APPENDIX C

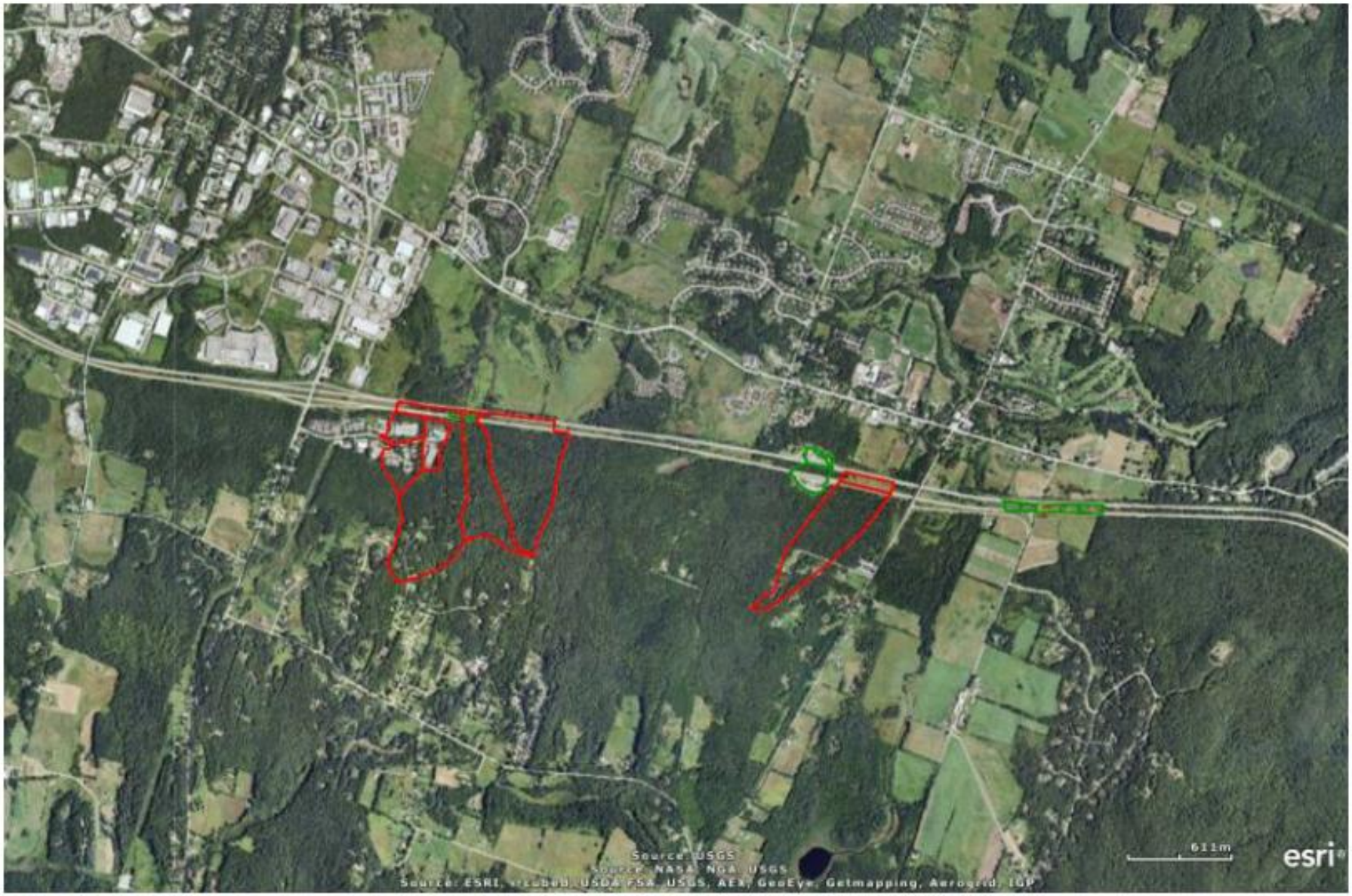
TOWN OF WILLISTON BMP PARCELS

AERIAL MAPS AND CPv BMP MODELS

DuBois & King inc.

WILLISTON AND VTRANS

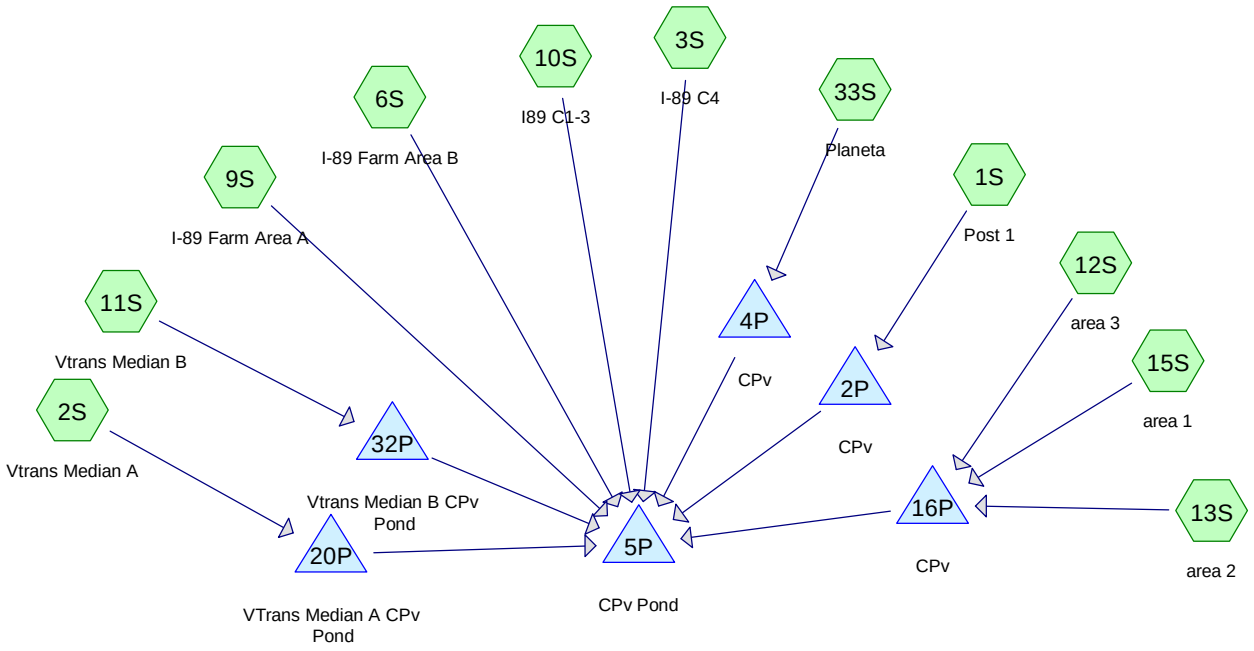
POTENTIAL BMP DRAINAGE AREAS

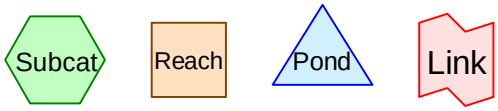


TOWN OF WILLISTON PARCELS

VTRANS I-89 SITES

WILLISTON PARCEL: FARMLAND NORTH OF I-89





Routing Diagram for I89_areas
Prepared by DuBois& King, Inc., Printed 2/1/2012
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Summary for Subcatchment 1S: Post 1

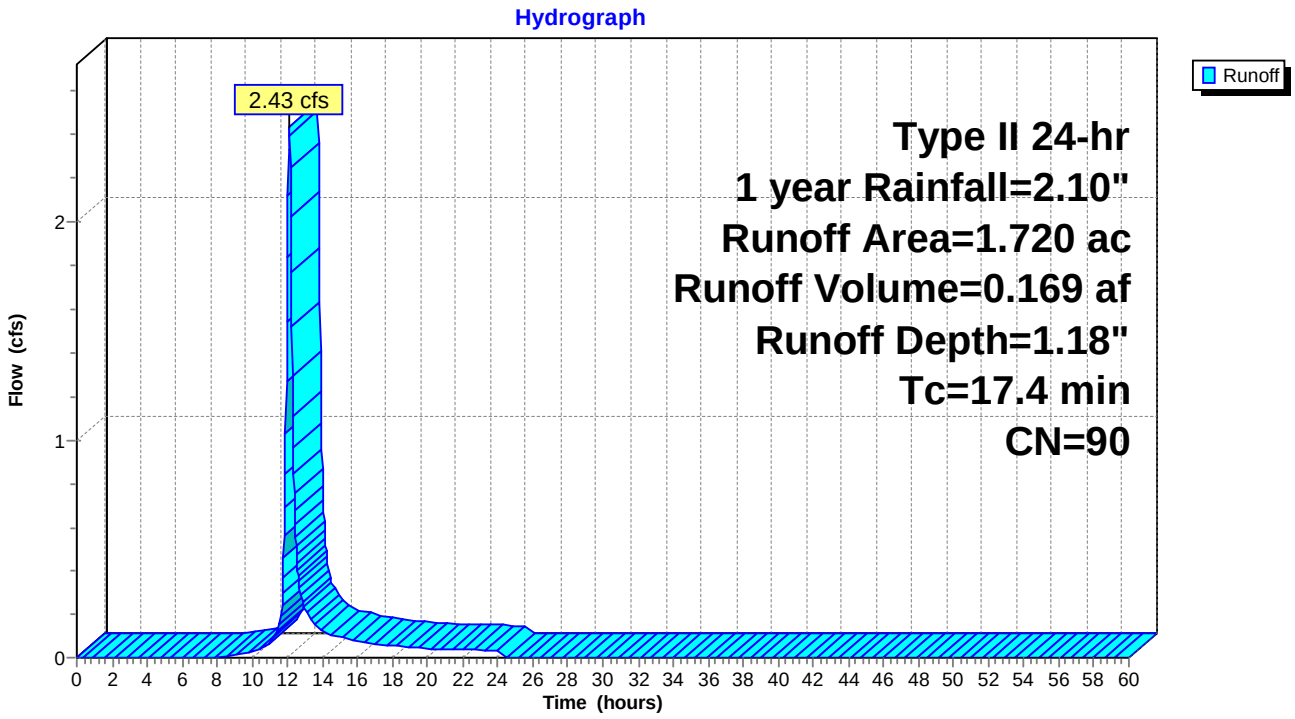
Runoff = 2.43 cfs @ 12.10 hrs, Volume= 0.169 af, Depth= 1.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.03 hrs
Type II 24-hr 1 year Rainfall=2.10"

	Area (ac)	CN	Description
*	1.720	90	
	1.720		100.00% Pervious Area

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

Subcatchment 1S: Post 1



Summary for Subcatchment 2S: Vtrans Median A

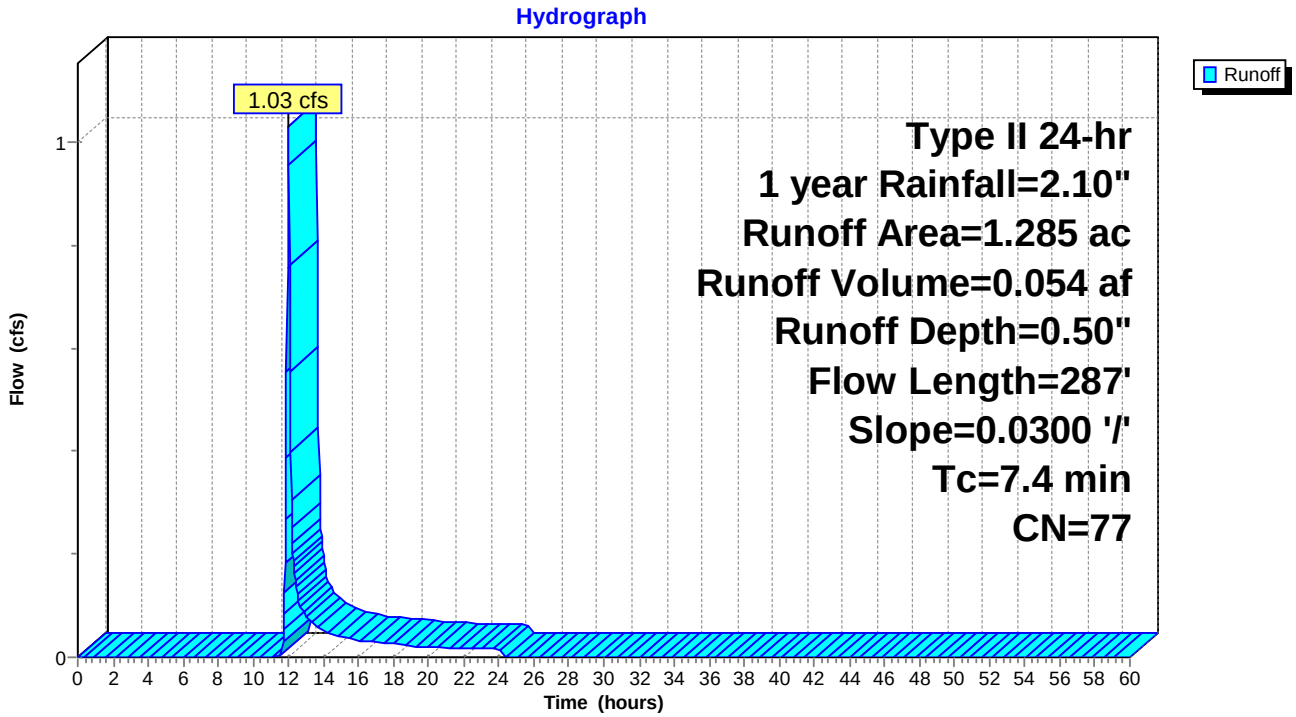
Runoff = 1.03 cfs @ 12.00 hrs, Volume= 0.054 af, Depth= 0.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.03 hrs
Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
0.285	98	Paved parking, HSG C
1.000	71	Meadow, non-grazed, HSG C
1.285	77	Weighted Average
1.000		77.82% Pervious Area
0.285		22.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	287	0.0300	0.65		**Lag/CN Method,**

Subcatchment 2S: Vtrans Median A



Summary for Subcatchment 3S: I-89 C4

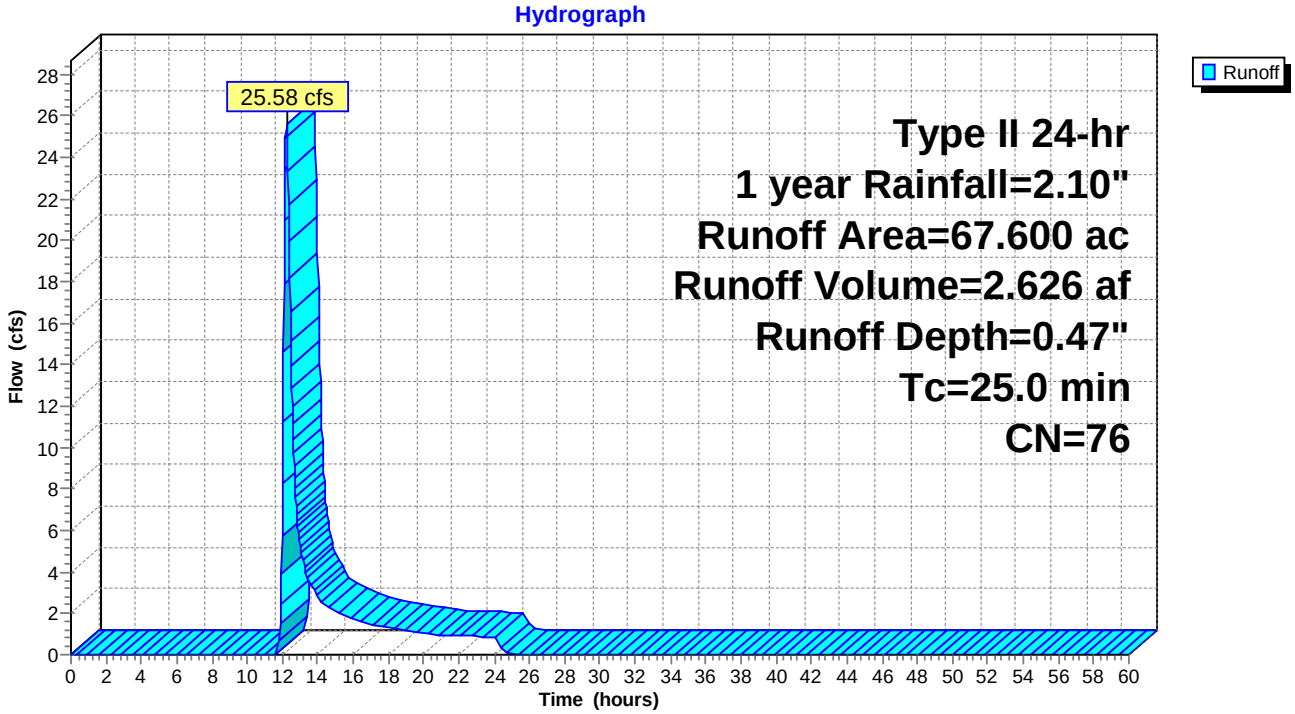
Runoff = 25.58 cfs @ 12.22 hrs, Volume= 2.626 af, Depth= 0.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.03 hrs
Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
20.448	70	Woods, Good, HSG C
42.040	77	Woods, Good, HSG D
5.112	98	Paved parking & roofs
67.600	76	Weighted Average
62.488		92.44% Pervious Area
5.112		7.56% Impervious Area

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

Subcatchment 3S: I-89 C4



Summary for Subcatchment 6S: I-89 Farm Area B

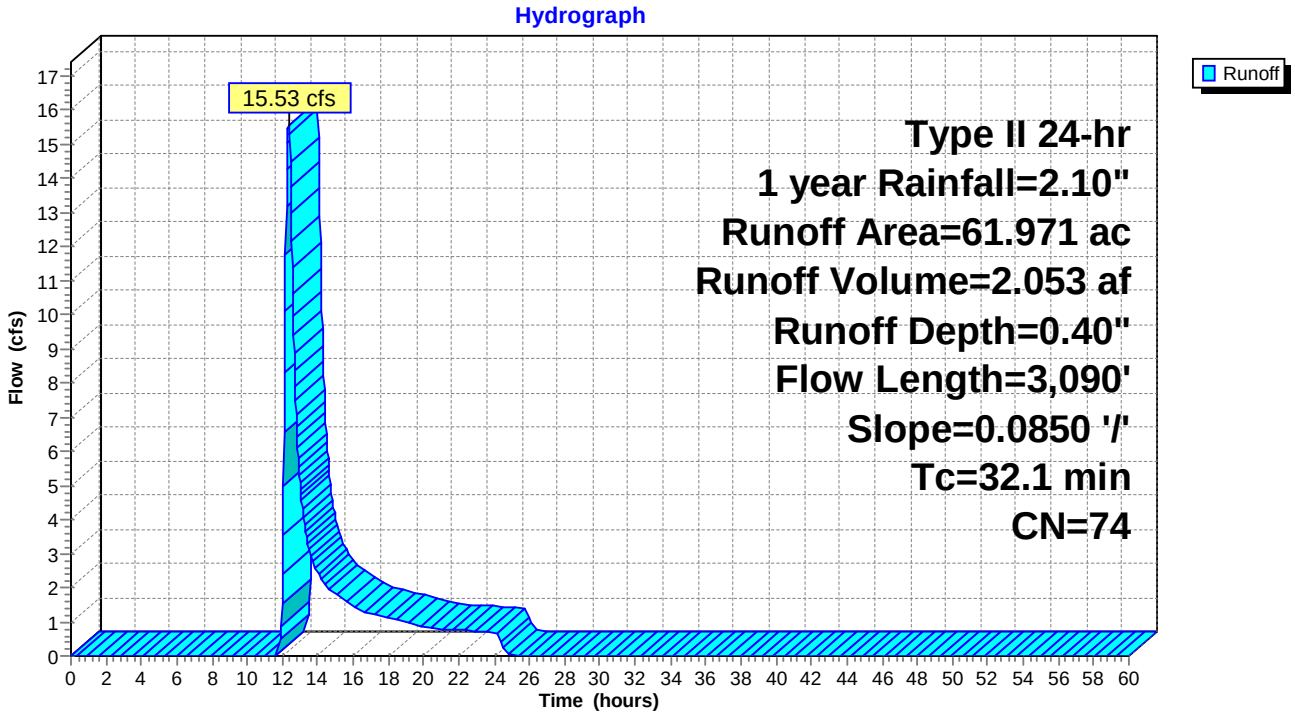
Runoff = 15.53 cfs @ 12.32 hrs, Volume= 2.053 af, Depth= 0.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.03 hrs
Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
0.288	30	Woods, Good, HSG A
31.207	70	Woods, Good, HSG C
28.181	77	Woods, Good, HSG D
2.295	98	Paved parking & roofs
61.971	74	Weighted Average
59.676		96.30% Pervious Area
2.295		3.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
32.1	3,090	0.0850	1.60		**Lag/CN Method,**

Subcatchment 6S: I-89 Farm Area B



Summary for Subcatchment 9S: I-89 Farm Area A

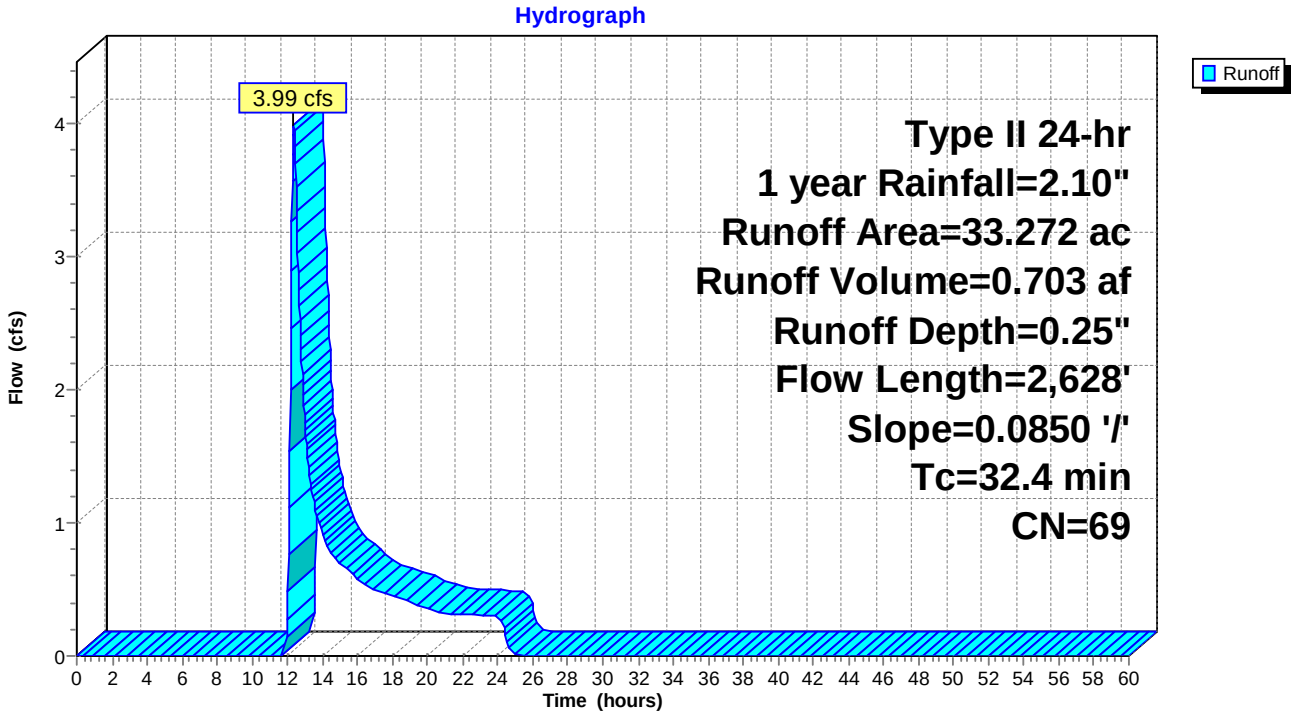
Runoff = 3.99 cfs @ 12.37 hrs, Volume= 0.703 af, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.03 hrs
Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
0.218	98	Paved parking & roofs
2.196	30	Woods, Good, HSG A
23.354	70	Woods, Good, HSG C
7.504	77	Woods, Good, HSG D
33.272	69	Weighted Average
33.054		99.34% Pervious Area
0.218		0.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
32.4	2,628	0.0850	1.35		**Lag/CN Method,**

Subcatchment 9S: I-89 Farm Area A



Summary for Subcatchment 10S: I89 C1-3

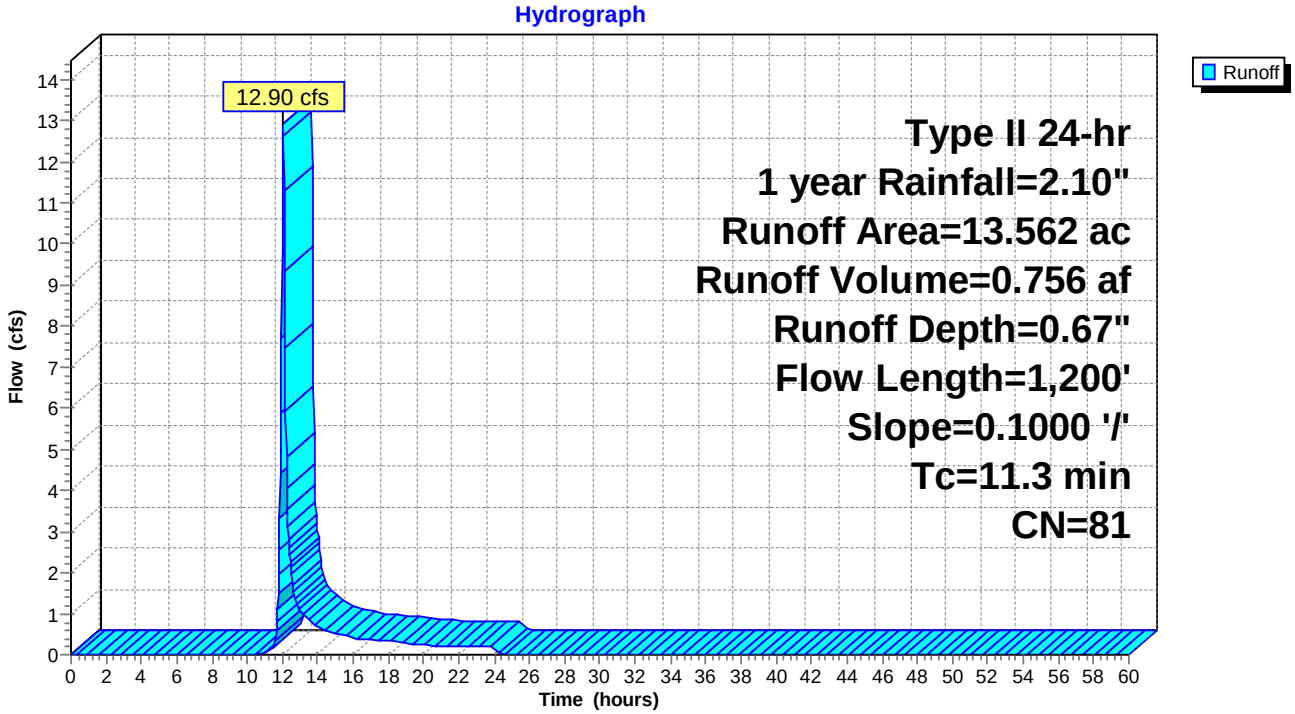
Runoff = 12.90 cfs @ 12.04 hrs, Volume= 0.756 af, Depth= 0.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.03 hrs
Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
1.854	70	Woods, Good, HSG C
8.554	77	Woods, Good, HSG D
3.154	98	Paved parking & roofs
13.562	81	Weighted Average
10.408		76.74% Pervious Area
3.154		23.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	1,200	0.1000	1.78		**Lag/CN Method,**

Subcatchment 10S: I89 C1-3



Summary for Subcatchment 11S: Vtrans Median B

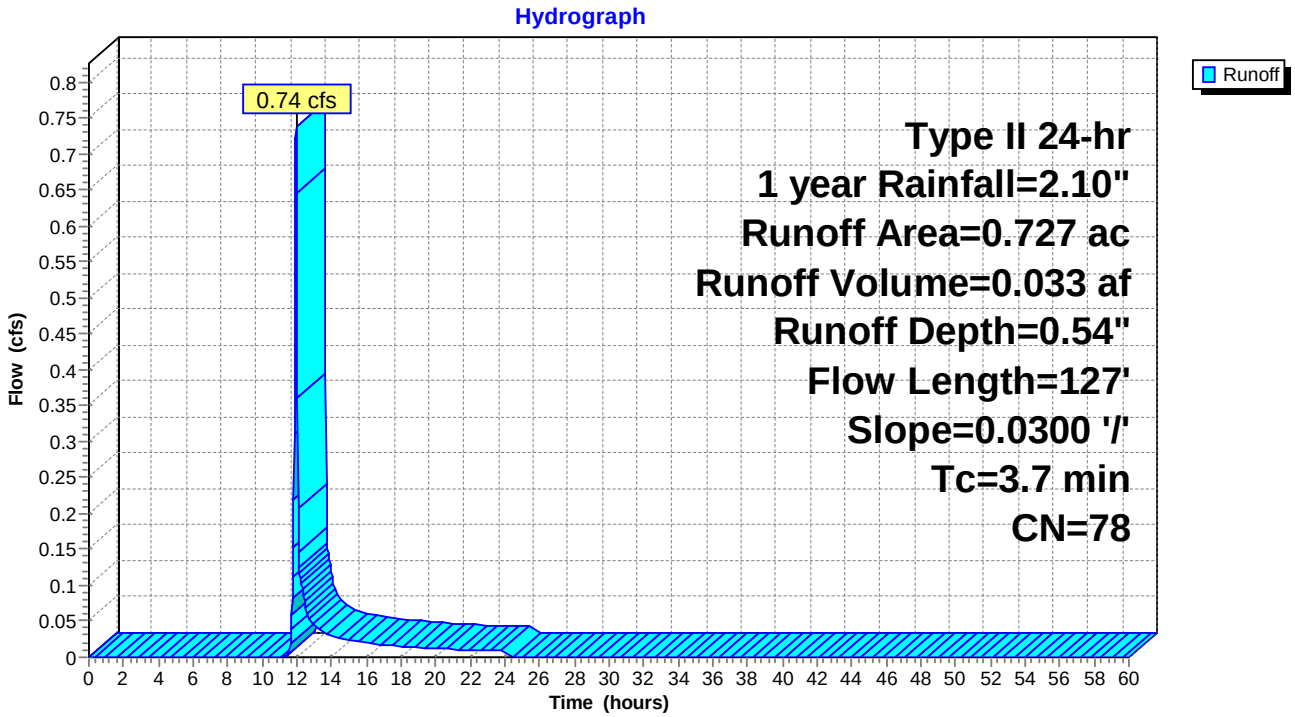
Runoff = 0.74 cfs @ 11.95 hrs, Volume= 0.033 af, Depth= 0.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.03 hrs
Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
0.197	98	Paved parking, HSG C
0.530	71	Meadow, non-grazed, HSG C
0.727	78	Weighted Average
0.530		72.90% Pervious Area
0.197		27.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	127	0.0300	0.57		**Lag/CN Method,**

Subcatchment 11S: Vtrans Median B



Summary for Subcatchment 12S: area 3

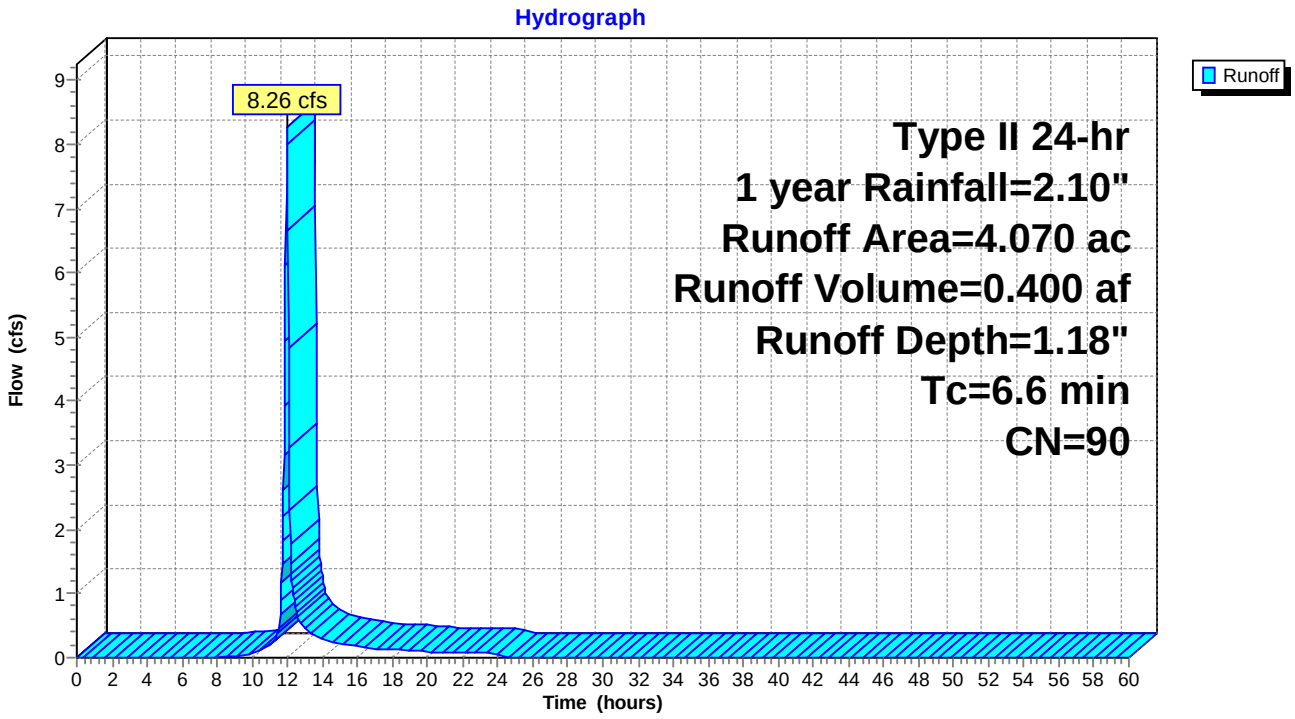
Runoff = 8.26 cfs @ 11.98 hrs, Volume= 0.400 af, Depth= 1.18"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.03 hrs
Type II 24-hr 1 year Rainfall=2.10"

	Area (ac)	CN	Description
*	4.070	90	
	4.070		100.00% Pervious Area

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

Subcatchment 12S: area 3



Summary for Subcatchment 13S: area 2

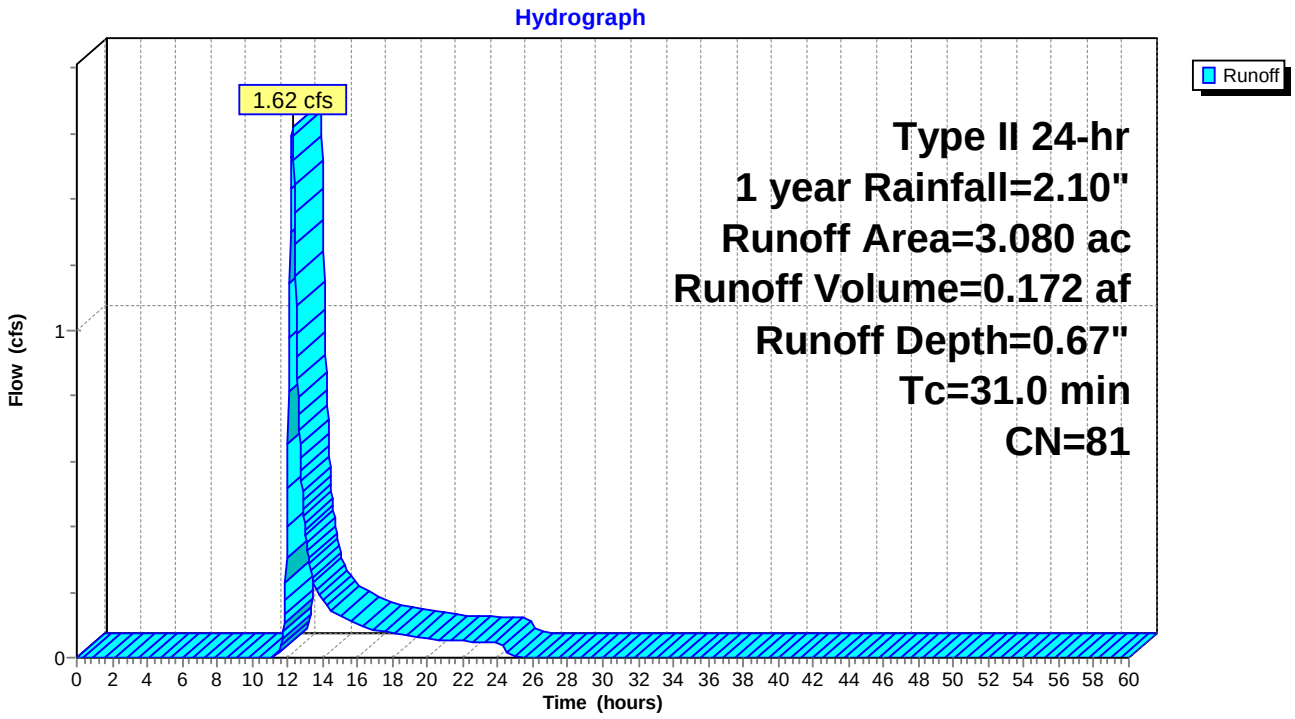
Runoff = 1.62 cfs @ 12.28 hrs, Volume= 0.172 af, Depth= 0.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.03 hrs
Type II 24-hr 1 year Rainfall=2.10"

	Area (ac)	CN	Description
*	3.080	81	
	3.080		100.00% Pervious Area

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

Subcatchment 13S: area 2



Summary for Subcatchment 15S: area 1

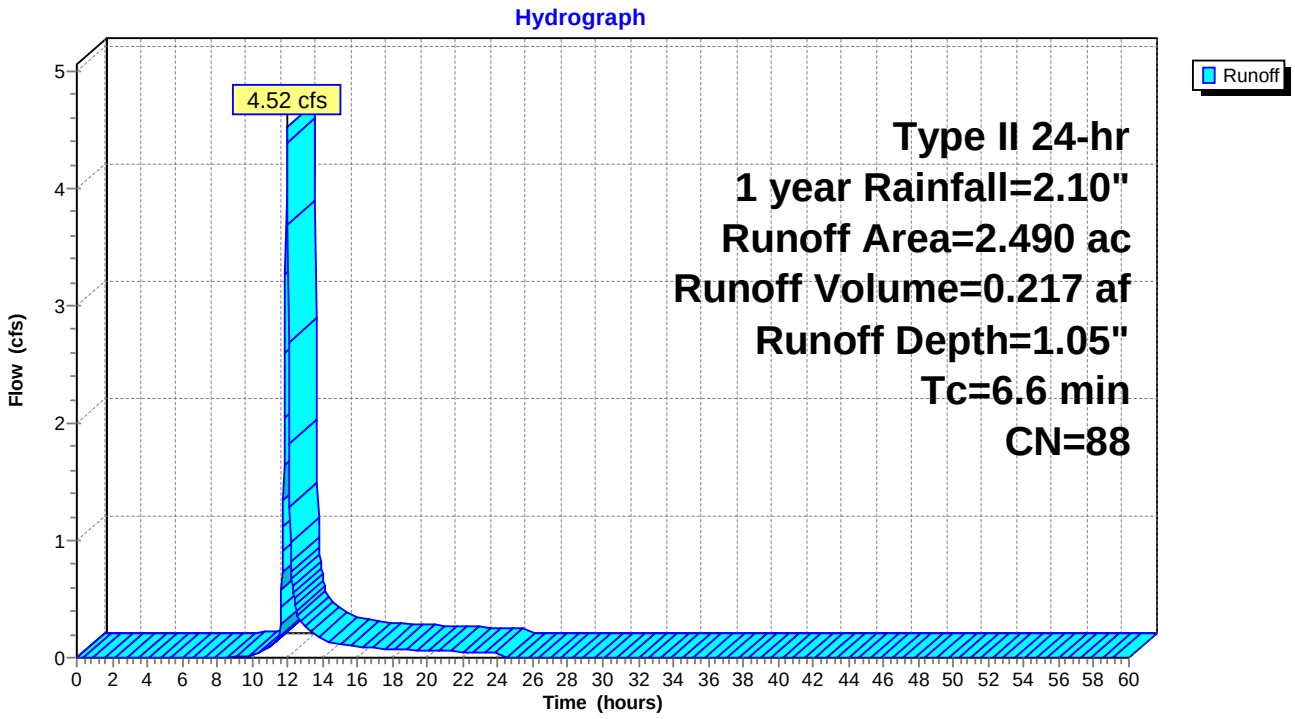
Runoff = 4.52 cfs @ 11.98 hrs, Volume= 0.217 af, Depth= 1.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.03 hrs
Type II 24-hr 1 year Rainfall=2.10"

	Area (ac)	CN	Description
*	2.490	88	
	2.490		100.00% Pervious Area

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

Subcatchment 15S: area 1



Summary for Subcatchment 33S: Planeta

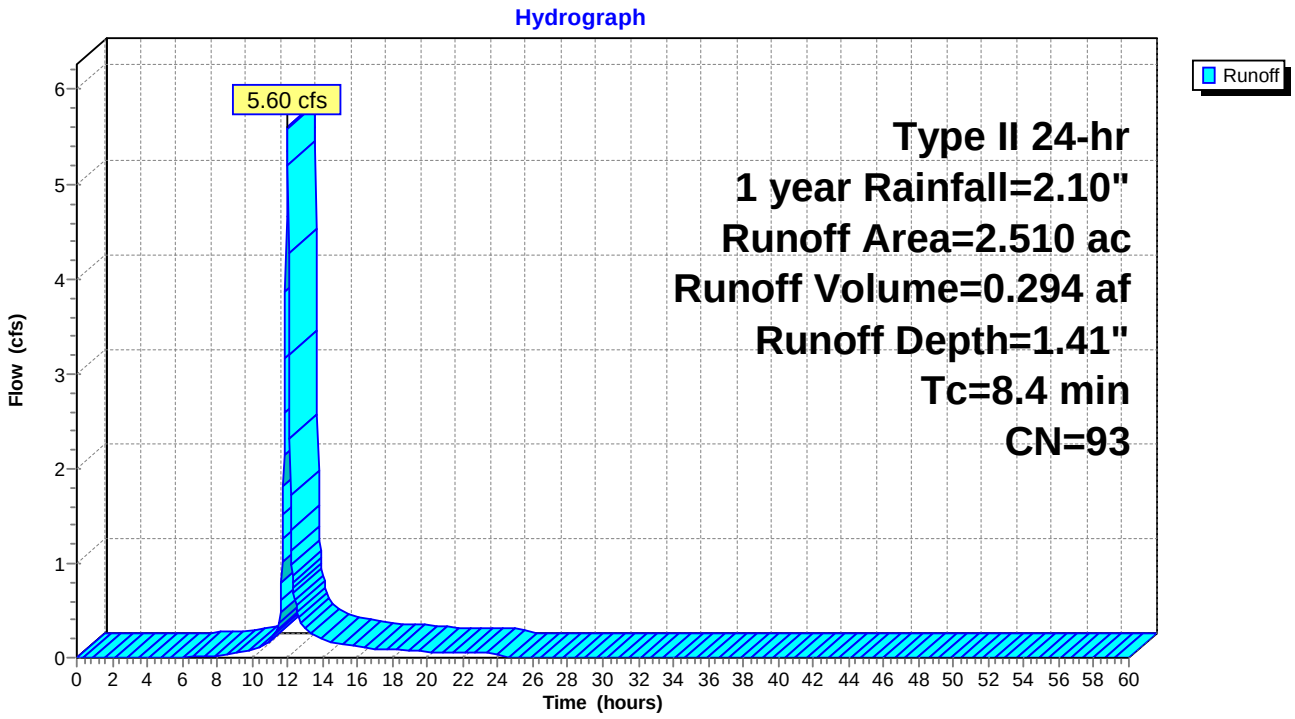
Runoff = 5.60 cfs @ 12.00 hrs, Volume= 0.294 af, Depth= 1.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-60.00 hrs, dt= 0.03 hrs
Type II 24-hr 1 year Rainfall=2.10"

	Area (ac)	CN	Description
*	2.510	93	
	2.510		100.00% Pervious Area

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

Subcatchment 33S: Planeta



Summary for Pond 2P: CPv

Inflow Area = 1.720 ac, 0.00% Impervious, Inflow Depth = 1.18" for 1 year event
Inflow = 2.43 cfs @ 12.10 hrs, Volume= 0.169 af
Outflow = 0.01 cfs @ 24.33 hrs, Volume= 0.034 af, Atten= 100%, Lag= 733.9 min
Primary = 0.01 cfs @ 24.33 hrs, Volume= 0.034 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.03 hrs
Peak Elev= 480.94' @ 24.33 hrs Surf.Area= 0.170 ac Storage= 0.160 af

Plug-Flow detention time= 1,457.8 min calculated for 0.034 af (20% of inflow)
Center-of-Mass det. time= 1,315.9 min (2,147.7 - 831.7)

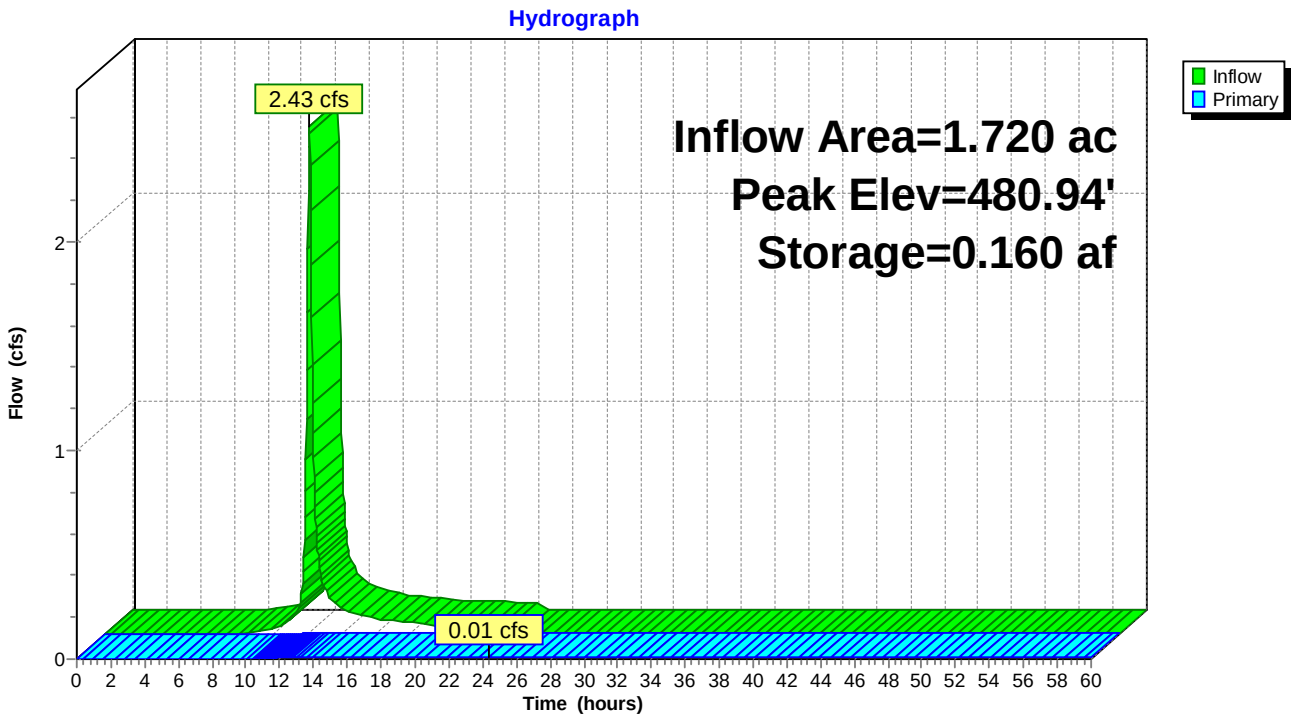
Volume	Invert	Avail.Storage	Storage Description
#1	480.00'	0.340 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
480.00	0.170	0.000	0.000
481.00	0.170	0.170	0.170
482.00	0.170	0.170	0.340

Device	Routing	Invert	Outlet Devices
#1	Primary	480.00'	**1.0" Round Culvert** L= 10.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 480.00' / 479.50' S= 0.0500 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.01 sf
#2	Primary	481.00'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.01 cfs @ 24.33 hrs HW=480.94' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.01 cfs @ 1.62 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: CPv


Hydrograph
Inflow
Primary
2.43 cfs
0.01 cfs
Inflow Area=1.720 ac
Peak Elev=480.94'
Storage=0.160 af
Flow (cfs)
0
1
2
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60
Time (hours)

Summary for Pond 4P: CPv

Inflow Area = 2.510 ac, 0.00% Impervious, Inflow Depth = 1.41" for 1 year event
Inflow = 5.60 cfs @ 12.00 hrs, Volume= 0.294 af
Outflow = 0.05 cfs @ 24.03 hrs, Volume= 0.192 af, Atten= 99%, Lag= 721.8 min
Primary = 0.05 cfs @ 24.03 hrs, Volume= 0.192 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.03 hrs
Peak Elev= 480.96' @ 24.03 hrs Surf.Area= 0.250 ac Storage= 0.240 af

Plug-Flow detention time= 1,374.0 min calculated for 0.192 af (65% of inflow)
Center-of-Mass det. time= 1,271.4 min (2,078.7 - 807.3)

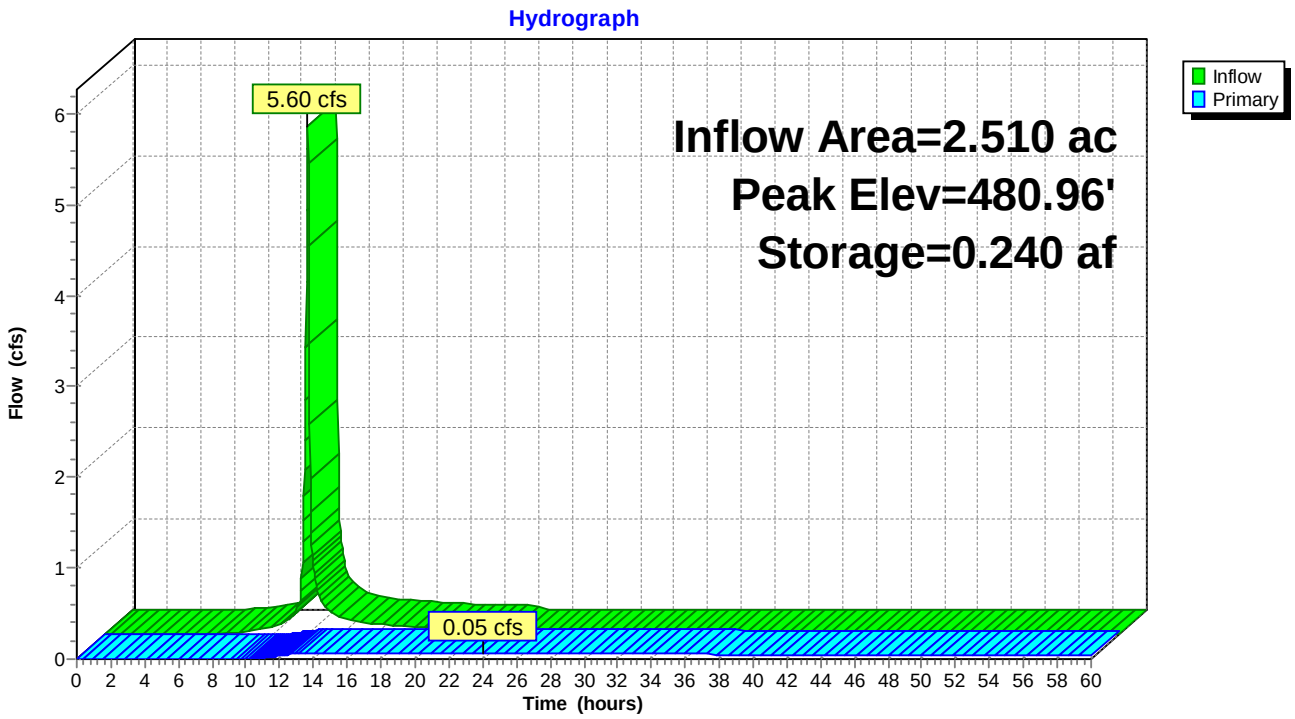
Volume	Invert	Avail.Storage	Storage Description
#1	480.00'	0.500 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
480.00	0.250	0.000	0.000
481.00	0.250	0.250	0.250
482.00	0.250	0.250	0.500

Device	Routing	Invert	Outlet Devices
#1	Primary	480.00'	**2.0" Round Culvert** L= 10.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 480.00' / 479.50' S= 0.0500 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.02 sf
#2	Primary	481.00'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.05 cfs @ 24.03 hrs HW=480.96' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.05 cfs @ 2.43 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: CPv


Hydrograph
Inflow
Primary
5.60 cfs
0.05 cfs
Inflow Area=2.510 ac
Peak Elev=480.96'
Storage=0.240 af
Flow (cfs)
Time (hours)

Summary for Pond 5P: CPv Pond

Inflow Area = 192.287 ac, 5.86% Impervious, Inflow Depth > 0.45" for 1 year event
Inflow = 47.38 cfs @ 12.24 hrs, Volume= 7.150 af
Outflow = 8.03 cfs @ 13.76 hrs, Volume= 4.734 af, Atten= 83%, Lag= 91.2 min
Primary = 8.03 cfs @ 13.76 hrs, Volume= 4.734 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.03 hrs
Peak Elev= 461.19' @ 13.76 hrs Surf.Area= 2.400 ac Storage= 2.866 af

Plug-Flow detention time= 418.4 min calculated for 4.732 af (66% of inflow)
Center-of-Mass det. time= 197.4 min (1,220.5 - 1,023.1)

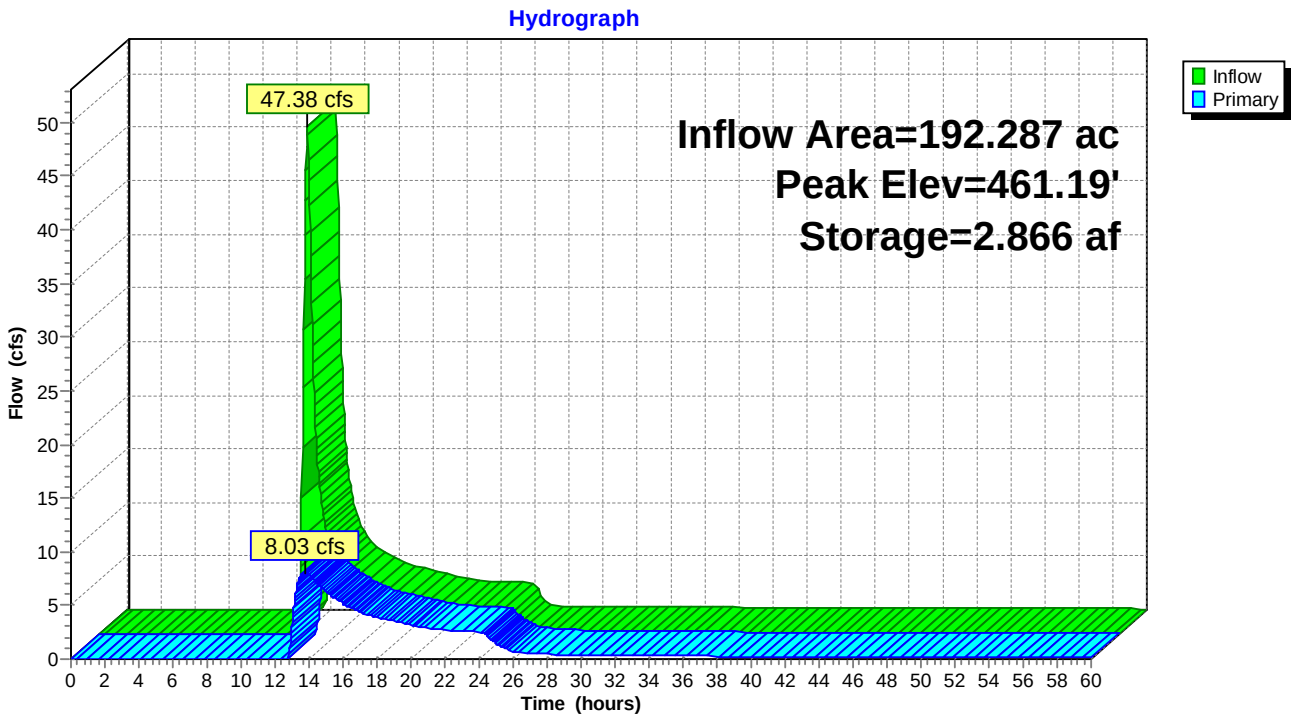
Volume	Invert	Avail.Storage	Storage Description
#1	460.00'	4.800 af	**Custom Stage Data (Prismatic)** Listed below (Recalc) x 0.3

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
460.00	8.000	0.000	0.000
461.00	8.000	8.000	8.000
462.00	8.000	8.000	16.000

Device	Routing	Invert	Outlet Devices
#1	Primary	460.00'	**18.0" Round Culvert X 0.00** L= 10.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 460.00' / 460.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Primary	461.00'	**40.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=8.02 cfs @ 13.76 hrs HW=461.19' (Free Discharge)
└─**1=Culvert** (Controls 0.00 cfs)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 8.02 cfs @ 1.03 fps)

Pond 5P: CPv Pond



Summary for Pond 16P: CPv

Inflow Area = 9.640 ac, 0.00% Impervious, Inflow Depth = 0.98" for 1 year event
Inflow = 13.22 cfs @ 11.98 hrs, Volume= 0.789 af
Outflow = 0.37 cfs @ 16.05 hrs, Volume= 0.738 af, Atten= 97%, Lag= 244.1 min
Primary = 0.37 cfs @ 16.05 hrs, Volume= 0.738 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.03 hrs
Peak Elev= 480.93' @ 16.05 hrs Surf.Area= 0.550 ac Storage= 0.510 af

Plug-Flow detention time= 792.3 min calculated for 0.738 af (93% of inflow)
Center-of-Mass det. time= 756.7 min (1,594.3 - 837.6)

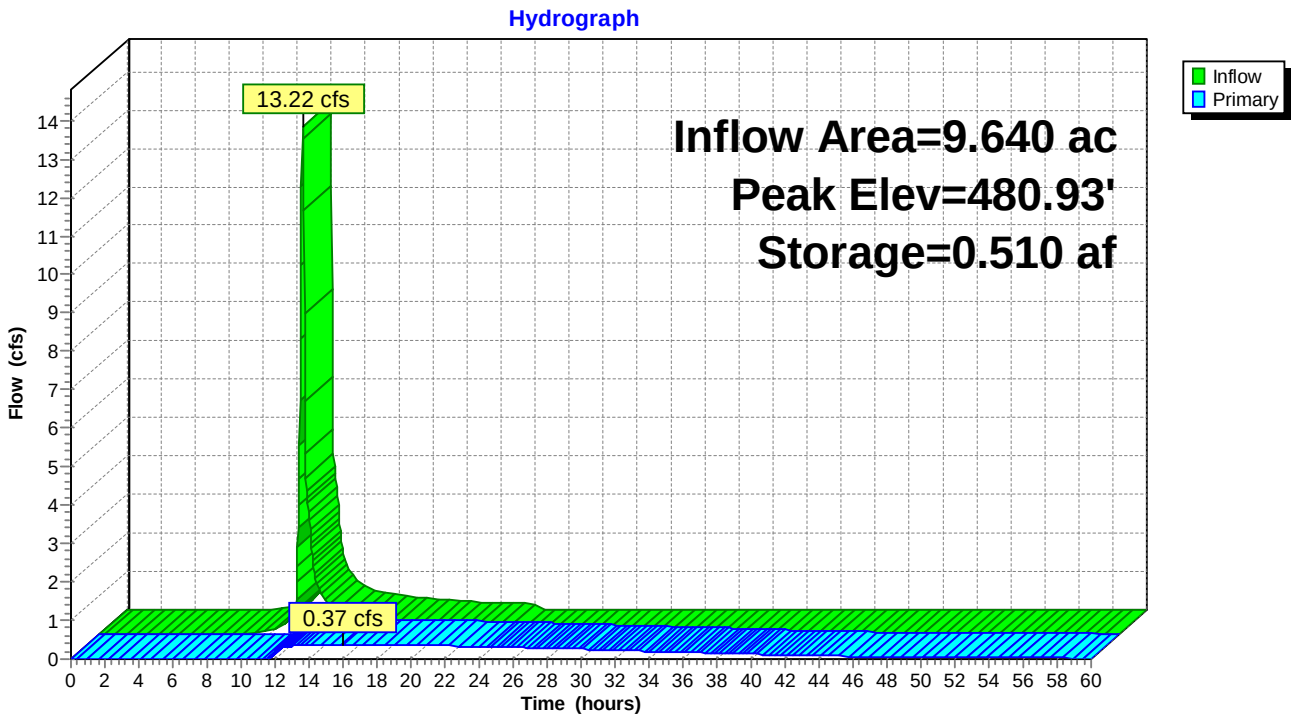
Volume	Invert	Avail.Storage	Storage Description
#1	480.00'	1.100 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
480.00	0.550	0.000	0.000
481.00	0.550	0.550	0.550
482.00	0.550	0.550	1.100

Device	Routing	Invert	Outlet Devices
#1	Primary	480.00'	**4.0" Round Culvert** L= 10.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 480.00' / 478.50' S= 0.1500 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.09 sf
#2	Primary	481.00'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.37 cfs @ 16.05 hrs HW=480.93' (Free Discharge)
└─**1=Culvert** (Inlet Controls 0.37 cfs @ 4.20 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 16P: CPv


Hydrograph
13.22 cfs
0.37 cfs
Inflow Area=9.640 ac
Peak Elev=480.93'
Storage=0.510 af
Inflow
Primary
Flow (cfs)
Time (hours)

Summary for Pond 20P: VTrans Median A CPv Pond

Inflow Area = 1.285 ac, 22.18% Impervious, Inflow Depth = 0.50" for 1 year event
Inflow = 1.03 cfs @ 12.00 hrs, Volume= 0.054 af
Outflow = 0.01 cfs @ 24.12 hrs, Volume= 0.025 af, Atten= 99%, Lag= 727.1 min
Primary = 0.01 cfs @ 24.12 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.03 hrs
Peak Elev= 470.87' @ 24.12 hrs Surf.Area= 4,824 sf Storage= 2,067 cf

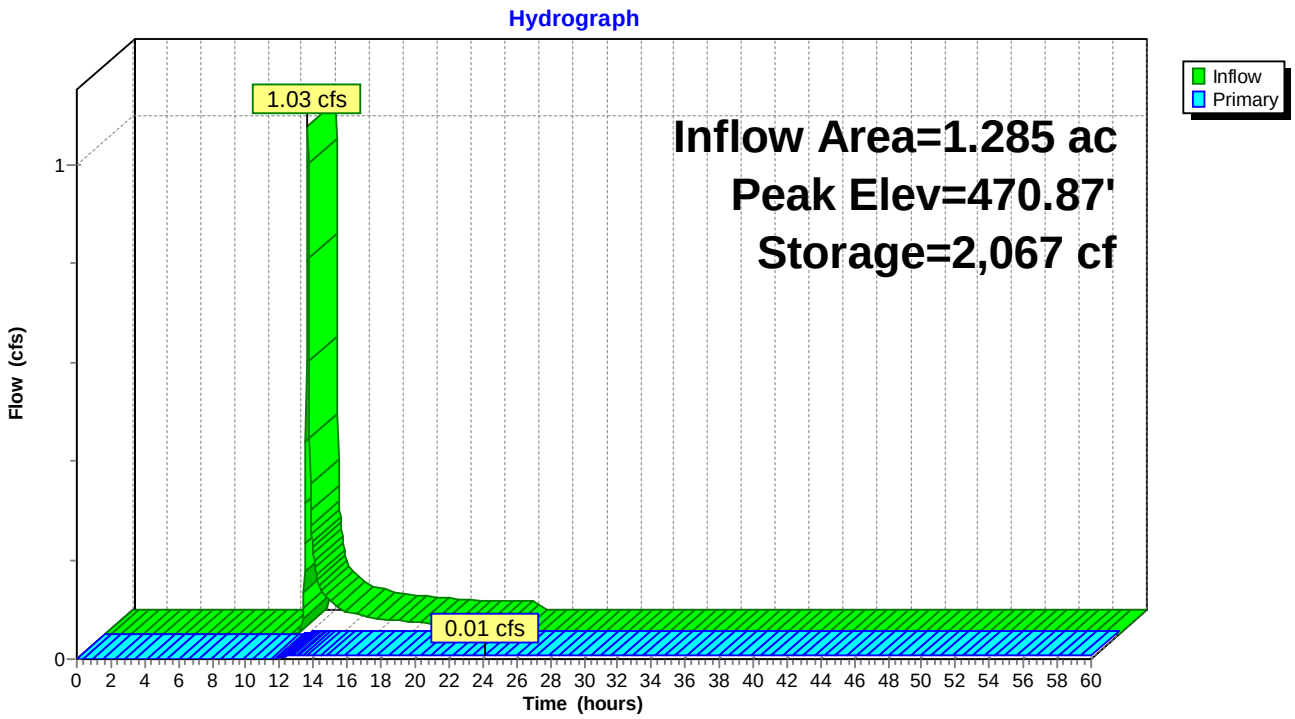
Plug-Flow detention time= 1,414.3 min calculated for 0.025 af (46% of inflow)
Center-of-Mass det. time= 1,261.8 min (2,140.6 - 878.7)

Volume	Invert	Avail.Storage	Storage Description
#1	470.00'	6,300 cf	**386.00'L x 1.50'H Prismatoid Z=7.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	470.00'	**1.0" Round Culvert** L= 10.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 470.00' / 470.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.01 sf
#2	Primary	471.50'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.01 cfs @ 24.12 hrs HW=470.87' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.01 cfs @ 1.23 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 20P: VTrans Median A CPv Pond



Summary for Pond 32P: Vtrans Median B CPv Pond

Inflow Area = 0.727 ac, 27.10% Impervious, Inflow Depth = 0.54" for 1 year event
Inflow = 0.74 cfs @ 11.95 hrs, Volume= 0.033 af
Outflow = 0.01 cfs @ 24.04 hrs, Volume= 0.023 af, Atten= 99%, Lag= 725.3 min
Primary = 0.01 cfs @ 24.04 hrs, Volume= 0.023 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.03 hrs
Peak Elev= 470.79' @ 24.04 hrs Surf.Area= 2,961 sf Storage= 1,160 cf

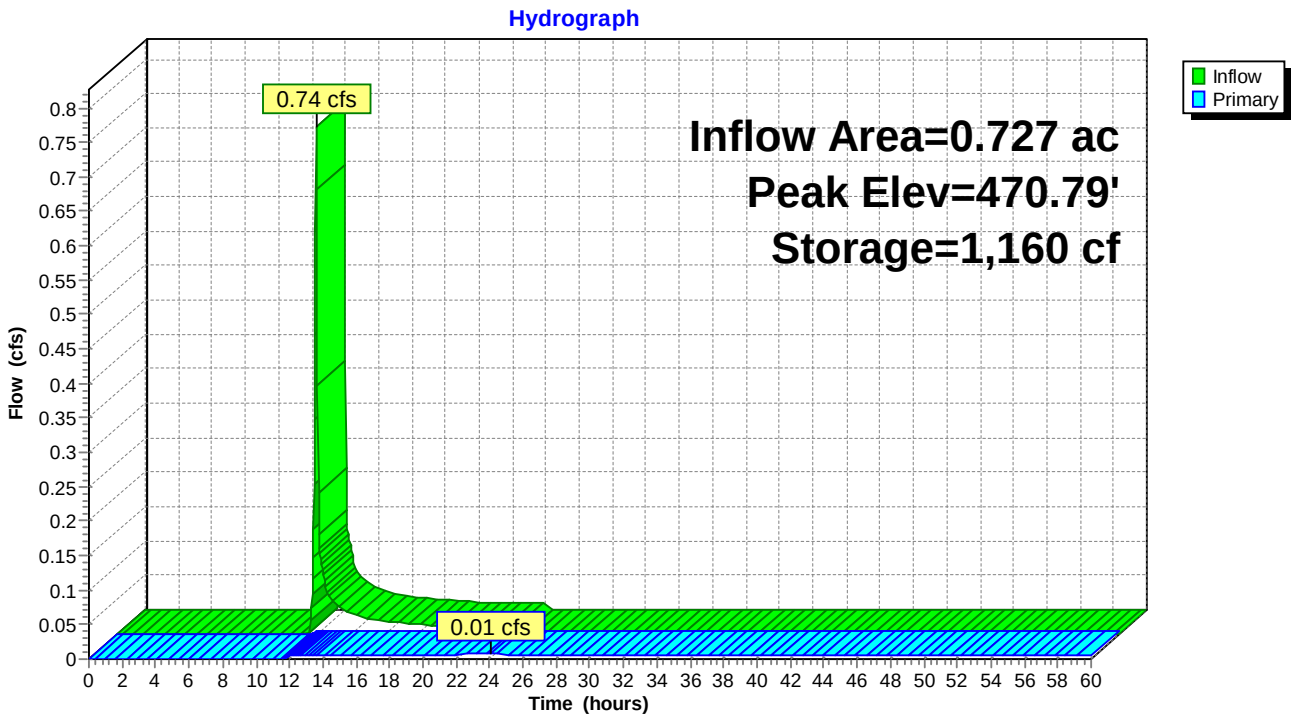
Plug-Flow detention time= 1,345.7 min calculated for 0.023 af (70% of inflow)
Center-of-Mass det. time= 1,230.2 min (2,100.9 - 870.7)

Volume	Invert	Avail.Storage	Storage Description
#1	470.00'	4,237 cf	**255.00'L x 1.50'H Prismatoid Z=7.0**

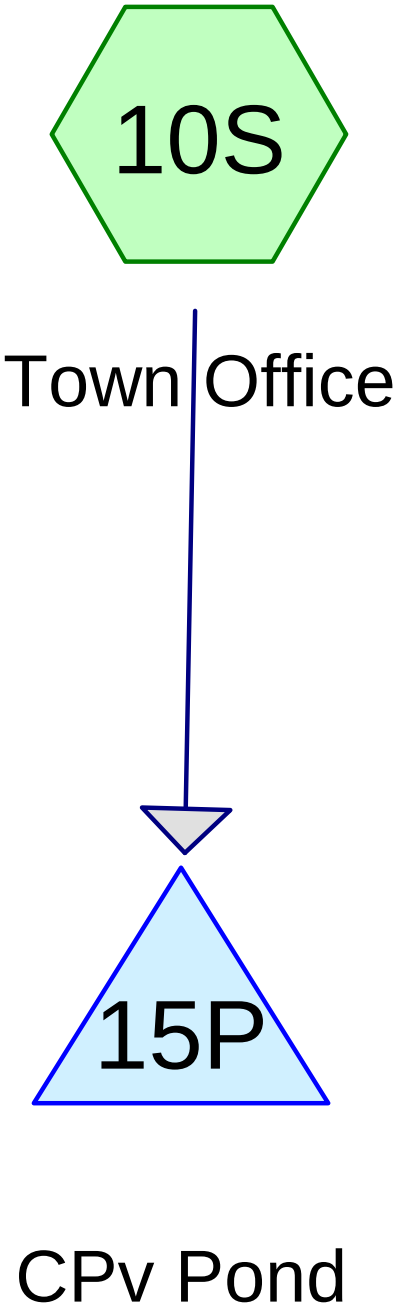
Device	Routing	Invert	Outlet Devices
#1	Primary	470.00'	**1.0" Round Culvert** L= 10.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 470.00' / 470.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.01 sf
#2	Primary	471.50'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

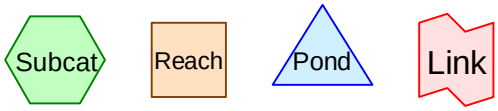
Primary OutFlow Max=0.01 cfs @ 24.04 hrs HW=470.79' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.01 cfs @ 1.17 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 32P: Vtrans Median B CPv Pond



WILLISTON PARCEL: TOWN OFFICES FIELD





Routing Diagram for Town BMP
Prepared by DuBois& King, Inc., Printed 2/1/2012
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Summary for Subcatchment 10S: Town Office

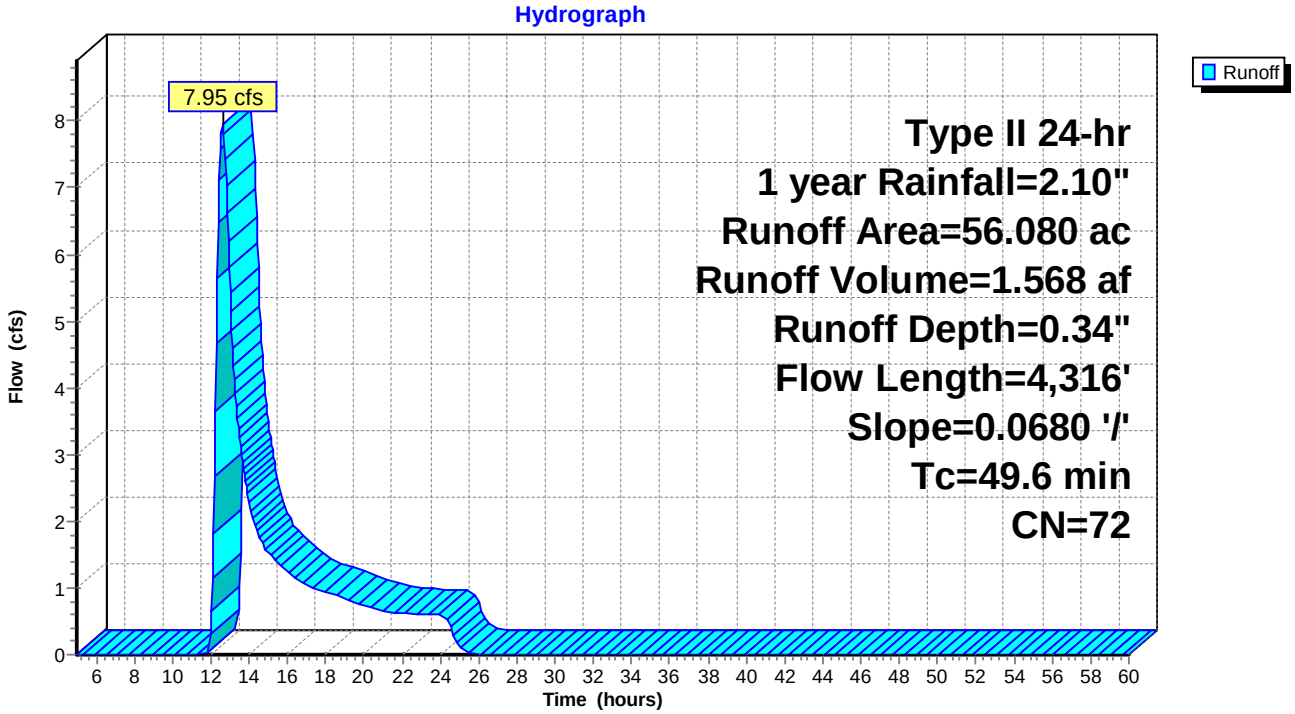
Runoff = 7.95 cfs @ 12.61 hrs, Volume= 1.568 af, Depth= 0.34"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 year Rainfall=2.10"

Area (ac)	CN	Description
16.740	77	2 acre lots, 12% imp, HSG C
4.760	71	Meadow, non-grazed, HSG C
34.580	70	Woods, Good, HSG C
56.080	72	Weighted Average
54.071		96.42% Pervious Area
2.009		3.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
49.6	4,316	0.0680	1.45		**Lag/CN Method,**

Subcatchment 10S: Town Office



Summary for Pond 15P: CPv Pond

Inflow Area = 56.080 ac, 3.58% Impervious, Inflow Depth = 0.34" for 1 year event
Inflow = 7.95 cfs @ 12.61 hrs, Volume= 1.568 af
Outflow = 0.11 cfs @ 25.03 hrs, Volume= 0.397 af, Atten= 99%, Lag= 744.9 min
Primary = 0.11 cfs @ 25.03 hrs, Volume= 0.397 af

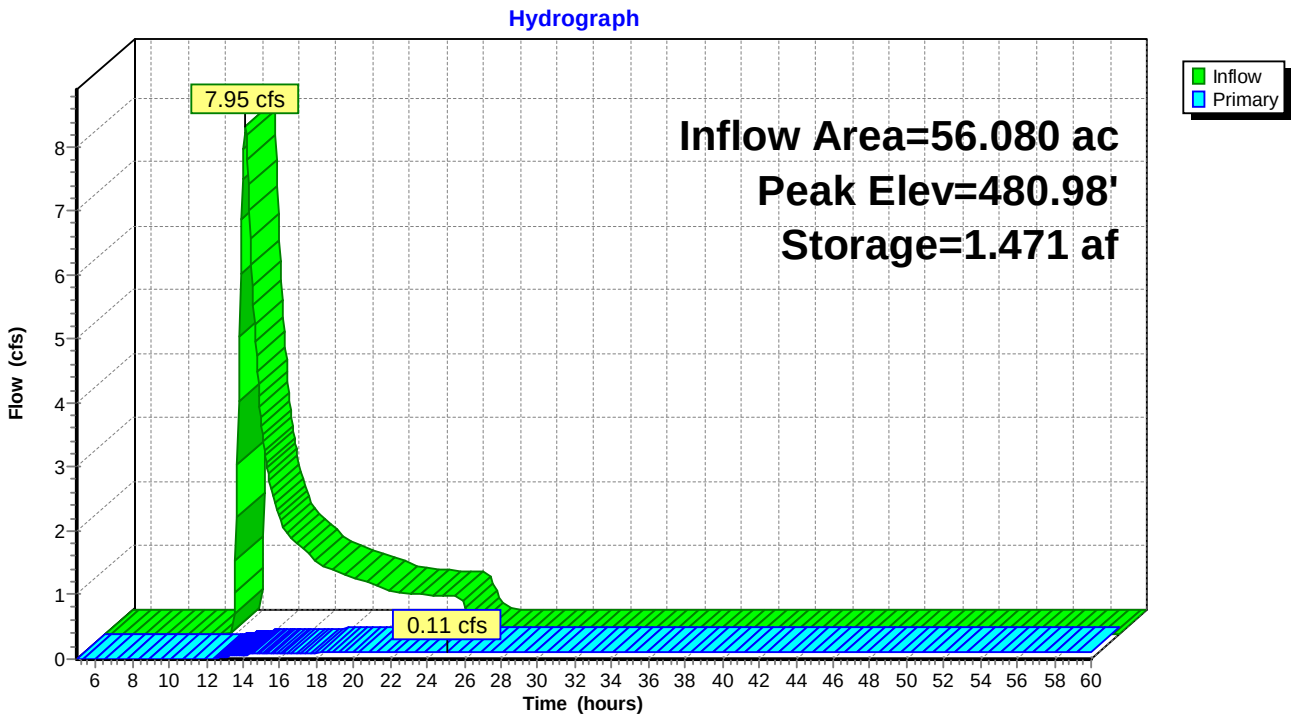
Routing by Stor-Ind method, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs
Peak Elev= 480.98' @ 25.03 hrs Surf.Area= 1.500 ac Storage= 1.471 af

Plug-Flow detention time= 1,450.7 min calculated for 0.397 af (25% of inflow)
Center-of-Mass det. time= 1,259.5 min (2,203.6 - 944.1)

Volume	Invert	Avail.Storage	Storage Description
#1	480.00'	3.000 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
480.00	1.500	0.000	0.000
481.00	1.500	1.500	1.500
482.00	1.500	1.500	3.000

Device	Routing	Invert	Outlet Devices
#1	Primary	480.00'	**3.0" Round Culvert** L= 10.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 480.00' / 480.00' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.05 sf
#2	Primary	481.00'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.11 cfs @ 25.03 hrs HW=480.98' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.11 cfs @ 2.30 fps)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 15P: CPv Pond