 1.200 af

Primary=6.34 cfs 1.200 af

Link PDP3: DP3 (Proposed)

Inflow=6.75 cfs 0.253 af

Primary=6.75 cfs 0.253 af

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Type III 24-hr 2-yr Rainfall=3.09"

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Summary for Subcatchment P1: P1

Runoff = 1.68 cfs @ 12.19 hrs, Volume= 0.155 af, Depth= 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-yr Rainfall=3.09"

Area (ac)	CN	Description
0.475	61	>75% Grass cover, Good, HSG B
0.277	74	>75% Grass cover, Good, HSG C
0.145	55	Woods, Good, HSG B
0.020	70	Woods, Good, HSG C
* 0.642	98	IMPERVIOUS
1.559	78	Weighted Average
0.917		58.82% Pervious Area
0.642		41.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0400	0.15		Sheet Flow, Grass SF Grass: Dense n= 0.240 P2= 3.09"
0.4	30	0.0400	1.40		Shallow Concentrated Flow, Grass SCF Short Grass Pasture Kv= 7.0 fps
0.6	25	0.0200	0.71		Shallow Concentrated Flow, Woodland SCF Woodland Kv= 5.0 fps
0.3	15	0.0200	0.99		Shallow Concentrated Flow, Grass SCF Short Grass Pasture Kv= 7.0 fps
0.8	103	0.0160	2.04		Shallow Concentrated Flow, PVMT SCF Unpaved Kv= 16.1 fps
13.1	273	Total			

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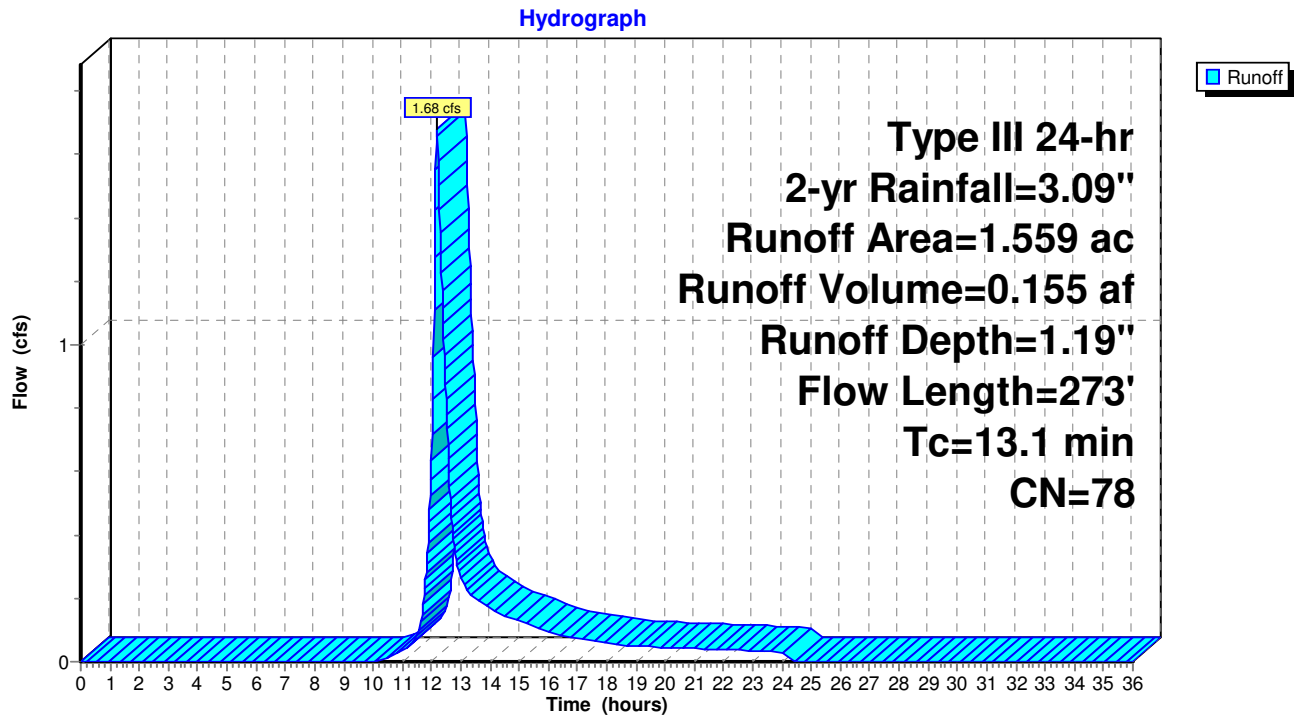
Proposed Conditions

Type III 24-hr 2-yr Rainfall=3.09"

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Subcatchment P1: P1



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Type III 24-hr 2-yr Rainfall=3.09"

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Summary for Subcatchment P2: P2

Runoff = 0.94 cfs @ 12.35 hrs, Volume= 0.112 af, Depth= 1.02"

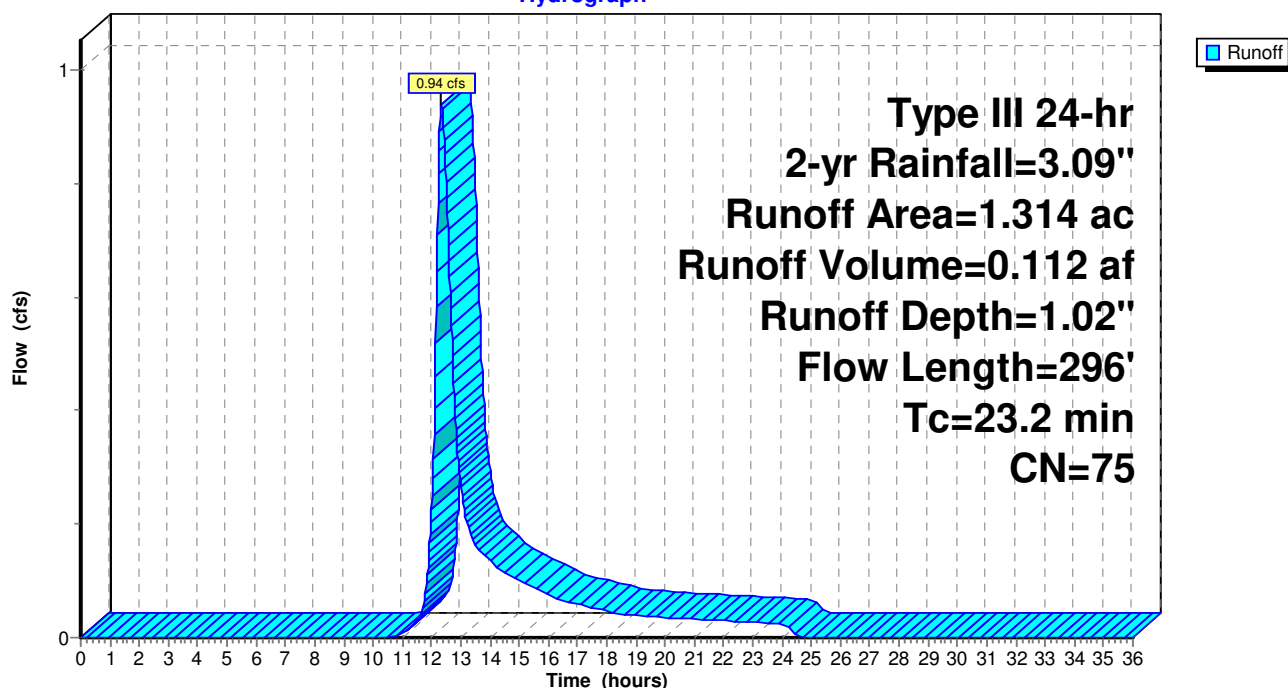
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-yr Rainfall=3.09"

Area (ac)	CN	Description
0.719	61	>75% Grass cover, Good, HSG B
0.147	74	>75% Grass cover, Good, HSG C
* 0.448	98	IMPERVIOUS
1.314	75	Weighted Average
0.866		65.91% Pervious Area
0.448		34.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.0	100	0.0080	0.08		Sheet Flow, Grass SF Grass: Dense n= 0.240 P2= 3.09"
1.8	126	0.0280	1.17		Shallow Concentrated Flow, Grass SCF Short Grass Pasture Kv= 7.0 fps
0.4	70	0.0250	3.21		Shallow Concentrated Flow, PVMT SCF Paved Kv= 20.3 fps
23.2	296	Total			

Subcatchment P2: P2

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Type III 24-hr 2-yr Rainfall=3.09"

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Summary for Subcatchment P3: P3

Runoff = 0.81 cfs @ 12.12 hrs, Volume= 0.064 af, Depth= 1.13"

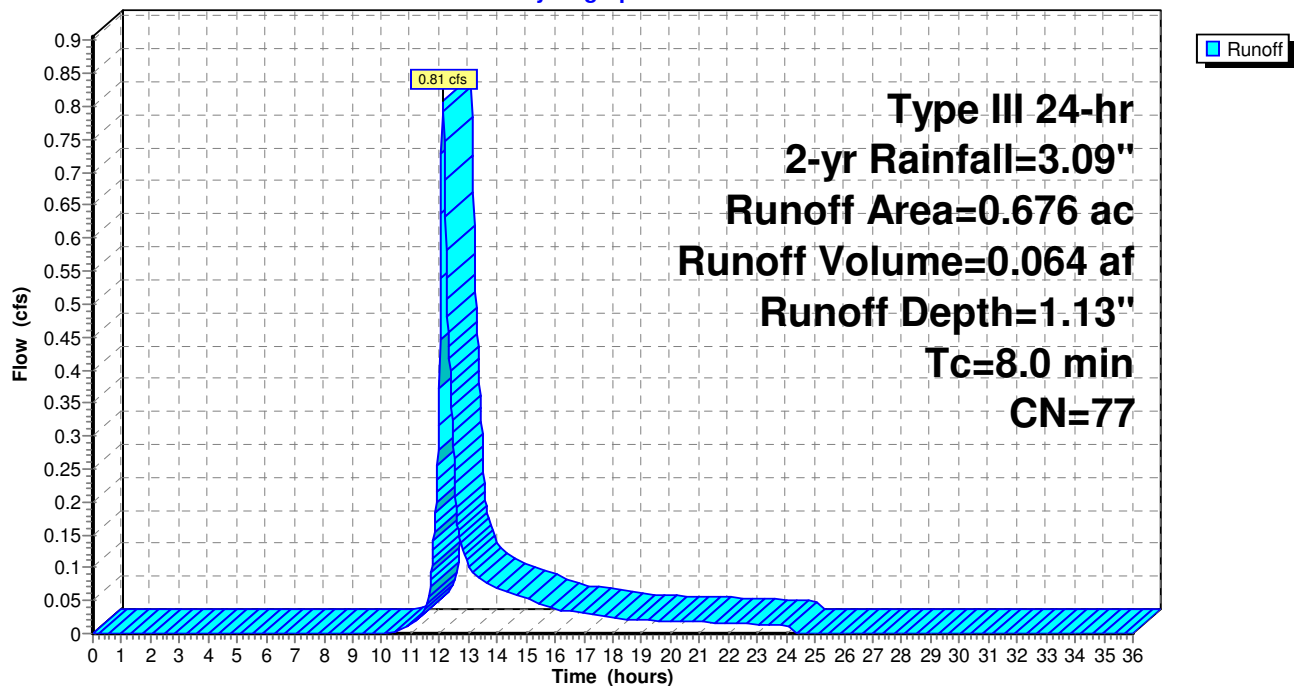
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-yr Rainfall=3.09"

Area (ac)	CN	Description
0.314	61	>75% Grass cover, Good, HSG B
0.067	55	Woods, Good, HSG B
* 0.295	98	IMPERVIOUS
0.676	77	Weighted Average
0.381		56.36% Pervious Area
0.295		43.64% Impervious Area

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

Subcatchment P3: P3

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Type III 24-hr 2-yr Rainfall=3.09"

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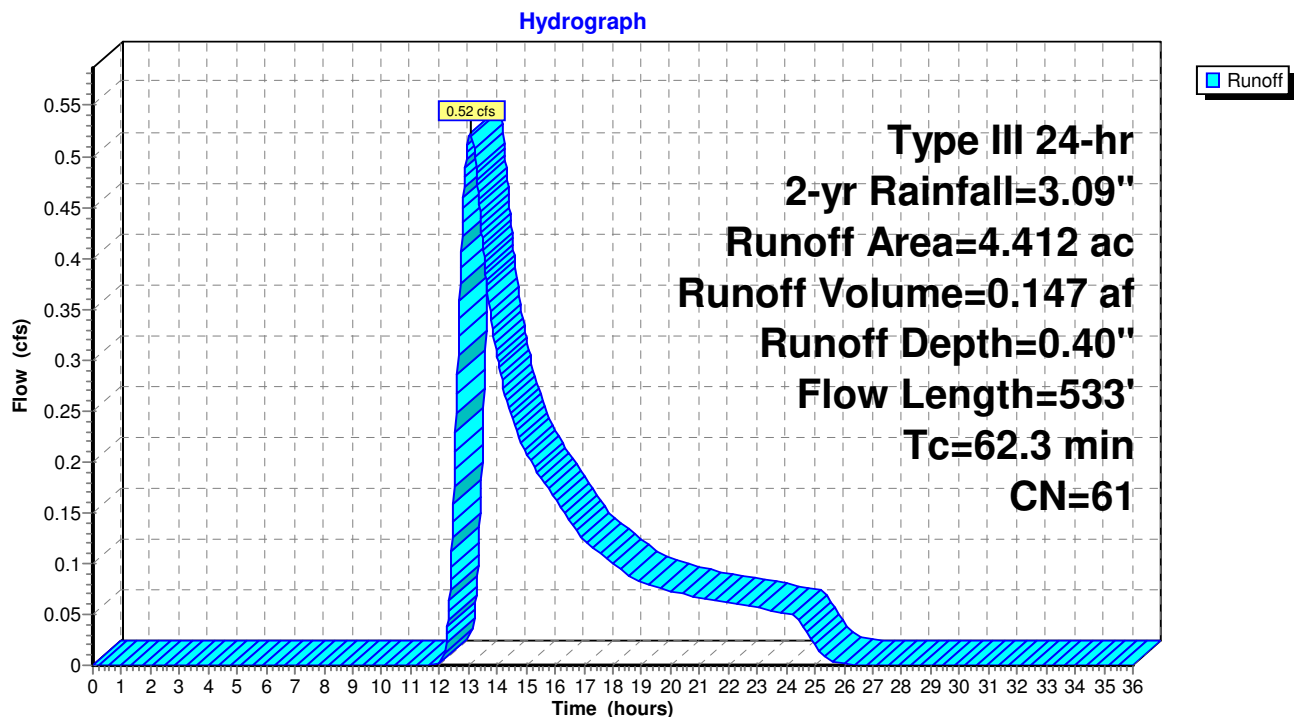
Summary for Subcatchment P4: P4 (Proposed E4)

Runoff = 0.52 cfs @ 13.08 hrs, Volume= 0.147 af, Depth= 0.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-yr Rainfall=3.09"

Area (ac)	CN	Description
0.407	61	>75% Grass cover, Good, HSG B
2.669	55	Woods, Good, HSG B
* 1.336	74	Woods, Good, HSG C/D
4.412	61	Weighted Average
4.412		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
33.4	100	0.0025	0.05		Sheet Flow, Grass SF
					Grass: Dense n= 0.240 P2= 3.09"
28.9	433	0.0100	0.25		Shallow Concentrated Flow, Woodland SCF
					Forest w/Heavy Litter Kv= 2.5 fps
62.3	533				Total

Subcatchment P4: P4 (Proposed E4)

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Summary for Subcatchment P5: P5 (Proposed E5)

Runoff = 0.68 cfs @ 12.14 hrs, Volume= 0.056 af, Depth= 1.82"

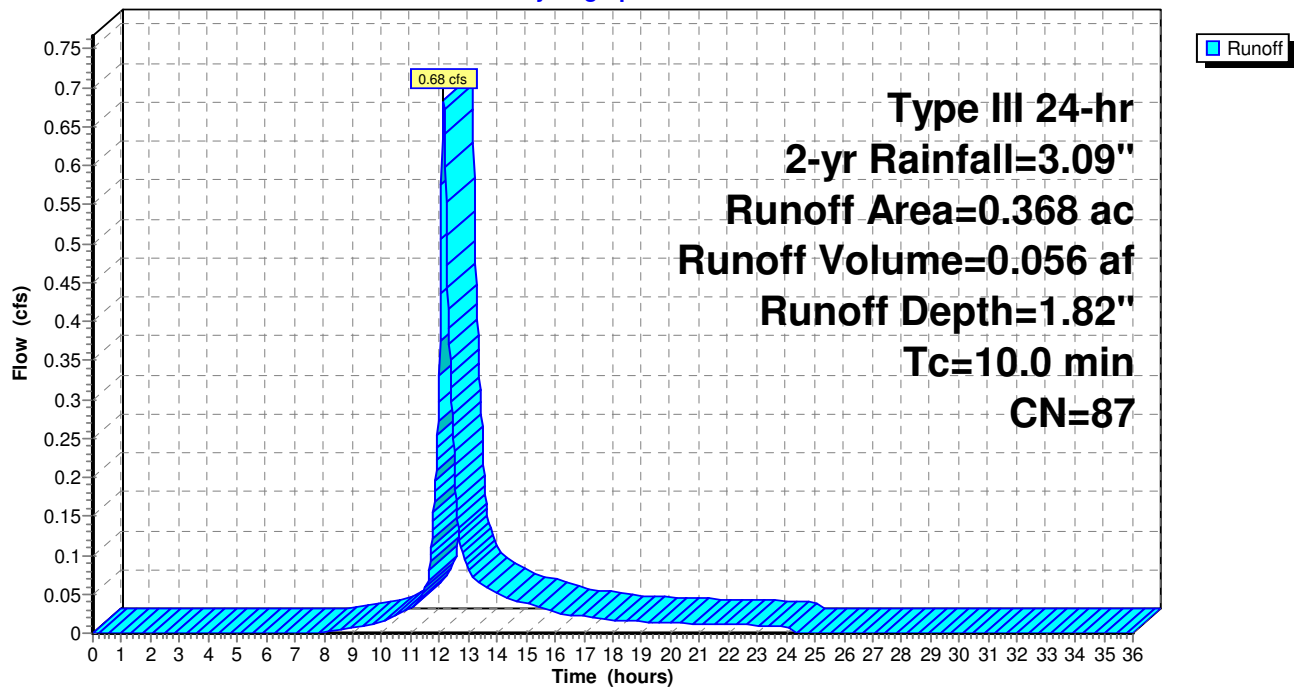
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-yr Rainfall=3.09"

Area (ac)	CN	Description
0.110	61	>75% Grass cover, Good, HSG B
* 0.258	98	IMPERVIOUS
0.368	87	Weighted Average
0.110		29.89% Pervious Area
0.258		70.11% Impervious Area

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

Subcatchment P5: P5 (Proposed E5)

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Type III 24-hr 2-yr Rainfall=3.09"

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Summary for Subcatchment P6: P6

Runoff = 0.54 cfs @ 12.09 hrs, Volume= 0.039 af, Depth= 1.74"

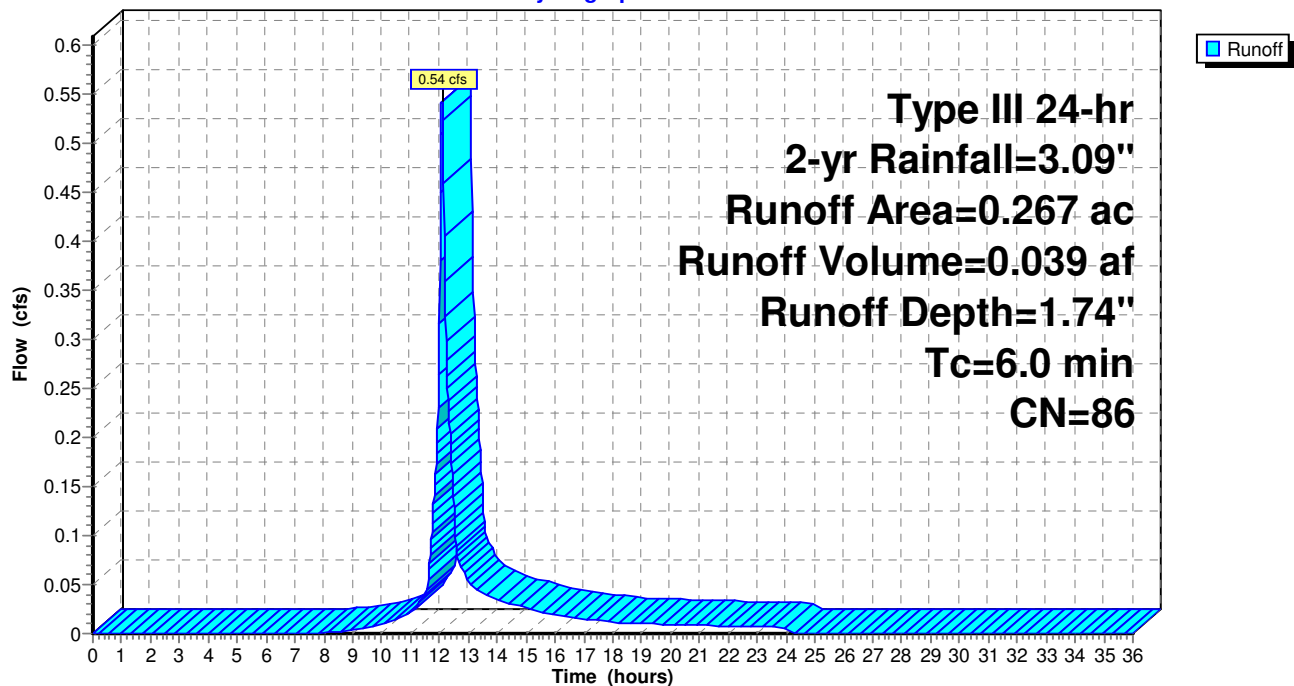
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-yr Rainfall=3.09"

Area (ac)	CN	Description
0.057	61	>75% Grass cover, Good, HSG B
0.051	74	>75% Grass cover, Good, HSG C
* 0.159	98	IMPERVIOUS
0.267	86	Weighted Average
0.108		40.45% Pervious Area
0.159		59.55% Impervious Area

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

Subcatchment P6: P6

Hydrograph



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Type III 24-hr 2-yr Rainfall=3.09"

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Summary for Subcatchment P7: P7

Runoff = 0.58 cfs @ 12.12 hrs, Volume= 0.048 af, Depth= 0.91"

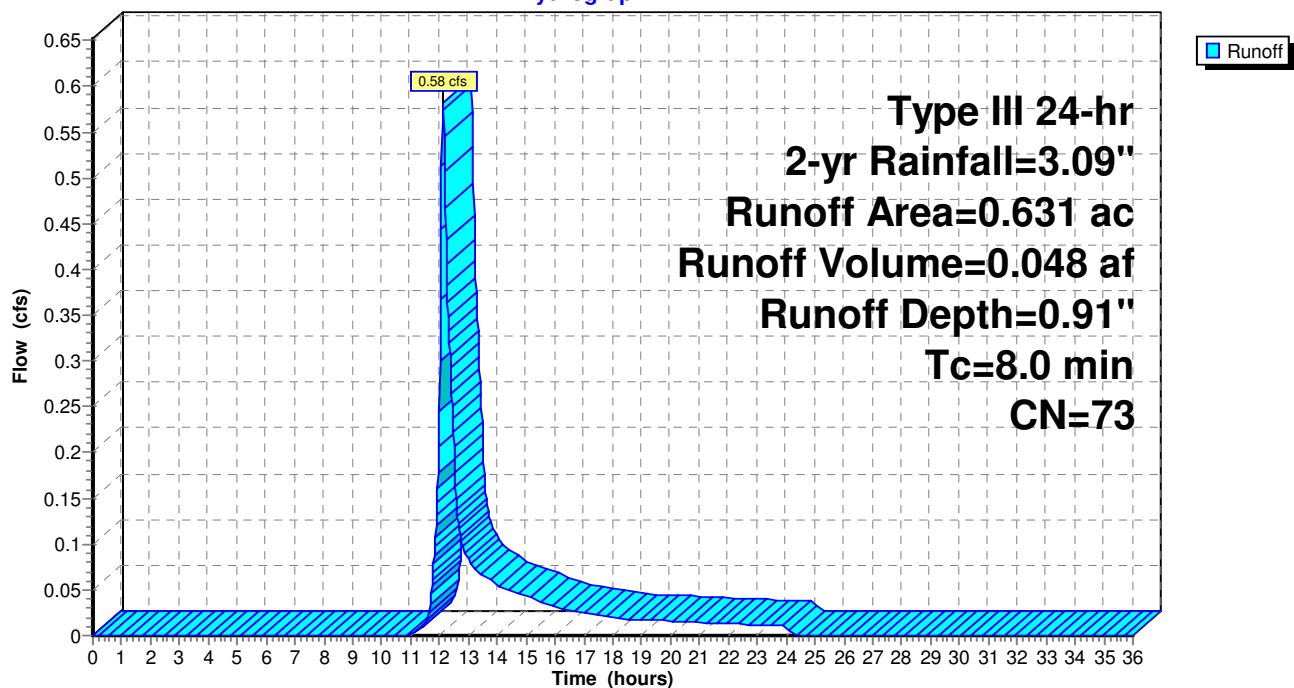
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-yr Rainfall=3.09"

Area (ac)	CN	Description
0.286	61	>75% Grass cover, Good, HSG B
0.124	55	Woods, Good, HSG B
* 0.221	98	IMPERVIOUS
0.631	73	Weighted Average
0.410		64.98% Pervious Area
0.221		35.02% Impervious Area

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

Subcatchment P7: P7

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Type III 24-hr 2-yr Rainfall=3.09"

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Summary for Subcatchment P8: P8

Runoff = 0.05 cfs @ 12.92 hrs, Volume= 0.015 af, Depth= 0.25"

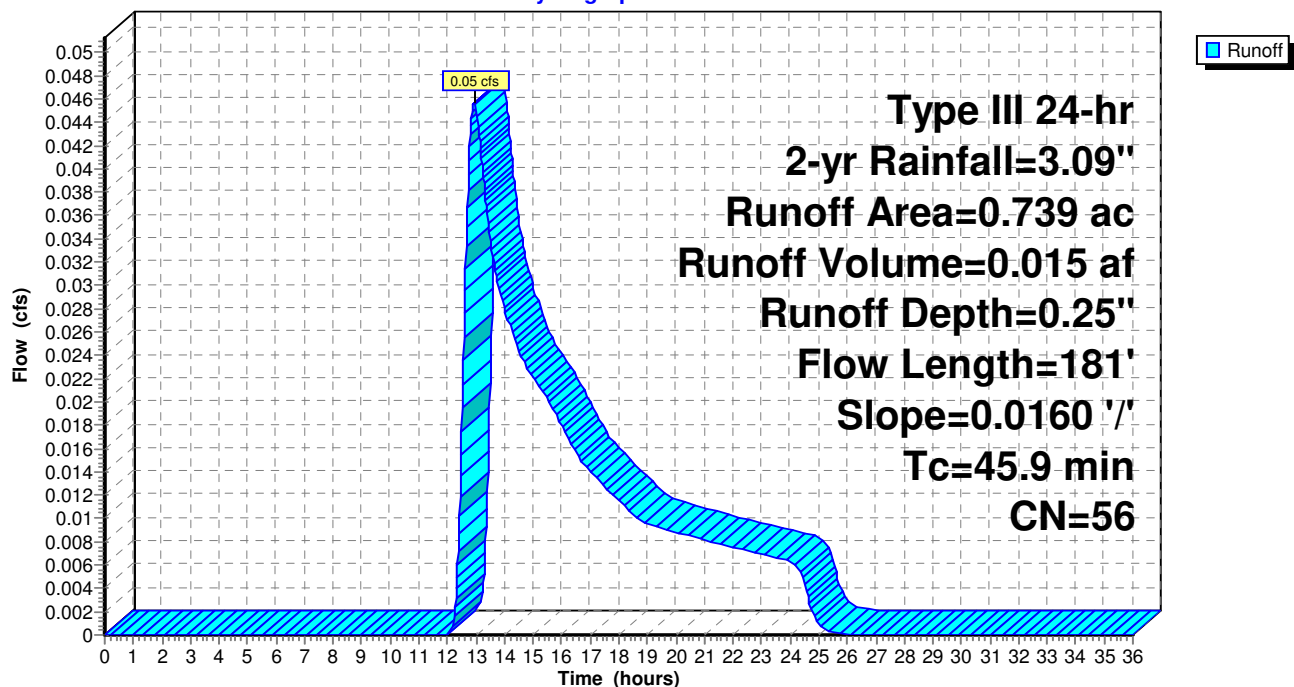
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-yr Rainfall=3.09"

Area (ac)	CN	Description
0.607	55	Woods, Good, HSG B
0.028	61	>75% Grass cover, Good, HSG B
0.003	74	>75% Grass cover, Good, HSG C
0.088	55	Woods, Good, HSG B
0.013	70	Woods, Good, HSG C
0.739	56	Weighted Average
0.739		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
41.6	100	0.0160	0.04		Sheet Flow, Grass SF
					Woods: Dense underbrush n= 0.800 P2= 3.09"
4.3	81	0.0160	0.32		Shallow Concentrated Flow, Woodland SCF
					Forest w/Heavy Litter Kv= 2.5 fps
45.9	181	Total			

Subcatchment P8: P8

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Summary for Subcatchment R1: R1

Runoff = 0.20 cfs @ 12.08 hrs, Volume= 0.016 af, Depth= 2.86"

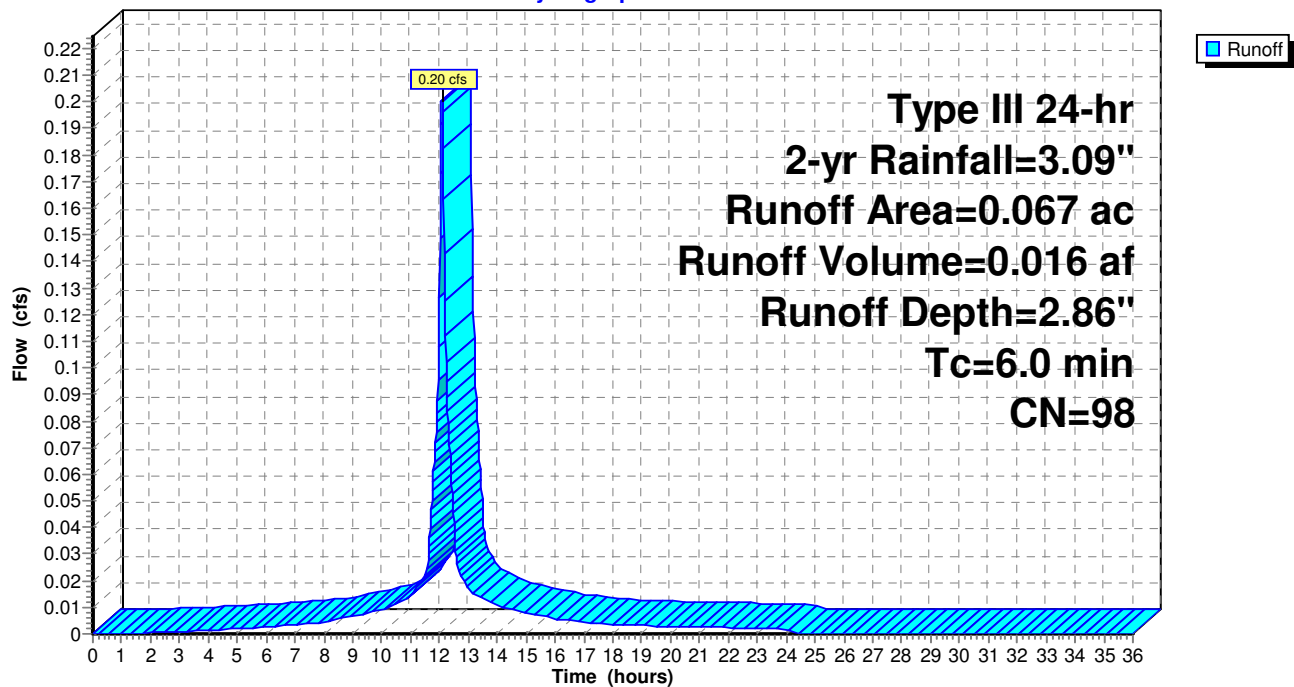
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-yr Rainfall=3.09"

Area (ac)	CN	Description
* 0.067	98	IMPERVIOUS
0.067		100.00% Impervious Area

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

Subcatchment R1: R1

Hydrograph



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Type III 24-hr 2-yr Rainfall=3.09"

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Summary for Subcatchment R2: R2

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 2.86"

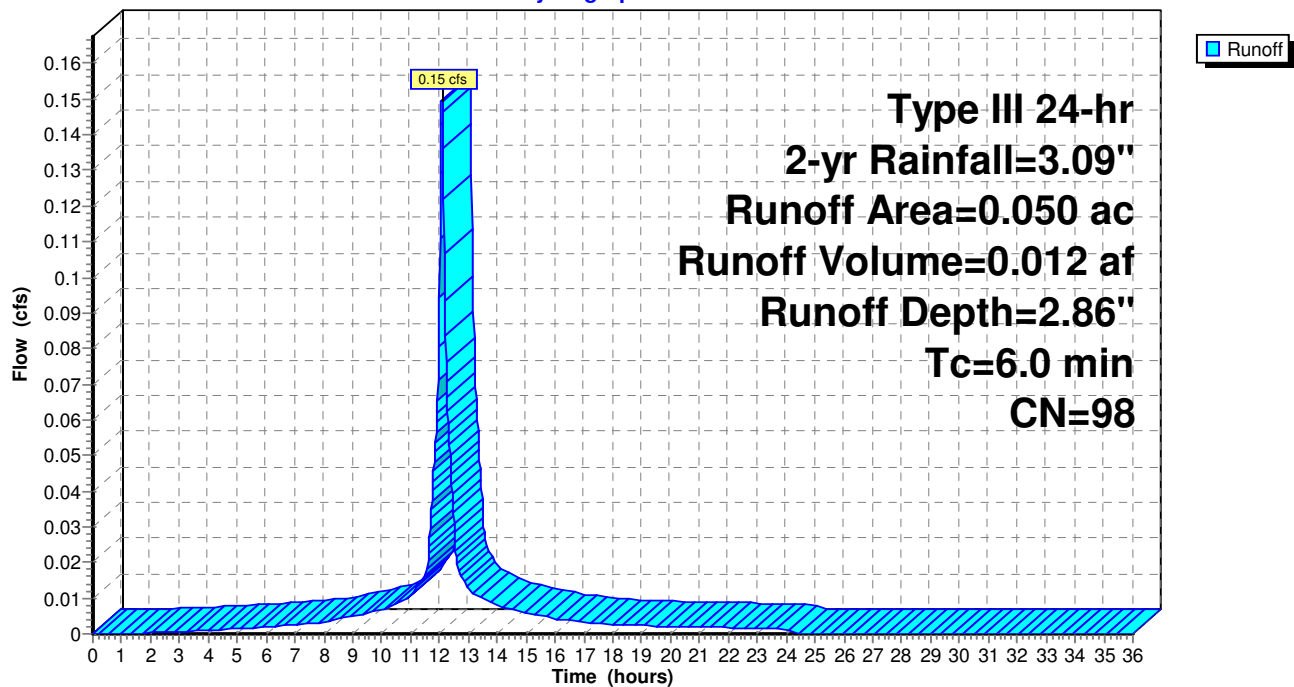
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-yr Rainfall=3.09"

Area (ac)	CN	Description
* 0.050	98	IMPERVIOUS
0.050		100.00% Impervious Area

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

Subcatchment R2: R2

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Type III 24-hr 2-yr Rainfall=3.09"

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Summary for Subcatchment R3: R3

Runoff = 0.27 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 2.86"

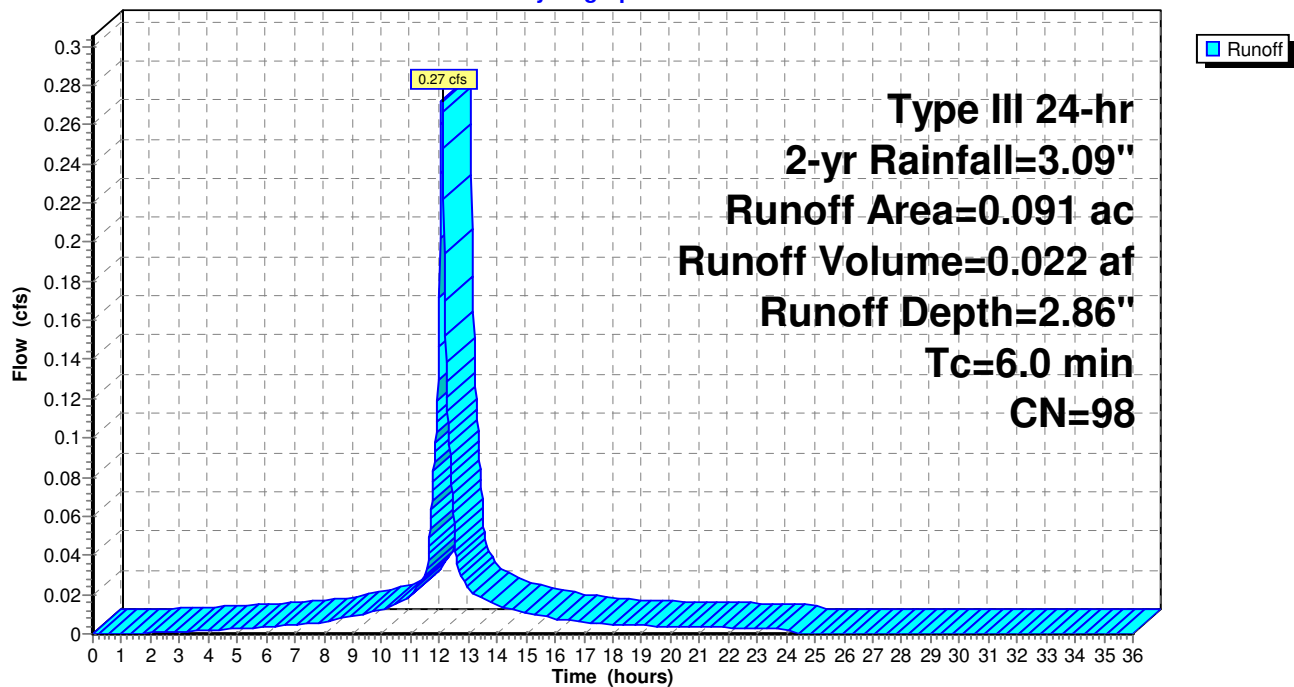
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-yr Rainfall=3.09"

Area (ac)	CN	Description
* 0.091	98	IMPERVIOUS
0.091		100.00% Impervious Area

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

Subcatchment R3: R3

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Summary for Subcatchment R4: R4

Runoff = 0.35 cfs @ 12.08 hrs, Volume= 0.028 af, Depth= 2.86"

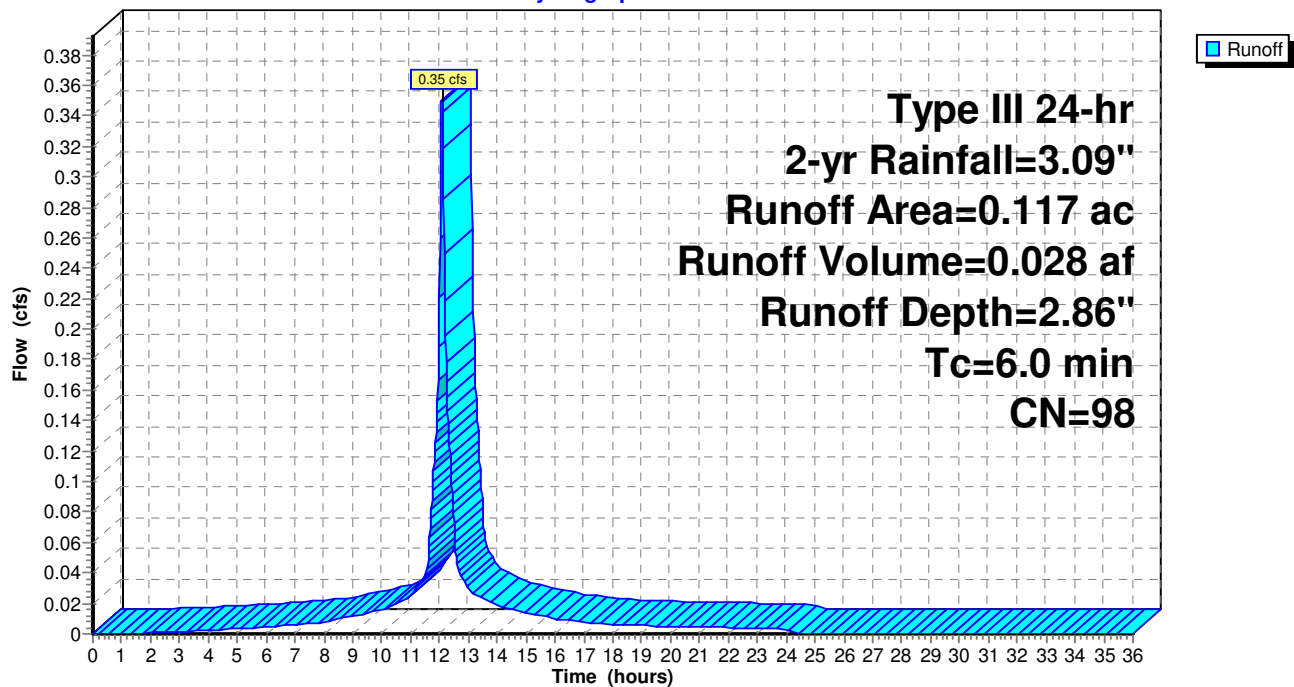
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-yr Rainfall=3.09"

Area (ac)	CN	Description
* 0.117	98	IMPERVIOUS
0.117		100.00% Impervious Area

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

Subcatchment R4: R4

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Summary for Subcatchment R5: R5

Runoff = 0.49 cfs @ 12.08 hrs, Volume= 0.039 af, Depth= 2.86"

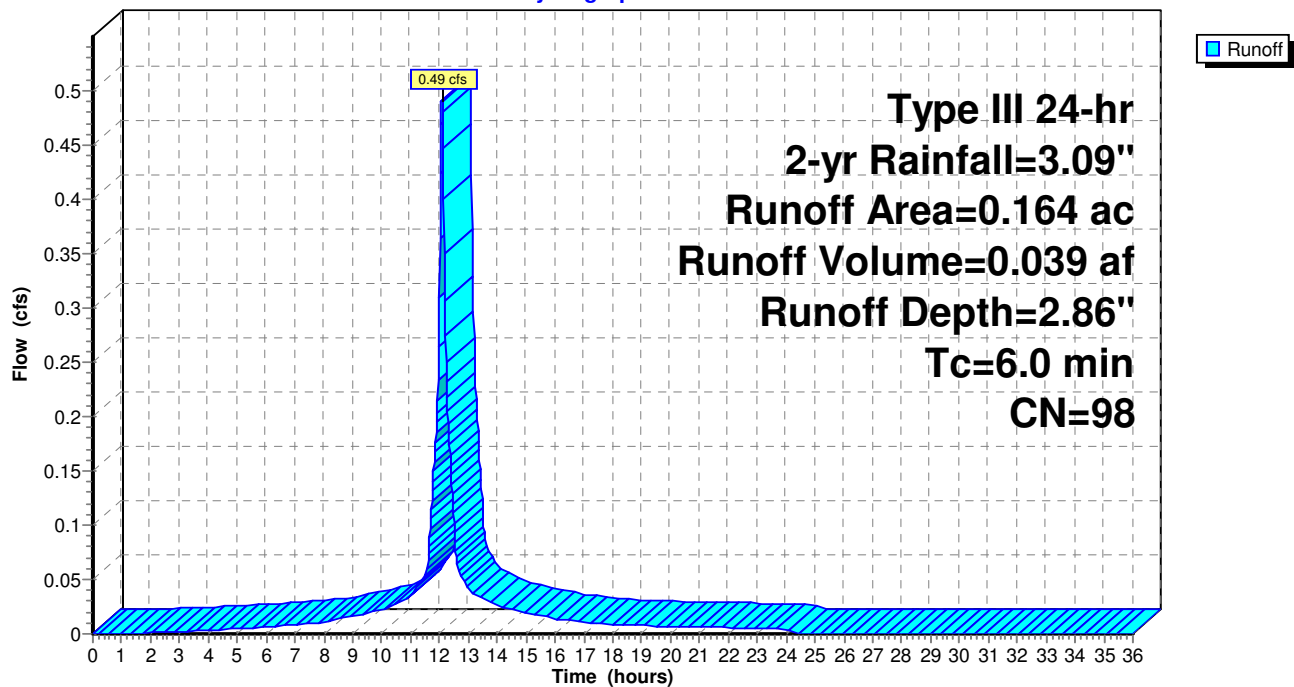
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-yr Rainfall=3.09"

Area (ac)	CN	Description
* 0.164	98	IMPERVIOUS
0.164		100.00% Impervious Area

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

Subcatchment R5: R5

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Summary for Pond EP1*: Proposed EP1

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=12)

Inflow Area = 1.559 ac, 41.18% Impervious, Inflow Depth = 1.19" for 2-yr event
 Inflow = 1.68 cfs @ 12.19 hrs, Volume= 0.155 af
 Outflow = 0.92 cfs @ 12.46 hrs, Volume= 0.155 af, Atten= 45%, Lag= 16.5 min
 Discarded = 0.70 cfs @ 12.08 hrs, Volume= 0.153 af
 Primary = 0.22 cfs @ 12.46 hrs, Volume= 0.002 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
 Peak Elev= 36.61' @ 12.46 hrs Surf.Area= 215 sf Storage= 988 cf

Plug-Flow detention time= 7.4 min calculated for 0.155 af (100% of inflow)
 Center-of-Mass det. time= 7.4 min (865.1 - 857.7)

Volume	Invert	Avail.Storage	Storage Description
#1	33.00'	8 cf	6.00'D x 1.85'H Vertical Cone/Cylinder 52 cf Overall - 32 cf Embedded = 21 cf x 40.0% Voids
#2	33.00'	23 cf	4.00'D x 1.85'H Vertical Cone/Cylinder Inside #1 32 cf Overall - 4.0" Wall Thickness = 23 cf
#3	34.85'	3 cf	2.00'D x 1.00'H Vertical Cone/Cylinder -Impervious
#4	35.85'	12,510 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
#5	35.50'	60 cf	Custom Stage Data (Conic) Listed below (Recalc)
		12,604 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
35.85	12	0	0
36.00	117	10	10
36.50	2,079	549	559
37.00	11,922	3,500	4,059
37.50	21,881	8,451	12,510

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.50	64	0	0	64
36.00	187	60	60	188

Device	Routing	Invert	Outlet Devices
#1	Discarded	33.00'	120.000 in/hr Exfiltration over Wetted area
#2	Primary	36.60'	150.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#3	Secondary	37.22'	29.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00

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Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31
3.30 3.31 3.32

Discarded OutFlow Max=0.70 cfs @ 12.08 hrs HW=36.08' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.70 cfs)

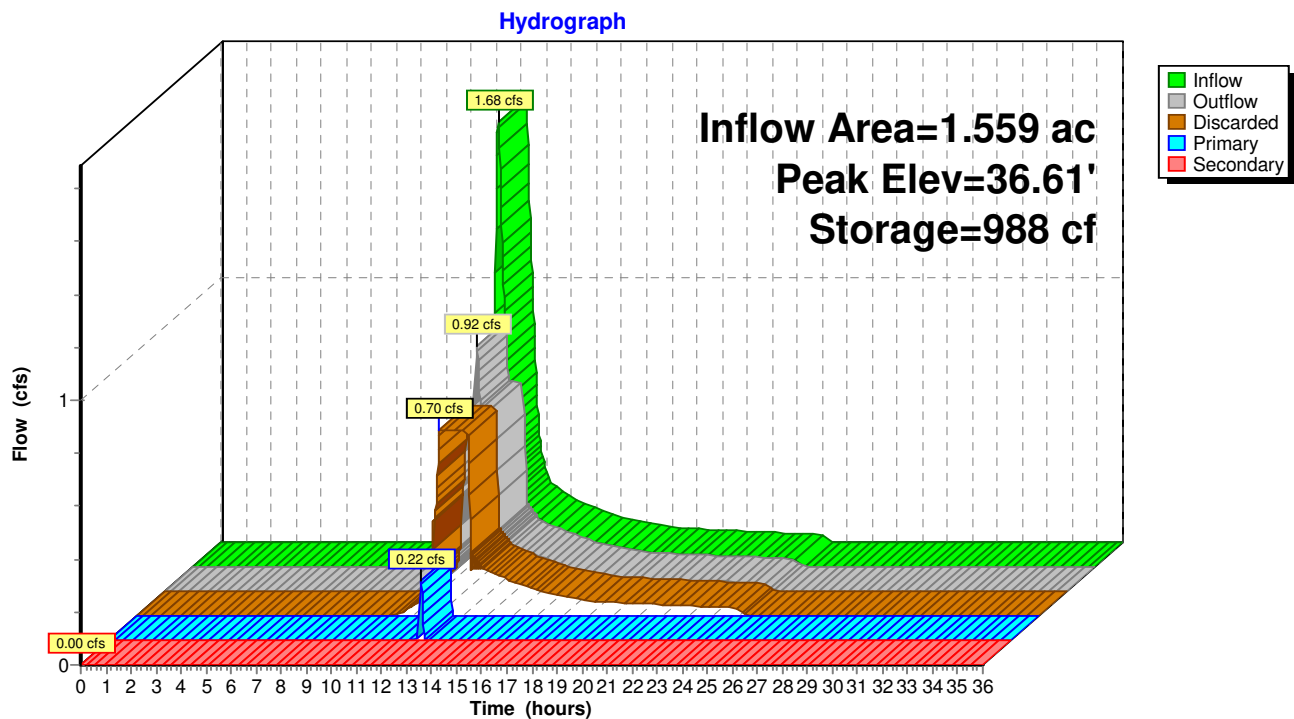
Primary OutFlow Max=0.22 cfs @ 12.46 hrs HW=36.61' TW=0.00' (Dynamic Tailwater)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.22 cfs @ 0.22 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=33.00' TW=30.10' (Dynamic Tailwater)

↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond EP1*: Proposed EP1



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Summary for Pond EP2*: Proposed EP2

Inflow Area = 2.488 ac, 45.54% Impervious, Inflow Depth = 1.30" for 2-yr event
 Inflow = 2.42 cfs @ 12.11 hrs, Volume= 0.269 af
 Outflow = 0.39 cfs @ 12.46 hrs, Volume= 0.269 af, Atten= 84%, Lag= 21.0 min
 Discarded = 0.39 cfs @ 12.46 hrs, Volume= 0.269 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Peak Elev= 34.95' @ 13.23 hrs Surf.Area= 57 sf Storage= 4,142 cf

Plug-Flow detention time= 96.3 min calculated for 0.269 af (100% of inflow)

Center-of-Mass det. time= 96.3 min (936.2 - 839.9)

Volume	Invert	Avail.Storage	Storage Description
#1	30.10'	20 cf	6.00'D x 4.49'H Vertical Cone/Cylinder 127 cf Overall - 77 cf Embedded = 50 cf x 40.0% Voids
#2	30.10'	56 cf	4.00'D x 4.49'H Vertical Cone/Cylinder Inside #1 77 cf Overall - 4.0" Wall Thickness = 56 cf
#3	33.00'	6 cf	6.00'D x 1.40'H Vertical Cone/Cylinder 40 cf Overall - 24 cf Embedded = 16 cf x 40.0% Voids
#4	33.00'	18 cf	4.00'D x 1.40'H Vertical Cone/Cylinder Inside #3 24 cf Overall - 4.0" Wall Thickness = 18 cf
#5	34.59'	3 cf	2.00'D x 1.00'H Vertical Cone/Cylinder -Impervious
#6	34.40'	3 cf	2.00'D x 1.00'H Vertical Cone/Cylinder -Impervious
#7	33.00'	32,419 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		32,525 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
33.00	1,403	0	0
34.00	2,047	1,725	1,725
35.00	2,855	2,451	4,176
36.00	9,813	6,334	10,510
37.00	34,004	21,909	32,419

Device	Routing	Invert	Outlet Devices
#1	Discarded	30.10'	120.000 in/hr Exfiltration over Wetted area from 30.10' - 35.76' Excluded Wetted area = 28 sf
#2	Primary	36.50'	3.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#3	Primary	36.20'	55.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

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Discarded OutFlow Max=0.39 cfs @ 12.46 hrs HW=34.61' (Free Discharge)

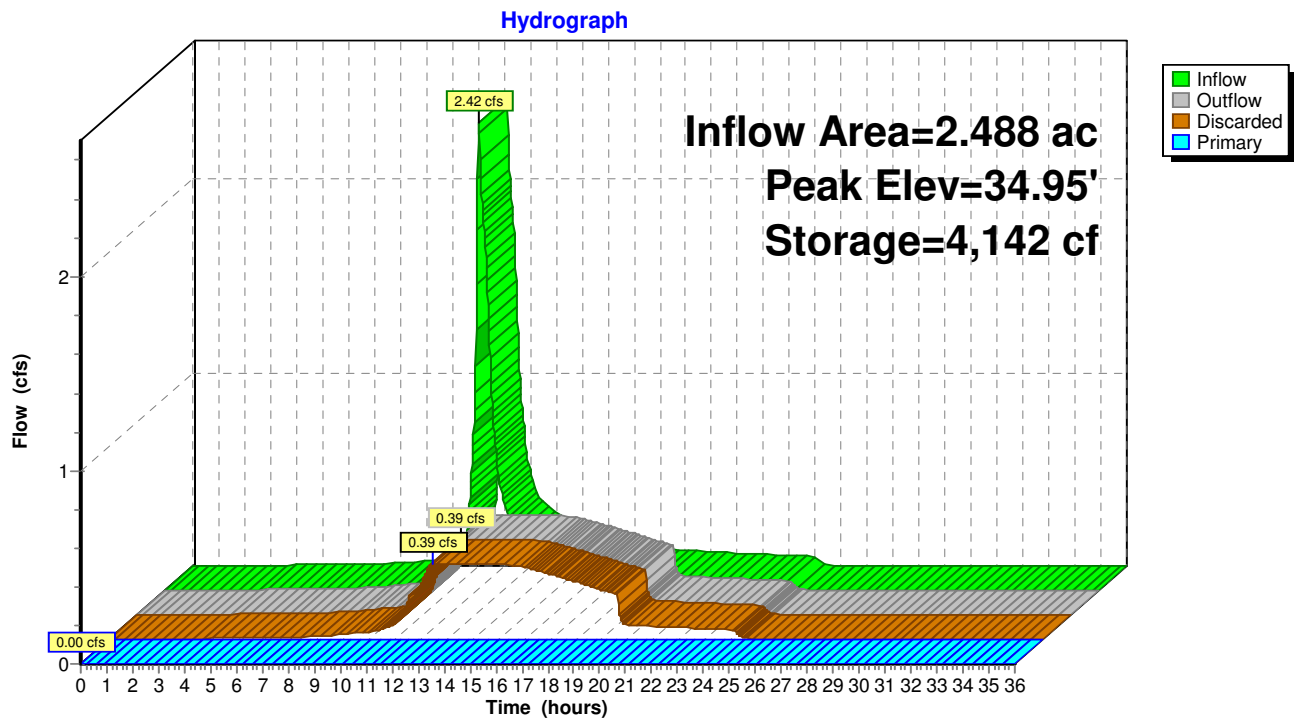
↑ **1=Exfiltration** (Exfiltration Controls 0.39 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=30.10' TW=0.00' (Dynamic Tailwater)

↑ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond EP2*: Proposed EP2



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Summary for Pond PP1: Proposed Pond 1

Inflow Area = 0.889 ac, 53.88% Impervious, Inflow Depth = 1.48" for 2-yr event
 Inflow = 1.32 cfs @ 12.10 hrs, Volume= 0.109 af
 Outflow = 0.72 cfs @ 12.26 hrs, Volume= 0.109 af, Atten= 45%, Lag= 9.8 min
 Discarded = 0.72 cfs @ 12.26 hrs, Volume= 0.109 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Peak Elev= 33.48' @ 12.26 hrs Surf.Area= 1,714 sf Storage= 764 cf

Plug-Flow detention time= 17.2 min calculated for 0.109 af (100% of inflow)

Center-of-Mass det. time= 17.2 min (823.7 - 806.5)

Volume	Invert	Avail.Storage	Storage Description	
#1	33.00'	15,241 cf	Custom Stage Data (Conic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
33.00	1,464	0	0	1,464
34.00	2,006	1,728	1,728	2,026
35.00	2,664	2,327	4,055	2,705
36.00	5,292	3,904	7,959	5,343
37.00	9,474	7,282	15,241	9,536

Device	Routing	Invert	Outlet Devices
#1	Discarded	33.00'	120.000 in/hr Exfiltration over Wetted area from 33.00' - 35.80' Excluded Wetted area = 1,464 sf
#2	Primary	36.90'	35.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.72 cfs @ 12.26 hrs HW=33.48' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.72 cfs)**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=33.00' TW=0.00' (Dynamic Tailwater)↑ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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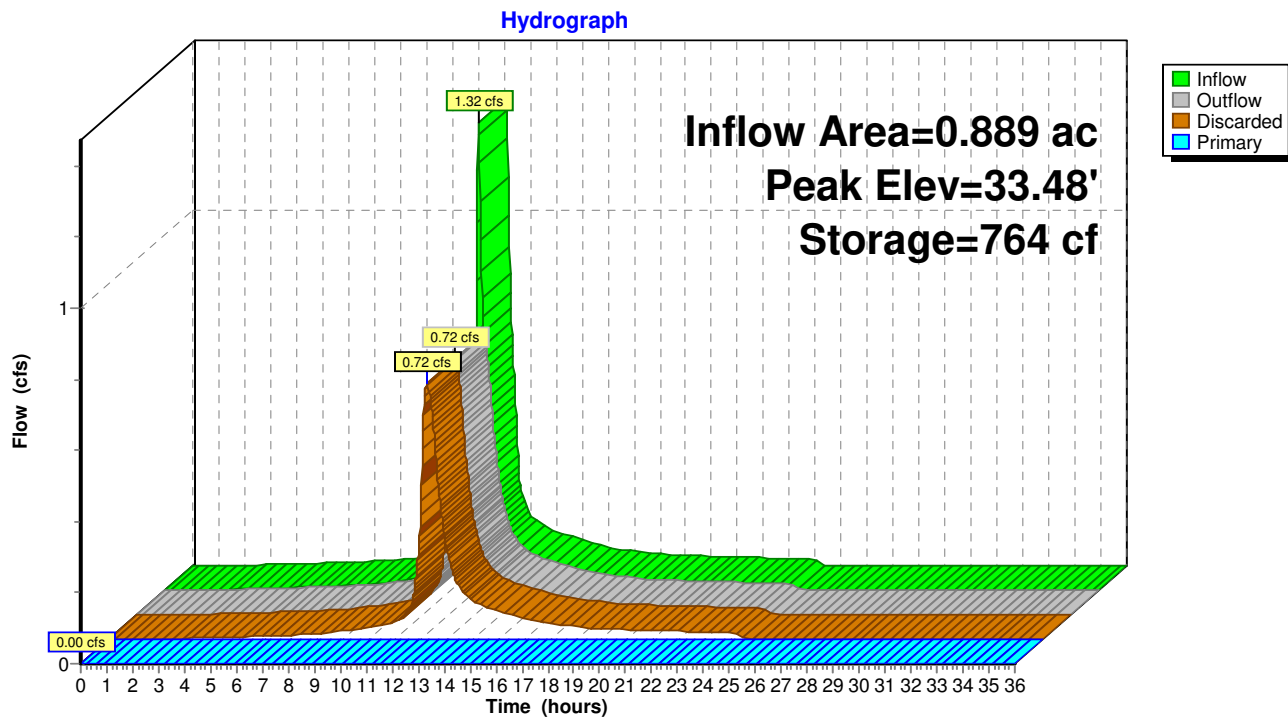
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Pond PP1: Proposed Pond 1



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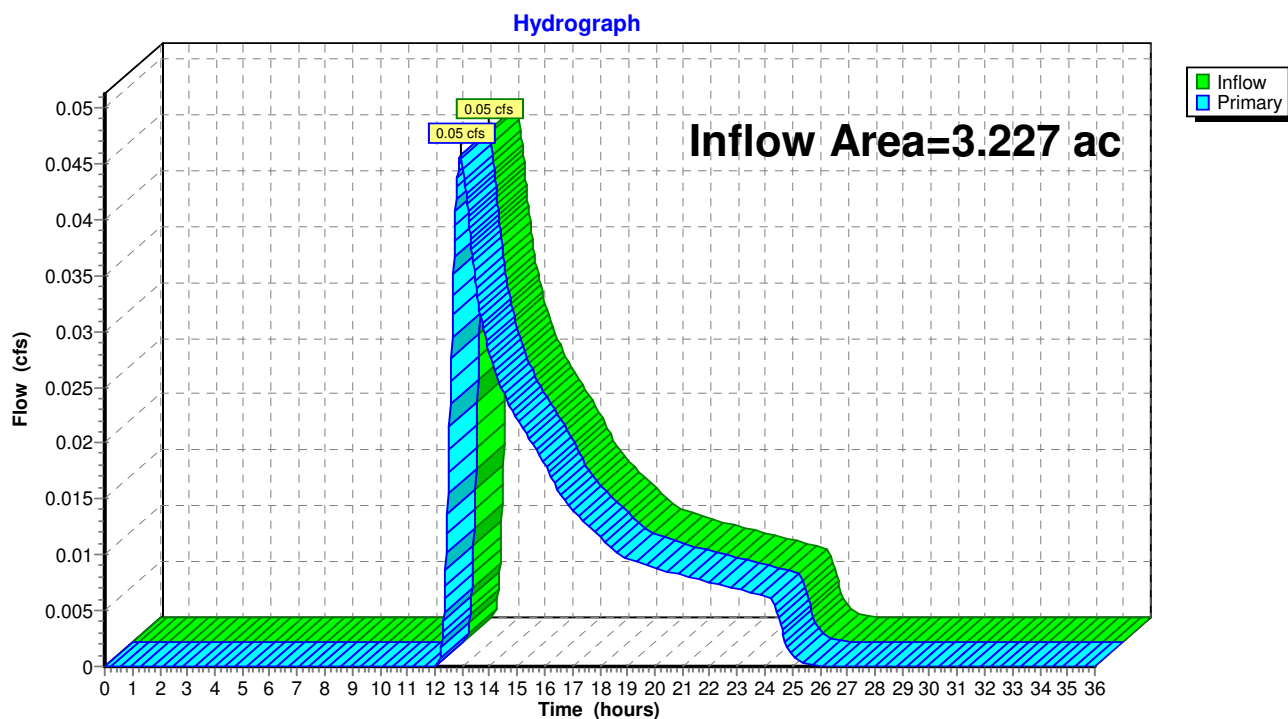
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Summary for Link PDP1: DP1 (Proposed)

Inflow Area = 3.227 ac, 35.11% Impervious, Inflow Depth = 0.06" for 2-yr event
Inflow = 0.05 cfs @ 12.92 hrs, Volume= 0.015 af
Primary = 0.05 cfs @ 12.92 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Link PDP1: DP1 (Proposed)



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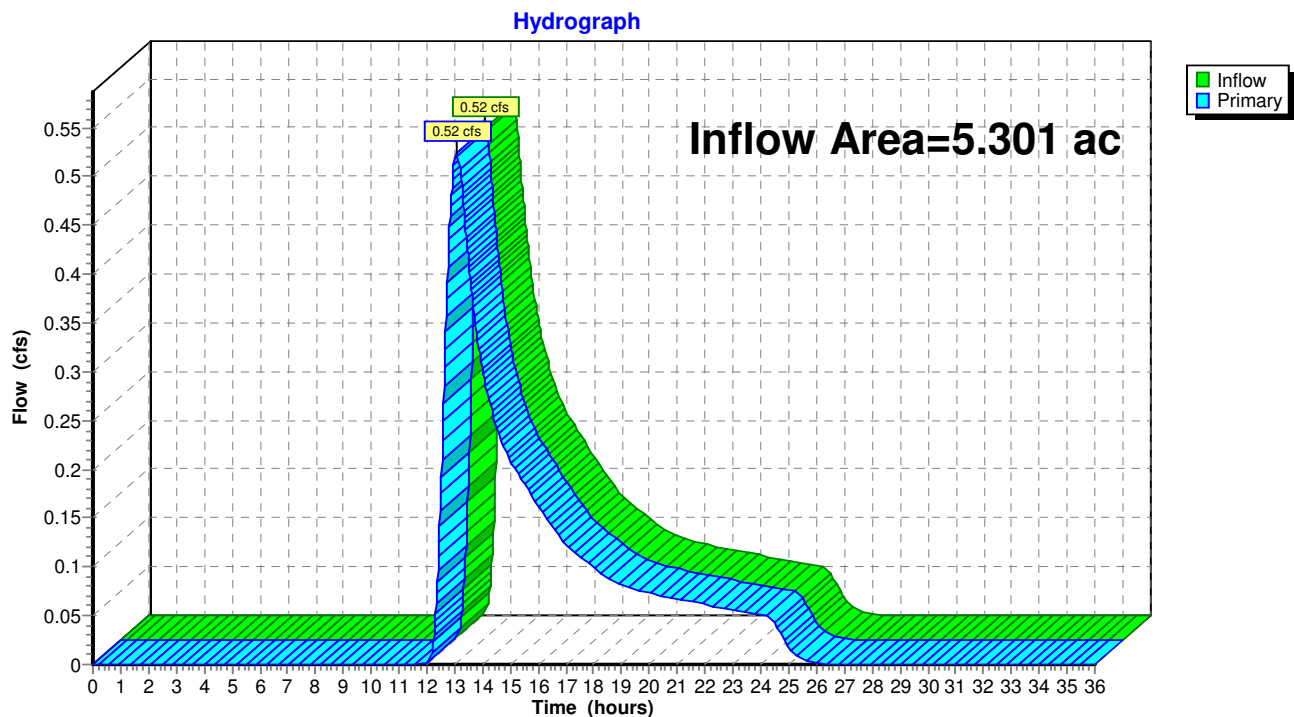
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Summary for Link PDP2: DP2 (Proposed)

Inflow Area = 5.301 ac, 9.04% Impervious, Inflow Depth = 0.33" for 2-yr event
Inflow = 0.52 cfs @ 13.08 hrs, Volume= 0.147 af
Primary = 0.52 cfs @ 13.08 hrs, Volume= 0.147 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Link PDP2: DP2 (Proposed)



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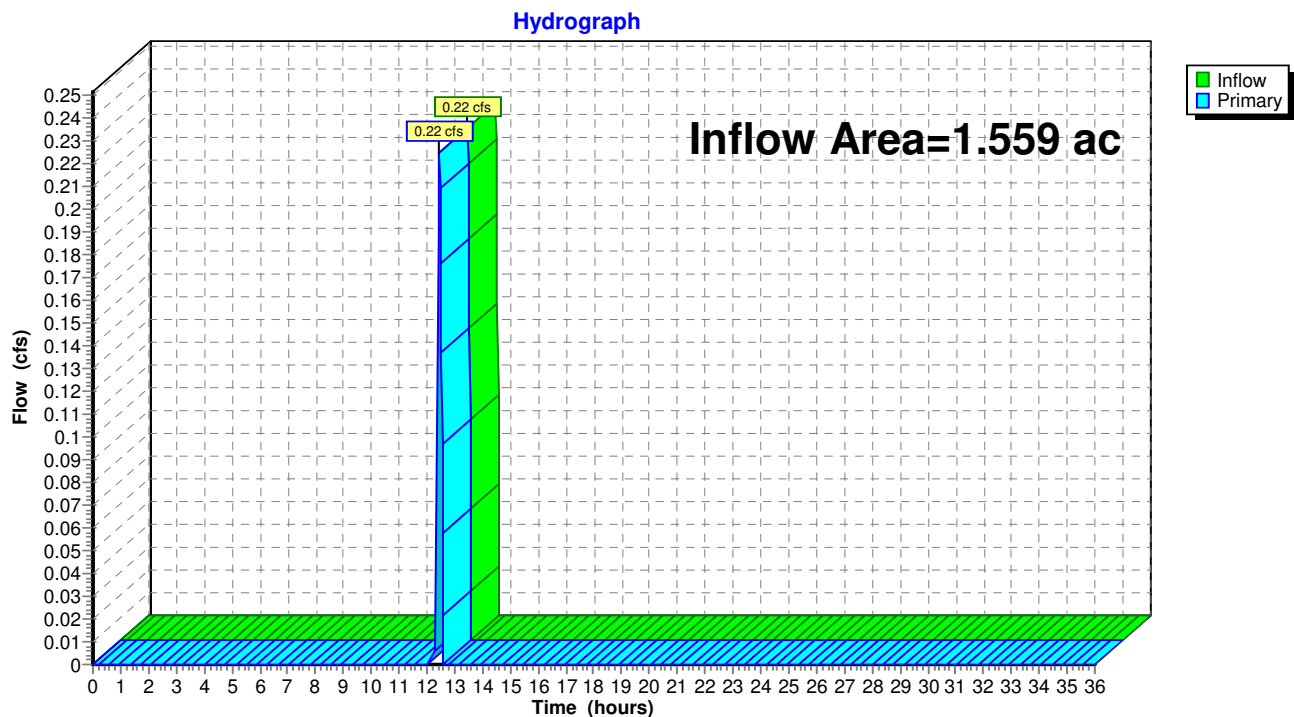
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Summary for Link PDP3: DP3 (Proposed)

Inflow Area = 1.559 ac, 41.18% Impervious, Inflow Depth = 0.02" for 2-yr event
Inflow = 0.22 cfs @ 12.46 hrs, Volume= 0.002 af
Primary = 0.22 cfs @ 12.46 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Link PDP3: DP3 (Proposed)



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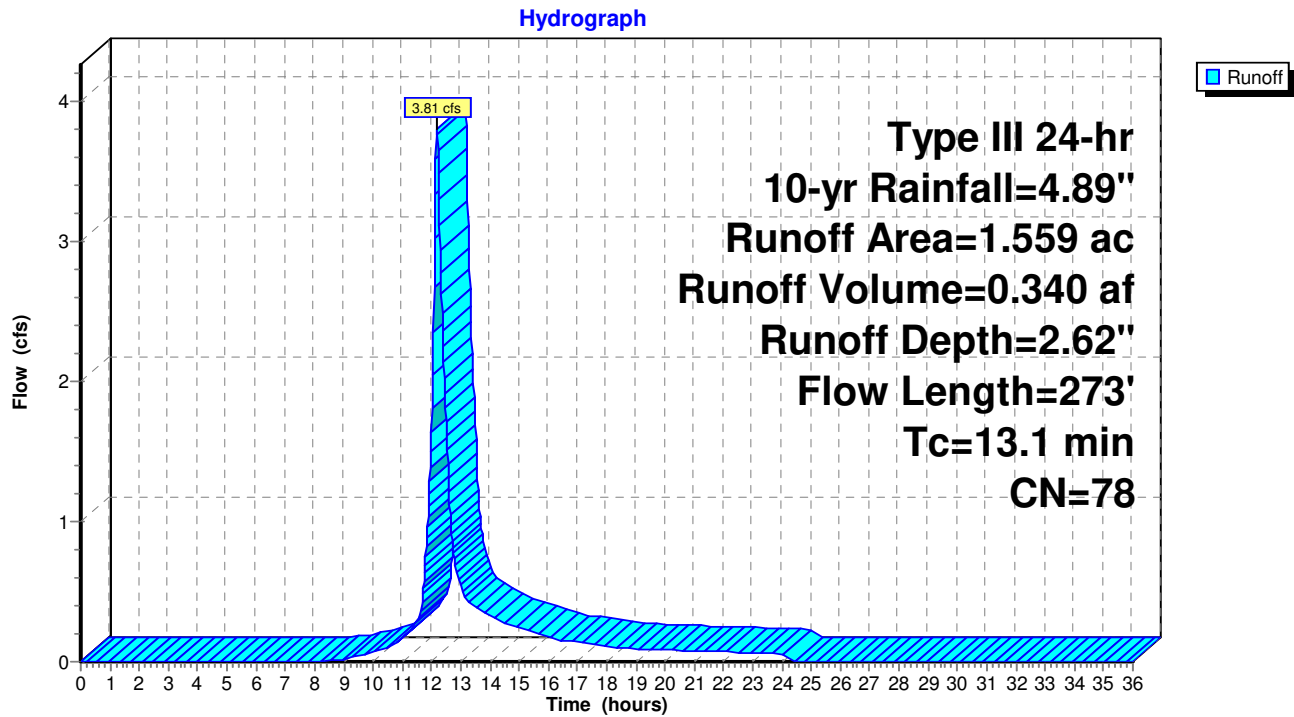
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Type III 24-hr 10-yr Rainfall=4.89"

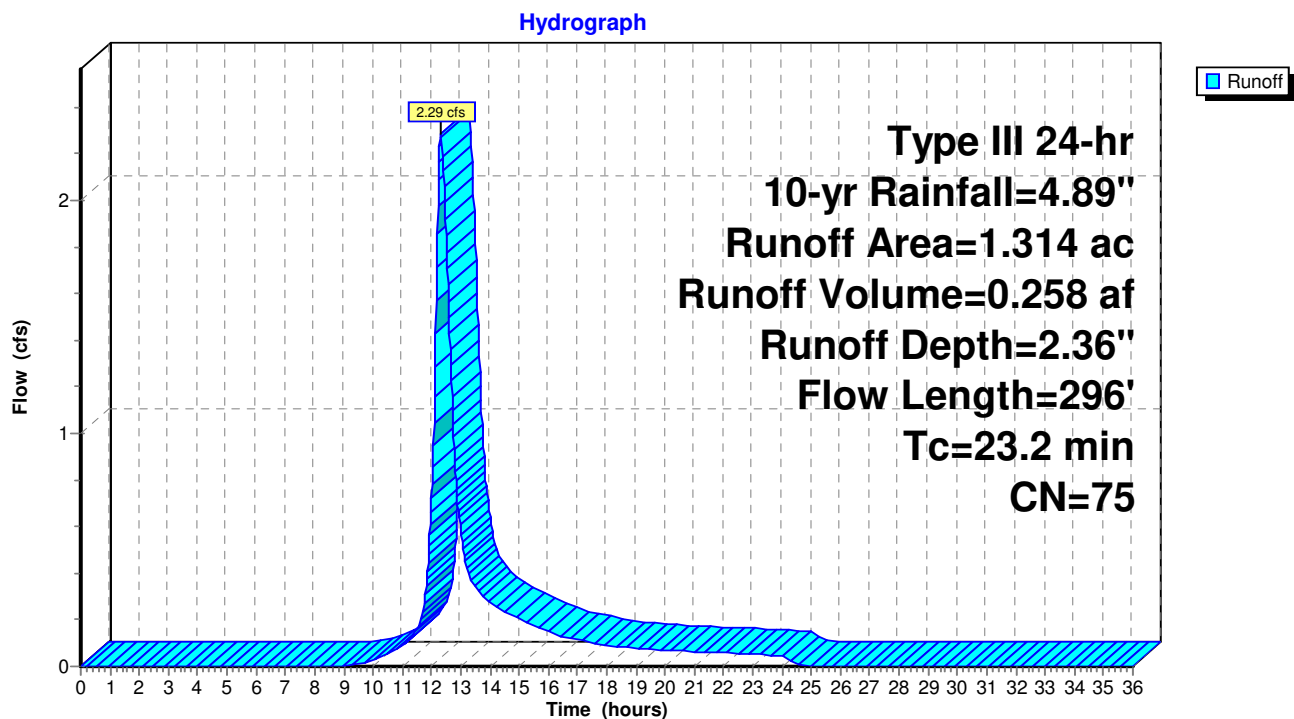
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Subcatchment P1: P1



Subcatchment P2: P2



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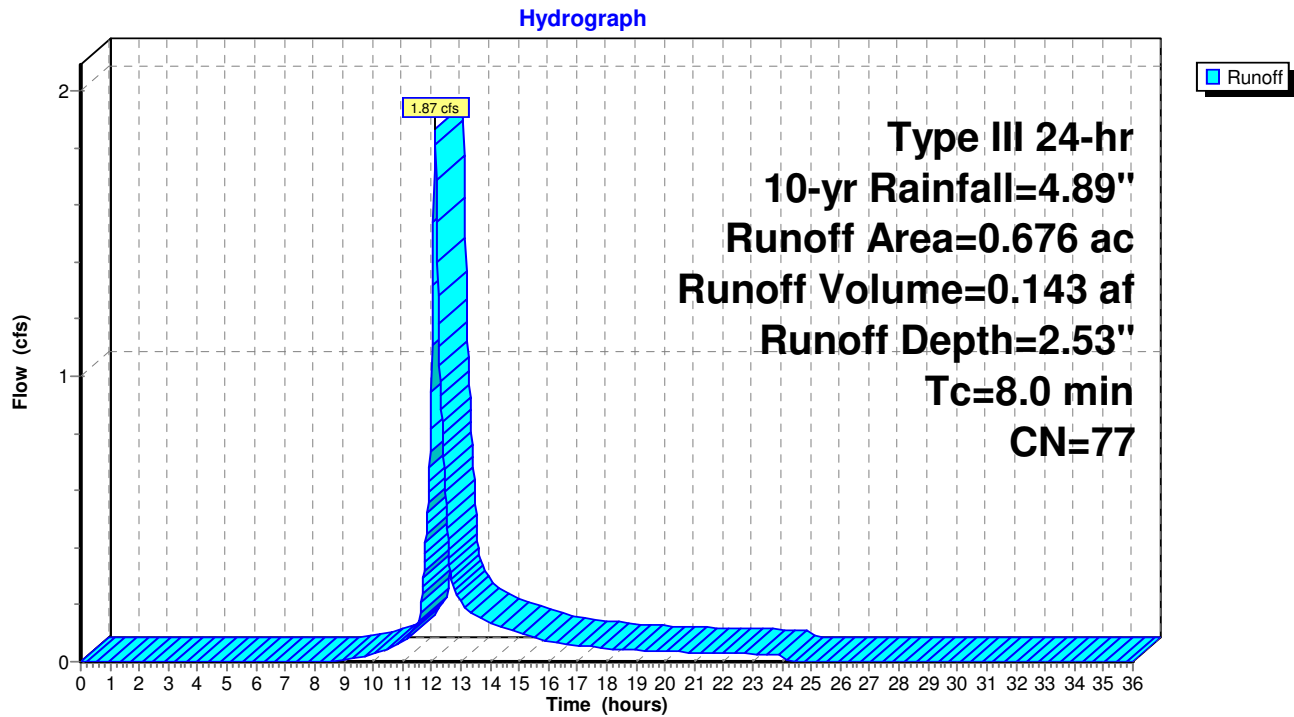
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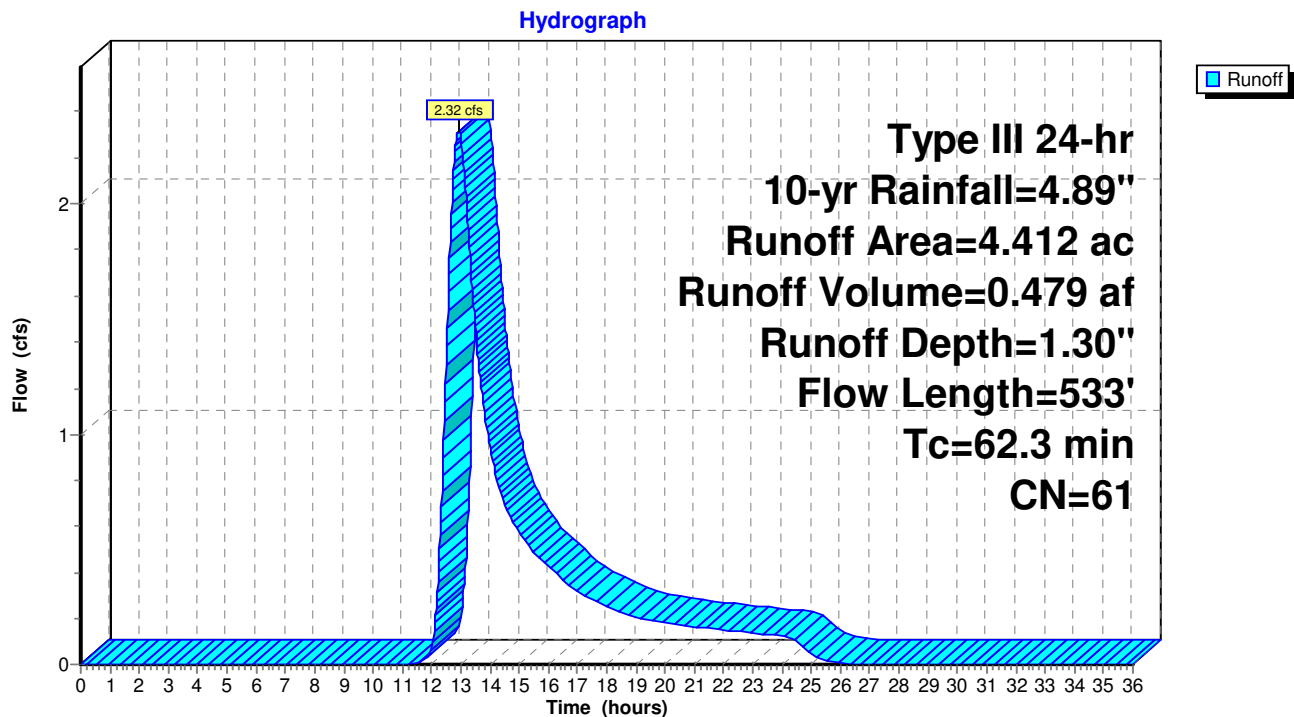
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Subcatchment P3: P3



Subcatchment P4: P4 (Proposed E4)



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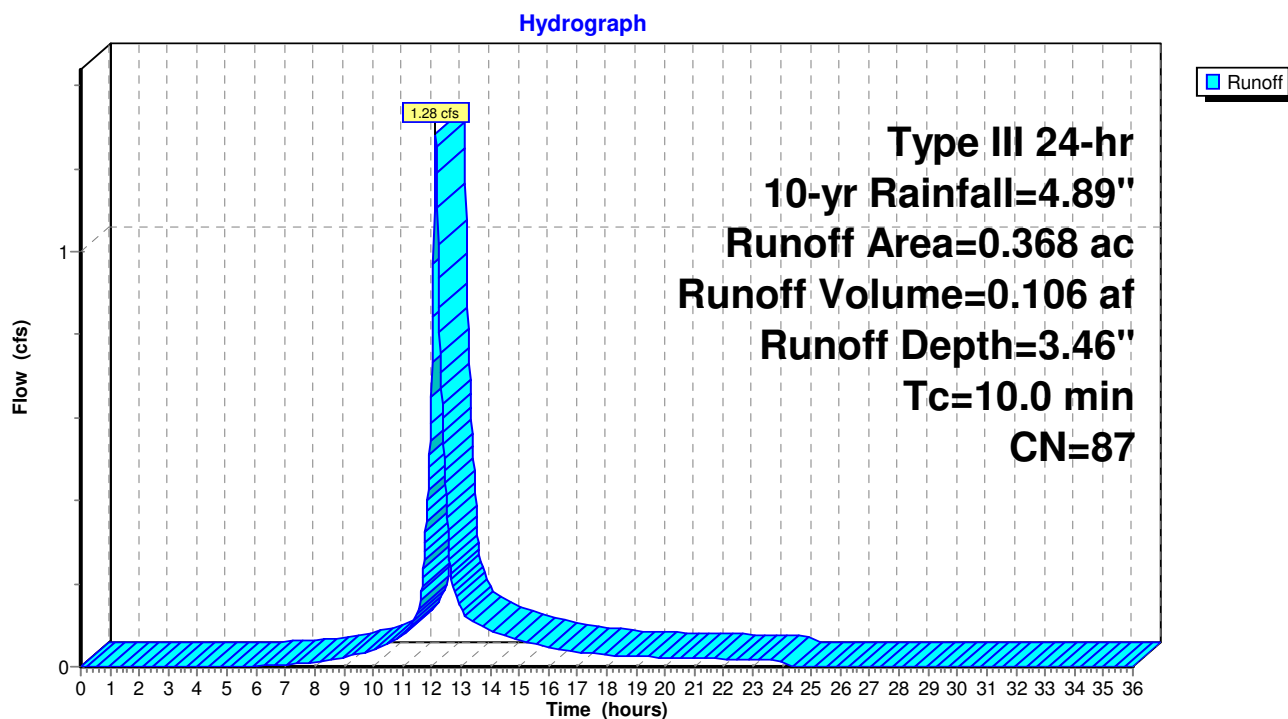
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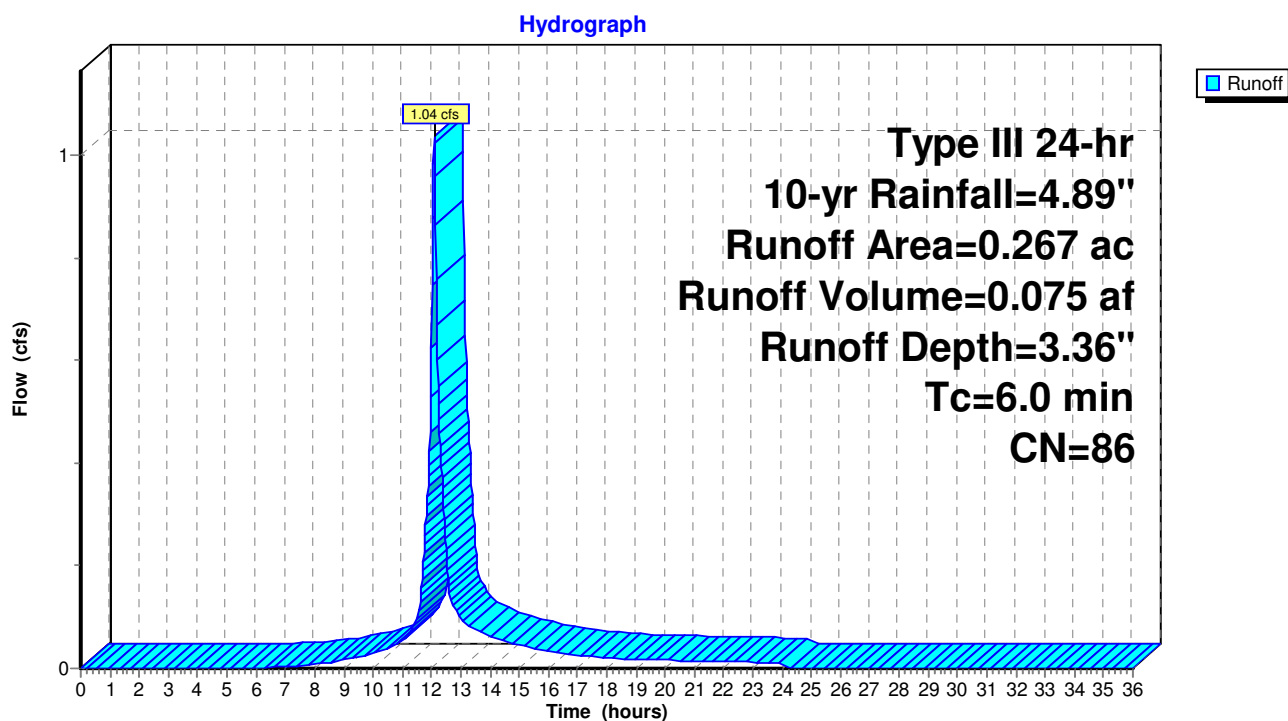
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Subcatchment P5: P5 (Proposed E5)



Subcatchment P6: P6



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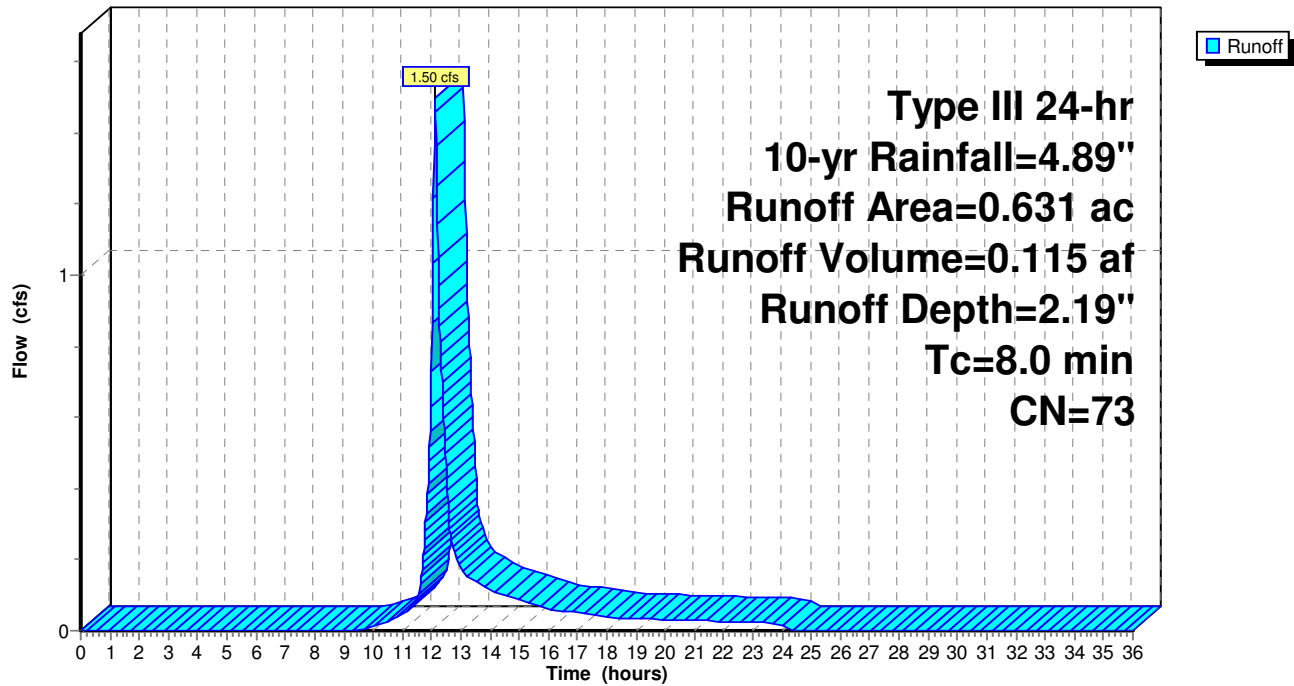
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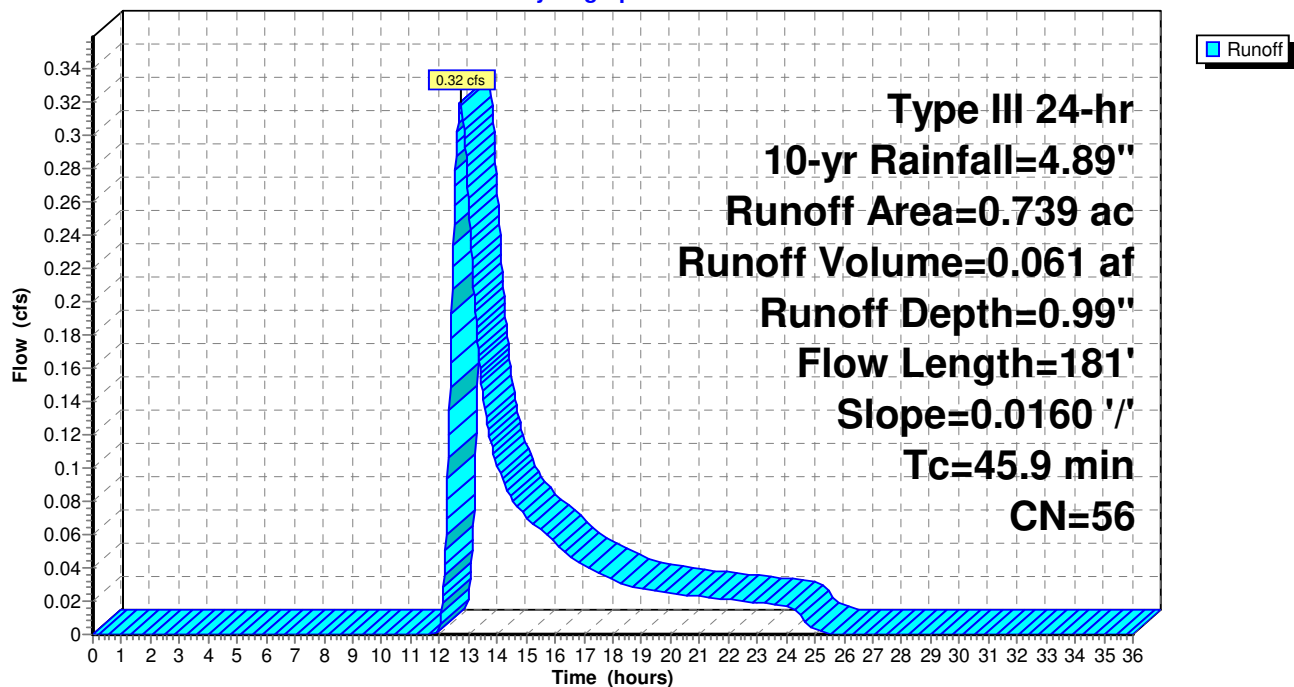
Subcatchment P7: P7

Hydrograph



Subcatchment P8: P8

Hydrograph



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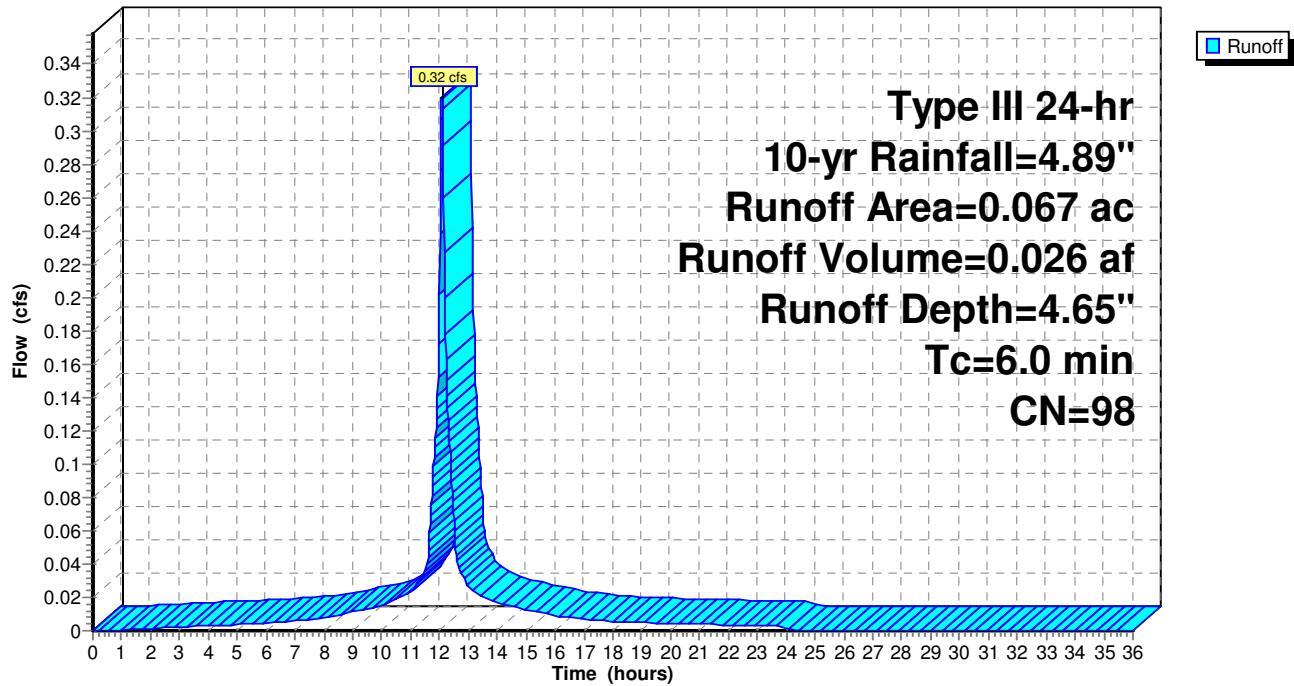
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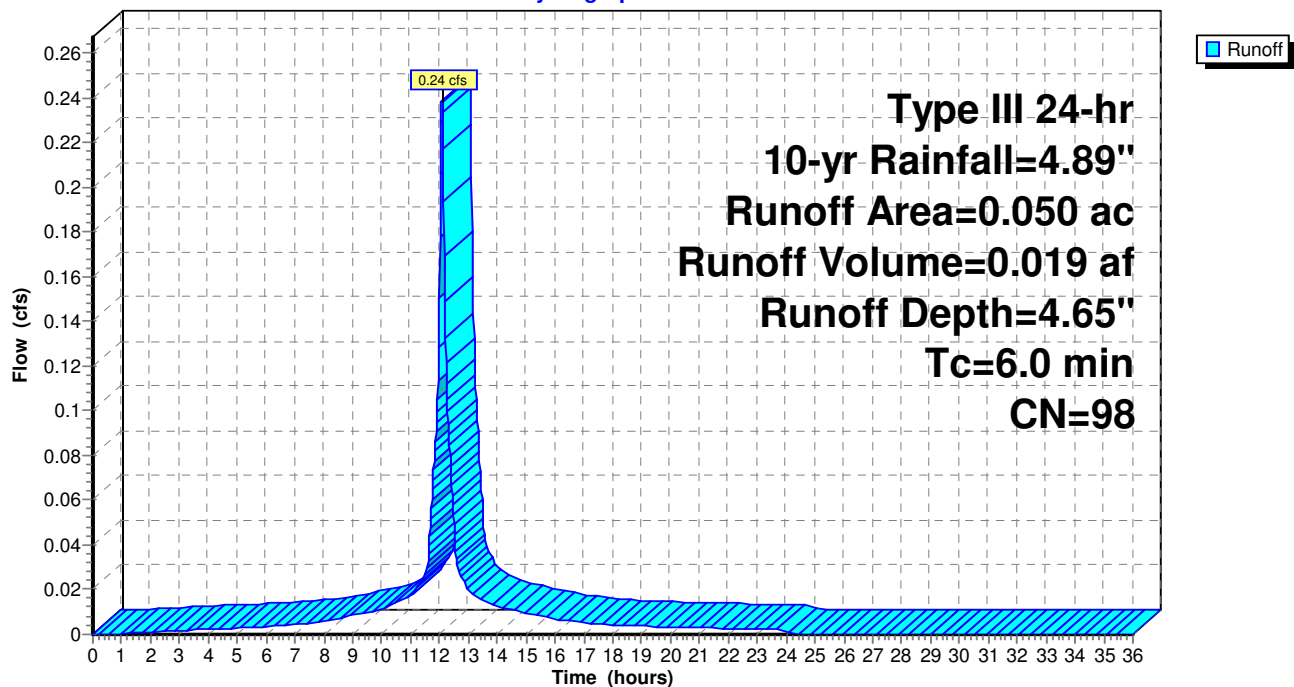
Subcatchment R1: R1

Hydrograph



Subcatchment R2: R2

Hydrograph



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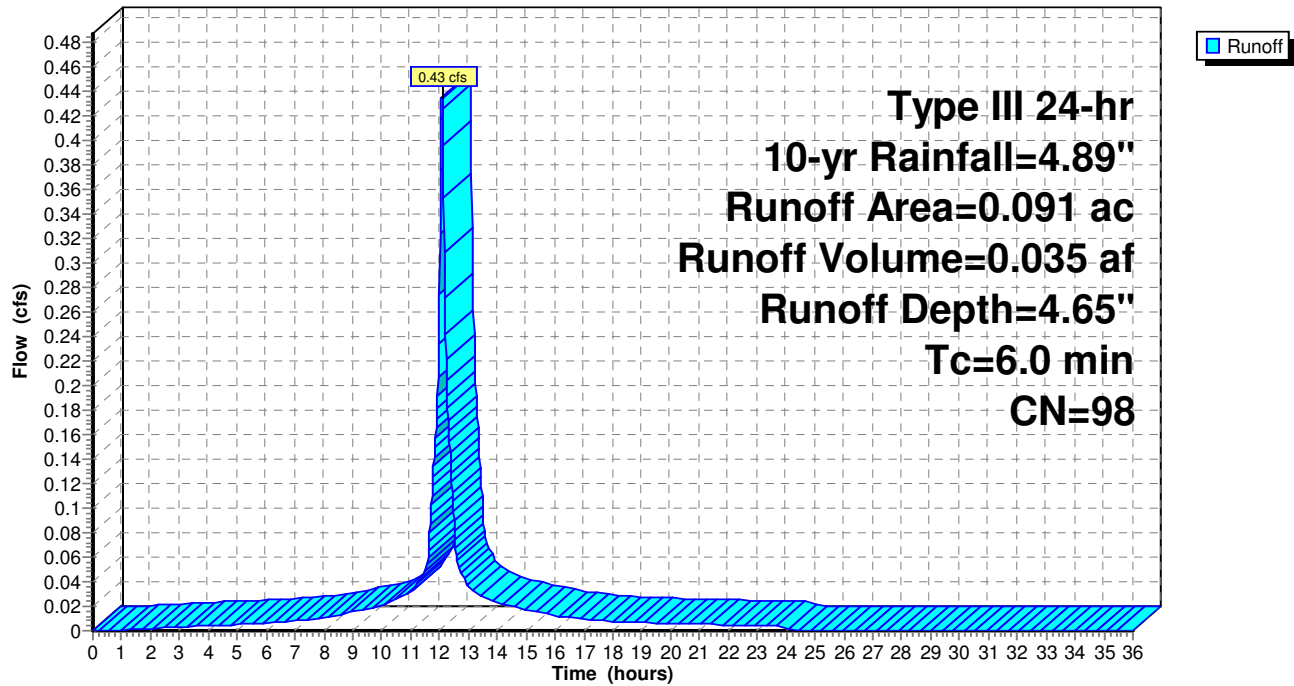
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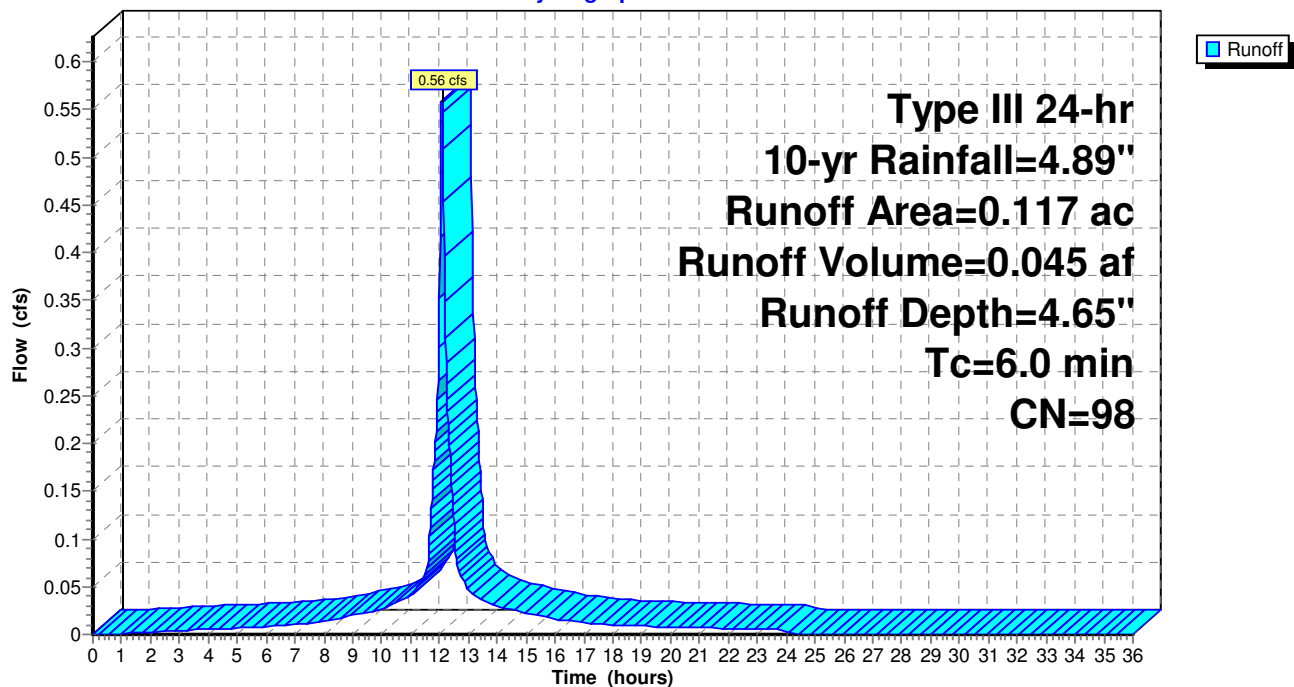
Subcatchment R3: R3

Hydrograph



Subcatchment R4: R4

Hydrograph



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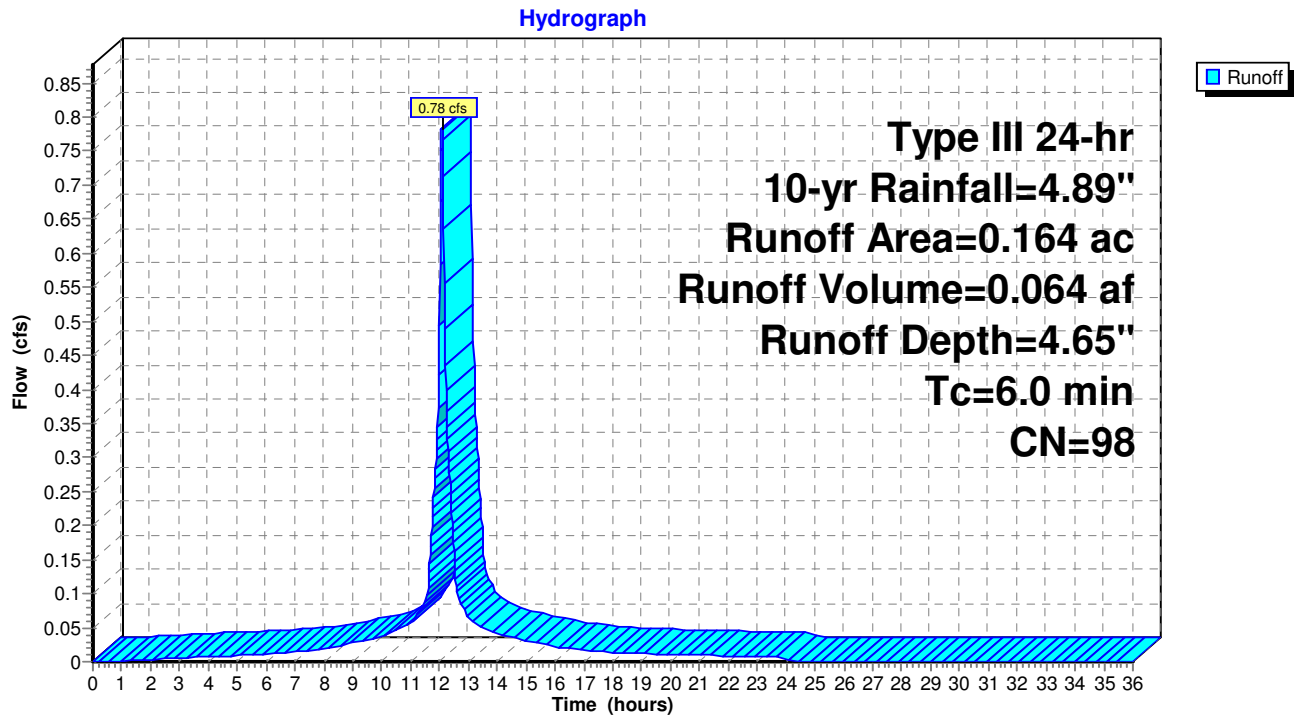
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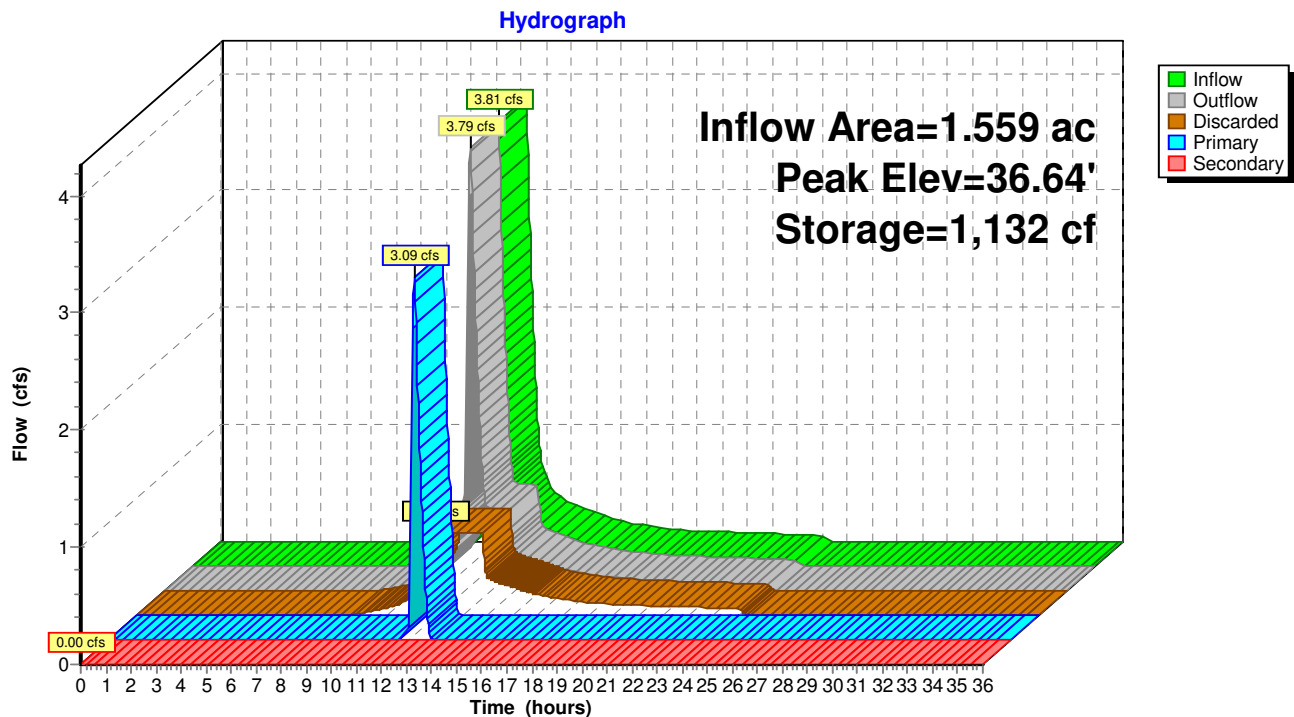
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Subcatchment R5: R5



Pond EP1*: Proposed EP1



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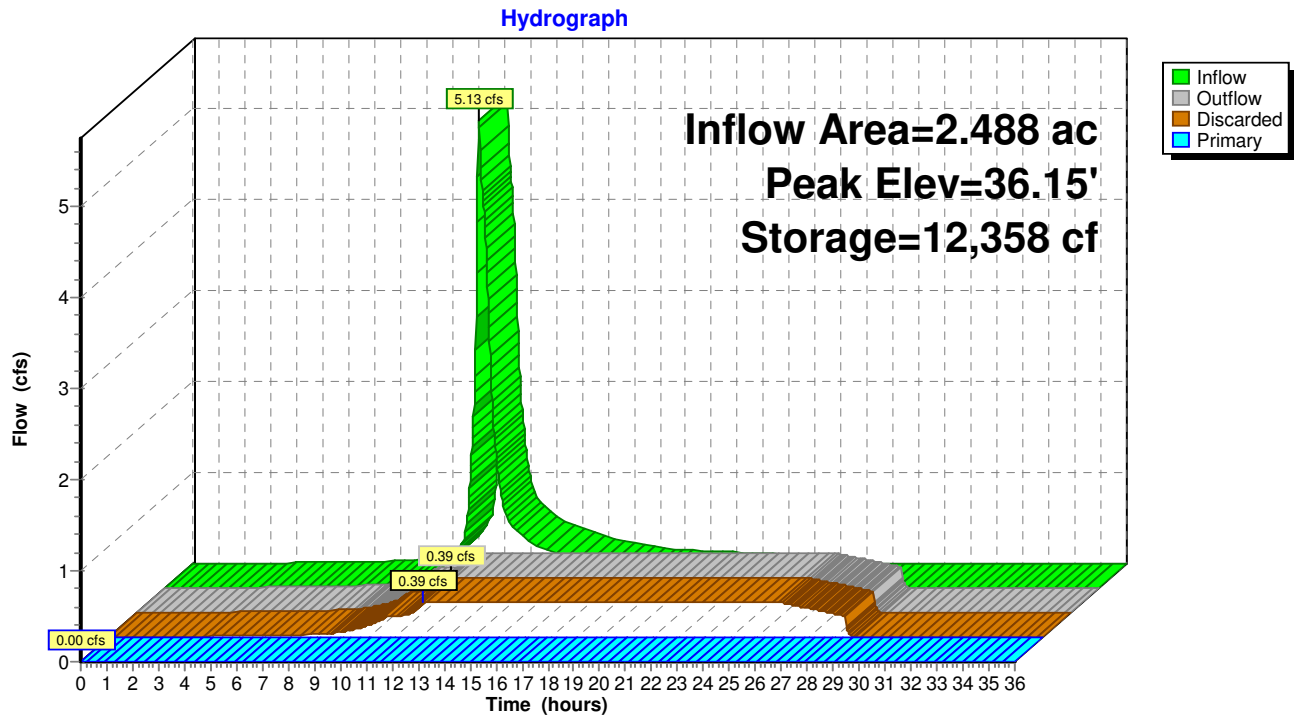
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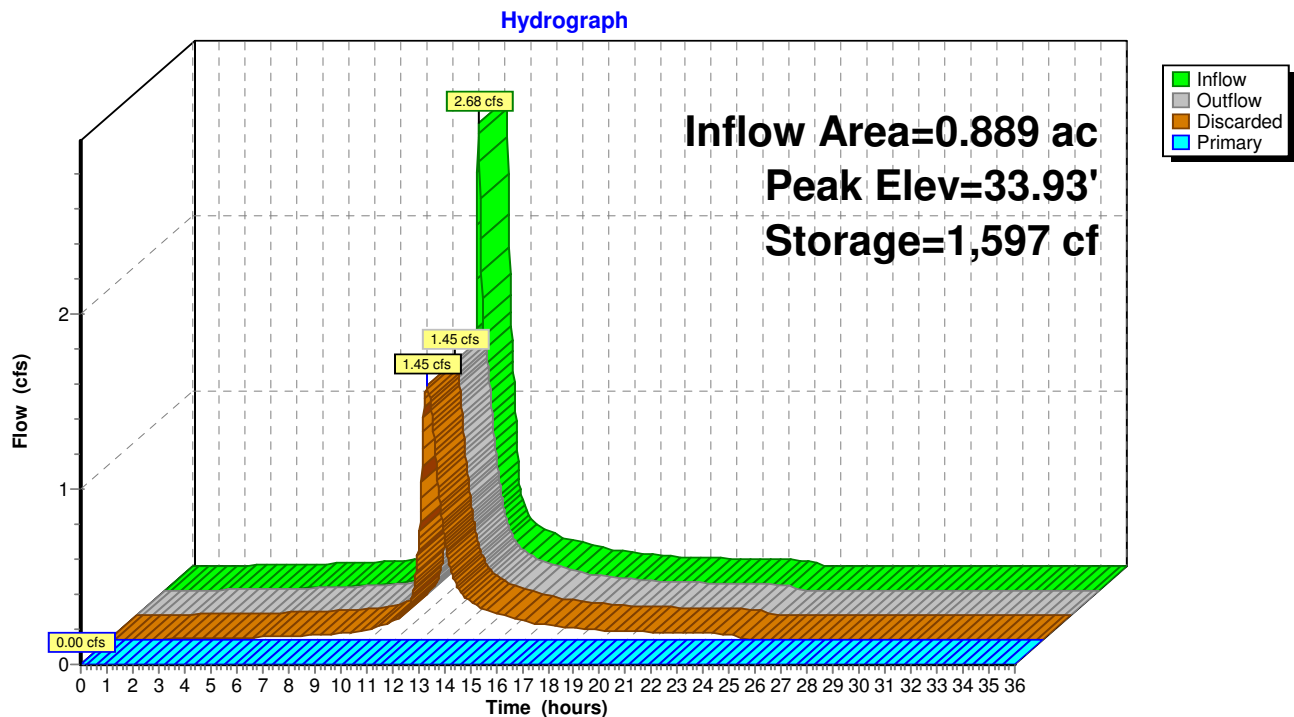
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Pond EP2*: Proposed EP2



Pond PP1: Proposed Pond 1



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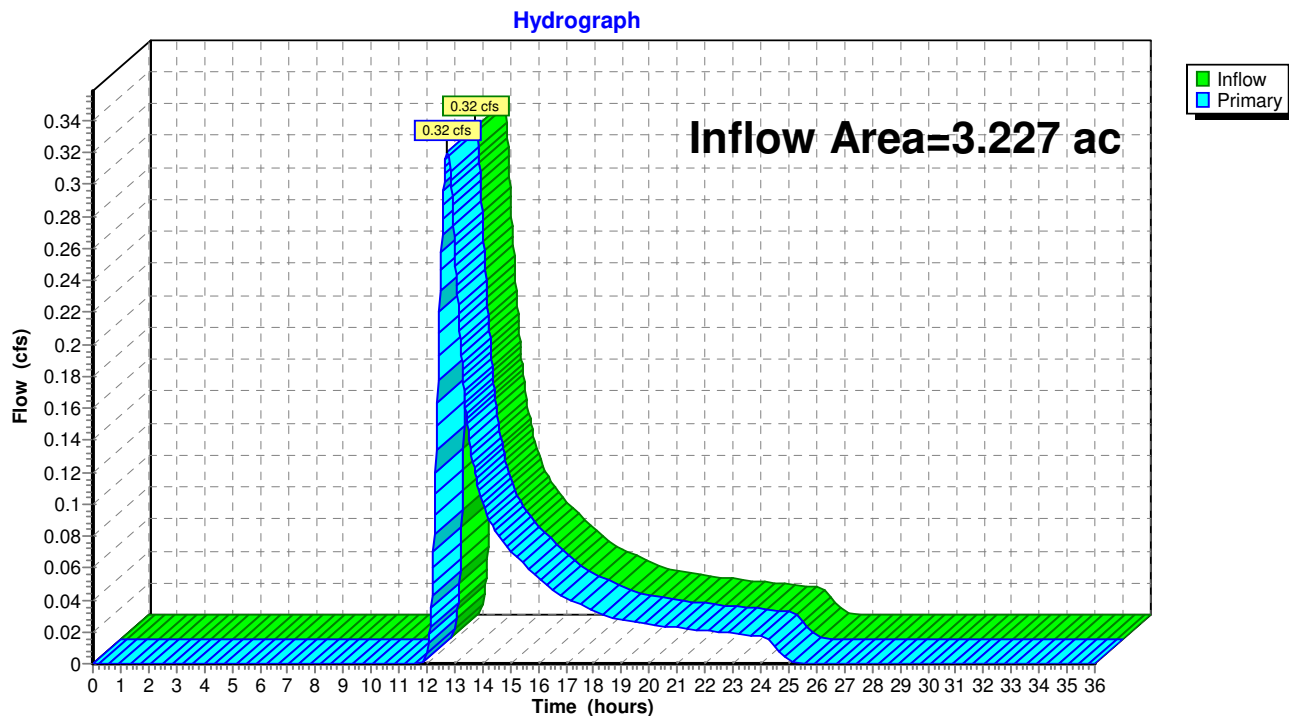
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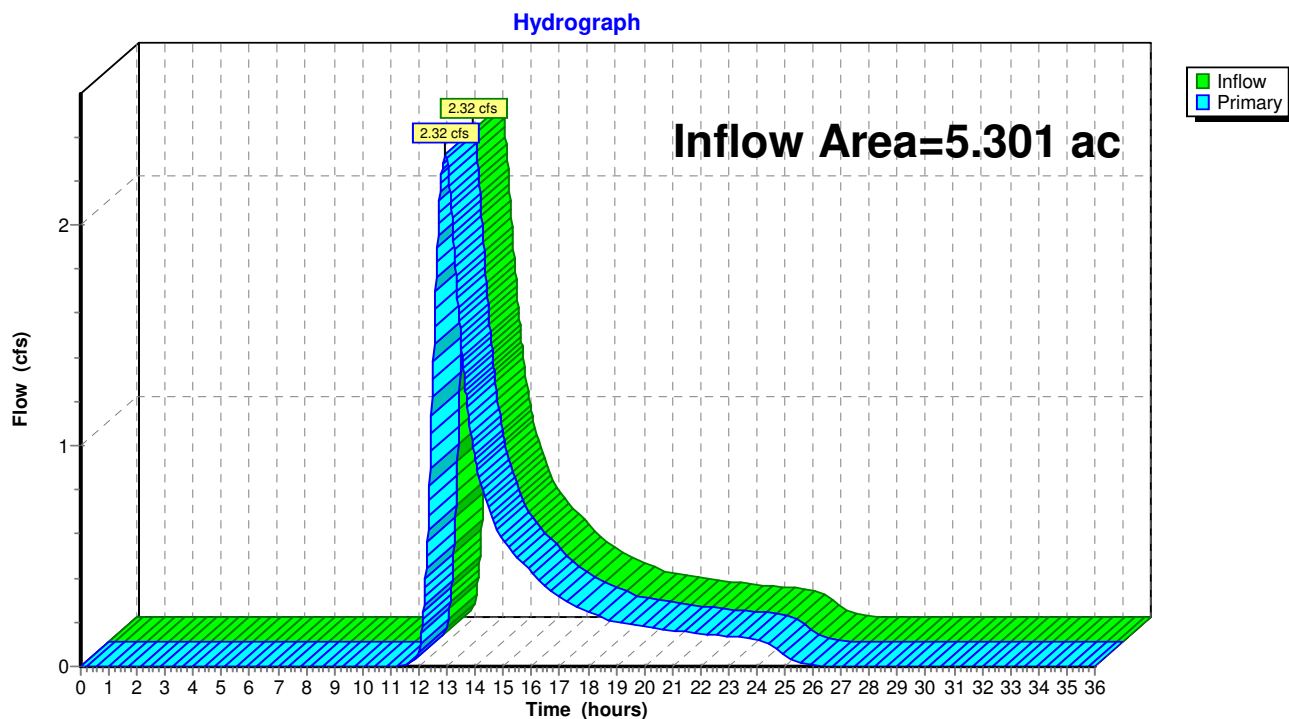
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Link PDP1: DP1 (Proposed)



Link PDP2: DP2 (Proposed)



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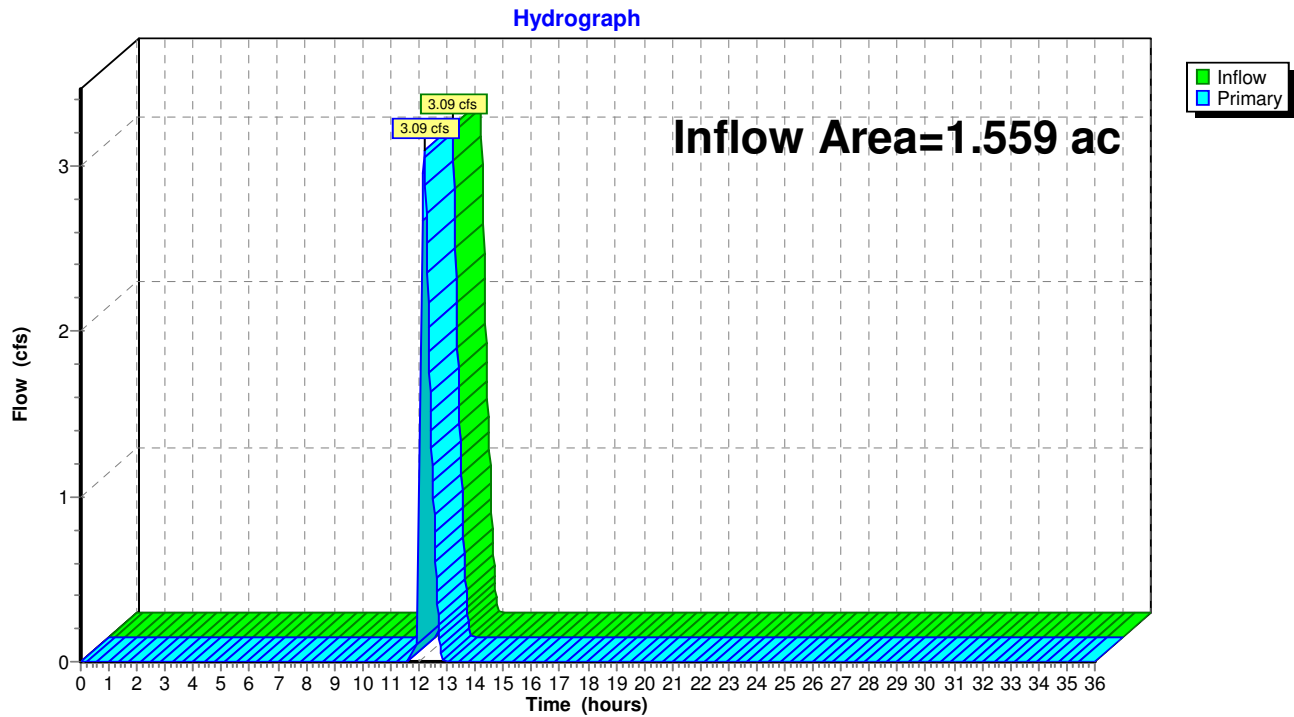
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Link PDP3: DP3 (Proposed)



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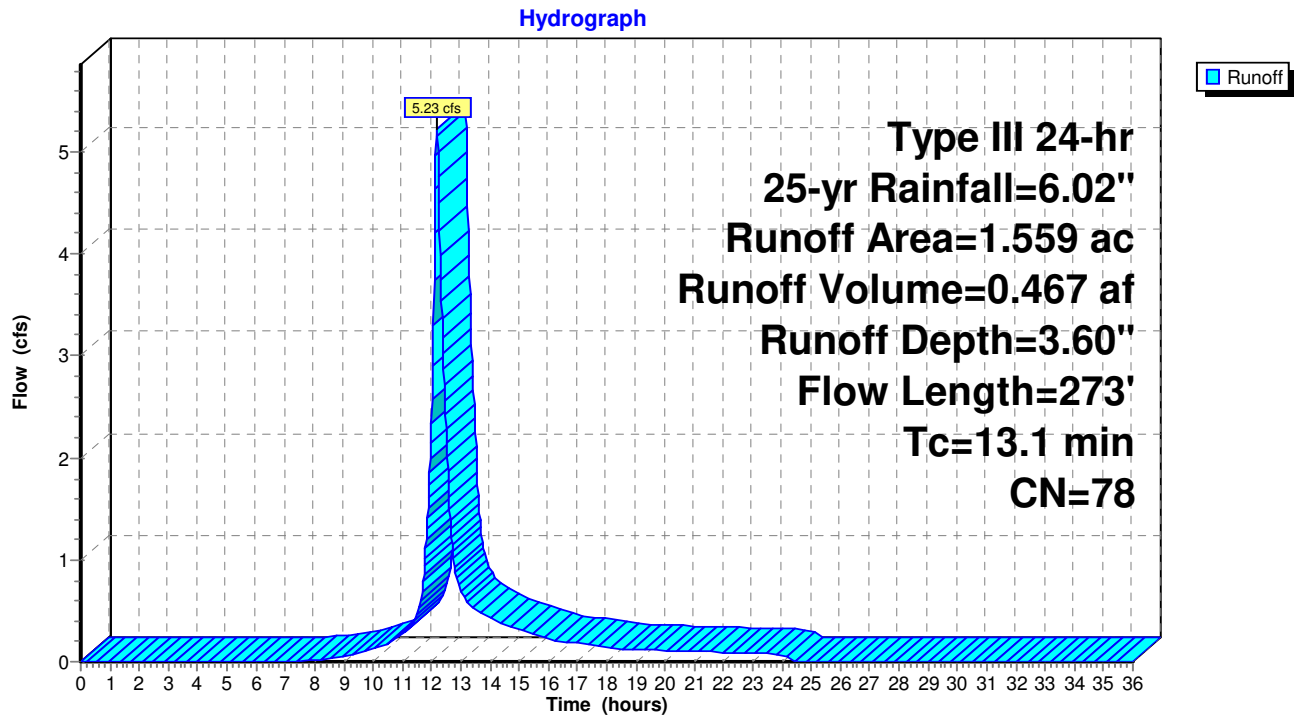
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Type III 24-hr 25-yr Rainfall=6.02"

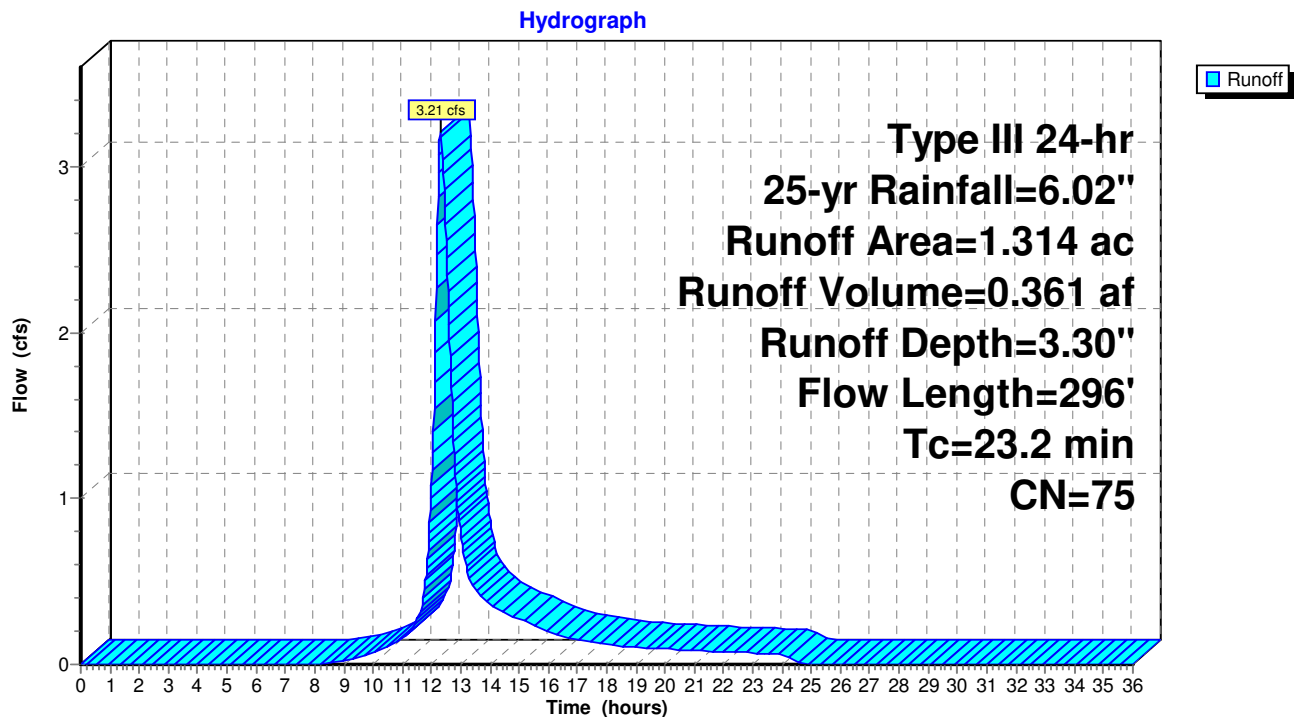
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Subcatchment P1: P1



Subcatchment P2: P2



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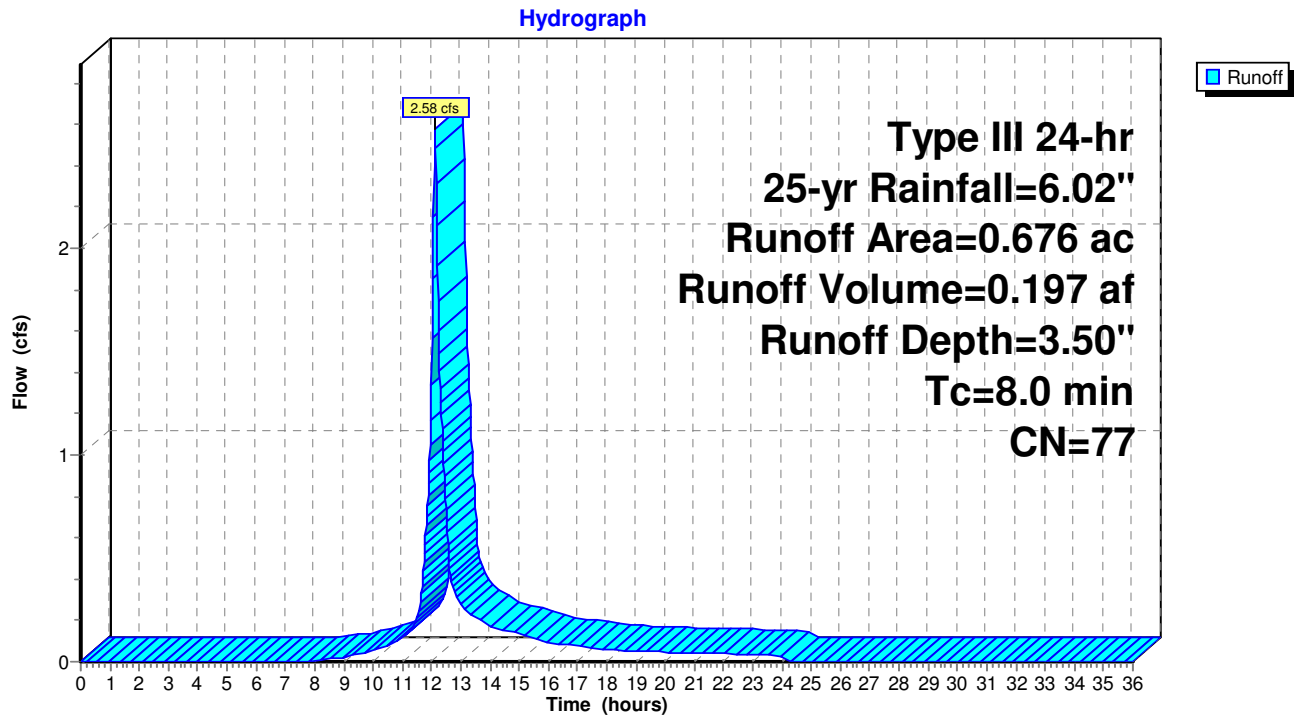
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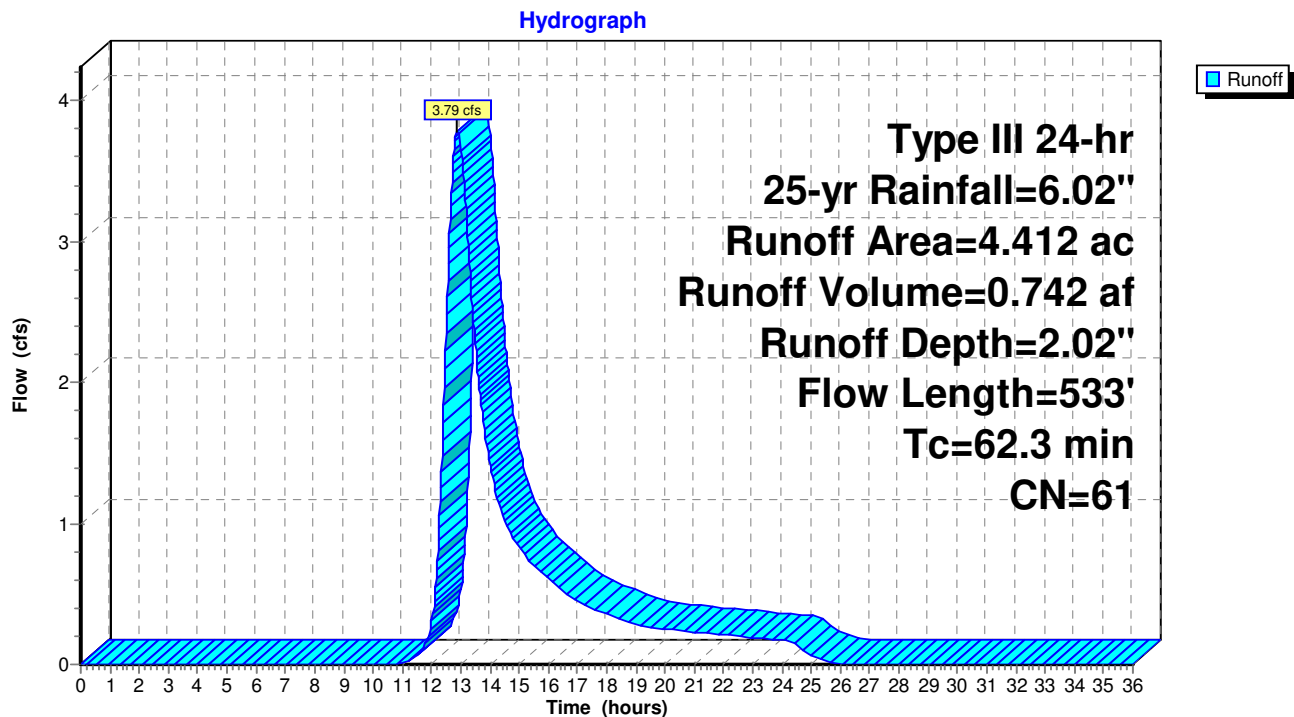
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Subcatchment P3: P3



Subcatchment P4: P4 (Proposed E4)



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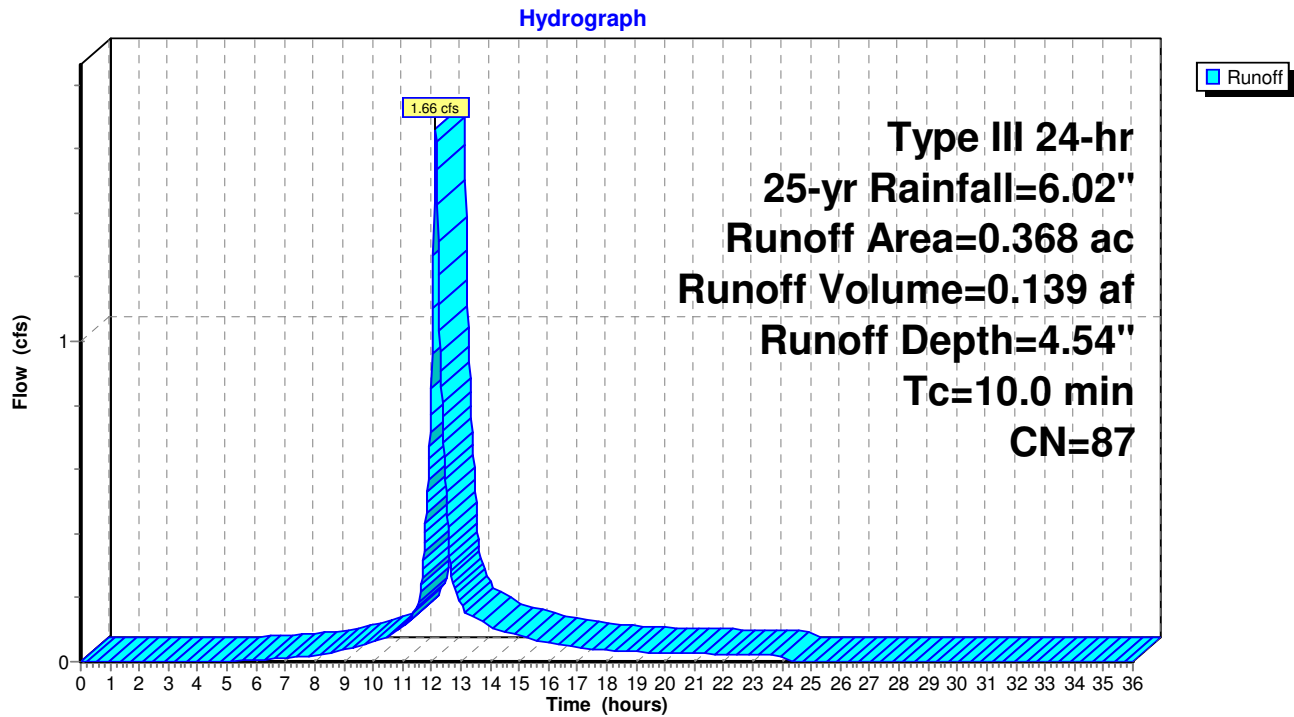
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Type III 24-hr 25-yr Rainfall=6.02"

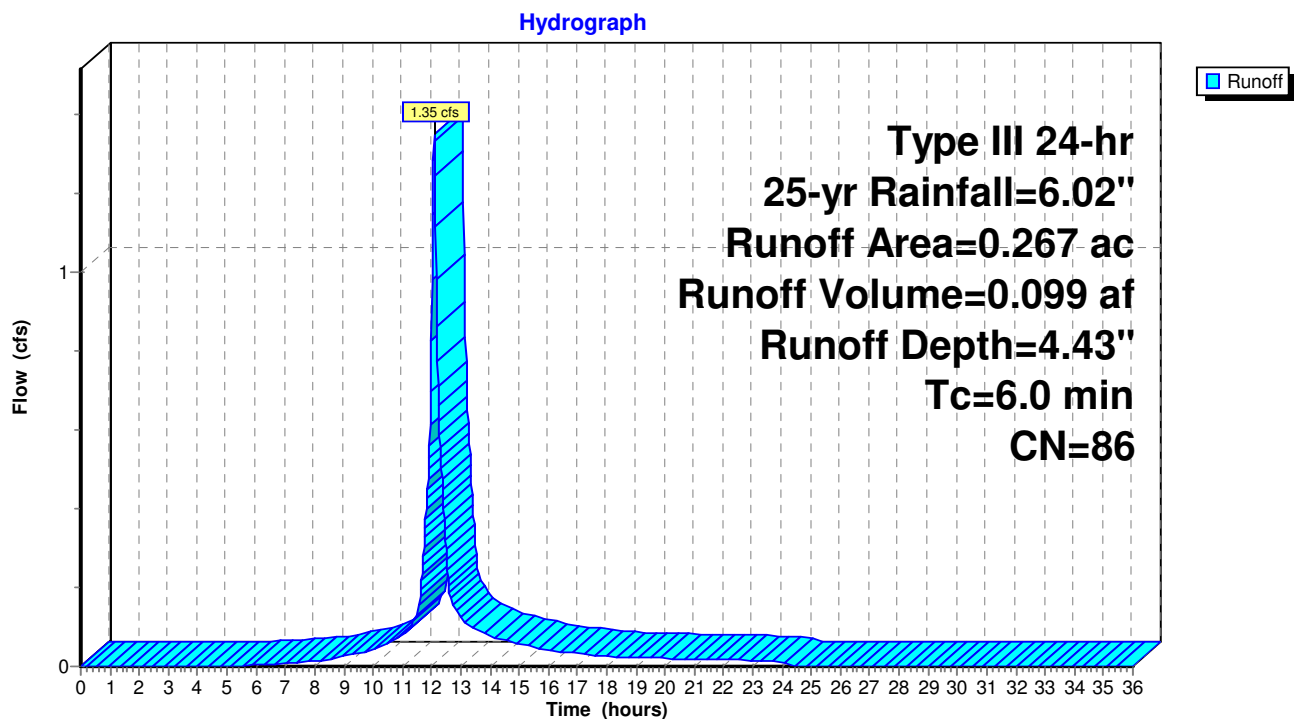
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Subcatchment P5: P5 (Proposed E5)



Subcatchment P6: P6



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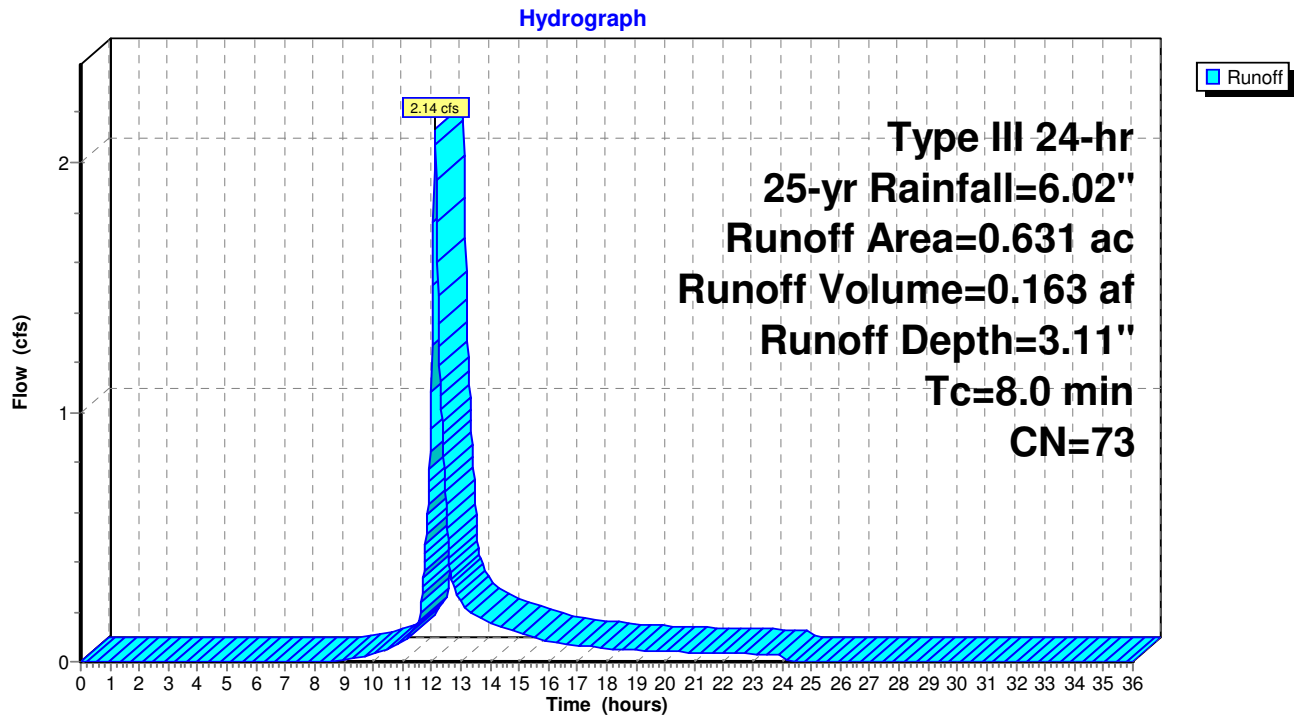
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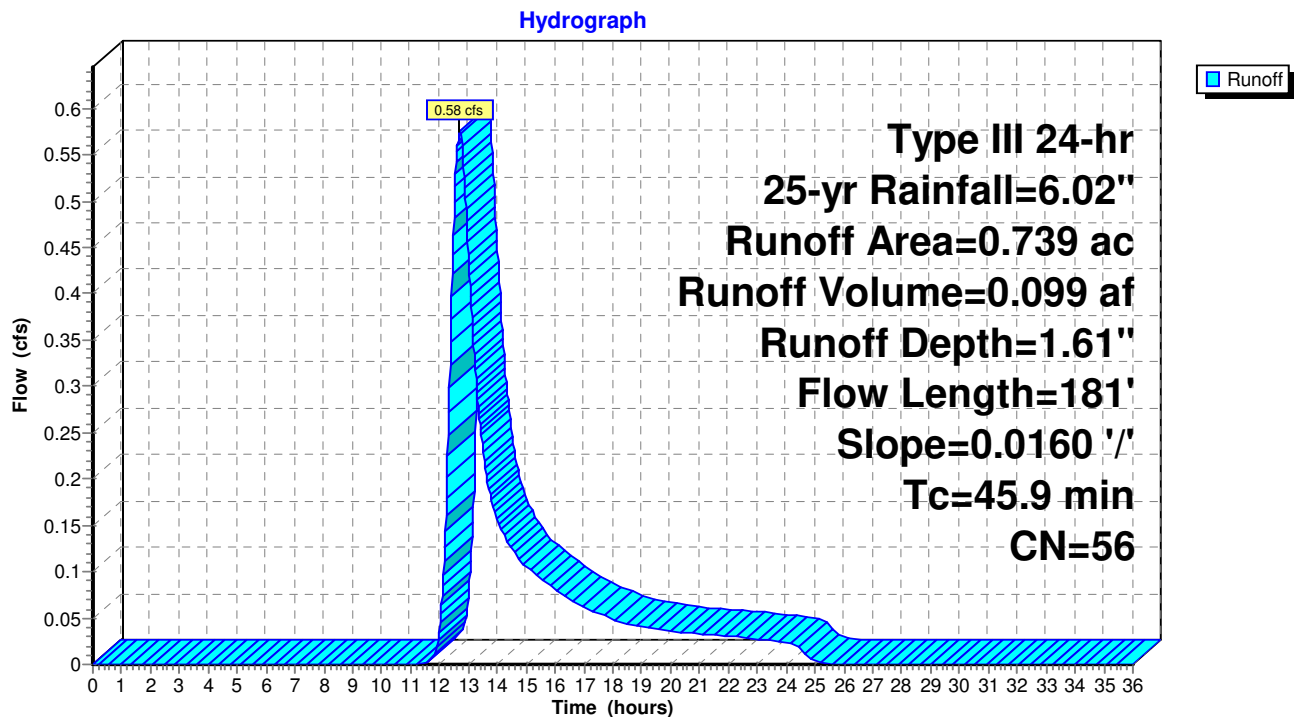
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Subcatchment P7: P7



Subcatchment P8: P8



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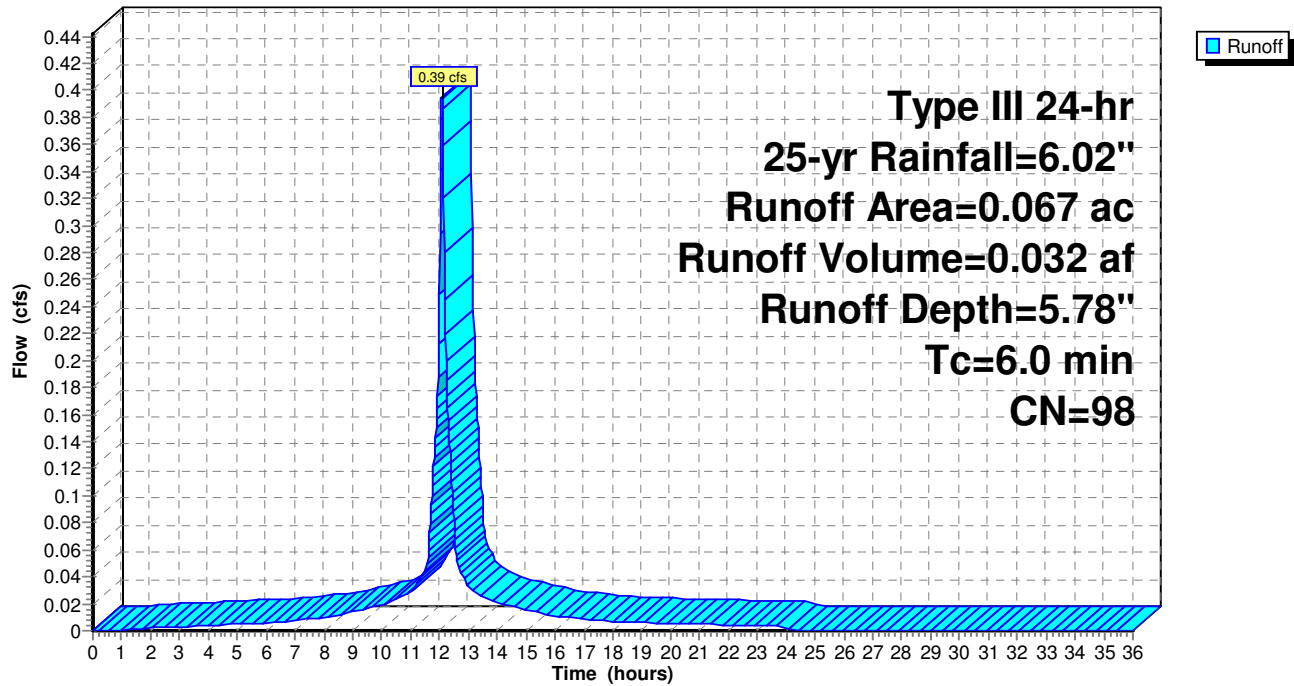
Proposed Conditions
Type III 24-hr 25-yr Rainfall=6.02"

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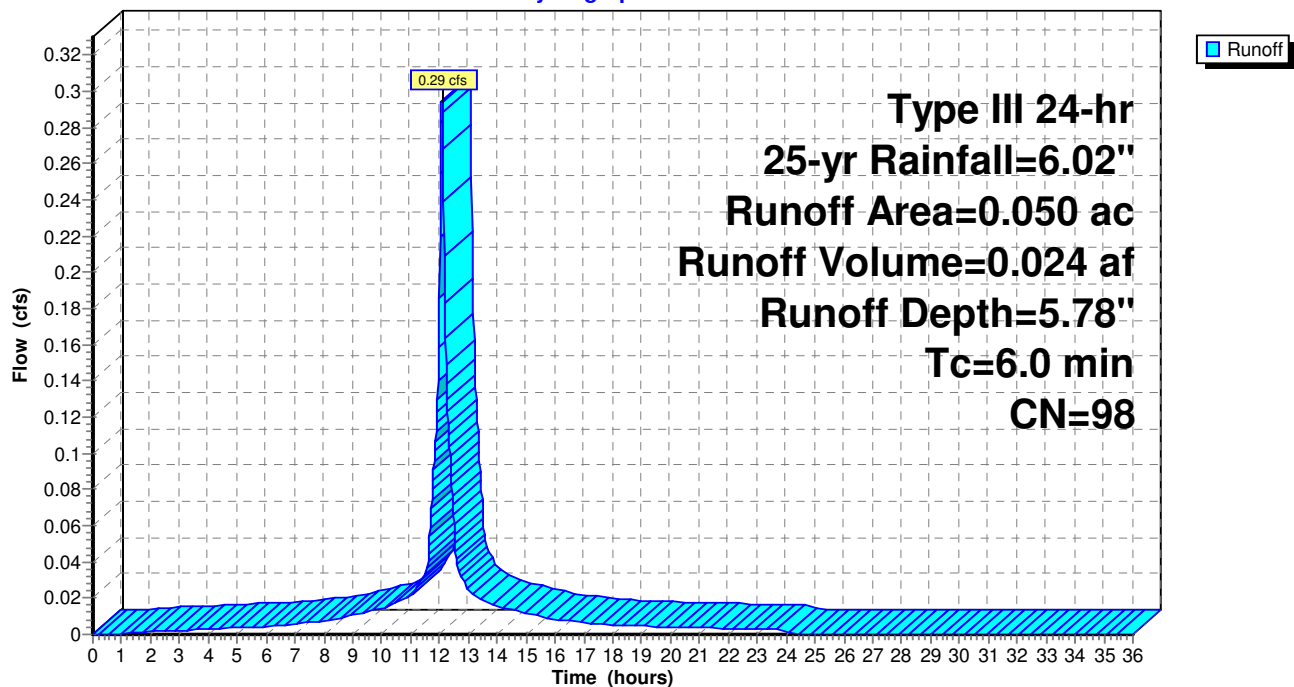
Subcatchment R1: R1

Hydrograph



Subcatchment R2: R2

Hydrograph



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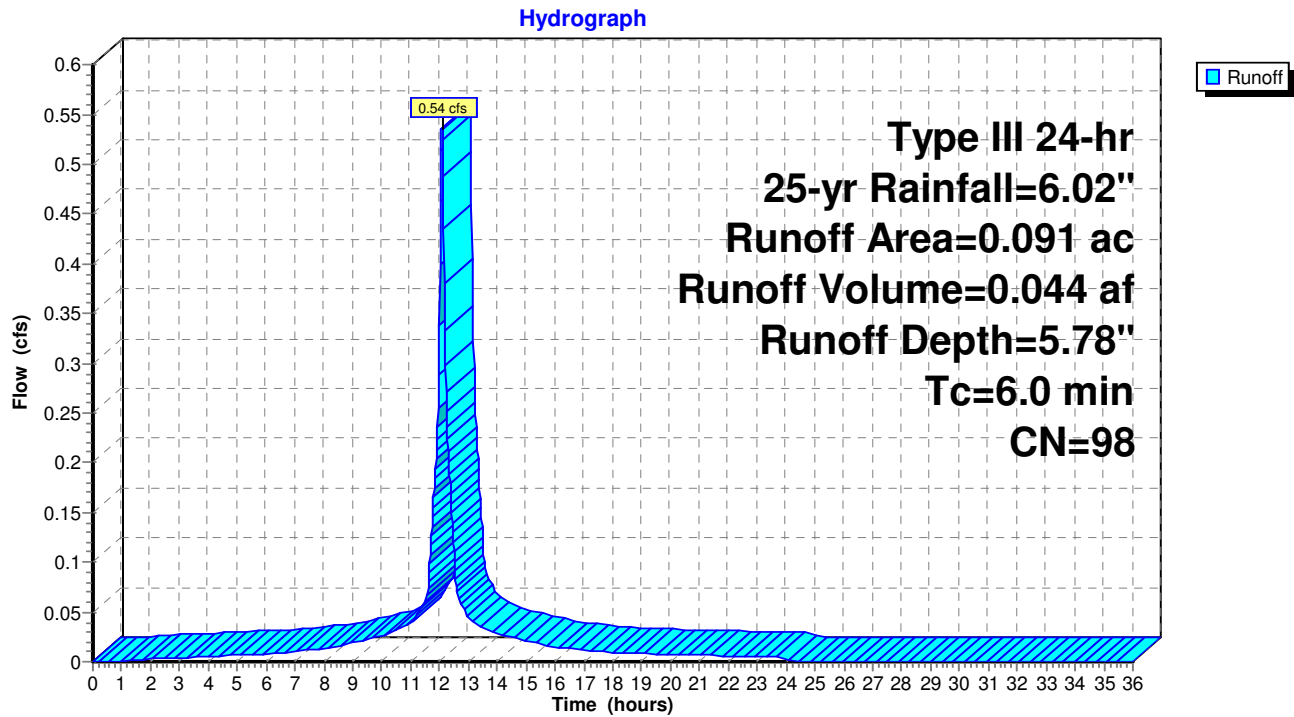
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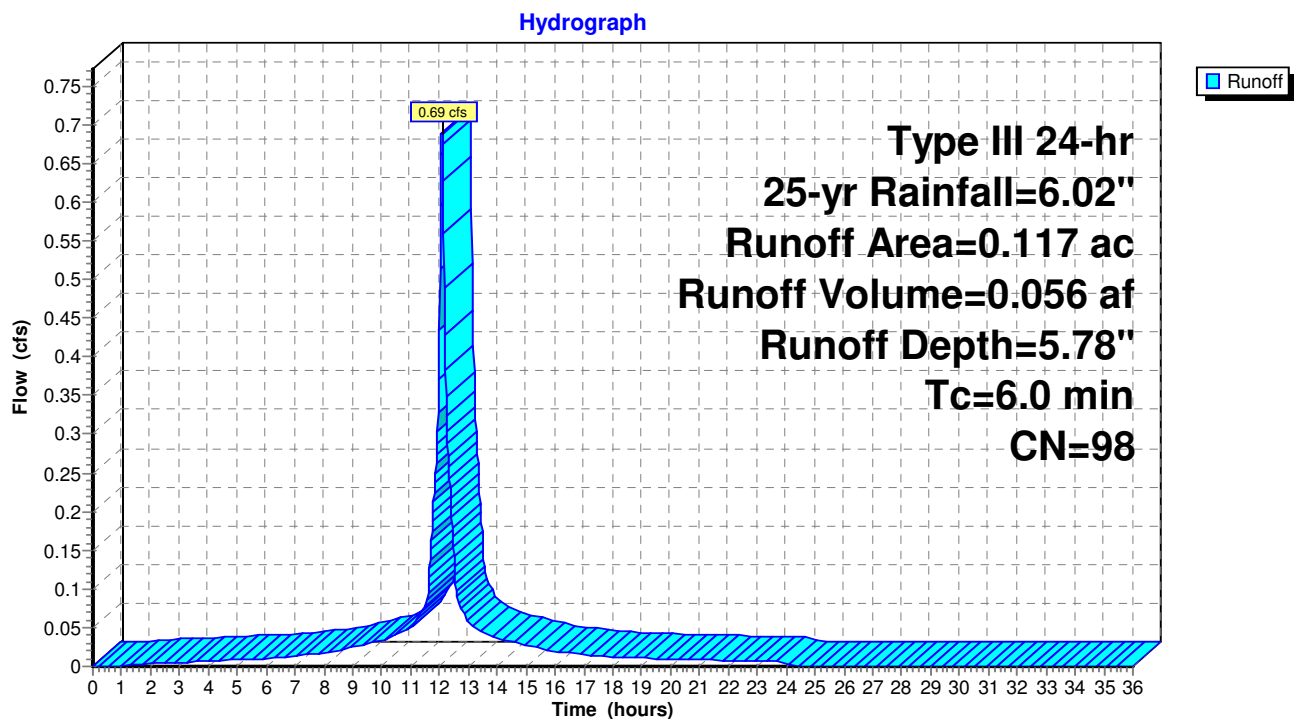
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Subcatchment R3: R3



Subcatchment R4: R4



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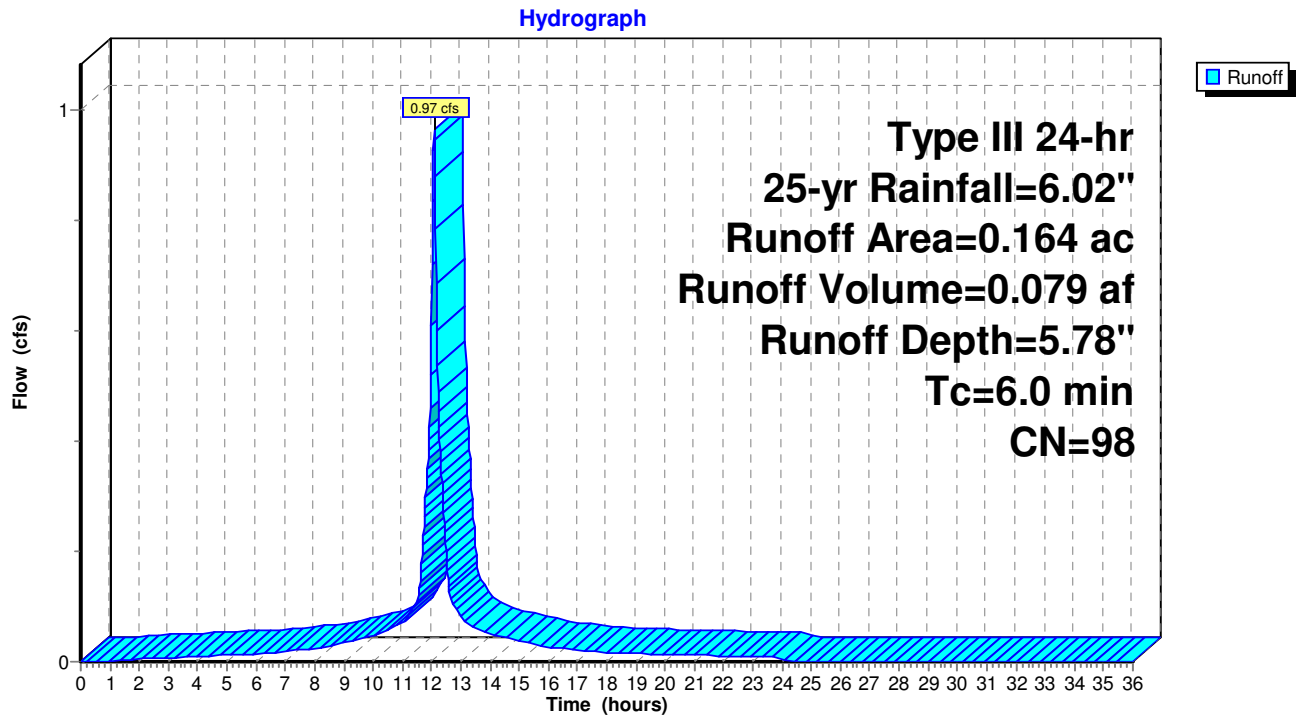
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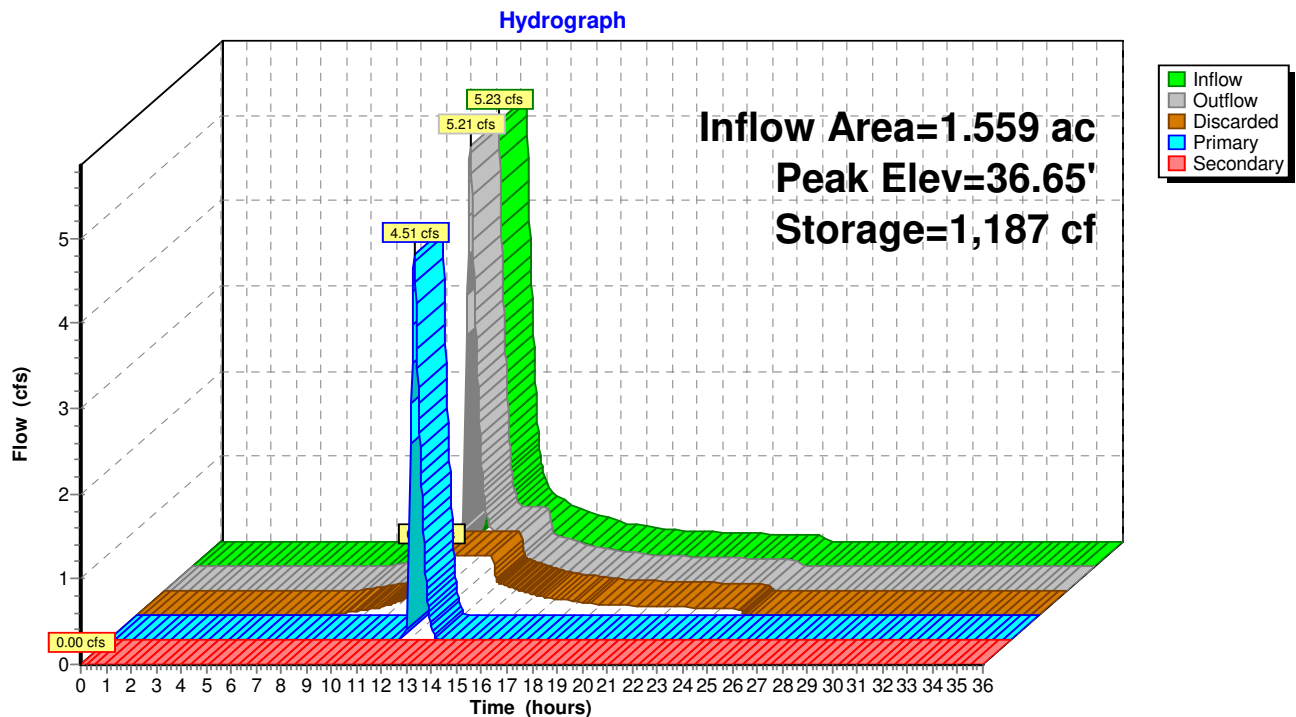
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Subcatchment R5: R5



Pond EP1*: Proposed EP1



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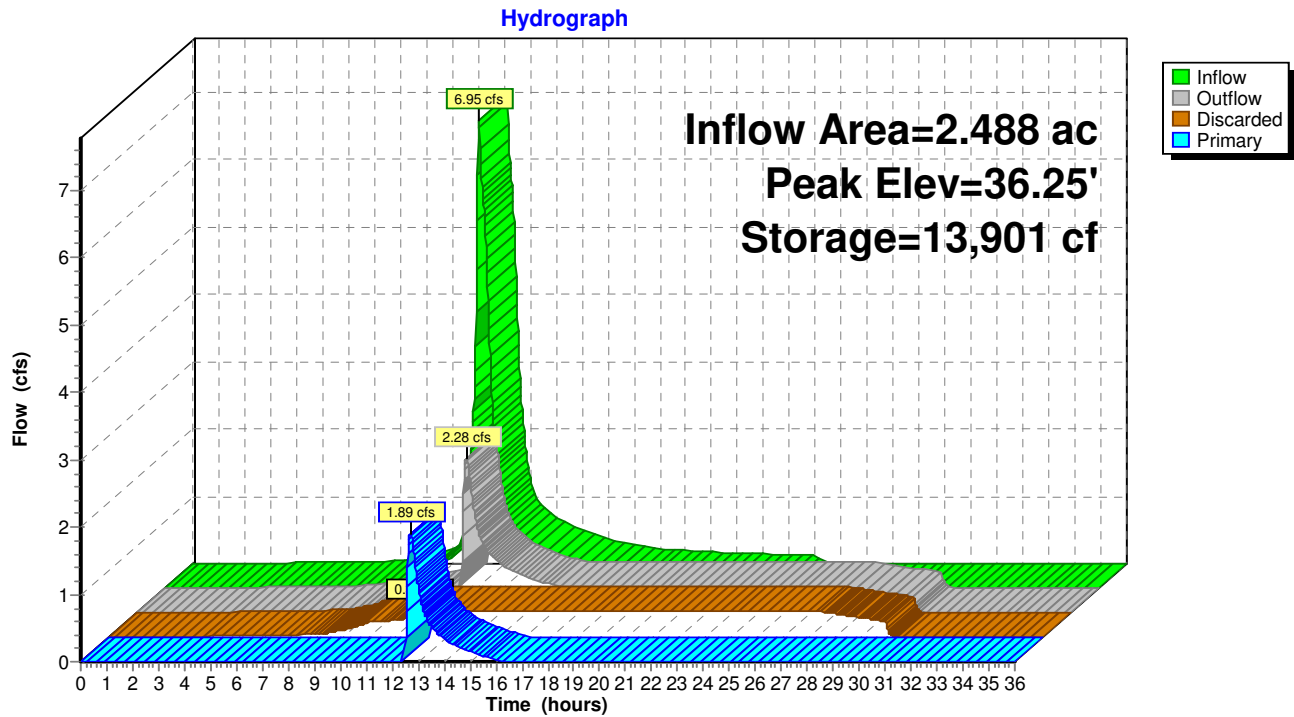
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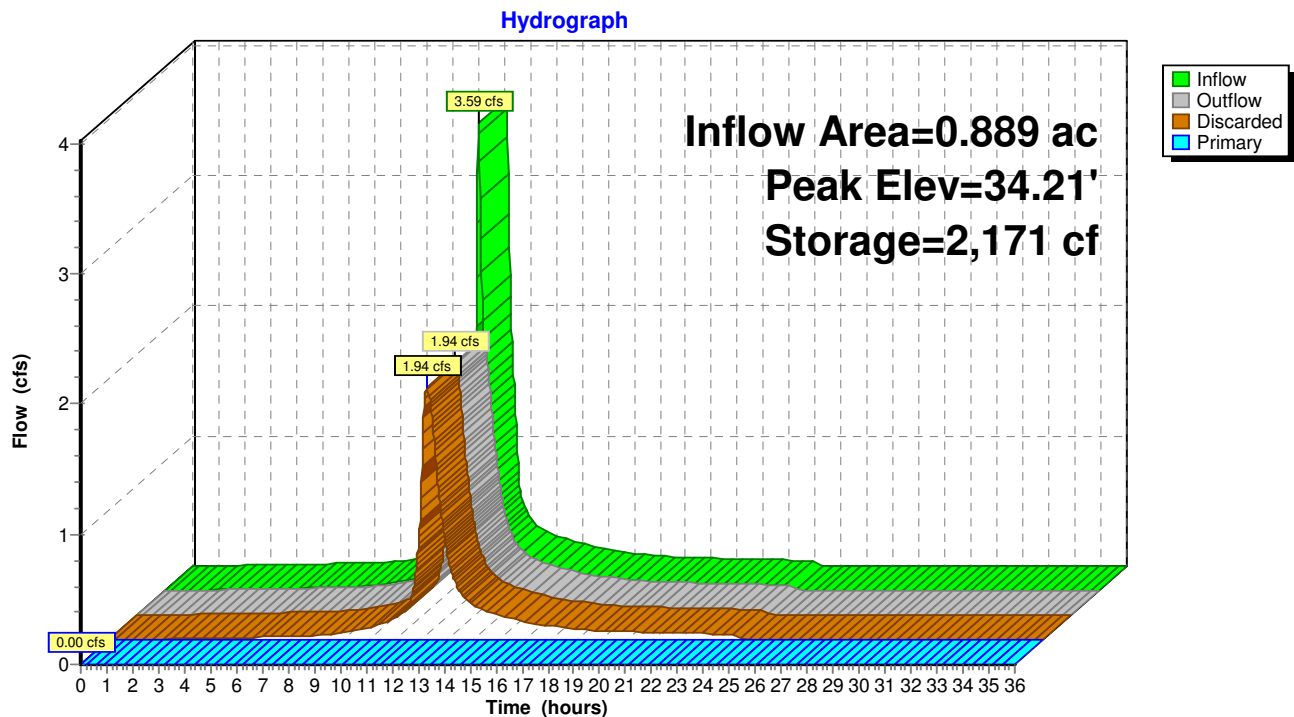
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Pond EP2*: Proposed EP2



Pond PP1: Proposed Pond 1



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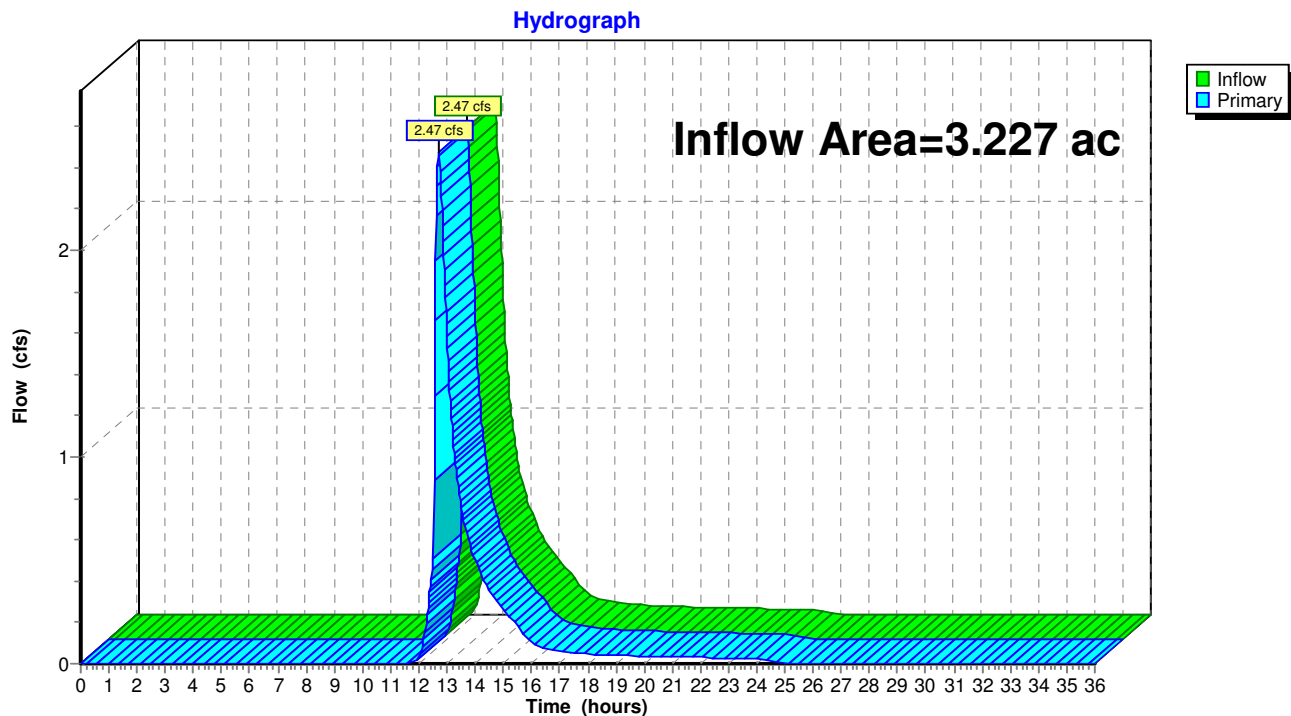
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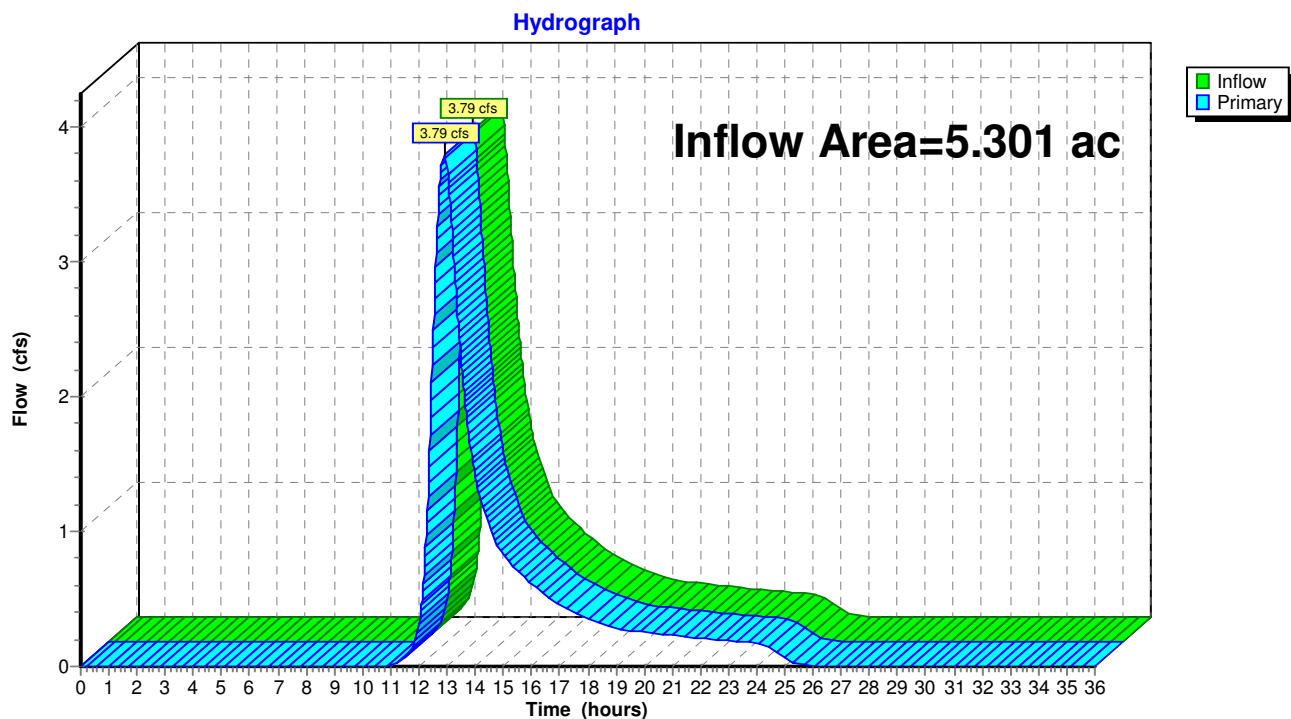
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Link PDP1: DP1 (Proposed)



Link PDP2: DP2 (Proposed)



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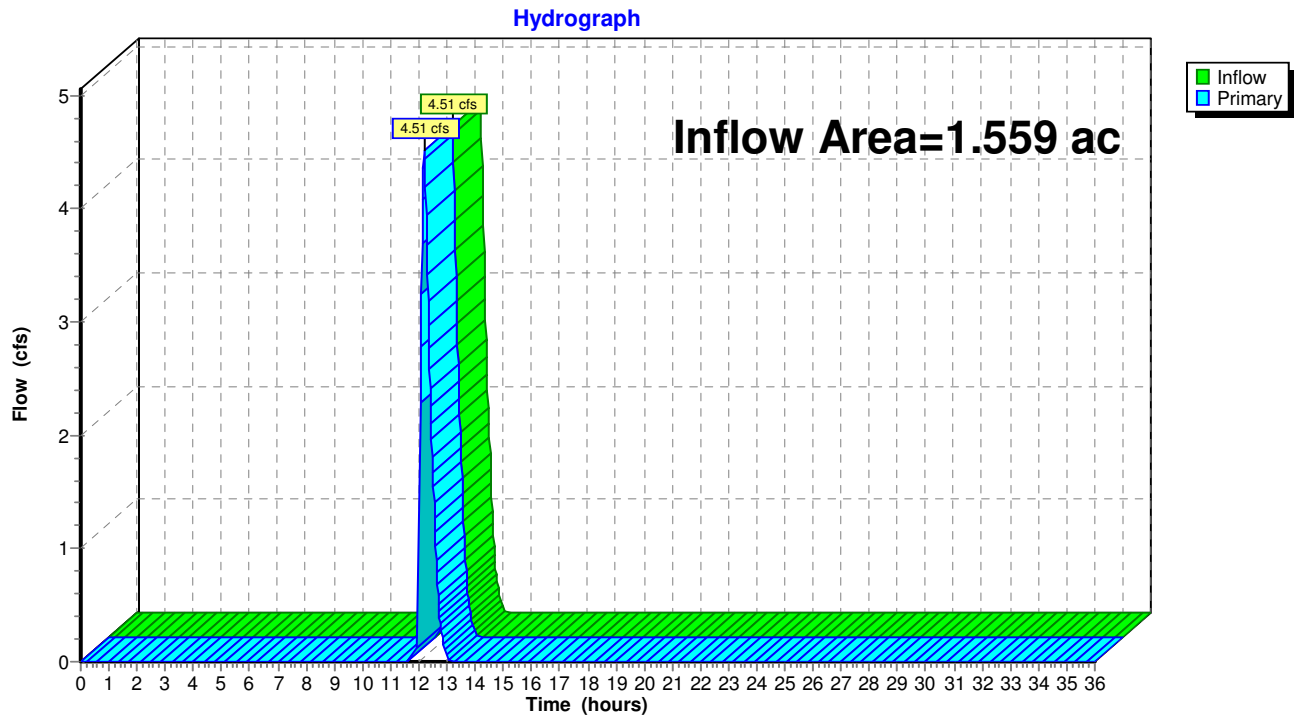
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Type III 24-hr 25-yr Rainfall=6.02"

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Link PDP3: DP3 (Proposed)



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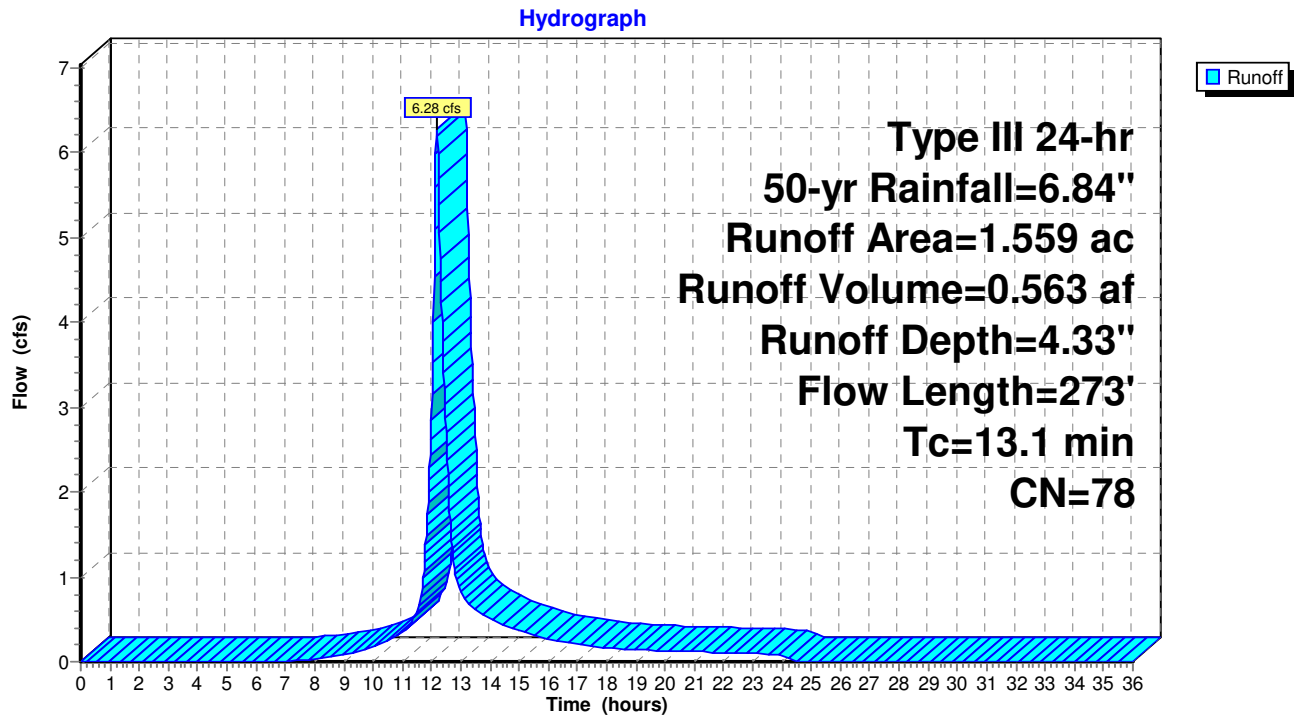
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Proposed Conditions
Type III 24-hr 50-yr Rainfall=6.84"

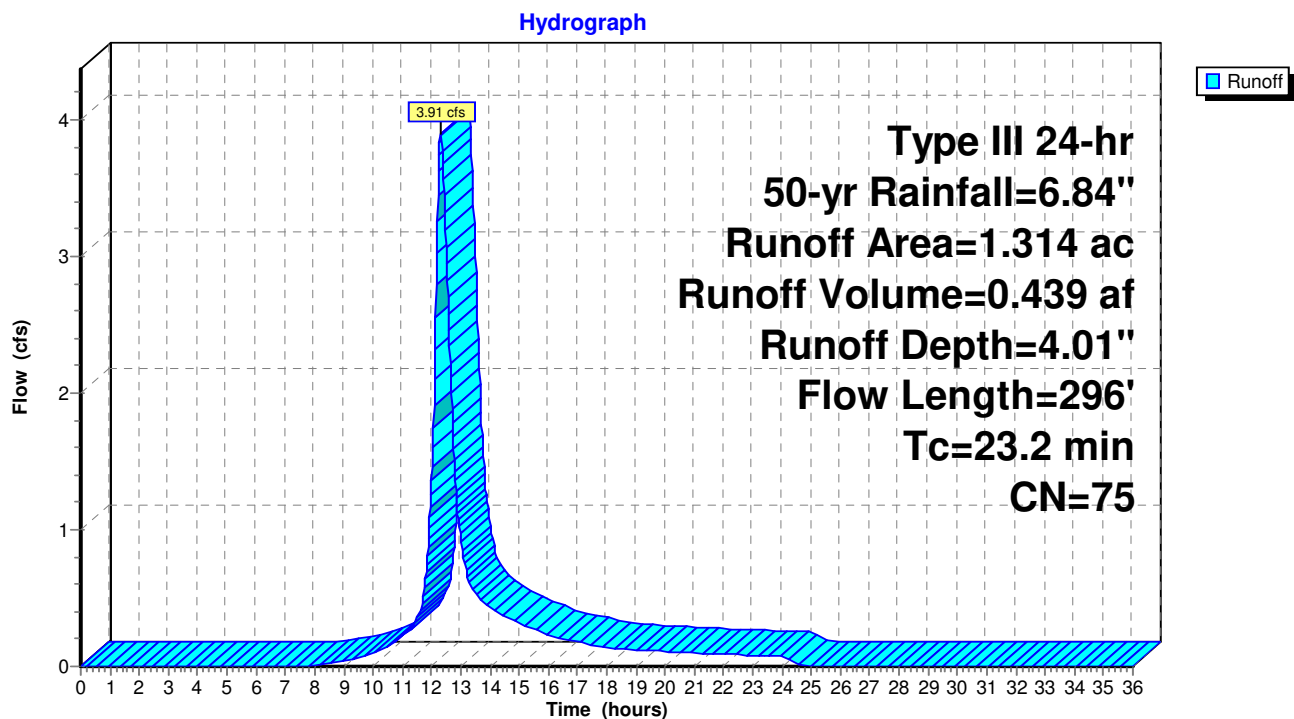
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Subcatchment P1: P1



Subcatchment P2: P2



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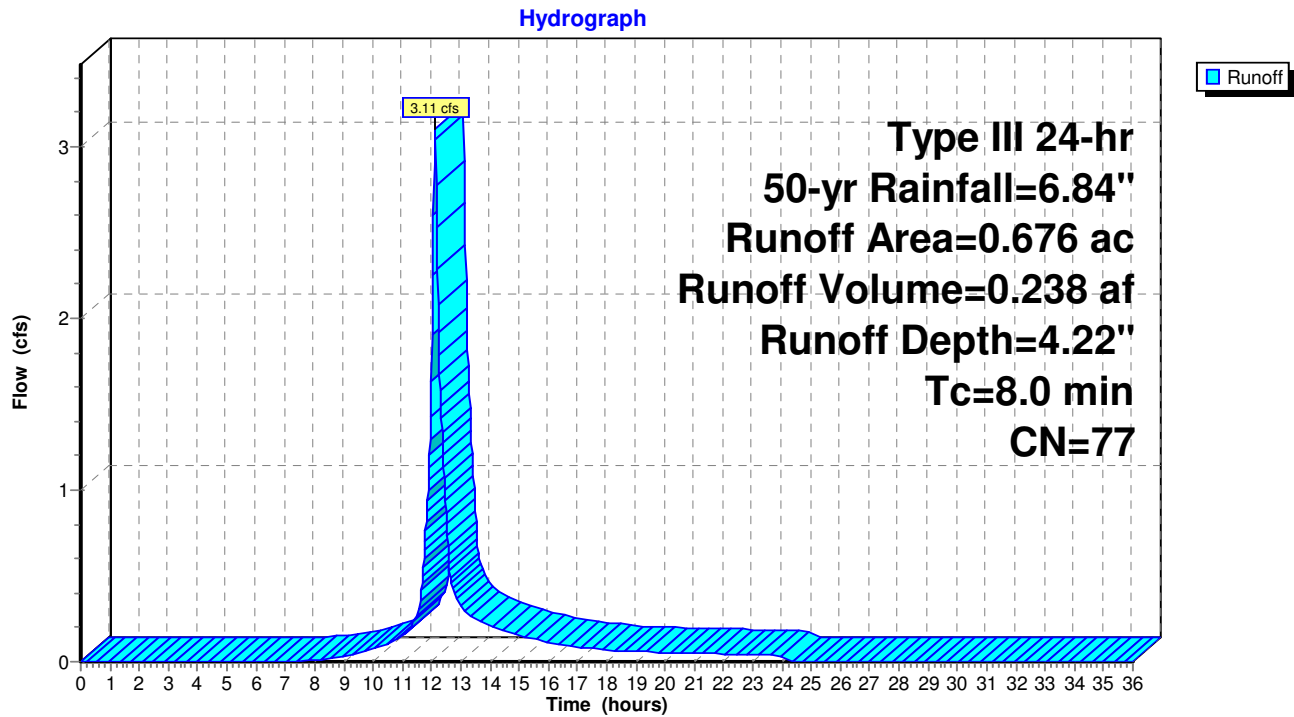
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Type III 24-hr 50-yr Rainfall=6.84"

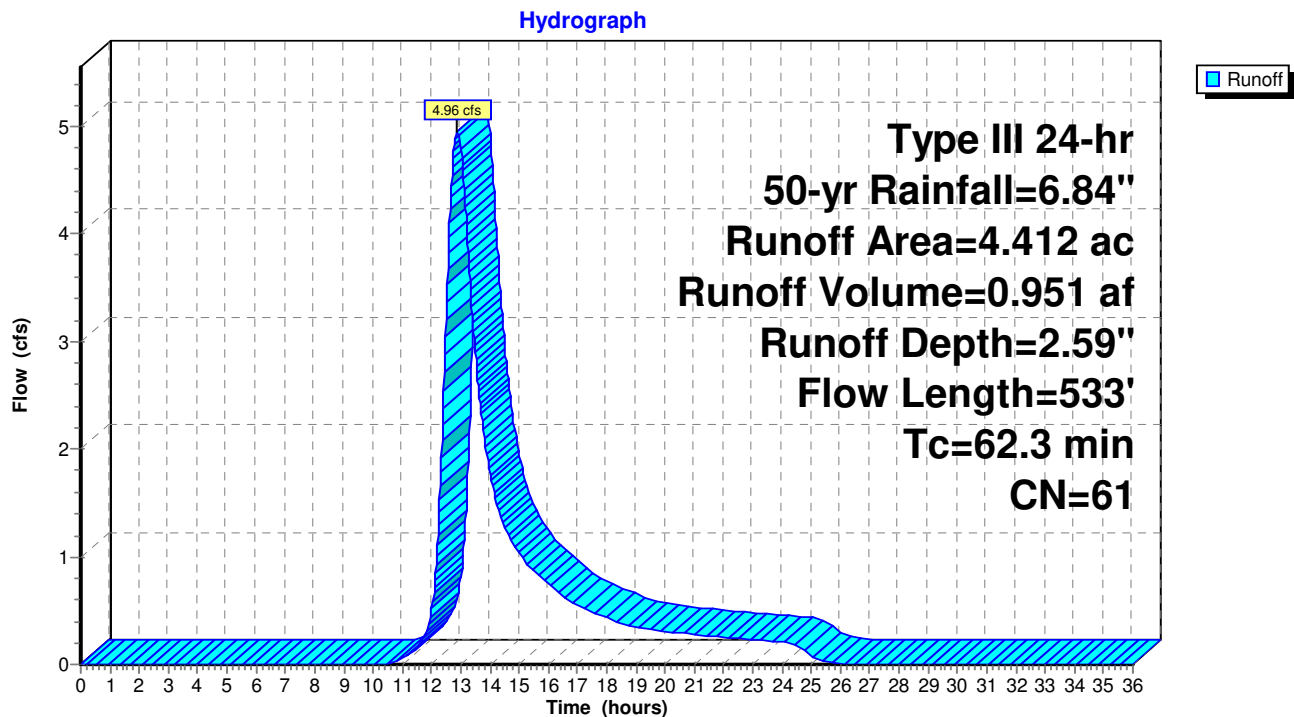
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Subcatchment P3: P3



Subcatchment P4: P4 (Proposed E4)



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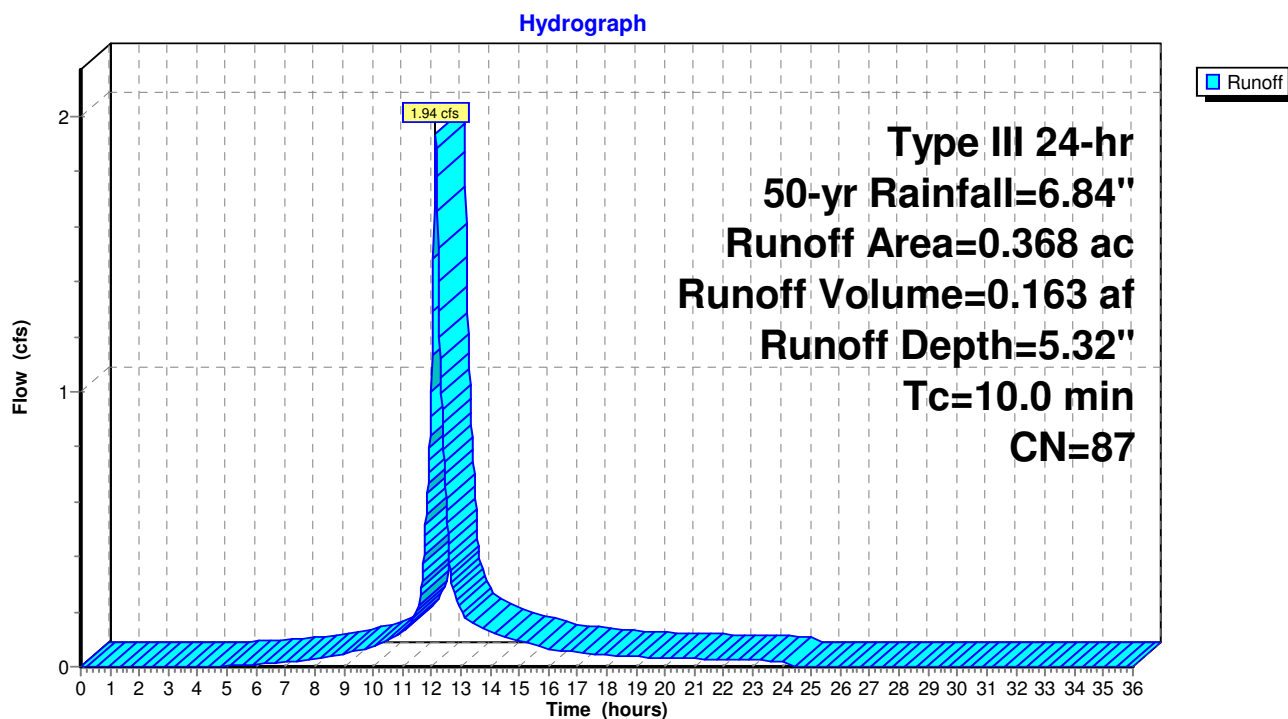
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Type III 24-hr 50-yr Rainfall=6.84"

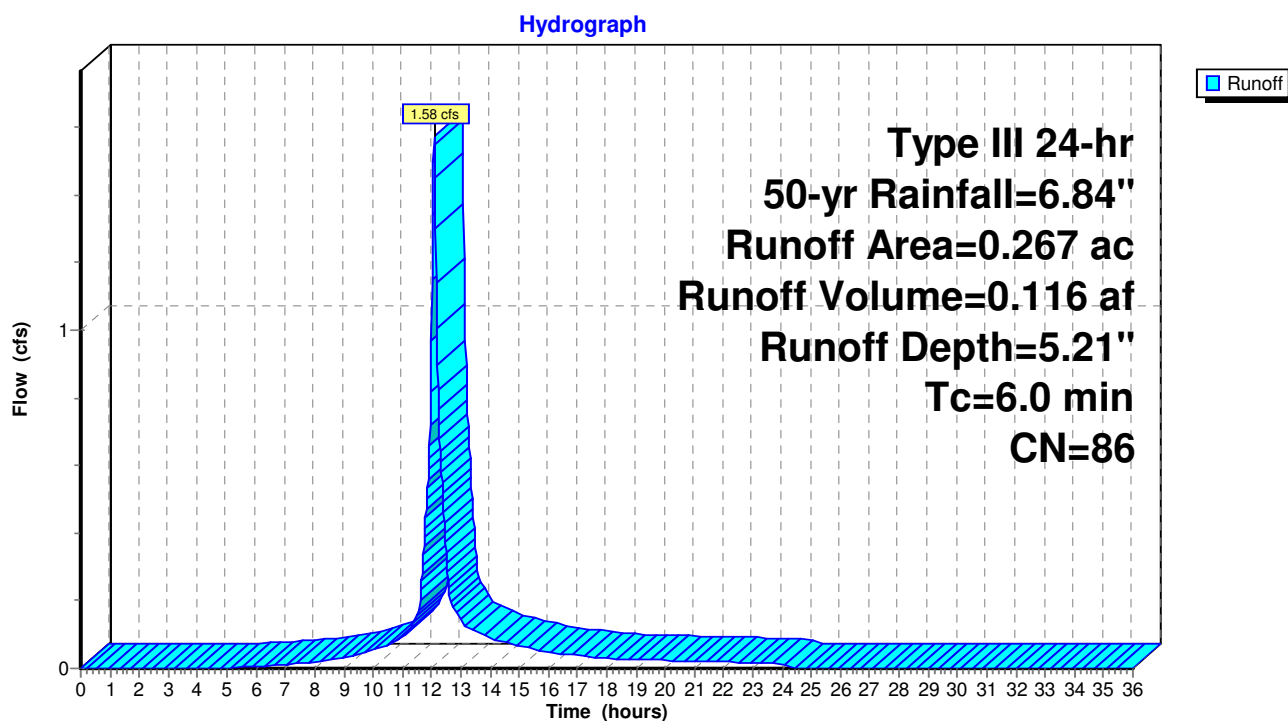
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Subcatchment P5: P5 (Proposed E5)



Subcatchment P6: P6



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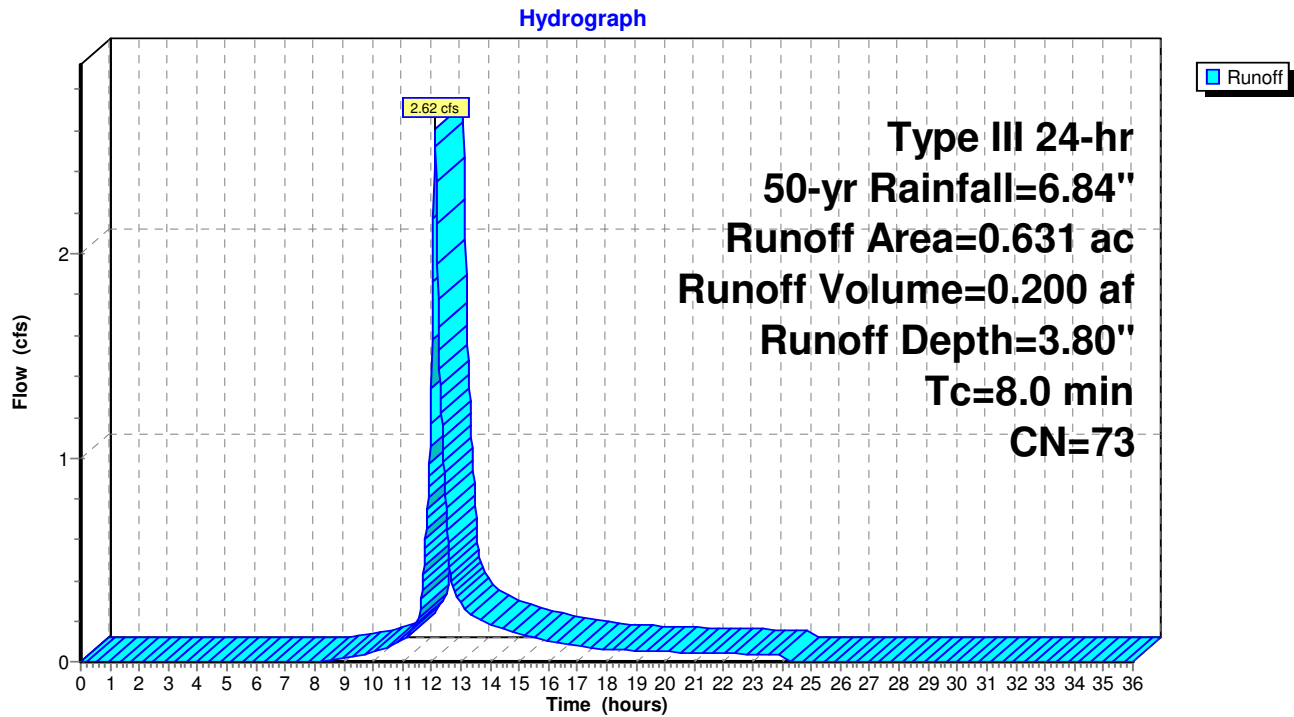
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Type III 24-hr 50-yr Rainfall=6.84"

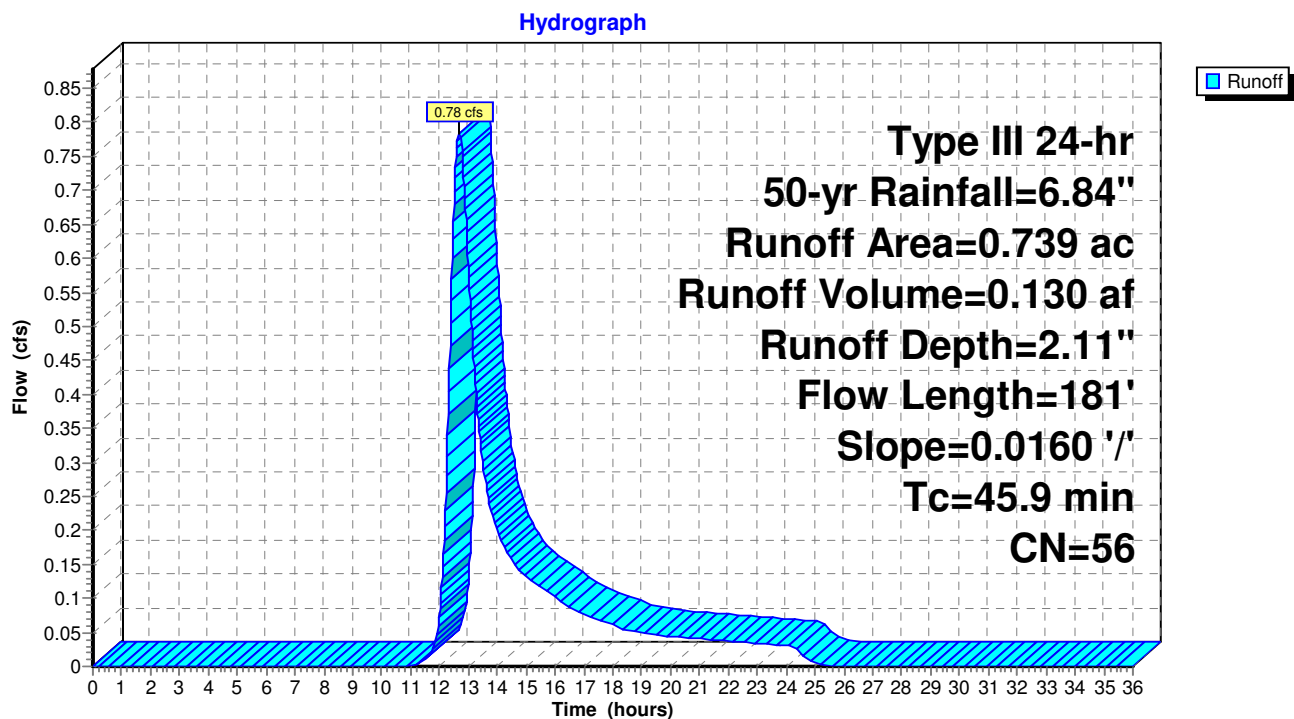
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Subcatchment P7: P7



Subcatchment P8: P8



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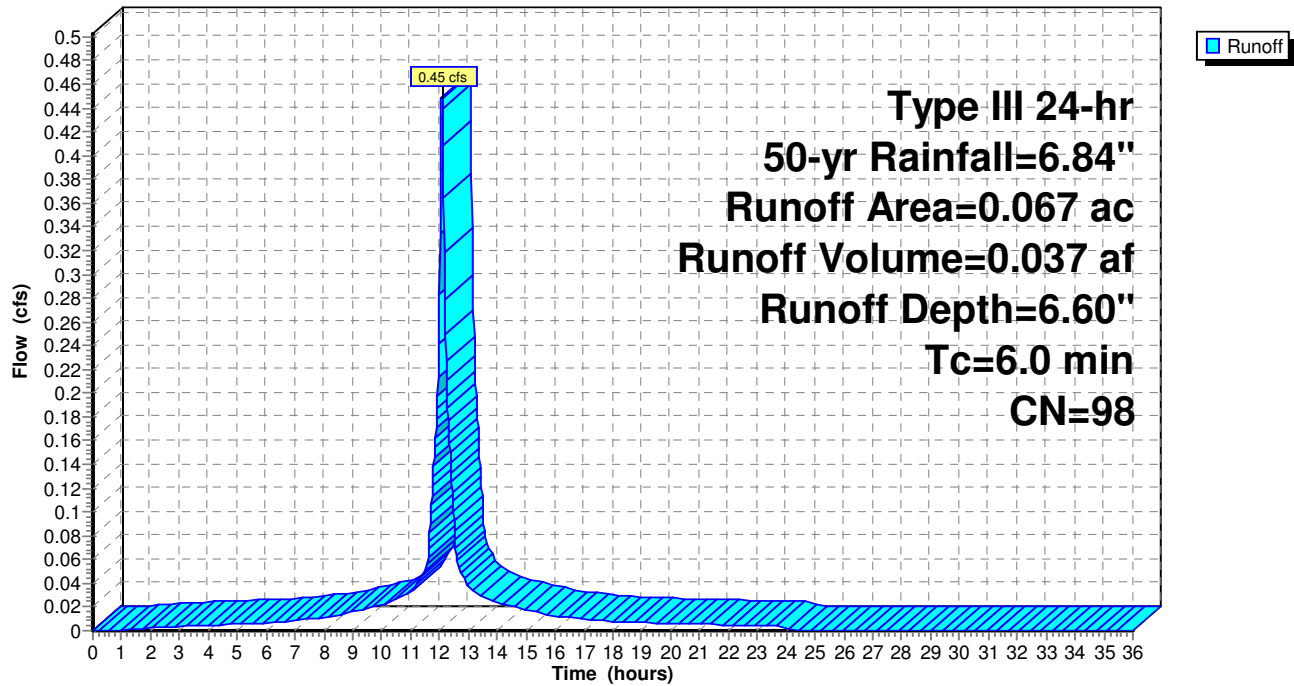
Proposed Conditions
Type III 24-hr 50-yr Rainfall=6.84"

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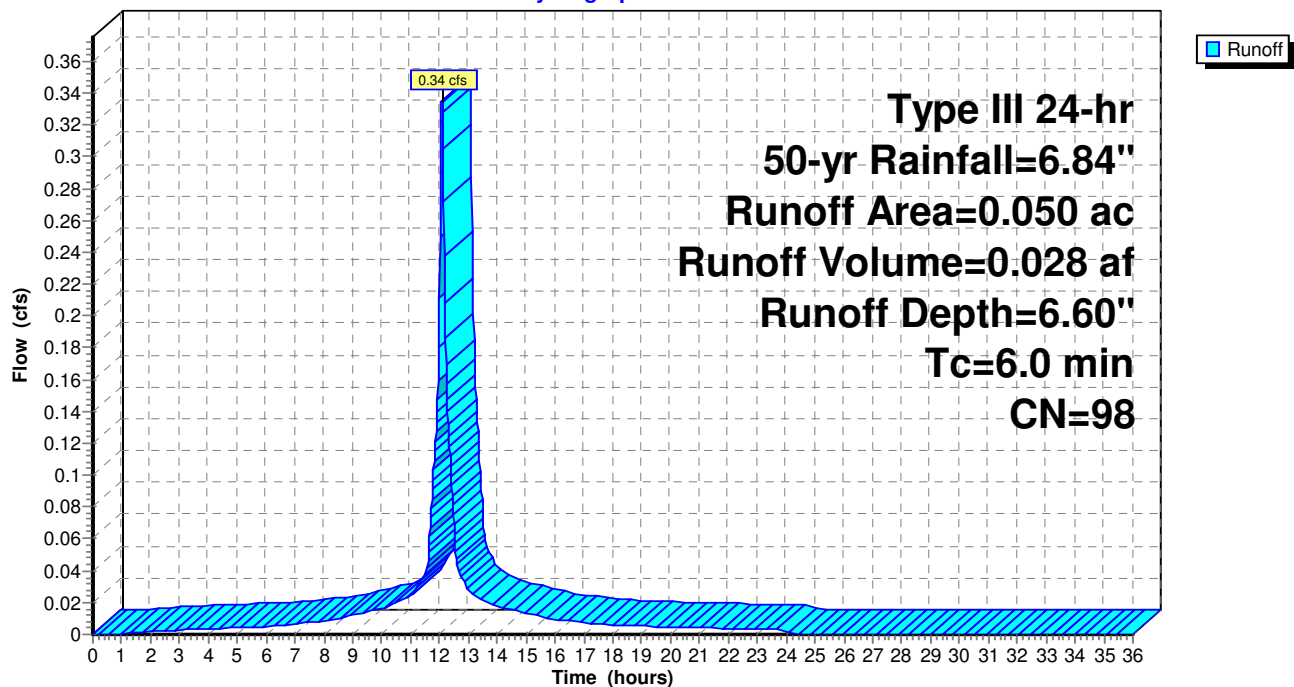
Subcatchment R1: R1

Hydrograph



Subcatchment R2: R2

Hydrograph



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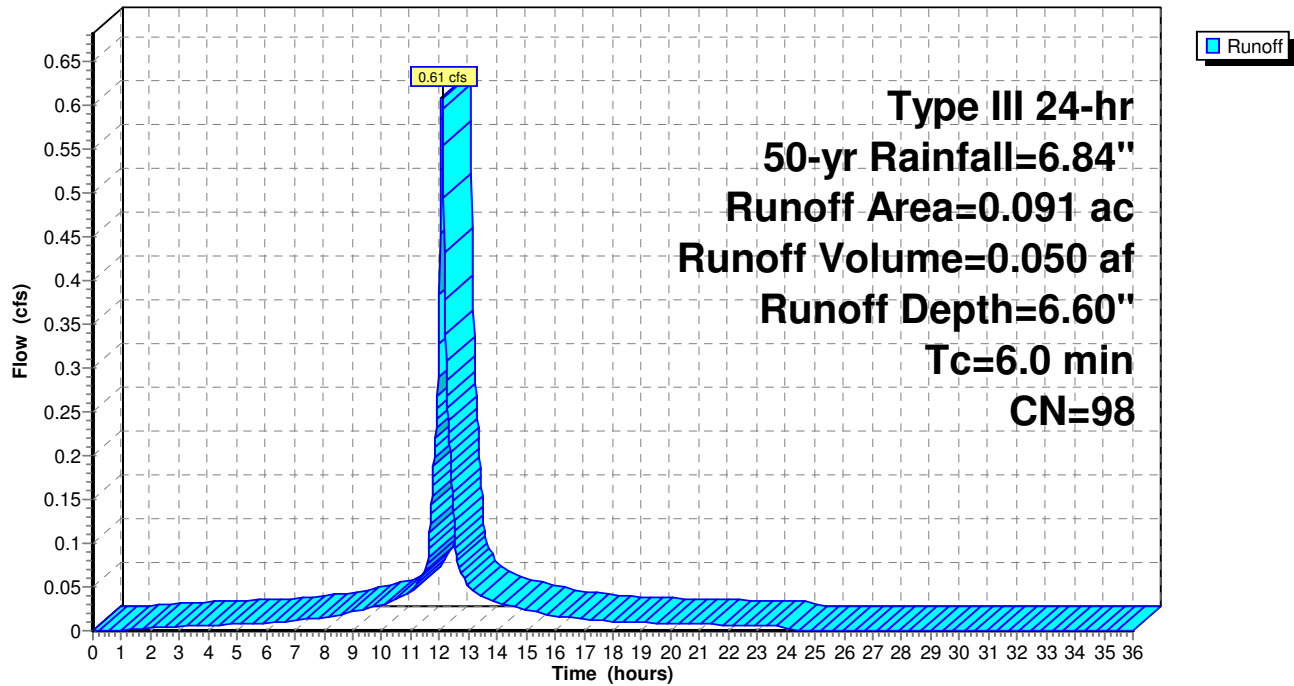
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Type III 24-hr 50-yr Rainfall=6.84"

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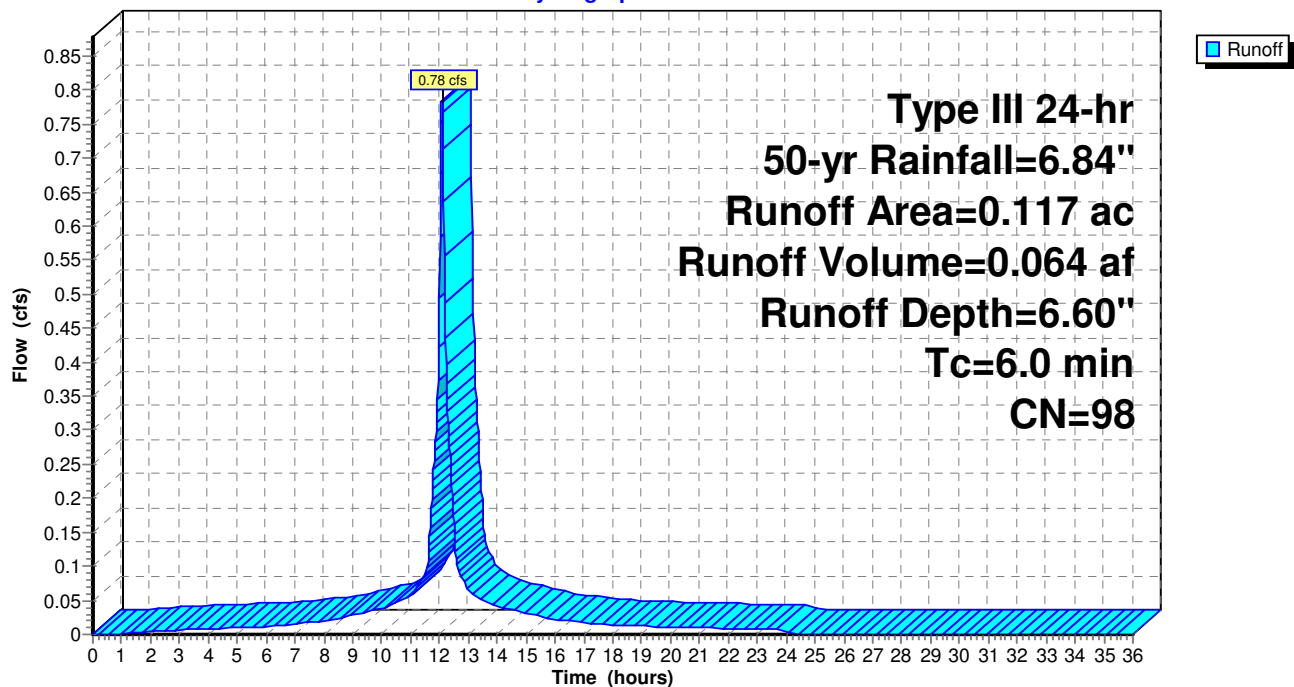
Subcatchment R3: R3

Hydrograph



Subcatchment R4: R4

Hydrograph



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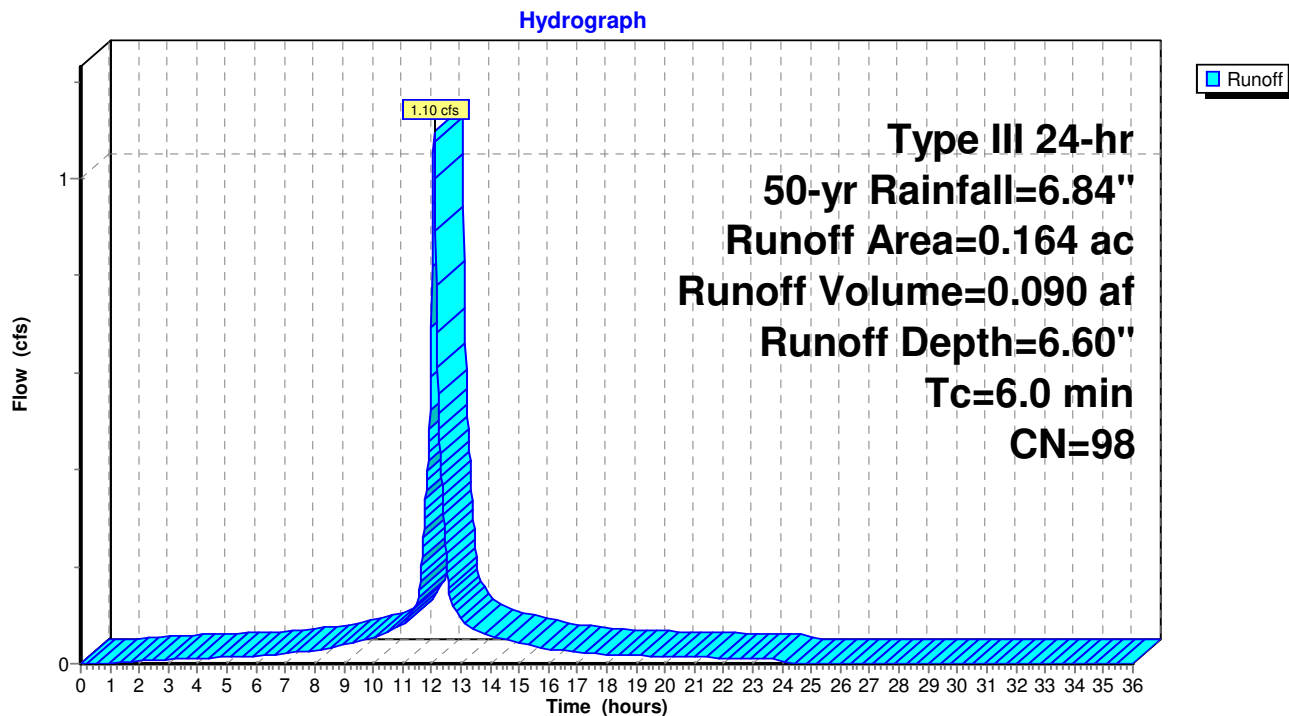
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Type III 24-hr 50-yr Rainfall=6.84"

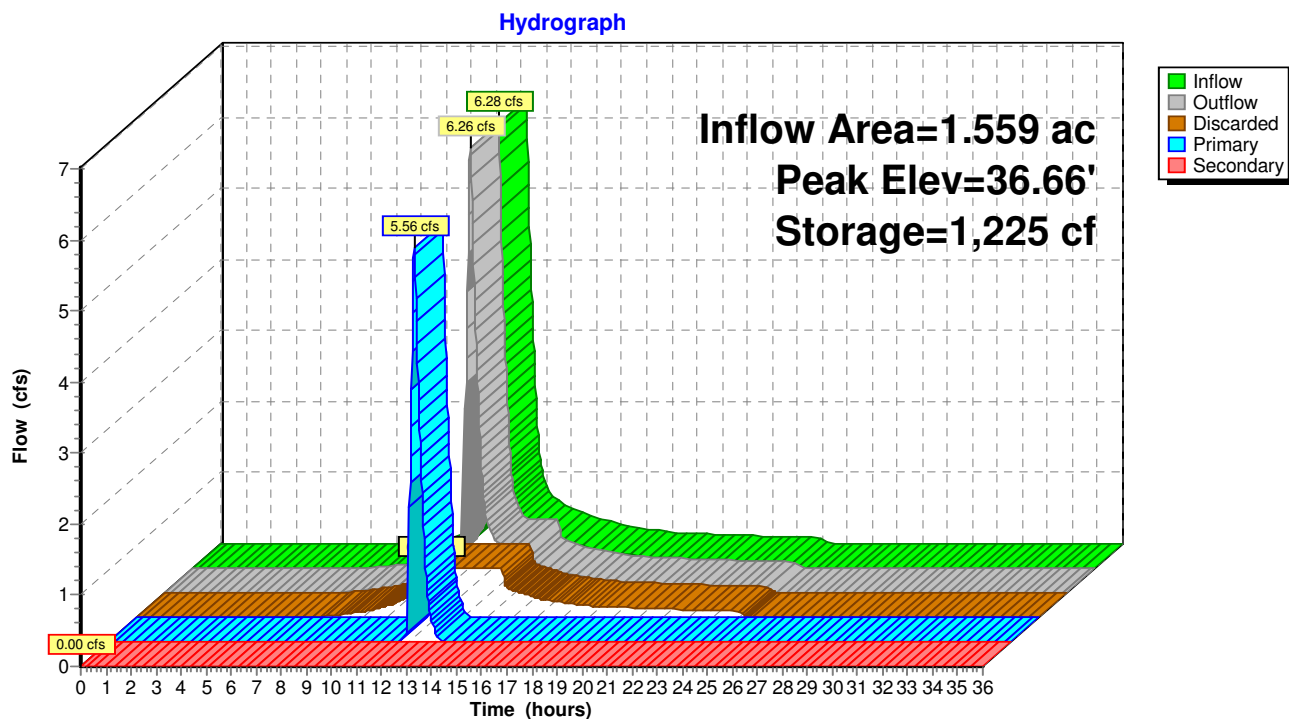
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Subcatchment R5: R5



Pond EP1*: Proposed EP1



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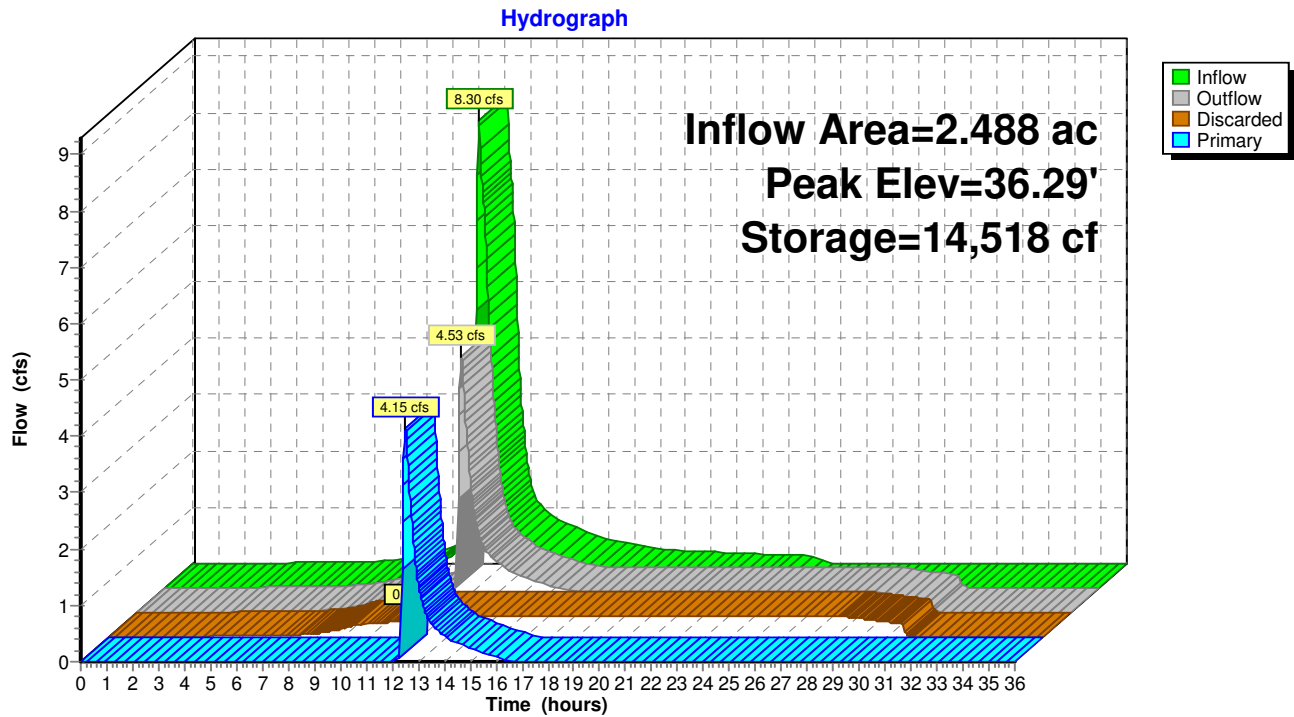
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Proposed Conditions
Type III 24-hr 50-yr Rainfall=6.84"

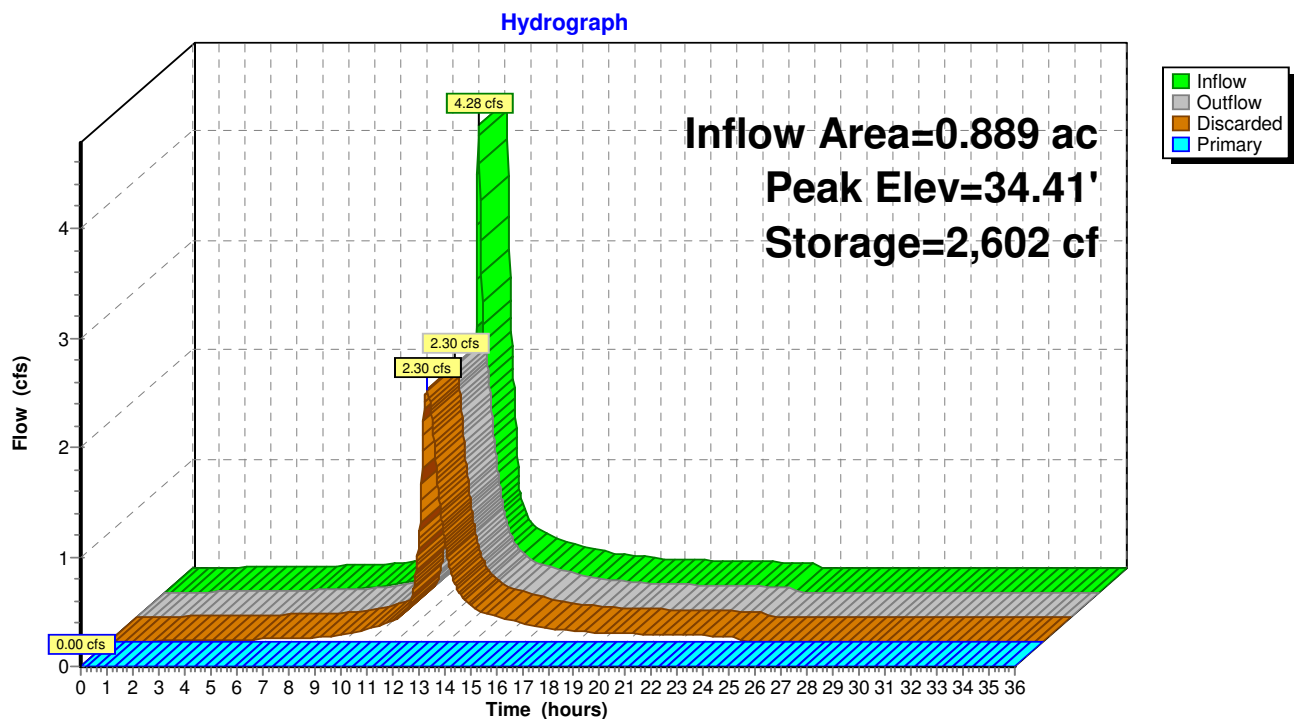
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Pond EP2*: Proposed EP2



Pond PP1: Proposed Pond 1



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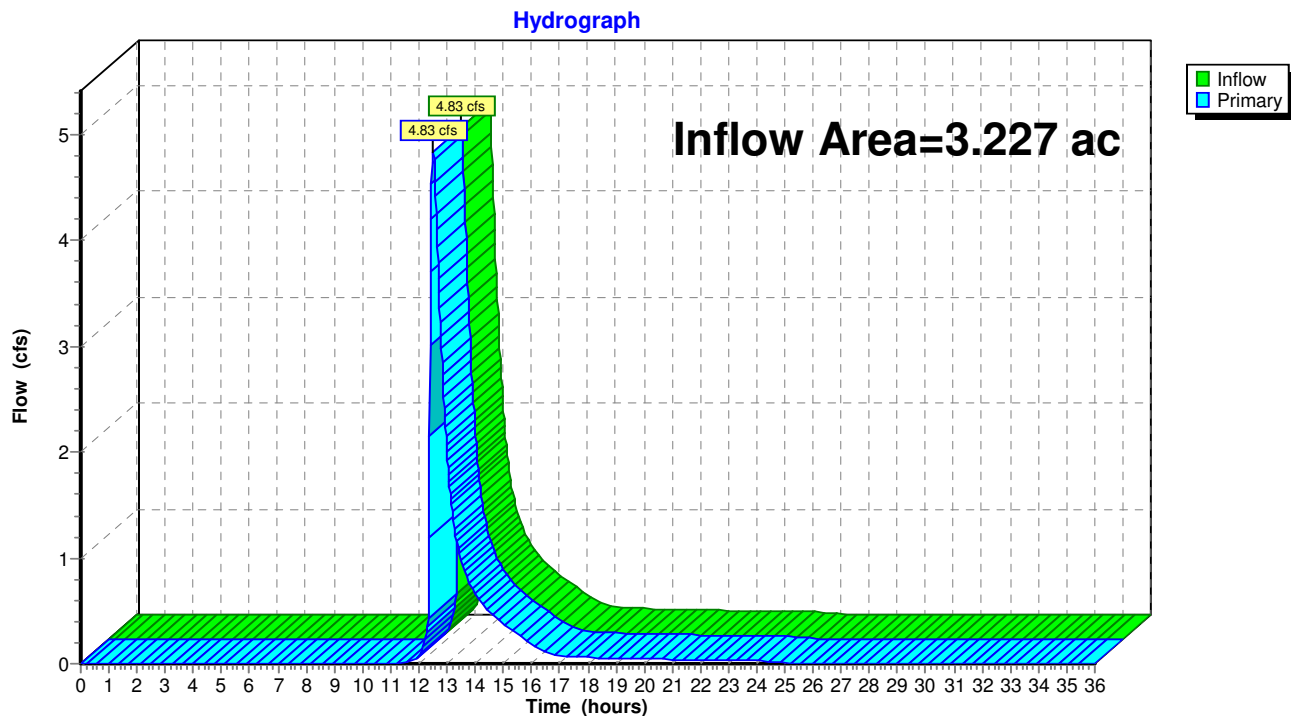
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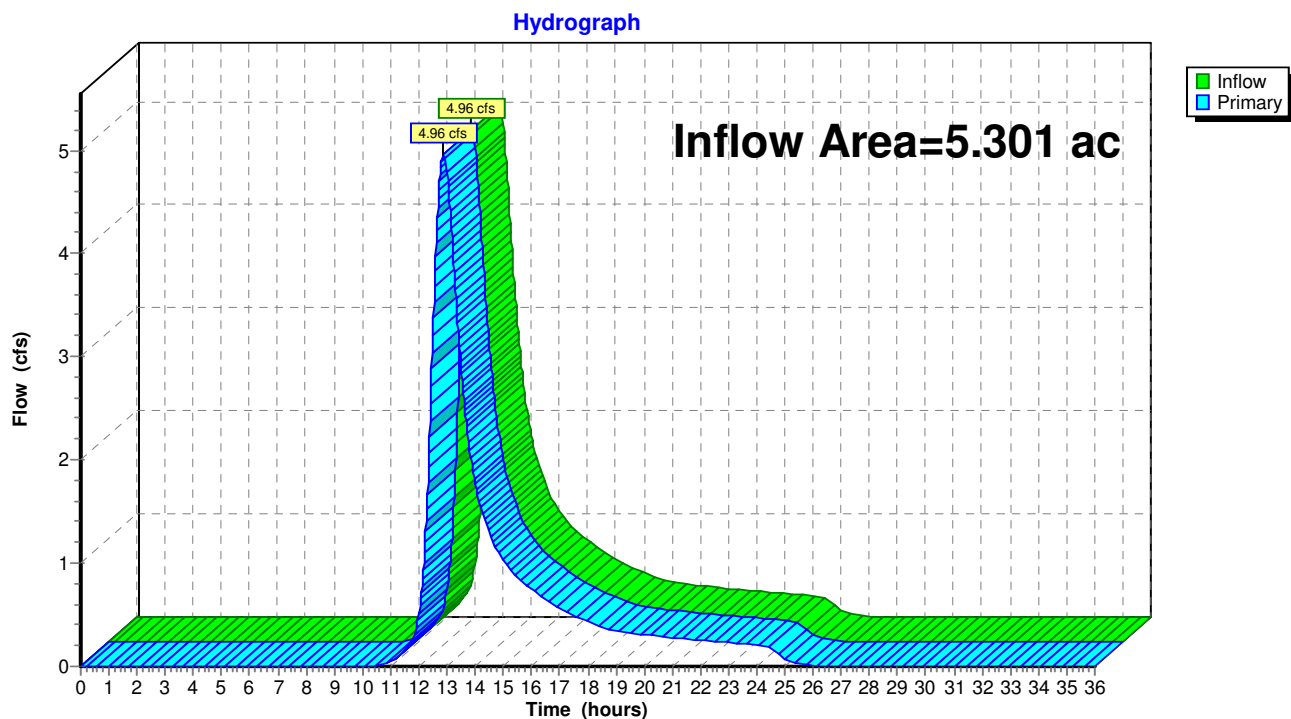
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Link PDP1: DP1 (Proposed)



Link PDP2: DP2 (Proposed)



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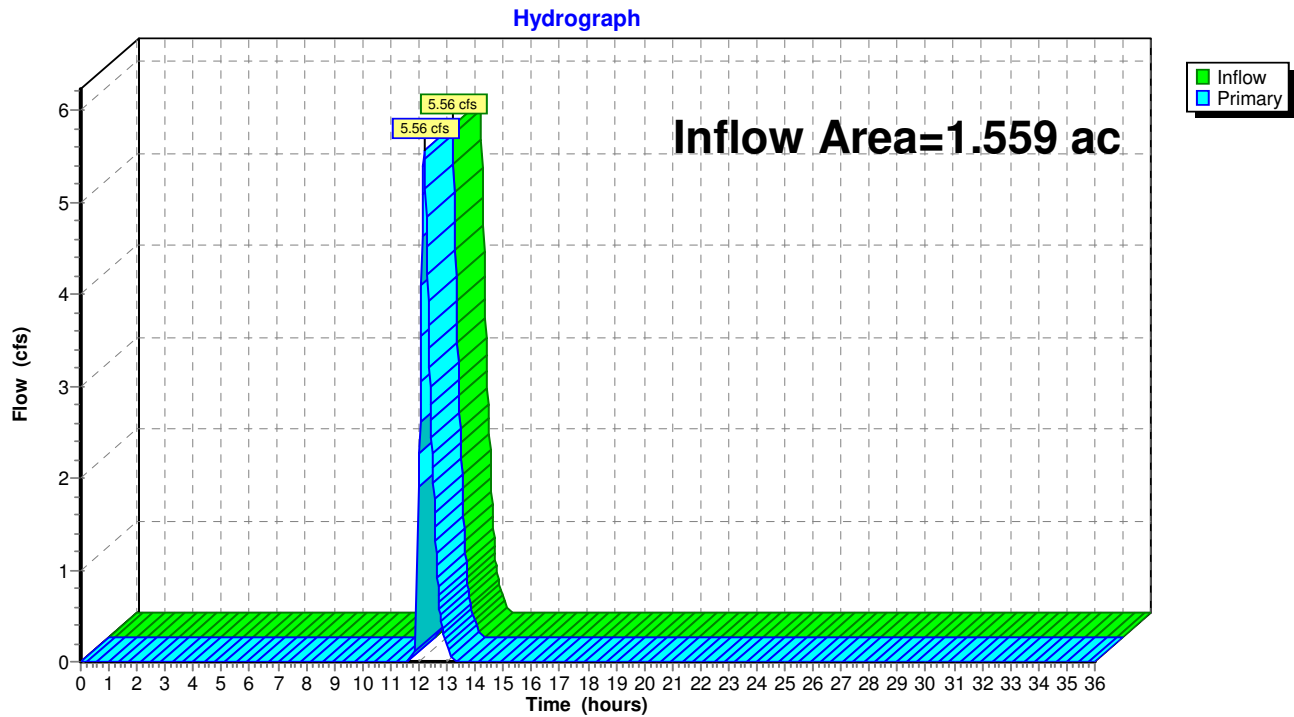
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Proposed Conditions
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Link PDP3: DP3 (Proposed)



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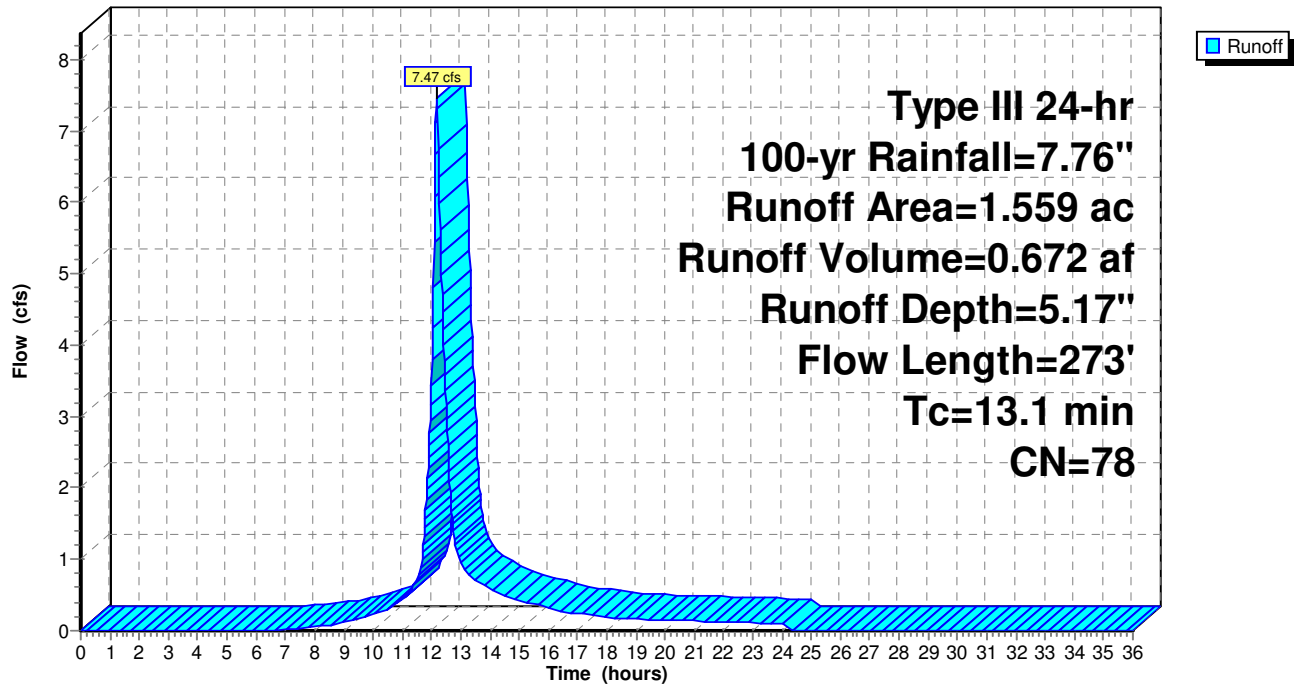
Proposed Conditions
Type III 24-hr 100-yr Rainfall=7.76"

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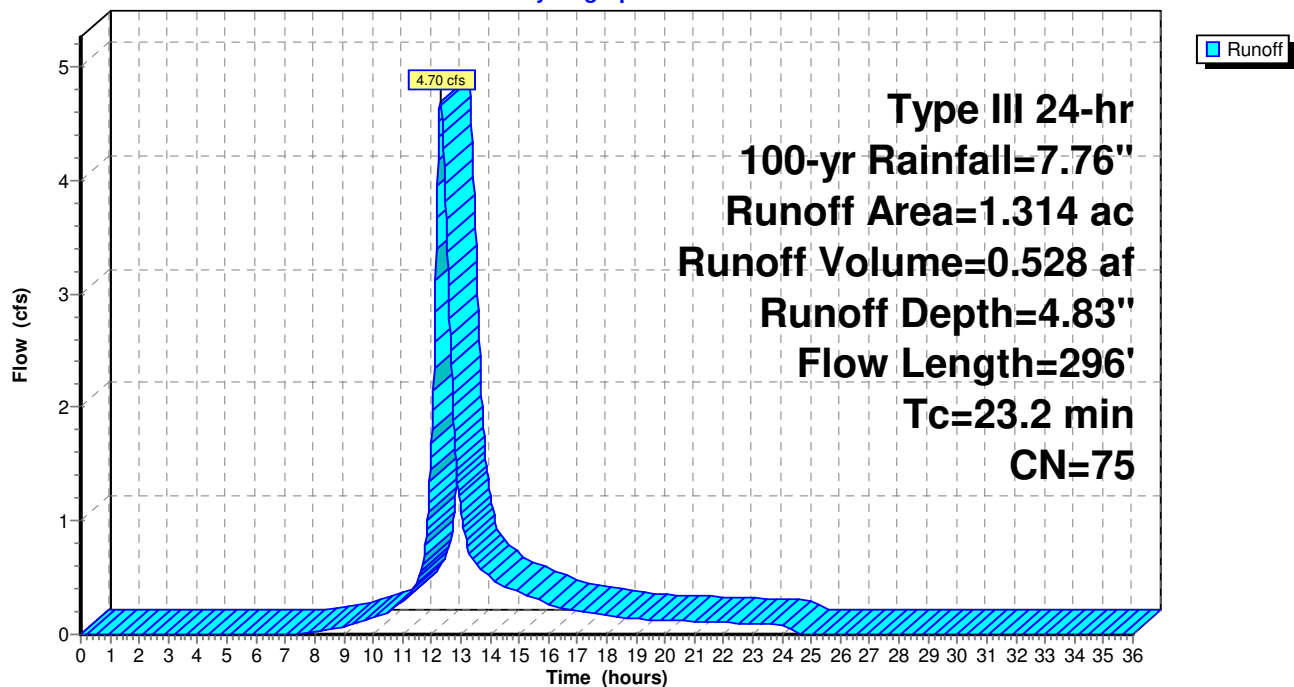
Subcatchment P1: P1

Hydrograph



Subcatchment P2: P2

Hydrograph



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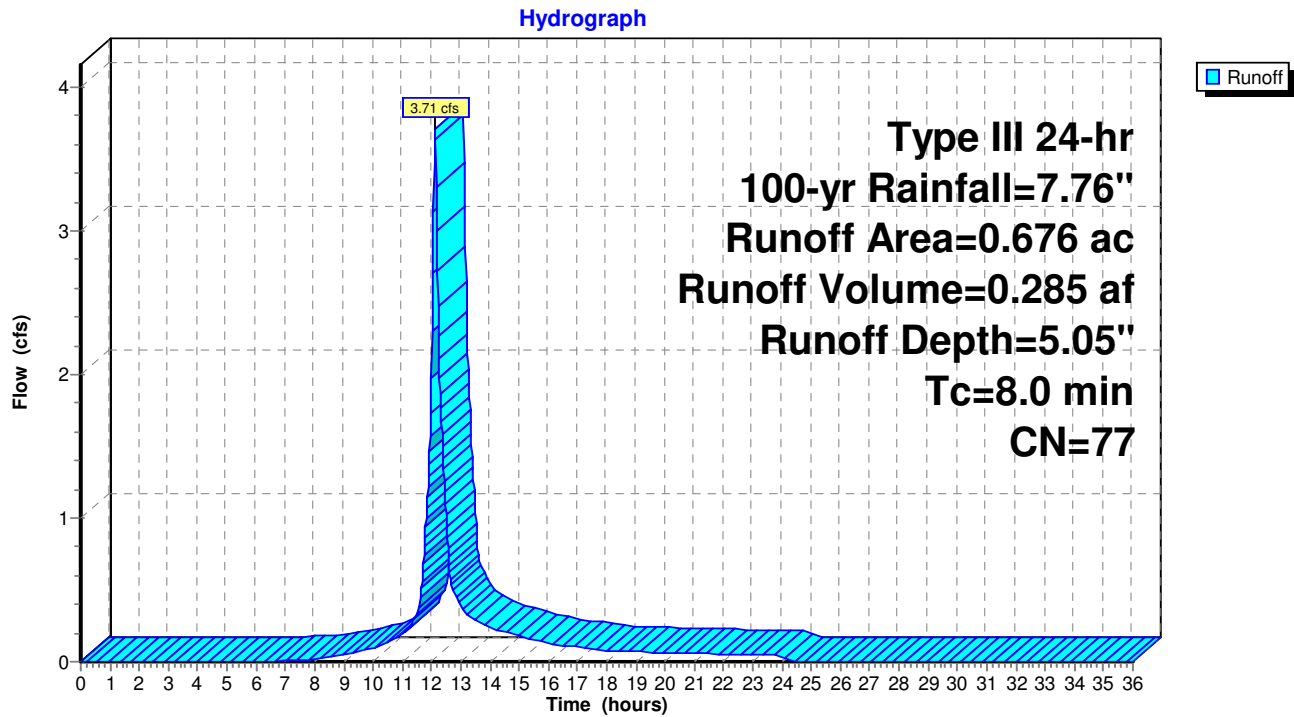
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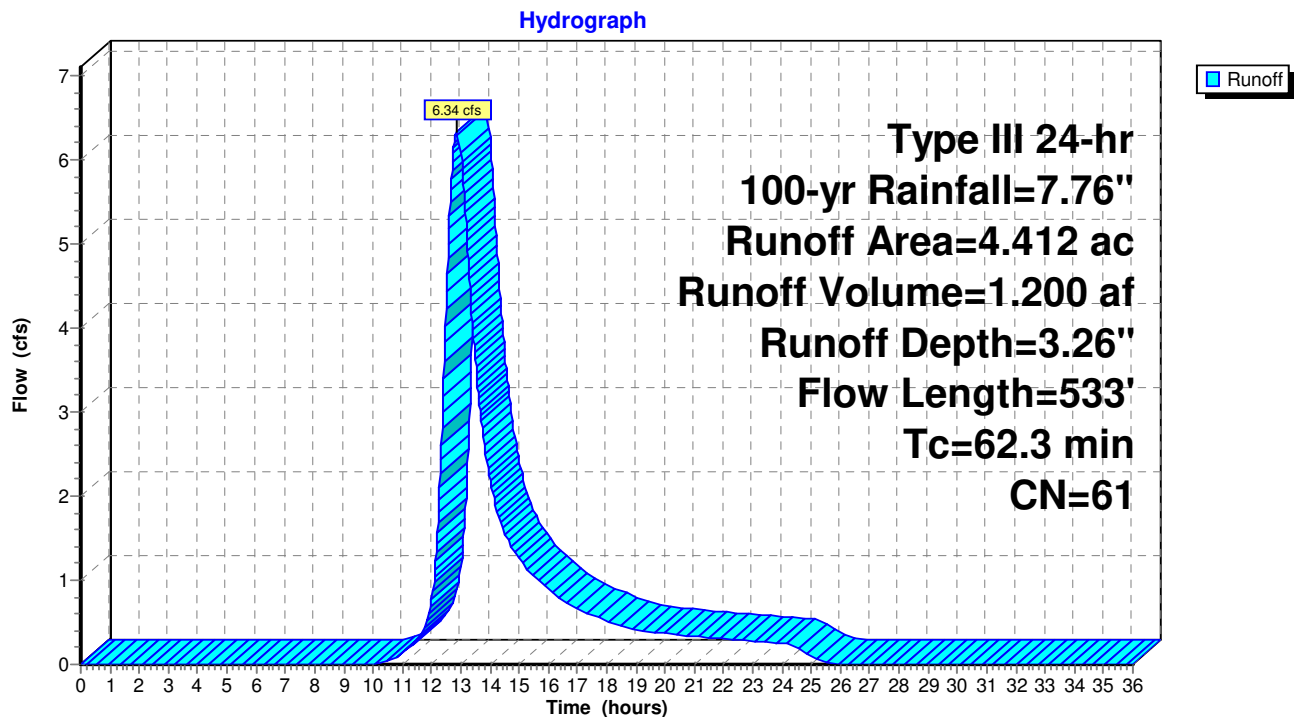
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Subcatchment P3: P3



Subcatchment P4: P4 (Proposed E4)



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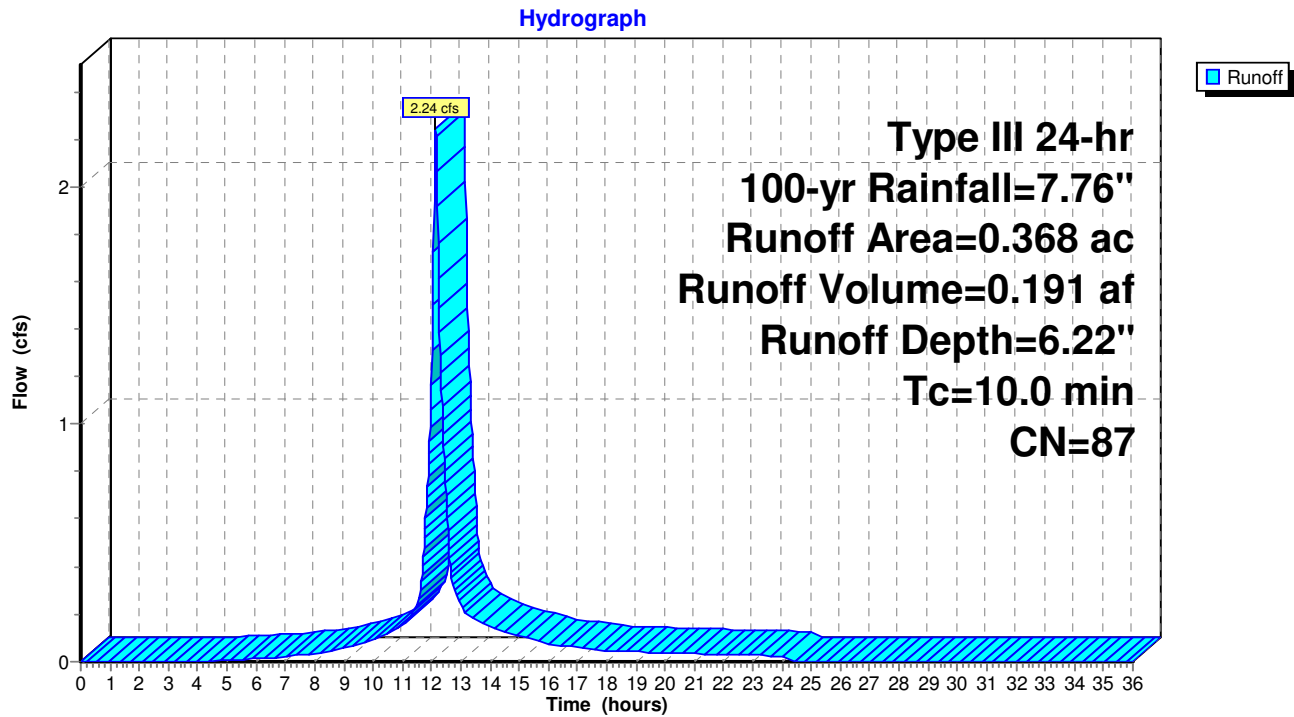
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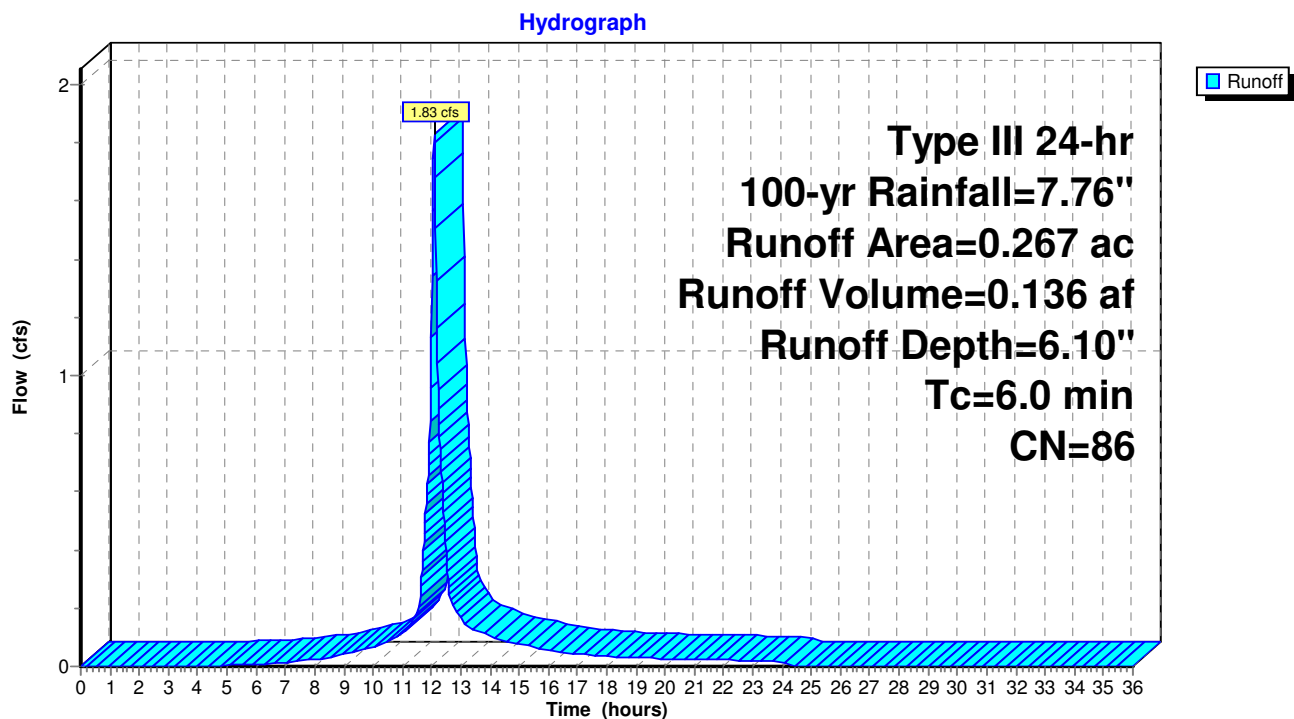
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Subcatchment P5: P5 (Proposed E5)



Subcatchment P6: P6



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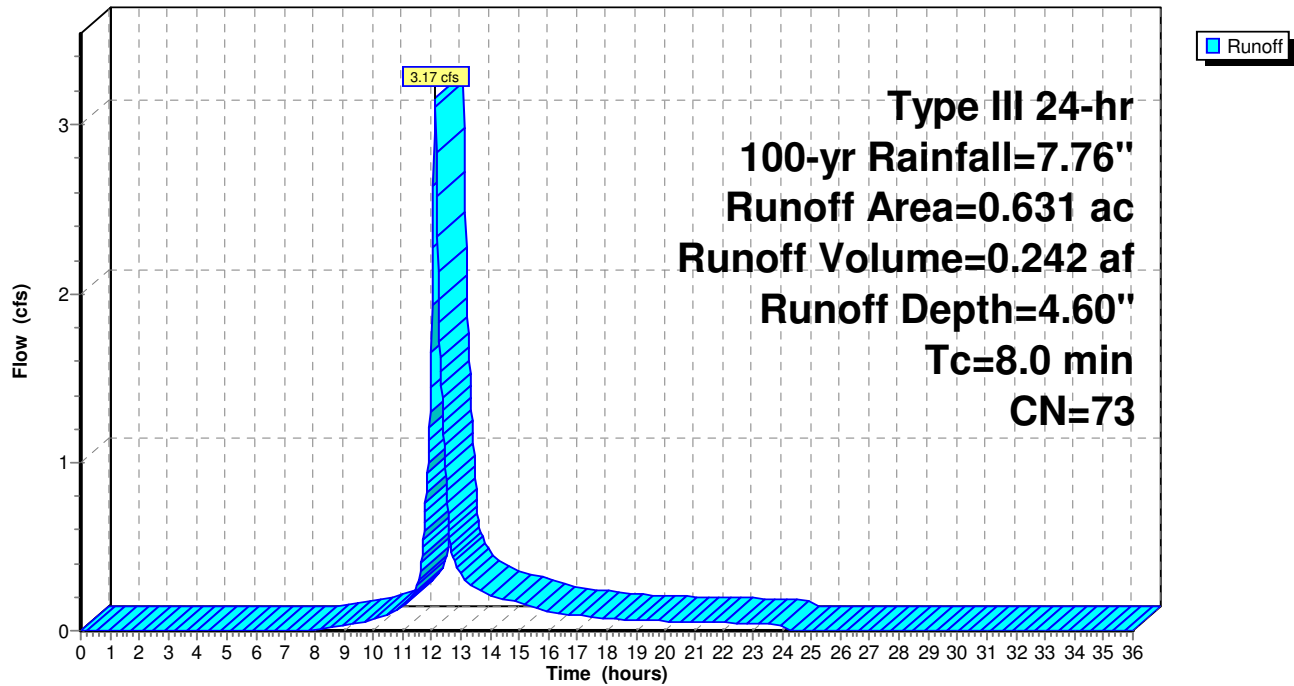
Proposed Conditions
Type III 24-hr 100-yr Rainfall=7.76"

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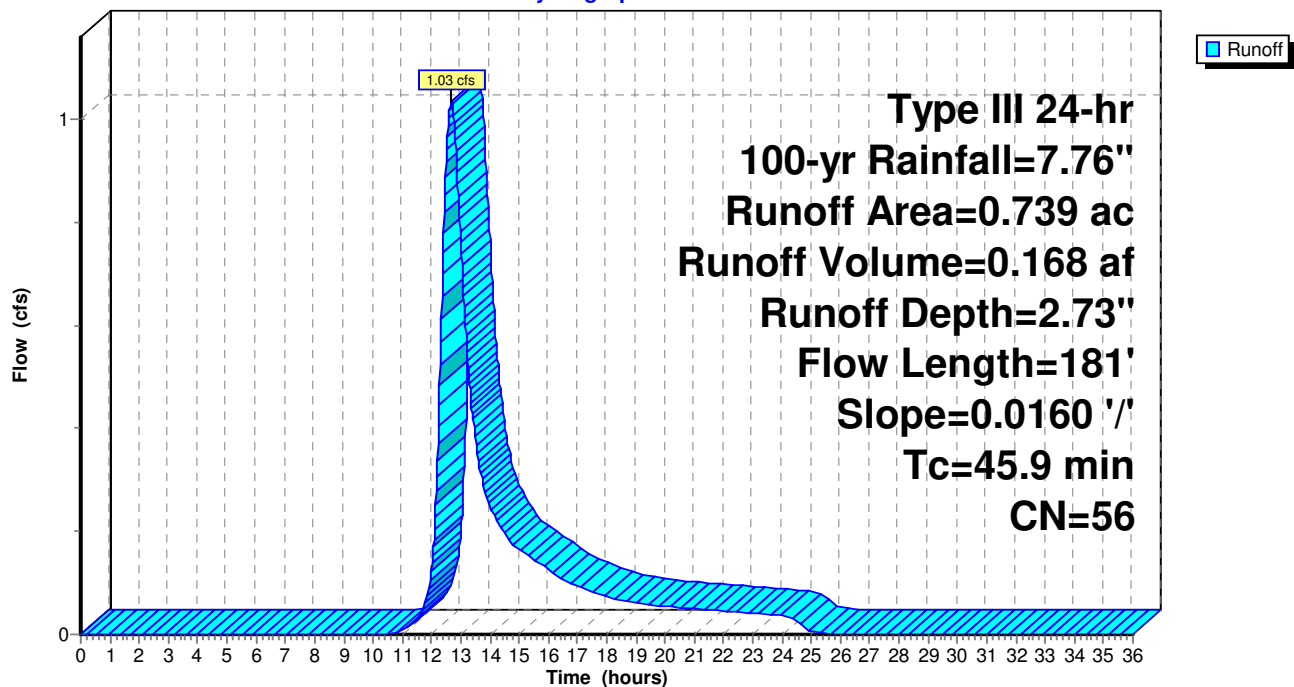
Subcatchment P7: P7

Hydrograph



Subcatchment P8: P8

Hydrograph



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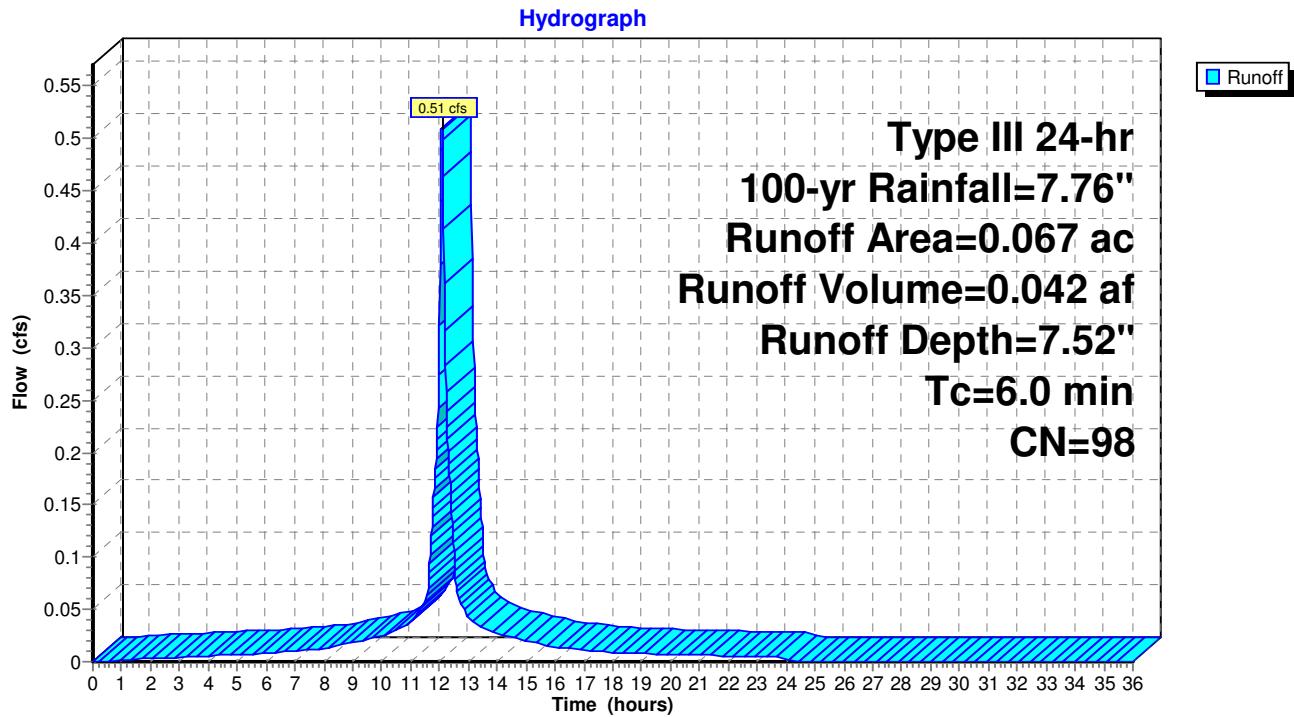
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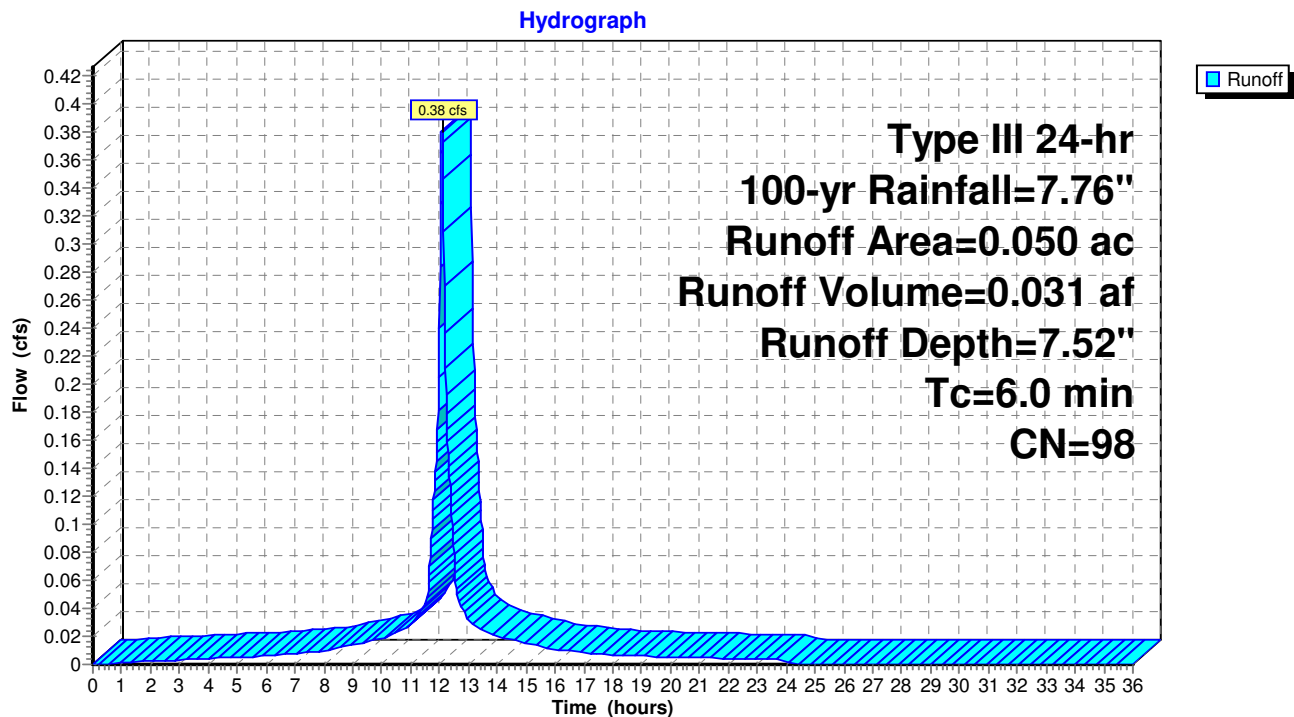
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Subcatchment R1: R1



Subcatchment R2: R2



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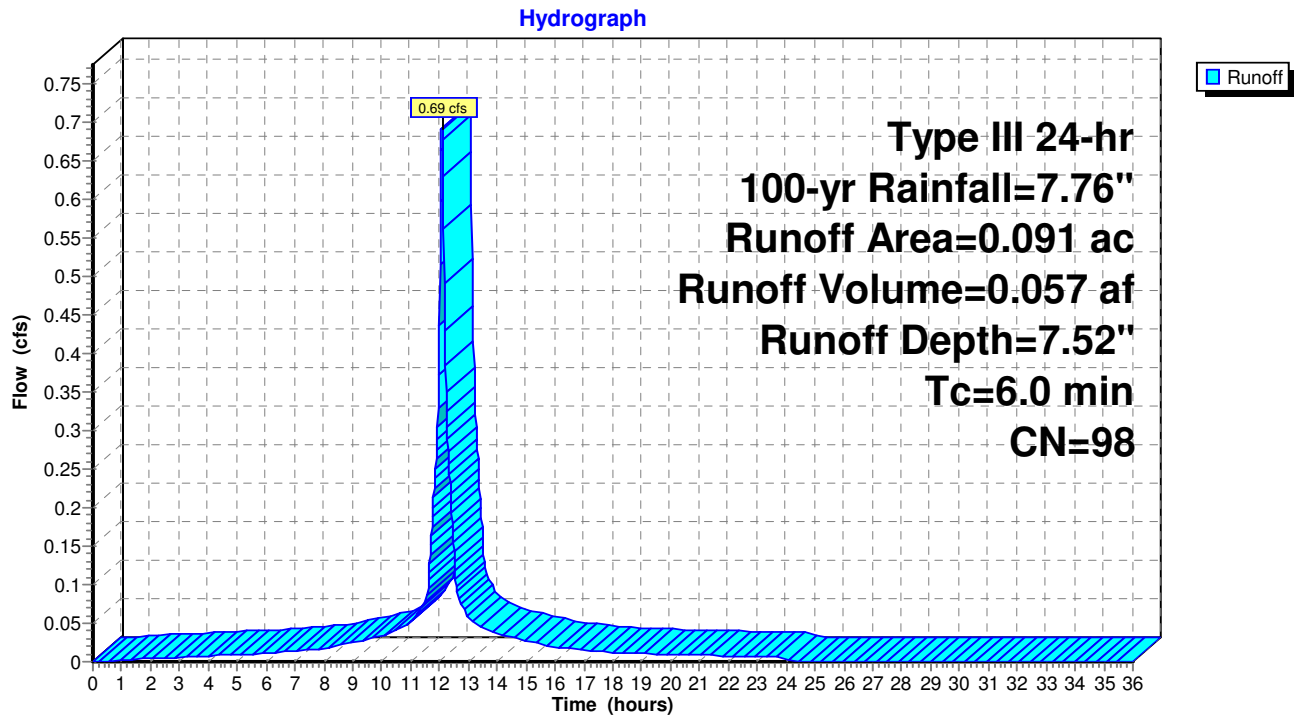
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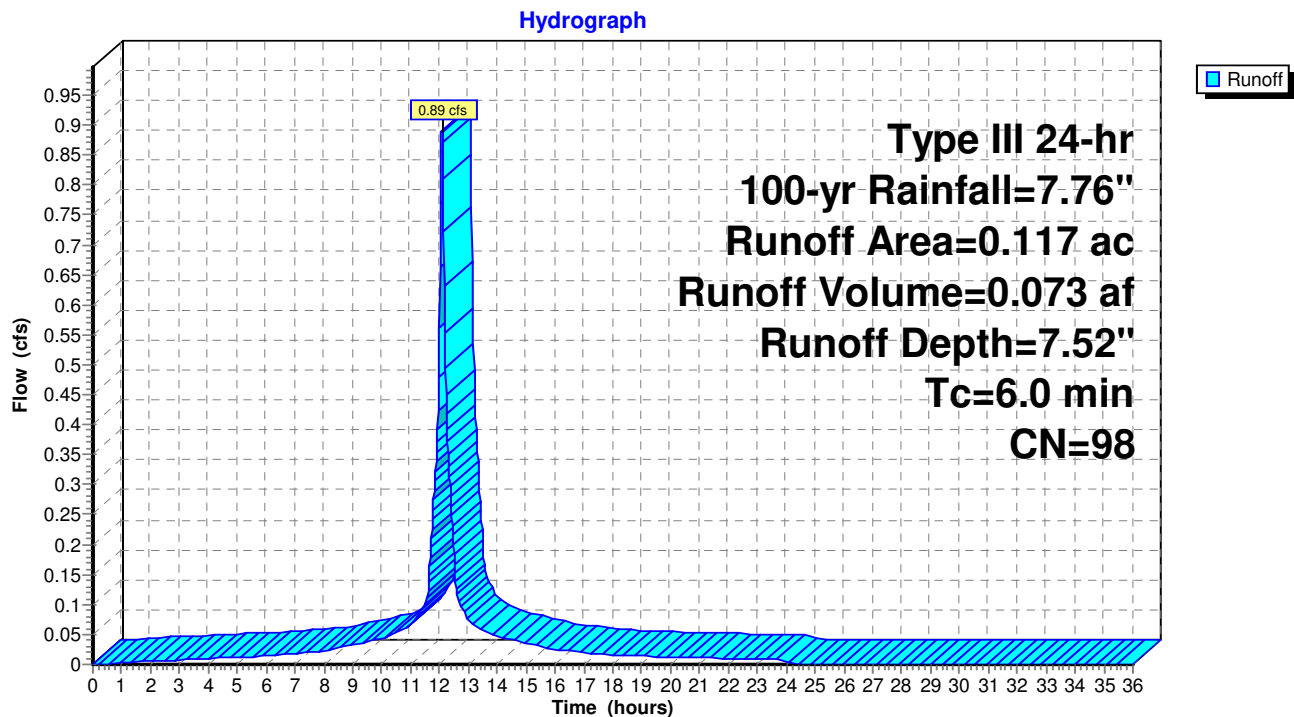
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Subcatchment R3: R3



Subcatchment R4: R4



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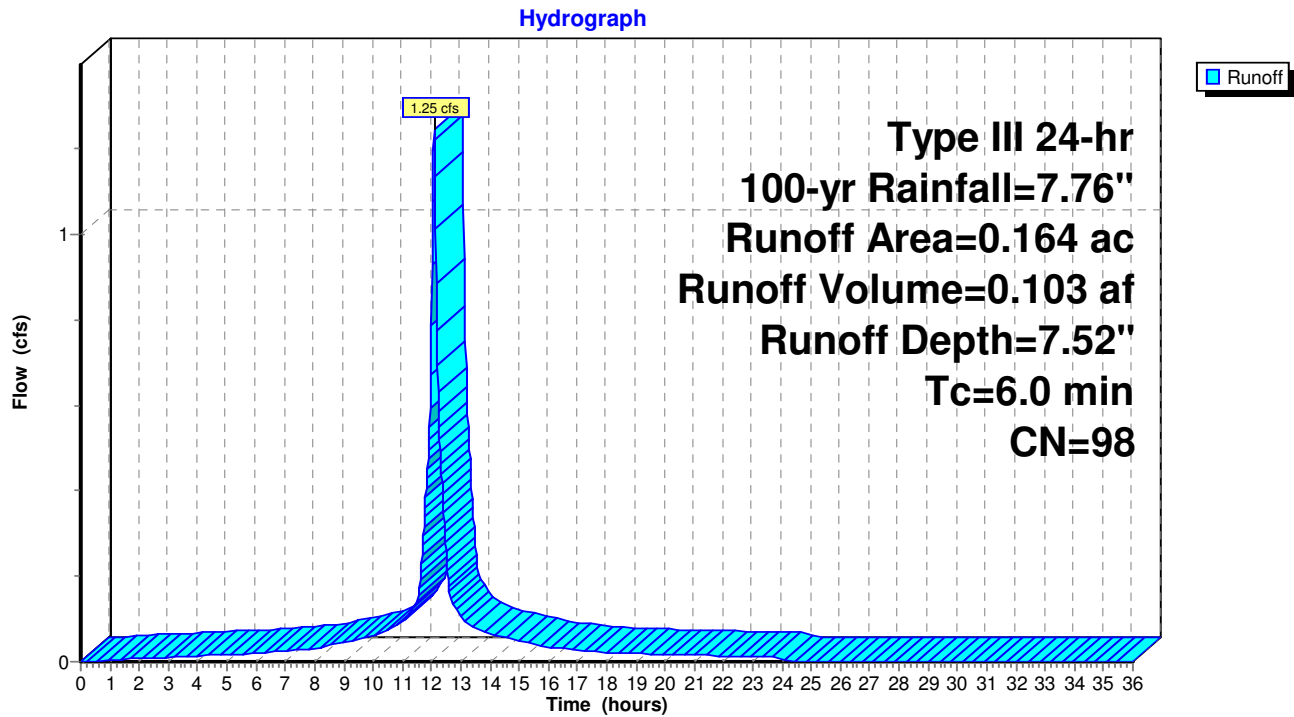
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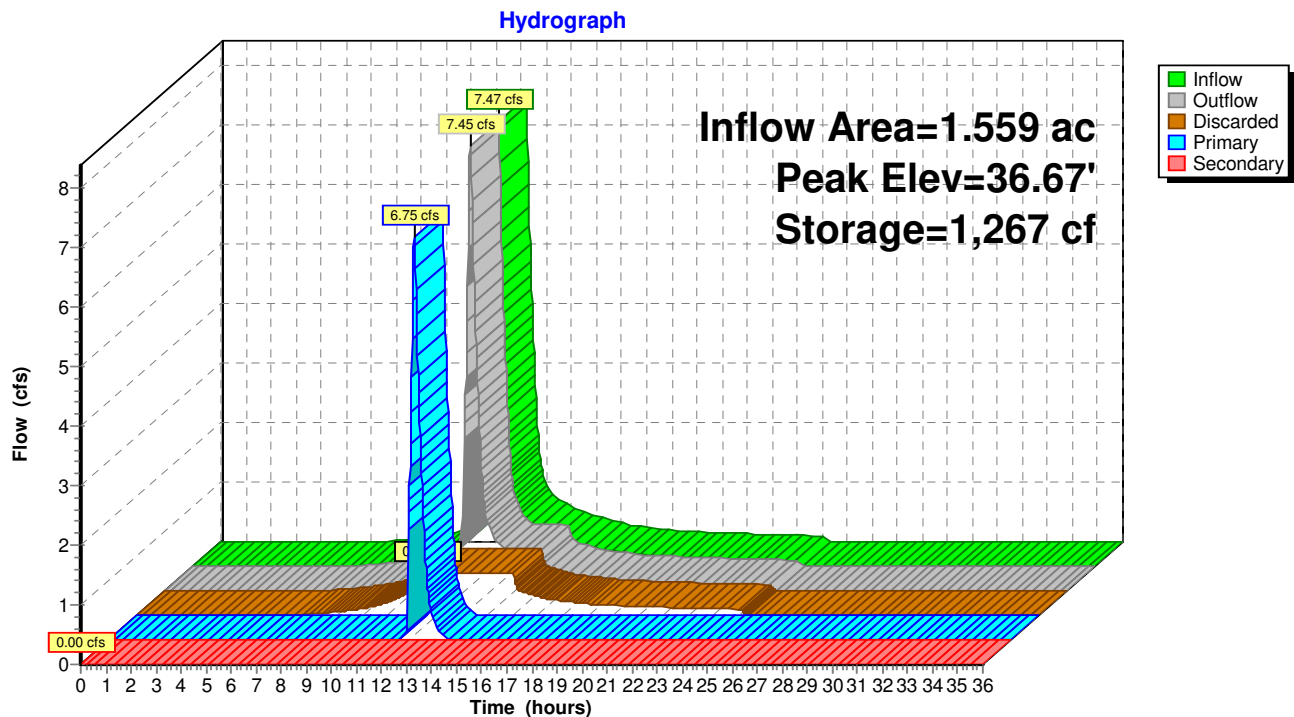
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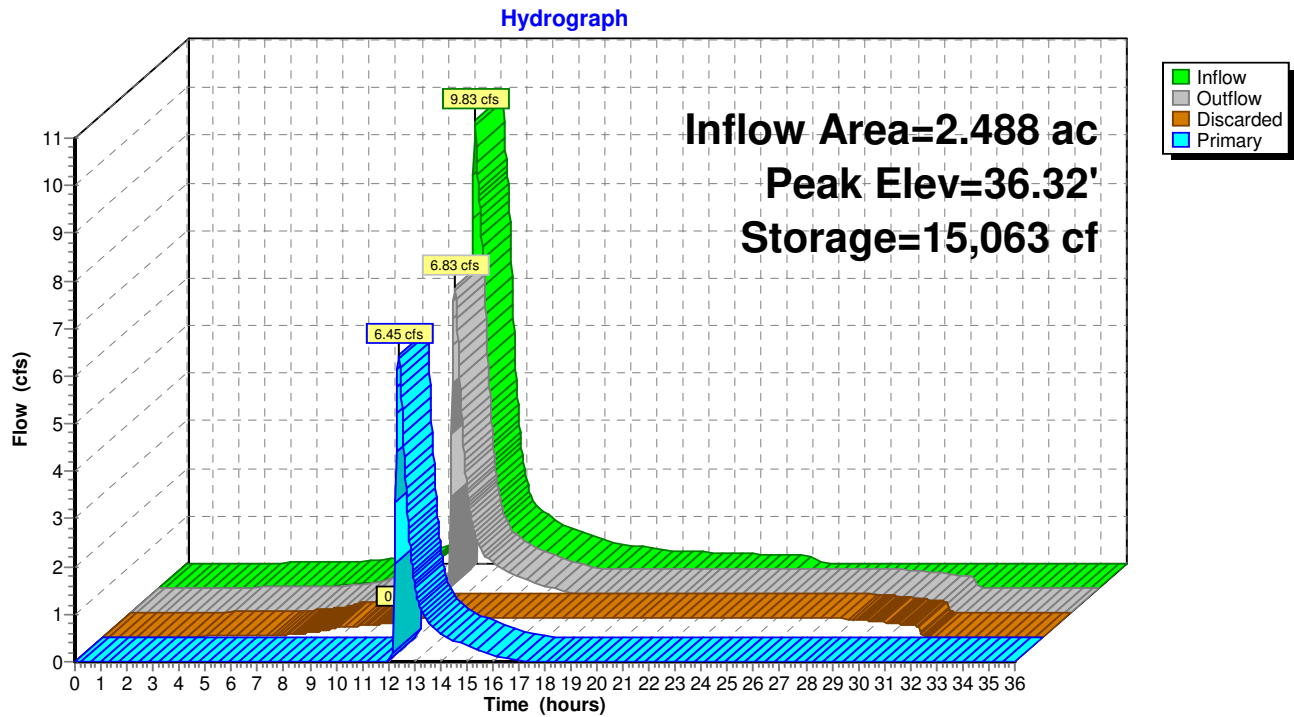
Subcatchment R5: R5



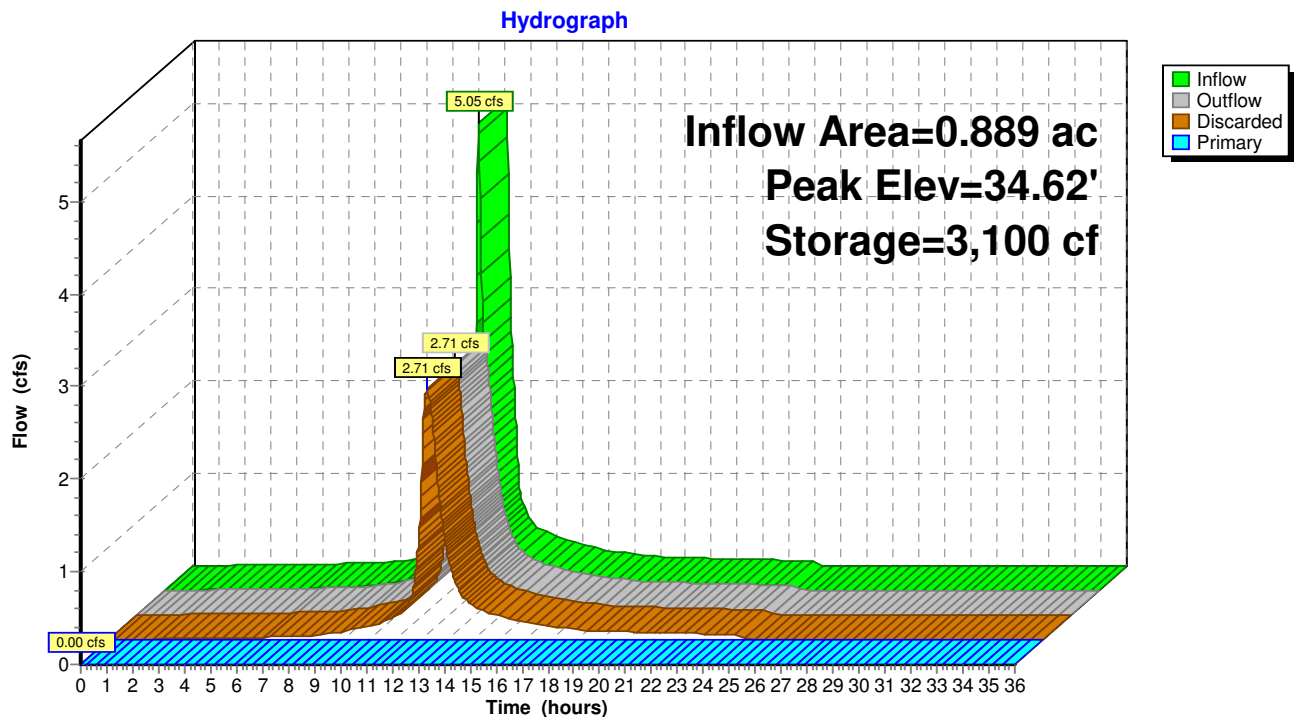
Pond EP1*: Proposed EP1



Pond EP2*: Proposed EP2



Pond PP1: Proposed Pond 1



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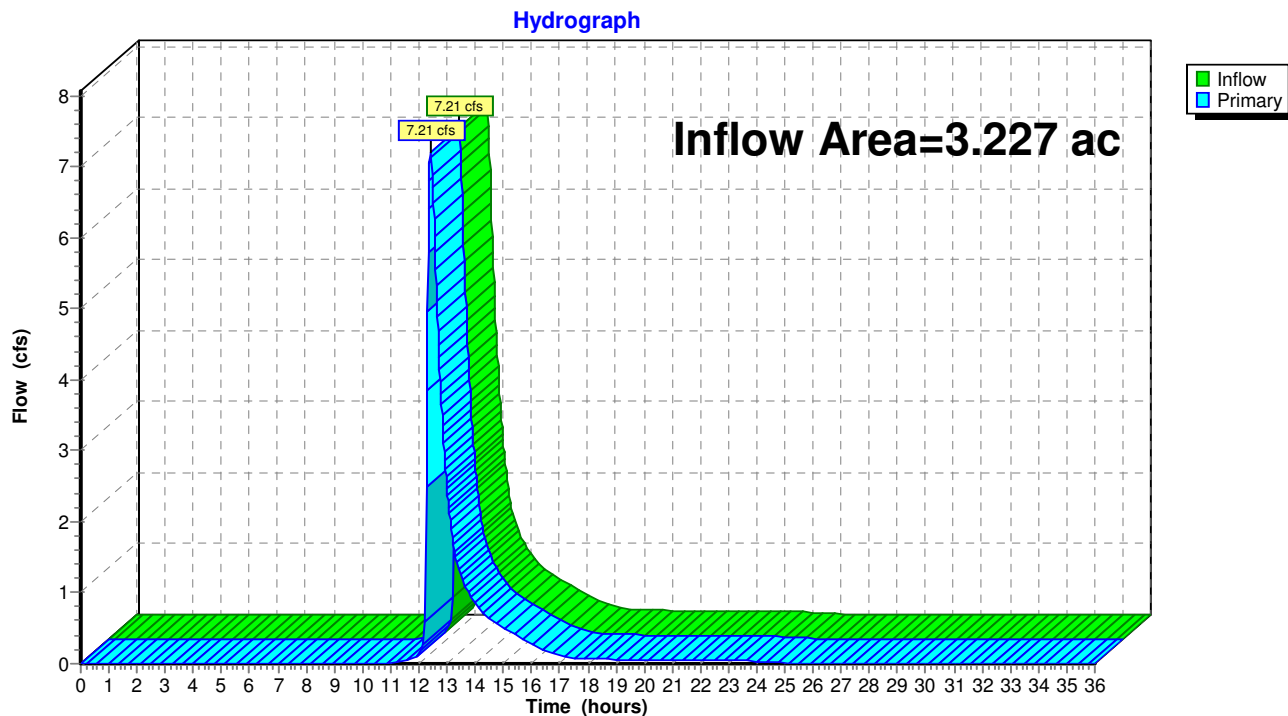
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Proposed Conditions
Type III 24-hr 100-yr Rainfall=7.76"

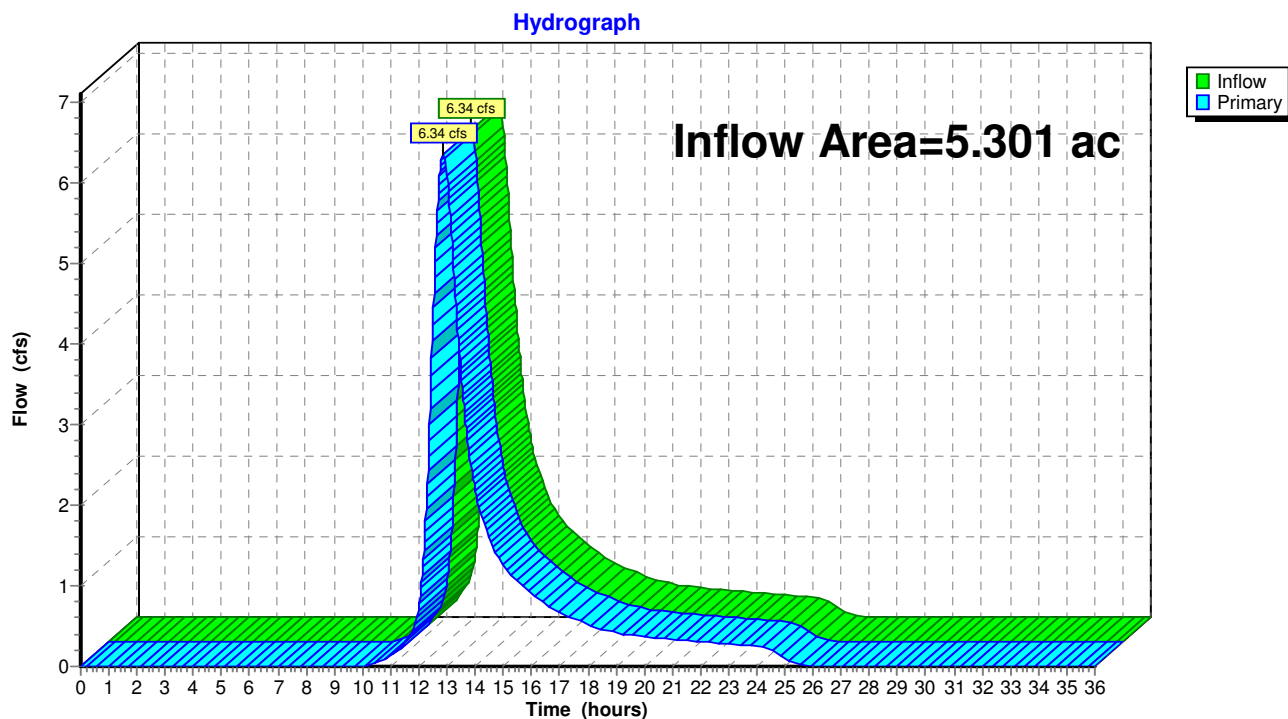
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Link PDP1: DP1 (Proposed)



Link PDP2: DP2 (Proposed)



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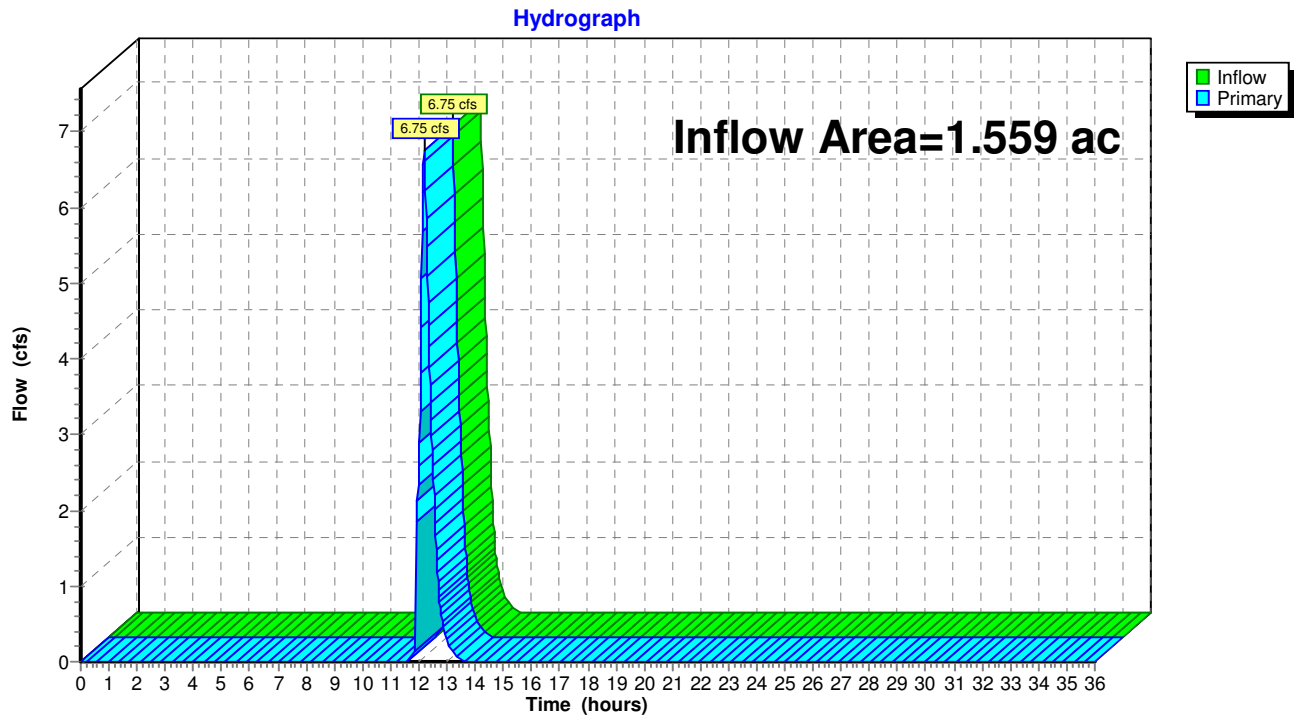
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Type III 24-hr 100-yr Rainfall=7.76"

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Link PDP3: DP3 (Proposed)



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Proposed Conditions
Type III 24-hr 100-yr Rainfall=7.76"

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Summary for Pond EP1*: Proposed EP1

Inflow Area = 1.559 ac, 41.18% Impervious, Inflow Depth = 5.17" for 100-yr event
 Inflow = 7.47 cfs @ 12.18 hrs, Volume= 0.672 af
 Outflow = 7.45 cfs @ 12.19 hrs, Volume= 0.672 af, Atten= 0%, Lag= 0.6 min
 Discarded = 0.70 cfs @ 11.56 hrs, Volume= 0.418 af
 Primary = 6.75 cfs @ 12.19 hrs, Volume= 0.253 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Peak Elev= 36.67' @ 12.19 hrs Surf.Area= 215 sf Storage= 1,267 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 6.5 min (821.8 - 815.3)

Volume	Invert	Avail.Storage	Storage Description
#1	33.00'	8 cf	6.00'D x 1.85'H Vertical Cone/Cylinder 52 cf Overall - 32 cf Embedded = 21 cf x 40.0% Voids
#2	33.00'	23 cf	4.00'D x 1.85'H Vertical Cone/Cylinder Inside #1 32 cf Overall - 4.0" Wall Thickness = 23 cf
#3	34.85'	3 cf	2.00'D x 1.00'H Vertical Cone/Cylinder -Impervious
#4	35.85'	12,510 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
#5	35.50'	60 cf	Custom Stage Data (Conic) Listed below (Recalc)
		12,604 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
35.85	12	0	0
36.00	117	10	10
36.50	2,079	549	559
37.00	11,922	3,500	4,059
37.50	21,881	8,451	12,510

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.50	64	0	0	64
36.00	187	60	60	188

Device	Routing	Invert	Outlet Devices
#1	Discarded	33.00'	120.000 in/hr Exfiltration over Wetted area
#2	Primary	36.60'	150.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#3	Secondary	37.22'	29.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

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Proposed Conditions
Type III 24-hr 100-yr Rainfall=7.76"

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Discarded OutFlow Max=0.70 cfs @ 11.56 hrs HW=36.02' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.70 cfs)**Primary OutFlow** Max=6.73 cfs @ 12.19 hrs HW=36.67' TW=0.00' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 6.73 cfs @ 0.69 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=33.00' TW=30.10' (Dynamic Tailwater)↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond EP2*: Proposed EP2**

Inflow Area = 2.488 ac, 45.54% Impervious, Inflow Depth = 5.27" for 100-yr event
 Inflow = 9.83 cfs @ 12.11 hrs, Volume= 1.094 af
 Outflow = 6.83 cfs @ 12.41 hrs, Volume= 1.094 af, Atten= 30%, Lag= 17.6 min
 Discarded = 0.39 cfs @ 11.74 hrs, Volume= 0.702 af
 Primary = 6.45 cfs @ 12.41 hrs, Volume= 0.392 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Peak Elev= 36.32' @ 12.41 hrs Surf.Area= 57 sf Storage= 15,063 cf

Plug-Flow detention time= 231.9 min calculated for 1.093 af (100% of inflow)

Center-of-Mass det. time= 232.0 min (1,041.3 - 809.3)

Volume	Invert	Avail.Storage	Storage Description
#1	30.10'	20 cf	6.00'D x 4.49'H Vertical Cone/Cylinder 127 cf Overall - 77 cf Embedded = 50 cf x 40.0% Voids
#2	30.10'	56 cf	4.00'D x 4.49'H Vertical Cone/Cylinder Inside #1 77 cf Overall - 4.0" Wall Thickness = 56 cf
#3	33.00'	6 cf	6.00'D x 1.40'H Vertical Cone/Cylinder 40 cf Overall - 24 cf Embedded = 16 cf x 40.0% Voids
#4	33.00'	18 cf	4.00'D x 1.40'H Vertical Cone/Cylinder Inside #3 24 cf Overall - 4.0" Wall Thickness = 18 cf
#5	34.59'	3 cf	2.00'D x 1.00'H Vertical Cone/Cylinder -Impervious
#6	34.40'	3 cf	2.00'D x 1.00'H Vertical Cone/Cylinder -Impervious
#7	33.00'	32,419 cf	Custom Stage Data (Prismatic) Listed below (Recalc) -Impervious
		32,525 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
33.00	1,403	0	0
34.00	2,047	1,725	1,725
35.00	2,855	2,451	4,176
36.00	9,813	6,334	10,510
37.00	34,004	21,909	32,419

**WATER QUALITY
VOLUME**

Device	Routing	Invert	Outlet Devices
#1	Discarded	30.10'	120.000 in/hr Exfiltration over Wetted area from 30.10' - 35.76' Excluded Wetted area = 28 sf
#2	Primary	36.50'	3.0' long x 1.0' breadth Broad-Crested Rectangular Weir

4512 - HydroCAD

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Proposed Conditions
Type III 24-hr 100-yr Rainfall=7.76"

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#3	Primary	36.20'	Head (feet)	0.20	0.40	0.60	0.80	1.00	1.20	1.40	1.60	1.80	2.00
			2.50	3.00									
			Coef. (English)	2.69	2.72	2.75	2.85	2.98	3.08	3.20	3.28	3.31	
			3.30	3.31	3.32								
			55.0' long x 1.0' breadth Broad-Crested Rectangular Weir										
			Head (feet)	0.20	0.40	0.60	0.80	1.00	1.20	1.40	1.60	1.80	2.00
			2.50	3.00									
			Coef. (English)	2.69	2.72	2.75	2.85	2.98	3.08	3.20	3.28	3.31	
			3.30	3.31	3.32								

Discarded OutFlow Max=0.39 cfs @ 11.74 hrs HW=34.63' (Free Discharge)

1=Exfiltration (Exfiltration Controls 0.39 cfs)

Primary OutFlow Max=6.44 cfs @ 12.41 hrs HW=36.32' TW=0.00' (Dynamic Tailwater)

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

3=Broad-Crested Rectangular Weir (Weir Controls 6.44 cfs @ 0.95 fps)

Summary for Pond PP1: Proposed Pond 1

Inflow Area = 0.889 ac, 53.88% Impervious, Inflow Depth = 5.45" for 100-yr event
 Inflow = 5.05 cfs @ 12.10 hrs, Volume= 0.403 af
 Outflow = 2.71 cfs @ 12.26 hrs, Volume= 0.403 af, Atten= 46%, Lag= 9.5 min
 Discarded = 2.71 cfs @ 12.26 hrs, Volume= 0.403 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Peak Elev= 34.62' @ 12.26 hrs Surf.Area= 2,405 sf Storage= 3,100 cf

Plug-Flow detention time= 17.9 min calculated for 0.403 af (100% of inflow)

Center-of-Mass det. time= 17.9 min (807.4 - 789.5)

Volume	Invert	Avail.Storage	Storage Description	
#1	33.00'	15,241 cf	Custom Stage Data (Conic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
33.00	1,464	0	0	1,464
34.00	2,006	1,728	1,728	2,026
35.00	2,664	2,327	4,055	2,705
36.00	5,292	3,904	7,959	5,343
37.00	9,474	7,282	15,241	9,536

WATER QUALITY
VOLUME

Device	Routing	Invert	Outlet Devices
#1	Discarded	33.00'	120.000 in/hr Exfiltration over Wetted area from 33.00' - 35.80' Excluded Wetted area = 1,464 sf
#2	Primary	36.90'	35.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

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Type III 24-hr 100-yr Rainfall=7.76"

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Discarded OutFlow Max=2.70 cfs @ 12.26 hrs HW=34.62' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 2.70 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=33.00' TW=0.00' (Dynamic Tailwater)

↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

APPENDIX C
NRCS Soil Map & Data



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

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

Custom Soil Resource Report for State of Connecticut



April 9, 2021

Preface

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

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

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

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

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

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

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How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

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

Custom Soil Resource Report

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

Soil Map

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

Custom Soil Resource Report Soil Map



Custom Soil Resource Report

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 1:12,000.

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:
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: State of Connecticut
Survey Area Data: Version 20, Jun 9, 2020

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

Date(s) aerial images were photographed: Jul 15, 2019—Oct 24, 2019

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

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
12	Raypol silt loam	18.1	21.0%
29A	Agawam fine sandy loam, 0 to 3 percent slopes	10.7	12.4%
29B	Agawam fine sandy loam, 3 to 8 percent slopes	8.3	9.7%
36B	Windsor loamy sand, 3 to 8 percent slopes	1.5	1.8%
37E	Manchester gravelly sandy loam, 15 to 45 percent slopes	3.8	4.4%
306	Udorthents-Urban land complex	7.8	9.1%
307	Urban land	4.5	5.2%
701A	Ninigret fine sandy loam, 0 to 3 percent slopes	0.0	0.0%
702A	Tisbury silt loam, 0 to 3 percent slopes	7.4	8.5%
704A	Enfield silt loam, 0 to 3 percent slopes	20.5	23.8%
704B	Enfield silt loam, 3 to 8 percent slopes	2.7	3.1%
W	Water	0.8	1.0%
Totals for Area of Interest		86.1	100.0%

Map Unit Descriptions

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

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

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a

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

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

State of Connecticut

12—Raypol silt loam

Map Unit Setting

National map unit symbol: 9ljx
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Raypol and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Raypol

Setting

Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from granite and/or schist and/or gneiss

Typical profile

Ap - 0 to 8 inches: silt loam
Bg1 - 8 to 12 inches: very fine sandy loam
Bg2 - 12 to 20 inches: silt loam
Bw1 - 20 to 26 inches: silt loam
Bw2 - 26 to 29 inches: very fine sandy loam
2C1 - 29 to 52 inches: stratified very gravelly coarse sand to loamy fine sand
2C2 - 52 to 65 inches: stratified very gravelly coarse sand to loamy fine sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Ecological site: F144AY028MA - Wet Outwash
Hydric soil rating: Yes

Minor Components

Haven

Percent of map unit: 5 percent
Landform: Outwash plains, terraces
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Enfield

Percent of map unit: 5 percent
Landform: Terraces, outwash plains
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Ninigret

Percent of map unit: 3 percent
Landform: Outwash plains, terraces
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Tisbury

Percent of map unit: 2 percent
Landform: Outwash plains, terraces
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Scarboro

Percent of map unit: 2 percent
Landform: Depressions, drainageways, terraces
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Walpole

Percent of map unit: 2 percent
Landform: Depressions on terraces, drainageways on terraces
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Unnamed, loamy substratum

Percent of map unit: 1 percent

29A—Agawam fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tyqw

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Elevation: 0 to 1,040 feet

Mean annual precipitation: 36 to 71 inches

Mean annual air temperature: 39 to 55 degrees F

Frost-free period: 140 to 250 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Agawam and similar soils: 85 percent

Minor components: 15 percent

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

Description of Agawam

Setting

Landform: Outwash plains, kame terraces, kames, moraines, outwash terraces

Landform position (two-dimensional): Backslope, shoulder, footslope, summit

Landform position (three-dimensional): Side slope, crest, tread, riser, rise, dip

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from gneiss, granite, schist, and/or phyllite

Typical profile

Ap - 0 to 11 inches: fine sandy loam

Bw1 - 11 to 16 inches: fine sandy loam

Bw2 - 16 to 26 inches: fine sandy loam

2C1 - 26 to 39 inches: loamy fine sand

2C2 - 39 to 55 inches: loamy fine sand

2C3 - 55 to 65 inches: loamy sand

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: 15 to 35 inches to strongly contrasting textural stratification

Drainage class: Well drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water capacity: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2s

Hydrologic Soil Group: B

Ecological site: F145XY008MA - Dry Outwash

Hydric soil rating: No

Minor Components

Ninigret

Percent of map unit: 5 percent

Landform: Terraces

Down-slope shape: Linear

Custom Soil Resource Report

Across-slope shape: Concave

Hydric soil rating: No

Windsor

Percent of map unit: 4 percent

Landform: Outwash plains, outwash terraces, deltas, dunes

Landform position (three-dimensional): Tread, riser

Down-slope shape: Linear, convex

Across-slope shape: Linear, convex

Hydric soil rating: No

Walpole

Percent of map unit: 3 percent

Landform: Outwash plains, depressions, outwash terraces, depressions, deltas

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Tread, dip, talf

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Hinckley

Percent of map unit: 3 percent

Landform: Outwash plains, eskers, kames, deltas

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

Landform position (three-dimensional): Nose slope, side slope, crest, head slope, rise

Down-slope shape: Convex

Across-slope shape: Linear, convex

Hydric soil rating: No

29B—Agawam fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2tyqx

Elevation: 0 to 820 feet

Mean annual precipitation: 36 to 71 inches

Mean annual air temperature: 39 to 55 degrees F

Frost-free period: 140 to 250 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Agawam and similar soils: 85 percent

Minor components: 15 percent

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

Description of Agawam

Setting

Landform: Moraines, outwash terraces, kame terraces, kames, outwash plains

Landform position (two-dimensional): Backslope, shoulder, footslope, summit

Landform position (three-dimensional): Side slope, crest, tread, riser, rise, dip

Custom Soil Resource Report

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from gneiss, granite, schist, and/or phyllite

Typical profile

Ap - 0 to 11 inches: fine sandy loam

Bw1 - 11 to 16 inches: fine sandy loam

Bw2 - 16 to 26 inches: fine sandy loam

2C1 - 26 to 45 inches: loamy fine sand

2C2 - 45 to 55 inches: loamy fine sand

2C3 - 55 to 65 inches: loamy sand

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 15 to 35 inches to strongly contrasting textural stratification

Drainage class: Well drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water capacity: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2s

Hydrologic Soil Group: B

Ecological site: F145XY008MA - Dry Outwash

Hydric soil rating: No

Minor Components

Sudbury

Percent of map unit: 5 percent

Landform: Terraces, deltas, outwash plains

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Tread, dip

Down-slope shape: Concave

Across-slope shape: Linear

Hydric soil rating: No

Hinckley

Percent of map unit: 5 percent

Landform: Deltas, outwash plains, eskers, kames

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

Landform position (three-dimensional): Head slope, nose slope, side slope, crest, rise

Down-slope shape: Convex

Across-slope shape: Convex, linear

Hydric soil rating: No

Merrimac

Percent of map unit: 3 percent

Custom Soil Resource Report

Landform: Kames, eskers, moraines, outwash terraces, outwash plains
Landform position (two-dimensional): Backslope, footslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest, riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Windsor

Percent of map unit: 2 percent
Landform: Deltas, outwash plains, dunes, outwash terraces
Landform position (three-dimensional): Riser, tread
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

36B—Windsor loamy sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2svkf
Elevation: 0 to 1,210 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Windsor, loamy sand, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor, Loamy Sand

Setting

Landform: Outwash terraces, deltas, outwash plains, dunes
Landform position (three-dimensional): Tread, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss

Typical profile

O - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: loamy sand
Bw - 3 to 25 inches: loamy sand
C - 25 to 65 inches: sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained

Custom Soil Resource Report

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water capacity: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2s

Hydrologic Soil Group: A

Ecological site: F144AY022MA - Dry Outwash

Hydric soil rating: No

Minor Components

Hinckley, loamy sand

Percent of map unit: 10 percent

Landform: Eskers, kames, deltas, outwash plains

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

Landform position (three-dimensional): Nose slope, side slope, crest, head slope, rise

Down-slope shape: Convex

Across-slope shape: Convex, linear

Hydric soil rating: No

Deerfield, loamy sand

Percent of map unit: 5 percent

Landform: Outwash plains, terraces, deltas

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Tread, tal

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

37E—Manchester gravelly sandy loam, 15 to 45 percent slopes

Map Unit Setting

National map unit symbol: 9ln7

Elevation: 0 to 1,200 feet

Mean annual precipitation: 43 to 54 inches

Mean annual air temperature: 45 to 55 degrees F

Frost-free period: 140 to 185 days

Farmland classification: Not prime farmland

Map Unit Composition

Manchester and similar soils: 80 percent

Minor components: 20 percent

Custom Soil Resource Report

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

Description of Manchester

Setting

Landform: Eskers, kames, outwash plains, terraces

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Sandy and gravelly glaciofluvial deposits derived from sandstone and shale and/or basalt

Typical profile

Ap - 0 to 9 inches: gravelly sandy loam

Bw - 9 to 18 inches: gravelly loamy sand

C - 18 to 65 inches: stratified extremely gravelly coarse sand to very gravelly loamy sand

Properties and qualities

Slope: 15 to 45 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Excessively drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water capacity: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: A

Ecological site: F145XY008MA - Dry Outwash

Hydric soil rating: No

Minor Components

Penwood

Percent of map unit: 5 percent

Landform: Outwash plains, terraces

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

Branford

Percent of map unit: 5 percent

Landform: Outwash plains, terraces

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Hartford

Percent of map unit: 5 percent

Landform: Outwash plains, terraces

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Walpole

Percent of map unit: 3 percent

Landform: Depressions on terraces, drainageways on terraces

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Scitico

Percent of map unit: 2 percent

Landform: Terraces, depressions, drainageways

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

306—Udorthents-Urban land complex

Map Unit Setting

National map unit symbol: 9lmg

Elevation: 0 to 2,000 feet

Mean annual precipitation: 43 to 56 inches

Mean annual air temperature: 45 to 55 degrees F

Frost-free period: 120 to 185 days

Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 50 percent

Urban land: 35 percent

Minor components: 15 percent

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

Description of Udorthents

Setting

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Drift

Typical profile

A - 0 to 5 inches: loam

C1 - 5 to 21 inches: gravelly loam

C2 - 21 to 80 inches: very gravelly sandy loam

Properties and qualities

Slope: 0 to 25 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 1.98 in/hr)

Depth to water table: About 54 to 72 inches

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Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Urban Land

Typical profile

H - 0 to 6 inches: material

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Unranked

Minor Components

Unnamed, undisturbed soils

Percent of map unit: 8 percent
Hydric soil rating: No

Udorthents, wet substratum

Percent of map unit: 5 percent
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent
Hydric soil rating: No

307—Urban land

Map Unit Setting

National map unit symbol: 9lmh
Elevation: 0 to 2,000 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 120 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Typical profile

H - 0 to 6 inches: material

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Hydrologic Soil Group: D

Hydric soil rating: Unranked

Minor Components

Unnamed, undisturbed soils

Percent of map unit: 10 percent

Hydric soil rating: No

Udorthents, wet substratum

Percent of map unit: 10 percent

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

701A—Ninigret fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2y07d

Elevation: 0 to 1,260 feet

Mean annual precipitation: 43 to 54 inches

Mean annual air temperature: 45 to 55 degrees F

Frost-free period: 140 to 185 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Ninigret and similar soils: 85 percent

Minor components: 15 percent

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

Description of Ninigret

Setting

Landform: Outwash terraces, kames, moraines, outwash plains, kame terraces

Landform position (two-dimensional): Footslope, toeslope

Landform position (three-dimensional): Base slope, tread

Down-slope shape: Linear, convex

Across-slope shape: Concave, convex

Parent material: Coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from gneiss, granite, schist, and/or phyllite

Typical profile

Ap - 0 to 8 inches: fine sandy loam

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Bw1 - 8 to 16 inches: fine sandy loam
Bw2 - 16 to 26 inches: fine sandy loam
2C - 26 to 65 inches: stratified loamy sand to loamy fine sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 18 to 38 inches to strongly contrasting textural stratification
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 17 to 39 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Ecological site: F144AY026CT - Moist Silty Outwash
Hydric soil rating: No

Minor Components

Merrimac

Percent of map unit: 5 percent
Landform: Moraines, kames, eskers, outwash terraces, outwash plains
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Side slope, crest, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Agawam

Percent of map unit: 5 percent
Landform: Moraines, outwash terraces, outwash plains, kame terraces, kames
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Side slope, crest, tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Tisbury

Percent of map unit: 3 percent
Landform: Outwash terraces, outwash plains, deltas, valley trains
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

Raypol

Percent of map unit: 2 percent
Landform: Depressions, drainageways
Down-slope shape: Concave

Custom Soil Resource Report

Across-slope shape: Concave
Hydric soil rating: Yes

702A—Tisbury silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2y07g
Elevation: 0 to 1,260 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Tisbury and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tisbury

Setting

Landform: Valley trains, outwash plains, deltas, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-silty eolian deposits over sandy and gravelly glaciofluvial deposits derived from granite, schist, and/or gneiss

Typical profile

Ap - 0 to 8 inches: silt loam
Bw1 - 8 to 18 inches: silt loam
Bw2 - 18 to 26 inches: silt loam
2C - 26 to 65 inches: extremely gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 24 to 36 inches to strongly contrasting textural stratification
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e

Custom Soil Resource Report

Hydrologic Soil Group: C

Ecological site: F144AY026CT - Moist Silty Outwash

Hydric soil rating: No

Minor Components

Merrimac

Percent of map unit: 5 percent

Landform: Moraines, outwash terraces, outwash plains, kames, eskers

Landform position (two-dimensional): Shoulder, summit

Landform position (three-dimensional): Side slope, crest, tread

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Agawam

Percent of map unit: 5 percent

Landform: Outwash terraces, outwash plains, kame terraces, kames, moraines

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Side slope, crest, tread

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Ninigret

Percent of map unit: 3 percent

Landform: Outwash terraces, kames, moraines, outwash plains, kame terraces

Landform position (two-dimensional): Footslope, toeslope

Landform position (three-dimensional): Base slope, tread

Down-slope shape: Linear, convex

Across-slope shape: Concave, convex

Hydric soil rating: No

Raypol

Percent of map unit: 2 percent

Landform: Depressions, drainageways

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

704A—Enfield silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2y07p

Elevation: 0 to 1,200 feet

Mean annual precipitation: 43 to 54 inches

Mean annual air temperature: 45 to 55 degrees F

Frost-free period: 140 to 185 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Enfield and similar soils: 85 percent

Minor components: 15 percent

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

Description of Enfield

Setting

Landform: Outwash terraces, outwash plains

Landform position (three-dimensional): Tread

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Coarse-silty eolian deposits over sandy and gravelly glaciofluvial deposits derived from granite, schist, and/or gneiss

Typical profile

Ap - 0 to 7 inches: silt loam

Bw1 - 7 to 15 inches: silt loam

Bw2 - 15 to 25 inches: silt loam

2C - 25 to 60 inches: stratified very gravelly coarse sand to loamy sand

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: 16 to 39 inches to strongly contrasting textural stratification

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water capacity: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 1

Hydrologic Soil Group: B

Ecological site: F145XY009CT - Well Drained Outwash

Hydric soil rating: No

Minor Components

Haven

Percent of map unit: 5 percent

Landform: Outwash terraces, outwash plains

Landform position (three-dimensional): Tread

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

Tisbury

Percent of map unit: 5 percent

Landform: Valley trains, outwash terraces, outwash plains, deltas

Landform position (three-dimensional): Tread

Down-slope shape: Concave

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Across-slope shape: Concave

Hydric soil rating: No

Agawam

Percent of map unit: 3 percent

Landform: Kames, moraines, outwash terraces, outwash plains, kame terraces

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Side slope, crest, tread

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Raypol

Percent of map unit: 2 percent

Landform: Depressions, drainageways

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

704B—Enfield silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2y07q

Elevation: 0 to 1,200 feet

Mean annual precipitation: 43 to 54 inches

Mean annual air temperature: 45 to 55 degrees F

Frost-free period: 140 to 185 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Enfield and similar soils: 85 percent

Minor components: 15 percent

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

Description of Enfield

Setting

Landform: Outwash terraces, outwash plains

Landform position (three-dimensional): Tread

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Coarse-silty eolian deposits over sandy and gravelly glaciofluvial deposits derived from granite, schist, and/or gneiss

Typical profile

Ap - 0 to 7 inches: silt loam

Bw1 - 7 to 15 inches: silt loam

Bw2 - 15 to 25 inches: silt loam

2C - 25 to 60 inches: stratified very gravelly coarse sand to loamy sand

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 16 to 39 inches to strongly contrasting textural stratification

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water capacity: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: B

Ecological site: F145XY009CT - Well Drained Outwash

Hydric soil rating: No

Minor Components

Haven

Percent of map unit: 5 percent

Landform: Outwash plains, outwash terraces

Landform position (three-dimensional): Tread

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

Tisbury

Percent of map unit: 5 percent

Landform: Outwash plains, deltas, valley trains, outwash terraces

Landform position (three-dimensional): Tread

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: No

Agawam

Percent of map unit: 3 percent

Landform: Kames, moraines, outwash terraces, outwash plains, kame terraces

Landform position (two-dimensional): Backslope, shoulder, footslope, summit, toeslope

Landform position (three-dimensional): Side slope, crest, head slope, nose slope, tread

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Raypol

Percent of map unit: 2 percent

Landform: Drainageways, depressions

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

W—Water

Map Unit Composition

Water: 100 percent

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

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

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.

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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.

Custom Soil Resource Report Map—Hydrologic Soil Group



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 1:12,000.

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:
 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: State of Connecticut
 Survey Area Data: Version 20, Jun 9, 2020

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

Date(s) aerial images were photographed: Jul 15, 2019—Oct 24, 2019

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.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
12	Raypol silt loam	C/D	18.1	21.0%
29A	Agawam fine sandy loam, 0 to 3 percent slopes	B	10.7	12.4%
29B	Agawam fine sandy loam, 3 to 8 percent slopes	B	8.3	9.7%
36B	Windsor loamy sand, 3 to 8 percent slopes	A	1.5	1.8%
37E	Manchester gravelly sandy loam, 15 to 45 percent slopes	A	3.8	4.4%
306	Udorthents-Urban land complex	B	7.8	9.1%
307	Urban land	D	4.5	5.2%
701A	Ninigret fine sandy loam, 0 to 3 percent slopes	C	0.0	0.0%
702A	Tisbury silt loam, 0 to 3 percent slopes	C	7.4	8.5%
704A	Enfield silt loam, 0 to 3 percent slopes	B	20.5	23.8%
704B	Enfield silt loam, 3 to 8 percent slopes	B	2.7	3.1%
W	Water		0.8	1.0%
Totals for Area of Interest			86.1	100.0%

Rating Options—Hydrologic Soil Group*Aggregation Method: Dominant Condition**Component Percent Cutoff: None Specified**Tie-break Rule: Higher*

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Custom Soil Resource Report

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APPENDIX D
Soil Testing Result



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DEEP TEST PIT RESULTS

The following deep test pits were witnessed by Daniel Jameson, P.E., of Design Professionals, Inc. on 2/25/21.

TEST PIT #1

0" – 12"	TOPSOIL
12" – 96"	TAN MED-FINE SANDY LOAM

GROUND WATER SEEPAGE @ 90", NO MOTTILING, STABLE TRENCH

TEST PIT #2

0" – 12"	TOPSOIL
12" – 60"	TAN MED-FINE SANDY LOAM
60" – 90"	TAN MED-FINE SANDY LOAM (COMPACT & DAMP)

GROUND WATER SEEPAGE @ 90", NO MOTTILING, STABLE TRENCH

TEST PIT #3

0" – 11"	TOPSOIL
11" – 96"	TAN MED-FINE SANDY LOAM

NO MOTTILING, STABLE TRENCH



1060 Main Street
Percolation Test Results
May 18, 2021

21 Jeffrey Drive - South Windsor, CT
(860) 291- 8755
www.designprofessionalsinc.com

Test Performed By Daniel Jameson, P.E.
2/25/2021

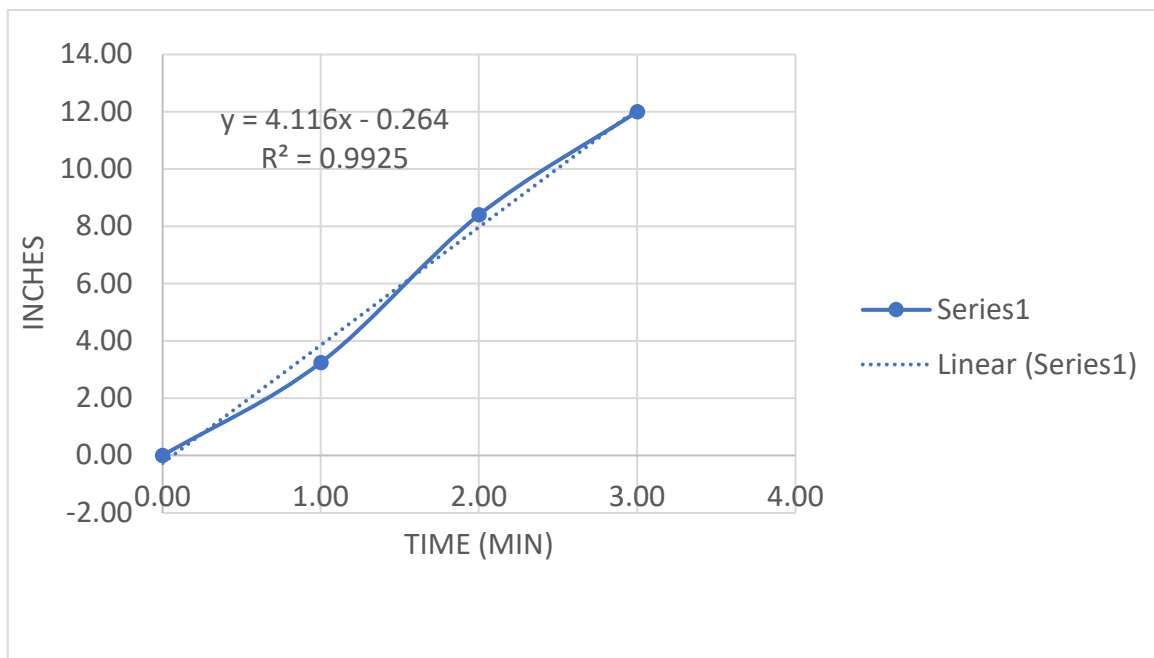
Bottom Of Hole 48"
Pre-Soak Depth 14.4"

Pre Soak 12:04:00 PM (Dry Before 1:58 PM)

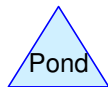
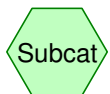
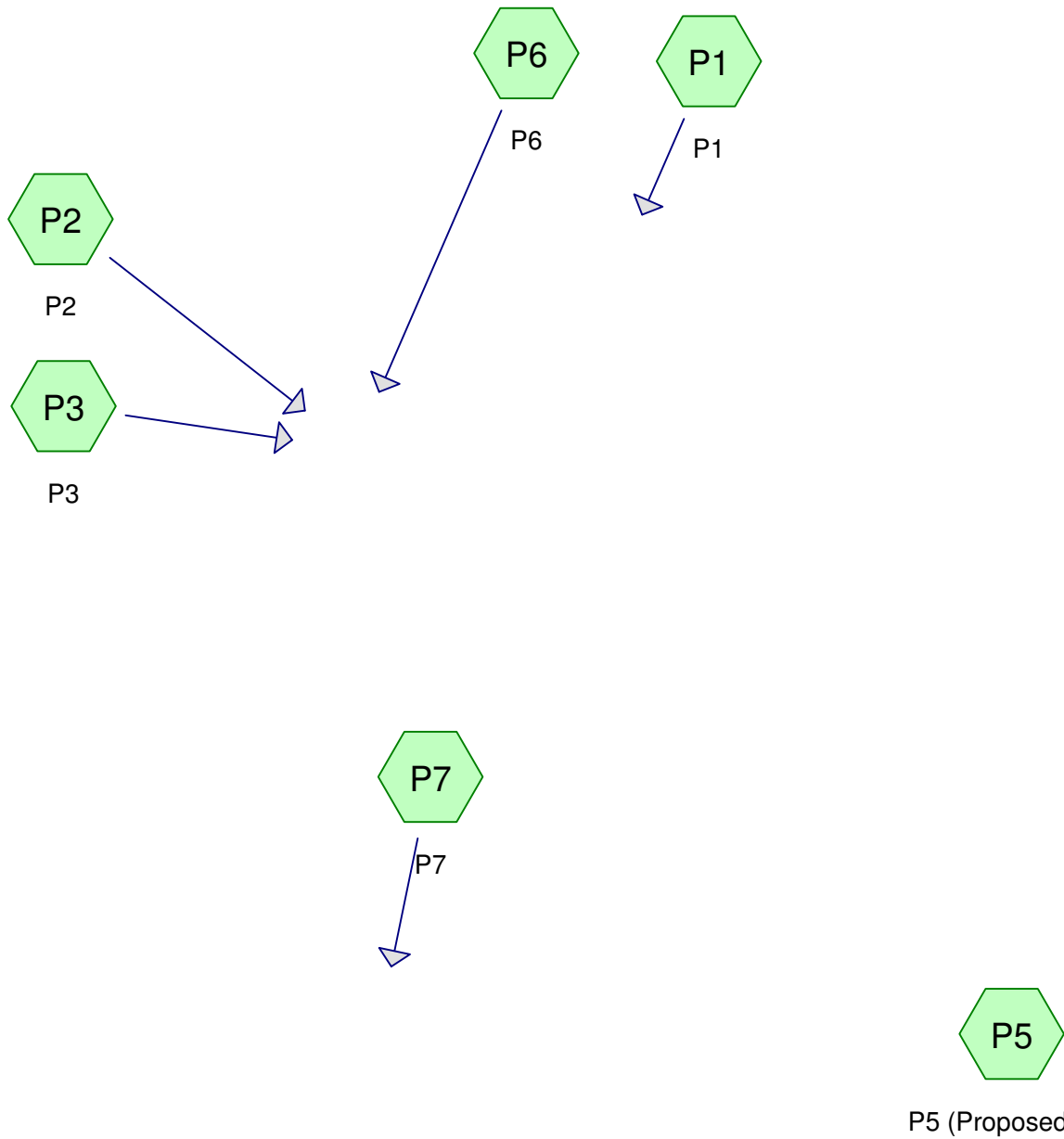
	TIME	DAYS	MINS	DEPTH (ft)	DEPTH (in)
Test Start	11:13 AM		0.00	0.00	0.00
(Dry)	11:14 AM	0.0007	1.00	0.27	3.24
	11:15 AM	0.0014	2.00	0.70	8.40
	11:16 AM	0.0021	3.00	1.00	12.00

4.1160 in/min

0.24 min/in



APPENDIX E
Water Quality Calculations



Routing Diagram for 4512 - HydroCAD

Prepared by Design Professionals, Inc. , Printed 5/11/2021
HydroCAD® 10.00-25 s/n 09320 © 2019 HydroCAD Software Solutions LLC

4512 - HydroCAD

Prepared by Design Professionals, Inc.

Printed 5/11/2021

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Page 2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.961	61	>75% Grass cover, Good, HSG B (P1, P2, P3, P5, P6, P7)
0.475	74	>75% Grass cover, Good, HSG C (P1, P2, P6)
2.023	98	IMPERVIOUS (P1, P2, P3, P5, P6, P7)
0.336	55	Woods, Good, HSG B (P1, P3, P7)
0.020	70	Woods, Good, HSG C (P1)
4.815	77	TOTAL AREA

1060 Main Street – DPI Project No.:4512

May 18, 2021

Water Quality Volume Calculations

Per 2004 Connecticut Stormwater Quality Manual, Section 7.4.1:

Areas for Calculation: Development Areas (Excluding Roofs) P1 - P7 (Excluding P4)

	Development Areas
Impervious	2.023
Pervious	2.792
Total Area	4.815
% Impervious	42.01%

Water Quality Volume (WQV) = (1")(R)(A)/12, where:

R = unitless volumetric runoff coefficient = $0.05 + 0.009(I)$, where:

I = percent impervious cover of drainage area = 42.01%

$R = 0.05 + 0.009(I)$

$R = 0.05 + 0.009(42.01)$

$R = \underline{0.428}$

A = drainage area in acres = 4.815 acres

$WQV = (1")(R)(A \text{ acres})/12 \text{ inches per foot}$

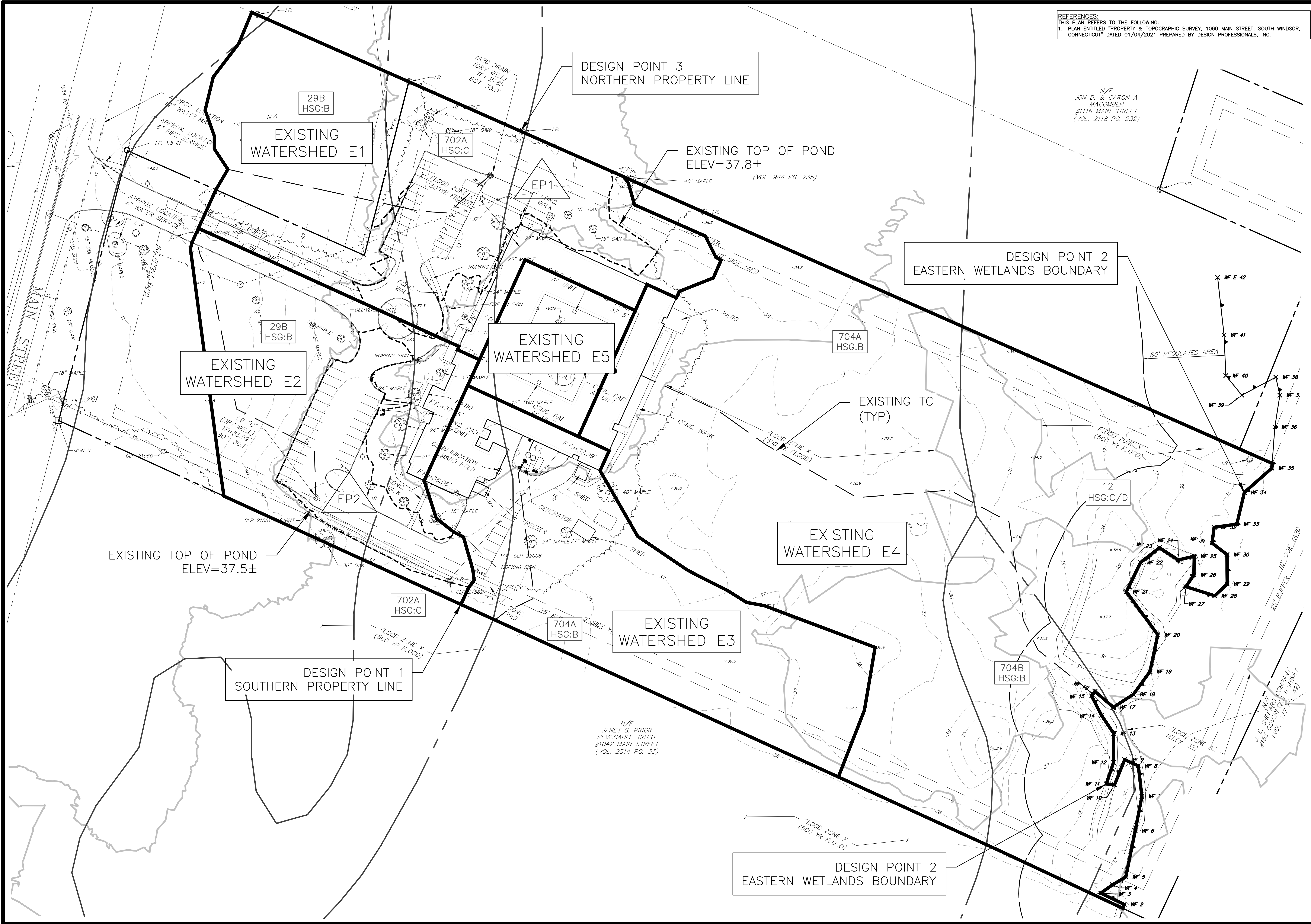
$WQV = (1")(0.428)(\underline{4.815} \text{ acres})/12 \text{ inches per foot}$

$WQV = \underline{0.172} \text{ acre-feet required} = 7492.32 \text{ cft}$

Proposed BMP

Proposed stilling basins 1 and 2 will provide **4,055 cft** and **4,176 cft** below Elev. 35 respectively. The total combined basin area will provide more over **100%** of the determined water quality volume for the site as recommended by the 2004 Connecticut Stormwater Quality Manual. Stage storage report for both basins is included on pages 76 and 77 of the proposed condition HydroCAD report, included in Appendix B of this report.

APPENDIX F
Drainage Area Maps



REFERENCES:
THIS PLAN REFERS TO THE FOLLOWING:
1. PLAN ENTITLED "PROPERTY & TOPOGRAPHIC SURVEY, 1060 MAIN STREET, SOUTH WINDSOR, CONNECTICUT" DATED 01/04/2021 PREPARED BY DESIGN PROFESSIONALS, INC.

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(VOL. 2118 PG. 232)

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PROJECT NO.:
4512
DATE:
5/18/21
DESIGN BY:
REM
CHECKED BY:
CJDA
DATE:
5/18/21

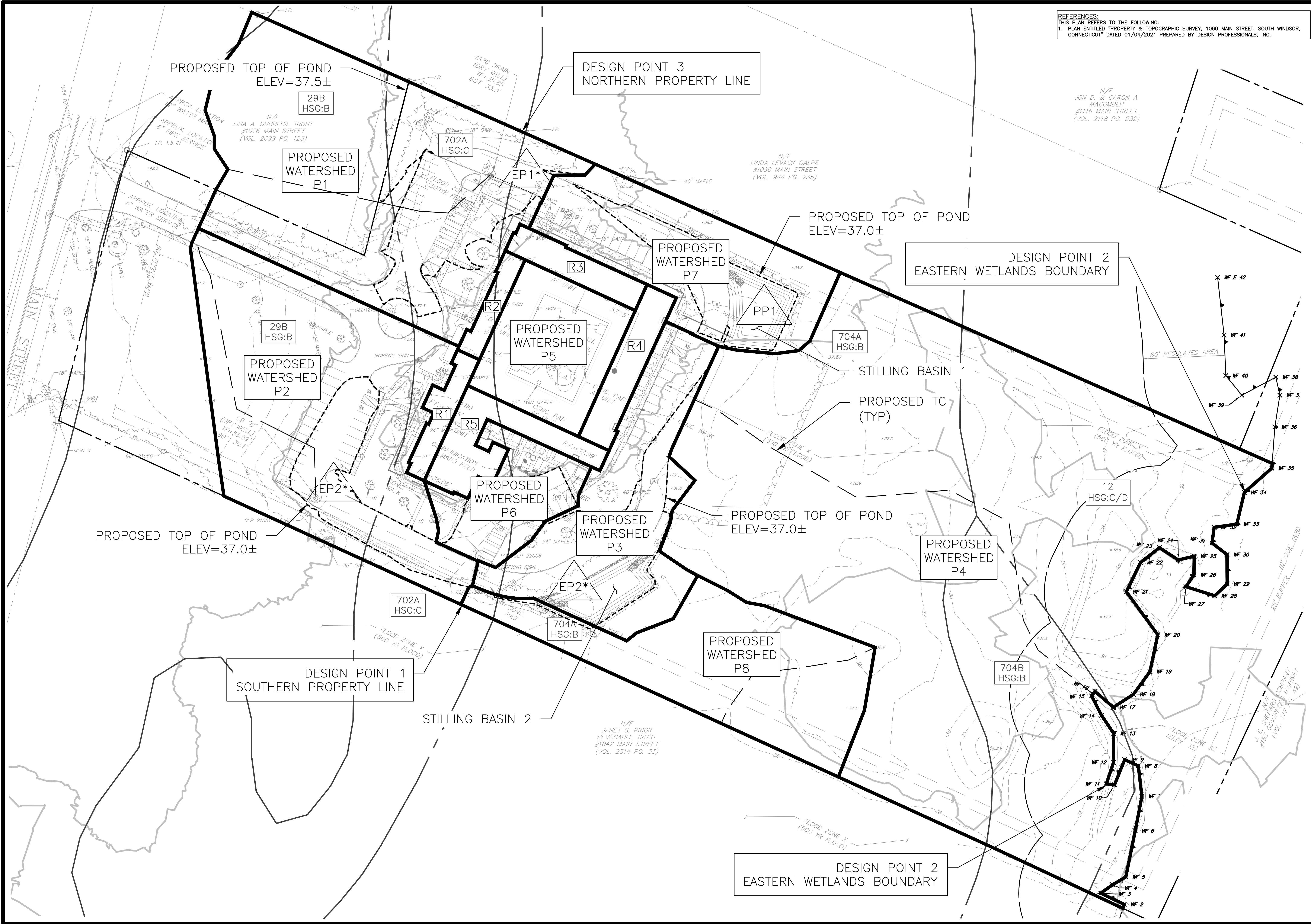
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& SPECIAL EXCEPTION**
1060 MAIN STREET
SOUTH WINDSOR, CONNECTICUT
GIS No. 54901060

NO. DATE REVISIONS BY

EXISTING
DRAINAGE AREA
MAP

SCALE: 0' 20' 40' 80'
T = 40'

SHEET
C-DA1
SHEET 1 OF 2



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PROJECT NO.:
4512
DATE:
5/11/21
DESIGN BY:
JDM
CHECKED BY:
JDM
APPROVED BY:
JDM

**1060 MAIN STREET
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& SPECIAL EXCEPTION**
1060 MAIN STREET
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**PROPOSED
DRAINAGE AREA
MAP**

SCALE: 0 20' 40'
1" = 40'

SHEET
C-DA2
SHEET 2 OF 2