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Memorandum

To: Mr. David W. Roache, PE
Senior Vice President of Development
Mark Development, LLC
275 Grove Street, Suite 2-150
Newton, MA 02466
617.614.9149

Date: July 1, 2022

Project #: 15548.00

From: VHB

Re: Stormwater Update Memo
Elderly Housing with Services
Crafts Street & Court Street

Introduction

This memorandum has been prepared as a summary of the stormwater management design associated with proposed site plan changes made after the April 4th 2022 Stormwater Management Report as part of ongoing coordination with the City of Newton. Modifications to the proposed site design are reflected on the revised Figure 3 – Proposed Drainage Conditions, included in ***Appendix A*** of this memorandum, and consist of the following:

- Modification of Loading Area to accommodate exterior dumpster enclosure and access for trash removal
- Addition of two (2) exterior bike storage areas at the entry court and front entrance
- Addition of limited-access gates for the rear emergency vehicle access path
- Enhancements to proposed landscaping

The site plan changes result in a negligible impact on the proposed stormwater management design, and this memorandum has been prepared to document that the Project maintains conformance with the regulatory requirements as noted in the original report.

Regulatory Compliance

As demonstrated below, the proposed Project fully complies with the MassDEP Stormwater Management Standards:

Standard 1: No New Untreated Discharges or Erosion to Wetlands

No change to Standard 1 from previously submitted response.

Standard 2: Peak Rate Attenuation

The hydrologic analysis has been updated to confirm that, as summarized in Tables 3 and 4 below, there is no increase in peak discharge rates or runoff volumes between existing and proposed conditions for the 2, 10, 25, and 100-year storm events. An updated hydrocad model report for the proposed conditions is included in ***Appendix B***.

Table 3 Peak Discharge Rates (cfs)

Design Point	2-year	10-year	25-year	100-year
Design Point 1: Court Street				
Existing	0.3	0.6	0.8	1.3
Proposed	0.2	0.5	0.7	1.2
Design Point 2: Crafts Street				
Existing	4.8	9.9	13.3	20.4
Proposed	0.5	4.7	8.7	18.8

Table 4 Stormwater Volume Analysis (acre-ft)

Design Point	2-year	10-year	25-year	100-year
Design Point 1: Court Street				
Existing	0.02	0.04	0.06	0.09
Proposed	0.02	0.04	0.05	0.09
Design Point 2: Crafts Street				
Existing	0.35	0.71	0.95	1.48
Proposed	0.04	0.18	0.30	0.61

Standard 3: Stormwater Recharge

Recharge calculations have been updated to confirm that, as stated in Table 5 below and the Recharge Calculations included in ***Appendix C***, the Project maintains compliance with Standard 3.

Table 5 Summary of Recharge Calculations

Infiltration BMP	Provided Recharge Volume (cubic feet)
Subsurface Infiltration System "A"	1,192
Subsurface Infiltration System "B"	4050
Subsurface Infiltration System "C"	2,368
Total Provided Recharge	**7,610**
Total Required Recharge	**5,123**

Standard 4: Water Quality

The Project maintains treatment trains that provide a minimum of 80% TSS removal of stormwater runoff from all proposed impervious surfaces, as well as 44% pretreatment from non-roof impervious areas prior to infiltration. The

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Project still provides an average phosphorous reduction of 91% by treating the 1.0-inch volume of runoff. Supporting water quality calculations are included in ***Appendix D***.

Standard 5: Land Uses with Higher Potential Pollutant Loads (LUHPPLs)

No change to Standard 5 from previously submitted response.

Standard 6: Critical Areas

No change to Standard 6 from previously submitted response.

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the Maximum Extent Practicable

No change to Standard 7 from previously submitted response.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Controls

No change to Standard 8 from previously submitted response.

Standard 9: Operation and Maintenance Plan

No change to Standard 9 from previously submitted response.

Standard 10: Prohibition of Illicit Discharges

No change to Standard 10 from previously submitted response.

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Appendices

Appendix A: Drainage Figures

- Figure 3 – Proposed Drainage Conditions

Appendix B: HydroCAD Analysis: Proposed Conditions

- HydroCAD Analysis: Proposed Conditions
    - 2-Year Storm
    - 10-Year Storm
    - 25-Year Storm
    - 100-Year Storm

Appendix C: Recharge Volumes and Drawdown Analysis

- Recharge Calculations

Appendix D: Water Quality Calculations

- Water Quality Volume Calculations
- Phosphorus Removal Worksheets

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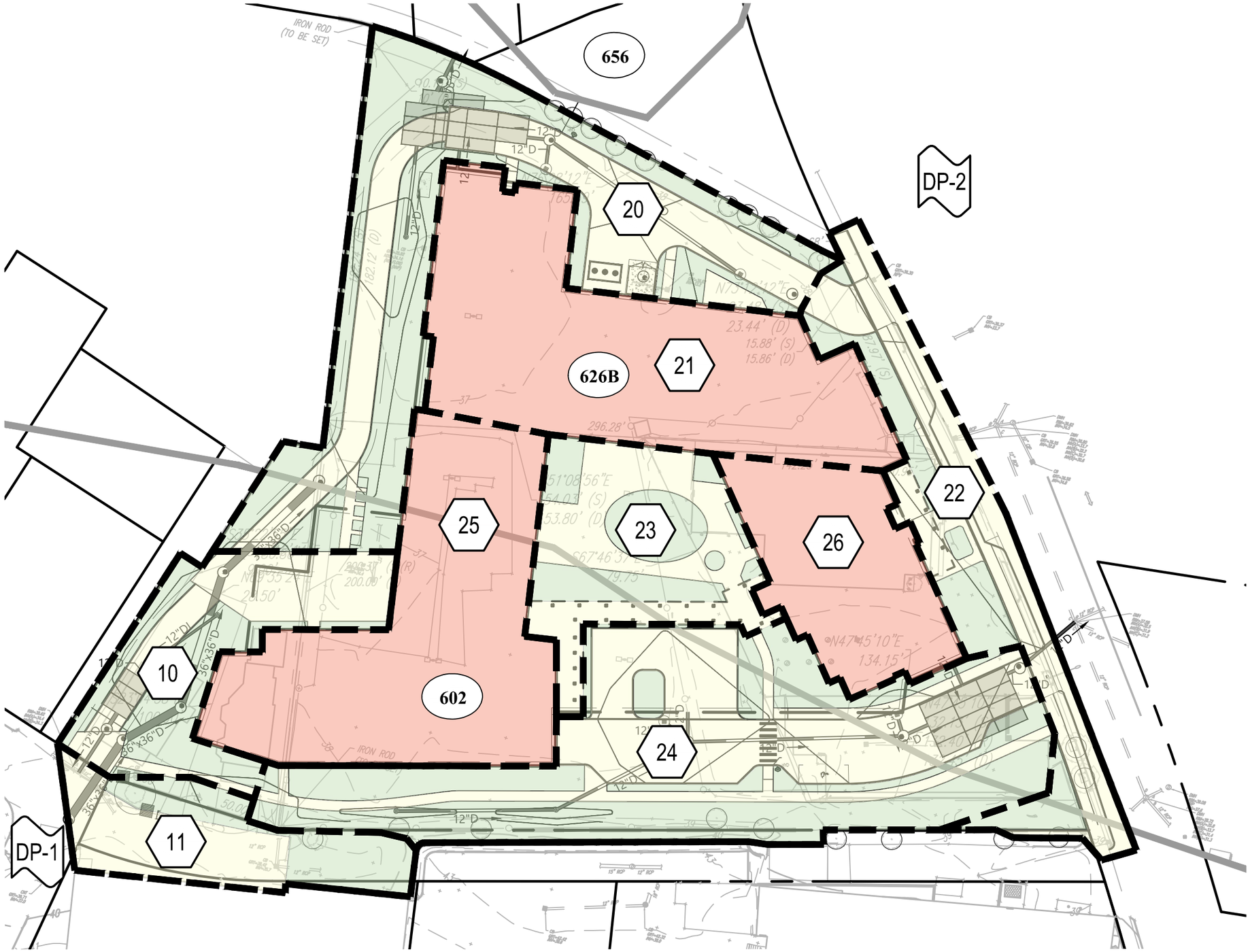
Appendix A: Drainage Figures

- Figure 3 – Proposed Drainage Conditions



Legend

SYMBOLS

- DESIGN POINT
- DRAINAGE AREA DESIGNATION
- POND

LINETYPES

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE
- SOIL TYPE BOUNDARY

SCS SOIL CLASSIFICATIONS

- 656 — UDORTHENTS-URBAN LAND COMPLEX
- 626B — MERRIMAC-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES, HSG A
- 602 — URBAN LAND

IMPERVIOUS AREAS

- BUILDING
- IMPERVIOUS
- PERVIOUS

0 25 50 100Feet

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Proposed Drainage Conditions
Elderly Housing with Services
Crafts Street & Court Street
Newton, MA

Figure 3

R1 - 03/31/2022
R2 - 07/01/2022

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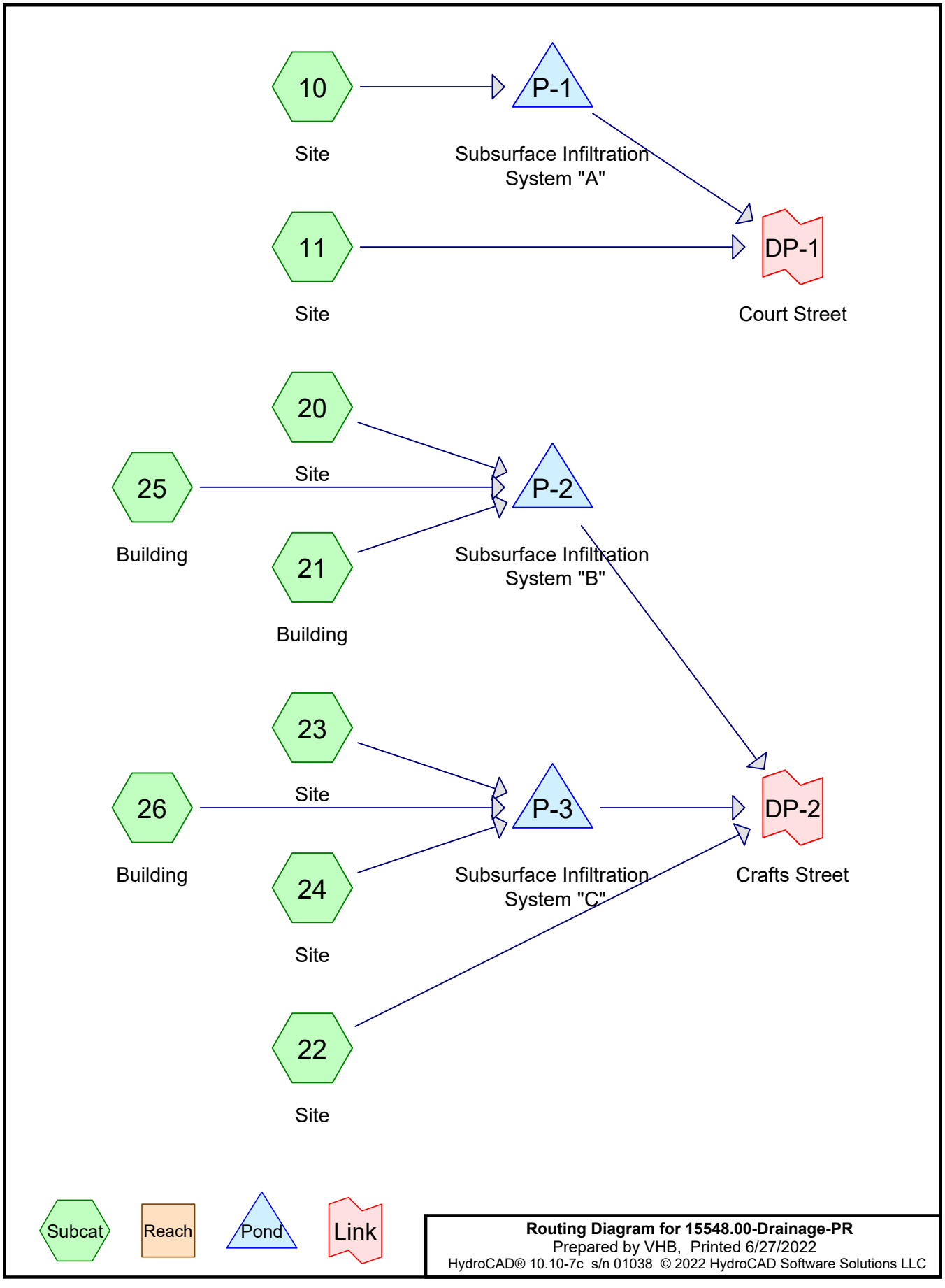
Appendix B: HydroCAD Analysis: Proposed Conditions

- HydroCAD Analysis: Proposed Conditions
    - 2-Year Storm
    - 10-Year Storm
    - 25-Year Storm
    - 100-Year Storm



Routing Diagram for 15548.00-Drainage-PR
Prepared by VHB, Printed 6/27/2022

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.916	49	50-75% Grass cover, Fair, HSG A (10, 11, 20, 22, 23, 24)
1.032	98	Paved parking, HSG A (10, 11, 20, 22, 23, 24)
1.013	98	Roofs, HSG A (21, 25, 26)
2.962	**83**	**TOTAL AREA**

Time span=0.00-25.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment10: Site Runoff Area=9,065 sf 53.89% Impervious Runoff Depth=1.13"
Tc=5.0 min CN=75 Runoff=0.27 cfs 0.020 af

Subcatchment11: Site Runoff Area=6,680 sf 56.74% Impervious Runoff Depth=1.25"
Tc=5.0 min CN=77 Runoff=0.22 cfs 0.016 af

Subcatchment20: Site Runoff Area=22,160 sf 44.13% Impervious Runoff Depth=0.91"
Tc=5.0 min CN=71 Runoff=0.50 cfs 0.039 af

Subcatchment21: Building Runoff Area=18,520 sf 100.00% Impervious Runoff Depth=3.02"
Tc=5.0 min CN=98 Runoff=1.35 cfs 0.107 af

Subcatchment22: Site Runoff Area=11,480 sf 68.07% Impervious Runoff Depth=1.58"
Tc=5.0 min CN=82 Runoff=0.49 cfs 0.035 af

Subcatchment23: Site Runoff Area=9,590 sf 61.26% Impervious Runoff Depth=1.37"
Tc=5.0 min CN=79 Runoff=0.35 cfs 0.025 af

Subcatchment24: Site Runoff Area=25,885 sf 49.53% Impervious Runoff Depth=1.01"
Tc=5.0 min CN=73 Runoff=0.67 cfs 0.050 af

Subcatchment25: Building Runoff Area=17,390 sf 100.00% Impervious Runoff Depth=3.02"
Tc=5.0 min CN=98 Runoff=1.27 cfs 0.100 af

Subcatchment26: Building Runoff Area=8,235 sf 100.00% Impervious Runoff Depth=3.02"
Tc=5.0 min CN=98 Runoff=0.60 cfs 0.048 af

Pond P-1: Subsurface Infiltration System "A" Peak Elev=31.34' Storage=0.004 af Inflow=0.27 cfs 0.020 af
Discarded=0.07 cfs 0.020 af Primary=0.00 cfs 0.000 af Outflow=0.07 cfs 0.020 af

Pond P-2: Subsurface Infiltration System "B" Peak Elev=32.93' Storage=0.071 af Inflow=3.11 cfs 0.246 af
Discarded=0.61 cfs 0.246 af Primary=0.00 cfs 0.000 af Outflow=0.61 cfs 0.246 af

Pond P-3: Subsurface Infiltration System "C" Peak Elev=31.45' Storage=0.031 af Inflow=1.61 cfs 0.123 af
Discarded=0.37 cfs 0.123 af Primary=0.00 cfs 0.000 af Outflow=0.37 cfs 0.123 af

Link DP-1: Court Street Inflow=0.22 cfs 0.016 af
Primary=0.22 cfs 0.016 af

Link DP-2: Crafts Street Inflow=0.49 cfs 0.035 af
Primary=0.49 cfs 0.035 af

Total Runoff Area = 2.962 ac Runoff Volume = 0.439 af Average Runoff Depth = 1.78"
30.93% Pervious = 0.916 ac 69.07% Impervious = 2.046 ac

Summary for Subcatchment 10: Site

[49] Hint: Tc<2dt may require smaller dt

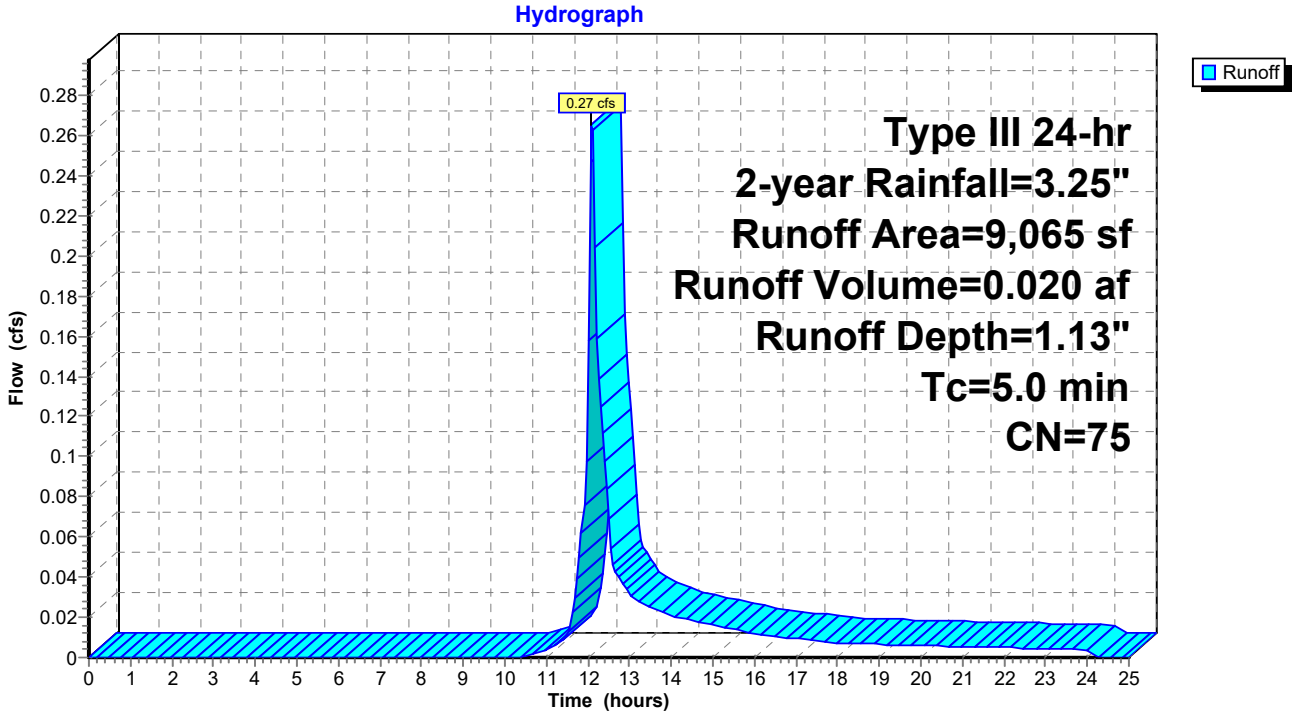
Runoff = 0.27 cfs @ 12.09 hrs, Volume= 0.020 af, Depth= 1.13"
Routed to Pond P-1 : Subsurface Infiltration System "A"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.25"

Area (sf)	CN	Description
4,885	98	Paved parking, HSG A
0	98	Roofs, HSG A
4,180	49	50-75% Grass cover, Fair, HSG A
9,065	75	Weighted Average
4,180		46.11% Pervious Area
4,885		53.89% Impervious Area

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

Subcatchment 10: Site



Summary for Subcatchment 11: Site

[49] Hint: Tc<2dt may require smaller dt

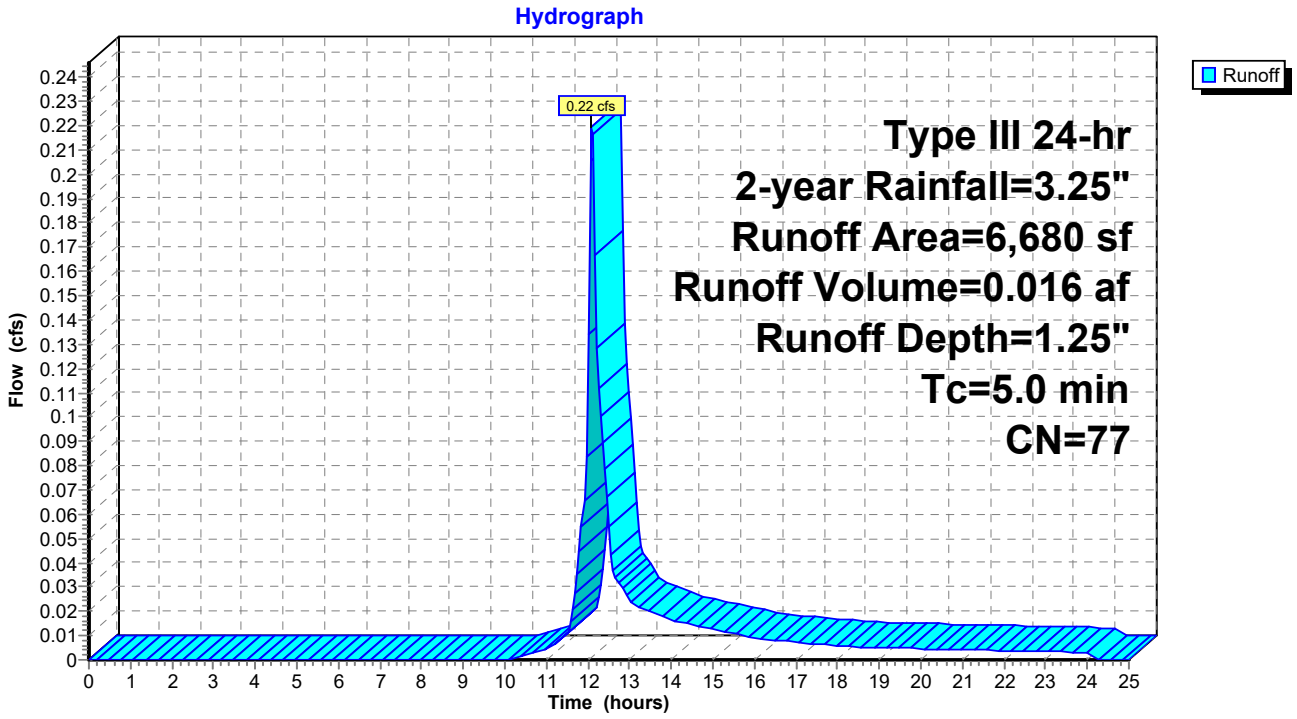
Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.016 af, Depth= 1.25"
Routed to Link DP-1 : Court Street

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.25"

Area (sf)	CN	Description
3,790	98	Paved parking, HSG A
2,890	49	50-75% Grass cover, Fair, HSG A
6,680	77	Weighted Average
2,890		43.26% Pervious Area
3,790		56.74% Impervious Area

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

Subcatchment 11: Site



Summary for Subcatchment 20: Site

[49] Hint: Tc<2dt may require smaller dt

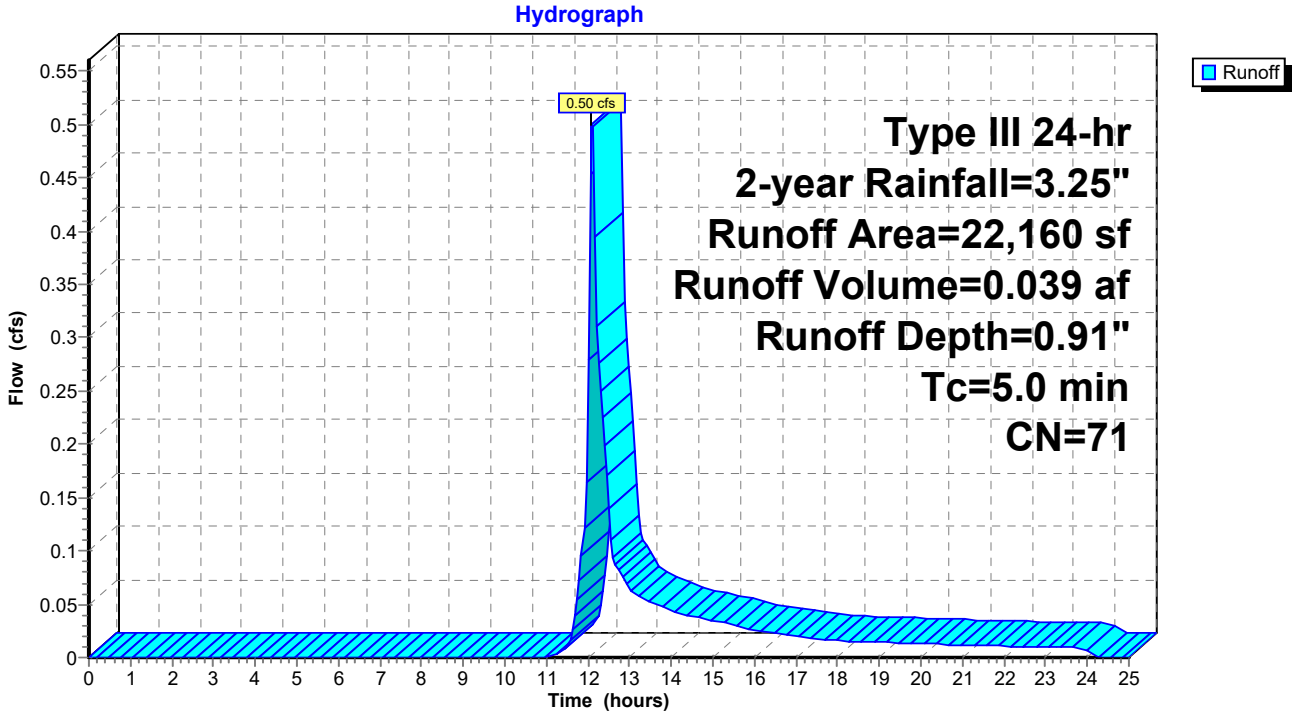
Runoff = 0.50 cfs @ 12.09 hrs, Volume= 0.039 af, Depth= 0.91"
Routed to Pond P-2 : Subsurface Infiltration System "B"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.25"

Area (sf)	CN	Description
9,780	98	Paved parking, HSG A
0	98	Roofs, HSG A
12,380	49	50-75% Grass cover, Fair, HSG A
22,160	71	Weighted Average
12,380		55.87% Pervious Area
9,780		44.13% Impervious Area

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

Subcatchment 20: Site



Summary for Subcatchment 21: Building

[49] Hint: Tc<2dt may require smaller dt

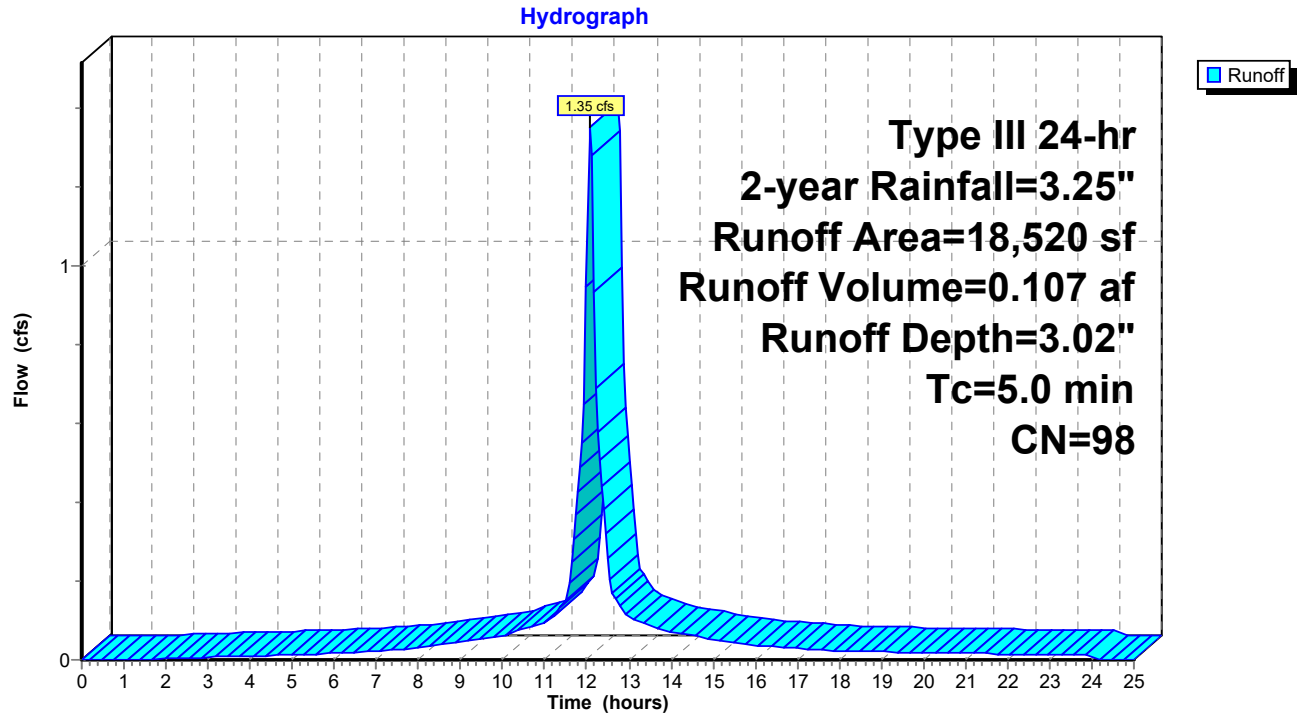
Runoff = 1.35 cfs @ 12.07 hrs, Volume= 0.107 af, Depth= 3.02"
Routed to Pond P-2 : Subsurface Infiltration System "B"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.25"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
18,520	98	Roofs, HSG A
0	49	50-75% Grass cover, Fair, HSG A
18,520	98	Weighted Average
18,520		100.00% Impervious Area

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

Subcatchment 21: Building



Summary for Subcatchment 22: Site

[49] Hint: Tc<2dt may require smaller dt

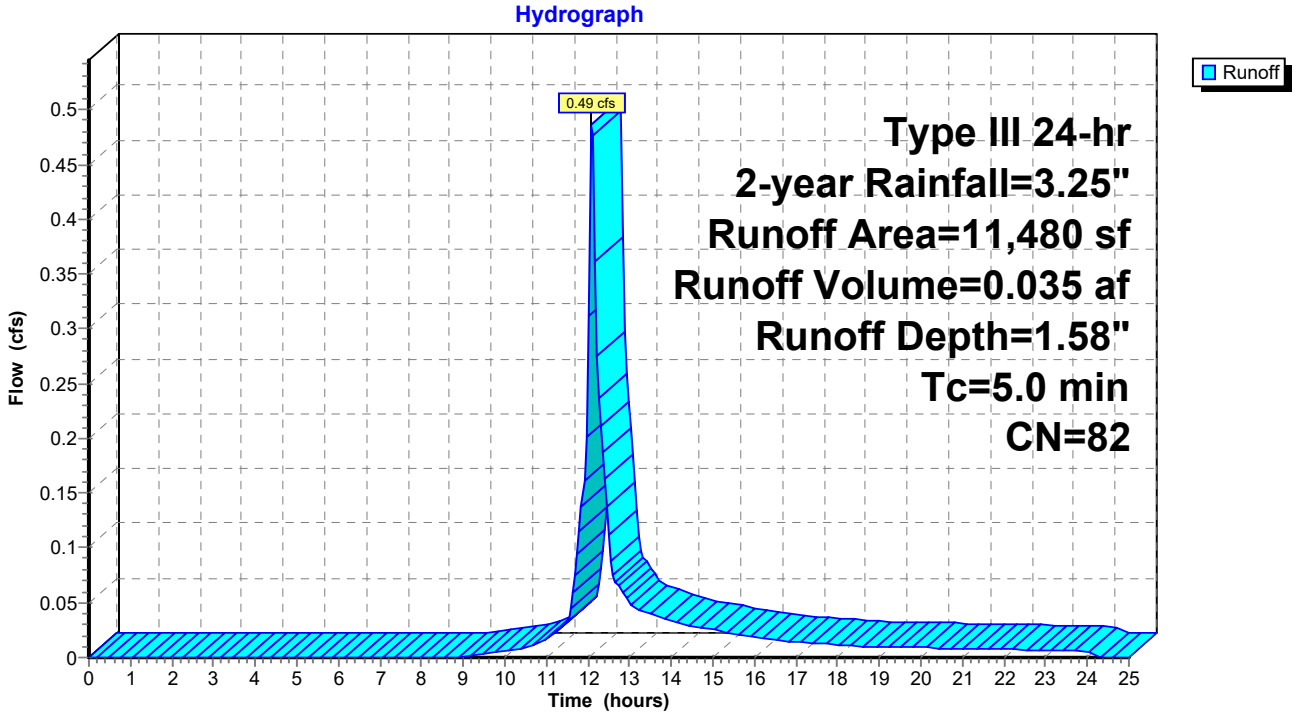
Runoff = 0.49 cfs @ 12.08 hrs, Volume= 0.035 af, Depth= 1.58"
Routed to Link DP-2 : Crafts Street

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.25"

Area (sf)	CN	Description
7,815	98	Paved parking, HSG A
0	98	Roofs, HSG A
3,665	49	50-75% Grass cover, Fair, HSG A
11,480	82	Weighted Average
3,665		31.93% Pervious Area
7,815		68.07% Impervious Area

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

Subcatchment 22: Site



Summary for Subcatchment 23: Site

[49] Hint: Tc<2dt may require smaller dt

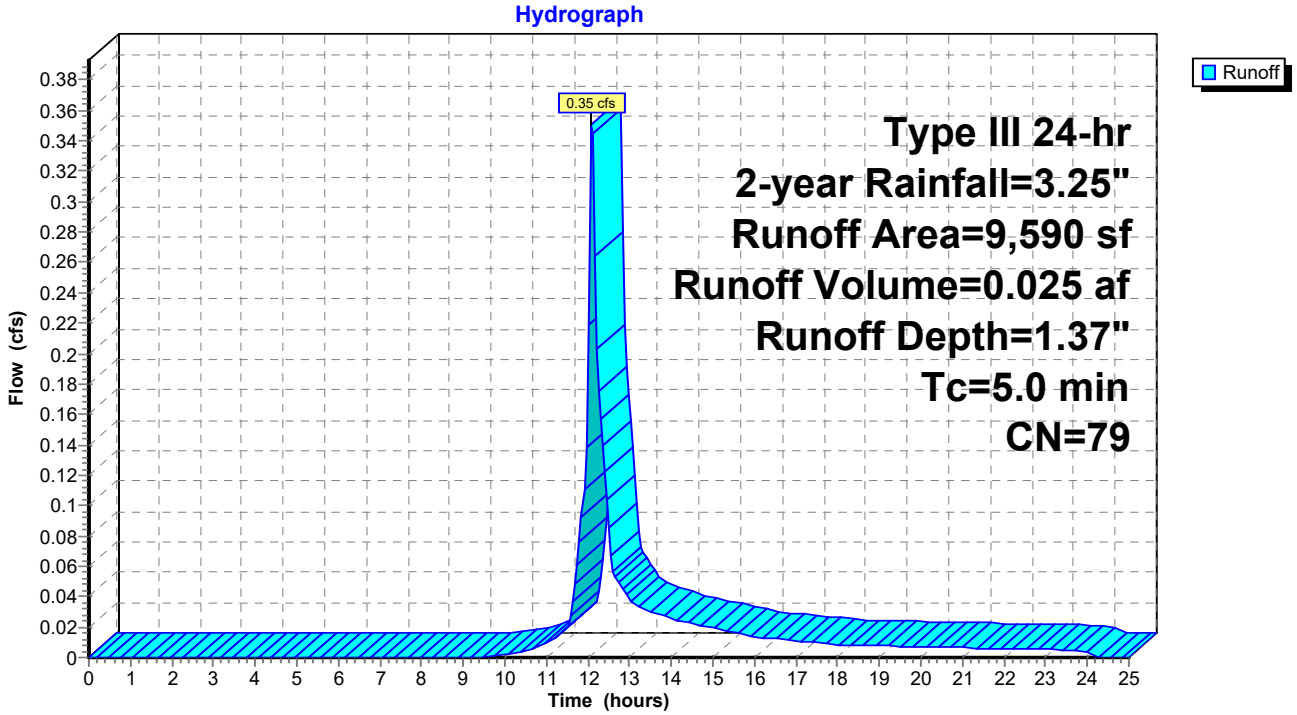
Runoff = 0.35 cfs @ 12.08 hrs, Volume= 0.025 af, Depth= 1.37"
Routed to Pond P-3 : Subsurface Infiltration System "C"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.25"

Area (sf)	CN	Description
5,875	98	Paved parking, HSG A
0	98	Roofs, HSG A
3,715	49	50-75% Grass cover, Fair, HSG A
9,590	79	Weighted Average
3,715		38.74% Pervious Area
5,875		61.26% Impervious Area

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

Subcatchment 23: Site



Summary for Subcatchment 24: Site

[49] Hint: Tc<2dt may require smaller dt

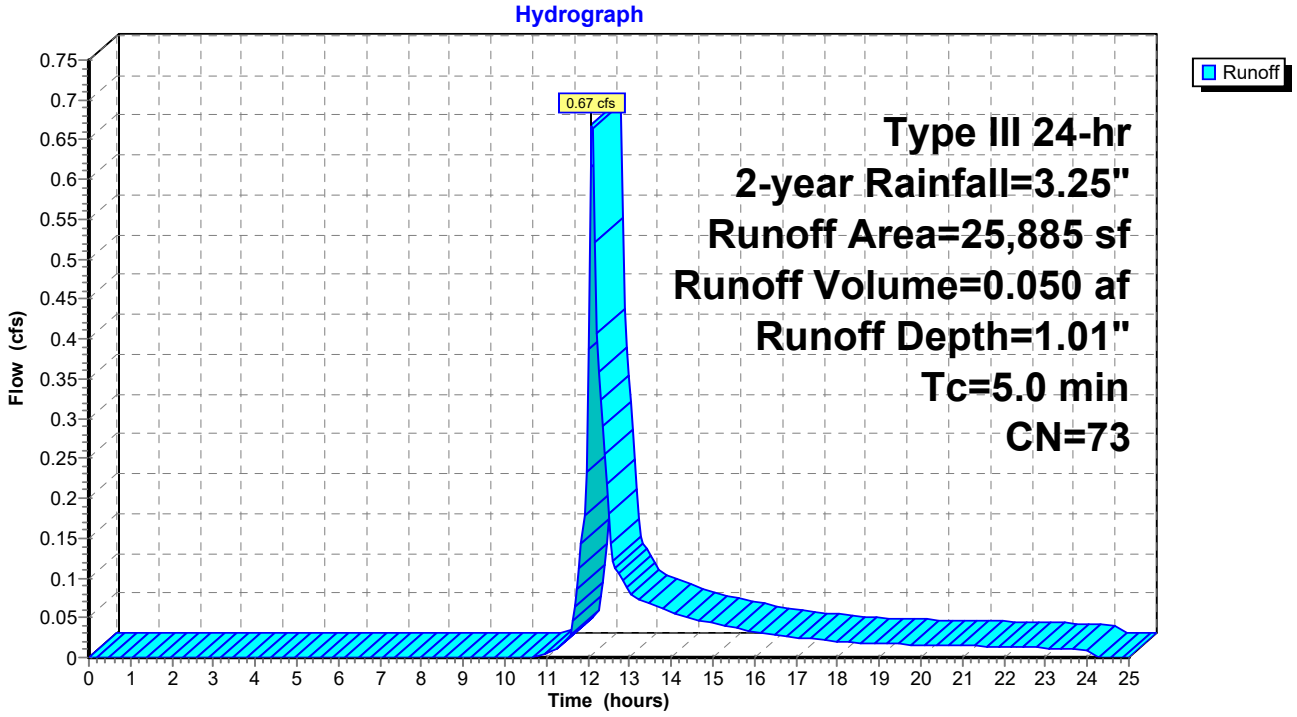
Runoff = 0.67 cfs @ 12.09 hrs, Volume= 0.050 af, Depth= 1.01"
Routed to Pond P-3 : Subsurface Infiltration System "C"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.25"

Area (sf)	CN	Description
12,820	98	Paved parking, HSG A
0	98	Roofs, HSG A
13,065	49	50-75% Grass cover, Fair, HSG A
25,885	73	Weighted Average
13,065		50.47% Pervious Area
12,820		49.53% Impervious Area

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

Subcatchment 24: Site



Summary for Subcatchment 25: Building

[49] Hint: Tc<2dt may require smaller dt

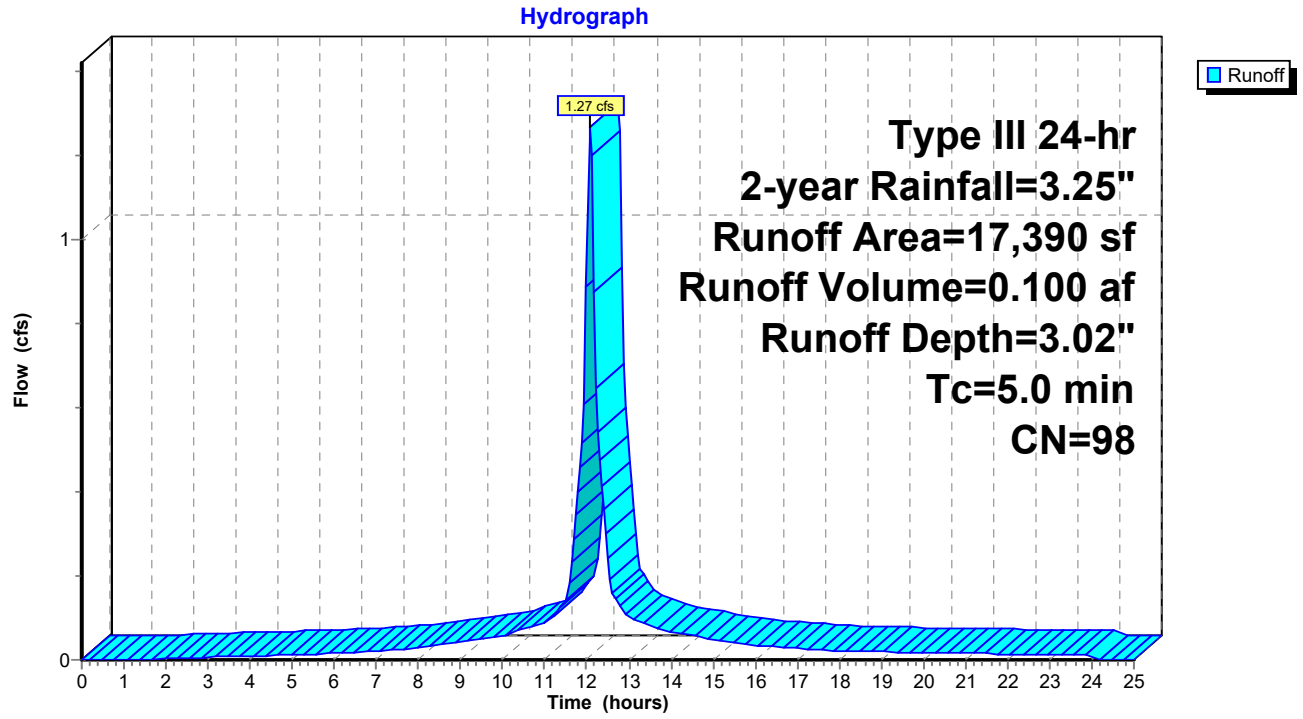
Runoff = 1.27 cfs @ 12.07 hrs, Volume= 0.100 af, Depth= 3.02"
Routed to Pond P-2 : Subsurface Infiltration System "B"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.25"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
17,390	98	Roofs, HSG A
0	49	50-75% Grass cover, Fair, HSG A
17,390	98	Weighted Average
17,390		100.00% Impervious Area

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

Subcatchment 25: Building



Summary for Subcatchment 26: Building

[49] Hint: Tc<2dt may require smaller dt

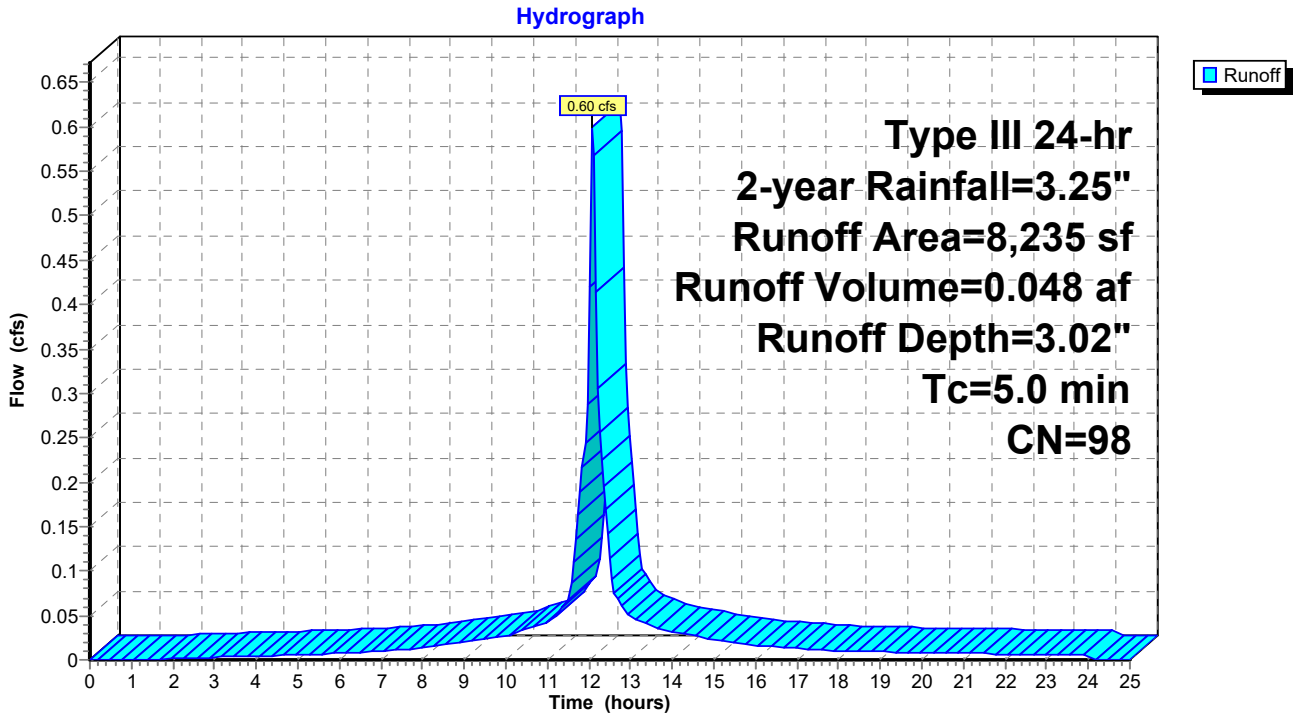
Runoff = 0.60 cfs @ 12.07 hrs, Volume= 0.048 af, Depth= 3.02"
Routed to Pond P-3 : Subsurface Infiltration System "C"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.25"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
8,235	98	Roofs, HSG A
0	49	50-75% Grass cover, Fair, HSG A
8,235	98	Weighted Average
8,235		100.00% Impervious Area

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

Subcatchment 26: Building



Summary for Pond P-1: Subsurface Infiltration System "A"

Inflow Area = 0.208 ac, 53.89% Impervious, Inflow Depth = 1.13" for 2-year event
Inflow = 0.27 cfs @ 12.09 hrs, Volume= 0.020 af
Outflow = 0.07 cfs @ 12.49 hrs, Volume= 0.020 af, Atten= 72%, Lag= 24.0 min
Discarded = 0.07 cfs @ 12.49 hrs, Volume= 0.020 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link DP-1 : Court Street

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 31.34' @ 12.49 hrs Surf.Area= 0.007 ac Storage= 0.004 af

Plug-Flow detention time= 17.0 min calculated for 0.020 af (100% of inflow)
Center-of-Mass det. time= 16.9 min (873.9 - 856.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	30.60'	0.000 af	**6.90'W x 43.19'L x 5.67'H Field A** 0.039 af Overall - 0.039 af Embedded = 0.000 af x 40.0% Voids
#2A	30.60'	0.029 af	**StormTrap ST1 SingleTrap 5-0** x 3 Inside #1 Inside= 82.7"W x 60.0"H => 29.76 sf x 14.06'L = 418.5 cf Outside= 82.7"W x 68.0"H => 39.08 sf x 14.06'L = 549.5 cf 6.90' x 42.19' Core + 0.00' x 0.50' Border = 6.90' x 43.19' System
		0.029 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	34.60'	**12.0" Round Culvert** L= 25.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 34.60' / 34.30' S= 0.0120 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	34.60'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	35.60'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	30.60'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 28.00'

Discarded OutFlow Max=0.07 cfs @ 12.49 hrs HW=31.34' (Free Discharge)
└**4=Exfiltration** (Controls 0.07 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=30.60' (Free Discharge)
└**1=Culvert** (Controls 0.00 cfs)
  └**2=Orifice/Grate** (Controls 0.00 cfs)
  └**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P-1: Subsurface Infiltration System "A" - Chamber Wizard Field A

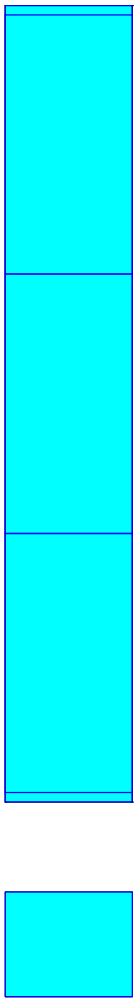
Chamber Model = StormTrap ST1 SingleTrap 5-0 (StormTrap ST1 SingleTrap® Type VI)
Inside= 82.7"W x 60.0"H => 29.76 sf x 14.06'L = 418.5 cf
Outside= 82.7"W x 68.0"H => 39.08 sf x 14.06'L = 549.5 cf

3 Chambers/Row x 14.06' Long = 42.19' Row Length +6.0" Border x 2 = 43.19' Base Length
1 Rows x 82.7" Wide = 6.90' Base Width
68.0" Chamber Height = 5.67' Field Height

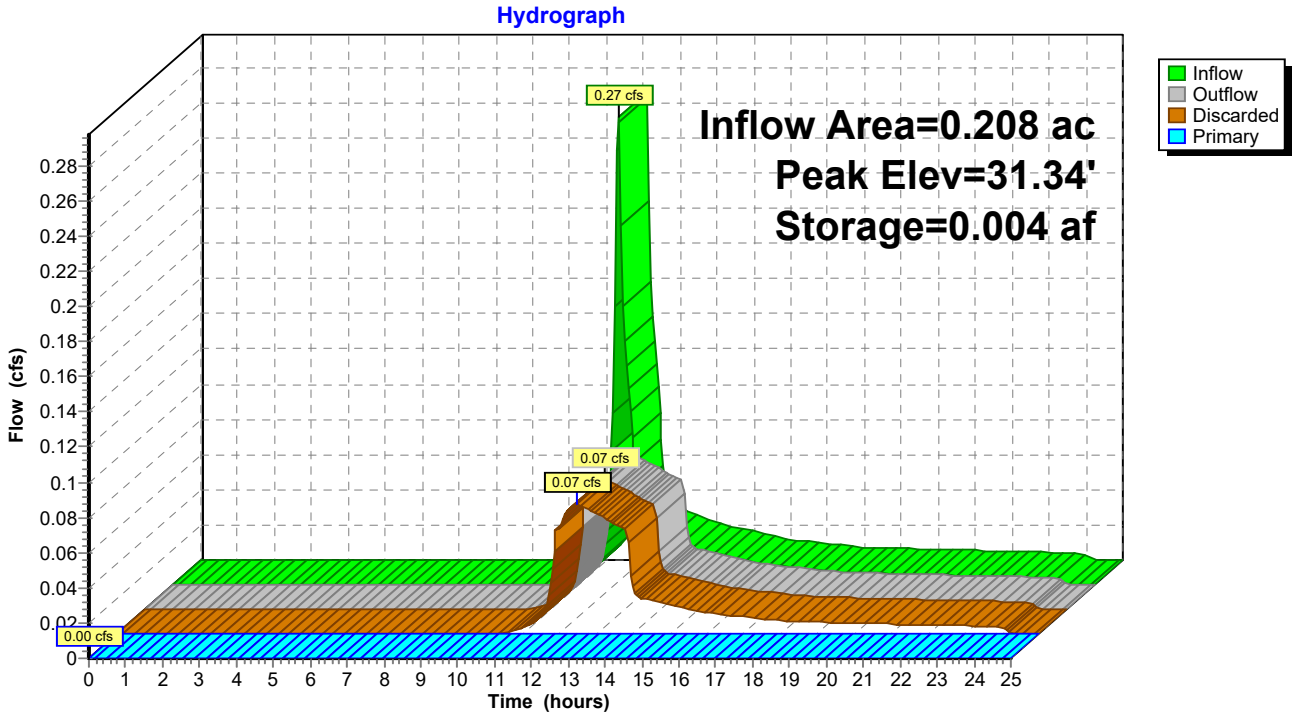
3 Chambers x 418.5 cf = 1,255.5 cf Chamber Storage
3 Chambers x 549.5 cf + 39.1 cf Border = 1,687.6 cf Displacement

Chamber Storage = 1,255.5 cf = 0.029 af
Overall Storage Efficiency = 74.4%
Overall System Size = 43.19' x 6.90' x 5.67'

3 Chambers (plus border)
62.5 cy Field



Pond P-1: Subsurface Infiltration System "A"



Summary for Pond P-2: Subsurface Infiltration System "B"

Inflow Area = 1.333 ac, 78.68% Impervious, Inflow Depth = 2.21" for 2-year event
Inflow = 3.11 cfs @ 12.07 hrs, Volume= 0.246 af
Outflow = 0.61 cfs @ 12.51 hrs, Volume= 0.246 af, Atten= 80%, Lag= 26.4 min
Discarded = 0.61 cfs @ 12.51 hrs, Volume= 0.246 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link DP-2 : Crafts Street

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 32.93' @ 12.51 hrs Surf.Area= 0.031 ac Storage= 0.071 af

Plug-Flow detention time= 39.3 min calculated for 0.246 af (100% of inflow)
Center-of-Mass det. time= 39.2 min (812.4 - 773.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	30.10'	0.000 af	**89.65'W x 15.06'L x 4.67'H Field A** 0.145 af Overall - 0.145 af Embedded = 0.000 af x 40.0% Voids
#2A	30.10'	0.100 af	**StormTrap ST1 SingleTrap 4-0**x 13 Inside #1 Inside= 82.7"W x 48.0"H => 23.79 sf x 14.06'L = 334.5 cf Outside= 82.7"W x 56.0"H => 32.18 sf x 14.06'L = 452.5 cf 13 Chambers in 13 Rows 89.65' x 14.06' Core + 0.00' x 0.50' Border = 89.65' x 15.06' System
#3	33.30'	0.001 af	**4.00'D x 3.10'H Vertical Cone/Cylinder**-Impervious
		0.101 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	33.10'	**12.0" Round Culvert X 2.00** L= 5.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 33.10' / 33.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Discarded	30.10'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 28.00'

Discarded OutFlow Max=0.61 cfs @ 12.51 hrs HW=32.92' (Free Discharge)
2=Exfiltration (Controls 0.61 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=30.10' (Free Discharge)
1=Culvert (Controls 0.00 cfs)

Pond P-2: Subsurface Infiltration System "B" - Chamber Wizard Field A

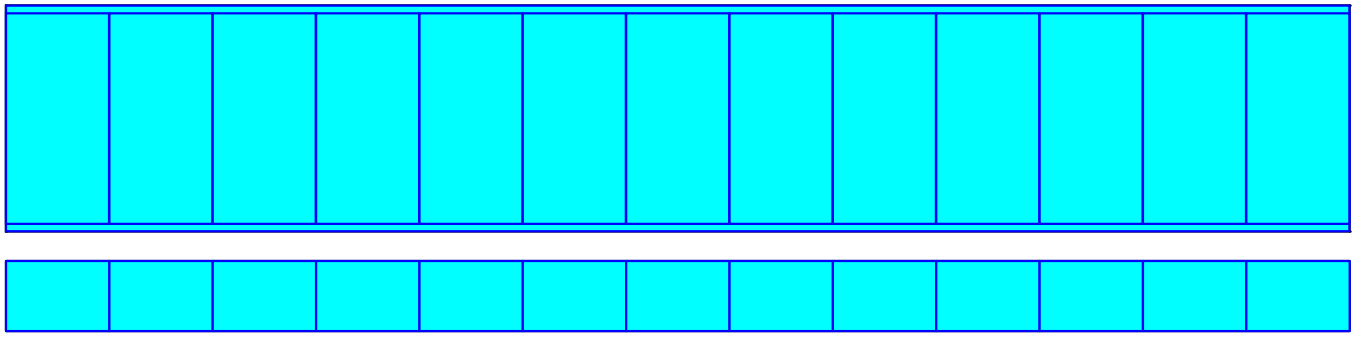
Chamber Model = StormTrap ST1 SingleTrap 4-0 (StormTrap ST1 SingleTrap® Type VI)
Inside= 82.7"W x 48.0"H => 23.79 sf x 14.06'L = 334.5 cf
Outside= 82.7"W x 56.0"H => 32.18 sf x 14.06'L = 452.5 cf

1 Chambers/Row x 14.06' Long = 14.06' Row Length +6.0" Border x 2 = 15.06' Base Length
13 Rows x 82.7" Wide = 89.65' Base Width
56.0" Chamber Height = 4.67' Field Height

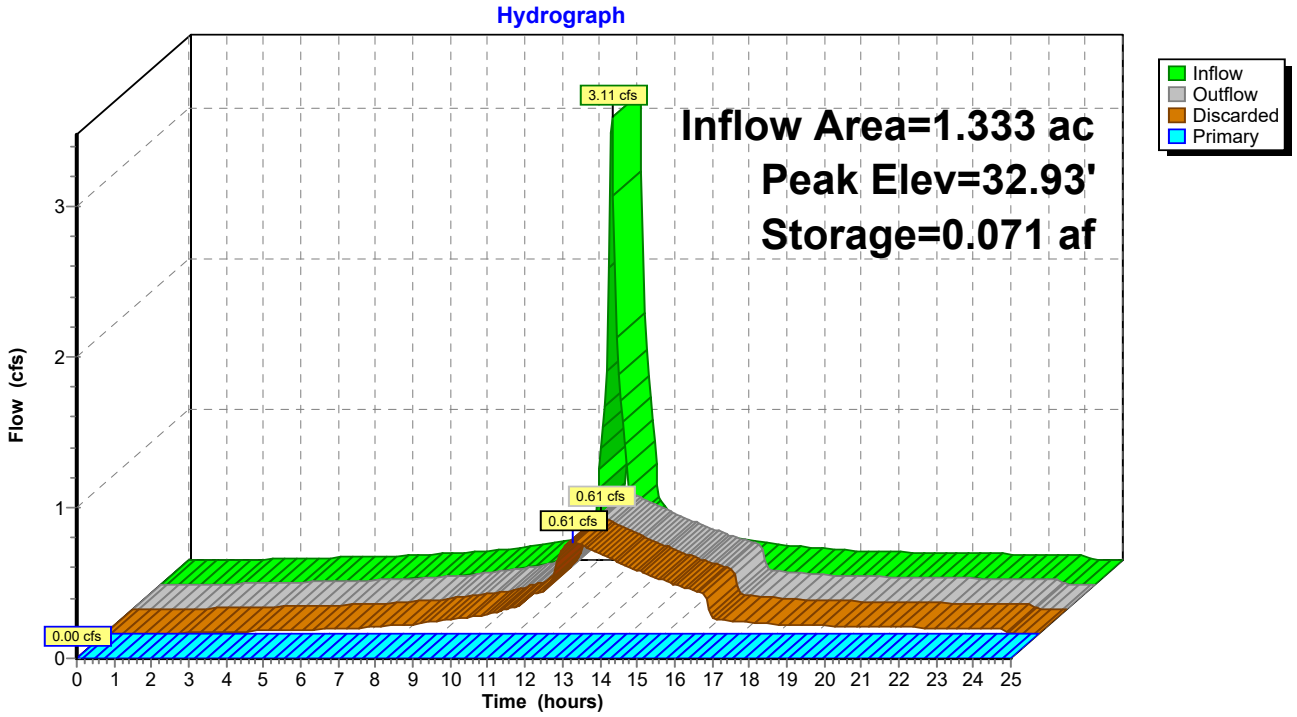
13 Chambers x 334.5 cf = 4,348.5 cf Chamber Storage
13 Chambers x 452.5 cf + 418.3 cf Border = 6,301.4 cf Displacement

Chamber Storage = 4,348.5 cf = 0.100 af
Overall Storage Efficiency = 69.0%
Overall System Size = 15.06' x 89.65' x 4.67'

13 Chambers (plus border)
233.4 cy Field



Pond P-2: Subsurface Infiltration System "B"



Summary for Pond P-3: Subsurface Infiltration System "C"

Inflow Area = 1.003 ac, 61.61% Impervious, Inflow Depth = 1.47" for 2-year event
Inflow = 1.61 cfs @ 12.08 hrs, Volume= 0.123 af
Outflow = 0.37 cfs @ 12.50 hrs, Volume= 0.123 af, Atten= 77%, Lag= 25.5 min
Discarded = 0.37 cfs @ 12.50 hrs, Volume= 0.123 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link DP-2 : Crafts Street

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 31.45' @ 12.50 hrs Surf.Area= 0.027 ac Storage= 0.031 af

Plug-Flow detention time= 26.4 min calculated for 0.123 af (100% of inflow)
Center-of-Mass det. time= 26.4 min (844.1 - 817.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	30.10'	0.000 af	**20.69'W x 57.25'L x 3.67'H Field A** 0.100 af Overall - 0.100 af Embedded = 0.000 af x 40.0% Voids
#2A	30.10'	0.069 af	**StormTrap ST1 SingleTrap 3-0**x 12 Inside #1 Inside= 82.7"W x 36.0"H => 17.81 sf x 14.06'L = 250.5 cf Outside= 82.7"W x 44.0"H => 25.28 sf x 14.06'L = 355.6 cf 12 Chambers in 3 Rows 20.69' x 56.25' Core + 0.00' x 0.50' Border = 20.69' x 57.25' System
#3	32.30'	0.001 af	**4.00'D x 5.10'H Vertical Cone/Cylinder**-Impervious
		0.070 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	32.10'	**12.0" Round Culvert** L= 5.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 32.10' / 32.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Discarded	30.10'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 28.00'

Discarded OutFlow Max=0.37 cfs @ 12.50 hrs HW=31.45' (Free Discharge)
↑**2=Exfiltration** (Controls 0.37 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=30.10' (Free Discharge)
↑**1=Culvert** (Controls 0.00 cfs)

Pond P-3: Subsurface Infiltration System "C" - Chamber Wizard Field A

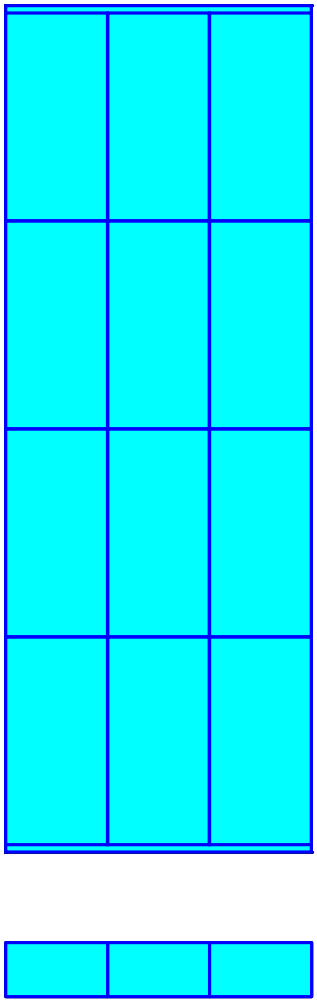
Chamber Model = StormTrap ST1 SingleTrap 3-0 (StormTrap ST1 SingleTrap® Type VI)
Inside= 82.7"W x 36.0"H => 17.81 sf x 14.06'L = 250.5 cf
Outside= 82.7"W x 44.0"H => 25.28 sf x 14.06'L = 355.6 cf

4 Chambers/Row x 14.06' Long = 56.25' Row Length +6.0" Border x 2 = 57.25' Base Length
3 Rows x 82.7" Wide = 20.69' Base Width
44.0" Chamber Height = 3.67' Field Height

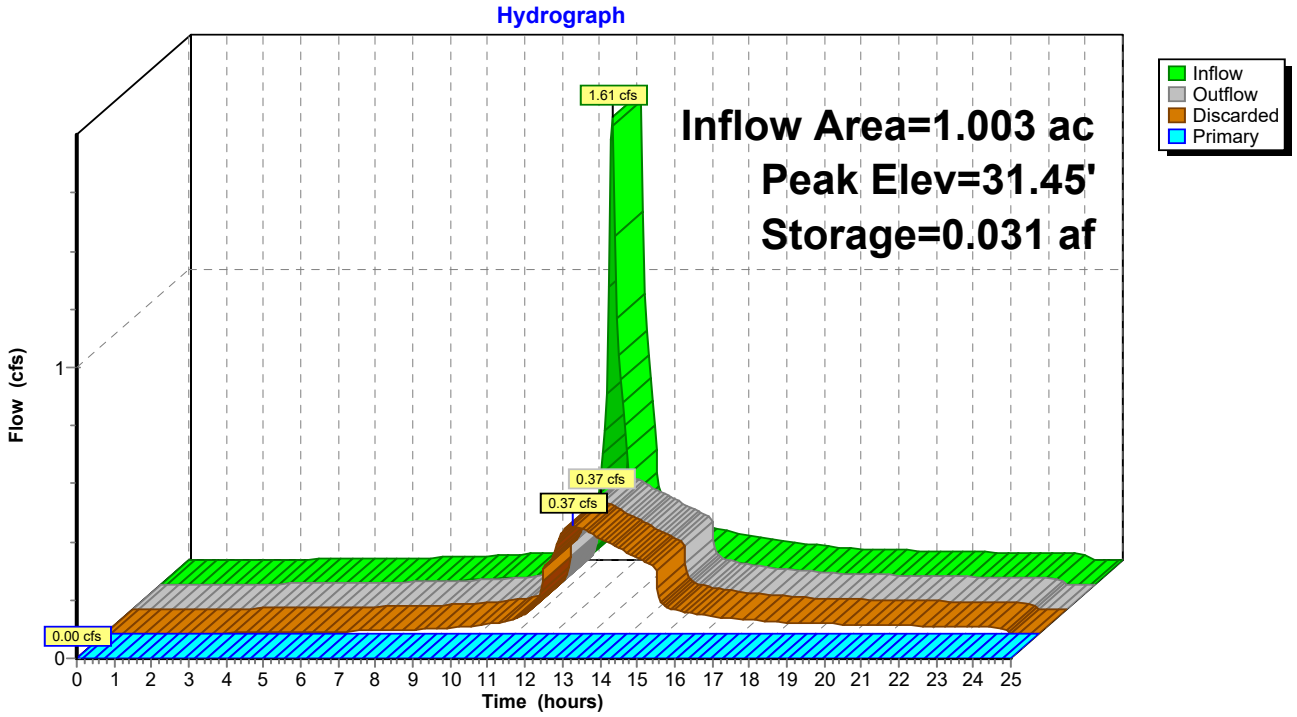
12 Chambers x 250.5 cf = 3,006.0 cf Chamber Storage
12 Chambers x 355.6 cf + 75.9 cf Border = 4,342.7 cf Displacement

Chamber Storage = 3,006.0 cf = 0.069 af
Overall Storage Efficiency = 69.2%
Overall System Size = 57.25' x 20.69' x 3.67'

12 Chambers (plus border)
160.8 cy Field



Pond P-3: Subsurface Infiltration System "C"

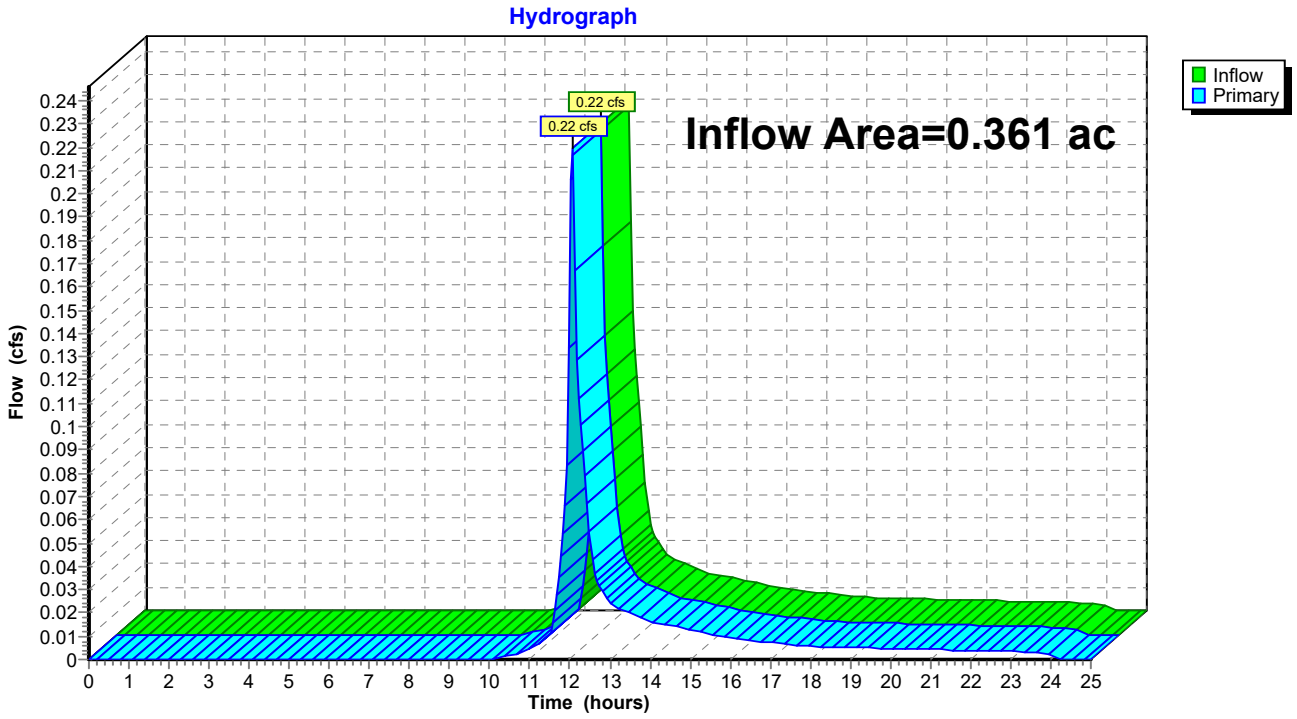


Summary for Link DP-1: Court Street

Inflow Area = 0.361 ac, 55.10% Impervious, Inflow Depth = 0.53" for 2-year event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 0.016 af
Primary = 0.22 cfs @ 12.08 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 27L

Primary outflow = Inflow, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs

Link DP-1: Court Street

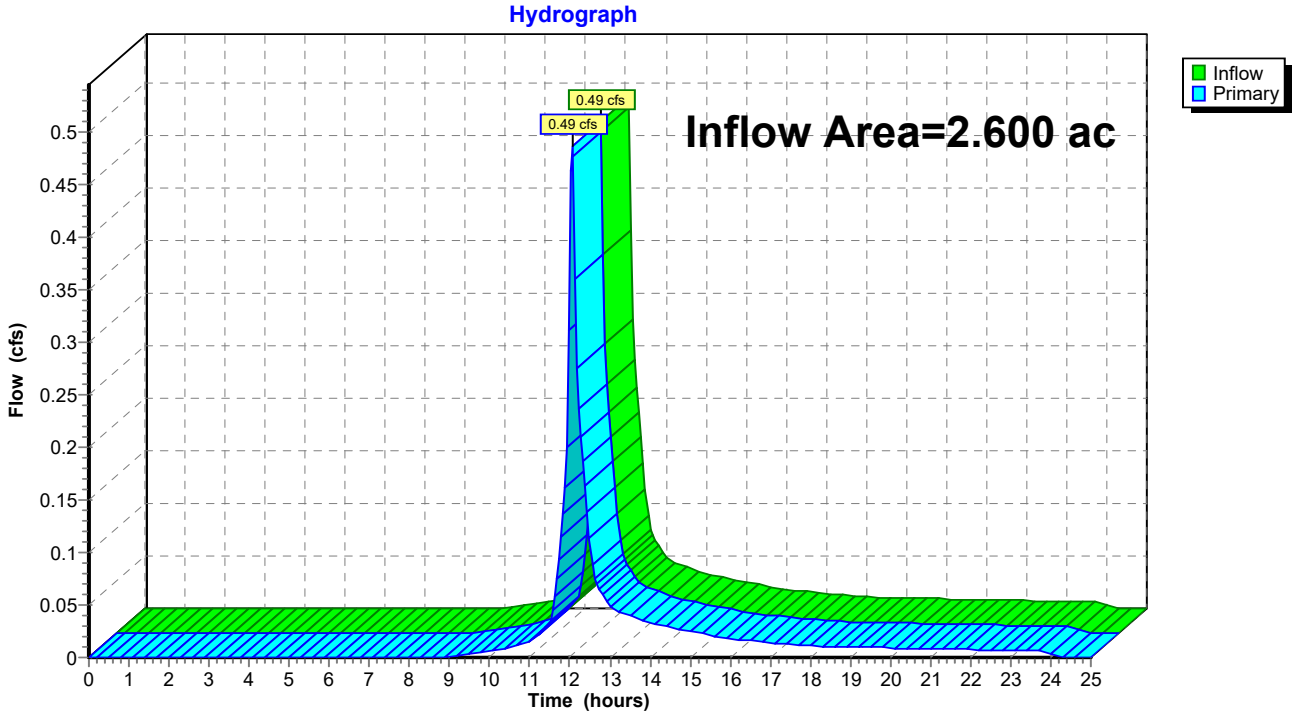


Summary for Link DP-2: Crafts Street

Inflow Area = 2.600 ac, 71.02% Impervious, Inflow Depth = 0.16" for 2-year event
Inflow = 0.49 cfs @ 12.08 hrs, Volume= 0.035 af
Primary = 0.49 cfs @ 12.08 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 27L

Primary outflow = Inflow, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs

Link DP-2: Crafts Street



Time span=0.00-25.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment10: Site Runoff Area=9,065 sf 53.89% Impervious Runoff Depth=2.56"
Tc=5.0 min CN=75 Runoff=0.62 cfs 0.044 af

Subcatchment11: Site Runoff Area=6,680 sf 56.74% Impervious Runoff Depth=2.73"
Tc=5.0 min CN=77 Runoff=0.49 cfs 0.035 af

Subcatchment20: Site Runoff Area=22,160 sf 44.13% Impervious Runoff Depth=2.22"
Tc=5.0 min CN=71 Runoff=1.31 cfs 0.094 af

Subcatchment21: Building Runoff Area=18,520 sf 100.00% Impervious Runoff Depth=4.89"
Tc=5.0 min CN=98 Runoff=2.15 cfs 0.173 af

Subcatchment22: Site Runoff Area=11,480 sf 68.07% Impervious Runoff Depth=3.20"
Tc=5.0 min CN=82 Runoff=0.98 cfs 0.070 af

Subcatchment23: Site Runoff Area=9,590 sf 61.26% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=79 Runoff=0.75 cfs 0.053 af

Subcatchment24: Site Runoff Area=25,885 sf 49.53% Impervious Runoff Depth=2.38"
Tc=5.0 min CN=73 Runoff=1.65 cfs 0.118 af

Subcatchment25: Building Runoff Area=17,390 sf 100.00% Impervious Runoff Depth=4.89"
Tc=5.0 min CN=98 Runoff=2.02 cfs 0.163 af

Subcatchment26: Building Runoff Area=8,235 sf 100.00% Impervious Runoff Depth=4.89"
Tc=5.0 min CN=98 Runoff=0.96 cfs 0.077 af

Pond P-1: Subsurface Infiltration System "A" Peak Elev=33.05' Storage=0.014 af Inflow=0.62 cfs 0.044 af
Discarded=0.11 cfs 0.044 af Primary=0.00 cfs 0.000 af Outflow=0.11 cfs 0.044 af

Pond P-2: Subsurface Infiltration System "B" Peak Elev=33.82' Storage=0.093 af Inflow=5.47 cfs 0.430 af
Discarded=0.72 cfs 0.357 af Primary=3.29 cfs 0.073 af Outflow=4.01 cfs 0.430 af

Pond P-3: Subsurface Infiltration System "C" Peak Elev=32.66' Storage=0.059 af Inflow=3.35 cfs 0.249 af
Discarded=0.50 cfs 0.215 af Primary=1.10 cfs 0.034 af Outflow=1.60 cfs 0.249 af

Link DP-1: Court Street Inflow=0.49 cfs 0.035 af
Primary=0.49 cfs 0.035 af

Link DP-2: Crafts Street Inflow=4.68 cfs 0.177 af
Primary=4.68 cfs 0.177 af

Total Runoff Area = 2.962 ac Runoff Volume = 0.828 af Average Runoff Depth = 3.36"
30.93% Pervious = 0.916 ac 69.07% Impervious = 2.046 ac

Summary for Subcatchment 10: Site

[49] Hint: Tc<2dt may require smaller dt

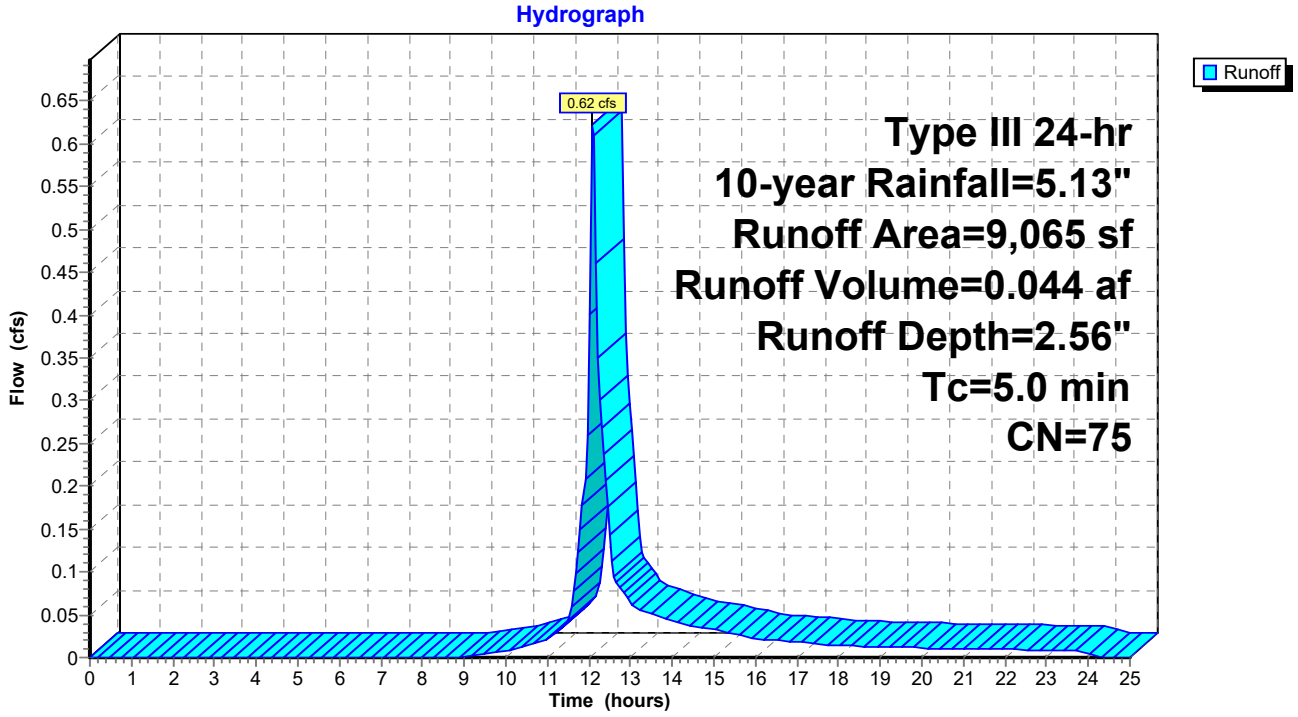
Runoff = 0.62 cfs @ 12.08 hrs, Volume= 0.044 af, Depth= 2.56"
Routed to Pond P-1 : Subsurface Infiltration System "A"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.13"

Area (sf)	CN	Description
4,885	98	Paved parking, HSG A
0	98	Roofs, HSG A
4,180	49	50-75% Grass cover, Fair, HSG A
9,065	75	Weighted Average
4,180		46.11% Pervious Area
4,885		53.89% Impervious Area

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

Subcatchment 10: Site



Summary for Subcatchment 11: Site

[49] Hint: Tc<2dt may require smaller dt

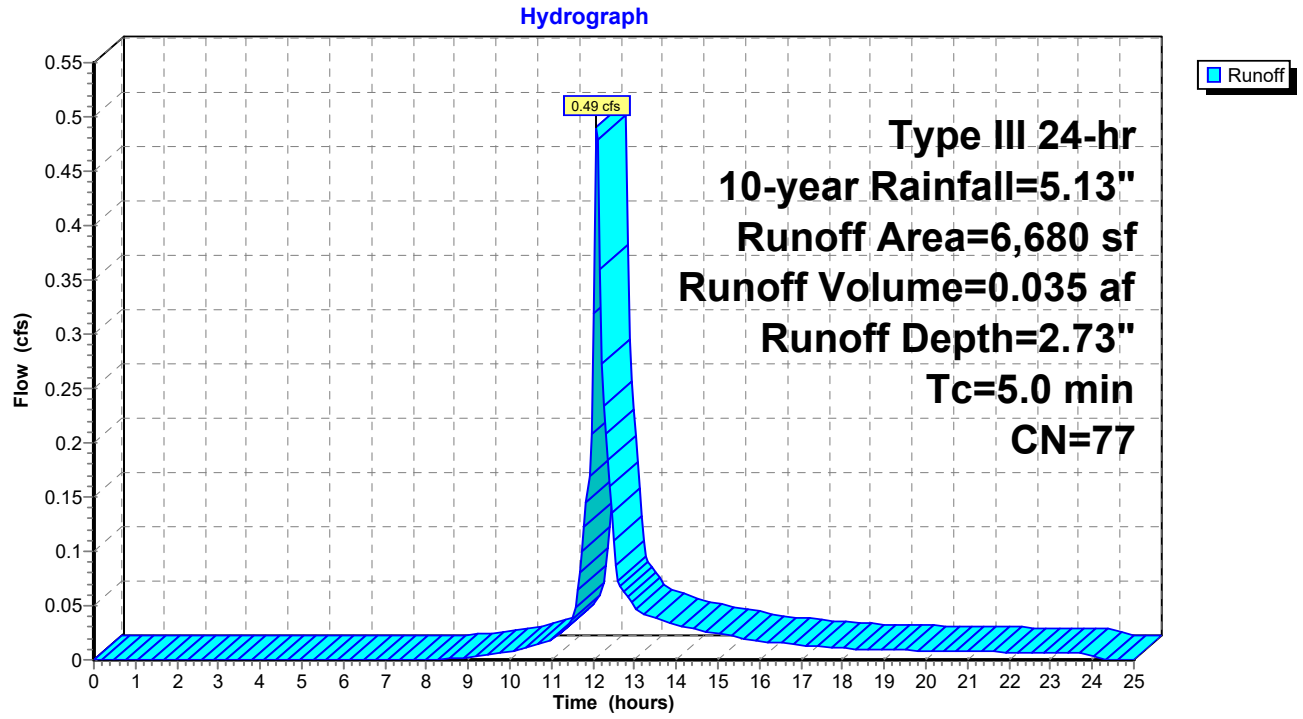
Runoff = 0.49 cfs @ 12.08 hrs, Volume= 0.035 af, Depth= 2.73"
Routed to Link DP-1 : Court Street

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.13"

Area (sf)	CN	Description
3,790	98	Paved parking, HSG A
2,890	49	50-75% Grass cover, Fair, HSG A
6,680	77	Weighted Average
2,890		43.26% Pervious Area
3,790		56.74% Impervious Area

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

Subcatchment 11: Site



Summary for Subcatchment 20: Site

[49] Hint: Tc<2dt may require smaller dt

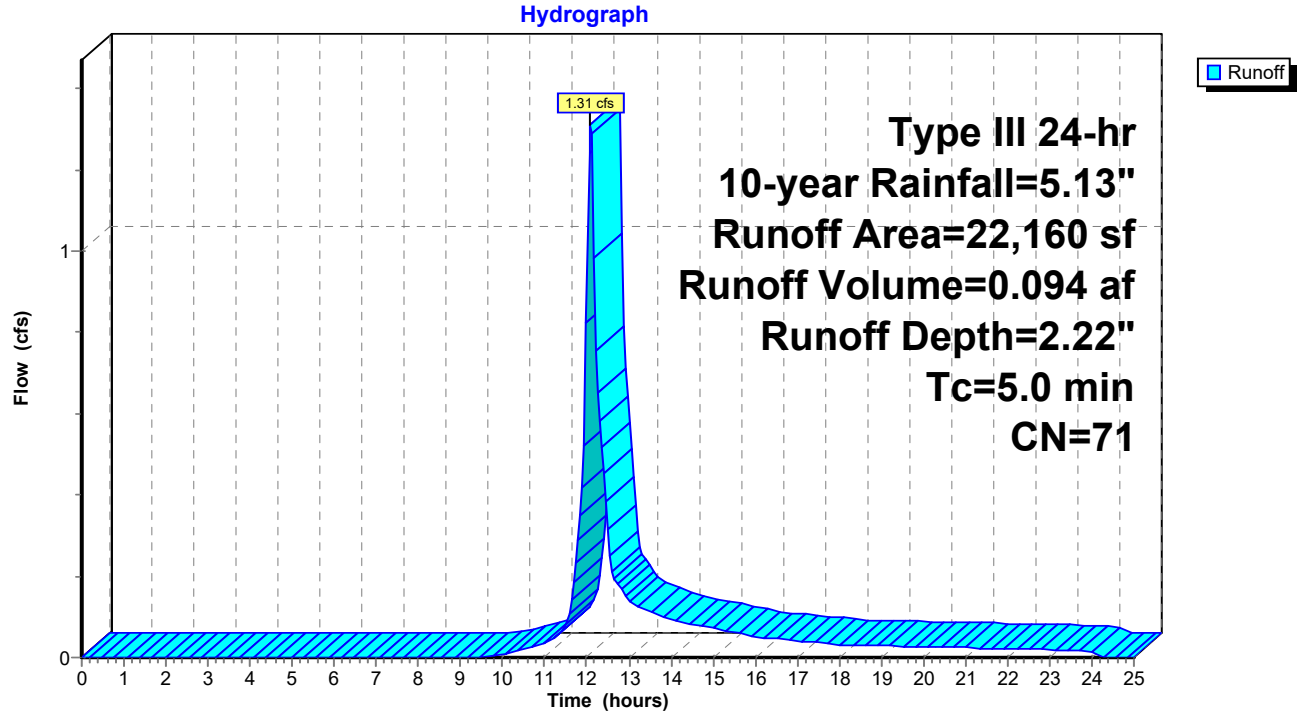
Runoff = 1.31 cfs @ 12.08 hrs, Volume= 0.094 af, Depth= 2.22"
Routed to Pond P-2 : Subsurface Infiltration System "B"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.13"

Area (sf)	CN	Description
9,780	98	Paved parking, HSG A
0	98	Roofs, HSG A
12,380	49	50-75% Grass cover, Fair, HSG A
22,160	71	Weighted Average
12,380		55.87% Pervious Area
9,780		44.13% Impervious Area

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

Subcatchment 20: Site



Summary for Subcatchment 21: Building

[49] Hint: Tc<2dt may require smaller dt

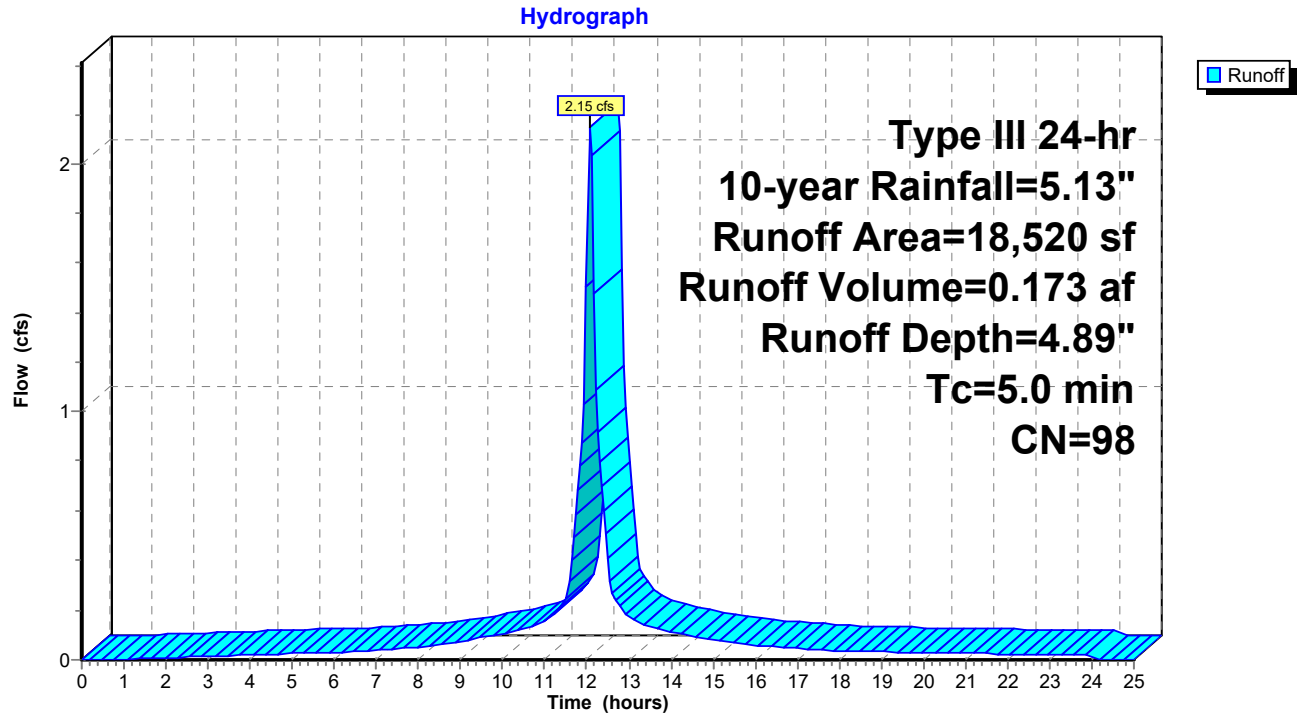
Runoff = 2.15 cfs @ 12.07 hrs, Volume= 0.173 af, Depth= 4.89"
Routed to Pond P-2 : Subsurface Infiltration System "B"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.13"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
18,520	98	Roofs, HSG A
0	49	50-75% Grass cover, Fair, HSG A
18,520	98	Weighted Average
18,520		100.00% Impervious Area

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

Subcatchment 21: Building



Summary for Subcatchment 22: Site

[49] Hint: Tc<2dt may require smaller dt

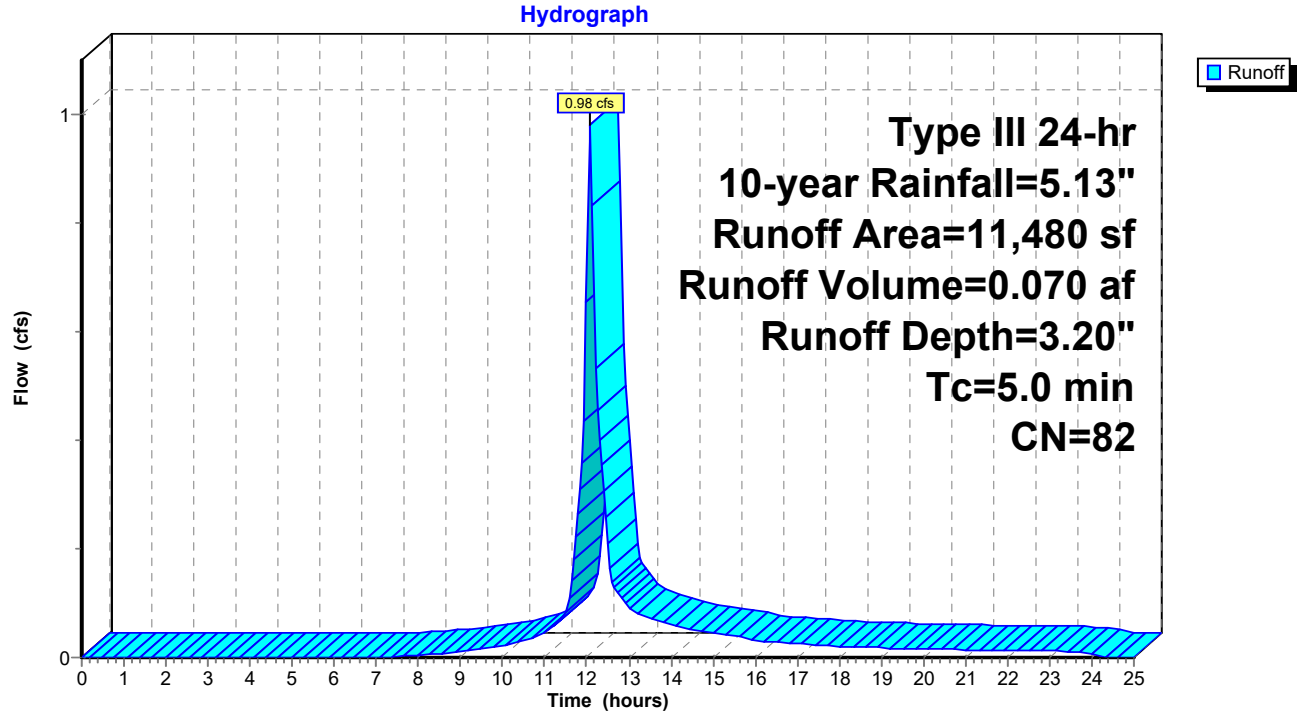
Runoff = 0.98 cfs @ 12.08 hrs, Volume= 0.070 af, Depth= 3.20"
Routed to Link DP-2 : Crafts Street

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.13"

Area (sf)	CN	Description
7,815	98	Paved parking, HSG A
0	98	Roofs, HSG A
3,665	49	50-75% Grass cover, Fair, HSG A
11,480	82	Weighted Average
3,665		31.93% Pervious Area
7,815		68.07% Impervious Area

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

Subcatchment 22: Site



Summary for Subcatchment 23: Site

[49] Hint: Tc<2dt may require smaller dt

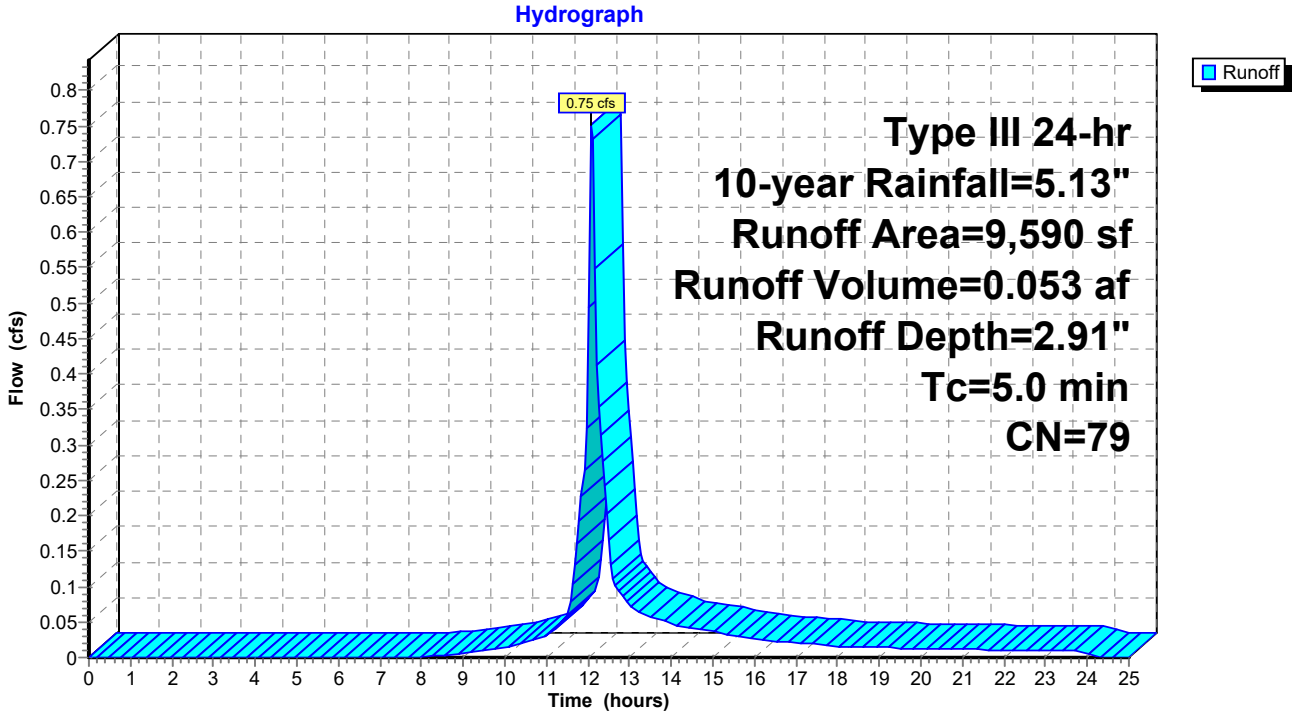
Runoff = 0.75 cfs @ 12.08 hrs, Volume= 0.053 af, Depth= 2.91"
Routed to Pond P-3 : Subsurface Infiltration System "C"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.13"

Area (sf)	CN	Description
5,875	98	Paved parking, HSG A
0	98	Roofs, HSG A
3,715	49	50-75% Grass cover, Fair, HSG A
9,590	79	Weighted Average
3,715		38.74% Pervious Area
5,875		61.26% Impervious Area

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

Subcatchment 23: Site



Summary for Subcatchment 24: Site

[49] Hint: Tc<2dt may require smaller dt

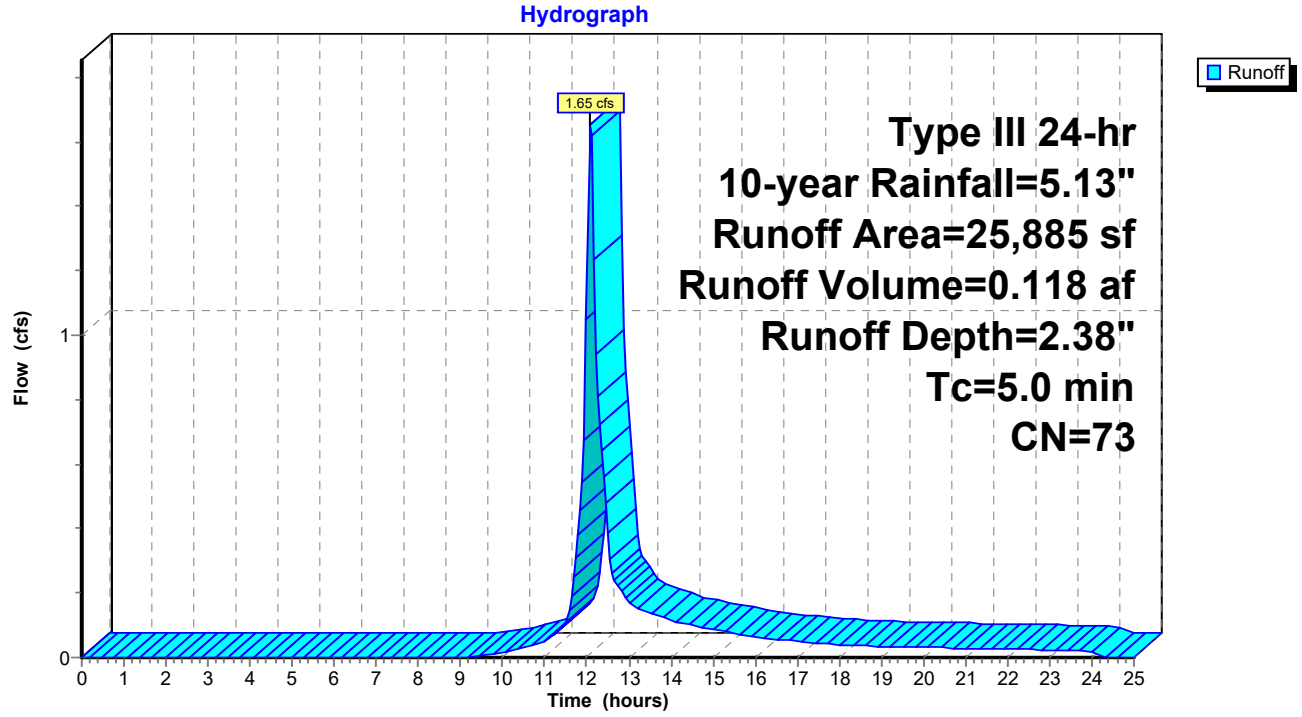
Runoff = 1.65 cfs @ 12.08 hrs, Volume= 0.118 af, Depth= 2.38"
Routed to Pond P-3 : Subsurface Infiltration System "C"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.13"

Area (sf)	CN	Description
12,820	98	Paved parking, HSG A
0	98	Roofs, HSG A
13,065	49	50-75% Grass cover, Fair, HSG A
25,885	73	Weighted Average
13,065		50.47% Pervious Area
12,820		49.53% Impervious Area

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

Subcatchment 24: Site



Summary for Subcatchment 25: Building

[49] Hint: Tc<2dt may require smaller dt

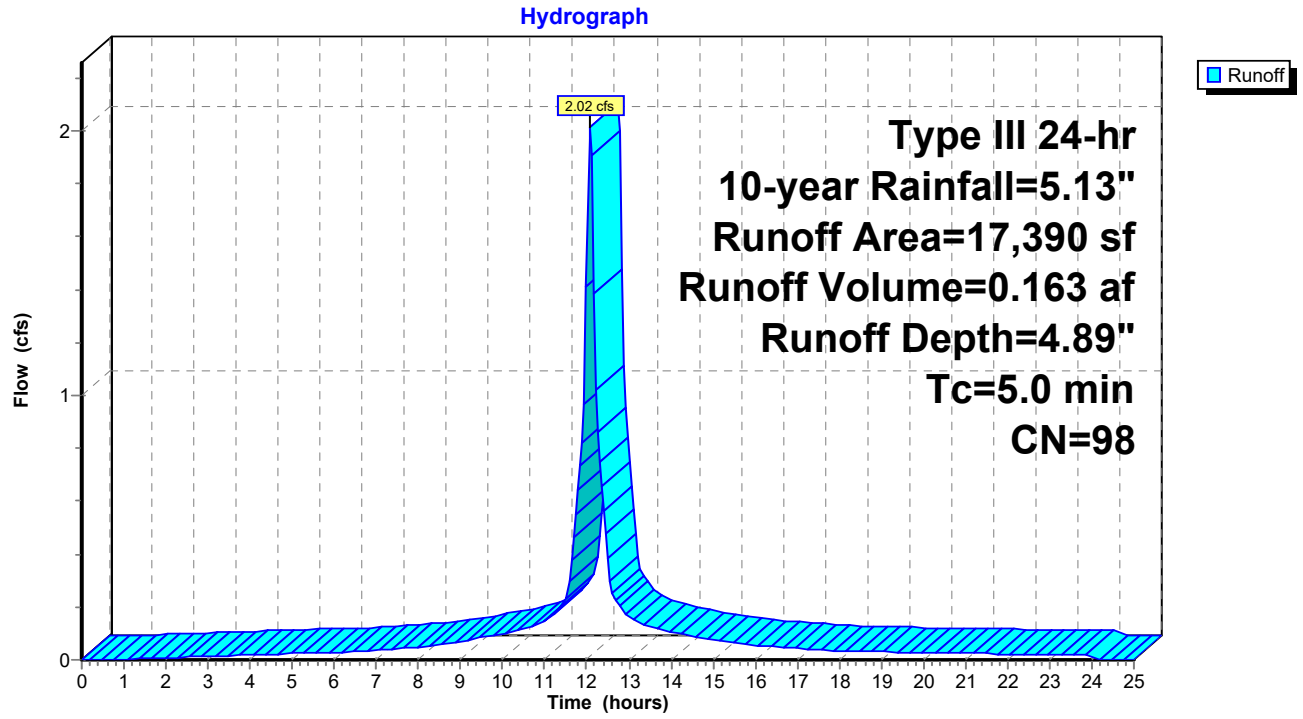
Runoff = 2.02 cfs @ 12.07 hrs, Volume= 0.163 af, Depth= 4.89"
Routed to Pond P-2 : Subsurface Infiltration System "B"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.13"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
17,390	98	Roofs, HSG A
0	49	50-75% Grass cover, Fair, HSG A
17,390	98	Weighted Average
17,390		100.00% Impervious Area

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

Subcatchment 25: Building



Summary for Subcatchment 26: Building

[49] Hint: Tc<2dt may require smaller dt

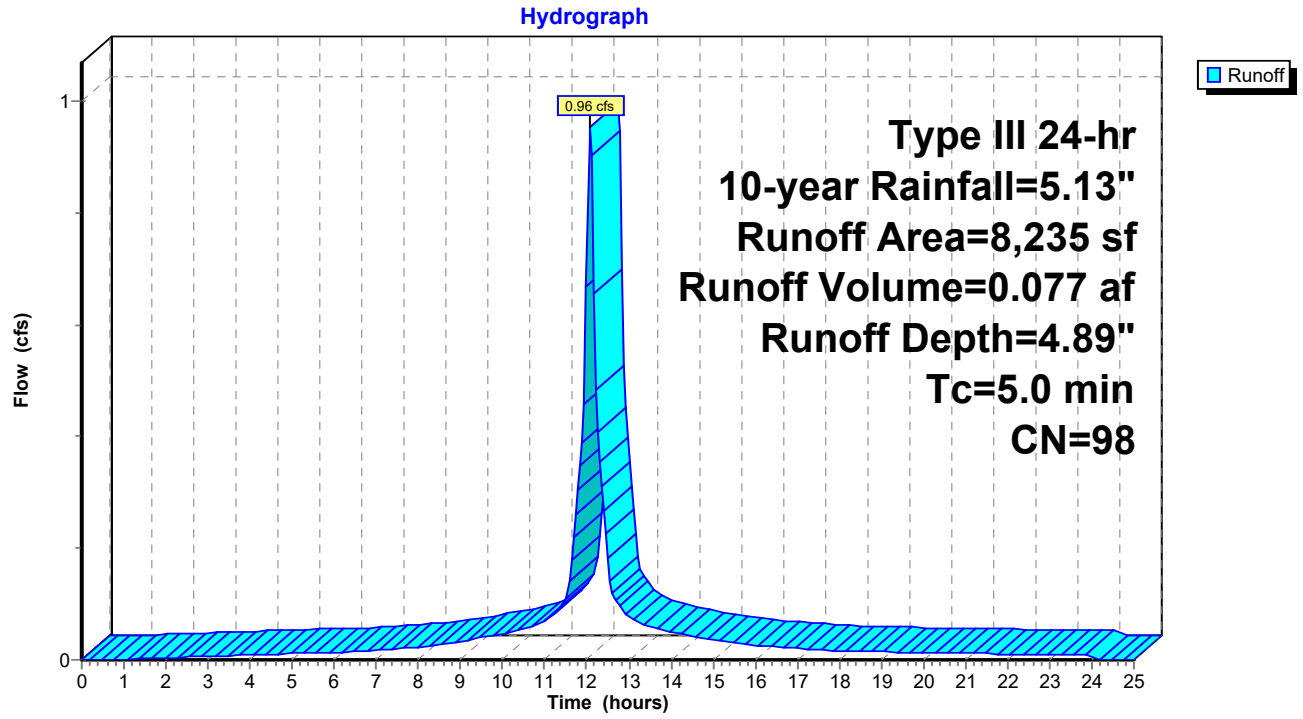
Runoff = 0.96 cfs @ 12.07 hrs, Volume= 0.077 af, Depth= 4.89"
Routed to Pond P-3 : Subsurface Infiltration System "C"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.13"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
8,235	98	Roofs, HSG A
0	49	50-75% Grass cover, Fair, HSG A
8,235	98	Weighted Average
8,235		100.00% Impervious Area

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

Subcatchment 26: Building



Summary for Pond P-1: Subsurface Infiltration System "A"

Inflow Area = 0.208 ac, 53.89% Impervious, Inflow Depth = 2.56" for 10-year event
Inflow = 0.62 cfs @ 12.08 hrs, Volume= 0.044 af
Outflow = 0.11 cfs @ 12.56 hrs, Volume= 0.044 af, Atten= 82%, Lag= 28.9 min
Discarded = 0.11 cfs @ 12.56 hrs, Volume= 0.044 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link DP-1 : Court Street

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 33.05' @ 12.56 hrs Surf.Area= 0.007 ac Storage= 0.014 af

Plug-Flow detention time= 47.9 min calculated for 0.044 af (100% of inflow)
Center-of-Mass det. time= 47.8 min (880.6 - 832.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	30.60'	0.000 af	**6.90'W x 43.19'L x 5.67'H Field A** 0.039 af Overall - 0.039 af Embedded = 0.000 af x 40.0% Voids
#2A	30.60'	0.029 af	**StormTrap ST1 SingleTrap 5-0** x 3 Inside #1 Inside= 82.7"W x 60.0"H => 29.76 sf x 14.06'L = 418.5 cf Outside= 82.7"W x 68.0"H => 39.08 sf x 14.06'L = 549.5 cf 6.90' x 42.19' Core + 0.00' x 0.50' Border = 6.90' x 43.19' System
		0.029 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	34.60'	**12.0" Round Culvert** L= 25.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 34.60' / 34.30' S= 0.0120 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	34.60'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	35.60'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	30.60'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 28.00'

Discarded OutFlow Max=0.11 cfs @ 12.56 hrs HW=33.05' (Free Discharge)
└**4=Exfiltration** (Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=30.60' (Free Discharge)
└**1=Culvert** (Controls 0.00 cfs)
  └**2=Orifice/Grate** (Controls 0.00 cfs)
  └**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P-1: Subsurface Infiltration System "A" - Chamber Wizard Field A

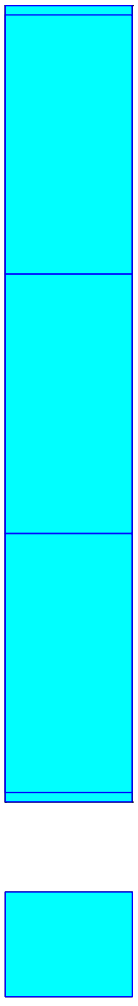
Chamber Model = StormTrap ST1 SingleTrap 5-0 (StormTrap ST1 SingleTrap® Type VI)
Inside= 82.7"W x 60.0"H => 29.76 sf x 14.06'L = 418.5 cf
Outside= 82.7"W x 68.0"H => 39.08 sf x 14.06'L = 549.5 cf

3 Chambers/Row x 14.06' Long = 42.19' Row Length +6.0" Border x 2 = 43.19' Base Length
1 Rows x 82.7" Wide = 6.90' Base Width
68.0" Chamber Height = 5.67' Field Height

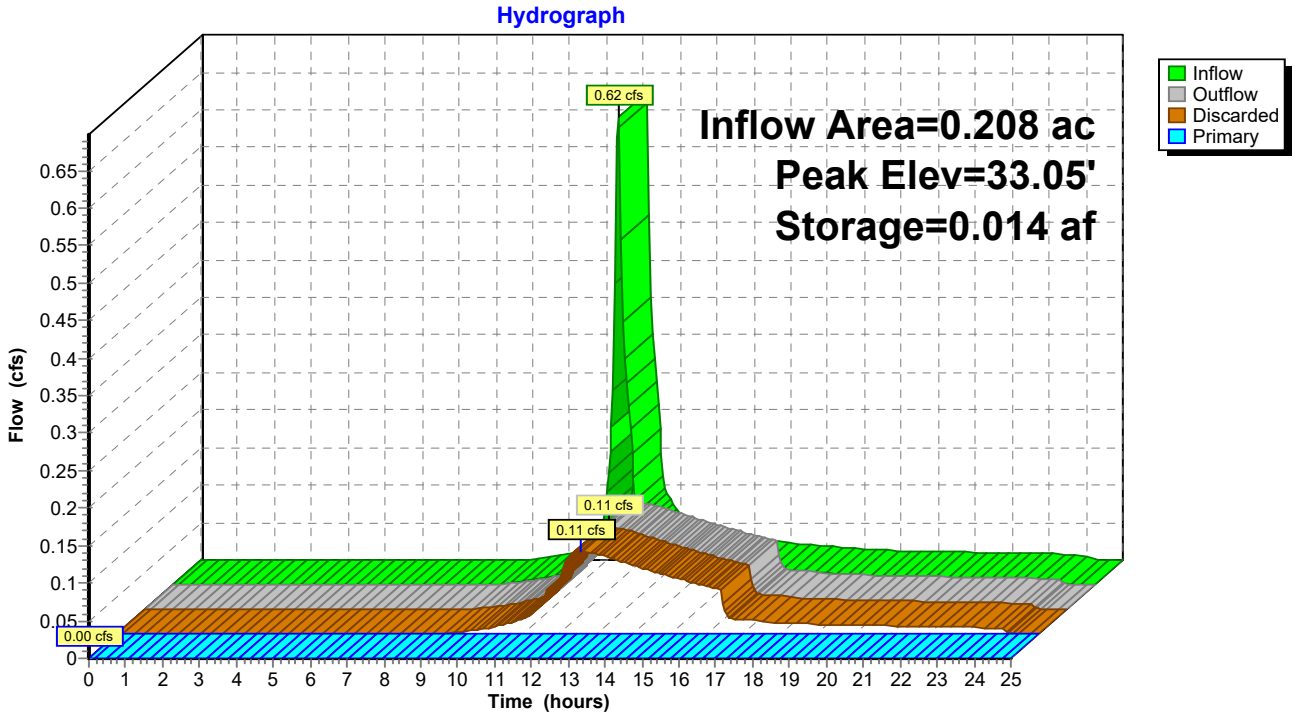
3 Chambers x 418.5 cf = 1,255.5 cf Chamber Storage
3 Chambers x 549.5 cf + 39.1 cf Border = 1,687.6 cf Displacement

Chamber Storage = 1,255.5 cf = 0.029 af
Overall Storage Efficiency = 74.4%
Overall System Size = 43.19' x 6.90' x 5.67'

3 Chambers (plus border)
62.5 cy Field



Pond P-1: Subsurface Infiltration System "A"



Summary for Pond P-2: Subsurface Infiltration System "B"

Inflow Area = 1.333 ac, 78.68% Impervious, Inflow Depth = 3.87" for 10-year event
Inflow = 5.47 cfs @ 12.07 hrs, Volume= 0.430 af
Outflow = 4.01 cfs @ 12.16 hrs, Volume= 0.430 af, Atten= 27%, Lag= 5.5 min
Discarded = 0.72 cfs @ 12.16 hrs, Volume= 0.357 af
Primary = 3.29 cfs @ 12.16 hrs, Volume= 0.073 af
Routed to Link DP-2 : Crafts Street

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 33.82' @ 12.16 hrs Surf.Area= 0.031 ac Storage= 0.093 af

Plug-Flow detention time= 37.1 min calculated for 0.430 af (100% of inflow)
Center-of-Mass det. time= 37.0 min (804.7 - 767.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	30.10'	0.000 af	**89.65'W x 15.06'L x 4.67'H Field A** 0.145 af Overall - 0.145 af Embedded = 0.000 af x 40.0% Voids
#2A	30.10'	0.100 af	**StormTrap ST1 SingleTrap 4-0**x 13 Inside #1 Inside= 82.7"W x 48.0"H => 23.79 sf x 14.06'L = 334.5 cf Outside= 82.7"W x 56.0"H => 32.18 sf x 14.06'L = 452.5 cf 13 Chambers in 13 Rows 89.65' x 14.06' Core + 0.00' x 0.50' Border = 89.65' x 15.06' System
#3	33.30'	0.001 af	**4.00'D x 3.10'H Vertical Cone/Cylinder**-Impervious
		0.101 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	33.10'	**12.0" Round Culvert X 2.00** L= 5.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 33.10' / 33.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Discarded	30.10'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 28.00'

Discarded OutFlow Max=0.71 cfs @ 12.16 hrs HW=33.79' (Free Discharge)
2=Exfiltration (Controls 0.71 cfs)

Primary OutFlow Max=3.09 cfs @ 12.16 hrs HW=33.79' (Free Discharge)
1=Culvert (Barrel Controls 3.09 cfs @ 3.75 fps)

Pond P-2: Subsurface Infiltration System "B" - Chamber Wizard Field A

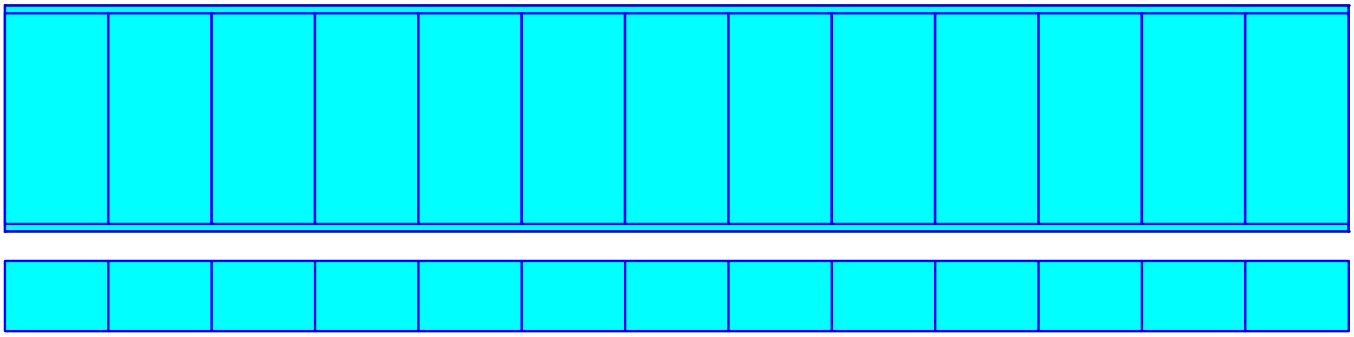
Chamber Model = StormTrap ST1 SingleTrap 4-0 (StormTrap ST1 SingleTrap® Type VI)
Inside= 82.7"W x 48.0"H => 23.79 sf x 14.06'L = 334.5 cf
Outside= 82.7"W x 56.0"H => 32.18 sf x 14.06'L = 452.5 cf

1 Chambers/Row x 14.06' Long = 14.06' Row Length +6.0" Border x 2 = 15.06' Base Length
13 Rows x 82.7" Wide = 89.65' Base Width
56.0" Chamber Height = 4.67' Field Height

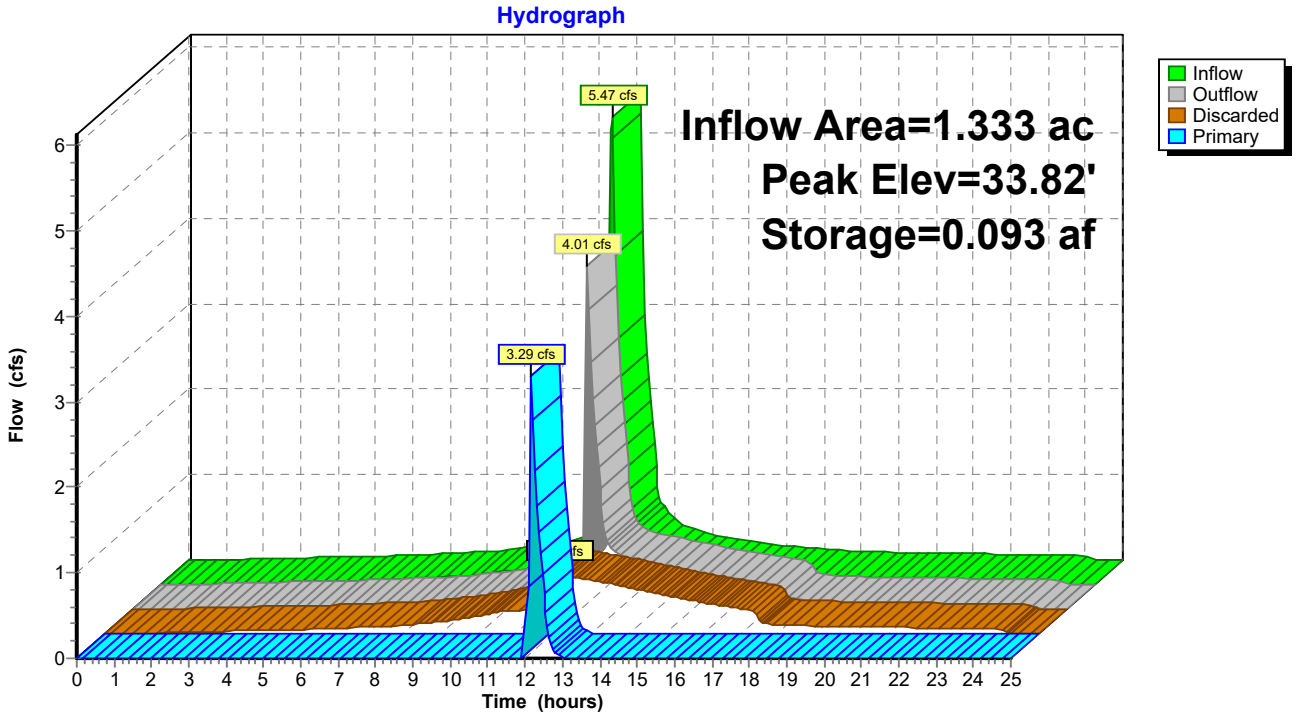
13 Chambers x 334.5 cf = 4,348.5 cf Chamber Storage
13 Chambers x 452.5 cf + 418.3 cf Border = 6,301.4 cf Displacement

Chamber Storage = 4,348.5 cf = 0.100 af
Overall Storage Efficiency = 69.0%
Overall System Size = 15.06' x 89.65' x 4.67'

13 Chambers (plus border)
233.4 cy Field



Pond P-2: Subsurface Infiltration System "B"



Summary for Pond P-3: Subsurface Infiltration System "C"

Inflow Area = 1.003 ac, 61.61% Impervious, Inflow Depth = 2.97" for 10-year event
Inflow = 3.35 cfs @ 12.08 hrs, Volume= 0.249 af
Outflow = 1.60 cfs @ 12.26 hrs, Volume= 0.249 af, Atten= 52%, Lag= 10.7 min
Discarded = 0.50 cfs @ 12.26 hrs, Volume= 0.215 af
Primary = 1.10 cfs @ 12.26 hrs, Volume= 0.034 af
Routed to Link DP-2 : Crafts Street

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 32.66' @ 12.26 hrs Surf.Area= 0.027 ac Storage= 0.059 af

Plug-Flow detention time= 34.8 min calculated for 0.249 af (100% of inflow)
Center-of-Mass det. time= 34.8 min (841.0 - 806.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	30.10'	0.000 af	**20.69'W x 57.25'L x 3.67'H Field A** 0.100 af Overall - 0.100 af Embedded = 0.000 af x 40.0% Voids
#2A	30.10'	0.069 af	**StormTrap ST1 SingleTrap 3-0**x 12 Inside #1 Inside= 82.7"W x 36.0"H => 17.81 sf x 14.06'L = 250.5 cf Outside= 82.7"W x 44.0"H => 25.28 sf x 14.06'L = 355.6 cf 12 Chambers in 3 Rows 20.69' x 56.25' Core + 0.00' x 0.50' Border = 20.69' x 57.25' System
#3	32.30'	0.001 af	**4.00'D x 5.10'H Vertical Cone/Cylinder**-Impervious
		0.070 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	32.10'	**12.0" Round Culvert** L= 5.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 32.10' / 32.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Discarded	30.10'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 28.00'

Discarded OutFlow Max=0.50 cfs @ 12.26 hrs HW=32.66' (Free Discharge)
2=Exfiltration (Controls 0.50 cfs)

Primary OutFlow Max=1.09 cfs @ 12.26 hrs HW=32.66' (Free Discharge)
1=Culvert (Barrel Controls 1.09 cfs @ 3.47 fps)

Pond P-3: Subsurface Infiltration System "C" - Chamber Wizard Field A

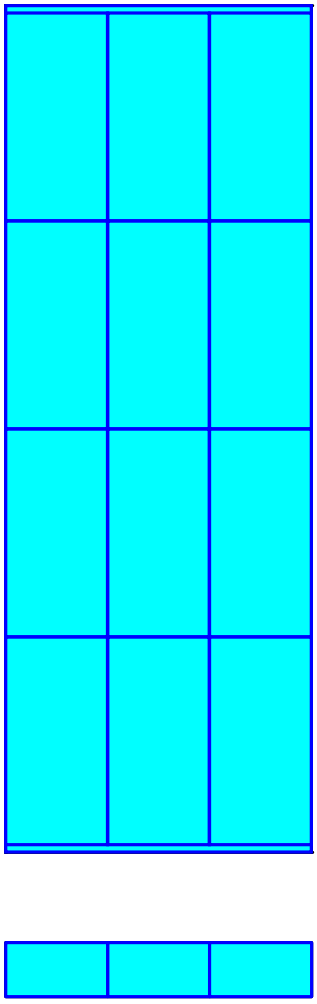
Chamber Model = StormTrap ST1 SingleTrap 3-0 (StormTrap ST1 SingleTrap® Type VI)
Inside= 82.7"W x 36.0"H => 17.81 sf x 14.06'L = 250.5 cf
Outside= 82.7"W x 44.0"H => 25.28 sf x 14.06'L = 355.6 cf

4 Chambers/Row x 14.06' Long = 56.25' Row Length +6.0" Border x 2 = 57.25' Base Length
3 Rows x 82.7" Wide = 20.69' Base Width
44.0" Chamber Height = 3.67' Field Height

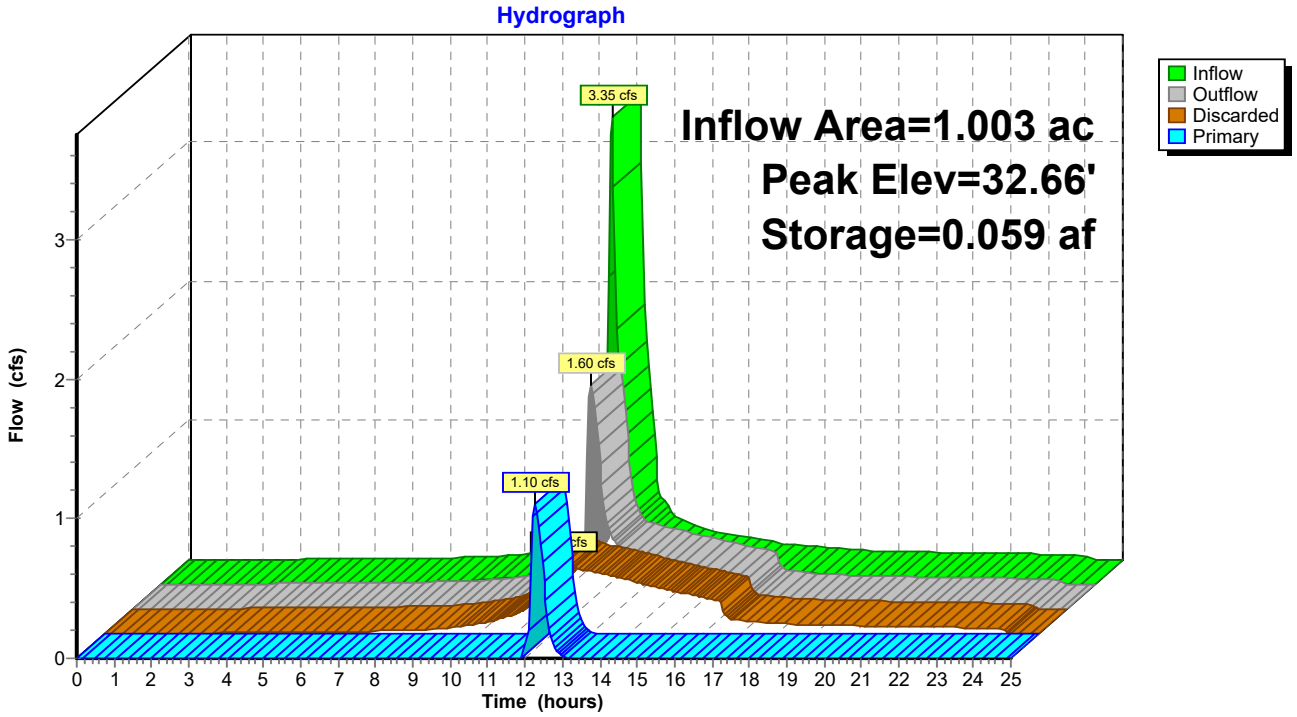
12 Chambers x 250.5 cf = 3,006.0 cf Chamber Storage
12 Chambers x 355.6 cf + 75.9 cf Border = 4,342.7 cf Displacement

Chamber Storage = 3,006.0 cf = 0.069 af
Overall Storage Efficiency = 69.2%
Overall System Size = 57.25' x 20.69' x 3.67'

12 Chambers (plus border)
160.8 cy Field



Pond P-3: Subsurface Infiltration System "C"

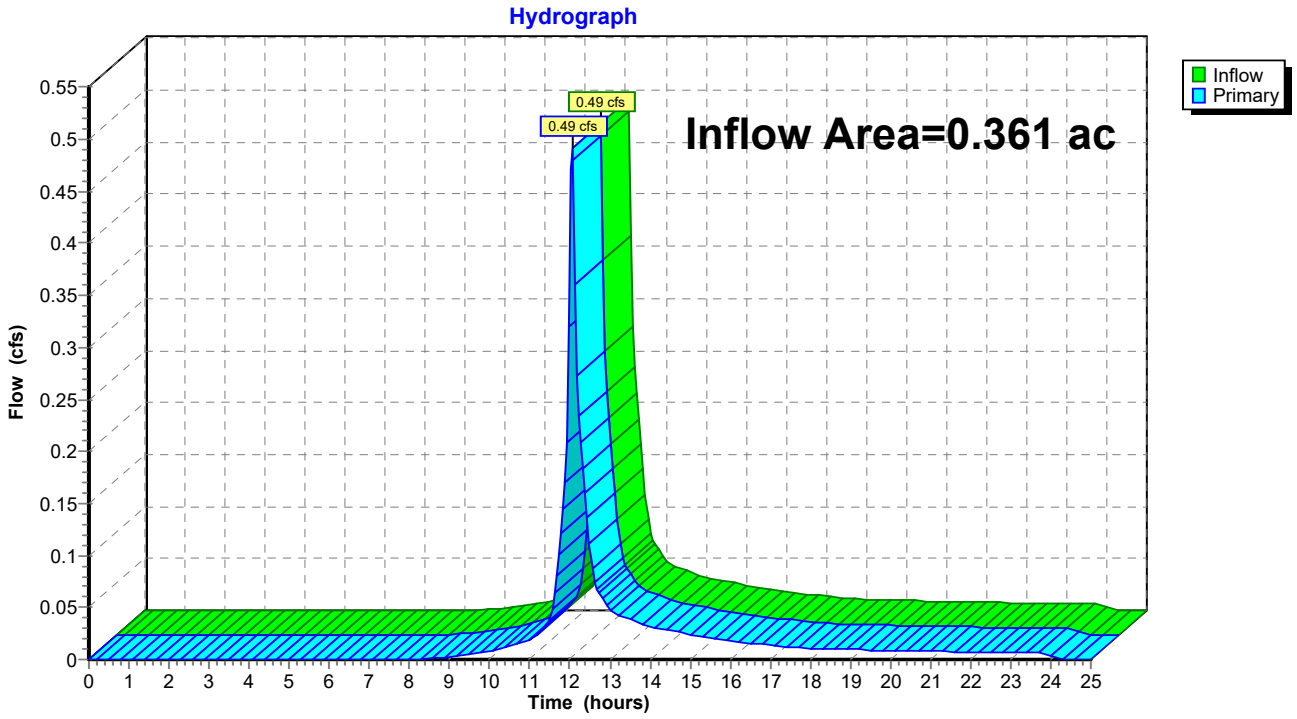


Summary for Link DP-1: Court Street

Inflow Area = 0.361 ac, 55.10% Impervious, Inflow Depth = 1.16" for 10-year event
Inflow = 0.49 cfs @ 12.08 hrs, Volume= 0.035 af
Primary = 0.49 cfs @ 12.08 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 27L

Primary outflow = Inflow, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs

Link DP-1: Court Street

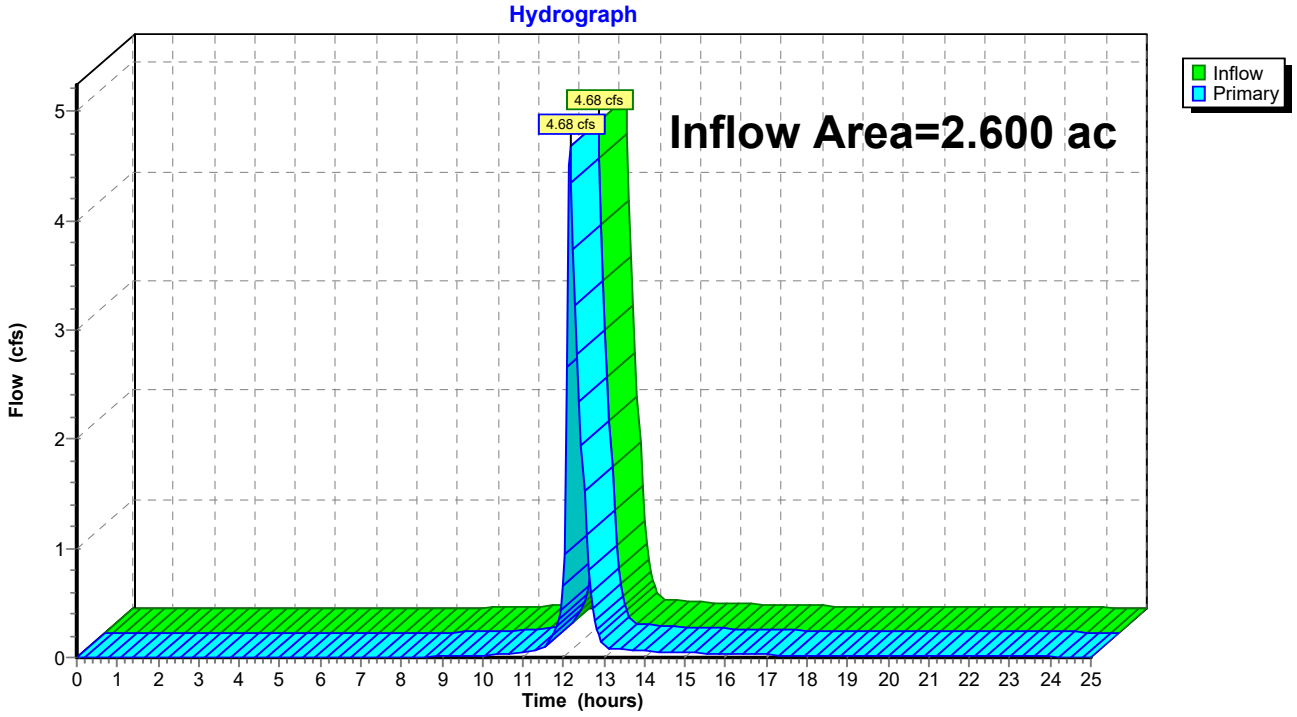


Summary for Link DP-2: Crafts Street

Inflow Area = 2.600 ac, 71.02% Impervious, Inflow Depth = 0.82" for 10-year event
Inflow = 4.68 cfs @ 12.17 hrs, Volume= 0.177 af
Primary = 4.68 cfs @ 12.17 hrs, Volume= 0.177 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 27L

Primary outflow = Inflow, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs

Link DP-2: Crafts Street



Time span=0.00-25.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment10: Site Runoff Area=9,065 sf 53.89% Impervious Runoff Depth=3.54"
Tc=5.0 min CN=75 Runoff=0.86 cfs 0.061 af

Subcatchment11: Site Runoff Area=6,680 sf 56.74% Impervious Runoff Depth=3.74"
Tc=5.0 min CN=77 Runoff=0.67 cfs 0.048 af

Subcatchment20: Site Runoff Area=22,160 sf 44.13% Impervious Runoff Depth=3.14"
Tc=5.0 min CN=71 Runoff=1.87 cfs 0.133 af

Subcatchment21: Building Runoff Area=18,520 sf 100.00% Impervious Runoff Depth=6.06"
Tc=5.0 min CN=98 Runoff=2.64 cfs 0.215 af

Subcatchment22: Site Runoff Area=11,480 sf 68.07% Impervious Runoff Depth=4.26"
Tc=5.0 min CN=82 Runoff=1.31 cfs 0.094 af

Subcatchment23: Site Runoff Area=9,590 sf 61.26% Impervious Runoff Depth=3.95"
Tc=5.0 min CN=79 Runoff=1.01 cfs 0.072 af

Subcatchment24: Site Runoff Area=25,885 sf 49.53% Impervious Runoff Depth=3.34"
Tc=5.0 min CN=73 Runoff=2.33 cfs 0.165 af

Subcatchment25: Building Runoff Area=17,390 sf 100.00% Impervious Runoff Depth=6.06"
Tc=5.0 min CN=98 Runoff=2.48 cfs 0.202 af

Subcatchment26: Building Runoff Area=8,235 sf 100.00% Impervious Runoff Depth=6.06"
Tc=5.0 min CN=98 Runoff=1.18 cfs 0.095 af

Pond P-1: Subsurface Infiltration System "A" Peak Elev=34.28' Storage=0.021 af Inflow=0.86 cfs 0.061 af
Discarded=0.14 cfs 0.061 af Primary=0.00 cfs 0.000 af Outflow=0.14 cfs 0.061 af

Pond P-2: Subsurface Infiltration System "B" Peak Elev=34.12' Storage=0.100 af Inflow=7.00 cfs 0.550 af
Discarded=0.75 cfs 0.416 af Primary=5.54 cfs 0.134 af Outflow=6.29 cfs 0.550 af

Pond P-3: Subsurface Infiltration System "C" Peak Elev=33.07' Storage=0.069 af Inflow=4.50 cfs 0.333 af
Discarded=0.55 cfs 0.258 af Primary=2.60 cfs 0.076 af Outflow=3.15 cfs 0.333 af

Link DP-1: Court Street Inflow=0.67 cfs 0.048 af
Primary=0.67 cfs 0.048 af

Link DP-2: Crafts Street Inflow=8.73 cfs 0.303 af
Primary=8.73 cfs 0.303 af

Total Runoff Area = 2.962 ac Runoff Volume = 1.086 af Average Runoff Depth = 4.40"
30.93% Pervious = 0.916 ac 69.07% Impervious = 2.046 ac

Summary for Subcatchment 10: Site

[49] Hint: Tc<2dt may require smaller dt

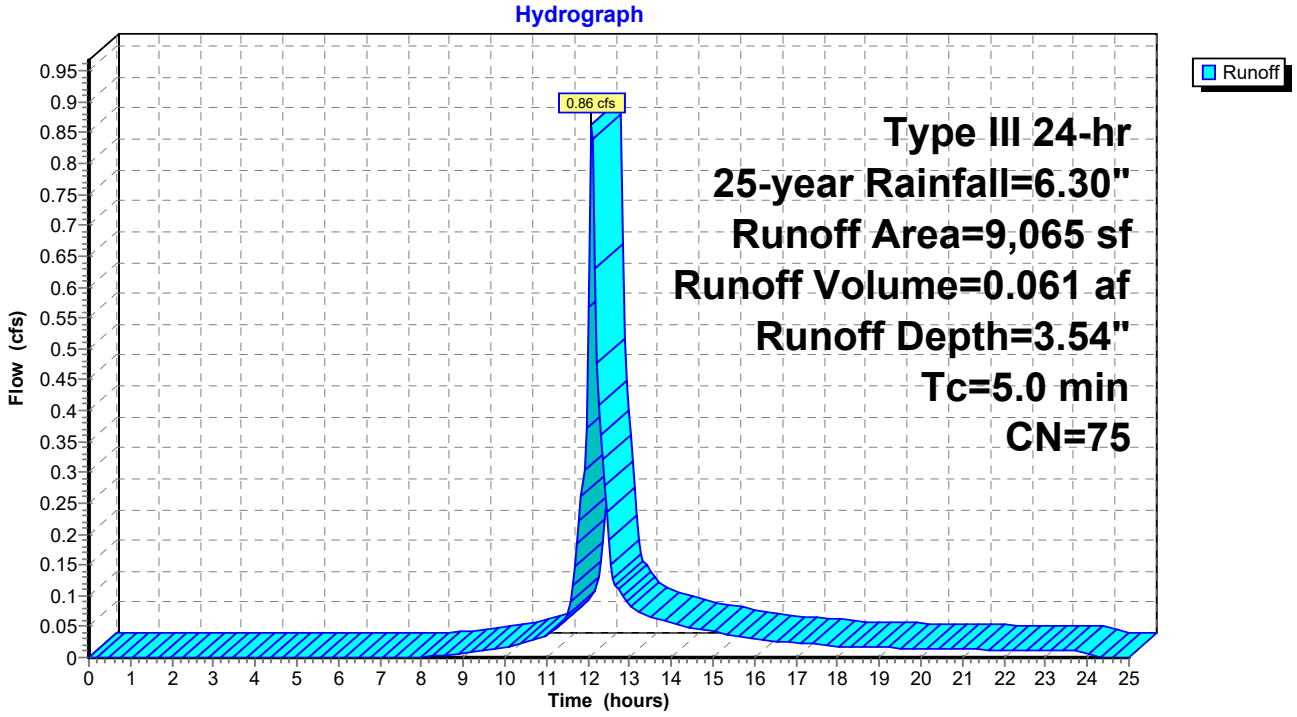
Runoff = 0.86 cfs @ 12.08 hrs, Volume= 0.061 af, Depth= 3.54"
Routed to Pond P-1 : Subsurface Infiltration System "A"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.30"

Area (sf)	CN	Description
4,885	98	Paved parking, HSG A
0	98	Roofs, HSG A
4,180	49	50-75% Grass cover, Fair, HSG A
9,065	75	Weighted Average
4,180		46.11% Pervious Area
4,885		53.89% Impervious Area

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

Subcatchment 10: Site



Summary for Subcatchment 11: Site

[49] Hint: Tc<2dt may require smaller dt

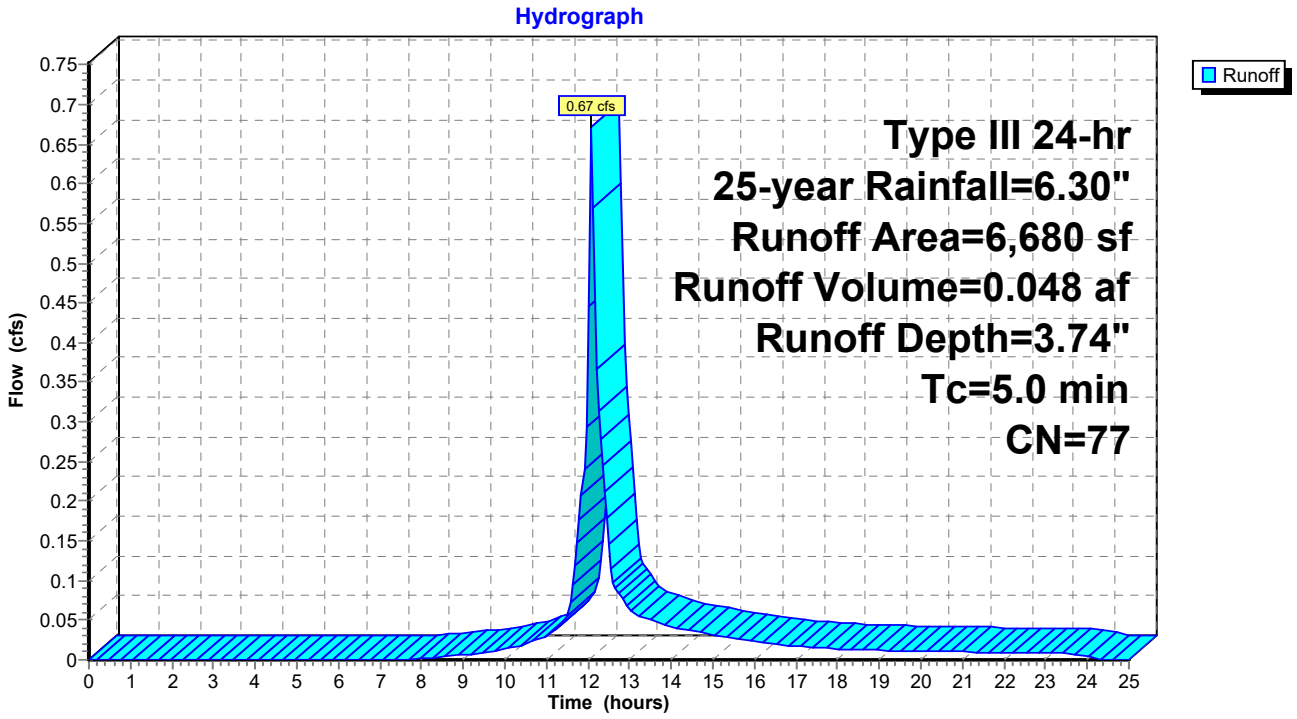
Runoff = 0.67 cfs @ 12.08 hrs, Volume= 0.048 af, Depth= 3.74"
Routed to Link DP-1 : Court Street

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.30"

Area (sf)	CN	Description
3,790	98	Paved parking, HSG A
2,890	49	50-75% Grass cover, Fair, HSG A
6,680	77	Weighted Average
2,890		43.26% Pervious Area
3,790		56.74% Impervious Area

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

Subcatchment 11: Site



Summary for Subcatchment 20: Site

[49] Hint: Tc<2dt may require smaller dt

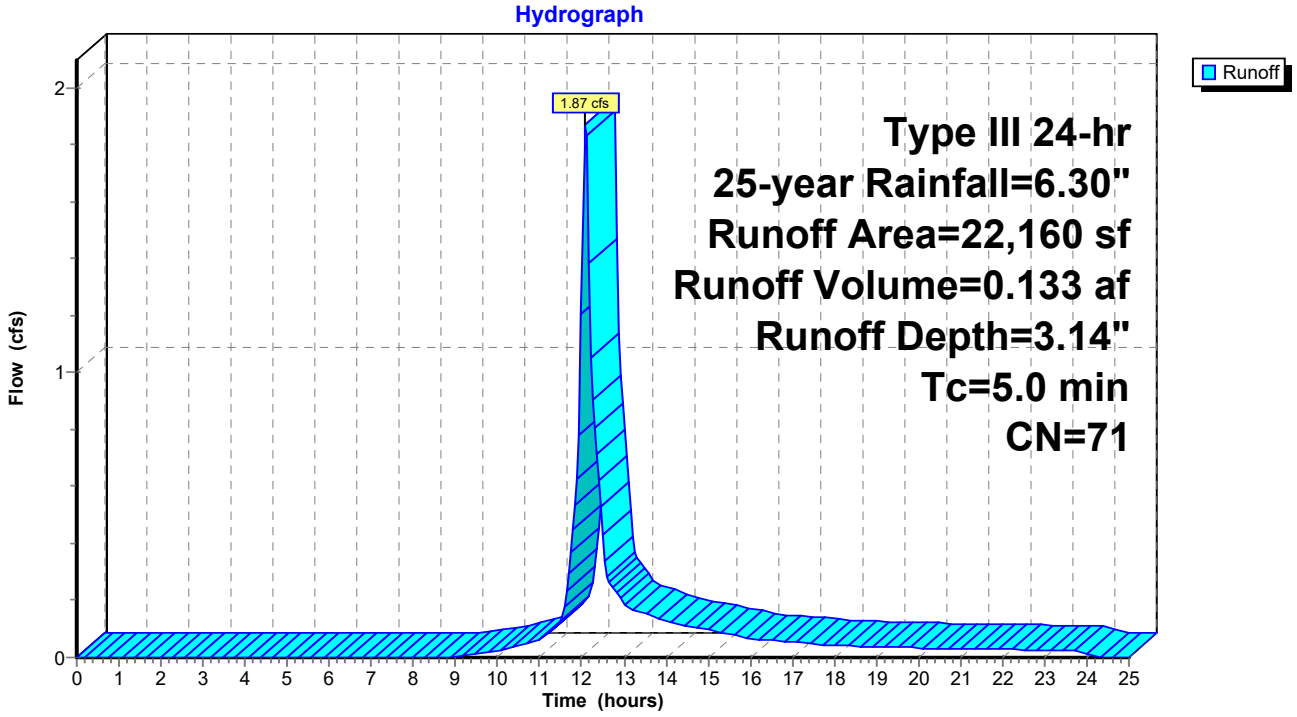
Runoff = 1.87 cfs @ 12.08 hrs, Volume= 0.133 af, Depth= 3.14"
Routed to Pond P-2 : Subsurface Infiltration System "B"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.30"

Area (sf)	CN	Description
9,780	98	Paved parking, HSG A
0	98	Roofs, HSG A
12,380	49	50-75% Grass cover, Fair, HSG A
22,160	71	Weighted Average
12,380		55.87% Pervious Area
9,780		44.13% Impervious Area

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

Subcatchment 20: Site



Summary for Subcatchment 21: Building

[49] Hint: Tc<2dt may require smaller dt

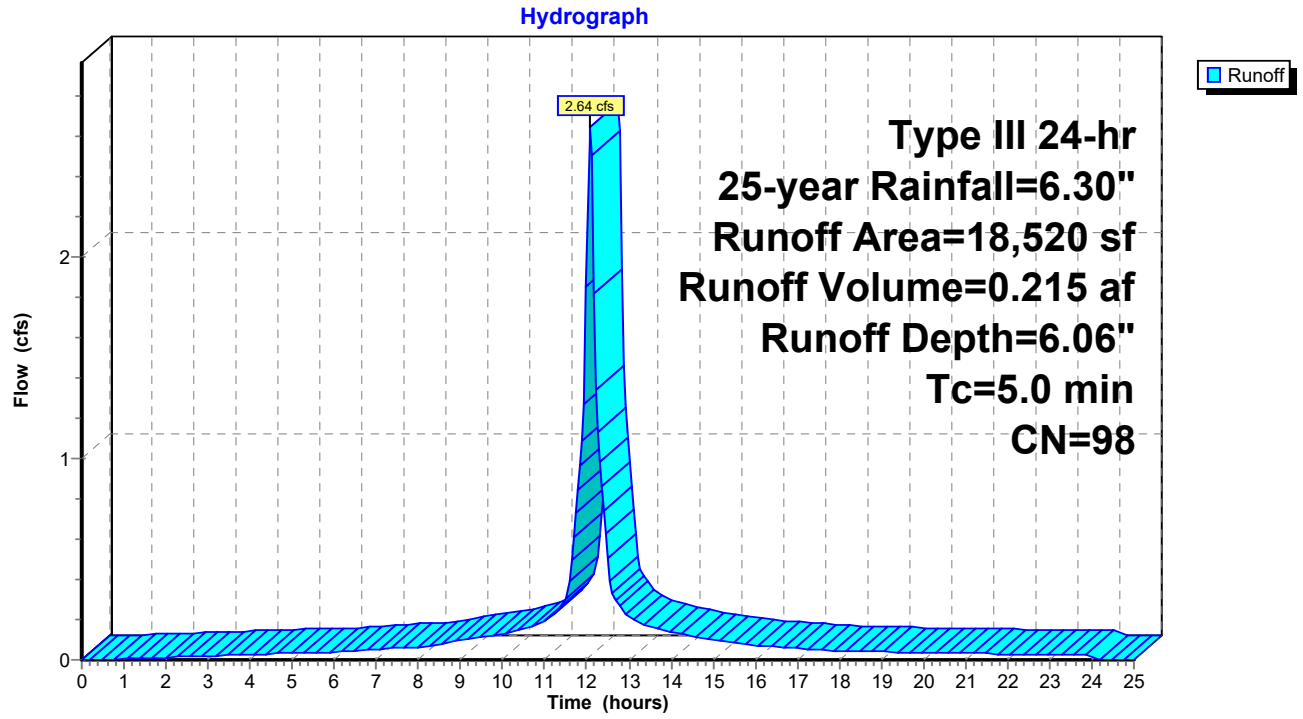
Runoff = 2.64 cfs @ 12.07 hrs, Volume= 0.215 af, Depth= 6.06"
Routed to Pond P-2 : Subsurface Infiltration System "B"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.30"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
18,520	98	Roofs, HSG A
0	49	50-75% Grass cover, Fair, HSG A
18,520	98	Weighted Average
18,520		100.00% Impervious Area

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

Subcatchment 21: Building



Summary for Subcatchment 22: Site

[49] Hint: Tc<2dt may require smaller dt

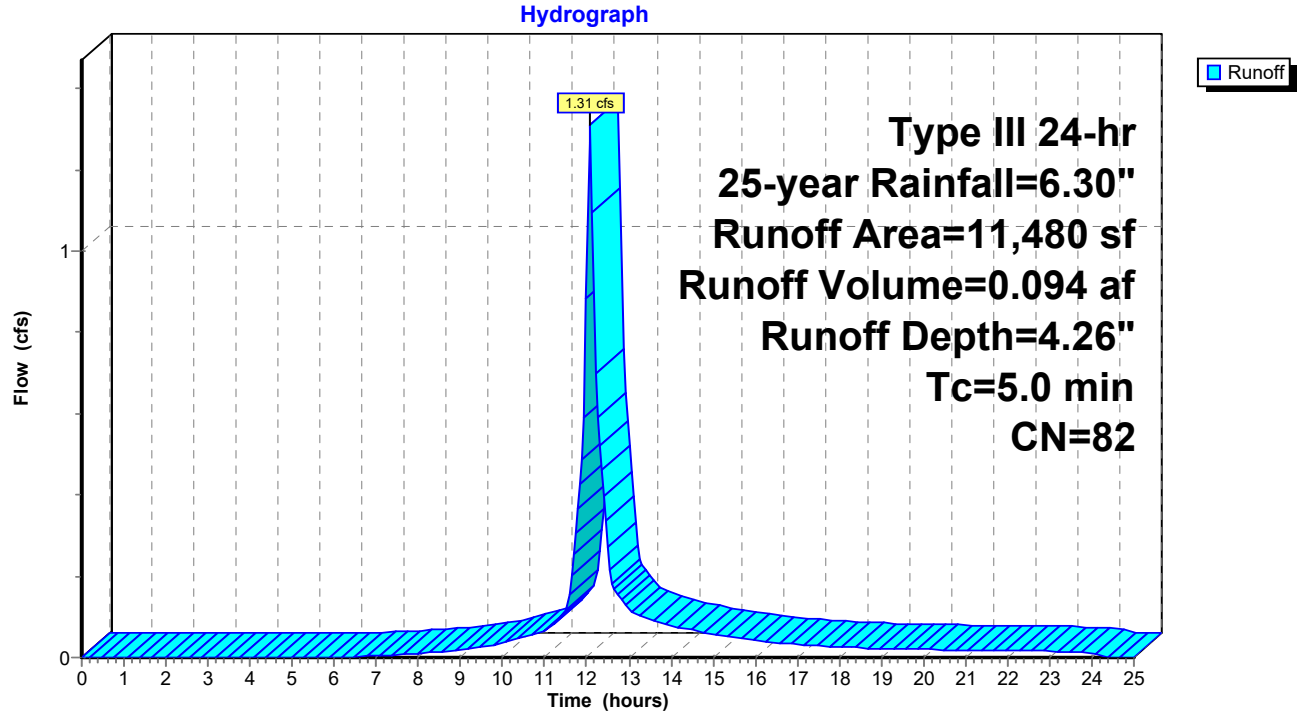
Runoff = 1.31 cfs @ 12.07 hrs, Volume= 0.094 af, Depth= 4.26"
Routed to Link DP-2 : Crafts Street

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.30"

Area (sf)	CN	Description
7,815	98	Paved parking, HSG A
0	98	Roofs, HSG A
3,665	49	50-75% Grass cover, Fair, HSG A
11,480	82	Weighted Average
3,665		31.93% Pervious Area
7,815		68.07% Impervious Area

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

Subcatchment 22: Site



Summary for Subcatchment 23: Site

[49] Hint: Tc<2dt may require smaller dt

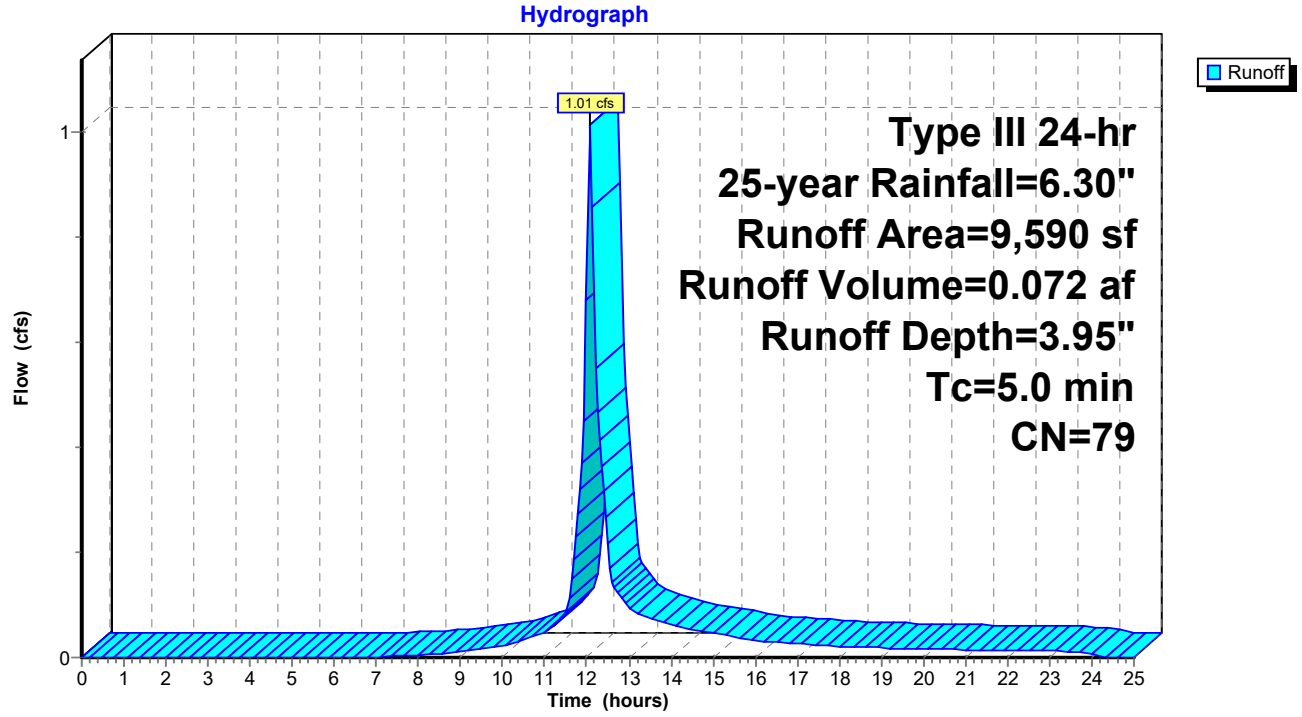
Runoff = 1.01 cfs @ 12.08 hrs, Volume= 0.072 af, Depth= 3.95"
Routed to Pond P-3 : Subsurface Infiltration System "C"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.30"

Area (sf)	CN	Description
5,875	98	Paved parking, HSG A
0	98	Roofs, HSG A
3,715	49	50-75% Grass cover, Fair, HSG A
9,590	79	Weighted Average
3,715		38.74% Pervious Area
5,875		61.26% Impervious Area

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

Subcatchment 23: Site



Summary for Subcatchment 24: Site

[49] Hint: Tc<2dt may require smaller dt

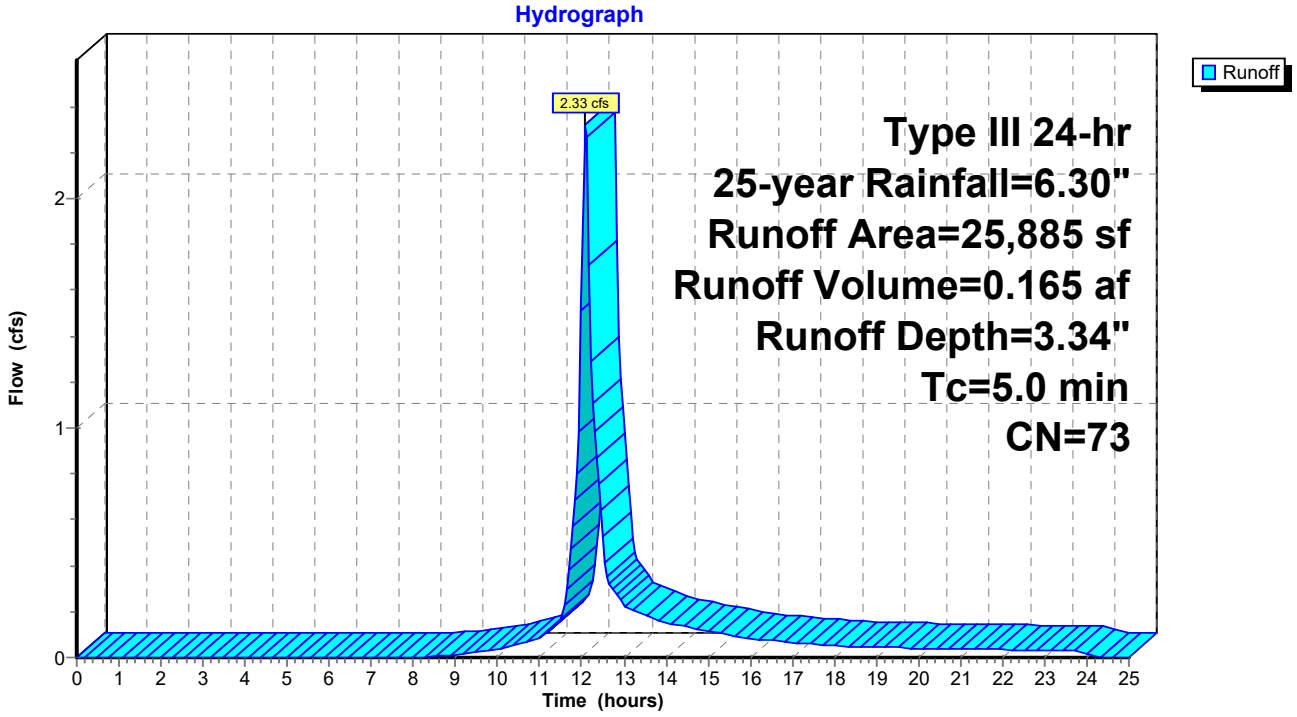
Runoff = 2.33 cfs @ 12.08 hrs, Volume= 0.165 af, Depth= 3.34"
Routed to Pond P-3 : Subsurface Infiltration System "C"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.30"

Area (sf)	CN	Description
12,820	98	Paved parking, HSG A
0	98	Roofs, HSG A
13,065	49	50-75% Grass cover, Fair, HSG A
25,885	73	Weighted Average
13,065		50.47% Pervious Area
12,820		49.53% Impervious Area

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

Subcatchment 24: Site



Summary for Subcatchment 25: Building

[49] Hint: Tc<2dt may require smaller dt

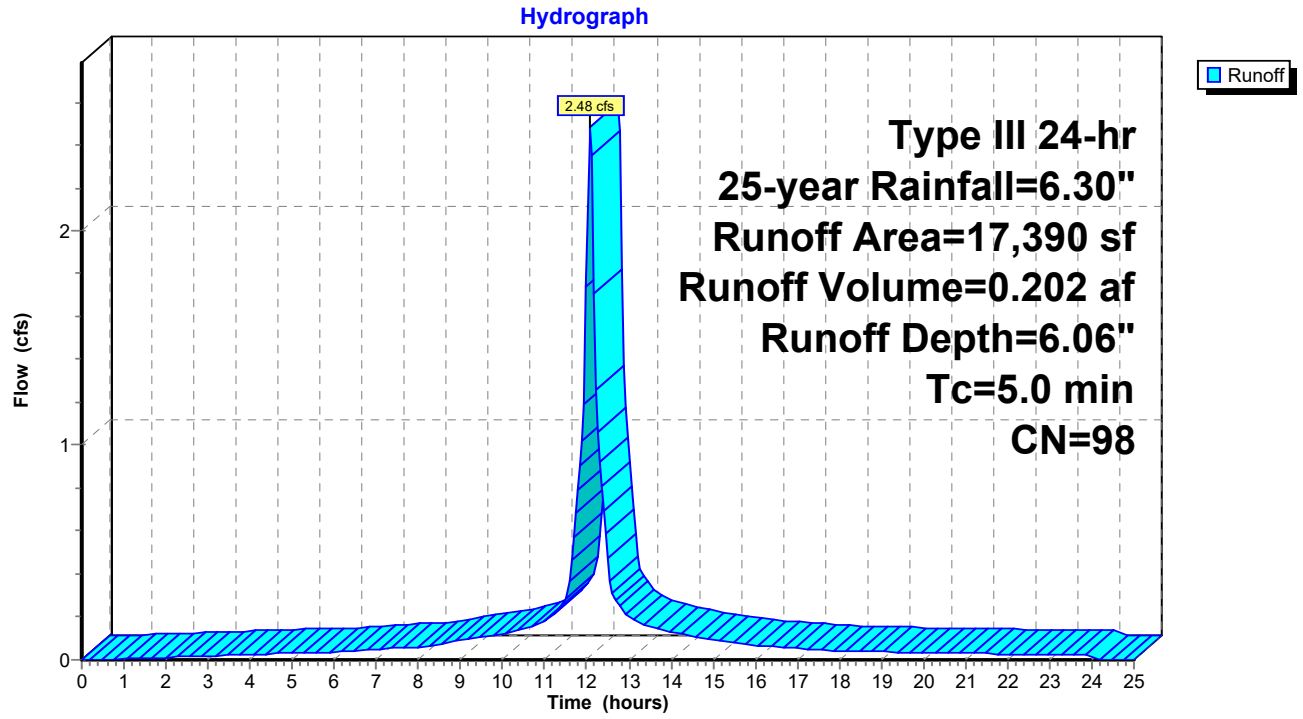
Runoff = 2.48 cfs @ 12.07 hrs, Volume= 0.202 af, Depth= 6.06"
Routed to Pond P-2 : Subsurface Infiltration System "B"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.30"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
17,390	98	Roofs, HSG A
0	49	50-75% Grass cover, Fair, HSG A
17,390	98	Weighted Average
17,390		100.00% Impervious Area

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

Subcatchment 25: Building



Summary for Subcatchment 26: Building

[49] Hint: Tc<2dt may require smaller dt

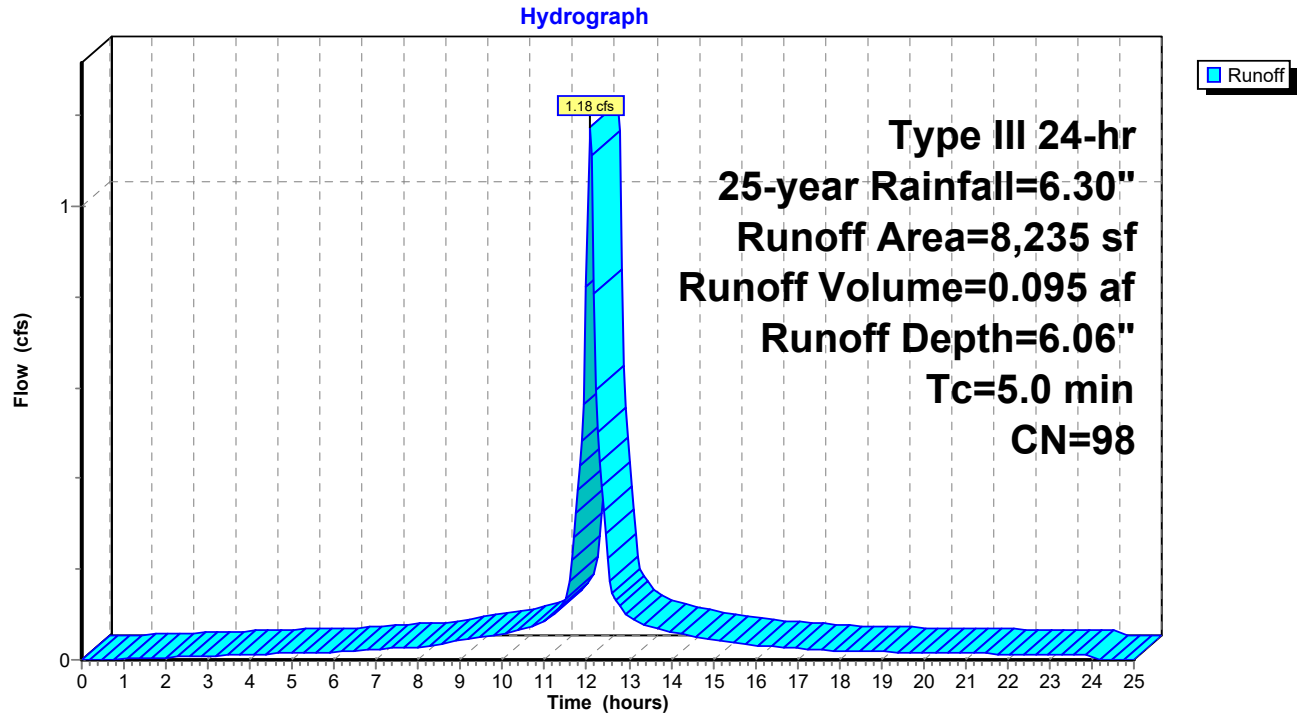
Runoff = 1.18 cfs @ 12.07 hrs, Volume= 0.095 af, Depth= 6.06"
Routed to Pond P-3 : Subsurface Infiltration System "C"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.30"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
8,235	98	Roofs, HSG A
0	49	50-75% Grass cover, Fair, HSG A
8,235	98	Weighted Average
8,235		100.00% Impervious Area

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

Subcatchment 26: Building



Summary for Pond P-1: Subsurface Infiltration System "A"

Inflow Area = 0.208 ac, 53.89% Impervious, Inflow Depth = 3.54" for 25-year event
Inflow = 0.86 cfs @ 12.08 hrs, Volume= 0.061 af
Outflow = 0.14 cfs @ 12.58 hrs, Volume= 0.061 af, Atten= 84%, Lag= 30.0 min
Discarded = 0.14 cfs @ 12.58 hrs, Volume= 0.061 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link DP-1 : Court Street

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 34.28' @ 12.58 hrs Surf.Area= 0.007 ac Storage= 0.021 af

Plug-Flow detention time= 63.0 min calculated for 0.061 af (100% of inflow)
Center-of-Mass det. time= 63.0 min (886.3 - 823.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	30.60'	0.000 af	**6.90'W x 43.19'L x 5.67'H Field A** 0.039 af Overall - 0.039 af Embedded = 0.000 af x 40.0% Voids
#2A	30.60'	0.029 af	**StormTrap ST1 SingleTrap 5-0**x 3 Inside #1 Inside= 82.7"W x 60.0"H => 29.76 sf x 14.06'L = 418.5 cf Outside= 82.7"W x 68.0"H => 39.08 sf x 14.06'L = 549.5 cf 6.90' x 42.19' Core + 0.00' x 0.50' Border = 6.90' x 43.19' System
		0.029 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	34.60'	**12.0" Round Culvert** L= 25.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 34.60' / 34.30' S= 0.0120 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	34.60'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	35.60'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	30.60'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 28.00'

Discarded OutFlow Max=0.14 cfs @ 12.58 hrs HW=34.28' (Free Discharge)
└**4=Exfiltration** (Controls 0.14 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=30.60' (Free Discharge)
└**1=Culvert** (Controls 0.00 cfs)
  └**2=Orifice/Grate** (Controls 0.00 cfs)
  └**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P-1: Subsurface Infiltration System "A" - Chamber Wizard Field A

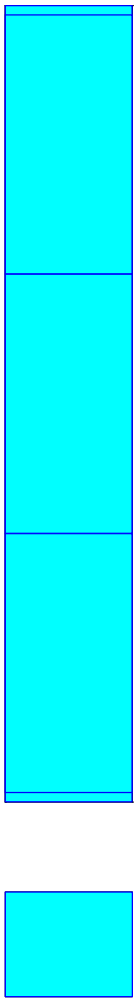
Chamber Model = StormTrap ST1 SingleTrap 5-0 (StormTrap ST1 SingleTrap® Type VI)
Inside= 82.7"W x 60.0"H => 29.76 sf x 14.06'L = 418.5 cf
Outside= 82.7"W x 68.0"H => 39.08 sf x 14.06'L = 549.5 cf

3 Chambers/Row x 14.06' Long = 42.19' Row Length +6.0" Border x 2 = 43.19' Base Length
1 Rows x 82.7" Wide = 6.90' Base Width
68.0" Chamber Height = 5.67' Field Height

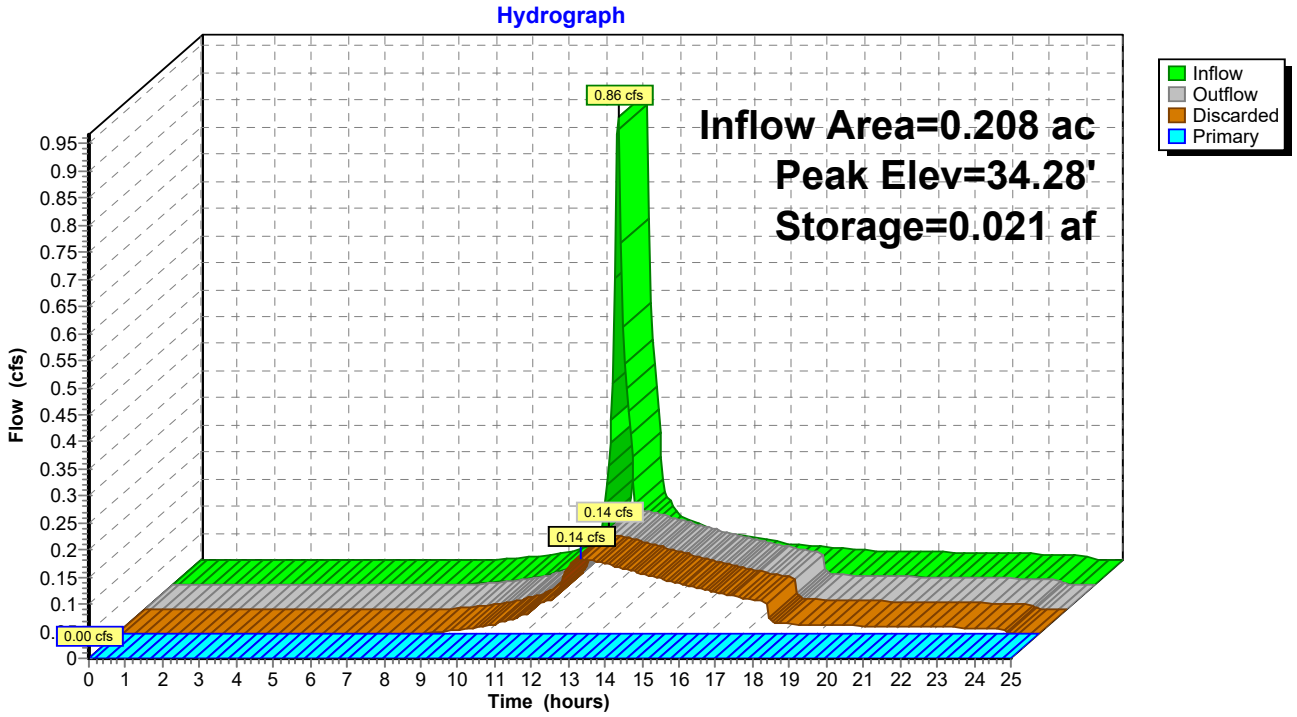
3 Chambers x 418.5 cf = 1,255.5 cf Chamber Storage
3 Chambers x 549.5 cf + 39.1 cf Border = 1,687.6 cf Displacement

Chamber Storage = 1,255.5 cf = 0.029 af
Overall Storage Efficiency = 74.4%
Overall System Size = 43.19' x 6.90' x 5.67'

3 Chambers (plus border)
62.5 cy Field



Pond P-1: Subsurface Infiltration System "A"



Summary for Pond P-2: Subsurface Infiltration System "B"

Inflow Area = 1.333 ac, 78.68% Impervious, Inflow Depth = 4.95" for 25-year event
Inflow = 7.00 cfs @ 12.07 hrs, Volume= 0.550 af
Outflow = 6.29 cfs @ 12.12 hrs, Volume= 0.550 af, Atten= 10%, Lag= 2.9 min
Discarded = 0.75 cfs @ 12.12 hrs, Volume= 0.416 af
Primary = 5.54 cfs @ 12.12 hrs, Volume= 0.134 af
Routed to Link DP-2 : Crafts Street

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 34.12' @ 12.12 hrs Surf.Area= 0.031 ac Storage= 0.100 af

Plug-Flow detention time= 35.6 min calculated for 0.549 af (100% of inflow)
Center-of-Mass det. time= 35.5 min (800.6 - 765.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	30.10'	0.000 af	**89.65'W x 15.06'L x 4.67'H Field A** 0.145 af Overall - 0.145 af Embedded = 0.000 af x 40.0% Voids
#2A	30.10'	0.100 af	**StormTrap ST1 SingleTrap 4-0**x 13 Inside #1 Inside= 82.7"W x 48.0"H => 23.79 sf x 14.06'L = 334.5 cf Outside= 82.7"W x 56.0"H => 32.18 sf x 14.06'L = 452.5 cf 13 Chambers in 13 Rows 89.65' x 14.06' Core + 0.00' x 0.50' Border = 89.65' x 15.06' System
#3	33.30'	0.001 af	**4.00'D x 3.10'H Vertical Cone/Cylinder**-Impervious
		0.101 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	33.10'	**12.0" Round Culvert X 2.00** L= 5.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 33.10' / 33.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Discarded	30.10'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 28.00'

Discarded OutFlow Max=0.75 cfs @ 12.12 hrs HW=34.08' (Free Discharge)
2=Exfiltration (Controls 0.75 cfs)

Primary OutFlow Max=5.25 cfs @ 12.12 hrs HW=34.08' (Free Discharge)
1=Culvert (Barrel Controls 5.25 cfs @ 4.26 fps)

Pond P-2: Subsurface Infiltration System "B" - Chamber Wizard Field A

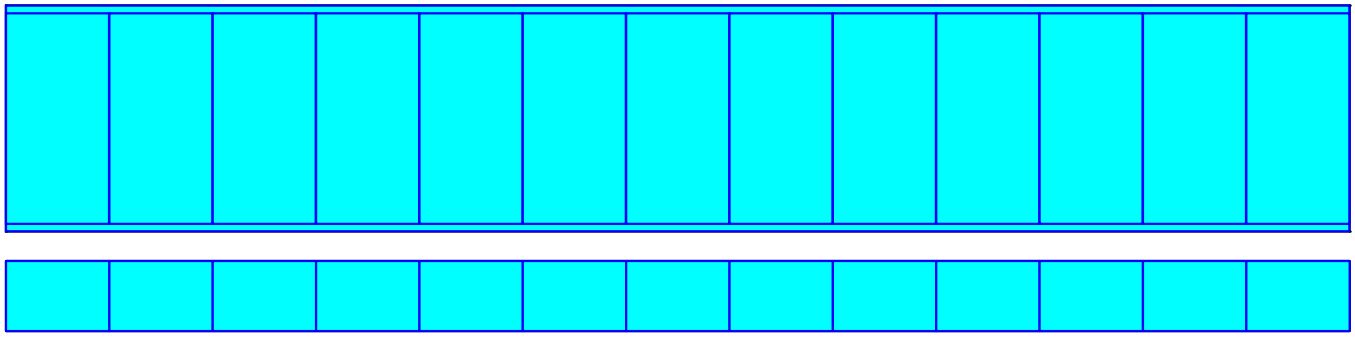
Chamber Model = StormTrap ST1 SingleTrap 4-0 (StormTrap ST1 SingleTrap® Type VI)
Inside= 82.7"W x 48.0"H => 23.79 sf x 14.06'L = 334.5 cf
Outside= 82.7"W x 56.0"H => 32.18 sf x 14.06'L = 452.5 cf

1 Chambers/Row x 14.06' Long = 14.06' Row Length +6.0" Border x 2 = 15.06' Base Length
13 Rows x 82.7" Wide = 89.65' Base Width
56.0" Chamber Height = 4.67' Field Height

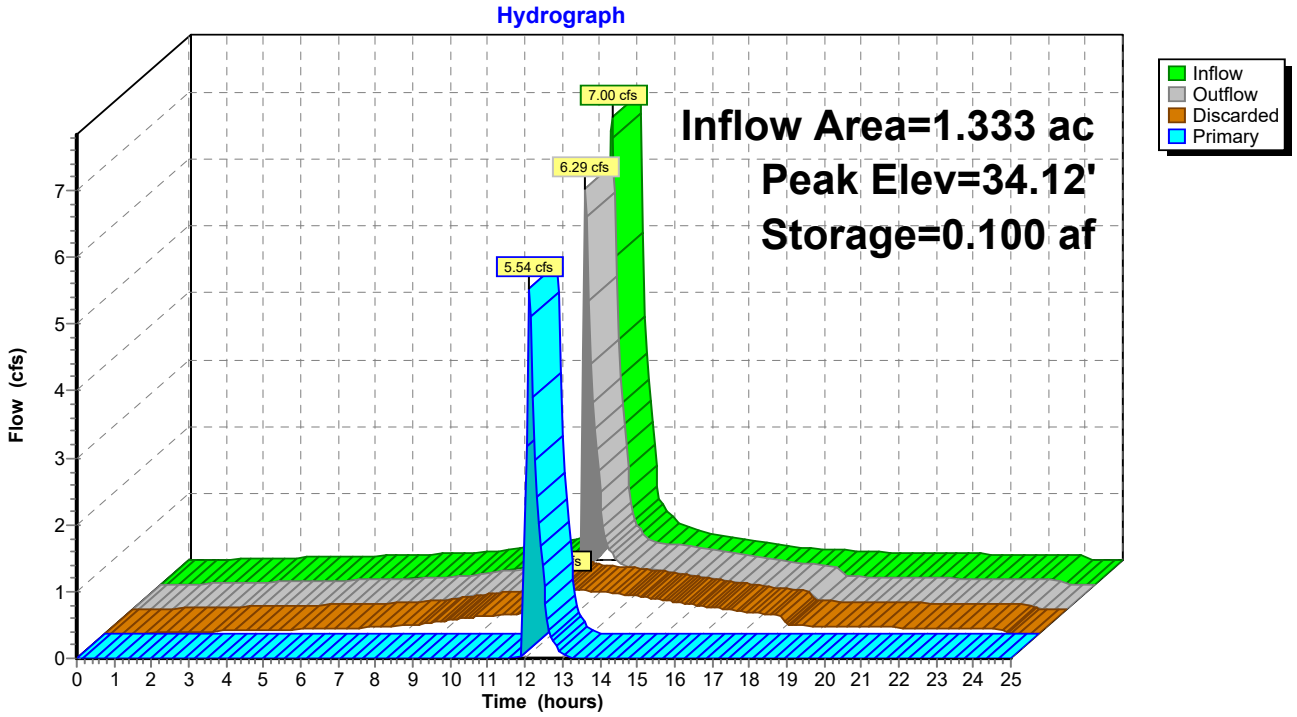
13 Chambers x 334.5 cf = 4,348.5 cf Chamber Storage
13 Chambers x 452.5 cf + 418.3 cf Border = 6,301.4 cf Displacement

Chamber Storage = 4,348.5 cf = 0.100 af
Overall Storage Efficiency = 69.0%
Overall System Size = 15.06' x 89.65' x 4.67'

13 Chambers (plus border)
233.4 cy Field



Pond P-2: Subsurface Infiltration System "B"



Summary for Pond P-3: Subsurface Infiltration System "C"

Inflow Area = 1.003 ac, 61.61% Impervious, Inflow Depth = 3.99" for 25-year event
Inflow = 4.50 cfs @ 12.08 hrs, Volume= 0.333 af
Outflow = 3.15 cfs @ 12.17 hrs, Volume= 0.333 af, Atten= 30%, Lag= 5.5 min
Discarded = 0.55 cfs @ 12.17 hrs, Volume= 0.258 af
Primary = 2.60 cfs @ 12.17 hrs, Volume= 0.076 af
Routed to Link DP-2 : Crafts Street

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 33.07' @ 12.17 hrs Surf.Area= 0.027 ac Storage= 0.069 af

Plug-Flow detention time= 32.7 min calculated for 0.333 af (100% of inflow)
Center-of-Mass det. time= 32.7 min (833.3 - 800.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	30.10'	0.000 af	**20.69'W x 57.25'L x 3.67'H Field A** 0.100 af Overall - 0.100 af Embedded = 0.000 af x 40.0% Voids
#2A	30.10'	0.069 af	**StormTrap ST1 SingleTrap 3-0**x 12 Inside #1 Inside= 82.7"W x 36.0"H => 17.81 sf x 14.06'L = 250.5 cf Outside= 82.7"W x 44.0"H => 25.28 sf x 14.06'L = 355.6 cf 12 Chambers in 3 Rows 20.69' x 56.25' Core + 0.00' x 0.50' Border = 20.69' x 57.25' System
#3	32.30'	0.001 af	**4.00'D x 5.10'H Vertical Cone/Cylinder**-Impervious
		0.070 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	32.10'	**12.0" Round Culvert** L= 5.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 32.10' / 32.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Discarded	30.10'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 28.00'

Discarded OutFlow Max=0.54 cfs @ 12.17 hrs HW=33.05' (Free Discharge)
2=Exfiltration (Controls 0.54 cfs)

Primary OutFlow Max=2.50 cfs @ 12.17 hrs HW=33.05' (Free Discharge)
1=Culvert (Barrel Controls 2.50 cfs @ 4.21 fps)

Pond P-3: Subsurface Infiltration System "C" - Chamber Wizard Field A

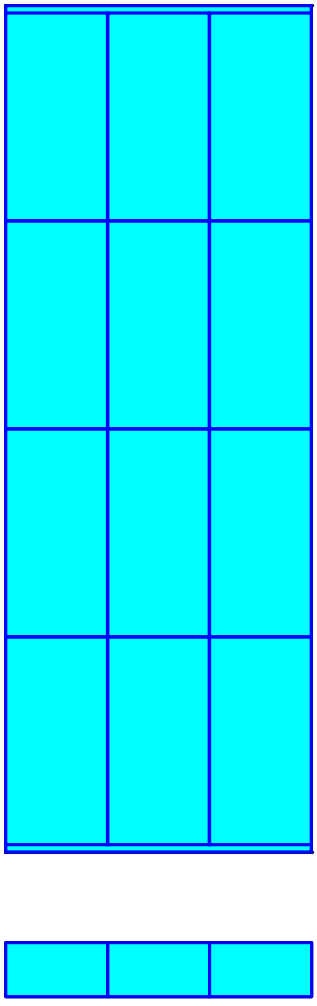
Chamber Model = StormTrap ST1 SingleTrap 3-0 (StormTrap ST1 SingleTrap® Type VI)
Inside= 82.7"W x 36.0"H => 17.81 sf x 14.06'L = 250.5 cf
Outside= 82.7"W x 44.0"H => 25.28 sf x 14.06'L = 355.6 cf

4 Chambers/Row x 14.06' Long = 56.25' Row Length +6.0" Border x 2 = 57.25' Base Length
3 Rows x 82.7" Wide = 20.69' Base Width
44.0" Chamber Height = 3.67' Field Height

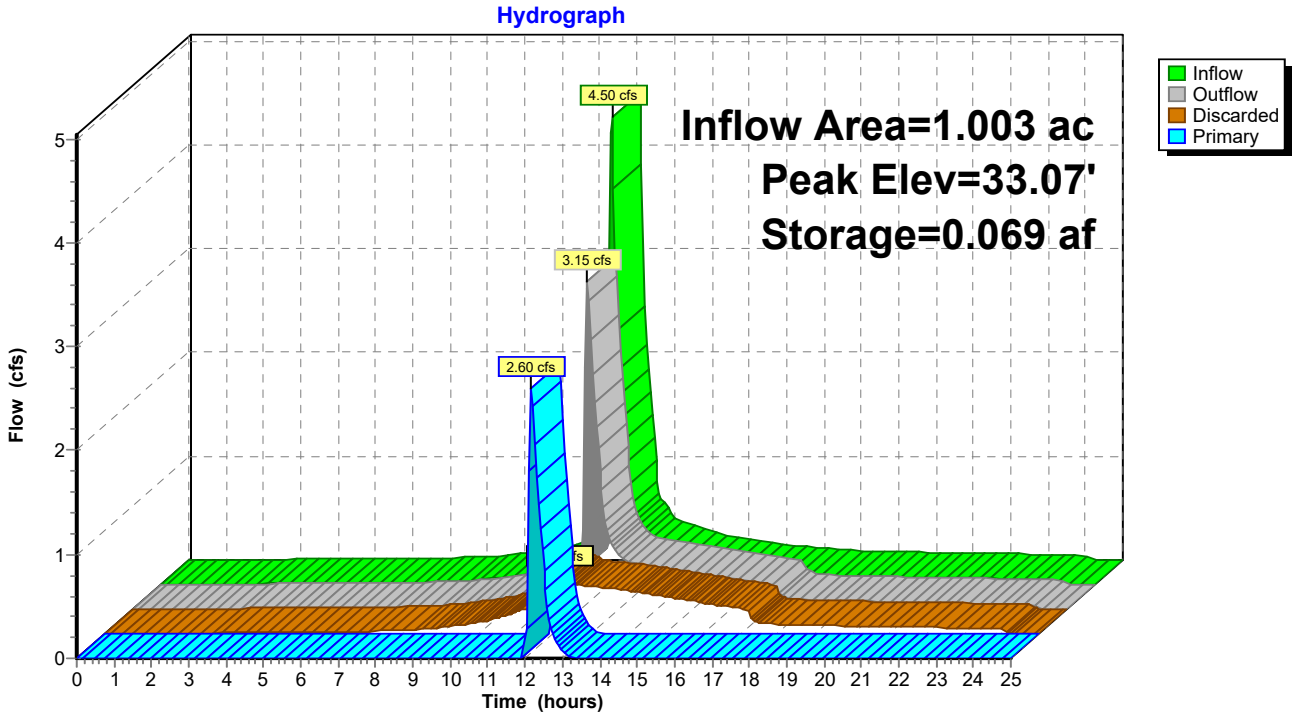
12 Chambers x 250.5 cf = 3,006.0 cf Chamber Storage
12 Chambers x 355.6 cf + 75.9 cf Border = 4,342.7 cf Displacement

Chamber Storage = 3,006.0 cf = 0.069 af
Overall Storage Efficiency = 69.2%
Overall System Size = 57.25' x 20.69' x 3.67'

12 Chambers (plus border)
160.8 cy Field



Pond P-3: Subsurface Infiltration System "C"

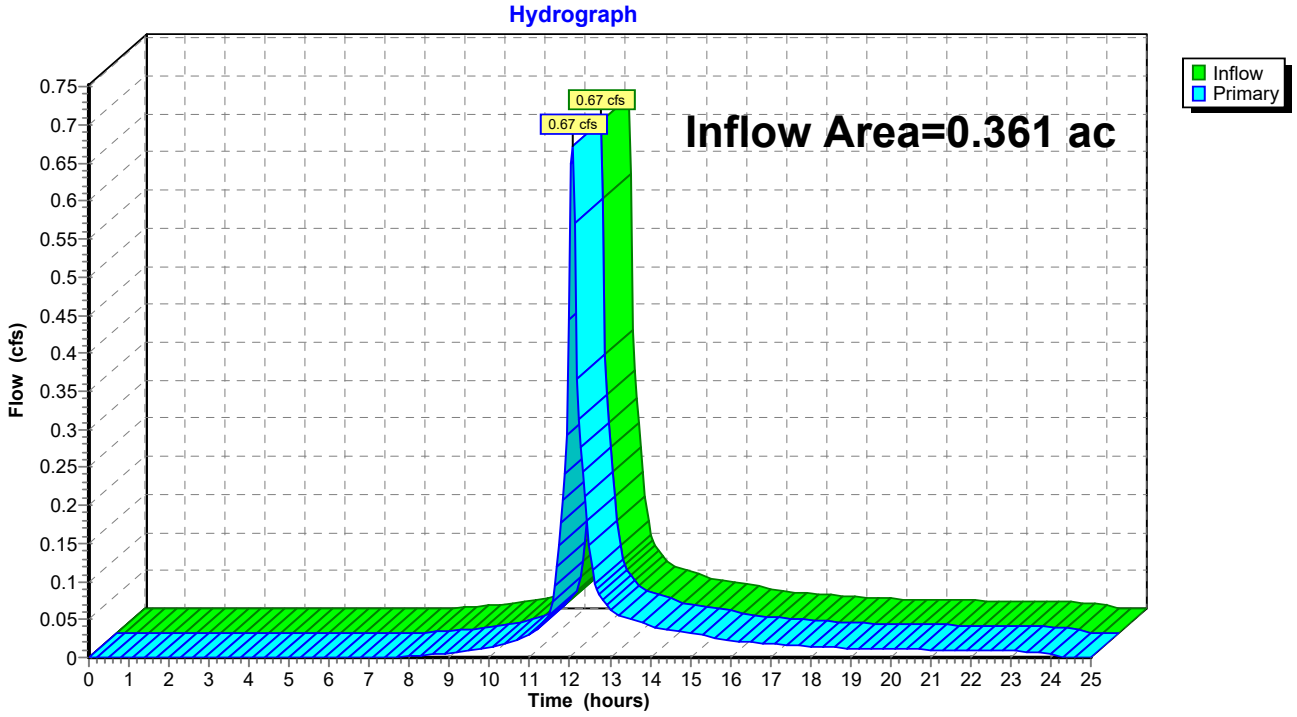


Summary for Link DP-1: Court Street

Inflow Area = 0.361 ac, 55.10% Impervious, Inflow Depth = 1.59" for 25-year event
Inflow = 0.67 cfs @ 12.08 hrs, Volume= 0.048 af
Primary = 0.67 cfs @ 12.08 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 27L

Primary outflow = Inflow, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs

Link DP-1: Court Street

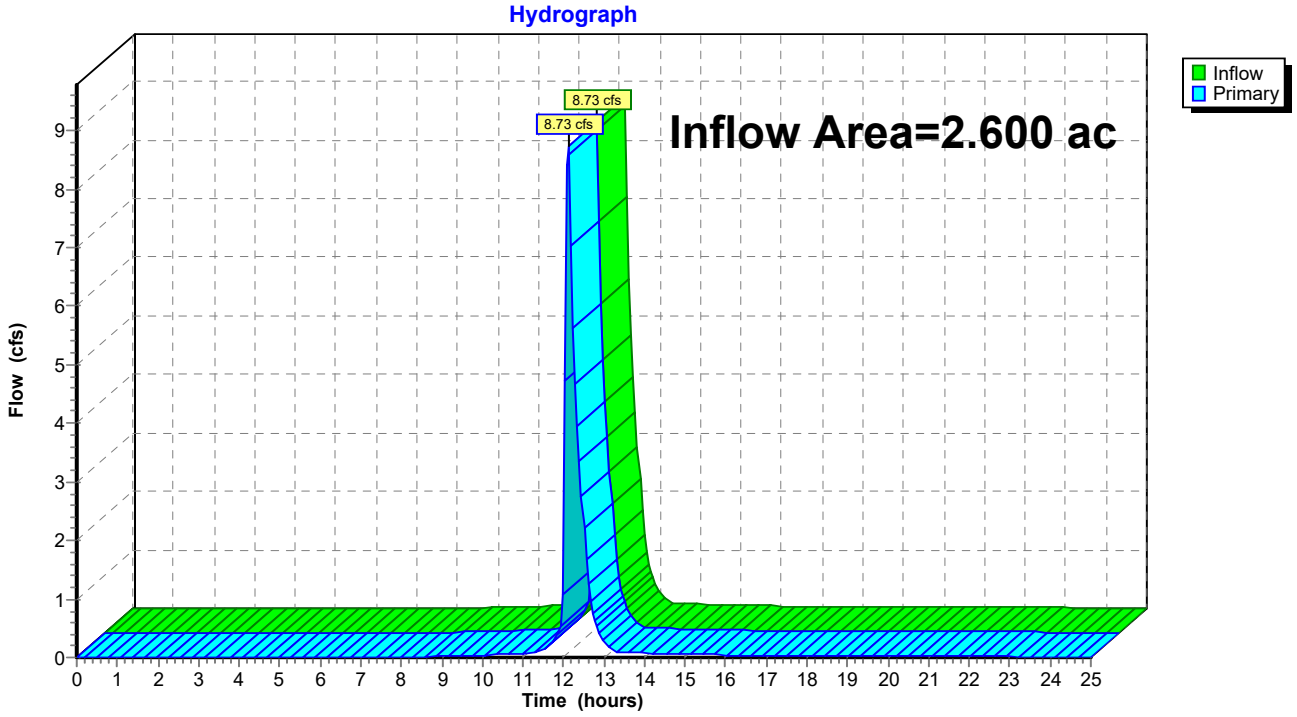


Summary for Link DP-2: Crafts Street

Inflow Area = 2.600 ac, 71.02% Impervious, Inflow Depth = 1.40" for 25-year event
Inflow = 8.73 cfs @ 12.13 hrs, Volume= 0.303 af
Primary = 8.73 cfs @ 12.13 hrs, Volume= 0.303 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 27L

Primary outflow = Inflow, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs

Link DP-2: Crafts Street



Time span=0.00-25.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment10: Site Runoff Area=9,065 sf 53.89% Impervious Runoff Depth=5.75"
Tc=5.0 min CN=75 Runoff=1.40 cfs 0.100 af

Subcatchment11: Site Runoff Area=6,680 sf 56.74% Impervious Runoff Depth=5.99"
Tc=5.0 min CN=77 Runoff=1.07 cfs 0.077 af

Subcatchment20: Site Runoff Area=22,160 sf 44.13% Impervious Runoff Depth=5.26"
Tc=5.0 min CN=71 Runoff=3.13 cfs 0.223 af

Subcatchment21: Building Runoff Area=18,520 sf 100.00% Impervious Runoff Depth=8.54"
Tc=5.0 min CN=98 Runoff=3.69 cfs 0.303 af

Subcatchment22: Site Runoff Area=11,480 sf 68.07% Impervious Runoff Depth=6.60"
Tc=5.0 min CN=82 Runoff=1.99 cfs 0.145 af

Subcatchment23: Site Runoff Area=9,590 sf 61.26% Impervious Runoff Depth=6.24"
Tc=5.0 min CN=79 Runoff=1.59 cfs 0.114 af

Subcatchment24: Site Runoff Area=25,885 sf 49.53% Impervious Runoff Depth=5.51"
Tc=5.0 min CN=73 Runoff=3.82 cfs 0.273 af

Subcatchment25: Building Runoff Area=17,390 sf 100.00% Impervious Runoff Depth=8.54"
Tc=5.0 min CN=98 Runoff=3.47 cfs 0.284 af

Subcatchment26: Building Runoff Area=8,235 sf 100.00% Impervious Runoff Depth=8.54"
Tc=5.0 min CN=98 Runoff=1.64 cfs 0.135 af

Pond P-1: Subsurface Infiltration System "A" Peak Elev=35.24' Storage=0.027 af Inflow=1.40 cfs 0.100 af
Discarded=0.16 cfs 0.084 af Primary=0.59 cfs 0.016 af Outflow=0.75 cfs 0.100 af

Pond P-2: Subsurface Infiltration System "B" Peak Elev=34.78' Storage=0.100 af Inflow=10.30 cfs 0.810 af
Discarded=0.83 cfs 0.528 af Primary=9.94 cfs 0.282 af Outflow=10.77 cfs 0.810 af

Pond P-3: Subsurface Infiltration System "C" Peak Elev=34.46' Storage=0.070 af Inflow=7.07 cfs 0.522 af
Discarded=0.70 cfs 0.340 af Primary=6.90 cfs 0.181 af Outflow=7.60 cfs 0.522 af

Link DP-1: Court Street Inflow=1.23 cfs 0.093 af
Primary=1.23 cfs 0.093 af

Link DP-2: Crafts Street Inflow=18.83 cfs 0.608 af
Primary=18.83 cfs 0.608 af

Total Runoff Area = 2.962 ac Runoff Volume = 1.653 af Average Runoff Depth = 6.70"
30.93% Pervious = 0.916 ac 69.07% Impervious = 2.046 ac

Summary for Subcatchment 10: Site

[49] Hint: Tc<2dt may require smaller dt

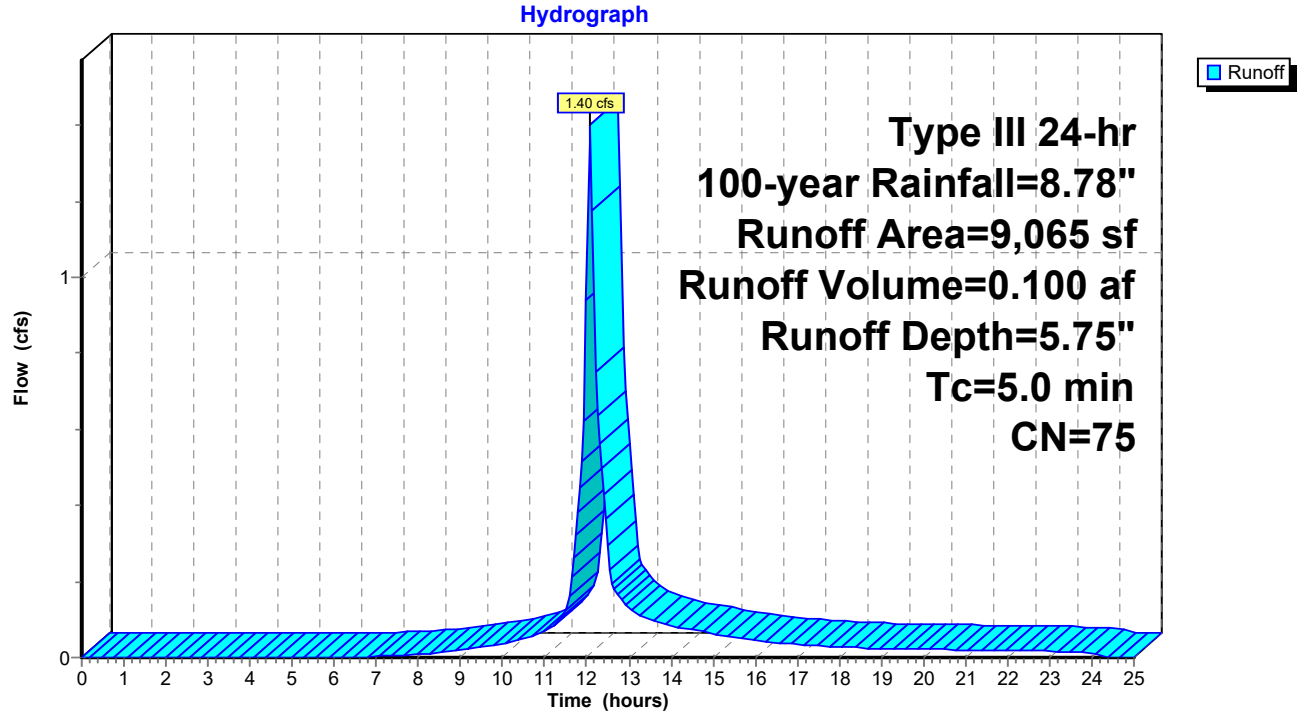
Runoff = 1.40 cfs @ 12.07 hrs, Volume= 0.100 af, Depth= 5.75"
Routed to Pond P-1 : Subsurface Infiltration System "A"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.78"

Area (sf)	CN	Description
4,885	98	Paved parking, HSG A
0	98	Roofs, HSG A
4,180	49	50-75% Grass cover, Fair, HSG A
9,065	75	Weighted Average
4,180		46.11% Pervious Area
4,885		53.89% Impervious Area

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

Subcatchment 10: Site



Summary for Subcatchment 11: Site

[49] Hint: Tc<2dt may require smaller dt

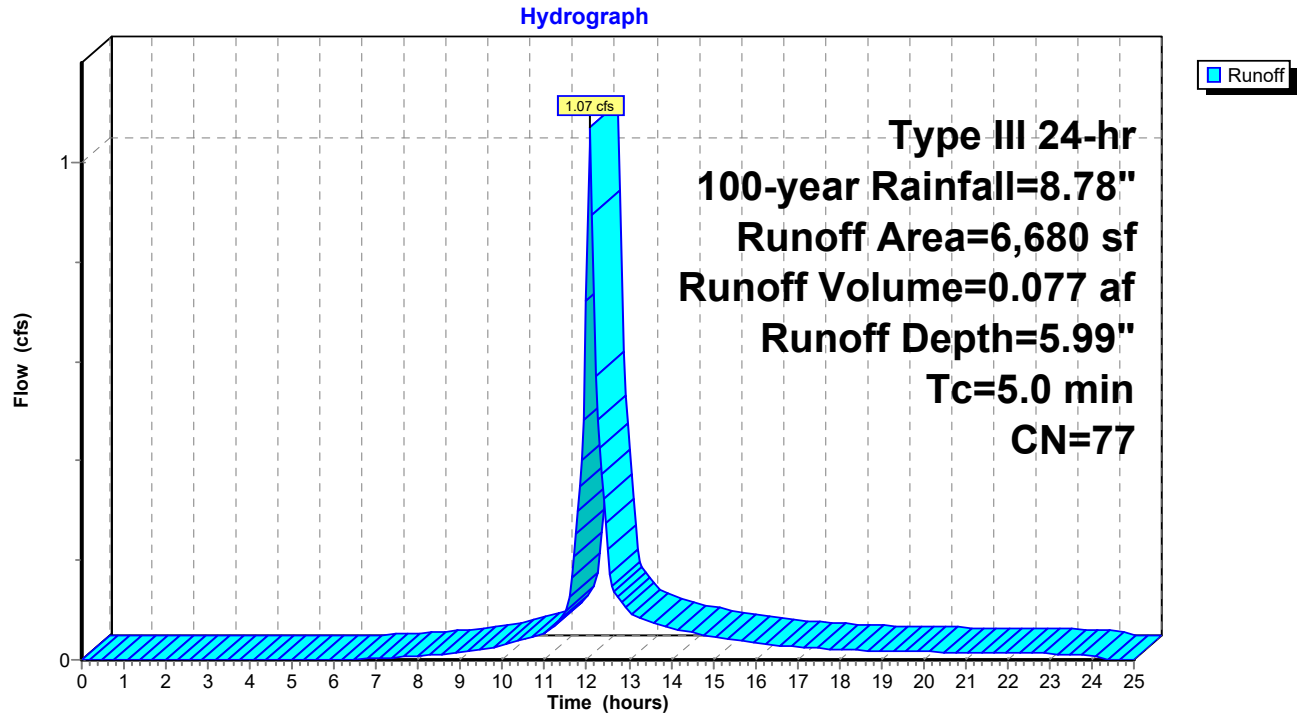
Runoff = 1.07 cfs @ 12.07 hrs, Volume= 0.077 af, Depth= 5.99"
Routed to Link DP-1 : Court Street

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.78"

Area (sf)	CN	Description
3,790	98	Paved parking, HSG A
2,890	49	50-75% Grass cover, Fair, HSG A
6,680	77	Weighted Average
2,890		43.26% Pervious Area
3,790		56.74% Impervious Area

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

Subcatchment 11: Site



Summary for Subcatchment 20: Site

[49] Hint: Tc<2dt may require smaller dt

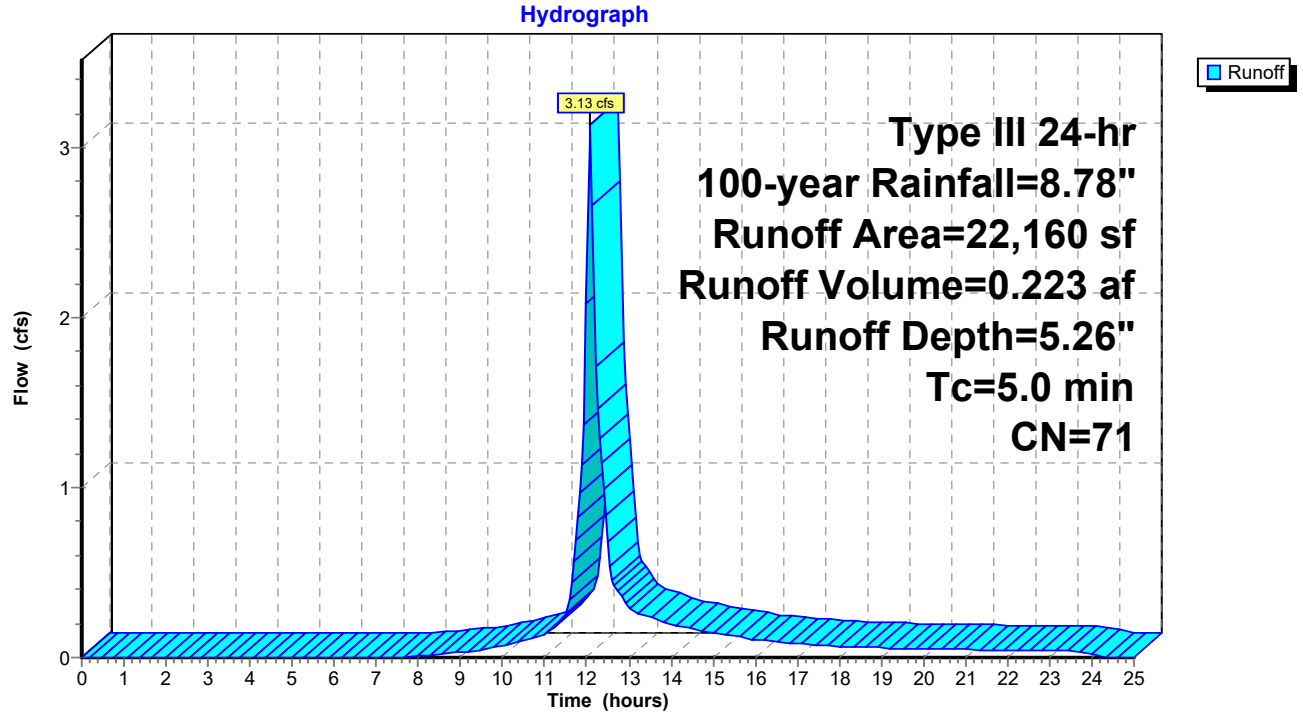
Runoff = 3.13 cfs @ 12.08 hrs, Volume= 0.223 af, Depth= 5.26"
Routed to Pond P-2 : Subsurface Infiltration System "B"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.78"

Area (sf)	CN	Description
9,780	98	Paved parking, HSG A
0	98	Roofs, HSG A
12,380	49	50-75% Grass cover, Fair, HSG A
22,160	71	Weighted Average
12,380		55.87% Pervious Area
9,780		44.13% Impervious Area

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

Subcatchment 20: Site



Summary for Subcatchment 21: Building

[49] Hint: Tc<2dt may require smaller dt

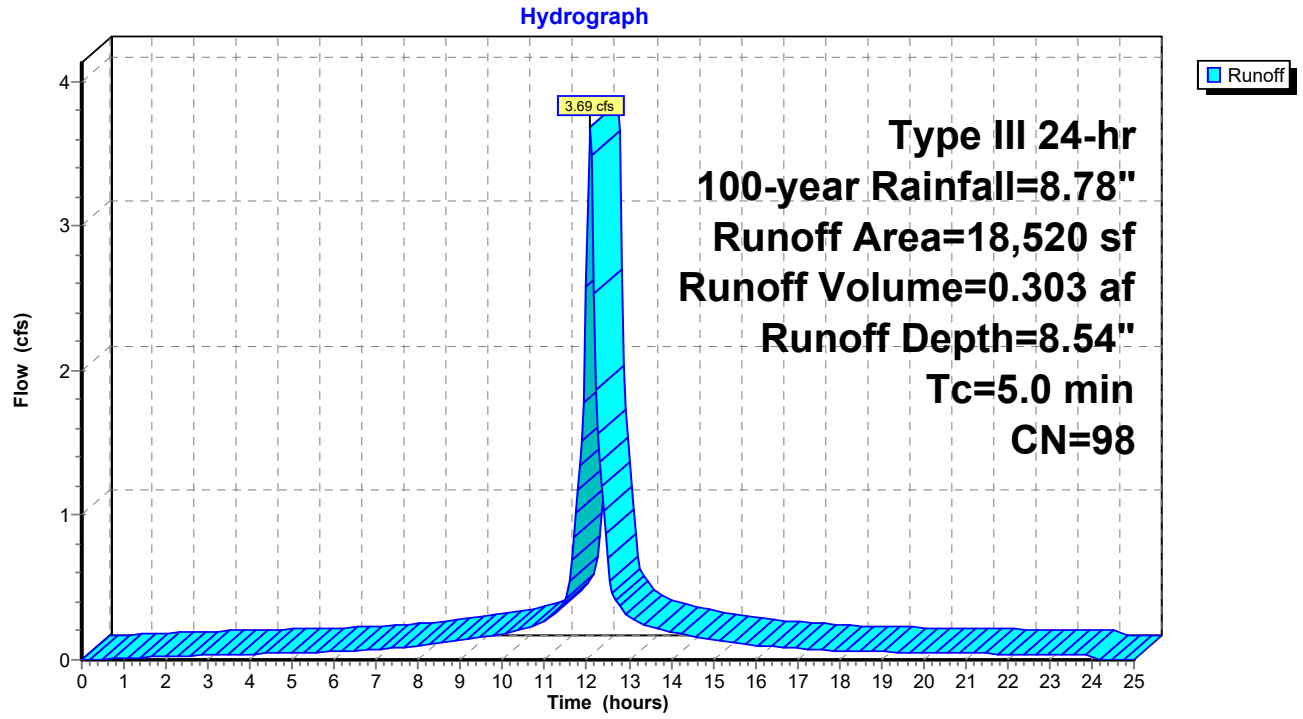
Runoff = 3.69 cfs @ 12.07 hrs, Volume= 0.303 af, Depth= 8.54"
Routed to Pond P-2 : Subsurface Infiltration System "B"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.78"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
18,520	98	Roofs, HSG A
0	49	50-75% Grass cover, Fair, HSG A
18,520	98	Weighted Average
18,520		100.00% Impervious Area

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

Subcatchment 21: Building



Summary for Subcatchment 22: Site

[49] Hint: Tc<2dt may require smaller dt

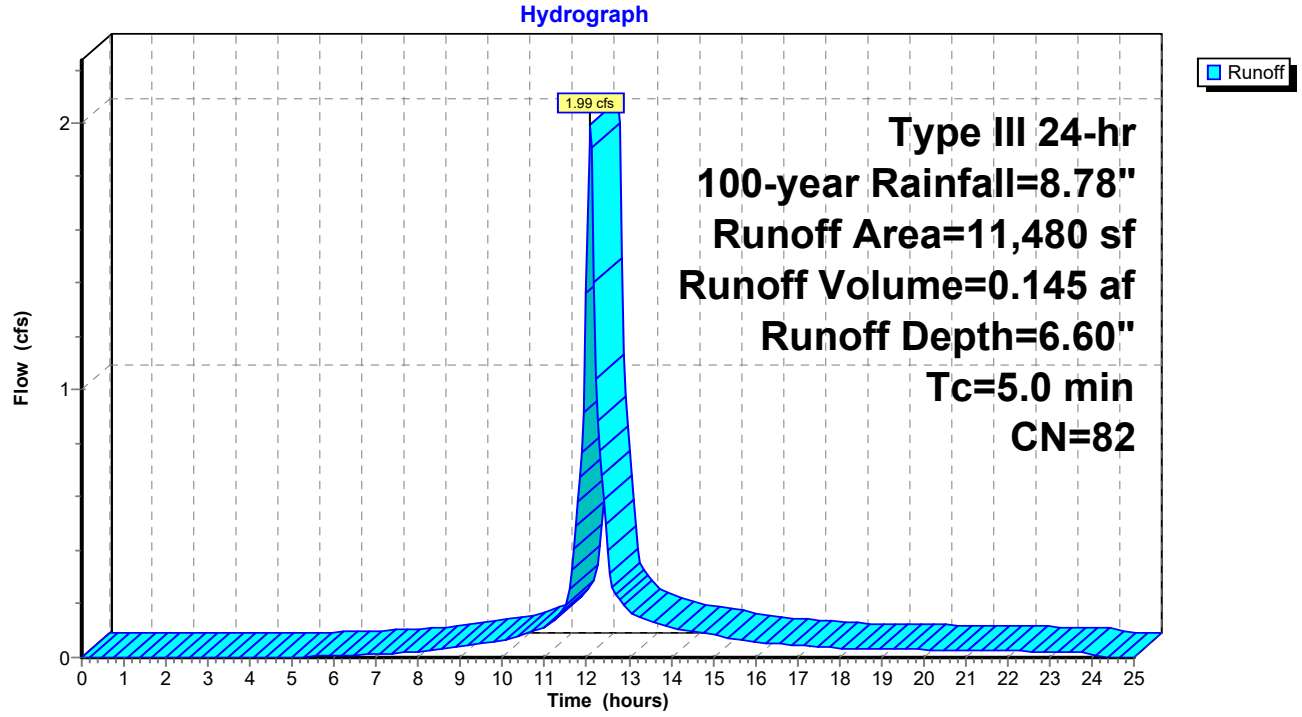
Runoff = 1.99 cfs @ 12.07 hrs, Volume= 0.145 af, Depth= 6.60"
Routed to Link DP-2 : Crafts Street

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.78"

Area (sf)	CN	Description
7,815	98	Paved parking, HSG A
0	98	Roofs, HSG A
3,665	49	50-75% Grass cover, Fair, HSG A
11,480	82	Weighted Average
3,665		31.93% Pervious Area
7,815		68.07% Impervious Area

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

Subcatchment 22: Site



Summary for Subcatchment 23: Site

[49] Hint: Tc<2dt may require smaller dt

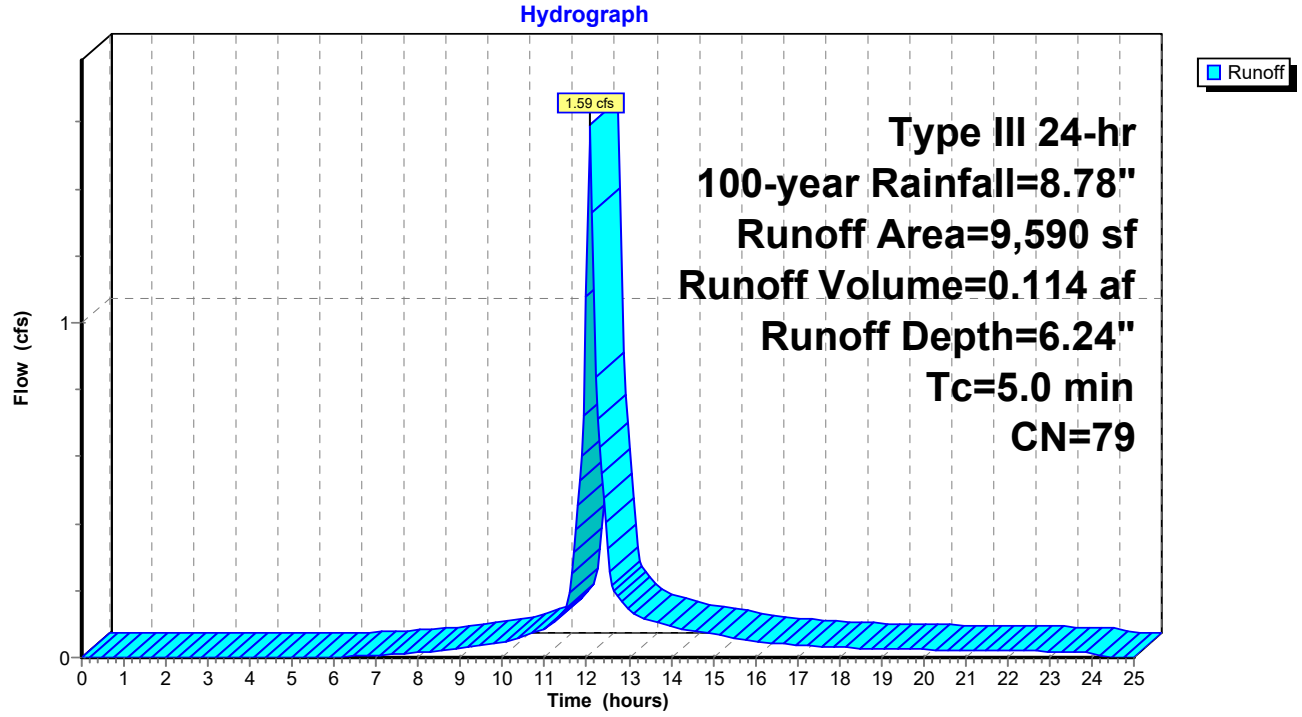
Runoff = 1.59 cfs @ 12.07 hrs, Volume= 0.114 af, Depth= 6.24"
Routed to Pond P-3 : Subsurface Infiltration System "C"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.78"

Area (sf)	CN	Description
5,875	98	Paved parking, HSG A
0	98	Roofs, HSG A
3,715	49	50-75% Grass cover, Fair, HSG A
9,590	79	Weighted Average
3,715		38.74% Pervious Area
5,875		61.26% Impervious Area

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

Subcatchment 23: Site



Summary for Subcatchment 24: Site

[49] Hint: Tc<2dt may require smaller dt

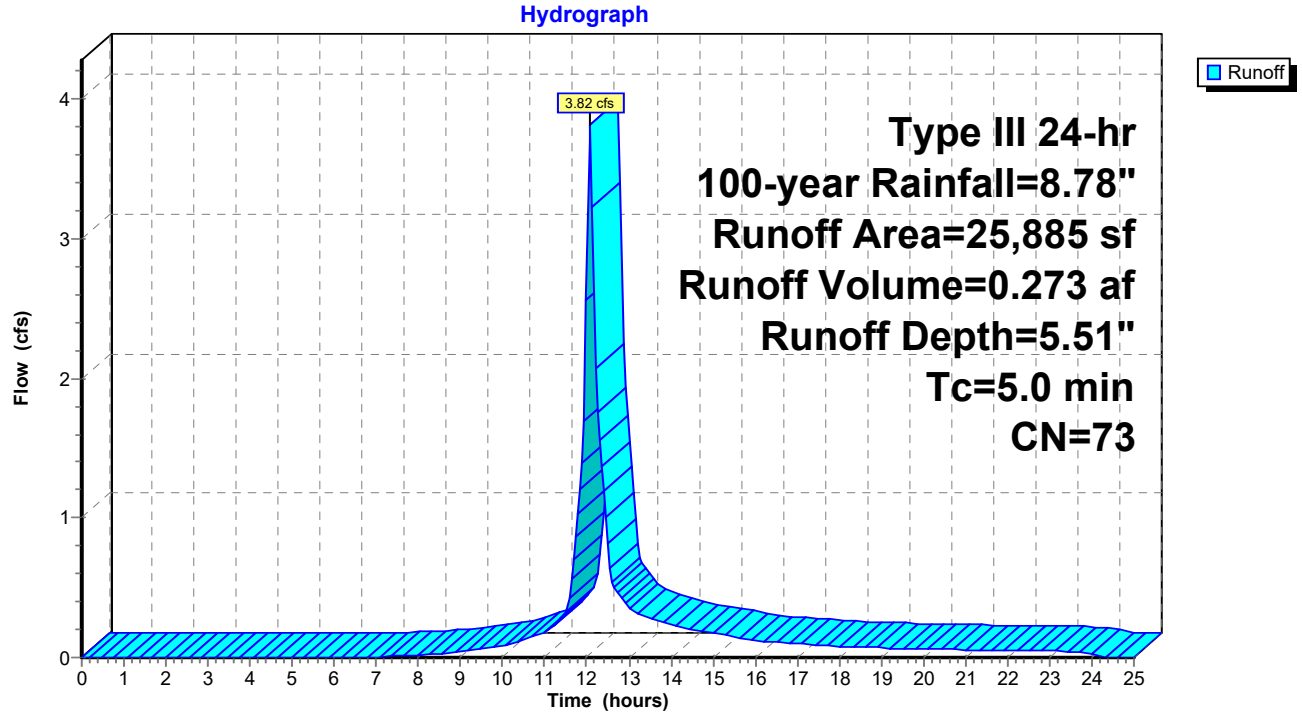
Runoff = 3.82 cfs @ 12.08 hrs, Volume= 0.273 af, Depth= 5.51"
Routed to Pond P-3 : Subsurface Infiltration System "C"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.78"

Area (sf)	CN	Description
12,820	98	Paved parking, HSG A
0	98	Roofs, HSG A
13,065	49	50-75% Grass cover, Fair, HSG A
25,885	73	Weighted Average
13,065		50.47% Pervious Area
12,820		49.53% Impervious Area

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

Subcatchment 24: Site



Summary for Subcatchment 25: Building

[49] Hint: Tc<2dt may require smaller dt

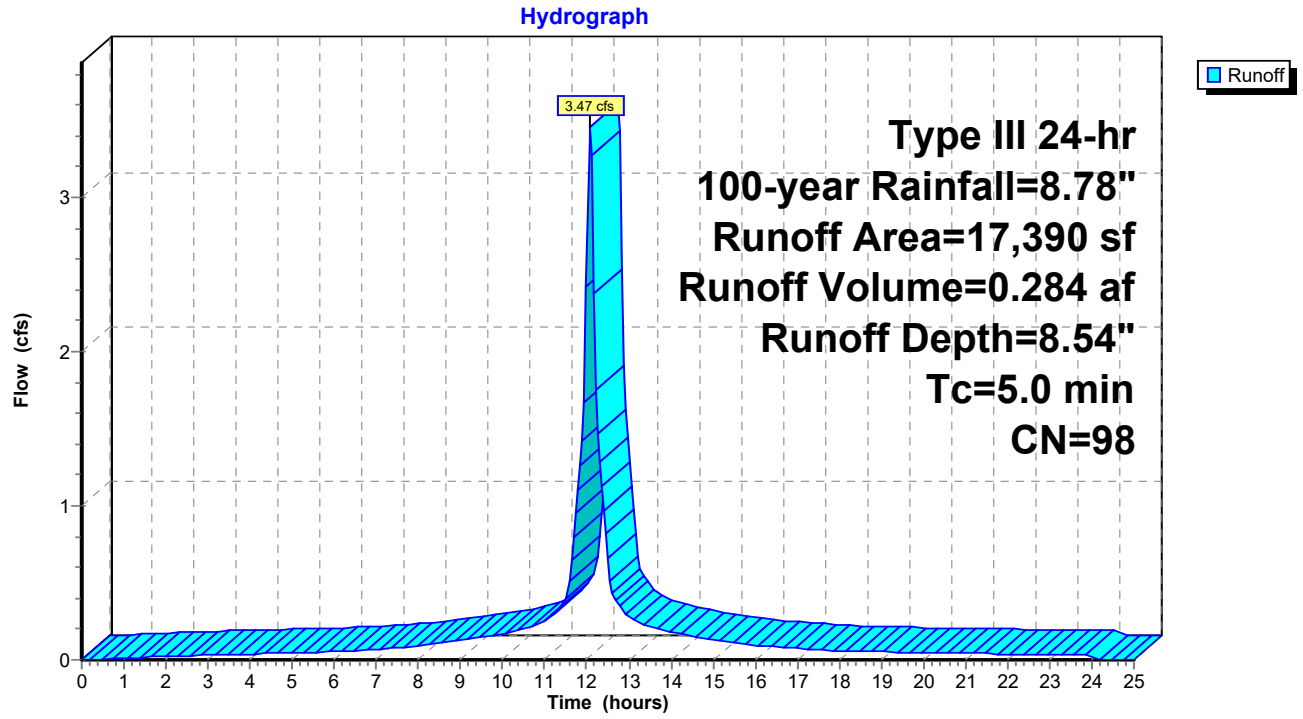
Runoff = 3.47 cfs @ 12.07 hrs, Volume= 0.284 af, Depth= 8.54"
Routed to Pond P-2 : Subsurface Infiltration System "B"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.78"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
17,390	98	Roofs, HSG A
0	49	50-75% Grass cover, Fair, HSG A
17,390	98	Weighted Average
17,390		100.00% Impervious Area

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

Subcatchment 25: Building



Summary for Subcatchment 26: Building

[49] Hint: Tc<2dt may require smaller dt

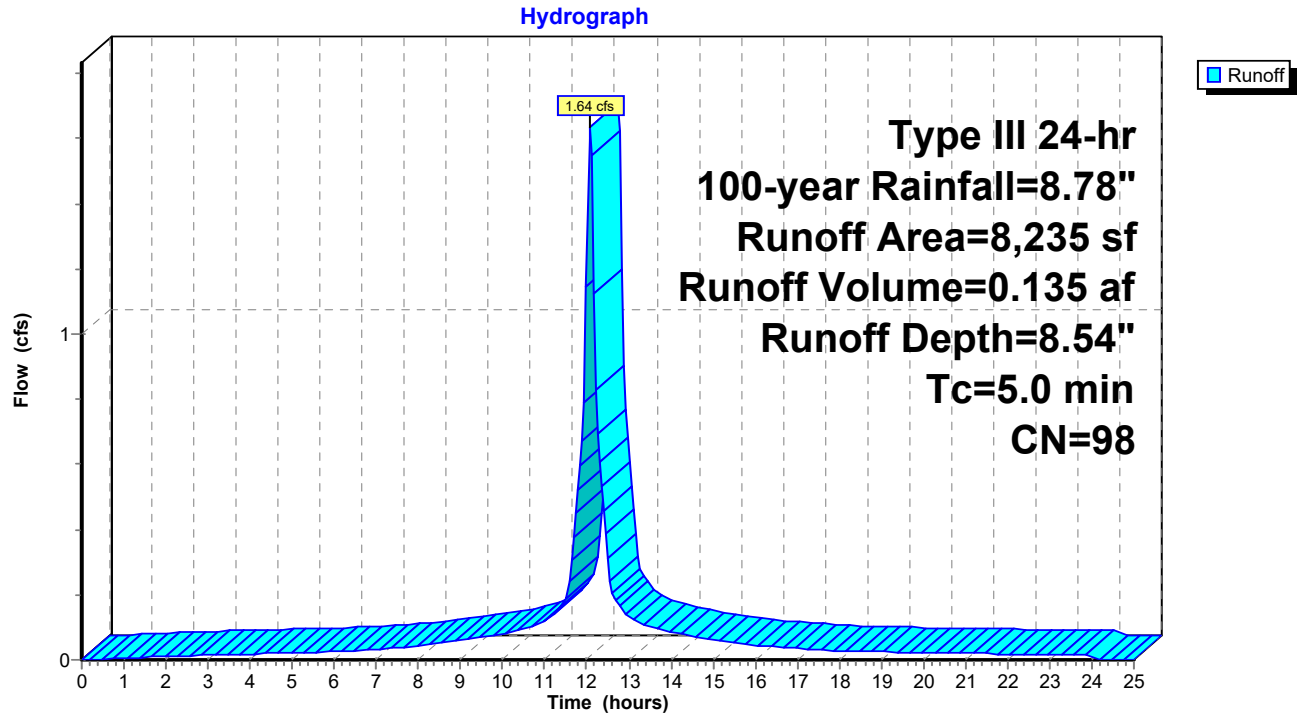
Runoff = 1.64 cfs @ 12.07 hrs, Volume= 0.135 af, Depth= 8.54"
Routed to Pond P-3 : Subsurface Infiltration System "C"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=8.78"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
8,235	98	Roofs, HSG A
0	49	50-75% Grass cover, Fair, HSG A
8,235	98	Weighted Average
8,235		100.00% Impervious Area

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

Subcatchment 26: Building



Summary for Pond P-1: Subsurface Infiltration System "A"

Inflow Area = 0.208 ac, 53.89% Impervious, Inflow Depth = 5.75" for 100-year event
Inflow = 1.40 cfs @ 12.07 hrs, Volume= 0.100 af
Outflow = 0.75 cfs @ 12.22 hrs, Volume= 0.100 af, Atten= 47%, Lag= 8.6 min
Discarded = 0.16 cfs @ 12.22 hrs, Volume= 0.084 af
Primary = 0.59 cfs @ 12.22 hrs, Volume= 0.016 af
Routed to Link DP-1 : Court Street

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 35.24' @ 12.22 hrs Surf.Area= 0.007 ac Storage= 0.027 af

Plug-Flow detention time= 58.5 min calculated for 0.100 af (100% of inflow)
Center-of-Mass det. time= 58.4 min (867.9 - 809.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	30.60'	0.000 af	**6.90'W x 43.19'L x 5.67'H Field A** 0.039 af Overall - 0.039 af Embedded = 0.000 af x 40.0% Voids
#2A	30.60'	0.029 af	**StormTrap ST1 SingleTrap 5-0** x 3 Inside #1 Inside= 82.7"W x 60.0"H => 29.76 sf x 14.06'L = 418.5 cf Outside= 82.7"W x 68.0"H => 39.08 sf x 14.06'L = 549.5 cf 6.90' x 42.19' Core + 0.00' x 0.50' Border = 6.90' x 43.19' System
		0.029 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	34.60'	**12.0" Round Culvert** L= 25.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 34.60' / 34.30' S= 0.0120 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	34.60'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	35.60'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Discarded	30.60'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 28.00'

Discarded OutFlow Max=0.16 cfs @ 12.22 hrs HW=35.22' (Free Discharge)
└**4=Exfiltration** (Controls 0.16 cfs)

Primary OutFlow Max=0.57 cfs @ 12.22 hrs HW=35.22' (Free Discharge)
└**1=Culvert** (Passes 0.57 cfs of 1.39 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.57 cfs @ 2.93 fps)
  └**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P-1: Subsurface Infiltration System "A" - Chamber Wizard Field A

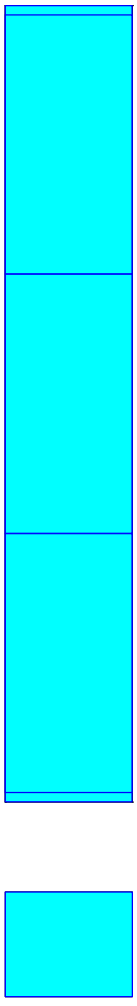
Chamber Model = StormTrap ST1 SingleTrap 5-0 (StormTrap ST1 SingleTrap® Type VI)
Inside= 82.7"W x 60.0"H => 29.76 sf x 14.06'L = 418.5 cf
Outside= 82.7"W x 68.0"H => 39.08 sf x 14.06'L = 549.5 cf

3 Chambers/Row x 14.06' Long = 42.19' Row Length +6.0" Border x 2 = 43.19' Base Length
1 Rows x 82.7" Wide = 6.90' Base Width
68.0" Chamber Height = 5.67' Field Height

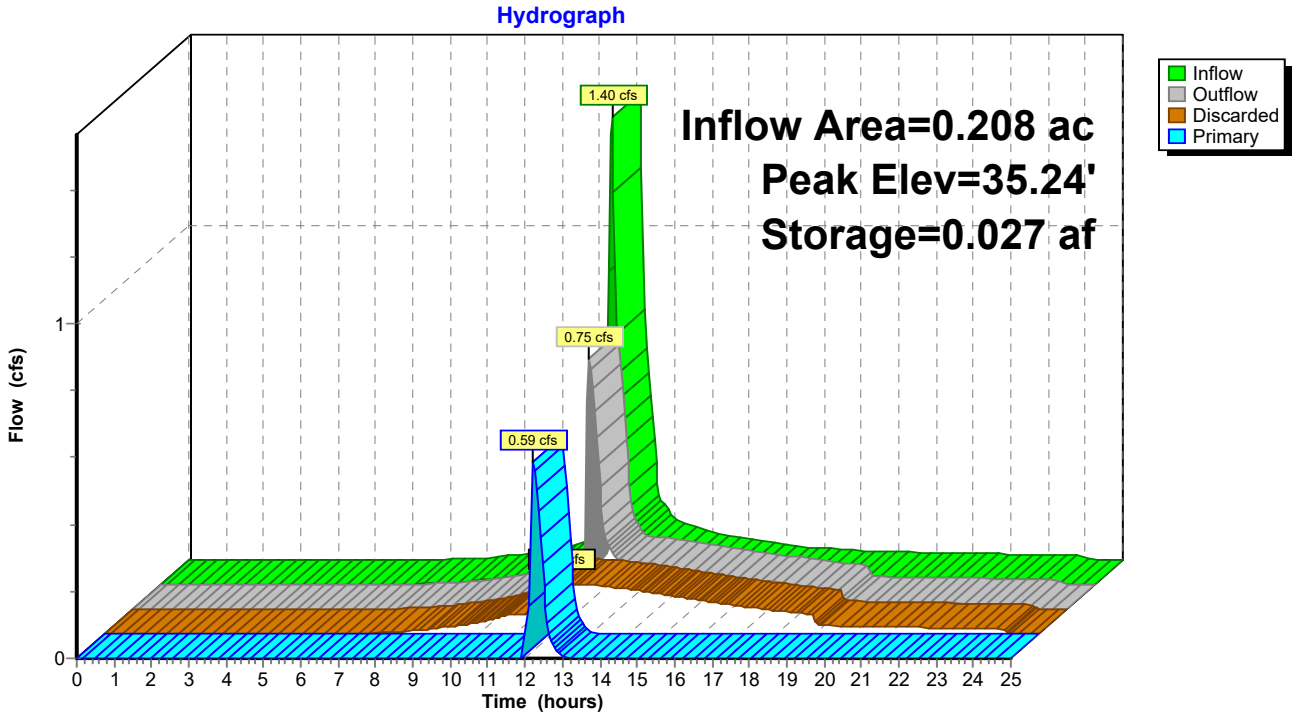
3 Chambers x 418.5 cf = 1,255.5 cf Chamber Storage
3 Chambers x 549.5 cf + 39.1 cf Border = 1,687.6 cf Displacement

Chamber Storage = 1,255.5 cf = 0.029 af
Overall Storage Efficiency = 74.4%
Overall System Size = 43.19' x 6.90' x 5.67'

3 Chambers (plus border)
62.5 cy Field



Pond P-1: Subsurface Infiltration System "A"



Summary for Pond P-2: Subsurface Infiltration System "B"

[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 1.333 ac, 78.68% Impervious, Inflow Depth = 7.29" for 100-year event
Inflow = 10.30 cfs @ 12.07 hrs, Volume= 0.810 af
Outflow = 10.77 cfs @ 12.07 hrs, Volume= 0.810 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.83 cfs @ 12.07 hrs, Volume= 0.528 af
Primary = 9.94 cfs @ 12.07 hrs, Volume= 0.282 af
Routed to Link DP-2 : Crafts Street

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 34.78' @ 12.07 hrs Surf.Area= 0.031 ac Storage= 0.100 af

Plug-Flow detention time= 33.9 min calculated for 0.808 af (100% of inflow)
Center-of-Mass det. time= 33.8 min (794.6 - 760.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	30.10'	0.000 af	**89.65'W x 15.06'L x 4.67'H Field A** 0.145 af Overall - 0.145 af Embedded = 0.000 af x 40.0% Voids
#2A	30.10'	0.100 af	**StormTrap ST1 SingleTrap 4-0**x 13 Inside #1 Inside= 82.7"W x 48.0"H => 23.79 sf x 14.06'L = 334.5 cf Outside= 82.7"W x 56.0"H => 32.18 sf x 14.06'L = 452.5 cf 13 Chambers in 13 Rows 89.65' x 14.06' Core + 0.00' x 0.50' Border = 89.65' x 15.06' System
#3	33.30'	0.001 af	**4.00'D x 3.10'H Vertical Cone/Cylinder**-Impervious
		0.101 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	33.10'	**12.0" Round Culvert X 2.00** L= 5.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 33.10' / 33.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Discarded	30.10'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 28.00'

Discarded OutFlow Max=0.82 cfs @ 12.07 hrs HW=34.69' (Free Discharge)
↑**2=Exfiltration** (Controls 0.82 cfs)

Primary OutFlow Max=9.31 cfs @ 12.07 hrs HW=34.69' (Free Discharge)
↑**1=Culvert** (Barrel Controls 9.31 cfs @ 5.93 fps)

Pond P-2: Subsurface Infiltration System "B" - Chamber Wizard Field A

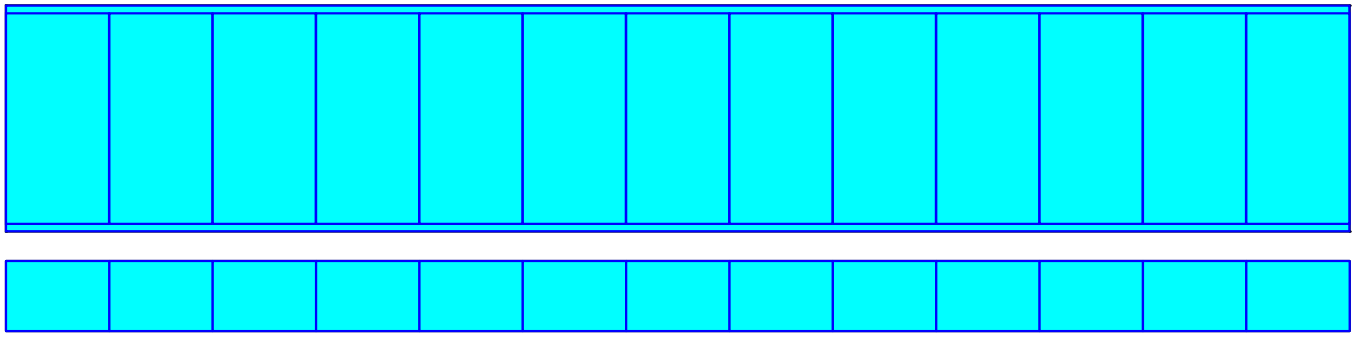
Chamber Model = StormTrap ST1 SingleTrap 4-0 (StormTrap ST1 SingleTrap® Type VI)
Inside= 82.7"W x 48.0"H => 23.79 sf x 14.06'L = 334.5 cf
Outside= 82.7"W x 56.0"H => 32.18 sf x 14.06'L = 452.5 cf

1 Chambers/Row x 14.06' Long = 14.06' Row Length +6.0" Border x 2 = 15.06' Base Length
13 Rows x 82.7" Wide = 89.65' Base Width
56.0" Chamber Height = 4.67' Field Height

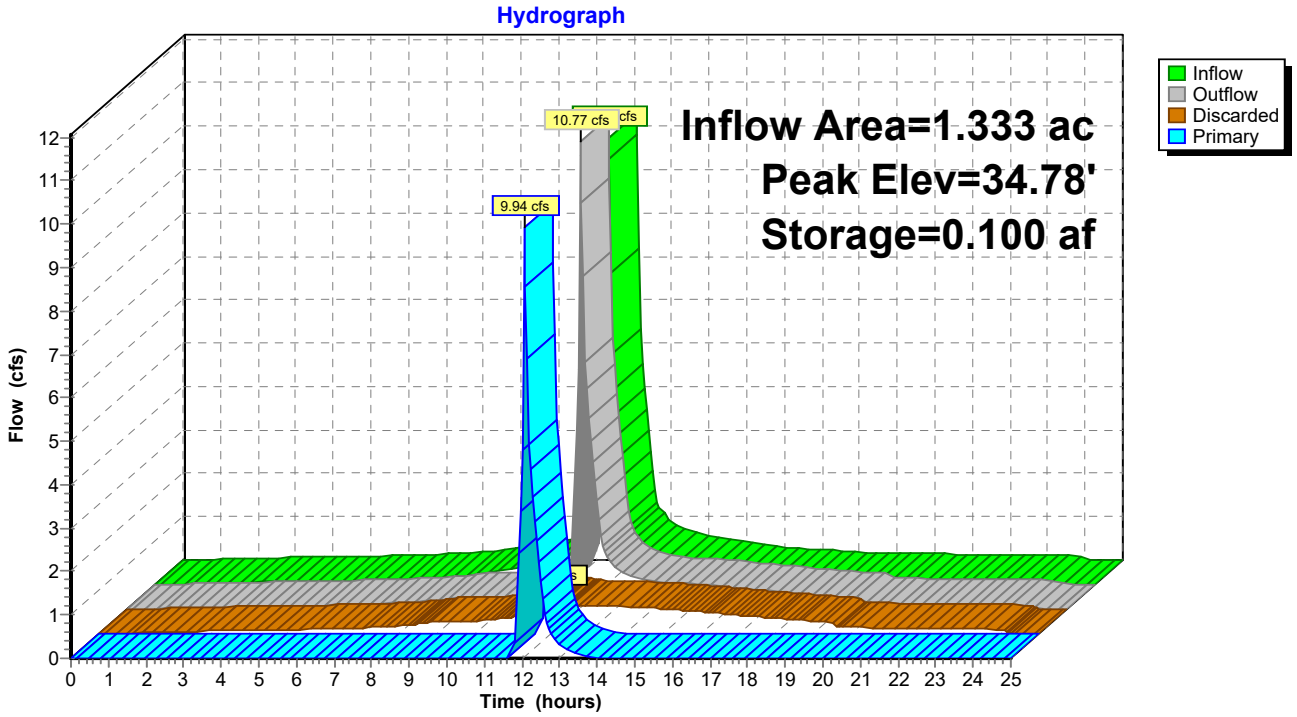
13 Chambers x 334.5 cf = 4,348.5 cf Chamber Storage
13 Chambers x 452.5 cf + 418.3 cf Border = 6,301.4 cf Displacement

Chamber Storage = 4,348.5 cf = 0.100 af
Overall Storage Efficiency = 69.0%
Overall System Size = 15.06' x 89.65' x 4.67'

13 Chambers (plus border)
233.4 cy Field



Pond P-2: Subsurface Infiltration System "B"



Summary for Pond P-3: Subsurface Infiltration System "C"

[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 1.003 ac, 61.61% Impervious, Inflow Depth = 6.24" for 100-year event
Inflow = 7.07 cfs @ 12.07 hrs, Volume= 0.522 af
Outflow = 7.60 cfs @ 12.07 hrs, Volume= 0.522 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.70 cfs @ 12.06 hrs, Volume= 0.340 af
Primary = 6.90 cfs @ 12.07 hrs, Volume= 0.181 af
Routed to Link DP-2 : Crafts Street

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs
Peak Elev= 34.46' @ 12.06 hrs Surf.Area= 0.027 ac Storage= 0.070 af

Plug-Flow detention time= 30.0 min calculated for 0.522 af (100% of inflow)
Center-of-Mass det. time= 30.0 min (821.6 - 791.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	30.10'	0.000 af	**20.69'W x 57.25'L x 3.67'H Field A** 0.100 af Overall - 0.100 af Embedded = 0.000 af x 40.0% Voids
#2A	30.10'	0.069 af	**StormTrap ST1 SingleTrap 3-0**x 12 Inside #1 Inside= 82.7"W x 36.0"H => 17.81 sf x 14.06'L = 250.5 cf Outside= 82.7"W x 44.0"H => 25.28 sf x 14.06'L = 355.6 cf 12 Chambers in 3 Rows 20.69' x 56.25' Core + 0.00' x 0.50' Border = 20.69' x 57.25' System
#3	32.30'	0.001 af	**4.00'D x 5.10'H Vertical Cone/Cylinder**-Impervious
		0.070 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	32.10'	**12.0" Round Culvert** L= 5.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 32.10' / 32.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Discarded	30.10'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 28.00'

Discarded OutFlow Max=0.68 cfs @ 12.06 hrs HW=34.28' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.68 cfs)

Primary OutFlow Max=6.33 cfs @ 12.07 hrs HW=34.27' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 6.33 cfs @ 8.07 fps)

Pond P-3: Subsurface Infiltration System "C" - Chamber Wizard Field A

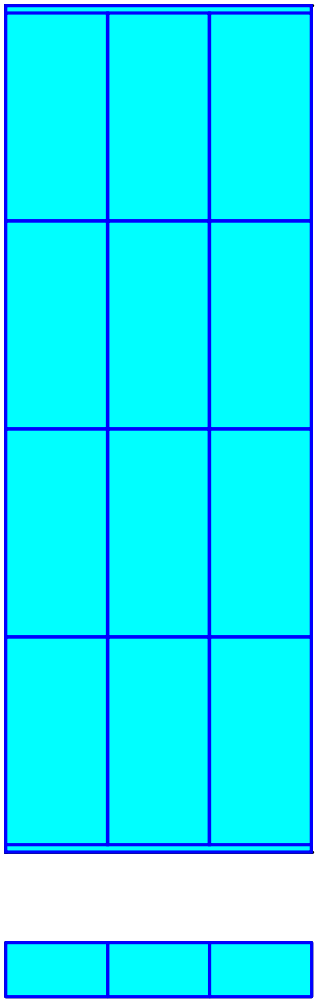
Chamber Model = StormTrap ST1 SingleTrap 3-0 (StormTrap ST1 SingleTrap® Type VI)
Inside= 82.7"W x 36.0"H => 17.81 sf x 14.06'L = 250.5 cf
Outside= 82.7"W x 44.0"H => 25.28 sf x 14.06'L = 355.6 cf

4 Chambers/Row x 14.06' Long = 56.25' Row Length +6.0" Border x 2 = 57.25' Base Length
3 Rows x 82.7" Wide = 20.69' Base Width
44.0" Chamber Height = 3.67' Field Height

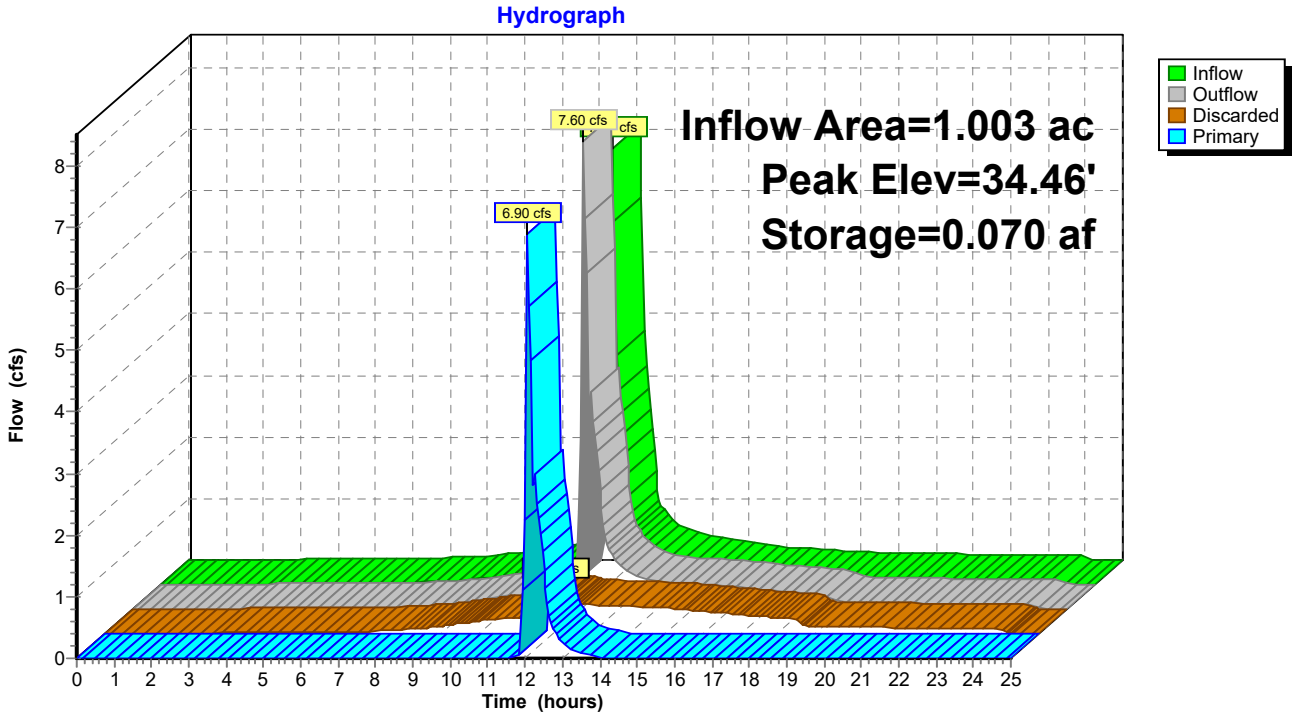
12 Chambers x 250.5 cf = 3,006.0 cf Chamber Storage
12 Chambers x 355.6 cf + 75.9 cf Border = 4,342.7 cf Displacement

Chamber Storage = 3,006.0 cf = 0.069 af
Overall Storage Efficiency = 69.2%
Overall System Size = 57.25' x 20.69' x 3.67'

12 Chambers (plus border)
160.8 cy Field



Pond P-3: Subsurface Infiltration System "C"

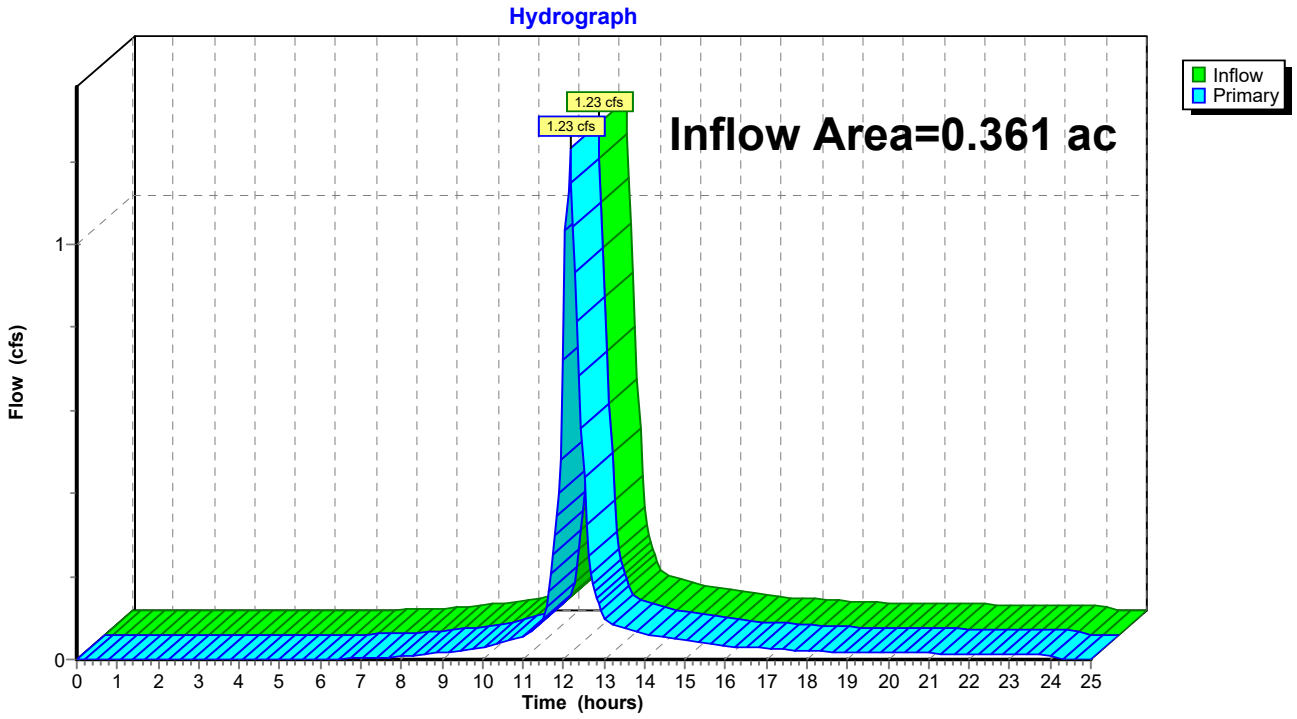


Summary for Link DP-1: Court Street

Inflow Area = 0.361 ac, 55.10% Impervious, Inflow Depth = 3.08" for 100-year event
Inflow = 1.23 cfs @ 12.16 hrs, Volume= 0.093 af
Primary = 1.23 cfs @ 12.16 hrs, Volume= 0.093 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 27L

Primary outflow = Inflow, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs

Link DP-1: Court Street

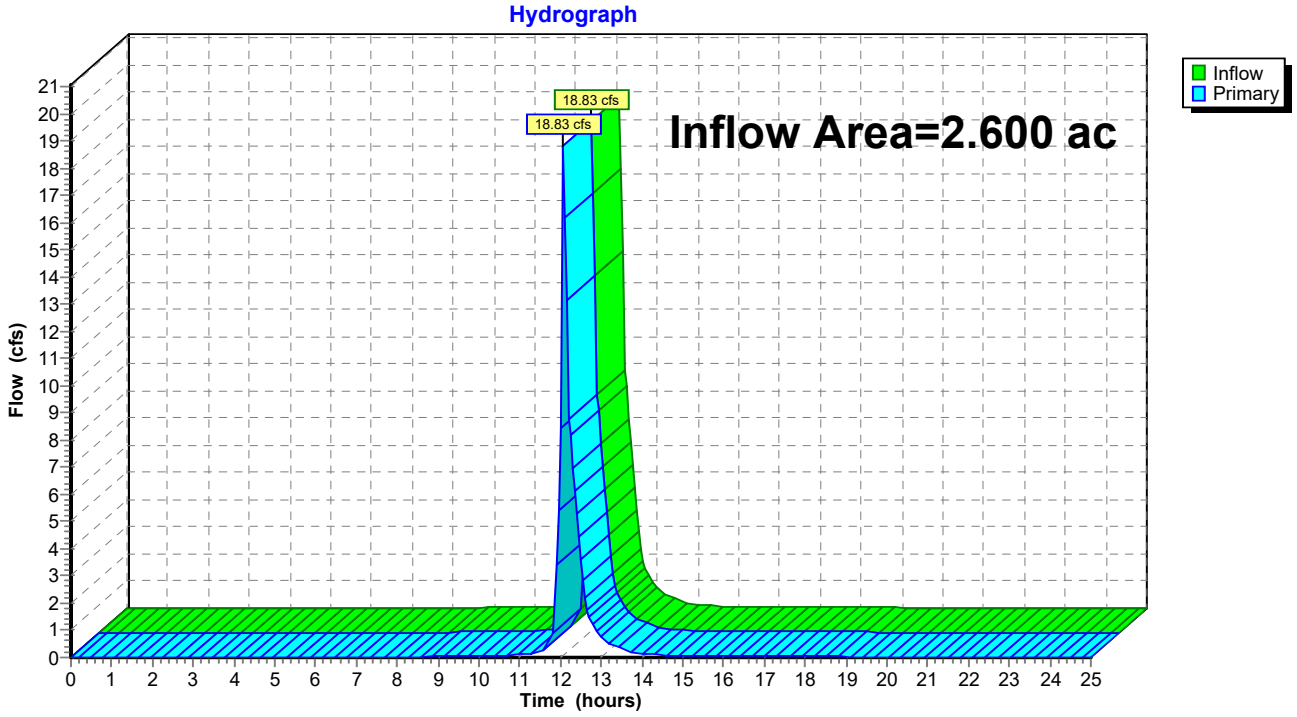


Summary for Link DP-2: Crafts Street

Inflow Area = 2.600 ac, 71.02% Impervious, Inflow Depth = 2.81" for 100-year event
Inflow = 18.83 cfs @ 12.07 hrs, Volume= 0.608 af
Primary = 18.83 cfs @ 12.07 hrs, Volume= 0.608 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 27L

Primary outflow = Inflow, Time Span= 0.00-25.00 hrs, dt= 0.05 hrs

Link DP-2: Crafts Street



#260-22

Memorandum

Appendix C: Recharge Volumes and Drawdown Analysis

- Recharge Calculations

Recharge Calculations

Project	Elderly Housing with Services Crafts St & Court St, Newton	**Project #**	15548.00
Calculated by	SRD	**Date**	7/1/2022
Checked by	JK	**Date**	7/1/2022

REQUIRED RECHARGE VOLUME

Hydrologic Soil Group (HSG)	Area (ft^2)	Inches of Runoff (in)	Volume (ft^3)
A	89,115	0.60	4,456
B	0	0.35	0
C	0	0.25	0
D	0	0.10	0
TOTAL			**4,456**

CAPTURE AREA ADJUSTMENT

Required Recharge Volume (ft^3)	4,456
Total Site Net Impervious Area (ft^2)	89,115
Total Site Impervious Area Draining to Recharge Facilities (ft^2)	77,510
Capture Area Adjustment Factor	1.15
Adjusted Required Recharge Volume (ft^3)	**5,123**

PROVIDED RECHARGE VOLUME

BASIN #SIS-A:

Subsurface Infiltration System, Stormtrap ST-1, 5'HT

Volumes provided below the lowest outlet at elevation: 34.6

Provided Volume:	Bottom Area (ft^2)	Volume (ft^3)
	298	**1,192**

Drawdown: ($V_{Infiltration}/A_{Bottom}$)/Rawl's Rate

Rawls Recharge Rate:	8.27	(in/hr)
Drawdown Time:	**5.80**	(hours)

Recharge Calculations

Project	Elderly Housing with Services Crafts St & Court St, Newton	**Project #**	15548.00
Calculated by	SRD	**Date**	7/1/2022
Checked by	JK	**Date**	7/1/2022

BASIN #SIS-B:

Subsurface Infiltration System, Stormtrap ST-1, 4'HT

Volumes provided below the lowest outlet at elevation: 33.1

Provided Volume:	**Bottom Area (ft^2)**	**Volume (ft^3)**
	1,350	**4,050**

Drawdown: $(V_{Infiltration}/A_{Bottom})$/Rawl's Rate

Rawls Recharge Rate:	8.27	(in/hr)
Drawdown Time:	**4.35**	(hours)

BASIN #SIS-C:

Subsurface Infiltration System, Stormtrap ST-1, 3'HT

Volumes provided below the lowest outlet at elevation: 32.1

Provided Volume:	**Bottom Area (ft^2)**	**Volume (ft^3)**
	1,184	**2,368**

Drawdown: $(V_{Infiltration}/A_{Bottom})$/Rawl's Rate

Rawls Recharge Rate:	8.27	(in/hr)
Drawdown Time:	**2.90**	(hours)

RECHARGE VOLUME SUMMARY

Required Recharge Volume:	**5,123**	**(ft^3)**
Total Recharge Volume Provided:	**7,610**	**(ft^3)**

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Memorandum

Appendix D: Water Quality Calculations

- Water Quality Volume Calculations
- Phosphorus Removal Worksheets

Water Quality Volume Calculations

Project	Elderly Housing with Services Crafts St & Court St, Newton	**Project #**	15548.00
Calculated by	SD	**Date**	7/1/2022
Checked by	JK	**Date**	7/1/2022

SUBSURFACE INFILTRATION SYSTEM "A"

3 **UNITS**

Runoff from subcatchment areas 10

Water Quality Storm Runoff Depth	(in)	1.0
Total Impervious Area	(ft^2)	4,885

BASIN WQV:

Required Volume:

Runoff Depth to be Treated (in)	Required Volume (ft^3)
1.0	**407**

Provided Volume:

Elevation	Area (ft^2)	Cumulative Volume (ft^3)
30.6	298	0
34.6	298	**1,192**

** Per MassDEP Treatment Requirement*

Water Quality Volume Calculations

Project	Elderly Housing with Services Crafts St & Court St, Newton	**Project #**	15548.00
Calculated by	SD	**Date**	7/1/2022
Checked by	JK	**Date**	7/1/2022

SUBSURFACE INFILTRATION SYSTEM "B"

13 **UNITS**

Runoff from subcatchment areas 20, 21, 25

Water Quality Storm Runoff Depth	(in)	1.0
Total Impervious Area	(ft^2)	45,690

BASIN WQV:

Required Volume:

Runoff Depth to be Treated (in)	Required Volume (ft^3)
1.0	**3,808**

Provided Volume:

Elevation	Area (ft^2)	Cumulative Volume (ft^3)
30.1	1,350	0
33.1	1,350	**4,050**

** Per MassDEP Treatment Requirement*

Water Quality Volume Calculations

Project	Elderly Housing with Services Crafts St & Court St, Newton	**Project #**	15548.00
Calculated by	SD	**Date**	7/1/2022
Checked by	JK	**Date**	7/1/2022

SUBSURFACE INFILTRATION SYSTEM "C"

12 **UNITS**

Runoff from subcatchment areas 23, 24, 26

Water Quality Storm Runoff Depth	(in)	1.0
Total Impervious Area	(ft^2)	26,935

BASIN WQV:

Required Volume:

Runoff Depth to be Treated (in)	Required Volume (ft^3)
1.0	**2,245**

Provided Volume:

Elevation	Area (ft^2)	Cumulative Volume (ft^3)
30.1	1,184	0
32.1	1,184	**2,368**

** Per MassDEP Treatment Requirement*

Site Summary

Project	Elderly Housing with Services Crafts St & Court St, Newton, MA	**Project #**	15548.00
Calculated by	SRD	**Date**	7/1/2022
Checked by	JK	**Date**	7/1/2022

Treatment Category	Area to Treatment Category (ac)	Impervious Area to Treatement Category (ac)	P Load of Impervious Area (lb/yr)	P Load Removed (lb/yr)	Average Area Weighted P Reduction (%)	TSS Load of Impervious Area (lb/yr)	TSS Load Removed (lb/yr)	Average Area Weighted TSS Reduction (%)
Structural BMPs	2.8	2.0	4.5	4.6	100%	860	866	100%
Impervious Area Disconnection	-	-	-	-		-	-	
Porous Pavement (w/ underdrain)	-	-	-	-		-	-	
Untreated	0.3	0.2	0.4	0	0%	79	0	0%
TOTAL	**3.1**	**2.1**	**5.0**	**4.6**	**91%**	**939**	**866**	**92%**

Untreated Area Calculations

Project	Elderly Housing with Services Crafts Street & Court Street, Newton, MA	**Project #**	15548.00
Calculated by	SRD	**Date**	7/1/2022
Checked by	JK	**Date**	7/1/2022

User Inputs				Load Calculations			
Untreated Area ID	**Impervious Area (ft^2)**	**Pervious Area (ft^2)**	**Land Use**	**Impervious TP Loading Rate (lb/ac/yr)**	**P Load of Impervious Area (lb/yr)**	**Impervious TSS Loading Rate (lb/ac/yr)**	**TSS Load of Impervious Area (lb/yr)**
Catchment Area #22	7,815	3,665	Multi-Family and High Density Residential	2.3	0.4	439	79

Structural BMP Calculations

Project	Elderly Housing with Services Crafts Street & Court Street, Newton, MA	**Project #**	15548.00
Calculated by	SRD	**Date**	7/1/2022
Checked by	JK	**Date**	7/1/2022

User Inputs										Water Quality Results														
										Phosphorus							Total Suspended Solids (TSS Reduction values can NOT be used for DEP Stormwater Standard 4 Compliance at this time.)							
BMP ID	**BMP Type**	**BMP Soil Type**	**BMP Design Storage Volume (ft^3)**	**Impervious Catchment Area (ft^2)**	**Pervious Catchment Area (ft^2)**	**Catchment Primary Land Use**	**Catchment Primary HSG**	**Runoff Depth from Impervious Area (in)**	**EPA Water Quality Curve**	**Impervious P Loading Rate (lb/ac/yr)**	**Impervious P Load to BMP (lb/yr)**	**Pervious P Loading Rate (lb/ac/yr)**	**Pervious P Load to BMP (lb/yr)**	**Total P Load to BMP (lb/yr)**	**P Removal Credit (%)**	**P Load Reduction (lb/yr)**	**Impervious TSS Loading Rate (lb/ac/yr)**	**Impervious TSS Load to BMP (lb/yr)**	**Pervious TSS Loading Rate (lb/ac/yr)**	**Pervious TSS Load to BMP (lb/yr)**	**Total TSS Load to BMP (lb/yr)**	**TSS Removal Credit (%)**	**TSS Load Reduction (lb/yr)**
SIS-A	Subsurface Infiltration System	Sand (8.27 in/hr)	1,192	4,885	4,180	Multi-Family and High Density Residenti	HSG A	2.9	Infiltration Trench	2.3	0.3	0.0	0.0	0.3	100%	0.3	439	49	7	1	50	100%	50
SIS-B	Subsurface Infiltration System	Sand (8.27 in/hr)	4,050	45,690	12,380	Multi-Family and High Density Residenti	HSG A	1.1	Infiltration Trench	2.3	2.4	0.0	0.0	2.4	100%	2.4	439	460	7	2	462	100%	462
SIS-C	Subsurface Infiltration System	Sand (8.27 in/hr)	2,368	34,750	20,450	Multi-Family and High Density Residenti	HSG A	0.8	Infiltration Trench	2.3	1.9	0.0	0.0	1.9	99%	1.8	439	350	7	3	353	100%	353