Johnsonville Elementary School – Phase 2

Storm Drainage Analysis
And Calculations

Prepared by:

LKC Engineering Landscape Architecture Planning

140 Aqua Shed Court
Aberdeen, NC 28315
License # P-1095
May, 2022

Johnsonville Elementary School – Phase 2

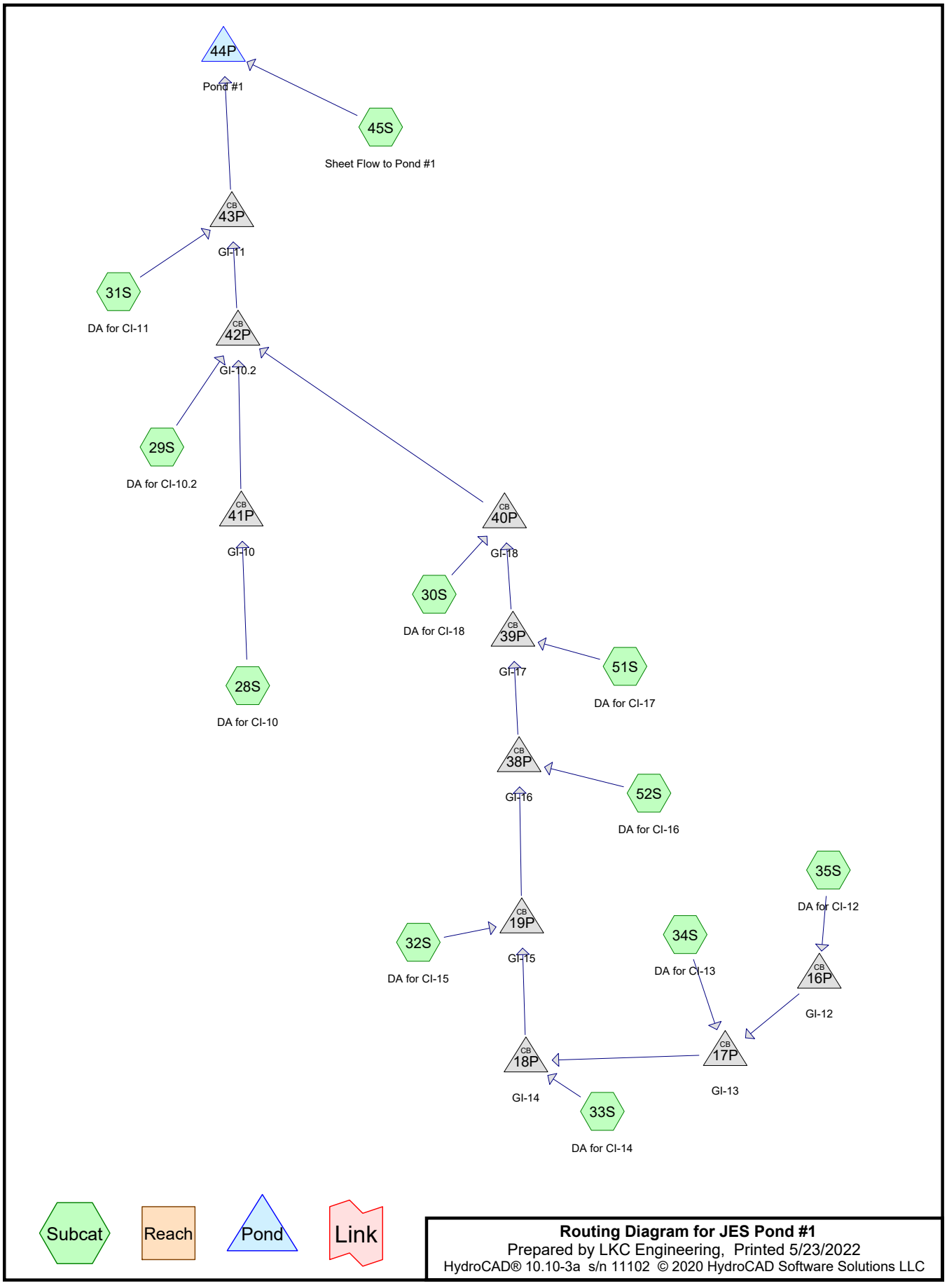
Stormwater Summary

Johnsonville Elementary - Phase 2	
1-year event Storm Drainage Summary	
Pond #1	
Peak Inflow Rate (cfs)	8.24
Peak Release Rate (cfs)	2.05
Pond #2	
Peak Inflow Rate (cfs)	7.81
Peak Release Rate (cfs)	1.9
Post Construction Release Rate (cfs)	3.95

Johnsonville Elementary - Phase 2	
10-year event Storm Drainage Summary	
Pond #1	
Peak Inflow Rate (cfs)	16.21
Peak Release Rate (cfs)	14.09
Pond #2	
Peak Inflow Rate (cfs)	16.3
Peak Release Rate (cfs)	14.53
Post Construction Release Rate (cfs)	28.62

Johnsonville Elementary School – Phase 2
Pond #1

1-Year Rainfall Event
Storm Drainage Calculations



Routing Diagram for JES Pond #1
Prepared by LKC Engineering, Printed 5/23/2022
HydroCAD® 10.10-3a s/n 11102 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
29,851	90	(28S, 34S)
29,934	96	(29S, 32S, 35S, 51S, 52S)
9,331	80	(30S, 33S)
2,910	98	(31S)
39,040	92	(45S)

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	16P	0.00	-0.10	20.0	0.0050	0.013	15.0	0.0	0.0
2	17P	0.00	-0.53	105.0	0.0050	0.013	15.0	0.0	0.0
3	18P	0.00	-0.25	50.0	0.0050	0.013	15.0	0.0	0.0
4	19P	0.00	-0.34	67.0	0.0051	0.013	15.0	0.0	0.0
5	38P	0.00	-0.31	62.0	0.0050	0.013	18.0	0.0	0.0
6	39P	0.00	-0.24	48.0	0.0050	0.013	18.0	0.0	0.0
7	40P	0.00	-1.03	207.0	0.0050	0.013	18.0	0.0	0.0
8	41P	0.00	-0.51	102.0	0.0050	0.013	15.0	0.0	0.0
9	42P	0.00	-0.21	42.0	0.0050	0.013	24.0	0.0	0.0
10	43P	0.00	-0.17	34.0	0.0050	0.013	24.0	0.0	0.0
11	44P	349.00	348.50	50.0	0.0100	0.013	24.0	0.0	0.0

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Pond 16P: GI-12 Peak Elev=0.25' Inflow=0.20 cfs 523 cf
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=0.20 cfs 523 cf

Pond 17P: GI-13 Peak Elev=0.33' Inflow=0.39 cfs 969 cf
15.0" Round Culvert n=0.013 L=105.0' S=0.0050 '/' Outflow=0.39 cfs 969 cf

Pond 18P: GI-14 Peak Elev=0.49' Inflow=0.79 cfs 1,887 cf
15.0" Round Culvert n=0.013 L=50.0' S=0.0050 '/' Outflow=0.79 cfs 1,887 cf

Pond 19P: GI-15 Peak Elev=0.61' Inflow=1.22 cfs 3,017 cf
15.0" Round Culvert n=0.013 L=67.0' S=0.0051 '/' Outflow=1.22 cfs 3,017 cf

Pond 38P: GI-16 Peak Elev=0.68' Inflow=1.67 cfs 4,159 cf
18.0" Round Culvert n=0.013 L=62.0' S=0.0050 '/' Outflow=1.67 cfs 4,159 cf

Pond 39P: GI-17 Peak Elev=0.87' Inflow=2.51 cfs 6,344 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0050 '/' Outflow=2.51 cfs 6,344 cf

Pond 40P: GI-18 Peak Elev=0.83' Inflow=2.55 cfs 6,422 cf
18.0" Round Culvert n=0.013 L=207.0' S=0.0050 '/' Outflow=2.55 cfs 6,422 cf

Pond 41P: GI-10 Peak Elev=0.79' Inflow=1.92 cfs 4,580 cf
15.0" Round Culvert n=0.013 L=102.0' S=0.0050 '/' Outflow=1.92 cfs 4,580 cf

Pond 42P: GI-10.2 Peak Elev=1.15' Inflow=5.04 cfs 12,487 cf
24.0" Round Culvert n=0.013 L=42.0' S=0.0050 '/' Outflow=5.04 cfs 12,487 cf

Pond 43P: GI-11 Peak Elev=1.19' Inflow=5.29 cfs 13,168 cf
24.0" Round Culvert n=0.013 L=34.0' S=0.0050 '/' Outflow=5.29 cfs 13,168 cf

Pond 44P: Pond #1 Peak Elev=354.26' Storage=10,185 cf Inflow=8.24 cfs 20,322 cf
Outflow=2.05 cfs 13,993 cf

Summary for Pond 16P: GI-12

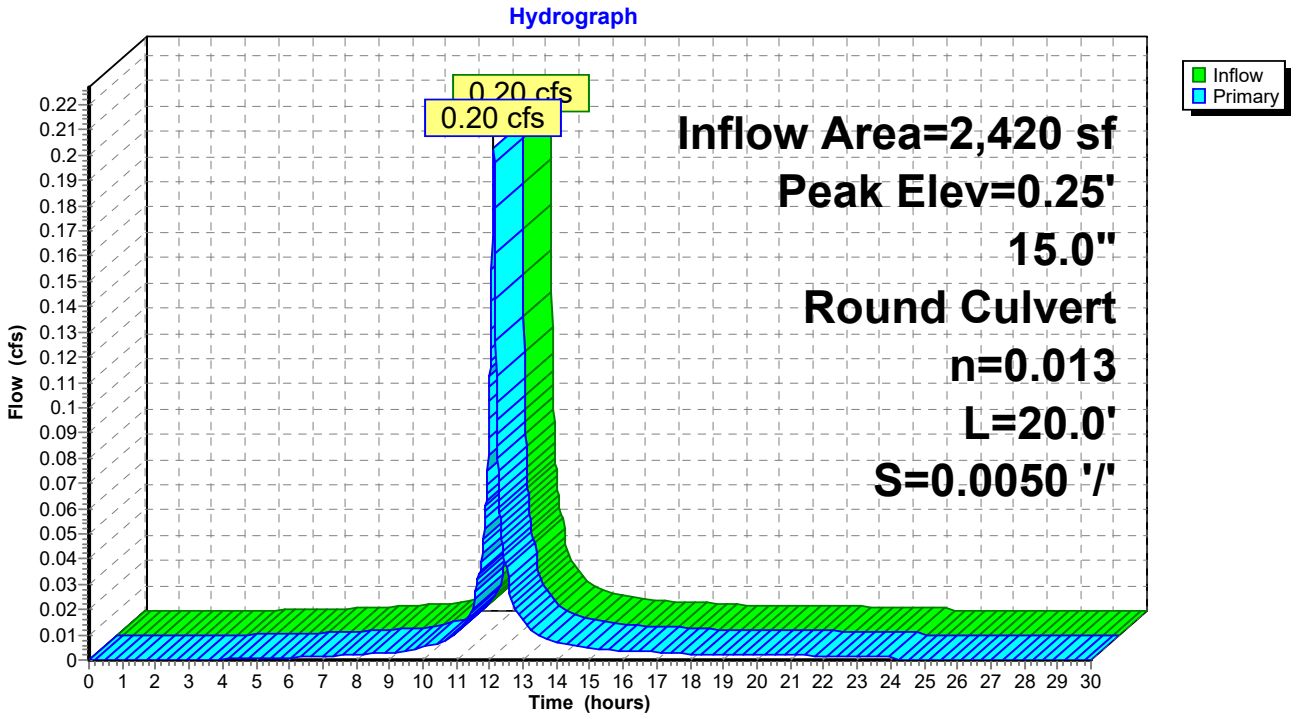
Inflow Area = 2,420 sf, 0.00% Impervious, Inflow Depth = 2.59" for 1-Year event
Inflow = 0.20 cfs @ 12.12 hrs, Volume= 523 cf
Outflow = 0.20 cfs @ 12.12 hrs, Volume= 523 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.20 cfs @ 12.12 hrs, Volume= 523 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 0.25' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.10' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.20 cfs @ 12.12 hrs HW=0.25' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 0.20 cfs @ 1.78 fps)

Pond 16P: GI-12



Summary for Pond 17P: GI-13

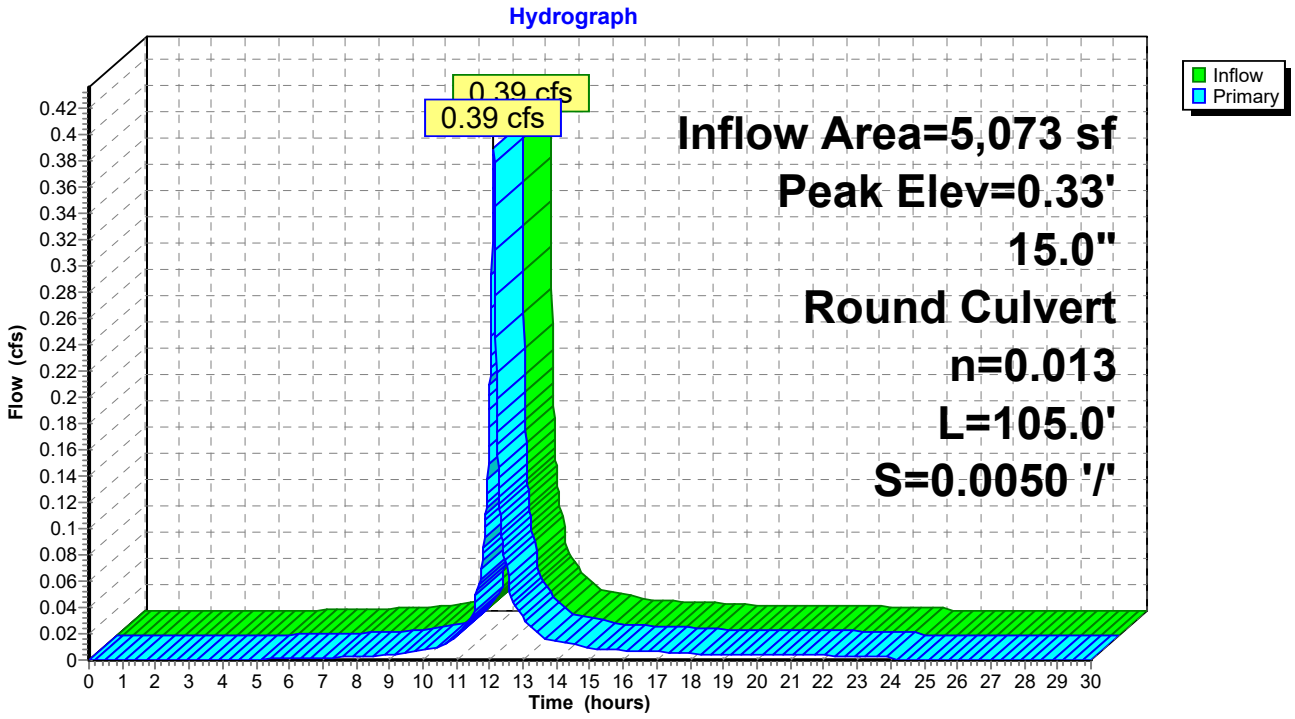
Inflow Area = 5,073 sf, 0.00% Impervious, Inflow Depth = 2.29" for 1-Year event
Inflow = 0.39 cfs @ 12.12 hrs, Volume= 969 cf
Outflow = 0.39 cfs @ 12.12 hrs, Volume= 969 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.39 cfs @ 12.12 hrs, Volume= 969 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 0.33' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 105.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.53' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.39 cfs @ 12.12 hrs HW=0.33' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 0.39 cfs @ 2.23 fps)

Pond 17P: GI-13



Summary for Pond 18P: GI-14

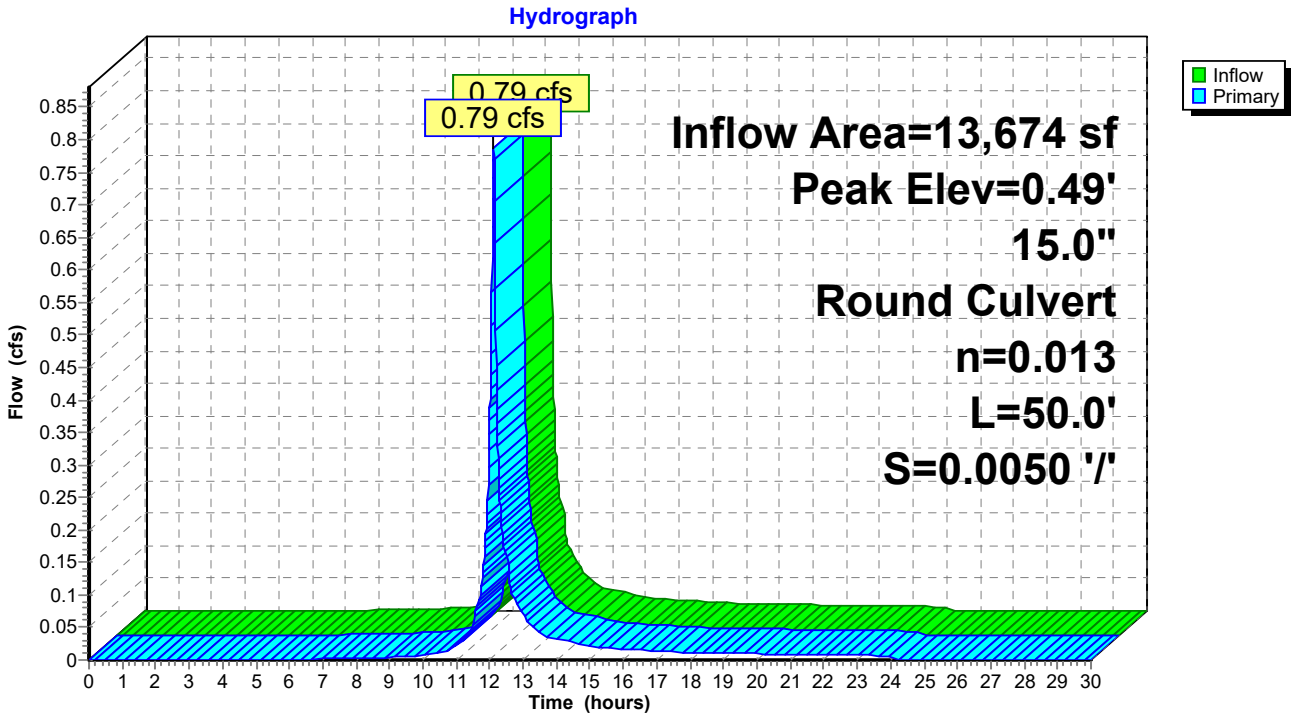
Inflow Area = 13,674 sf, 0.00% Impervious, Inflow Depth = 1.66" for 1-Year event
Inflow = 0.79 cfs @ 12.12 hrs, Volume= 1,887 cf
Outflow = 0.79 cfs @ 12.12 hrs, Volume= 1,887 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.79 cfs @ 12.12 hrs, Volume= 1,887 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 0.49' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.25' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.78 cfs @ 12.12 hrs HW=0.49' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 0.78 cfs @ 2.62 fps)

Pond 18P: GI-14



Summary for Pond 19P: GI-15

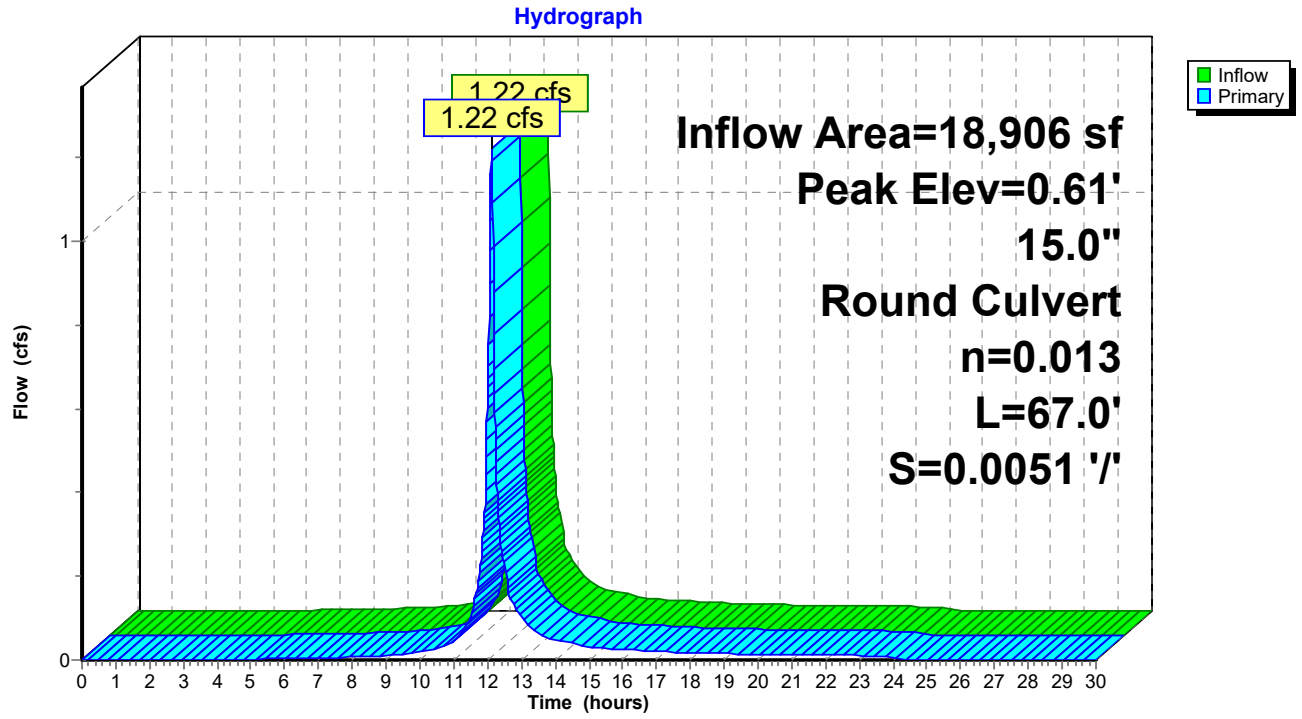
Inflow Area = 18,906 sf, 0.00% Impervious, Inflow Depth = 1.91" for 1-Year event
Inflow = 1.22 cfs @ 12.12 hrs, Volume= 3,017 cf
Outflow = 1.22 cfs @ 12.12 hrs, Volume= 3,017 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.22 cfs @ 12.12 hrs, Volume= 3,017 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 0.61' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 67.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.34' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=1.22 cfs @ 12.12 hrs HW=0.61' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 1.22 cfs @ 2.98 fps)

Pond 19P: GI-15



Summary for Pond 38P: GI-16

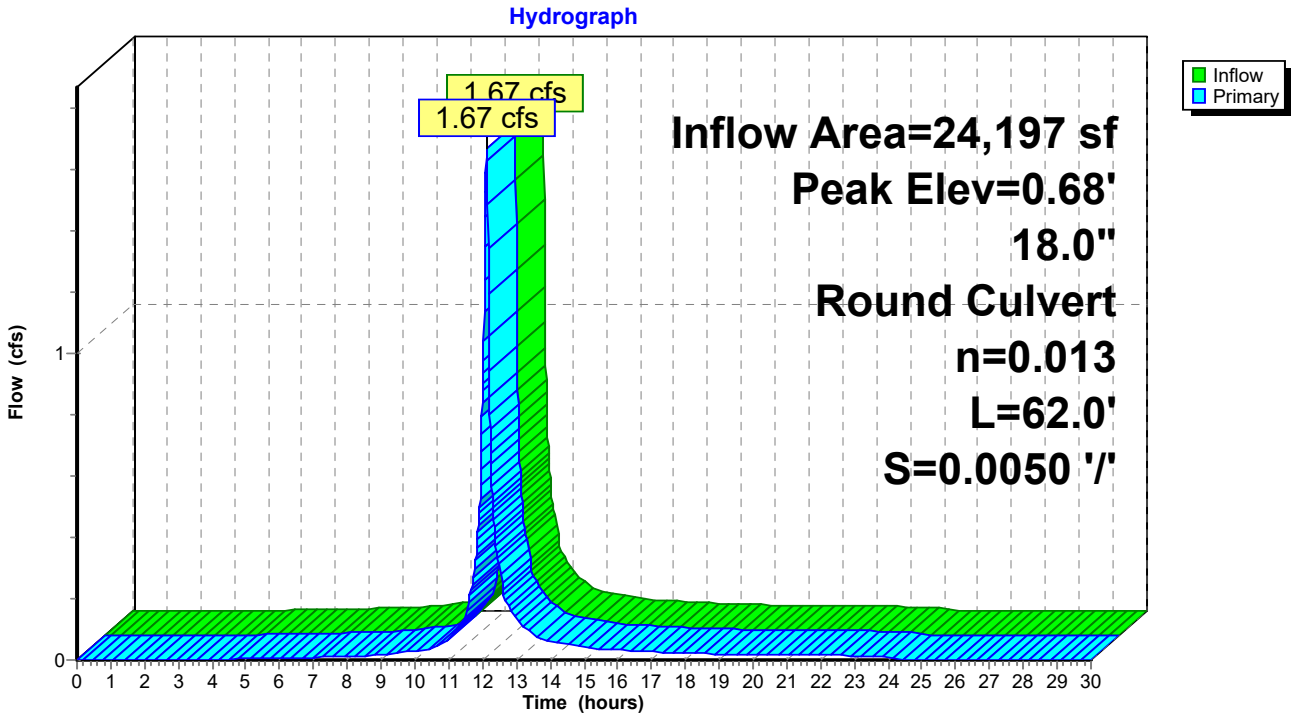
Inflow Area = 24,197 sf, 0.00% Impervious, Inflow Depth = 2.06" for 1-Year event
Inflow = 1.67 cfs @ 12.12 hrs, Volume= 4,159 cf
Outflow = 1.67 cfs @ 12.12 hrs, Volume= 4,159 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.67 cfs @ 12.12 hrs, Volume= 4,159 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 0.68' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**18.0" Round RCP_Round 18"** L= 62.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.31' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=1.66 cfs @ 12.12 hrs HW=0.68' (Free Discharge)
1=RCP_Round 18" (Barrel Controls 1.66 cfs @ 3.14 fps)

Pond 38P: GI-16



Summary for Pond 39P: GI-17

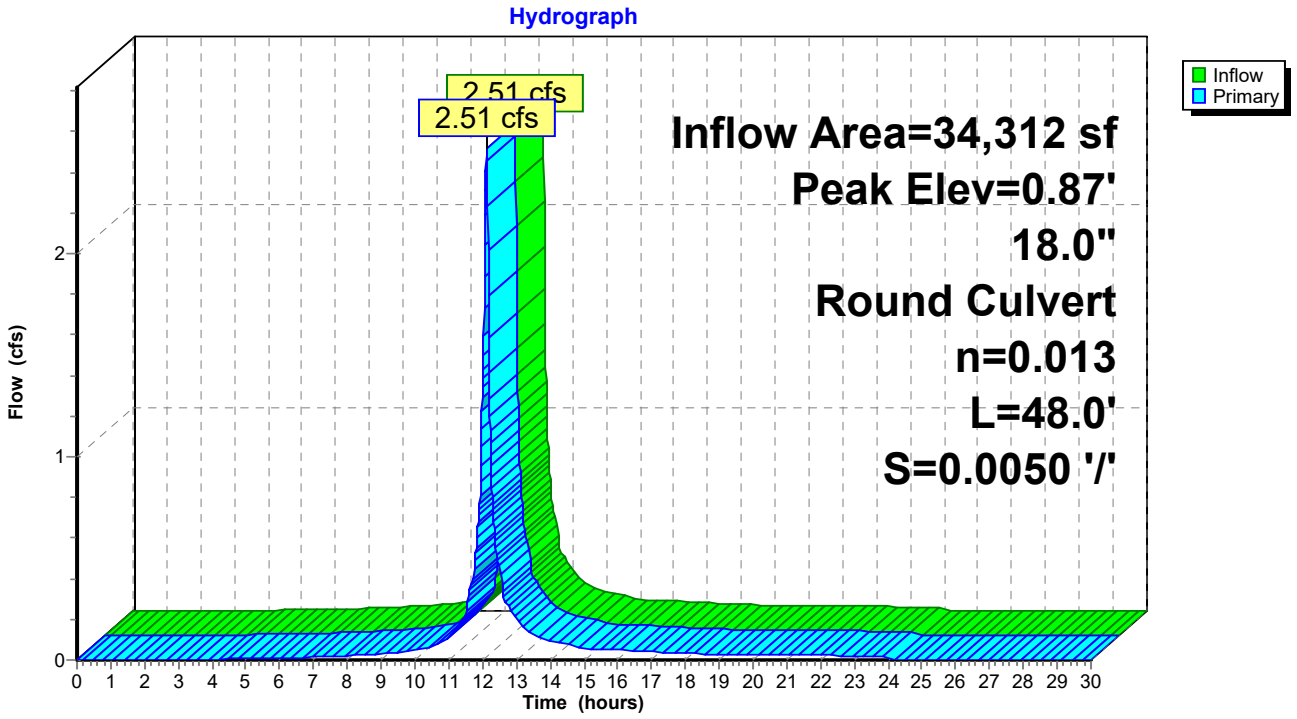
Inflow Area = 34,312 sf, 0.00% Impervious, Inflow Depth = 2.22" for 1-Year event
Inflow = 2.51 cfs @ 12.12 hrs, Volume= 6,344 cf
Outflow = 2.51 cfs @ 12.12 hrs, Volume= 6,344 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.51 cfs @ 12.12 hrs, Volume= 6,344 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 0.87' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**18.0" Round RCP_Round 18"** L= 48.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.24' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=2.51 cfs @ 12.12 hrs HW=0.86' (Free Discharge)
1=RCP_Round 18" (Barrel Controls 2.51 cfs @ 3.43 fps)

Pond 39P: GI-17



Summary for Pond 40P: GI-18

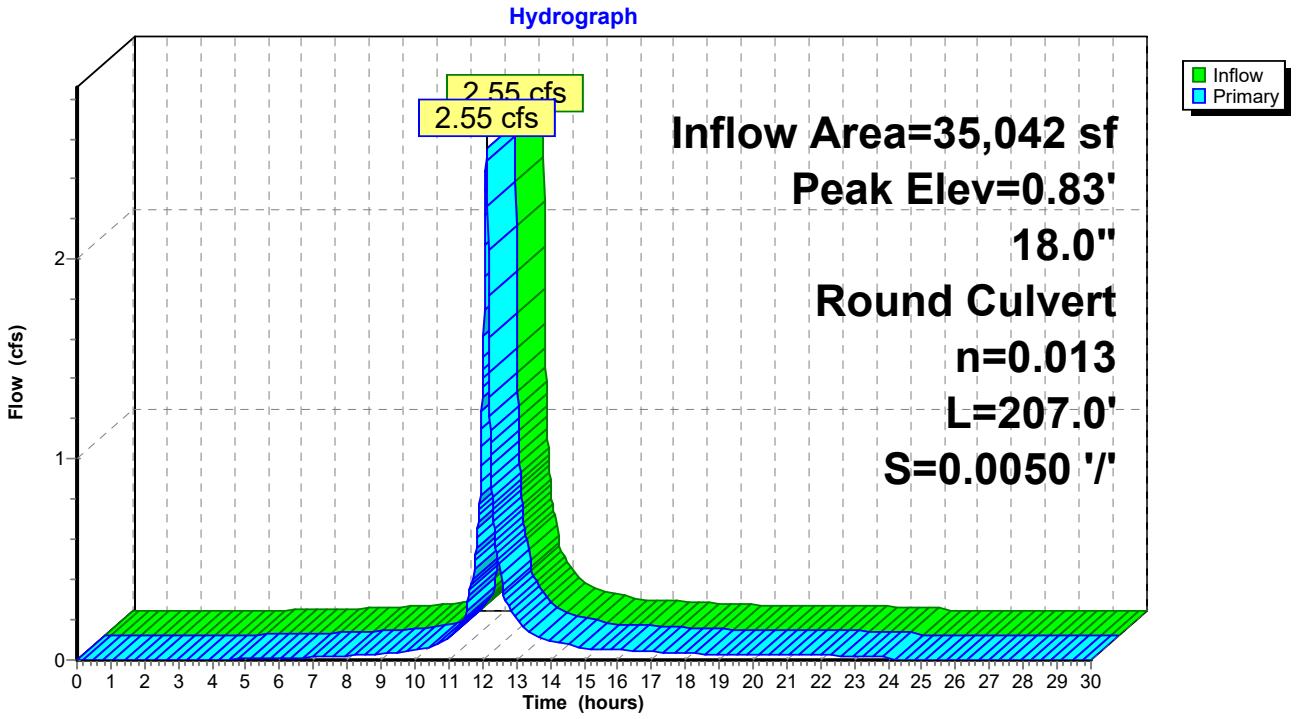
Inflow Area = 35,042 sf, 0.00% Impervious, Inflow Depth = 2.20" for 1-Year event
Inflow = 2.55 cfs @ 12.12 hrs, Volume= 6,422 cf
Outflow = 2.55 cfs @ 12.12 hrs, Volume= 6,422 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.55 cfs @ 12.12 hrs, Volume= 6,422 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 0.83' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**18.0" Round RCP_Round 18"** L= 207.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -1.03' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=2.54 cfs @ 12.12 hrs HW=0.83' (Free Discharge)
1=RCP_Round 18" (Barrel Controls 2.54 cfs @ 3.65 fps)

Pond 40P: GI-18



Summary for Pond 41P: GI-10

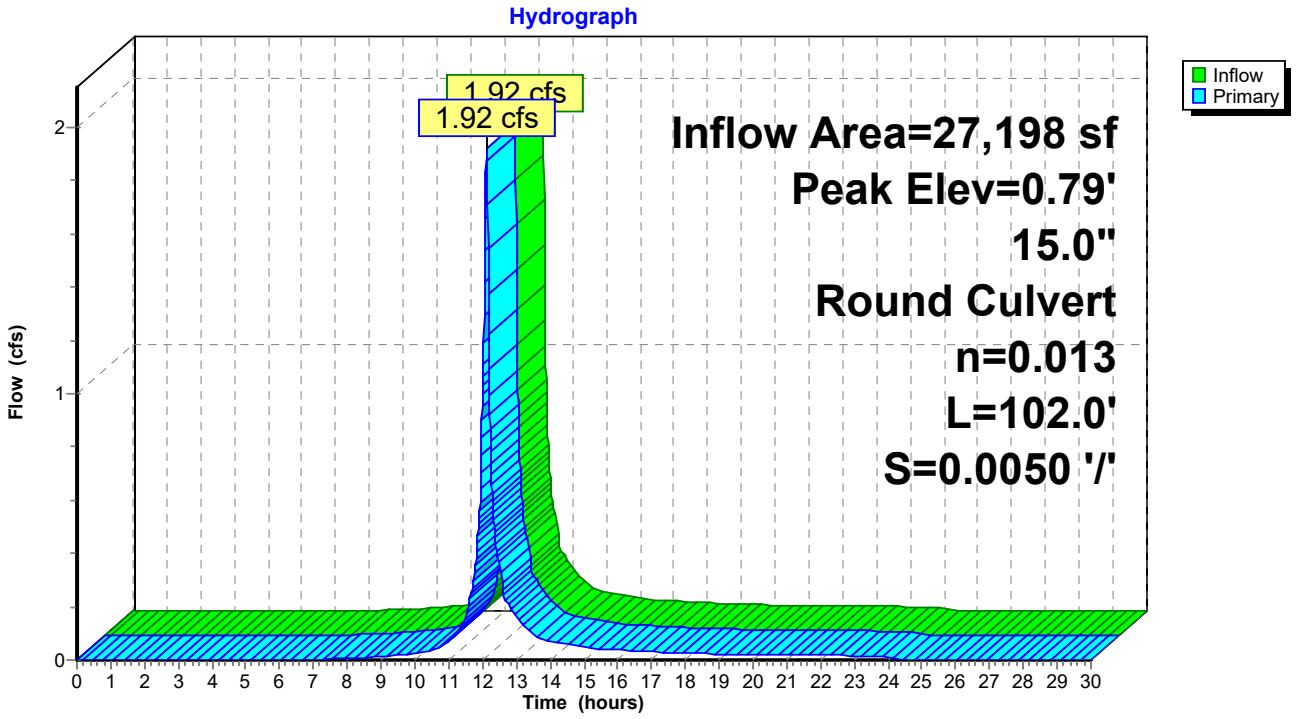
Inflow Area = 27,198 sf, 0.00% Impervious, Inflow Depth = 2.02" for 1-Year event
Inflow = 1.92 cfs @ 12.12 hrs, Volume= 4,580 cf
Outflow = 1.92 cfs @ 12.12 hrs, Volume= 4,580 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.92 cfs @ 12.12 hrs, Volume= 4,580 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 0.79' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 102.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.51' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=1.92 cfs @ 12.12 hrs HW=0.79' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 1.92 cfs @ 3.37 fps)

Pond 41P: GI-10



Summary for Pond 42P: GI-10.2

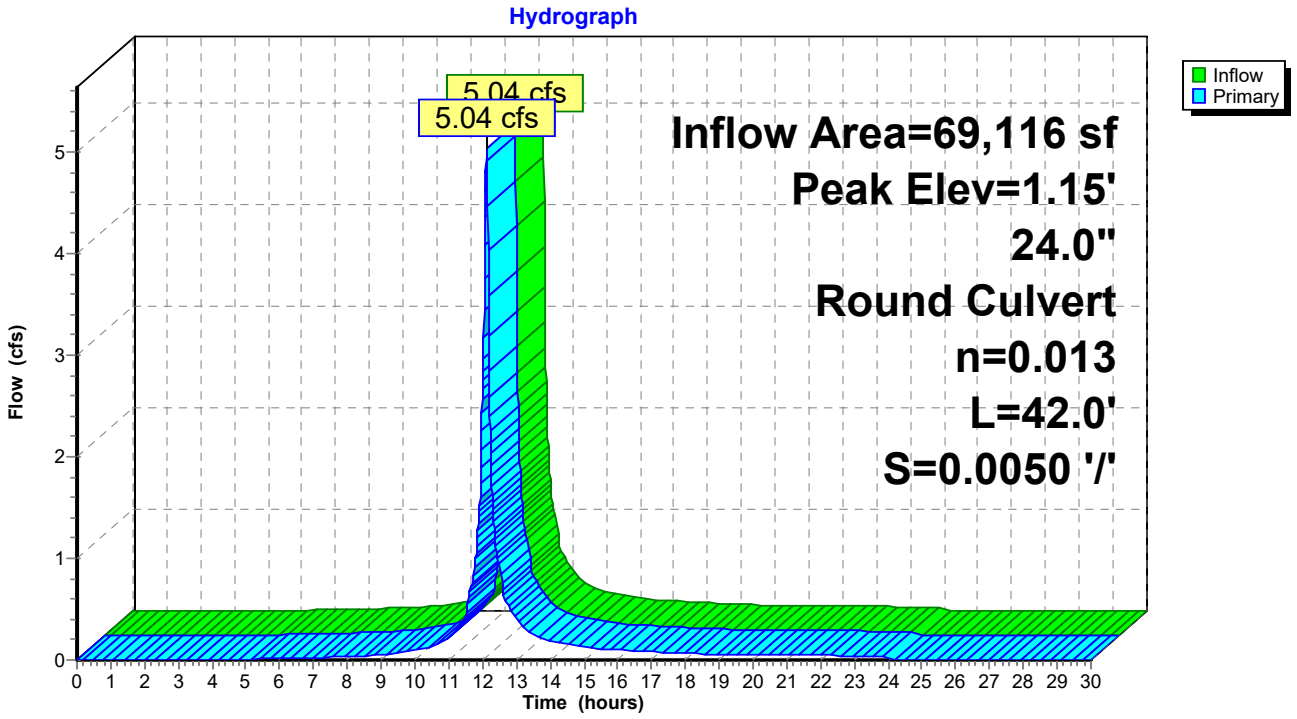
Inflow Area = 69,116 sf, 0.00% Impervious, Inflow Depth = 2.17" for 1-Year event
Inflow = 5.04 cfs @ 12.12 hrs, Volume= 12,487 cf
Outflow = 5.04 cfs @ 12.12 hrs, Volume= 12,487 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.04 cfs @ 12.12 hrs, Volume= 12,487 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1.15' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**24.0" Round RCP_Round 24"** L= 42.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.21' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=5.03 cfs @ 12.12 hrs HW=1.15' (Free Discharge)
1=RCP_Round 24" (Barrel Controls 5.03 cfs @ 3.90 fps)

Pond 42P: GI-10.2



Summary for Pond 43P: GI-11

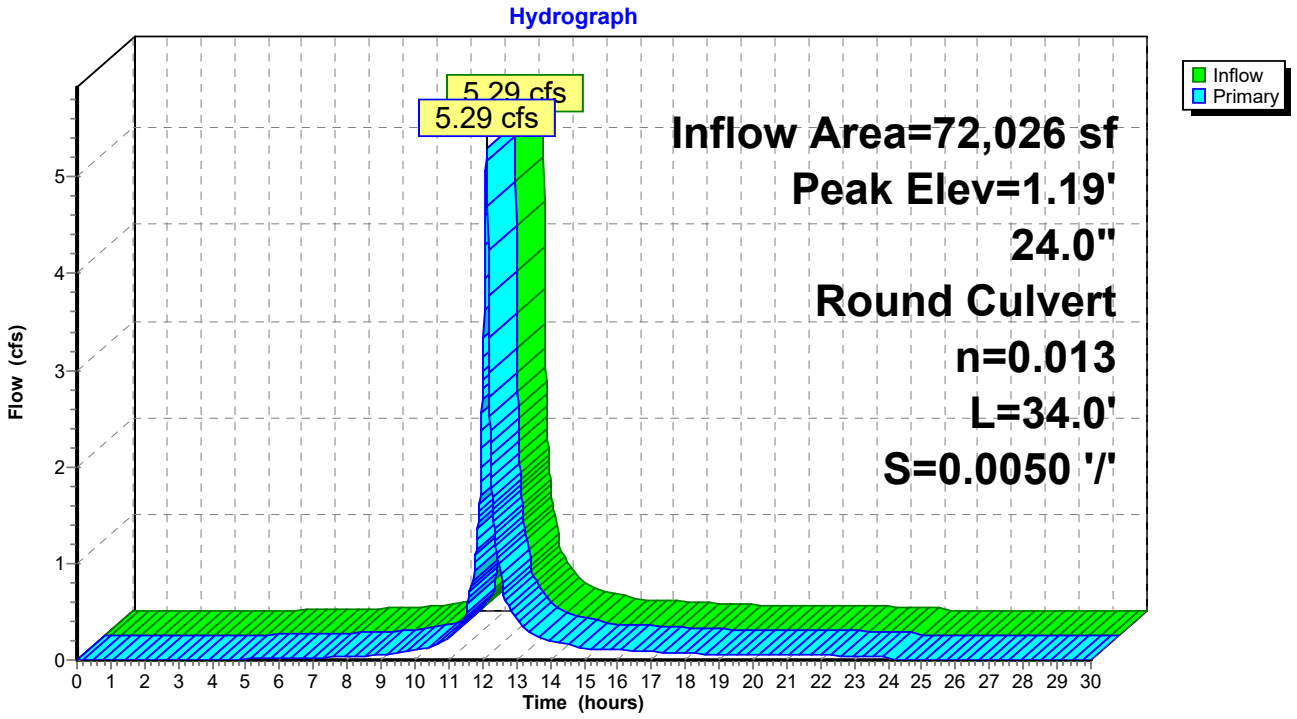
Inflow Area = 72,026 sf, 4.04% Impervious, Inflow Depth = 2.19" for 1-Year event
Inflow = 5.29 cfs @ 12.12 hrs, Volume= 13,168 cf
Outflow = 5.29 cfs @ 12.12 hrs, Volume= 13,168 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.29 cfs @ 12.12 hrs, Volume= 13,168 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1.19' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**24.0" Round RCP_Round 24"** L= 34.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.17' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=5.28 cfs @ 12.12 hrs HW=1.19' (Free Discharge)
1=RCP_Round 24" (Barrel Controls 5.28 cfs @ 3.91 fps)

Pond 43P: GI-11



Summary for Pond 44P: Pond #1

Inflow Area = 111,066 sf, 2.62% Impervious, Inflow Depth = 2.20" for 1-Year event
Inflow = 8.24 cfs @ 12.12 hrs, Volume= 20,322 cf
Outflow = 2.05 cfs @ 12.36 hrs, Volume= 13,993 cf, Atten= 75%, Lag= 14.1 min
Primary = 2.05 cfs @ 12.36 hrs, Volume= 13,993 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 354.26' @ 12.36 hrs Surf.Area= 5,415 sf Storage= 10,185 cf

Plug-Flow detention time= 177.9 min calculated for 13,993 cf (69% of inflow)
Center-of-Mass det. time= 92.9 min (882.2 - 789.3)

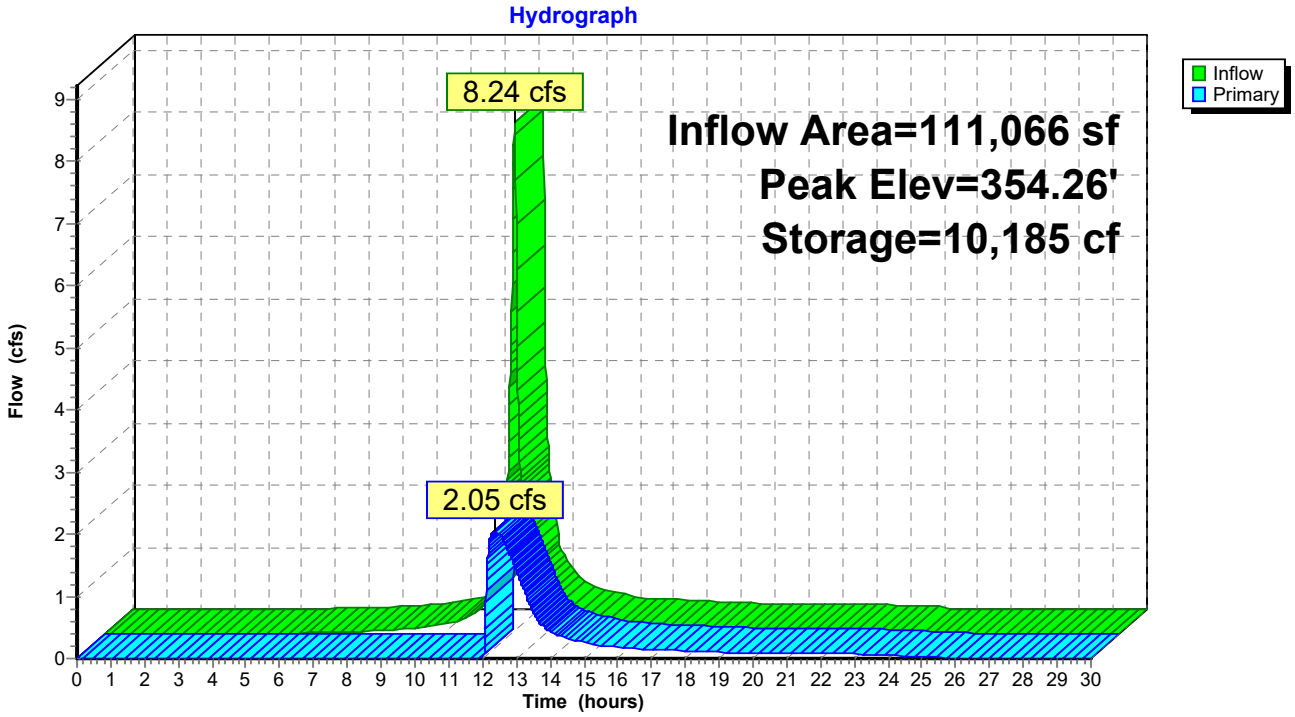
Volume	Invert	Avail.Storage	Storage Description
#1	352.00'	14,445 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
352.00	3,661	0	0
353.00	4,394	4,028	4,028
354.00	5,199	4,797	8,824
355.00	6,043	5,621	14,445

Device	Routing	Invert	Outlet Devices
#1	Primary	349.00'	**24.0" Round RCP_Round 24"** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 349.00' / 348.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	353.50'	**10.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	353.50'	**10.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	354.50'	**36.0" x 36.0" Horiz. Riser** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.05 cfs @ 12.36 hrs HW=354.26' (Free Discharge)
└**1=RCP_Round 24"** (Passes 2.05 cfs of 31.21 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.02 cfs @ 3.69 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.02 cfs @ 3.69 fps)
  └**4=Riser** (Controls 0.00 cfs)

Pond 44P: Pond #1



Johnsonville Elementary School – Phase 2
Pond #1

10-Year Rainfall Event
Storm Drainage Calculations

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Pond 16P: GI-12 Peak Elev=0.34' Inflow=0.37 cfs 1,002 cf
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=0.37 cfs 1,002 cf

Pond 17P: GI-13 Peak Elev=0.47' Inflow=0.75 cfs 1,953 cf
15.0" Round Culvert n=0.013 L=105.0' S=0.0050 '/' Outflow=0.75 cfs 1,953 cf

Pond 18P: GI-14 Peak Elev=0.76' Inflow=1.75 cfs 4,304 cf
15.0" Round Culvert n=0.013 L=50.0' S=0.0050 '/' Outflow=1.75 cfs 4,304 cf

Pond 19P: GI-15 Peak Elev=0.94' Inflow=2.56 cfs 6,471 cf
15.0" Round Culvert n=0.013 L=67.0' S=0.0051 '/' Outflow=2.56 cfs 6,471 cf

Pond 38P: GI-16 Peak Elev=1.02' Inflow=3.38 cfs 8,663 cf
18.0" Round Culvert n=0.013 L=62.0' S=0.0050 '/' Outflow=3.38 cfs 8,663 cf

Pond 39P: GI-17 Peak Elev=1.30' Inflow=4.94 cfs 12,852 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0050 '/' Outflow=4.94 cfs 12,852 cf

Pond 40P: GI-18 Peak Elev=1.26' Inflow=5.02 cfs 13,052 cf
18.0" Round Culvert n=0.013 L=207.0' S=0.0050 '/' Outflow=5.02 cfs 13,052 cf

Pond 41P: GI-10 Peak Elev=1.24' Inflow=3.90 cfs 9,750 cf
15.0" Round Culvert n=0.013 L=102.0' S=0.0050 '/' Outflow=3.90 cfs 9,750 cf

Pond 42P: GI-10.2 Peak Elev=1.73' Inflow=9.99 cfs 25,649 cf
24.0" Round Culvert n=0.013 L=42.0' S=0.0050 '/' Outflow=9.99 cfs 25,649 cf

Pond 43P: GI-11 Peak Elev=1.79' Inflow=10.44 cfs 26,911 cf
24.0" Round Culvert n=0.013 L=34.0' S=0.0050 '/' Outflow=10.44 cfs 26,911 cf

Pond 44P: Pond #1 Peak Elev=354.93' Storage=14,026 cf Inflow=16.21 cfs 41,615 cf
Outflow=14.09 cfs 35,285 cf

Summary for Pond 16P: GI-12

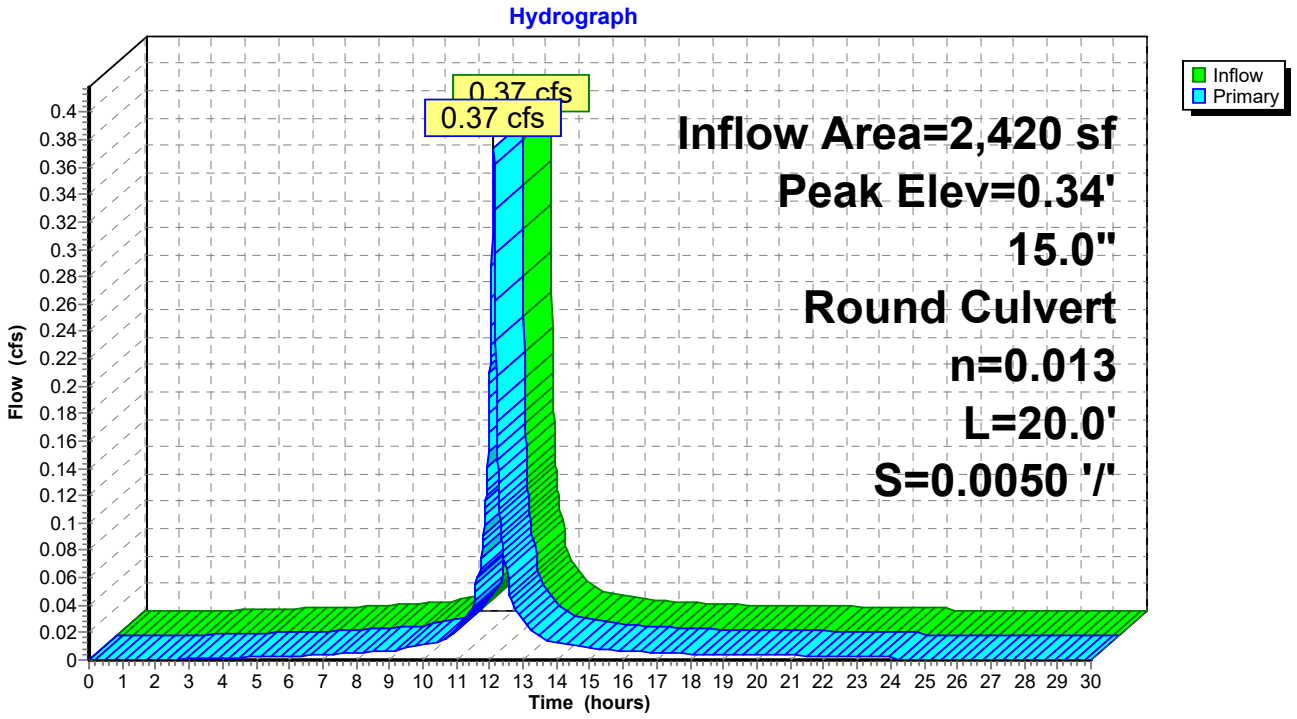
Inflow Area = 2,420 sf, 0.00% Impervious, Inflow Depth = 4.97" for 10-Year event
Inflow = 0.37 cfs @ 12.12 hrs, Volume= 1,002 cf
Outflow = 0.37 cfs @ 12.12 hrs, Volume= 1,002 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.37 cfs @ 12.12 hrs, Volume= 1,002 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 0.34' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.10' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.37 cfs @ 12.12 hrs HW=0.34' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 0.37 cfs @ 2.09 fps)

Pond 16P: GI-12



Summary for Pond 17P: GI-13

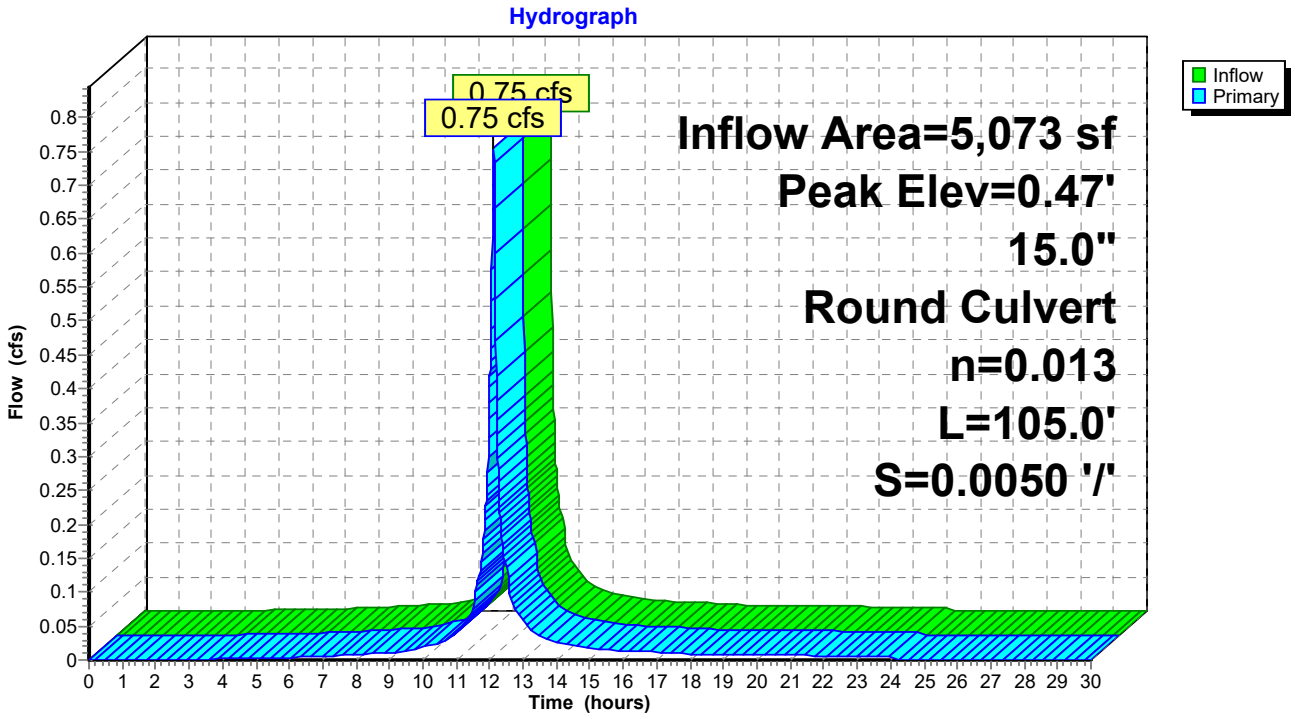
Inflow Area = 5,073 sf, 0.00% Impervious, Inflow Depth = 4.62" for 10-Year event
Inflow = 0.75 cfs @ 12.12 hrs, Volume= 1,953 cf
Outflow = 0.75 cfs @ 12.12 hrs, Volume= 1,953 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.75 cfs @ 12.12 hrs, Volume= 1,953 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 0.47' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 105.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.53' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.75 cfs @ 12.12 hrs HW=0.47' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 0.75 cfs @ 2.66 fps)

Pond 17P: GI-13



Summary for Pond 18P: GI-14

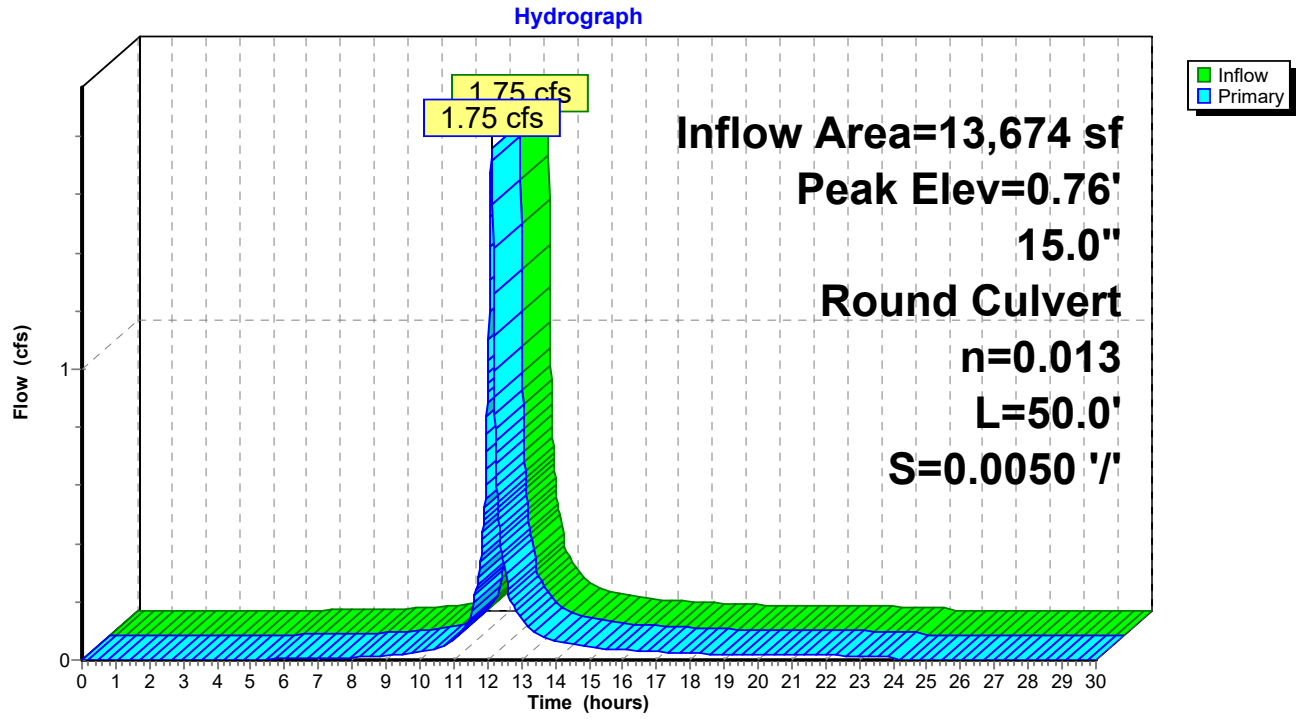
Inflow Area = 13,674 sf, 0.00% Impervious, Inflow Depth = 3.78" for 10-Year event
Inflow = 1.75 cfs @ 12.12 hrs, Volume= 4,304 cf
Outflow = 1.75 cfs @ 12.12 hrs, Volume= 4,304 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.75 cfs @ 12.12 hrs, Volume= 4,304 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 0.76' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.25' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=1.75 cfs @ 12.12 hrs HW=0.76' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 1.75 cfs @ 3.20 fps)

Pond 18P: GI-14



Summary for Pond 19P: GI-15

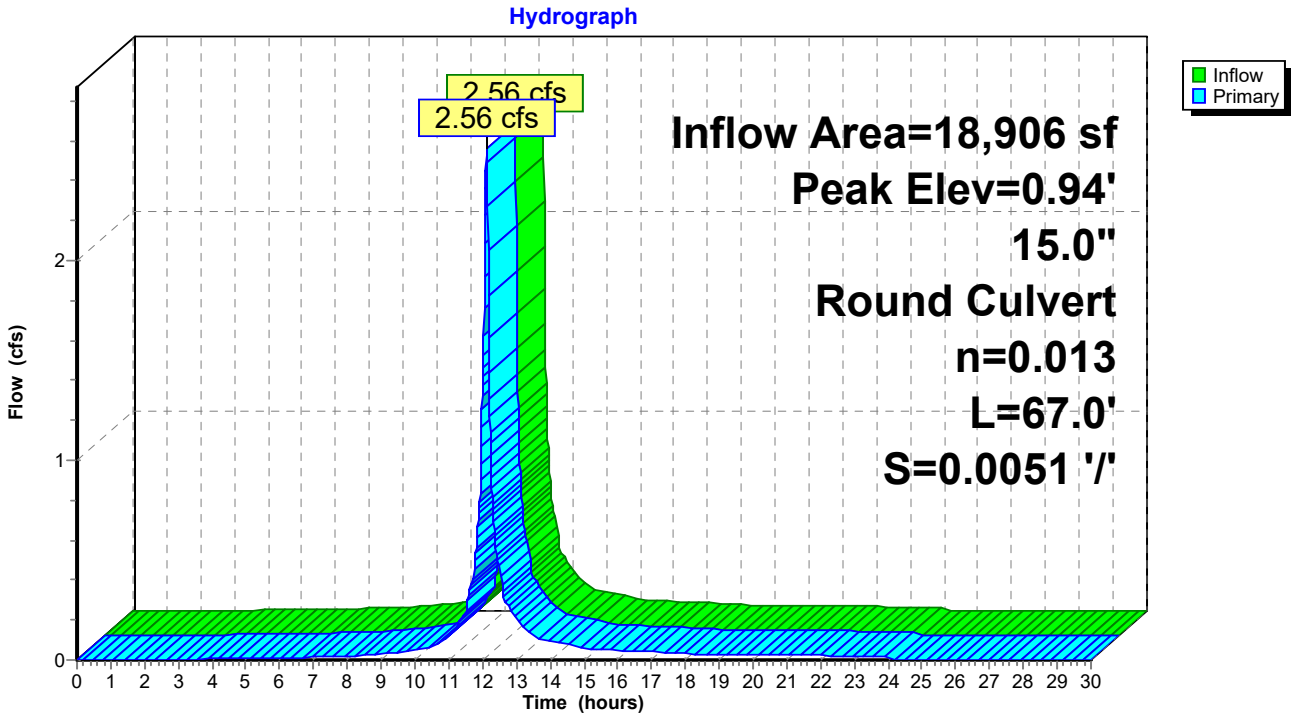
Inflow Area = 18,906 sf, 0.00% Impervious, Inflow Depth = 4.11" for 10-Year event
Inflow = 2.56 cfs @ 12.12 hrs, Volume= 6,471 cf
Outflow = 2.56 cfs @ 12.12 hrs, Volume= 6,471 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.56 cfs @ 12.12 hrs, Volume= 6,471 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 0.94' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 67.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.34' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=2.56 cfs @ 12.12 hrs HW=0.94' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 2.56 cfs @ 3.57 fps)

Pond 19P: GI-15



Summary for Pond 38P: GI-16

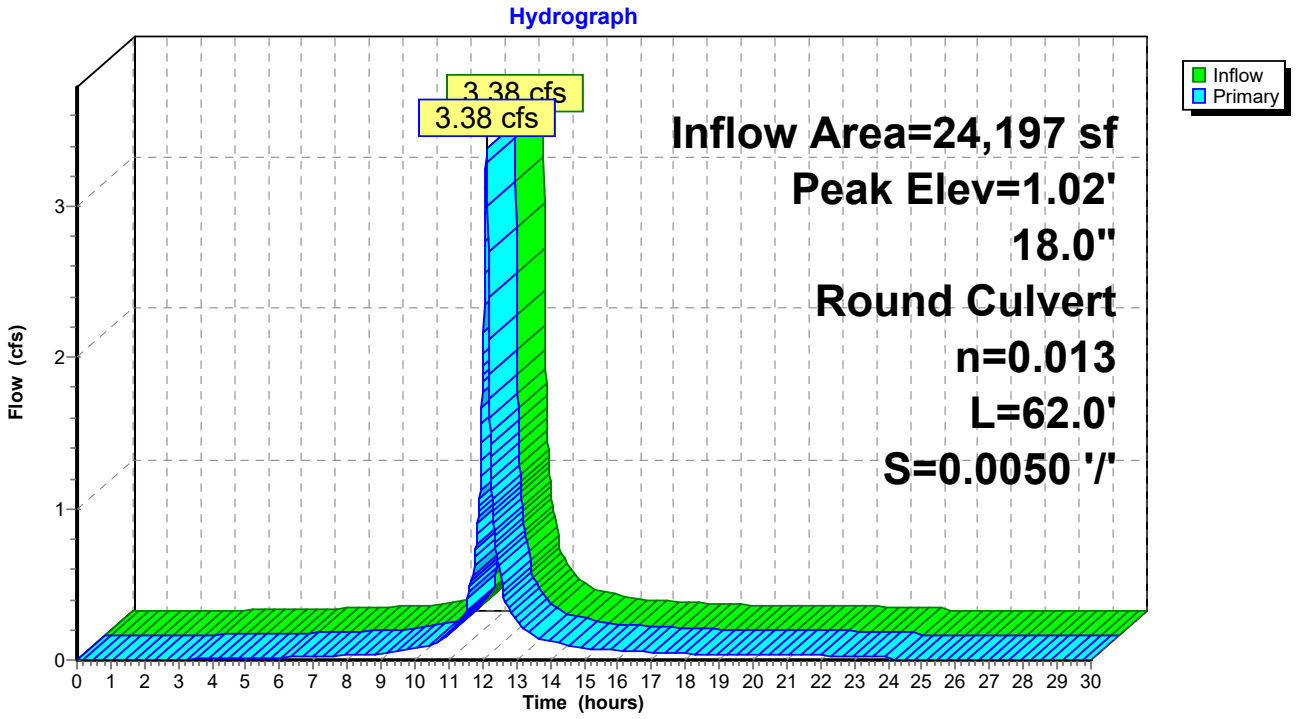
Inflow Area = 24,197 sf, 0.00% Impervious, Inflow Depth = 4.30" for 10-Year event
Inflow = 3.38 cfs @ 12.12 hrs, Volume= 8,663 cf
Outflow = 3.38 cfs @ 12.12 hrs, Volume= 8,663 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.38 cfs @ 12.12 hrs, Volume= 8,663 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1.02' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**18.0" Round RCP_Round 18"** L= 62.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.31' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.37 cfs @ 12.12 hrs HW=1.02' (Free Discharge)
1=RCP_Round 18" (Barrel Controls 3.37 cfs @ 3.73 fps)

Pond 38P: GI-16



Summary for Pond 39P: GI-17

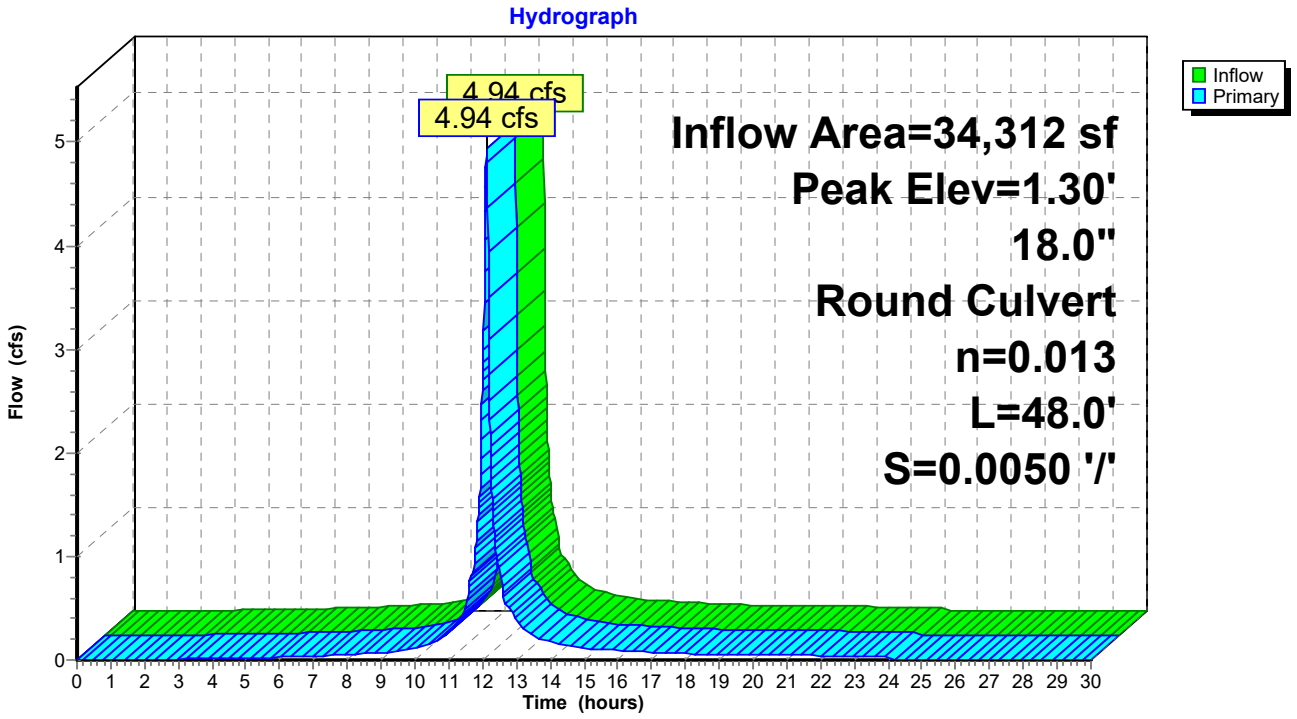
Inflow Area = 34,312 sf, 0.00% Impervious, Inflow Depth = 4.49" for 10-Year event
Inflow = 4.94 cfs @ 12.12 hrs, Volume= 12,852 cf
Outflow = 4.94 cfs @ 12.12 hrs, Volume= 12,852 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.94 cfs @ 12.12 hrs, Volume= 12,852 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1.30' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**18.0" Round RCP_Round 18"** L= 48.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.24' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=4.93 cfs @ 12.12 hrs HW=1.30' (Free Discharge)
1=RCP_Round 18" (Barrel Controls 4.93 cfs @ 4.05 fps)

Pond 39P: GI-17



Summary for Pond 40P: GI-18

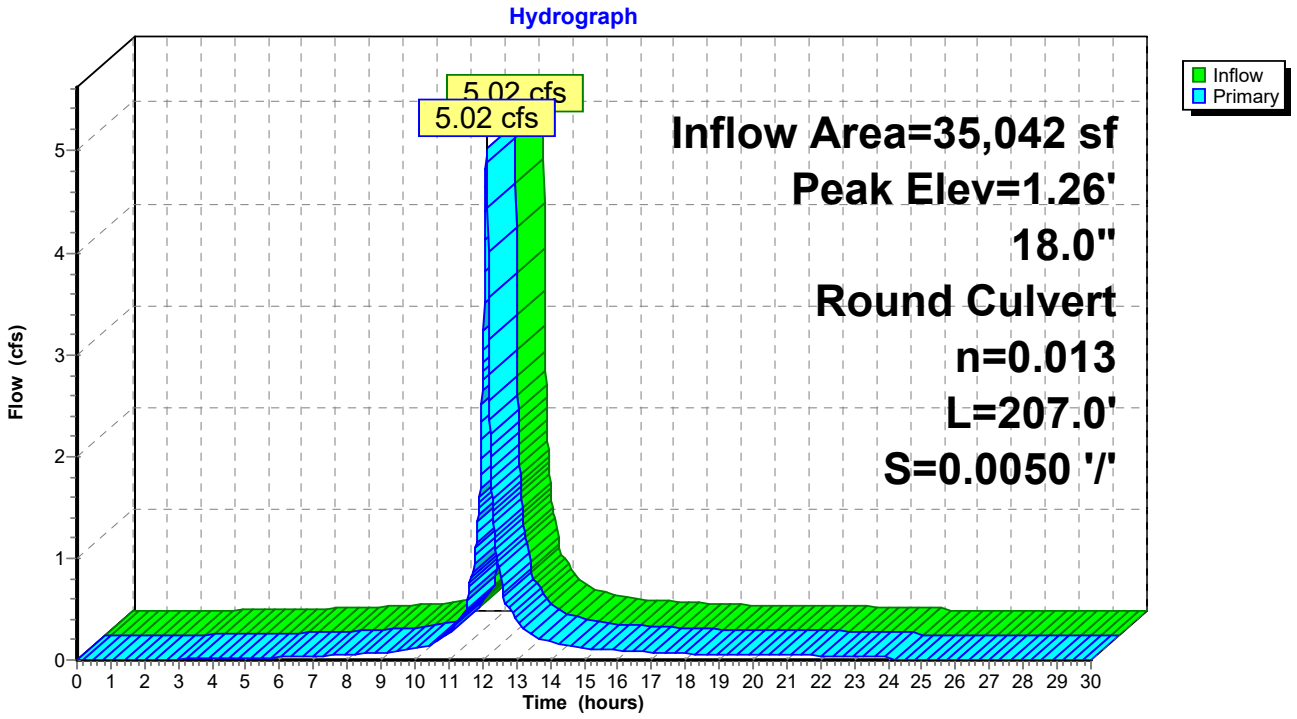
Inflow Area = 35,042 sf, 0.00% Impervious, Inflow Depth = 4.47" for 10-Year event
Inflow = 5.02 cfs @ 12.12 hrs, Volume= 13,052 cf
Outflow = 5.02 cfs @ 12.12 hrs, Volume= 13,052 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.02 cfs @ 12.12 hrs, Volume= 13,052 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1.26' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**18.0" Round RCP_Round 18"** L= 207.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -1.03' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=5.02 cfs @ 12.12 hrs HW=1.26' (Free Discharge)
1=RCP_Round 18" (Barrel Controls 5.02 cfs @ 4.29 fps)

Pond 40P: GI-18



Summary for Pond 41P: GI-10

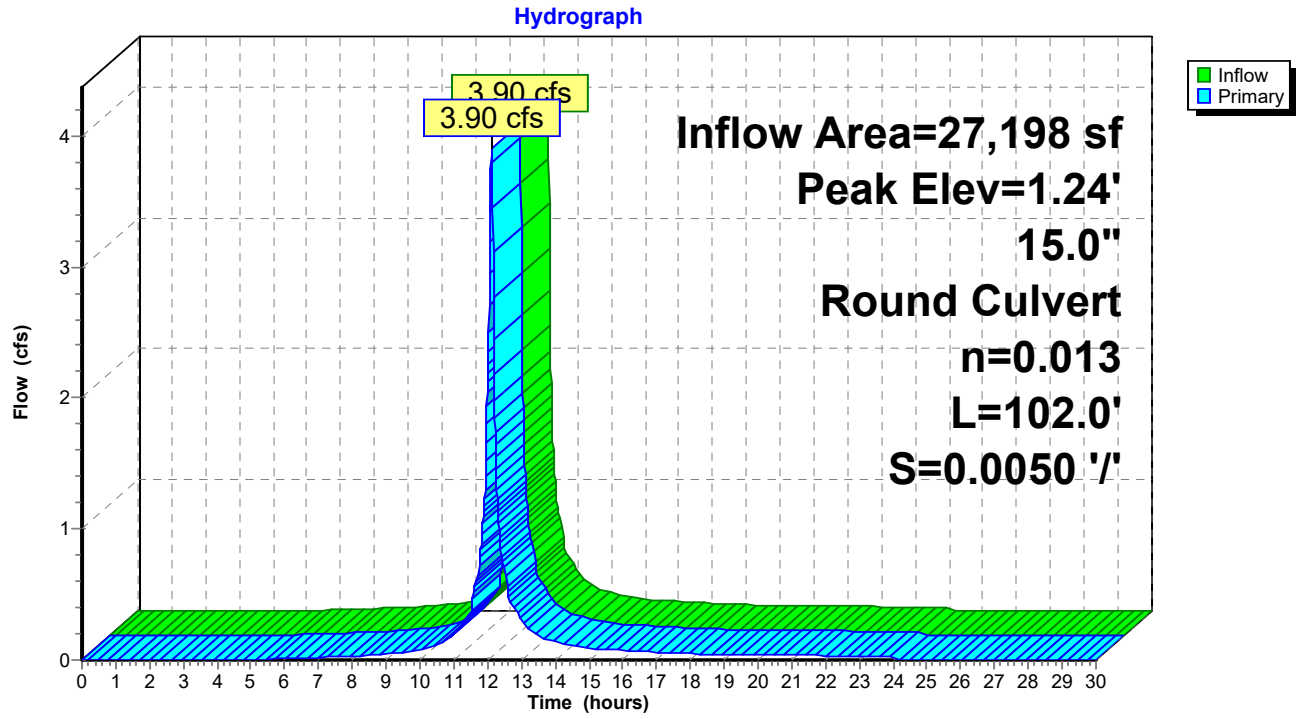
Inflow Area = 27,198 sf, 0.00% Impervious, Inflow Depth = 4.30" for 10-Year event
Inflow = 3.90 cfs @ 12.12 hrs, Volume= 9,750 cf
Outflow = 3.90 cfs @ 12.12 hrs, Volume= 9,750 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.90 cfs @ 12.12 hrs, Volume= 9,750 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1.24' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 102.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.51' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=3.90 cfs @ 12.12 hrs HW=1.24' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 3.90 cfs @ 3.97 fps)

Pond 41P: GI-10



Summary for Pond 42P: GI-10.2

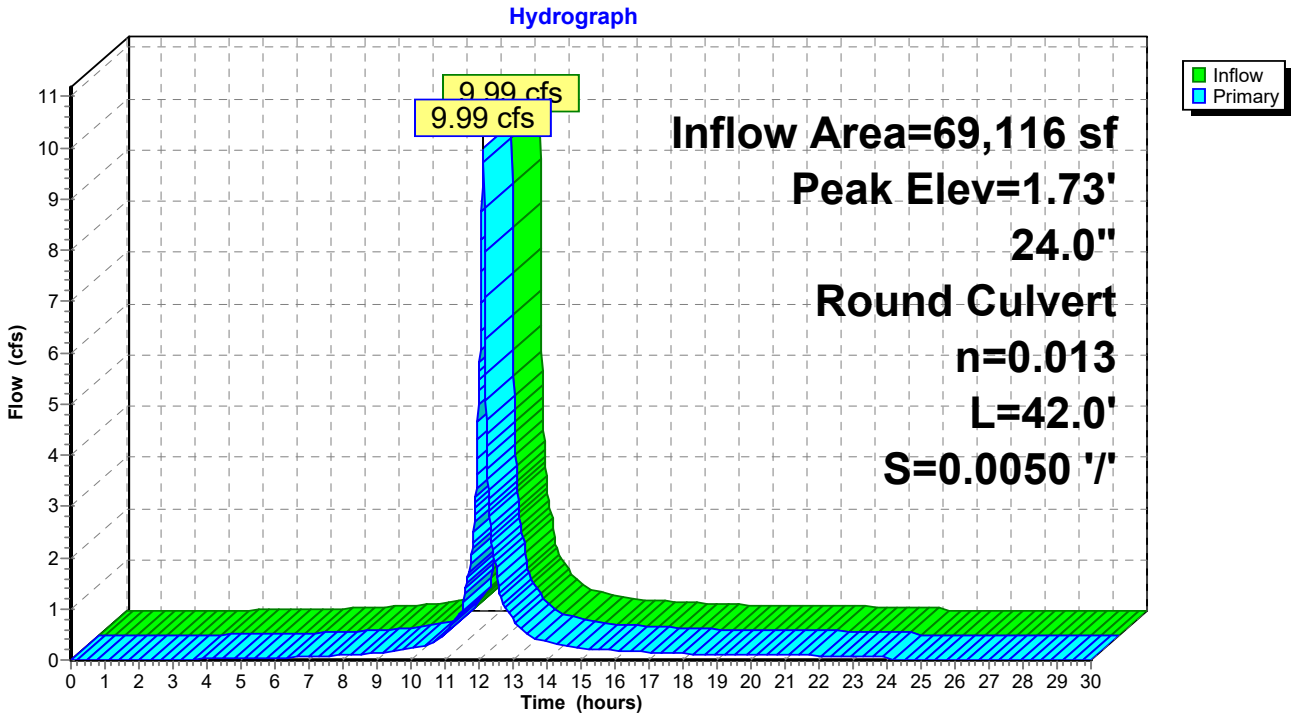
Inflow Area = 69,116 sf, 0.00% Impervious, Inflow Depth = 4.45" for 10-Year event
Inflow = 9.99 cfs @ 12.12 hrs, Volume= 25,649 cf
Outflow = 9.99 cfs @ 12.12 hrs, Volume= 25,649 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.99 cfs @ 12.12 hrs, Volume= 25,649 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1.73' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**24.0" Round RCP_Round 24"** L= 42.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.21' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=9.98 cfs @ 12.12 hrs HW=1.73' (Free Discharge)
1=RCP_Round 24" (Barrel Controls 9.98 cfs @ 4.63 fps)

Pond 42P: GI-10.2



Summary for Pond 43P: GI-11

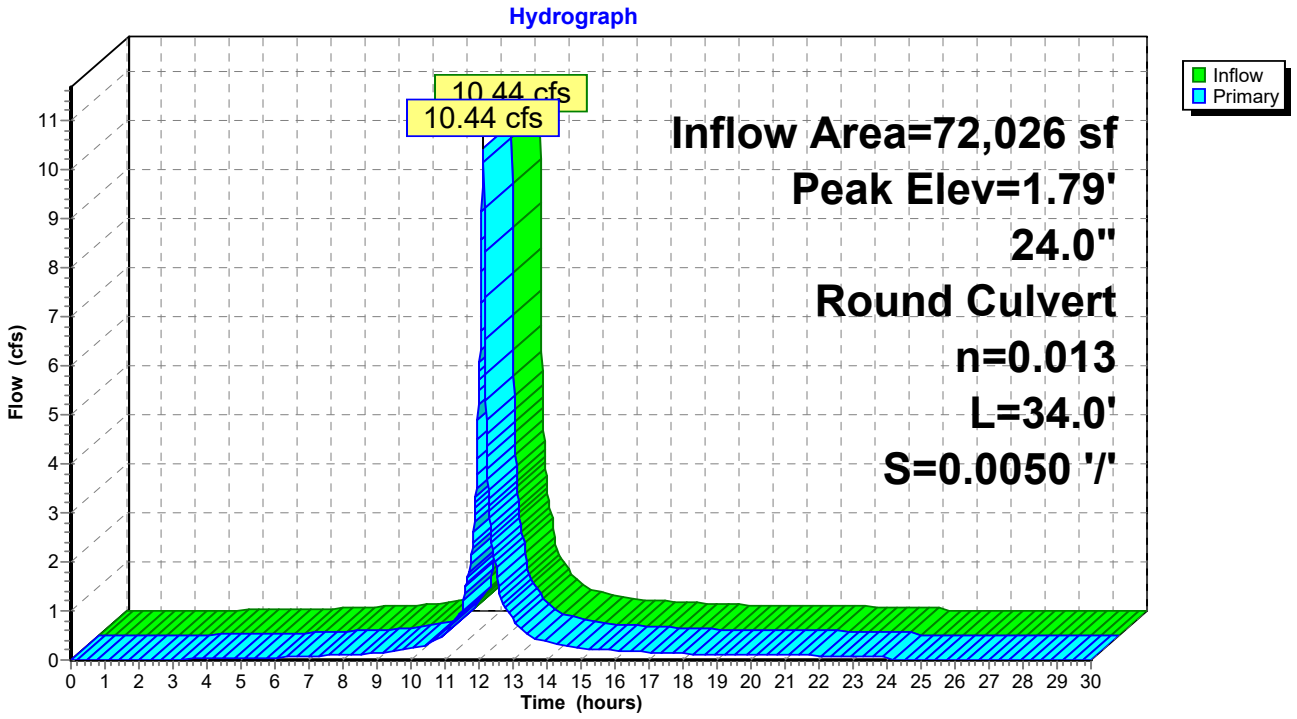
Inflow Area = 72,026 sf, 4.04% Impervious, Inflow Depth = 4.48" for 10-Year event
Inflow = 10.44 cfs @ 12.12 hrs, Volume= 26,911 cf
Outflow = 10.44 cfs @ 12.12 hrs, Volume= 26,911 cf, Atten= 0%, Lag= 0.0 min
Primary = 10.44 cfs @ 12.12 hrs, Volume= 26,911 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 1.79' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**24.0" Round RCP_Round 24"** L= 34.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.17' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=10.43 cfs @ 12.12 hrs HW=1.79' (Free Discharge)
1=RCP_Round 24" (Barrel Controls 10.43 cfs @ 4.65 fps)

Pond 43P: GI-11



Summary for Pond 44P: Pond #1

Inflow Area = 111,066 sf, 2.62% Impervious, Inflow Depth = 4.50" for 10-Year event
Inflow = 16.21 cfs @ 12.12 hrs, Volume= 41,615 cf
Outflow = 14.09 cfs @ 12.15 hrs, Volume= 35,285 cf, Atten= 13%, Lag= 1.9 min
Primary = 14.09 cfs @ 12.15 hrs, Volume= 35,285 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 354.93' @ 12.15 hrs Surf.Area= 5,984 sf Storage= 14,026 cf

Plug-Flow detention time= 125.7 min calculated for 35,285 cf (85% of inflow)
Center-of-Mass det. time= 64.2 min (837.9 - 773.8)

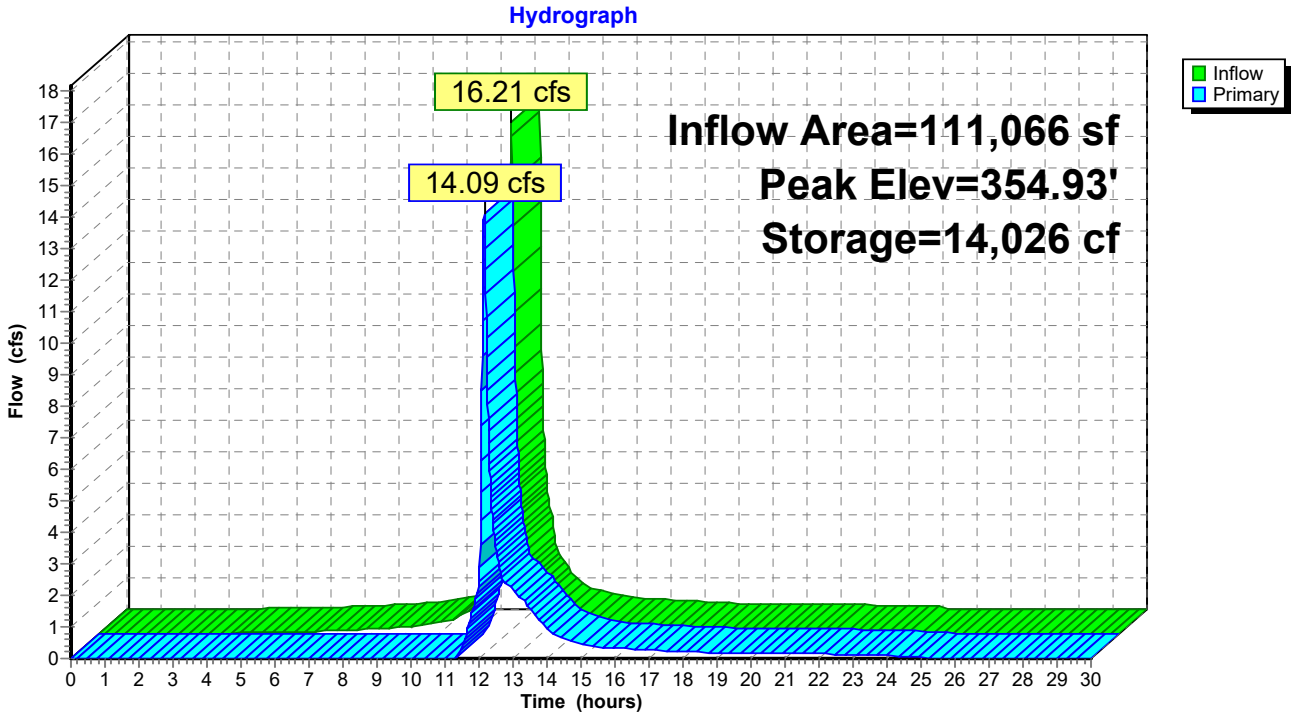
Volume	Invert	Avail.Storage	Storage Description
#1	352.00'	14,445 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
352.00	3,661	0	0
353.00	4,394	4,028	4,028
354.00	5,199	4,797	8,824
355.00	6,043	5,621	14,445

Device	Routing	Invert	Outlet Devices
#1	Primary	349.00'	**24.0" Round RCP_Round 24"** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 349.00' / 348.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	353.50'	**10.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	353.50'	**10.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	354.50'	**36.0" x 36.0" Horiz. Riser** C= 0.600 Limited to weir flow at low heads

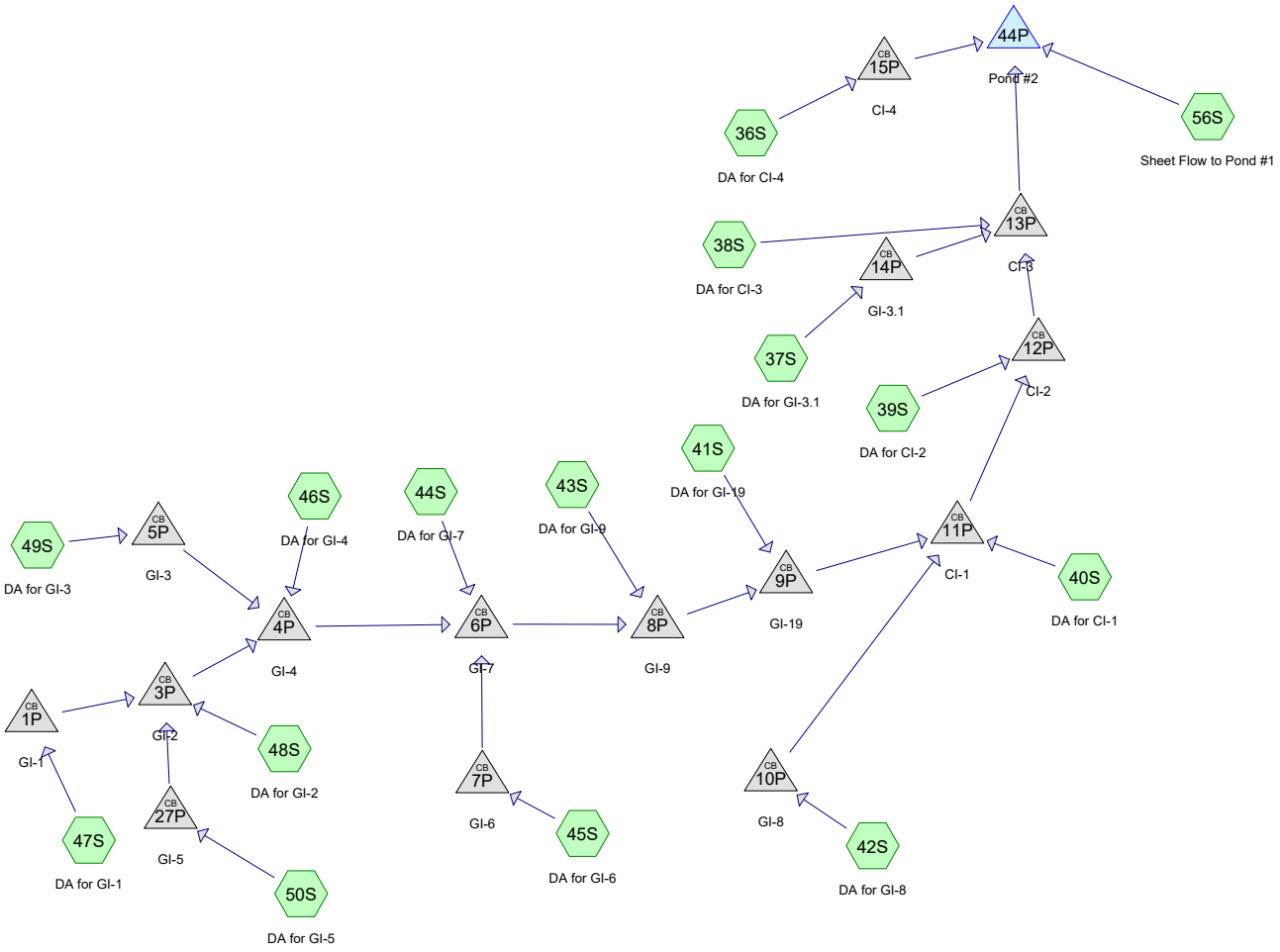
Primary OutFlow Max=14.06 cfs @ 12.15 hrs HW=354.93' (Free Discharge)
└**1=RCP_Round 24"** (Passes 14.06 cfs of 33.59 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.50 cfs @ 5.41 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.50 cfs @ 5.41 fps)
  └**4=Riser** (Weir Controls 11.05 cfs @ 2.14 fps)

Pond 44P: Pond #1



Johnsonville Elementary School – Phase 2
Pond #2

1-Year Rainfall Event
Storm Drainage Calculations



Subcat Reach Pond Link

Routing Diagram for JES Pond #2
Prepared by LKC Engineering, Printed 5/23/2022
HydroCAD® 10.10-3a s/n 11102 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.005	90	(36S, 39S, 44S, 46S, 47S, 49S)
0.016	40	(37S)
0.386	85	(38S)
0.704	96	(40S, 42S, 43S, 45S)
0.639	77	(41S)
0.120	98	(48S, 50S)

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	0.00	-0.27	54.0	0.0050	0.013	15.0	0.0	0.0
2	3P	0.00	-0.21	41.0	0.0051	0.013	15.0	0.0	0.0
3	4P	0.00	-0.58	115.0	0.0050	0.013	15.0	0.0	0.0
4	5P	0.00	-0.18	35.0	0.0051	0.013	15.0	0.0	0.0
5	6P	0.00	-0.72	145.0	0.0050	0.013	18.0	0.0	0.0
6	7P	0.00	-0.28	55.0	0.0051	0.013	15.0	0.0	0.0
7	8P	0.00	-0.19	38.0	0.0050	0.013	18.0	0.0	0.0
8	9P	0.00	-0.41	82.0	0.0050	0.013	24.0	0.0	0.0
9	10P	0.00	-0.64	128.0	0.0050	0.013	15.0	0.0	0.0
10	11P	0.00	-0.49	99.0	0.0049	0.013	24.0	0.0	0.0
11	12P	0.00	-0.34	67.0	0.0051	0.013	24.0	0.0	0.0
12	13P	0.00	-0.30	61.0	0.0049	0.013	30.0	0.0	0.0
13	14P	0.00	-0.27	53.0	0.0051	0.013	15.0	0.0	0.0
14	15P	0.00	-0.30	60.0	0.0050	0.013	15.0	0.0	0.0
15	27P	0.00	-0.15	30.0	0.0050	0.013	15.0	0.0	0.0
16	44P	343.00	342.00	44.0	0.0227	0.013	24.0	0.0	0.0

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 36S: DA for CI-4 Runoff Area=21,645 sf 0.00% Impervious Runoff Depth=2.02"
Tc=5.0 min CN=90 Runoff=1.46 cfs 0.084 af

Subcatchment 37S: DA for GI-3.1 Runoff Area=700 sf 0.00% Impervious Runoff Depth=0.00"
Tc=5.0 min CN=40 Runoff=0.00 cfs 0.000 af

Subcatchment 38S: DA for CI-3 Runoff Area=16,797 sf 0.00% Impervious Runoff Depth=1.62"
Tc=5.0 min CN=85 Runoff=0.93 cfs 0.052 af

Subcatchment 39S: DA for CI-2 Runoff Area=9,278 sf 0.00% Impervious Runoff Depth=2.02"
Tc=5.0 min CN=90 Runoff=0.63 cfs 0.036 af

Subcatchment 40S: DA for CI-1 Runoff Area=4,365 sf 0.00% Impervious Runoff Depth=2.59"
Tc=5.0 min CN=96 Runoff=0.35 cfs 0.022 af

Subcatchment 41S: DA for GI-19 Runoff Area=27,815 sf 0.00% Impervious Runoff Depth=1.10"
Tc=5.0 min CN=77 Runoff=1.03 cfs 0.058 af

Subcatchment 42S: DA for GI-8 Runoff Area=9,286 sf 0.00% Impervious Runoff Depth=2.59"
Tc=5.0 min CN=96 Runoff=0.75 cfs 0.046 af

Subcatchment 43S: DA for GI-9 Runoff Area=2,742 sf 0.00% Impervious Runoff Depth=2.59"
Tc=5.0 min CN=96 Runoff=0.22 cfs 0.014 af

Subcatchment 44S: DA for GI-7 Runoff Area=4,458 sf 0.00% Impervious Runoff Depth=2.02"
Tc=5.0 min CN=90 Runoff=0.30 cfs 0.017 af

Subcatchment 45S: DA for GI-6 Runoff Area=14,275 sf 0.00% Impervious Runoff Depth=2.59"
Tc=5.0 min CN=96 Runoff=1.15 cfs 0.071 af

Subcatchment 46S: DA for GI-4 Runoff Area=2,415 sf 0.00% Impervious Runoff Depth=2.02"
Tc=5.0 min CN=90 Runoff=0.16 cfs 0.009 af

Subcatchment 47S: DA for GI-1 Runoff Area=2,742 sf 0.00% Impervious Runoff Depth=2.02"
Tc=5.0 min CN=90 Runoff=0.18 cfs 0.011 af

Subcatchment 48S: DA for GI-2 Runoff Area=2,274 sf 100.00% Impervious Runoff Depth=2.81"
Tc=5.0 min CN=98 Runoff=0.19 cfs 0.012 af

Subcatchment 49S: DA for GI-3 Runoff Area=3,236 sf 0.00% Impervious Runoff Depth=2.02"
Tc=5.0 min CN=90 Runoff=0.22 cfs 0.013 af

Subcatchment 50S: DA for GI-5 Runoff Area=2,951 sf 100.00% Impervious Runoff Depth=2.81"
Tc=5.0 min CN=98 Runoff=0.25 cfs 0.016 af

Subcatchment 56S: Sheet Flow to Pond #1
Runoff=0.00 cfs 0.000 af

Pond 1P: GI-1 Peak Elev=0.23' Inflow=0.18 cfs 0.011 af
15.0" Round Culvert n=0.013 L=54.0' S=0.0050 '/' Outflow=0.18 cfs 0.011 af

Pond 3P: GI-2 Peak Elev=0.43' Inflow=0.62 cfs 0.039 af
15.0" Round Culvert n=0.013 L=41.0' S=0.0051 '/' Outflow=0.62 cfs 0.039 af

Pond 4P: GI-4 Peak Elev=0.54' Inflow=1.00 cfs 0.061 af
15.0" Round Culvert n=0.013 L=115.0' S=0.0050 '/' Outflow=1.00 cfs 0.061 af

Pond 5P: GI-3 Peak Elev=0.25' Inflow=0.22 cfs 0.013 af
15.0" Round Culvert n=0.013 L=35.0' S=0.0051 '/' Outflow=0.22 cfs 0.013 af

Pond 6P: GI-7 Peak Elev=0.82' Inflow=2.45 cfs 0.149 af
18.0" Round Culvert n=0.013 L=145.0' S=0.0050 '/' Outflow=2.45 cfs 0.149 af

Pond 7P: GI-6 Peak Elev=0.60' Inflow=1.15 cfs 0.071 af
15.0" Round Culvert n=0.013 L=55.0' S=0.0051 '/' Outflow=1.15 cfs 0.071 af

Pond 8P: GI-9 Peak Elev=0.90' Inflow=2.67 cfs 0.162 af
18.0" Round Culvert n=0.013 L=38.0' S=0.0050 '/' Outflow=2.67 cfs 0.162 af

Pond 9P: GI-19 Peak Elev=0.94' Inflow=3.70 cfs 0.221 af
24.0" Round Culvert n=0.013 L=82.0' S=0.0050 '/' Outflow=3.70 cfs 0.221 af

Pond 10P: GI-8 Peak Elev=0.47' Inflow=0.75 cfs 0.046 af
15.0" Round Culvert n=0.013 L=128.0' S=0.0050 '/' Outflow=0.75 cfs 0.046 af

Pond 11P: CI-1 Peak Elev=1.08' Inflow=4.79 cfs 0.288 af
24.0" Round Culvert n=0.013 L=99.0' S=0.0049 '/' Outflow=4.79 cfs 0.288 af

Pond 12P: CI-2 Peak Elev=1.17' Inflow=5.42 cfs 0.324 af
24.0" Round Culvert n=0.013 L=67.0' S=0.0051 '/' Outflow=5.42 cfs 0.324 af

Pond 13P: CI-3 Peak Elev=1.18' Inflow=6.35 cfs 0.376 af
30.0" Round Culvert n=0.013 L=61.0' S=0.0049 '/' Outflow=6.35 cfs 0.376 af

Pond 14P: GI-3.1 Peak Elev=0.00' Inflow=0.00 cfs 0.000 af
15.0" Round Culvert n=0.013 L=53.0' S=0.0051 '/' Outflow=0.00 cfs 0.000 af

Pond 15P: CI-4 Peak Elev=0.68' Inflow=1.46 cfs 0.084 af
15.0" Round Culvert n=0.013 L=60.0' S=0.0050 '/' Outflow=1.46 cfs 0.084 af

Pond 27P: GI-5 Peak Elev=0.27' Inflow=0.25 cfs 0.016 af
15.0" Round Culvert n=0.013 L=30.0' S=0.0050 '/' Outflow=0.25 cfs 0.016 af

Pond 44P: Pond #2 Peak Elev=348.28' Storage=9,884 cf Inflow=7.81 cfs 0.460 af
Outflow=1.90 cfs 0.310 af

Summary for Subcatchment 36S: DA for CI-4

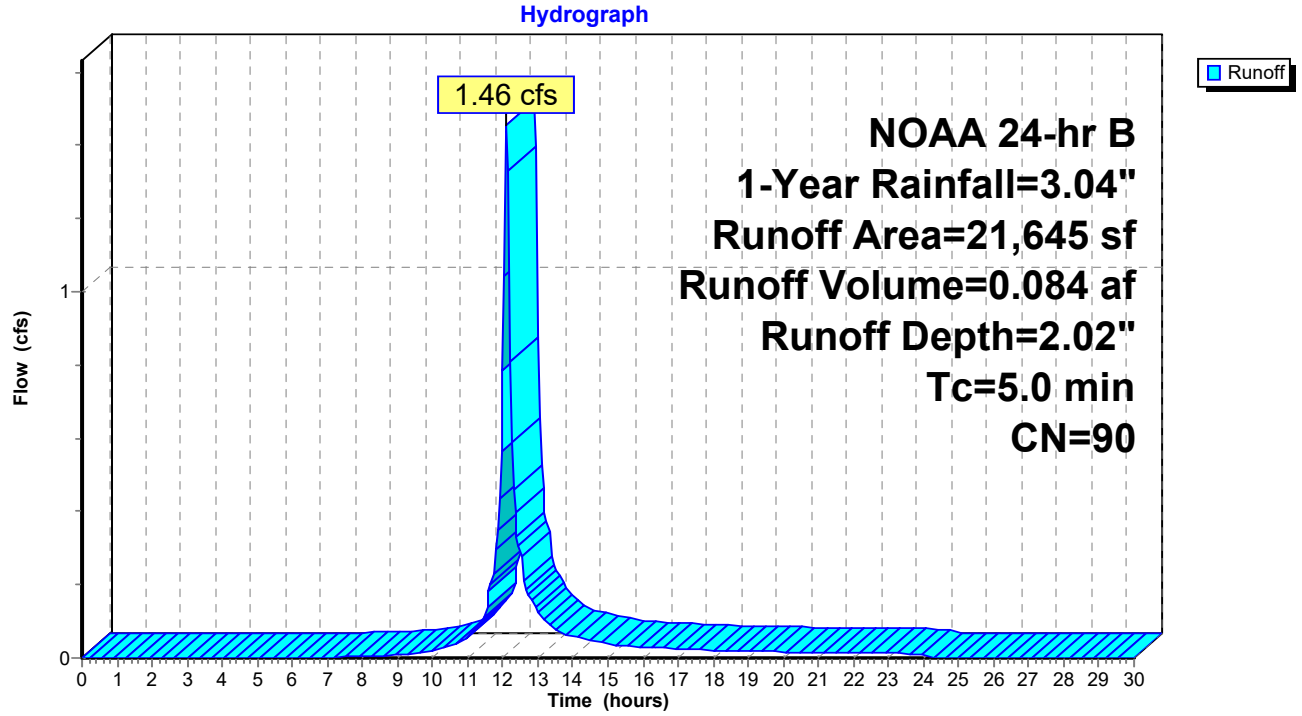
Runoff = 1.46 cfs @ 12.11 hrs, Volume= 0.084 af, Depth= 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 1-Year Rainfall=3.04"

	Area (sf)	CN	Description
*	21,645	90	
	21,645		100.00% Pervious Area

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

Subcatchment 36S: DA for CI-4



Summary for Subcatchment 37S: DA for GI-3.1

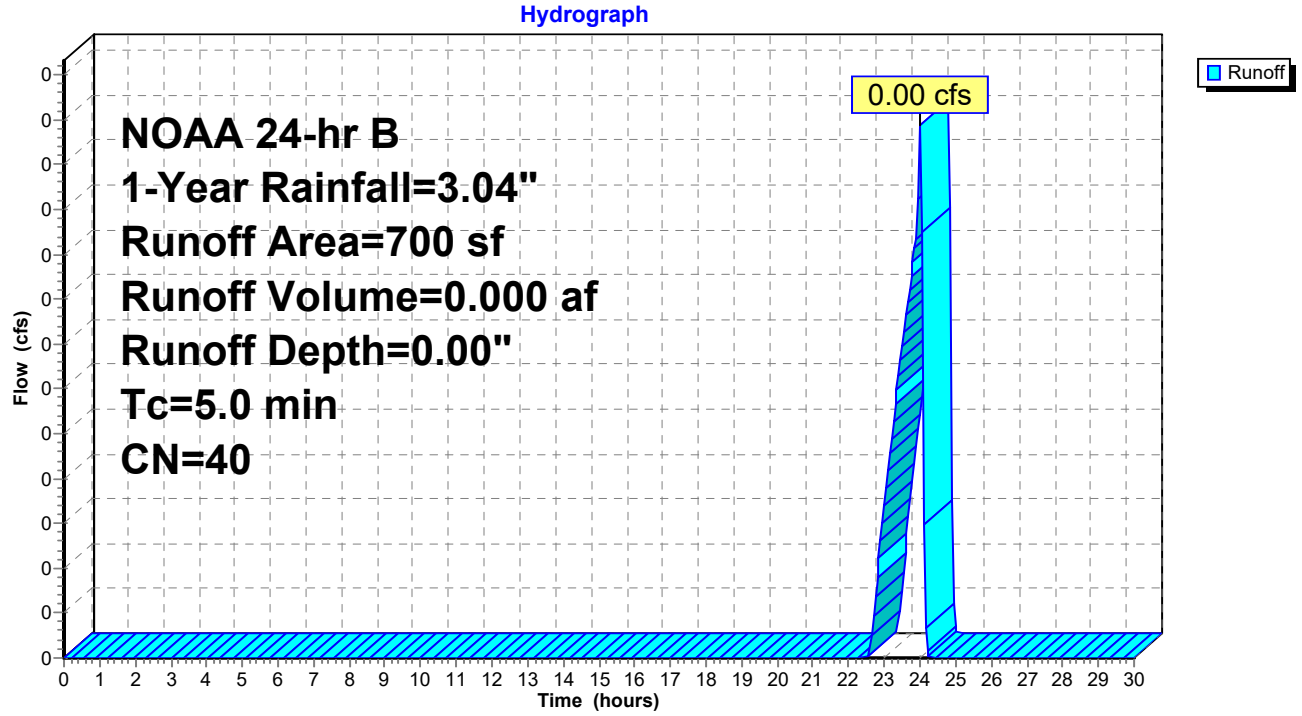
Runoff = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 1-Year Rainfall=3.04"

	Area (sf)	CN	Description
*	700	40	
	700		100.00% Pervious Area

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

Subcatchment 37S: DA for GI-3.1



Summary for Subcatchment 38S: DA for CI-3

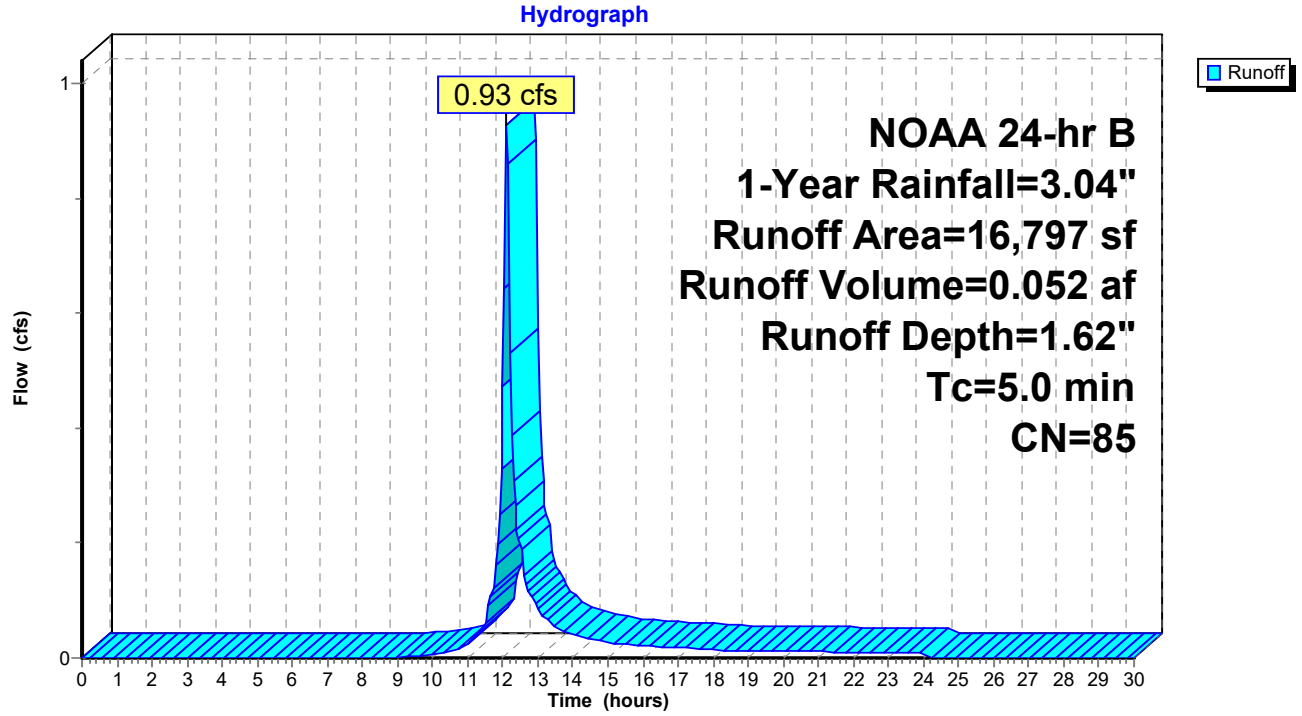
Runoff = 0.93 cfs @ 12.12 hrs, Volume= 0.052 af, Depth= 1.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 1-Year Rainfall=3.04"

	Area (sf)	CN	Description
*	16,797	85	
	16,797		100.00% Pervious Area

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

Subcatchment 38S: DA for CI-3



Summary for Subcatchment 39S: DA for CI-2

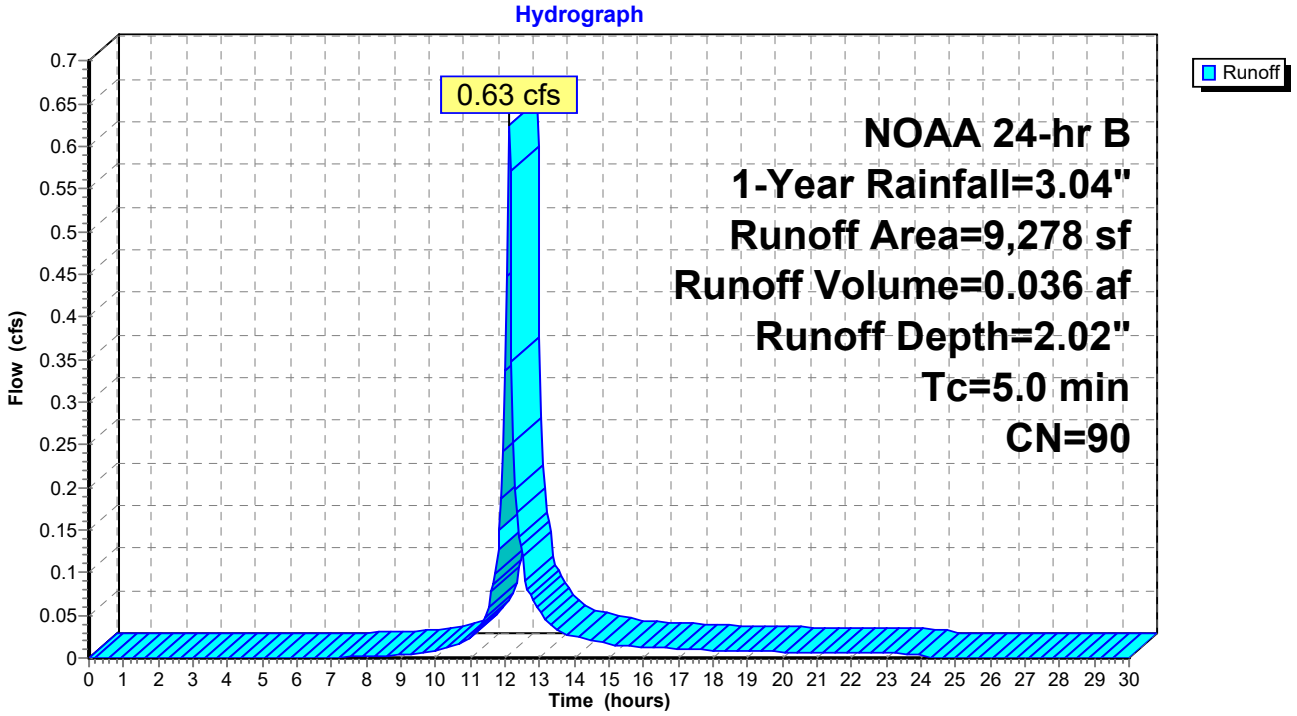
Runoff = 0.63 cfs @ 12.11 hrs, Volume= 0.036 af, Depth= 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 1-Year Rainfall=3.04"

	Area (sf)	CN	Description
*	9,278	90	
	9,278		100.00% Pervious Area

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

Subcatchment 39S: DA for CI-2



Summary for Subcatchment 40S: DA for CI-1

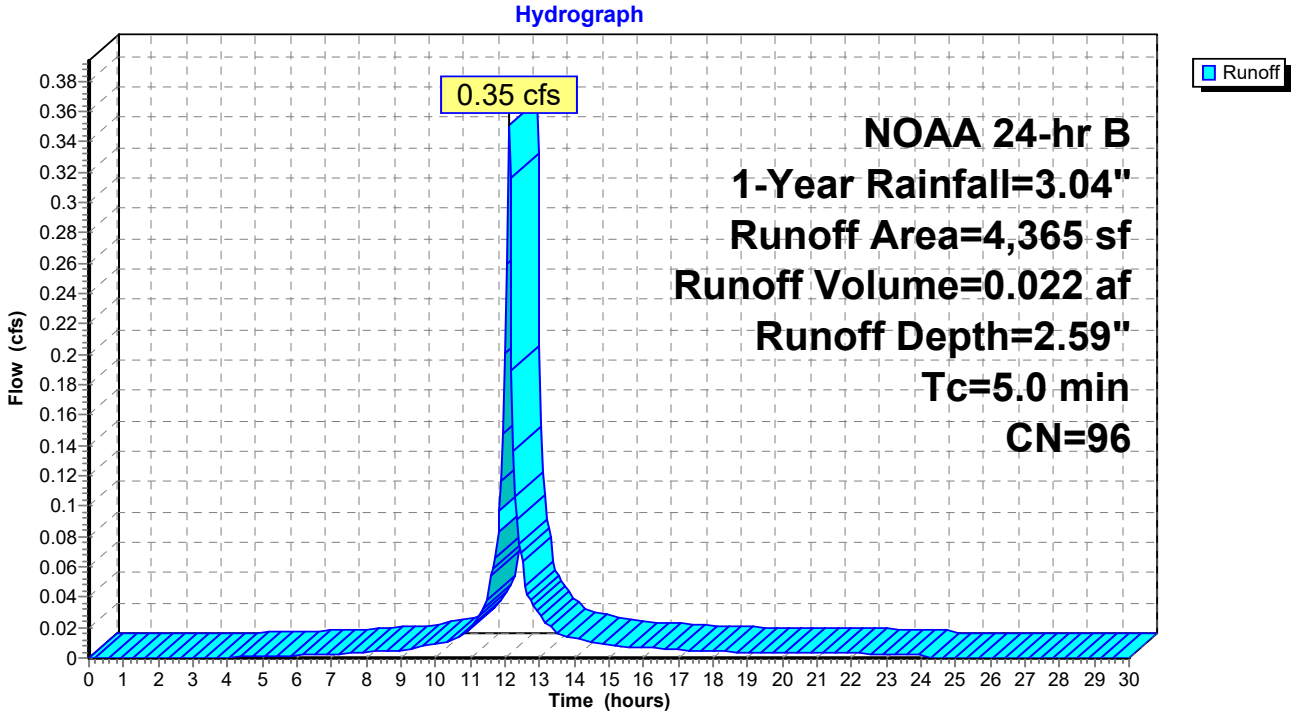
Runoff = 0.35 cfs @ 12.11 hrs, Volume= 0.022 af, Depth= 2.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 1-Year Rainfall=3.04"

	Area (sf)	CN	Description
*	4,365	96	
	4,365		100.00% Pervious Area

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

Subcatchment 40S: DA for CI-1



Summary for Subcatchment 41S: DA for GI-19

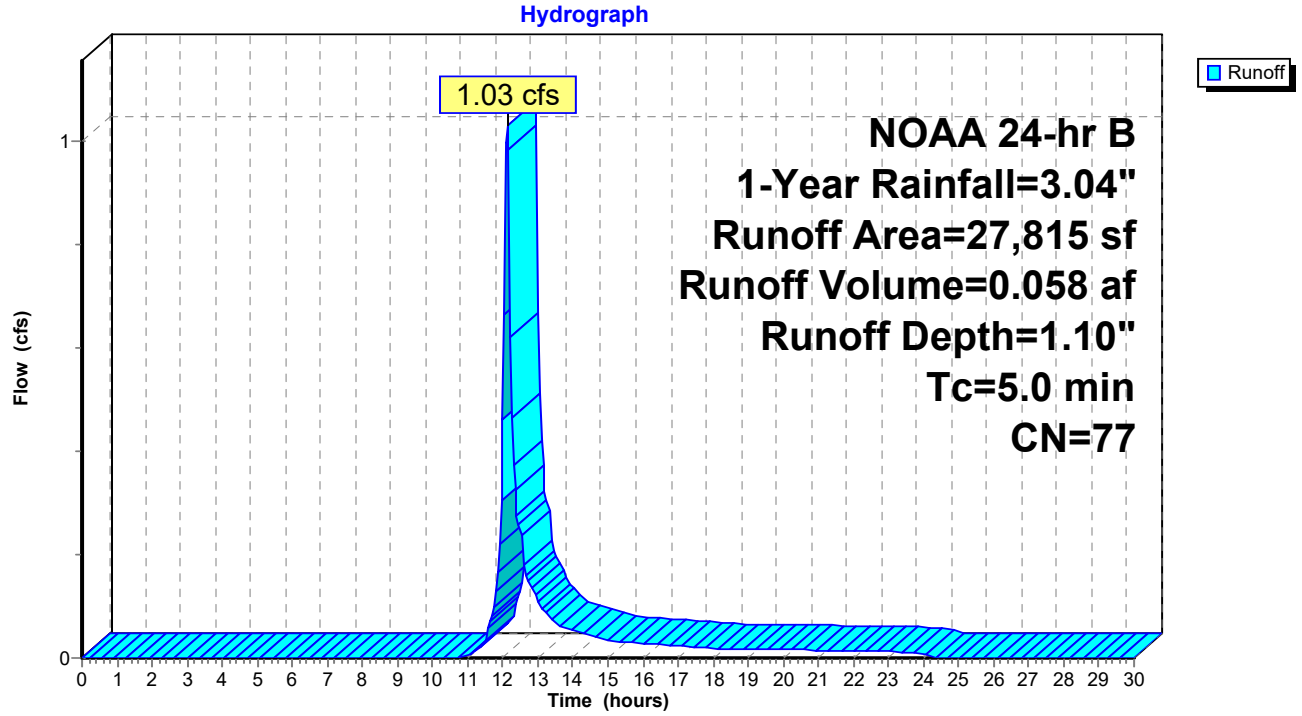
Runoff = 1.03 cfs @ 12.12 hrs, Volume= 0.058 af, Depth= 1.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 1-Year Rainfall=3.04"

	Area (sf)	CN	Description
*	27,815	77	
	27,815		100.00% Pervious Area

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

Subcatchment 41S: DA for GI-19



Summary for Subcatchment 42S: DA for GI-8

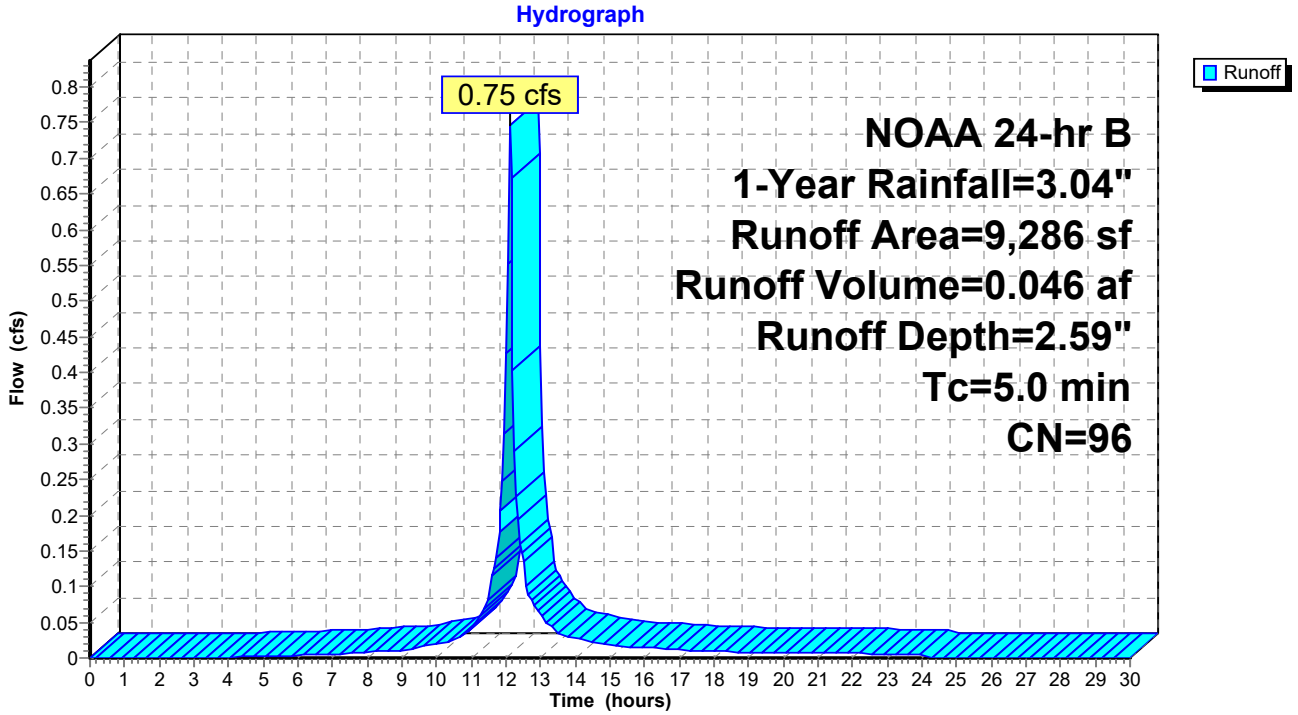
Runoff = 0.75 cfs @ 12.11 hrs, Volume= 0.046 af, Depth= 2.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 1-Year Rainfall=3.04"

	Area (sf)	CN	Description
*	9,286	96	
	9,286		100.00% Pervious Area

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

Subcatchment 42S: DA for GI-8



Summary for Subcatchment 43S: DA for GI-9

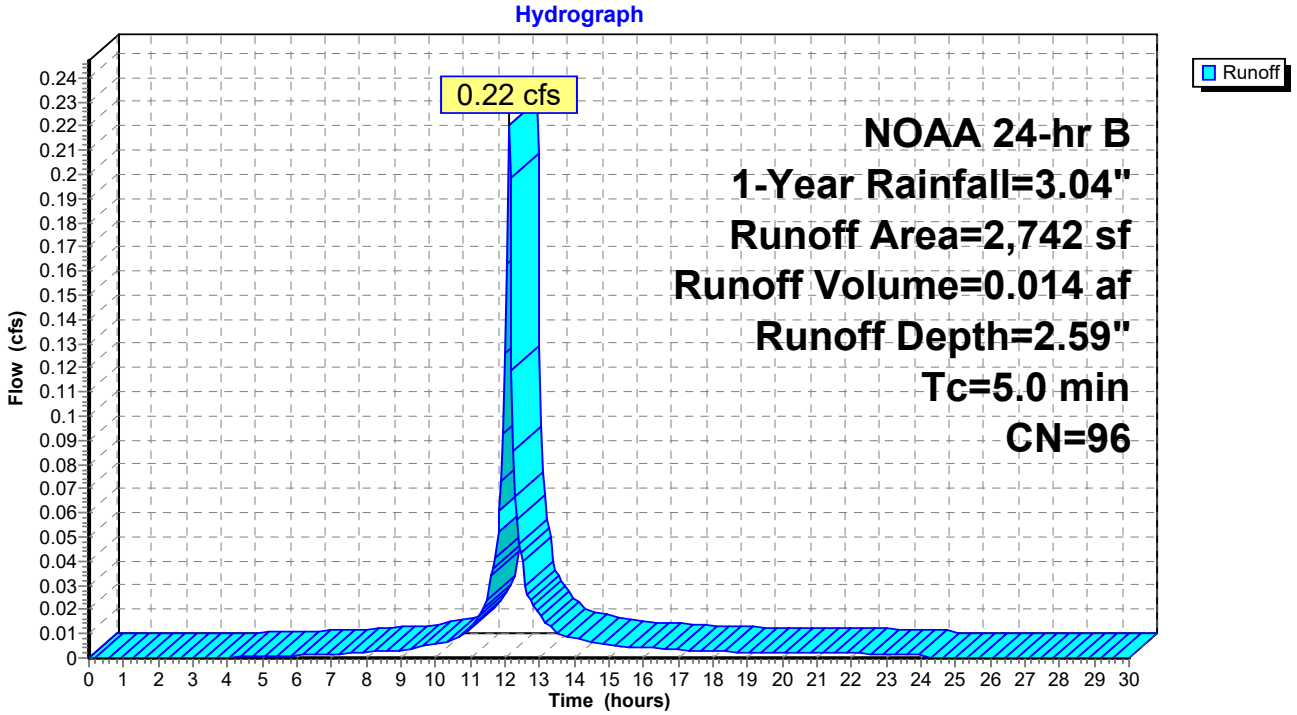
Runoff = 0.22 cfs @ 12.11 hrs, Volume= 0.014 af, Depth= 2.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 1-Year Rainfall=3.04"

	Area (sf)	CN	Description
*	2,742	96	
	2,742		100.00% Pervious Area

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

Subcatchment 43S: DA for GI-9



Summary for Subcatchment 44S: DA for GI-7

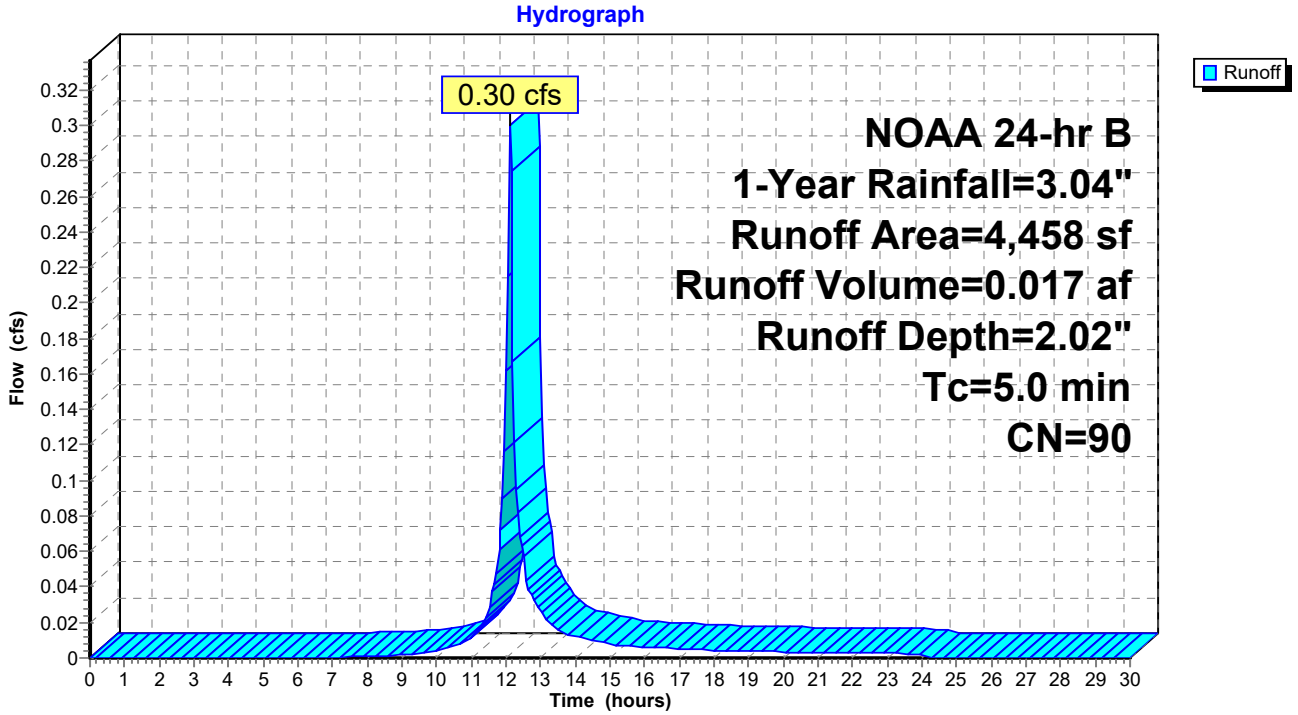
Runoff = 0.30 cfs @ 12.11 hrs, Volume= 0.017 af, Depth= 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 1-Year Rainfall=3.04"

	Area (sf)	CN	Description
*	4,458	90	
	4,458		100.00% Pervious Area

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

Subcatchment 44S: DA for GI-7



Summary for Subcatchment 45S: DA for GI-6

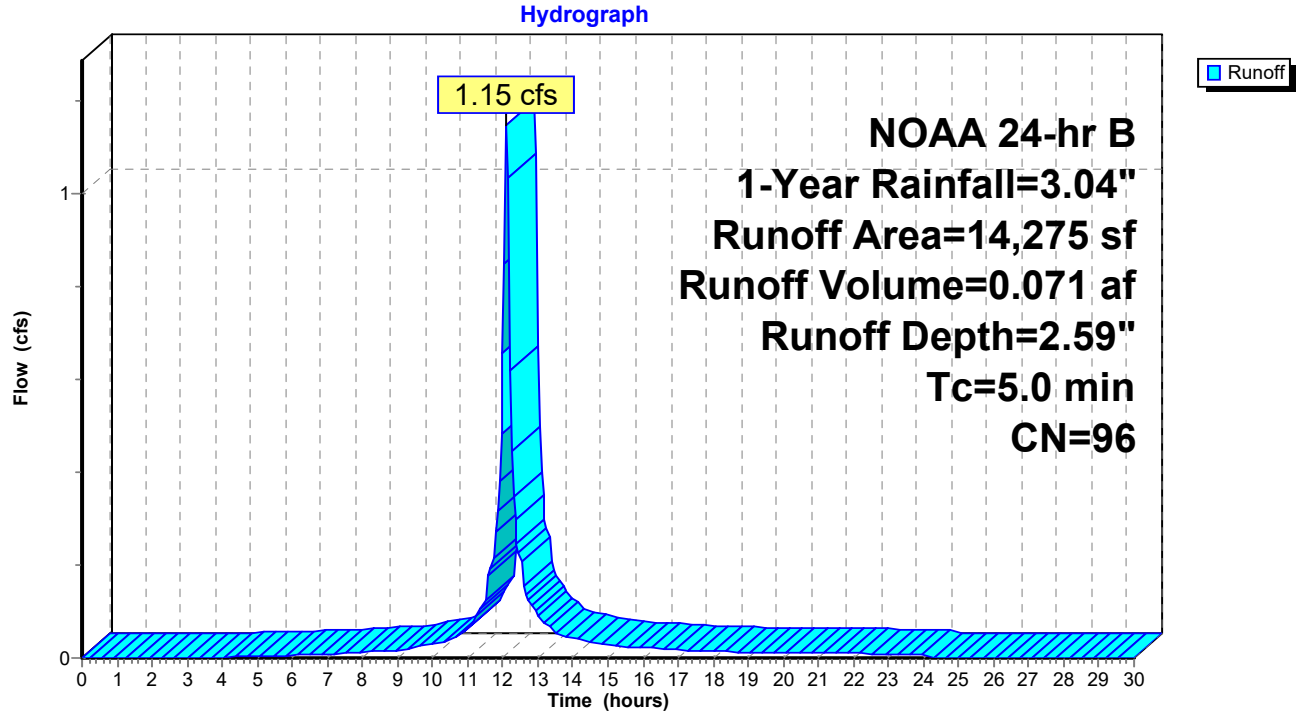
Runoff = 1.15 cfs @ 12.11 hrs, Volume= 0.071 af, Depth= 2.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 1-Year Rainfall=3.04"

	Area (sf)	CN	Description
*	14,275	96	
	14,275		100.00% Pervious Area

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

Subcatchment 45S: DA for GI-6



Summary for Subcatchment 46S: DA for GI-4

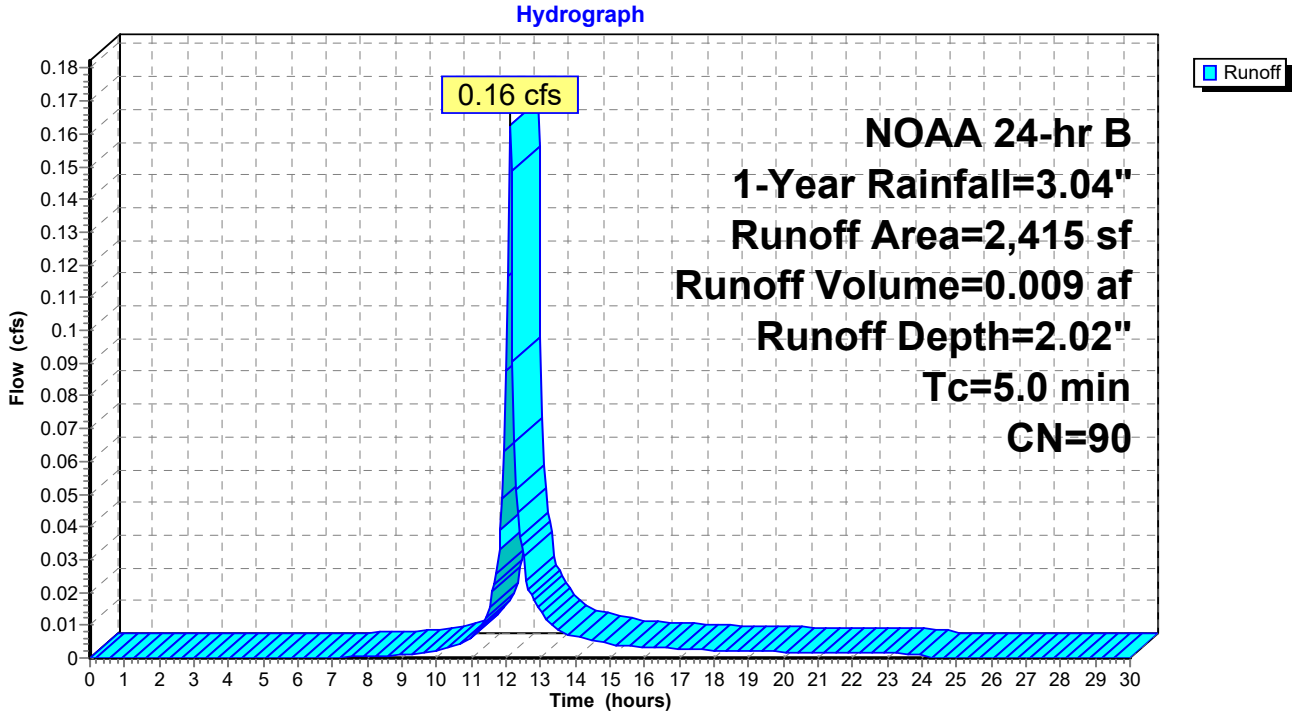
Runoff = 0.16 cfs @ 12.11 hrs, Volume= 0.009 af, Depth= 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 1-Year Rainfall=3.04"

	Area (sf)	CN	Description
*	2,415	90	
	2,415		100.00% Pervious Area

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

Subcatchment 46S: DA for GI-4



Summary for Subcatchment 47S: DA for GI-1

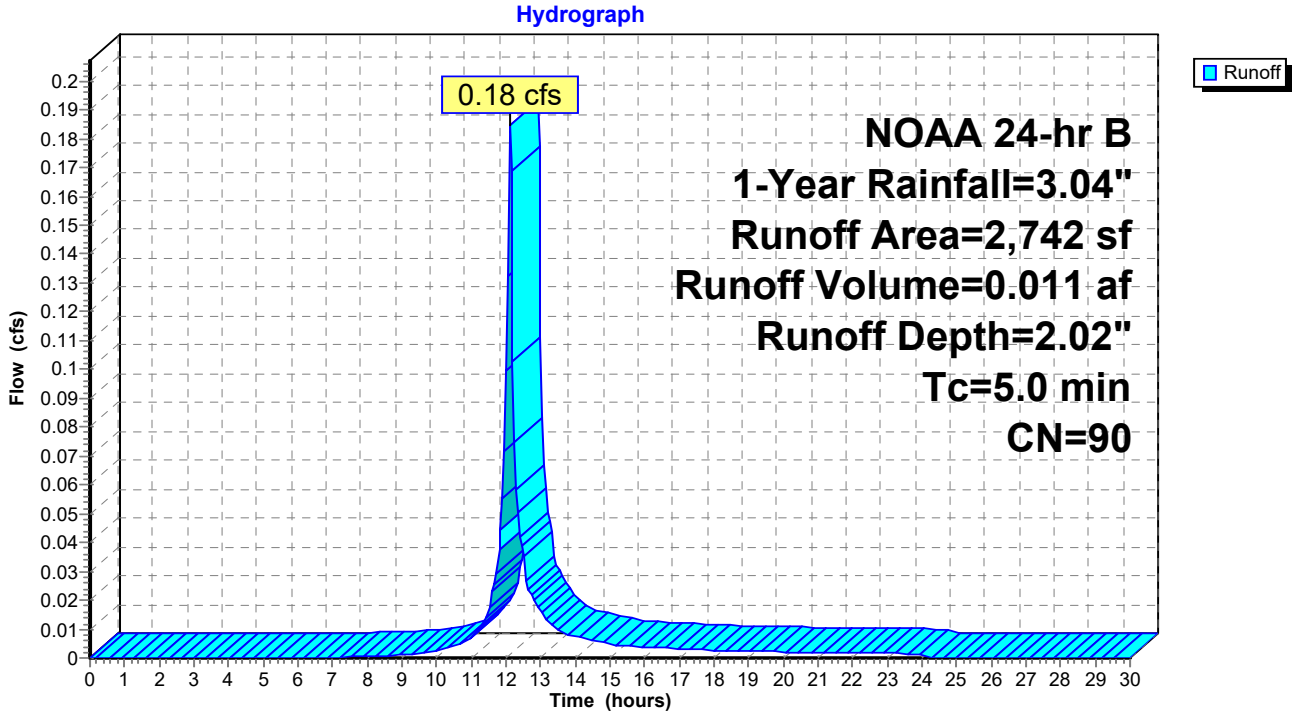
Runoff = 0.18 cfs @ 12.11 hrs, Volume= 0.011 af, Depth= 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 1-Year Rainfall=3.04"

	Area (sf)	CN	Description
*	2,742	90	
	2,742		100.00% Pervious Area

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

Subcatchment 47S: DA for GI-1



Summary for Subcatchment 48S: DA for GI-2

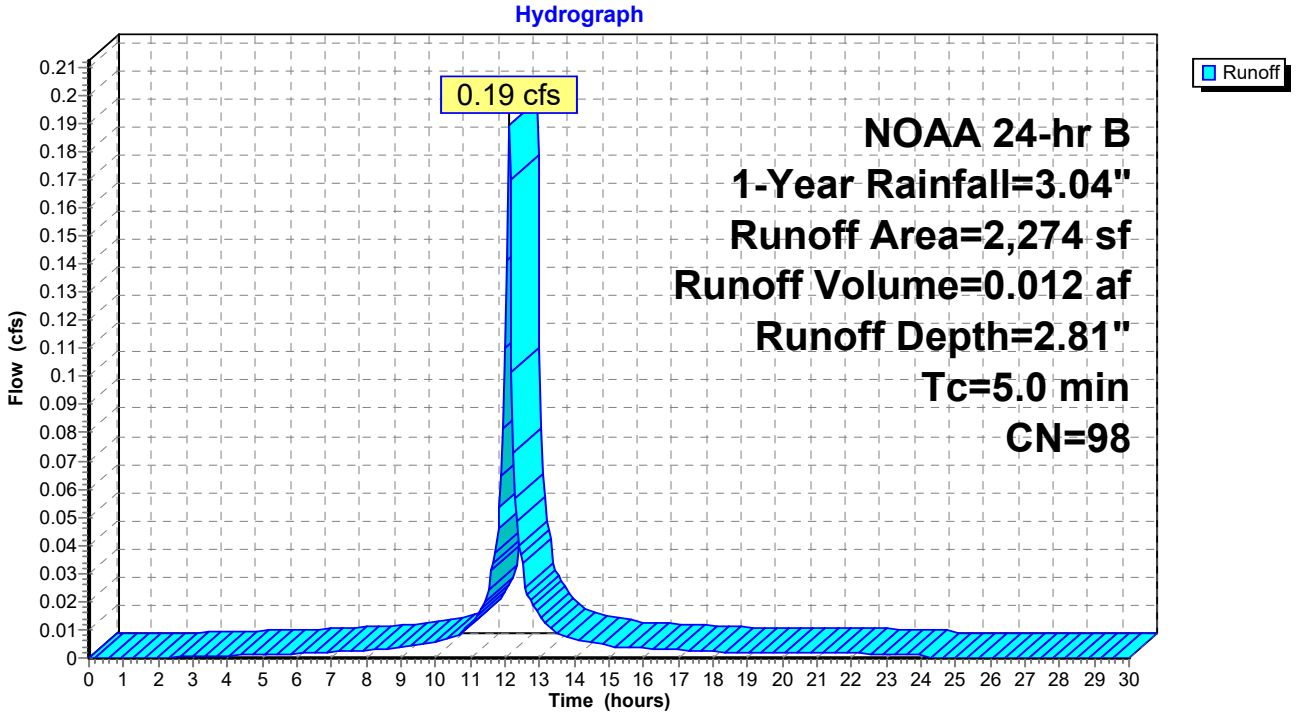
Runoff = 0.19 cfs @ 12.11 hrs, Volume= 0.012 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 1-Year Rainfall=3.04"

	Area (sf)	CN	Description
*	2,274	98	
	2,274		100.00% Impervious Area

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

Subcatchment 48S: DA for GI-2



Summary for Subcatchment 49S: DA for GI-3

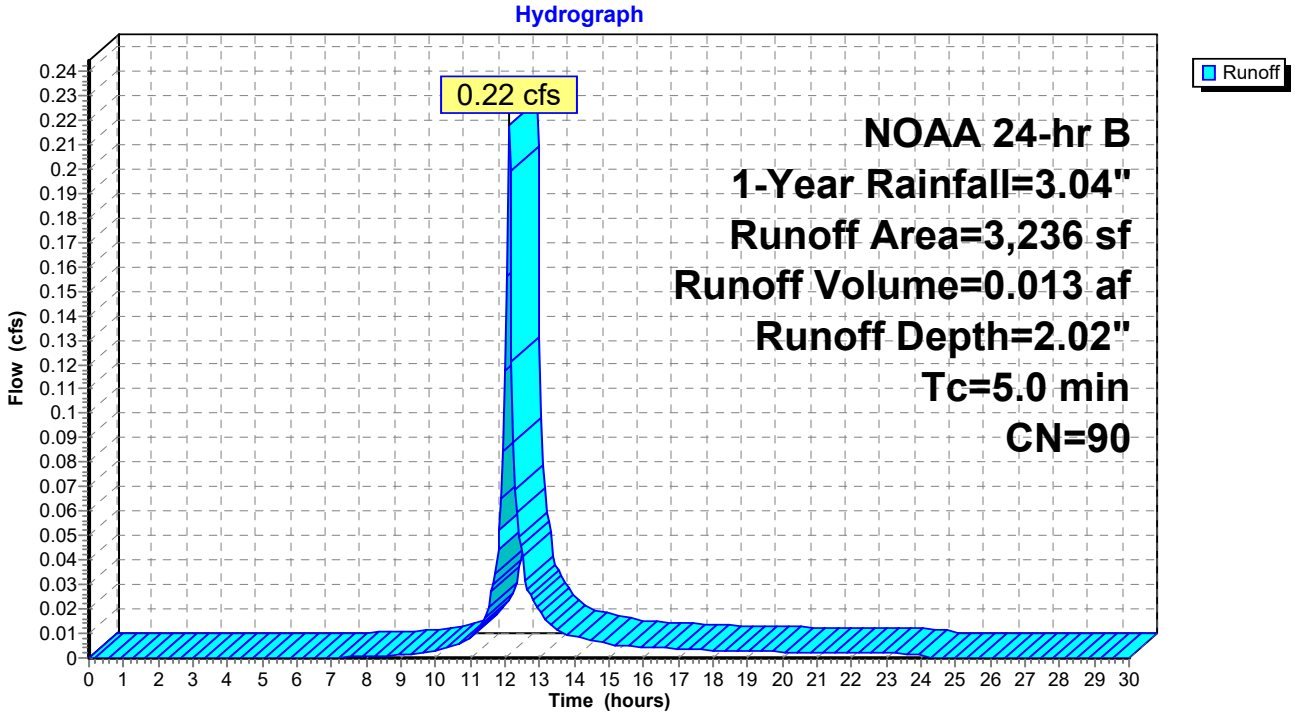
Runoff = 0.22 cfs @ 12.11 hrs, Volume= 0.013 af, Depth= 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 1-Year Rainfall=3.04"

	Area (sf)	CN	Description
*	3,236	90	
	3,236		100.00% Pervious Area

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

Subcatchment 49S: DA for GI-3



Summary for Subcatchment 50S: DA for GI-5

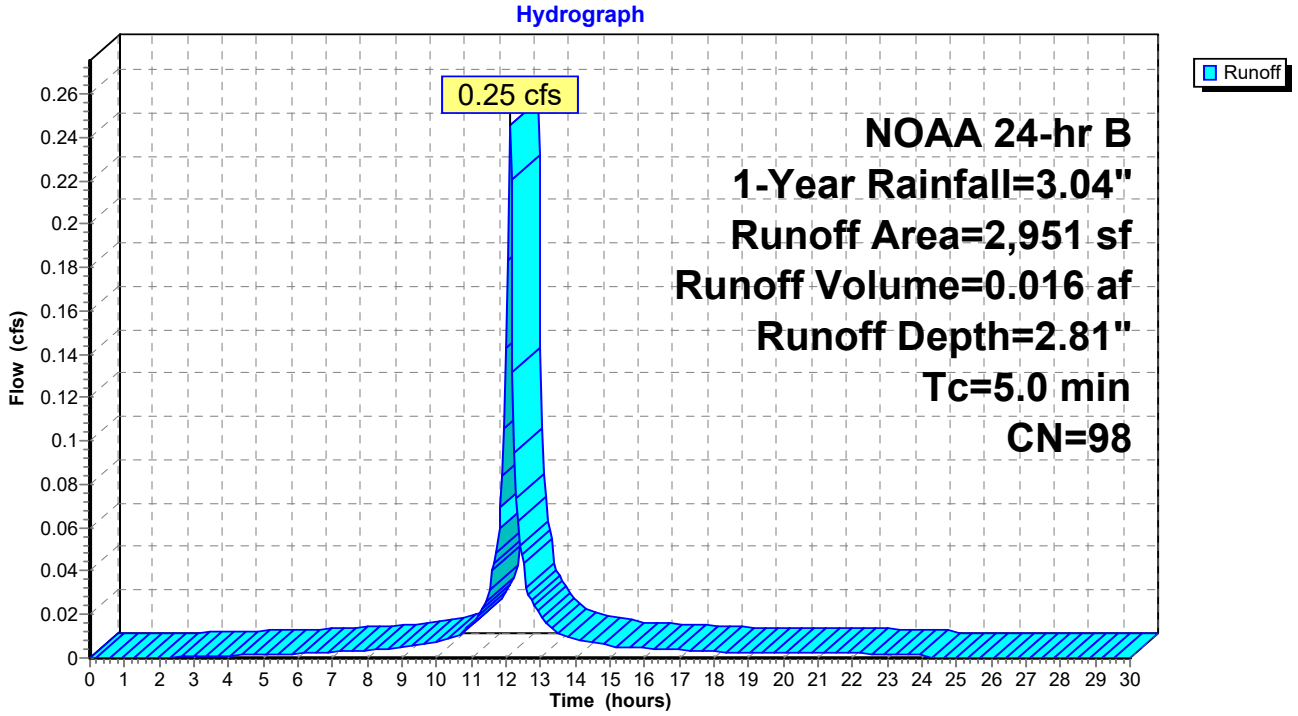
Runoff = 0.25 cfs @ 12.11 hrs, Volume= 0.016 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 1-Year Rainfall=3.04"

	Area (sf)	CN	Description
*	2,951	98	
	2,951		100.00% Impervious Area

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

Subcatchment 50S: DA for GI-5



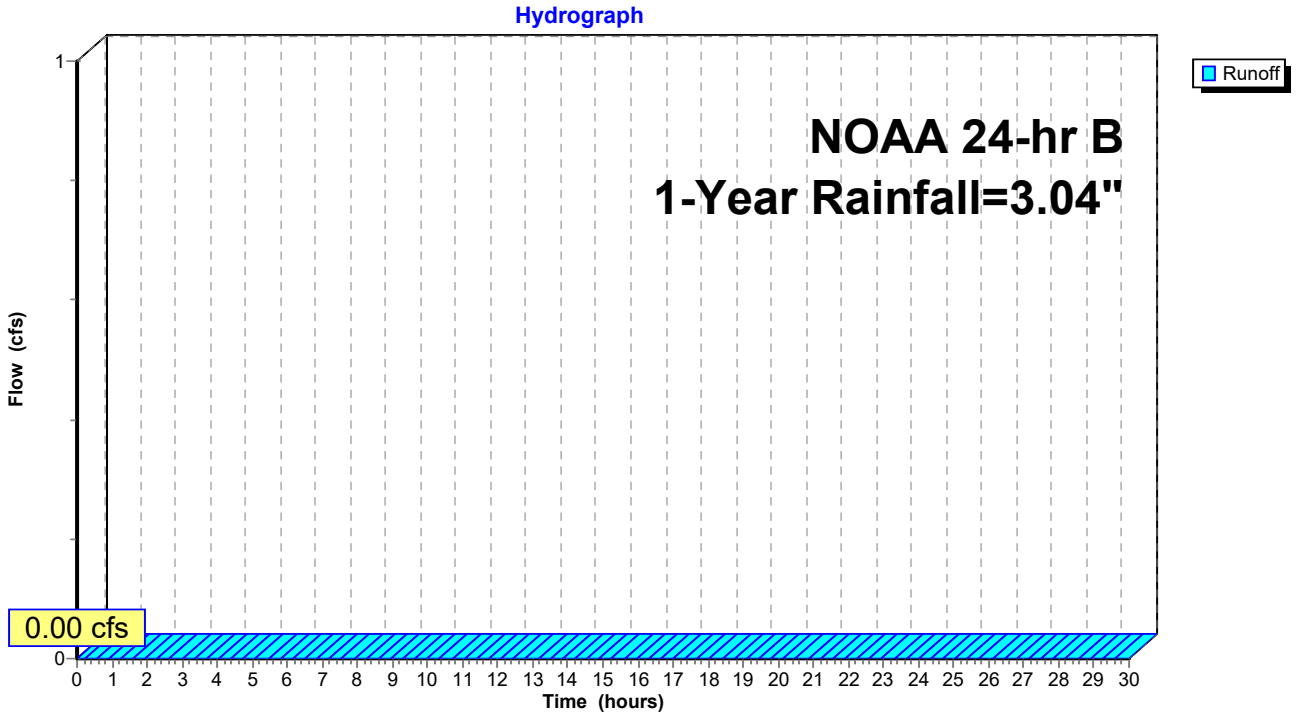
Summary for Subcatchment 56S: Sheet Flow to Pond #1

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 1-Year Rainfall=3.04"

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

Subcatchment 56S: Sheet Flow to Pond #1



Summary for Pond 1P: GI-1

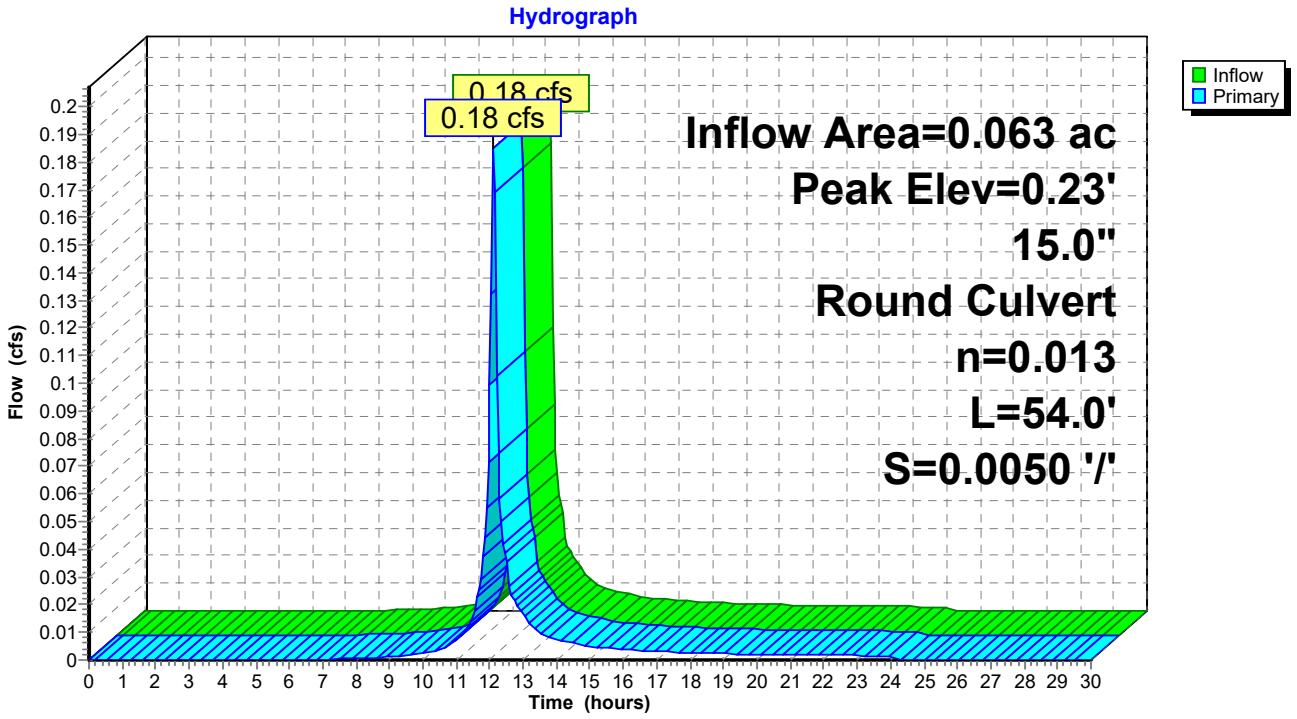
Inflow Area = 0.063 ac, 0.00% Impervious, Inflow Depth = 2.02" for 1-Year event
Inflow = 0.18 cfs @ 12.11 hrs, Volume= 0.011 af
Outflow = 0.18 cfs @ 12.11 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.0 min
Primary = 0.18 cfs @ 12.11 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 0.23' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 54.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.27' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.18 cfs @ 12.11 hrs HW=0.23' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 0.18 cfs @ 1.76 fps)

Pond 1P: GI-1



Summary for Pond 3P: GI-2

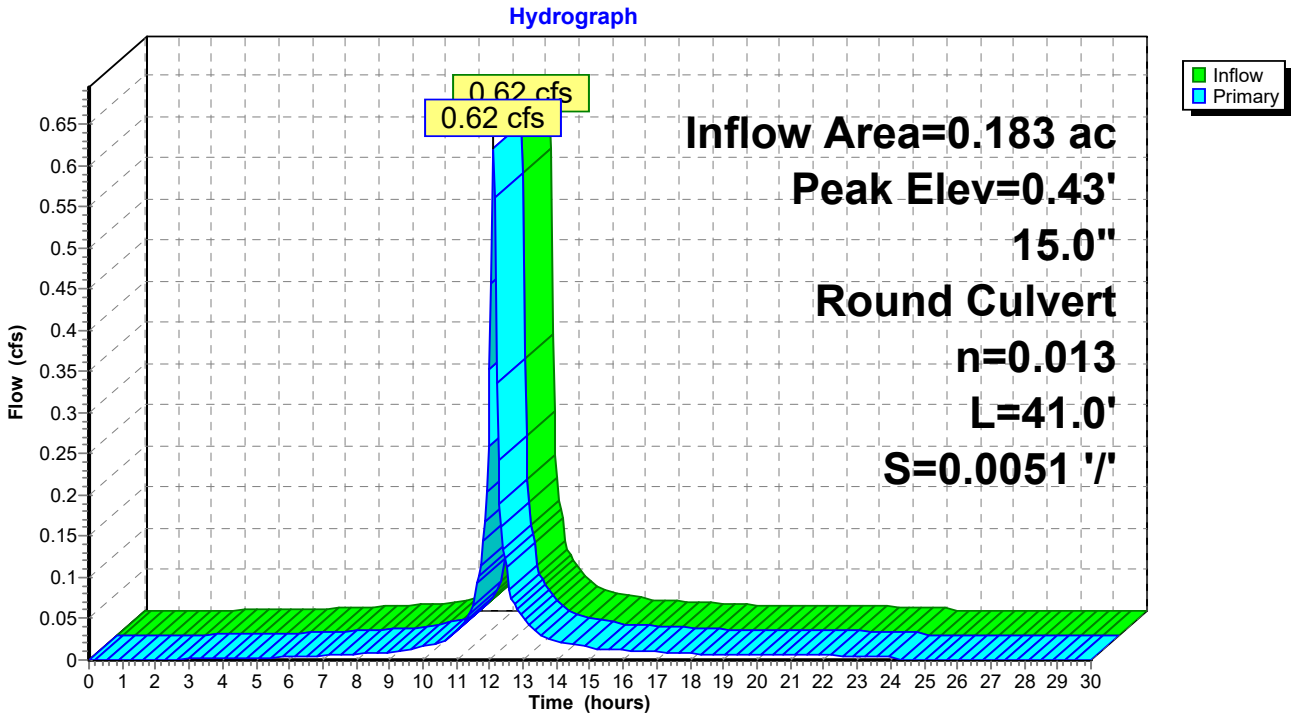
Inflow Area = 0.183 ac, 65.58% Impervious, Inflow Depth = 2.54" for 1-Year event
Inflow = 0.62 cfs @ 12.11 hrs, Volume= 0.039 af
Outflow = 0.62 cfs @ 12.11 hrs, Volume= 0.039 af, Atten= 0%, Lag= 0.0 min
Primary = 0.62 cfs @ 12.11 hrs, Volume= 0.039 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 0.43' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 41.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.21' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.60 cfs @ 12.11 hrs HW=0.42' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 0.60 cfs @ 2.44 fps)

Pond 3P: GI-2



Summary for Pond 4P: GI-4

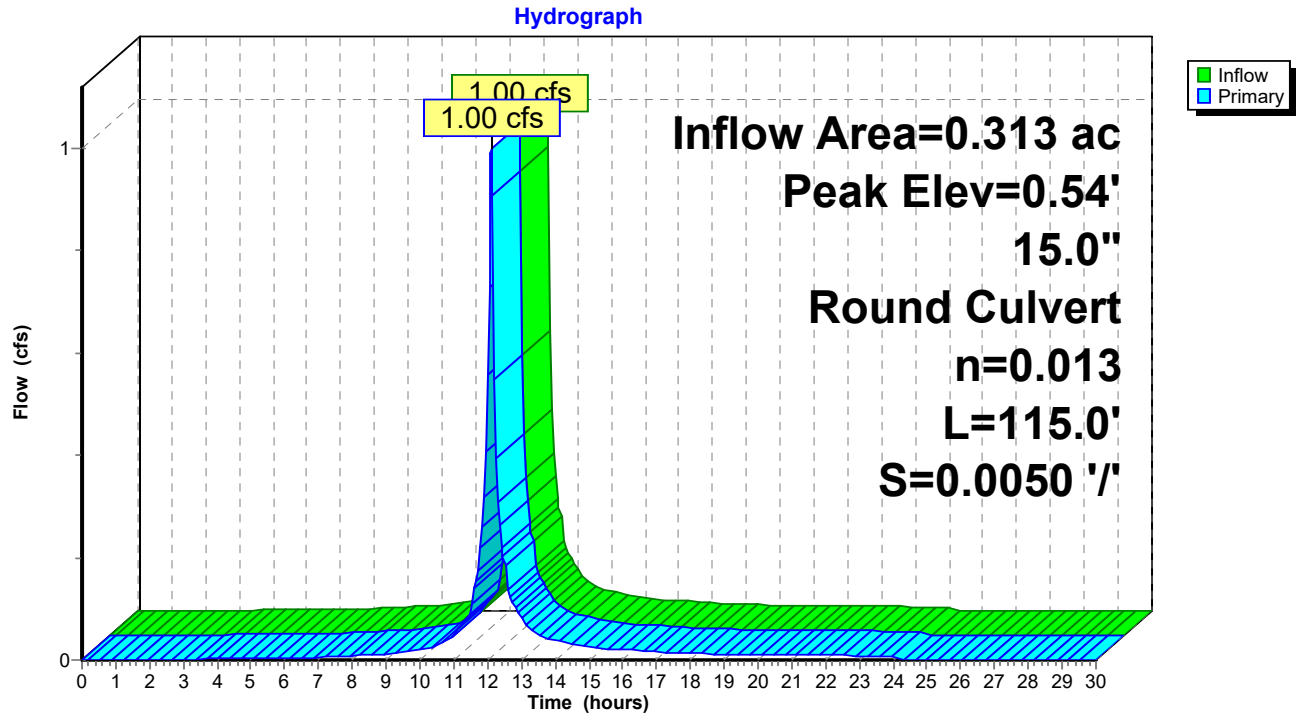
Inflow Area = 0.313 ac, 38.37% Impervious, Inflow Depth = 2.32" for 1-Year event
Inflow = 1.00 cfs @ 12.11 hrs, Volume= 0.061 af
Outflow = 1.00 cfs @ 12.11 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.0 min
Primary = 1.00 cfs @ 12.11 hrs, Volume= 0.061 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 0.54' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 115.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.58' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.97 cfs @ 12.11 hrs HW=0.53' (Free Discharge)
↑—**1=RCP_Round 15"** (Barrel Controls 0.97 cfs @ 2.85 fps)

Pond 4P: GI-4



Summary for Pond 5P: GI-3

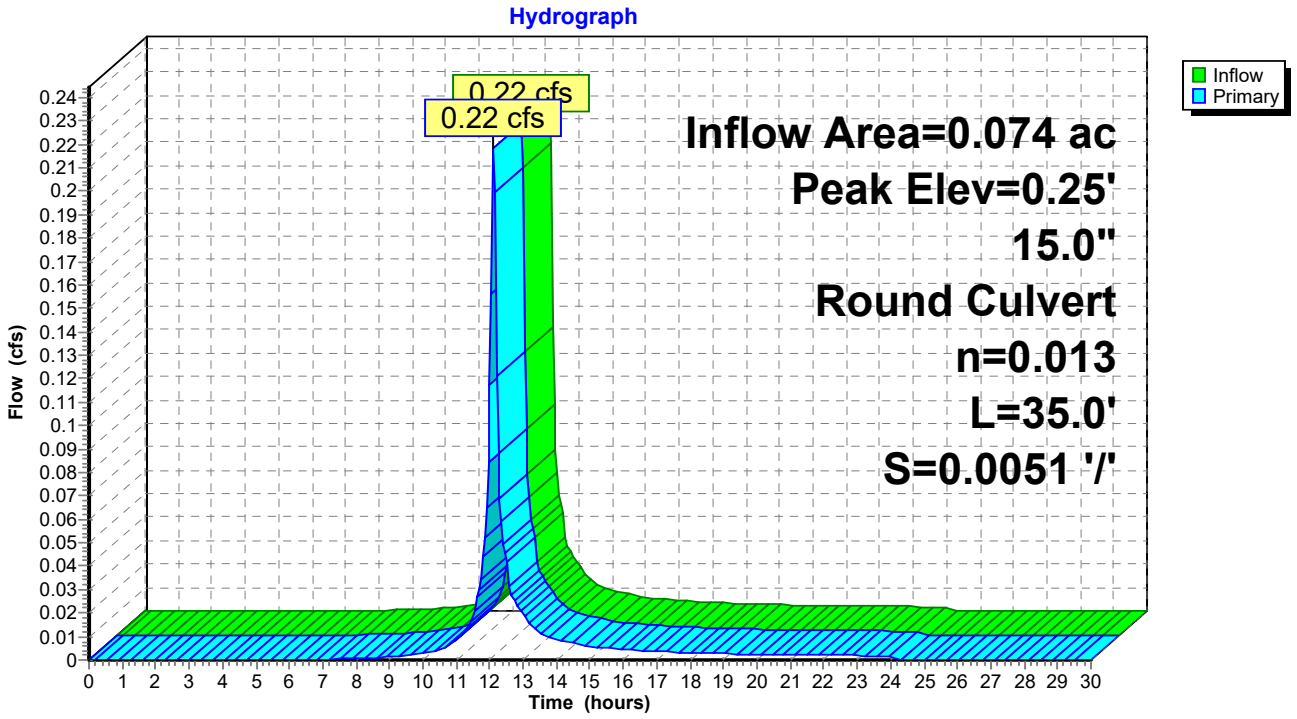
Inflow Area = 0.074 ac, 0.00% Impervious, Inflow Depth = 2.02" for 1-Year event
Inflow = 0.22 cfs @ 12.11 hrs, Volume= 0.013 af
Outflow = 0.22 cfs @ 12.11 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min
Primary = 0.22 cfs @ 12.11 hrs, Volume= 0.013 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 0.25' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 35.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.18' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.21 cfs @ 12.11 hrs HW=0.25' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 0.21 cfs @ 1.84 fps)

Pond 5P: GI-3



Summary for Pond 6P: GI-7

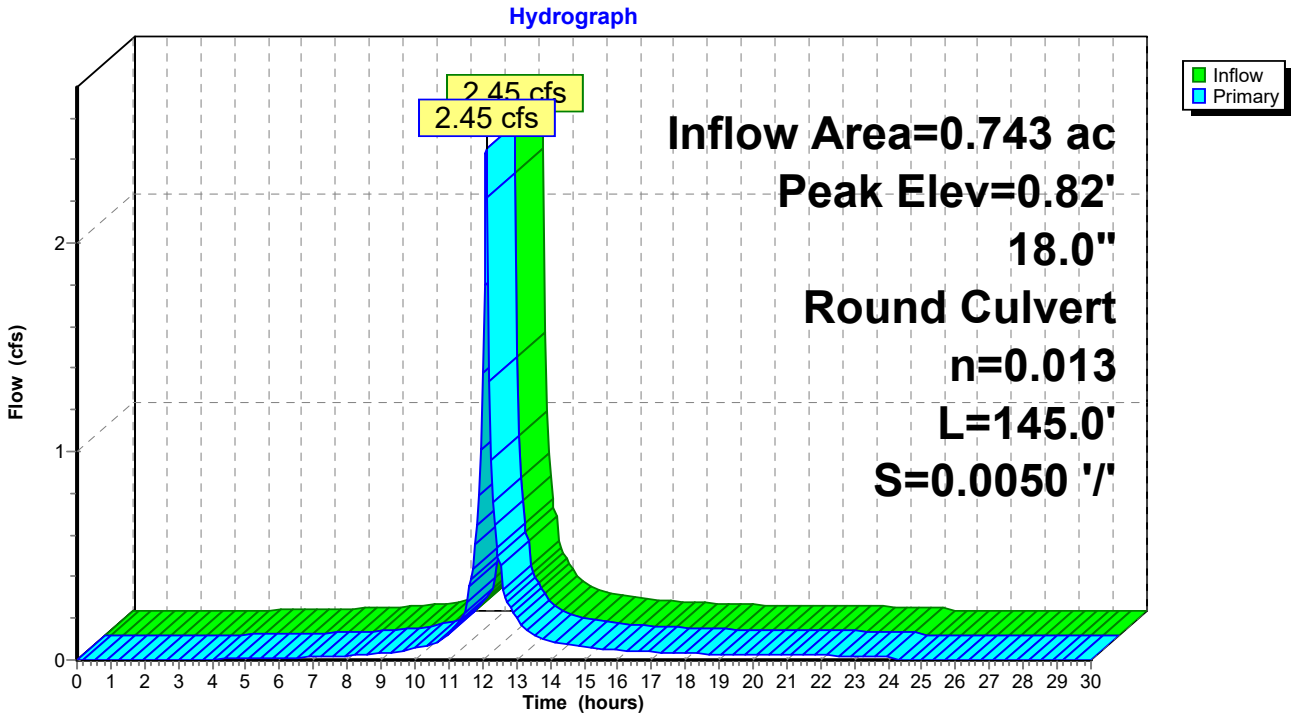
Inflow Area = 0.743 ac, 16.15% Impervious, Inflow Depth = 2.40" for 1-Year event
Inflow = 2.45 cfs @ 12.11 hrs, Volume= 0.149 af
Outflow = 2.45 cfs @ 12.11 hrs, Volume= 0.149 af, Atten= 0%, Lag= 0.0 min
Primary = 2.45 cfs @ 12.11 hrs, Volume= 0.149 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 0.82' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**18.0" Round RCP_Round 18"** L= 145.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.72' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=2.37 cfs @ 12.11 hrs HW=0.81' (Free Discharge)
1=RCP_Round 18" (Barrel Controls 2.37 cfs @ 3.54 fps)

Pond 6P: GI-7



Summary for Pond 7P: GI-6

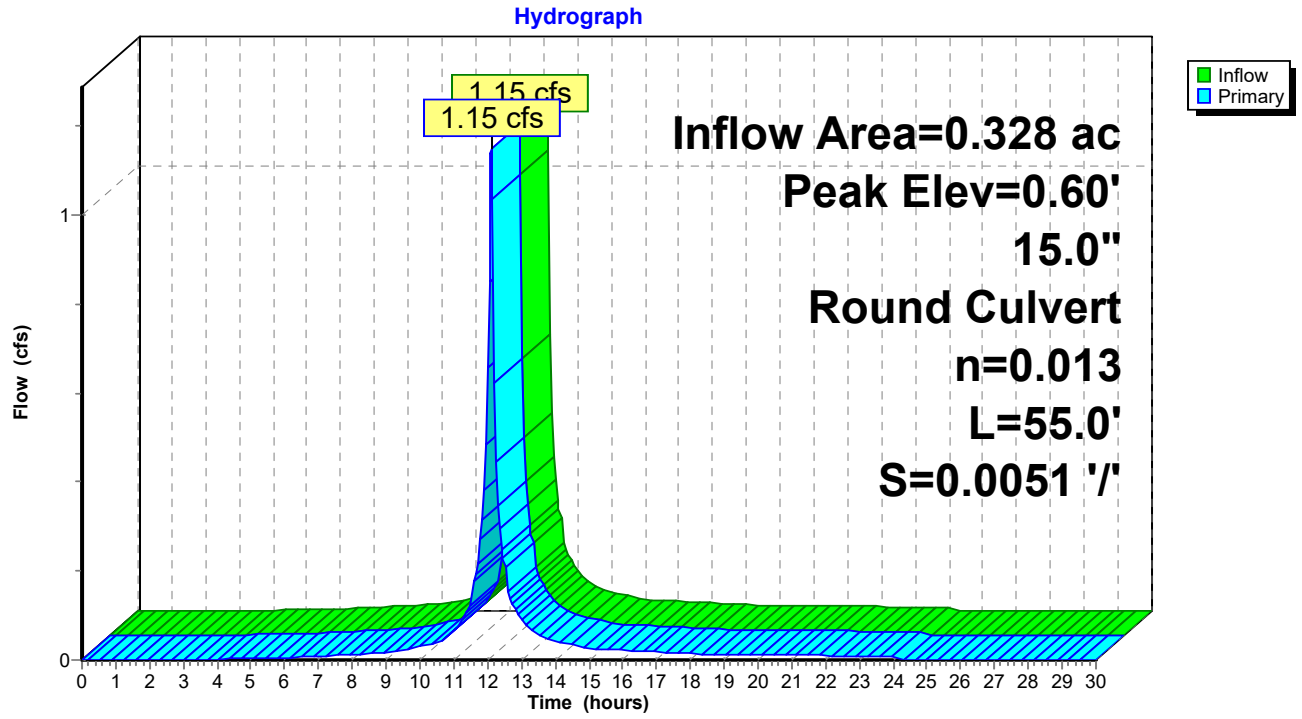
Inflow Area = 0.328 ac, 0.00% Impervious, Inflow Depth = 2.59" for 1-Year event
Inflow = 1.15 cfs @ 12.11 hrs, Volume= 0.071 af
Outflow = 1.15 cfs @ 12.11 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.0 min
Primary = 1.15 cfs @ 12.11 hrs, Volume= 0.071 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 0.60' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 55.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.28' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=1.11 cfs @ 12.11 hrs HW=0.59' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 1.11 cfs @ 2.89 fps)

Pond 7P: GI-6



Summary for Pond 8P: GI-9

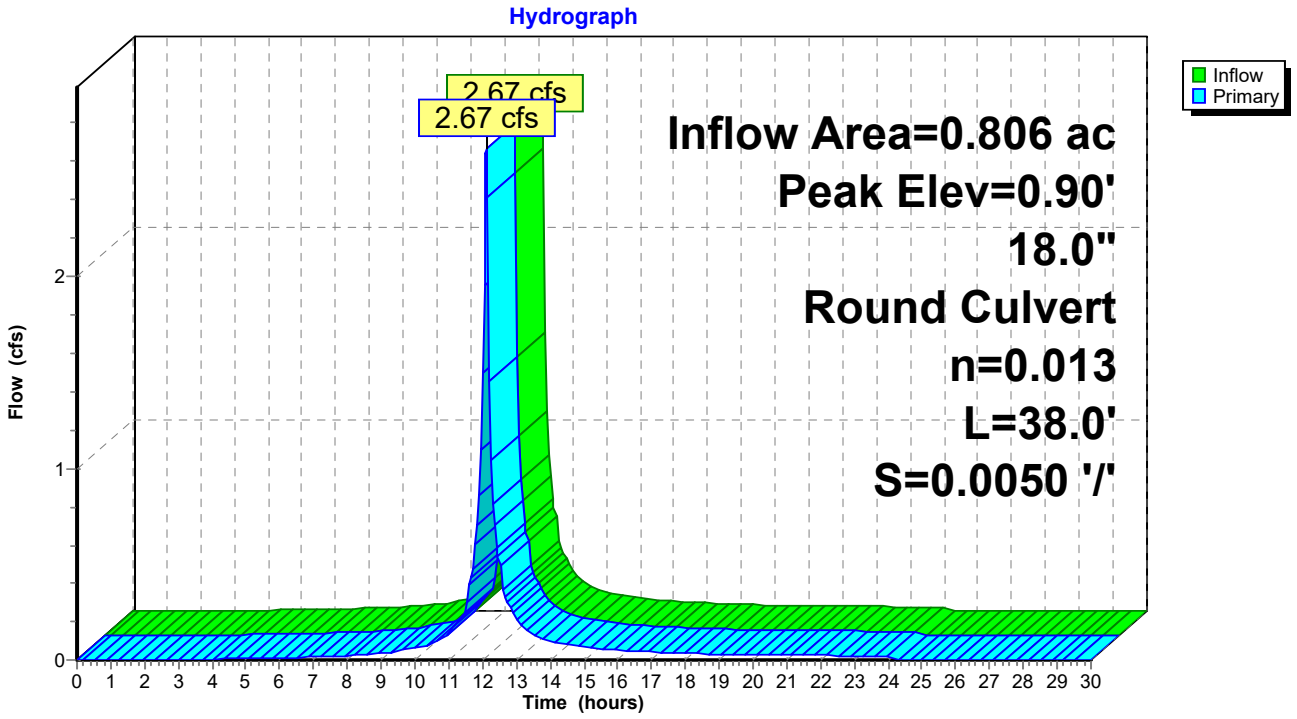
Inflow Area = 0.806 ac, 14.89% Impervious, Inflow Depth = 2.41" for 1-Year event
Inflow = 2.67 cfs @ 12.11 hrs, Volume= 0.162 af
Outflow = 2.67 cfs @ 12.11 hrs, Volume= 0.162 af, Atten= 0%, Lag= 0.0 min
Primary = 2.67 cfs @ 12.11 hrs, Volume= 0.162 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 0.90' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**18.0" Round RCP_Round 18"** L= 38.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.19' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=2.58 cfs @ 12.11 hrs HW=0.89' (Free Discharge)
1=RCP_Round 18" (Barrel Controls 2.58 cfs @ 3.42 fps)

Pond 8P: GI-9



Summary for Pond 9P: GI-19

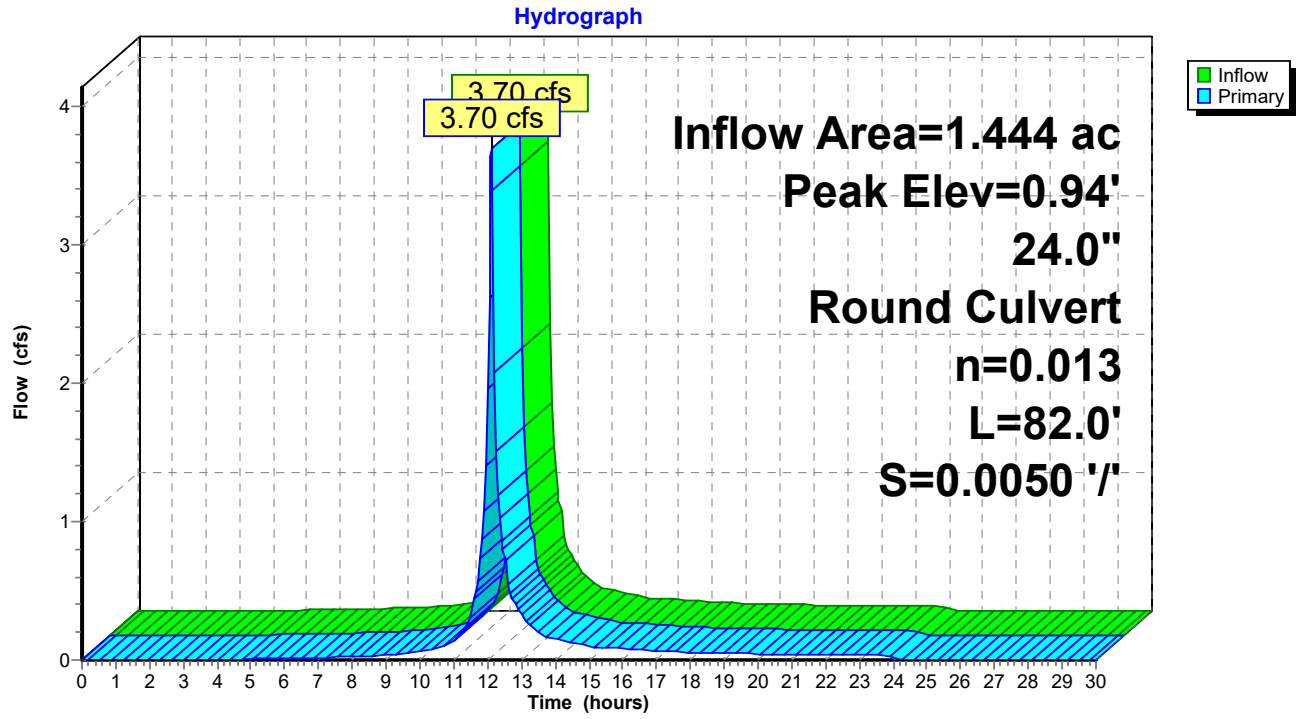
Inflow Area = 1.444 ac, 8.31% Impervious, Inflow Depth = 1.83" for 1-Year event
Inflow = 3.70 cfs @ 12.12 hrs, Volume= 0.221 af
Outflow = 3.70 cfs @ 12.12 hrs, Volume= 0.221 af, Atten= 0%, Lag= 0.0 min
Primary = 3.70 cfs @ 12.12 hrs, Volume= 0.221 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 0.94' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**24.0" Round RCP_Round 24"** L= 82.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.41' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=3.56 cfs @ 12.12 hrs HW=0.92' (Free Discharge)
1=RCP_Round 24" (Barrel Controls 3.56 cfs @ 3.73 fps)

Pond 9P: GI-19



Summary for Pond 10P: GI-8

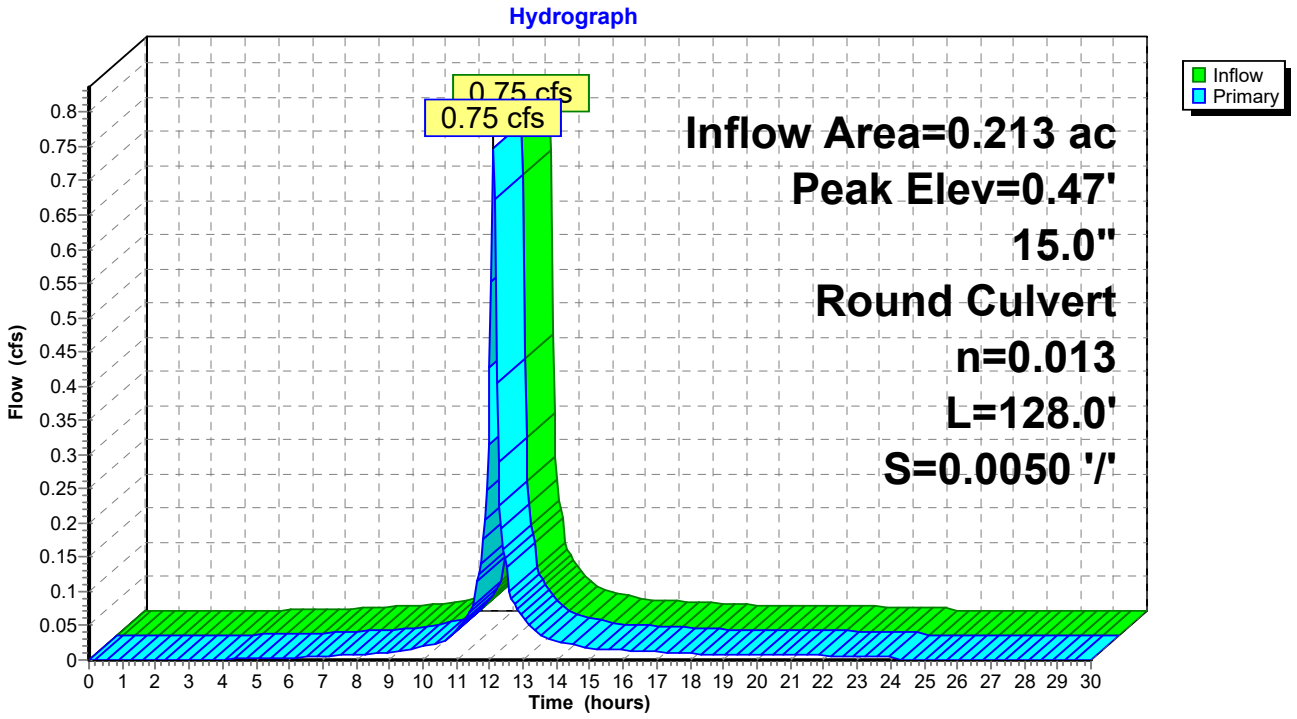
Inflow Area = 0.213 ac, 0.00% Impervious, Inflow Depth = 2.59" for 1-Year event
Inflow = 0.75 cfs @ 12.11 hrs, Volume= 0.046 af
Outflow = 0.75 cfs @ 12.11 hrs, Volume= 0.046 af, Atten= 0%, Lag= 0.0 min
Primary = 0.75 cfs @ 12.11 hrs, Volume= 0.046 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 0.47' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 128.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.64' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.72 cfs @ 12.11 hrs HW=0.46' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 0.72 cfs @ 2.64 fps)

Pond 10P: GI-8



Summary for Pond 11P: CI-1

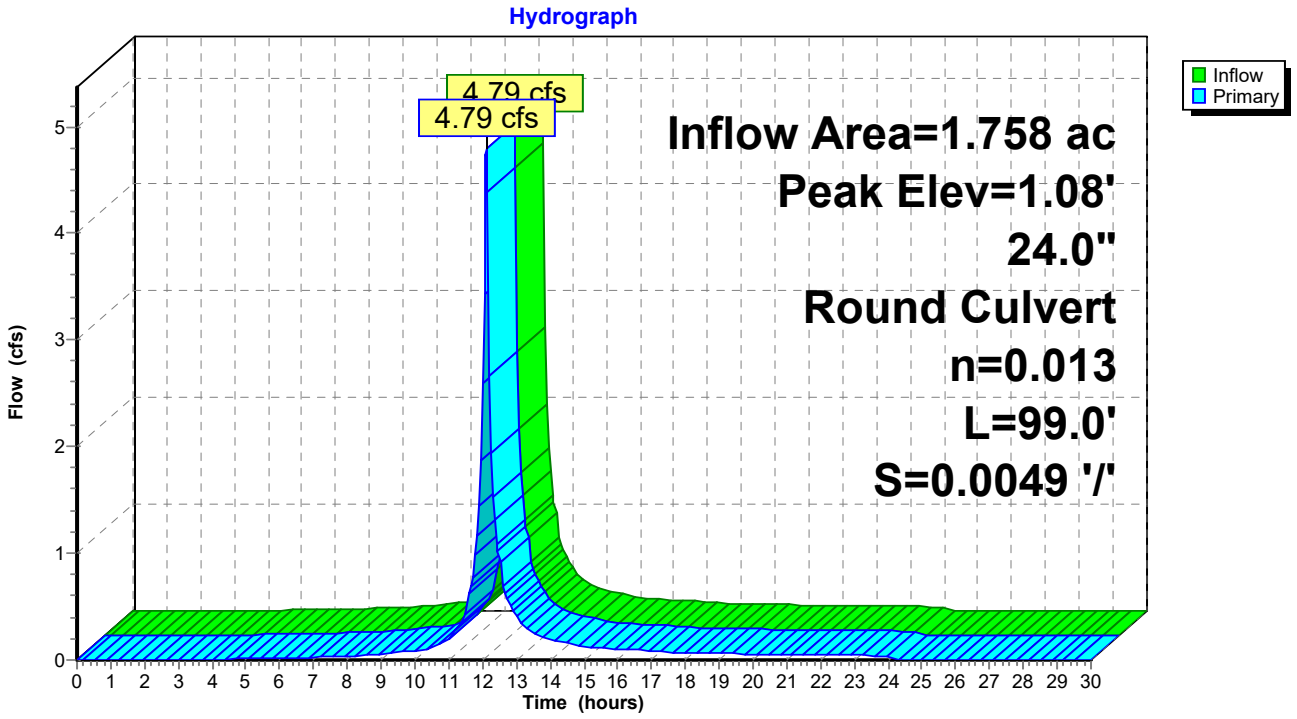
Inflow Area = 1.758 ac, 6.82% Impervious, Inflow Depth = 1.97" for 1-Year event
Inflow = 4.79 cfs @ 12.11 hrs, Volume= 0.288 af
Outflow = 4.79 cfs @ 12.11 hrs, Volume= 0.288 af, Atten= 0%, Lag= 0.0 min
Primary = 4.79 cfs @ 12.11 hrs, Volume= 0.288 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 1.08' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**24.0" Round RCP_Round 24"** L= 99.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.49' S= 0.0049 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=4.62 cfs @ 12.11 hrs HW=1.05' (Free Discharge)
1=RCP_Round 24" (Barrel Controls 4.62 cfs @ 4.00 fps)

Pond 11P: CI-1



Summary for Pond 12P: CI-2

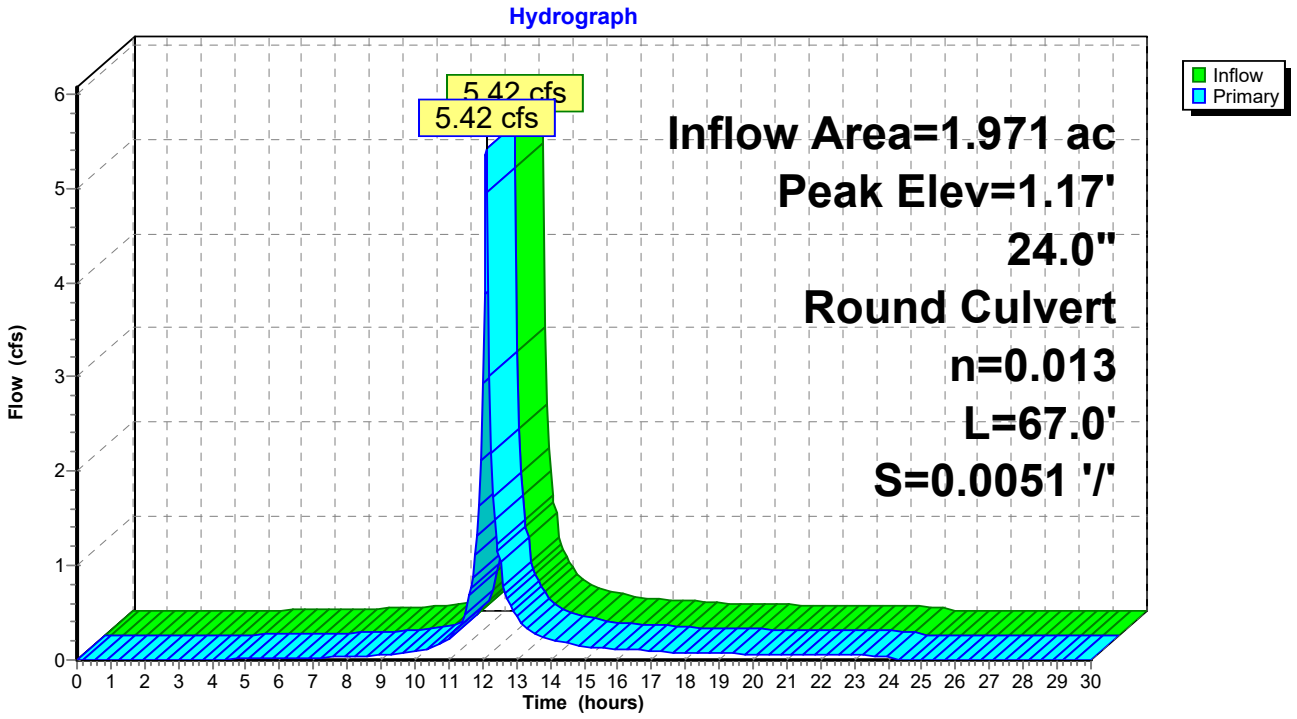
Inflow Area = 1.971 ac, 6.09% Impervious, Inflow Depth = 1.97" for 1-Year event
Inflow = 5.42 cfs @ 12.11 hrs, Volume= 0.324 af
Outflow = 5.42 cfs @ 12.11 hrs, Volume= 0.324 af, Atten= 0%, Lag= 0.0 min
Primary = 5.42 cfs @ 12.11 hrs, Volume= 0.324 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 1.17' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**24.0" Round RCP_Round 24"** L= 67.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.34' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=5.23 cfs @ 12.11 hrs HW=1.15' (Free Discharge)
1=RCP_Round 24" (Barrel Controls 5.23 cfs @ 4.05 fps)

Pond 12P: CI-2



Summary for Pond 13P: CI-3

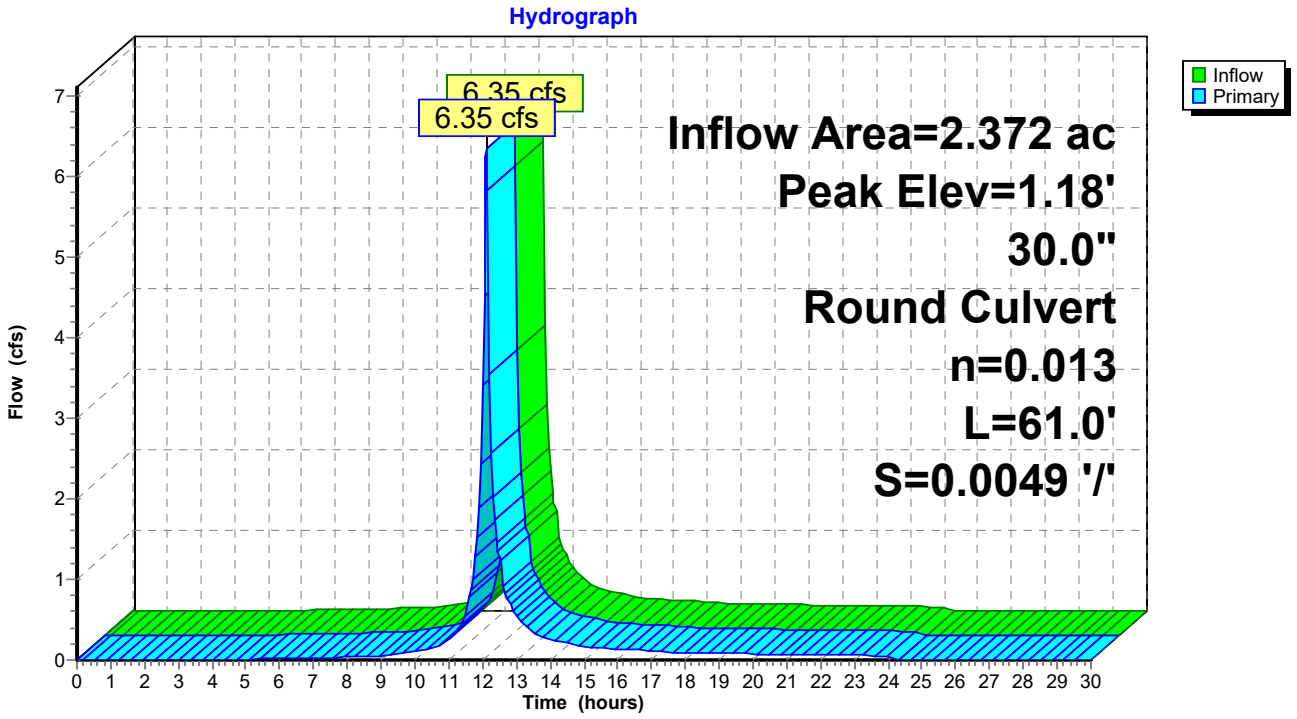
Inflow Area = 2.372 ac, 5.06% Impervious, Inflow Depth = 1.90" for 1-Year event
Inflow = 6.35 cfs @ 12.12 hrs, Volume= 0.376 af
Outflow = 6.35 cfs @ 12.12 hrs, Volume= 0.376 af, Atten= 0%, Lag= 0.0 min
Primary = 6.35 cfs @ 12.12 hrs, Volume= 0.376 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 1.18' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**30.0" Round RCP_Round 30"** L= 61.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.30' S= 0.0049 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Primary OutFlow Max=6.12 cfs @ 12.12 hrs HW=1.15' (Free Discharge)
1=RCP_Round 30" (Barrel Controls 6.12 cfs @ 4.06 fps)

Pond 13P: CI-3



Summary for Pond 14P: GI-3.1

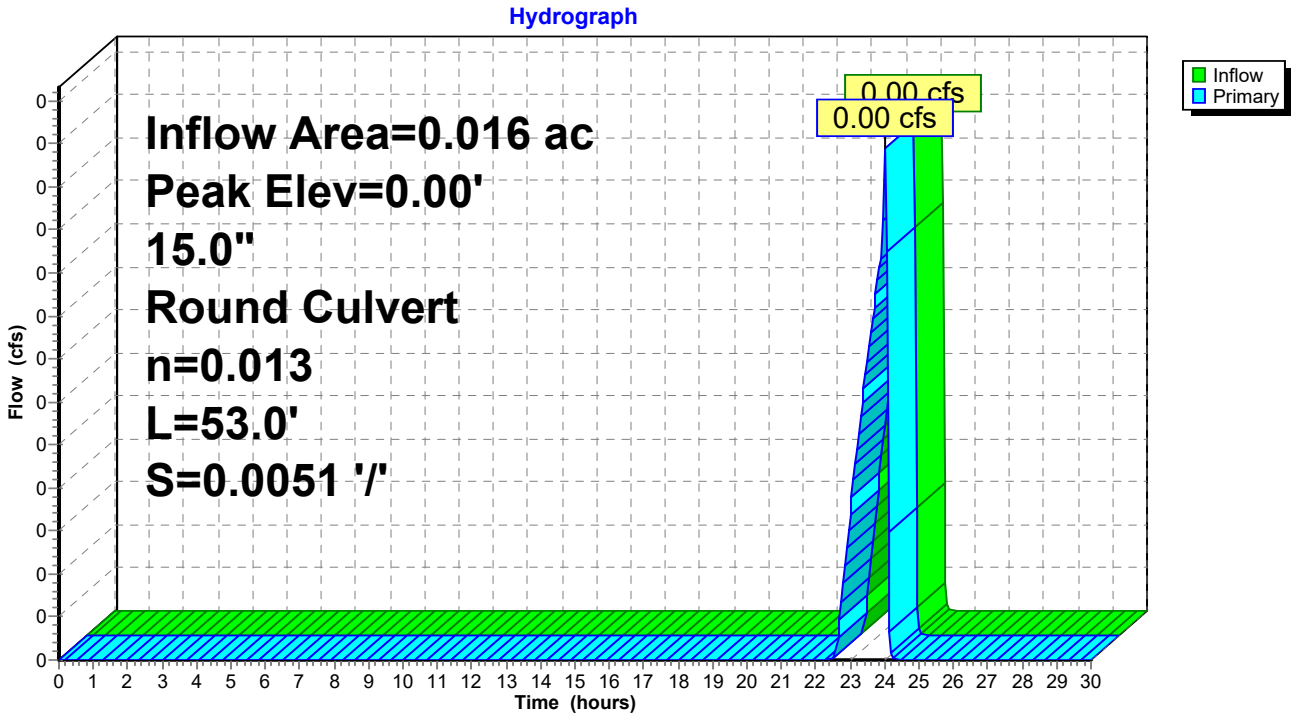
Inflow Area = 0.016 ac, 0.00% Impervious, Inflow Depth = 0.00" for 1-Year event
Inflow = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 0.00' @ 24.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 53.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.27' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 24.00 hrs HW=0.00' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 0.00 cfs @ 0.01 fps)

Pond 14P: GI-3.1



Summary for Pond 15P: CI-4

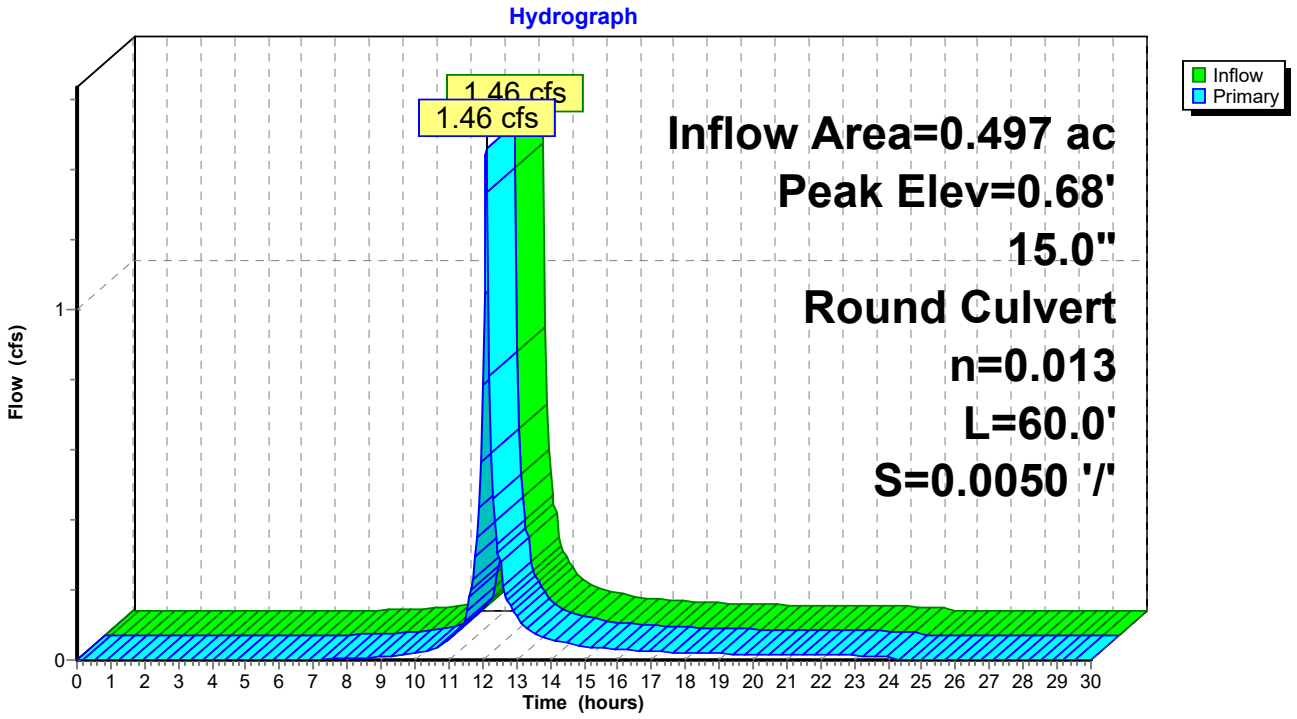
Inflow Area = 0.497 ac, 0.00% Impervious, Inflow Depth = 2.02" for 1-Year event
Inflow = 1.46 cfs @ 12.11 hrs, Volume= 0.084 af
Outflow = 1.46 cfs @ 12.11 hrs, Volume= 0.084 af, Atten= 0%, Lag= 0.0 min
Primary = 1.46 cfs @ 12.11 hrs, Volume= 0.084 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 0.68' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 60.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.30' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=1.41 cfs @ 12.11 hrs HW=0.67' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 1.41 cfs @ 3.06 fps)

Pond 15P: CI-4



Summary for Pond 27P: GI-5

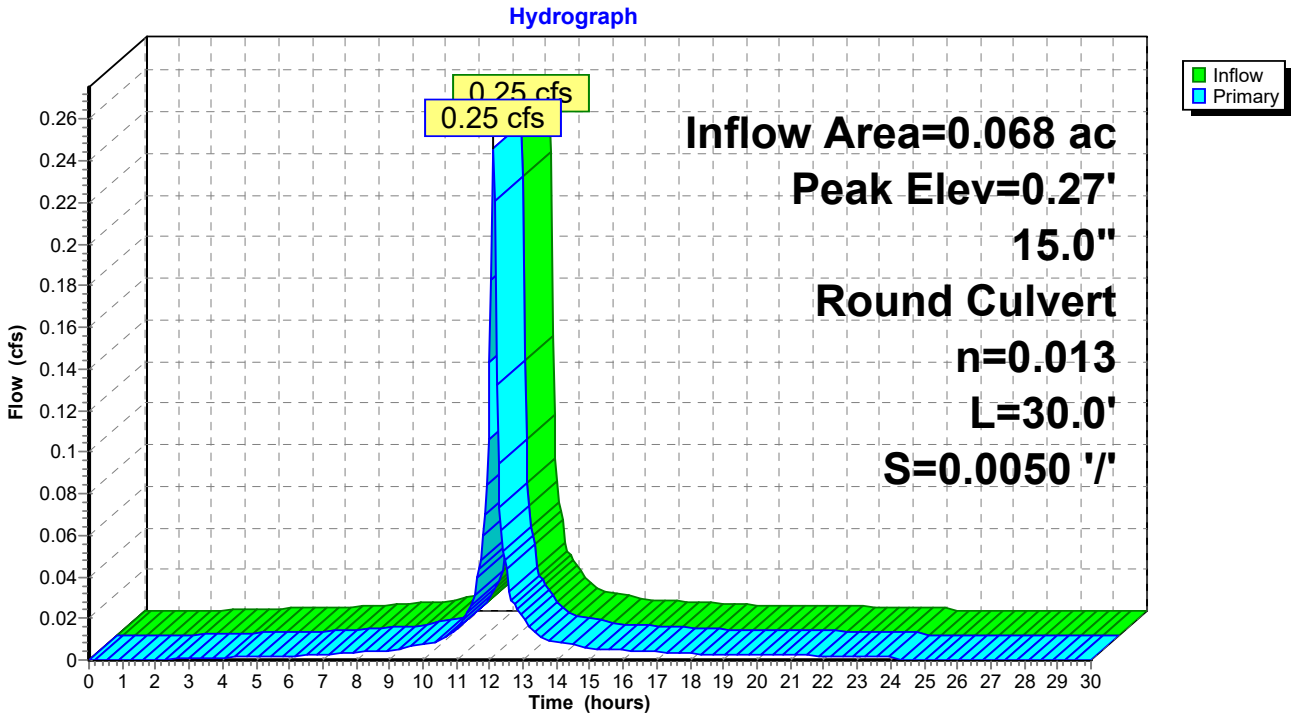
Inflow Area = 0.068 ac,100.00% Impervious, Inflow Depth = 2.81" for 1-Year event
Inflow = 0.25 cfs @ 12.11 hrs, Volume= 0.016 af
Outflow = 0.25 cfs @ 12.11 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min
Primary = 0.25 cfs @ 12.11 hrs, Volume= 0.016 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 0.27' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.15' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.24 cfs @ 12.11 hrs HW=0.27' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 0.24 cfs @ 1.89 fps)

Pond 27P: GI-5



Summary for Pond 44P: Pond #2

Inflow Area = 2.869 ac, 4.18% Impervious, Inflow Depth = 1.92" for 1-Year event
Inflow = 7.81 cfs @ 12.11 hrs, Volume= 0.460 af
Outflow = 1.90 cfs @ 12.39 hrs, Volume= 0.310 af, Atten= 76%, Lag= 16.4 min
Primary = 1.90 cfs @ 12.39 hrs, Volume= 0.310 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 348.28' @ 12.39 hrs Surf.Area= 5,267 sf Storage= 9,884 cf

Plug-Flow detention time= 184.1 min calculated for 0.310 af (67% of inflow)
Center-of-Mass det. time= 95.3 min (891.3 - 796.0)

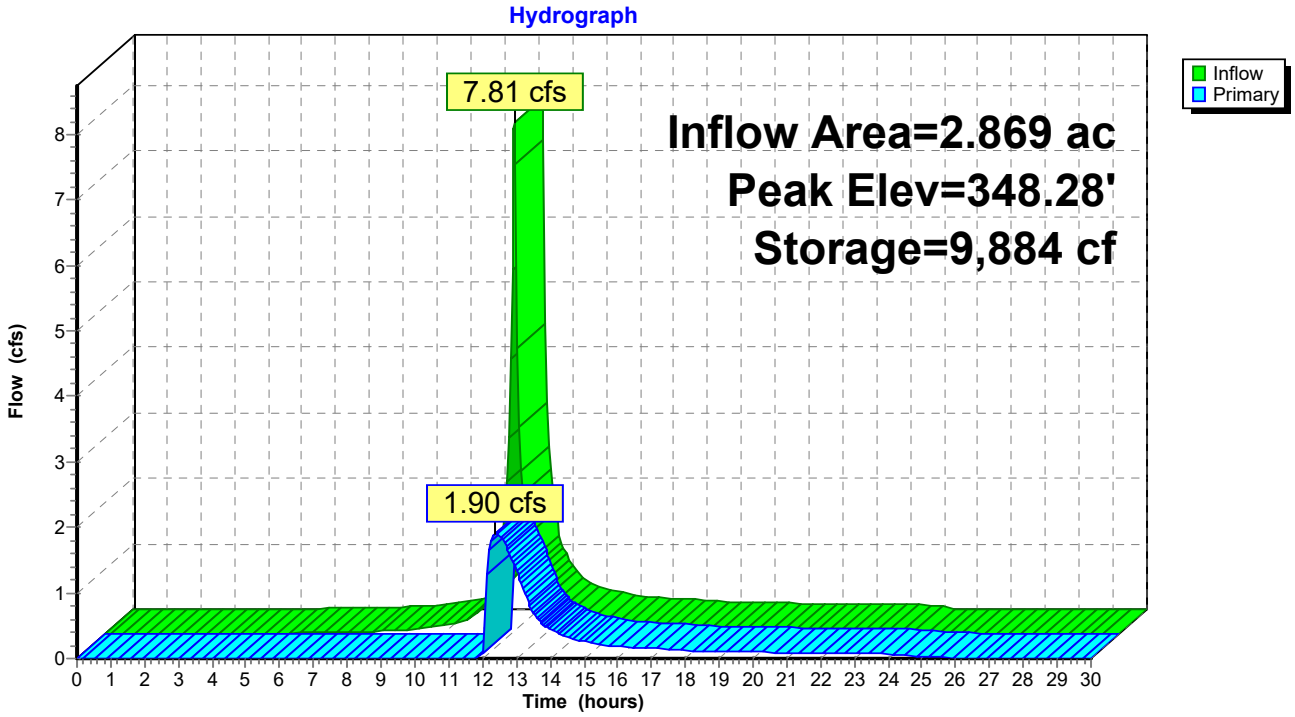
Volume	Invert	Avail.Storage	Storage Description
#1	346.00'	13,914 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
346.00	3,453	0	0
347.00	4,215	3,834	3,834
348.00	5,027	4,621	8,455
349.00	5,890	5,459	13,914

Device	Routing	Invert	Outlet Devices
#1	Primary	343.00'	**24.0" Round RCP_Round 24"** L= 44.0' Ke= 0.500 Inlet / Outlet Invert= 343.00' / 342.00' S= 0.0227 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	347.60'	**10.0" W x 4.0" H Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	347.60'	**10.0" W x 4.0" H Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	348.50'	**36.0" x 36.0" Horiz. Riser** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.90 cfs @ 12.39 hrs HW=348.28' (Free Discharge)
↑└**1=RCP_Round 24"** (Passes 1.90 cfs of 31.28 cfs potential flow)
↑ ├**2=Orifice** (Orifice Controls 0.95 cfs @ 3.42 fps)
 ├**3=Orifice** (Orifice Controls 0.95 cfs @ 3.42 fps)
 └**4=Riser** (Controls 0.00 cfs)

Pond 44P: Pond #2



Johnsonville Elementary School – Phase 2
Pond #2

10-Year Rainfall Event
Storm Drainage Calculations

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 36S: DA for CI-4 Runoff Area=21,645 sf 0.00% Impervious Runoff Depth=4.30"
Tc=5.0 min CN=90 Runoff=2.98 cfs 0.178 af

Subcatchment 37S: DA for GI-3.1 Runoff Area=700 sf 0.00% Impervious Runoff Depth=0.34"
Tc=5.0 min CN=40 Runoff=0.00 cfs 0.000 af

Subcatchment 38S: DA for CI-3 Runoff Area=16,797 sf 0.00% Impervious Runoff Depth=3.78"
Tc=5.0 min CN=85 Runoff=2.10 cfs 0.121 af

Subcatchment 39S: DA for CI-2 Runoff Area=9,278 sf 0.00% Impervious Runoff Depth=4.30"
Tc=5.0 min CN=90 Runoff=1.28 cfs 0.076 af

Subcatchment 40S: DA for CI-1 Runoff Area=4,365 sf 0.00% Impervious Runoff Depth=4.97"
Tc=5.0 min CN=96 Runoff=0.65 cfs 0.042 af

Subcatchment 41S: DA for GI-19 Runoff Area=27,815 sf 0.00% Impervious Runoff Depth=3.00"
Tc=5.0 min CN=77 Runoff=2.83 cfs 0.159 af

Subcatchment 42S: DA for GI-8 Runoff Area=9,286 sf 0.00% Impervious Runoff Depth=4.97"
Tc=5.0 min CN=96 Runoff=1.38 cfs 0.088 af

Subcatchment 43S: DA for GI-9 Runoff Area=2,742 sf 0.00% Impervious Runoff Depth=4.97"
Tc=5.0 min CN=96 Runoff=0.41 cfs 0.026 af

Subcatchment 44S: DA for GI-7 Runoff Area=4,458 sf 0.00% Impervious Runoff Depth=4.30"
Tc=5.0 min CN=90 Runoff=0.61 cfs 0.037 af

Subcatchment 45S: DA for GI-6 Runoff Area=14,275 sf 0.00% Impervious Runoff Depth=4.97"
Tc=5.0 min CN=96 Runoff=2.12 cfs 0.136 af

Subcatchment 46S: DA for GI-4 Runoff Area=2,415 sf 0.00% Impervious Runoff Depth=4.30"
Tc=5.0 min CN=90 Runoff=0.33 cfs 0.020 af

Subcatchment 47S: DA for GI-1 Runoff Area=2,742 sf 0.00% Impervious Runoff Depth=4.30"
Tc=5.0 min CN=90 Runoff=0.38 cfs 0.023 af

Subcatchment 48S: DA for GI-2 Runoff Area=2,274 sf 100.00% Impervious Runoff Depth=5.20"
Tc=5.0 min CN=98 Runoff=0.34 cfs 0.023 af

Subcatchment 49S: DA for GI-3 Runoff Area=3,236 sf 0.00% Impervious Runoff Depth=4.30"
Tc=5.0 min CN=90 Runoff=0.45 cfs 0.027 af

Subcatchment 50S: DA for GI-5 Runoff Area=2,951 sf 100.00% Impervious Runoff Depth=5.20"
Tc=5.0 min CN=98 Runoff=0.44 cfs 0.029 af

Subcatchment 56S: Sheet Flow to Pond #1
Runoff=0.00 cfs 0.000 af

Pond 1P: GI-1 Peak Elev=0.33' Inflow=0.38 cfs 0.023 af
15.0" Round Culvert n=0.013 L=54.0' S=0.0050 '/' Outflow=0.38 cfs 0.023 af

Pond 3P: GI-2 Peak Elev=0.61' Inflow=1.16 cfs 0.075 af
15.0" Round Culvert n=0.013 L=41.0' S=0.0051 '/' Outflow=1.16 cfs 0.075 af

Pond 4P: GI-4 Peak Elev=0.79' Inflow=1.94 cfs 0.121 af
15.0" Round Culvert n=0.013 L=115.0' S=0.0050 '/' Outflow=1.94 cfs 0.121 af

Pond 5P: GI-3 Peak Elev=0.36' Inflow=0.45 cfs 0.027 af
15.0" Round Culvert n=0.013 L=35.0' S=0.0051 '/' Outflow=0.45 cfs 0.027 af

Pond 6P: GI-7 Peak Elev=1.21' Inflow=4.68 cfs 0.293 af
18.0" Round Culvert n=0.013 L=145.0' S=0.0050 '/' Outflow=4.68 cfs 0.293 af

Pond 7P: GI-6 Peak Elev=0.85' Inflow=2.12 cfs 0.136 af
15.0" Round Culvert n=0.013 L=55.0' S=0.0051 '/' Outflow=2.12 cfs 0.136 af

Pond 8P: GI-9 Peak Elev=1.34' Inflow=5.08 cfs 0.320 af
18.0" Round Culvert n=0.013 L=38.0' S=0.0050 '/' Outflow=5.08 cfs 0.320 af

Pond 9P: GI-19 Peak Elev=1.46' Inflow=7.91 cfs 0.479 af
24.0" Round Culvert n=0.013 L=82.0' S=0.0050 '/' Outflow=7.91 cfs 0.479 af

Pond 10P: GI-8 Peak Elev=0.65' Inflow=1.38 cfs 0.088 af
15.0" Round Culvert n=0.013 L=128.0' S=0.0050 '/' Outflow=1.38 cfs 0.088 af

Pond 11P: CI-1 Peak Elev=1.67' Inflow=9.94 cfs 0.609 af
24.0" Round Culvert n=0.013 L=99.0' S=0.0049 '/' Outflow=9.94 cfs 0.609 af

Pond 12P: CI-2 Peak Elev=1.83' Inflow=11.22 cfs 0.685 af
24.0" Round Culvert n=0.013 L=67.0' S=0.0051 '/' Outflow=11.22 cfs 0.685 af

Pond 13P: CI-3 Peak Elev=1.81' Inflow=13.32 cfs 0.807 af
30.0" Round Culvert n=0.013 L=61.0' S=0.0049 '/' Outflow=13.32 cfs 0.807 af

Pond 14P: GI-3.1 Peak Elev=0.03' Inflow=0.00 cfs 0.000 af
15.0" Round Culvert n=0.013 L=53.0' S=0.0051 '/' Outflow=0.00 cfs 0.000 af

Pond 15P: CI-4 Peak Elev=1.05' Inflow=2.98 cfs 0.178 af
15.0" Round Culvert n=0.013 L=60.0' S=0.0050 '/' Outflow=2.98 cfs 0.178 af

Pond 27P: GI-5 Peak Elev=0.37' Inflow=0.44 cfs 0.029 af
15.0" Round Culvert n=0.013 L=30.0' S=0.0050 '/' Outflow=0.44 cfs 0.029 af

Pond 44P: Pond #2 Peak Elev=348.94' Storage=13,589 cf Inflow=16.30 cfs 0.985 af
Outflow=14.53 cfs 0.835 af

Summary for Subcatchment 36S: DA for CI-4

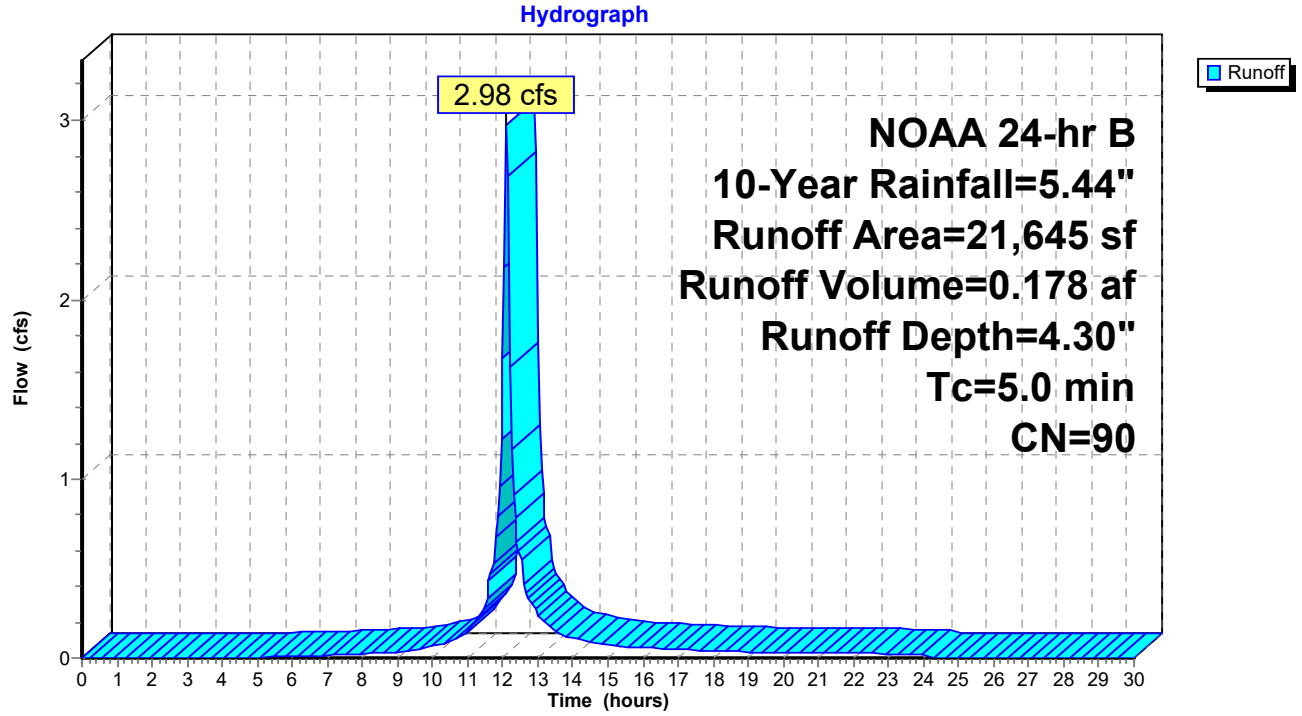
Runoff = 2.98 cfs @ 12.11 hrs, Volume= 0.178 af, Depth= 4.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 10-Year Rainfall=5.44"

	Area (sf)	CN	Description
*	21,645	90	
	21,645		100.00% Pervious Area

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

Subcatchment 36S: DA for CI-4



Summary for Subcatchment 37S: DA for GI-3.1

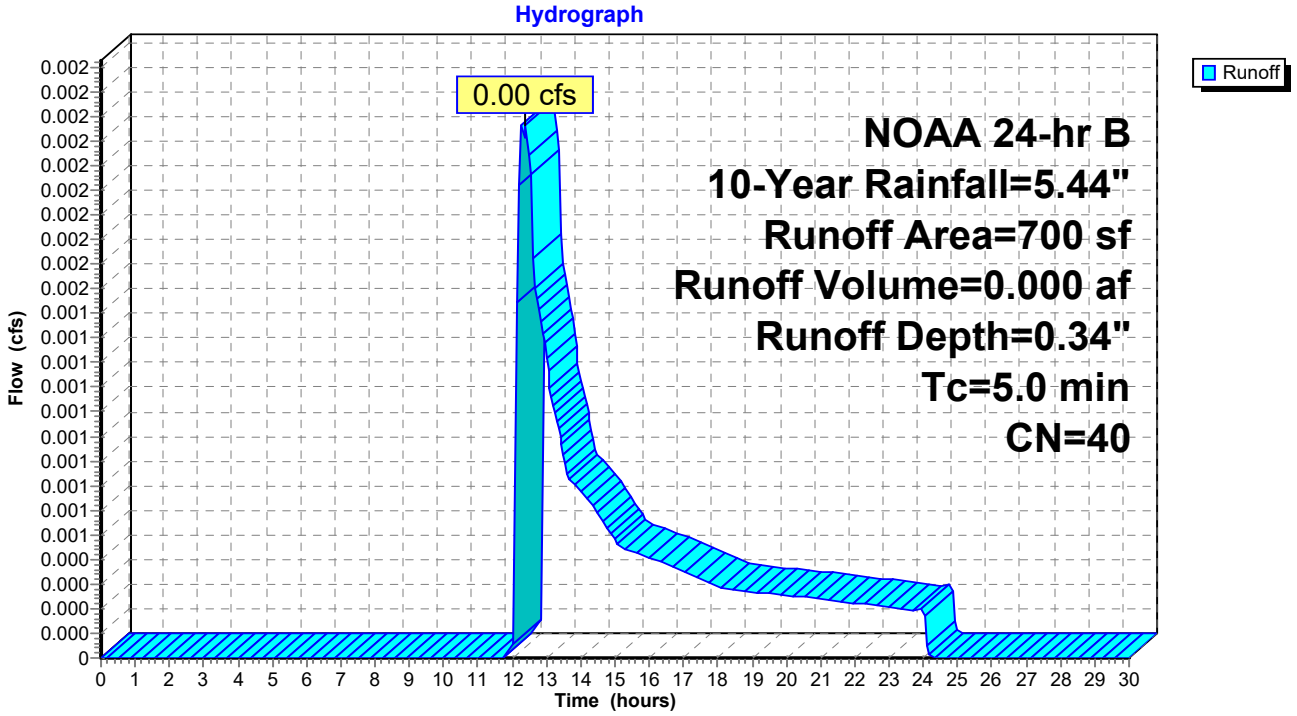
Runoff = 0.00 cfs @ 12.35 hrs, Volume= 0.000 af, Depth= 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 10-Year Rainfall=5.44"

	Area (sf)	CN	Description
*	700	40	
	700		100.00% Pervious Area

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

Subcatchment 37S: DA for GI-3.1



Summary for Subcatchment 38S: DA for CI-3

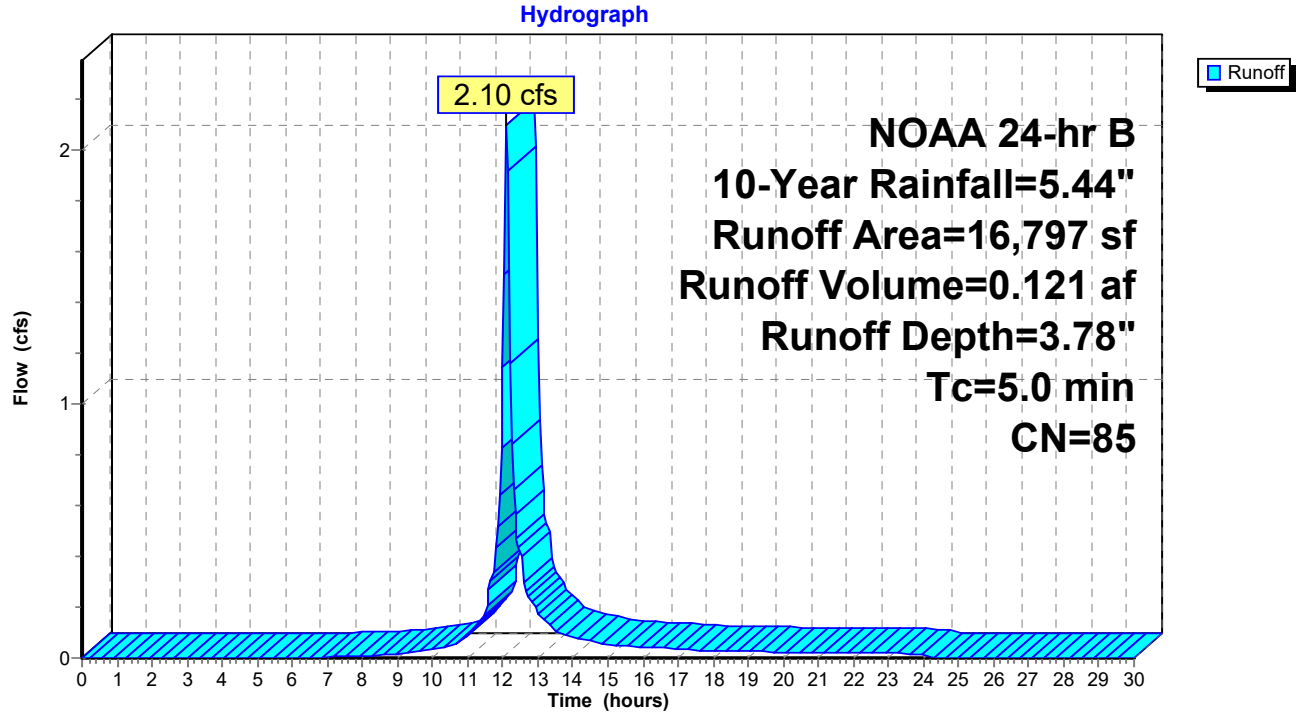
Runoff = 2.10 cfs @ 12.11 hrs, Volume= 0.121 af, Depth= 3.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 10-Year Rainfall=5.44"

	Area (sf)	CN	Description
*	16,797	85	
	16,797		100.00% Pervious Area

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

Subcatchment 38S: DA for CI-3



Summary for Subcatchment 39S: DA for CI-2

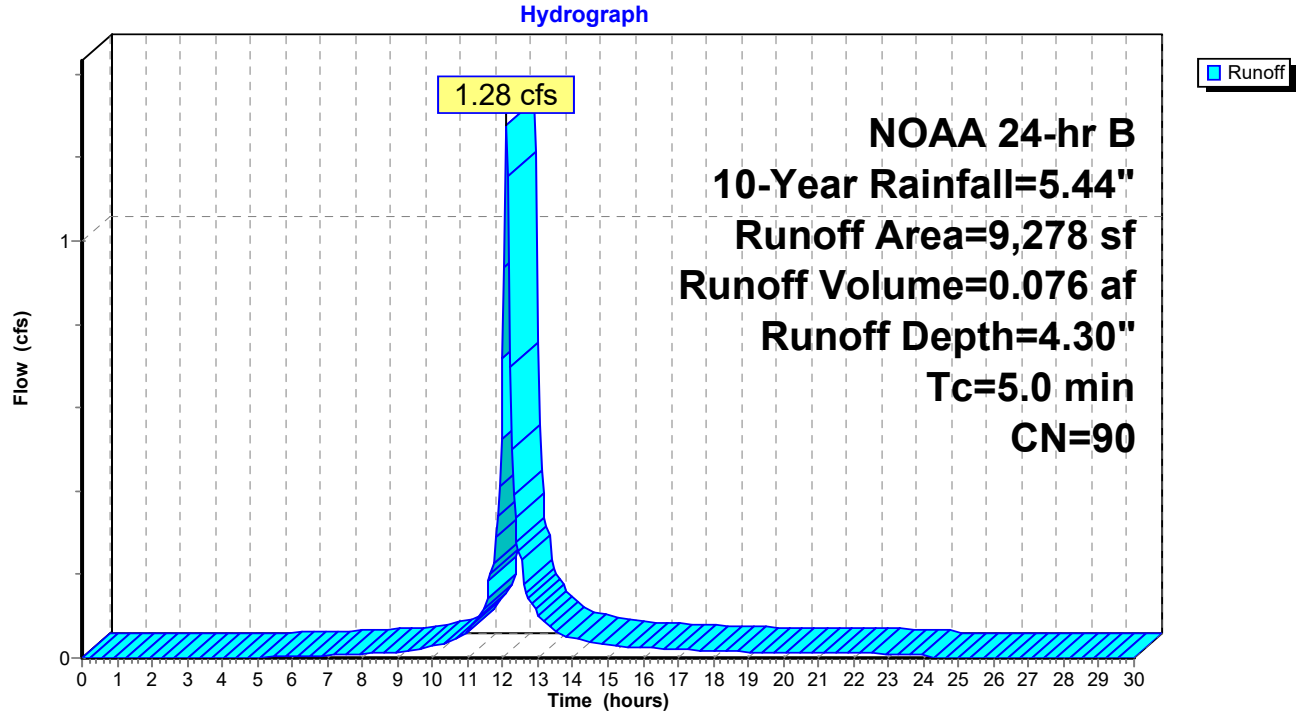
Runoff = 1.28 cfs @ 12.11 hrs, Volume= 0.076 af, Depth= 4.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 10-Year Rainfall=5.44"

	Area (sf)	CN	Description
*	9,278	90	
	9,278		100.00% Pervious Area

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

Subcatchment 39S: DA for CI-2



Summary for Subcatchment 40S: DA for CI-1

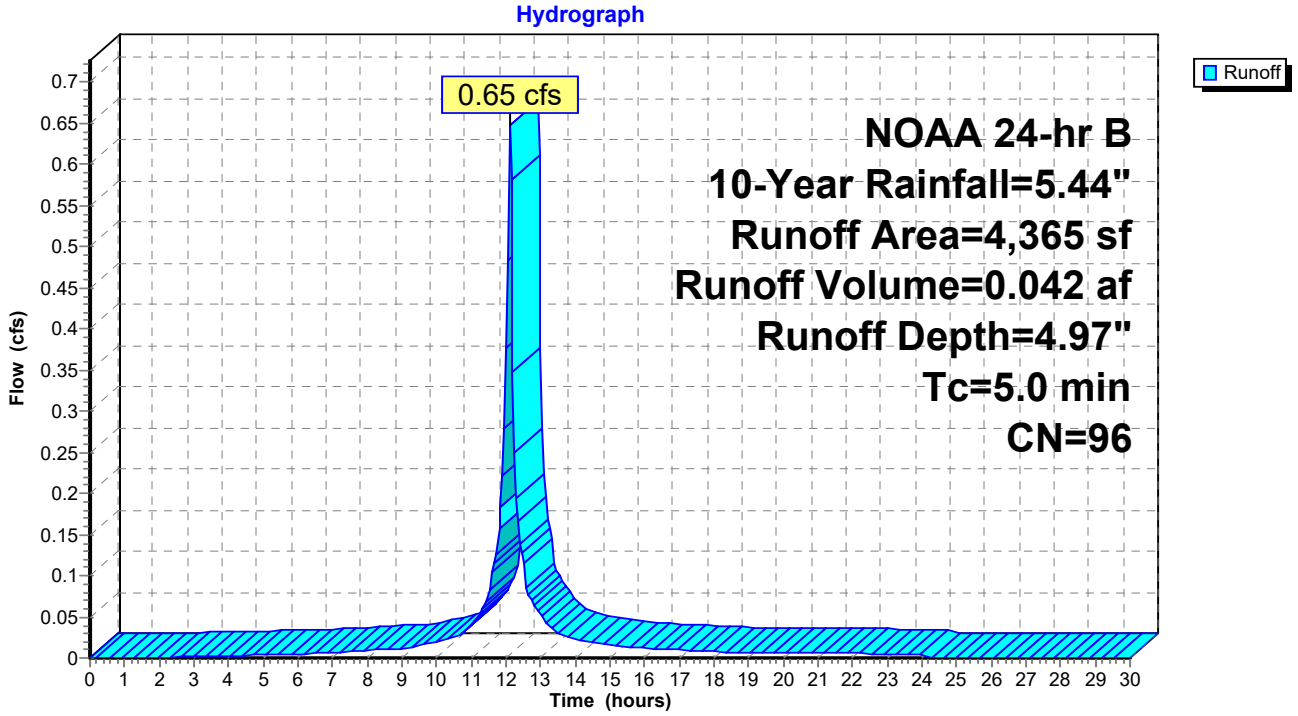
Runoff = 0.65 cfs @ 12.11 hrs, Volume= 0.042 af, Depth= 4.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 10-Year Rainfall=5.44"

	Area (sf)	CN	Description
*	4,365	96	
	4,365		100.00% Pervious Area

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

Subcatchment 40S: DA for CI-1



Summary for Subcatchment 41S: DA for GI-19

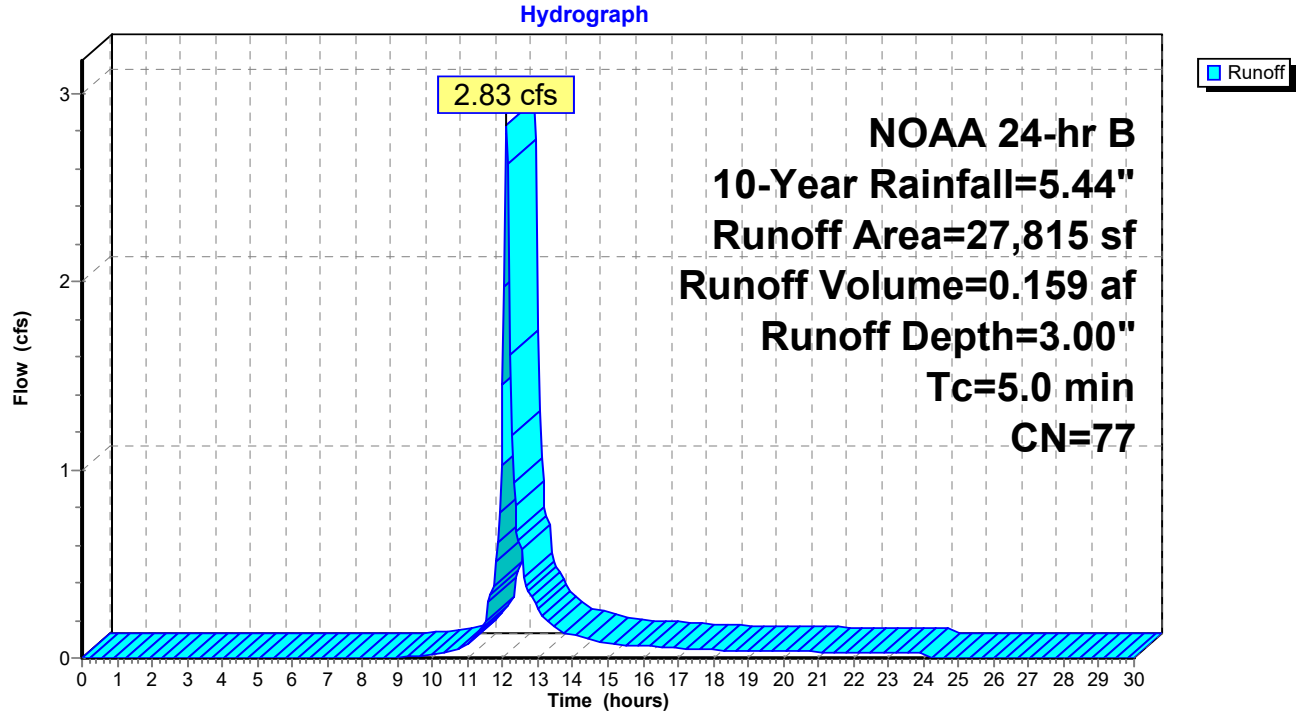
Runoff = 2.83 cfs @ 12.12 hrs, Volume= 0.159 af, Depth= 3.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 10-Year Rainfall=5.44"

	Area (sf)	CN	Description
*	27,815	77	
	27,815		100.00% Pervious Area

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

Subcatchment 41S: DA for GI-19



Summary for Subcatchment 42S: DA for GI-8

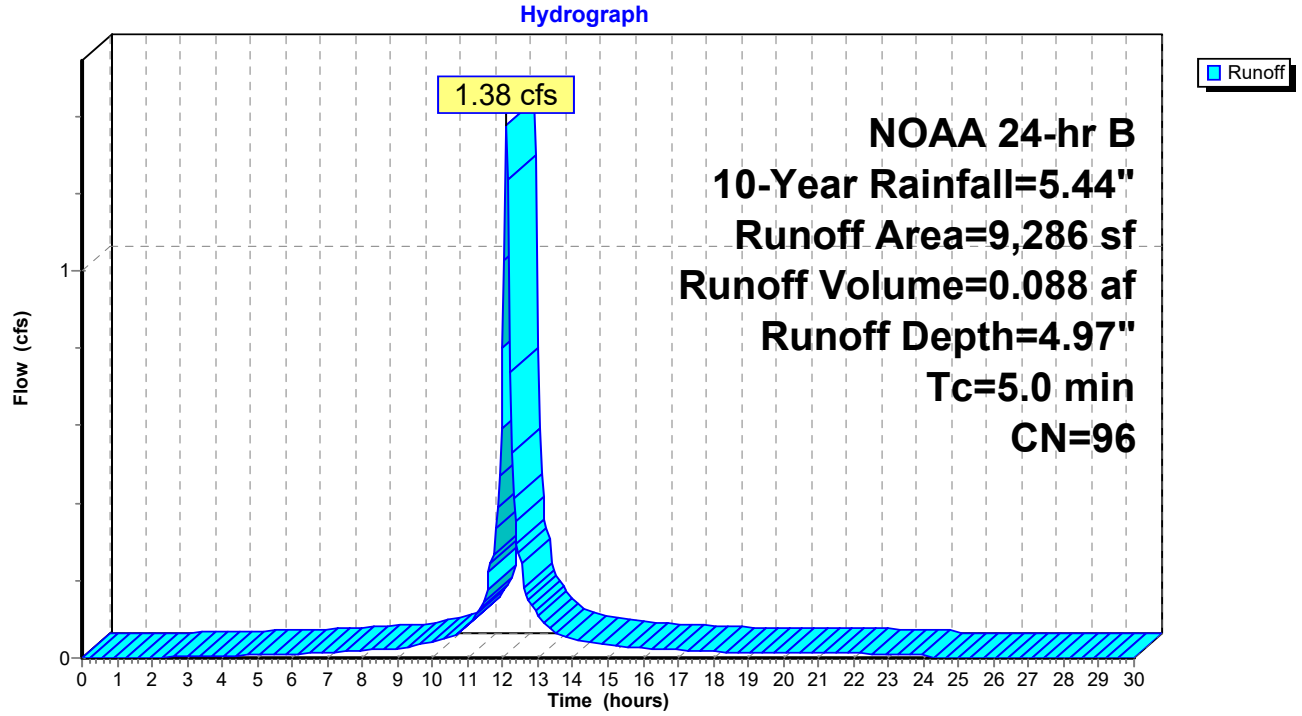
Runoff = 1.38 cfs @ 12.11 hrs, Volume= 0.088 af, Depth= 4.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 10-Year Rainfall=5.44"

	Area (sf)	CN	Description
*	9,286	96	
	9,286		100.00% Pervious Area

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

Subcatchment 42S: DA for GI-8



Summary for Subcatchment 43S: DA for GI-9

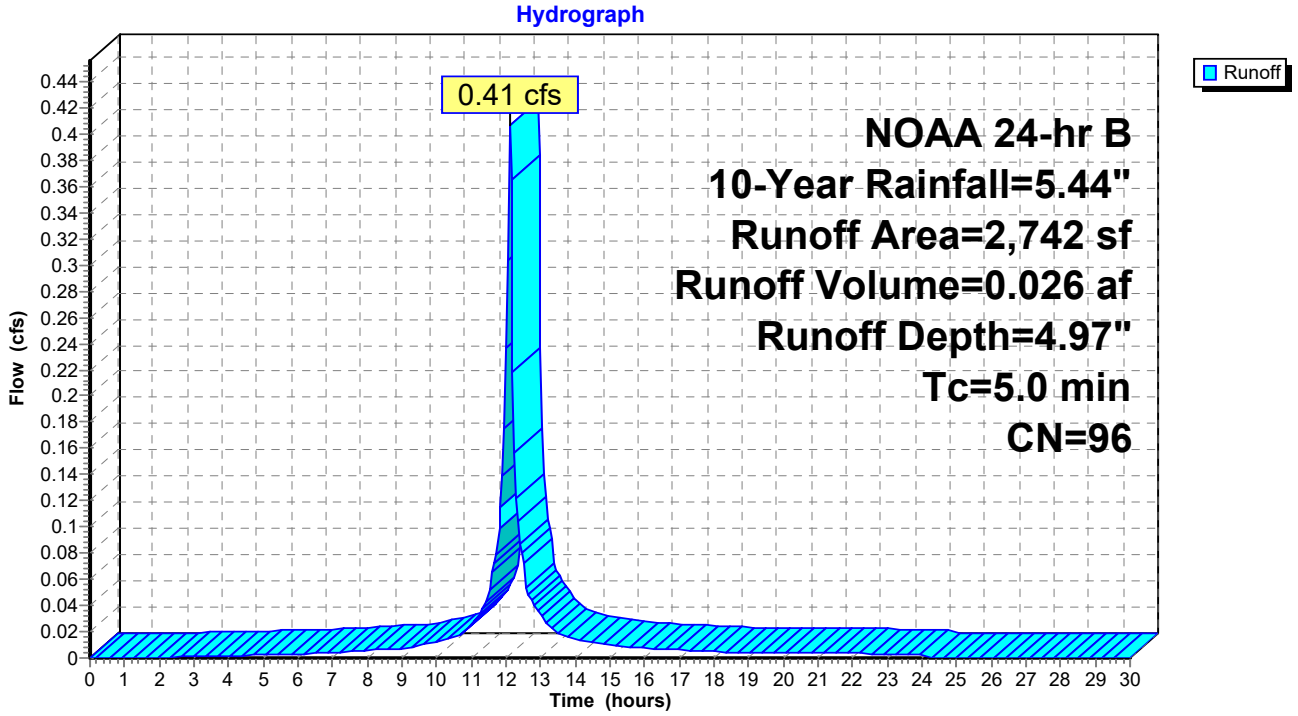
Runoff = 0.41 cfs @ 12.11 hrs, Volume= 0.026 af, Depth= 4.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 10-Year Rainfall=5.44"

	Area (sf)	CN	Description
*	2,742	96	
	2,742		100.00% Pervious Area

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

Subcatchment 43S: DA for GI-9



Summary for Subcatchment 44S: DA for GI-7

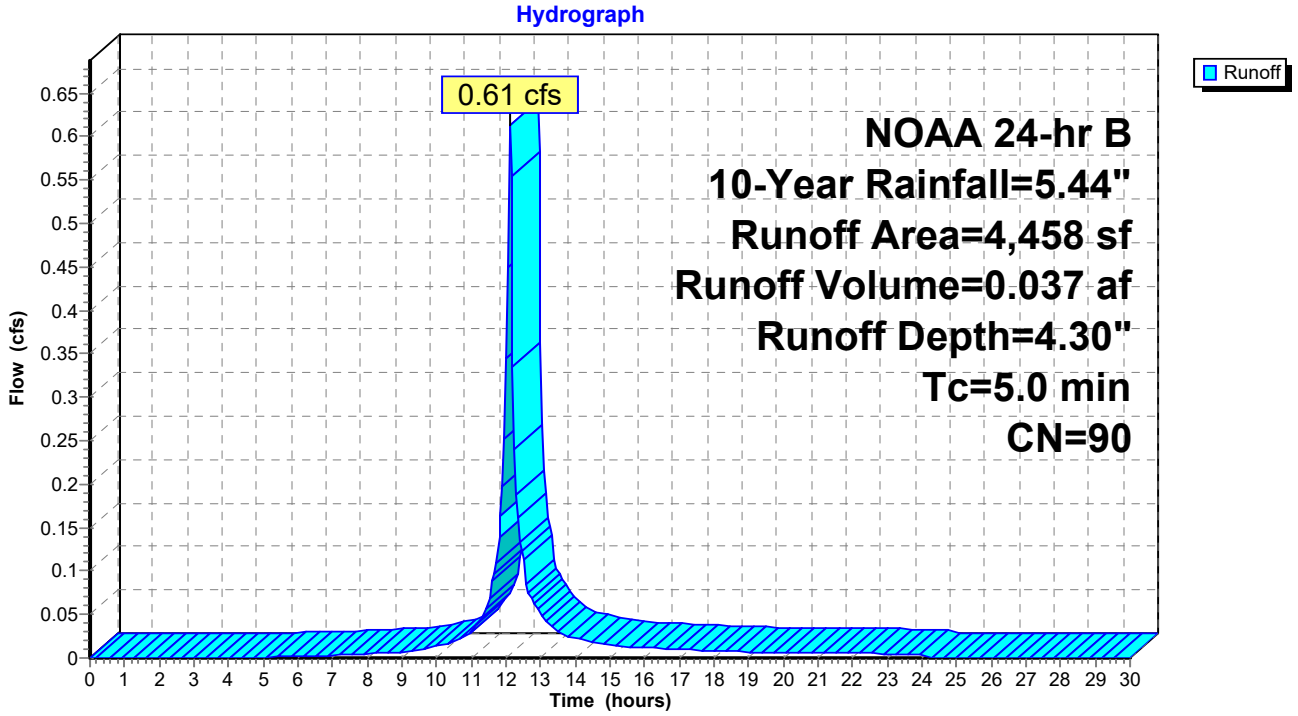
Runoff = 0.61 cfs @ 12.11 hrs, Volume= 0.037 af, Depth= 4.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 10-Year Rainfall=5.44"

	Area (sf)	CN	Description
*	4,458	90	
	4,458		100.00% Pervious Area

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

Subcatchment 44S: DA for GI-7



Summary for Subcatchment 45S: DA for GI-6

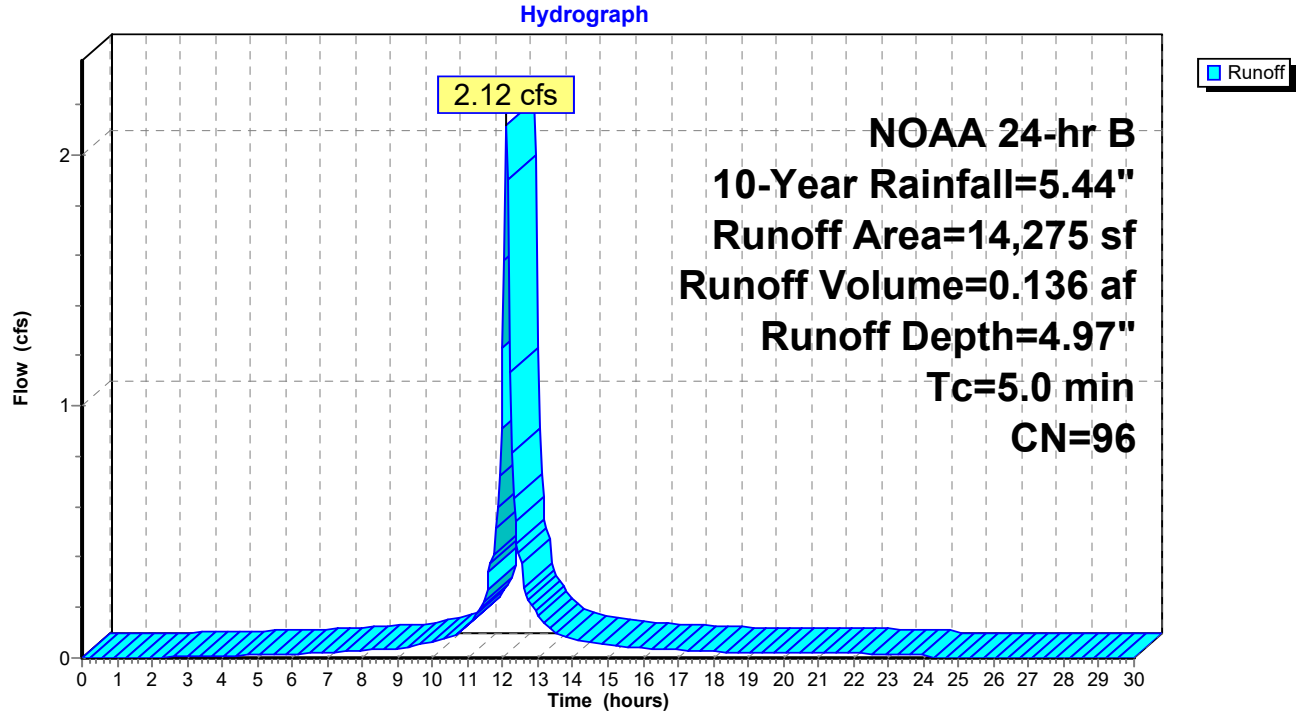
Runoff = 2.12 cfs @ 12.11 hrs, Volume= 0.136 af, Depth= 4.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 10-Year Rainfall=5.44"

	Area (sf)	CN	Description
*	14,275	96	
	14,275		100.00% Pervious Area

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

Subcatchment 45S: DA for GI-6



Summary for Subcatchment 46S: DA for GI-4

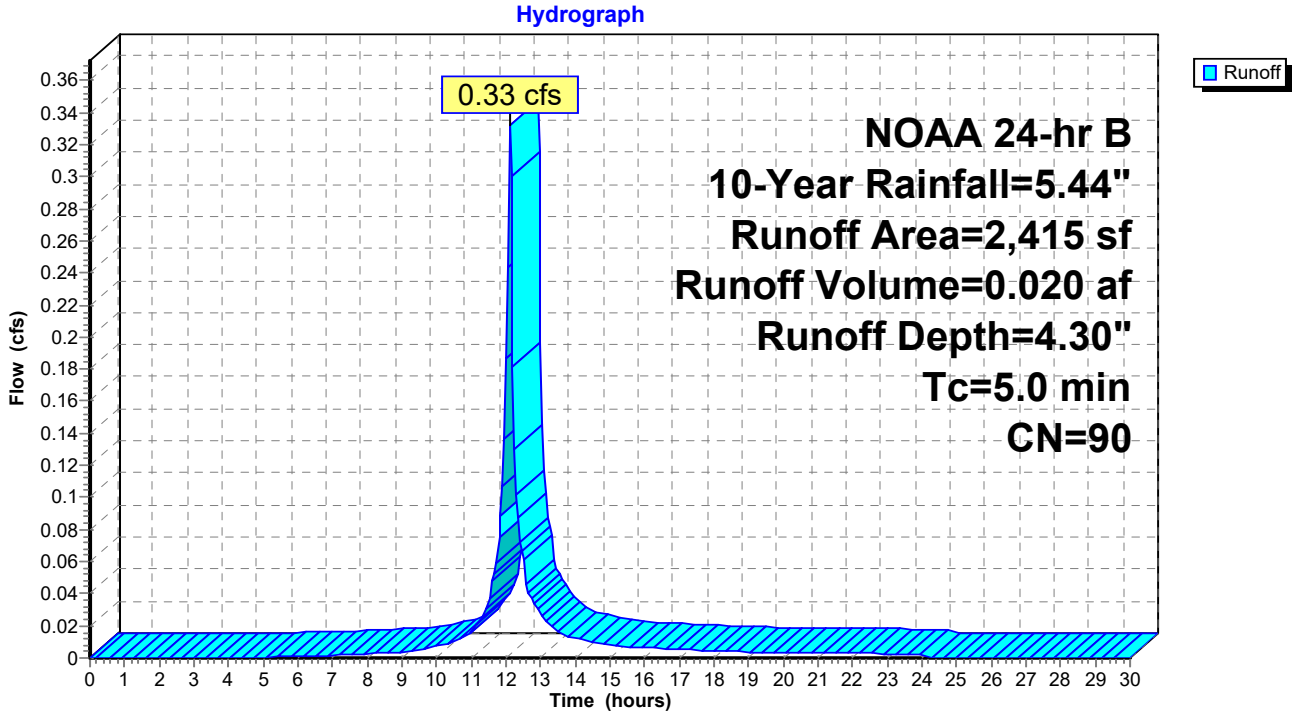
Runoff = 0.33 cfs @ 12.11 hrs, Volume= 0.020 af, Depth= 4.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 10-Year Rainfall=5.44"

	Area (sf)	CN	Description
*	2,415	90	
	2,415		100.00% Pervious Area

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

Subcatchment 46S: DA for GI-4



Summary for Subcatchment 47S: DA for GI-1

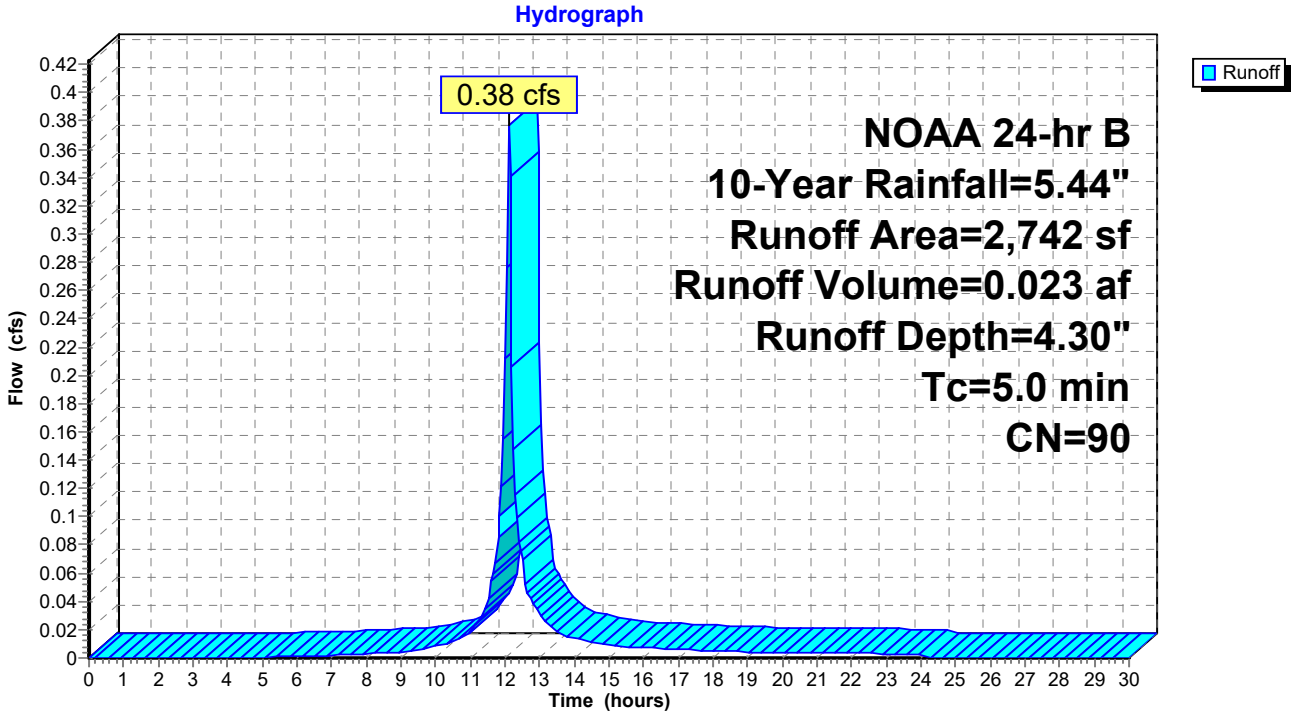
Runoff = 0.38 cfs @ 12.11 hrs, Volume= 0.023 af, Depth= 4.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 10-Year Rainfall=5.44"

	Area (sf)	CN	Description
*	2,742	90	
	2,742		100.00% Pervious Area

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

Subcatchment 47S: DA for GI-1



Summary for Subcatchment 48S: DA for GI-2

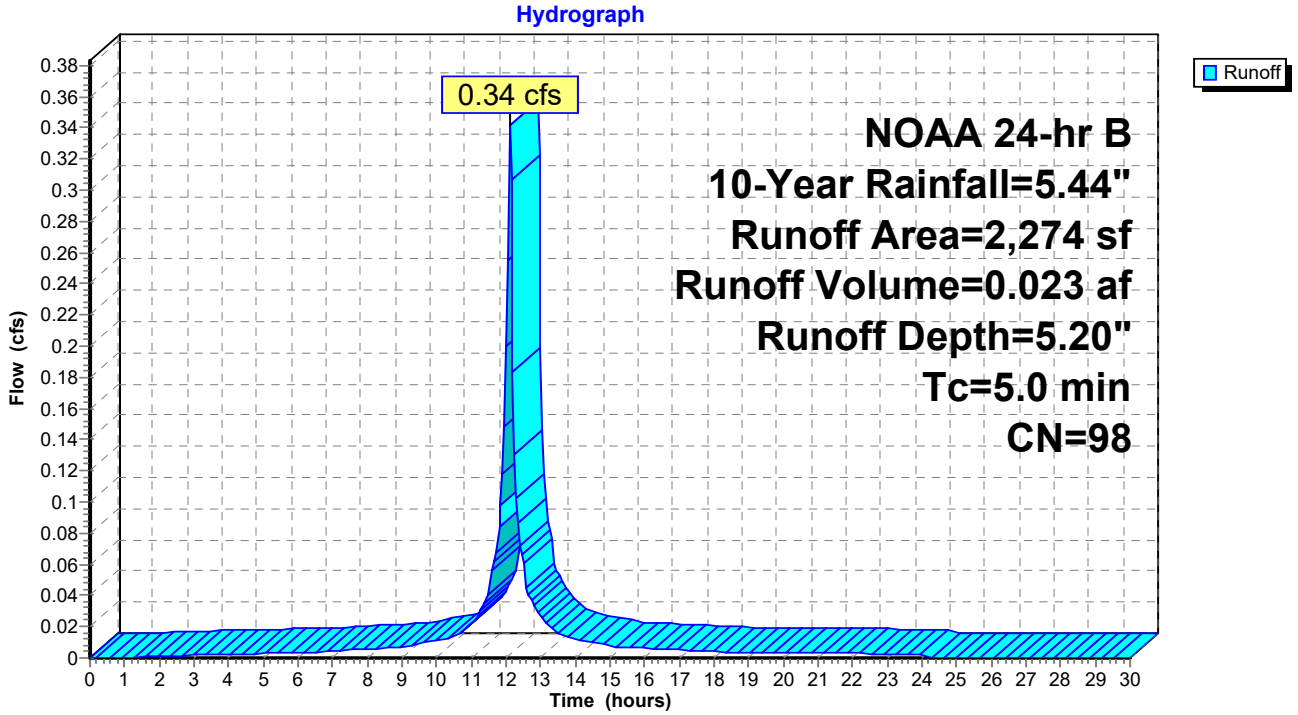
Runoff = 0.34 cfs @ 12.11 hrs, Volume= 0.023 af, Depth= 5.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 10-Year Rainfall=5.44"

	Area (sf)	CN	Description
*	2,274	98	
	2,274		100.00% Impervious Area

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

Subcatchment 48S: DA for GI-2



Summary for Subcatchment 49S: DA for GI-3

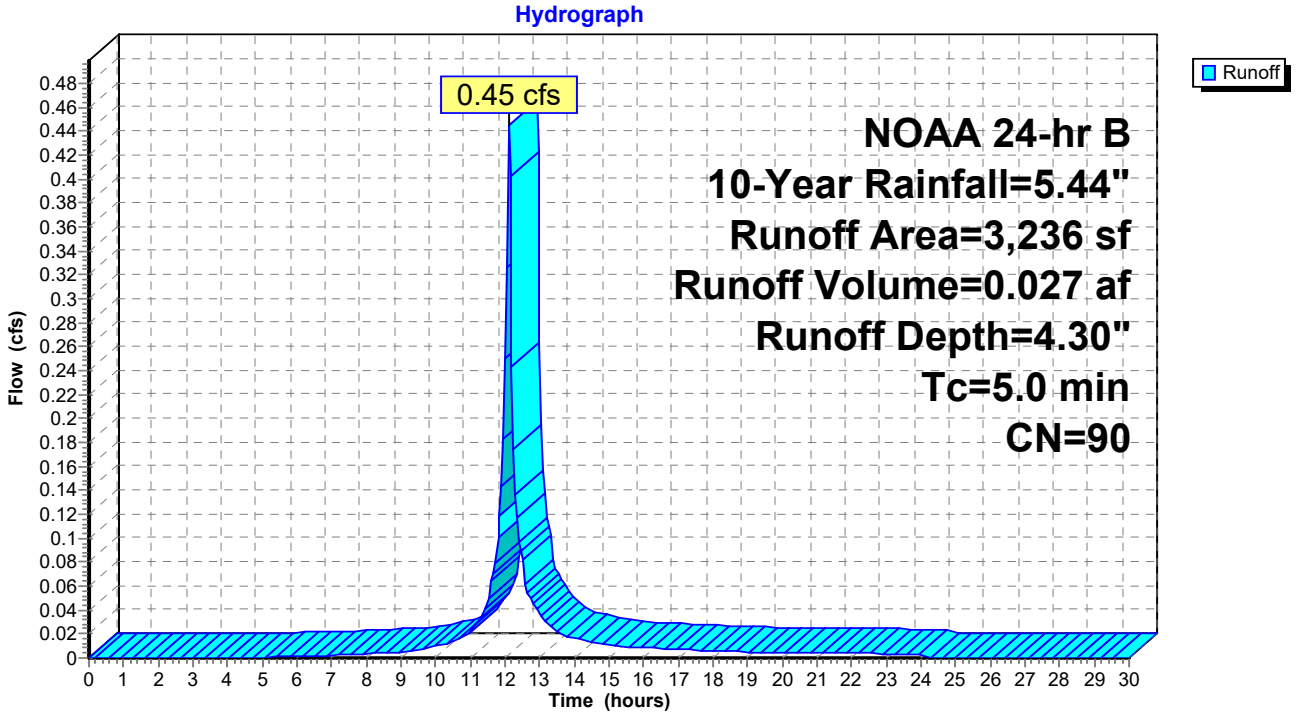
Runoff = 0.45 cfs @ 12.11 hrs, Volume= 0.027 af, Depth= 4.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 10-Year Rainfall=5.44"

	Area (sf)	CN	Description
*	3,236	90	
	3,236		100.00% Pervious Area

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

Subcatchment 49S: DA for GI-3



Summary for Subcatchment 50S: DA for GI-5

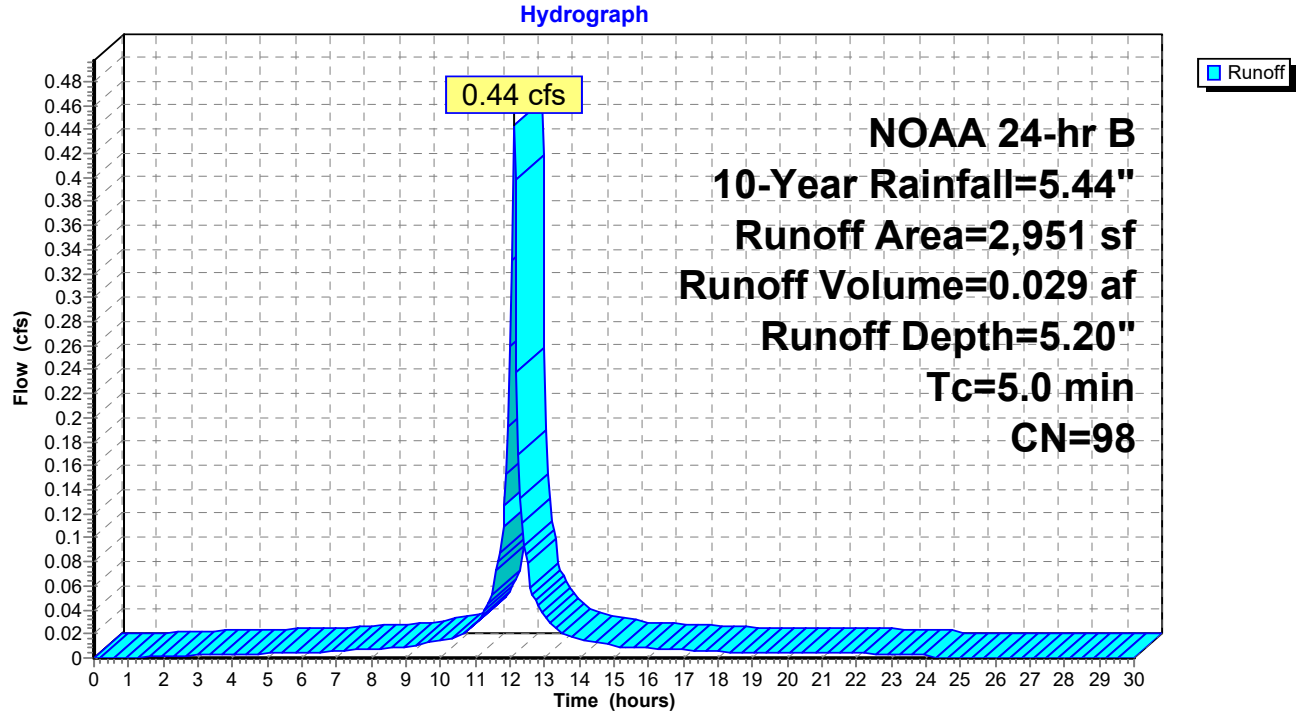
Runoff = 0.44 cfs @ 12.11 hrs, Volume= 0.029 af, Depth= 5.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 10-Year Rainfall=5.44"

	Area (sf)	CN	Description
*	2,951	98	
	2,951		100.00% Impervious Area

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

Subcatchment 50S: DA for GI-5



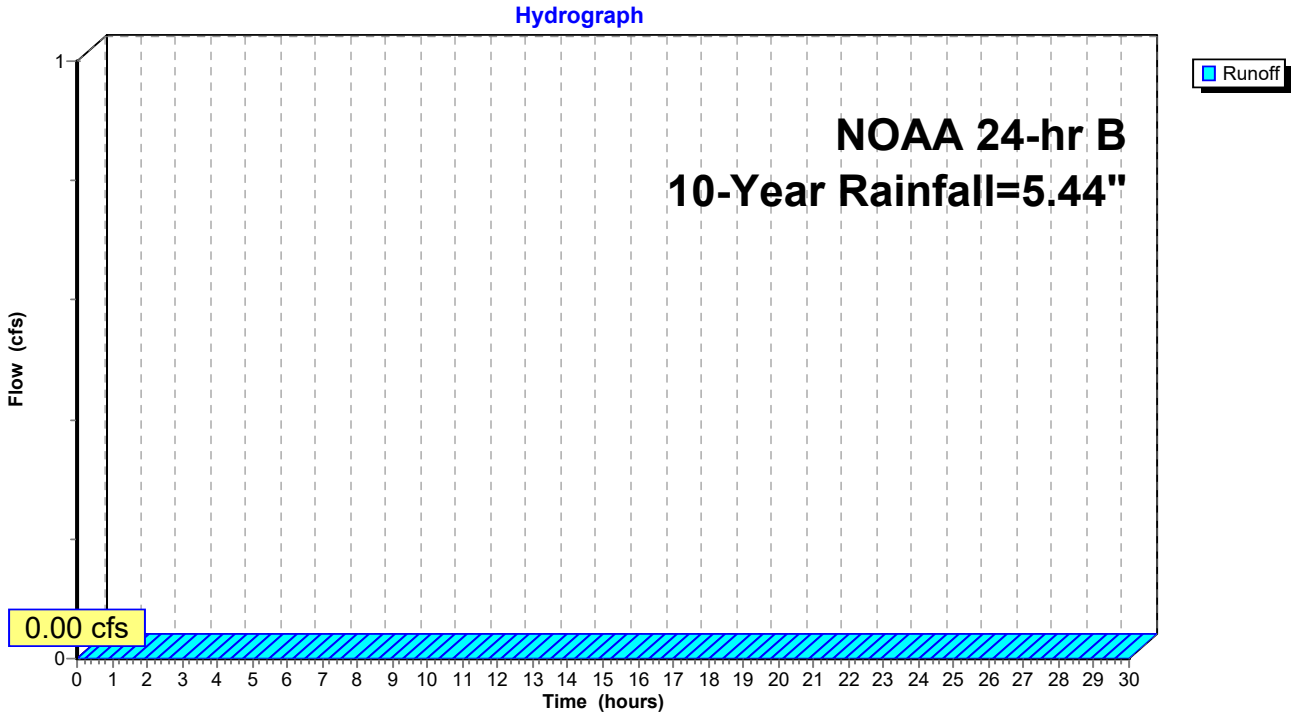
Summary for Subcatchment 56S: Sheet Flow to Pond #1

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
NOAA 24-hr B 10-Year Rainfall=5.44"

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

Subcatchment 56S: Sheet Flow to Pond #1



Summary for Pond 1P: GI-1

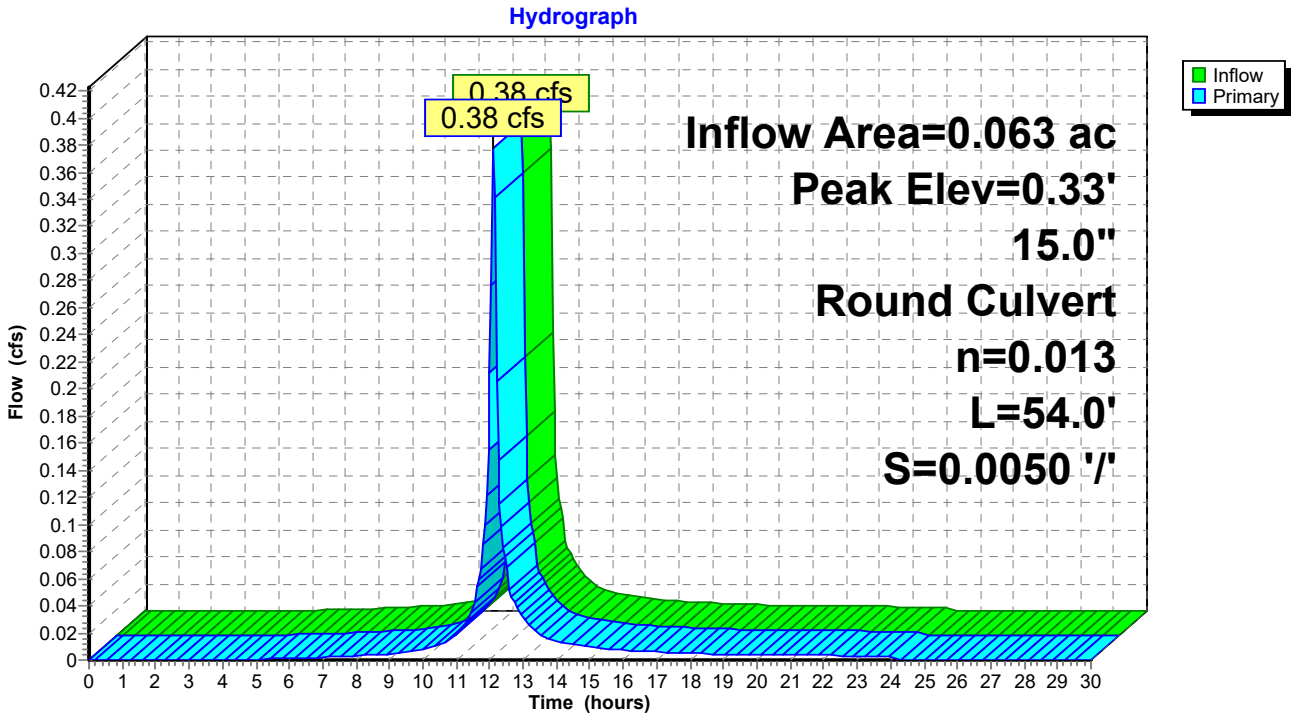
Inflow Area = 0.063 ac, 0.00% Impervious, Inflow Depth = 4.30" for 10-Year event
Inflow = 0.38 cfs @ 12.11 hrs, Volume= 0.023 af
Outflow = 0.38 cfs @ 12.11 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min
Primary = 0.38 cfs @ 12.11 hrs, Volume= 0.023 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 0.33' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 54.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.27' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.37 cfs @ 12.11 hrs HW=0.33' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 0.37 cfs @ 2.15 fps)

Pond 1P: GI-1



Summary for Pond 3P: GI-2

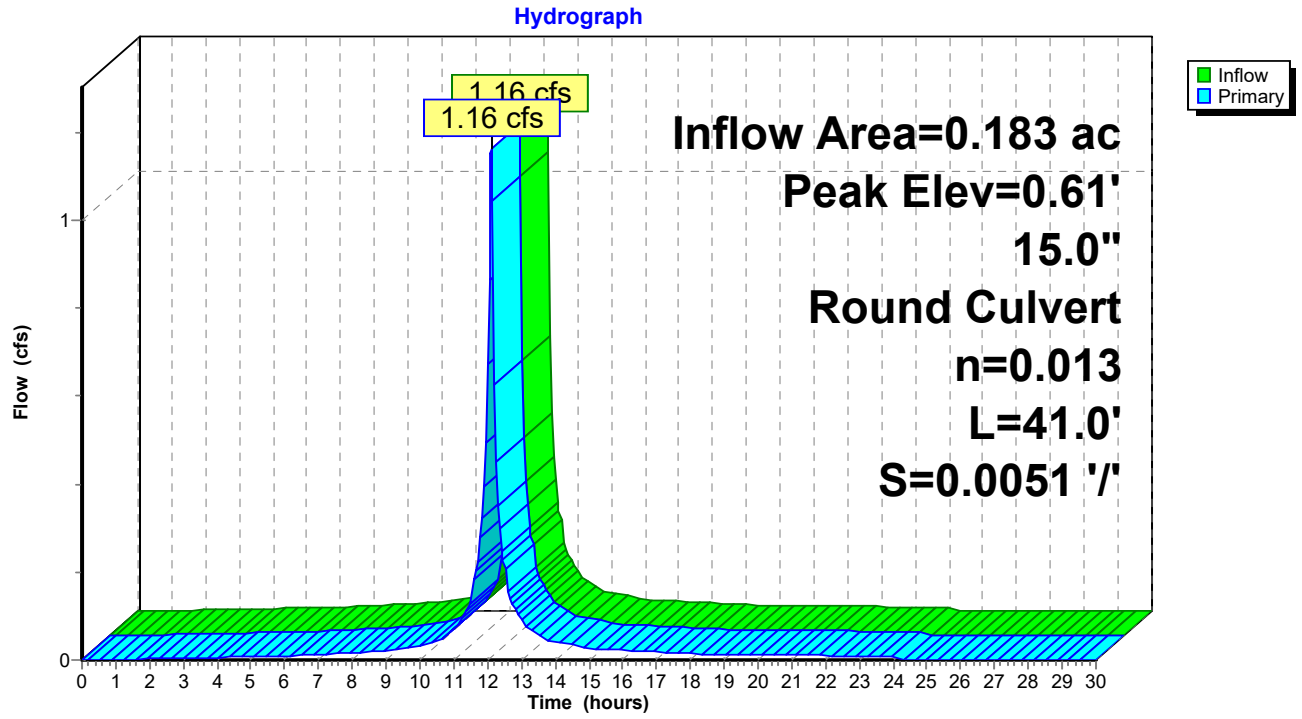
Inflow Area = 0.183 ac, 65.58% Impervious, Inflow Depth = 4.89" for 10-Year event
Inflow = 1.16 cfs @ 12.11 hrs, Volume= 0.075 af
Outflow = 1.16 cfs @ 12.11 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min
Primary = 1.16 cfs @ 12.11 hrs, Volume= 0.075 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 0.61' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 41.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.21' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=1.13 cfs @ 12.11 hrs HW=0.60' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 1.13 cfs @ 2.86 fps)

Pond 3P: GI-2



Summary for Pond 4P: GI-4

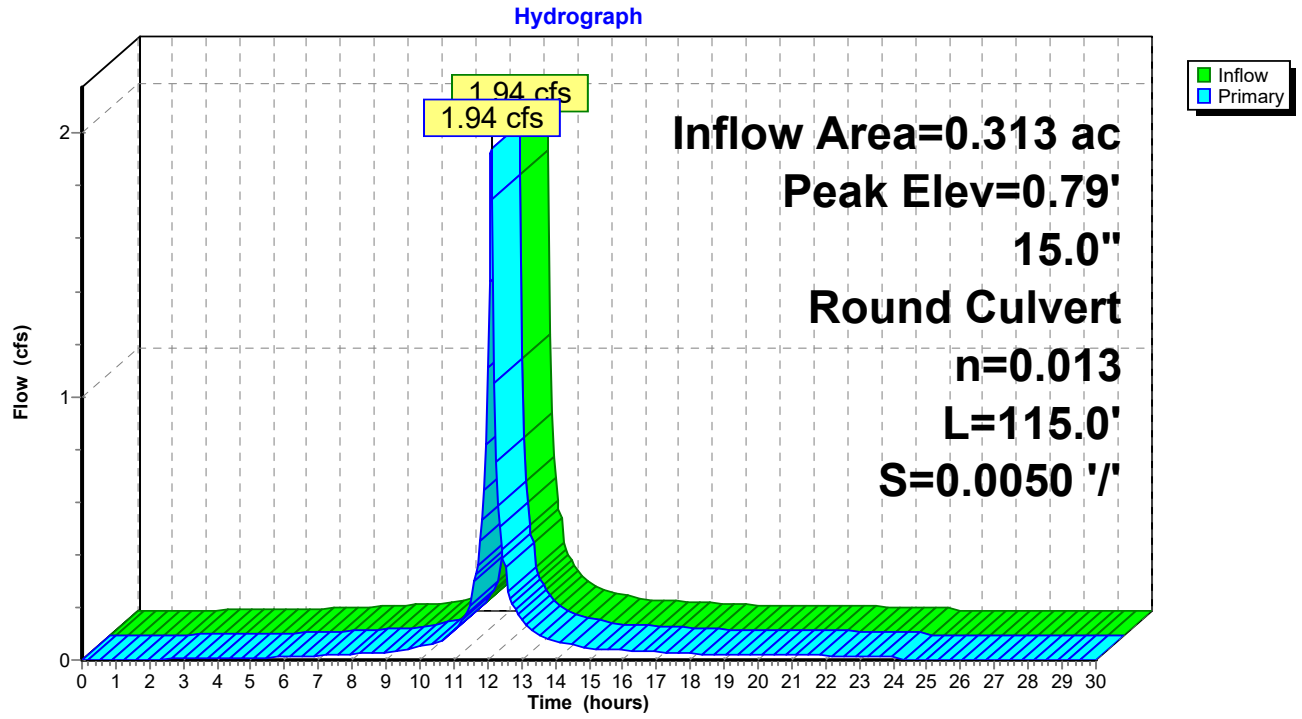
Inflow Area = 0.313 ac, 38.37% Impervious, Inflow Depth = 4.65" for 10-Year event
Inflow = 1.94 cfs @ 12.11 hrs, Volume= 0.121 af
Outflow = 1.94 cfs @ 12.11 hrs, Volume= 0.121 af, Atten= 0%, Lag= 0.0 min
Primary = 1.94 cfs @ 12.11 hrs, Volume= 0.121 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 0.79' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 115.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.58' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=1.88 cfs @ 12.11 hrs HW=0.77' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 1.88 cfs @ 3.38 fps)

Pond 4P: GI-4



Summary for Pond 5P: GI-3

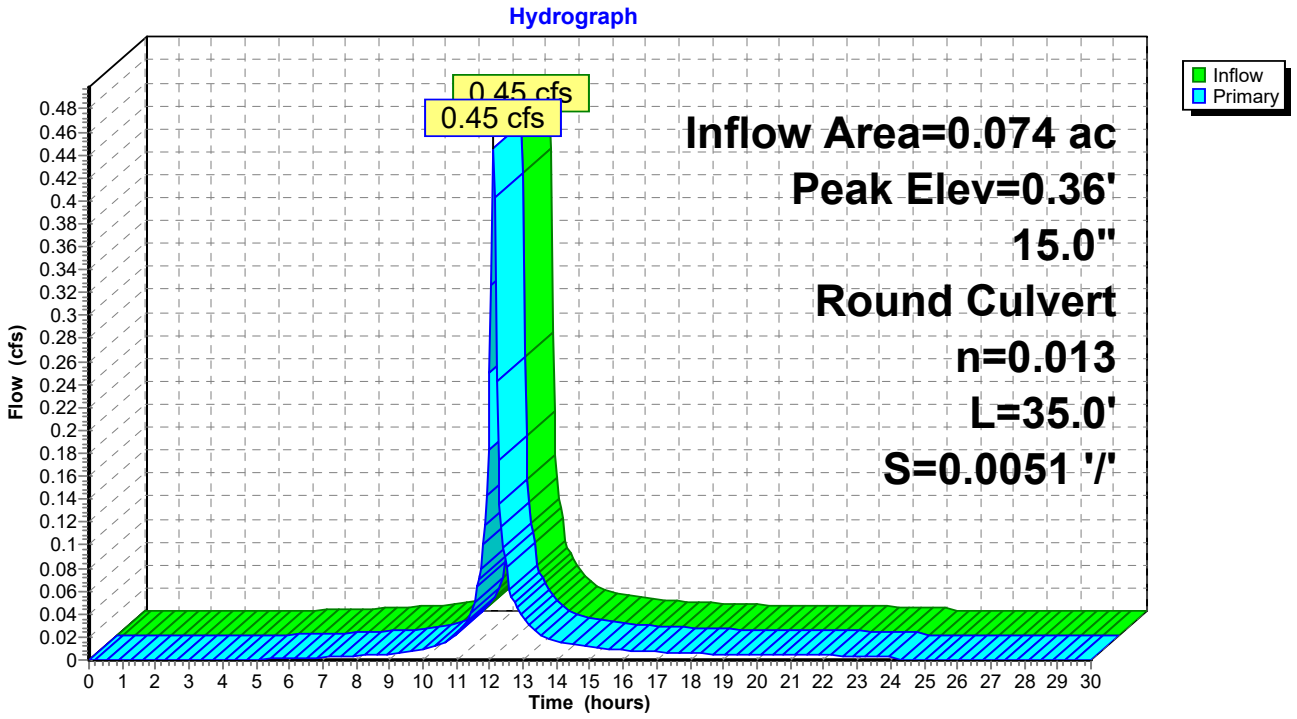
Inflow Area = 0.074 ac, 0.00% Impervious, Inflow Depth = 4.30" for 10-Year event
Inflow = 0.45 cfs @ 12.11 hrs, Volume= 0.027 af
Outflow = 0.45 cfs @ 12.11 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min
Primary = 0.45 cfs @ 12.11 hrs, Volume= 0.027 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 0.36' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 35.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.18' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.43 cfs @ 12.11 hrs HW=0.36' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 0.43 cfs @ 2.23 fps)

Pond 5P: GI-3



Summary for Pond 6P: GI-7

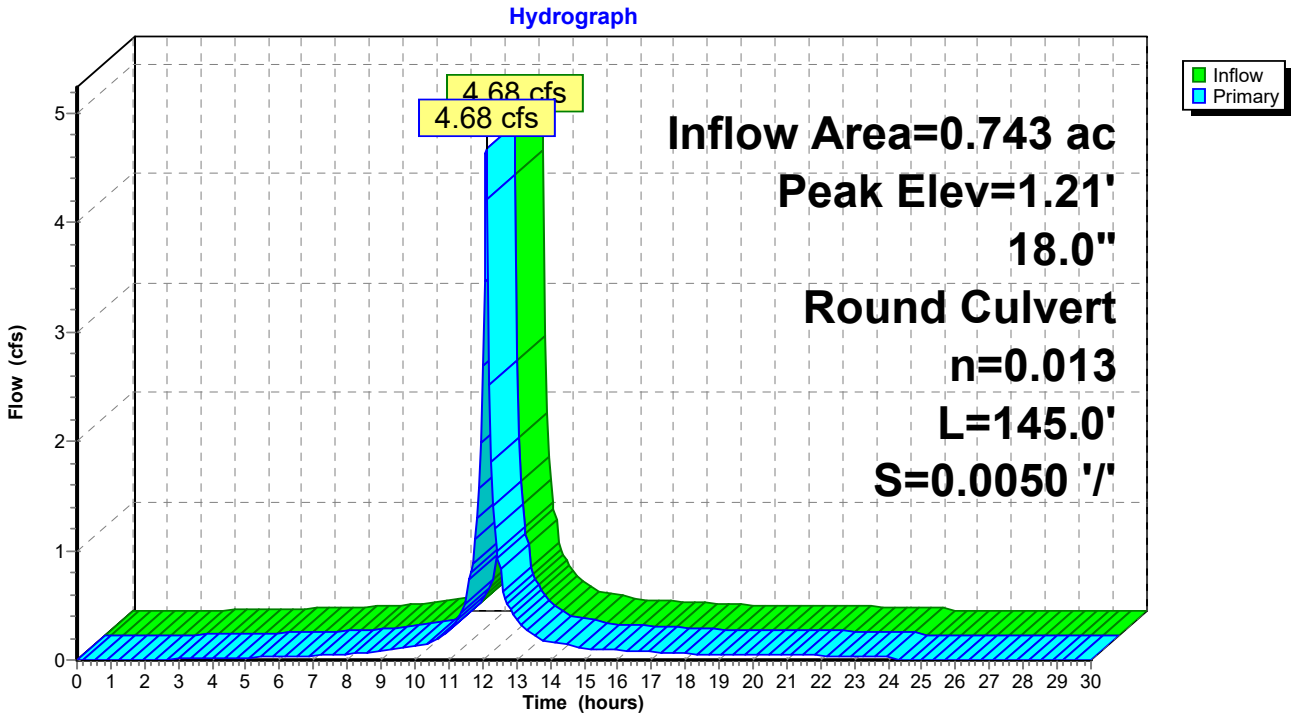
Inflow Area = 0.743 ac, 16.15% Impervious, Inflow Depth = 4.74" for 10-Year event
Inflow = 4.68 cfs @ 12.11 hrs, Volume= 0.293 af
Outflow = 4.68 cfs @ 12.11 hrs, Volume= 0.293 af, Atten= 0%, Lag= 0.0 min
Primary = 4.68 cfs @ 12.11 hrs, Volume= 0.293 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 1.21' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**18.0" Round RCP_Round 18"** L= 145.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.72' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=4.53 cfs @ 12.11 hrs HW=1.19' (Free Discharge)
1=RCP_Round 18" (Barrel Controls 4.53 cfs @ 4.14 fps)

Pond 6P: GI-7



Summary for Pond 7P: GI-6

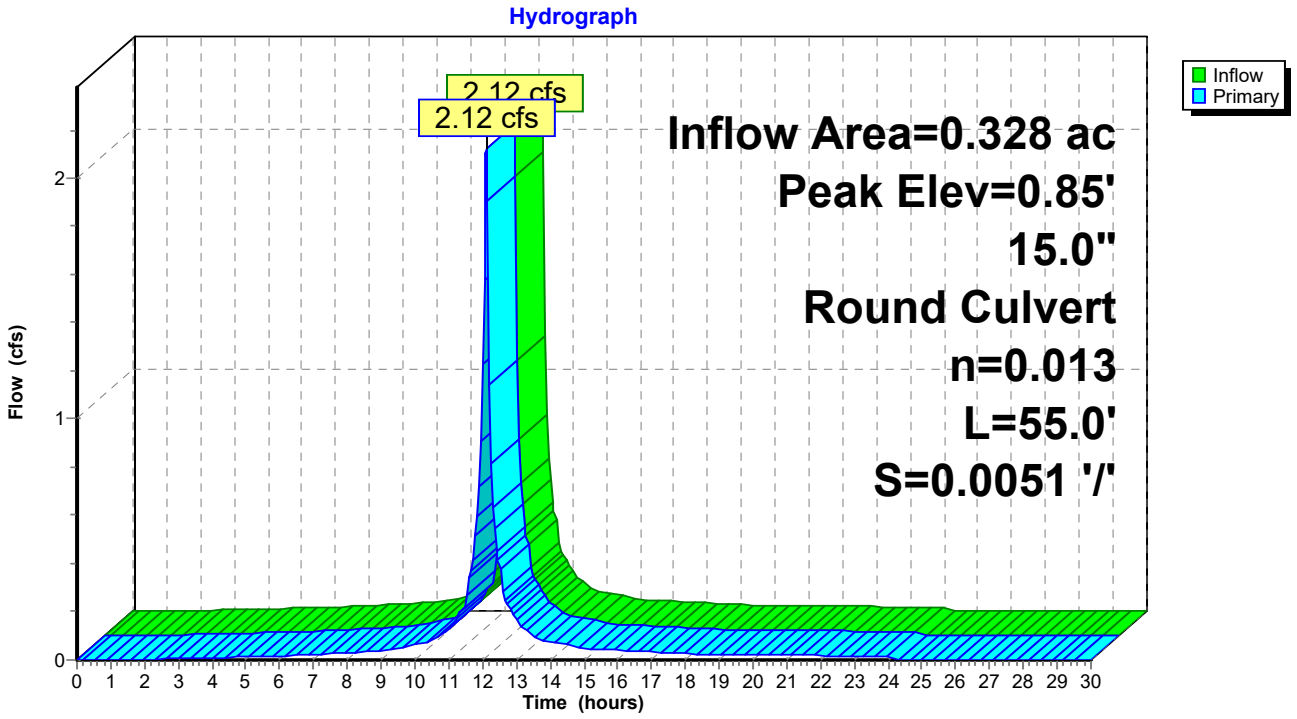
Inflow Area = 0.328 ac, 0.00% Impervious, Inflow Depth = 4.97" for 10-Year event
Inflow = 2.12 cfs @ 12.11 hrs, Volume= 0.136 af
Outflow = 2.12 cfs @ 12.11 hrs, Volume= 0.136 af, Atten= 0%, Lag= 0.0 min
Primary = 2.12 cfs @ 12.11 hrs, Volume= 0.136 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 0.85' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 55.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.28' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=2.06 cfs @ 12.11 hrs HW=0.83' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 2.06 cfs @ 3.36 fps)

Pond 7P: GI-6



Summary for Pond 8P: GI-9

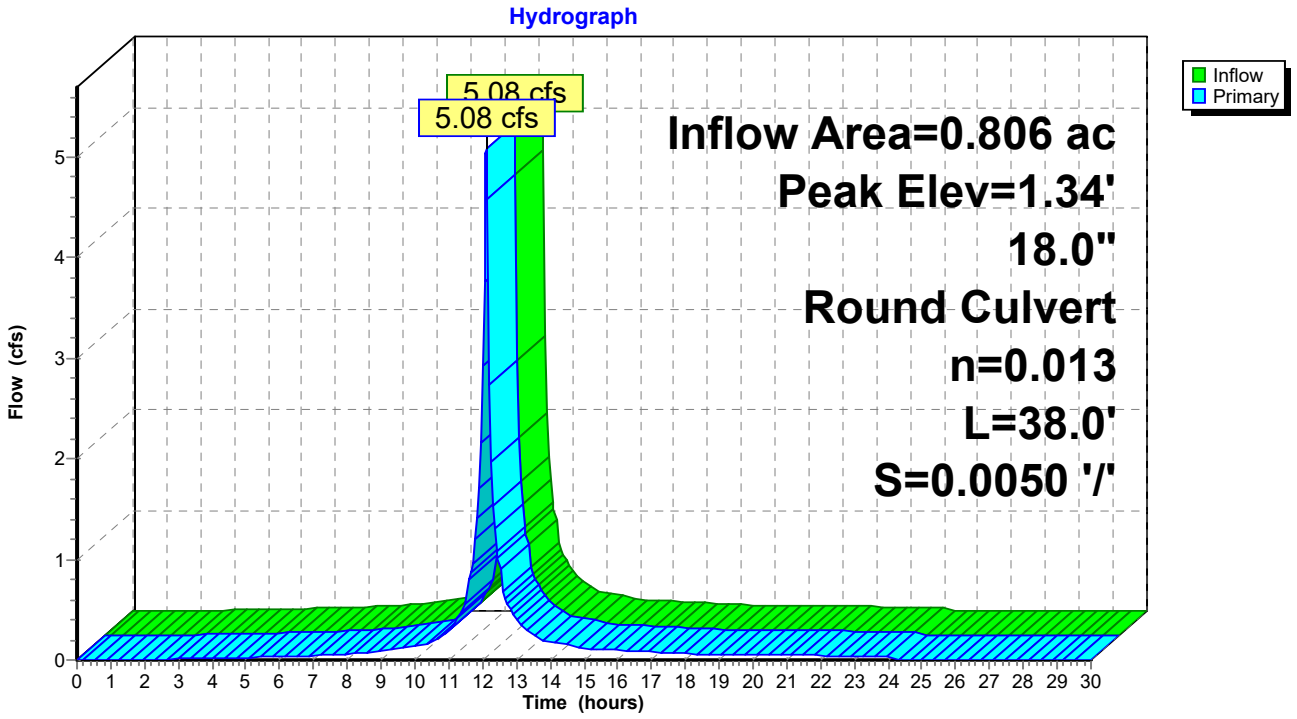
Inflow Area = 0.806 ac, 14.89% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 5.08 cfs @ 12.11 hrs, Volume= 0.320 af
Outflow = 5.08 cfs @ 12.11 hrs, Volume= 0.320 af, Atten= 0%, Lag= 0.0 min
Primary = 5.08 cfs @ 12.11 hrs, Volume= 0.320 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 1.34' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**18.0" Round RCP_Round 18"** L= 38.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.19' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=4.93 cfs @ 12.11 hrs HW=1.31' (Free Discharge)
1=RCP_Round 18" (Barrel Controls 4.93 cfs @ 4.01 fps)

Pond 8P: GI-9



Summary for Pond 9P: GI-19

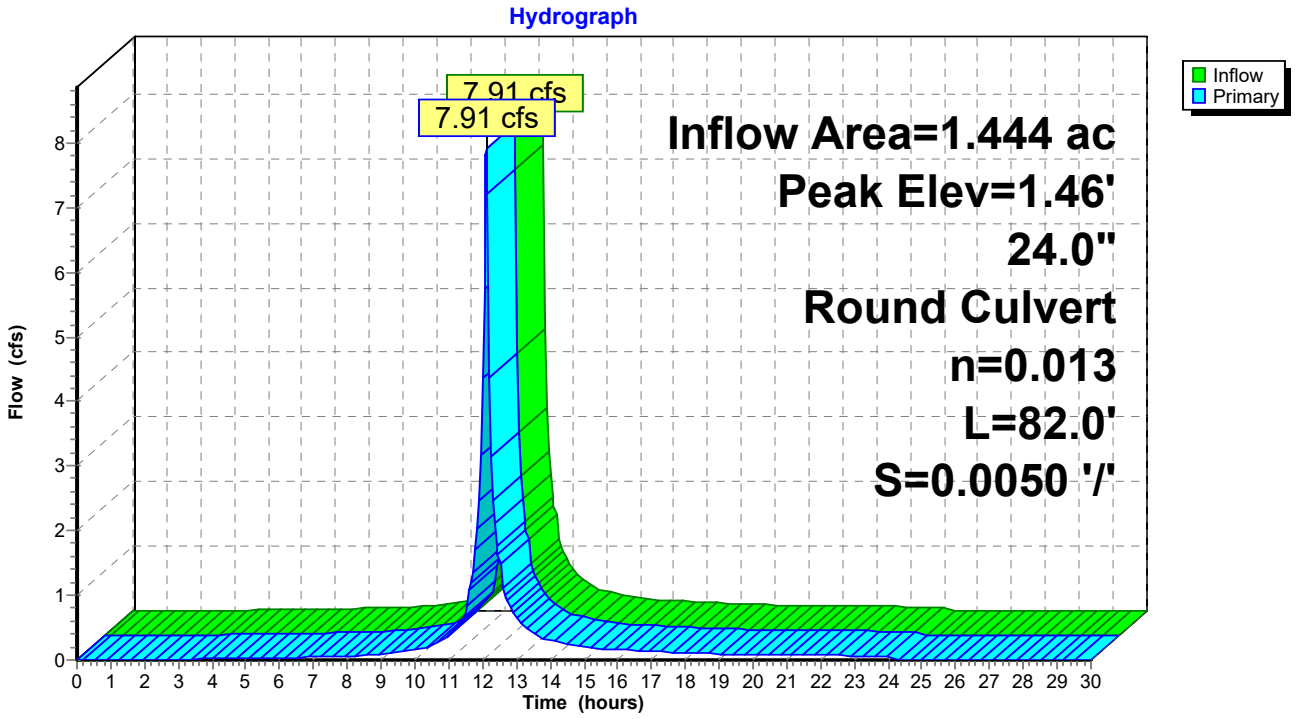
Inflow Area = 1.444 ac, 8.31% Impervious, Inflow Depth = 3.98" for 10-Year event
Inflow = 7.91 cfs @ 12.11 hrs, Volume= 0.479 af
Outflow = 7.91 cfs @ 12.11 hrs, Volume= 0.479 af, Atten= 0%, Lag= 0.0 min
Primary = 7.91 cfs @ 12.11 hrs, Volume= 0.479 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 1.46' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**24.0" Round RCP_Round 24"** L= 82.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.41' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=7.65 cfs @ 12.11 hrs HW=1.43' (Free Discharge)
1=RCP_Round 24" (Barrel Controls 7.65 cfs @ 4.47 fps)

Pond 9P: GI-19



Summary for Pond 10P: GI-8

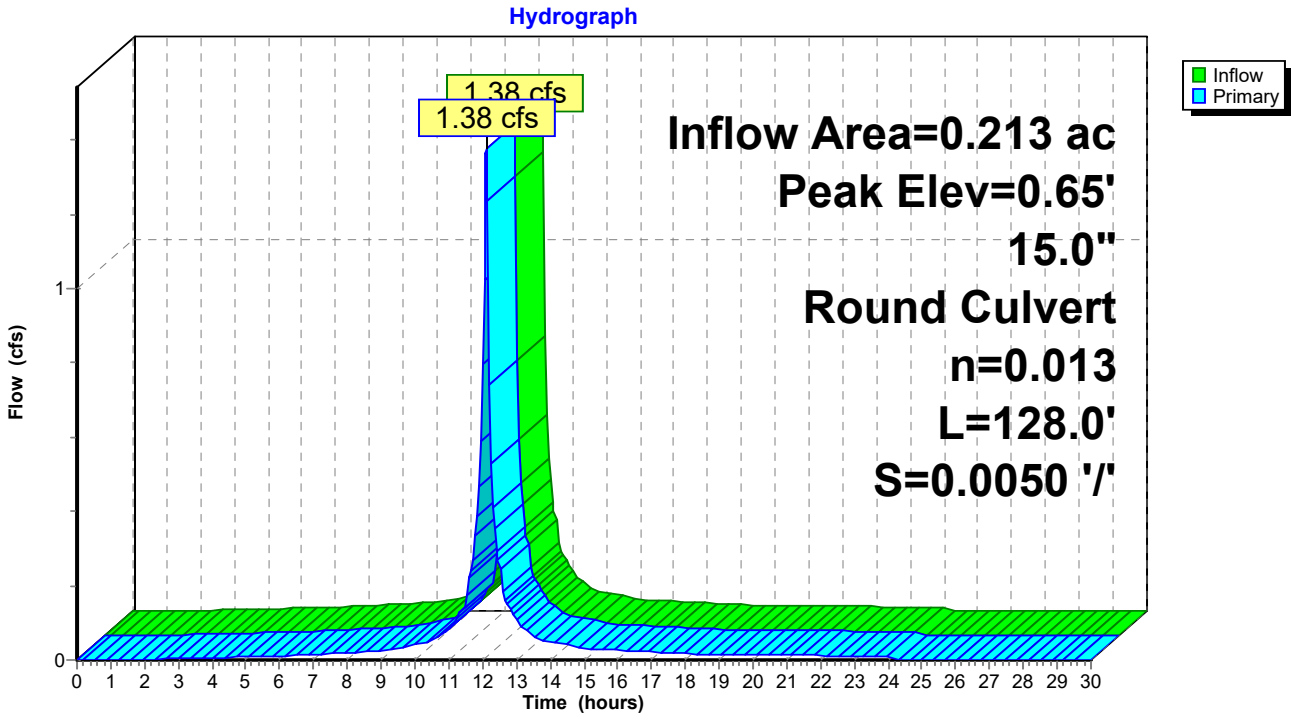
Inflow Area = 0.213 ac, 0.00% Impervious, Inflow Depth = 4.97" for 10-Year event
Inflow = 1.38 cfs @ 12.11 hrs, Volume= 0.088 af
Outflow = 1.38 cfs @ 12.11 hrs, Volume= 0.088 af, Atten= 0%, Lag= 0.0 min
Primary = 1.38 cfs @ 12.11 hrs, Volume= 0.088 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 0.65' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 128.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.64' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=1.34 cfs @ 12.11 hrs HW=0.64' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 1.34 cfs @ 3.10 fps)

Pond 10P: GI-8



Summary for Pond 11P: CI-1

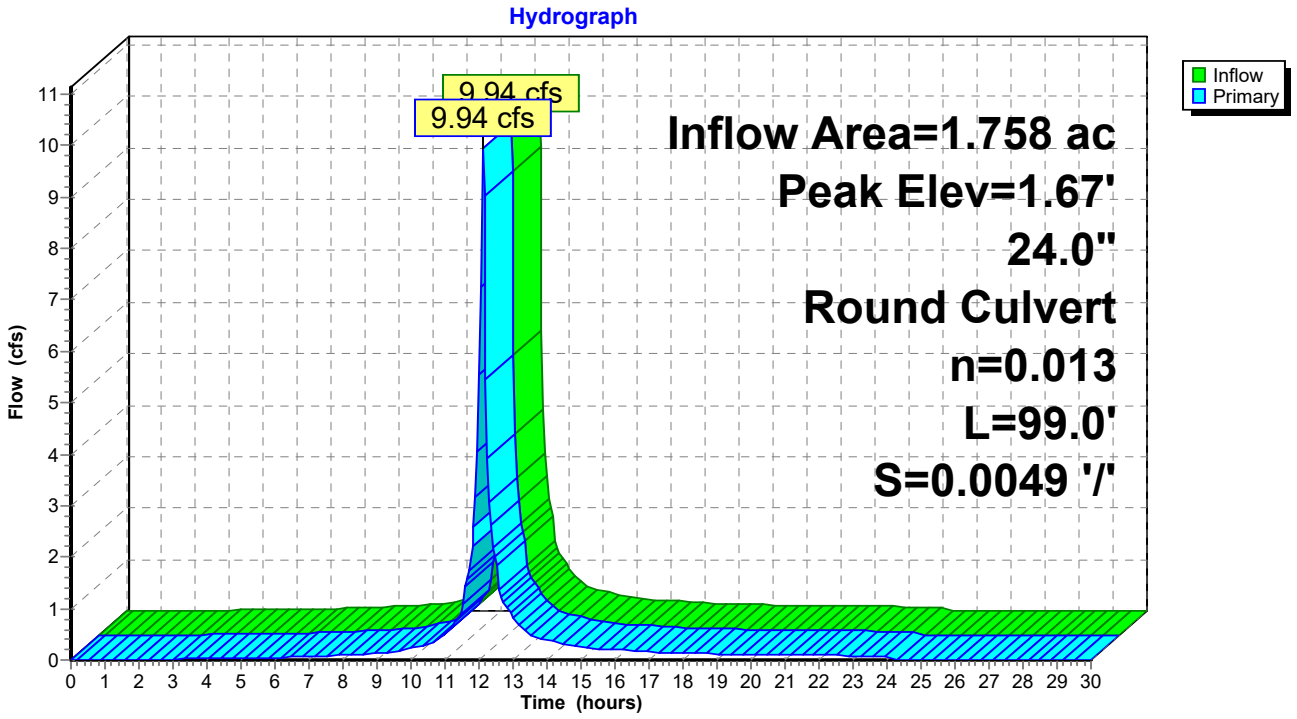
Inflow Area = 1.758 ac, 6.82% Impervious, Inflow Depth = 4.16" for 10-Year event
Inflow = 9.94 cfs @ 12.11 hrs, Volume= 0.609 af
Outflow = 9.94 cfs @ 12.11 hrs, Volume= 0.609 af, Atten= 0%, Lag= 0.0 min
Primary = 9.94 cfs @ 12.11 hrs, Volume= 0.609 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 1.67' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**24.0" Round RCP_Round 24"** L= 99.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.49' S= 0.0049 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=9.61 cfs @ 12.11 hrs HW=1.64' (Free Discharge)
1=RCP_Round 24" (Barrel Controls 9.61 cfs @ 4.76 fps)

Pond 11P: CI-1



Summary for Pond 12P: CI-2

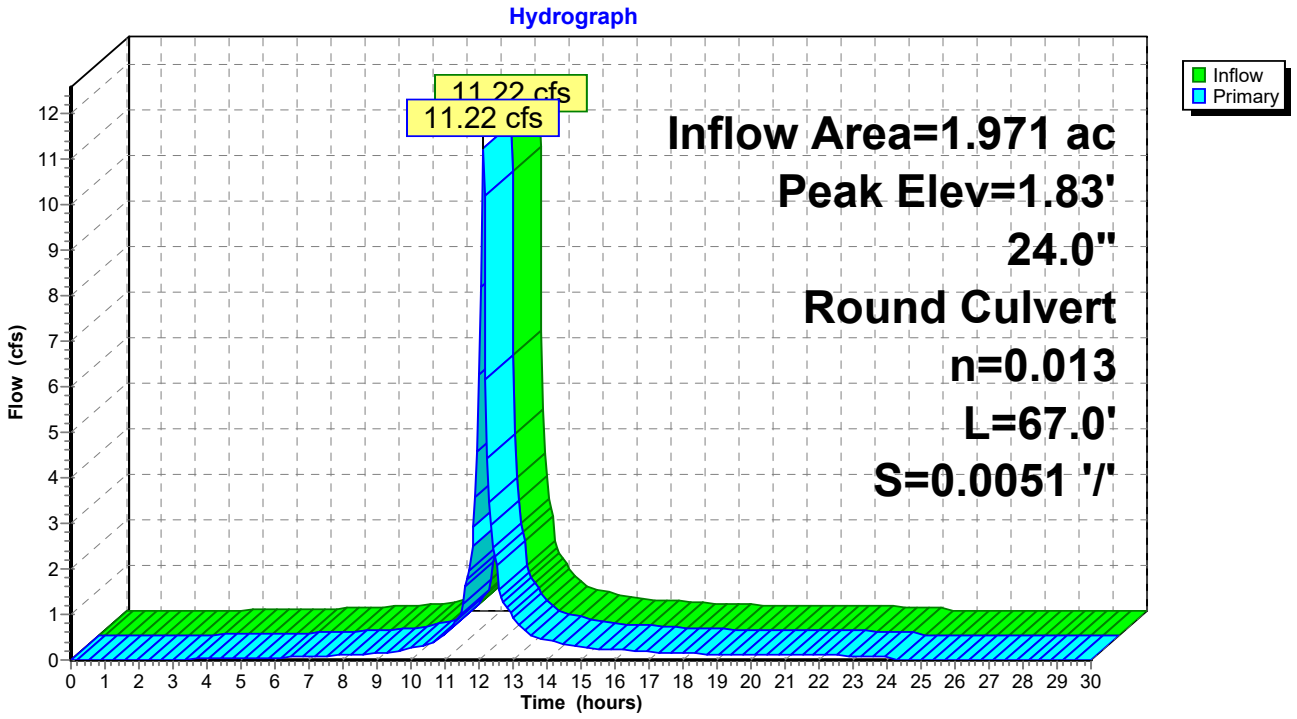
Inflow Area = 1.971 ac, 6.09% Impervious, Inflow Depth = 4.17" for 10-Year event
Inflow = 11.22 cfs @ 12.11 hrs, Volume= 0.685 af
Outflow = 11.22 cfs @ 12.11 hrs, Volume= 0.685 af, Atten= 0%, Lag= 0.0 min
Primary = 11.22 cfs @ 12.11 hrs, Volume= 0.685 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 1.83' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**24.0" Round RCP_Round 24"** L= 67.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.34' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=10.85 cfs @ 12.11 hrs HW=1.79' (Free Discharge)
1=RCP_Round 24" (Barrel Controls 10.85 cfs @ 4.83 fps)

Pond 12P: CI-2



Summary for Pond 13P: CI-3

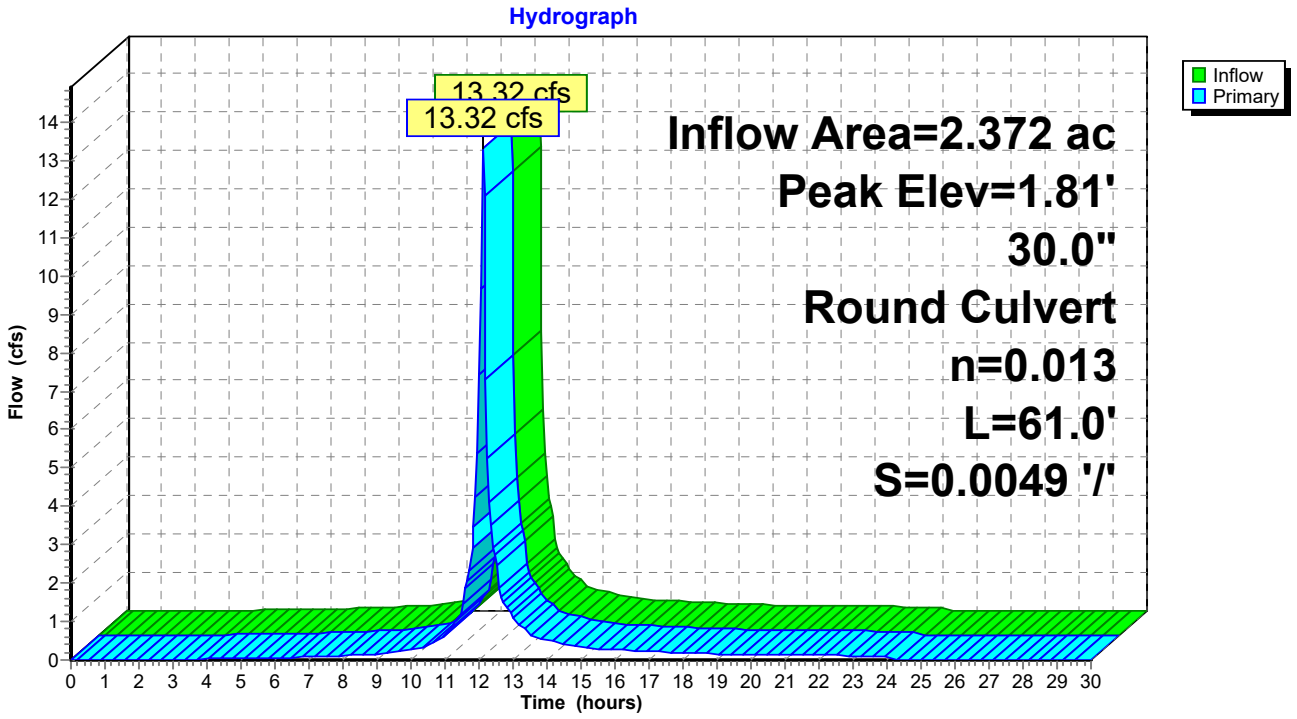
Inflow Area = 2.372 ac, 5.06% Impervious, Inflow Depth = 4.08" for 10-Year event
Inflow = 13.32 cfs @ 12.11 hrs, Volume= 0.807 af
Outflow = 13.32 cfs @ 12.11 hrs, Volume= 0.807 af, Atten= 0%, Lag= 0.0 min
Primary = 13.32 cfs @ 12.11 hrs, Volume= 0.807 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 1.81' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**30.0" Round RCP_Round 30"** L= 61.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.30' S= 0.0049 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf

Primary OutFlow Max=12.87 cfs @ 12.11 hrs HW=1.77' (Free Discharge)
1=RCP_Round 30" (Barrel Controls 12.87 cfs @ 4.85 fps)

Pond 13P: CI-3



Summary for Pond 14P: GI-3.1

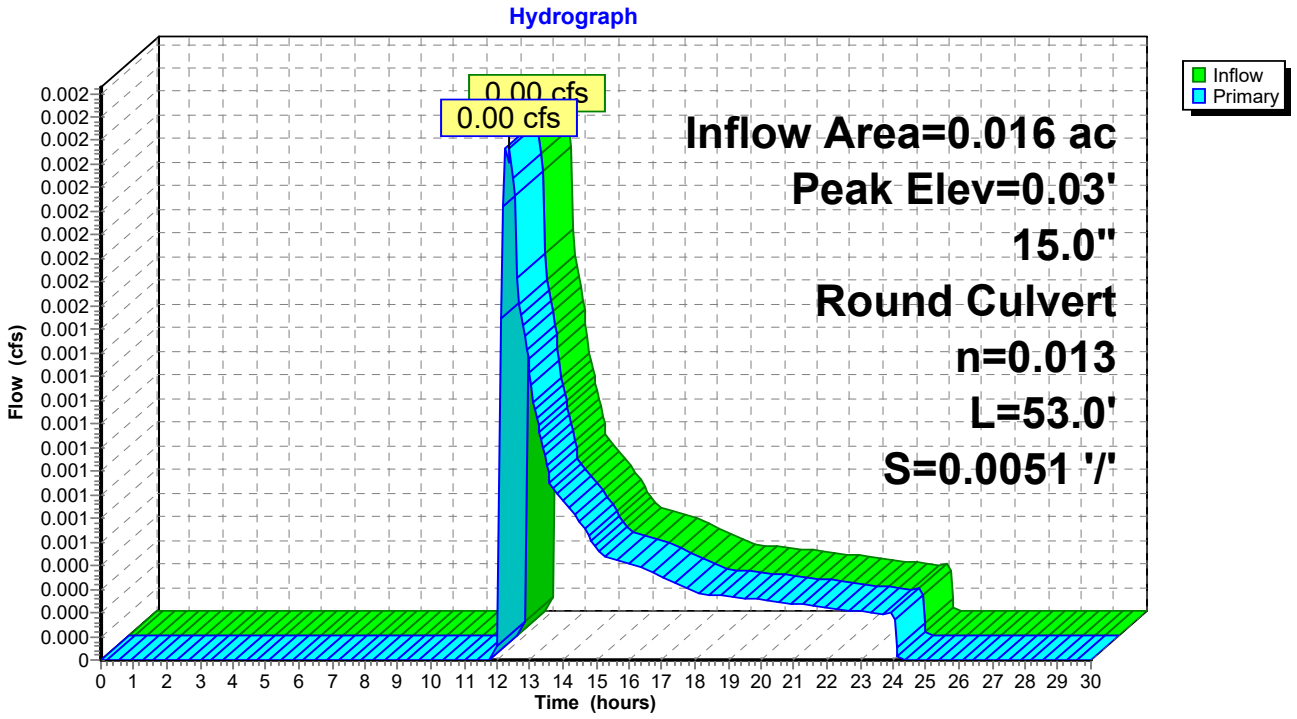
Inflow Area = 0.016 ac, 0.00% Impervious, Inflow Depth = 0.34" for 10-Year event
Inflow = 0.00 cfs @ 12.35 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 12.35 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 12.35 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 0.03' @ 12.35 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 53.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.27' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.35 hrs HW=0.03' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 0.00 cfs @ 0.47 fps)

Pond 14P: GI-3.1



Summary for Pond 15P: CI-4

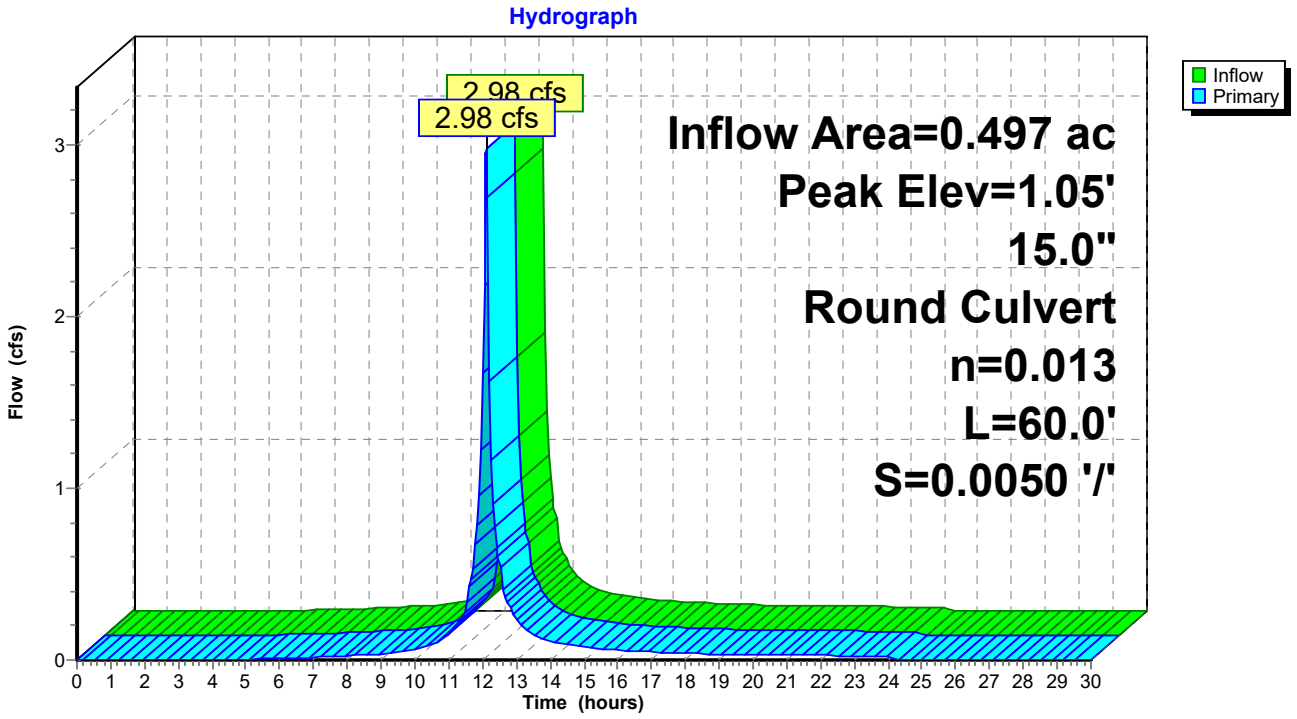
Inflow Area = 0.497 ac, 0.00% Impervious, Inflow Depth = 4.30" for 10-Year event
Inflow = 2.98 cfs @ 12.11 hrs, Volume= 0.178 af
Outflow = 2.98 cfs @ 12.11 hrs, Volume= 0.178 af, Atten= 0%, Lag= 0.0 min
Primary = 2.98 cfs @ 12.11 hrs, Volume= 0.178 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 1.05' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 60.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.30' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=2.88 cfs @ 12.11 hrs HW=1.02' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 2.88 cfs @ 3.64 fps)

Pond 15P: CI-4



Summary for Pond 27P: GI-5

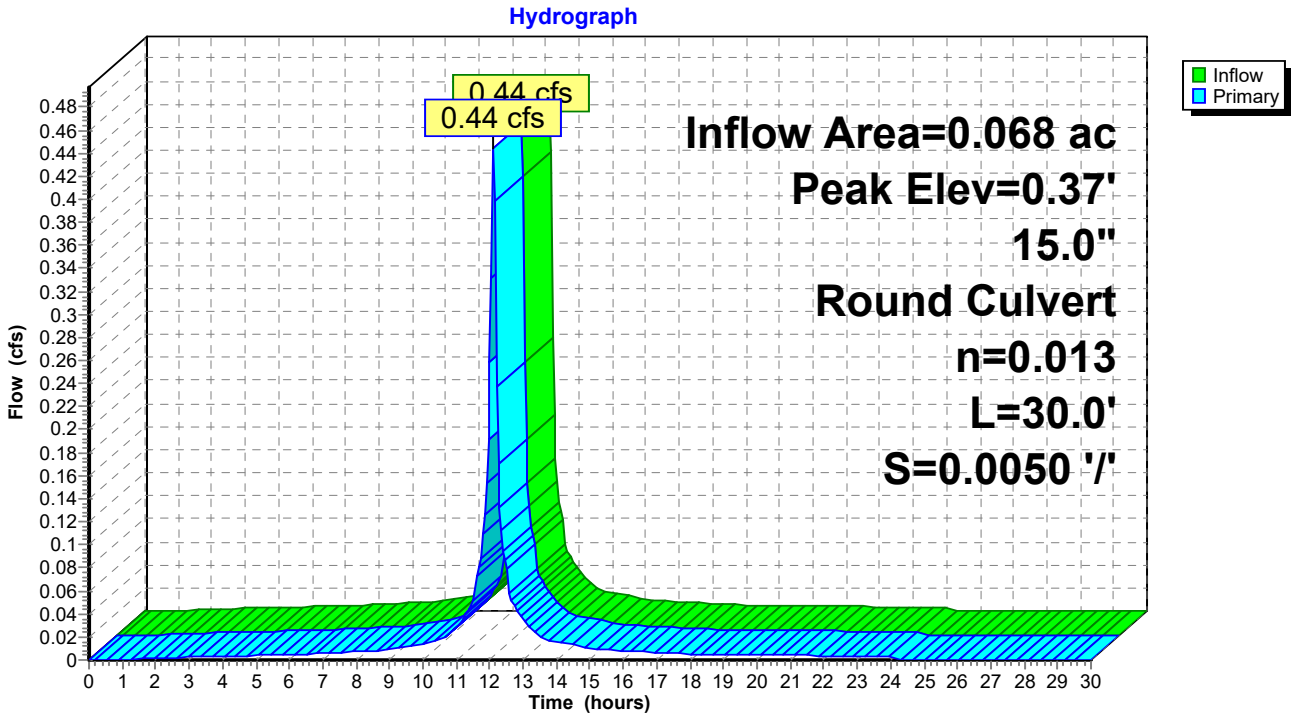
Inflow Area = 0.068 ac,100.00% Impervious, Inflow Depth = 5.20" for 10-Year event
Inflow = 0.44 cfs @ 12.11 hrs, Volume= 0.029 af
Outflow = 0.44 cfs @ 12.11 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min
Primary = 0.44 cfs @ 12.11 hrs, Volume= 0.029 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 0.37' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**15.0" Round RCP_Round 15"** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.15' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.43 cfs @ 12.11 hrs HW=0.36' (Free Discharge)
1=RCP_Round 15" (Barrel Controls 0.43 cfs @ 2.20 fps)

Pond 27P: GI-5



Summary for Pond 44P: Pond #2

Inflow Area = 2.869 ac, 4.18% Impervious, Inflow Depth = 4.12" for 10-Year event
Inflow = 16.30 cfs @ 12.11 hrs, Volume= 0.985 af
Outflow = 14.53 cfs @ 12.15 hrs, Volume= 0.835 af, Atten= 11%, Lag= 2.5 min
Primary = 14.53 cfs @ 12.15 hrs, Volume= 0.835 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 348.94' @ 12.15 hrs Surf.Area= 5,842 sf Storage= 13,589 cf

Plug-Flow detention time= 121.3 min calculated for 0.834 af (85% of inflow)
Center-of-Mass det. time= 60.5 min (841.5 - 781.0)

Volume	Invert	Avail.Storage	Storage Description
#1	346.00'	13,914 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
346.00	3,453	0	0
347.00	4,215	3,834	3,834
348.00	5,027	4,621	8,455
349.00	5,890	5,459	13,914

Device	Routing	Invert	Outlet Devices
#1	Primary	343.00'	**24.0" Round RCP_Round 24"** L= 44.0' Ke= 0.500 Inlet / Outlet Invert= 343.00' / 342.00' S= 0.0227 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	347.60'	**10.0" W x 4.0" H Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	347.60'	**10.0" W x 4.0" H Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	348.50'	**36.0" x 36.0" Horiz. Riser** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=14.35 cfs @ 12.15 hrs HW=348.94' (Free Discharge)
↑**1=RCP_Round 24"** (Passes 14.35 cfs of 33.62 cfs potential flow)
↑**2=Orifice** (Orifice Controls 1.45 cfs @ 5.21 fps)
3=Orifice (Orifice Controls 1.45 cfs @ 5.21 fps)
4=Riser (Weir Controls 11.45 cfs @ 2.17 fps)

Pond 44P: Pond #2