

**Stormwater Management Report
Industrial Flex
75 Connecticut Avenue
South Windsor, Connecticut**

Prepared by:

**Design Professionals, Inc.
21 Jeffrey Drive
South Windsor, CT 06074**

March 10, 2023



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Introduction

Trio Investment Properties LLC is proposing site improvement to a tract of land located at 75 Connecticut Avenue, South Windsor, CT 06074. The property is referenced on the Town of South Windsor Tax Assessors map as GIS#: 23400075. The proposed site improvements will include the construction of 4 new buildings totaling to 39,850 SF. Associated site improvements will include but not be limited to: new access driveways, parking areas for vehicles, sidewalks, landscaping, lighting, utilities, and stormwater management BMP's.

The total tract area is 6.44 acres. 4.15± acres of this area are proposed to be disturbed during construction. For more information, please refer to the plans entitled "Industrial Flux ~ Site Plan Modification ~ 75 Connecticut Avenue ~ South Windsor, CT ~ Map 47 ~ Block 127 ~ Lot 8" prepared by Design Professionals, Inc., and dated March 10, 2023, as amended.

Pre-Development Site Conditions

The existing surficial characteristics of 75 Connecticut Avenue to be improved can be primarily classified as wooded area with scattered areas of grass near the border. Review of the site topography indicated all stormwater runoff generated across the tract would flow to one of two design points. These two design points were identified as follows:

1. **Design Point #1 (DP#1):** Flow to Wetlands
2. **Design Point #2 (DP#2):** Offsite Flow to 24" RCP

The flow to wetlands and offsite flow to 24" RCP were selected as design points for our drainage analysis. Flow to wetlands (DP#1) ultimately drains to The Newberry Brook and is a part of local basin ID 4000-21-1. Offsite flow to 24" RCP (DP#2) ultimately drains to The Podunk River and is a part of local basin ID 4004-00-2-R1. Existing conditions watershed delineations are identified in the Existing Conditions Drainage Map located in **Appendix G**. Based on Natural Resources Conservation Service (NRCS) Hydrologic Soil Group (HSG) mapping, soil types B, B/D, & C 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 identified. 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. Rainfall data from NOAA Atlas 14 Point Frequency Estimates was used to generate storm conditions. NOAA Atlas 14 rainfall data is included in **Appendix D** for reference. For more information, please refer to the enclosed Pre-Development Drainage HydroCAD Report located in **Appendix A**.

Post-Development Site Conditions

The proposed site improvements will include the construction of 4 new buildings totaling to 39,850 SF. Associated site improvements will include but not be limited to: new access driveways, parking areas for vehicles, sidewalks, landscaping, lighting, utilities, and stormwater management BMP's. Two proposed water quality basins, catch basins, and concrete leak offs were designed to attenuate stormwater discharge in the proposed site conditions and ensure that peak rates offsite are less than or equal to the existing site conditions. 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 G**.

Analysis of Results

The pre-development and post-development conditions were analyzed using HydroCAD consistent with National Resource Conservation Service (NRCS) hydrology methods. One discharge location (**Design Point #1**) was identified as a point 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 – Flow to Wetlands	Pre	2.25	6.19	9.02	11.17	13.61
	Post	2.24	6.19	9.01	11.17	13.61
	Net	-0.01	0.00	-0.01	0.00	0.00
DP#2 – Offsite Flow to 24" RCP	Pre	0.65	2.55	4.04	5.22	6.59
	Post	0.54	2.02	3.16	4.06	5.10
	Net	-0.11	-0.53	-0.88	-1.16	-1.49
Overall Site	Pre	2.9	8.74	13.06	16.39	20.20
	Post	2.78	8.21	12.17	15.23	18.71
	Net	-0.12	-0.53	-0.89	-1.16	-1.49

As seen in the table above, all of the storm events evaluated for 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-, 50- and 100-year design storms.

Storm Sewer Collection System

The proposed subsurface stormwater collection and conveyance system was designed to adequately convey proposed runoff under 10- year storm event conditions. The design of the storm sewers followed the guidelines set forth in the Connecticut Department of Transportation's Drainage Manual. It is estimated that during a 10-year storm event, all proposed subsurface culverts will convey storm runoff without resulting in any unacceptable flooding conditions. Storm Sewer calculation are included as **Appendix E** of this report.

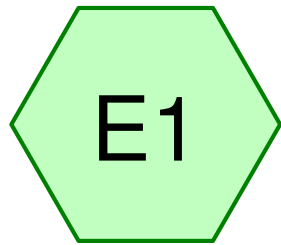
Water Quality

The proposed water quality basin and forebays were sized to treat a 1" rain event as recommended in the 2004 Connecticut Stormwater Quality Manual. The proposed forebay was sized to store over 10% of this water quality volume as recommended by the 2004 Connecticut Stormwater Quality Manual. Water Quality Volume calculations and basin stage storage tables are included as **Appendix F** of this report.

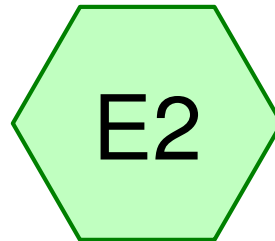
Conclusion

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.

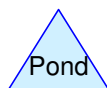
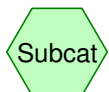
APPENDIX A
Watershed Computations
(Pre-Development Drainage HydroCAD Report)



E1 (DP1)



E2



Routing Diagram for 4613.R HydroCAD

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Existing Conditions
Type III 24-hr 2-Yr Rainfall=3.10"

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Page 2

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points

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

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

Subcatchment E1: E1 (DP1)

Runoff Area=318,750 sf 4.07% Impervious Runoff Depth=0.82"
Flow Length=1,168' Tc=69.3 min CN=71 Runoff=2.25 cfs 0.499 af

Subcatchment E2: E2

Runoff Area=147,538 sf 1.32% Impervious Runoff Depth=0.48"
Flow Length=550' Tc=42.8 min CN=63 Runoff=0.65 cfs 0.134 af

Total Runoff Area = 10.704 ac Runoff Volume = 0.633 af Average Runoff Depth = 0.71"
96.80% Pervious = 10.362 ac 3.20% Impervious = 0.343 ac

4613.R HydroCAD

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Existing Conditions
Type III 24-hr 10-Yr Rainfall=4.92"

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Page 3

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points

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

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

Subcatchment E1: E1 (DP1)

Runoff Area=318,750 sf 4.07% Impervious Runoff Depth=2.06"
Flow Length=1,168' Tc=69.3 min CN=71 Runoff=6.19 cfs 1.254 af

Subcatchment E2: E2

Runoff Area=147,538 sf 1.32% Impervious Runoff Depth=1.46"
Flow Length=550' Tc=42.8 min CN=63 Runoff=2.55 cfs 0.412 af

Total Runoff Area = 10.704 ac Runoff Volume = 1.666 af Average Runoff Depth = 1.87"
96.80% Pervious = 10.362 ac 3.20% Impervious = 0.343 ac

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Existing Conditions
Type III 24-hr 25-Yr Rainfall=6.06"

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Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points

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

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

Subcatchment E1: E1 (DP1)

Runoff Area=318,750 sf 4.07% Impervious Runoff Depth=2.95"
Flow Length=1,168' Tc=69.3 min CN=71 Runoff=9.02 cfs 1.797 af

Subcatchment E2: E2

Runoff Area=147,538 sf 1.32% Impervious Runoff Depth=2.22"
Flow Length=550' Tc=42.8 min CN=63 Runoff=4.04 cfs 0.626 af

Total Runoff Area = 10.704 ac Runoff Volume = 2.423 af Average Runoff Depth = 2.72"
96.80% Pervious = 10.362 ac 3.20% Impervious = 0.343 ac

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Existing Conditions
Type III 24-hr 50-Yr Rainfall=6.89"

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Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points

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

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

Subcatchment E1: E1 (DP1)

Runoff Area=318,750 sf 4.07% Impervious Runoff Depth=3.63"
Flow Length=1,168' Tc=69.3 min CN=71 Runoff=11.17 cfs 2.214 af

Subcatchment E2: E2

Runoff Area=147,538 sf 1.32% Impervious Runoff Depth=2.82"
Flow Length=550' Tc=42.8 min CN=63 Runoff=5.22 cfs 0.796 af

Total Runoff Area = 10.704 ac Runoff Volume = 3.010 af Average Runoff Depth = 3.37"
96.80% Pervious = 10.362 ac 3.20% Impervious = 0.343 ac

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Existing Conditions

Type III 24-hr 100-Yr Rainfall=7.81"

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Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points

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

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

Subcatchment E1: E1 (DP1)

Runoff Area=318,750 sf 4.07% Impervious Runoff Depth=4.41"
Flow Length=1,168' Tc=69.3 min CN=71 Runoff=13.61 cfs 2.692 af

Subcatchment E2: E2

Runoff Area=147,538 sf 1.32% Impervious Runoff Depth=3.52"
Flow Length=550' Tc=42.8 min CN=63 Runoff=6.59 cfs 0.993 af

Total Runoff Area = 10.704 ac Runoff Volume = 3.685 af Average Runoff Depth = 4.13"
96.80% Pervious = 10.362 ac 3.20% Impervious = 0.343 ac

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Type III 24-hr 2-Yr Rainfall=3.10"

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Summary for Subcatchment E1: E1 (DP1)

Runoff = 2.25 cfs @ 13.02 hrs, Volume= 0.499 af, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Yr Rainfall=3.10"

Area (sf)	CN	Description
1,223	61	>75% Grass cover, Good, HSG B
* 0	71	>75% Grass cover, Good, HSG B/D
30,455	74	>75% Grass cover, Good, HSG C
0	98	Paved parking, HSG B
* 0	98	Paved parking, HSG B/D
12,976	98	Paved parking, HSG C
1,370	71	Meadow, non-grazed, HSG C
14,864	55	Woods, Good, HSG B
* 5,615	66	Woods, Good, HSG B/D
252,247	70	Woods, Good, HSG C
318,750	71	Weighted Average
305,774		95.93% Pervious Area
12,976		4.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.8	35	0.0125	0.03		Sheet Flow, Woods Sheet Flow Woods: Dense underbrush n= 0.800 P2= 3.11"
12.4	65	0.0125	0.09		Sheet Flow, Grass Sheet Flow Grass: Dense n= 0.240 P2= 3.11"
1.3	52	0.0056	0.67		Shallow Concentrated Flow, Grass Shallow Flow Cultivated Straight Rows Kv= 9.0 fps
2.0	45	0.0056	0.37		Shallow Concentrated Flow, Woods Shallow Flow Woodland Kv= 5.0 fps
1.5	48	0.0056	0.52		Shallow Concentrated Flow, Grass Shallow Short Grass Pasture Kv= 7.0 fps
32.3	923	0.0091	0.48		Shallow Concentrated Flow, Woods Shallow Flow Woodland Kv= 5.0 fps
69.3	1,168	Total			

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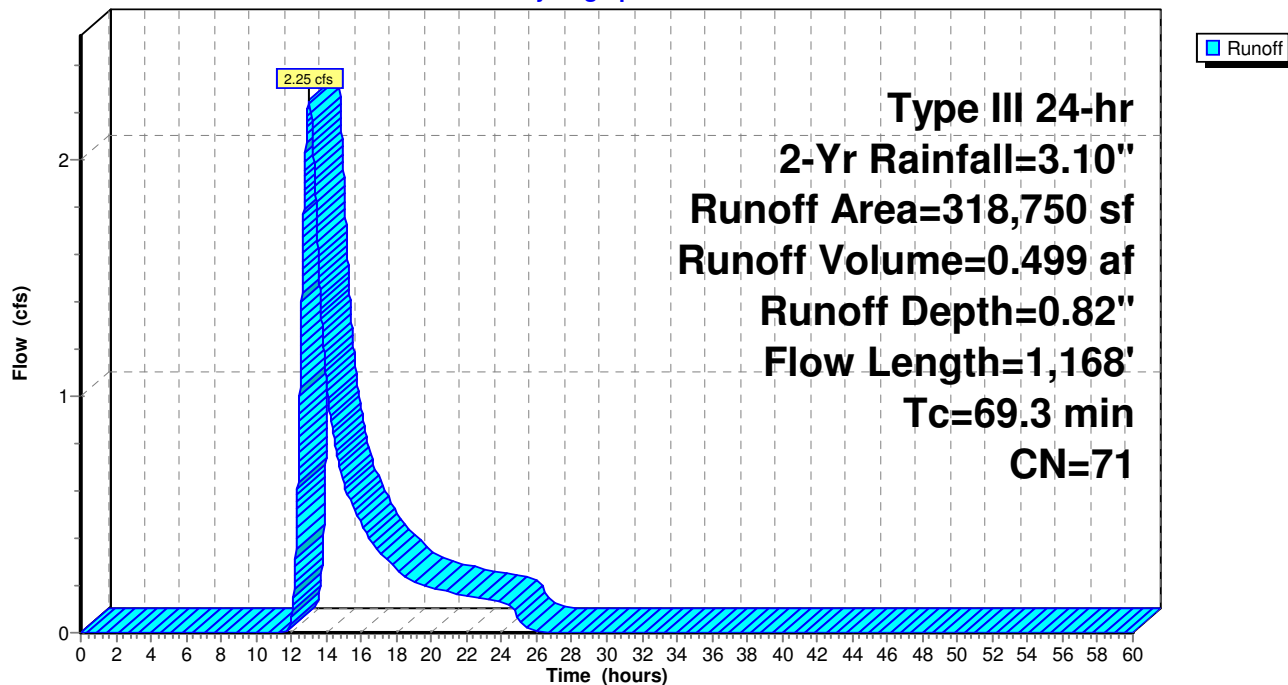
Existing Conditions
Type III 24-hr 2-Yr Rainfall=3.10"

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Subcatchment E1: E1 (DP1)

Hydrograph



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Existing Conditions
Type III 24-hr 2-Yr Rainfall=3.10"

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Summary for Subcatchment E2: E2

Runoff = 0.65 cfs @ 12.74 hrs, Volume= 0.134 af, Depth= 0.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Yr Rainfall=3.10"

	Area (sf)	CN	Description
	5,002	61	>75% Grass cover, Good, HSG B
*	2,054	71	>75% Grass cover, Good, HSG B/D
	4,540	74	>75% Grass cover, Good, HSG C
	1,294	98	Paved parking, HSG B
*	171	98	Paved parking, HSG B/D
	480	98	Paved parking, HSG C
	0	71	Meadow, non-grazed, HSG C
	48,590	55	Woods, Good, HSG B
*	68,461	66	Woods, Good, HSG B/D
	16,946	70	Woods, Good, HSG C
	147,538	63	Weighted Average
	145,593		98.68% Pervious Area
	1,945		1.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	58	0.0466	0.14		Sheet Flow, Grass Sheet Flow
					Grass: Dense n= 0.240 P2= 3.11"
13.5	42	0.0466	0.05		Sheet Flow, Woods Sheet Flow
					Woods: Dense underbrush n= 0.800 P2= 3.11"
22.6	450	0.0044	0.33		Shallow Concentrated Flow, Woods Shallow Flow
					Woodland Kv= 5.0 fps
42.8	550	Total			

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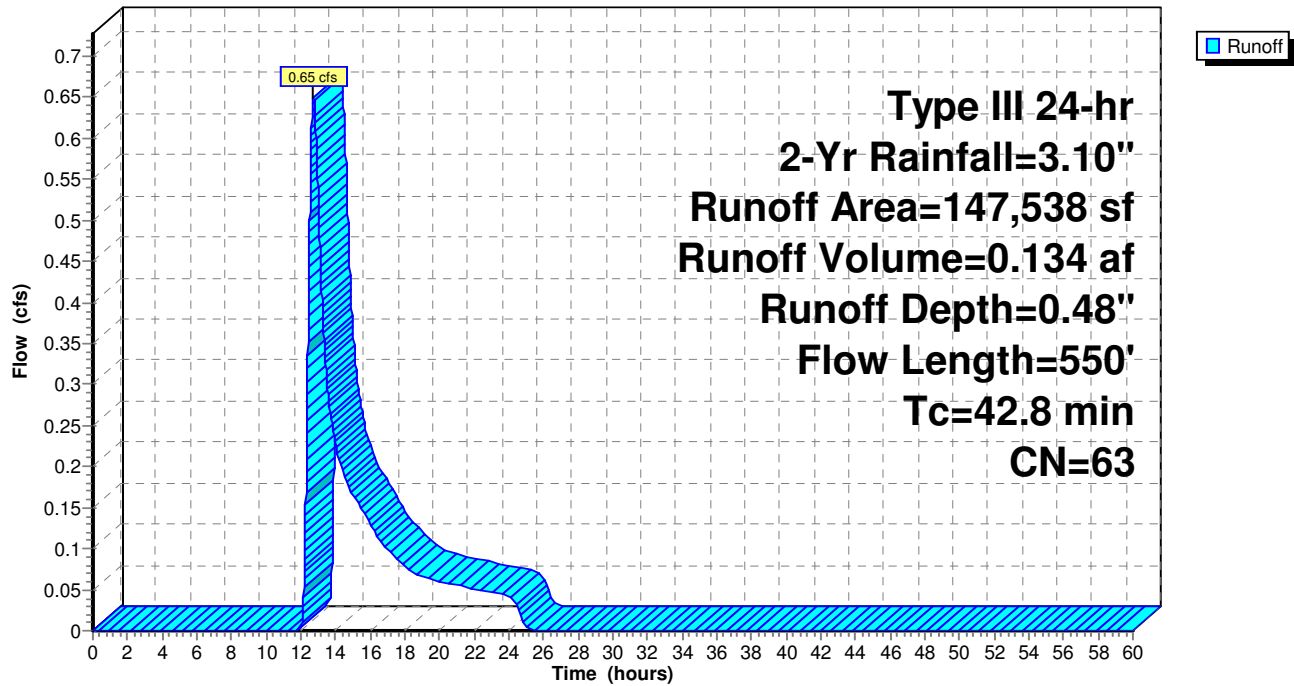
Existing Conditions
Type III 24-hr 2-Yr Rainfall=3.10"

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Subcatchment E2: E2

Hydrograph



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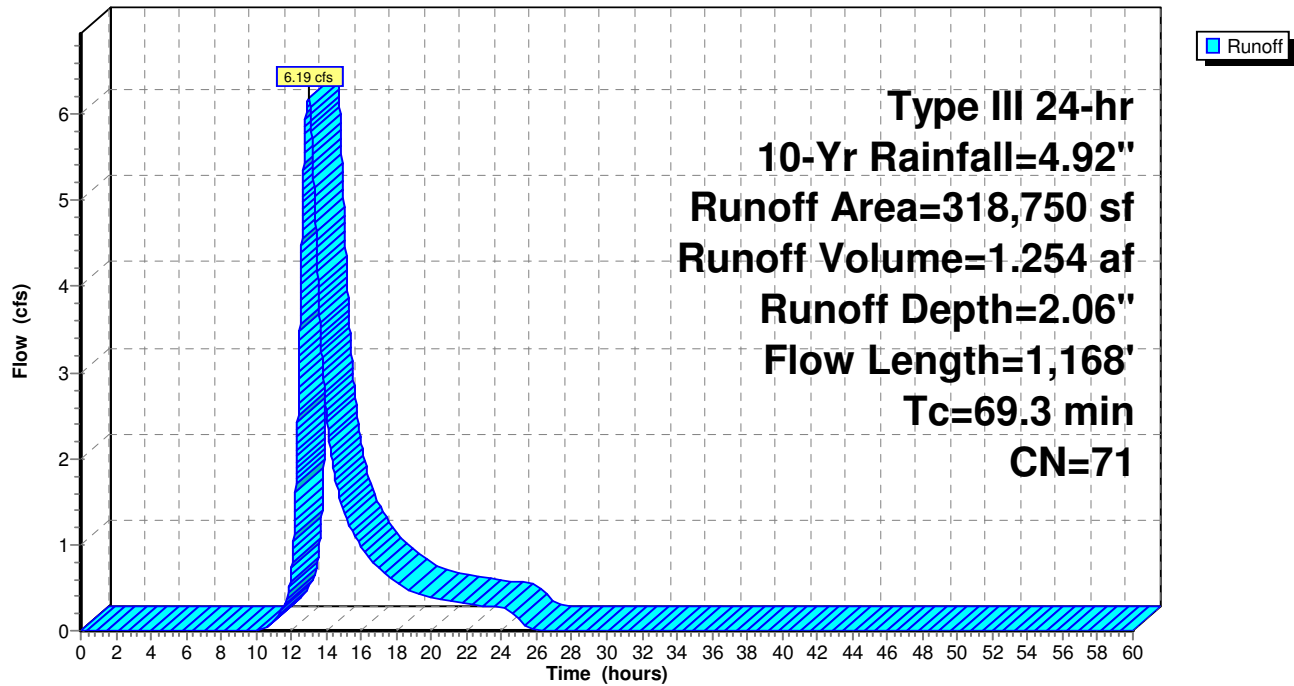
Existing Conditions
Type III 24-hr 10-Yr Rainfall=4.92"

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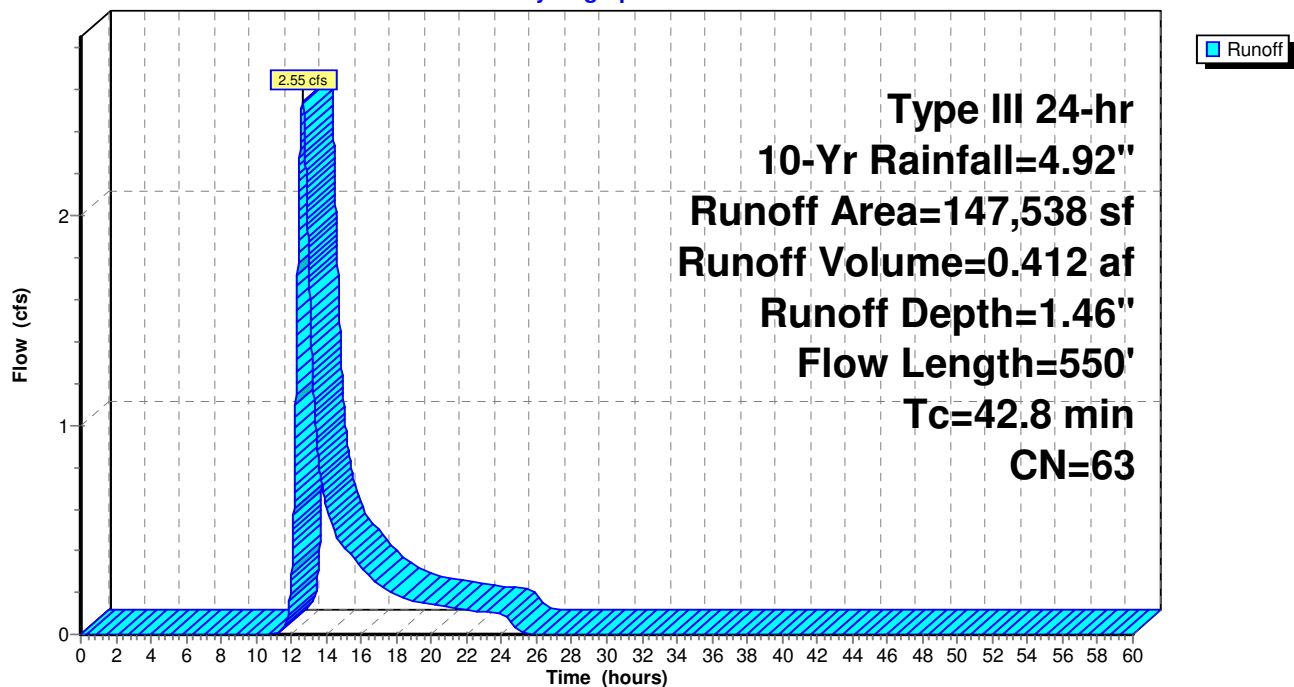
Subcatchment E1: E1 (DP1)

Hydrograph



Subcatchment E2: E2

Hydrograph



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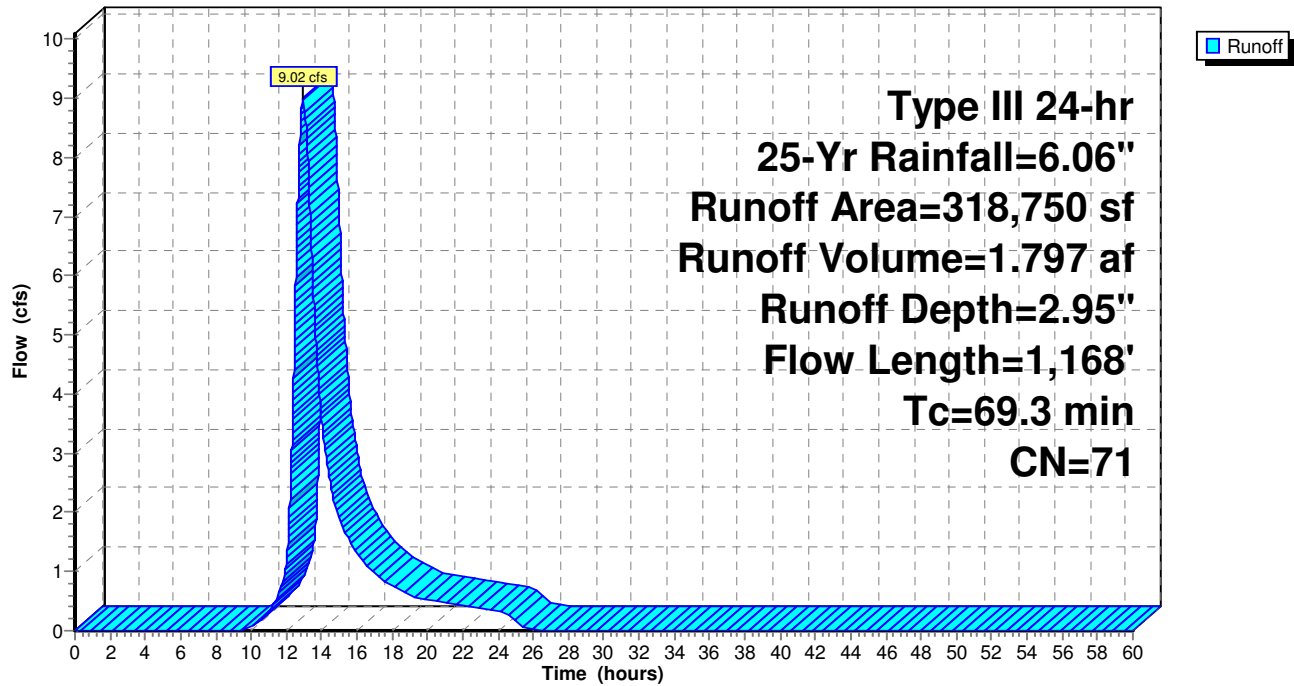
Existing Conditions
Type III 24-hr 25-Yr Rainfall=6.06"

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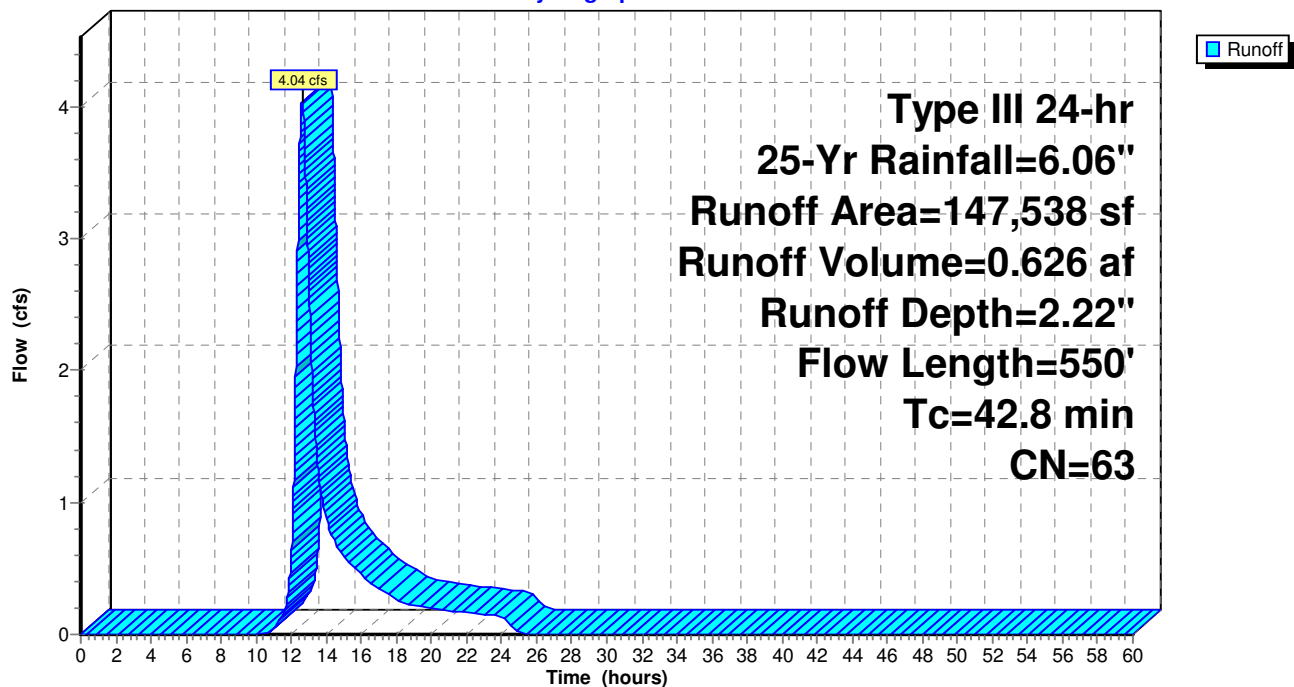
Subcatchment E1: E1 (DP1)

Hydrograph



Subcatchment E2: E2

Hydrograph



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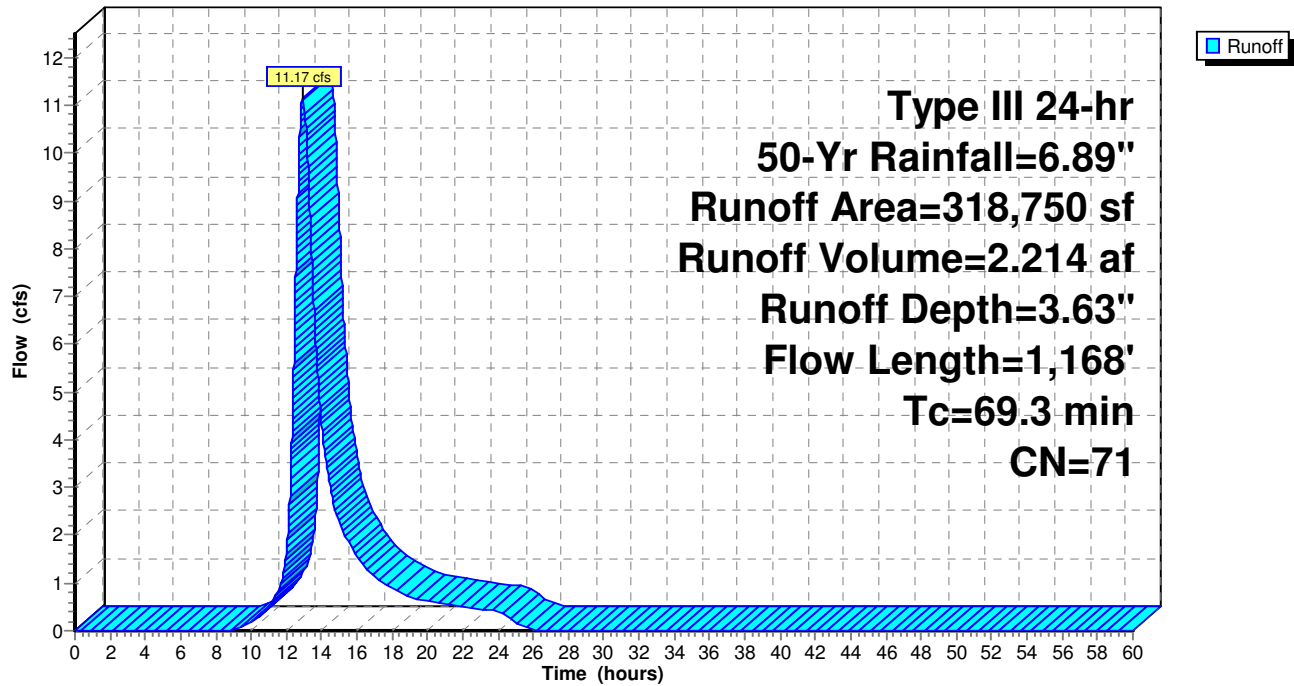
Existing Conditions
Type III 24-hr 50-Yr Rainfall=6.89"

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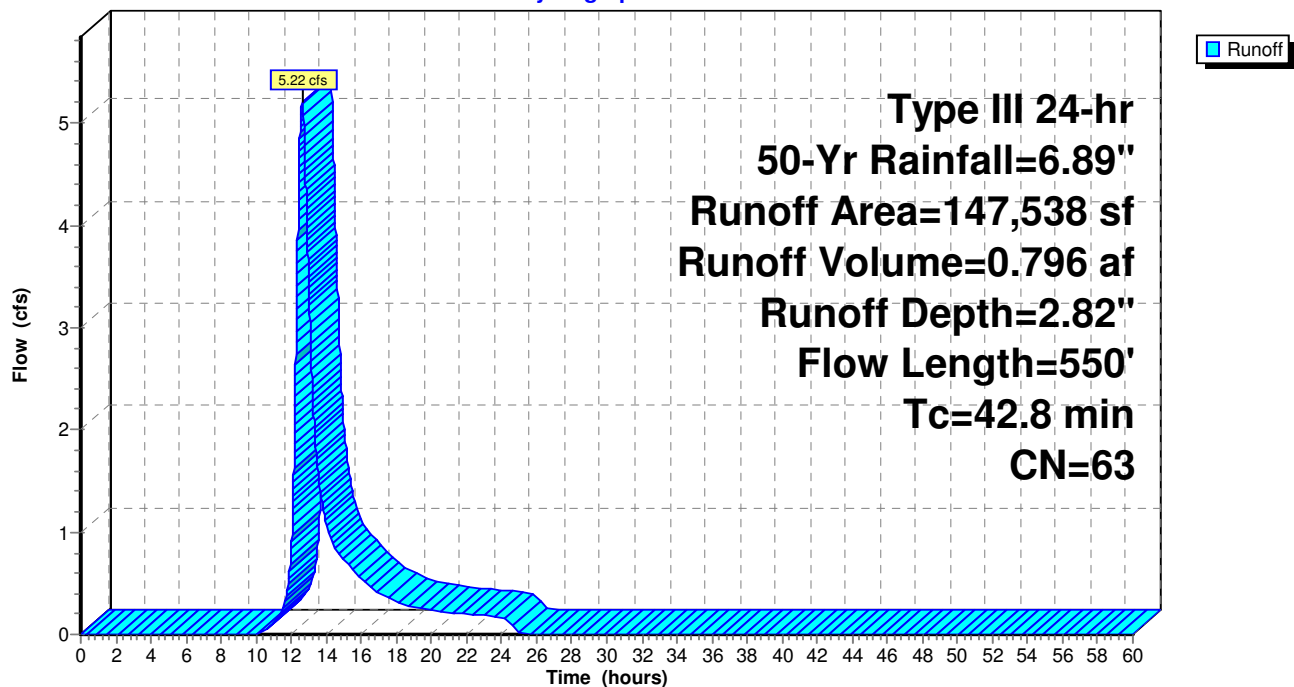
Subcatchment E1: E1 (DP1)

Hydrograph



Subcatchment E2: E2

Hydrograph



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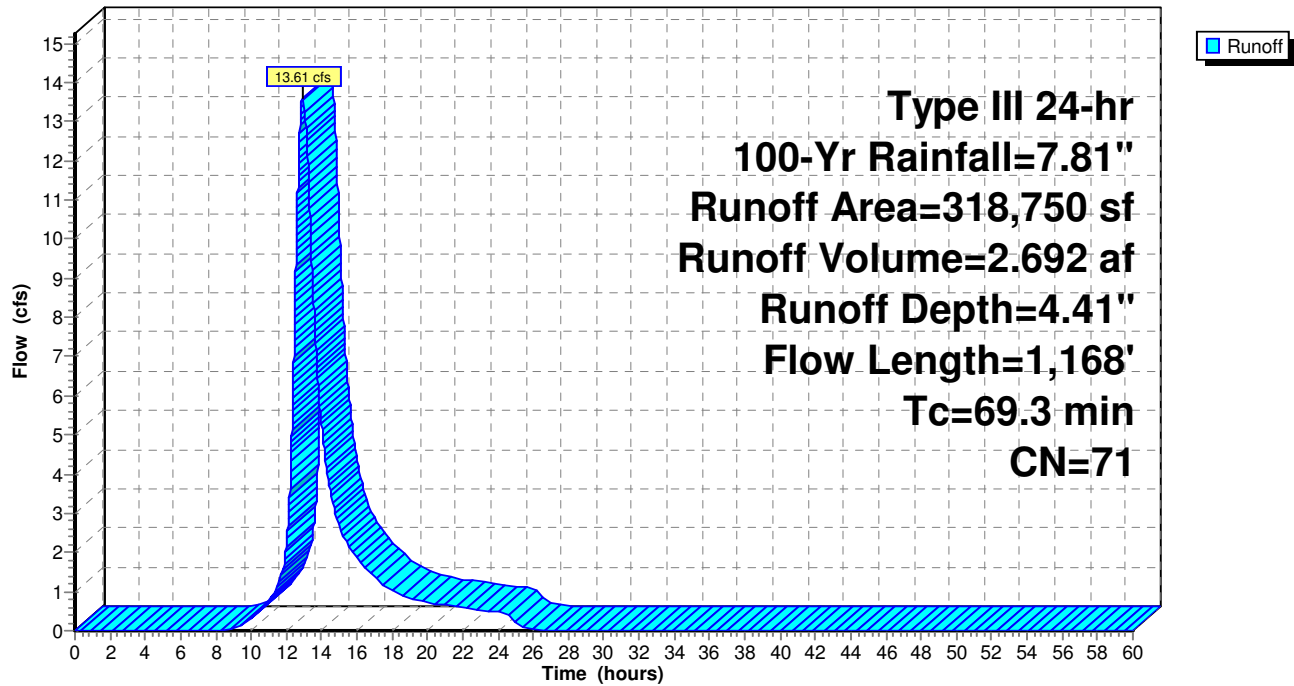
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Type III 24-hr 100-Yr Rainfall=7.81"

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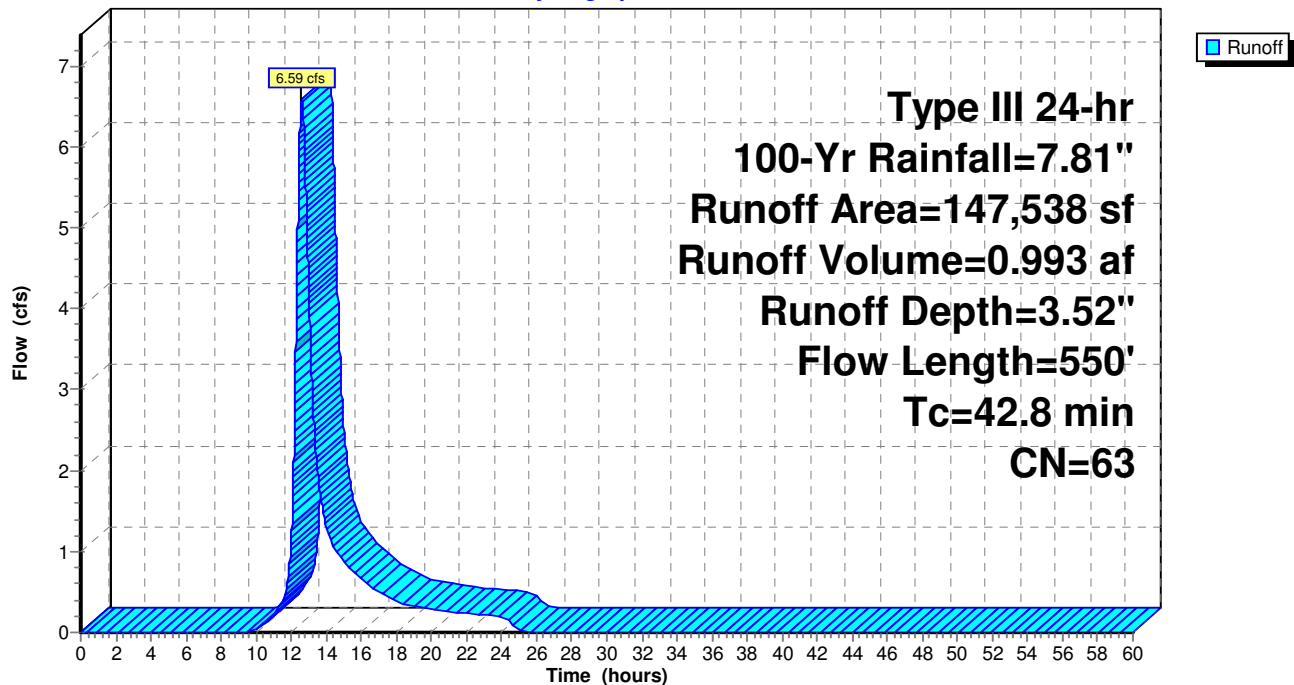
Subcatchment E1: E1 (DP1)

Hydrograph

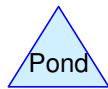
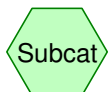
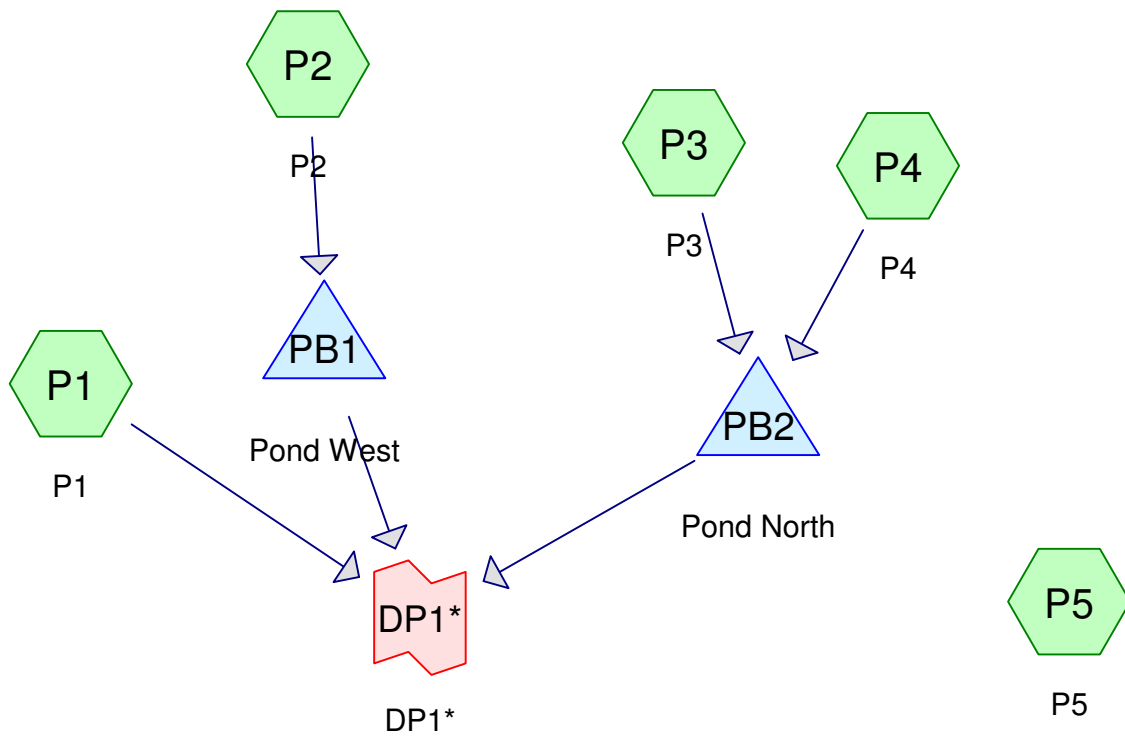


Subcatchment E2: E2

Hydrograph



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



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Proposed Conditions

Type III 24-hr 2-Yr Rainfall=3.10"

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Page 2

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points

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

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

Subcatchment P1: P1Runoff Area=64,495 sf 0.01% Impervious Runoff Depth=0.82"
Flow Length=270' Tc=61.1 min CN=71 Runoff=0.49 cfs 0.101 af**Subcatchment P2: P2**Runoff Area=69,552 sf 79.06% Impervious Runoff Depth=2.26"
Flow Length=103' Tc=20.9 min CN=92 Runoff=2.75 cfs 0.300 af**Subcatchment P3: P3**Runoff Area=44,337 sf 92.64% Impervious Runoff Depth=2.65"
Tc=6.0 min CN=96 Runoff=2.95 cfs 0.225 af**Subcatchment P4: P4**Runoff Area=177,576 sf 20.86% Impervious Runoff Depth=1.14"
Flow Length=565' Tc=48.2 min CN=77 Runoff=2.35 cfs 0.388 af**Subcatchment P5: P5**Runoff Area=110,316 sf 2.05% Impervious Runoff Depth=0.51"
Flow Length=550' Tc=42.8 min CN=64 Runoff=0.54 cfs 0.108 af**Pond PB1: Pond West**Peak Elev=69.31' Storage=5,814 cf Inflow=2.75 cfs 0.300 af
Outflow=0.74 cfs 0.297 af**Pond PB2: Pond North**Peak Elev=69.37' Storage=10,623 cf Inflow=3.38 cfs 0.612 af
Outflow=1.07 cfs 0.605 af**Link DP1*: DP1***Inflow=2.24 cfs 1.002 af
Primary=2.24 cfs 1.002 af**Total Runoff Area = 10.704 ac Runoff Volume = 1.122 af Average Runoff Depth = 1.26"**
70.97% Pervious = 7.597 ac 29.03% Impervious = 3.107 ac

4613.R HydroCAD

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Proposed Conditions
Type III 24-hr 10-Yr Rainfall=4.92"

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Page 3

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment P1: P1

Runoff Area=64,495 sf 0.01% Impervious Runoff Depth=2.06"
Flow Length=270' Tc=61.1 min CN=71 Runoff=1.36 cfs 0.254 af

Subcatchment P2: P2

Runoff Area=69,552 sf 79.06% Impervious Runoff Depth=4.01"
Flow Length=103' Tc=20.9 min CN=92 Runoff=4.77 cfs 0.534 af

Subcatchment P3: P3

Runoff Area=44,337 sf 92.64% Impervious Runoff Depth=4.45"
Tc=6.0 min CN=96 Runoff=4.82 cfs 0.378 af

Subcatchment P4: P4

Runoff Area=177,576 sf 20.86% Impervious Runoff Depth=2.56"
Flow Length=565' Tc=48.2 min CN=77 Runoff=5.44 cfs 0.868 af

Subcatchment P5: P5

Runoff Area=110,316 sf 2.05% Impervious Runoff Depth=1.53"
Flow Length=550' Tc=42.8 min CN=64 Runoff=2.02 cfs 0.323 af

Pond PB1: Pond West

Peak Elev=69.73' Storage=10,009 cf Inflow=4.77 cfs 0.534 af
Outflow=1.28 cfs 0.530 af

Pond PB2: Pond North

Peak Elev=69.86' Storage=18,452 cf Inflow=6.17 cfs 1.246 af
Outflow=3.69 cfs 1.238 af

Link DP1*: DP1*

Inflow=6.19 cfs 2.022 af
Primary=6.19 cfs 2.022 af

Total Runoff Area = 10.704 ac Runoff Volume = 2.356 af Average Runoff Depth = 2.64"
70.97% Pervious = 7.597 ac 29.03% Impervious = 3.107 ac

4613.R HydroCAD

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Proposed Conditions
Type III 24-hr 25-Yr Rainfall=6.06"

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Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment P1: P1

Runoff Area=64,495 sf 0.01% Impervious Runoff Depth=2.95"
Flow Length=270' Tc=61.1 min CN=71 Runoff=1.99 cfs 0.364 af

Subcatchment P2: P2

Runoff Area=69,552 sf 79.06% Impervious Runoff Depth=5.13"
Flow Length=103' Tc=20.9 min CN=92 Runoff=6.02 cfs 0.682 af

Subcatchment P3: P3

Runoff Area=44,337 sf 92.64% Impervious Runoff Depth=5.59"
Tc=6.0 min CN=96 Runoff=5.98 cfs 0.474 af

Subcatchment P4: P4

Runoff Area=177,576 sf 20.86% Impervious Runoff Depth=3.53"
Flow Length=565' Tc=48.2 min CN=77 Runoff=7.52 cfs 1.200 af

Subcatchment P5: P5

Runoff Area=110,316 sf 2.05% Impervious Runoff Depth=2.31"
Flow Length=550' Tc=42.8 min CN=64 Runoff=3.16 cfs 0.487 af

Pond PB1: Pond West

Peak Elev=69.97' Storage=12,618 cf Inflow=6.02 cfs 0.682 af
Outflow=1.60 cfs 0.679 af

Pond PB2: Pond North

Peak Elev=70.12' Storage=22,779 cf Inflow=8.25 cfs 1.674 af
Outflow=5.55 cfs 1.666 af

Link DP1*: DP1*

Inflow=9.01 cfs 2.708 af
Primary=9.01 cfs 2.708 af

Total Runoff Area = 10.704 ac Runoff Volume = 3.206 af Average Runoff Depth = 3.59"
70.97% Pervious = 7.597 ac 29.03% Impervious = 3.107 ac

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Type III 24-hr 50-Yr Rainfall=6.89"

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Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment P1: P1

Runoff Area=64,495 sf 0.01% Impervious Runoff Depth=3.63"
Flow Length=270' Tc=61.1 min CN=71 Runoff=2.46 cfs 0.448 af

Subcatchment P2: P2

Runoff Area=69,552 sf 79.06% Impervious Runoff Depth=5.95"
Flow Length=103' Tc=20.9 min CN=92 Runoff=6.92 cfs 0.791 af

Subcatchment P3: P3

Runoff Area=44,337 sf 92.64% Impervious Runoff Depth=6.41"
Tc=6.0 min CN=96 Runoff=6.82 cfs 0.544 af

Subcatchment P4: P4

Runoff Area=177,576 sf 20.86% Impervious Runoff Depth=4.27"
Flow Length=565' Tc=48.2 min CN=77 Runoff=9.08 cfs 1.450 af

Subcatchment P5: P5

Runoff Area=110,316 sf 2.05% Impervious Runoff Depth=2.92"
Flow Length=550' Tc=42.8 min CN=64 Runoff=4.06 cfs 0.616 af

Pond PB1: Pond West

Peak Elev=70.12' Storage=14,237 cf Inflow=6.92 cfs 0.791 af
Outflow=2.13 cfs 0.788 af

Pond PB2: Pond North

Peak Elev=70.31' Storage=26,029 cf Inflow=9.91 cfs 1.994 af
Outflow=6.76 cfs 1.986 af

Link DP1*: DP1*

Inflow=11.17 cfs 3.221 af
Primary=11.17 cfs 3.221 af

Total Runoff Area = 10.704 ac Runoff Volume = 3.849 af Average Runoff Depth = 4.31"
70.97% Pervious = 7.597 ac 29.03% Impervious = 3.107 ac

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Type III 24-hr 100-Yr Rainfall=7.81"

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Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points

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

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

Subcatchment P1: P1Runoff Area=64,495 sf 0.01% Impervious Runoff Depth=4.41"
Flow Length=270' Tc=61.1 min CN=71 Runoff=3.00 cfs 0.545 af**Subcatchment P2: P2**Runoff Area=69,552 sf 79.06% Impervious Runoff Depth=6.86"
Flow Length=103' Tc=20.9 min CN=92 Runoff=7.92 cfs 0.912 af**Subcatchment P3: P3**Runoff Area=44,337 sf 92.64% Impervious Runoff Depth=7.33"
Tc=6.0 min CN=96 Runoff=7.75 cfs 0.622 af**Subcatchment P4: P4**Runoff Area=177,576 sf 20.86% Impervious Runoff Depth=5.10"
Flow Length=565' Tc=48.2 min CN=77 Runoff=10.83 cfs 1.733 af**Subcatchment P5: P5**Runoff Area=110,316 sf 2.05% Impervious Runoff Depth=3.63"
Flow Length=550' Tc=42.8 min CN=64 Runoff=5.10 cfs 0.766 af**Pond PB1: Pond West**Peak Elev=70.27' Storage=15,968 cf Inflow=7.92 cfs 0.912 af
Outflow=2.59 cfs 0.908 af**Pond PB2: Pond North**Peak Elev=70.51' Storage=29,602 cf Inflow=11.79 cfs 2.355 af
Outflow=8.23 cfs 2.346 af**Link DP1*: DP1***Inflow=13.61 cfs 3.800 af
Primary=13.61 cfs 3.800 af**Total Runoff Area = 10.704 ac Runoff Volume = 4.578 af Average Runoff Depth = 5.13"**
70.97% Pervious = 7.597 ac 29.03% Impervious = 3.107 ac

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Type III 24-hr 2-Yr Rainfall=3.10"

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Summary for Subcatchment P1: P1

Runoff = 0.49 cfs @ 12.90 hrs, Volume= 0.101 af, Depth= 0.82"
 Routed to Link DP1* : DP1*

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-Yr Rainfall=3.10"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
* 0	71	>75% Grass cover, Good, HSG B/D
13,589	74	>75% Grass cover, Good, HSG C
* 4	98	Impervious
1,370	71	Meadow, non-grazed, HSG C
0	55	Woods, Good, HSG B
* 0	66	Woods, Good, HSG B/D
49,532	70	Woods, Good, HSG C
64,495	71	Weighted Average
64,491		99.99% Pervious Area
4		0.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	10	0.0400	0.10		Sheet Flow, Grass Sheet Flow Grass: Dense n= 0.240 P2= 3.11"
54.0	90	0.0067	0.03		Sheet Flow, Woods Sheet Flow Woods: Dense underbrush n= 0.800 P2= 3.11"
4.7	143	0.0105	0.51		Shallow Concentrated Flow, Woods Shallow Flow Woodland Kv= 5.0 fps
0.7	27	0.0020	0.67		Shallow Concentrated Flow, Grass Shallow Flow Grassed Waterway Kv= 15.0 fps
61.1	270	Total			

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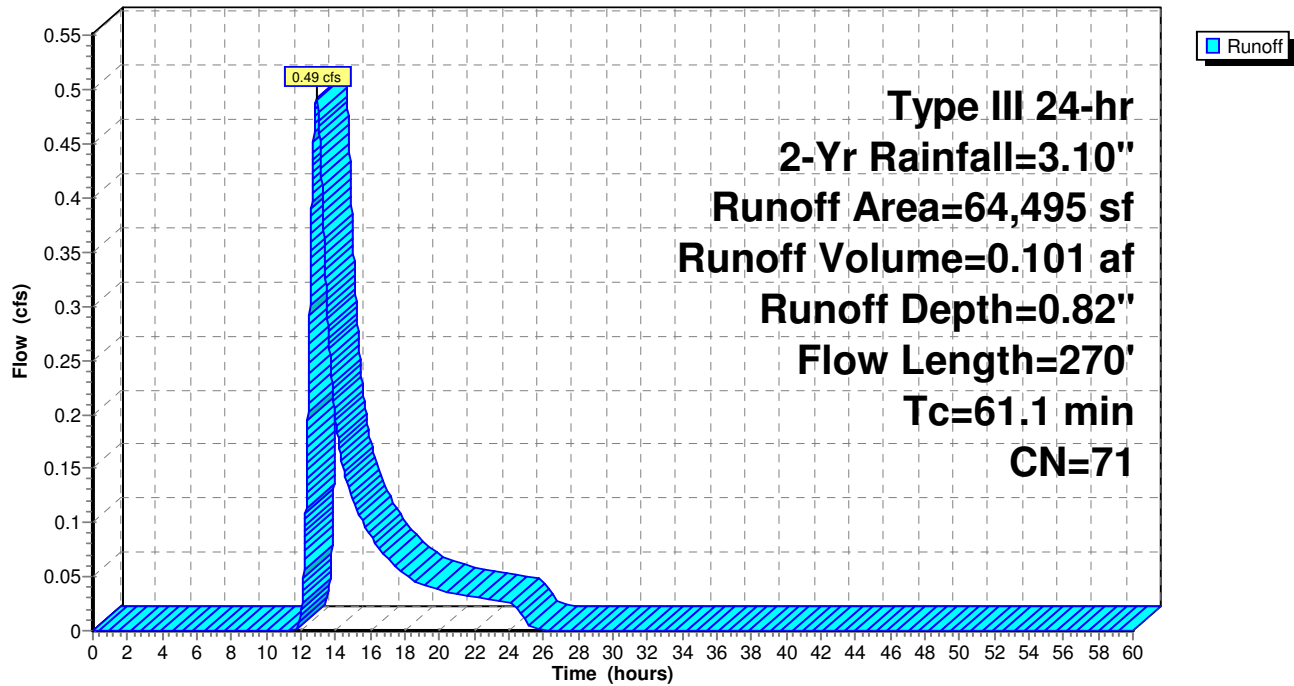
Type III 24-hr 2-Yr Rainfall=3.10"

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Subcatchment P1: P1

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Type III 24-hr 2-Yr Rainfall=3.10"

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Summary for Subcatchment P2: P2

Runoff = 2.75 cfs @ 12.28 hrs, Volume= 0.300 af, Depth= 2.26"
 Routed to Pond PB1 : Pond West

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-Yr Rainfall=3.10"

Area (sf)	CN	Description
5,600	61	>75% Grass cover, Good, HSG B
* 915	71	>75% Grass cover, Good, HSG B/D
8,035	74	>75% Grass cover, Good, HSG C
* 54,985	98	Impervious
0	71	Meadow, non-grazed, HSG C
2	55	Woods, Good, HSG B
* 0	66	Woods, Good, HSG B/D
15	70	Woods, Good, HSG C
69,552	92	Weighted Average
14,567		20.94% Pervious Area
54,985		79.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.9	100	0.0080	0.08		Sheet Flow, Grass Sheet Flow
					Grass: Dense n= 0.240 P2= 3.11"
0.0	3	0.2100	6.87		Shallow Concentrated Flow, Grass Shallow Flow
					Grassed Waterway Kv= 15.0 fps
20.9	103	Total			

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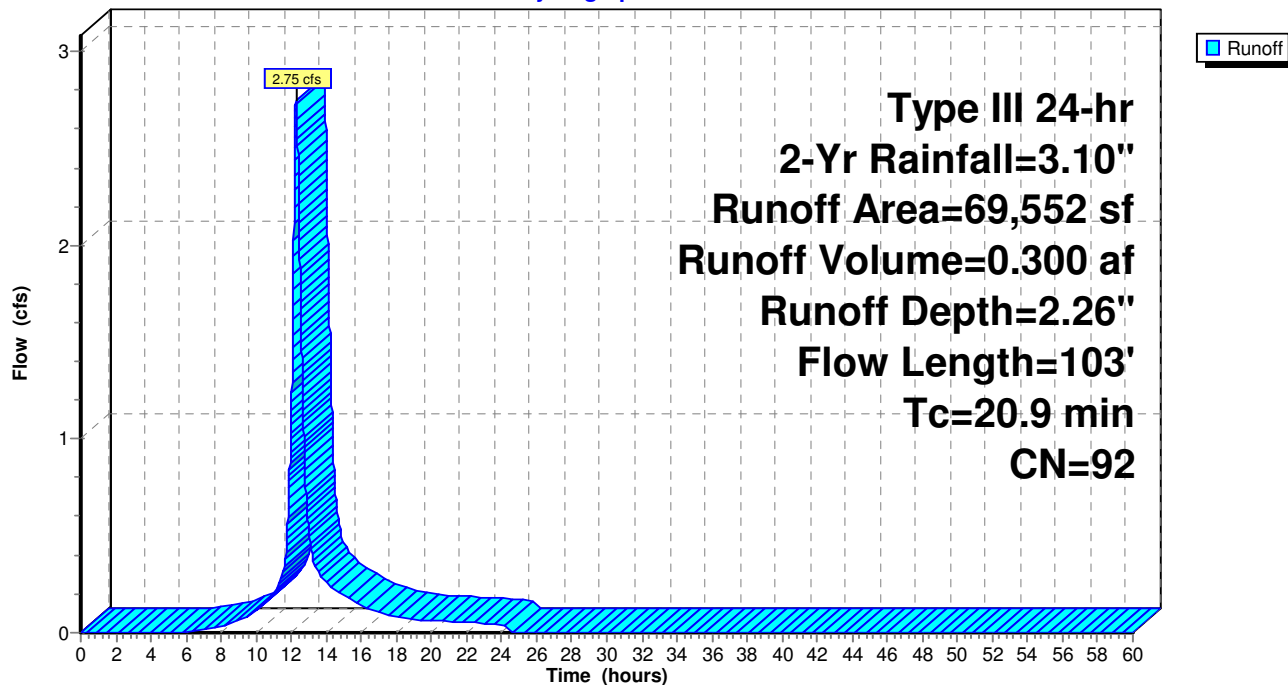
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Subcatchment P2: P2

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Type III 24-hr 2-Yr Rainfall=3.10"

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Summary for Subcatchment P3: P3

Runoff = 2.95 cfs @ 12.08 hrs, Volume= 0.225 af, Depth= 2.65"
Routed to Pond PB2 : Pond North

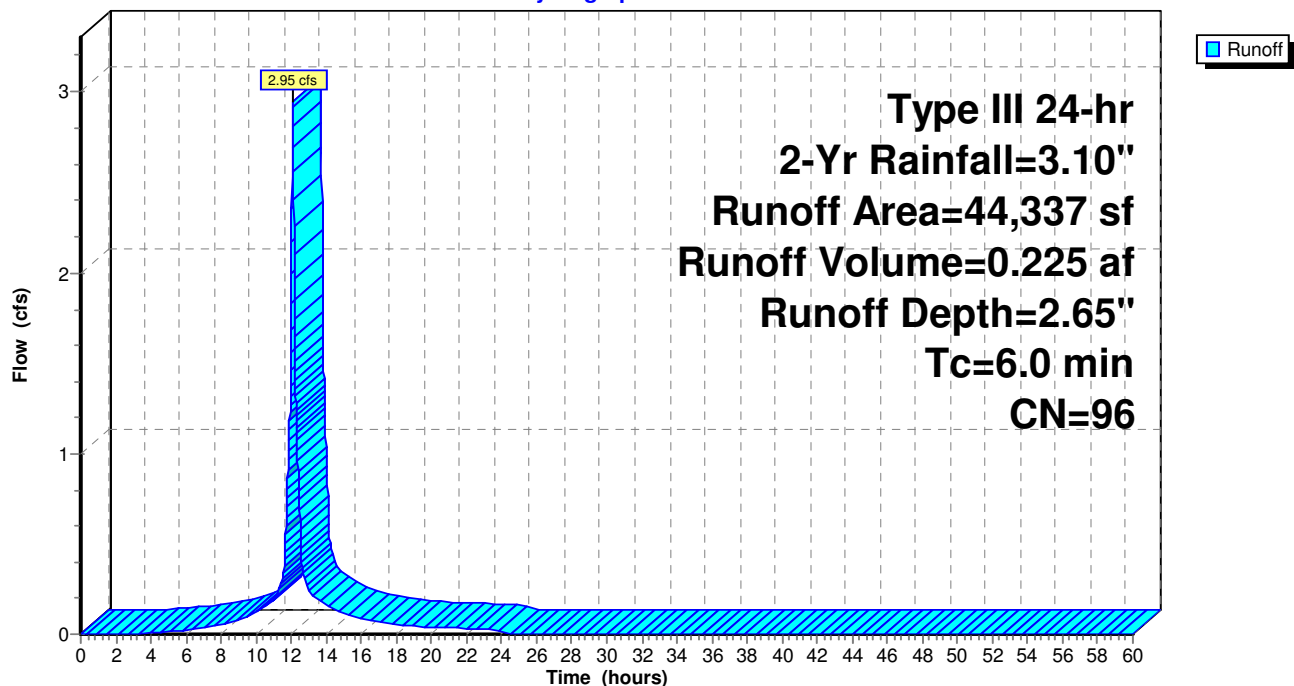
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Yr Rainfall=3.10"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
* 327	71	>75% Grass cover, Good, HSG B/D
2,938	74	>75% Grass cover, Good, HSG C
* 41,072	98	Impervious
0	71	Meadow, non-grazed, HSG C
0	55	Woods, Good, HSG B
* 0	66	Woods, Good, HSG B/D
0	70	Woods, Good, HSG C
44,337	96	Weighted Average
3,265		7.36% Pervious Area
41,072		92.64% Impervious Area

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

Subcatchment P3: P3

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Type III 24-hr 2-Yr Rainfall=3.10"

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Summary for Subcatchment P4: P4

Runoff = 2.35 cfs @ 12.69 hrs, Volume= 0.388 af, Depth= 1.14"
 Routed to Pond PB2 : Pond North

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-Yr Rainfall=3.10"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
* 4,610	71	>75% Grass cover, Good, HSG B/D
49,186	74	>75% Grass cover, Good, HSG C
* 37,039	98	Impervious
0	71	Meadow, non-grazed, HSG C
0	55	Woods, Good, HSG B
* 243	66	Woods, Good, HSG B/D
86,498	70	Woods, Good, HSG C
177,576	77	Weighted Average
140,537		79.14% Pervious Area
37,039		20.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.8	35	0.0125	0.03		Sheet Flow, Woods Sheet Flow
					Woods: Dense underbrush n= 0.800 P2= 3.11"
12.4	65	0.0125	0.09		Sheet Flow, Grass Sheet Flow
					Grass: Dense n= 0.240 P2= 3.11"
1.3	52	0.0056	0.67		Shallow Concentrated Flow, Grass Shallow Flow
					Cultivated Straight Rows Kv= 9.0 fps
2.0	45	0.0056	0.37		Shallow Concentrated Flow, Woods Shallow Flow
					Woodland Kv= 5.0 fps
1.5	48	0.0056	0.52		Shallow Concentrated Flow, Grass Shallow
					Short Grass Pasture Kv= 7.0 fps
11.2	320	0.0091	0.48		Shallow Concentrated Flow, Woods Shallow Flow
					Woodland Kv= 5.0 fps
48.2	565	Total			

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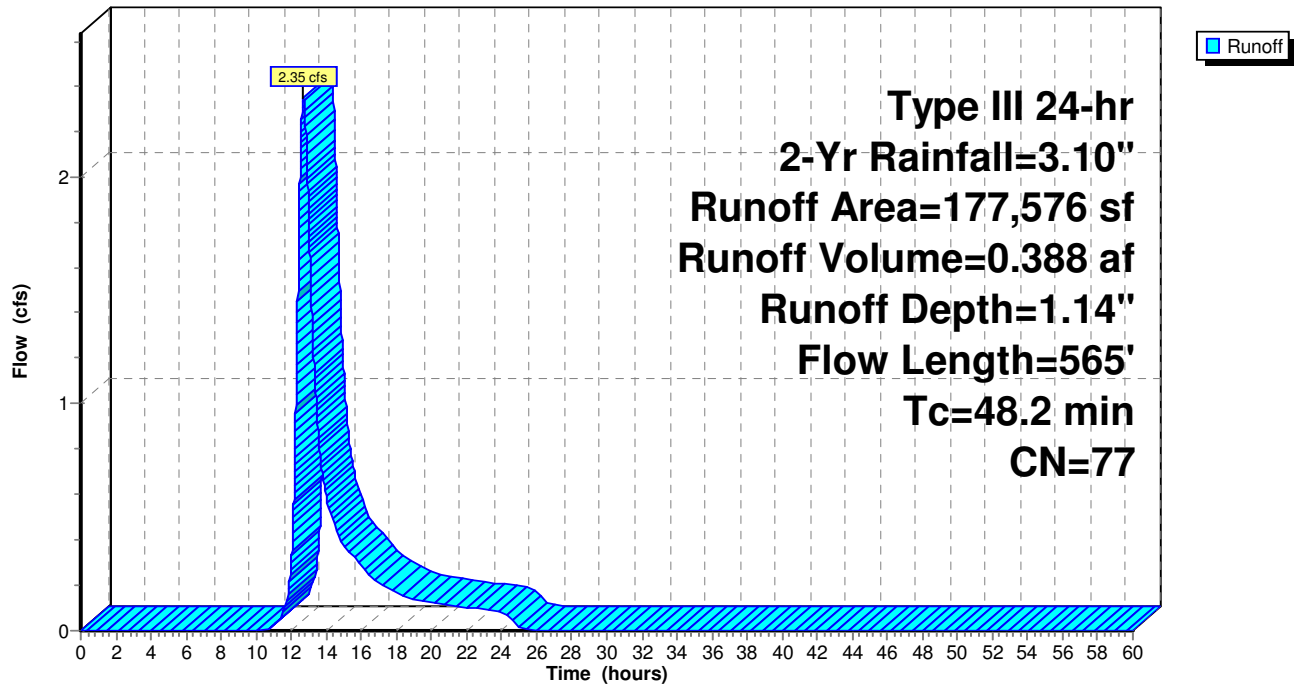
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Subcatchment P4: P4

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Summary for Subcatchment P5: P5

Runoff = 0.54 cfs @ 12.70 hrs, Volume= 0.108 af, Depth= 0.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Yr Rainfall=3.10"

	Area (sf)	CN	Description
	7,988	61	>75% Grass cover, Good, HSG B
*	2,980	71	>75% Grass cover, Good, HSG B/D
	5,156	74	>75% Grass cover, Good, HSG C
*	2,260	98	Impervious
	0	71	Meadow, non-grazed, HSG C
	33,124	55	Woods, Good, HSG B
*	50,227	66	Woods, Good, HSG B/D
	8,581	70	Woods, Good, HSG C
	110,316	64	Weighted Average
	108,056		97.95% Pervious Area
	2,260		2.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	58	0.0466	0.14		Sheet Flow, Grass Sheet Flow
					Grass: Dense n= 0.240 P2= 3.11"
13.5	42	0.0466	0.05		Sheet Flow, Woods Sheet Flow
					Woods: Dense underbrush n= 0.800 P2= 3.11"
22.6	450	0.0044	0.33		Shallow Concentrated Flow, Woods Shallow Flow
					Woodland Kv= 5.0 fps
42.8	550	Total			

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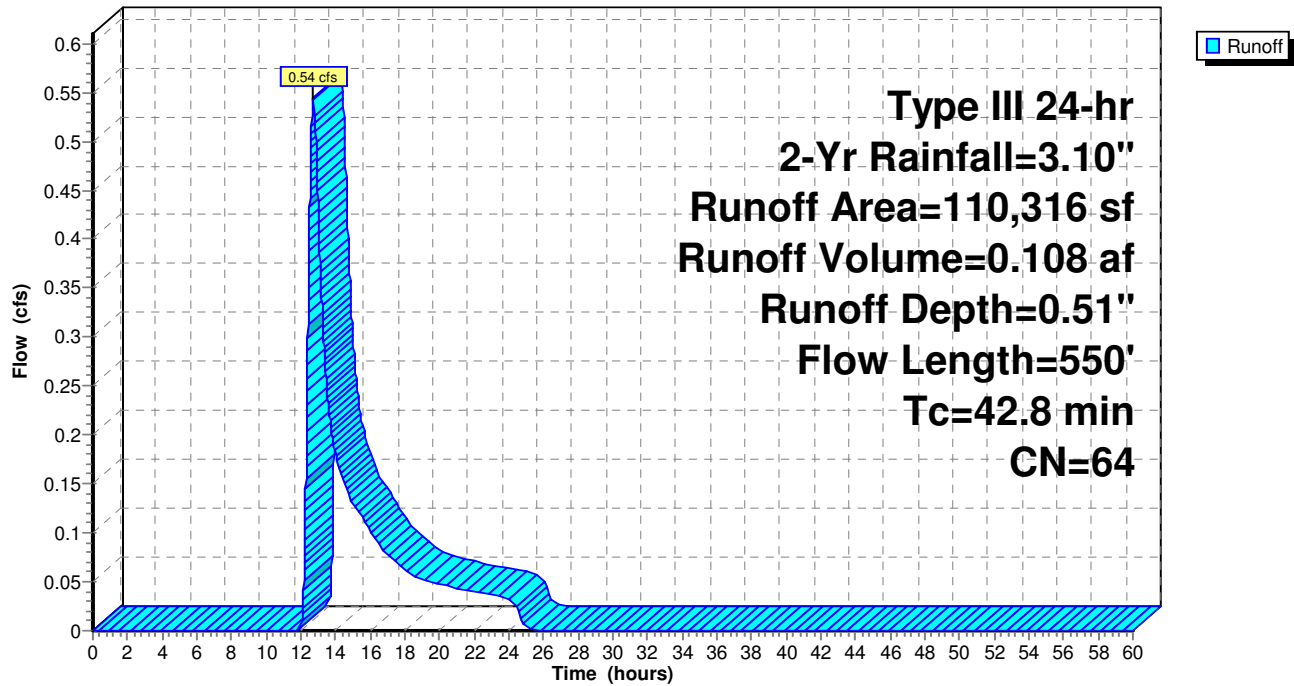
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Subcatchment P5: P5

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Type III 24-hr 2-Yr Rainfall=3.10"

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Summary for Pond PB1: Pond West

Inflow Area = 1.597 ac, 79.06% Impervious, Inflow Depth = 2.26" for 2-Yr event
 Inflow = 2.75 cfs @ 12.28 hrs, Volume= 0.300 af
 Outflow = 0.74 cfs @ 12.84 hrs, Volume= 0.297 af, Atten= 73%, Lag= 33.2 min
 Primary = 0.74 cfs @ 12.84 hrs, Volume= 0.297 af
 Routed to Link DP1* : DP1*

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
 Peak Elev= 69.31' @ 12.84 hrs Surf.Area= 9,511 sf Storage= 5,814 cf

Plug-Flow detention time= 187.6 min calculated for 0.297 af (99% of inflow)
 Center-of-Mass det. time= 180.8 min (993.5 - 812.7)

Volume	Invert	Avail.Storage	Storage Description
#1	68.65'	31,601 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
68.65	8,267	0	0
69.00	8,805	2,988	2,988
70.00	11,093	9,949	12,937
71.00	12,705	11,899	24,836
71.50	14,355	6,765	31,601

Device	Routing	Invert	Outlet Devices
#1	Primary	68.65'	12.0" Round Culvert L= 26.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 68.65' / 68.50' S= 0.0058 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	68.65'	28.0" W x 1.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	69.31'	16.0" W x 1.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	69.73'	8.0" W x 1.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Device 1	69.97'	36.0" W x 1.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#6	Device 1	70.12'	10.0" W x 1.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.74 cfs @ 12.84 hrs HW=69.31' (Free Discharge)

1=Culvert (Passes 0.74 cfs of 1.10 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.74 cfs @ 3.78 fps)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Orifice/Grate (Controls 0.00 cfs)
 5=Orifice/Grate (Controls 0.00 cfs)
 6=Orifice/Grate (Controls 0.00 cfs)

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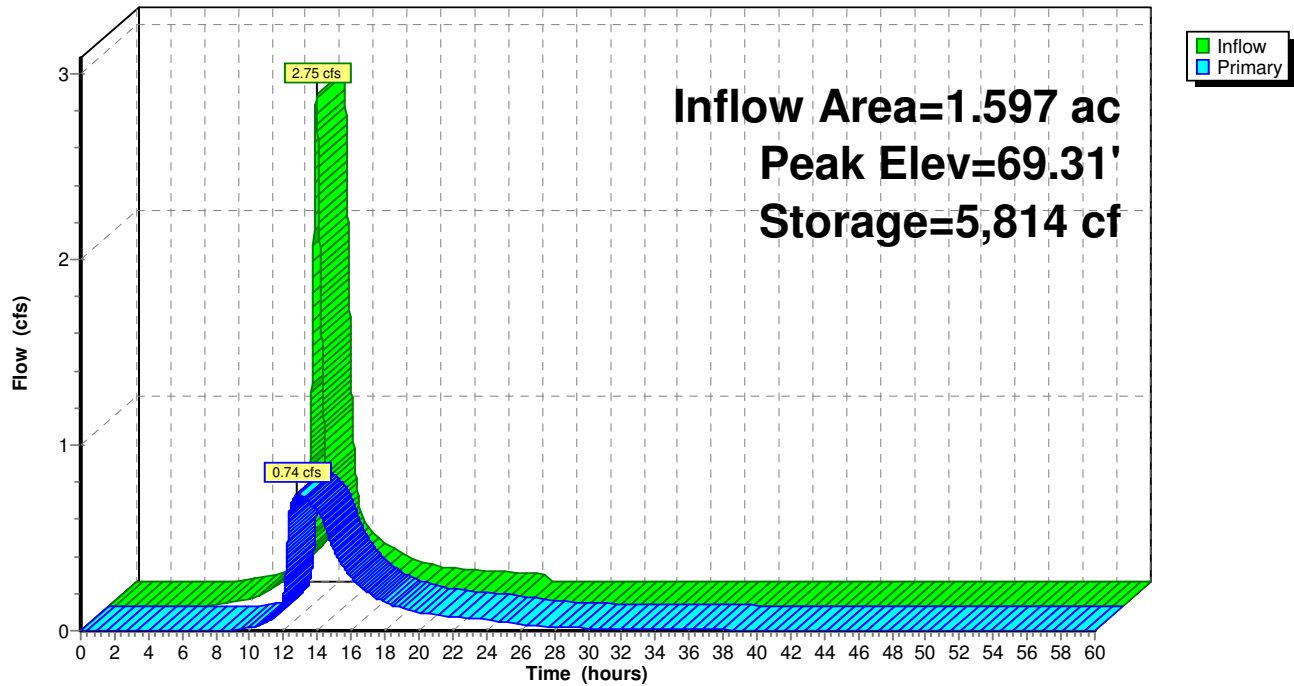
Type III 24-hr 2-Yr Rainfall=3.10"

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Pond PB1: Pond West

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Summary for Pond PB2: Pond North

Inflow Area = 5.094 ac, 35.20% Impervious, Inflow Depth = 1.44" for 2-Yr event
 Inflow = 3.38 cfs @ 12.09 hrs, Volume= 0.612 af
 Outflow = 1.07 cfs @ 13.53 hrs, Volume= 0.605 af, Atten= 68%, Lag= 86.7 min
 Primary = 1.07 cfs @ 13.53 hrs, Volume= 0.605 af
 Routed to Link DP1* : DP1*

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
 Peak Elev= 69.37' @ 13.53 hrs Surf.Area= 15,468 sf Storage= 10,623 cf

Plug-Flow detention time= 200.0 min calculated for 0.605 af (99% of inflow)
 Center-of-Mass det. time= 192.6 min (1,042.5 - 849.9)

Volume	Invert	Avail.Storage	Storage Description
#1	68.65'	48,929 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
68.65	13,925	0	0
69.00	14,665	5,003	5,003
70.00	16,818	15,742	20,745
71.00	19,028	17,923	38,668
71.50	22,018	10,262	48,929

Device	Routing	Invert	Outlet Devices
#1	Primary	68.65'	24.0" Round Culvert L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 68.65' / 68.50' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Device 1	68.65'	20.0" W x 2.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	69.37'	36.0" W x 3.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	69.82'	36.0" W x 2.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Device 1	70.11'	23.0" W x 1.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#6	Device 1	70.31'	36.0" W x 1.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.07 cfs @ 13.53 hrs HW=69.37' (Free Discharge)

1=Culvert (Passes 1.07 cfs of 2.05 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 1.07 cfs @ 3.85 fps)
 3=Orifice/Grate (Orifice Controls 0.00 cfs @ 0.18 fps)
 4=Orifice/Grate (Controls 0.00 cfs)
 5=Orifice/Grate (Controls 0.00 cfs)
 6=Orifice/Grate (Controls 0.00 cfs)

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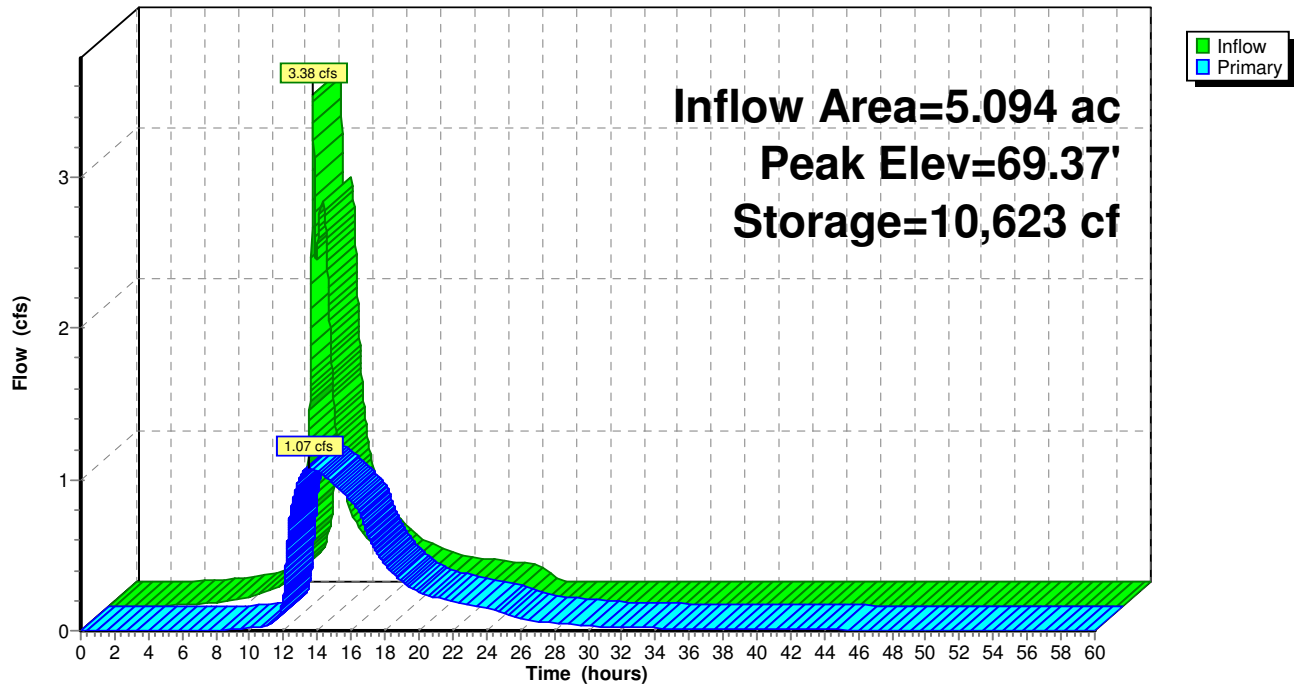
Type III 24-hr 2-Yr Rainfall=3.10"

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Pond PB2: Pond North

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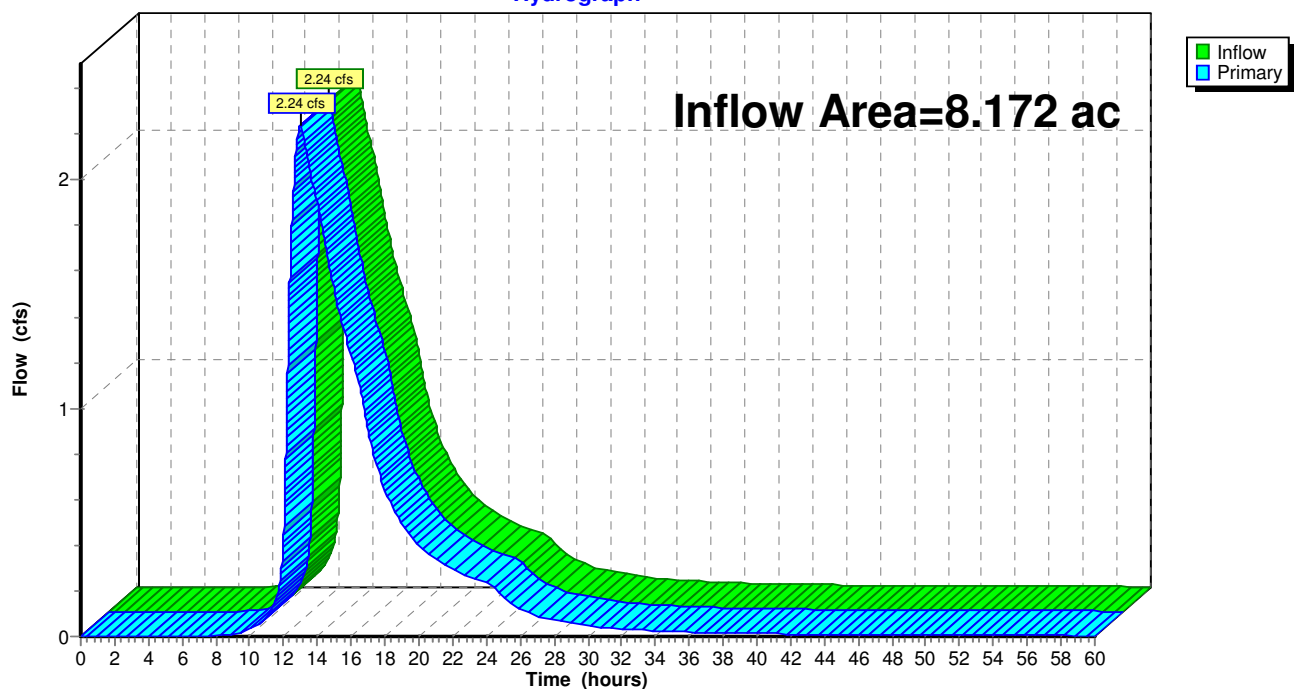
Summary for Link DP1*: DP1*

Inflow Area = 8.172 ac, 37.39% Impervious, Inflow Depth > 1.47" for 2-Yr event
Inflow = 2.24 cfs @ 12.97 hrs, Volume= 1.002 af
Primary = 2.24 cfs @ 12.97 hrs, Volume= 1.002 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Link DP1*: DP1*

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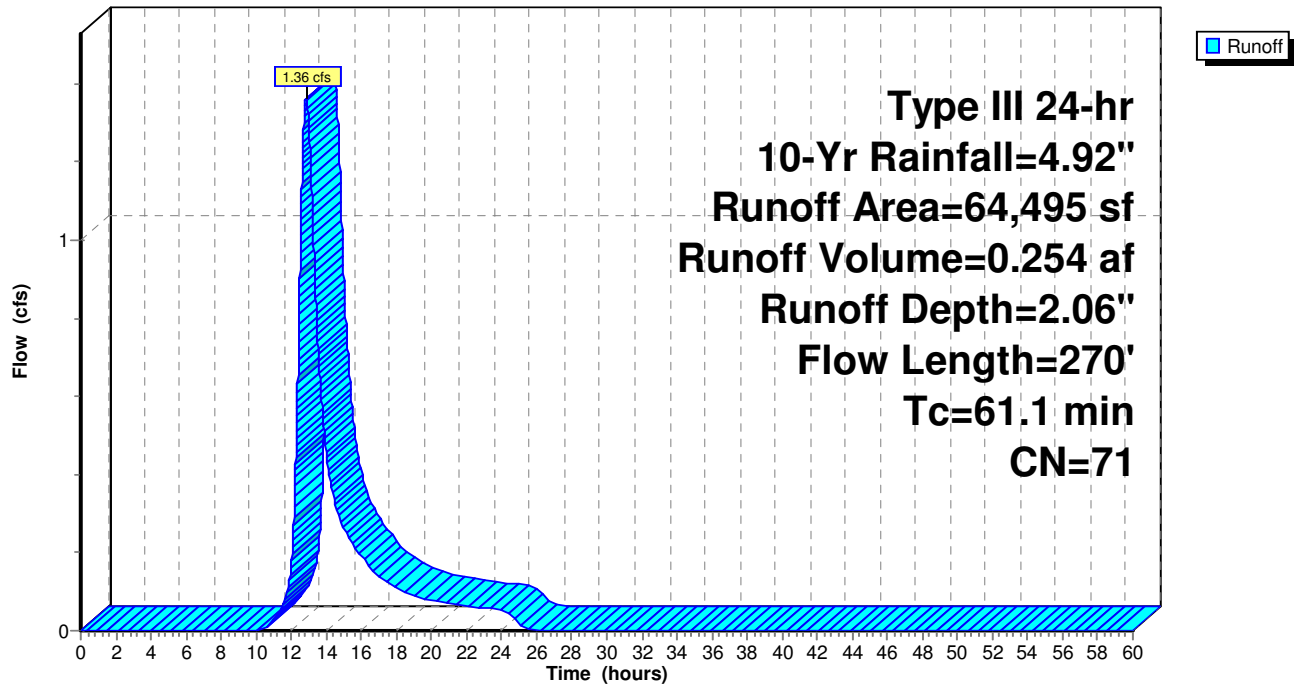
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Type III 24-hr 10-Yr Rainfall=4.92"

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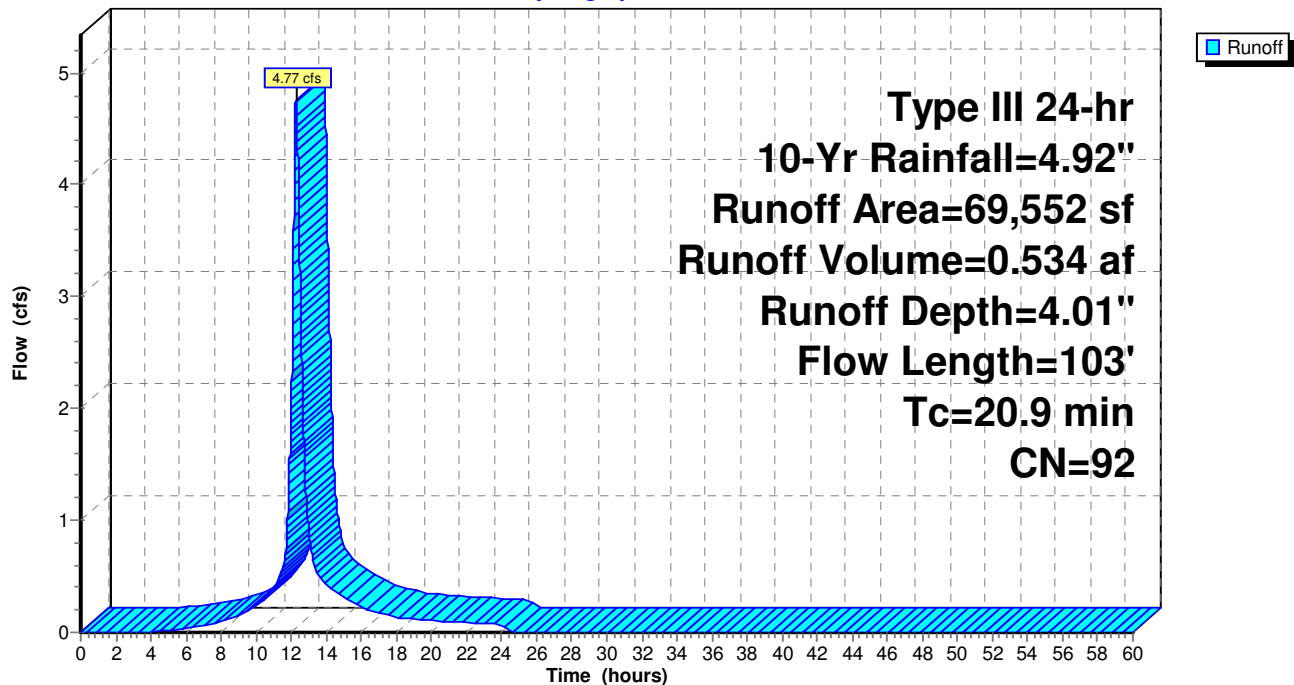
Subcatchment P1: P1

Hydrograph



Subcatchment P2: P2

Hydrograph



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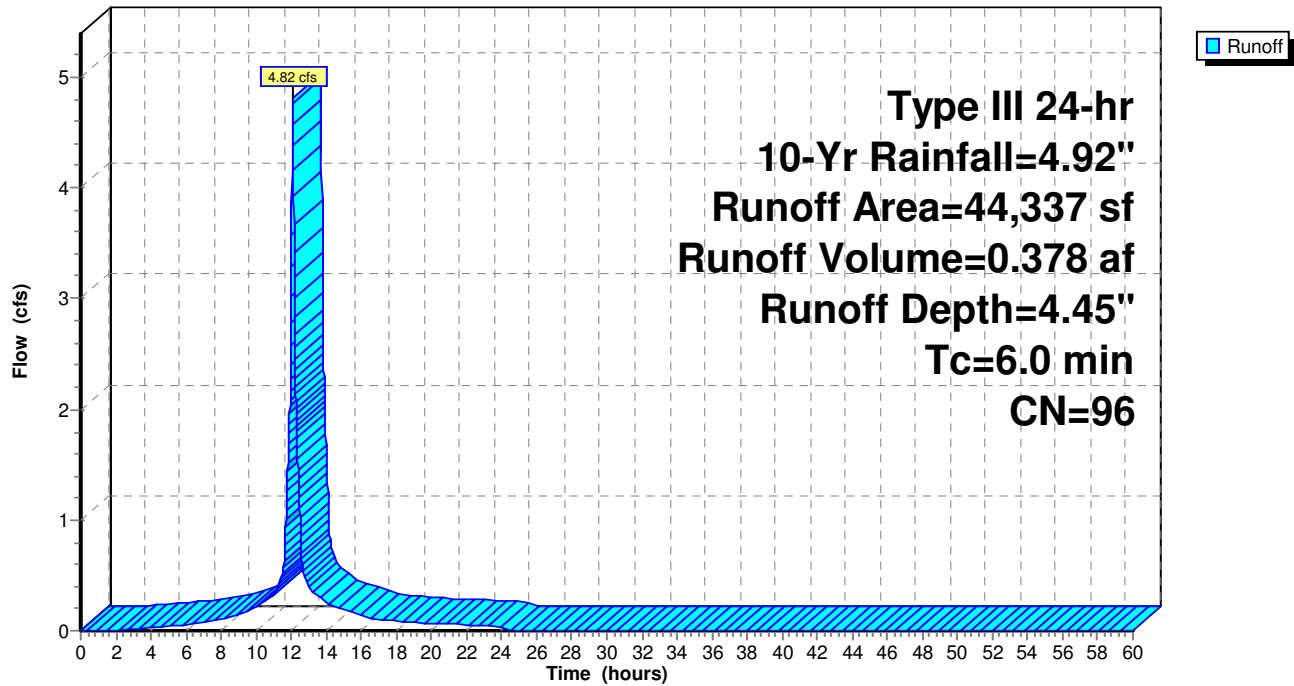
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Type III 24-hr 10-Yr Rainfall=4.92"

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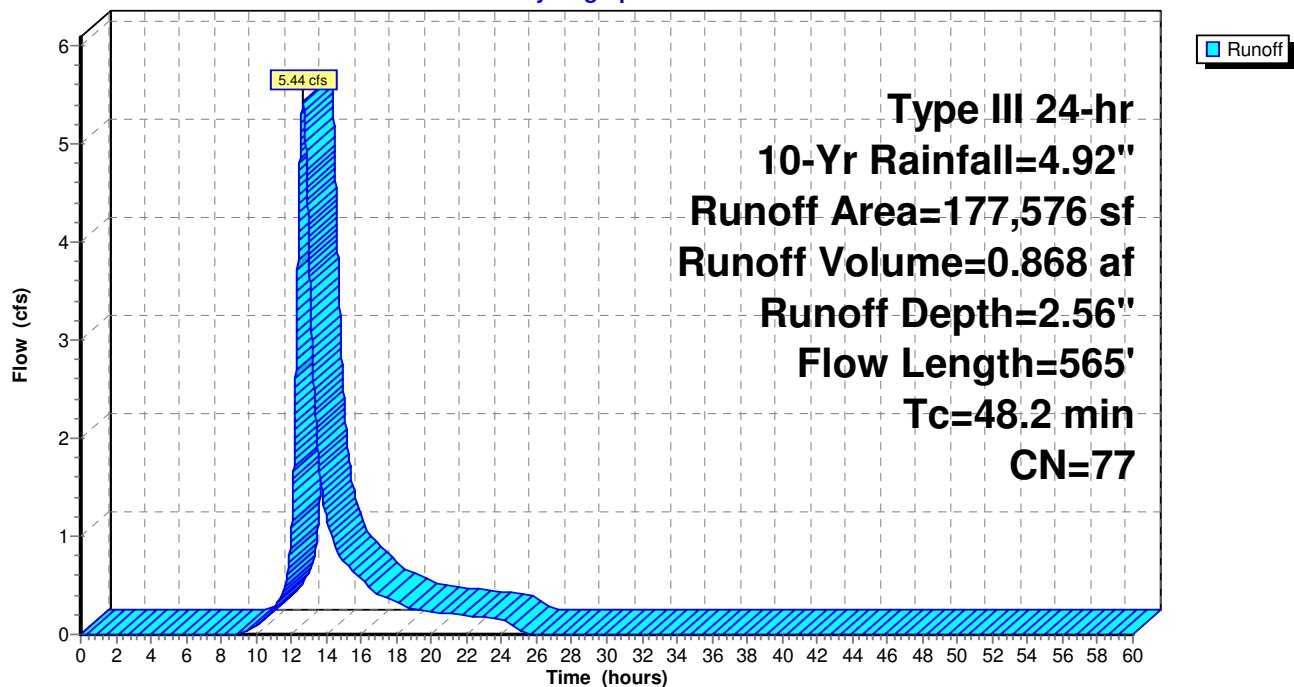
Subcatchment P3: P3

Hydrograph



Subcatchment P4: P4

Hydrograph



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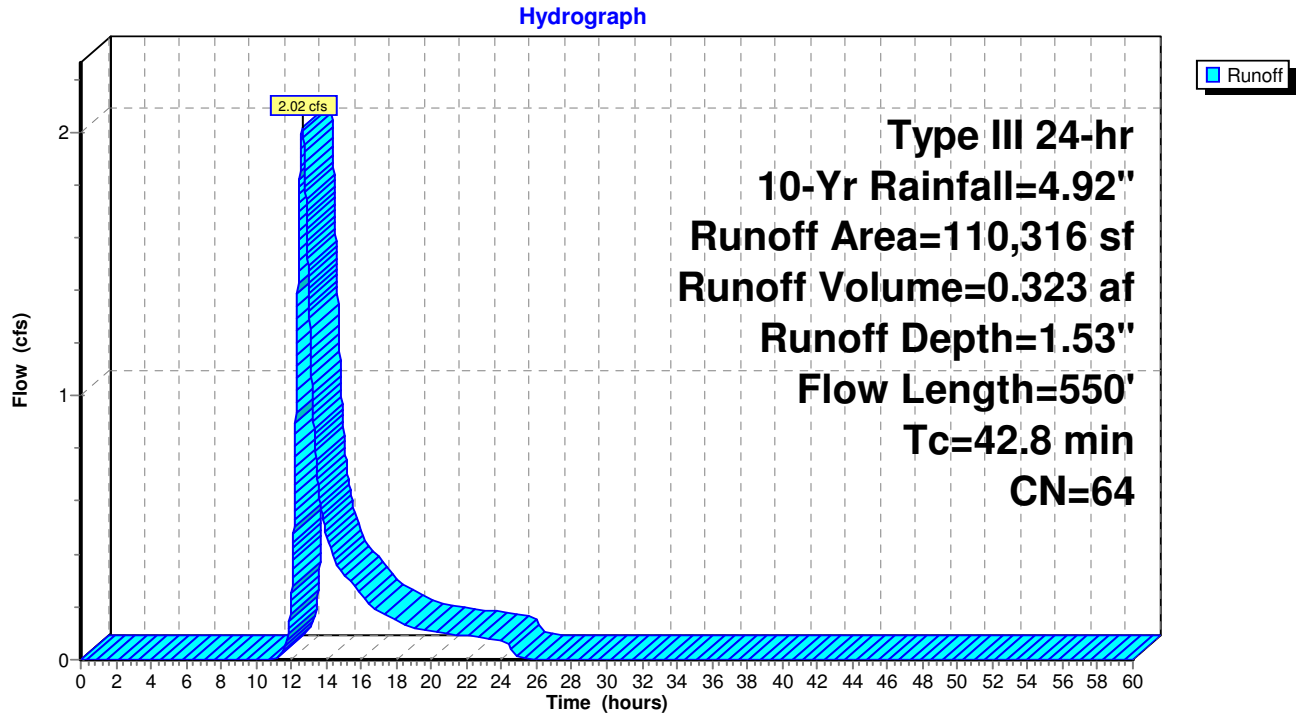
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Proposed Conditions
Type III 24-hr 10-Yr Rainfall=4.92"

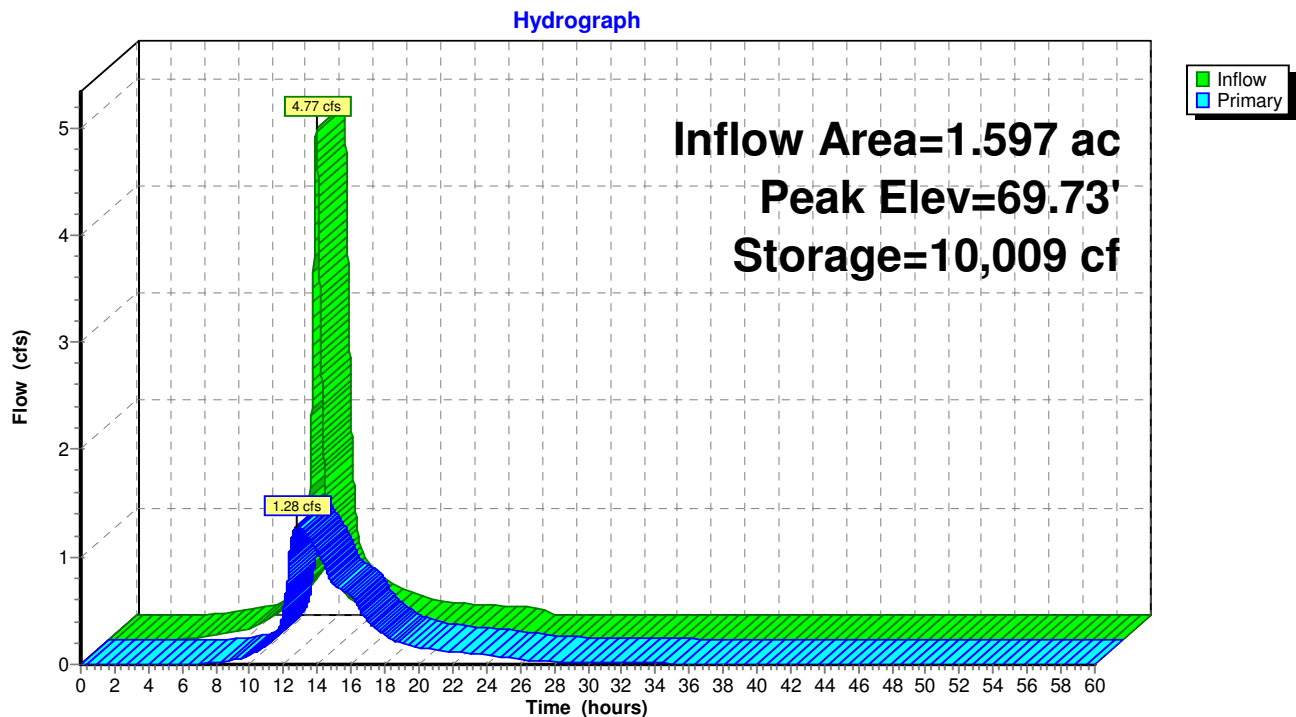
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Subcatchment P5: P5



Pond PB1: Pond West



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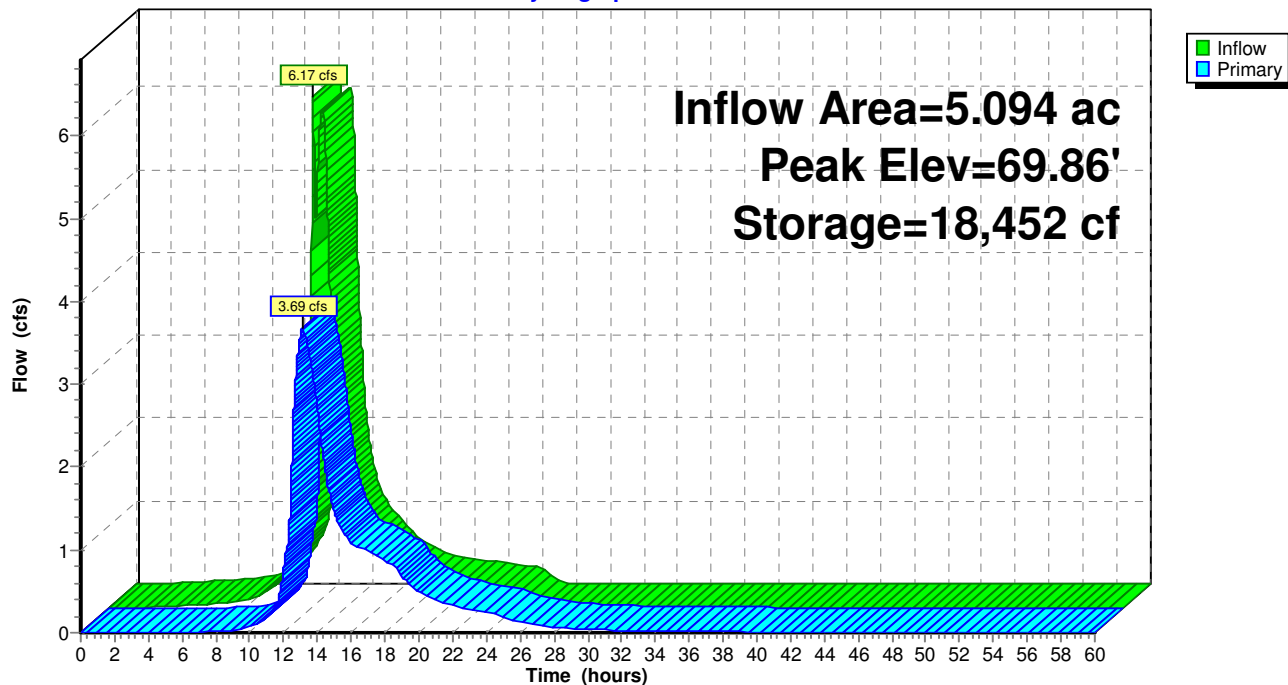
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Type III 24-hr 10-Yr Rainfall=4.92"

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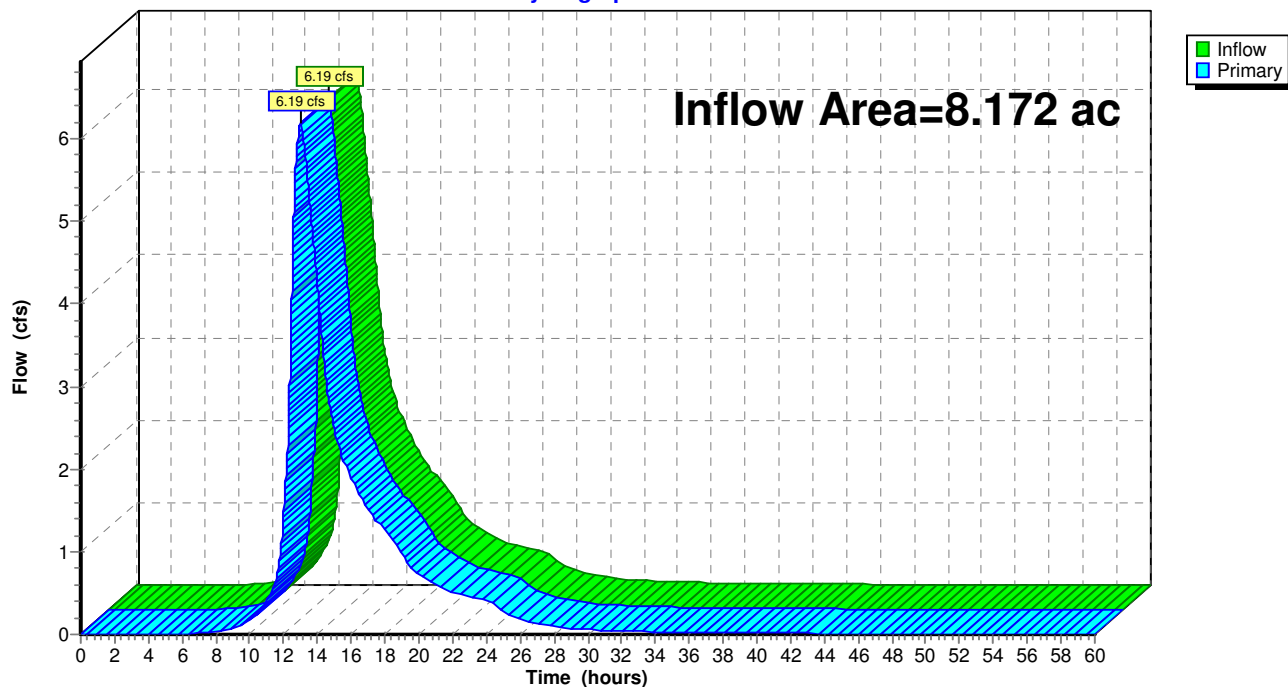
Pond PB2: Pond North

Hydrograph



Link DP1*: DP1*

Hydrograph



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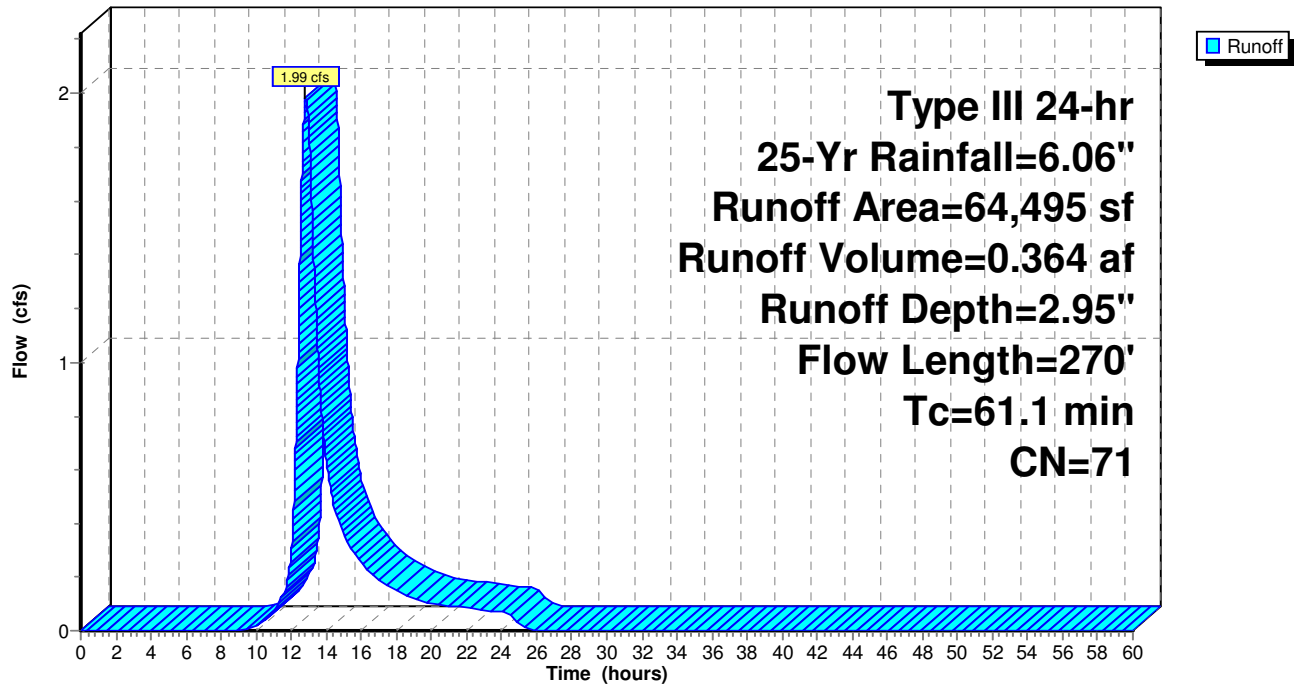
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Type III 24-hr 25-Yr Rainfall=6.06"

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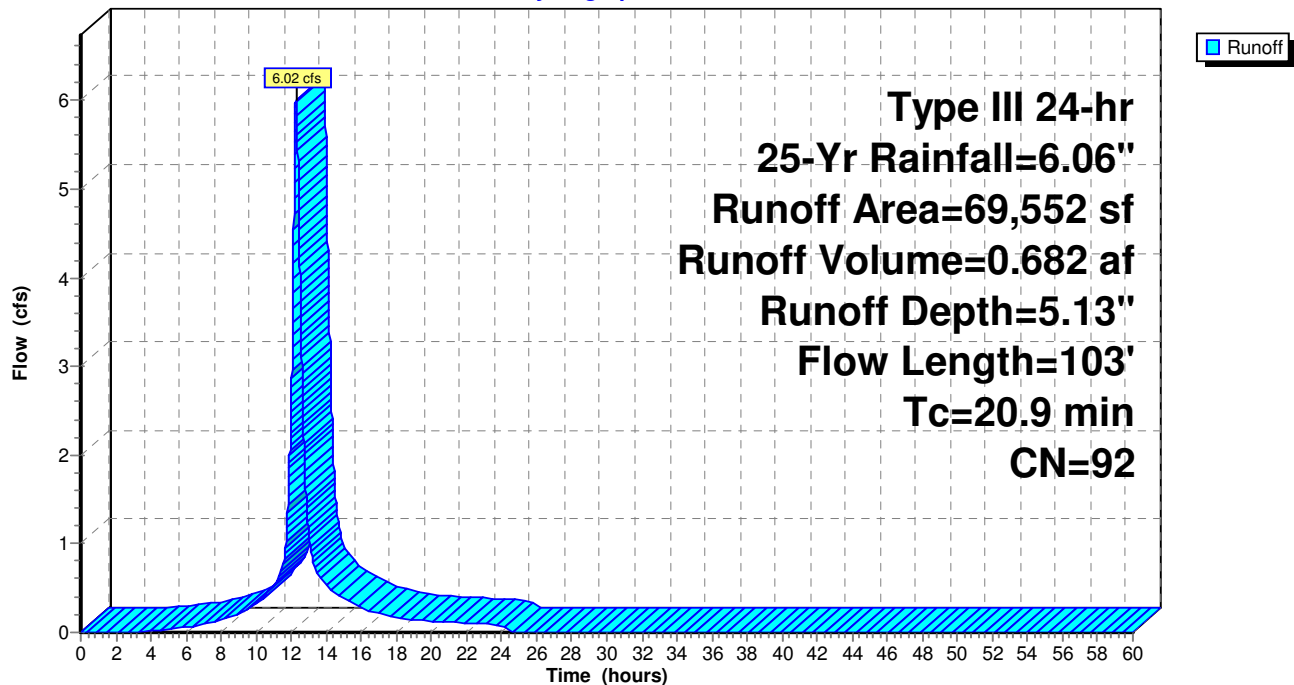
Subcatchment P1: P1

Hydrograph



Subcatchment P2: P2

Hydrograph



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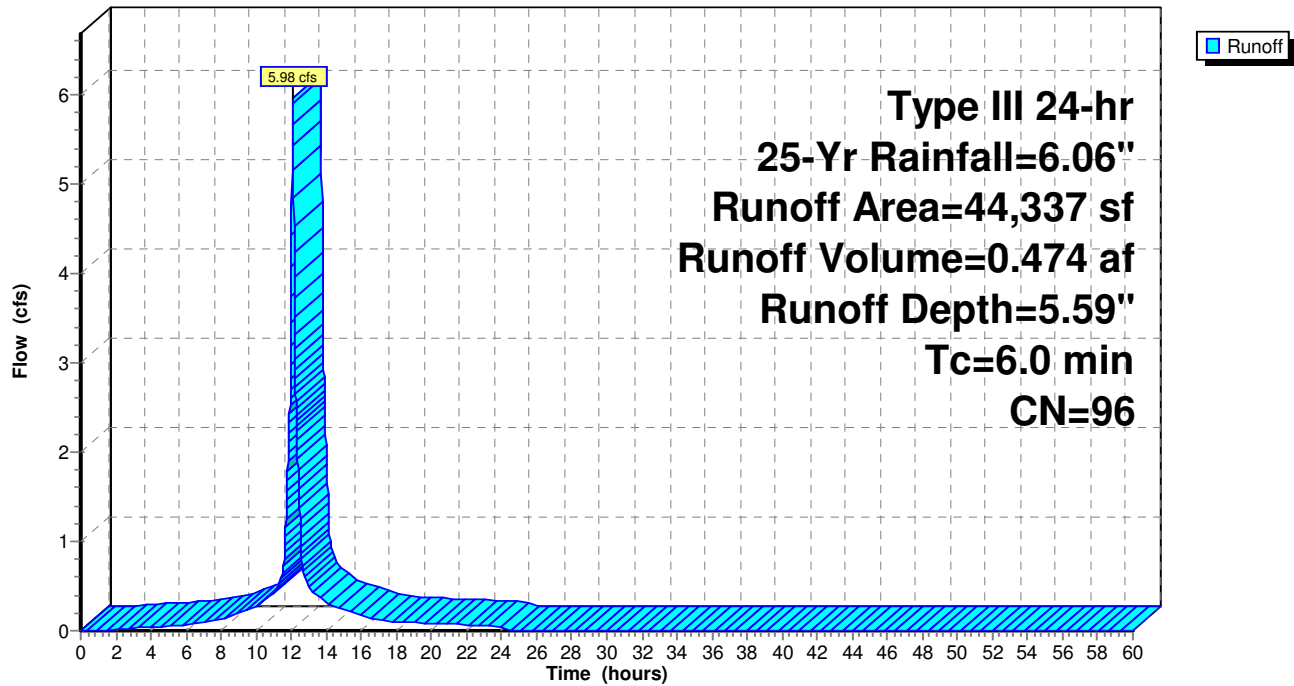
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Type III 24-hr 25-Yr Rainfall=6.06"

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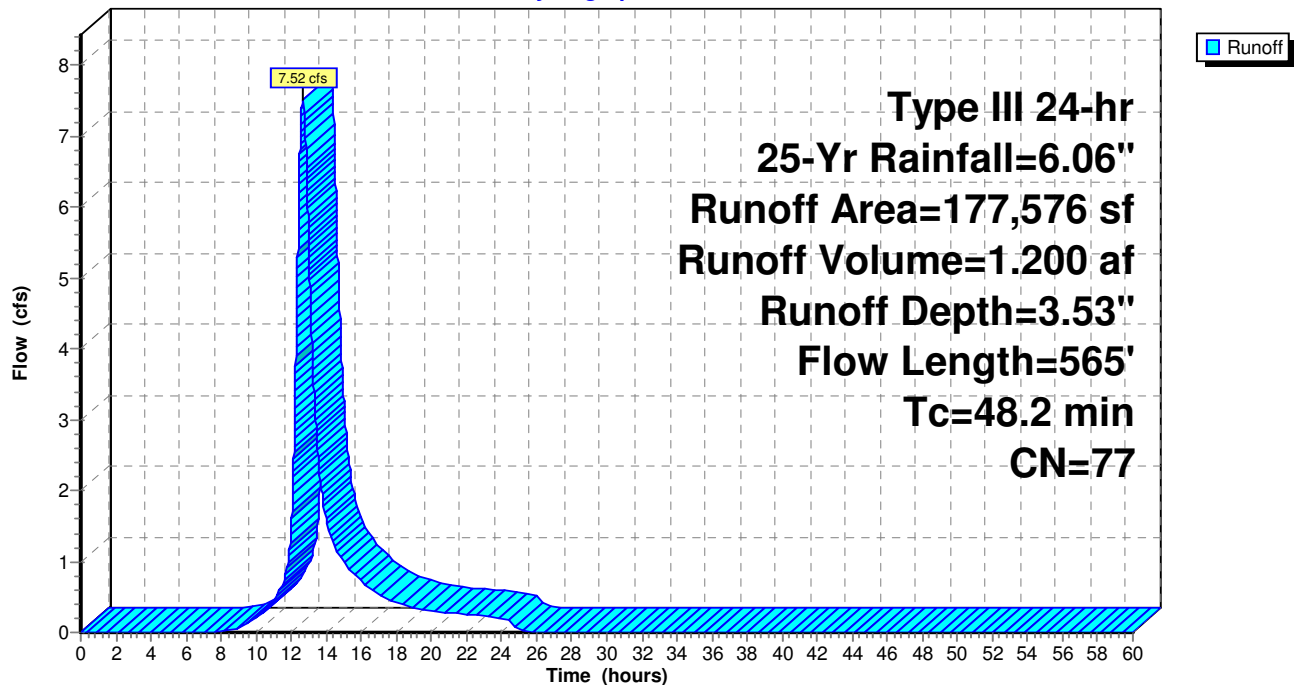
Subcatchment P3: P3

Hydrograph



Subcatchment P4: P4

Hydrograph



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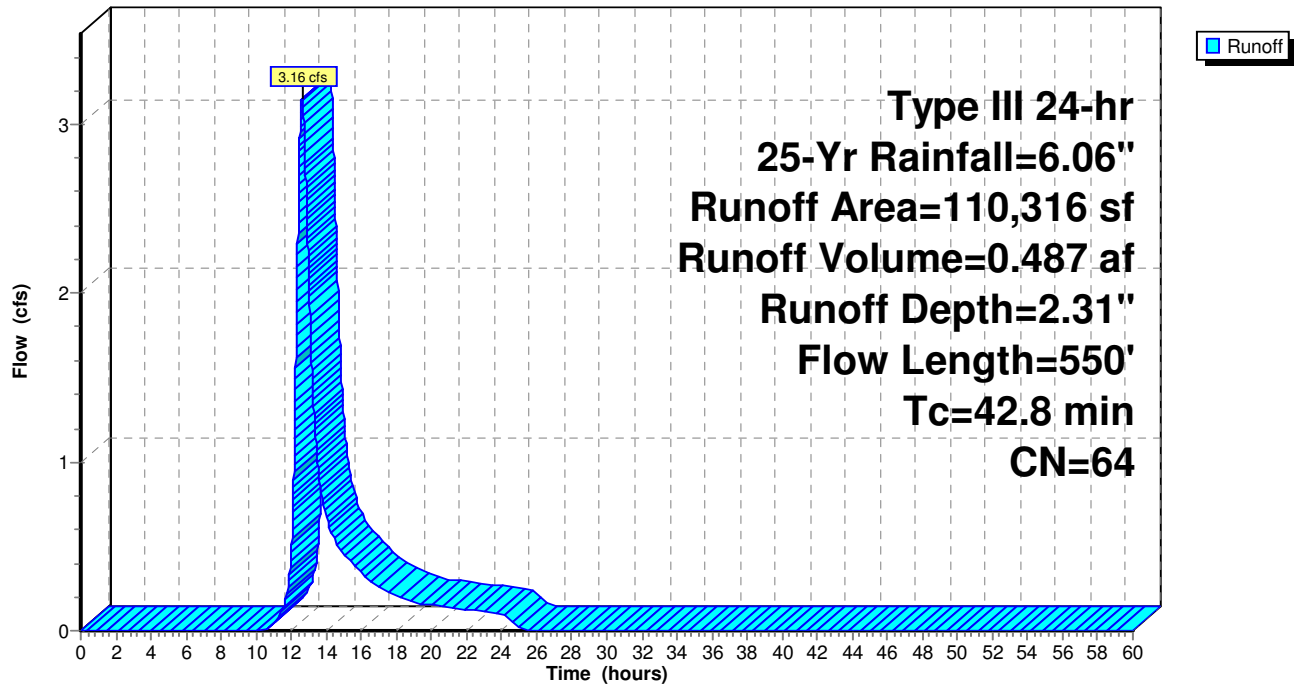
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Type III 24-hr 25-Yr Rainfall=6.06"

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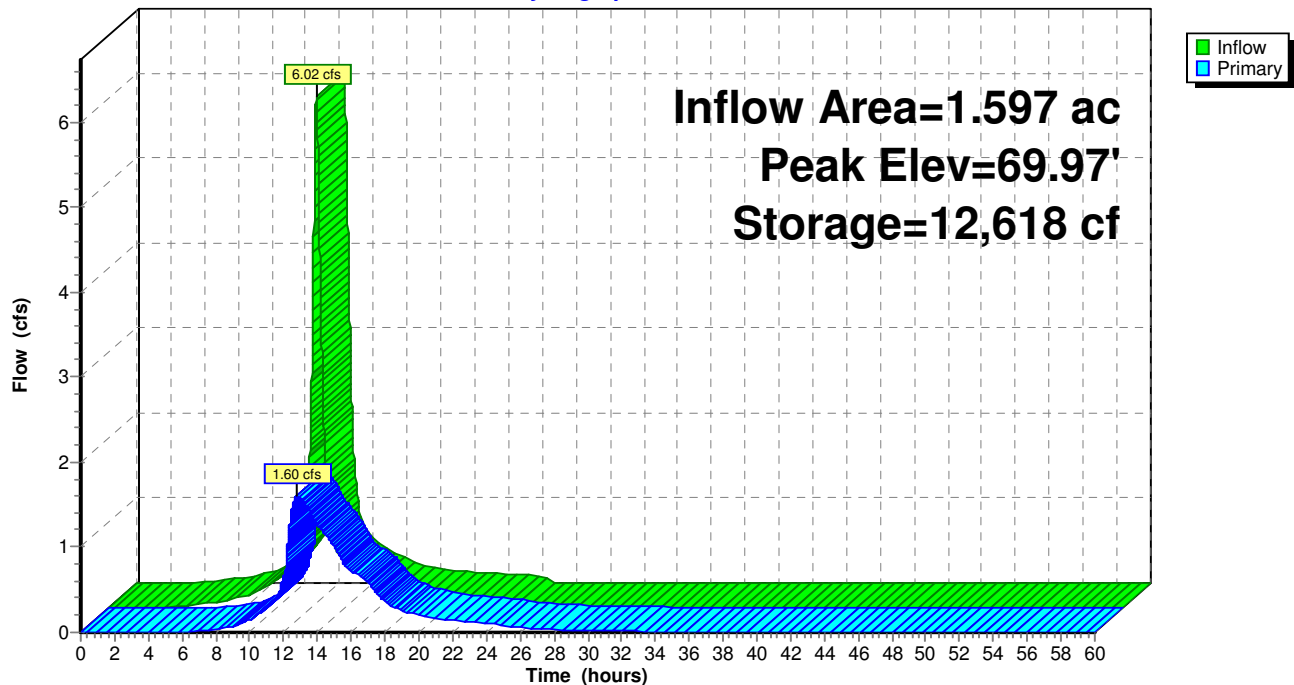
Subcatchment P5: P5

Hydrograph



Pond PB1: Pond West

Hydrograph



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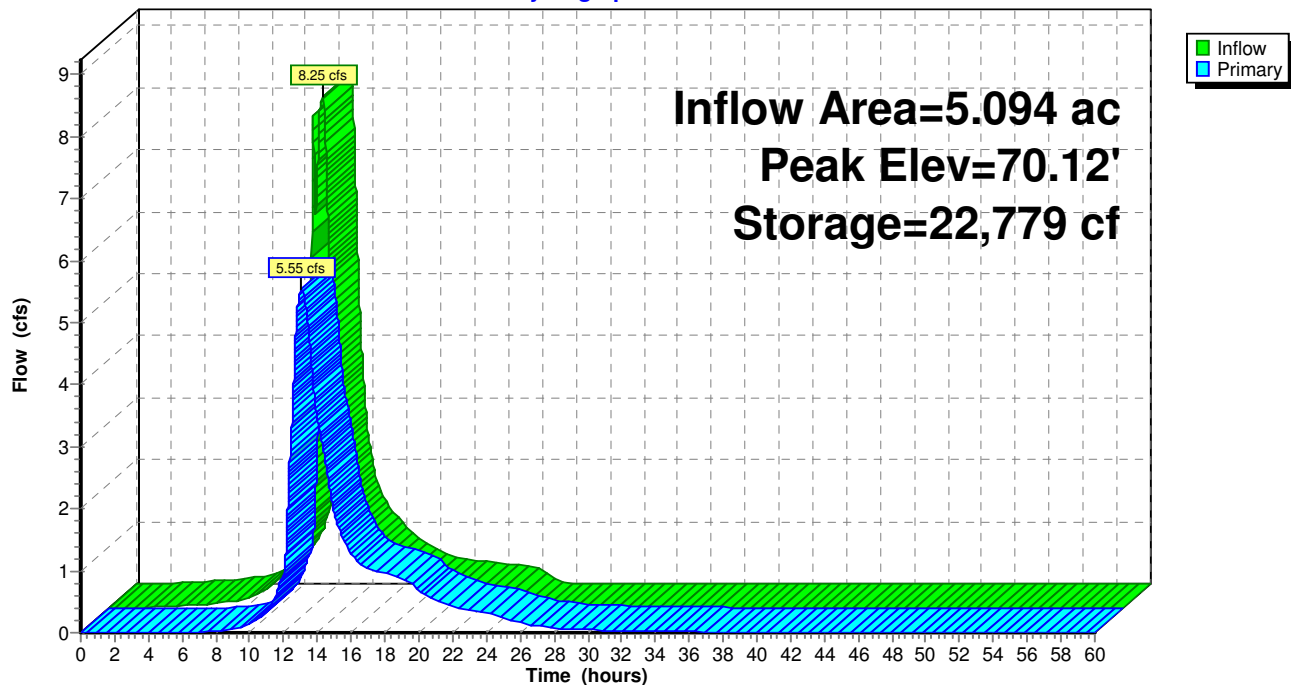
Proposed Conditions
Type III 24-hr 25-Yr Rainfall=6.06"

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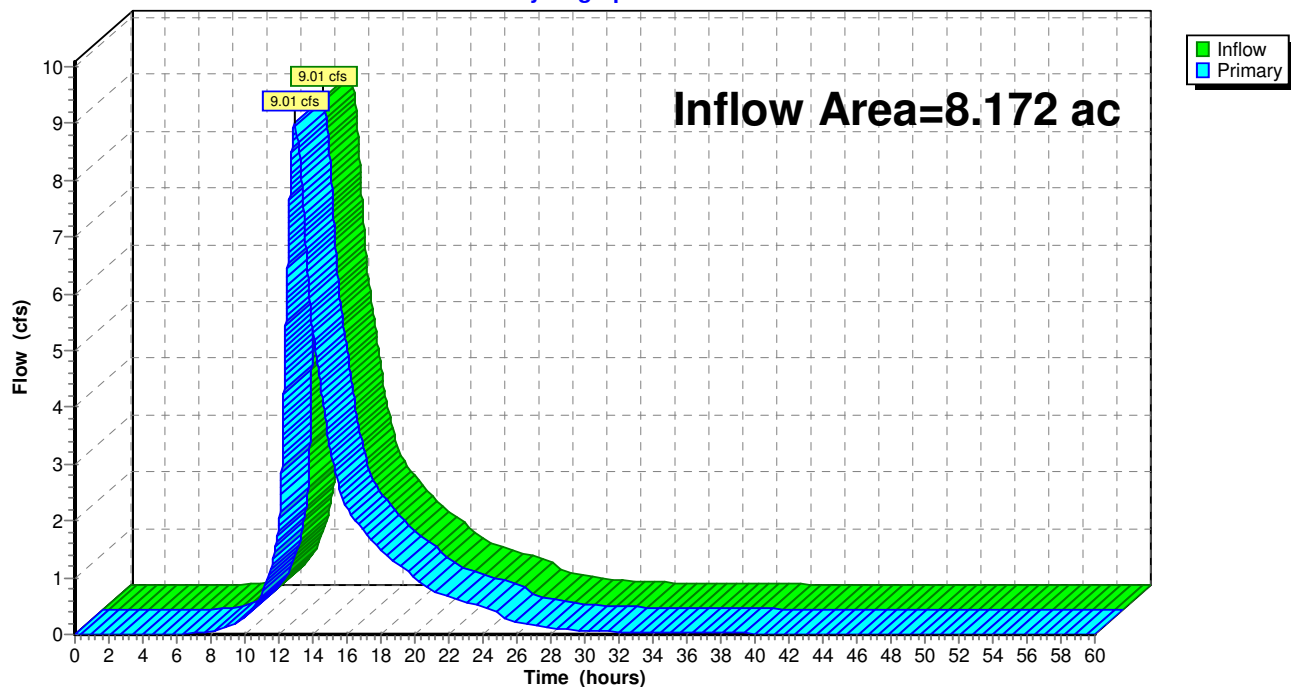
Pond PB2: Pond North

Hydrograph



Link DP1*: DP1*

Hydrograph



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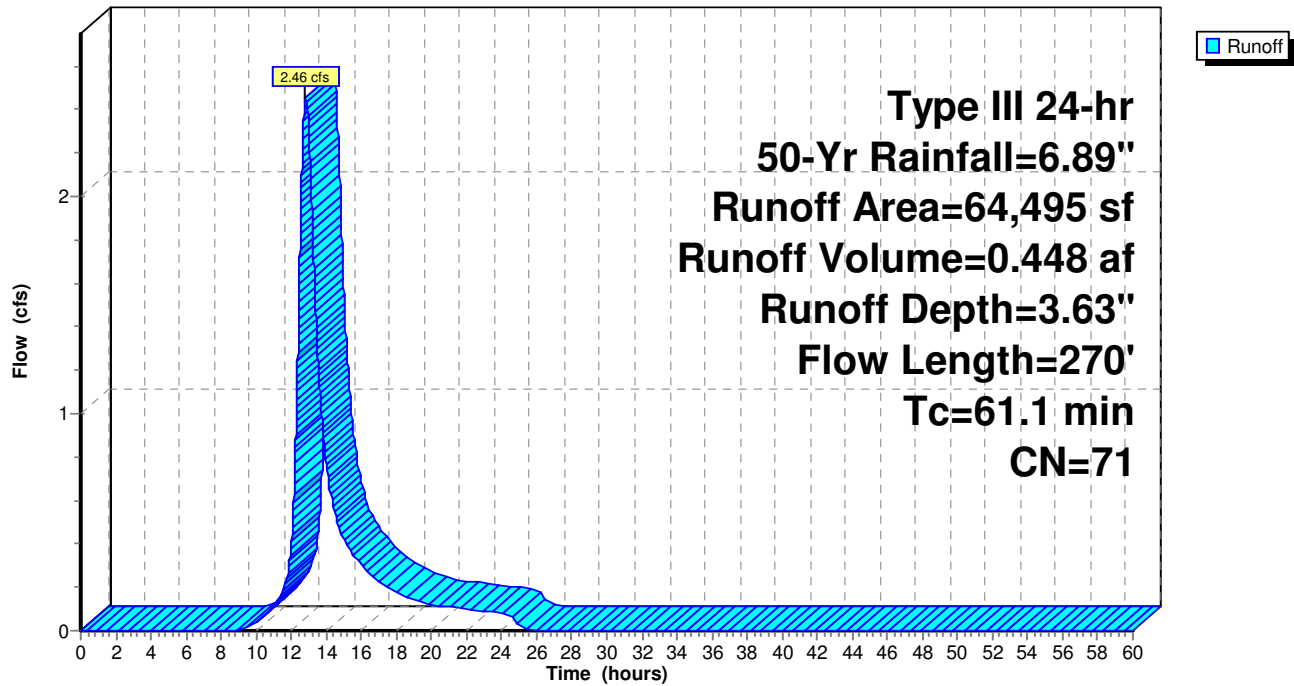
Type III 24-hr 50-Yr Rainfall=6.89"

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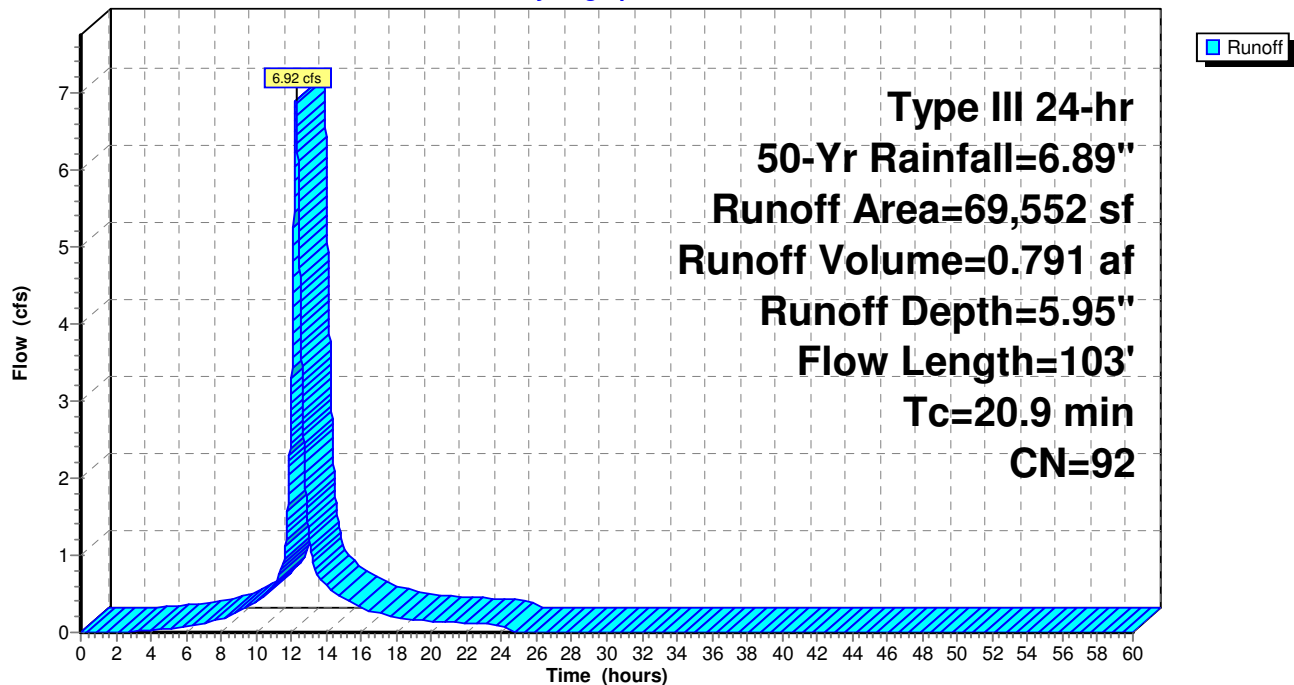
Subcatchment P1: P1

Hydrograph



Subcatchment P2: P2

Hydrograph



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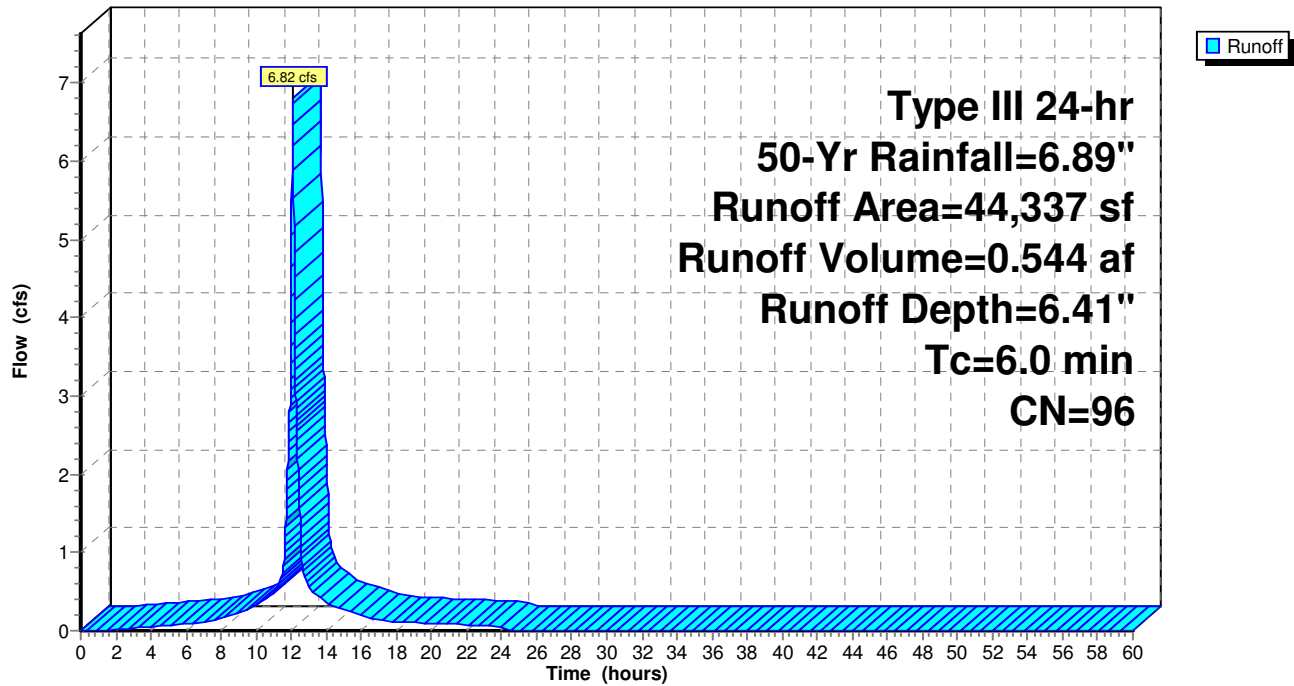
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Type III 24-hr 50-Yr Rainfall=6.89"

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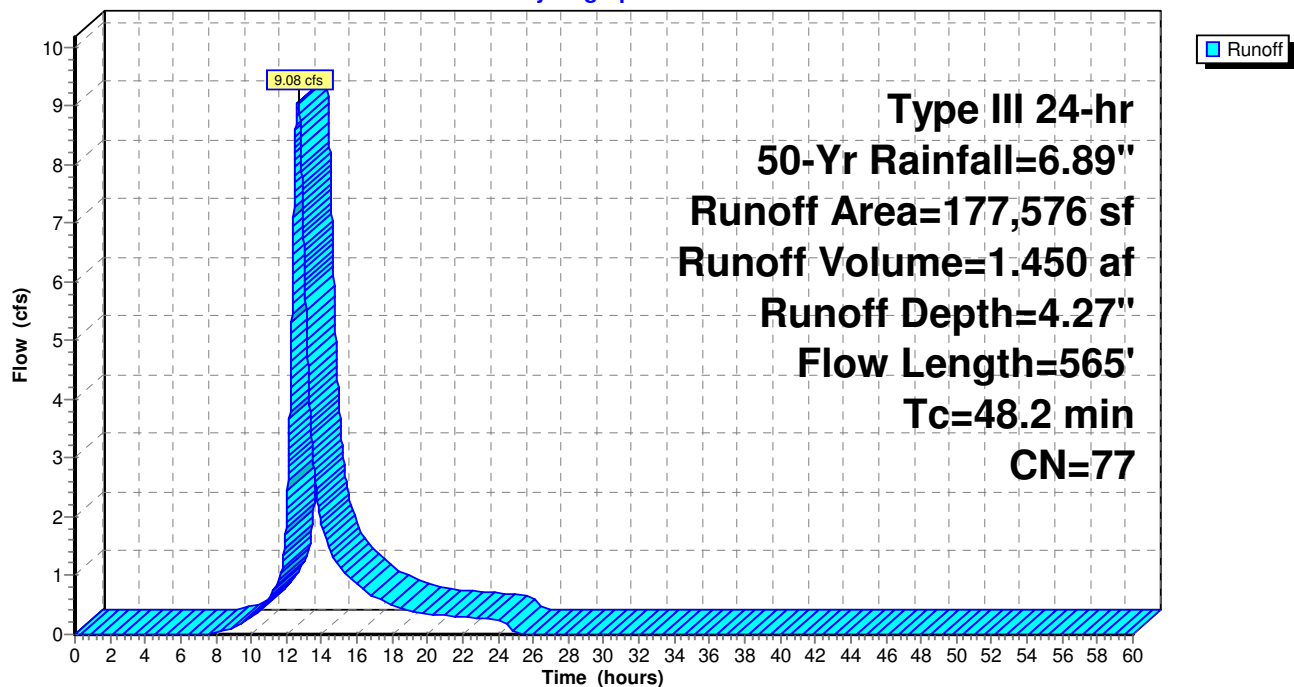
Subcatchment P3: P3

Hydrograph



Subcatchment P4: P4

Hydrograph



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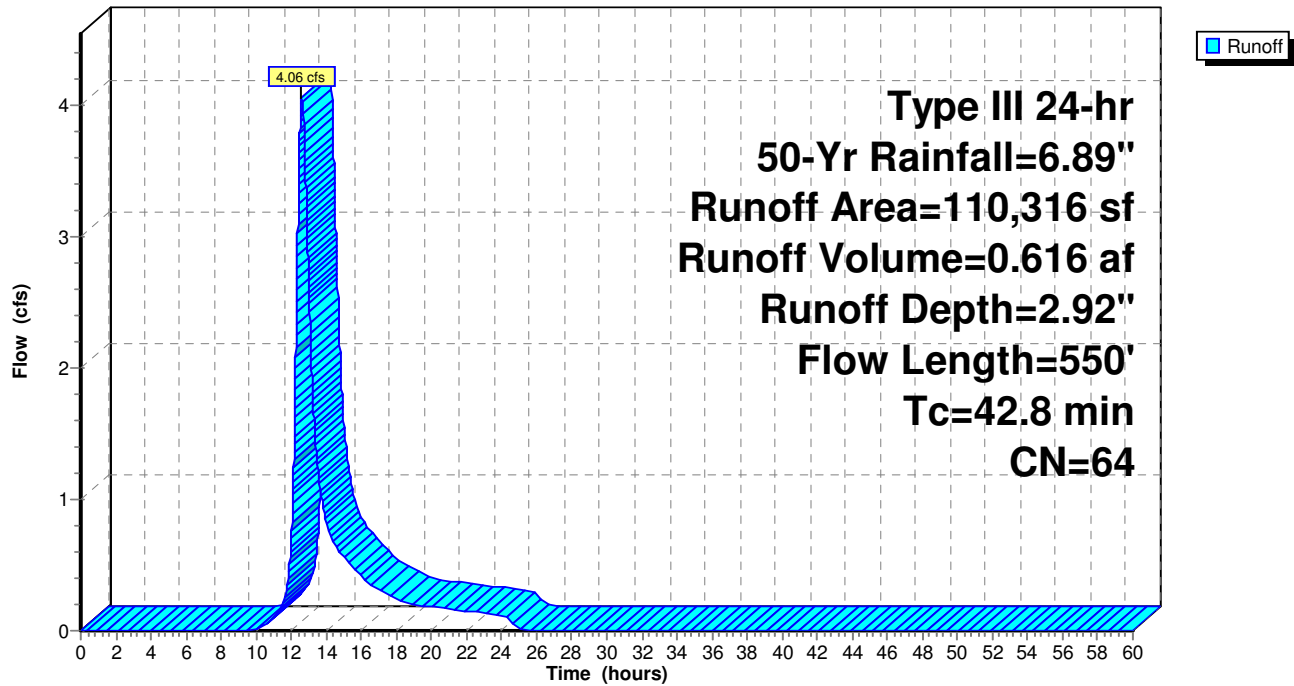
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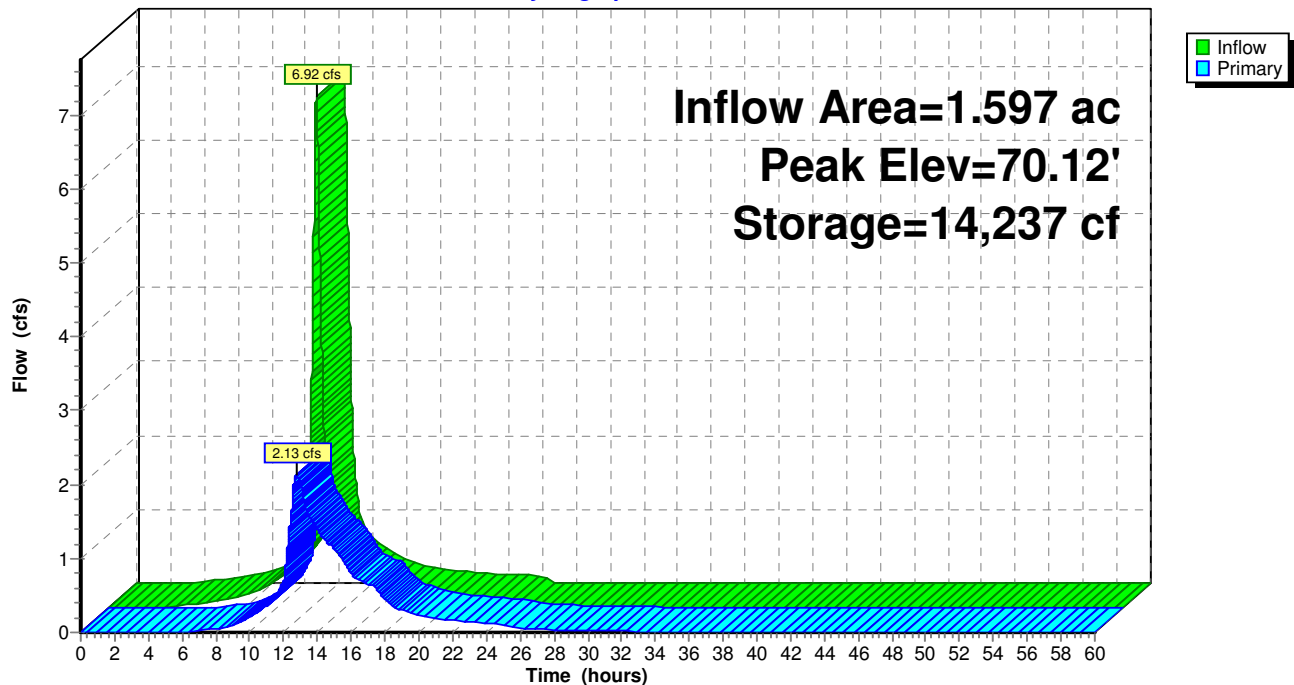
Subcatchment P5: P5

Hydrograph



Pond PB1: Pond West

Hydrograph



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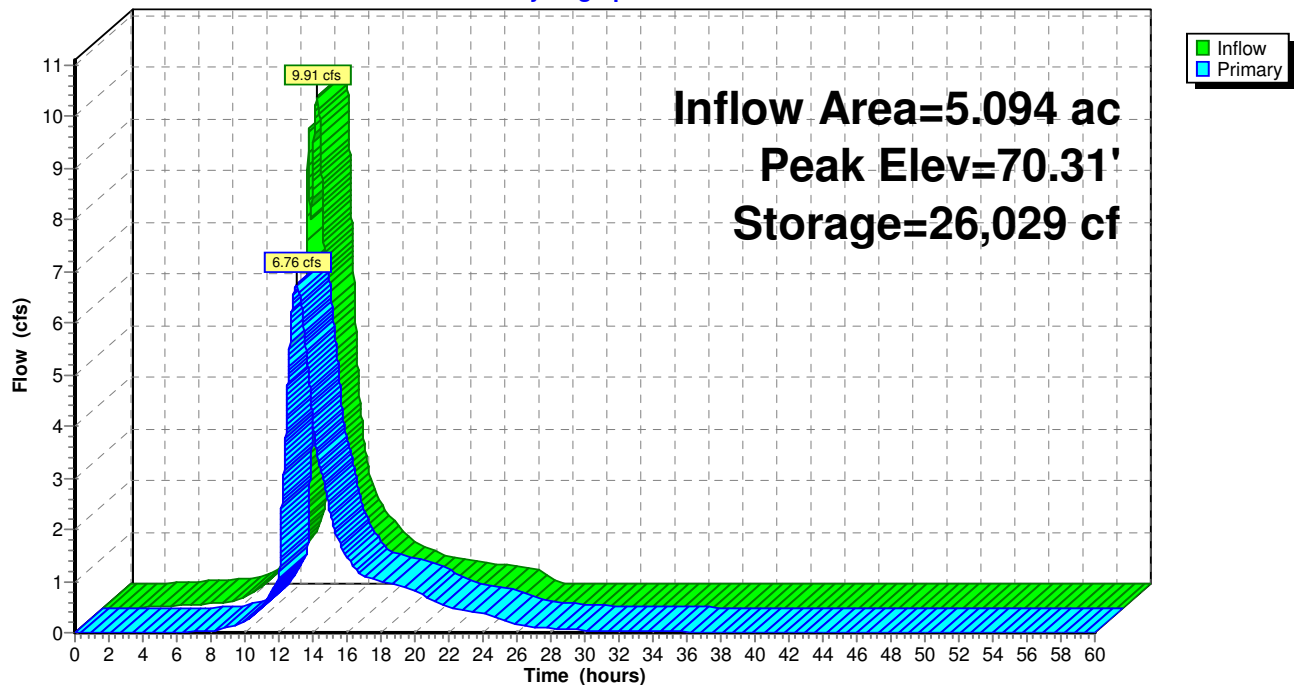
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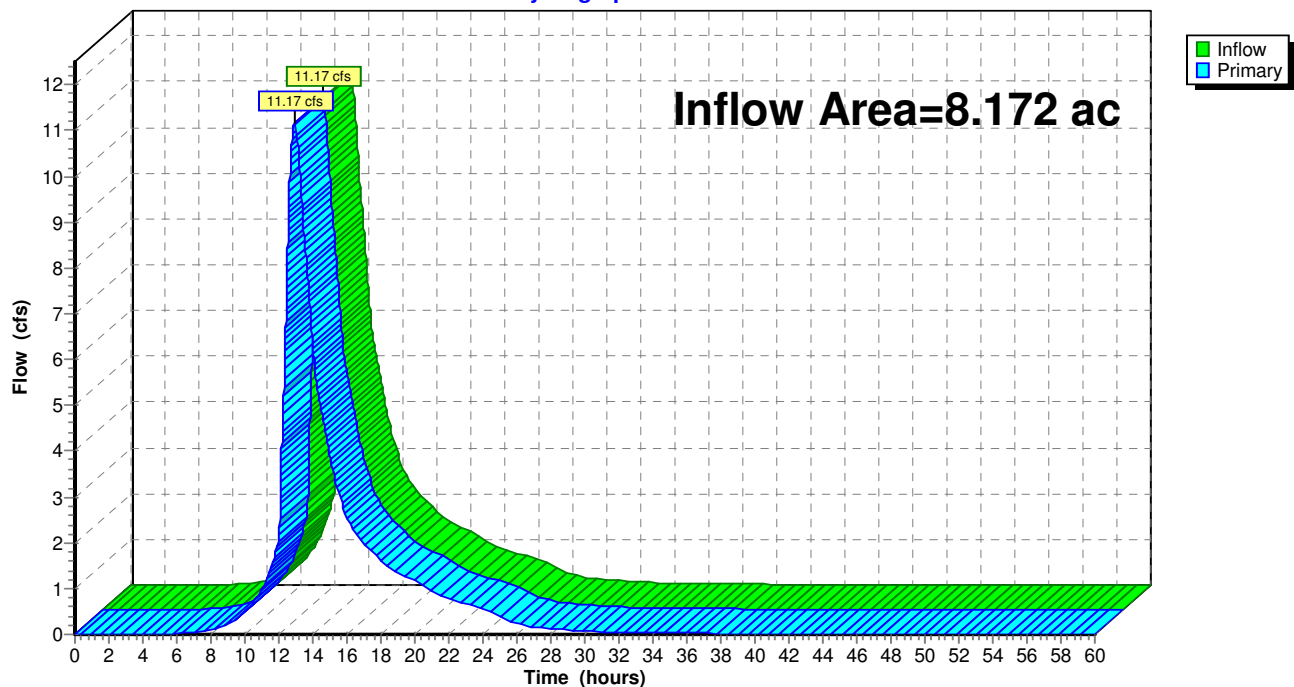
Pond PB2: Pond North

Hydrograph



Link DP1*: DP1*

Hydrograph



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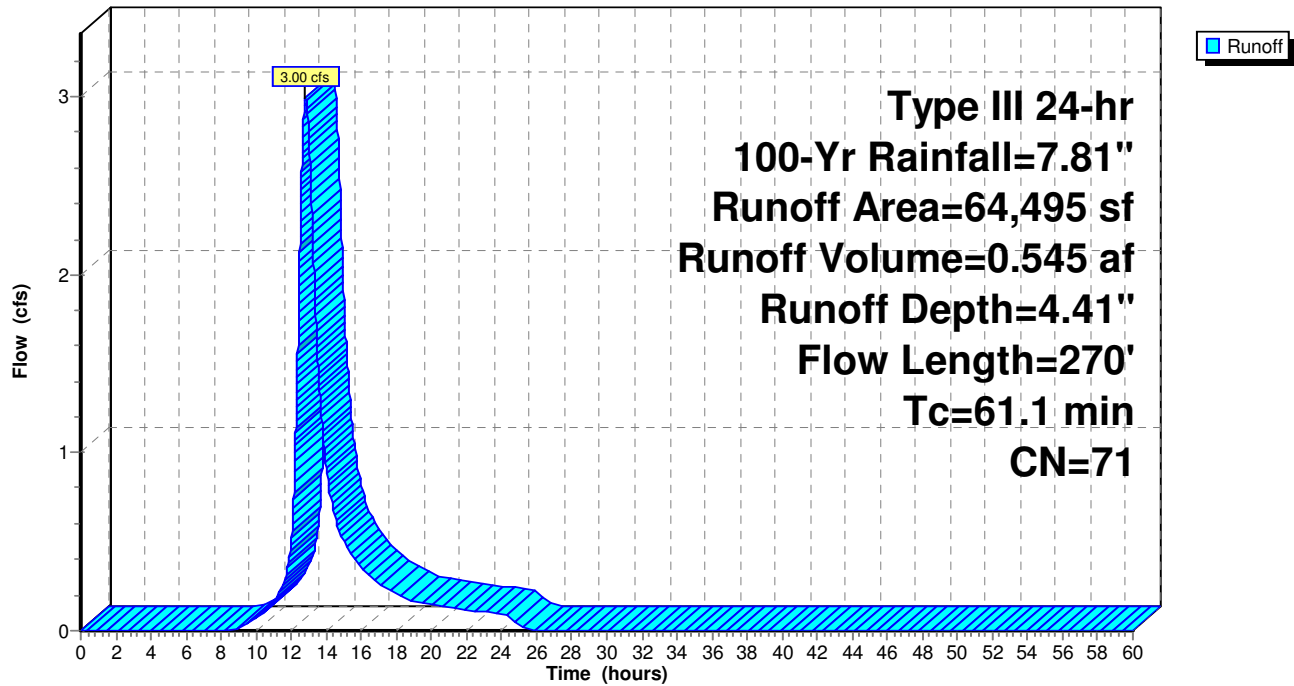
Proposed Conditions
Type III 24-hr 100-Yr Rainfall=7.81"

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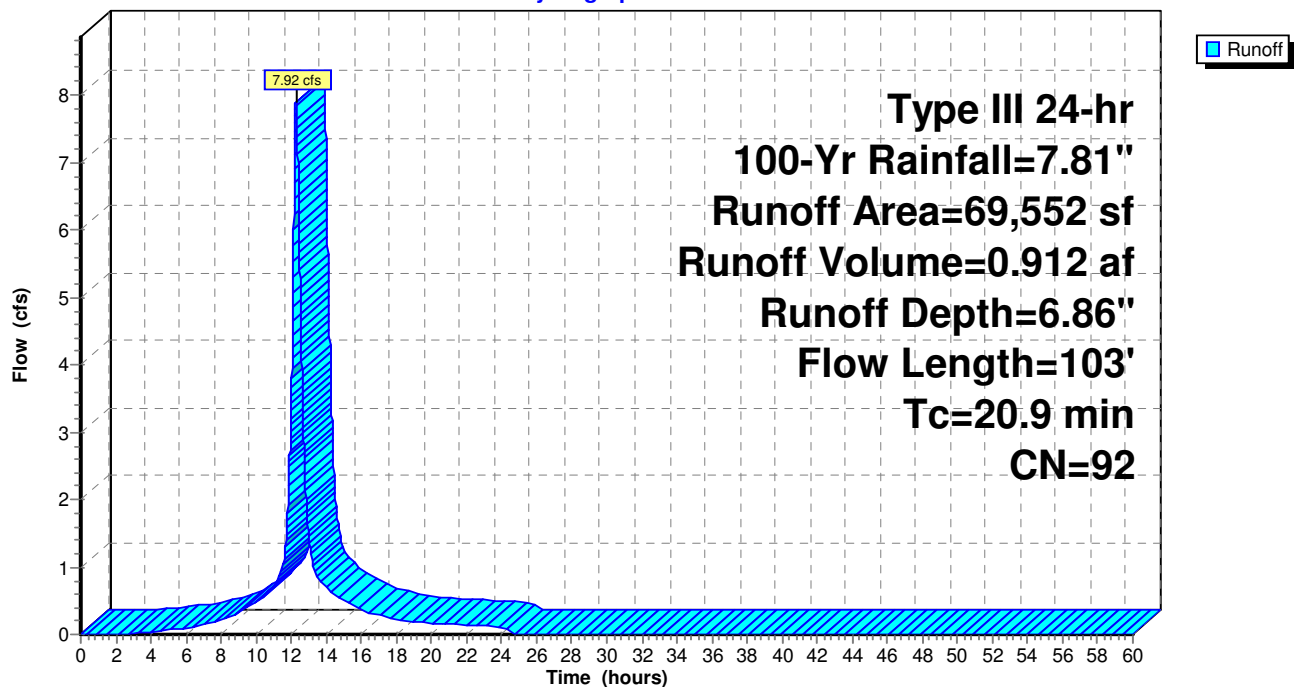
Subcatchment P1: P1

Hydrograph



Subcatchment P2: P2

Hydrograph



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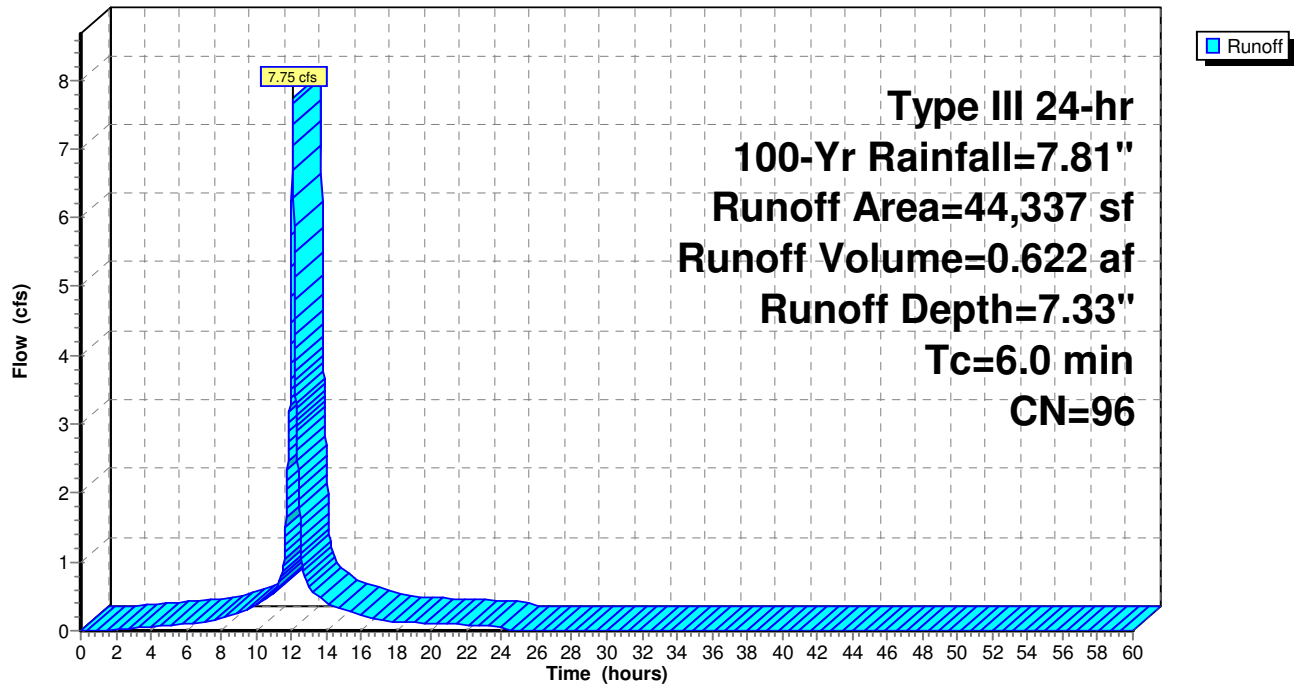
Proposed Conditions
Type III 24-hr 100-Yr Rainfall=7.81"

Printed 3/10/2023

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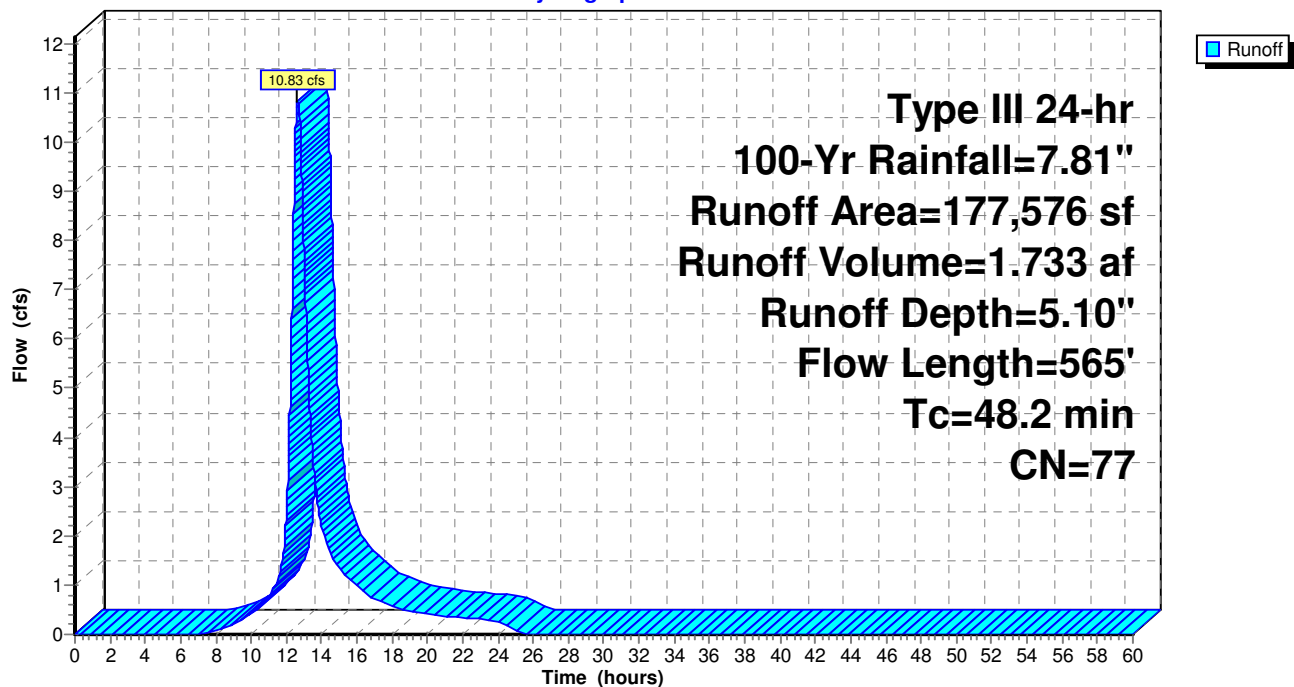
Subcatchment P3: P3

Hydrograph



Subcatchment P4: P4

Hydrograph



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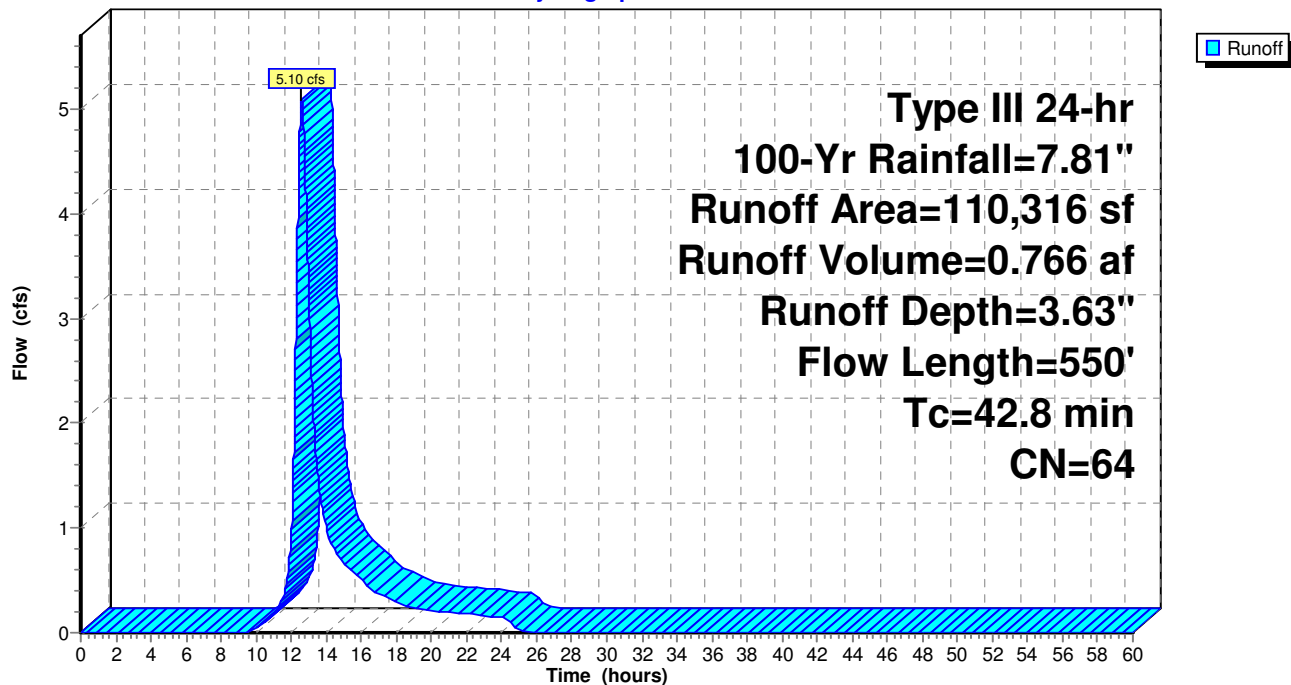
Proposed Conditions
Type III 24-hr 100-Yr Rainfall=7.81"

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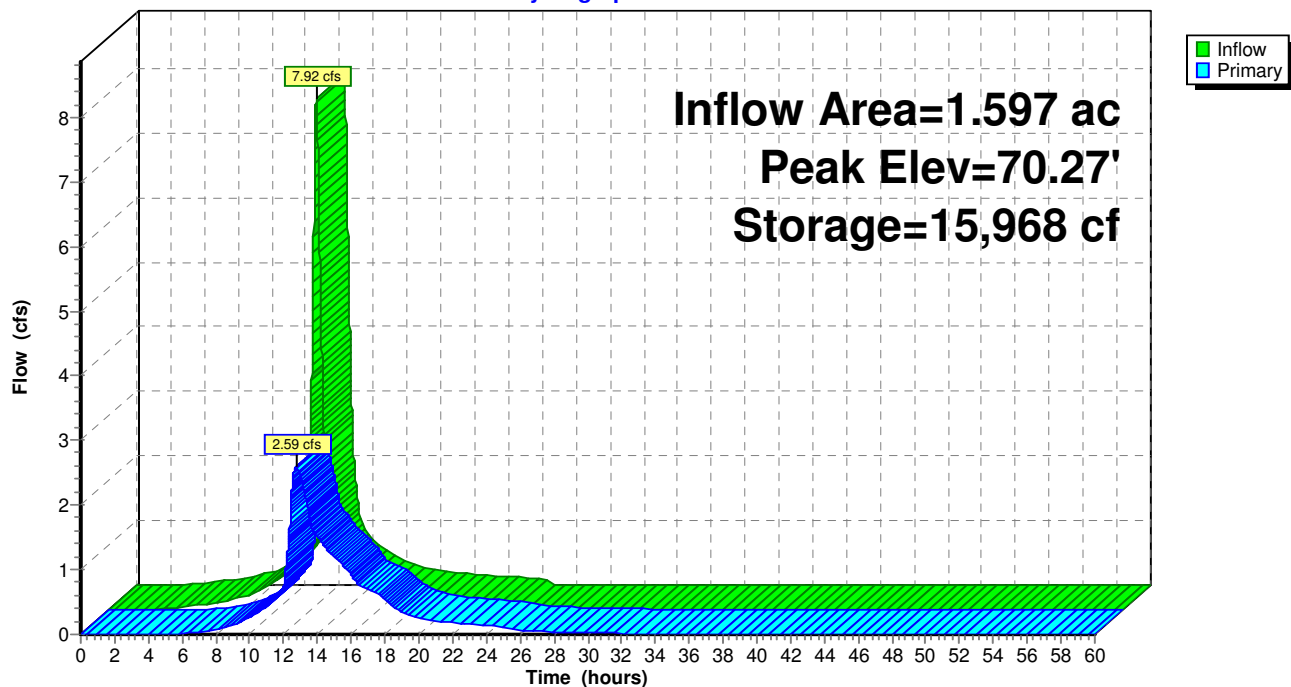
Subcatchment P5: P5

Hydrograph



Pond PB1: Pond West

Hydrograph



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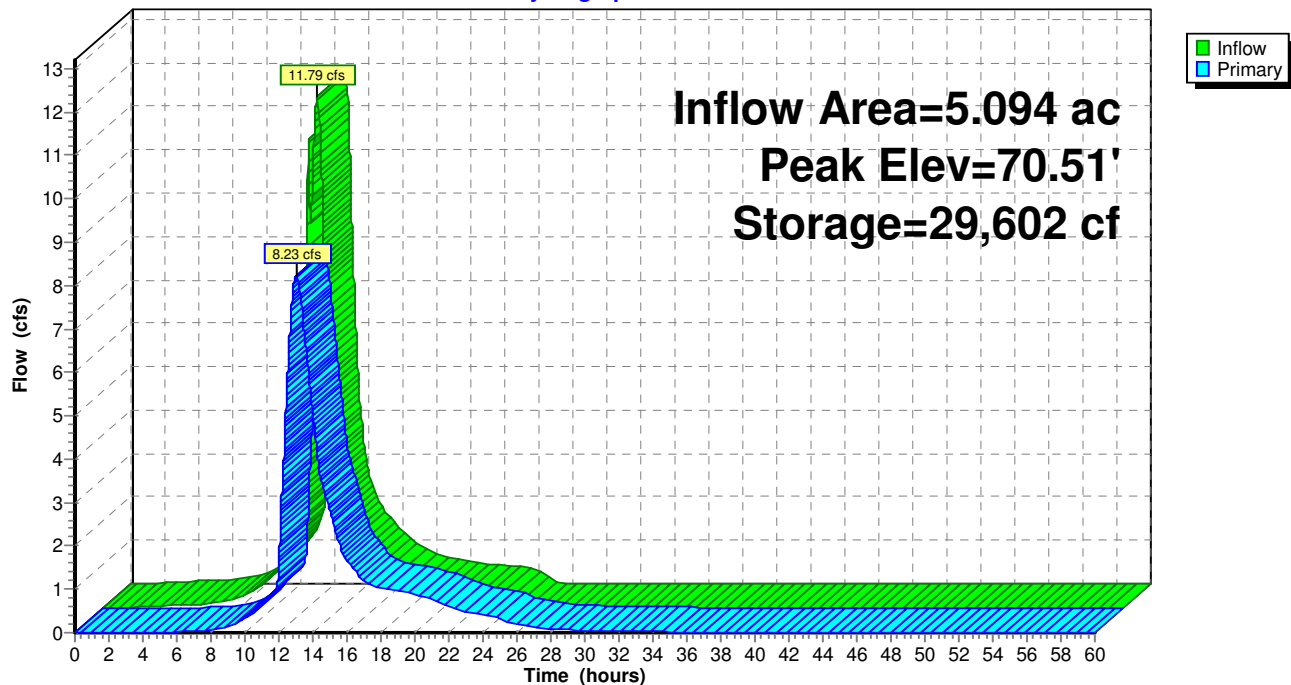
Proposed Conditions
Type III 24-hr 100-Yr Rainfall=7.81"

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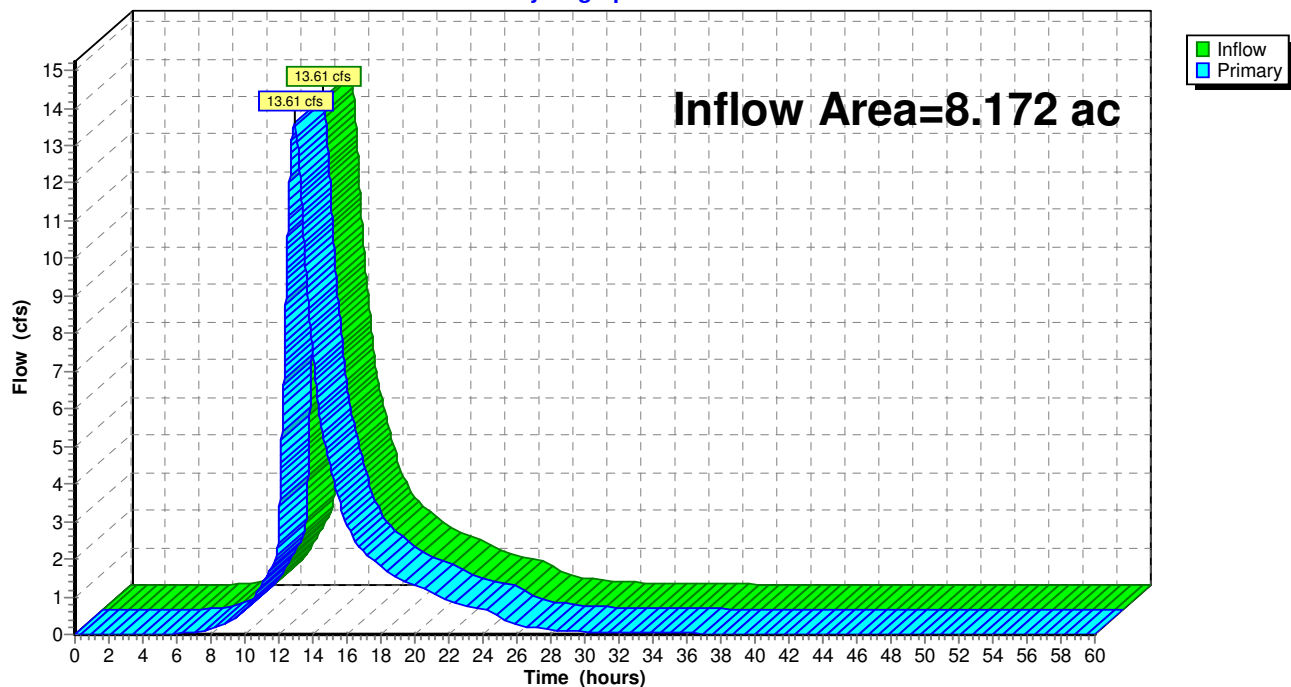
Pond PB2: Pond North

Hydrograph



Link DP1*: DP1*

Hydrograph



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Proposed Conditions

Type III 24-hr 100-Yr Rainfall=7.81"

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Summary for Pond PB1: Pond West

Inflow Area = 1.597 ac, 79.06% Impervious, Inflow Depth = 6.86" for 100-Yr event
 Inflow = 7.92 cfs @ 12.28 hrs, Volume= 0.912 af
 Outflow = 2.59 cfs @ 12.75 hrs, Volume= 0.908 af, Atten= 67%, Lag= 28.1 min
 Primary = 2.59 cfs @ 12.75 hrs, Volume= 0.908 af
 Routed to Link DP1* : DP1*

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
 Peak Elev= 70.27' @ 12.75 hrs Surf.Area= 11,525 sf Storage= 15,968 cf

Plug-Flow detention time= 141.3 min calculated for 0.908 af (100% of inflow)
 Center-of-Mass det. time= 138.6 min (922.2 - 783.5)

Volume	Invert	Avail.Storage	Storage Description
#1	68.65'	31,601 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
68.65	8,267	0	0
69.00	8,805	2,988	2,988
70.00	11,093	9,949	12,937
71.00	12,705	11,899	24,836
71.50	14,355	6,765	31,601

Device	Routing	Invert	Outlet Devices
#1	Primary	68.65'	12.0" Round Culvert L= 26.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 68.65' / 68.50' S= 0.0058 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	68.65'	28.0" W x 1.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	69.31'	16.0" W x 1.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	69.73'	8.0" W x 1.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Device 1	69.97'	36.0" W x 1.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#6	Device 1	70.12'	10.0" W x 1.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.59 cfs @ 12.75 hrs HW=70.27' (Free Discharge)

↑ **1=Culvert** (Passes 2.59 cfs of 3.48 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 1.18 cfs @ 6.05 fps)
 ↑ **3=Orifice/Grate** (Orifice Controls 0.51 cfs @ 4.61 fps)
 ↑ **4=Orifice/Grate** (Orifice Controls 0.19 cfs @ 3.39 fps)
 ↑ **5=Orifice/Grate** (Orifice Controls 0.61 cfs @ 2.44 fps)
 ↑ **6=Orifice/Grate** (Orifice Controls 0.11 cfs @ 1.56 fps)

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Proposed Conditions

Type III 24-hr 100-Yr Rainfall=7.81"

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Summary for Pond PB2: Pond North

Inflow Area = 5.094 ac, 35.20% Impervious, Inflow Depth = 5.55" for 100-Yr event
 Inflow = 11.79 cfs @ 12.59 hrs, Volume= 2.355 af
 Outflow = 8.23 cfs @ 13.01 hrs, Volume= 2.346 af, Atten= 30%, Lag= 25.2 min
 Primary = 8.23 cfs @ 13.01 hrs, Volume= 2.346 af
 Routed to Link DP1* : DP1*

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
 Peak Elev= 70.51' @ 13.01 hrs Surf.Area= 17,944 sf Storage= 29,602 cf

Plug-Flow detention time= 111.0 min calculated for 2.346 af (100% of inflow)
 Center-of-Mass det. time= 109.1 min (933.3 - 824.2)

Volume	Invert	Avail.Storage	Storage Description
#1	68.65'	48,929 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
68.65	13,925	0	0
69.00	14,665	5,003	5,003
70.00	16,818	15,742	20,745
71.00	19,028	17,923	38,668
71.50	22,018	10,262	48,929

Device	Routing	Invert	Outlet Devices
#1	Primary	68.65'	24.0" Round Culvert L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 68.65' / 68.50' S= 0.0050 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 3.14 sf
#2	Device 1	68.65'	20.0" W x 2.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	69.37'	36.0" W x 3.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	69.82'	36.0" W x 2.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Device 1	70.11'	23.0" W x 1.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#6	Device 1	70.31'	36.0" W x 1.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=8.23 cfs @ 13.01 hrs HW=70.51' (Free Discharge)

1=Culvert (Passes 8.23 cfs of 10.41 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 1.78 cfs @ 6.42 fps)
 3=Orifice/Grate (Orifice Controls 3.64 cfs @ 4.85 fps)
 4=Orifice/Grate (Orifice Controls 1.87 cfs @ 3.75 fps)
 5=Orifice/Grate (Orifice Controls 0.46 cfs @ 2.88 fps)
 6=Orifice/Grate (Orifice Controls 0.48 cfs @ 1.91 fps)

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



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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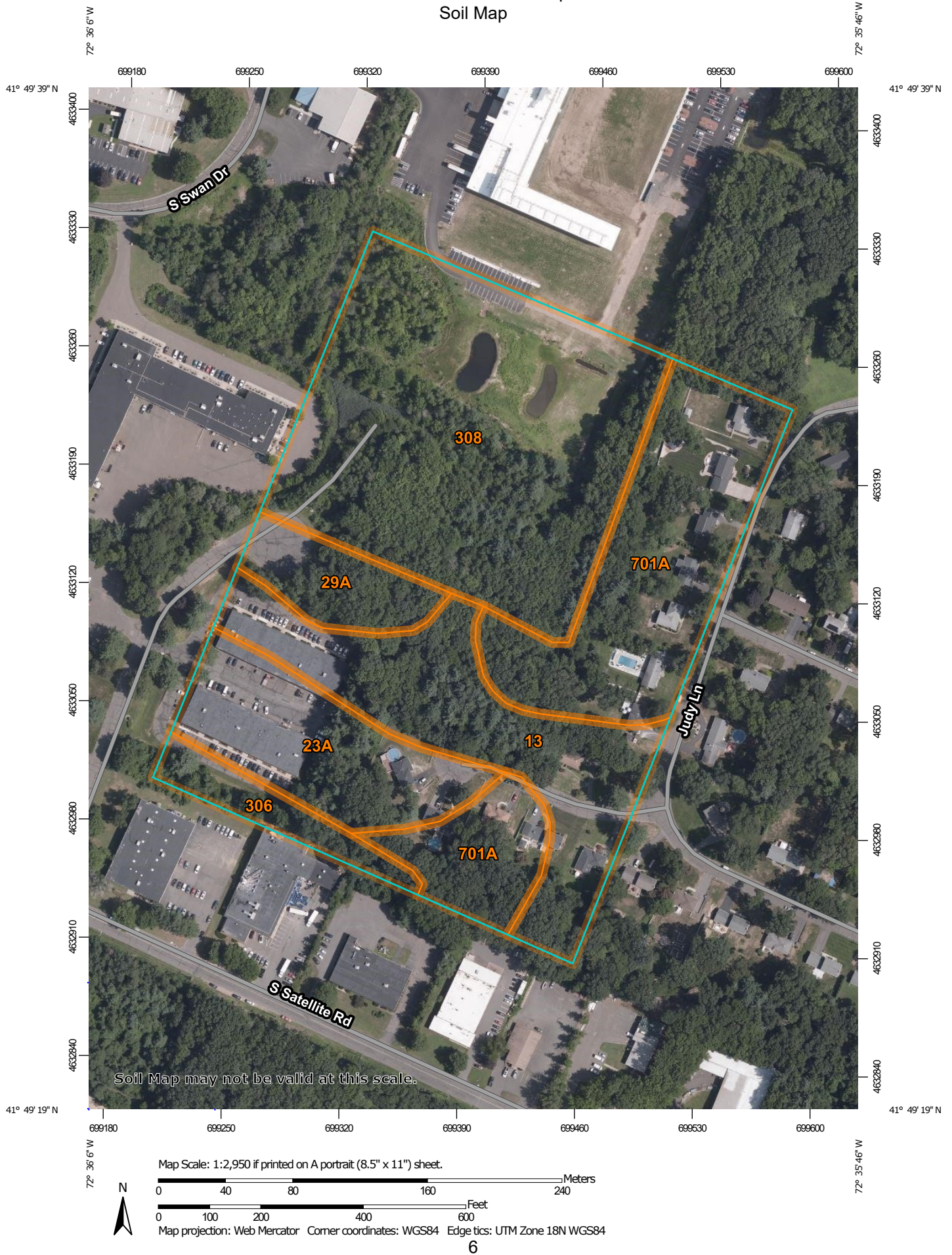
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Soil Map

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 22, Sep 12, 2022

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—Aug 29, 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
13	Walpole sandy loam, 0 to 3 percent slopes	4.3	18.0%
23A	Sudbury sandy loam, 0 to 5 percent slopes	2.7	11.5%
29A	Agawam fine sandy loam, 0 to 3 percent slopes	1.2	5.0%
306	Udorthents-Urban land complex	0.9	3.7%
308	Udorthents, smoothed	8.7	37.0%
701A	Ninigret fine sandy loam, 0 to 3 percent slopes	5.9	24.8%
Totals for Area of Interest		23.6	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.

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

13—Walpole sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2svkl

Elevation: 0 to 1,020 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: Farmland of statewide importance

Map Unit Composition

Walpole and similar soils: 80 percent

Minor components: 20 percent

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

Description of Walpole

Setting

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

Landform position (two-dimensional): Toeslope

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

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Sandy glaciofluvial deposits derived from igneous, metamorphic and sedimentary rock

Typical profile

Oe - 0 to 1 inches: mucky peat

A - 1 to 7 inches: sandy loam

Bg - 7 to 21 inches: sandy loam

BC - 21 to 25 inches: gravelly sandy loam

C - 25 to 65 inches: very gravelly sand

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Poorly drained

Runoff class: Very high

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 0 to 4 inches

Frequency of flooding: None

Frequency of ponding: None

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

Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: B/D

Ecological site: F144AY028MA - Wet Outwash

Hydric soil rating: Yes

Minor Components

Sudbury

Percent of map unit: 10 percent
Landform: Outwash plains, deltas, terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Scarboro

Percent of map unit: 10 percent
Landform: Outwash plains, deltas, outwash terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

23A—Sudbury sandy loam, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 9lkv
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

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

Description of Sudbury

Setting

Landform: Terraces, outwash plains
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Sandy and gravelly glaciofluvial deposits derived from granite and/or schist and/or gneiss

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 5 inches: sandy loam
Bw1 - 5 to 17 inches: gravelly sandy loam
Bw2 - 17 to 25 inches: sandy loam
2C - 25 to 60 inches: stratified gravel to sand

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Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

Minor Components

Merrimac

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

Ninigret

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

Agawam

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

Tisbury

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

Walpole

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

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

Map Unit Setting

National map unit symbol: 2tyqw

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

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

Landform position (three-dimensional): Crest, side slope, riser, tread, 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 supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

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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
Across-slope shape: Concave
Hydric soil rating: No

Windsor

Percent of map unit: 4 percent
Landform: Dunes, deltas, outwash terraces, outwash plains
Landform position (three-dimensional): Tread, riser
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Hydric soil rating: No

Hinckley

Percent of map unit: 3 percent
Landform: Deltas, kames, eskers, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Head slope, nose slope, crest, side slope, rise
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Walpole

Percent of map unit: 3 percent
Landform: Deltas, depressions, outwash terraces, depressions, outwash plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, talf, dip
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

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: 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

308—Udorthents, smoothed

Map Unit Setting

National map unit symbol: 9lmj

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: 80 percent

Minor components: 20 percent

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

Description of Udorthents

Setting

Down-slope shape: Convex

Across-slope shape: Linear

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 35 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately 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 24 to 54 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C

Hydric soil rating: No

Minor Components

Udorthents, wet substratum

Percent of map unit: 7 percent

Hydric soil rating: No

Unnamed, undisturbed soils

Percent of map unit: 7 percent

Hydric soil rating: No

Urban land

Percent of map unit: 5 percent

Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent

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: Kame terraces, outwash plains, moraines, kames, outwash terraces

Landform position (two-dimensional): Footslope, toeslope

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

Down-slope shape: Convex, linear

Across-slope shape: Convex, concave

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

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 supply, 0 to 60 inches: 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: Outwash plains, outwash terraces, eskers, 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

Agawam

Percent of map unit: 5 percent

Landform: Kame terraces, outwash plains, outwash terraces, moraines, kames

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

Tisbury

Percent of map unit: 3 percent

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

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: Drainageways, depressions

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

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.

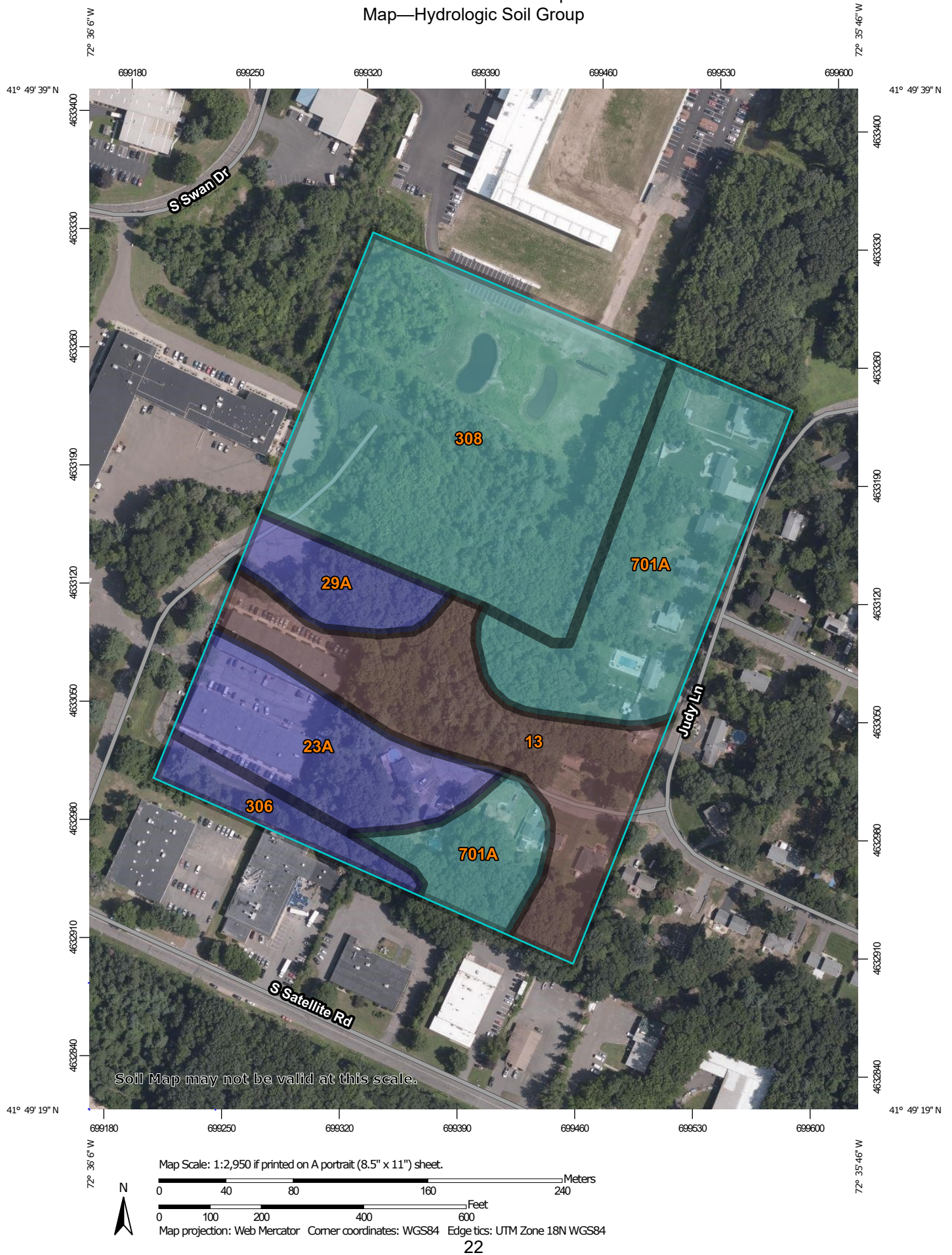
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Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water 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



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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 22, Sep 12, 2022

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—Aug 29, 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
13	Walpole sandy loam, 0 to 3 percent slopes	B/D	4.3	18.0%
23A	Sudbury sandy loam, 0 to 5 percent slopes	B	2.7	11.5%
29A	Agawam fine sandy loam, 0 to 3 percent slopes	B	1.2	5.0%
306	Udorthents-Urban land complex	B	0.9	3.7%
308	Udorthents, smoothed	C	8.7	37.0%
701A	Ninigret fine sandy loam, 0 to 3 percent slopes	C	5.9	24.8%
Totals for Area of Interest			23.6	100.0%

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

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APPENDIX D
NOAA Rainfall Data



NOAA Atlas 14, Volume 10, Version 3
Location name: South Windsor, Connecticut, USA*
Latitude: 41.8255°, Longitude: -72.5994°
Elevation: 73.32 ft**
 * source: ESRI Maps
 ** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aerals](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	4.03 (3.13-5.18)	4.88 (3.79-6.29)	6.28 (4.85-8.10)	7.44 (5.72-9.66)	9.04 (6.74-12.3)	10.2 (7.48-14.2)	11.5 (8.16-16.6)	12.9 (8.69-19.1)	15.0 (9.68-22.9)	16.6 (10.5-26.0)
10-min	2.86 (2.22-3.67)	3.46 (2.69-4.45)	4.45 (3.44-5.74)	5.27 (4.06-6.85)	6.40 (4.78-8.70)	7.25 (5.30-10.1)	8.14 (5.78-11.8)	9.14 (6.16-13.5)	10.6 (6.86-16.2)	11.8 (7.45-18.4)
15-min	2.24 (1.74-2.88)	2.72 (2.11-3.49)	3.49 (2.70-4.50)	4.14 (3.18-5.37)	5.02 (3.74-6.82)	5.69 (4.16-7.90)	6.39 (4.54-9.22)	7.18 (4.83-10.6)	8.30 (5.38-12.7)	9.23 (5.84-14.4)
30-min	1.50 (1.17-1.93)	1.83 (1.42-2.35)	2.36 (1.82-3.04)	2.79 (2.15-3.63)	3.40 (2.53-4.62)	3.85 (2.82-5.35)	4.33 (3.07-6.25)	4.87 (3.27-7.19)	5.63 (3.65-8.62)	6.26 (3.96-9.79)
60-min	0.942 (0.732-1.21)	1.15 (0.891-1.48)	1.48 (1.15-1.91)	1.76 (1.36-2.28)	2.14 (1.60-2.91)	2.43 (1.78-3.38)	2.73 (1.94-3.94)	3.07 (2.07-4.54)	3.56 (2.30-5.45)	3.95 (2.50-6.18)
2-hr	0.610 (0.477-0.778)	0.738 (0.576-0.944)	0.948 (0.738-1.22)	1.12 (0.868-1.45)	1.36 (1.02-1.84)	1.54 (1.13-2.13)	1.73 (1.24-2.50)	1.96 (1.32-2.87)	2.29 (1.49-3.49)	2.57 (1.63-4.00)
3-hr	0.468 (0.367-0.596)	0.566 (0.444-0.721)	0.726 (0.567-0.928)	0.859 (0.667-1.10)	1.04 (0.785-1.41)	1.18 (0.871-1.63)	1.32 (0.955-1.91)	1.50 (1.01-2.19)	1.77 (1.15-2.68)	2.00 (1.27-3.09)
6-hr	0.294 (0.232-0.372)	0.357 (0.281-0.452)	0.459 (0.361-0.583)	0.544 (0.425-0.696)	0.661 (0.502-0.889)	0.747 (0.557-1.03)	0.842 (0.612-1.21)	0.958 (0.650-1.39)	1.14 (0.742-1.71)	1.29 (0.824-1.99)
12-hr	0.178 (0.141-0.224)	0.218 (0.173-0.274)	0.283 (0.224-0.358)	0.338 (0.265-0.429)	0.413 (0.315-0.552)	0.468 (0.350-0.642)	0.528 (0.386-0.758)	0.603 (0.411-0.872)	0.720 (0.471-1.08)	0.821 (0.525-1.25)
24-hr	0.104 (0.083-0.130)	0.129 (0.103-0.162)	0.171 (0.136-0.214)	0.205 (0.162-0.259)	0.252 (0.194-0.337)	0.287 (0.217-0.393)	0.325 (0.240-0.467)	0.374 (0.256-0.538)	0.452 (0.297-0.673)	0.520 (0.334-0.789)
2-day	0.059 (0.047-0.073)	0.074 (0.059-0.092)	0.099 (0.079-0.124)	0.120 (0.095-0.151)	0.149 (0.115-0.198)	0.169 (0.129-0.232)	0.193 (0.144-0.277)	0.224 (0.153-0.320)	0.275 (0.181-0.407)	0.321 (0.206-0.483)
3-day	0.043 (0.034-0.053)	0.054 (0.043-0.067)	0.072 (0.058-0.090)	0.087 (0.070-0.109)	0.109 (0.084-0.144)	0.124 (0.095-0.169)	0.141 (0.106-0.202)	0.164 (0.113-0.233)	0.202 (0.133-0.298)	0.236 (0.152-0.355)
4-day	0.034 (0.028-0.042)	0.043 (0.035-0.053)	0.058 (0.047-0.072)	0.070 (0.056-0.088)	0.087 (0.068-0.115)	0.099 (0.076-0.135)	0.113 (0.085-0.161)	0.131 (0.090-0.186)	0.162 (0.107-0.238)	0.189 (0.122-0.283)
7-day	0.023 (0.019-0.028)	0.029 (0.023-0.036)	0.038 (0.031-0.047)	0.046 (0.037-0.057)	0.057 (0.045-0.075)	0.065 (0.050-0.088)	0.074 (0.055-0.104)	0.085 (0.059-0.120)	0.104 (0.069-0.152)	0.121 (0.079-0.180)
10-day	0.019 (0.015-0.023)	0.023 (0.019-0.028)	0.030 (0.024-0.037)	0.036 (0.029-0.044)	0.044 (0.034-0.057)	0.050 (0.038-0.067)	0.056 (0.042-0.079)	0.065 (0.045-0.091)	0.078 (0.052-0.114)	0.090 (0.058-0.134)
20-day	0.014 (0.011-0.016)	0.016 (0.013-0.019)	0.019 (0.016-0.024)	0.023 (0.018-0.028)	0.027 (0.021-0.035)	0.030 (0.023-0.039)	0.033 (0.025-0.046)	0.037 (0.026-0.052)	0.044 (0.029-0.063)	0.049 (0.032-0.072)
30-day	0.011 (0.009-0.014)	0.013 (0.011-0.016)	0.015 (0.013-0.019)	0.018 (0.014-0.021)	0.020 (0.016-0.026)	0.023 (0.017-0.029)	0.025 (0.018-0.034)	0.027 (0.019-0.038)	0.031 (0.021-0.045)	0.034 (0.022-0.050)
45-day	0.010 (0.008-0.012)	0.011 (0.009-0.013)	0.012 (0.010-0.015)	0.014 (0.011-0.017)	0.016 (0.012-0.020)	0.017 (0.013-0.022)	0.019 (0.014-0.025)	0.020 (0.014-0.028)	0.023 (0.015-0.032)	0.024 (0.016-0.035)
60-day	0.008 (0.007-0.010)	0.009 (0.008-0.011)	0.011 (0.009-0.013)	0.012 (0.010-0.014)	0.013 (0.010-0.017)	0.014 (0.011-0.019)	0.016 (0.011-0.021)	0.017 (0.012-0.023)	0.018 (0.012-0.026)	0.019 (0.013-0.028)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical



NOAA Atlas 14, Volume 10, Version 3
Location name: South Windsor, Connecticut, USA*
Latitude: 41.8255°, Longitude: -72.5994°
Elevation: 73.32 ft**
 * source: ESRI Maps
 ** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

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PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.336 (0.261-0.432)	0.407 (0.316-0.524)	0.523 (0.404-0.675)	0.620 (0.477-0.805)	0.753 (0.562-1.02)	0.853 (0.623-1.19)	0.958 (0.680-1.38)	1.08 (0.724-1.59)	1.25 (0.807-1.91)	1.39 (0.876-2.16)
10-min	0.476 (0.370-0.612)	0.577 (0.448-0.742)	0.742 (0.574-0.957)	0.879 (0.676-1.14)	1.07 (0.796-1.45)	1.21 (0.883-1.68)	1.36 (0.964-1.96)	1.52 (1.03-2.25)	1.77 (1.14-2.70)	1.96 (1.24-3.07)
15-min	0.560 (0.436-0.720)	0.679 (0.527-0.873)	0.873 (0.676-1.13)	1.03 (0.796-1.34)	1.25 (0.936-1.71)	1.42 (1.04-1.98)	1.60 (1.13-2.30)	1.79 (1.21-2.65)	2.08 (1.35-3.18)	2.31 (1.46-3.61)
30-min	0.751 (0.584-0.965)	0.913 (0.709-1.17)	1.18 (0.911-1.52)	1.40 (1.08-1.81)	1.70 (1.27-2.31)	1.93 (1.41-2.68)	2.17 (1.54-3.12)	2.43 (1.64-3.59)	2.82 (1.83-4.31)	3.13 (1.98-4.89)
60-min	0.942 (0.732-1.21)	1.15 (0.891-1.48)	1.48 (1.15-1.91)	1.76 (1.36-2.28)	2.14 (1.60-2.91)	2.43 (1.78-3.38)	2.73 (1.94-3.94)	3.07 (2.07-4.54)	3.56 (2.30-5.45)	3.95 (2.50-6.18)
2-hr	1.22 (0.954-1.56)	1.48 (1.15-1.89)	1.90 (1.48-2.43)	2.24 (1.74-2.90)	2.72 (2.05-3.69)	3.08 (2.27-4.27)	3.46 (2.48-5.00)	3.91 (2.64-5.74)	4.58 (2.98-6.97)	5.15 (3.27-7.99)
3-hr	1.41 (1.10-1.79)	1.70 (1.33-2.17)	2.18 (1.70-2.79)	2.58 (2.00-3.32)	3.13 (2.36-4.23)	3.54 (2.62-4.89)	3.97 (2.87-5.74)	4.50 (3.05-6.59)	5.31 (3.45-8.05)	5.99 (3.81-9.27)
6-hr	1.76 (1.39-2.23)	2.13 (1.68-2.70)	2.75 (2.16-3.49)	3.26 (2.55-4.17)	3.96 (3.00-5.33)	4.48 (3.33-6.17)	5.04 (3.66-7.26)	5.74 (3.89-8.34)	6.81 (4.44-10.3)	7.73 (4.93-11.9)
12-hr	2.14 (1.70-2.69)	2.63 (2.08-3.31)	3.42 (2.70-4.32)	4.07 (3.20-5.17)	4.97 (3.79-6.66)	5.64 (4.22-7.73)	6.36 (4.65-9.13)	7.27 (4.95-10.5)	8.67 (5.68-13.0)	9.89 (6.33-15.1)
24-hr	2.50 (1.99-3.12)	3.10 (2.48-3.89)	4.10 (3.26-5.15)	4.92 (3.89-6.22)	6.06 (4.65-8.08)	6.89 (5.20-9.43)	7.81 (5.76-11.2)	8.98 (6.14-12.9)	10.8 (7.12-16.1)	12.5 (8.01-18.9)
2-day	2.81 (2.26-3.49)	3.55 (2.85-4.42)	4.76 (3.80-5.94)	5.76 (4.58-7.23)	7.14 (5.52-9.49)	8.14 (6.19-11.1)	9.26 (6.91-13.3)	10.8 (7.37-15.4)	13.2 (8.69-19.5)	15.4 (9.91-23.2)
3-day	3.06 (2.47-3.79)	3.87 (3.12-4.80)	5.20 (4.17-6.47)	6.30 (5.02-7.88)	7.81 (6.07-10.4)	8.91 (6.81-12.2)	10.1 (7.60-14.6)	11.8 (8.11-16.8)	14.6 (9.60-21.4)	17.0 (11.0-25.5)
4-day	3.29 (2.66-4.06)	4.15 (3.35-5.13)	5.56 (4.47-6.90)	6.73 (5.38-8.40)	8.35 (6.50-11.0)	9.51 (7.28-12.9)	10.8 (8.13-15.5)	12.6 (8.66-17.9)	15.5 (10.3-22.8)	18.2 (11.7-27.2)
7-day	3.90 (3.16-4.79)	4.87 (3.95-5.99)	6.45 (5.21-7.96)	7.77 (6.24-9.64)	9.58 (7.48-12.6)	10.9 (8.36-14.7)	12.4 (9.29-17.5)	14.3 (9.89-20.2)	17.5 (11.6-25.6)	20.4 (13.2-30.3)
10-day	4.51 (3.68-5.53)	5.54 (4.51-6.79)	7.22 (5.85-8.88)	8.61 (6.93-10.7)	10.5 (8.23-13.7)	11.9 (9.15-16.0)	13.5 (10.1-18.9)	15.5 (10.7-21.8)	18.7 (12.4-27.3)	21.6 (14.0-32.1)
20-day	6.50 (5.33-7.91)	7.58 (6.21-9.24)	9.36 (7.63-11.4)	10.8 (8.77-13.3)	12.9 (10.1-16.6)	14.4 (11.0-18.9)	16.0 (11.9-22.0)	17.9 (12.5-25.0)	20.9 (14.0-30.2)	23.5 (15.3-34.6)
30-day	8.21 (6.75-9.96)	9.32 (7.65-11.3)	11.1 (9.11-13.6)	12.6 (10.3-15.5)	14.7 (11.5-18.8)	16.3 (12.5-21.2)	17.9 (13.3-24.2)	19.8 (13.8-27.4)	22.4 (15.0-32.2)	24.7 (16.1-36.2)
45-day	10.4 (8.55-12.5)	11.5 (9.48-13.9)	13.4 (11.0-16.2)	14.9 (12.2-18.2)	17.1 (13.4-21.6)	18.7 (14.3-24.2)	20.4 (15.0-27.2)	22.1 (15.5-30.5)	24.4 (16.4-34.8)	26.1 (17.1-38.2)
60-day	12.2 (10.1-14.7)	13.4 (11.0-16.1)	15.3 (12.6-18.5)	16.9 (13.8-20.6)	19.1 (15.0-24.1)	20.9 (16.0-26.7)	22.5 (16.6-29.8)	24.1 (17.0-33.2)	26.1 (17.6-37.2)	27.6 (18.0-40.1)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical

APPENDIX E
Storm Sewer Analysis

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Dn	Up	Dn	Up	Dn	Up	
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	20.000	0.10	0.37	0.82	0.08	0.31	8.0	9.8	5.4	1.68	2.86	3.78	12	0.55	69.70	69.81	70.25	70.36	70.70	72.01	CB1 - FE1
2	1	180.000	0.12	0.27	0.87	0.10	0.23	6.0	8.7	5.8	1.31	2.86	2.75	12	0.55	69.81	70.80	70.58	71.28	72.01	73.00	CB2 - CB1
3	2	101.000	0.15	0.15	0.82	0.12	0.12	8.0	8.0	6.0	0.74	3.43	2.44	12	0.79	70.80	71.60	71.28	71.96	73.00	73.70	CB3 - CB2
4	End	83.000	0.02	0.02	0.50	0.01	0.01	10.0	10.0	5.4	0.05	0.93	1.44	8	0.51	69.85	70.27	69.95	70.38	71.11	72.07	YD1 - FE4
5	End	30.020	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	3.85	17.32	3.68	24	0.50	68.50	68.65	69.29	69.34	70.00	69.85	OCS2 - FE3
6	End	26.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.36	2.93	3.59	12	0.58	68.50	68.65	68.98	69.14	69.50	69.70	OCS1 - FE2
Project File: 4613.R Storm Sewers.stm																Number of lines: 6				Run Date: 3/10/2023		
NOTES:Intensity = 35.57 / (Inlet time + 3.70) ^ 0.72; Return period =Yrs. 10 ; c = cir e = ellip b = box																						

APPENDIX F
Water Quality Flow Calculations and Data

3/7/23

Water Quality Volume Calculations

Per 2004 Connecticut Stormwater Quality Manual, Section 7.4.1:

Areas for Calculation: On site to Forebay at PB1

CB1 - CB3, LO1

Impervious	0.93
Pervious	0.087
Total Area	1.017
% Impervious	91.45

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

R = volumetric runoff coefficient

= 0.05 + 0.009 (I), where I = percent impervious cover = 91.45 %

R = 0.05 + 0.009 (I)

R = 0.05 + 0.009 x 91.45

R = 0.873

A = drainage area = 1.017 acres

WQV = (1")(R)(A) /12

WQV = $\frac{1" \times 0.873 \times 1.017}{12}$

WQV = 0.0740 acre-feet

= 3222.9 cft

Proposed BMP

The proposed water quality basin and forebay are proposed to provide **19,600 cft+** (below basin outlet FE-2 @ Elev. 68.65), **393 cft+** (below spillway at Elev. 69.30), and **584 cft+** (below spillway at Elev. 71.30) of water quality storage, respectively. The forebay will provide storage for more than 10% of the determined water quality volume draining to the basin. The forebays in combination with the proposed wet pool of the water quality basin will provide a total water quality storage volume of **20,577 cft+**; more than 100% of the water quality volume. Water quality basin and forebay stage storage reports are included as a part of this appendix.

3/7/23

Water Quality Volume Calculations

Per 2004 Connecticut Stormwater Quality Manual, Section 7.4.1:

Areas for Calculation: On site to Forebay at PB2

LO2 - LO3

Impervious	0.94
Pervious	0.057
Total Area	0.997
% Impervious	94.28

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

R = volumetric runoff coefficient

$$= 0.05 + 0.009 (I), \text{ where } I = \text{percent impervious cover} = 94.28 \%$$

$$R = 0.05 + 0.009 (I)$$

$$R = 0.05 + 0.009 \times 94.28$$

$$R = 0.899$$

$$A = \text{drainage area} = 0.997 \text{ acres}$$

$$WQV = (1")(R)(A) / 12$$

$$WQV = \frac{1" \times 0.899 \times 0.997}{12}$$

$$WQV = 0.0747 \text{ acre-feet}$$

$$= 3251.94 \text{ cft}$$

Proposed BMP

The proposed water quality basin and forebay are proposed to provide **28,768 cft+** (below basin outlet FE-2 @ Elev. 68.65), and **961 cft+** (below spillway at Elev. 71.30) of water quality storage, respectively. The forebay will provide storage for more than 10% of the determined water quality volume draining to the basin. The forebay in combination with the proposed wet pool of the water quality basin will provide a total water quality storage volume of **29,729 cft+**; more than 100% of the water quality volume. Water quality basin and forebay stage storage reports are included as a part of this appendix.

STAGE STORAGE TABLE (WQB – PB1)						
ELEV	AREA (sq. ft.)	DEPT H (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)	CONIC INC. VOL. (cu. ft.)	CONIC TOTAL VOL. (cu. ft.)
60.00	83.95	N/A	N/A	0.00	N/A	0.00
61.00	301.88	1.00	192.92	192.92	181.68	181.68
62.00	664.12	1.00	483.00	675.92	471.25	652.93
63.00	1,073.81	1.00	868.97	1544.89	860.80	1513.73
64.00	1,583.17	1.00	1328.49	2873.37	1320.28	2834.01
65.00	2,182.60	1.00	1882.88	4756.25	1874.88	4708.89
66.00	2,874.40	1.00	2528.50	7284.75	2520.57	7229.46
67.00	3,653.14	1.00	3263.77	10548.52	3256.00	10485.46
68.00	4,526.71	1.00	4089.92	14638.44	4082.13	14567.59
68.01	7,287.22	0.01	59.07	14697.51	58.52	14626.11
68.65	8,267.32	0.64	4977.45	19674.97	4974.16	19600.27

STAGE STORAGE TABLE (WQB – PB2)						
ELEV	AREA (sq. ft.)	DEPT H (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)	CONIC INC. VOL. (cu. ft.)	CONIC TOTAL VOL. (cu. ft.)
63.00	365.69	N/A	N/A	0.00	N/A	0.00
64.00	1,440.62	1.00	903.15	903.15	844.04	844.04
65.00	3,036.75	1.00	2238.69	3141.84	2189.66	3033.70
66.00	4,802.95	1.00	3919.85	7061.69	3886.26	6919.96
67.00	6,640.07	1.00	5721.51	12783.20	5696.77	12616.73
68.00	8,545.08	1.00	7592.58	20375.78	7572.58	20189.32
68.01	12,568.07	0.01	105.57	20481.34	104.92	20294.24
68.65	13,924.56	0.64	8477.64	28958.98	8473.93	28768.17

STAGE STORAGE TABLE (FOREBAY – FE1)						
ELEV	AREA (sq. ft.)	DEPT H (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)	CONIC INC. VOL. (cu. ft.)	CONIC TOTAL VOL. (cu. ft.)
68.00	278.92	N/A	N/A	0.00	N/A	0.00
69.00	520.85	1.00	399.88	399.88	393.64	393.64

STAGE STORAGE TABLE (FOREBAY – LO1)						
ELEV	AREA (sq. ft.)	DEPT H (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)	CONIC INC. VOL. (cu. ft.)	CONIC TOTAL VOL. (cu. ft.)
69.00	115.15	N/A	N/A	0.00	N/A	0.00
70.00	263.54	1.00	189.35	189.35	184.30	184.30
71.00	553.48	1.00	408.51	597.86	399.65	583.95

STAGE STORAGE TABLE (FOREBAY – LO2 & LO3)						
ELEV	AREA (sq. ft.)	DEPT H (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)	CONIC INC. VOL. (cu. ft.)	CONIC TOTAL VOL. (cu. ft.)
70.00	565.27	N/A	N/A	0.00	N/A	0.00
71.00	1,422.56	1.00	993.92	993.92	961.53	961.53

4613.R HydroCAD

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Type III 24-hr 100-Yr Rainfall=7.81"

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Stage-Area-Storage for Pond PB1: Pond West

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
68.65	8,267	0	71.25	13,530	28,115
68.70	8,344	415	71.30	13,695	28,796
68.75	8,421	834	71.35	13,860	29,484
68.80	8,498	1,257	71.40	14,025	30,182
68.85	8,574	1,684	71.45	14,190	30,887
68.90	8,651	2,115	71.50	14,355	31,601
68.95	8,728	2,549			
69.00	8,805	2,988			
69.05	8,919	3,431			
69.10	9,034	3,880			
69.15	9,148	4,334			
69.20	9,263	4,794			
69.25	9,377	5,260			
69.30	9,491	5,732			
69.35	9,606	6,209			
69.40	9,720	6,693			
69.45	9,835	7,182			
69.50	9,949	7,676			
69.55	10,063	8,176			
69.60	10,178	8,682			
69.65	10,292	9,194			
69.70	10,407	9,712			
69.75	10,521	10,235			
69.80	10,635	10,764			
69.85	10,750	11,298			
69.90	10,864	11,839			
69.95	10,979	12,385			
70.00	11,093	12,937			
70.05	11,174	13,493			
70.10	11,254	14,054			
70.15	11,335	14,619			
70.20	11,415	15,187			
70.25	11,496	15,760			
70.30	11,577	16,337			
70.35	11,657	16,918			
70.40	11,738	17,503			
70.45	11,818	18,092			
70.50	11,899	18,685			
70.55	11,980	19,282			
70.60	12,060	19,883			
70.65	12,141	20,488			
70.70	12,221	21,097			
70.75	12,302	21,710			
70.80	12,383	22,327			
70.85	12,463	22,948			
70.90	12,544	23,573			
70.95	12,624	24,202			
71.00	12,705	24,836			
71.05	12,870	25,475			
71.10	13,035	26,123			
71.15	13,200	26,778			
71.20	13,365	27,443			

4613.R HydroCAD

Prepared by Design Professionals Inc

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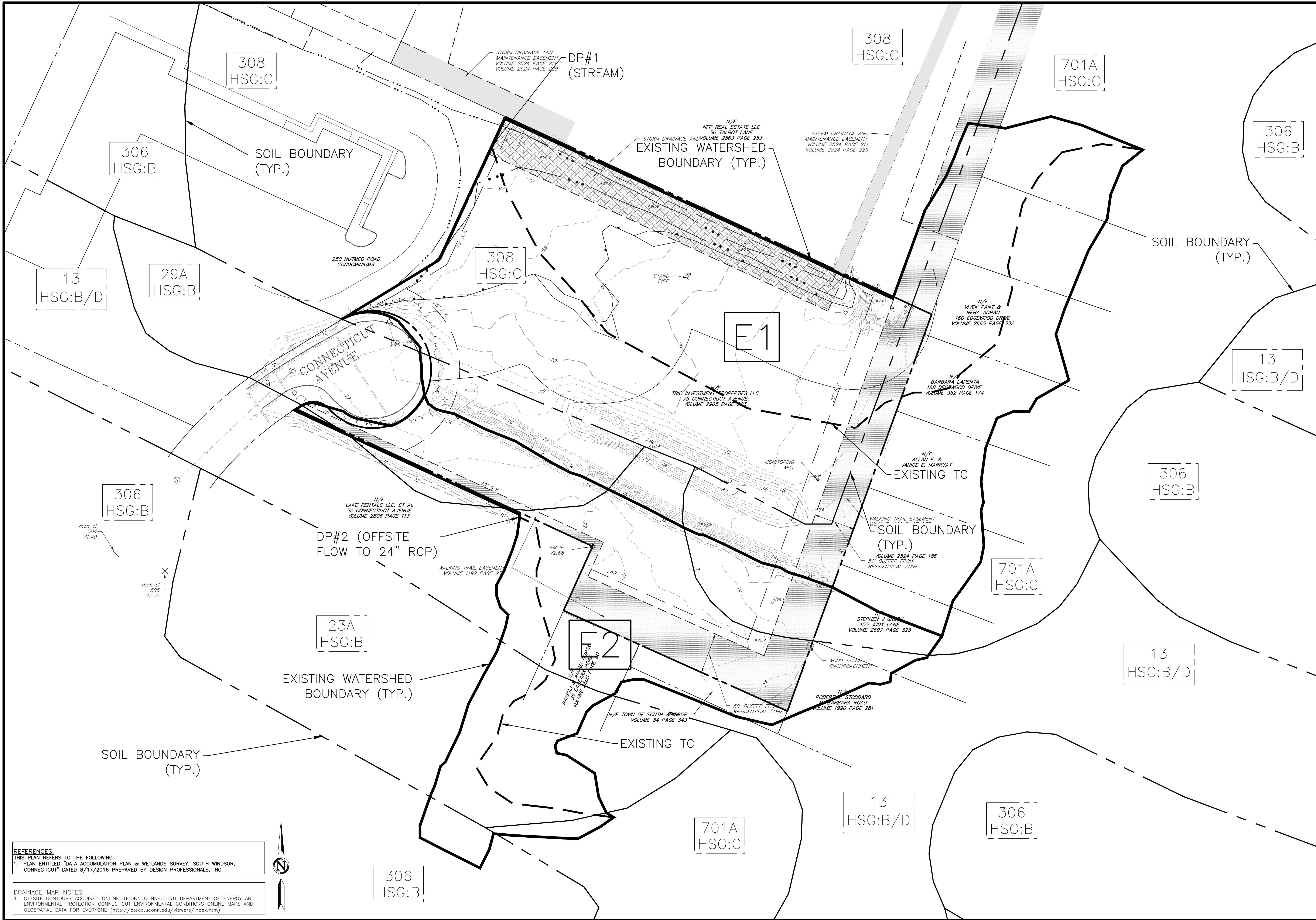
Type III 24-hr 100-Yr Rainfall=7.81"

Printed 3/10/2023

Stage-Area-Storage for Pond PB2: Pond North

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
68.65	13,925	0	71.25	20,523	43,612
68.70	14,031	699	71.30	20,822	44,645
68.75	14,136	1,403	71.35	21,121	45,694
68.80	14,242	2,113	71.40	21,420	46,757
68.85	14,348	2,827	71.45	21,719	47,836
68.90	14,454	3,547	71.50	22,018	48,929
68.95	14,559	4,273			
69.00	14,665	5,003			
69.05	14,773	5,739			
69.10	14,880	6,481			
69.15	14,988	7,227			
69.20	15,096	7,979			
69.25	15,203	8,737			
69.30	15,311	9,500			
69.35	15,419	10,268			
69.40	15,526	11,041			
69.45	15,634	11,820			
69.50	15,742	12,605			
69.55	15,849	13,395			
69.60	15,957	14,190			
69.65	16,064	14,990			
69.70	16,172	15,796			
69.75	16,280	16,608			
69.80	16,387	17,424			
69.85	16,495	18,246			
69.90	16,603	19,074			
69.95	16,710	19,907			
70.00	16,818	20,745			
70.05	16,929	21,588			
70.10	17,039	22,438			
70.15	17,150	23,292			
70.20	17,260	24,153			
70.25	17,371	25,018			
70.30	17,481	25,890			
70.35	17,592	26,766			
70.40	17,702	27,649			
70.45	17,813	28,537			
70.50	17,923	29,430			
70.55	18,034	30,329			
70.60	18,144	31,233			
70.65	18,255	32,143			
70.70	18,365	33,059			
70.75	18,476	33,980			
70.80	18,586	34,906			
70.85	18,697	35,838			
70.90	18,807	36,776			
70.95	18,918	37,719			
71.00	19,028	38,668			
71.05	19,327	39,627			
71.10	19,626	40,600			
71.15	19,925	41,589			
71.20	20,224	42,593			

APPENDIX G
Drainage Area Maps



REFERENCES:
THIS PLAN REFERS TO THE FOLLOWING:
1. PLAN ENTITLED "DATA ACCUMULATION PLAN & WETLANDS SURVEY, SOUTH WINDSOR, CONNECTICUT" DATED 8/17/2016 PREPARED BY DESIGN PROFESSIONALS, INC.

DRAINAGE MAP NOTES:
1. OFFSITE CONTOURS ACQUIRED ONLINE: UCONN CONNECTICUT DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION CONNECTICUT ENVIRONMENTAL CONDITIONS ONLINE MAPS AND GEOSPATIAL DATA FOR EVERYONE (<http://cteco.uconn.edu/viewers/index.htm>)



INDUSTRIAL FLEX

75 CONNECTICUT AVENUE
SOUTH WINDSOR, CONNECTICUT 06074

NO.

DATE

BY

REVISIONS

EXISTING DRAINAGE AREA MAP

SCALE: 0 25' 50' 100'

1" = 50'

SHEET

C-DA1

PREPARED FOR:

TRIO INVESTMENT PROPERTIES LLC
85 FELT ROAD, UNIT 504
SOUTH WINDSOR, CT

PROJECT NO.

DATE

DESIGNED BY

03/10/23

CHKD/CMM

BY

03/10/23

CHKD/CMM

BY

03/10/23

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