FIGURE 4

Soil Survey Plan

Hydrologic Soil Group—Norfolk and Suffolk Counties, Massachusetts
(Salson College)

USDA Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

MAP INFORMATION

Map Scale: 1:365 if printed on D size (22" × 34") sheet.

The soil surveys that comprise your AOI were mapped at 1:25,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 19N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Norfolk and Suffolk Counties, Massachusetts
Survey Area Data: Version 8, Jul 23, 2010

Date(s) aerial images were photographed: 7/10/2003

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Norfolk and Suffolk Counties, Massachusetts (MA616)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
310B	Woodbridge fine sandy loam, 3 to 8 percent slopes	C	5.4	100.0%
Totals for Area of Interest			**5.4**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

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

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

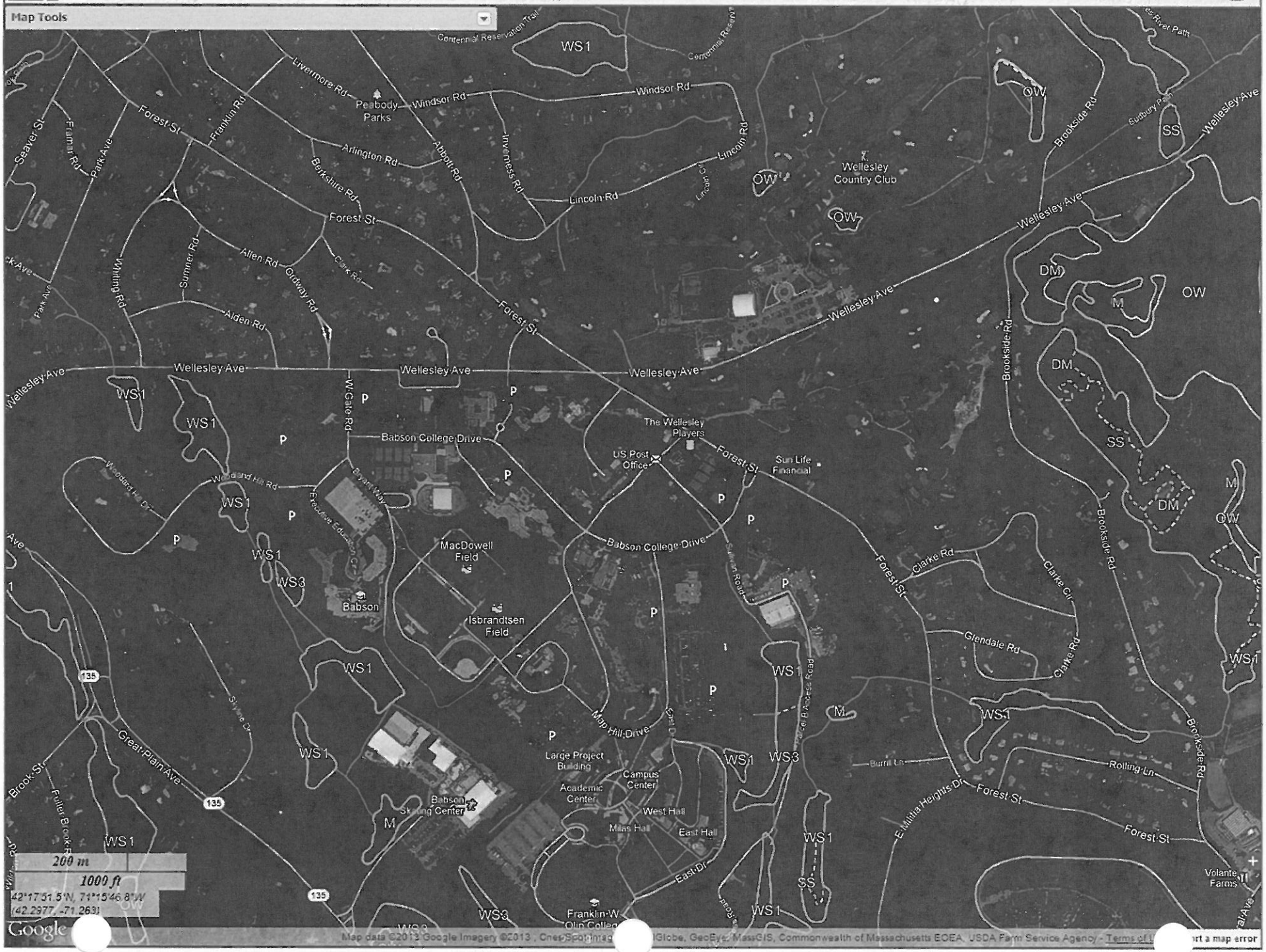
FIGURE 5

Wetland Soils and Setbacks

MassDEP Online Map Viewer

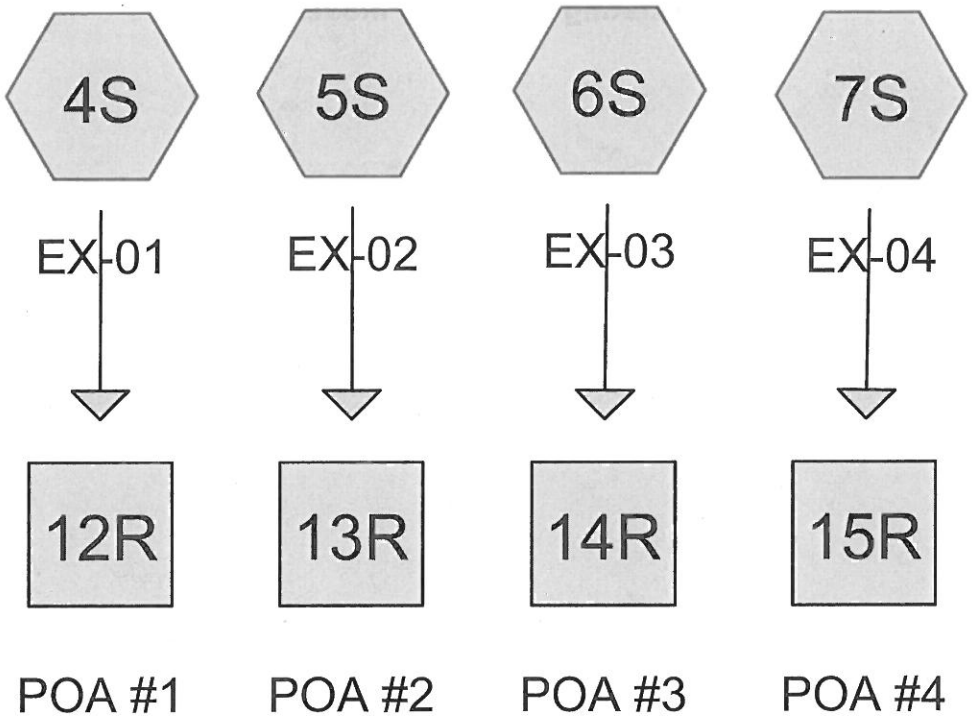
Wetland and Wetland Change Areas Map

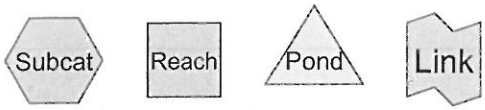
Mass.Gov



APPENDIX A

Existing Hydrology Model





Routing Diagram for BABSON-EX-COND
Prepared by Sasaki Associates, Printed 1/18/2013
HydroCAD® 10.00 s/n 04658 © 2011 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.088	74	(4S)
0.395	77	(7S)
3.940	77	Brush, Poor, HSG C (5S, 6S)
0.948	77	Paved roads w/curbs & sewers, HSG B (4S)
0.157	98	(7S)
0.319	98	Brush, Poor, HSG C (4S)
0.521	98	Paved roads w/curbs & sewers, HSG C (5S, 6S)
6.368	**80**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.948	HSG B	4S
4.779	HSG C	4S, 5S, 6S
0.000	HSG D	
0.641	Other	4S, 7S
6.368		**TOTAL AREA**

Summary for Subcatchment 4S: EX-01

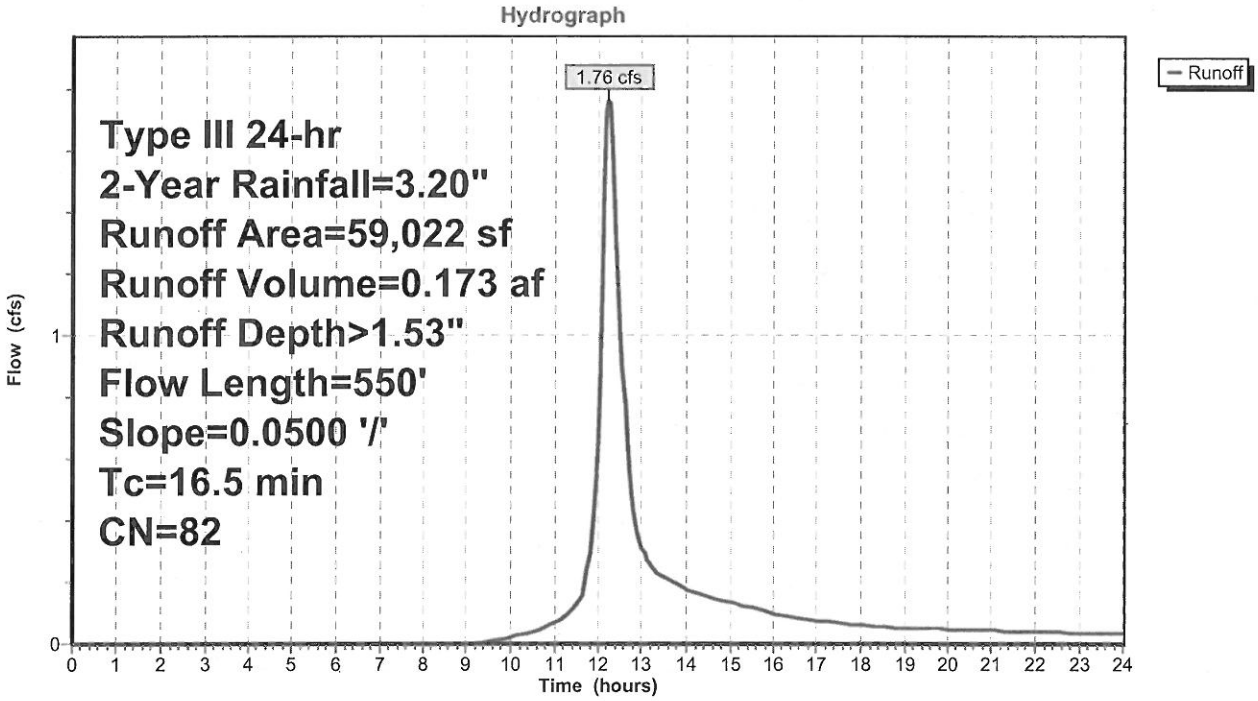
Runoff = 1.76 cfs @ 12.23 hrs, Volume= 0.173 af, Depth> 1.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (sf)	CN	Description
*	13,881	98	Brush, Poor, HSG C
*	41,298	77	Paved roads w/curbs & sewers, HSG B
*	3,843	74	
	59,022	82	Weighted Average
	45,141		76.48% Pervious Area
	13,881		23.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	100	0.0500	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
1.3	270	0.0500	3.35		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.3	180	0.0500	8.79	6.90	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.015 Concrete sewer w/manholes & inlets
16.5	550	Total			

Subcatchment 4S: EX-01



Summary for Subcatchment 5S: EX-02

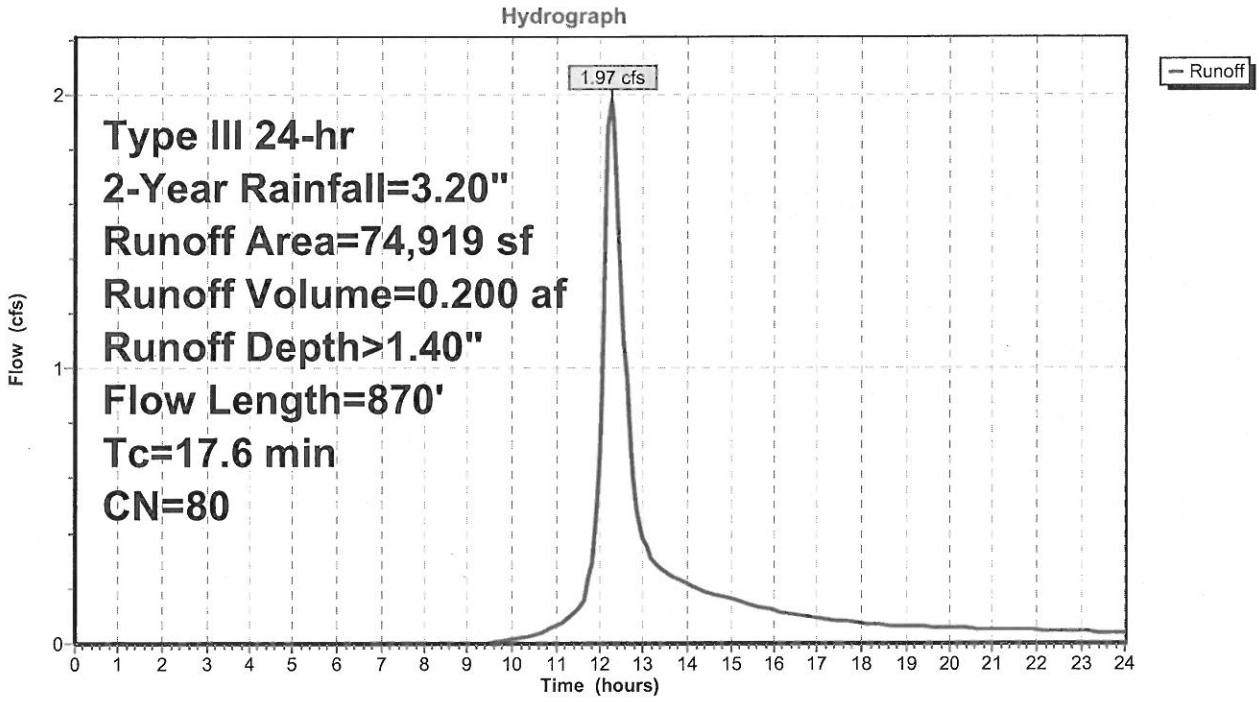
Runoff = 1.97 cfs @ 12.25 hrs, Volume= 0.200 af, Depth> 1.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
63,169	77	Brush, Poor, HSG C
11,750	98	Paved roads w/curbs & sewers, HSG C
74,919	80	Weighted Average
63,169		84.32% Pervious Area
11,750		15.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	100	0.0500	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
1.4	300	0.0530	3.45		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.2	40	0.0250	3.21		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
1.1	430	0.0500	6.71	2.34	**Pipe Channel, D-E** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.015 Concrete sewer w/manholes & inlets
17.6	870	Total			

Subcatchment 5S: EX-02



Summary for Subcatchment 6S: EX-03

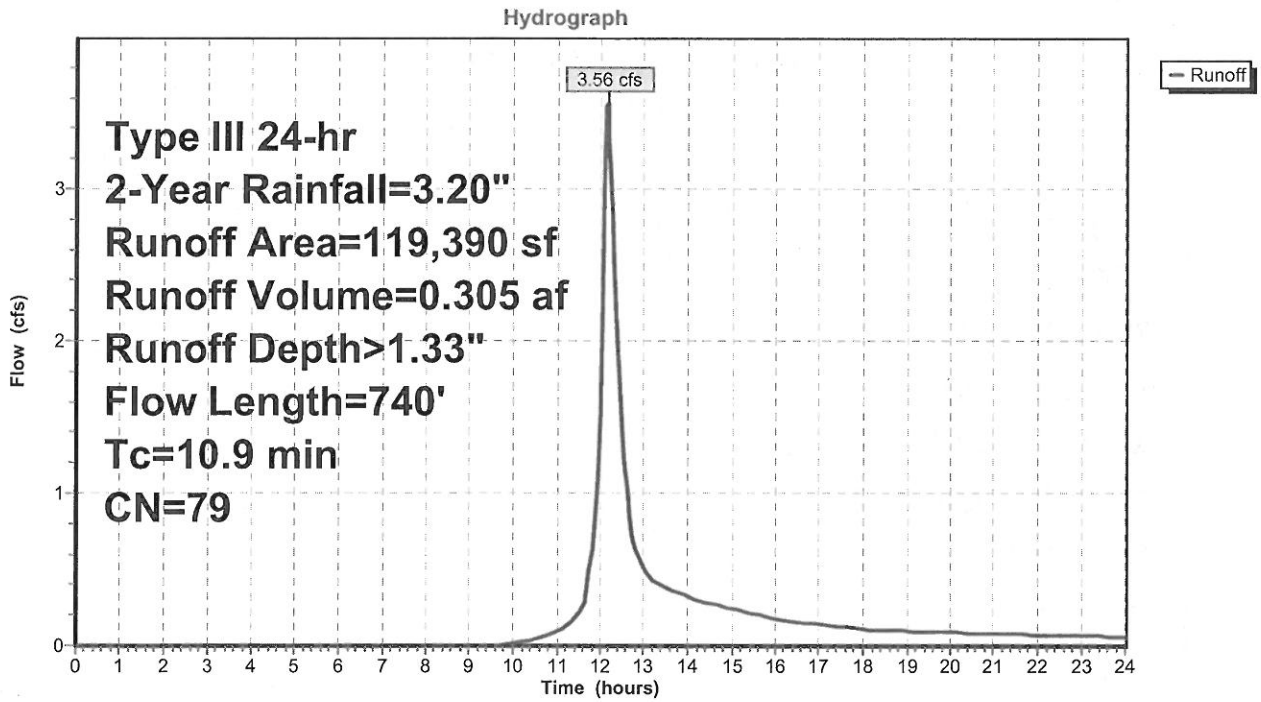
Runoff = 3.56 cfs @ 12.16 hrs, Volume= 0.305 af, Depth> 1.33"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
108,461	77	Brush, Poor, HSG C
10,929	98	Paved roads w/curbs & sewers, HSG C
119,390	79	Weighted Average
108,461		90.85% Pervious Area
10,929		9.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0500	0.17		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.20"
1.0	640	0.5500	11.12		**Shallow Concentrated Flow, A-B** Grassed Waterway Kv= 15.0 fps
10.9	740	Total			

Subcatchment 6S: EX-03



Summary for Subcatchment 7S: EX-04

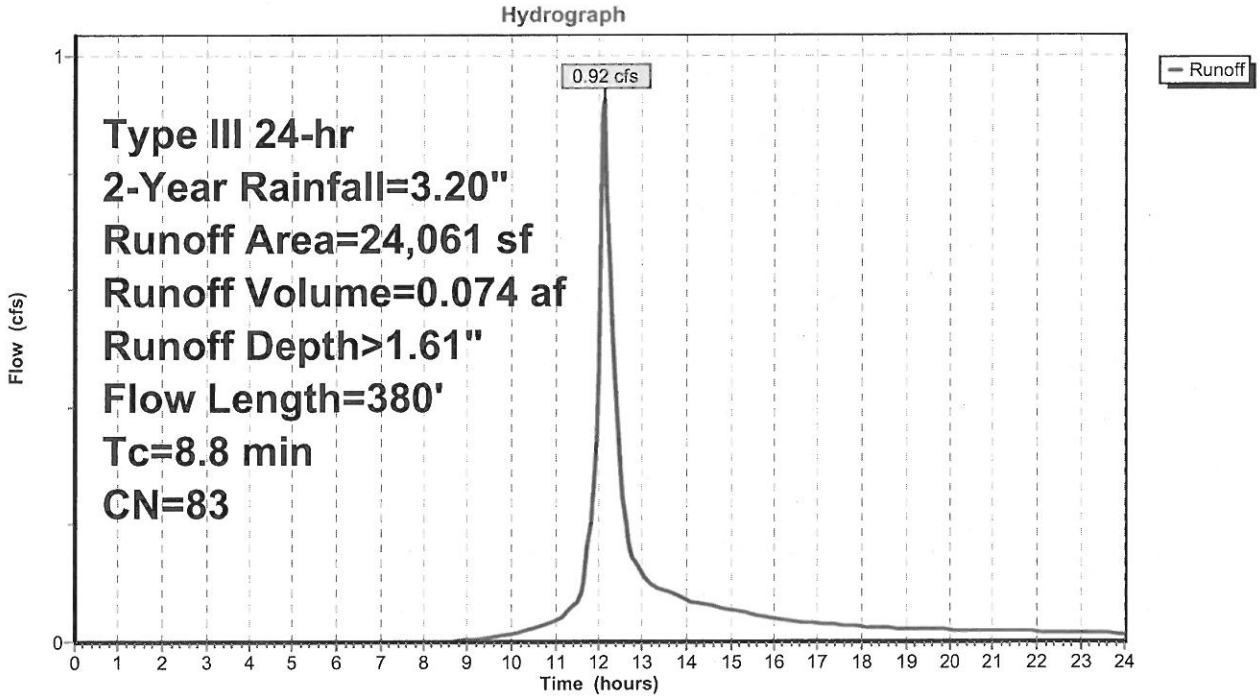
Runoff = 0.92 cfs @ 12.13 hrs, Volume= 0.074 af, Depth> 1.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (sf)	CN	Description
*	17,208	77	
*	6,853	98	
	24,061	83	Weighted Average
	17,208		71.52% Pervious Area
	6,853		28.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	100	0.0750	0.20		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.20"
0.1	90	0.5500	11.12		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.3	190	0.0500	10.14	7.97	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
8.8	380	Total			

Subcatchment 7S: EX-04

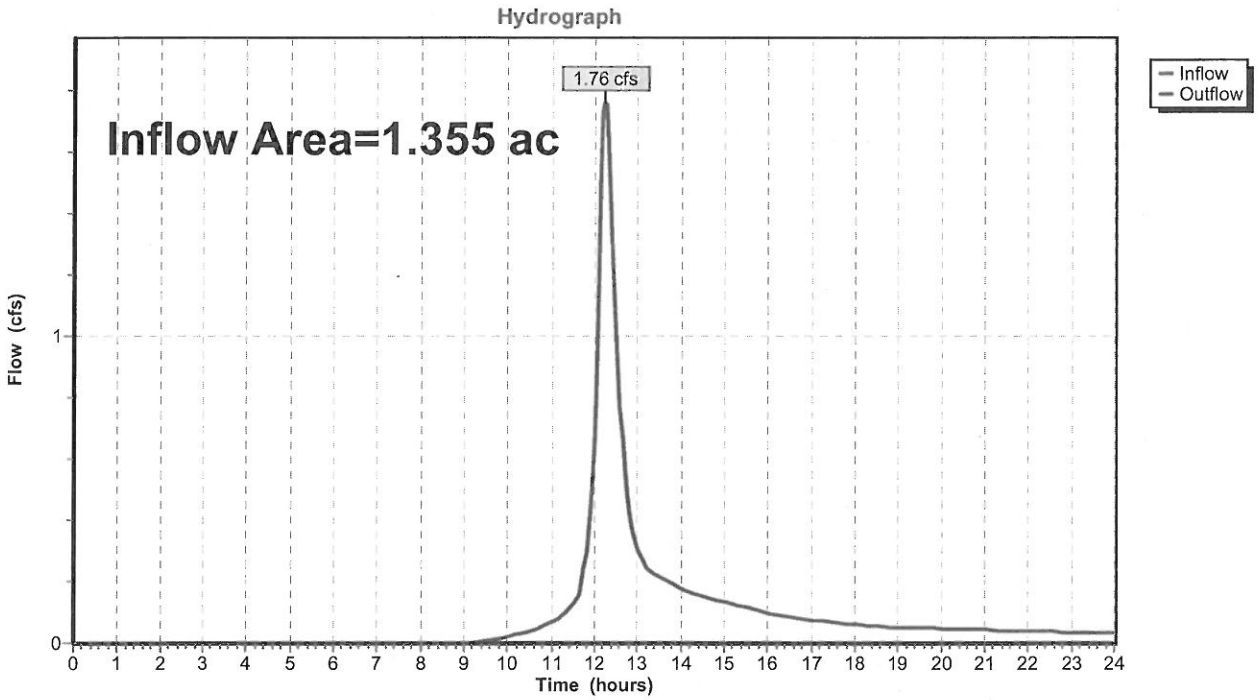


Summary for Reach 12R: POA #1

Inflow Area = 1.355 ac, 23.52% Impervious, Inflow Depth > 1.53" for 2-Year event
Inflow = 1.76 cfs @ 12.23 hrs, Volume= 0.173 af
Outflow = 1.76 cfs @ 12.23 hrs, Volume= 0.173 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 12R: POA #1

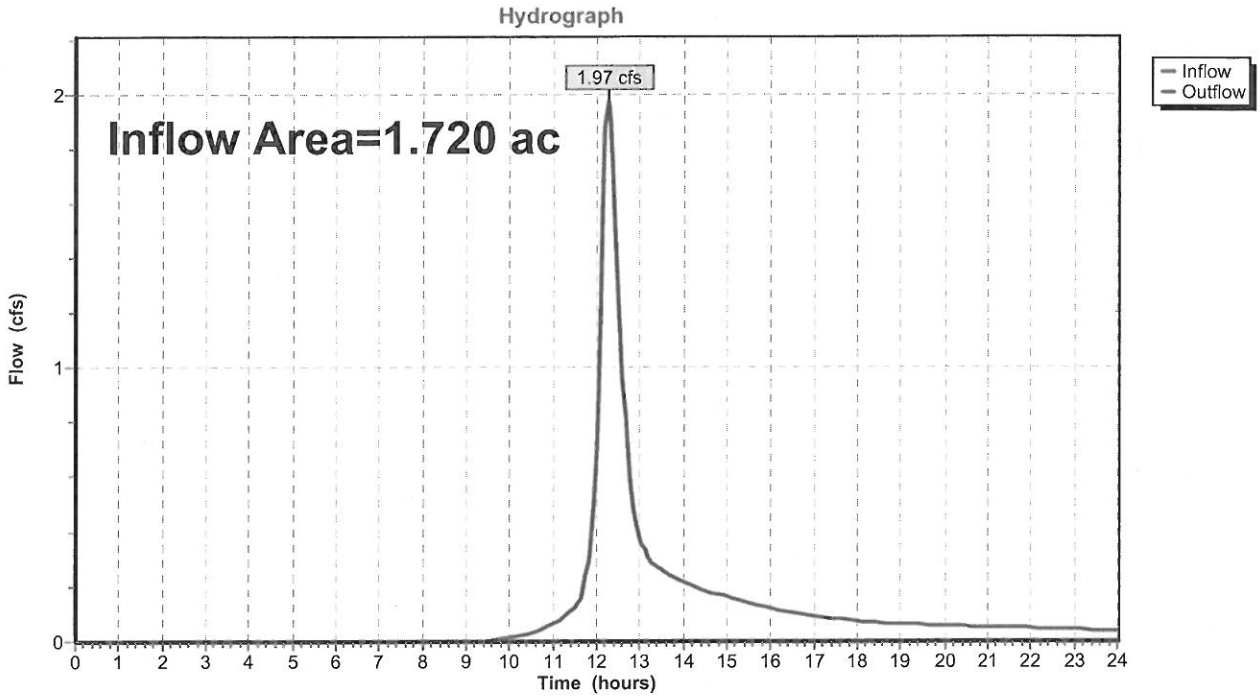


Summary for Reach 13R: POA #2

Inflow Area = 1.720 ac, 15.68% Impervious, Inflow Depth > 1.40" for 2-Year event
Inflow = 1.97 cfs @ 12.25 hrs, Volume= 0.200 af
Outflow = 1.97 cfs @ 12.25 hrs, Volume= 0.200 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 13R: POA #2

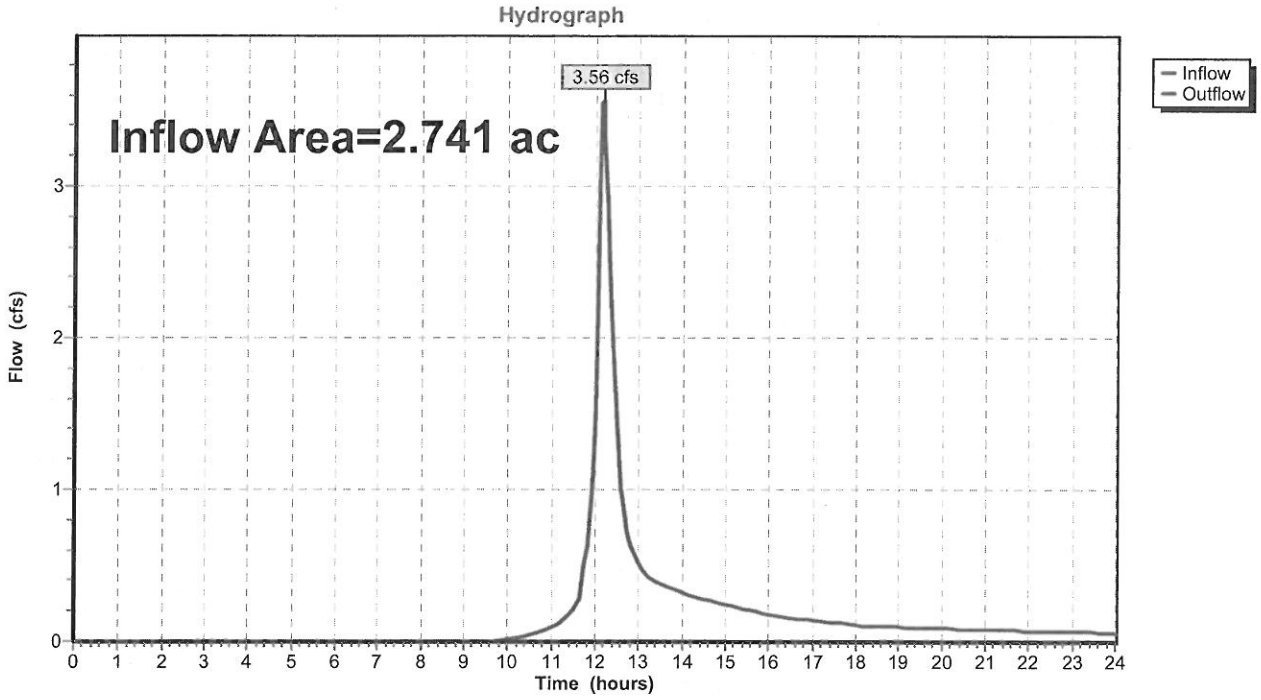


Summary for Reach 14R: POA #3

Inflow Area =	2.741 ac,	9.15% Impervious,	Inflow Depth >	1.33"	for 2-Year event
Inflow =	3.56 cfs @	12.16 hrs, Volume=	0.305 af		
Outflow =	3.56 cfs @	12.16 hrs, Volume=	0.305 af,	Atten= 0%,	Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 14R: POA #3

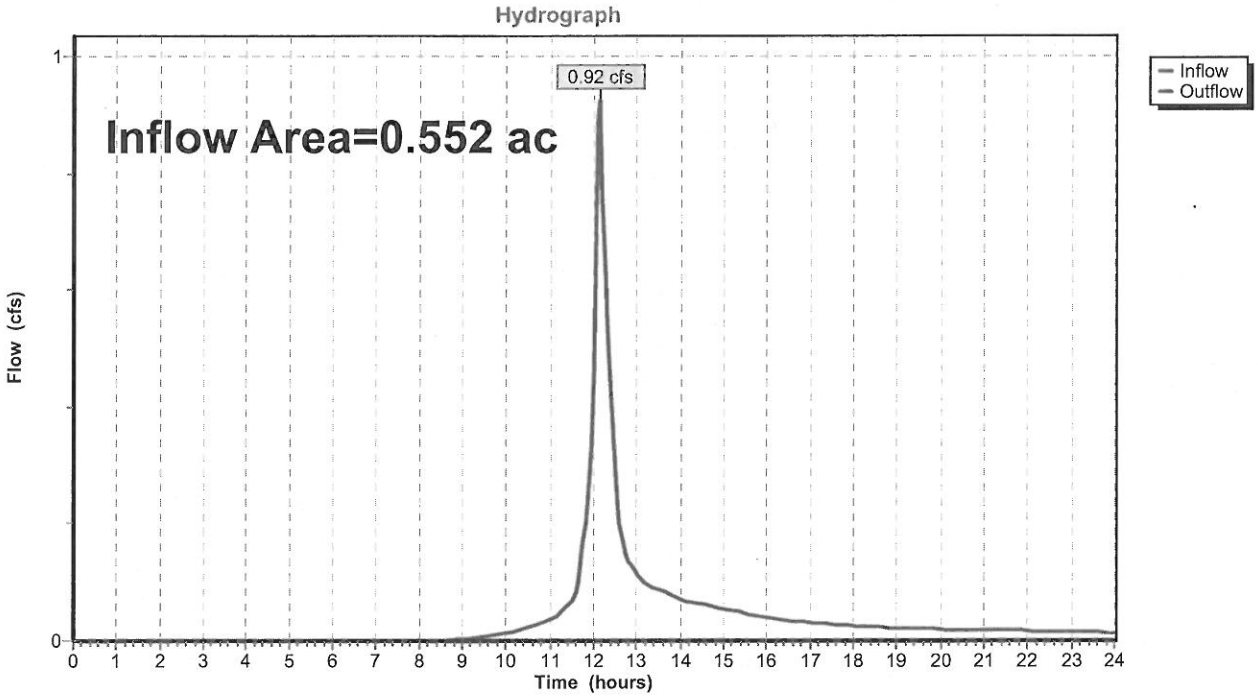


Summary for Reach 15R: POA #4

Inflow Area = 0.552 ac, 28.48% Impervious, Inflow Depth > 1.61" for 2-Year event
Inflow = 0.92 cfs @ 12.13 hrs, Volume= 0.074 af
Outflow = 0.92 cfs @ 12.13 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 15R: POA #4



Summary for Subcatchment 4S: EX-01

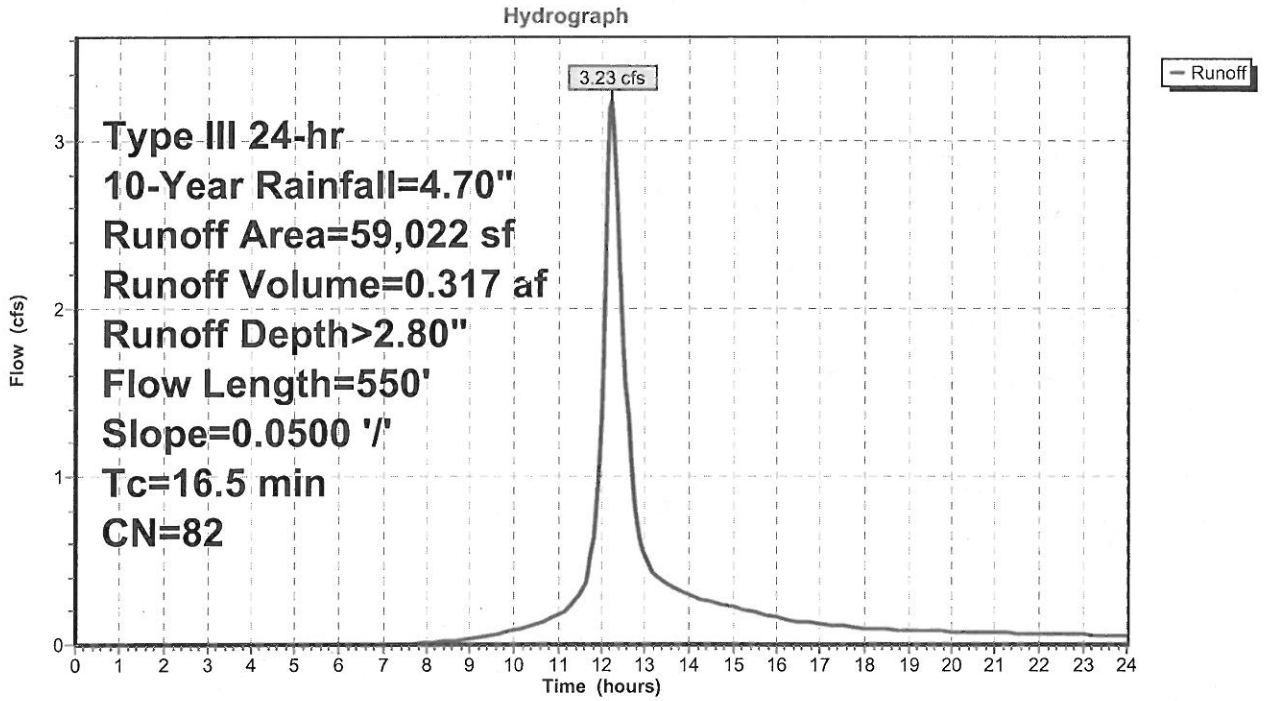
Runoff = 3.23 cfs @ 12.23 hrs, Volume= 0.317 af, Depth> 2.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (sf)	CN	Description
*	13,881	98	Brush, Poor, HSG C
*	41,298	77	Paved roads w/curbs & sewers, HSG B
*	3,843	74	
	59,022	82	Weighted Average
	45,141		76.48% Pervious Area
	13,881		23.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	100	0.0500	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
1.3	270	0.0500	3.35		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.3	180	0.0500	8.79	6.90	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.015 Concrete sewer w/manholes & inlets
16.5	550	Total			

Subcatchment 4S: EX-01



Summary for Subcatchment 5S: EX-02

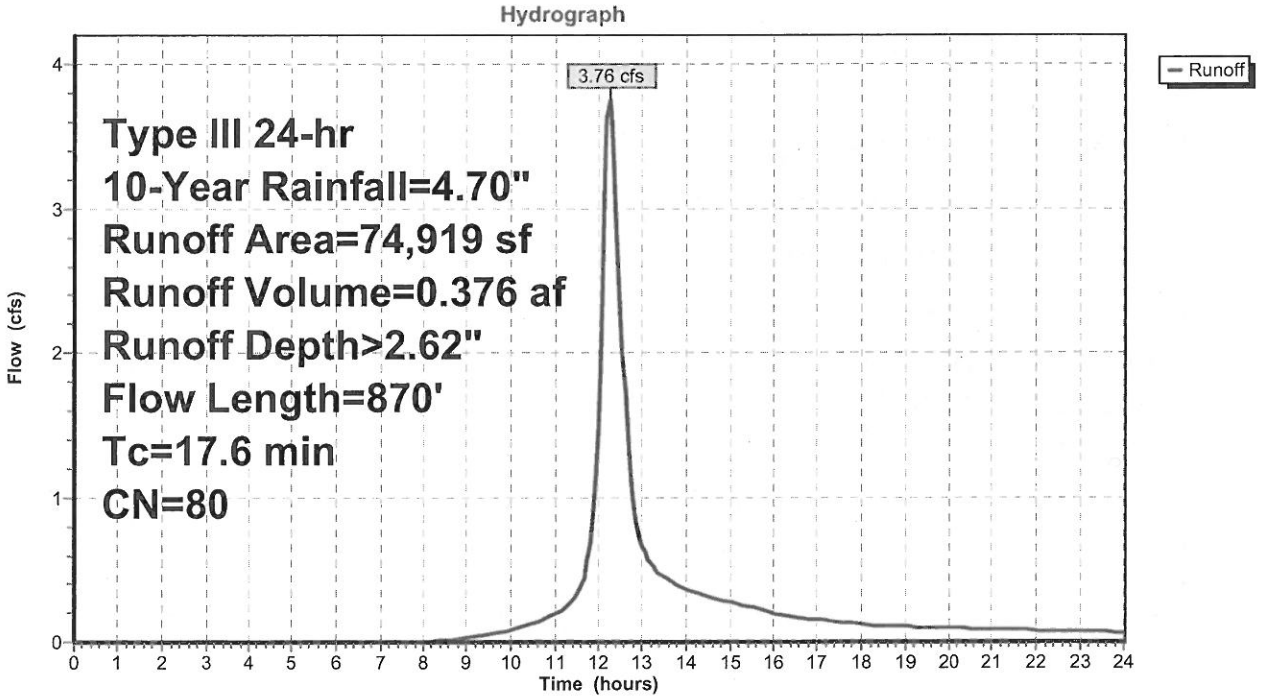
Runoff = 3.76 cfs @ 12.25 hrs, Volume= 0.376 af, Depth> 2.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

Area (sf)	CN	Description
63,169	77	Brush, Poor, HSG C
11,750	98	Paved roads w/curbs & sewers, HSG C
74,919	80	Weighted Average
63,169		84.32% Pervious Area
11,750		15.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	100	0.0500	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
1.4	300	0.0530	3.45		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.2	40	0.0250	3.21		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
1.1	430	0.0500	6.71	2.34	**Pipe Channel, D-E** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.015 Concrete sewer w/manholes & inlets
17.6	870	Total			

Subcatchment 5S: EX-02



Summary for Subcatchment 6S: EX-03

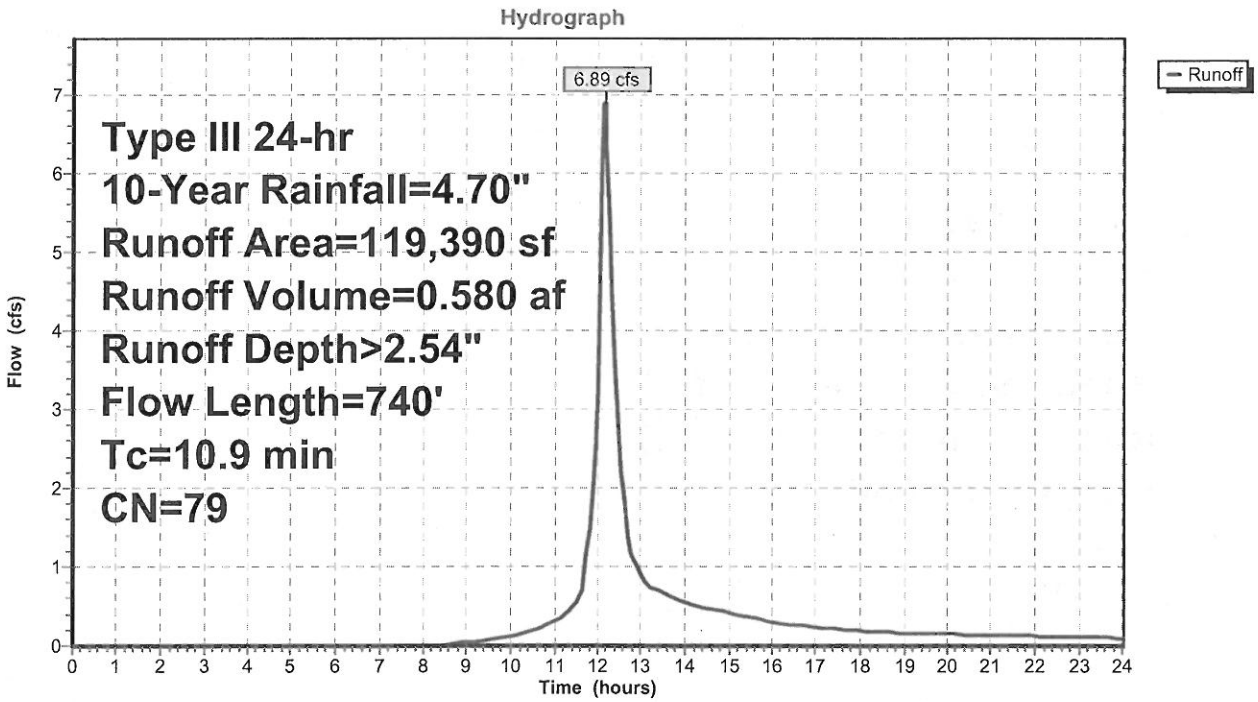
Runoff = 6.89 cfs @ 12.16 hrs, Volume= 0.580 af, Depth> 2.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

Area (sf)	CN	Description
108,461	77	Brush, Poor, HSG C
10,929	98	Paved roads w/curbs & sewers, HSG C
119,390	79	Weighted Average
108,461		90.85% Pervious Area
10,929		9.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0500	0.17		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.20"
1.0	640	0.5500	11.12		**Shallow Concentrated Flow, A-B** Grassed Waterway Kv= 15.0 fps
10.9	740	Total			

Subcatchment 6S: EX-03



Summary for Subcatchment 7S: EX-04

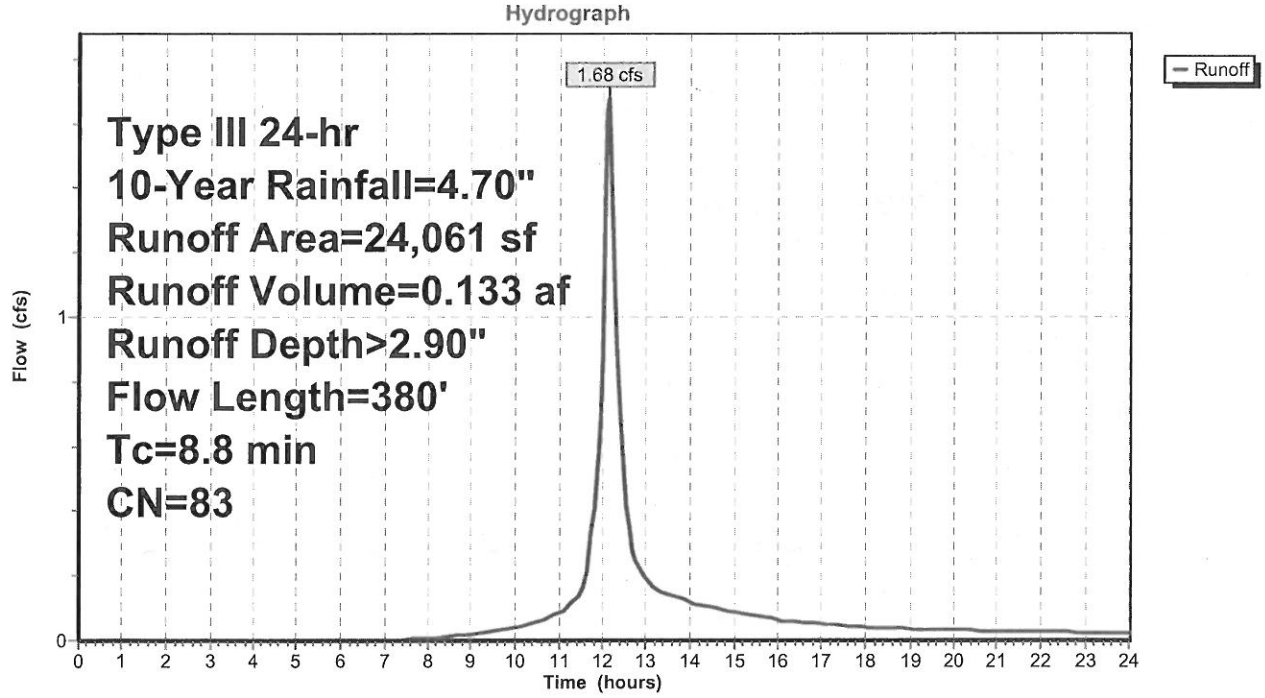
Runoff = 1.68 cfs @ 12.12 hrs, Volume= 0.133 af, Depth> 2.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

	Area (sf)	CN	Description
*	17,208	77	
*	6,853	98	
	24,061	83	Weighted Average
	17,208		71.52% Pervious Area
	6,853		28.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	100	0.0750	0.20		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.20"
0.1	90	0.5500	11.12		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.3	190	0.0500	10.14	7.97	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
8.8	380	Total			

Subcatchment 7S: EX-04

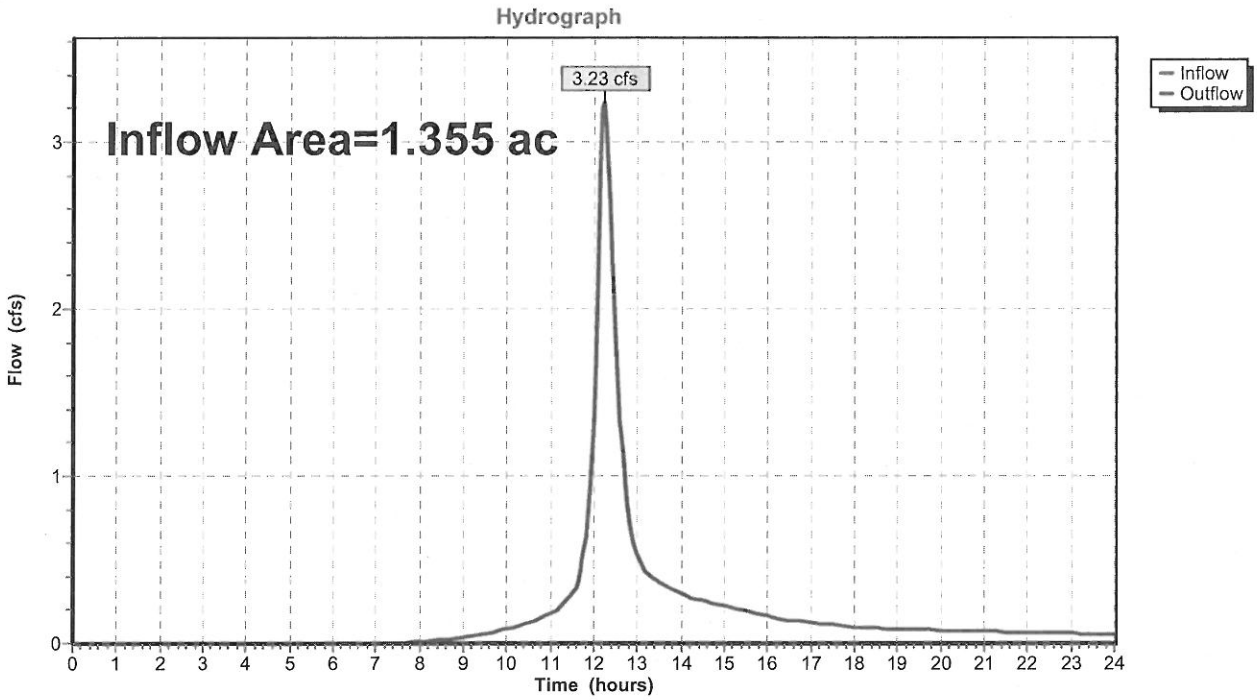


Summary for Reach 12R: POA #1

Inflow Area = 1.355 ac, 23.52% Impervious, Inflow Depth > 2.80" for 10-Year event
Inflow = 3.23 cfs @ 12.23 hrs, Volume= 0.317 af
Outflow = 3.23 cfs @ 12.23 hrs, Volume= 0.317 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 12R: POA #1

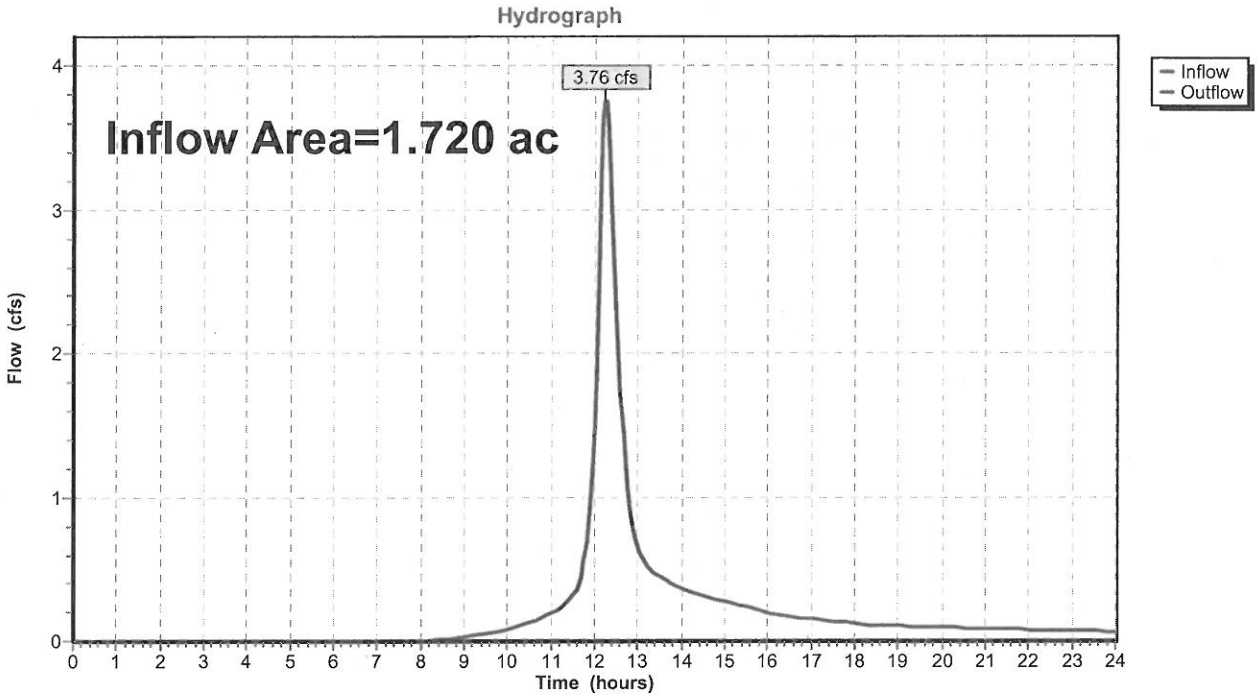


Summary for Reach 13R: POA #2

Inflow Area = 1.720 ac, 15.68% Impervious, Inflow Depth > 2.62" for 10-Year event
Inflow = 3.76 cfs @ 12.25 hrs, Volume= 0.376 af
Outflow = 3.76 cfs @ 12.25 hrs, Volume= 0.376 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 13R: POA #2

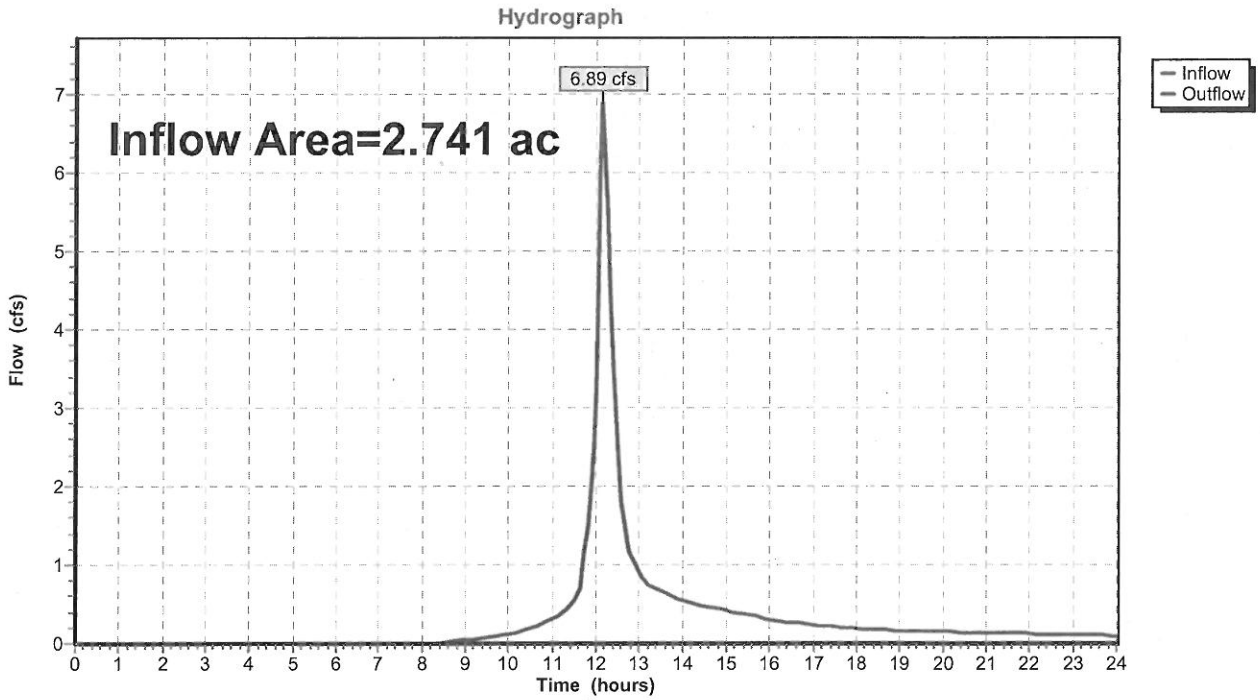


Summary for Reach 14R: POA #3

Inflow Area = 2.741 ac, 9.15% Impervious, Inflow Depth > 2.54" for 10-Year event
Inflow = 6.89 cfs @ 12.16 hrs, Volume= 0.580 af
Outflow = 6.89 cfs @ 12.16 hrs, Volume= 0.580 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 14R: POA #3

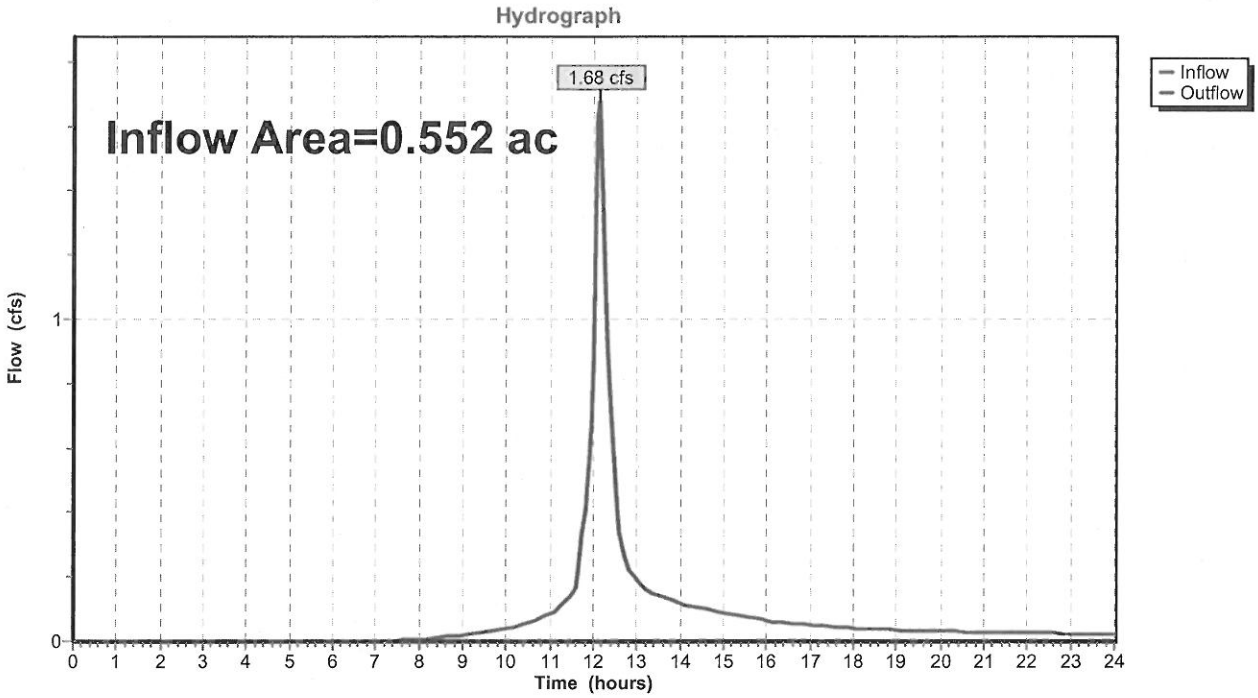


Summary for Reach 15R: POA #4

Inflow Area = 0.552 ac, 28.48% Impervious, Inflow Depth > 2.90" for 10-Year event
Inflow = 1.68 cfs @ 12.12 hrs, Volume= 0.133 af
Outflow = 1.68 cfs @ 12.12 hrs, Volume= 0.133 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 15R: POA #4



Summary for Subcatchment 4S: EX-01

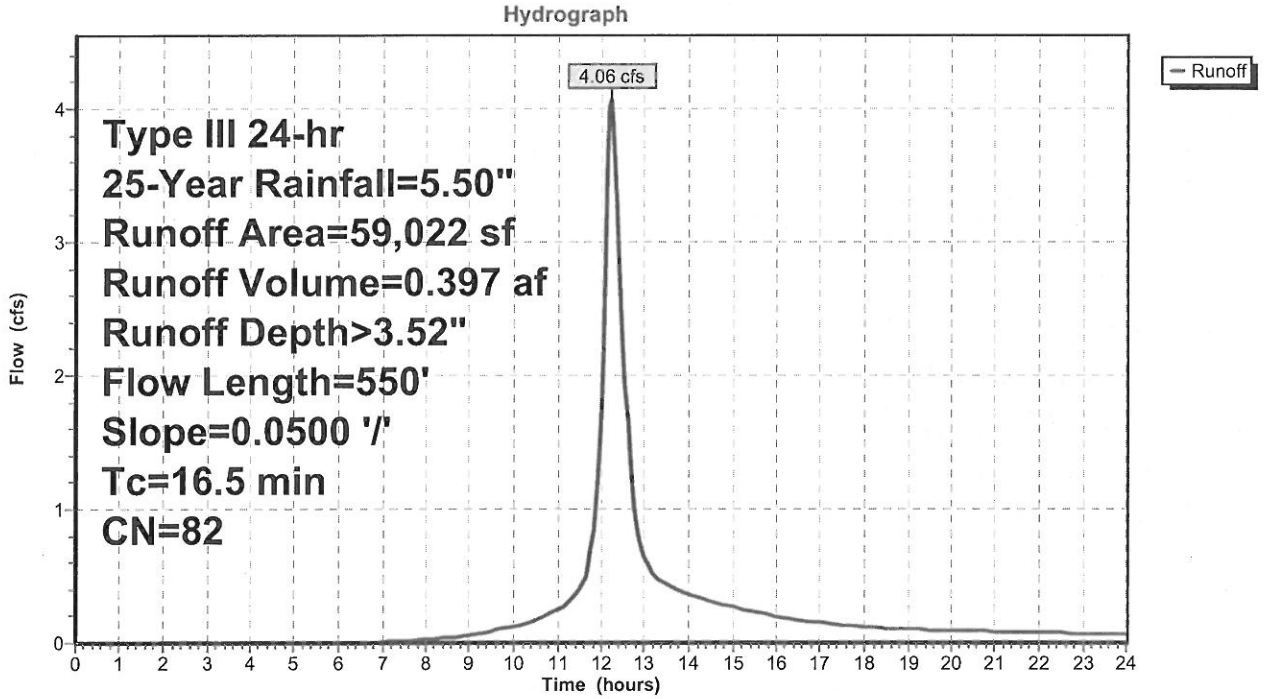
Runoff = 4.06 cfs @ 12.22 hrs, Volume= 0.397 af, Depth> 3.52"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (sf)	CN	Description
*	13,881	98	Brush, Poor, HSG C
*	41,298	77	Paved roads w/curbs & sewers, HSG B
*	3,843	74	
	59,022	82	Weighted Average
	45,141		76.48% Pervious Area
	13,881		23.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	100	0.0500	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
1.3	270	0.0500	3.35		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.3	180	0.0500	8.79	6.90	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.015 Concrete sewer w/manholes & inlets
16.5	550	Total			

Subcatchment 4S: EX-01



Summary for Subcatchment 5S: EX-02

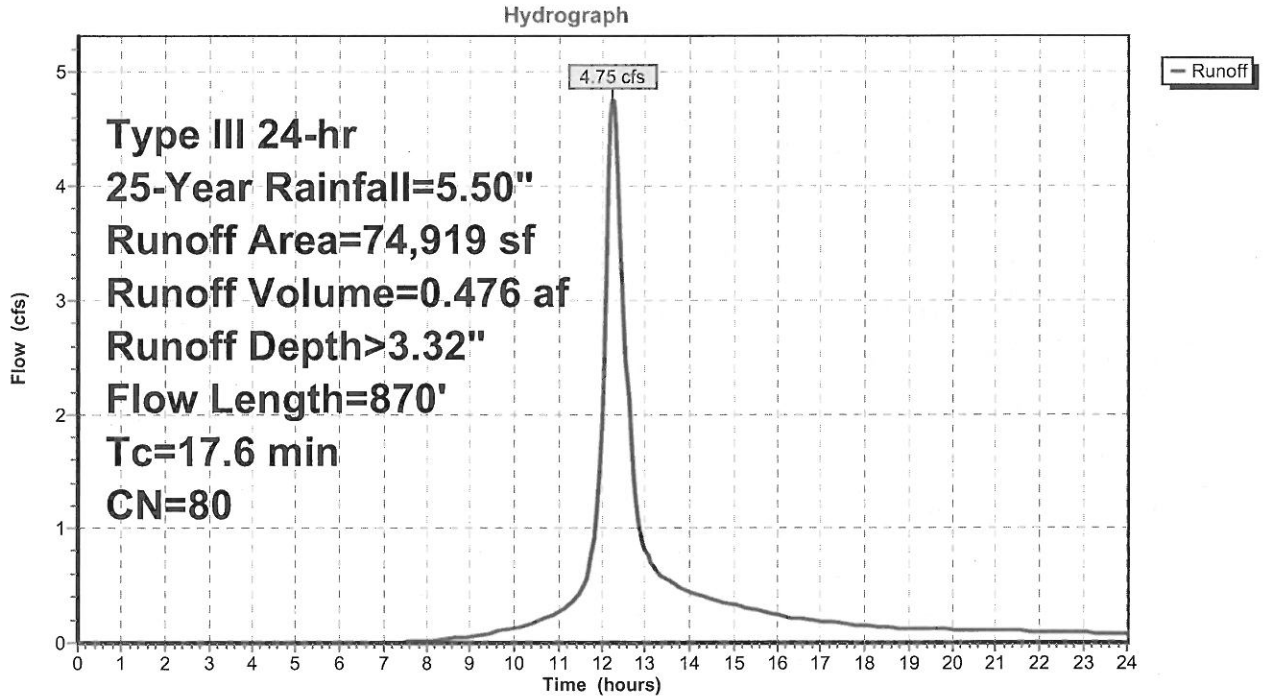
Runoff = 4.75 cfs @ 12.24 hrs, Volume= 0.476 af, Depth> 3.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

Area (sf)	CN	Description
63,169	77	Brush, Poor, HSG C
11,750	98	Paved roads w/curbs & sewers, HSG C
74,919	80	Weighted Average
63,169		84.32% Pervious Area
11,750		15.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	100	0.0500	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
1.4	300	0.0530	3.45		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.2	40	0.0250	3.21		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
1.1	430	0.0500	6.71	2.34	**Pipe Channel, D-E** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.015 Concrete sewer w/manholes & inlets
17.6	870	Total			

Subcatchment 5S: EX-02



Summary for Subcatchment 6S: EX-03

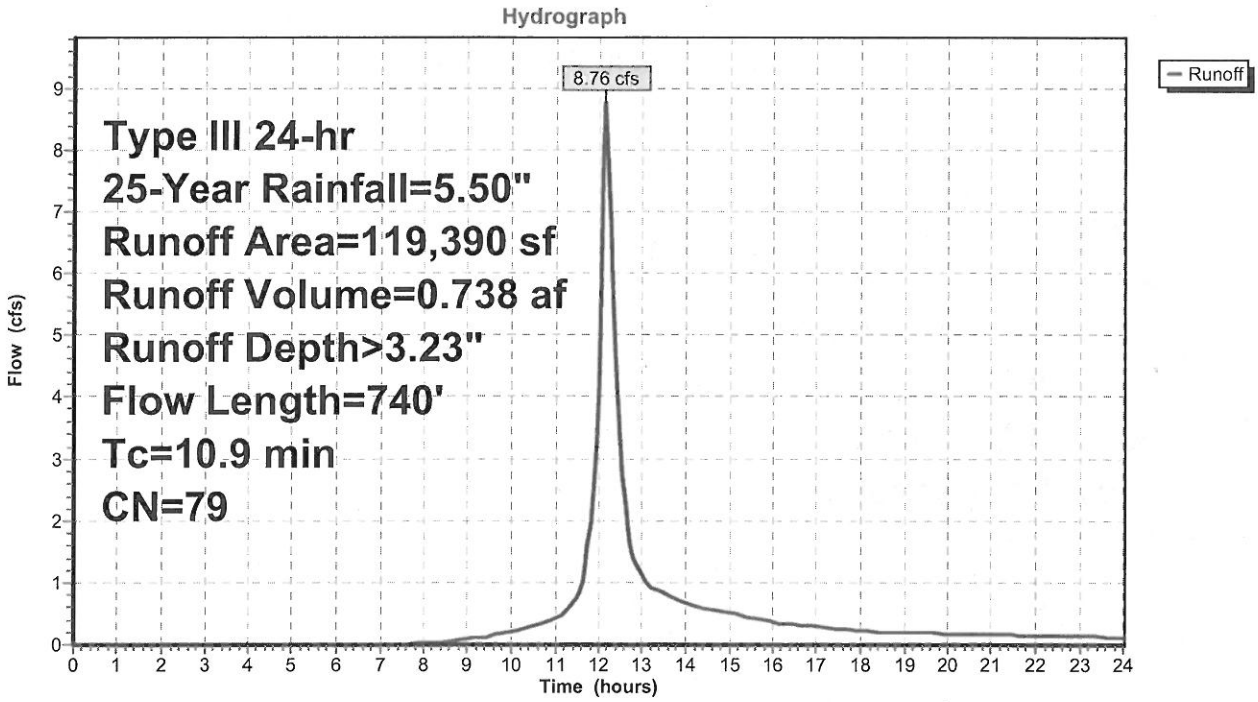
Runoff = 8.76 cfs @ 12.15 hrs, Volume= 0.738 af, Depth> 3.23"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

Area (sf)	CN	Description
108,461	77	Brush, Poor, HSG C
10,929	98	Paved roads w/curbs & sewers, HSG C
119,390	79	Weighted Average
108,461		90.85% Pervious Area
10,929		9.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0500	0.17		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.20"
1.0	640	0.5500	11.12		**Shallow Concentrated Flow, A-B** Grassed Waterway Kv= 15.0 fps
10.9	740	Total			

Subcatchment 6S: EX-03



Summary for Subcatchment 7S: EX-04

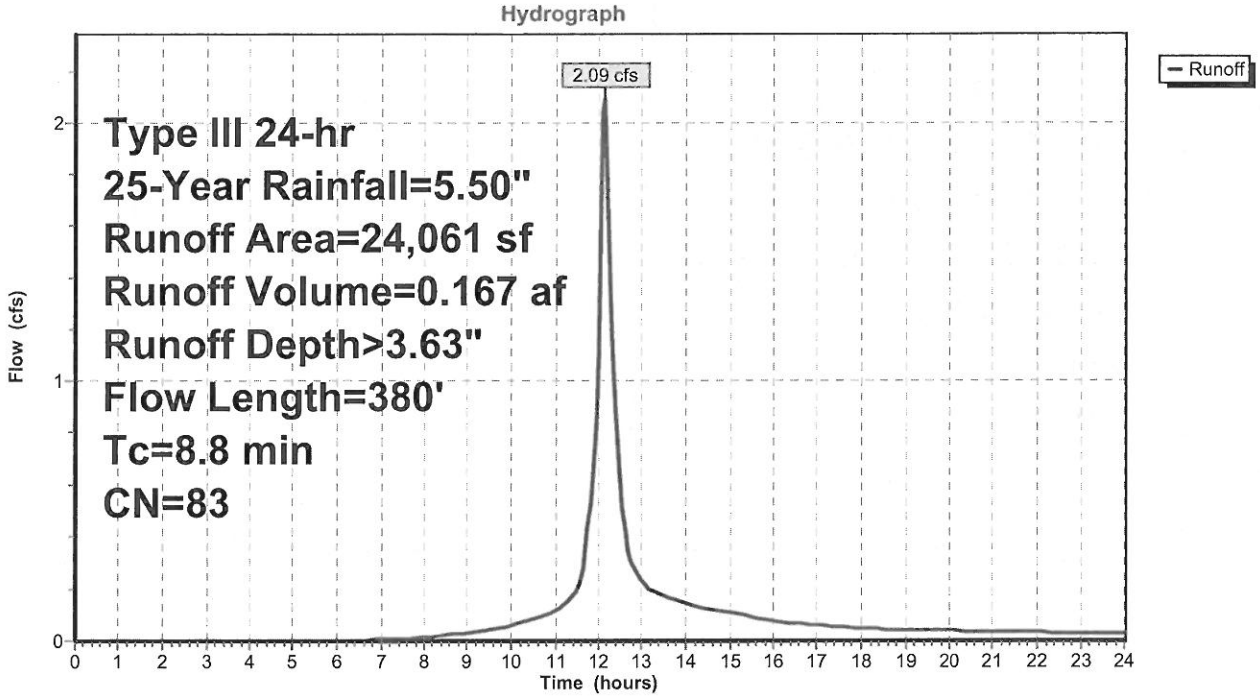
Runoff = 2.09 cfs @ 12.12 hrs, Volume= 0.167 af, Depth> 3.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (sf)	CN	Description
*	17,208	77	
*	6,853	98	
	24,061	83	Weighted Average
	17,208		71.52% Pervious Area
	6,853		28.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	100	0.0750	0.20		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.20"
0.1	90	0.5500	11.12		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.3	190	0.0500	10.14	7.97	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
8.8	380	Total			

Subcatchment 7S: EX-04

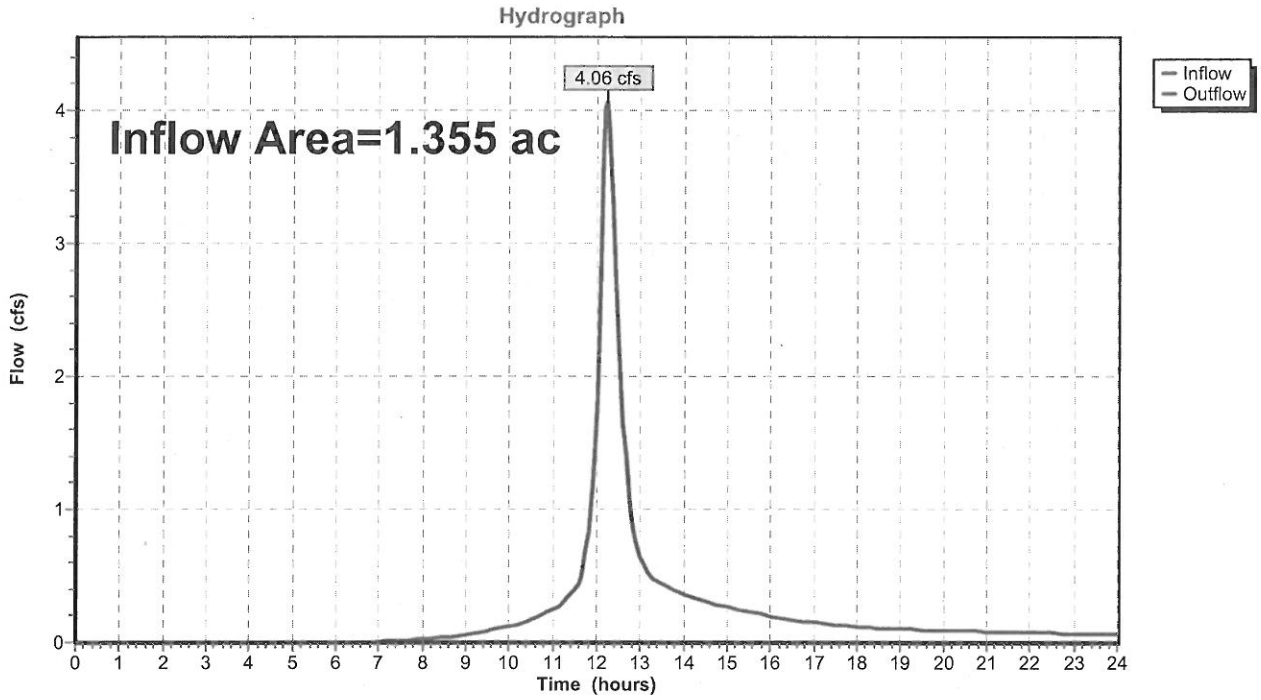


Summary for Reach 12R: POA #1

Inflow Area = 1.355 ac, 23.52% Impervious, Inflow Depth > 3.52" for 25-Year event
Inflow = 4.06 cfs @ 12.22 hrs, Volume= 0.397 af
Outflow = 4.06 cfs @ 12.22 hrs, Volume= 0.397 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 12R: POA #1

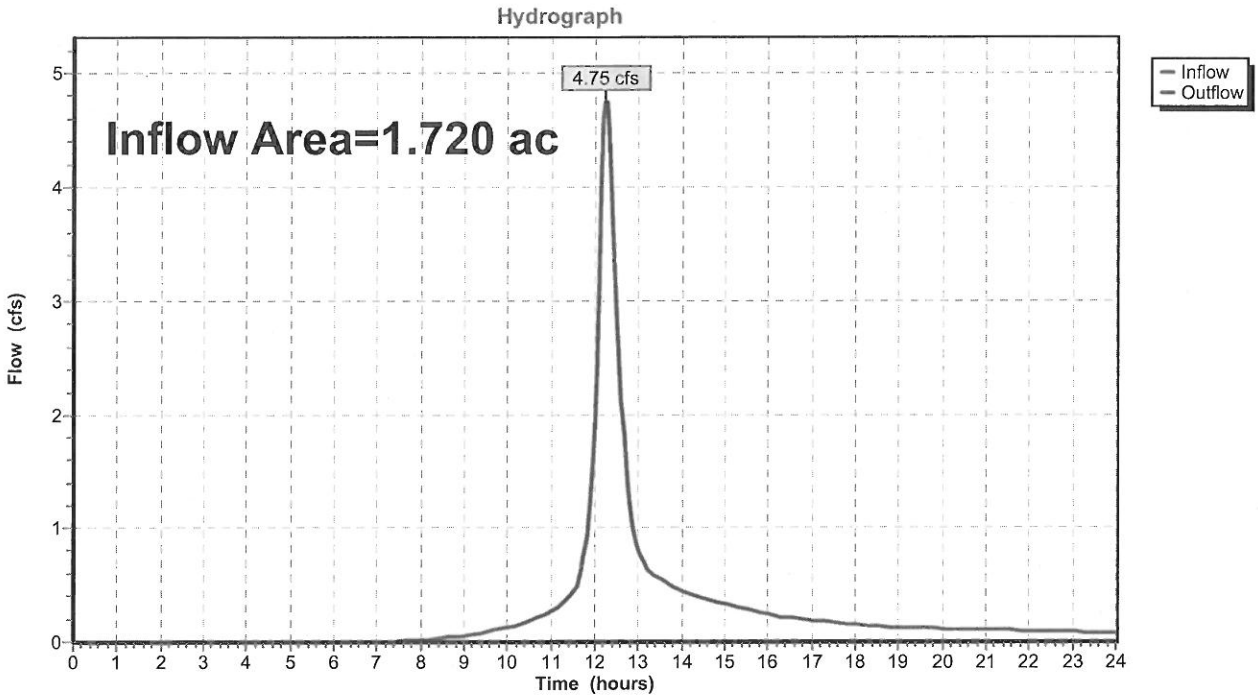


Summary for Reach 13R: POA #2

Inflow Area = 1.720 ac, 15.68% Impervious, Inflow Depth > 3.32" for 25-Year event
Inflow = 4.75 cfs @ 12.24 hrs, Volume= 0.476 af
Outflow = 4.75 cfs @ 12.24 hrs, Volume= 0.476 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 13R: POA #2

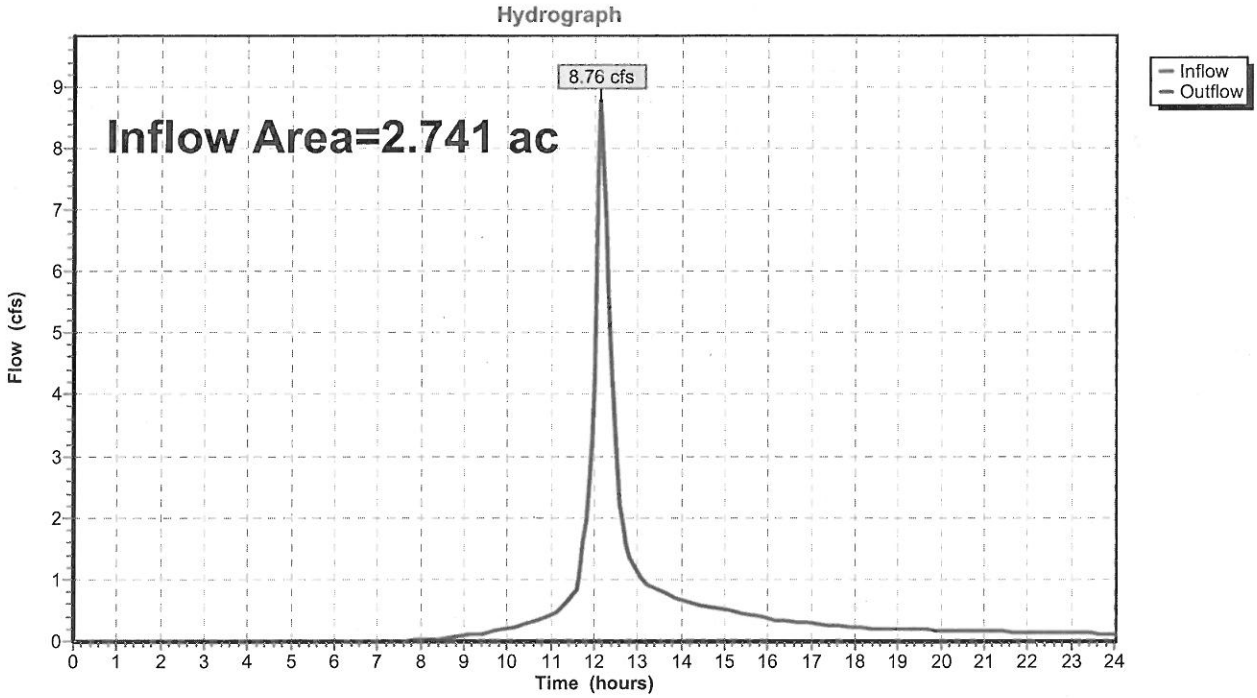


Summary for Reach 14R: POA #3

Inflow Area =	2.741 ac,	9.15% Impervious,	Inflow Depth >	3.23"	for 25-Year event
Inflow =	8.76 cfs @	12.15 hrs,	Volume=	0.738 af	
Outflow =	8.76 cfs @	12.15 hrs,	Volume=	0.738 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 14R: POA #3

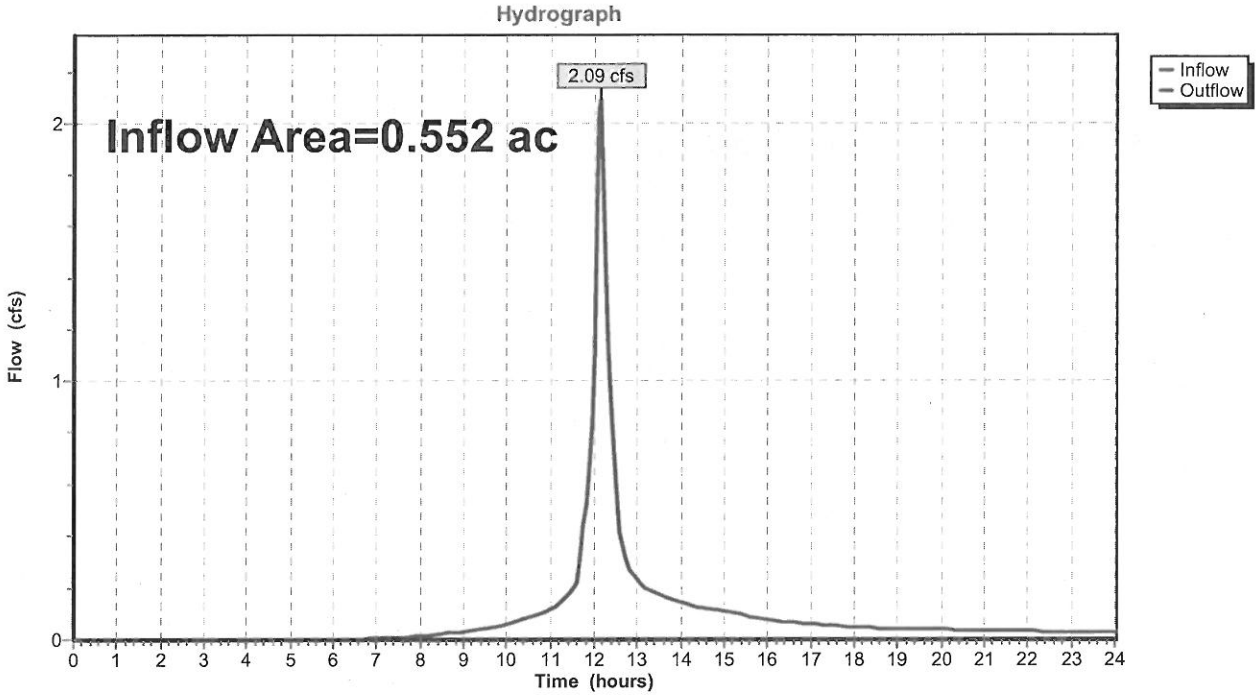


Summary for Reach 15R: POA #4

Inflow Area = 0.552 ac, 28.48% Impervious, Inflow Depth > 3.63" for 25-Year event
Inflow = 2.09 cfs @ 12.12 hrs, Volume= 0.167 af
Outflow = 2.09 cfs @ 12.12 hrs, Volume= 0.167 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 15R: POA #4



Summary for Subcatchment 4S: EX-01

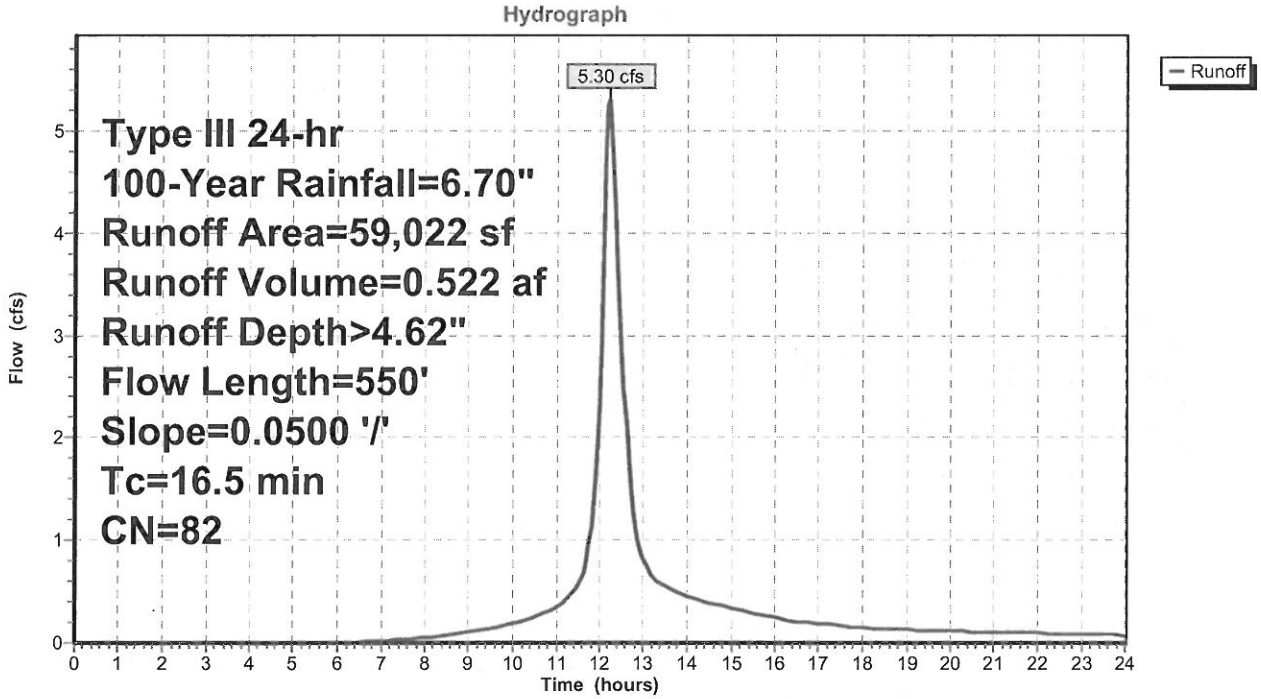
Runoff = 5.30 cfs @ 12.22 hrs, Volume= 0.522 af, Depth> 4.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.70"

	Area (sf)	CN	Description
*	13,881	98	Brush, Poor, HSG C
*	41,298	77	Paved roads w/curbs & sewers, HSG B
*	3,843	74	
	59,022	82	Weighted Average
	45,141		76.48% Pervious Area
	13,881		23.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	100	0.0500	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
1.3	270	0.0500	3.35		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.3	180	0.0500	8.79	6.90	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.015 Concrete sewer w/manholes & inlets
16.5	550	Total			

Subcatchment 4S: EX-01



Summary for Subcatchment 5S: EX-02

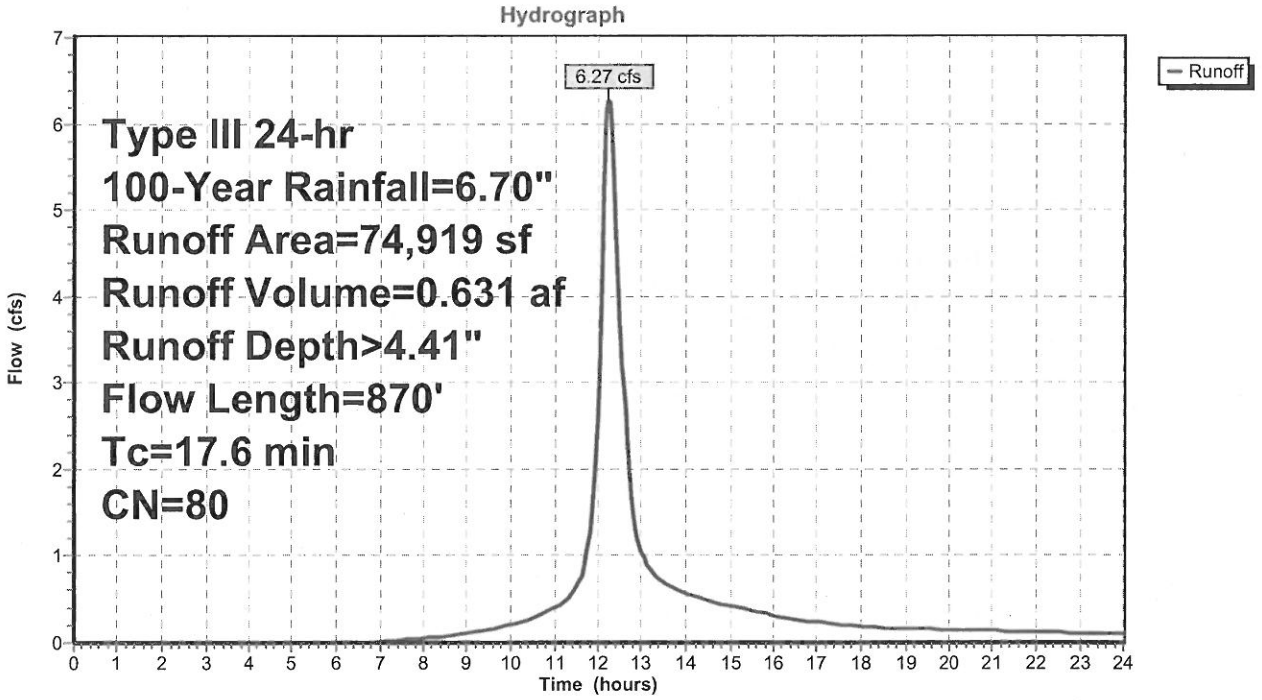
Runoff = 6.27 cfs @ 12.24 hrs, Volume= 0.631 af, Depth> 4.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.70"

Area (sf)	CN	Description
63,169	77	Brush, Poor, HSG C
11,750	98	Paved roads w/curbs & sewers, HSG C
74,919	80	Weighted Average
63,169		84.32% Pervious Area
11,750		15.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	100	0.0500	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.20"
1.4	300	0.0530	3.45		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.2	40	0.0250	3.21		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
1.1	430	0.0500	6.71	2.34	**Pipe Channel, D-E** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.015 Concrete sewer w/manholes & inlets
17.6	870	Total			

Subcatchment 5S: EX-02



Summary for Subcatchment 6S: EX-03

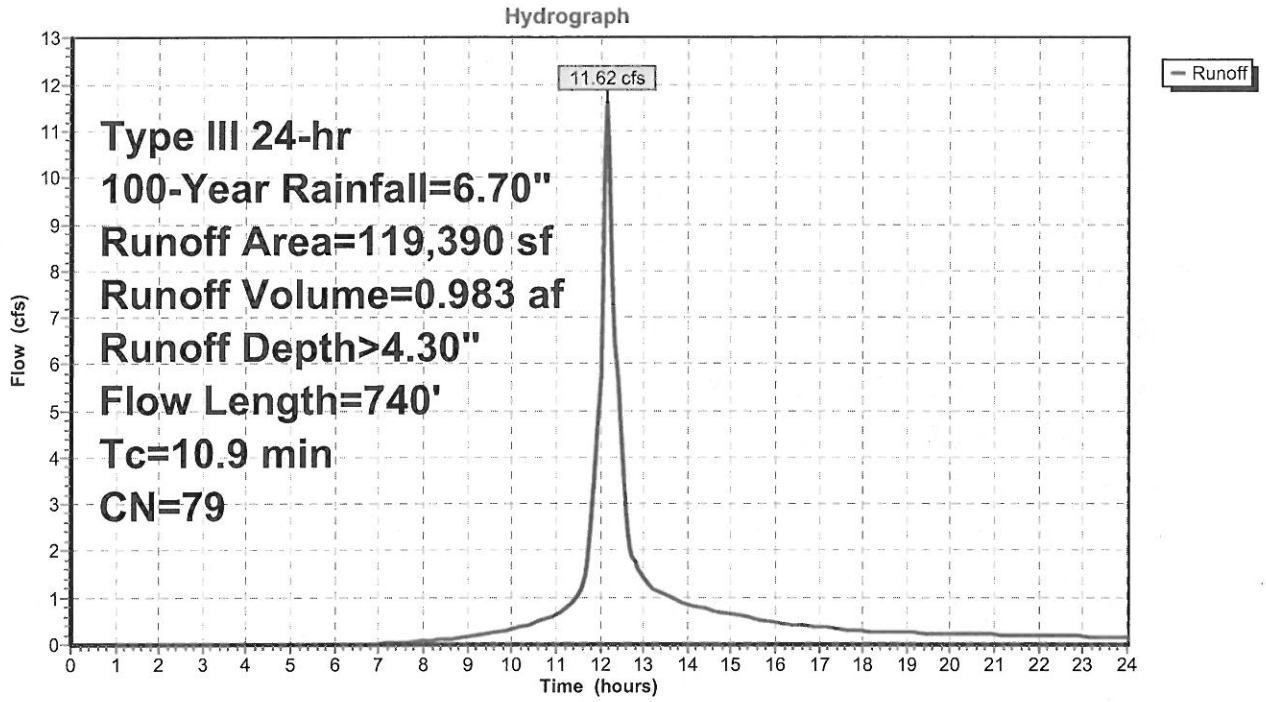
Runoff = 11.62 cfs @ 12.15 hrs, Volume= 0.983 af, Depth> 4.30"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.70"

Area (sf)	CN	Description
108,461	77	Brush, Poor, HSG C
10,929	98	Paved roads w/curbs & sewers, HSG C
119,390	79	Weighted Average
108,461		90.85% Pervious Area
10,929		9.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0500	0.17		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.20"
1.0	640	0.5500	11.12		**Shallow Concentrated Flow, A-B** Grassed Waterway Kv= 15.0 fps
10.9	740	Total			

Subcatchment 6S: EX-03



Summary for Subcatchment 7S: EX-04

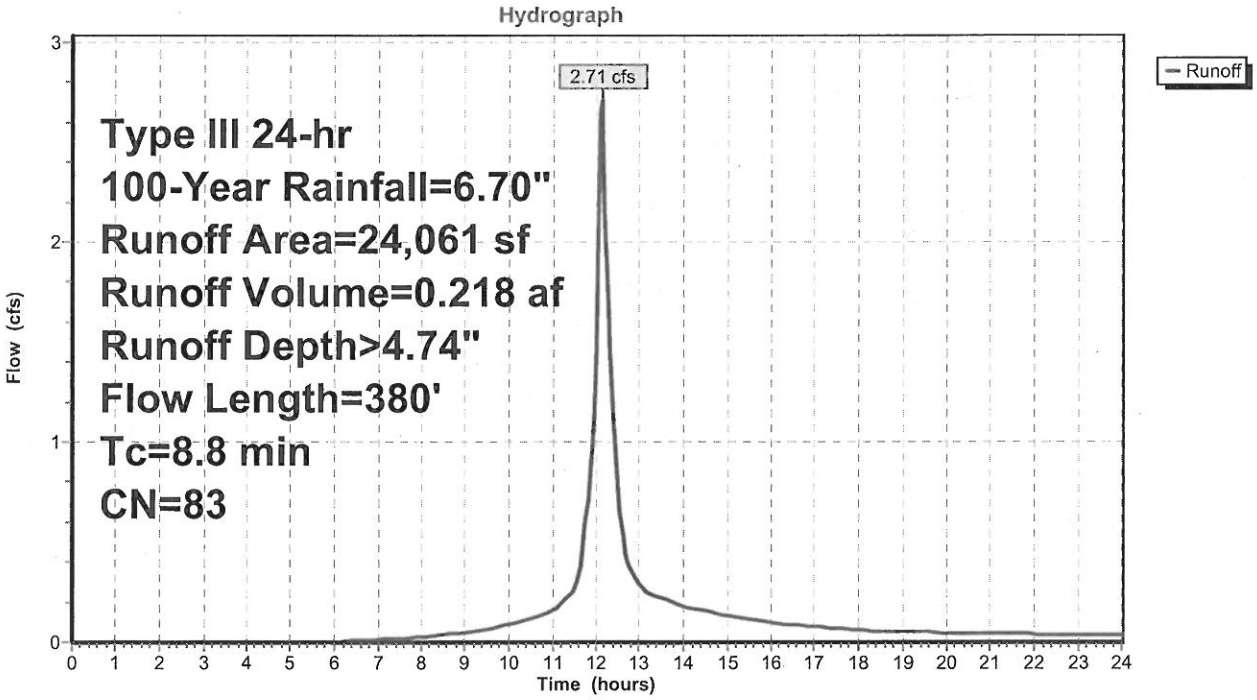
Runoff = 2.71 cfs @ 12.12 hrs, Volume= 0.218 af, Depth> 4.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.70"

	Area (sf)	CN	Description
*	17,208	77	
*	6,853	98	
	24,061	83	Weighted Average
	17,208		71.52% Pervious Area
	6,853		28.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	100	0.0750	0.20		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.20"
0.1	90	0.5500	11.12		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.3	190	0.0500	10.14	7.97	**Pipe Channel, C-D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
8.8	380	Total			

Subcatchment 7S: EX-04

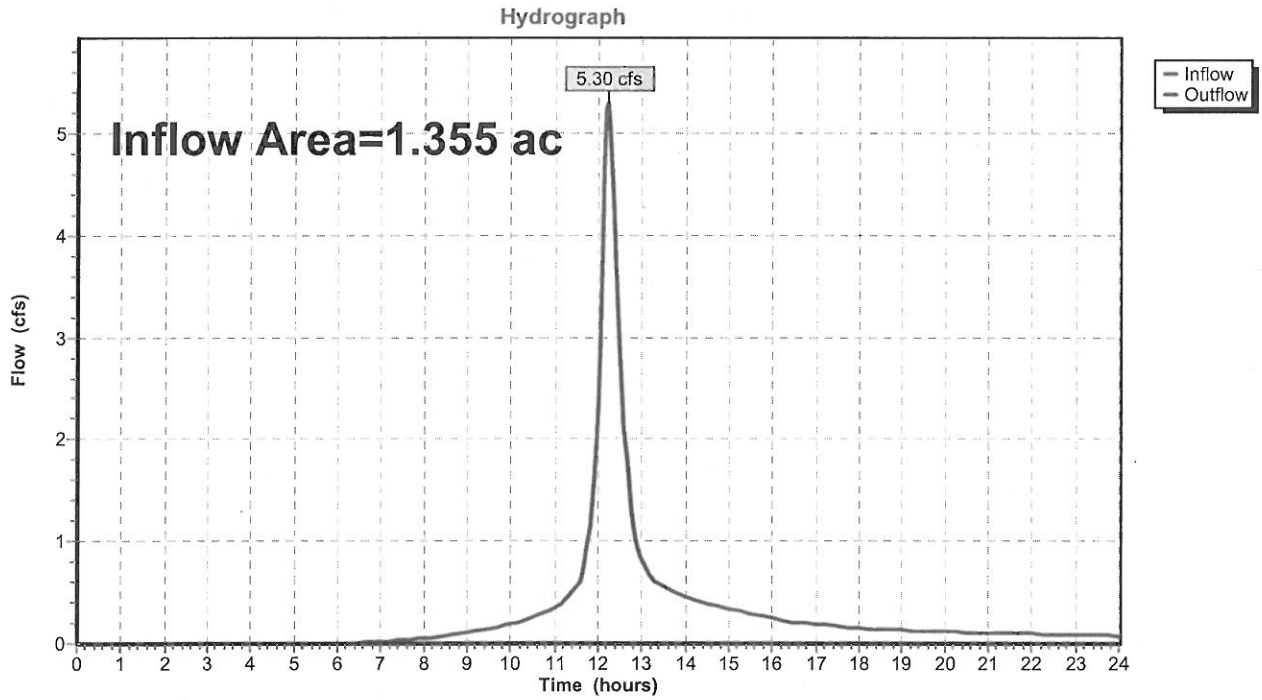


Summary for Reach 12R: POA #1

Inflow Area = 1.355 ac, 23.52% Impervious, Inflow Depth > 4.62" for 100-Year event
Inflow = 5.30 cfs @ 12.22 hrs, Volume= 0.522 af
Outflow = 5.30 cfs @ 12.22 hrs, Volume= 0.522 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 12R: POA #1

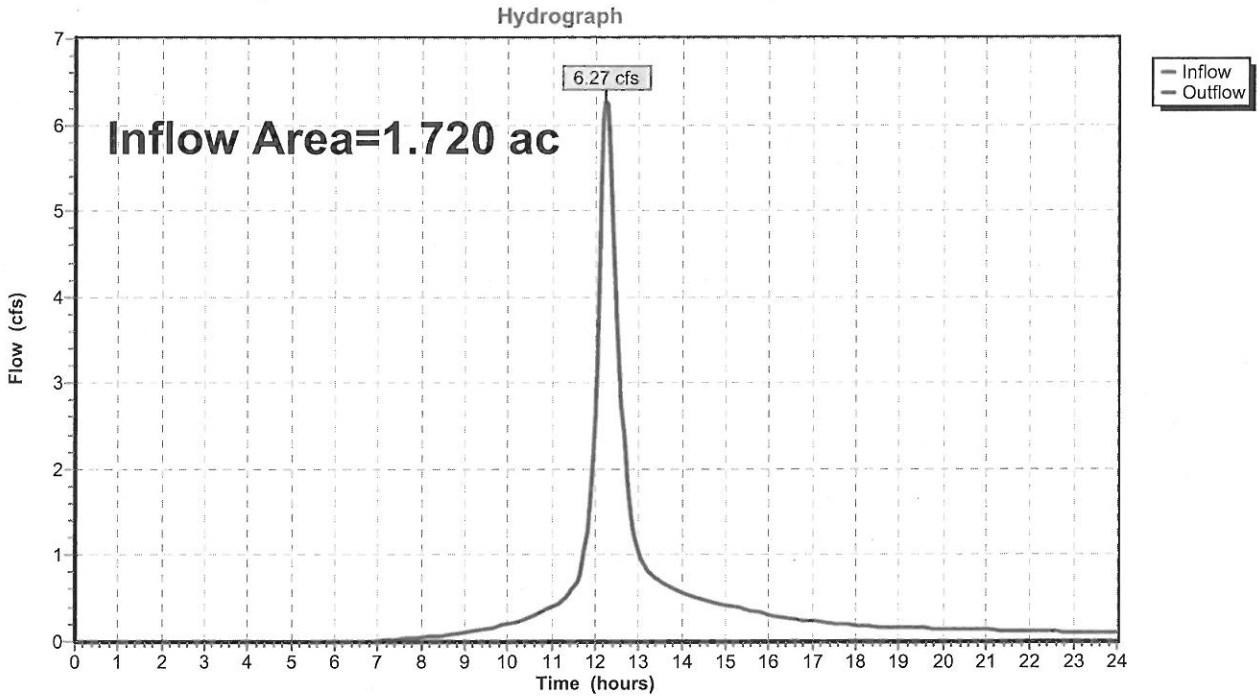


Summary for Reach 13R: POA #2

Inflow Area = 1.720 ac, 15.68% Impervious, Inflow Depth > 4.41" for 100-Year event
Inflow = 6.27 cfs @ 12.24 hrs, Volume= 0.631 af
Outflow = 6.27 cfs @ 12.24 hrs, Volume= 0.631 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 13R: POA #2

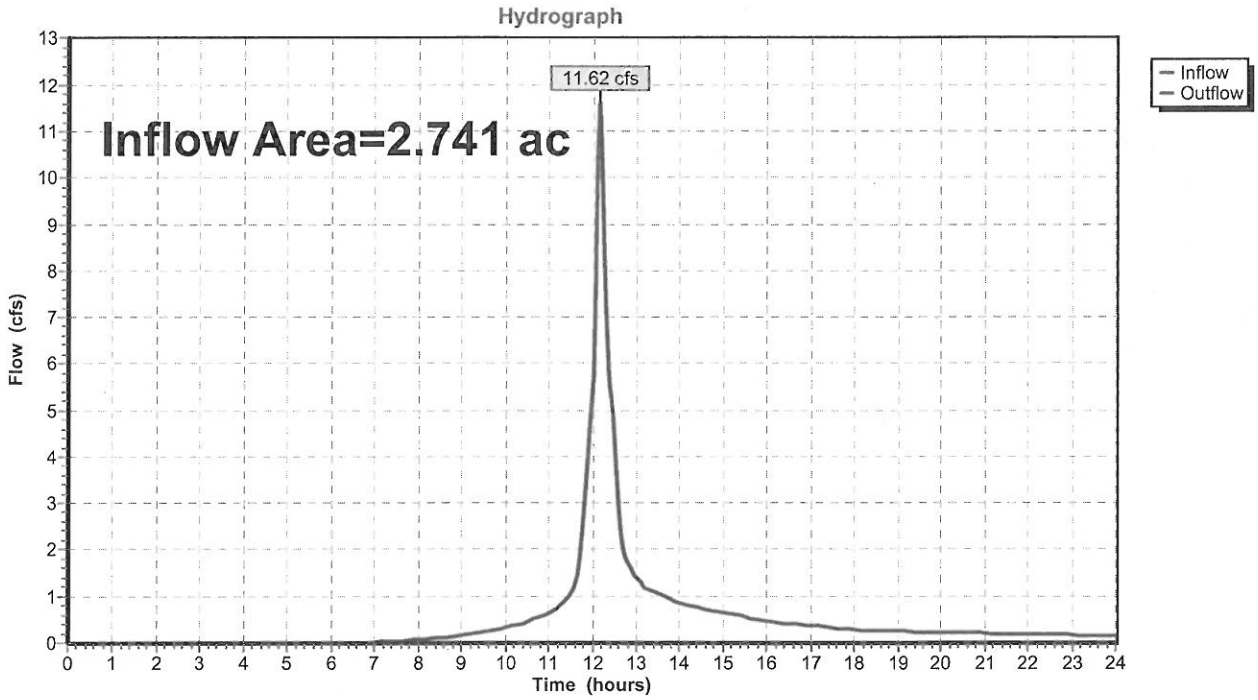


Summary for Reach 14R: POA #3

Inflow Area = 2.741 ac, 9.15% Impervious, Inflow Depth > 4.30" for 100-Year event
Inflow = 11.62 cfs @ 12.15 hrs, Volume= 0.983 af
Outflow = 11.62 cfs @ 12.15 hrs, Volume= 0.983 af, Atten= 0%, Lag= 0.0 min

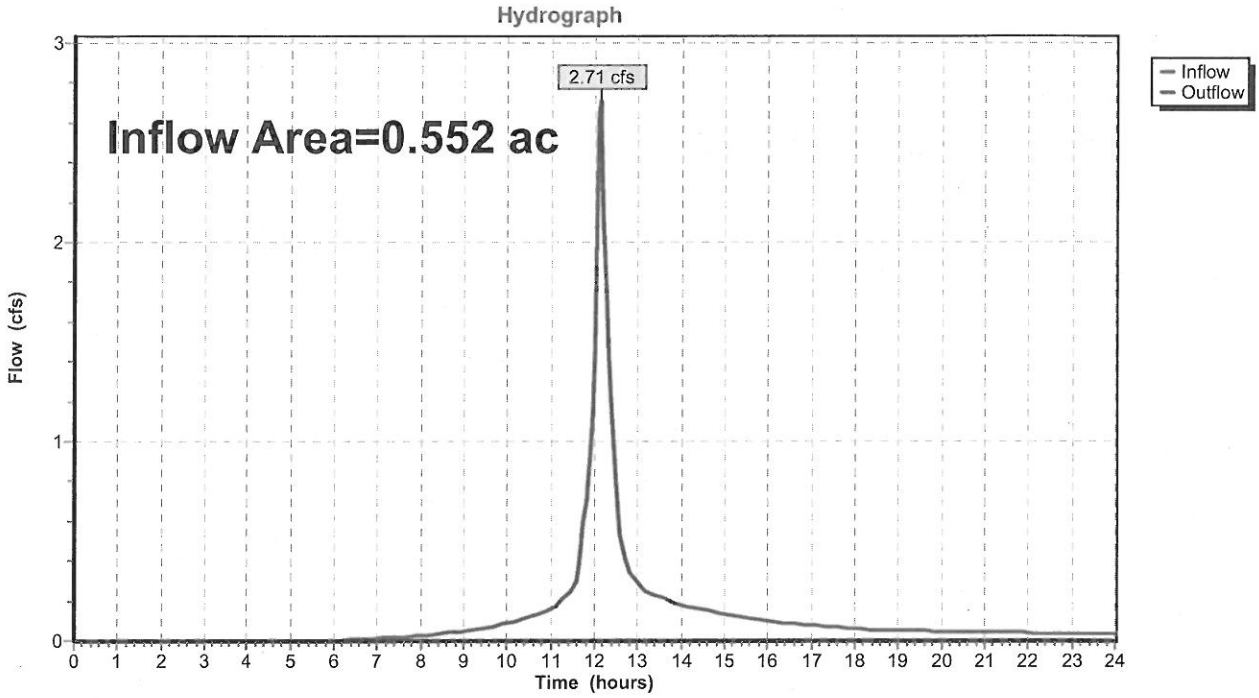
Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 14R: POA #3



Summary for Reach 15R: POA #4

Inflow Area = 0.552 ac, 28.48% Impervious, Inflow Depth > 4.74" for 100-Year event
Inflow = 2.71 cfs @ 12.12 hrs, Volume= 0.218 af
Outflow = 2.71 cfs @ 12.12 hrs, Volume= 0.218 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 15R: POA #4