BMP STANDARD 2
PRE&POST DEVELOPMENT STORMWATER ANALYSIS

COREY'S WAY MODIFIED SUBDIVISION

HINGHAM, MA

SEPTEMBER 21, 2020

Applicant:

Shepard Investments, LLC
c/o Robert Shepard
37 Derby Street Suite One
Hingham, MA 02043

Locus:
213 Cushing Street Hingham, MA

Engineer of Record:
Ross Engineering Co., Inc.

683 Main Street
Norwell, MA
781 659 1325

Table of Contents

PART I

INTRODUCTION 3

PRE & POST ANALYSIS 8

1.2 Pre Development Analysis Calculations.....

2 Year Storm .....

10 Year Storm .....

100 Year Storm .....

1.3 Post Development Analysis Calculations .....

2 Year Storm .....

10 Year Storm.....

100 Year Storm.....

PIPE SIZING ANALYSIS 9

100 Year Storm Analysis for Pipe Sizing.....

BYPASS ANALYSIS 10

100 Year Storm Analysis.....

APPENDIX A 11

1.9 Introduction

Analysis Format

The calculations of this report were generated by HydroCAD software. HydroCAD is a Computer Aided Design system for modeling the hydrology and hydraulics of stormwater runoff. It analysis runoff by a method which is based largely on the hydrology techniques developed by the Soil Conservation Service (SCS/NRCS) also known as TR-20, combined with other hydrology and hydraulics calculations. For a given rainfall event, these techniques are used to generate hydrographs throughout a watershed. Typically, this allows the engineer to verify that a given drainage system is adequate for the drainage areas that will ultimately be routed through that drainage system and will also determine the post development runoff impacts of the pre and post development conditions. The regulations require that the analysis be modeled with the TR-20 method, thus the HydroCAD software conforms to the stormwater bylaw.

SCS Unit Hydrograph Method

The SCS unit hydrograph procedure (also known as the TR-20 runoff method) generates a runoff hydrograph by the following basic steps: (For brevity, the following is a simplified description.)

1) A rainfall distribution is selected which indicates how the stormwater depth will be distributed over time. This is usually a standardized distribution, such as the SCS Type III storm, and often has a standardized duration of 24 hours.

2) The design storm rainfall depth is determined from rainfall distribution maps produced by the Cornell Method, based on the return period being modeled. Combined with the rainfall distribution, this specifies the cumulative rainfall depth at all times during the storm.

3) Based on the Time-of-Concentration, the storm is divided into "bursts" of equal duration. For each burst, the SCS runoff equation and the average Curve Number are used to determine the portion of that burst that will appear as runoff.

4) A Unit Hydrograph, in conjunction with the Time-of-Concentration, is used to determine how the runoff from a single burst is distributed over time. The result is a complete runoff hydrograph for a single burst.

5) Individual hydrographs are added together for all bursts in the storm, yielding the complete runoff hydrograph for the storm.
For a Tc of 7.5 minutes, the burst duration is 1 minute, so a 24-hour storm will consist of 1440 bursts. If each burst involves a unit hydrograph of 100 coordinates, then 140,000 coordinates must be summed to produce the composite hydrograph.

1.10 Summary of Hydrologic Analysis Results

Comparative discharge charts

The tables listed below illustrate how the peak discharges for the three design storms have been mitigated for the design points of the analysis.

DESIGN POINT 1
CUSHING STREET
PEAK DISCHARGE RATES

Storm Frequency T-year Interval	Pre-Development Conditions (cfs)	Post-Development Conditions (cfs)
2	0.03	0.03
10	0.37	0.28
100	1.69	1.05

DESIGN POINT 2
NORTHERLY PROPERTY LINE
PEAK DISCHARGE RATES

Storm Frequency T-year Interval	Pre-Development Conditions (cfs)	Post-Development Conditions (cfs)
2	0.08	0.04
10	0.50	0.26
100	1.55	1.09

DESIGN POINT 3
SOUTHERRLY PROPERTY LINE
PEAK DISCHARGE RATES

Storm Frequency T-year Interval	Pre-Development Conditions (cfs)	Post-Development Conditions (cfs)
2	0.00	0.00
10	0.00	0.00
100	0.04	0.03

DESIGN POINT 4
WESTERRLY PROPERTY LINE
PEAK DISCHARGE RATES

Storm Frequency T-year Interval	Pre-Development Conditions (cfs)	Post-Development Conditions (cfs)
2	0.00	0.000
10	0.00	0.001
100	0.010	0.010

DESIGN POINT 5
ON SITE IVW
PEAK DISCHARGE RATES

Storm Frequency T-year Interval	Pre-Development Conditions (cfs)	Post-Development Conditions (cfs)
2	0.00	0.00
10	0.00	0.01*
100	0.20	0.22*

Comparative Total Discharge Volume Charts
The tables listed below illustrate how the discharge volumes of runoff for the three design storms have been mitigated for the design points of the analysis.

DESIGN POINT 1
CUSHING STREET
TOTAL DISCHARGE VOLUMES

Storm Frequency T-year Interval	Pre-Development Conditions (AF)	Post-Development Conditions (AF)
2	0.009	0.010
10	0.046	0.040
100	0.138	0.111

DESIGN POINT 2
NORTHERLY PROPERTY LINE
TOTAL DISCHARGE VOLUMES

Storm Frequency T-year Interval	Pre-Development Conditions (AF)	Post-Development Conditions (AF)
2	0.013	0.007
10	0.045	0.027
100	0.118	0.09

DESIGN POINT 3
SOUTHERRLY PROPERTY LINE
TOTAL DISCHARGE VOLUMES

Storm Frequency T-year Interval	Pre-Development Conditions (AF)	Post-Development Conditions (AF)
2	0.000	0.000
10	0.000	0.000
100	0.019	0.019

DESIGN POINT 4
WESTERRLY PROPERTY LINE
TOTAL DISCHARGE VOLUMES

Storm Frequency T-year Interval	Pre-Development Conditions (AF)	Post-Development Conditions (AF)
2	0.000	0.000
10	0.000	0.000
100	0.005	0.005

DESIGN POINT 5
ON SITE IVW
TOTAL DISCHARGE VOLUMES

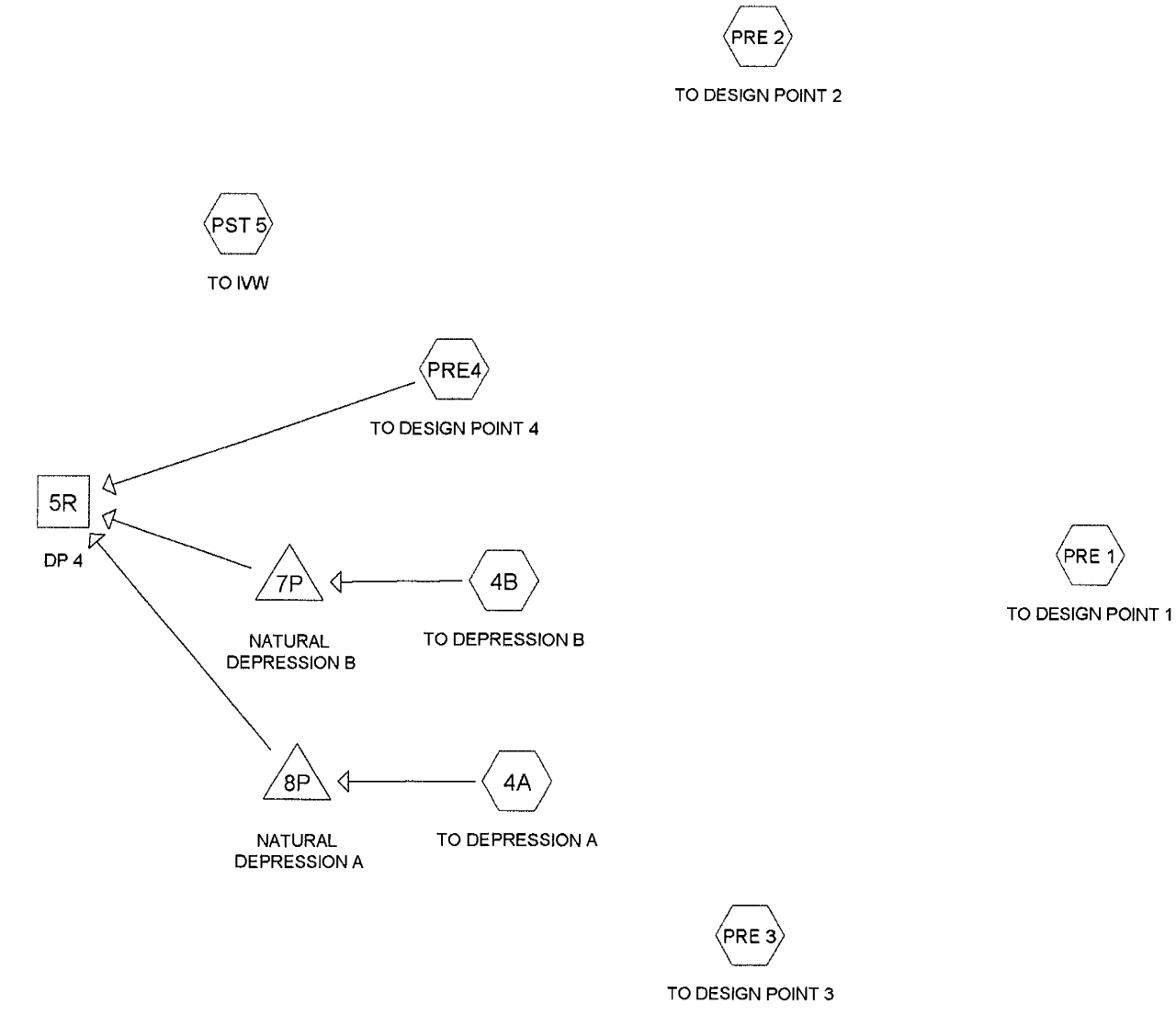
Storm Frequency T-year Interval	Pre-Development Conditions (AF)	Post-Development Conditions (AF)
2	0.000	0.000
10	0.004	0.007*
100	0.034	0.041*

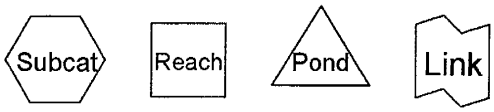
*Higher rates to the IVW resulted from a reduction of the tributary watershed area which consisted of all HSG soils resulting in a higher composite RCN. This is not a true increase in discharge or volume to the IVW.

The results of this analysis indicate that the proposed drainage system will reduce the peak flow and volume of discharge of stormwater off site to below that of the pre development condition. These reductions are shown for the 2-year, 10-year, and 100-year rainfall events. The results shown above satisfy the requirements of DEP Stormwater Management Regulations and the performance standards prescribed in the Hingham Rules and Regulations Governing the Subdivision of Land.

1.2 The following calculations are the pre and post development stormwater analysis that was performed by using the Hydrocad stormwater modeling program.

PRE & POST ANALYSIS





Routing Diagram for 4072 PRE 9-2-20
Prepared by Microsoft, Printed 9/21/2020
HydroCAD® 10.00-20 s/n 02764 © 2017 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.039	49	50-75% Grass cover, Fair, HSG A (PRE 1)
0.012	69	50-75% Grass cover, Fair, HSG B (PRE 1)
0.119	68	<50% Grass cover, Poor, HSG A (PRE 1)
0.005	79	<50% Grass cover, Poor, HSG B (PRE 1)
0.240	39	>75% Grass cover, Good, HSG A (PRE 1)
0.200	61	>75% Grass cover, Good, HSG B (PRE 1)
0.013	96	Gravel surface, HSG A (PRE 1)
0.006	96	Gravel surface, HSG B (PRE 1)
0.009	96	LEDGE (PRE 1)
0.021	98	Paved parking, HSG A (PRE 1)
0.031	98	Unconnected roofs, HSG A (PRE 1)
0.047	78	WETLAND (PST 5)
0.003	36	Woods, Fair, HSG A (PRE 2)
0.113	60	Woods, Fair, HSG B (PRE 2)
3.002	30	Woods, Good, HSG A (4A, 4B, PRE 1, PRE 2, PRE 3, PRE4, PST 5)
0.846	55	Woods, Good, HSG B (PRE 1, PRE 2, PST 5)
0.012	66	Woods, Poor, HSG B (PRE 2)
4.718	**40**	**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.039	0.012	0.000	0.000	0.000	0.052	50-75% Grass cover, Fair	PRE 1
0.119	0.005	0.000	0.000	0.000	0.124	<50% Grass cover, Poor	PRE 1
0.240	0.200	0.000	0.000	0.000	0.439	>75% Grass cover, Good	PRE 1
0.013	0.006	0.000	0.000	0.000	0.019	Gravel surface	PRE 1
0.000	0.000	0.000	0.000	0.009	0.009	LEDGE	PRE 1
0.021	0.000	0.000	0.000	0.000	0.021	Paved parking	PRE 1
0.031	0.000	0.000	0.000	0.000	0.031	Unconnected roofs	PRE 1
0.000	0.000	0.000	0.000	0.047	0.047	WETLAND	PST 5
0.003	0.113	0.000	0.000	0.000	0.116	Woods, Fair	PRE 2
3.002	0.846	0.000	0.000	0.000	3.849	Woods, Good	4A, 4B, PRE 1, PRE 2, PRE 3, PRE4, PST 5
0.000	0.012	0.000	0.000	0.000	0.012	Woods, Poor	PRE 2
3.468	**1.194**	**0.000**	**0.000**	**0.055**	**4.718**	**TOTAL AREA**	

Summary for Subcatchment 4A: TO DEPRESSION A

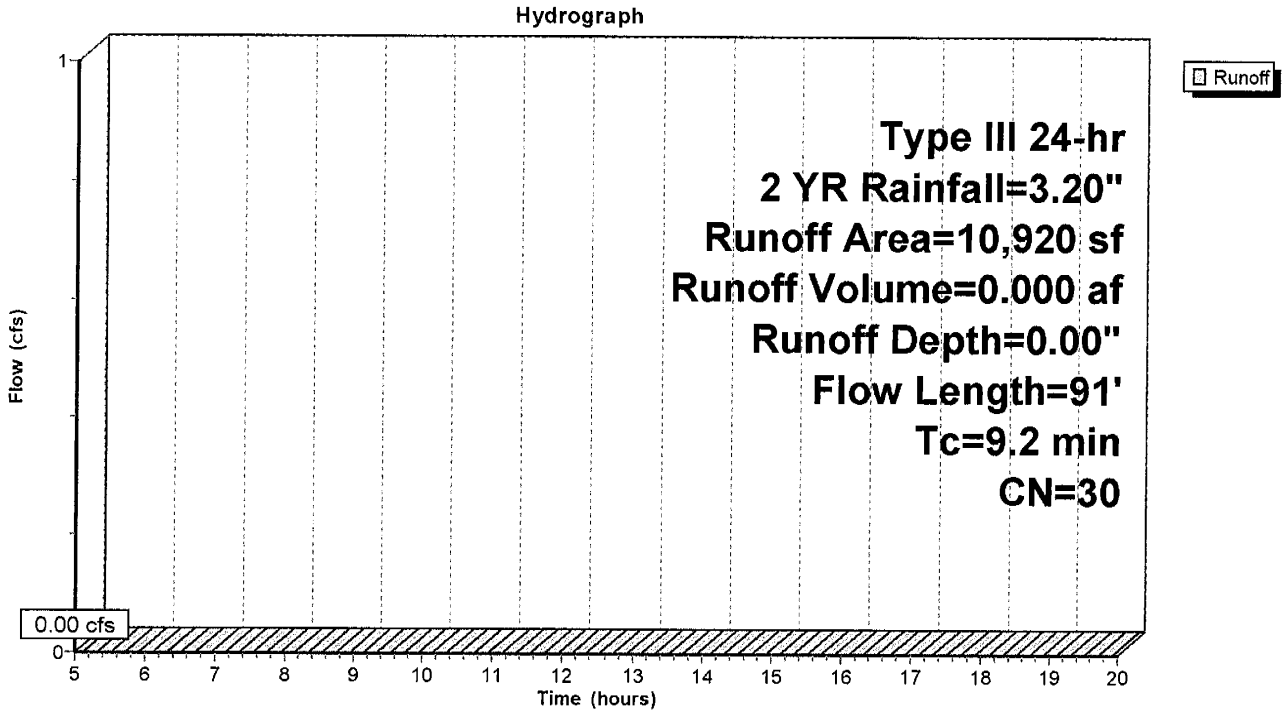
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.20"

Area (sf)	CN	Description
10,920	30	Woods, Good, HSG A
10,920		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	50	0.0482	0.10		**Sheet Flow, SEG 1** Woods: Light underbrush n= 0.400 P2= 3.20"
0.5	41	0.0839	1.45		**Shallow Concentrated Flow, SEG 2** Woodland Kv= 5.0 fps
9.2	91	Total			

Subcatchment 4A: TO DEPRESSION A



Summary for Subcatchment 4B: TO DEPRESSION B

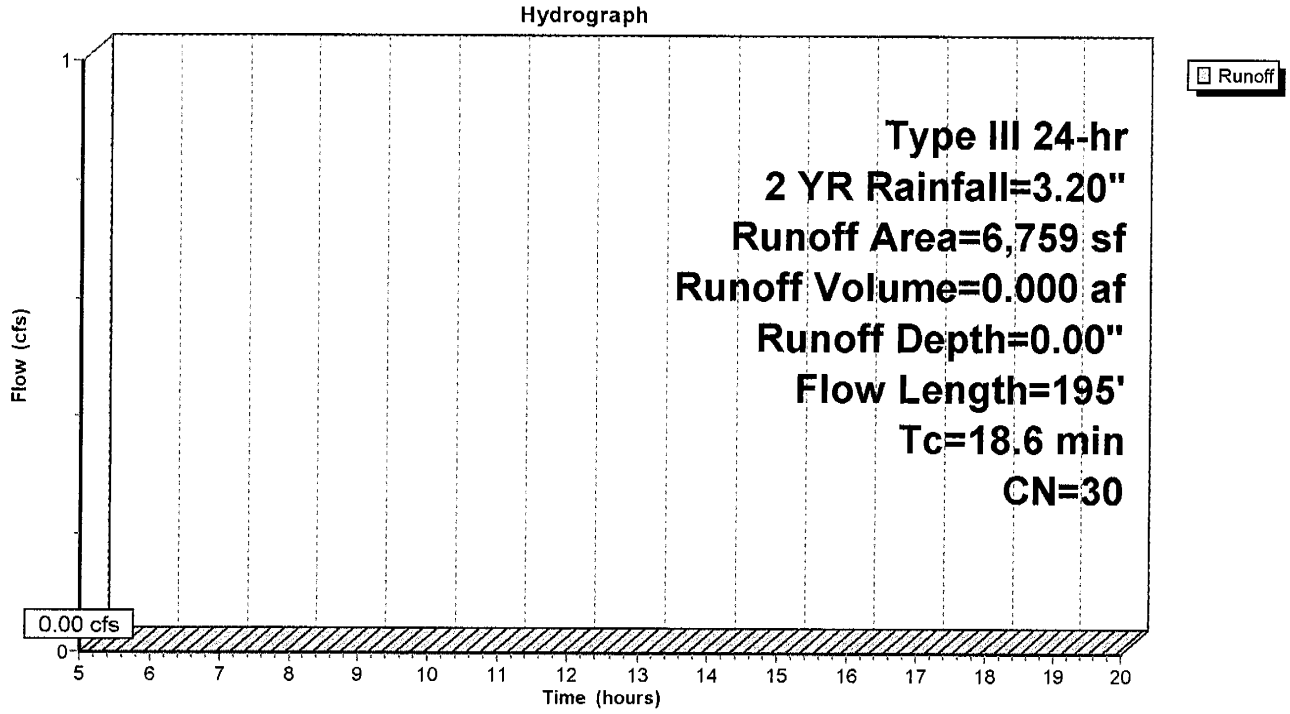
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.20"

Area (sf)	CN	Description
6,759	30	Woods, Good, HSG A
6,759		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.1	50	0.0088	0.05		**Sheet Flow, SEG 1** Woods: Light underbrush n= 0.400 P2= 3.20"
1.5	145	0.1090	1.65		**Shallow Concentrated Flow, SEG 2** Woodland Kv= 5.0 fps
18.6	195	Total			

Subcatchment 4B: TO DEPRESSION B



Summary for Subcatchment PRE 1: TO DESIGN POINT 1

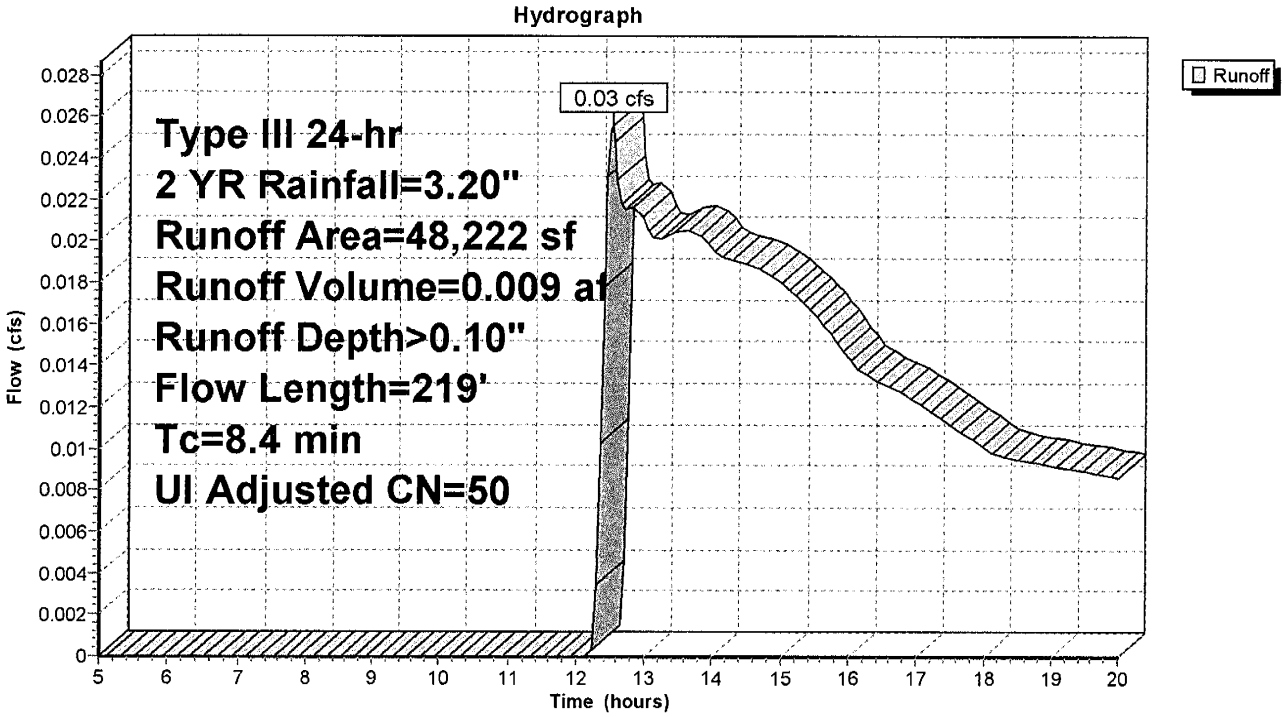
Runoff = 0.03 cfs @ 12.51 hrs, Volume= 0.009 af, Depth> 0.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.20"

	Area (sf)	CN	Adj	Description
*	378	96		LEDGE
	907	98		Paved parking, HSG A
	565	96		Gravel surface, HSG A
	262	96		Gravel surface, HSG B
	1,719	49		50-75% Grass cover, Fair, HSG A
	527	69		50-75% Grass cover, Fair, HSG B
	5,186	68		<50% Grass cover, Poor, HSG A
	223	79		<50% Grass cover, Poor, HSG B
	10,436	39		>75% Grass cover, Good, HSG A
	8,707	61		>75% Grass cover, Good, HSG B
	5,978	55		Woods, Good, HSG B
	11,982	30		Woods, Good, HSG A
	1,352	98		Unconnected roofs, HSG A
	48,222	51	50	Weighted Average, UI Adjusted
	45,963			95.32% Pervious Area
	2,259			4.68% Impervious Area
	1,352			59.85% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	50	0.0230	0.11		**Sheet Flow, SEG 1**
					Grass: Dense n= 0.240 P2= 3.20"
0.6	169	0.1011	5.12		**Shallow Concentrated Flow, SEG 2**
					Unpaved Kv= 16.1 fps
8.4	219	Total			

Subcatchment PRE 1: TO DESIGN POINT 1



Summary for Subcatchment PRE 2: TO DESIGN POINT 2

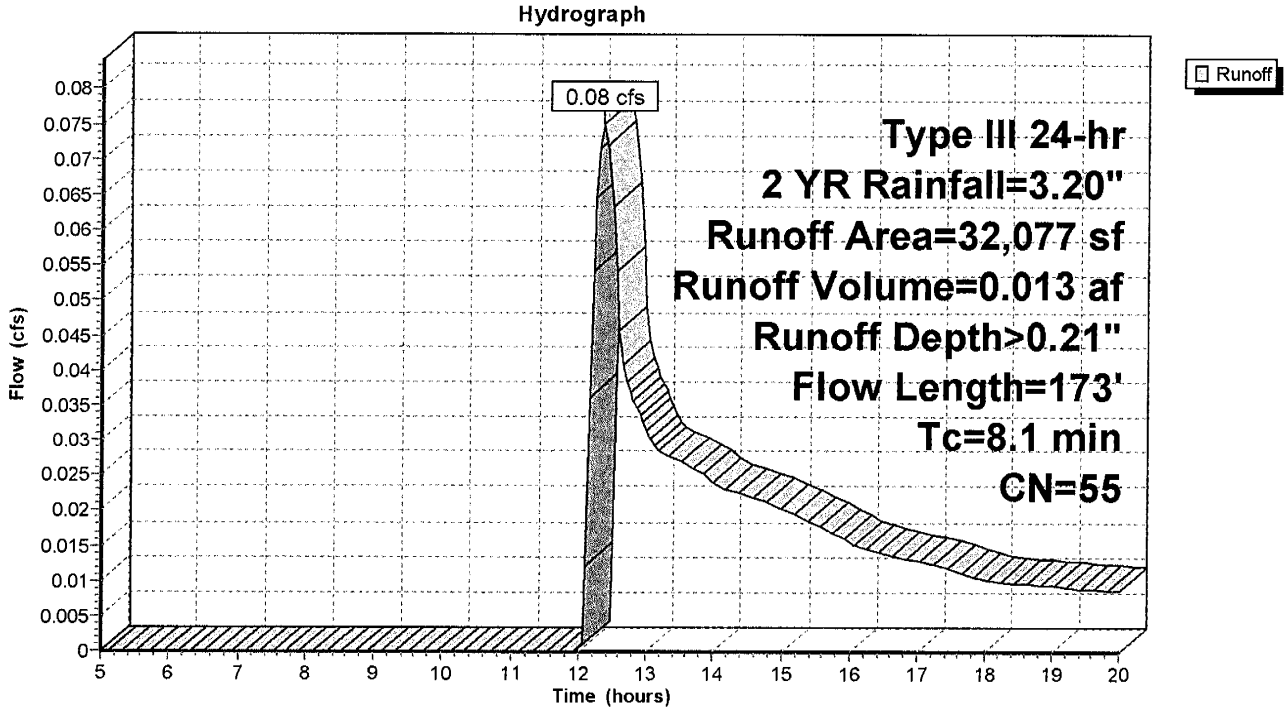
Runoff = 0.08 cfs @ 12.37 hrs, Volume= 0.013 af, Depth> 0.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.20"

Area (sf)	CN	Description
130	36	Woods, Fair, HSG A
4,905	60	Woods, Fair, HSG B
580	30	Woods, Good, HSG A
25,919	55	Woods, Good, HSG B
543	66	Woods, Poor, HSG B
32,077	55	Weighted Average
32,077		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0800	0.12		**Sheet Flow, SEG 1** Woods: Light underbrush n= 0.400 P2= 3.20"
1.0	123	0.1580	1.99		**Shallow Concentrated Flow, SEG 2** Woodland Kv= 5.0 fps
8.1	173	Total			

Subcatchment PRE 2: TO DESIGN POINT 2



Summary for Subcatchment PRE 3: TO DESIGN POINT 3

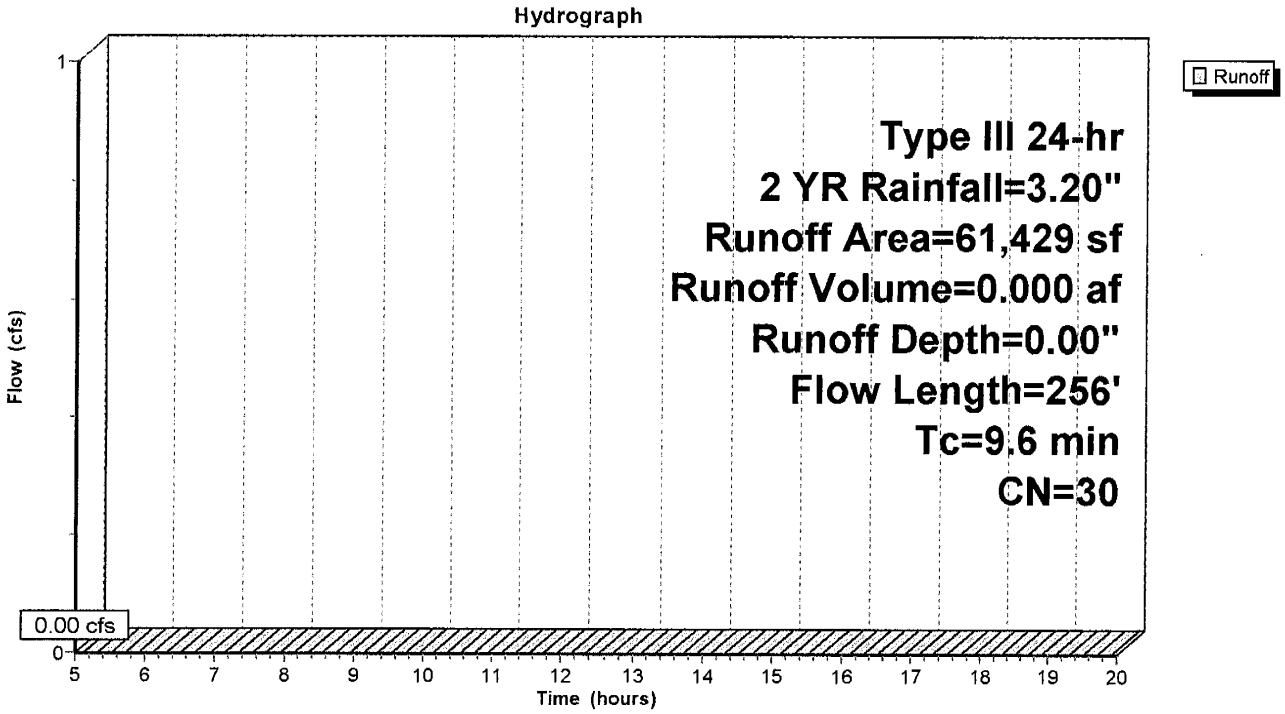
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.20"

Area (sf)	CN	Description
61,429	30	Woods, Good, HSG A
61,429		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	50	0.0686	0.11		**Sheet Flow, SEG 1** Woods: Light underbrush n= 0.400 P2= 3.20"
2.1	206	0.1045	1.62		**Shallow Concentrated Flow, SEG 2** Woodland Kv= 5.0 fps
9.6	256	Total			

Subcatchment PRE 3: TO DESIGN POINT 3



Summary for Subcatchment PRE4: TO DESIGN POINT 4

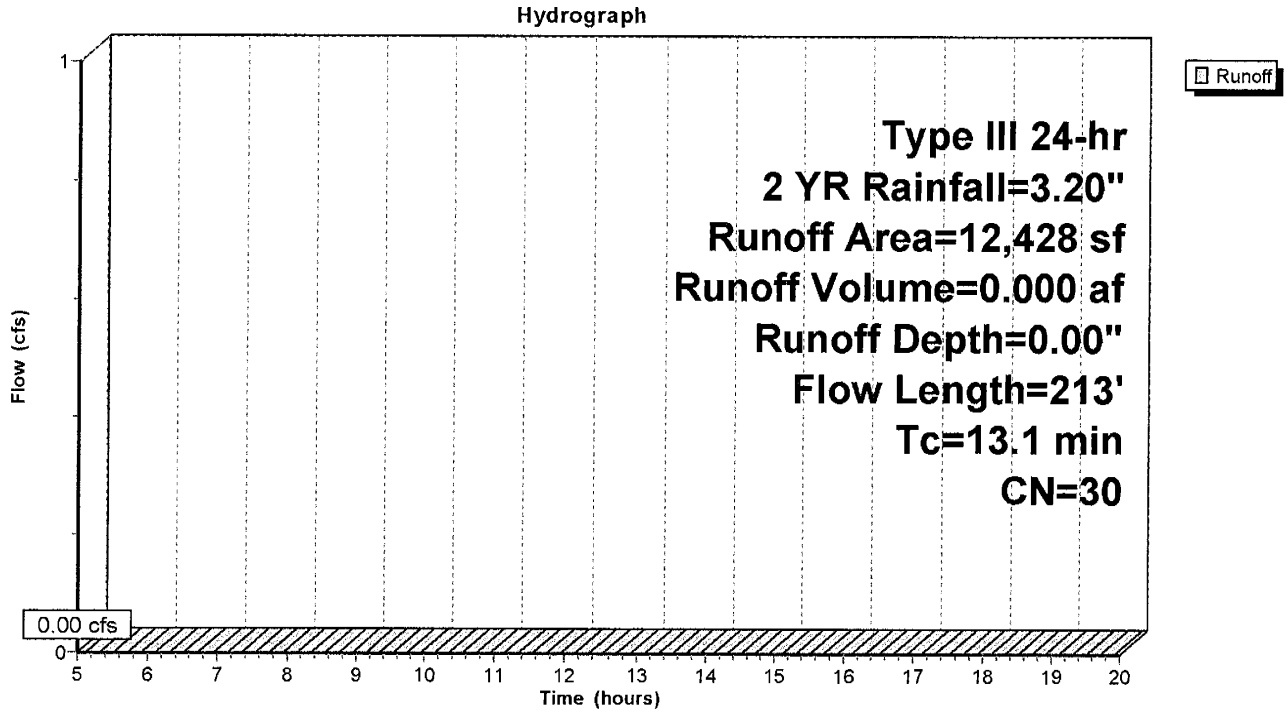
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.20"

Area (sf)	CN	Description
12,428	30	Woods, Good, HSG A
12,428		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	46	0.0217	0.07		**Sheet Flow, SEG 1** Woods: Light underbrush n= 0.400 P2= 3.20"
1.9	167	0.0880	1.48		**Shallow Concentrated Flow, SEG 2** Woodland Kv= 5.0 fps
13.1	213	Total			

Subcatchment PRE4: TO DESIGN POINT 4



Summary for Subcatchment PST 5: TO IVW

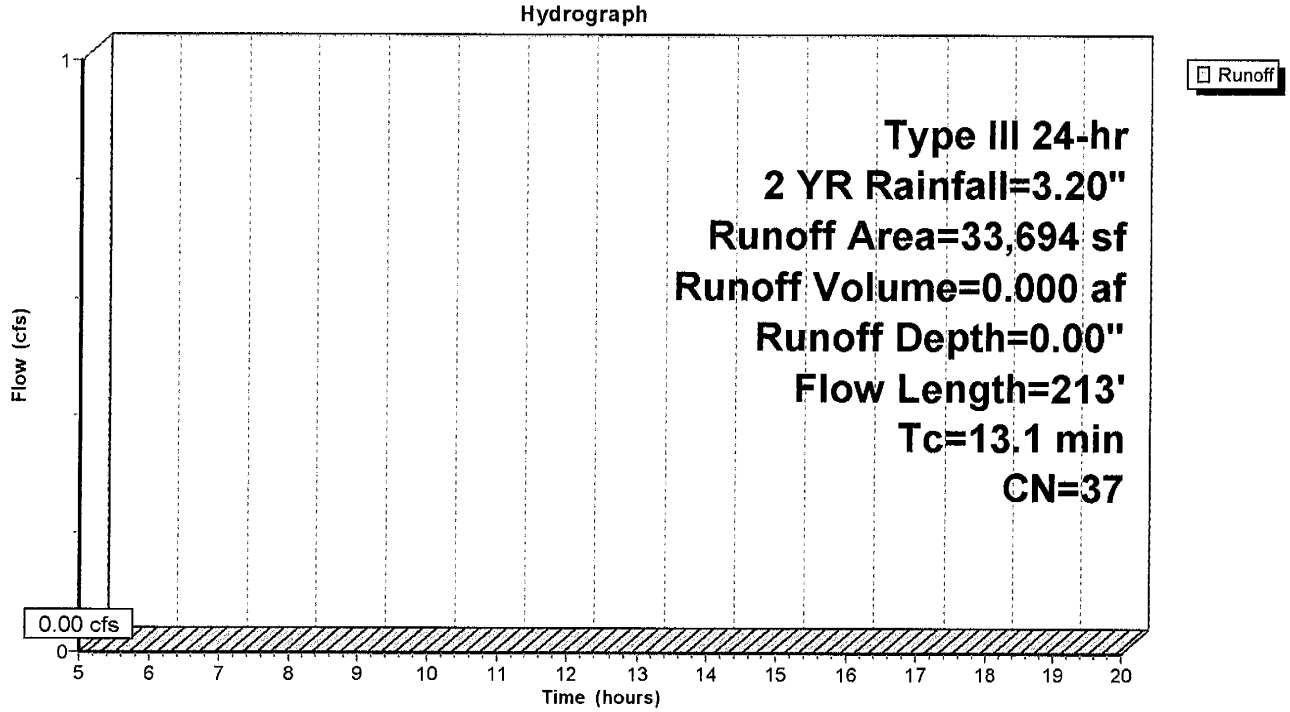
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.20"

	Area (sf)	CN	Description
*	2,039	78	WETLAND
	26,690	30	Woods, Good, HSG A
	4,965	55	Woods, Good, HSG B
	33,694	37	Weighted Average
	33,694		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	46	0.0217	0.07		**Sheet Flow, SEG 1** Woods: Light underbrush n= 0.400 P2= 3.20"
1.9	167	0.0880	1.48		**Shallow Concentrated Flow, SEG 2** Woodland Kv= 5.0 fps
13.1	213	Total			

Subcatchment PST 5: TO IVW



Summary for Reach 5R: DP 4

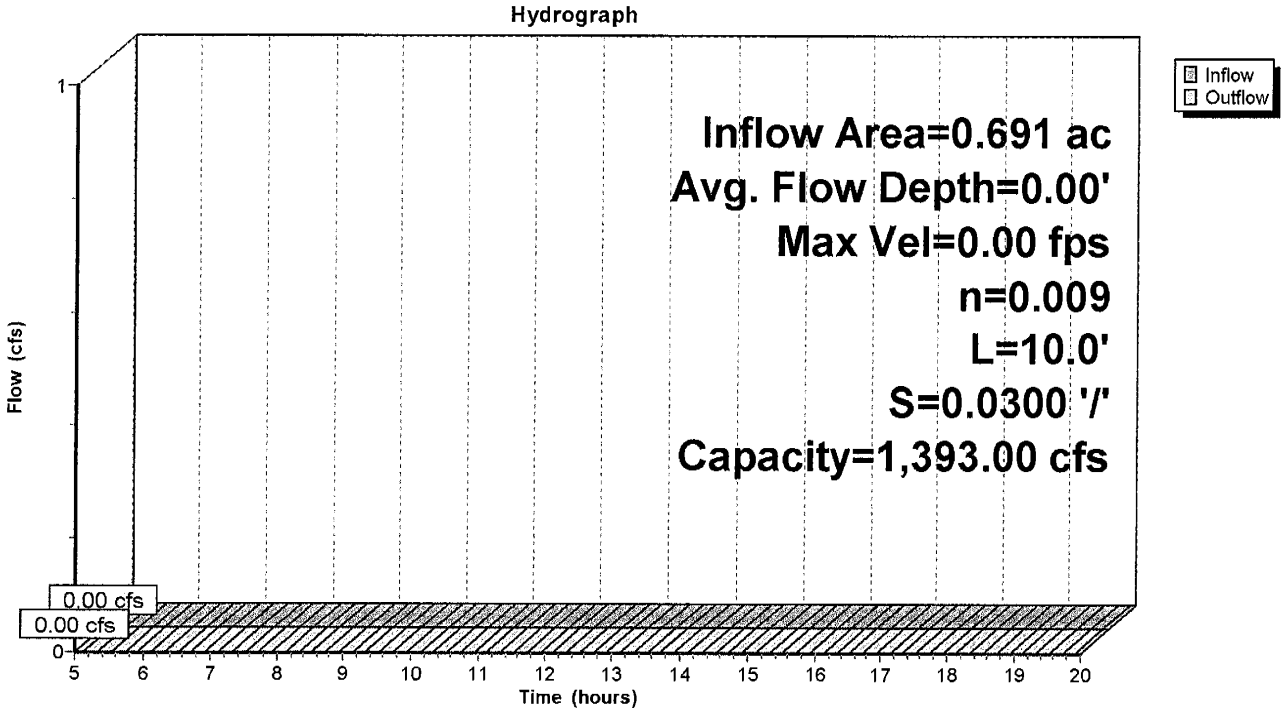
Inflow Area = 0.691 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2 YR event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 5.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 50.0 sf, Capacity= 1,393.00 cfs

50.00' x 1.00' deep channel, n= 0.009 PVC, smooth interior
Length= 10.0' Slope= 0.0300 '/'
Inlet Invert= 63.50', Outlet Invert= 63.20'

Reach 5R: DP 4



Summary for Pond 7P: NATURAL DEPRESSION B

Inflow Area =	0.155 ac,	0.00% Impervious,	Inflow Depth =	0.00"	for 2 YR event
Inflow =	0.00 cfs @	5.00 hrs, Volume=	0.000 af		
Outflow =	0.00 cfs @	5.00 hrs, Volume=	0.000 af,	Atten= 0%,	Lag= 0.0 min
Discarded =	0.00 cfs @	5.00 hrs, Volume=	0.000 af		
Primary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af		

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 63.60' @ 5.00 hrs Surf.Area= 1 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	63.60'	531 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

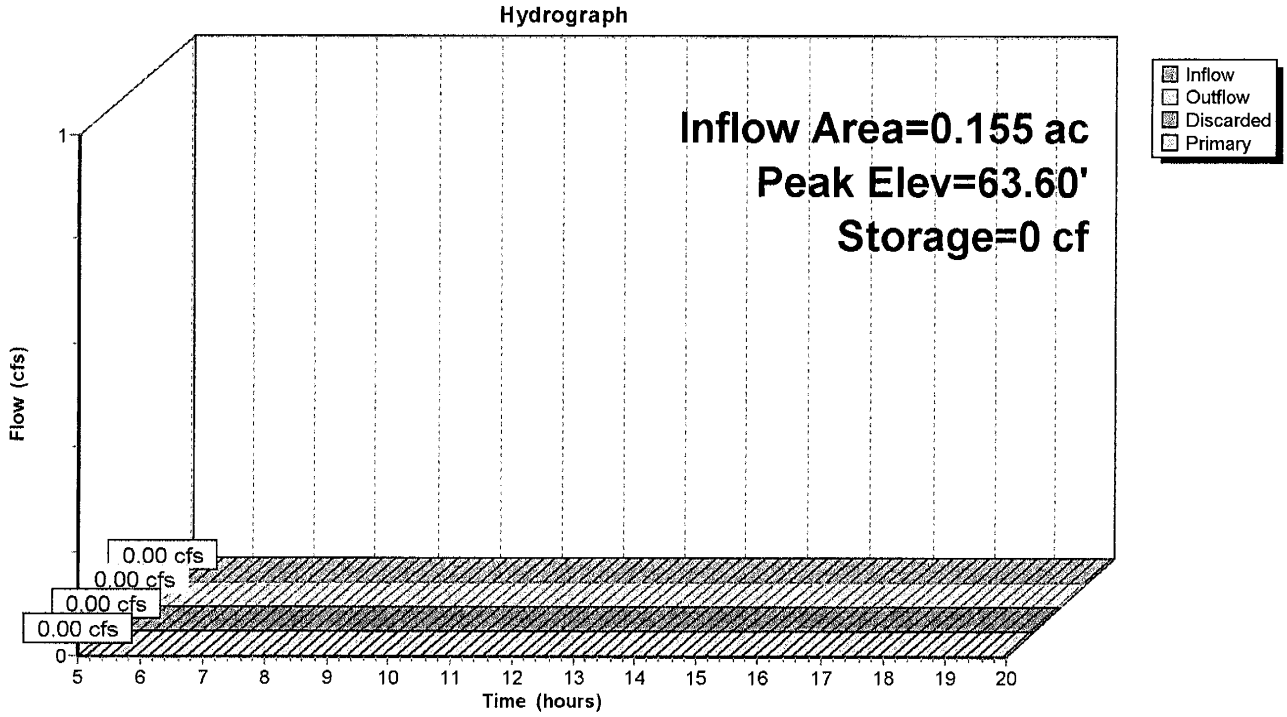
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
63.60	1	0	0
64.00	136	27	27
65.00	403	270	297
65.50	533	234	531

Device	Routing	Invert	Outlet Devices
#1	Discarded	63.60'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 55.00'
#2	Primary	62.70'	**Asymmetrical Weir, C= 3.27** Offset (feet) 0.00 1.80 4.90 65.00 65.50 Height (feet) 5.50 5.00 2.70 4.10 5.50
#3	Primary	64.60'	**Asymmetrical Weir, C= 3.27** Offset (feet) 0.00 0.90 1.30 2.25 6.00 Elev. (feet) 65.50 65.00 64.60 65.00 65.50

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=63.60' (Free Discharge)
└─**1=Exfiltration** (Passes 0.00 cfs of 0.00 cfs potential flow)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=63.60' (Free Discharge)
├─**2=Asymmetrical Weir** (Passes 0.00 cfs of 44.50 cfs potential flow)
└─**3=Asymmetrical Weir** (Controls 0.00 cfs)

Pond 7P: NATURAL DEPRESSION B



Summary for Pond 8P: NATURAL DEPRESSION A

Inflow Area =	0.251 ac,	0.00% Impervious,	Inflow Depth =	0.00"	for 2 YR event
Inflow =	0.00 cfs @	5.00 hrs, Volume=	0.000 af		
Outflow =	0.00 cfs @	5.00 hrs, Volume=	0.000 af,	Atten= 0%,	Lag= 0.0 min
Discarded =	0.00 cfs @	5.00 hrs, Volume=	0.000 af		
Primary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af		

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 67.46' @ 5.00 hrs Surf.Area= 1 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	67.46'	671 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

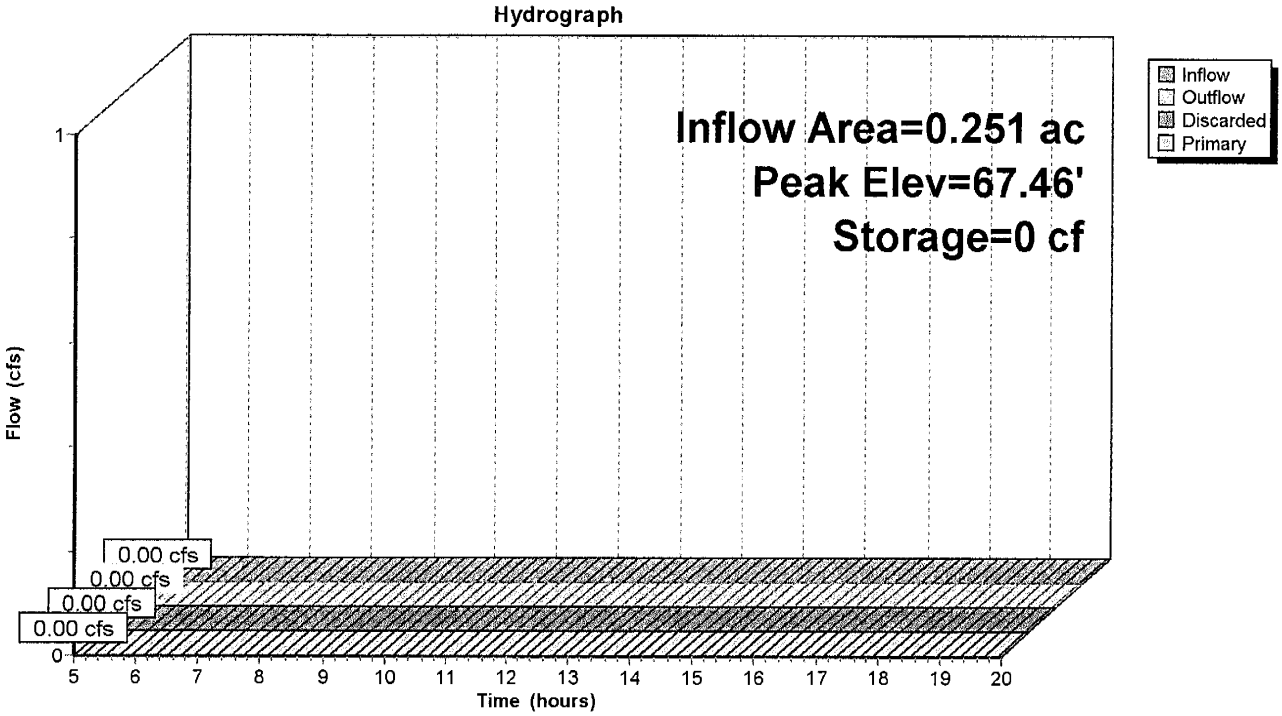
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
67.46	1	0	0
68.00	184	50	50
69.00	1,059	622	671

Device	Routing	Invert	Outlet Devices
#1	Discarded	67.46'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 55.00'
#2	Primary	68.44'	**Asymmetrical Weir, C= 3.27** Offset (feet) 0.00 3.00 4.50 6.00 9.00 Height (feet) 9.00 8.60 8.44 8.80 9.00

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=67.46' (Free Discharge)
└**1=Exfiltration** (Passes 0.00 cfs of 0.00 cfs potential flow)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=67.46' (Free Discharge)
└**2=Asymmetrical Weir** (Controls 0.00 cfs)

Pond 8P: NATURAL DEPRESSION A



Summary for Subcatchment 4A: TO DEPRESSION A

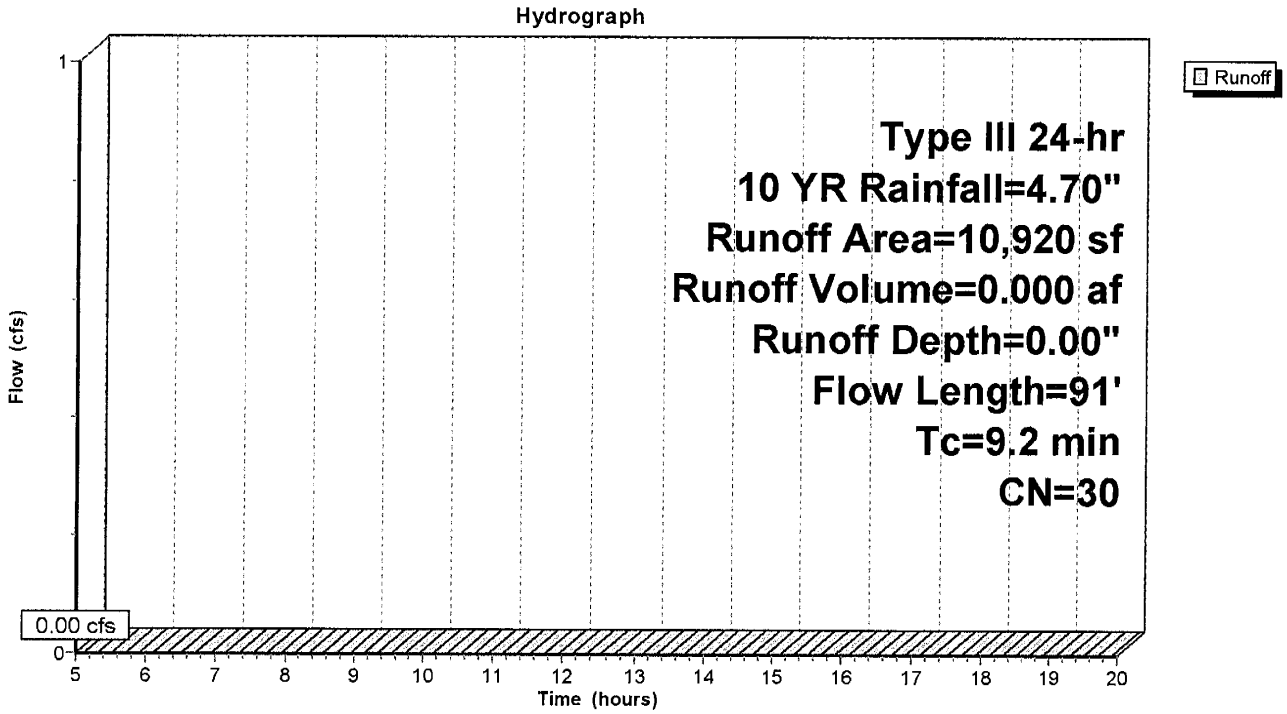
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

Area (sf)	CN	Description
10,920	30	Woods, Good, HSG A
10,920		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	50	0.0482	0.10		**Sheet Flow, SEG 1** Woods: Light underbrush n= 0.400 P2= 3.20"
0.5	41	0.0839	1.45		**Shallow Concentrated Flow, SEG 2** Woodland Kv= 5.0 fps
9.2	91	Total			

Subcatchment 4A: TO DEPRESSION A



Summary for Subcatchment 4B: TO DEPRESSION B

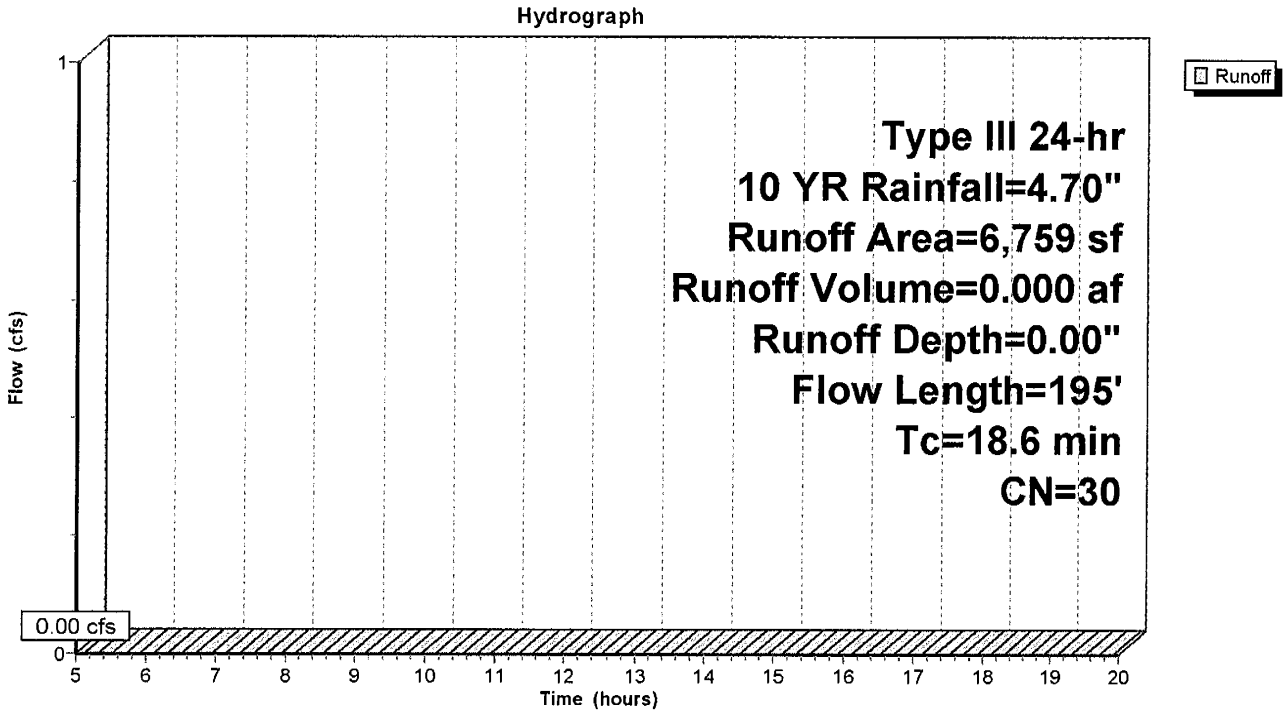
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

Area (sf)	CN	Description
6,759	30	Woods, Good, HSG A
6,759		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.1	50	0.0088	0.05		**Sheet Flow, SEG 1** Woods: Light underbrush n= 0.400 P2= 3.20"
1.5	145	0.1090	1.65		**Shallow Concentrated Flow, SEG 2** Woodland Kv= 5.0 fps
18.6	195	Total			

Subcatchment 4B: TO DEPRESSION B



Summary for Subcatchment PRE 1: TO DESIGN POINT 1

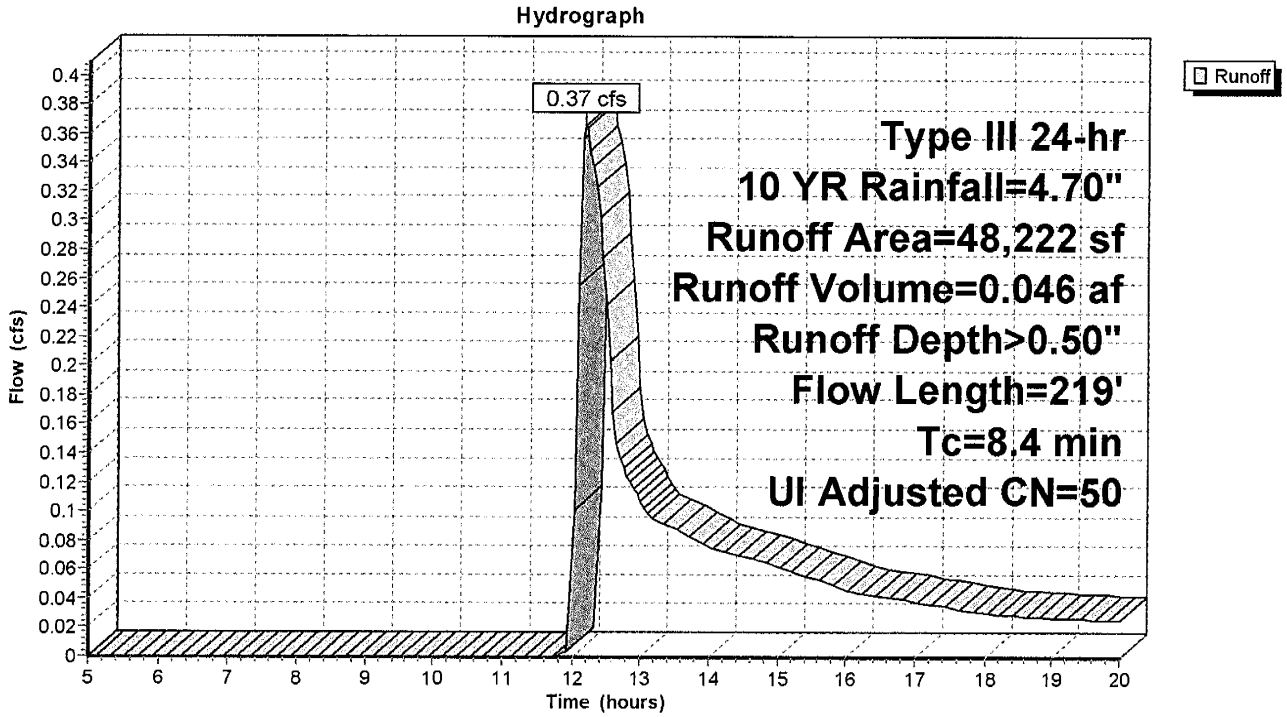
Runoff = 0.37 cfs @ 12.19 hrs, Volume= 0.046 af, Depth> 0.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

	Area (sf)	CN	Adj	Description
*	378	96		LEDGE
	907	98		Paved parking, HSG A
	565	96		Gravel surface, HSG A
	262	96		Gravel surface, HSG B
	1,719	49		50-75% Grass cover, Fair, HSG A
	527	69		50-75% Grass cover, Fair, HSG B
	5,186	68		<50% Grass cover, Poor, HSG A
	223	79		<50% Grass cover, Poor, HSG B
	10,436	39		>75% Grass cover, Good, HSG A
	8,707	61		>75% Grass cover, Good, HSG B
	5,978	55		Woods, Good, HSG B
	11,982	30		Woods, Good, HSG A
	1,352	98		Unconnected roofs, HSG A
	48,222	51	50	Weighted Average, UI Adjusted
	45,963			95.32% Pervious Area
	2,259			4.68% Impervious Area
	1,352			59.85% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	50	0.0230	0.11		**Sheet Flow, SEG 1**
					Grass: Dense n= 0.240 P2= 3.20"
0.6	169	0.1011	5.12		**Shallow Concentrated Flow, SEG 2**
					Unpaved Kv= 16.1 fps
8.4	219	Total			

Subcatchment PRE 1: TO DESIGN POINT 1



Summary for Subcatchment PRE 2: TO DESIGN POINT 2

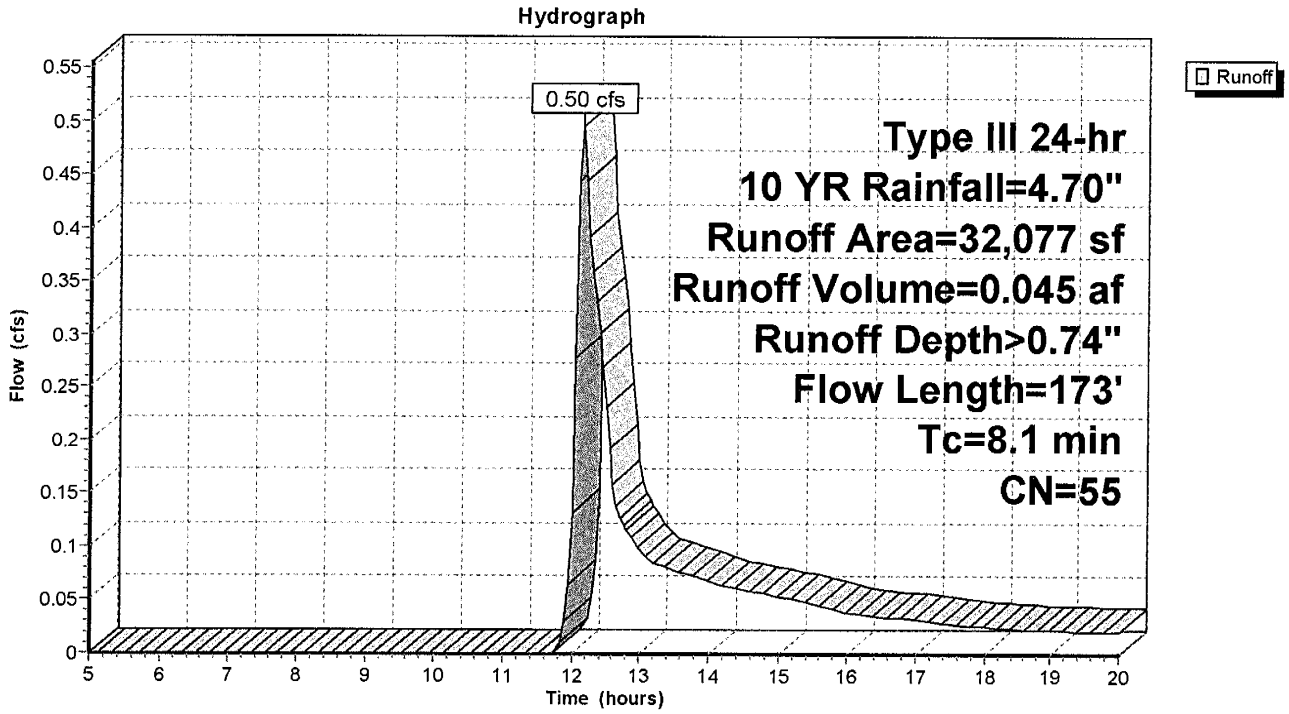
Runoff = 0.50 cfs @ 12.15 hrs, Volume= 0.045 af, Depth> 0.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

Area (sf)	CN	Description
130	36	Woods, Fair, HSG A
4,905	60	Woods, Fair, HSG B
580	30	Woods, Good, HSG A
25,919	55	Woods, Good, HSG B
543	66	Woods, Poor, HSG B
32,077	55	Weighted Average
32,077		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0800	0.12		**Sheet Flow, SEG 1** Woods: Light underbrush n= 0.400 P2= 3.20"
1.0	123	0.1580	1.99		**Shallow Concentrated Flow, SEG 2** Woodland Kv= 5.0 fps
8.1	173	Total			

Subcatchment PRE 2: TO DESIGN POINT 2



Summary for Subcatchment PRE 3: TO DESIGN POINT 3

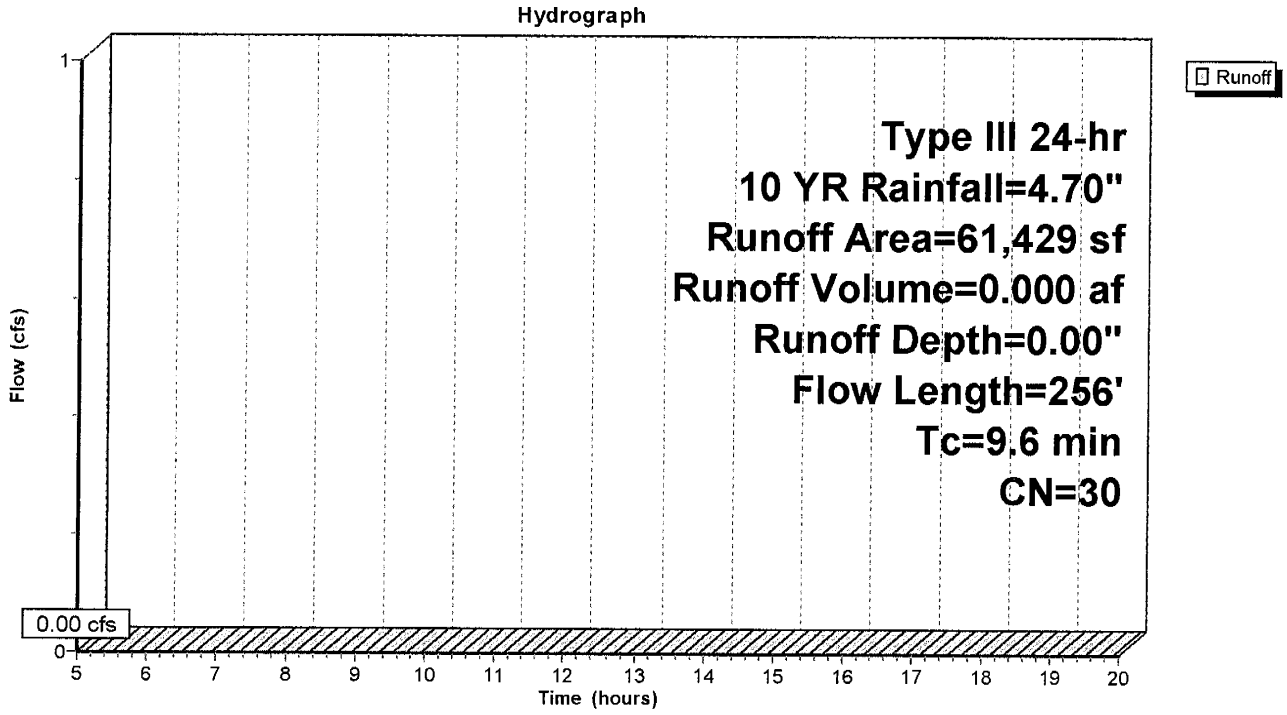
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

Area (sf)	CN	Description
61,429	30	Woods, Good, HSG A
61,429		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	50	0.0686	0.11		**Sheet Flow, SEG 1** Woods: Light underbrush n= 0.400 P2= 3.20"
2.1	206	0.1045	1.62		**Shallow Concentrated Flow, SEG 2** Woodland Kv= 5.0 fps
9.6	256	Total			

Subcatchment PRE 3: TO DESIGN POINT 3



Summary for Subcatchment PRE4: TO DESIGN POINT 4

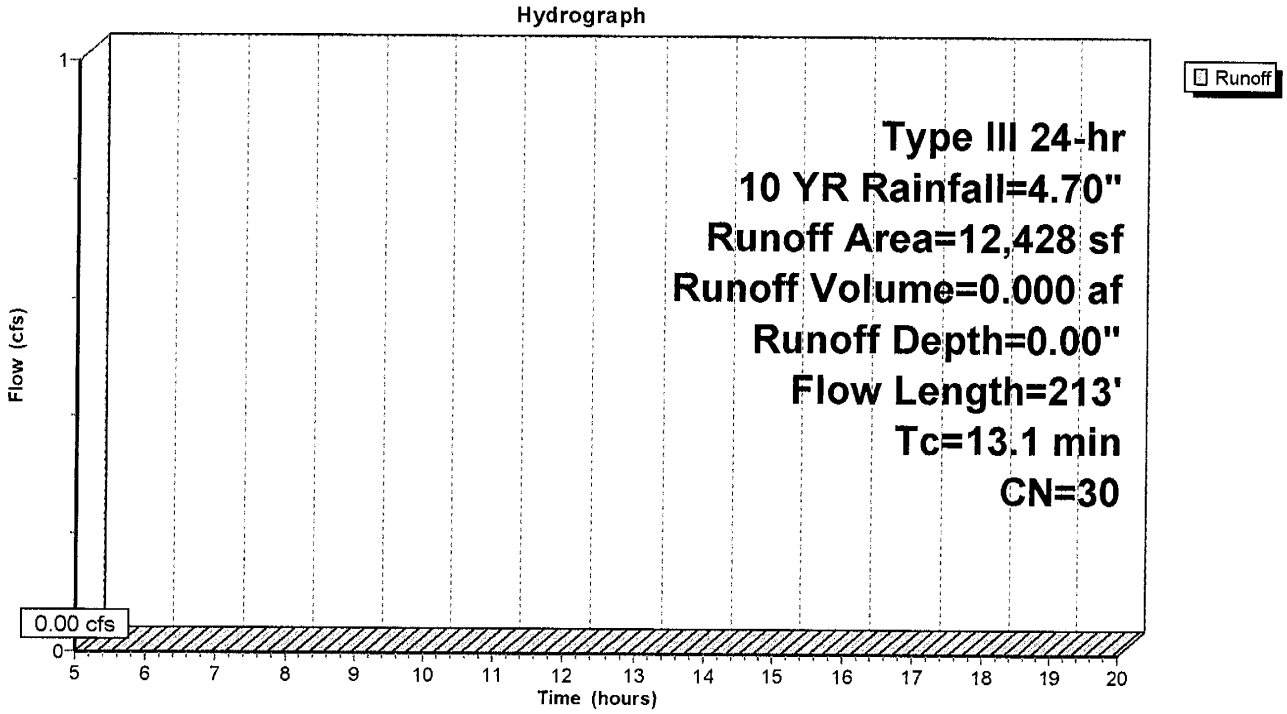
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

Area (sf)	CN	Description
12,428	30	Woods, Good, HSG A
12,428		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	46	0.0217	0.07		**Sheet Flow, SEG 1** Woods: Light underbrush n= 0.400 P2= 3.20"
1.9	167	0.0880	1.48		**Shallow Concentrated Flow, SEG 2** Woodland Kv= 5.0 fps
13.1	213	Total			

Subcatchment PRE4: TO DESIGN POINT 4



Summary for Subcatchment PST 5: TO IVW

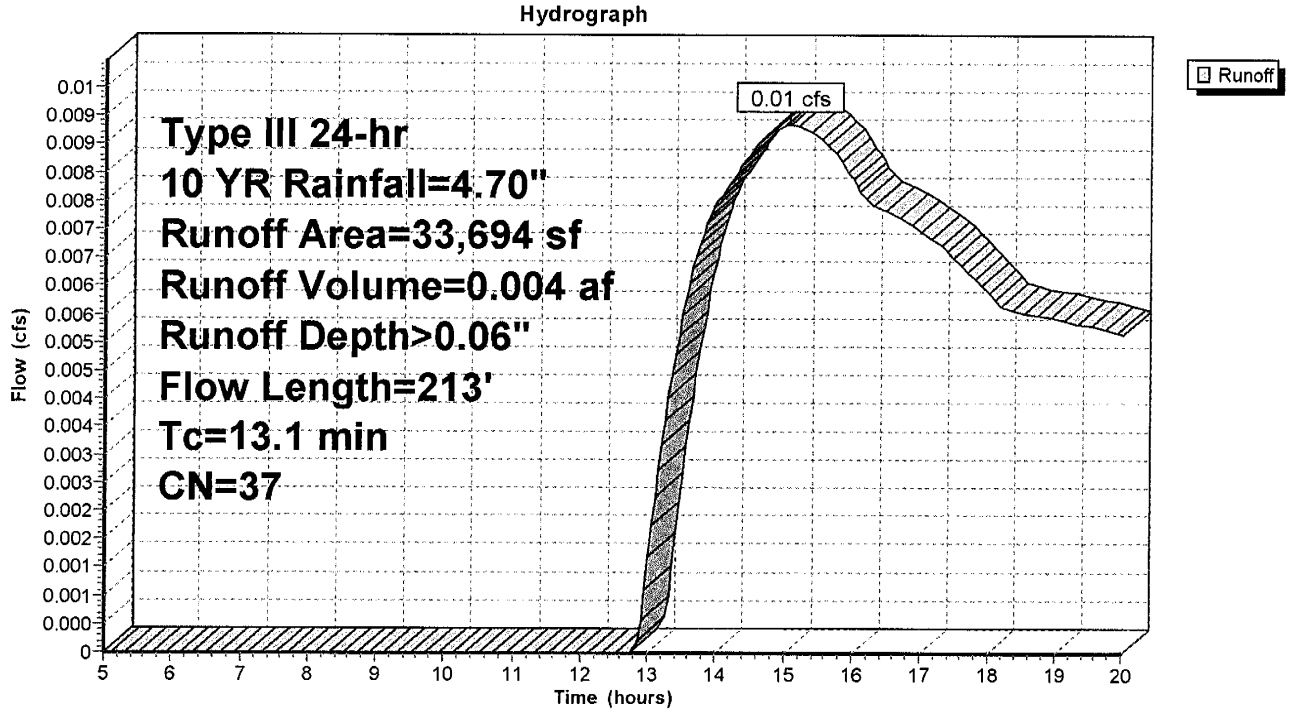
Runoff = 0.01 cfs @ 15.07 hrs, Volume= 0.004 af, Depth> 0.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

	Area (sf)	CN	Description
*	2,039	78	WETLAND
	26,690	30	Woods, Good, HSG A
	4,965	55	Woods, Good, HSG B
	33,694	37	Weighted Average
	33,694		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	46	0.0217	0.07		**Sheet Flow, SEG 1** Woods: Light underbrush n= 0.400 P2= 3.20"
1.9	167	0.0880	1.48		**Shallow Concentrated Flow, SEG 2** Woodland Kv= 5.0 fps
13.1	213	Total			

Subcatchment PST 5: TO IVW



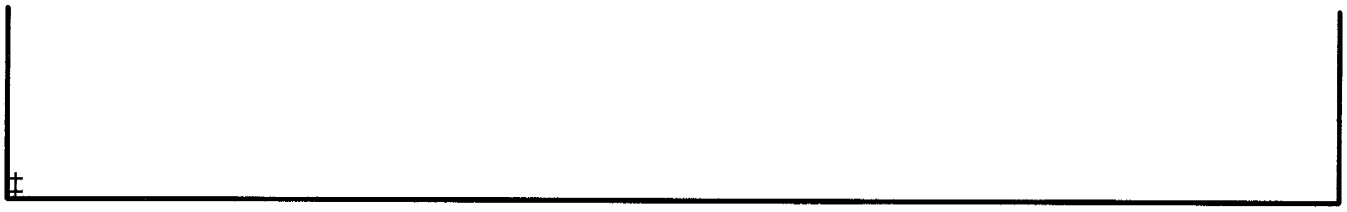
Summary for Reach 5R: DP 4

Inflow Area = 0.691 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10 YR event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

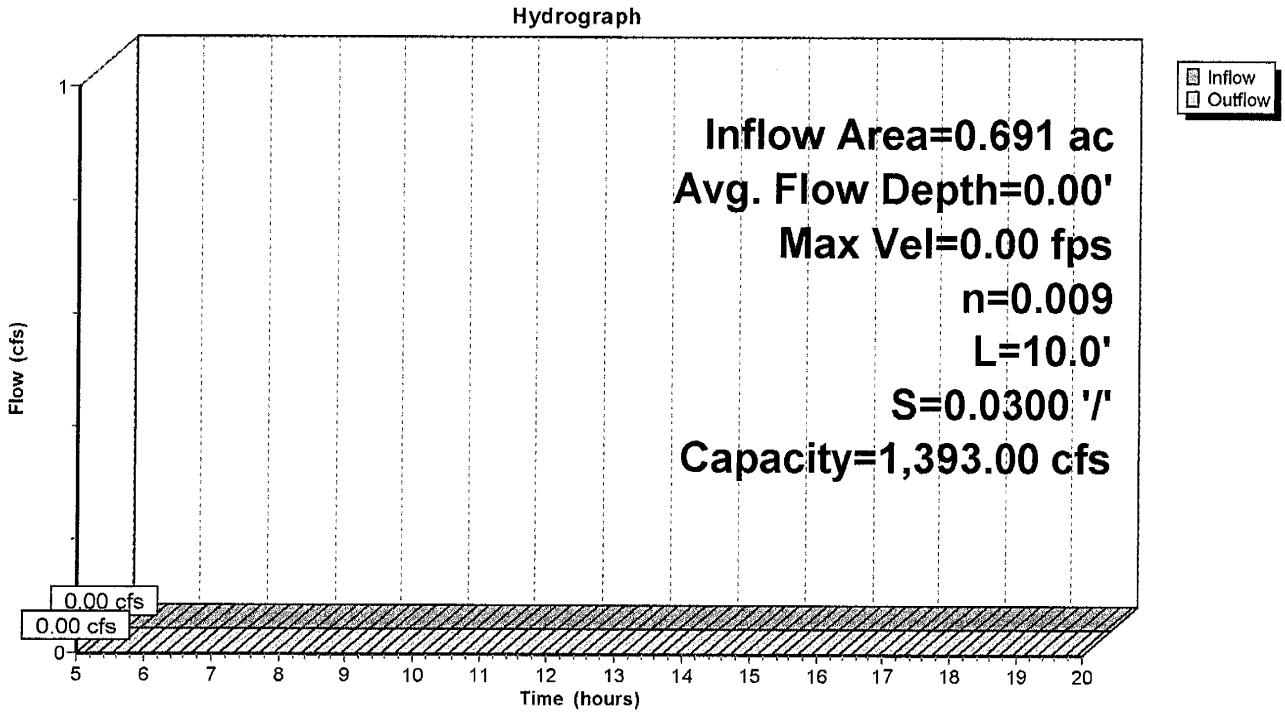
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 5.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 50.0 sf, Capacity= 1,393.00 cfs

50.00' x 1.00' deep channel, n= 0.009 PVC, smooth interior
Length= 10.0' Slope= 0.0300 '/'
Inlet Invert= 63.50', Outlet Invert= 63.20'



Reach 5R: DP 4



Summary for Pond 7P: NATURAL DEPRESSION B

Inflow Area =	0.155 ac,	0.00% Impervious,	Inflow Depth =	0.00"	for 10 YR event
Inflow =	0.00 cfs @	5.00 hrs, Volume=	0.000 af		
Outflow =	0.00 cfs @	5.00 hrs, Volume=	0.000 af,	Atten= 0%,	Lag= 0.0 min
Discarded =	0.00 cfs @	5.00 hrs, Volume=	0.000 af		
Primary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af		

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 63.60' @ 5.00 hrs Surf.Area= 1 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	63.60'	531 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

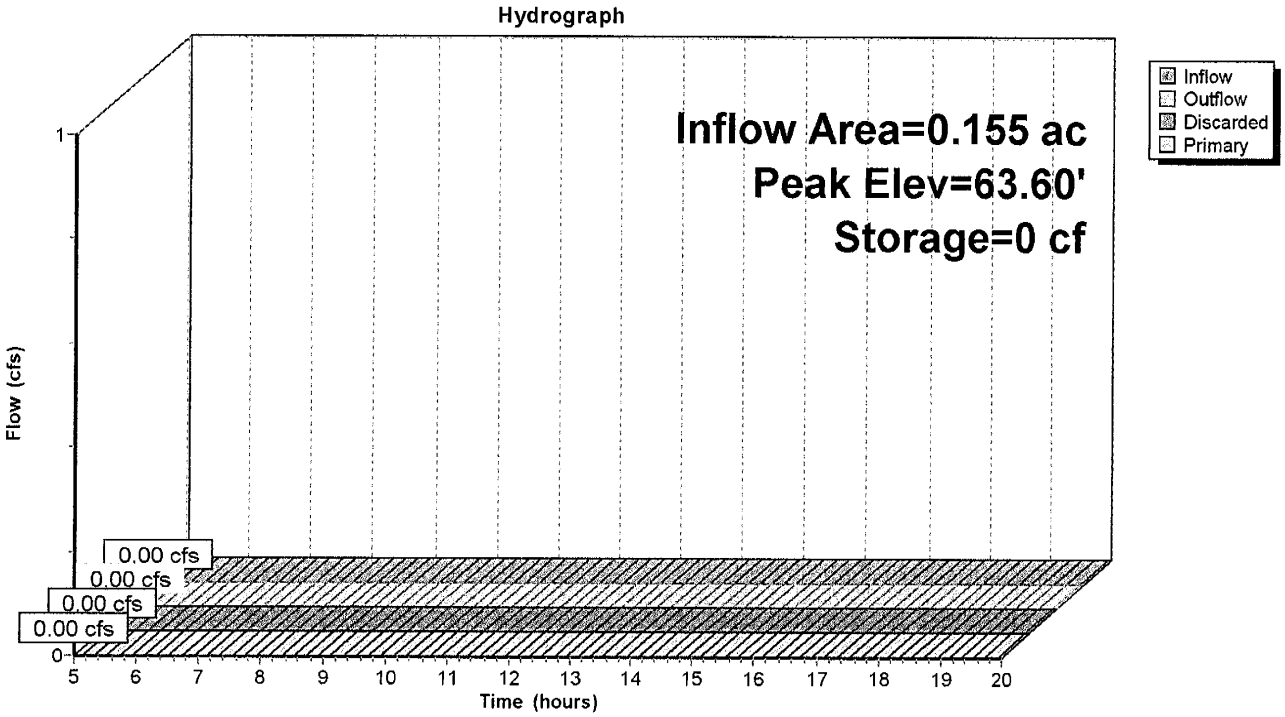
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
63.60	1	0	0
64.00	136	27	27
65.00	403	270	297
65.50	533	234	531

Device	Routing	Invert	Outlet Devices
#1	Discarded	63.60'	**2.410 in/hr Exfiltration over Surface area**
			Conductivity to Groundwater Elevation = 55.00'
#2	Primary	62.70'	**Asymmetrical Weir, C= 3.27**
			Offset (feet) 0.00 1.80 4.90 65.00 65.50
			Height (feet) 5.50 5.00 2.70 4.10 5.50
#3	Primary	64.60'	**Asymmetrical Weir, C= 3.27**
			Offset (feet) 0.00 0.90 1.30 2.25 6.00
			Elev. (feet) 65.50 65.00 64.60 65.00 65.50

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=63.60' (Free Discharge)
└─**1=Exfiltration** (Passes 0.00 cfs of 0.00 cfs potential flow)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=63.60' (Free Discharge)
├─**2=Asymmetrical Weir** (Passes 0.00 cfs of 44.50 cfs potential flow)
└─**3=Asymmetrical Weir** (Controls 0.00 cfs)

Pond 7P: NATURAL DEPRESSION B



Summary for Pond 8P: NATURAL DEPRESSION A

Inflow Area =	0.251 ac,	0.00% Impervious,	Inflow Depth =	0.00"	for 10 YR event
Inflow =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	
Outflow =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af,	Atten= 0%, Lag= 0.0 min
Discarded =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	
Primary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 67.46' @ 5.00 hrs Surf.Area= 1 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	67.46'	671 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

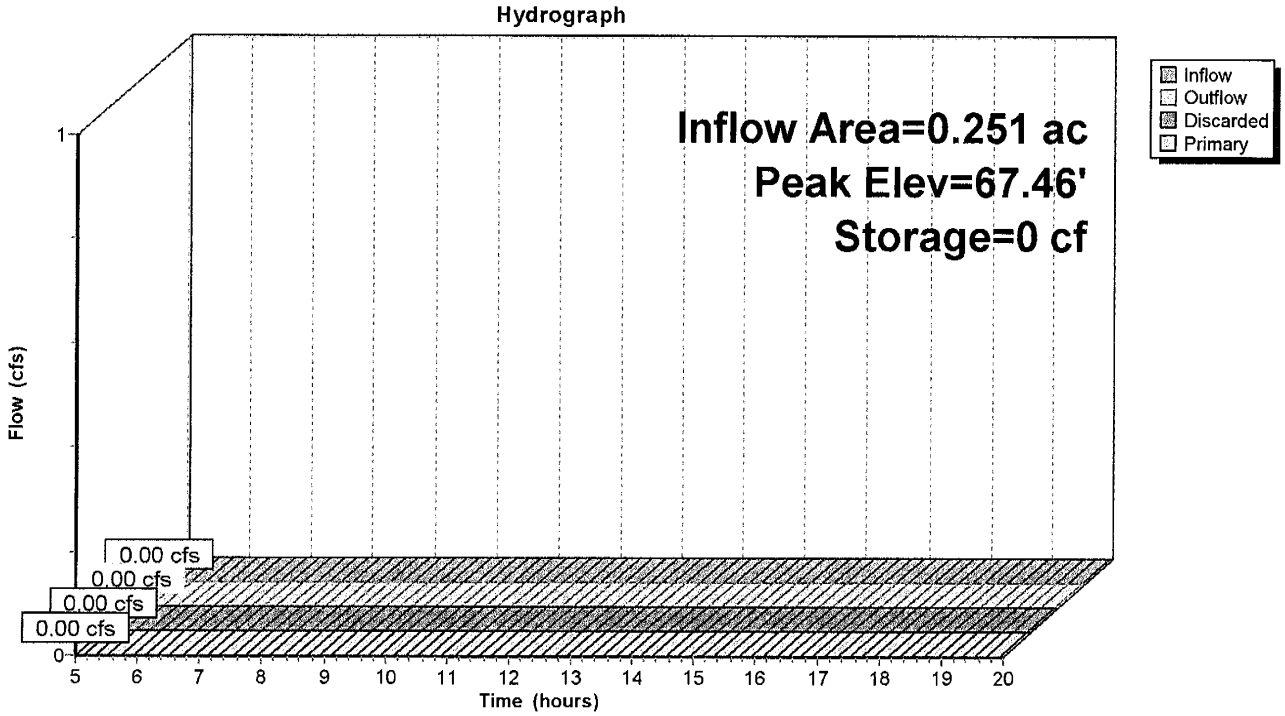
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
67.46	1	0	0
68.00	184	50	50
69.00	1,059	622	671

Device	Routing	Invert	Outlet Devices
#1	Discarded	67.46'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 55.00'
#2	Primary	68.44'	**Asymmetrical Weir, C= 3.27** Offset (feet) 0.00 3.00 4.50 6.00 9.00 Height (feet) 9.00 8.60 8.44 8.80 9.00

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=67.46' (Free Discharge)
└**1=Exfiltration** (Passes 0.00 cfs of 0.00 cfs potential flow)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=67.46' (Free Discharge)
└**2=Asymmetrical Weir** (Controls 0.00 cfs)

Pond 8P: NATURAL DEPRESSION A



Summary for Subcatchment 4A: TO DEPRESSION A

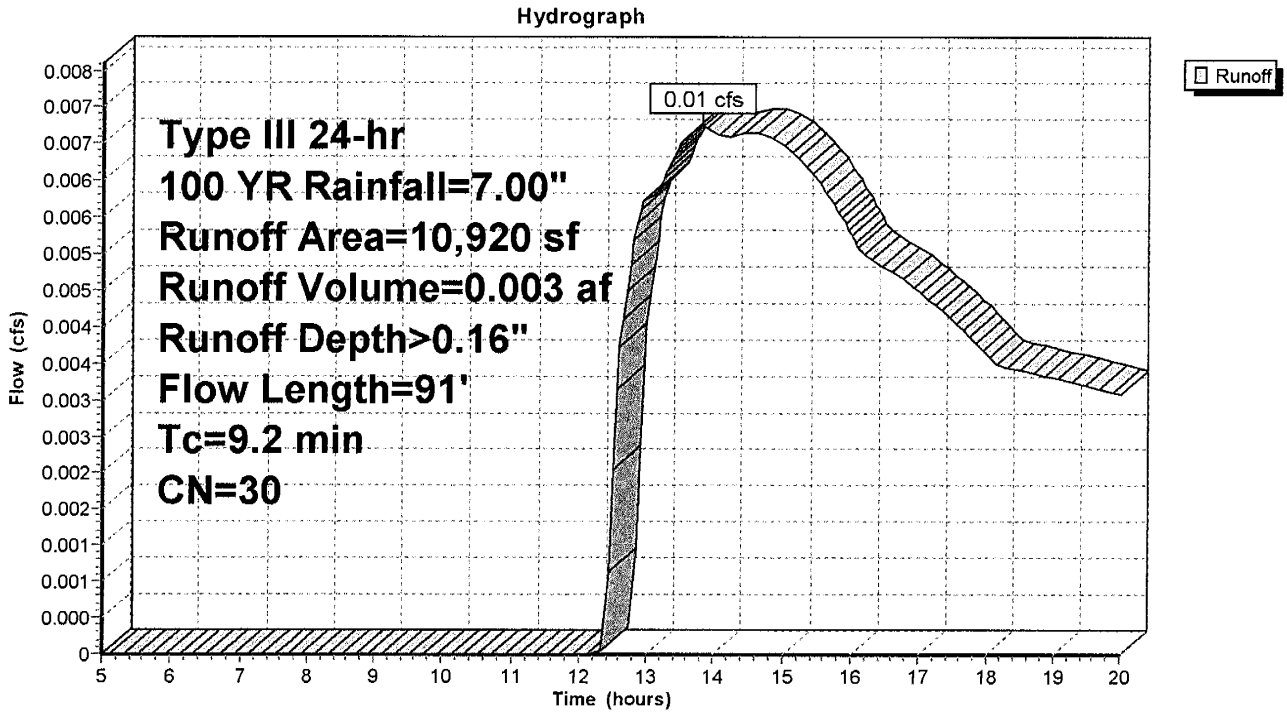
Runoff = 0.01 cfs @ 13.82 hrs, Volume= 0.003 af, Depth> 0.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

Area (sf)	CN	Description
10,920	30	Woods, Good, HSG A
10,920		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	50	0.0482	0.10		**Sheet Flow, SEG 1** Woods: Light underbrush n= 0.400 P2= 3.20"
0.5	41	0.0839	1.45		**Shallow Concentrated Flow, SEG 2** Woodland Kv= 5.0 fps
9.2	91	Total			

Subcatchment 4A: TO DEPRESSION A



Summary for Subcatchment 4B: TO DEPRESSION B

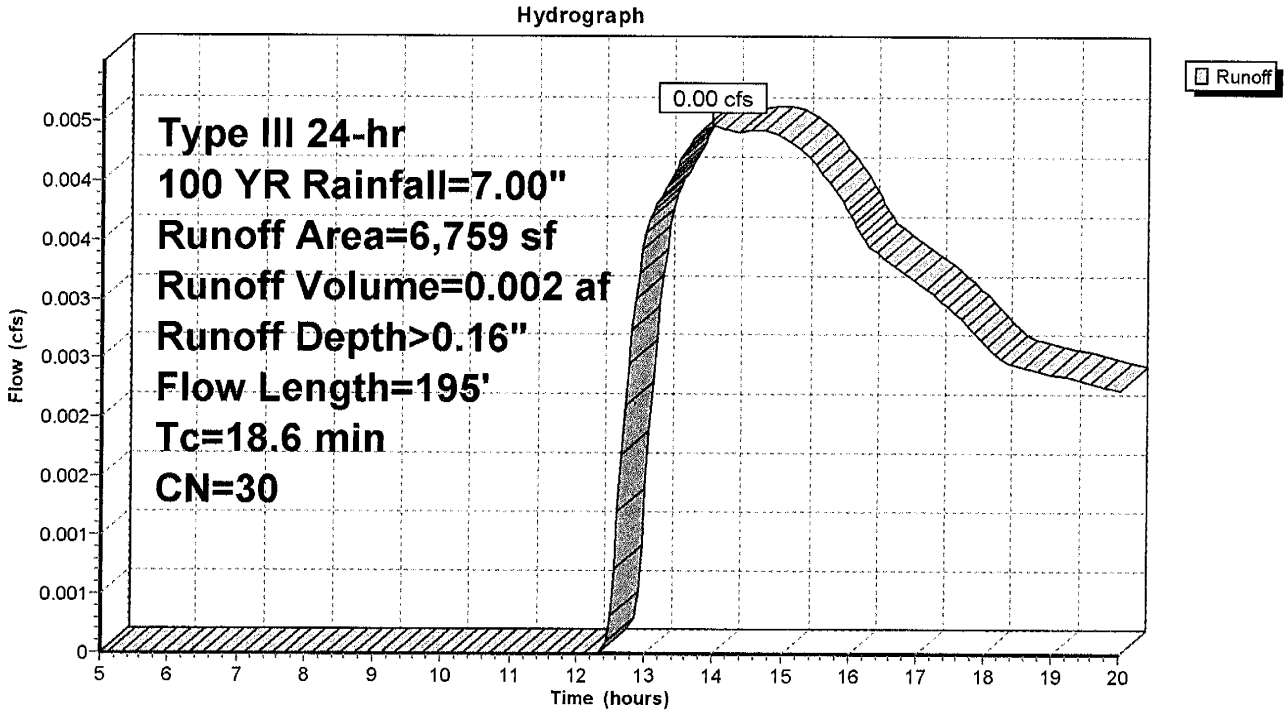
Runoff = 0.00 cfs @ 13.97 hrs, Volume= 0.002 af, Depth> 0.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

Area (sf)	CN	Description
6,759	30	Woods, Good, HSG A
6,759		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.1	50	0.0088	0.05		**Sheet Flow, SEG 1** Woods: Light underbrush n= 0.400 P2= 3.20"
1.5	145	0.1090	1.65		**Shallow Concentrated Flow, SEG 2** Woodland Kv= 5.0 fps
18.6	195	Total			

Subcatchment 4B: TO DEPRESSION B



Summary for Subcatchment PRE 1: TO DESIGN POINT 1

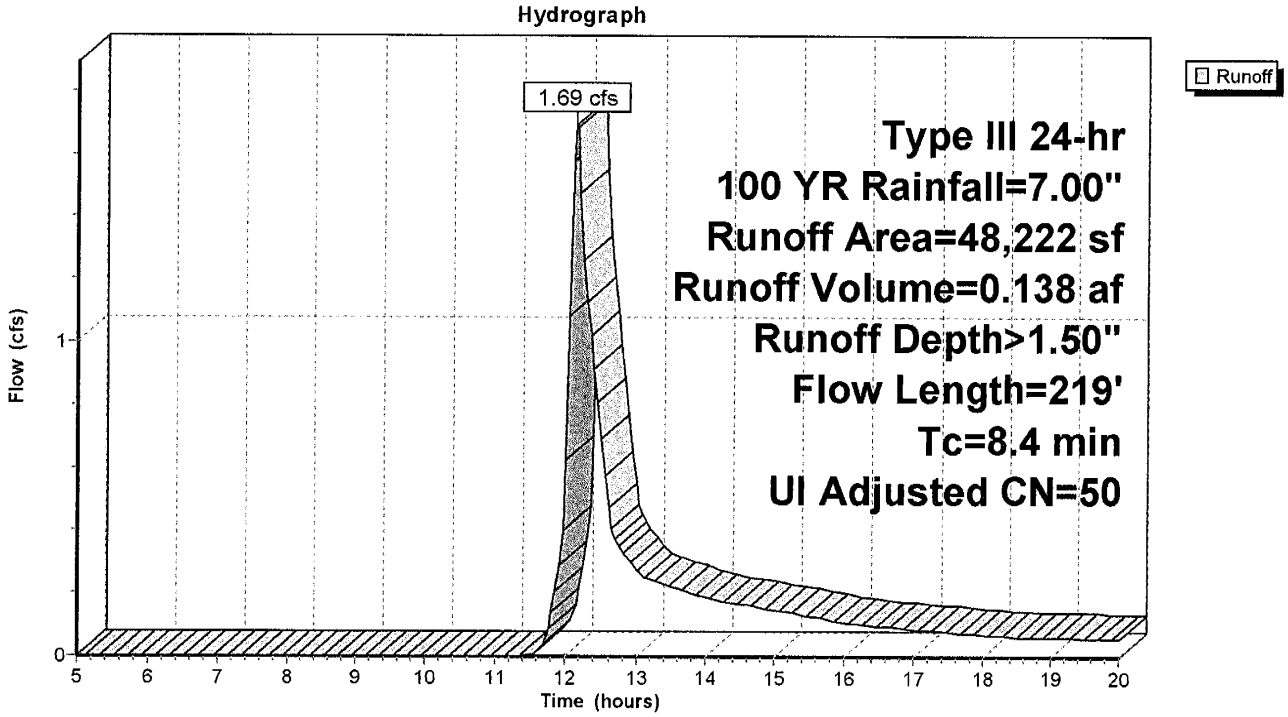
Runoff = 1.69 cfs @ 12.14 hrs, Volume= 0.138 af, Depth> 1.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

	Area (sf)	CN	Adj	Description
*	378	96		LEDGE
	907	98		Paved parking, HSG A
	565	96		Gravel surface, HSG A
	262	96		Gravel surface, HSG B
	1,719	49		50-75% Grass cover, Fair, HSG A
	527	69		50-75% Grass cover, Fair, HSG B
	5,186	68		<50% Grass cover, Poor, HSG A
	223	79		<50% Grass cover, Poor, HSG B
	10,436	39		>75% Grass cover, Good, HSG A
	8,707	61		>75% Grass cover, Good, HSG B
	5,978	55		Woods, Good, HSG B
	11,982	30		Woods, Good, HSG A
	1,352	98		Unconnected roofs, HSG A
	48,222	51	50	Weighted Average, UI Adjusted
	45,963			95.32% Pervious Area
	2,259			4.68% Impervious Area
	1,352			59.85% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.8	50	0.0230	0.11		**Sheet Flow, SEG 1**
					Grass: Dense n= 0.240 P2= 3.20"
0.6	169	0.1011	5.12		**Shallow Concentrated Flow, SEG 2**
					Unpaved Kv= 16.1 fps
8.4	219	Total			

Subcatchment PRE 1: TO DESIGN POINT 1



Summary for Subcatchment PRE 2: TO DESIGN POINT 2

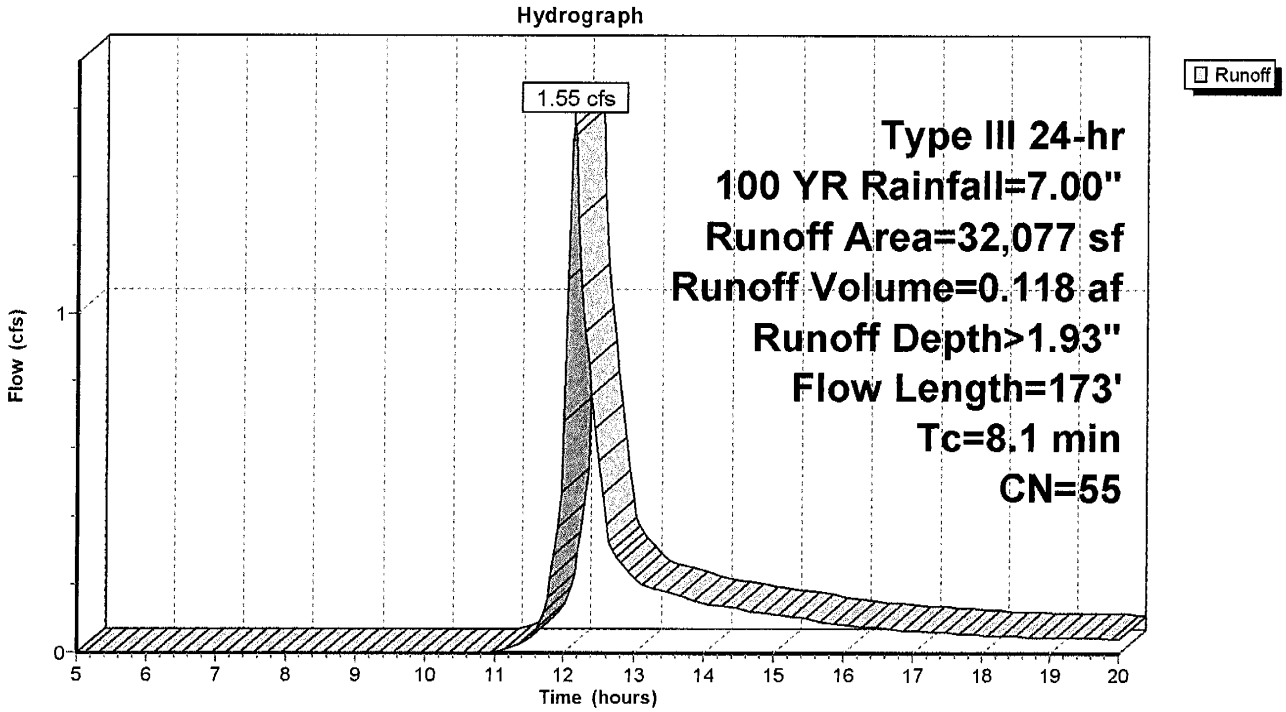
Runoff = 1.55 cfs @ 12.13 hrs, Volume= 0.118 af, Depth> 1.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

Area (sf)	CN	Description
130	36	Woods, Fair, HSG A
4,905	60	Woods, Fair, HSG B
580	30	Woods, Good, HSG A
25,919	55	Woods, Good, HSG B
543	66	Woods, Poor, HSG B
32,077	55	Weighted Average
32,077		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0800	0.12		**Sheet Flow, SEG 1** Woods: Light underbrush n= 0.400 P2= 3.20"
1.0	123	0.1580	1.99		**Shallow Concentrated Flow, SEG 2** Woodland Kv= 5.0 fps
8.1	173	Total			

Subcatchment PRE 2: TO DESIGN POINT 2



Summary for Subcatchment PRE 3: TO DESIGN POINT 3

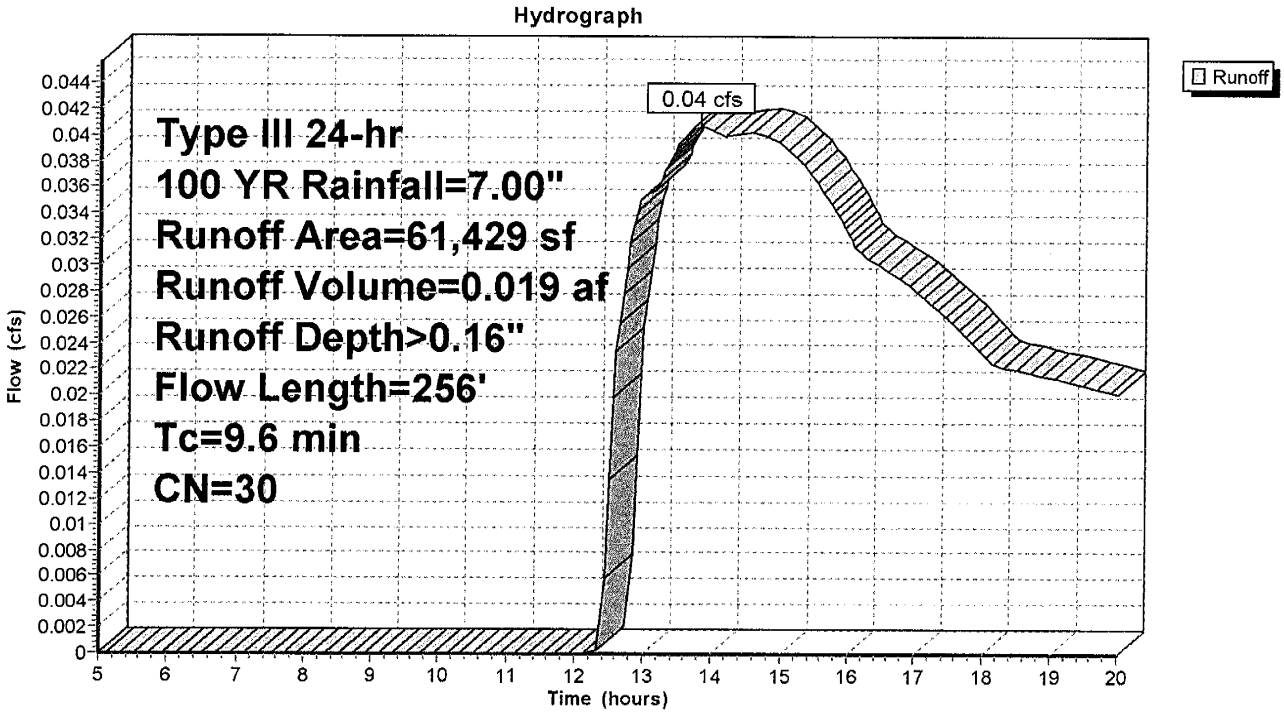
Runoff = 0.04 cfs @ 13.83 hrs, Volume= 0.019 af, Depth> 0.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

Area (sf)	CN	Description
61,429	30	Woods, Good, HSG A
61,429		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	50	0.0686	0.11		**Sheet Flow, SEG 1** Woods: Light underbrush n= 0.400 P2= 3.20"
2.1	206	0.1045	1.62		**Shallow Concentrated Flow, SEG 2** Woodland Kv= 5.0 fps
9.6	256	Total			

Subcatchment PRE 3: TO DESIGN POINT 3



Summary for Subcatchment PRE4: TO DESIGN POINT 4

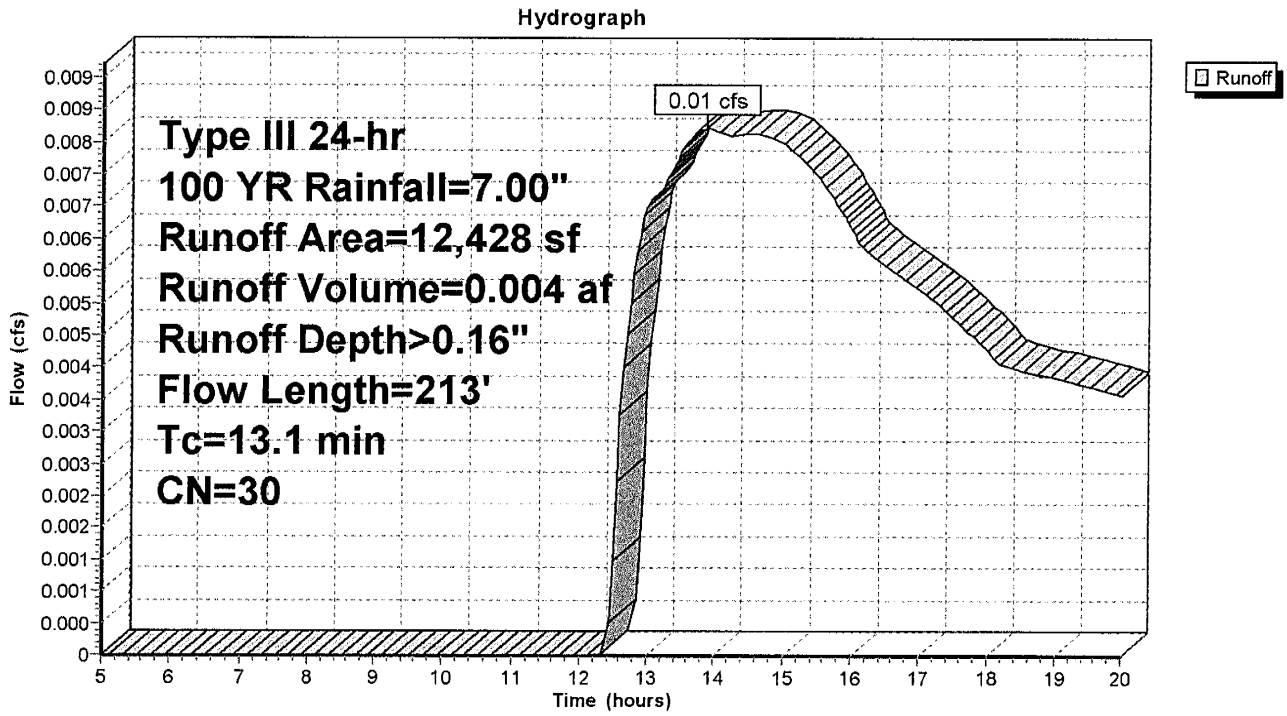
Runoff = 0.01 cfs @ 13.88 hrs, Volume= 0.004 af, Depth> 0.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

Area (sf)	CN	Description
12,428	30	Woods, Good, HSG A
12,428		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	46	0.0217	0.07		**Sheet Flow, SEG 1** Woods: Light underbrush n= 0.400 P2= 3.20"
1.9	167	0.0880	1.48		**Shallow Concentrated Flow, SEG 2** Woodland Kv= 5.0 fps
13.1	213	Total			

Subcatchment PRE4: TO DESIGN POINT 4



Summary for Subcatchment PST 5: TO IVW

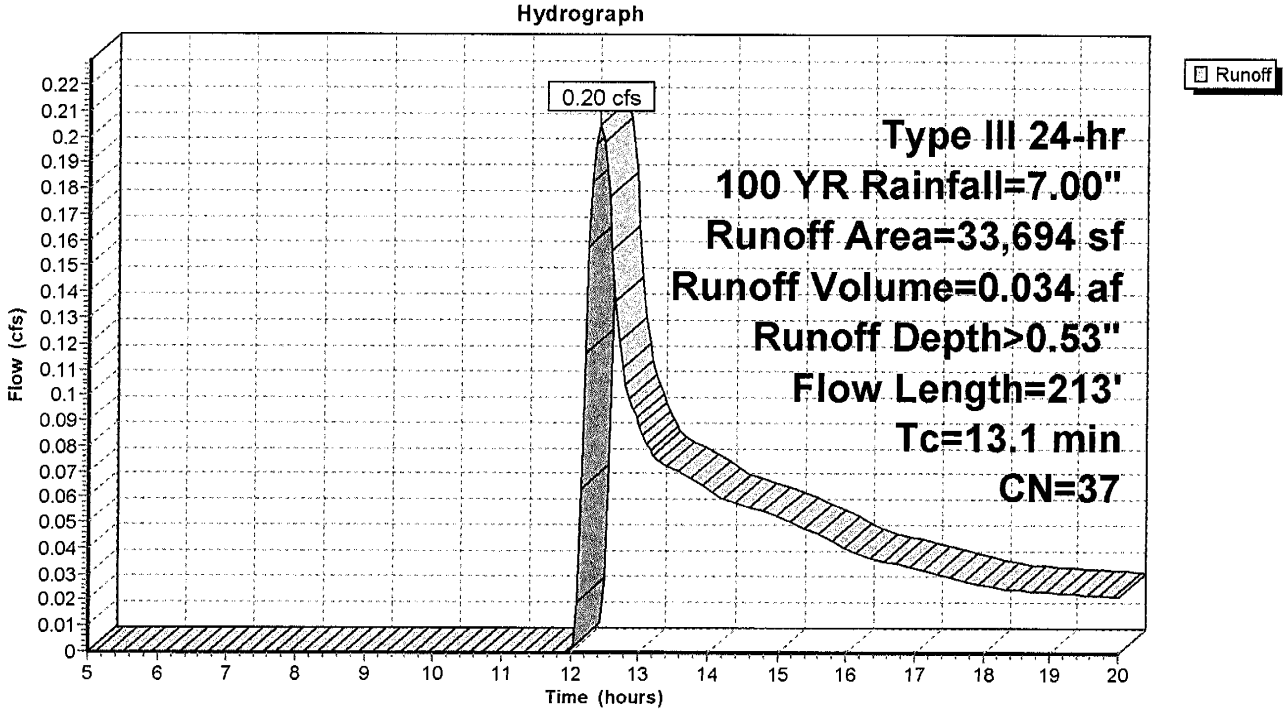
Runoff = 0.20 cfs @ 12.42 hrs, Volume= 0.034 af, Depth> 0.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

	Area (sf)	CN	Description
*	2,039	78	WETLAND
	26,690	30	Woods, Good, HSG A
	4,965	55	Woods, Good, HSG B
	33,694	37	Weighted Average
	33,694		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	46	0.0217	0.07		**Sheet Flow, SEG 1** Woods: Light underbrush n= 0.400 P2= 3.20"
1.9	167	0.0880	1.48		**Shallow Concentrated Flow, SEG 2** Woodland Kv= 5.0 fps
13.1	213	Total			

Subcatchment PST 5: TO IVW



Summary for Reach 5R: DP 4

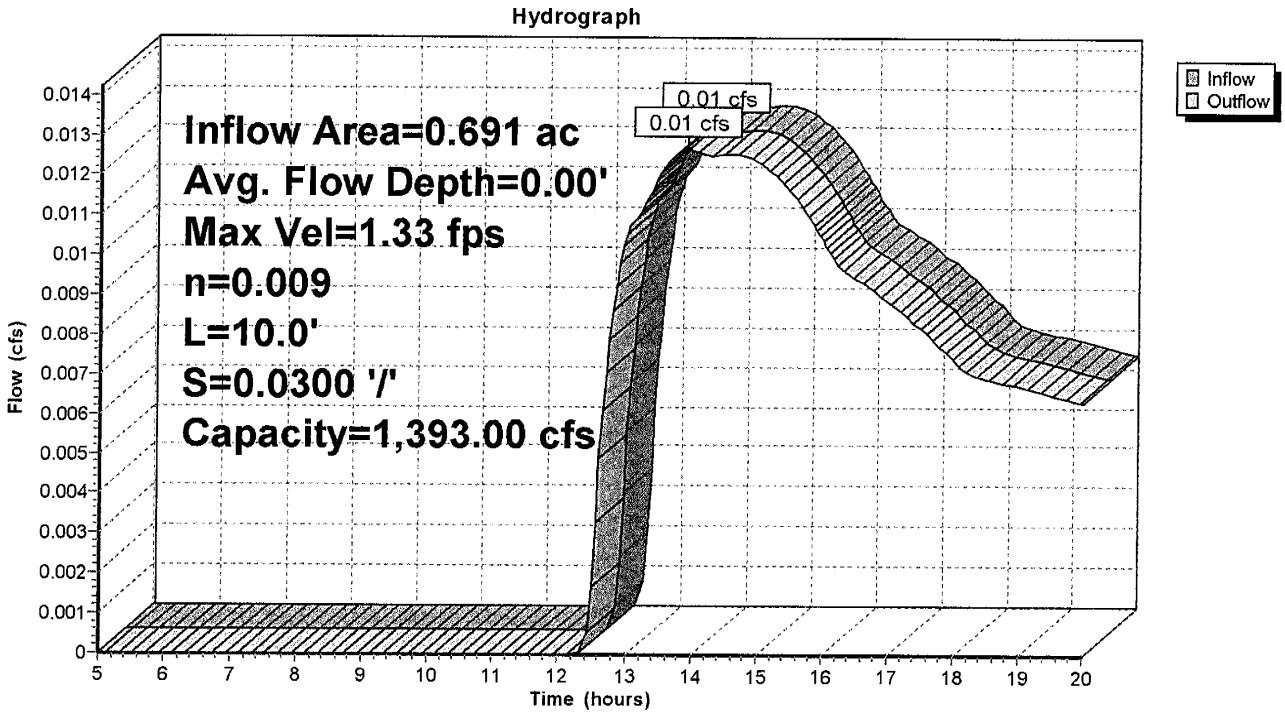
Inflow Area = 0.691 ac, 0.00% Impervious, Inflow Depth > 0.10" for 100 YR event
Inflow = 0.01 cfs @ 13.91 hrs, Volume= 0.006 af
Outflow = 0.01 cfs @ 13.91 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.33 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.33 fps, Avg. Travel Time= 0.1 min

Peak Storage= 0 cf @ 13.91 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 50.0 sf, Capacity= 1,393.00 cfs

50.00' x 1.00' deep channel, n= 0.009 PVC, smooth interior
Length= 10.0' Slope= 0.0300 '/'
Inlet Invert= 63.50', Outlet Invert= 63.20'

Reach 5R: DP 4



Summary for Pond 7P: NATURAL DEPRESSION B

Inflow Area =	0.155 ac,	0.00% Impervious,	Inflow Depth >	0.16"	for 100 YR event
Inflow =	0.00 cfs @	13.97 hrs,	Volume=	0.002 af	
Outflow =	0.00 cfs @	13.97 hrs,	Volume=	0.002 af,	Atten= 0%, Lag= 0.0 min
Discarded =	0.00 cfs @	13.97 hrs,	Volume=	0.000 af	
Primary =	0.00 cfs @	13.97 hrs,	Volume=	0.002 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 63.60' @ 13.97 hrs Surf.Area= 1 sf Storage= 0 cf

Plug-Flow detention time= 0.0 min calculated for 0.002 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (954.5 - 954.5)

Volume	Invert	Avail.Storage	Storage Description
#1	63.60'	531 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

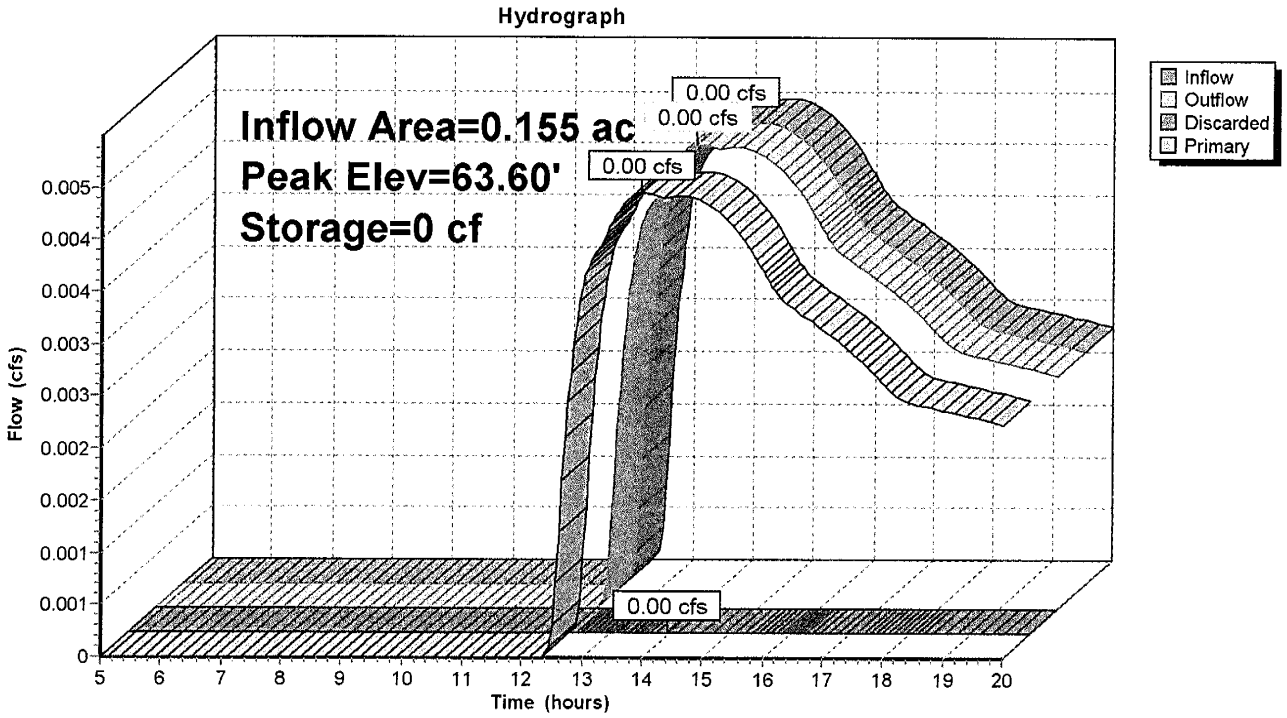
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
63.60	1	0	0
64.00	136	27	27
65.00	403	270	297
65.50	533	234	531

Device	Routing	Invert	Outlet Devices
#1	Discarded	63.60'	**2.410 in/hr Exfiltration over Surface area**
			Conductivity to Groundwater Elevation = 55.00'
#2	Primary	62.70'	**Asymmetrical Weir, C= 3.27**
			Offset (feet) 0.00 1.80 4.90 65.00 65.50
			Height (feet) 5.50 5.00 2.70 4.10 5.50
#3	Primary	64.60'	**Asymmetrical Weir, C= 3.27**
			Offset (feet) 0.00 0.90 1.30 2.25 6.00
			Elev. (feet) 65.50 65.00 64.60 65.00 65.50

Discarded OutFlow Max=0.00 cfs @ 13.97 hrs HW=63.60' (Free Discharge)
└─**1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=44.50 cfs @ 13.97 hrs HW=63.60' (Free Discharge)
├─**2=Asymmetrical Weir** (Weir Controls 44.50 cfs @ 1.24 fps)
└─**3=Asymmetrical Weir** (Controls 0.00 cfs)

Pond 7P: NATURAL DEPRESSION B



Summary for Pond 8P: NATURAL DEPRESSION A

Inflow Area =	0.251 ac,	0.00% Impervious,	Inflow Depth >	0.16"	for 100 YR event
Inflow =	0.01 cfs @	13.82 hrs, Volume=	0.003 af		
Outflow =	0.01 cfs @	15.59 hrs, Volume=	0.003 af,	Atten= 12%,	Lag= 105.8 min
Discarded =	0.01 cfs @	15.59 hrs, Volume=	0.003 af		
Primary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af		

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 67.79' @ 15.59 hrs Surf.Area= 113 sf Storage= 19 cf

Plug-Flow detention time= 40.6 min calculated for 0.003 af (95% of inflow)
Center-of-Mass det. time= 28.2 min (977.2 - 949.1)

Volume	Invert	Avail.Storage	Storage Description
#1	67.46'	671 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

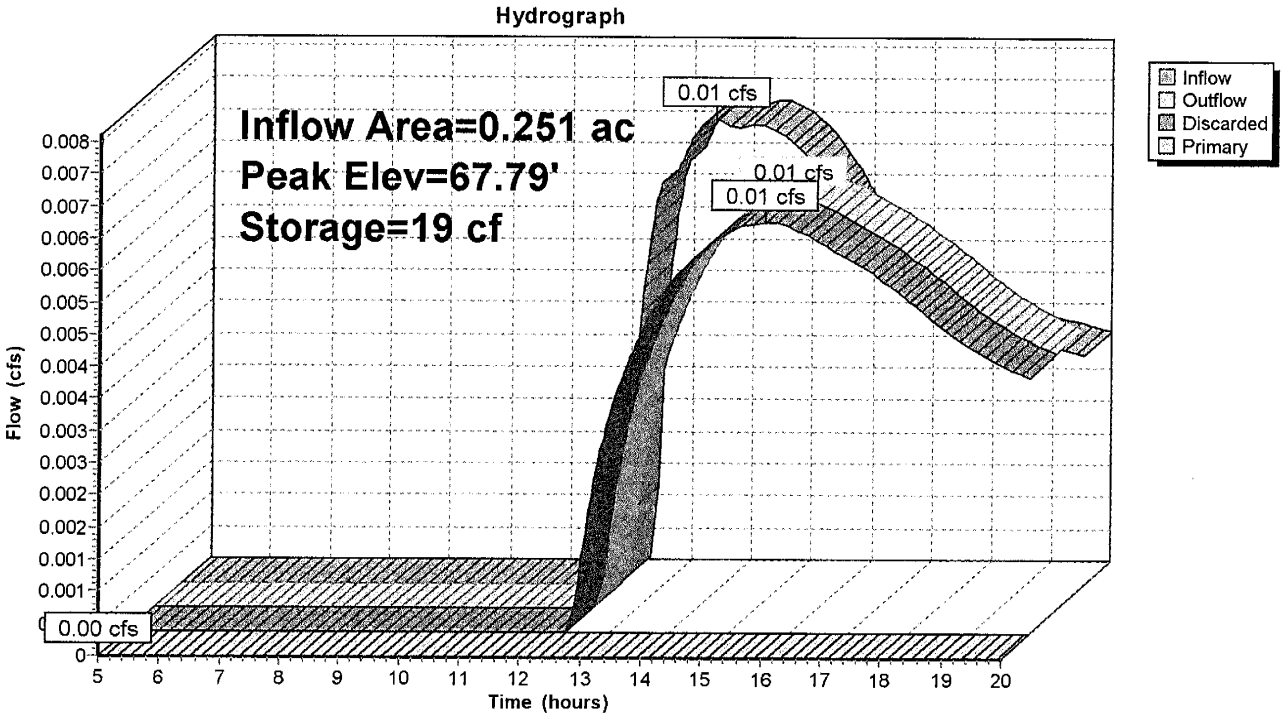
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
67.46	1	0	0
68.00	184	50	50
69.00	1,059	622	671

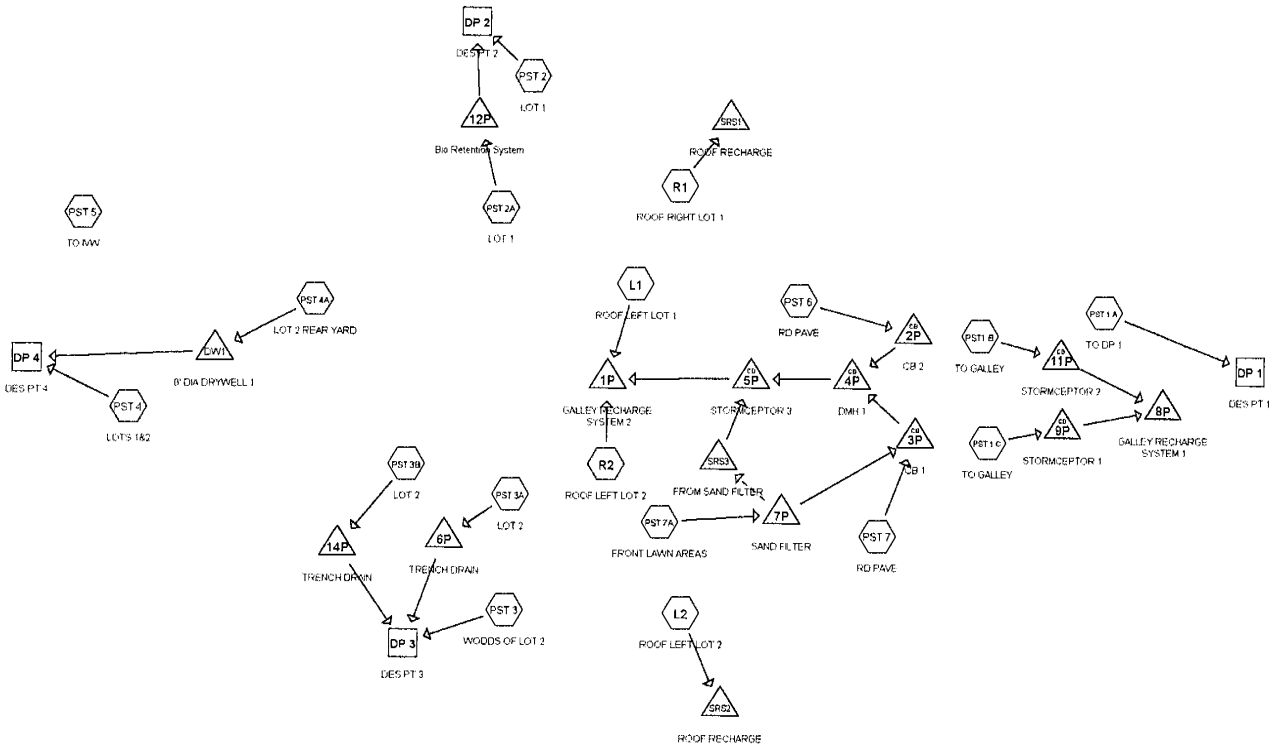
Device	Routing	Invert	Outlet Devices
#1	Discarded	67.46'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 55.00'
#2	Primary	68.44'	**Asymmetrical Weir, C= 3.27** Offset (feet) 0.00 3.00 4.50 6.00 9.00 Height (feet) 9.00 8.60 8.44 8.80 9.00

Discarded OutFlow Max=0.01 cfs @ 15.59 hrs HW=67.79' (Free Discharge)
└**1=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=67.46' (Free Discharge)
└**2=Asymmetrical Weir** (Controls 0.00 cfs)

Pond 8P: NATURAL DEPRESSION A





Subcat Reach Pond Link

Routing Diagram for 4072 PST 9-2-20
Prepared by Microsoft, Printed 9/21/2020
HydroCAD® 10.00-20 s/n 02764 © 2017 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.163	39	>75% Grass cover, Good, HSG A (PST 1 A, PST 2A, PST 3, PST 3A, PST 3B, PST 4, PST 4A, PST 6, PST 7A)
0.768	61	>75% Grass cover, Good, HSG B (PST 1 A, PST 2, PST 2A, PST 6)
0.282	98	Paved parking, HSG A (PST 1 A, PST 1 C, PST 6, PST 7, PST 7A, PST1 B)
0.147	98	Unconnected roofs, HSG A (L1, L2, R1, R2)
0.056	78	WETLAND (PST 5)
1.937	30	Woods, Good, HSG A (PST 1 A, PST 3, PST 4, PST 4A, PST 5)
0.365	55	Woods, Good, HSG B (PST 1 A, PST 2, PST 5)
4.718	**46**	**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
1.163	0.768	0.000	0.000	0.000	1.931	>75% Grass cover, Good	PST 1 A, PST 2, PST 2A, PST 3, PST 3A, PST 3B, PST 4, PST 4A, PST 6, PST 7A
0.282	0.000	0.000	0.000	0.000	0.282	Paved parking	PST 1 A, PST 1 C, PST 6, PST 7, PST 7A, PST1 B
0.147	0.000	0.000	0.000	0.000	0.147	Unconnected roofs	L1, L2, R1, R2
0.000	0.000	0.000	0.000	0.056	0.056	WETLAND	PST 5
1.937	0.365	0.000	0.000	0.000	2.302	Woods, Good	PST 1 A, PST 2, PST 3, PST 4, PST 4A, PST 5
3.529	**1.133**	**0.000**	**0.000**	**0.056**	**4.718**	**TOTAL AREA**	

Summary for Subcatchment L1: ROOF LEFT LOT 1

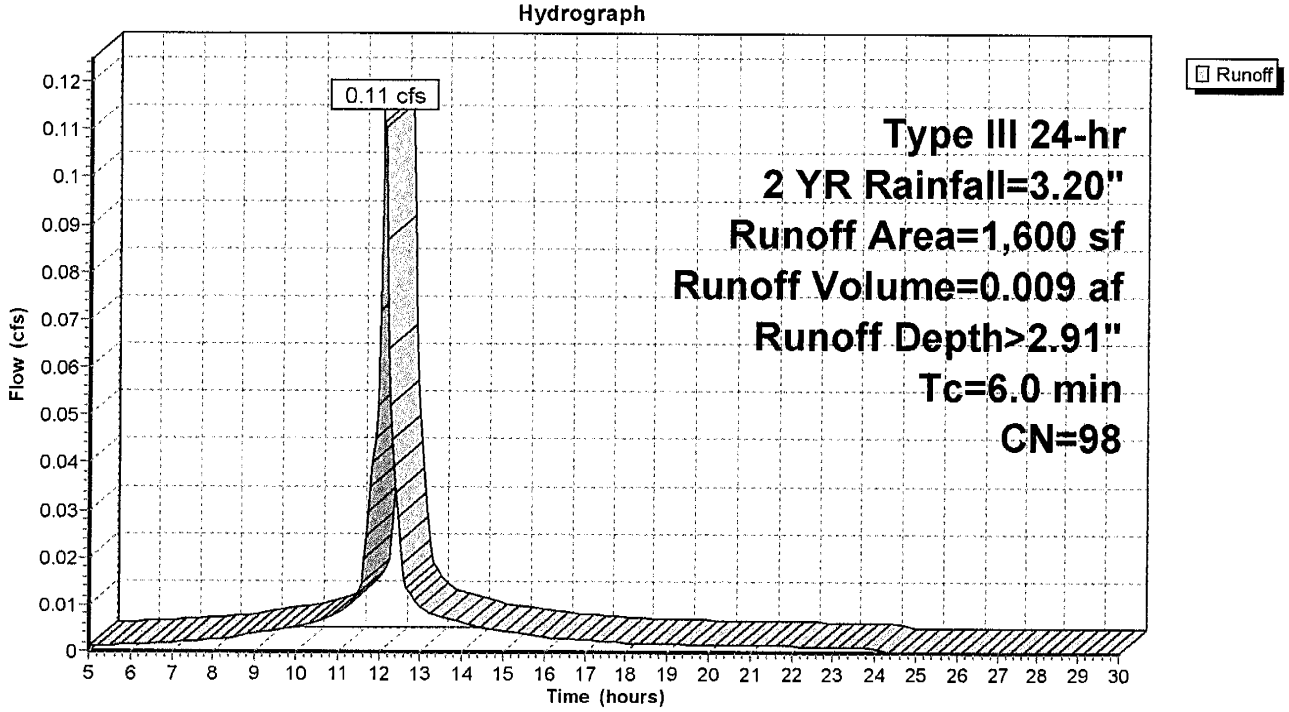
Runoff = 0.11 cfs @ 12.09 hrs, Volume= 0.009 af, Depth> 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.20"

Area (sf)	CN	Description
1,600	98	Unconnected roofs, HSG A
1,600		100.00% Impervious Area
1,600		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 MINUTE MIN**

Subcatchment L1: ROOF LEFT LOT 1



Summary for Subcatchment L2: ROOF LEFT LOT 2

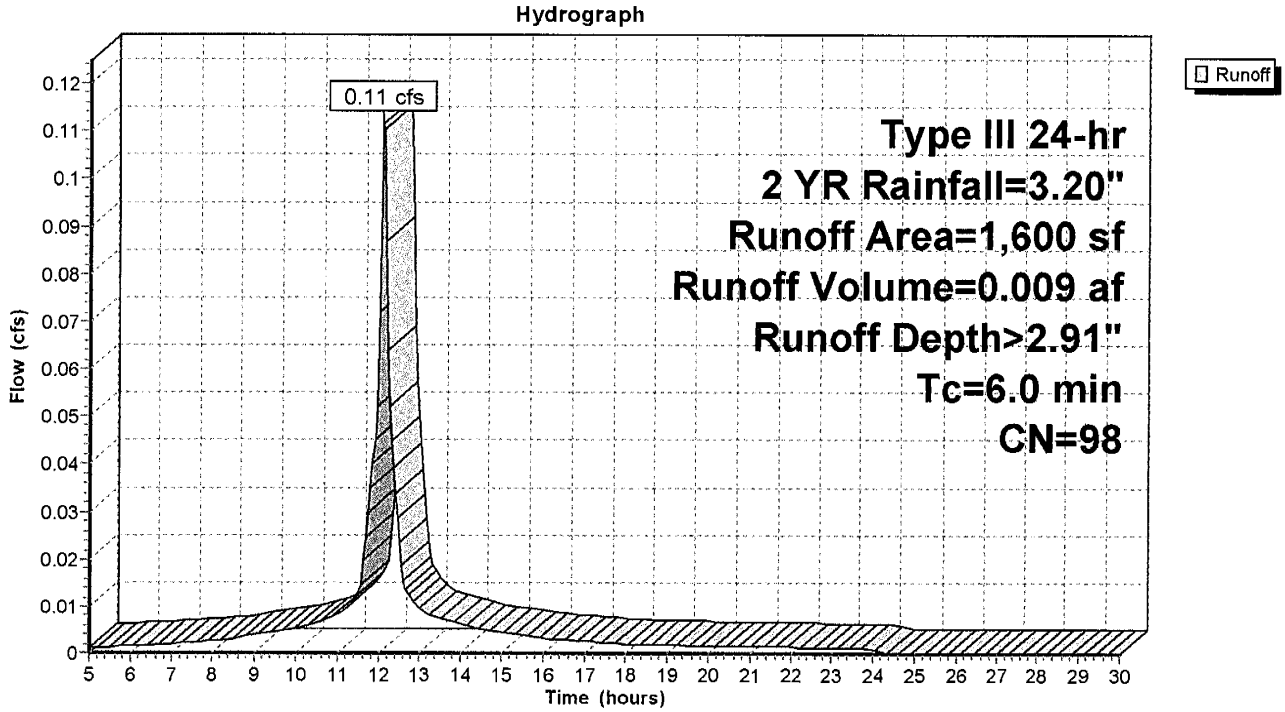
Runoff = 0.11 cfs @ 12.09 hrs, Volume= 0.009 af, Depth> 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.20"

Area (sf)	CN	Description
1,600	98	Unconnected roofs, HSG A
1,600		100.00% Impervious Area
1,600		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 MINUTE MIN**

Subcatchment L2: ROOF LEFT LOT 2



Summary for Subcatchment PST 1 A: TO DP 1

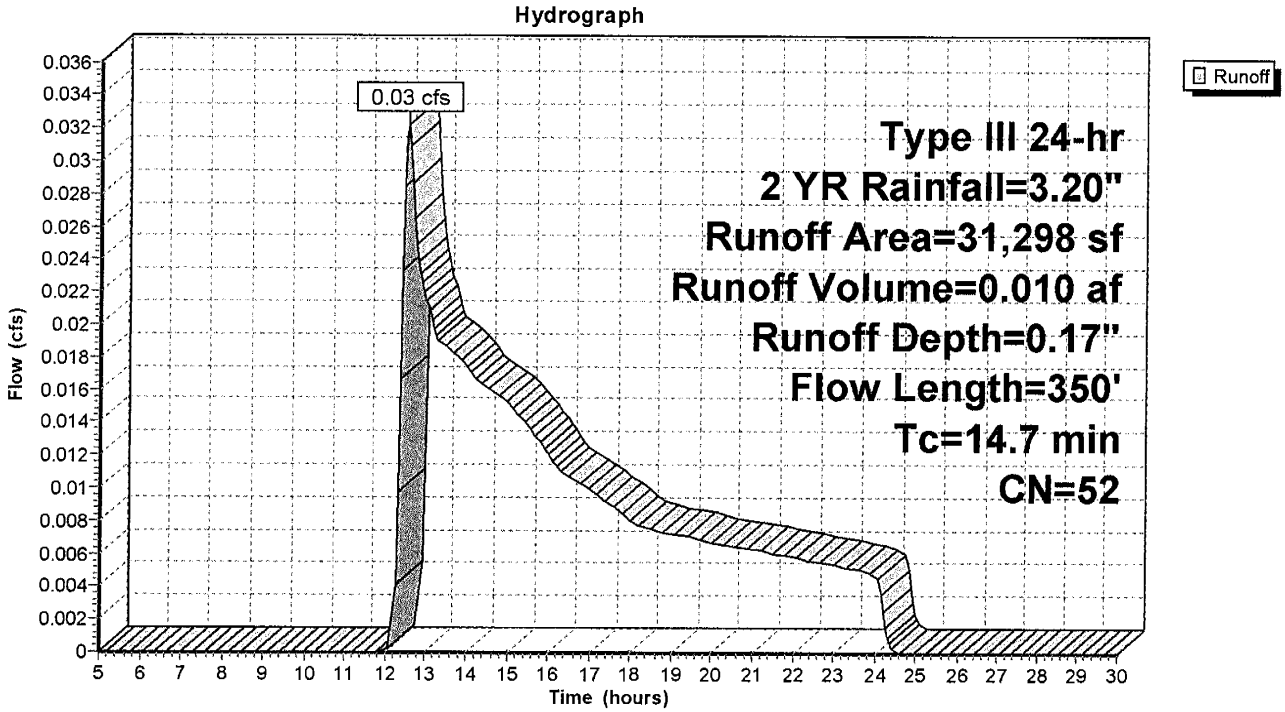
Runoff = 0.03 cfs @ 12.54 hrs, Volume= 0.010 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.20"

Area (sf)	CN	Description
1,929	98	Paved parking, HSG A
7,560	39	>75% Grass cover, Good, HSG A
14,622	61	>75% Grass cover, Good, HSG B
6,662	30	Woods, Good, HSG A
114	55	Woods, Good, HSG B
411	98	Paved parking, HSG A
31,298	52	Weighted Average
28,958		92.52% Pervious Area
2,340		7.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	50	0.0060	0.06		**Sheet Flow, SHEET** Grass: Dense n= 0.240 P2= 3.20"
1.4	300	0.0460	3.45		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
14.7	350	Total			

Subcatchment PST 1 A: TO DP 1



Summary for Subcatchment PST 1 C: TO GALLEY

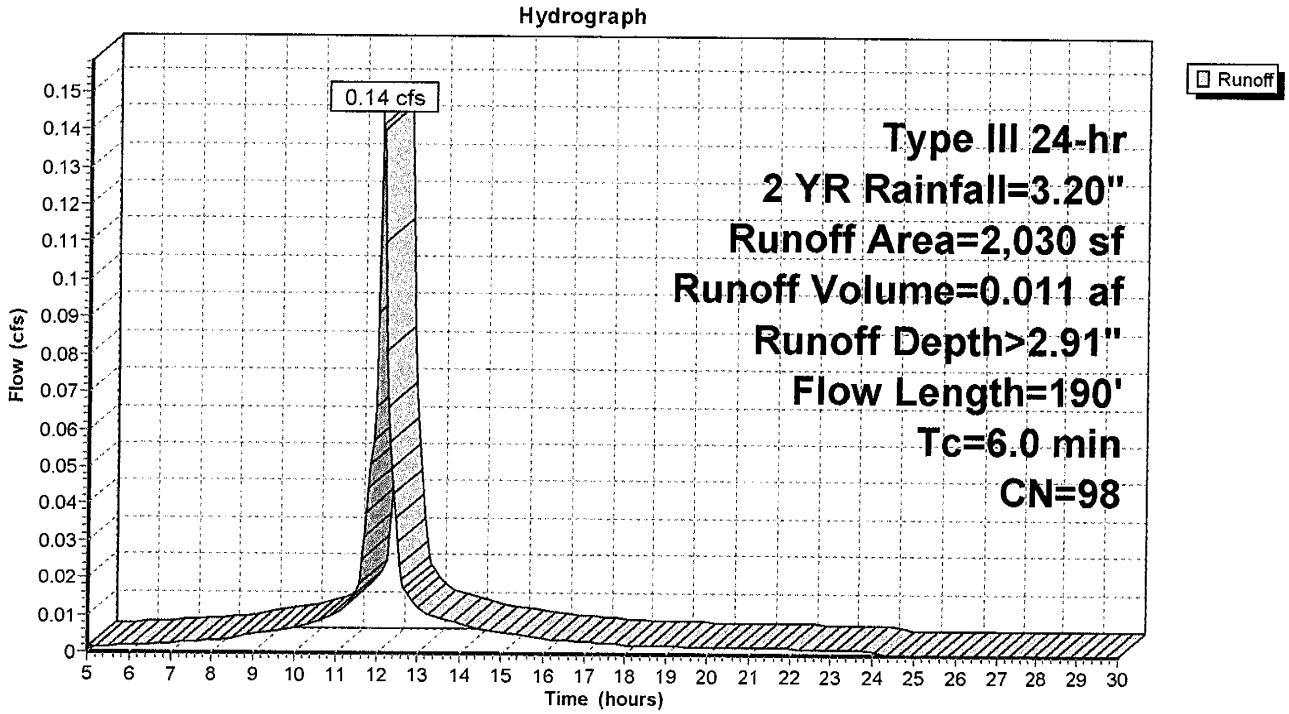
Runoff = 0.14 cfs @ 12.09 hrs, Volume= 0.011 af, Depth> 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.20"

Area (sf)	CN	Description
2,030	98	Paved parking, HSG A
2,030		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	50	0.0500	1.73		**Sheet Flow, SHEET** Smooth surfaces n= 0.011 P2= 3.20"
0.6	140	0.0400	4.06		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.9					**Direct Entry, 6 MIN. MIN**
6.0	190	Total			

Subcatchment PST 1 C: TO GALLEY



Summary for Subcatchment PST 2: LOT 1

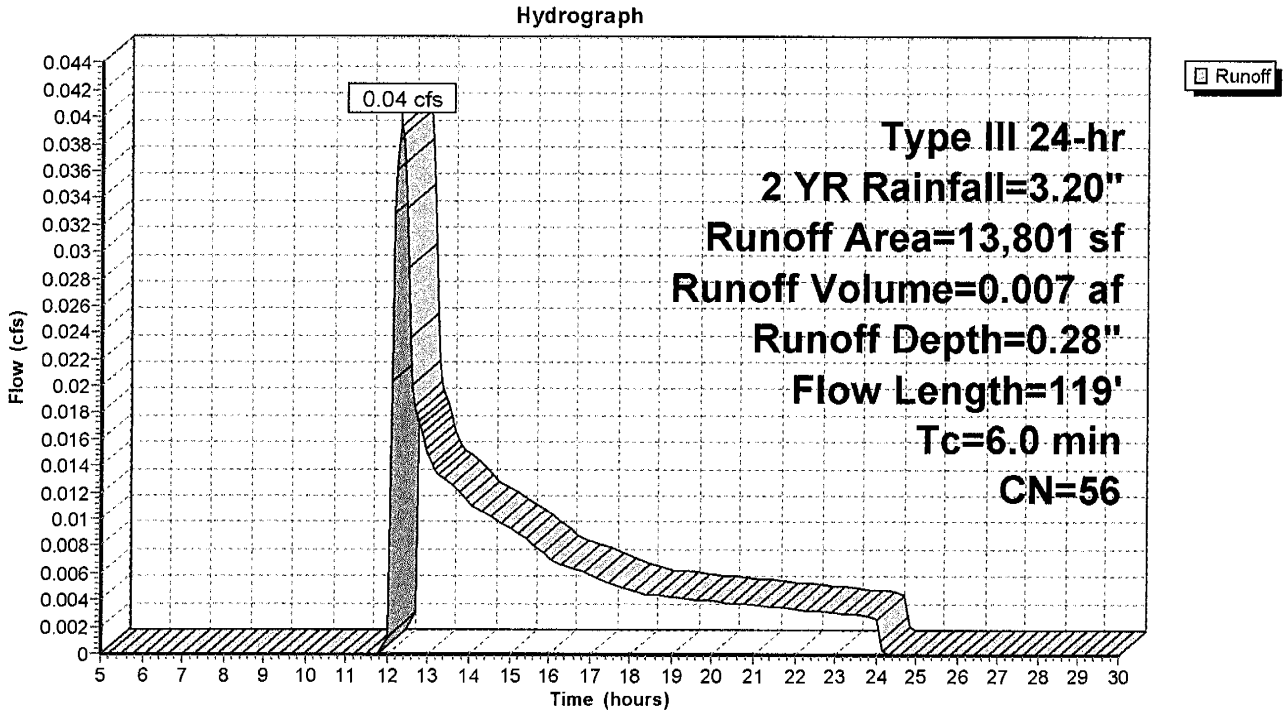
Runoff = 0.04 cfs @ 12.31 hrs, Volume= 0.007 af, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.20"

Area (sf)	CN	Description
2,904	61	>75% Grass cover, Good, HSG B
10,897	55	Woods, Good, HSG B
13,801	56	Weighted Average
13,801		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	14	0.3330	0.24		**Sheet Flow, SEG 1** Grass: Dense n= 0.240 P2= 3.20"
0.8	105	0.1750	2.09		**Shallow Concentrated Flow, SEG 2** Woodland Kv= 5.0 fps
4.2					**Direct Entry,**
6.0	119	Total			

Subcatchment PST 2: LOT 1



Summary for Subcatchment PST 2A: LOT 1

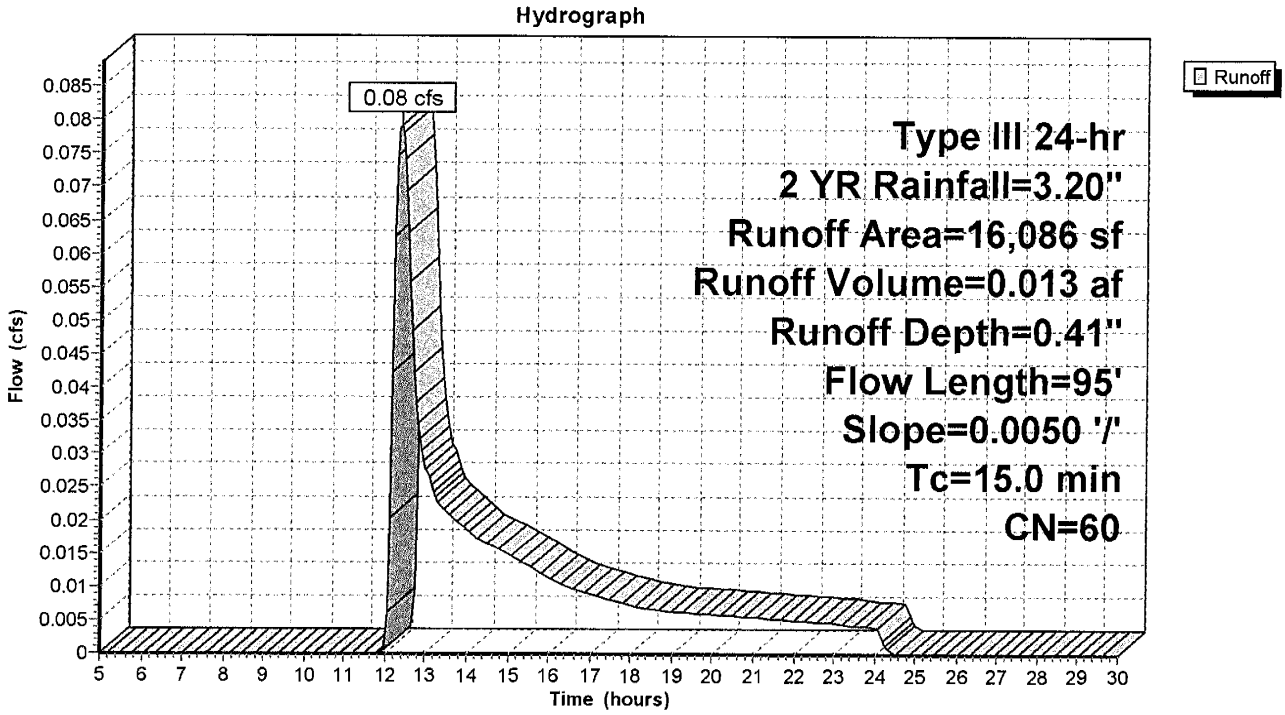
Runoff = 0.08 cfs @ 12.33 hrs, Volume= 0.013 af, Depth= 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.20"

Area (sf)	CN	Description
653	39	>75% Grass cover, Good, HSG A
15,433	61	>75% Grass cover, Good, HSG B
16,086	60	Weighted Average
16,086		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	50	0.0050	0.06		**Sheet Flow, SEG 1** Grass: Dense n= 0.240 P2= 3.20"
0.7	45	0.0050	1.14		**Shallow Concentrated Flow, SEG 2** Unpaved Kv= 16.1 fps
15.0	95	Total			

Subcatchment PST 2A: LOT 1



Summary for Subcatchment PST 3: WODDS OF LOT 2

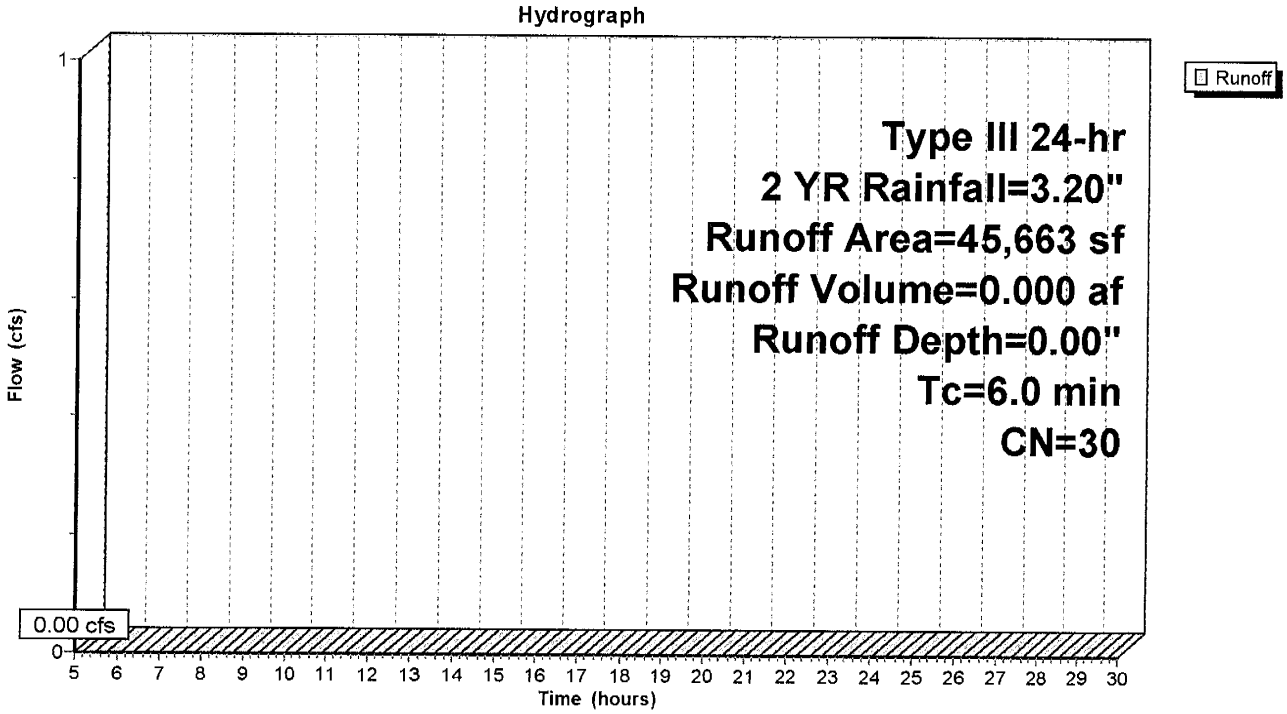
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.20"

Area (sf)	CN	Description
44,440	30	Woods, Good, HSG A
1,223	39	>75% Grass cover, Good, HSG A
45,663	30	Weighted Average
45,663		100.00% Pervious Area

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

Subcatchment PST 3: WODDS OF LOT 2



Summary for Subcatchment PST 3A: LOT 2

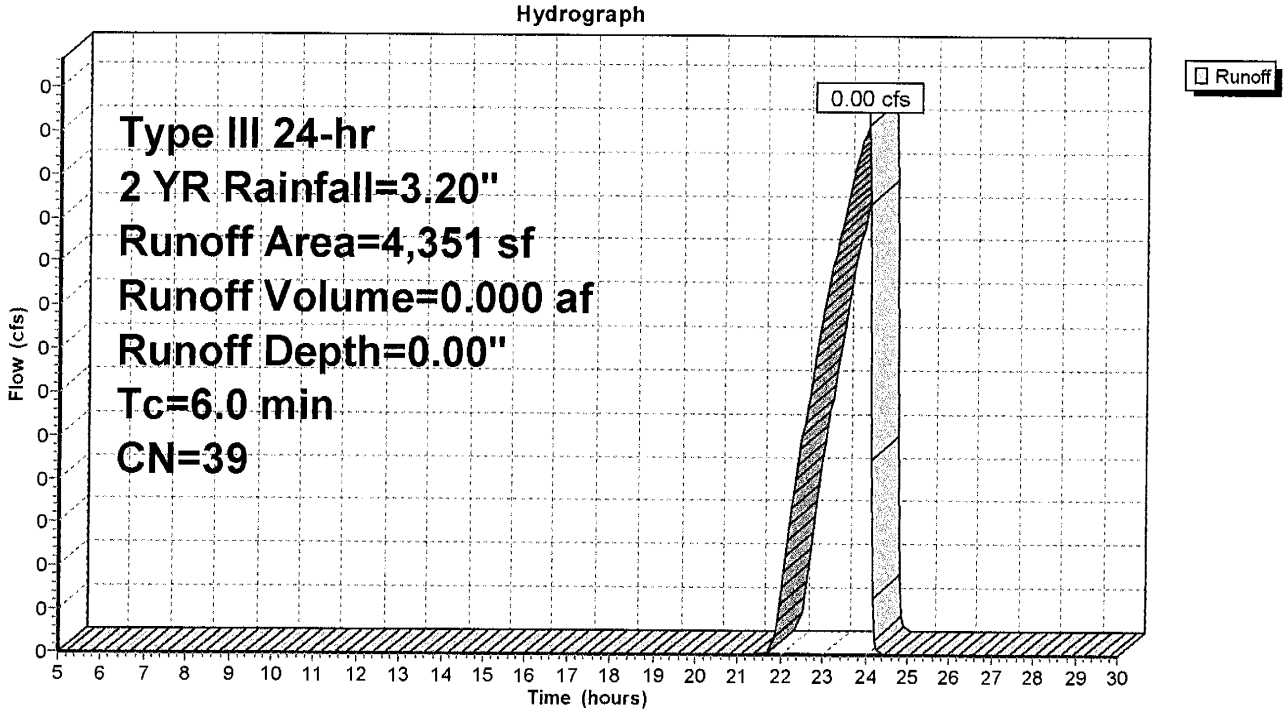
Runoff = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.20"

Area (sf)	CN	Description
4,351	39	>75% Grass cover, Good, HSG A
4,351		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 MINUTE MIN**

Subcatchment PST 3A: LOT 2



Summary for Subcatchment PST 3B: LOT 2

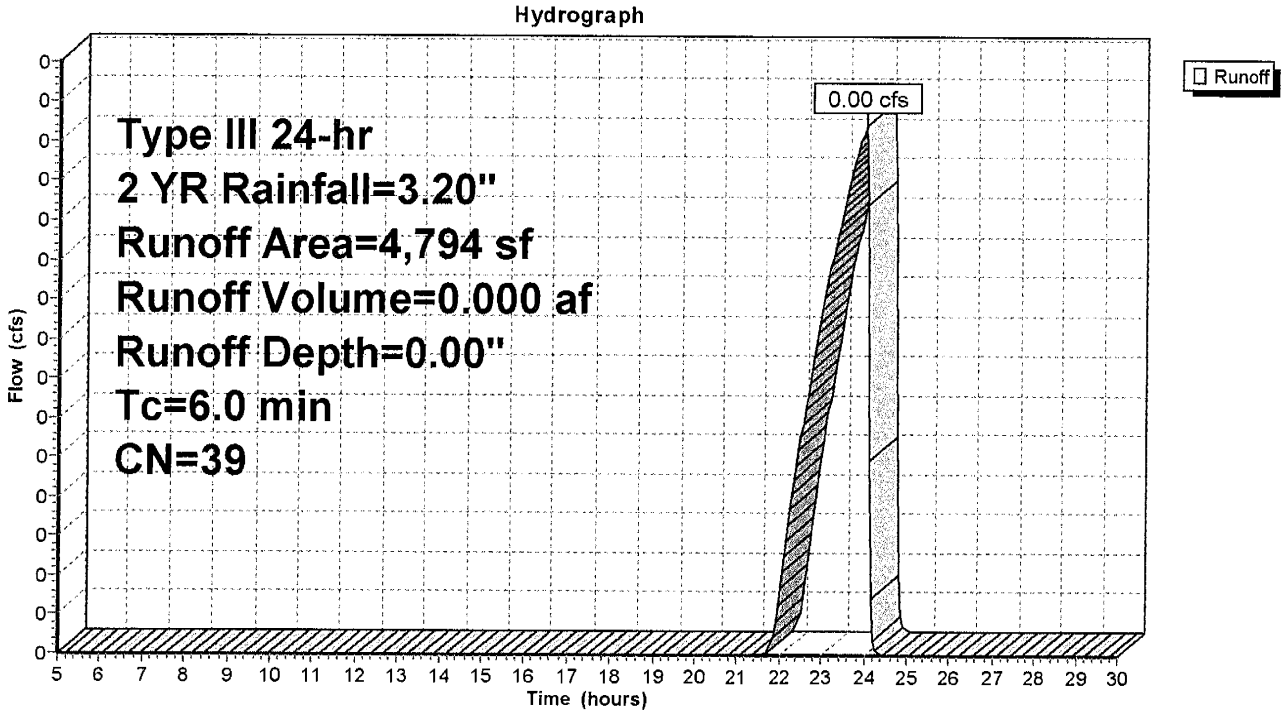
Runoff = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.20"

Area (sf)	CN	Description
4,794	39	>75% Grass cover, Good, HSG A
4,794		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 MINUTE MIN**

Subcatchment PST 3B: LOT 2



Summary for Subcatchment PST 4: LOTS 1&2

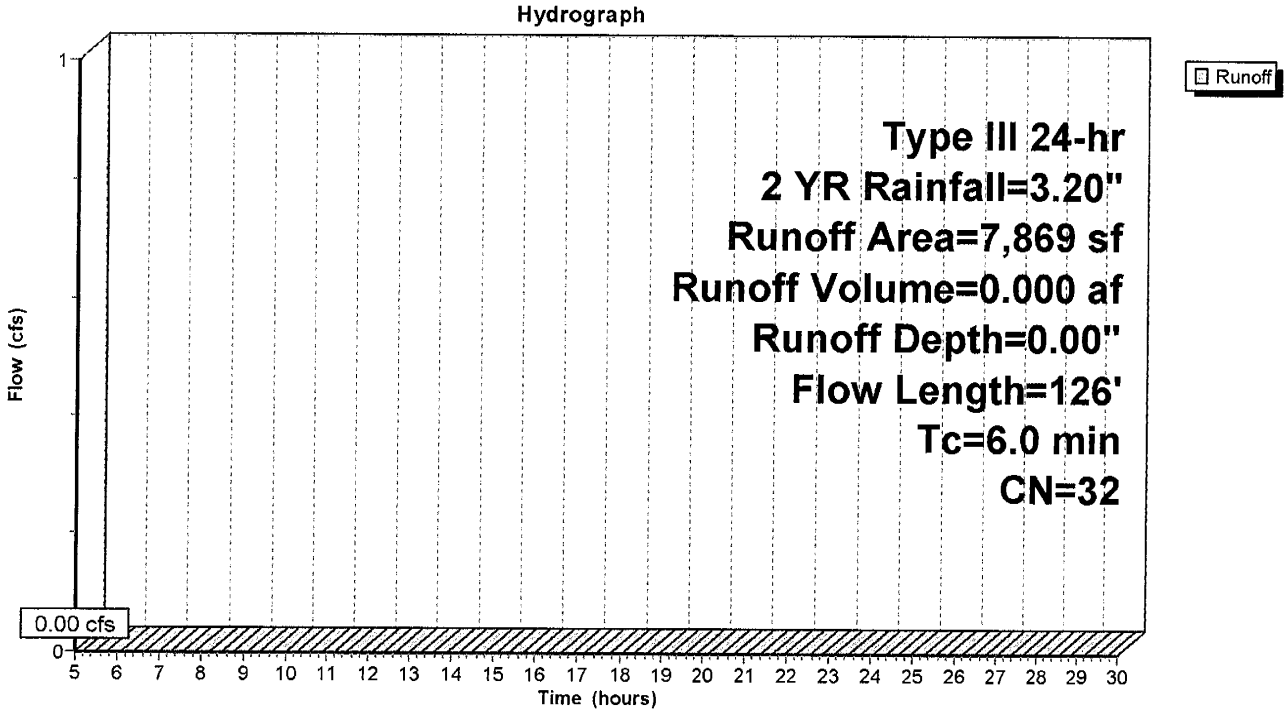
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.20"

Area (sf)	CN	Description
1,500	39	>75% Grass cover, Good, HSG A
6,369	30	Woods, Good, HSG A
7,869	32	Weighted Average
7,869		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.4400	0.23		**Sheet Flow, SHEET**
					Woods: Light underbrush n= 0.400 P2= 3.20"
0.9	76	0.0816	1.43		**Shallow Concentrated Flow, wood**
					Woodland Kv= 5.0 fps
1.5					**Direct Entry, 6 minute min.**
6.0	126	Total			

Subcatchment PST 4: LOTS 1&2



Summary for Subcatchment PST 4A: LOT 2 REAR YARD

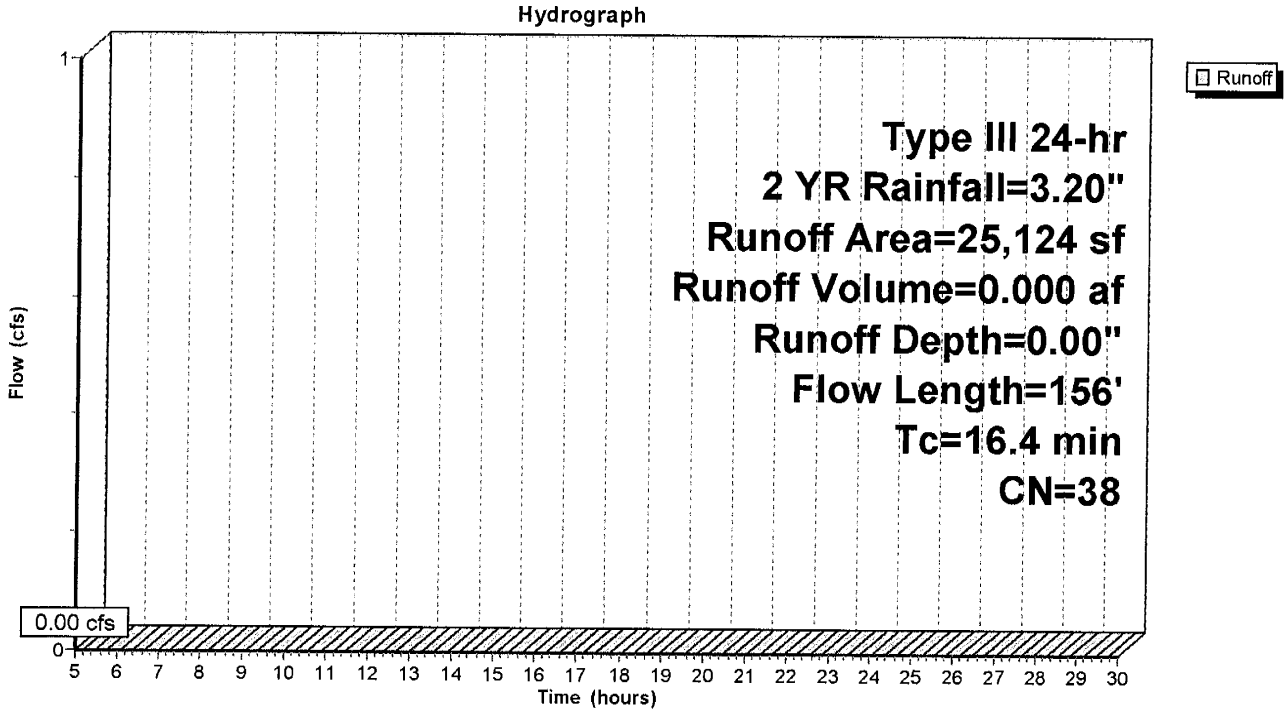
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.20"

Area (sf)	CN	Description
19,893	39	>75% Grass cover, Good, HSG A
2,061	30	Woods, Good, HSG A
1,500	39	>75% Grass cover, Good, HSG A
1,670	30	Woods, Good, HSG A
25,124	38	Weighted Average
25,124		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	50	0.0110	0.05		**Sheet Flow, SHEET** Grass: Bermuda n= 0.410 P2= 3.20"
0.4	106	0.0750	4.41		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
16.4	156	Total			

Subcatchment PST 4A: LOT 2 REAR YARD



Summary for Subcatchment PST 5: TO IVW

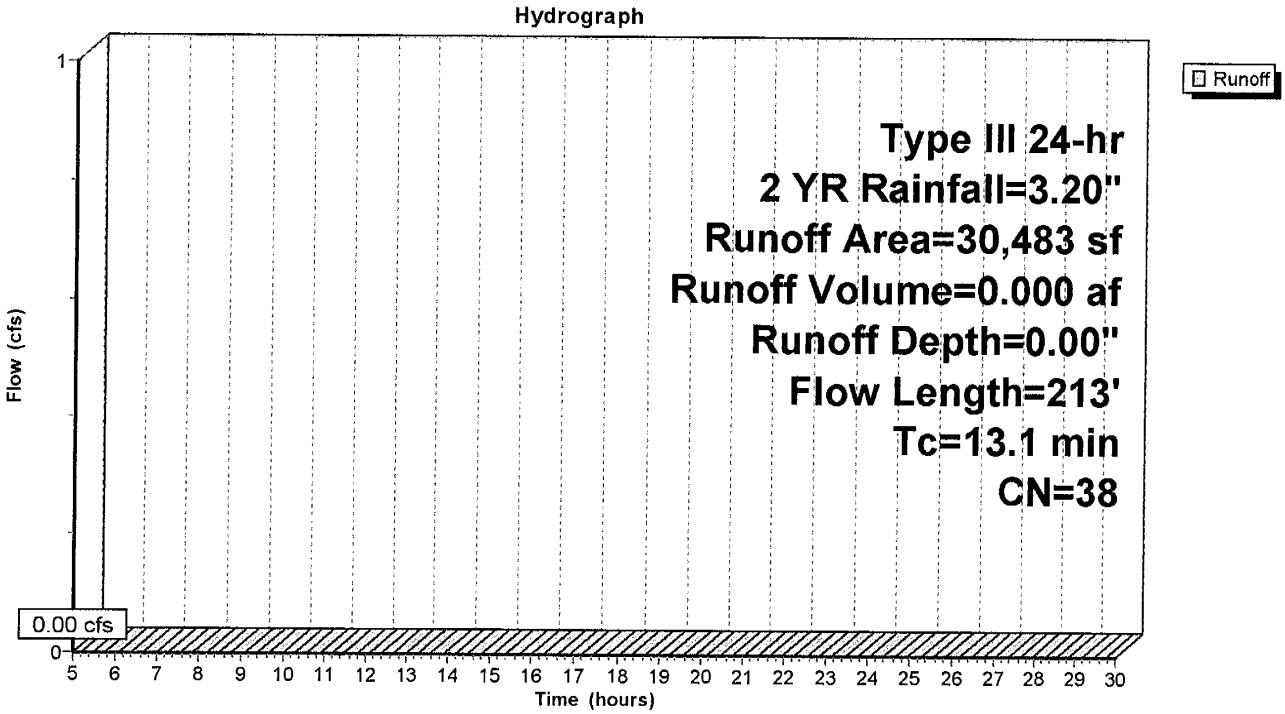
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.20"

	Area (sf)	CN	Description
*	2,432	78	WETLAND
	23,166	30	Woods, Good, HSG A
	4,885	55	Woods, Good, HSG B
	30,483	38	Weighted Average
	30,483		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	46	0.0217	0.07		**Sheet Flow, SEG 1** Woods: Light underbrush n= 0.400 P2= 3.20"
1.9	167	0.0880	1.48		**Shallow Concentrated Flow, SEG 2** Woodland Kv= 5.0 fps
13.1	213	Total			

Subcatchment PST 5: TO IVW



Summary for Subcatchment PST 6: RD PAVE

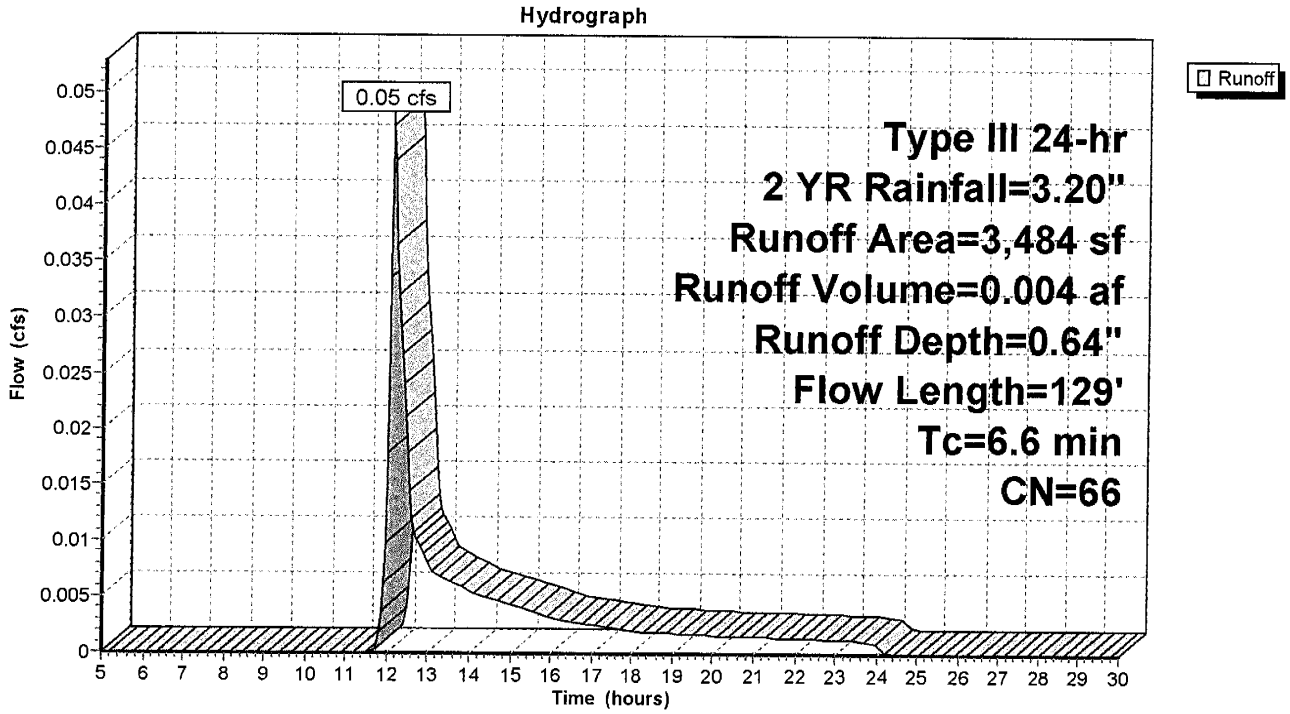
Runoff = 0.05 cfs @ 12.12 hrs, Volume= 0.004 af, Depth= 0.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.20"

Area (sf)	CN	Description
1,565	39	>75% Grass cover, Good, HSG A
494	61	>75% Grass cover, Good, HSG B
1,425	98	Paved parking, HSG A
3,484	66	Weighted Average
2,059		59.10% Pervious Area
1,425		40.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0410	0.14		**Sheet Flow, SHEET** Grass: Dense n= 0.240 P2= 3.20"
0.4	79	0.0500	3.60		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
6.6	129	Total			

Subcatchment PST 6: RD PAVE



Summary for Subcatchment PST 7: RD PAVE

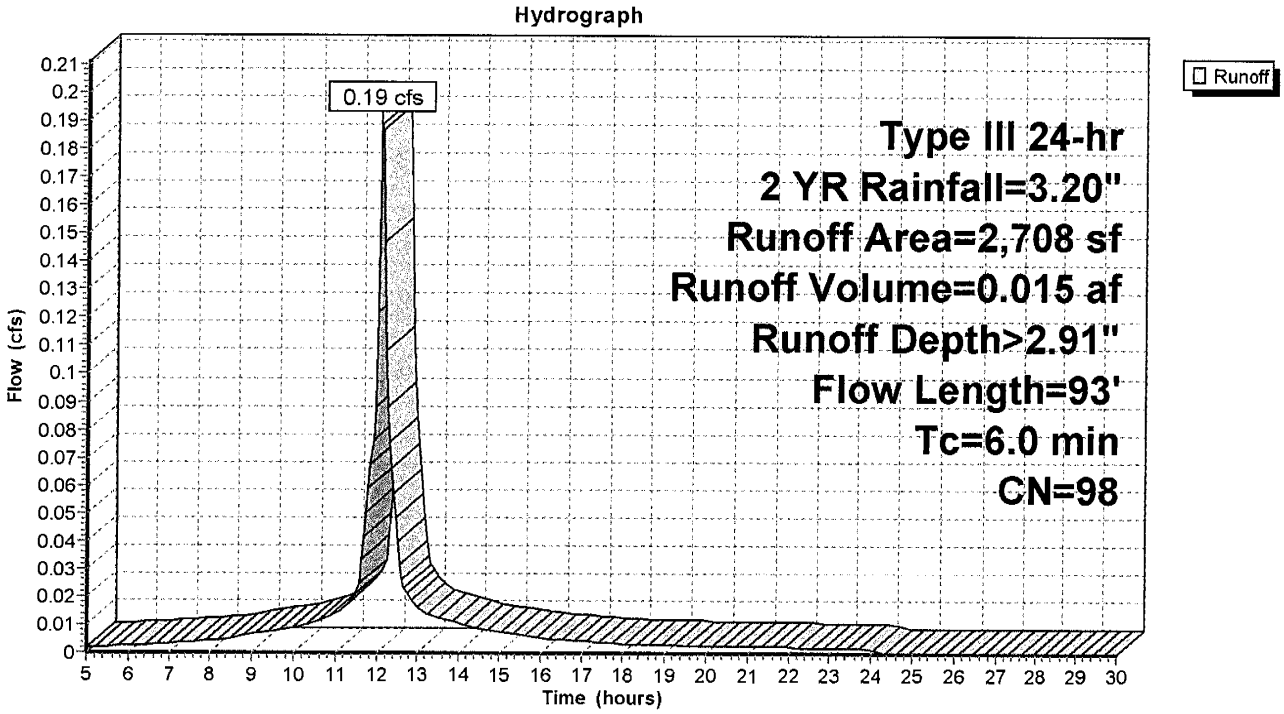
Runoff = 0.19 cfs @ 12.09 hrs, Volume= 0.015 af, Depth> 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.20"

Area (sf)	CN	Description
2,708	98	Paved parking, HSG A
2,708		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	50	0.0280	1.37		**Sheet Flow, SHEET** Smooth surfaces n= 0.011 P2= 3.20"
0.2	43	0.0360	3.85		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
5.2					**Direct Entry, 6 MINUTE MIN**
6.0	93	Total			

Subcatchment PST 7: RD PAVE



Summary for Subcatchment PST 7A: FRONT LAWN AREAS

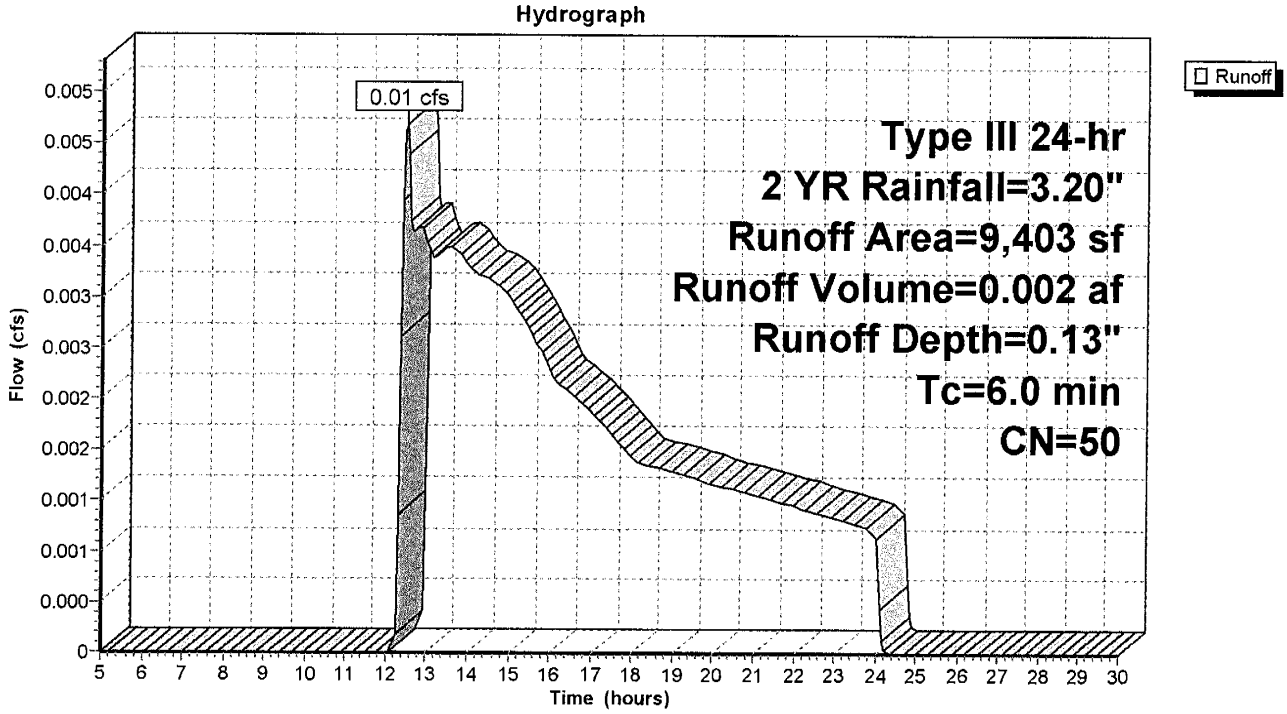
Runoff = 0.01 cfs @ 12.48 hrs, Volume= 0.002 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.20"

Area (sf)	CN	Description
1,788	98	Paved parking, HSG A
7,615	39	>75% Grass cover, Good, HSG A
9,403	50	Weighted Average
7,615		80.98% Pervious Area
1,788		19.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 MINUTE MIN**

Subcatchment PST 7A: FRONT LAWN AREAS



Summary for Subcatchment PST1 B: TO GALLEY

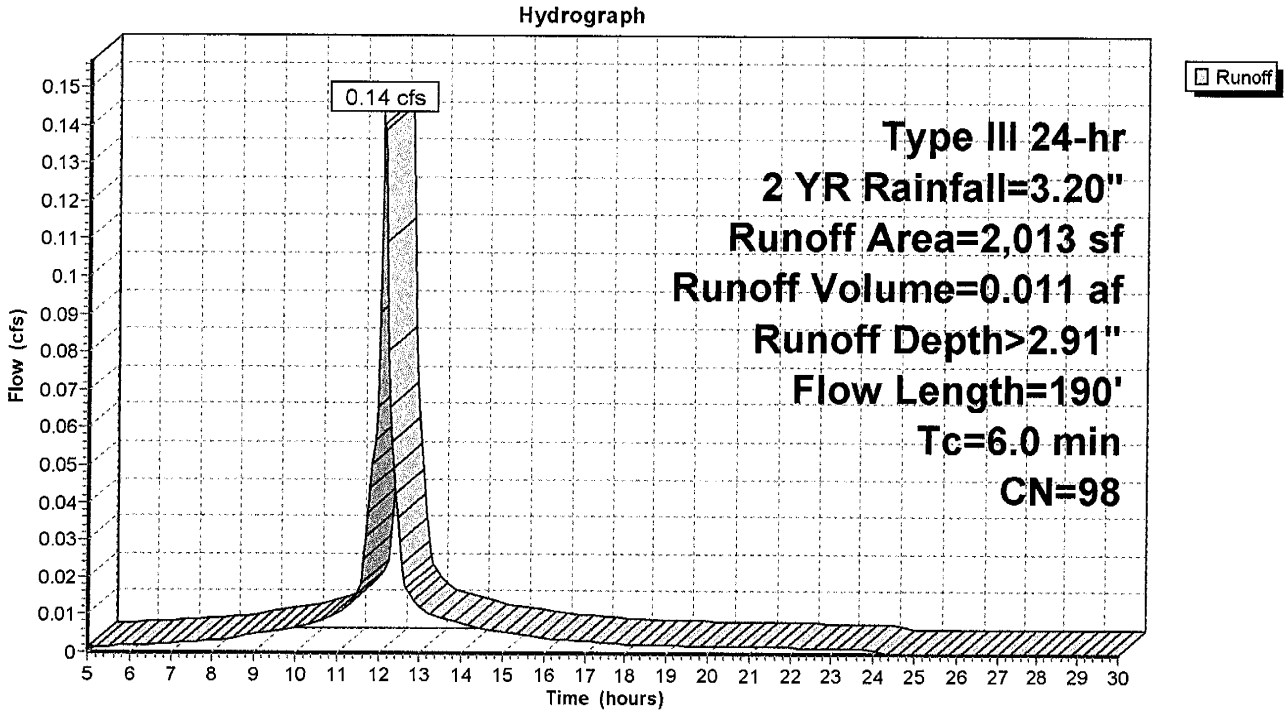
Runoff = 0.14 cfs @ 12.09 hrs, Volume= 0.011 af, Depth> 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.20"

Area (sf)	CN	Description
2,013	98	Paved parking, HSG A
2,013		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	50	0.0500	1.73		**Sheet Flow, SHEET** Smooth surfaces n= 0.011 P2= 3.20"
0.7	140	0.0400	3.22		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
4.8					**Direct Entry, 6 MINUTE MIN.**
6.0	190	Total			

Subcatchment PST1 B: TO GALLEY



Summary for Subcatchment R1: ROOF RIGHT LOT 1

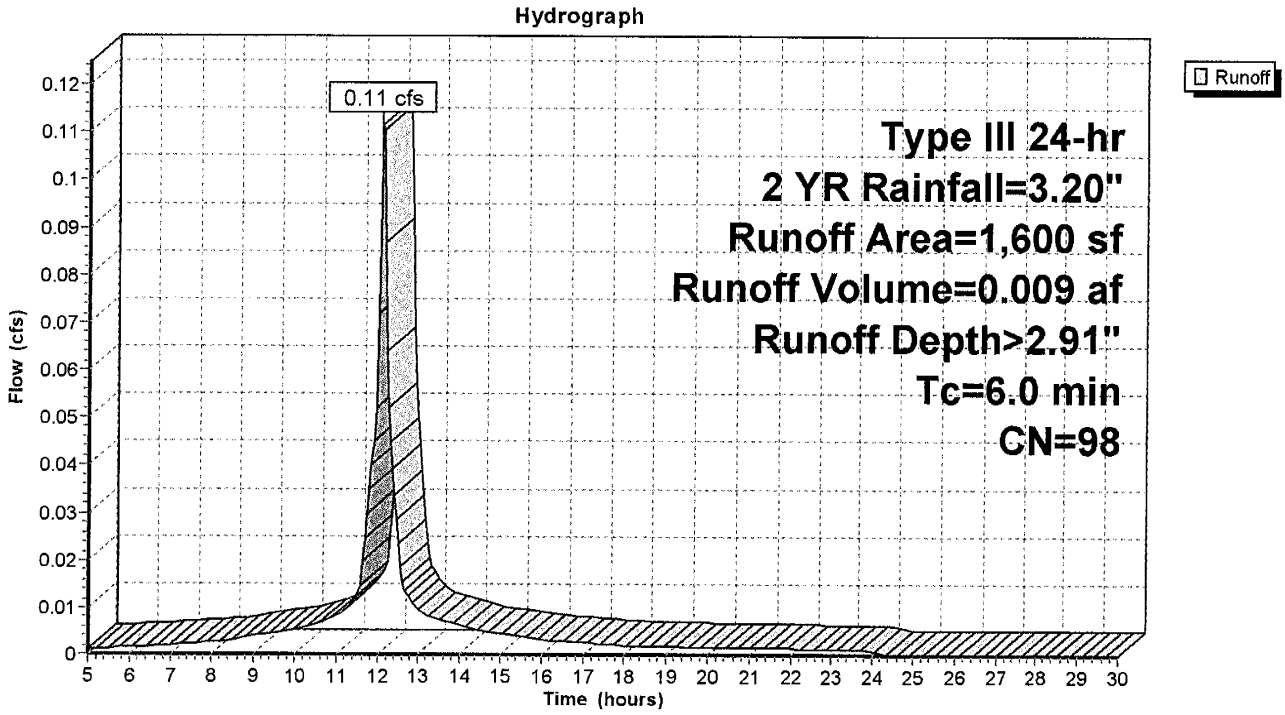
Runoff = 0.11 cfs @ 12.09 hrs, Volume= 0.009 af, Depth> 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.20"

Area (sf)	CN	Description
1,600	98	Unconnected roofs, HSG A
1,600		100.00% Impervious Area
1,600		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 MINUTE MIN**

Subcatchment R1: ROOF RIGHT LOT 1



Summary for Subcatchment R2: ROOF LEFT LOT 2

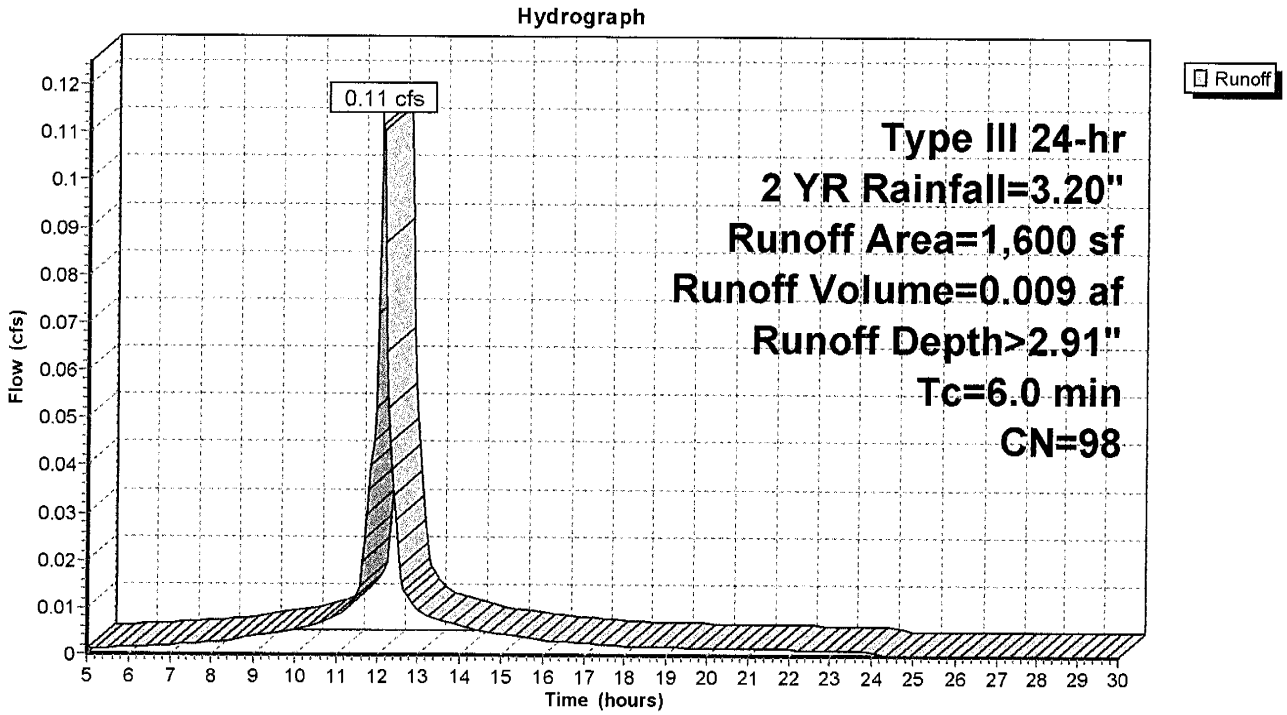
Runoff = 0.11 cfs @ 12.09 hrs, Volume= 0.009 af, Depth> 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.20"

Area (sf)	CN	Description
1,600	98	Unconnected roofs, HSG A
1,600		100.00% Impervious Area
1,600		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 MINUTE MIN**

Subcatchment R2: ROOF LEFT LOT 2



Summary for Reach DP 1: DES PT 1

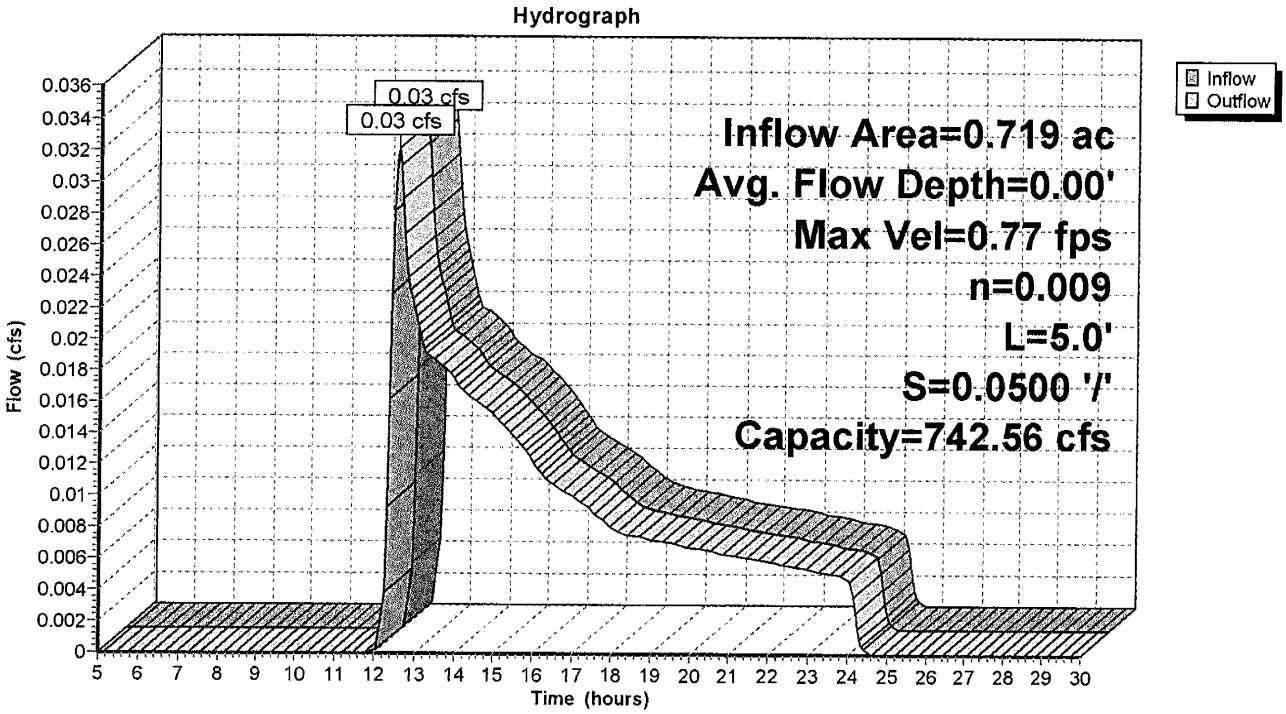
Inflow Area =	0.719 ac,	7.48% Impervious,	Inflow Depth =	0.17"	for 2 YR event
Inflow =	0.03 cfs @	12.54 hrs, Volume=	0.010 af		
Outflow =	0.03 cfs @	12.55 hrs, Volume=	0.010 af, Atten= 0%, Lag= 0.2 min		

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.77 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.77 fps, Avg. Travel Time= 0.1 min

Peak Storage= 0 cf @ 12.55 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.30' Flow Area= 45.0 sf, Capacity= 742.56 cfs

150.00' x 0.30' deep channel, n= 0.009 PVC, smooth interior
Length= 5.0' Slope= 0.0500 '/'
Inlet Invert= 65.25', Outlet Invert= 65.00'

Reach DP 1: DES PT 1



Summary for Reach DP 2: DES PT 2

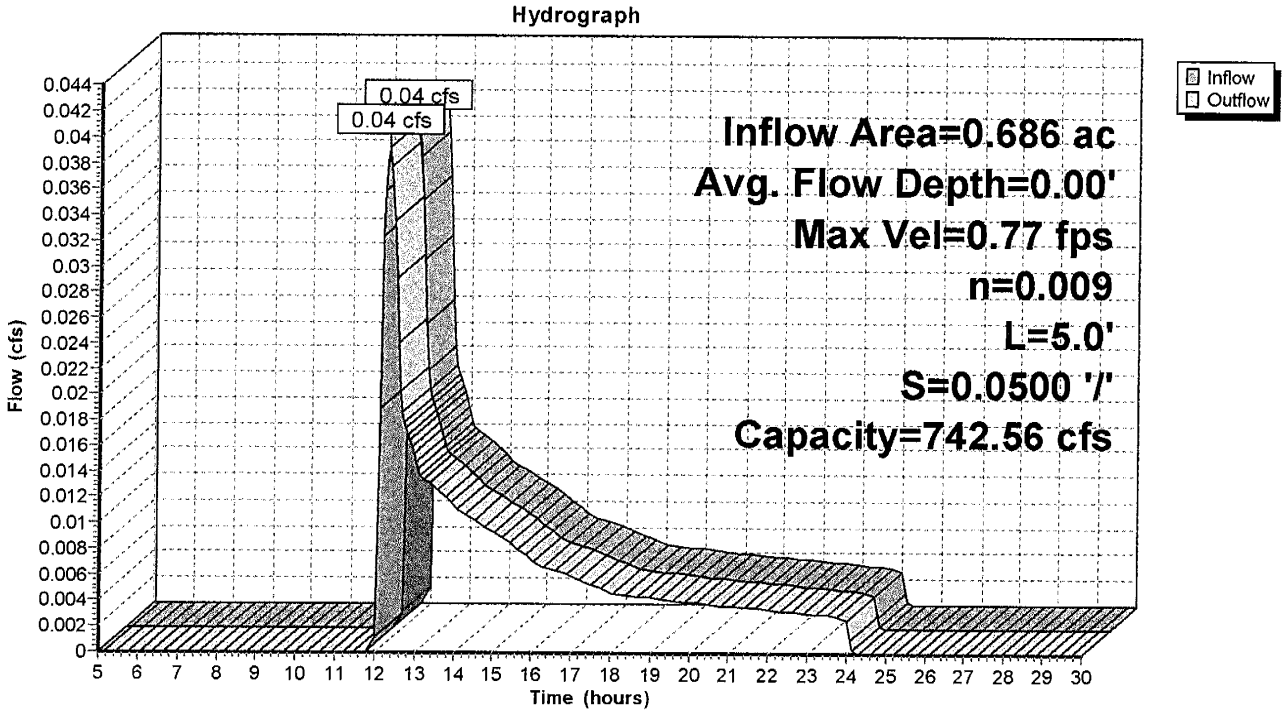
Inflow Area = 0.686 ac, 0.00% Impervious, Inflow Depth = 0.13" for 2 YR event
Inflow = 0.04 cfs @ 12.31 hrs, Volume= 0.007 af
Outflow = 0.04 cfs @ 12.31 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.77 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.77 fps, Avg. Travel Time= 0.1 min

Peak Storage= 0 cf @ 12.31 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.30' Flow Area= 45.0 sf, Capacity= 742.56 cfs

150.00' x 0.30' deep channel, n= 0.009 PVC, smooth interior
Length= 5.0' Slope= 0.0500 '/'
Inlet Invert= 65.25', Outlet Invert= 65.00'

Reach DP 2: DES PT 2



Summary for Reach DP 3: DES PT 3

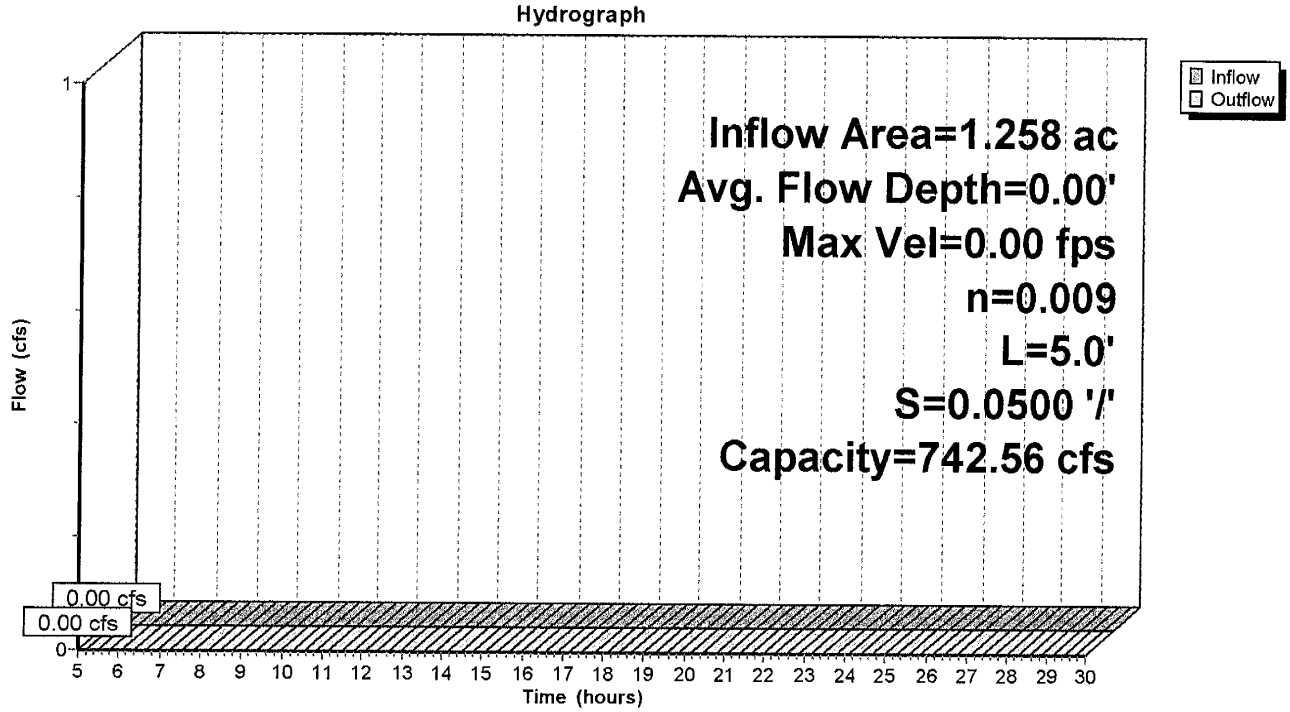
Inflow Area = 1.258 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2 YR event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 5.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.30' Flow Area= 45.0 sf, Capacity= 742.56 cfs

150.00' x 0.30' deep channel, n= 0.009 PVC, smooth interior
Length= 5.0' Slope= 0.0500 '/'
Inlet Invert= 65.25', Outlet Invert= 65.00'

Reach DP 3: DES PT 3



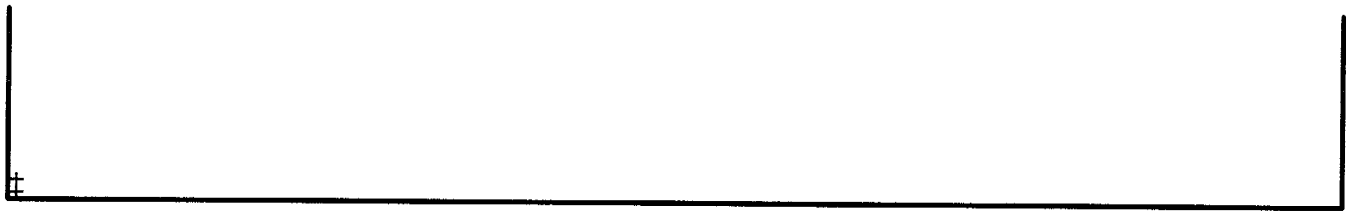
Summary for Reach DP 4: DES PT 4

Inflow Area =	0.757 ac,	0.00% Impervious,	Inflow Depth =	0.00"	for 2 YR event
Inflow =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	
Outflow =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af,	Atten= 0%, Lag= 0.0 min

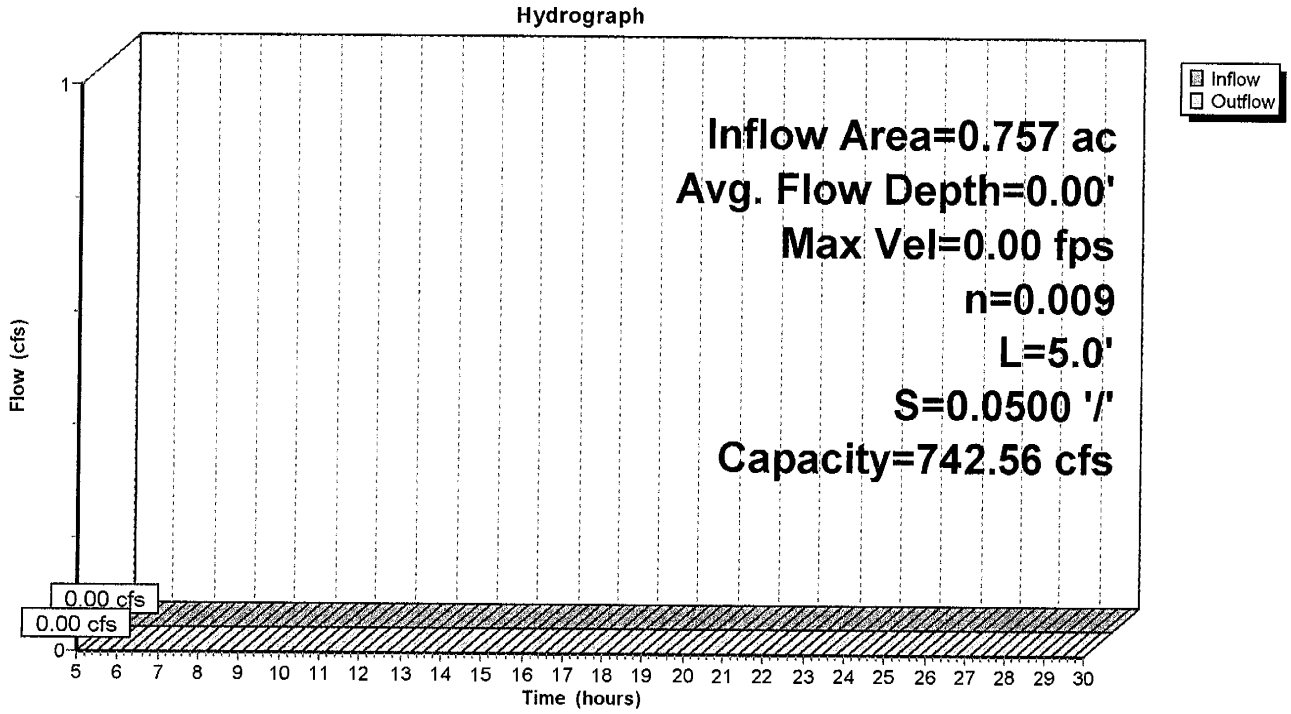
Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 5.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.30' Flow Area= 45.0 sf, Capacity= 742.56 cfs

150.00' x 0.30' deep channel, n= 0.009 PVC, smooth interior
Length= 5.0' Slope= 0.0500 '/'
Inlet Invert= 65.25', Outlet Invert= 65.00'



Reach DP 4: DES PT 4



Summary for Pond 1P: GALLEY RECHARGE SYSTEM 2

Inflow Area =	0.431 ac, 48.53% Impervious, Inflow Depth > 1.04" for 2 YR event				
Inflow =	0.46 cfs @	12.09 hrs,	Volume=	0.037 af	
Outflow =	0.15 cfs @	12.39 hrs,	Volume=	0.037 af,	Atten= 66%, Lag= 18.1 min
Discarded =	0.15 cfs @	12.39 hrs,	Volume=	0.037 af	
Primary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 70.61' @ 12.39 hrs Surf.Area= 720 sf Storage= 249 cf

Plug-Flow detention time= 8.4 min calculated for 0.037 af (100% of inflow)
Center-of-Mass det. time= 8.2 min (788.9 - 780.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	69.75'	963 cf	**15.00'W x 48.00'L x 5.25'H Field A** 3,780 cf Overall - 1,371 cf Embedded = 2,409 cf x 40.0% Voids
#2A	70.75'	1,020 cf	**Concrete Galley 4x4x4.25** x 22 Inside #1 Inside= 42.2"W x 45.0"H => 13.25 sf x 3.50'L = 46.4 cf Outside= 54.0"W x 51.0"H => 15.58 sf x 4.00'L = 62.3 cf 2 Rows of 11 Chambers
		1,984 cf	Total Available Storage

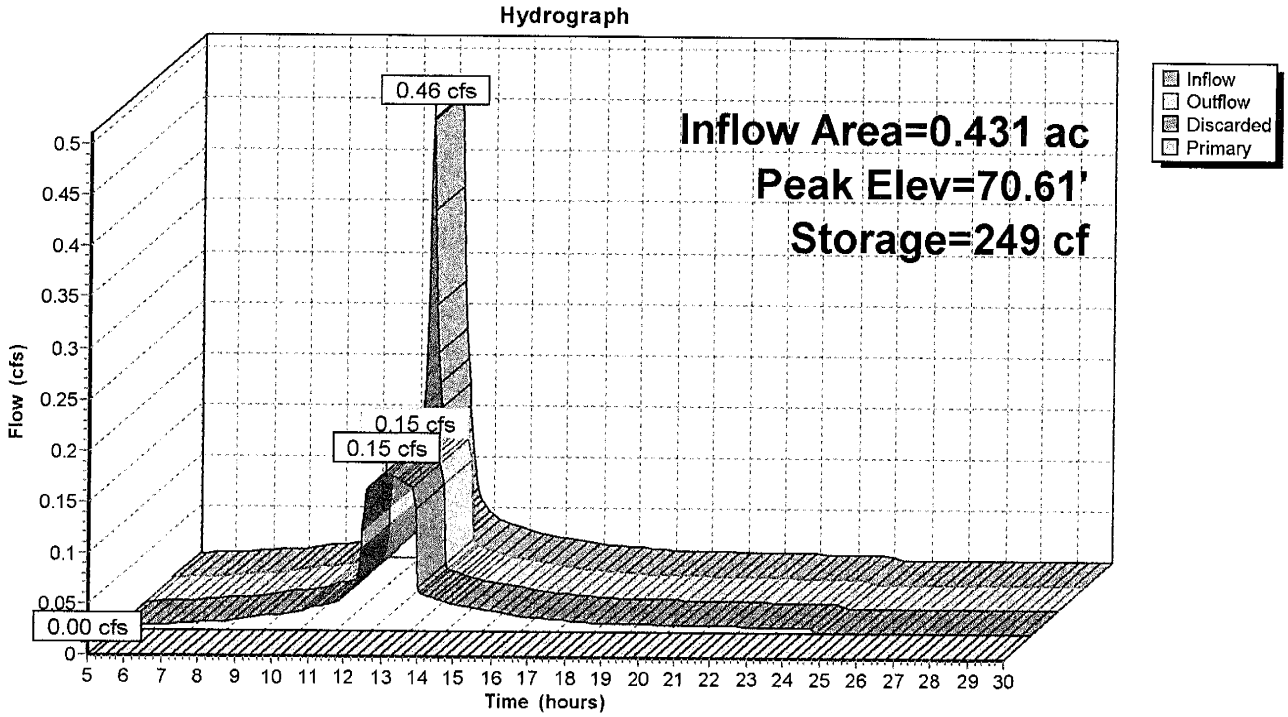
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	69.75'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 62.00'
#2	Primary	73.50'	**4.0" Round Culvert** L= 15.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 73.50' / 72.00' S= 0.1000 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.09 sf

Discarded OutFlow Max=0.15 cfs @ 12.39 hrs HW=70.61' (Free Discharge)
└**1=Exfiltration** (Controls 0.15 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=69.75' (Free Discharge)
└**2=Culvert** (Controls 0.00 cfs)

Pond 1P: GALLEY RECHARGE SYSTEM 2



Summary for Pond 2P: CB 2

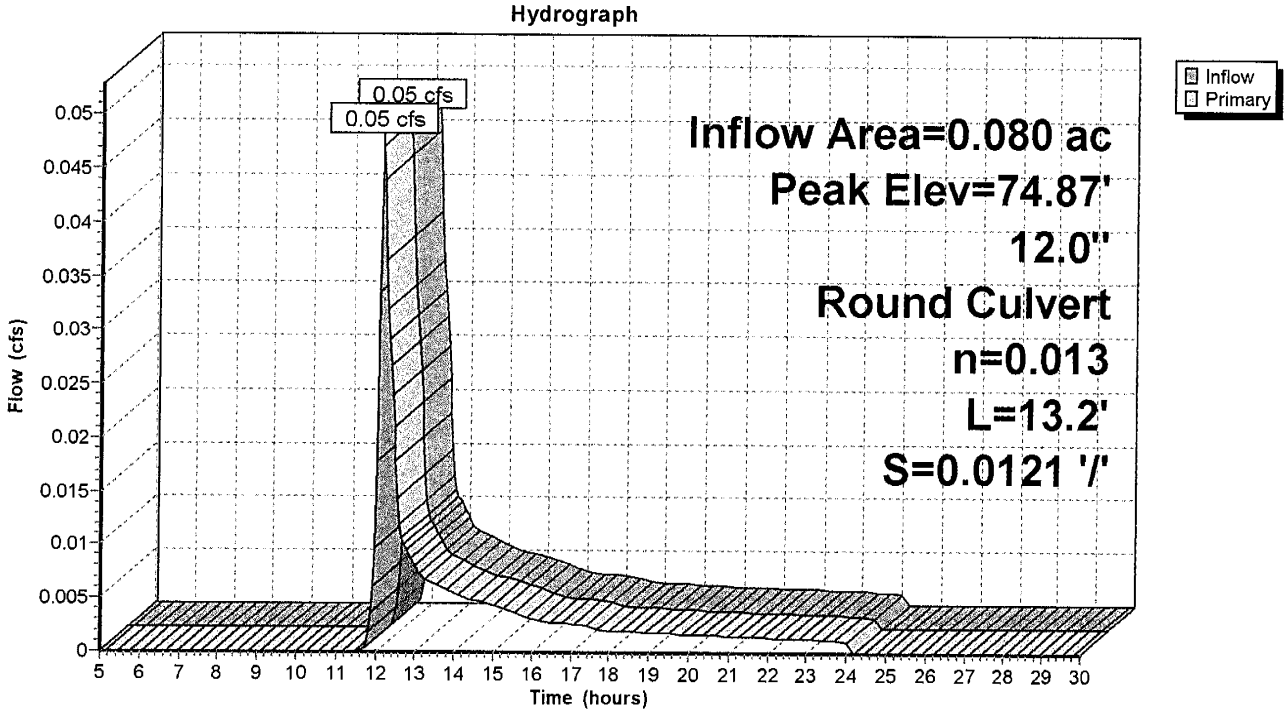
Inflow Area =	0.080 ac, 40.90% Impervious, Inflow Depth = 0.64" for 2 YR event				
Inflow =	0.05 cfs @ 12.12 hrs, Volume=	0.004 af			
Outflow =	0.05 cfs @ 12.12 hrs, Volume=	0.004 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.05 cfs @ 12.12 hrs, Volume=	0.004 af			

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 74.87' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	74.76'	**12.0" Round Culvert** L= 13.2' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 74.76' / 74.60' S= 0.0121 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.05 cfs @ 12.12 hrs HW=74.86' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.05 cfs @ 1.61 fps)

Pond 2P: CB 2



Summary for Pond 3P: CB 1

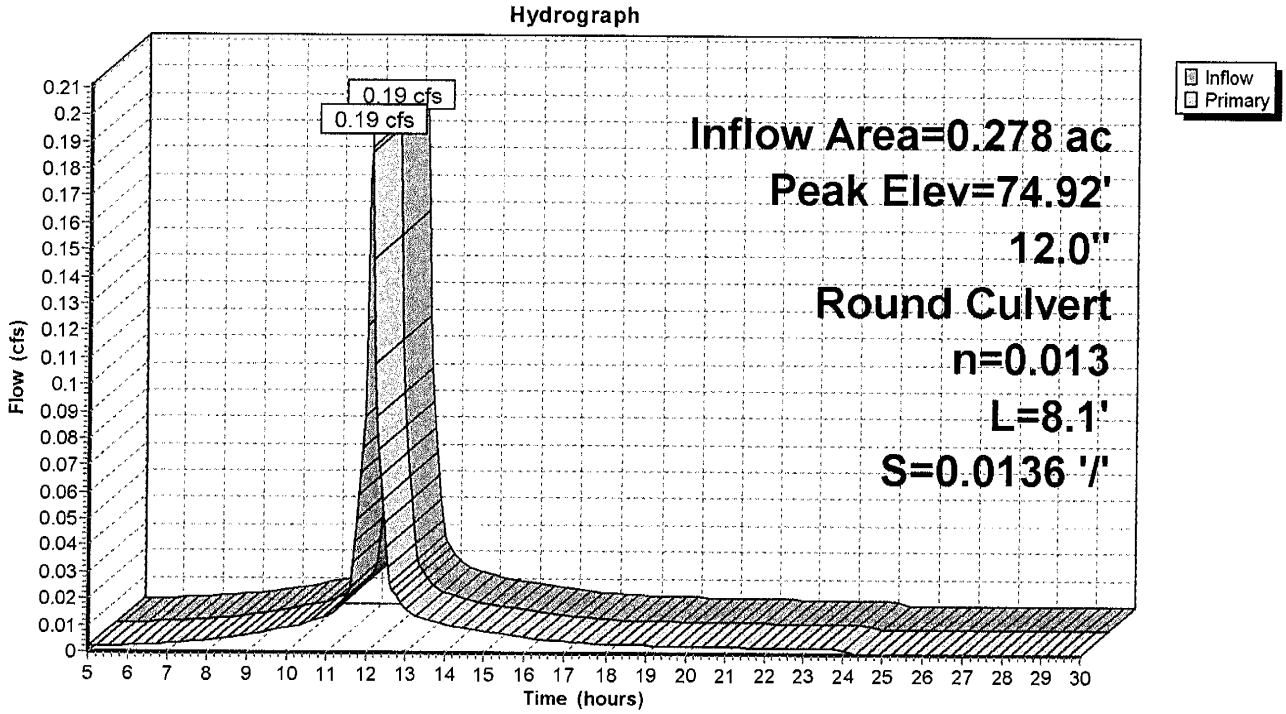
Inflow Area =	0.278 ac, 37.12% Impervious, Inflow Depth > 0.65" for 2 YR event				
Inflow =	0.19 cfs @ 12.09 hrs, Volume=	0.015 af			
Outflow =	0.19 cfs @ 12.09 hrs, Volume=	0.015 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.19 cfs @ 12.09 hrs, Volume=	0.015 af			

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 74.92' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	74.71'	**12.0" Round Culvert** L= 8.1' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 74.71' / 74.60' S= 0.0136 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.18 cfs @ 12.09 hrs HW=74.92' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.18 cfs @ 2.29 fps)

Pond 3P: CB 1



Summary for Pond 4P: DMH 1

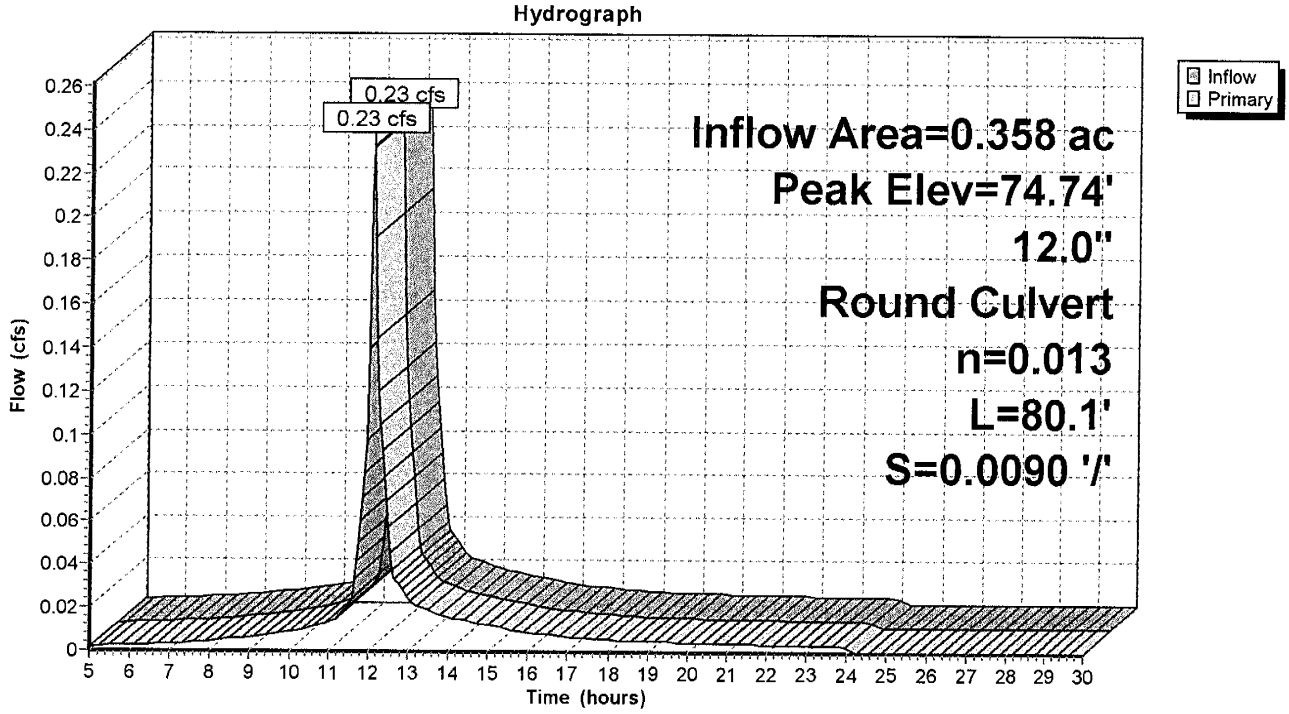
Inflow Area =	0.358 ac, 37.97% Impervious, Inflow Depth > 0.65" for 2 YR event				
Inflow =	0.23 cfs @ 12.09 hrs, Volume=	0.019 af			
Outflow =	0.23 cfs @ 12.09 hrs, Volume=	0.019 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.23 cfs @ 12.09 hrs, Volume=	0.019 af			

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 74.74' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	74.50'	**12.0" Round Culvert** L= 80.1' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 74.50' / 73.78' S= 0.0090 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.23 cfs @ 12.09 hrs HW=74.74' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.23 cfs @ 2.40 fps)

Pond 4P: DMH 1



Summary for Pond 5P: STORMCEPTOR 3

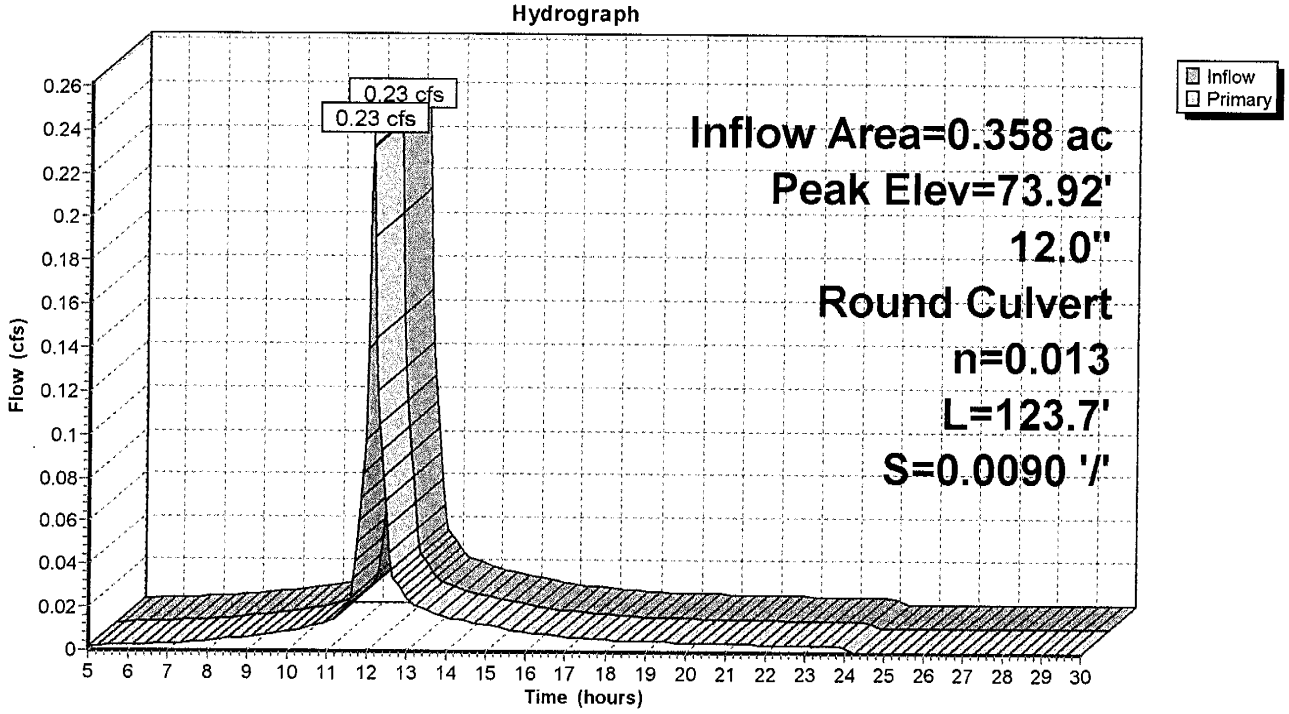
Inflow Area =	0.358 ac, 37.97% Impervious, Inflow Depth > 0.65" for 2 YR event				
Inflow =	0.23 cfs @	12.09 hrs,	Volume=	0.019 af	
Outflow =	0.23 cfs @	12.09 hrs,	Volume=	0.019 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.23 cfs @	12.09 hrs,	Volume=	0.019 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 73.92' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	73.68'	**12.0" Round Culvert** L= 123.7' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 73.68' / 72.57' S= 0.0090 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.23 cfs @ 12.09 hrs HW=73.92' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.23 cfs @ 2.42 fps)

Pond 5P: STORMCEPTOR 3



Summary for Pond 6P: TRENCH DRAIN

Inflow Area =	0.100 ac,	0.00% Impervious,	Inflow Depth =	0.00"	for 2 YR event
Inflow =	0.00 cfs @	24.00 hrs,	Volume=	0.000 af	
Outflow =	0.00 cfs @	23.98 hrs,	Volume=	0.000 af,	Atten= 0%, Lag= 0.0 min
Discarded =	0.00 cfs @	23.98 hrs,	Volume=	0.000 af	
Primary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 72.00' @ 23.98 hrs Surf.Area= 188 sf Storage= 0 cf

Plug-Flow detention time= 0.7 min calculated for 0.000 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (1,397.3 - 1,396.6)

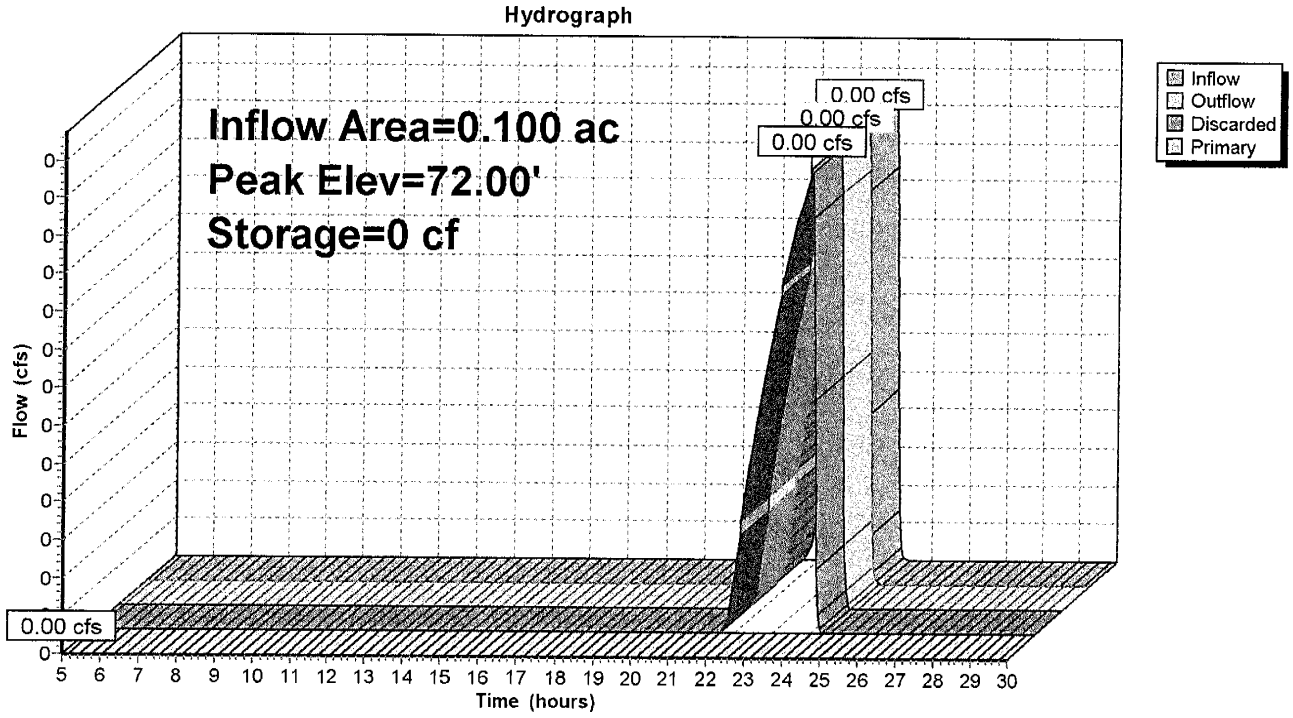
Volume	Invert	Avail.Storage	Storage Description
#1	72.00'	150 cf	**2.00'W x 94.00'L x 2.00'H Prismatoid** 376 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	72.00'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 65.00'
#2	Primary	73.80'	**10.0' 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

Discarded OutFlow Max=0.04 cfs @ 23.98 hrs HW=72.00' (Free Discharge)
└**1=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=72.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 6P: TRENCH DRAIN



Summary for Pond 7P: SAND FILTER

Inflow Area =	0.216 ac,	19.02% Impervious,	Inflow Depth =	0.13"	for 2 YR event
Inflow =	0.01 cfs @	12.48 hrs,	Volume=	0.002 af	
Outflow =	0.01 cfs @	12.50 hrs,	Volume=	0.002 af,	Atten= 1%, Lag= 1.4 min
Primary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	
Secondary =	0.01 cfs @	12.50 hrs,	Volume=	0.002 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 79.61' @ 12.50 hrs Surf.Area= 61 sf Storage= 0 cf

Plug-Flow detention time= 1.2 min calculated for 0.002 af (100% of inflow)
Center-of-Mass det. time= 1.2 min (1,011.2 - 1,010.0)

Volume	Invert	Avail.Storage	Storage Description
#1	79.60'	821 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

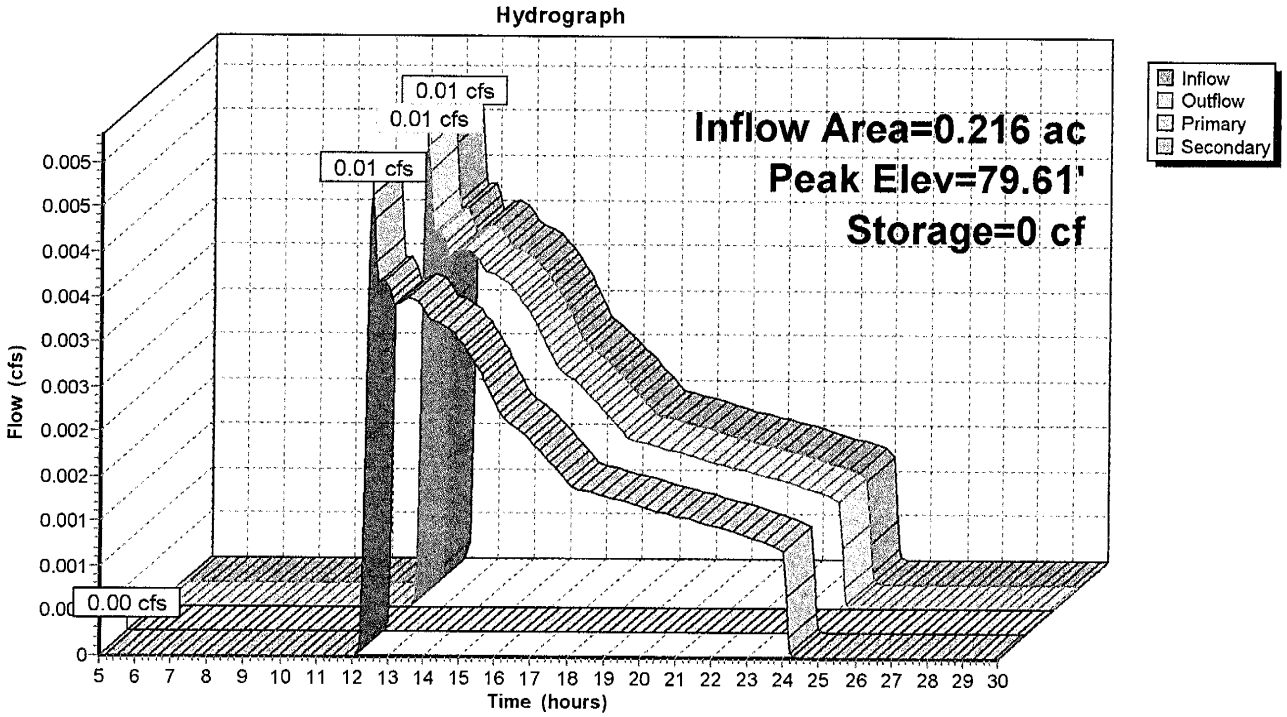
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.60	60	0	0
79.90	127	28	28
80.00	405	27	55
81.00	1,128	767	821

Device	Routing	Invert	Outlet Devices
#1	Primary	80.90'	**10.0' long x 2.0' 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Secondary	79.60'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 57.00'

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=79.60' (Free Discharge)
└─**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.01 cfs @ 12.50 hrs HW=79.61' (Free Discharge)
└─**2=Exfiltration** (Controls 0.01 cfs)

Pond 7P: SAND FILTER



Summary for Pond 8P: GALLEY RECHARGE SYSTEM 1

Inflow Area =	0.093 ac,100.00% Impervious, Inflow Depth > 2.91" for 2 YR event				
Inflow =	0.28 cfs @	12.09 hrs,	Volume=	0.023 af	
Outflow =	0.11 cfs @	12.33 hrs,	Volume=	0.023 af,	Atten= 62%, Lag= 14.4 min
Discarded =	0.11 cfs @	12.33 hrs,	Volume=	0.023 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 66.02' @ 12.33 hrs Surf.Area= 448 sf Storage= 139 cf

Plug-Flow detention time= 6.7 min calculated for 0.022 af (100% of inflow)
Center-of-Mass det. time= 6.6 min (772.8 - 766.2)

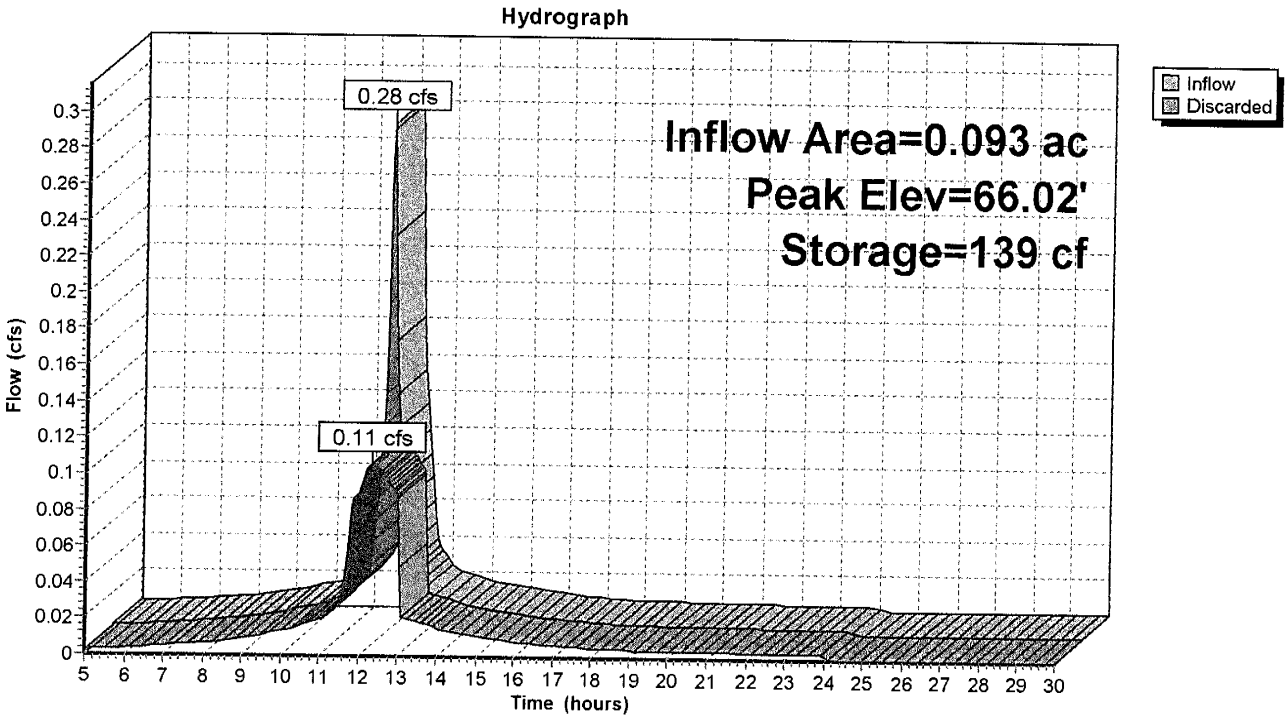
Volume	Invert	Avail.Storage	Storage Description
#1A	65.25'	406 cf	**16.00'W x 28.00'L x 4.00'H Field A** 1,792 cf Overall - 778 cf Embedded = 1,014 cf x 40.0% Voids
#2A	66.25'	561 cf	**Concrete Galley 4x4x3** x 18 Inside #1 Inside= 42.0"W x 30.0"H => 8.91 sf x 3.50'L = 31.2 cf Outside= 48.0"W x 36.0"H => 10.81 sf x 4.00'L = 43.2 cf 3 Rows of 6 Chambers
		967 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	65.25'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 62.00'

Discarded OutFlow Max=0.11 cfs @ 12.33 hrs HW=66.02' (Free Discharge)
└**1=Exfiltration** (Controls 0.11 cfs)

Pond 8P: GALLEY RECHARGE SYSTEM 1



Summary for Pond 9P: STORMCEPTOR 1

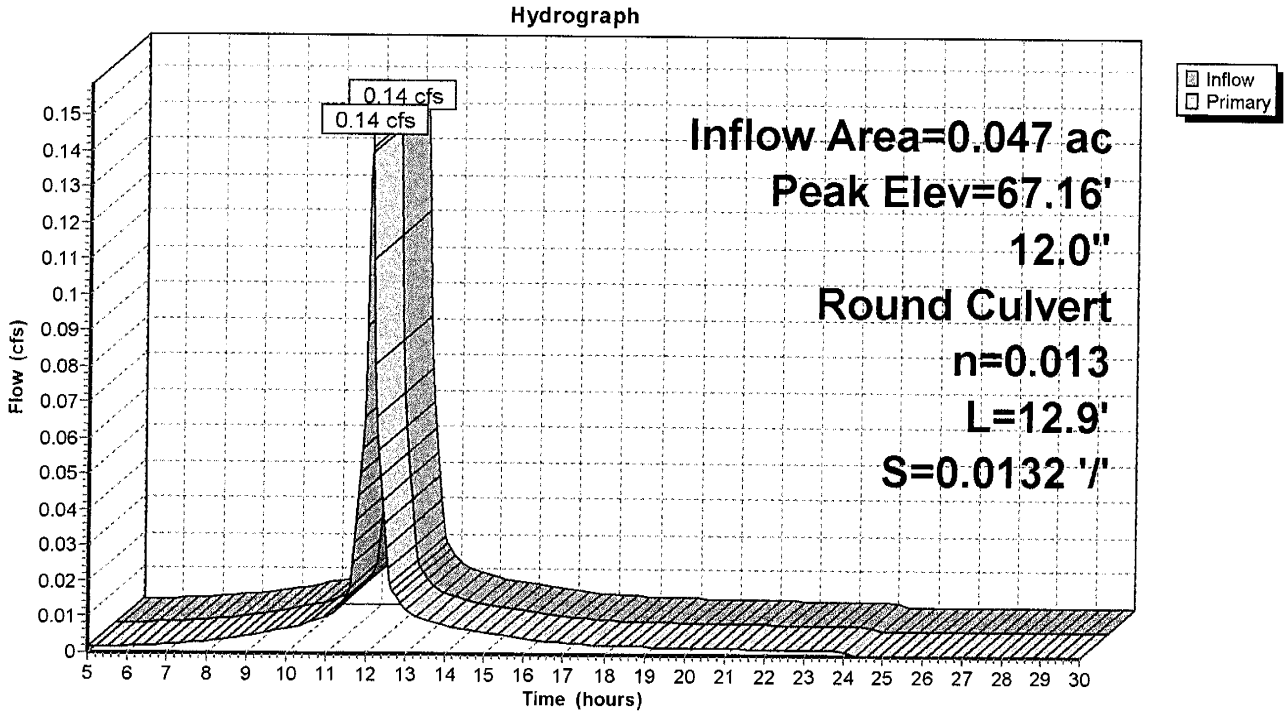
Inflow Area =	0.047 ac,100.00% Impervious, Inflow Depth > 2.91" for 2 YR event				
Inflow =	0.14 cfs @	12.09 hrs,	Volume=	0.011 af	
Outflow =	0.14 cfs @	12.09 hrs,	Volume=	0.011 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.14 cfs @	12.09 hrs,	Volume=	0.011 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 67.16' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	66.97'	**12.0" Round Culvert** L= 12.9' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 66.97' / 66.80' S= 0.0132 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.14 cfs @ 12.09 hrs HW=67.15' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.14 cfs @ 2.09 fps)

Pond 9P: STORMCEPTOR 1



Summary for Pond 11P: STORMCEPTOR 2

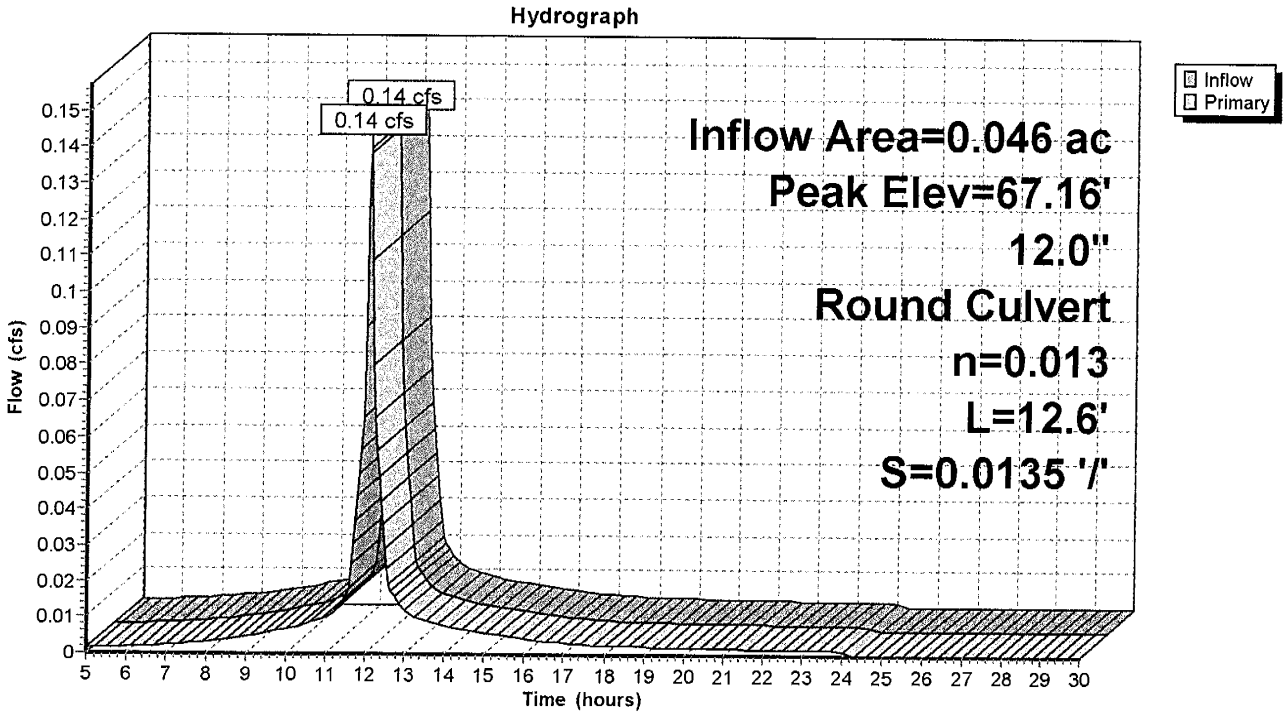
Inflow Area =	0.046 ac,100.00% Impervious, Inflow Depth > 2.91" for 2 YR event				
Inflow =	0.14 cfs @	12.09 hrs,	Volume=	0.011 af	
Outflow =	0.14 cfs @	12.09 hrs,	Volume=	0.011 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.14 cfs @	12.09 hrs,	Volume=	0.011 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 67.16' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	66.97'	**12.0" Round Culvert** L= 12.6' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 66.97' / 66.80' S= 0.0135 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.14 cfs @ 12.09 hrs HW=67.15' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.14 cfs @ 2.10 fps)

Pond 11P: STORMCEPTOR 2



Summary for Pond 12P: Bio Retention System

Inflow Area =	0.369 ac,	0.00% Impervious,	Inflow Depth =	0.41"	for 2 YR event
Inflow =	0.08 cfs @	12.33 hrs,	Volume=	0.013 af	
Outflow =	0.06 cfs @	12.56 hrs,	Volume=	0.013 af,	Atten= 22%, Lag= 14.1 min
Discarded =	0.06 cfs @	12.56 hrs,	Volume=	0.013 af	
Primary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 83.52' @ 12.56 hrs Surf.Area= 1,102 sf Storage= 21 cf

Plug-Flow detention time= 2.1 min calculated for 0.013 af (100% of inflow)
Center-of-Mass det. time= 2.1 min (930.8 - 928.7)

Volume	Invert	Avail.Storage	Storage Description
#1	83.50'	563 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

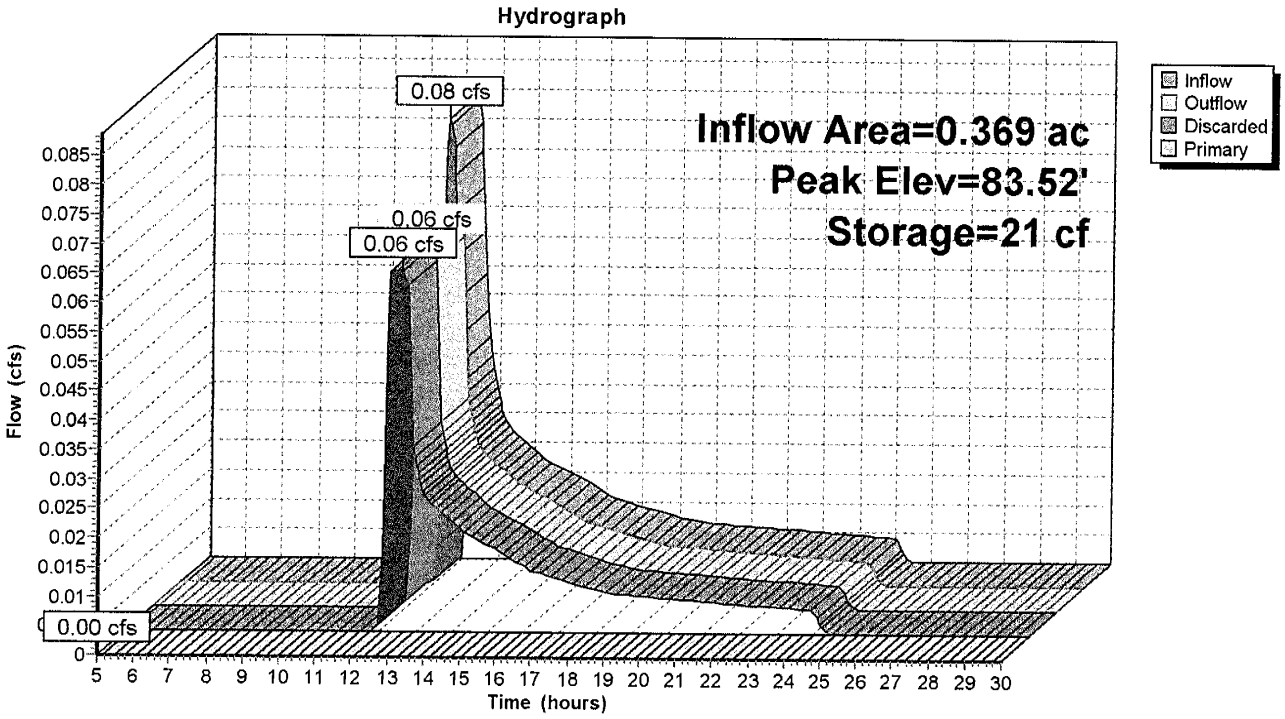
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
83.50	1,100	0	0
84.00	1,151	563	563

Device	Routing	Invert	Outlet Devices
#1	Discarded	83.50'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 67.00'
#2	Primary	83.75'	**5.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=0.06 cfs @ 12.56 hrs HW=83.52' (Free Discharge)
└**1=Exfiltration** (Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=83.50' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 12P: Bio Retention System



Summary for Pond 14P: TRENCH DRAIN

Inflow Area =	0.110 ac,	0.00% Impervious,	Inflow Depth =	0.00"	for 2 YR event
Inflow =	0.00 cfs @	24.00 hrs,	Volume=	0.000 af	
Outflow =	0.00 cfs @	23.98 hrs,	Volume=	0.000 af,	Atten= 0%, Lag= 0.0 min
Discarded =	0.00 cfs @	23.98 hrs,	Volume=	0.000 af	
Primary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 77.00' @ 23.98 hrs Surf.Area= 156 sf Storage= 0 cf

Plug-Flow detention time= 0.7 min calculated for 0.000 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (1,397.3 - 1,396.6)

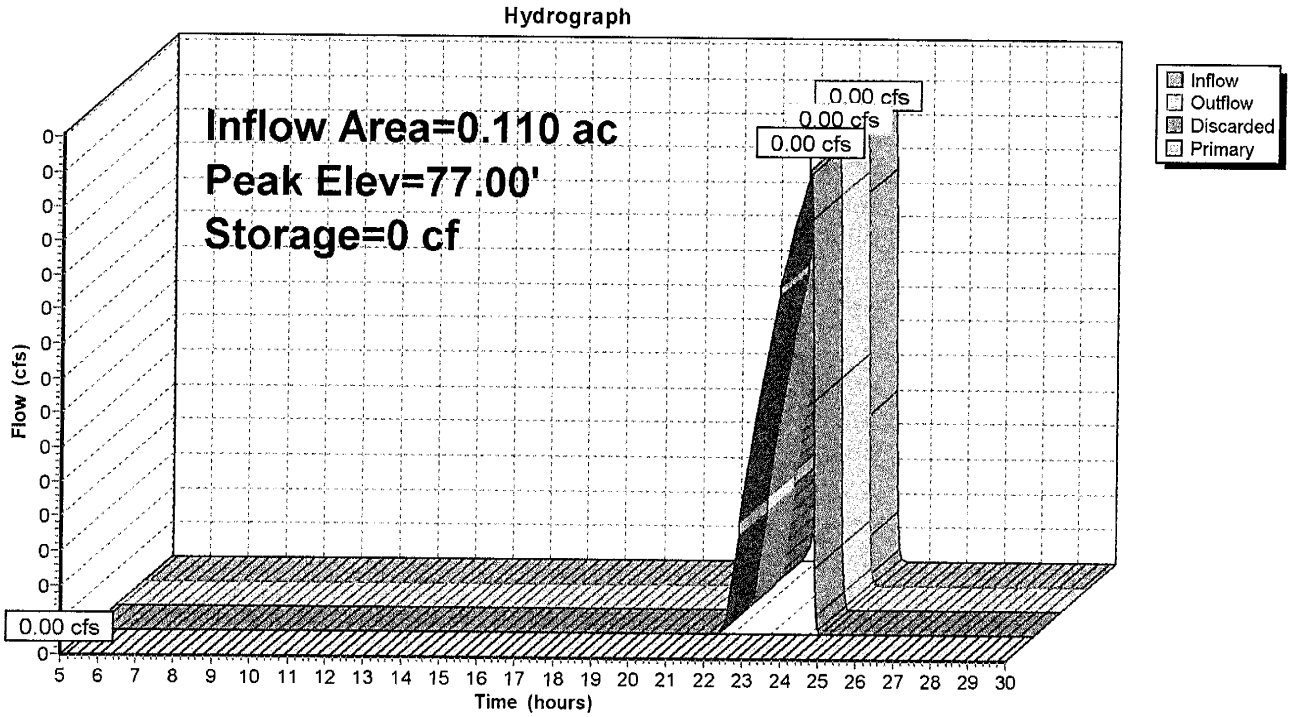
Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	125 cf	**2.00'W x 78.00'L x 2.00'H Prismatoid** 312 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	77.00'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 65.00'
#2	Primary	78.80'	**10.0' 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

Discarded OutFlow Max=0.03 cfs @ 23.98 hrs HW=77.00' (Free Discharge)
└**1=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=77.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 14P: TRENCH DRAIN



Summary for Pond DW1: 8' DIA DRYWELL 1

Inflow Area =	0.577 ac,	0.00% Impervious,	Inflow Depth =	0.00"	for 2 YR event
Inflow =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	
Outflow =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af,	Atten= 0%, Lag= 0.0 min
Discarded =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	
Primary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 62.00' @ 5.00 hrs Surf.Area= 201 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

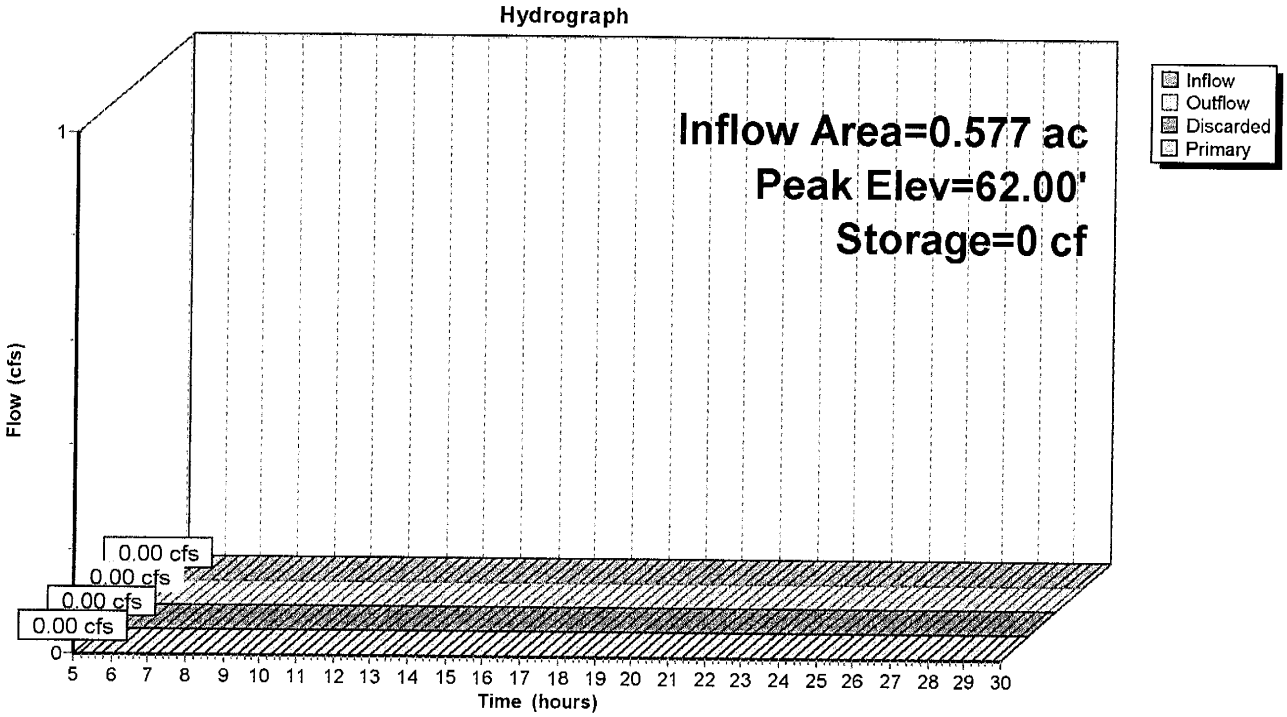
Volume	Invert	Avail.Storage	Storage Description
#1	62.00'	322 cf	**16.00'D x 4.00'H Vertical Cone/Cylinder** 804 cf Overall x 40.0% Voids
#2	63.00'	151 cf	**8.00'D x 3.00'H Vertical Cone/Cylinder**
		472 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	62.00'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 56.00'
#2	Primary	65.00'	**4.0" Round Culvert** L= 12.6' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 65.00' / 64.00' S= 0.0794 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.09 sf

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=62.00' (Free Discharge)
└**1=Exfiltration** (Passes 0.00 cfs of 0.04 cfs potential flow)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=62.00' (Free Discharge)
└**2=Culvert** (Controls 0.00 cfs)

Pond DW1: 8' DIA DRYWELL 1



Summary for Pond SRS1: ROOF RECHARGE

Inflow Area =	0.037 ac,100.00% Impervious, Inflow Depth > 2.91" for 2 YR event			
Inflow =	0.11 cfs @ 12.09 hrs, Volume=	0.009 af		
Outflow =	0.02 cfs @ 12.61 hrs, Volume=	0.009 af, Atten= 86%, Lag= 31.1 min		
Discarded =	0.02 cfs @ 12.61 hrs, Volume=	0.009 af		

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 81.38' @ 12.61 hrs Surf.Area= 268 sf Storage= 118 cf

Plug-Flow detention time= 48.4 min calculated for 0.009 af (100% of inflow)
Center-of-Mass det. time= 48.1 min (814.3 - 766.2)

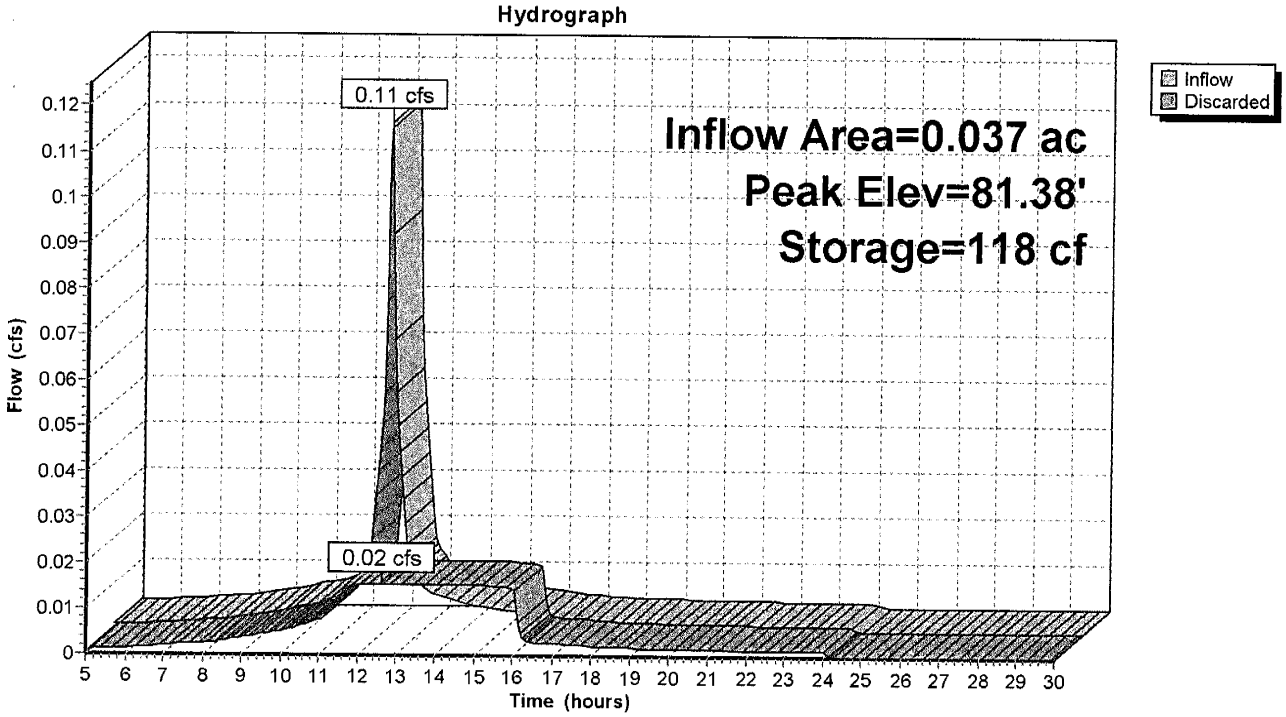
Volume	Invert	Avail.Storage	Storage Description
#1A	80.50'	302 cf	**13.50'W x 19.86'L x 3.50'H Field A** 938 cf Overall - 184 cf Embedded = 754 cf x 40.0% Voids
#2A	81.00'	184 cf	**ADS_StormTech SC-740 +Cap** x 4 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 2 Chambers
		486 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	80.50'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 57.00'

Discarded OutFlow Max=0.02 cfs @ 12.61 hrs HW=81.38' (Free Discharge)
└**1=Exfiltration** (Controls 0.02 cfs)

Pond SRS1: ROOF RECHARGE



Summary for Pond SRS2: ROOF RECHARGE

Inflow Area =	0.037 ac,100.00% Impervious, Inflow Depth > 2.91" for 2 YR event				
Inflow =	0.11 cfs @	12.09 hrs,	Volume=	0.009 af	
Outflow =	0.05 cfs @	12.25 hrs,	Volume=	0.009 af,	Atten= 53%, Lag= 10.1 min
Discarded =	0.05 cfs @	12.25 hrs,	Volume=	0.009 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 72.83' @ 12.25 hrs Surf.Area= 268 sf Storage= 36 cf

Plug-Flow detention time= 3.4 min calculated for 0.009 af (100% of inflow)
Center-of-Mass det. time= 3.3 min (769.5 - 766.2)

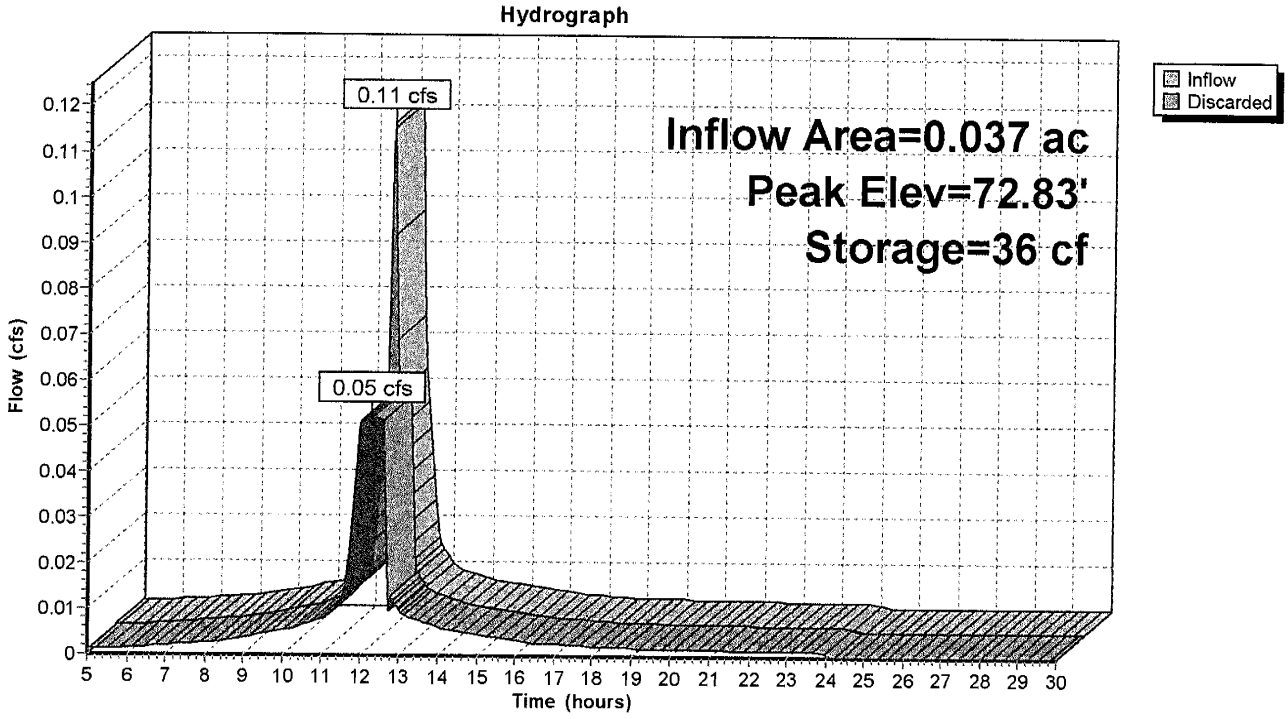
Volume	Invert	Avail.Storage	Storage Description
#1A	72.50'	302 cf	**13.50'W x 19.86'L x 3.50'H Field A** 938 cf Overall - 184 cf Embedded = 754 cf x 40.0% Voids
#2A	73.00'	184 cf	**ADS_StormTech SC-740 +Cap** x 4 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 2 Chambers
		486 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	72.50'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 57.00'

Discarded OutFlow Max=0.05 cfs @ 12.25 hrs HW=72.83' (Free Discharge)
└**1=Exfiltration** (Controls 0.05 cfs)

Pond SRS2: ROOF RECHARGE



Summary for Pond SRS3: FROM SAND FILTER

Inflow	=	0.01 cfs @	12.50 hrs,	Volume=	0.002 af
Outflow	=	0.00 cfs @	12.57 hrs,	Volume=	0.002 af, Atten= 9%, Lag= 4.5 min
Discarded	=	0.00 cfs @	12.57 hrs,	Volume=	0.002 af
Primary	=	0.00 cfs @	5.00 hrs,	Volume=	0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 74.01' @ 12.57 hrs Surf.Area= 201 sf Storage= 1 cf

Plug-Flow detention time= 4.3 min calculated for 0.002 af (100% of inflow)
Center-of-Mass det. time= 4.2 min (1,015.3 - 1,011.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	74.00'	207 cf	**6.25'W x 32.10'L x 3.50'H Field A** 702 cf Overall - 184 cf Embedded = 518 cf x 40.0% Voids
#2A	74.50'	184 cf	**ADS_StormTech SC-740 +Cap** x 4 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		391 cf	Total Available Storage

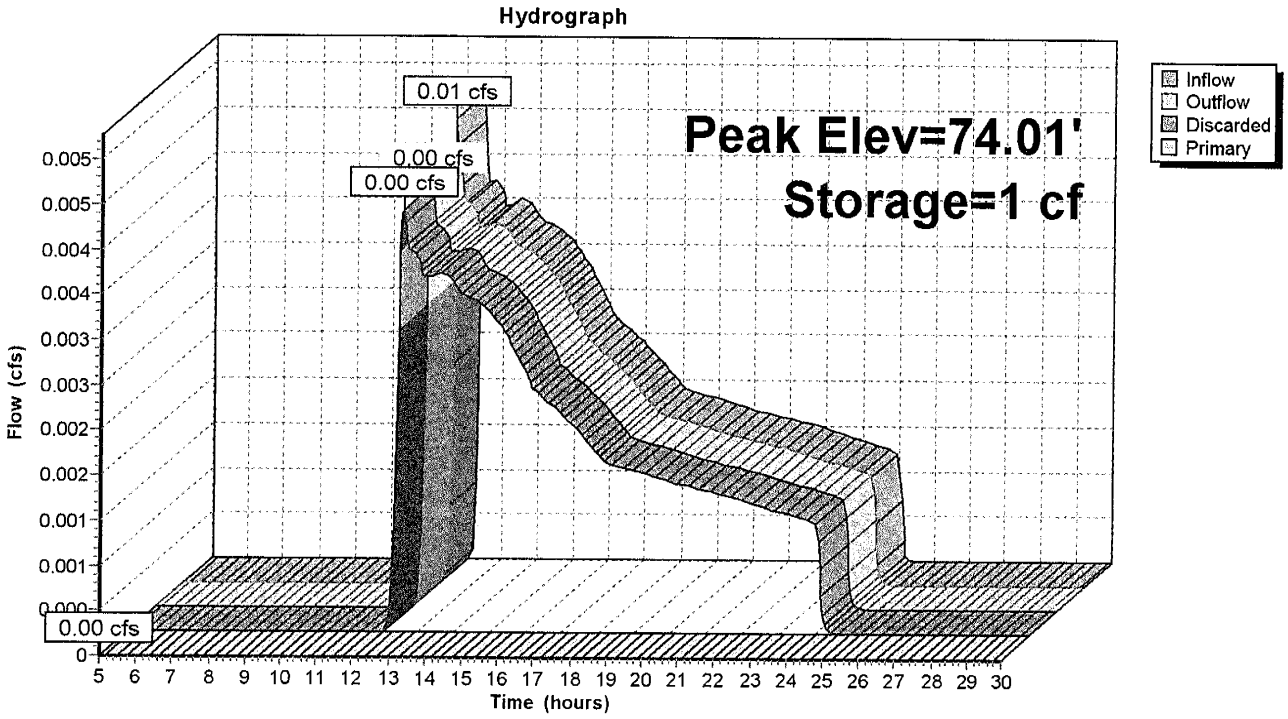
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	74.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 57.00'
#2	Primary	76.36'	**4.0" Round Culvert** L= 20.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 76.36' / 76.00' S= 0.0180 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.09 sf

Discarded OutFlow Max=0.01 cfs @ 12.57 hrs HW=74.01' (Free Discharge)
└─**1=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=74.00' (Free Discharge)
└─**2=Culvert** (Controls 0.00 cfs)

Pond SRS3: FROM SAND FILTER



Summary for Subcatchment L1: ROOF LEFT LOT 1

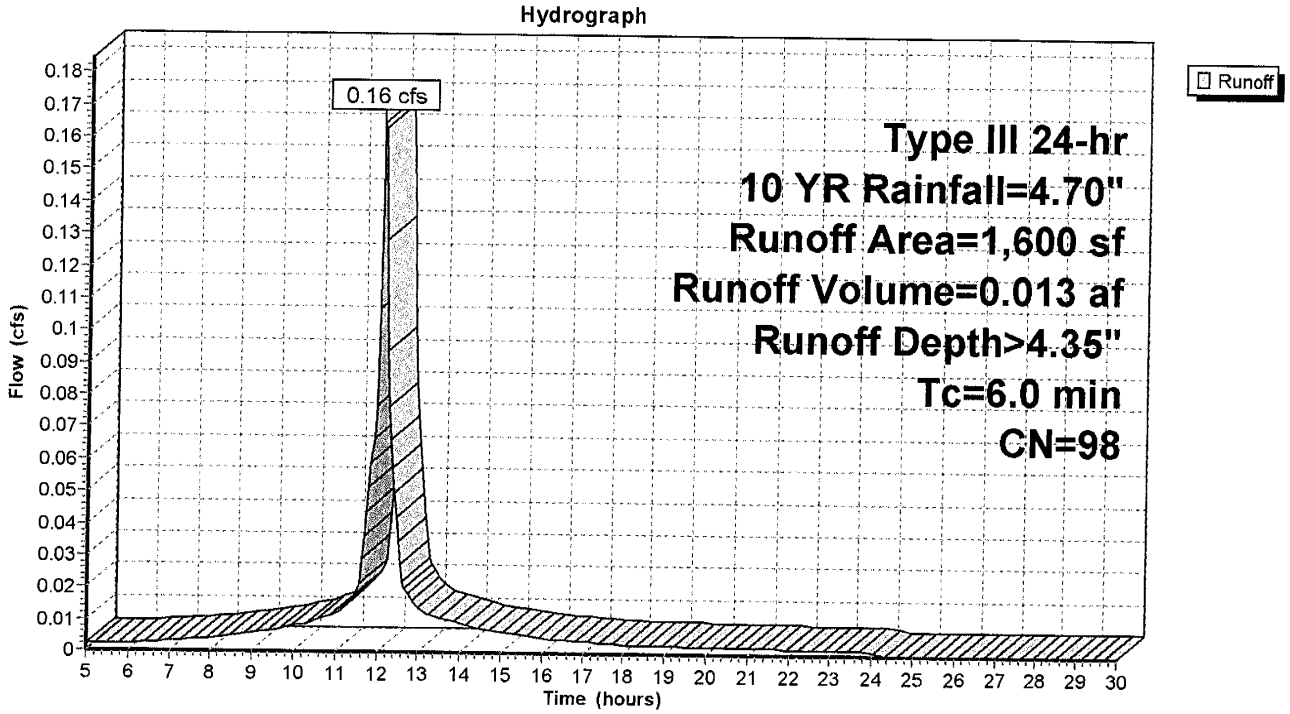
Runoff = 0.16 cfs @ 12.09 hrs, Volume= 0.013 af, Depth> 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

Area (sf)	CN	Description
1,600	98	Unconnected roofs, HSG A
1,600		100.00% Impervious Area
1,600		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 MINUTE MIN**

Subcatchment L1: ROOF LEFT LOT 1



Summary for Subcatchment L2: ROOF LEFT LOT 2

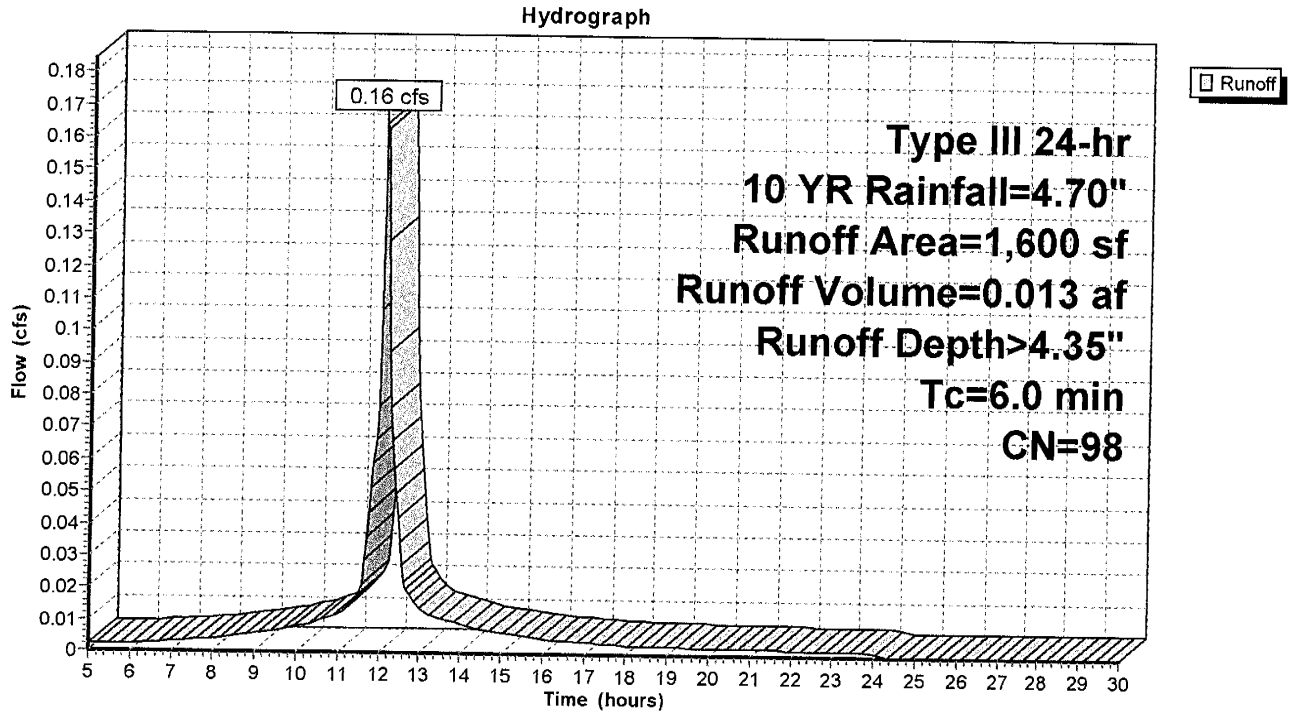
Runoff = 0.16 cfs @ 12.09 hrs, Volume= 0.013 af, Depth> 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

Area (sf)	CN	Description
1,600	98	Unconnected roofs, HSG A
1,600		100.00% Impervious Area
1,600		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 MINUTE MIN**

Subcatchment L2: ROOF LEFT LOT 2



Summary for Subcatchment PST 1 A: TO DP 1

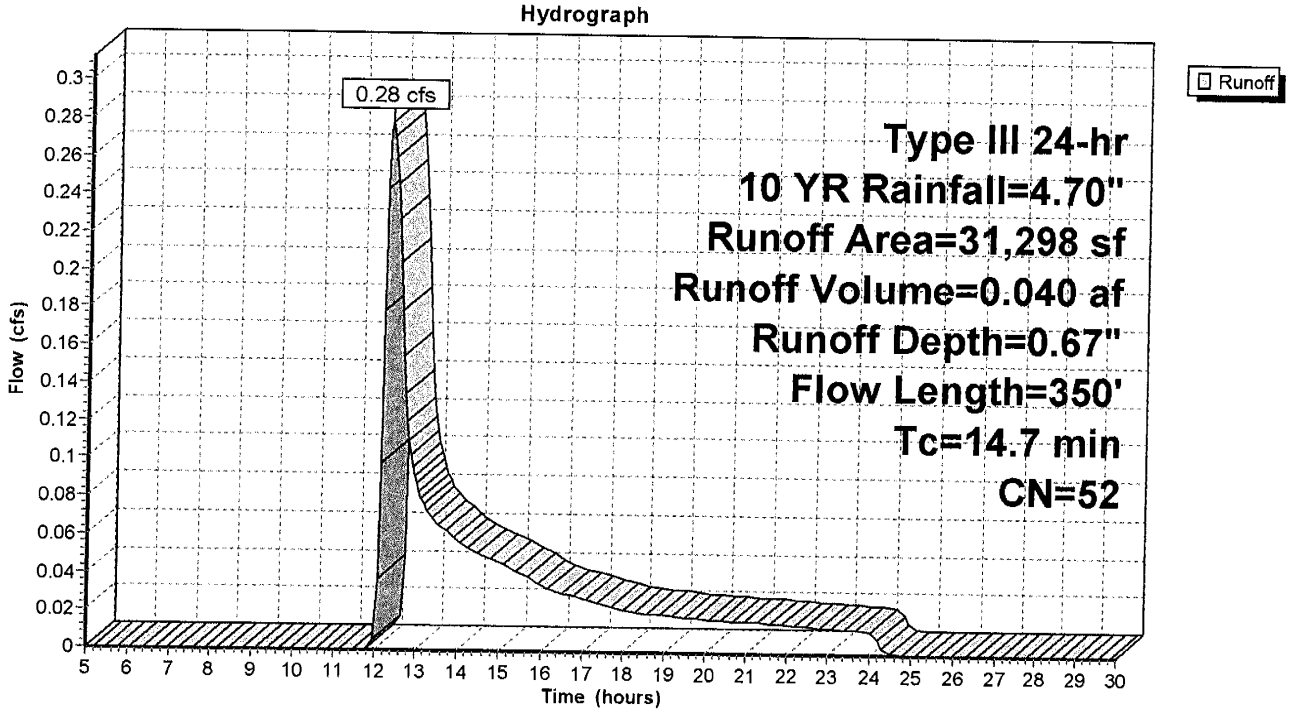
Runoff = 0.28 cfs @ 12.29 hrs, Volume= 0.040 af, Depth= 0.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

Area (sf)	CN	Description
1,929	98	Paved parking, HSG A
7,560	39	>75% Grass cover, Good, HSG A
14,622	61	>75% Grass cover, Good, HSG B
6,662	30	Woods, Good, HSG A
114	55	Woods, Good, HSG B
411	98	Paved parking, HSG A
31,298	52	Weighted Average
28,958		92.52% Pervious Area
2,340		7.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	50	0.0060	0.06		**Sheet Flow, SHEET** Grass: Dense n= 0.240 P2= 3.20"
1.4	300	0.0460	3.45		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
14.7	350	Total			

Subcatchment PST 1 A: TO DP 1



Summary for Subcatchment PST 1 C: TO GALLEY

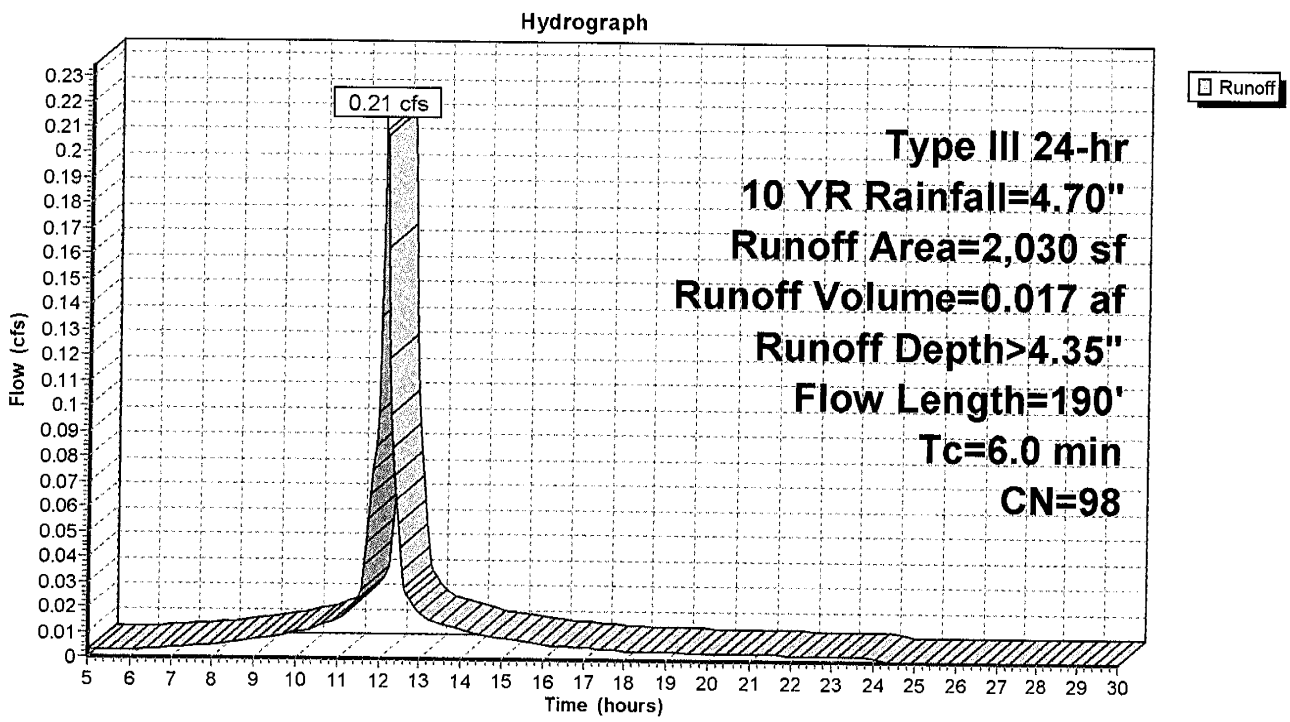
Runoff = 0.21 cfs @ 12.09 hrs, Volume= 0.017 af, Depth> 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

Area (sf)	CN	Description
2,030	98	Paved parking, HSG A
2,030		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	50	0.0500	1.73		**Sheet Flow, SHEET** Smooth surfaces n= 0.011 P2= 3.20"
0.6	140	0.0400	4.06		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.9					**Direct Entry, 6 MIN. MIN**
6.0	190	Total			

Subcatchment PST 1 C: TO GALLEY



Summary for Subcatchment PST 2: LOT 1

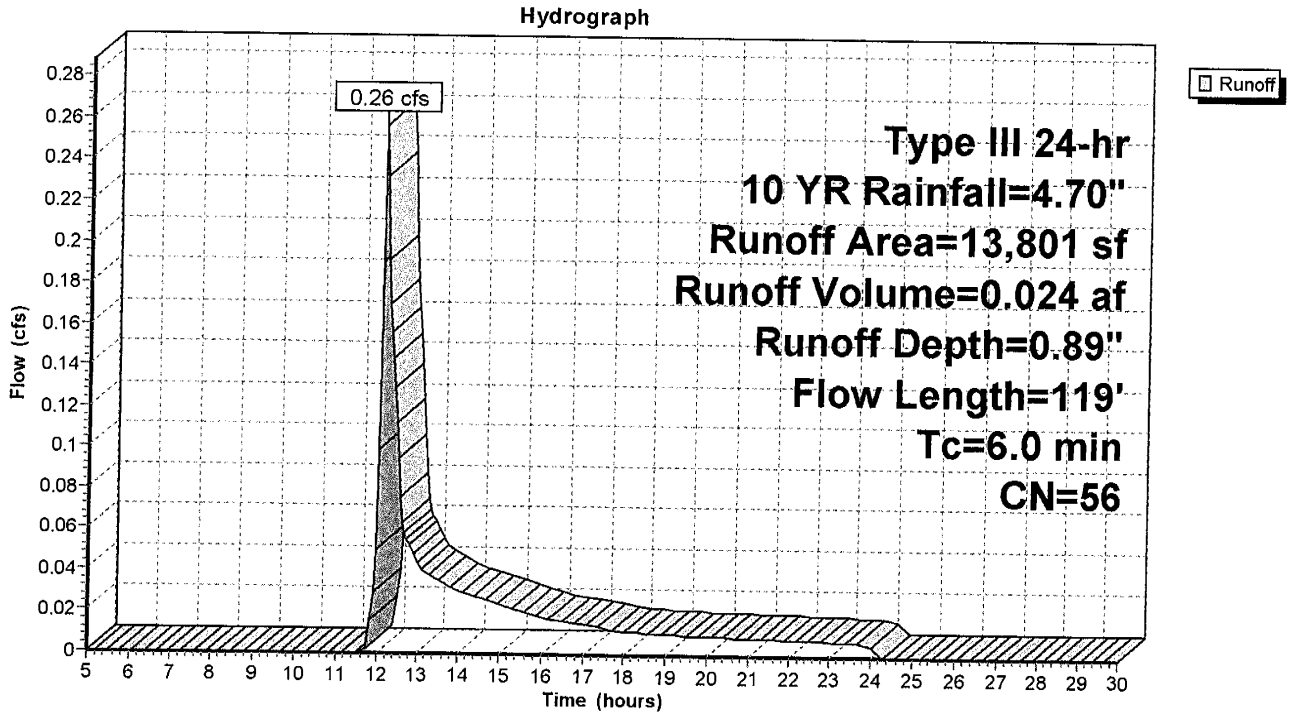
Runoff = 0.26 cfs @ 12.11 hrs, Volume= 0.024 af, Depth= 0.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

Area (sf)	CN	Description
2,904	61	>75% Grass cover, Good, HSG B
10,897	55	Woods, Good, HSG B
13,801	56	Weighted Average
13,801		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	14	0.3330	0.24		**Sheet Flow, SEG 1** Grass: Dense n= 0.240 P2= 3.20"
0.8	105	0.1750	2.09		**Shallow Concentrated Flow, SEG 2** Woodland Kv= 5.0 fps
4.2					**Direct Entry,**
6.0	119	Total			

Subcatchment PST 2: LOT 1



Summary for Subcatchment PST 2A: LOT 1

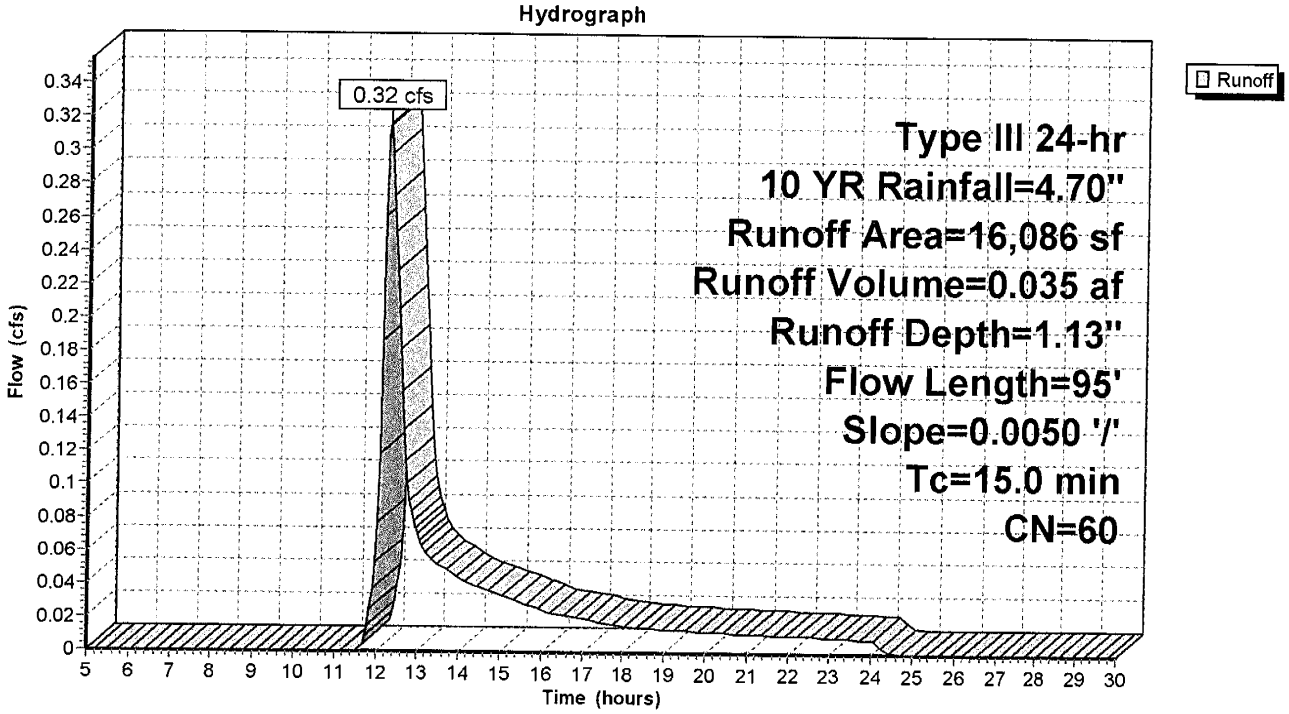
Runoff = 0.32 cfs @ 12.24 hrs, Volume= 0.035 af, Depth= 1.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

Area (sf)	CN	Description
653	39	>75% Grass cover, Good, HSG A
15,433	61	>75% Grass cover, Good, HSG B
16,086	60	Weighted Average
16,086		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	50	0.0050	0.06		**Sheet Flow, SEG 1** Grass: Dense n= 0.240 P2= 3.20"
0.7	45	0.0050	1.14		**Shallow Concentrated Flow, SEG 2** Unpaved Kv= 16.1 fps
15.0	95	Total			

Subcatchment PST 2A: LOT 1



Summary for Subcatchment PST 3: WODDS OF LOT 2

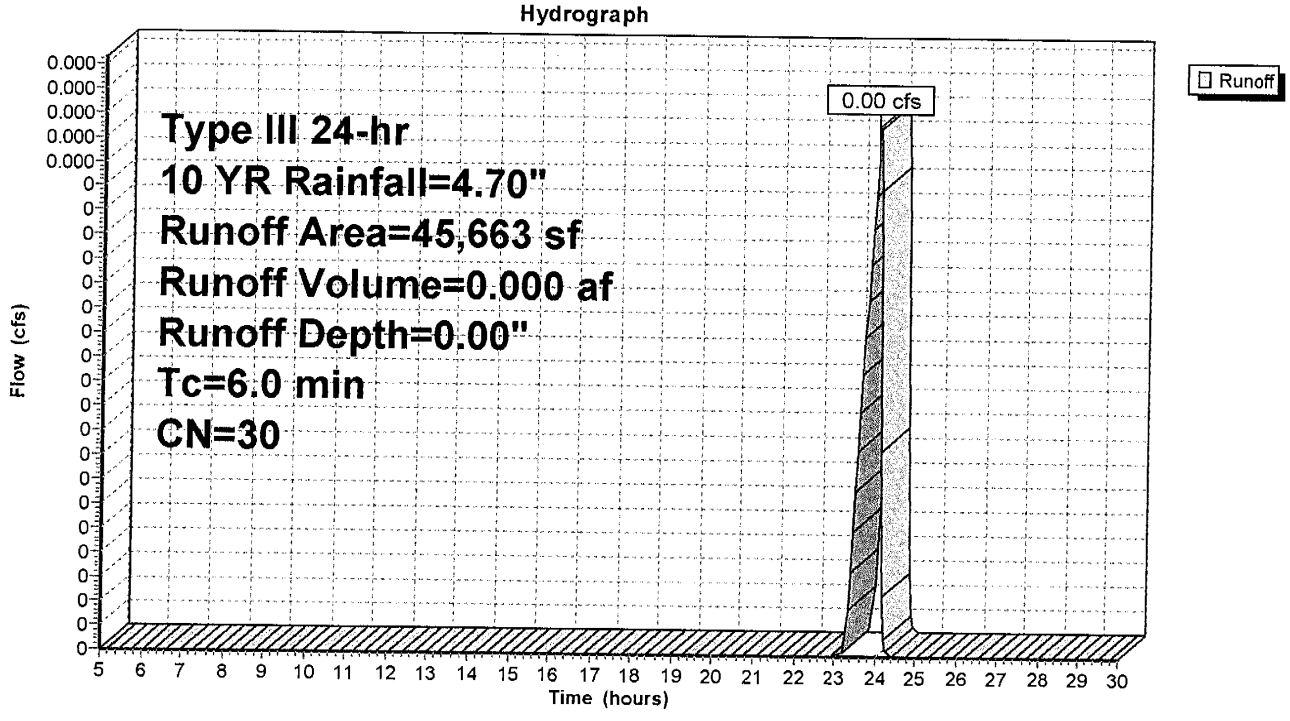
Runoff = 0.00 cfs @ 23.99 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

Area (sf)	CN	Description
44,440	30	Woods, Good, HSG A
1,223	39	>75% Grass cover, Good, HSG A
45,663	30	Weighted Average
45,663		100.00% Pervious Area

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

Subcatchment PST 3: WODDS OF LOT 2



Summary for Subcatchment PST 3A: LOT 2

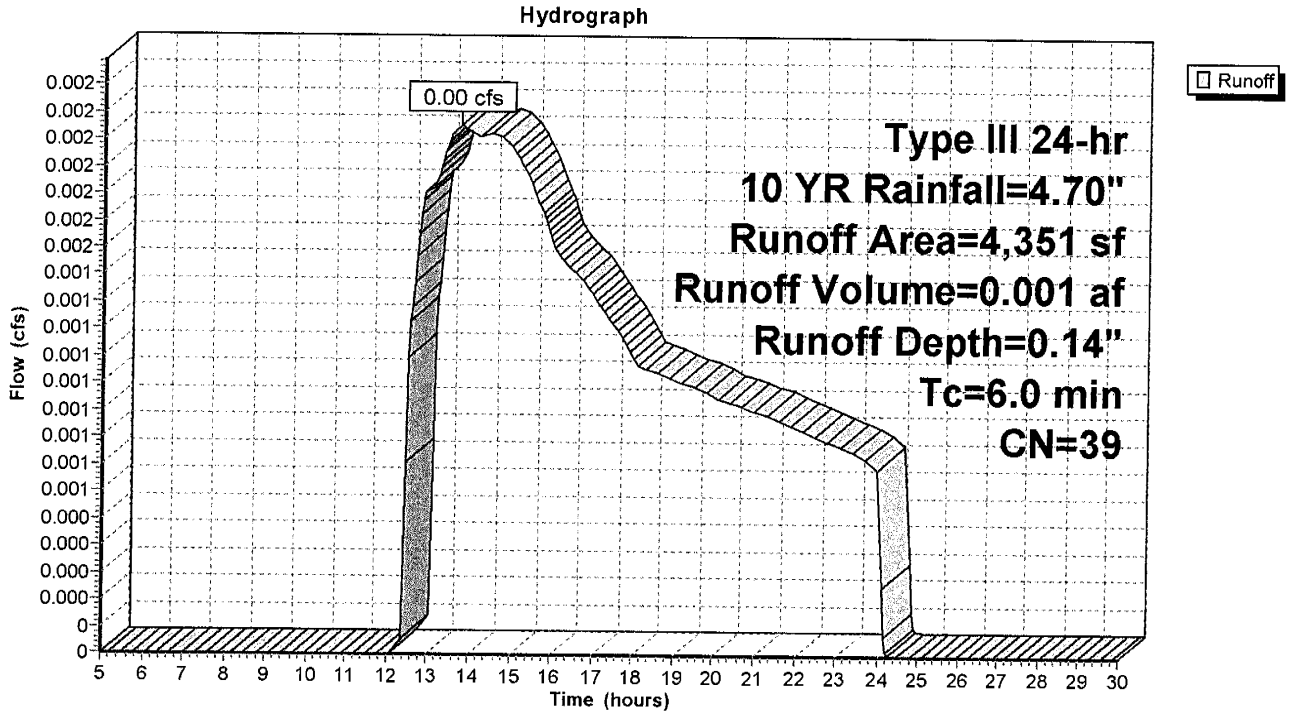
Runoff = 0.00 cfs @ 13.76 hrs, Volume= 0.001 af, Depth= 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

Area (sf)	CN	Description
4,351	39	>75% Grass cover, Good, HSG A
4,351		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 MINUTE MIN**

Subcatchment PST 3A: LOT 2



Summary for Subcatchment PST 3B: LOT 2

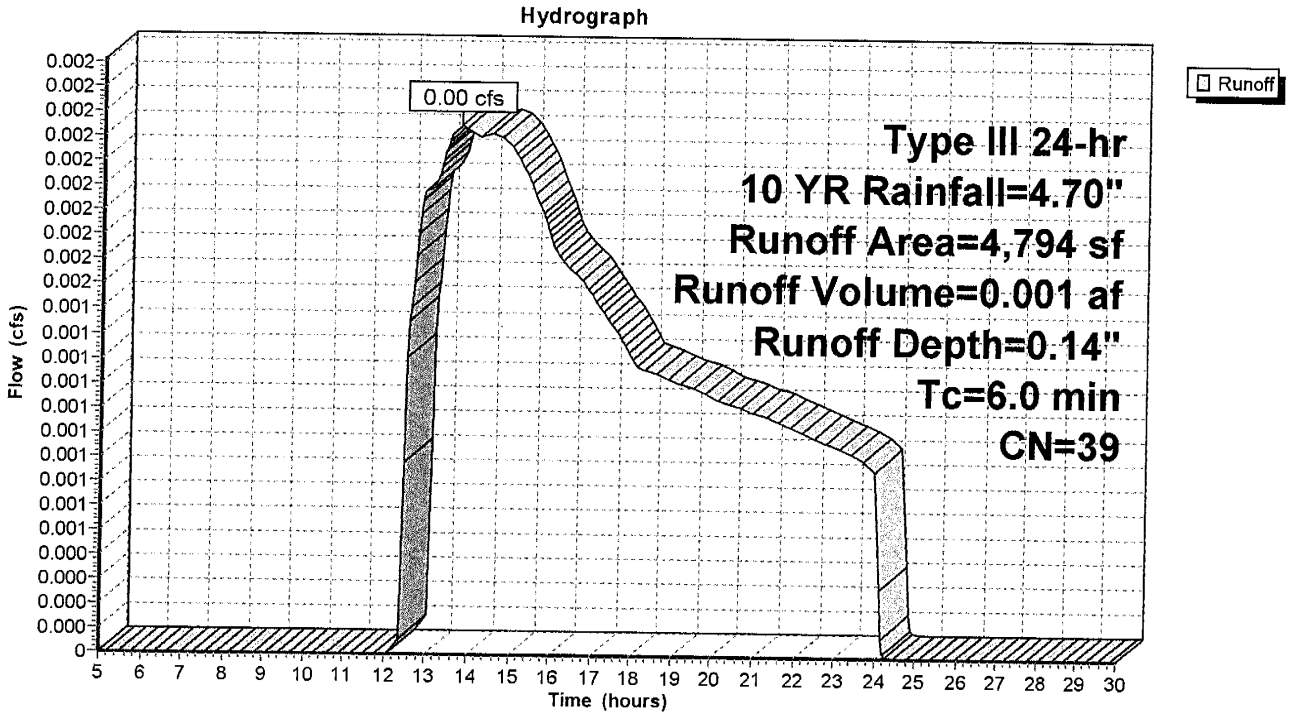
Runoff = 0.00 cfs @ 13.76 hrs, Volume= 0.001 af, Depth= 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

Area (sf)	CN	Description
4,794	39	>75% Grass cover, Good, HSG A
4,794		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 MINUTE MIN**

Subcatchment PST 3B: LOT 2



Summary for Subcatchment PST 4: LOTS 1&2

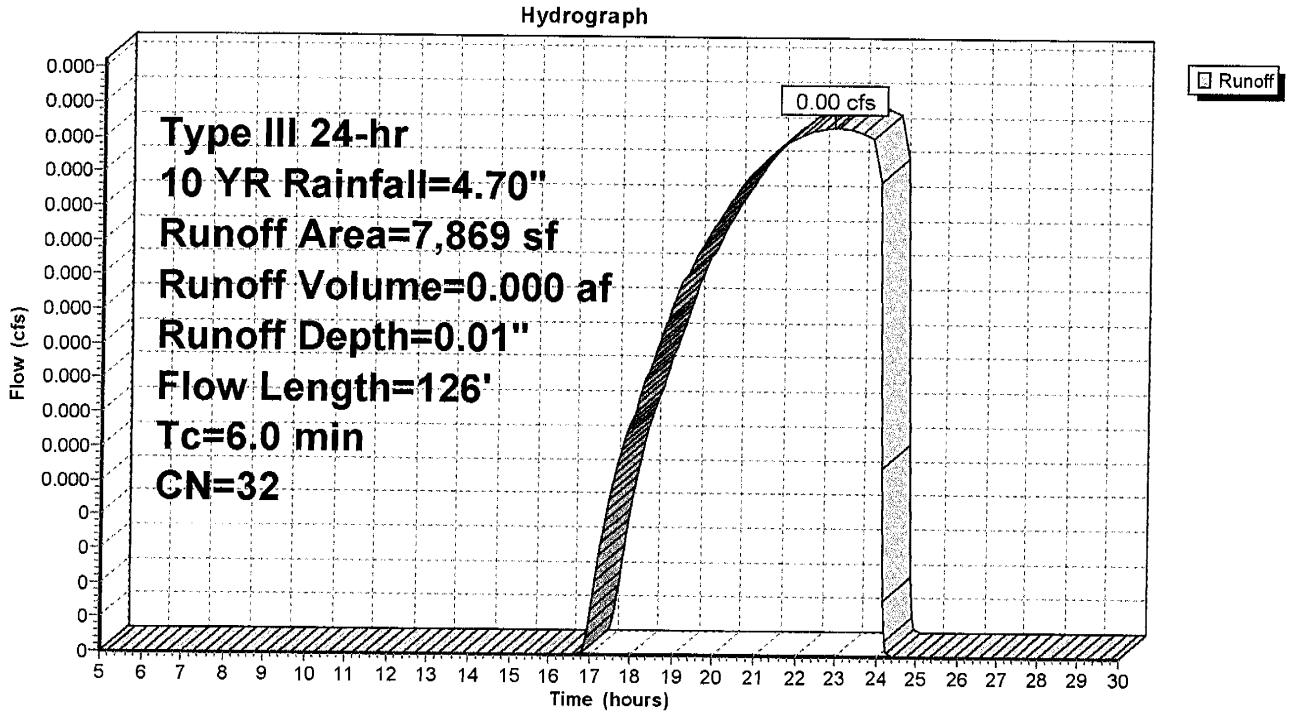
Runoff = 0.00 cfs @ 22.84 hrs, Volume= 0.000 af, Depth= 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

Area (sf)	CN	Description
1,500	39	>75% Grass cover, Good, HSG A
6,369	30	Woods, Good, HSG A
7,869	32	Weighted Average
7,869		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.4400	0.23		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 3.20"
0.9	76	0.0816	1.43		**Shallow Concentrated Flow, wood** Woodland Kv= 5.0 fps
1.5					**Direct Entry, 6 minute min.**
6.0	126	Total			

Subcatchment PST 4: LOTS 1&2



Summary for Subcatchment PST 4A: LOT 2 REAR YARD

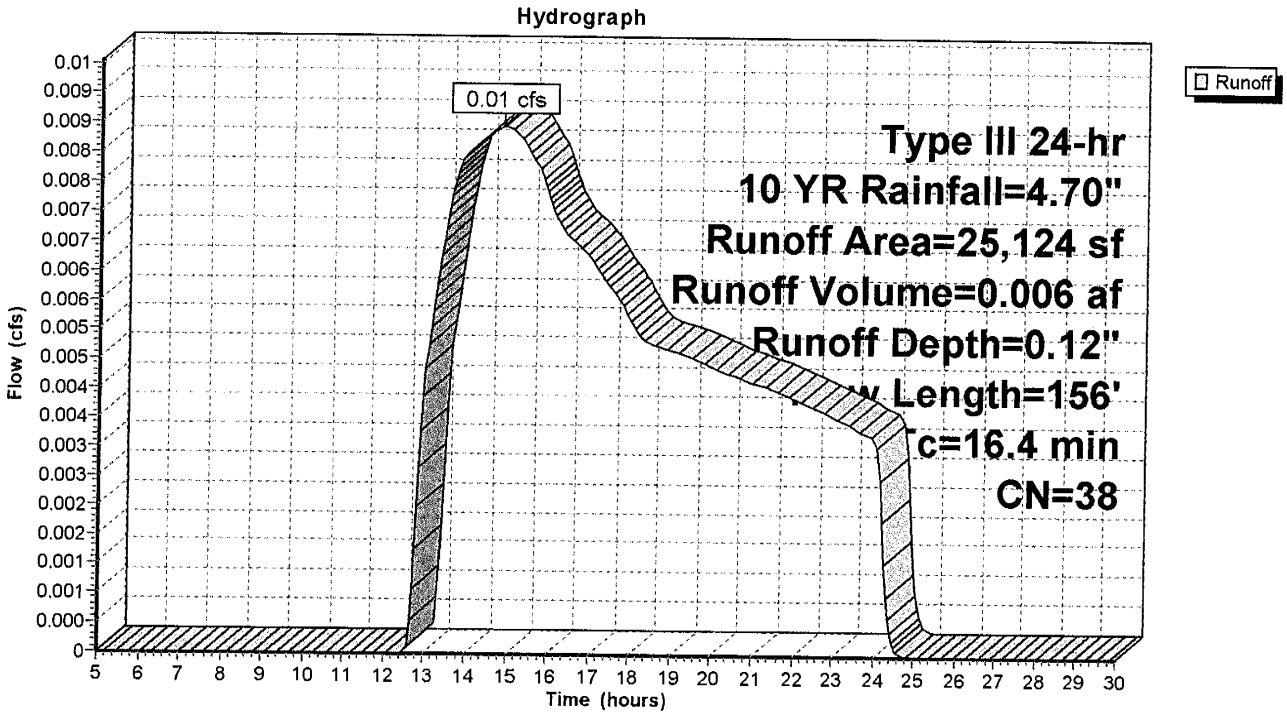
Runoff = 0.01 cfs @ 14.88 hrs, Volume= 0.006 af, Depth= 0.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

Area (sf)	CN	Description
19,893	39	>75% Grass cover, Good, HSG A
2,061	30	Woods, Good, HSG A
1,500	39	>75% Grass cover, Good, HSG A
1,670	30	Woods, Good, HSG A
25,124	38	Weighted Average
25,124		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	50	0.0110	0.05		**Sheet Flow, SHEET** Grass: Bermuda n= 0.410 P2= 3.20"
0.4	106	0.0750	4.41		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
16.4	156	Total			

Subcatchment PST 4A: LOT 2 REAR YARD



Summary for Subcatchment PST 5: TO IVW

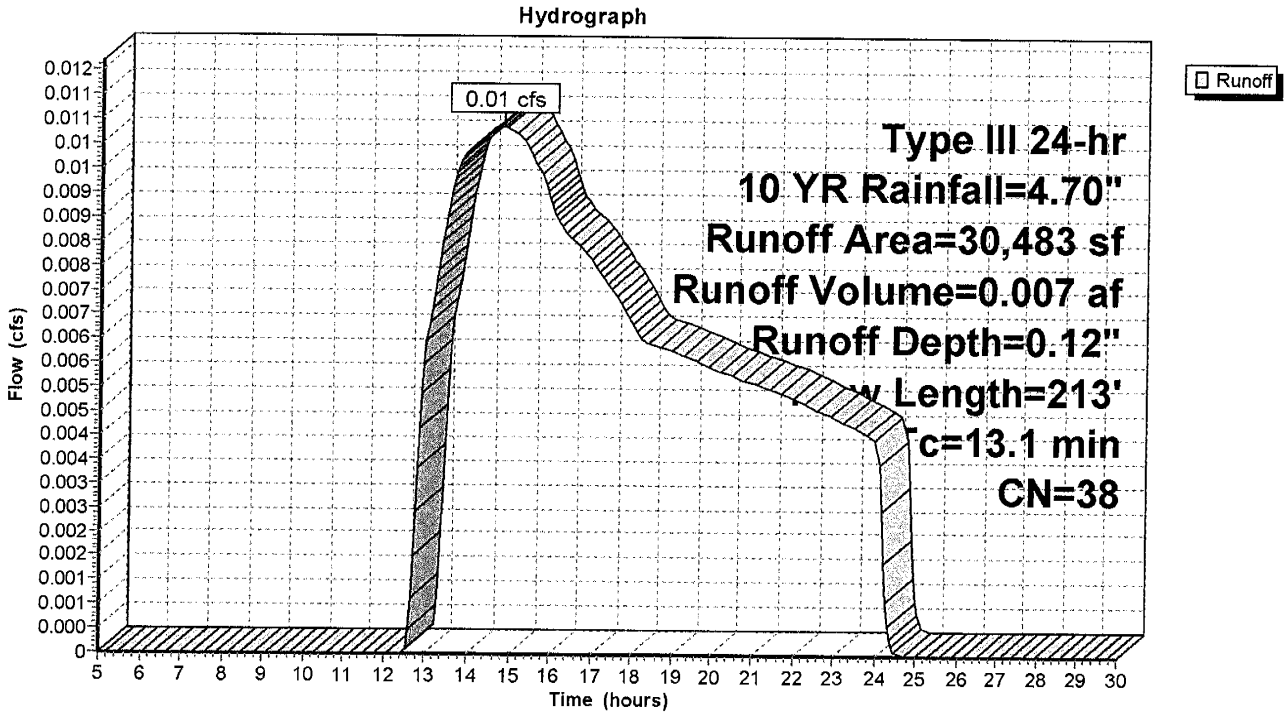
Runoff = 0.01 cfs @ 14.82 hrs, Volume= 0.007 af, Depth= 0.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

	Area (sf)	CN	Description
*	2,432	78	WETLAND
	23,166	30	Woods, Good, HSG A
	4,885	55	Woods, Good, HSG B
	30,483	38	Weighted Average
	30,483		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	46	0.0217	0.07		**Sheet Flow, SEG 1** Woods: Light underbrush n= 0.400 P2= 3.20"
1.9	167	0.0880	1.48		**Shallow Concentrated Flow, SEG 2** Woodland Kv= 5.0 fps
13.1	213	Total			

Subcatchment PST 5: TO IVW



Summary for Subcatchment PST 6: RD PAVE

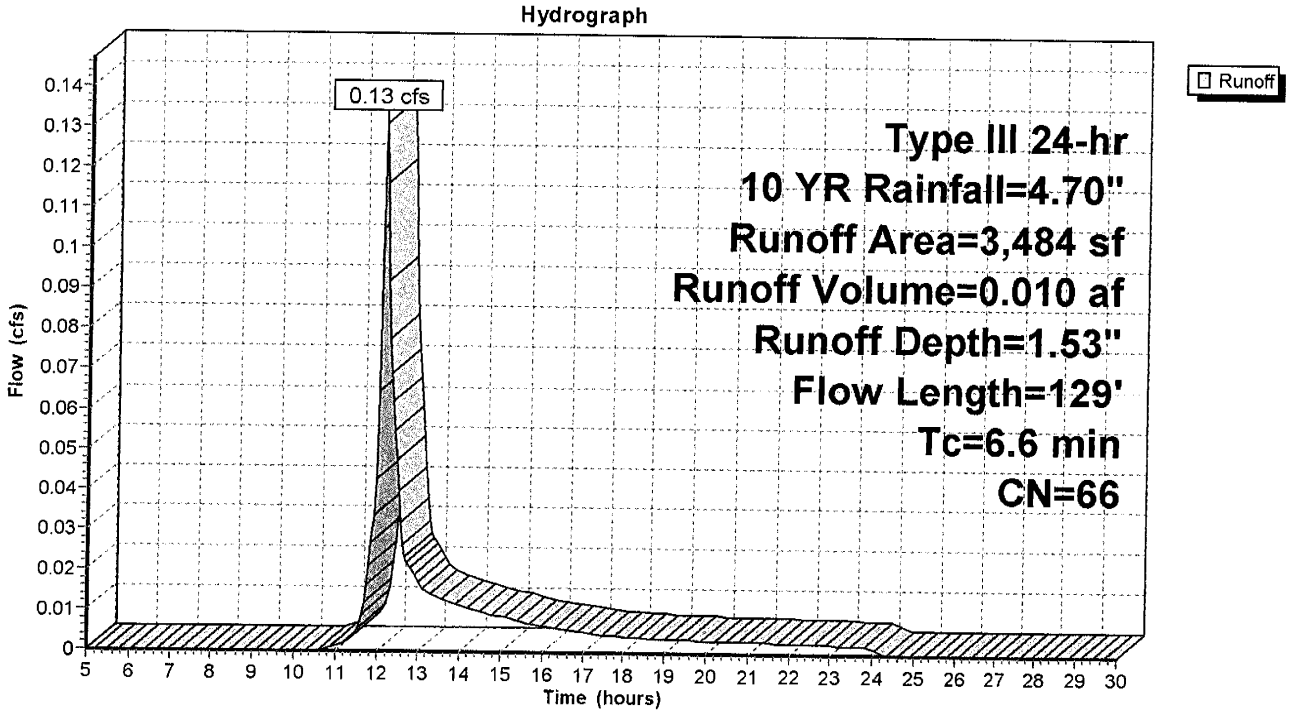
Runoff = 0.13 cfs @ 12.11 hrs, Volume= 0.010 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

Area (sf)	CN	Description
1,565	39	>75% Grass cover, Good, HSG A
494	61	>75% Grass cover, Good, HSG B
1,425	98	Paved parking, HSG A
3,484	66	Weighted Average
2,059		59.10% Pervious Area
1,425		40.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0410	0.14		**Sheet Flow, SHEET** Grass: Dense n= 0.240 P2= 3.20"
0.4	79	0.0500	3.60		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
6.6	129	Total			

Subcatchment PST 6: RD PAVE



Summary for Subcatchment PST 7: RD PAVE

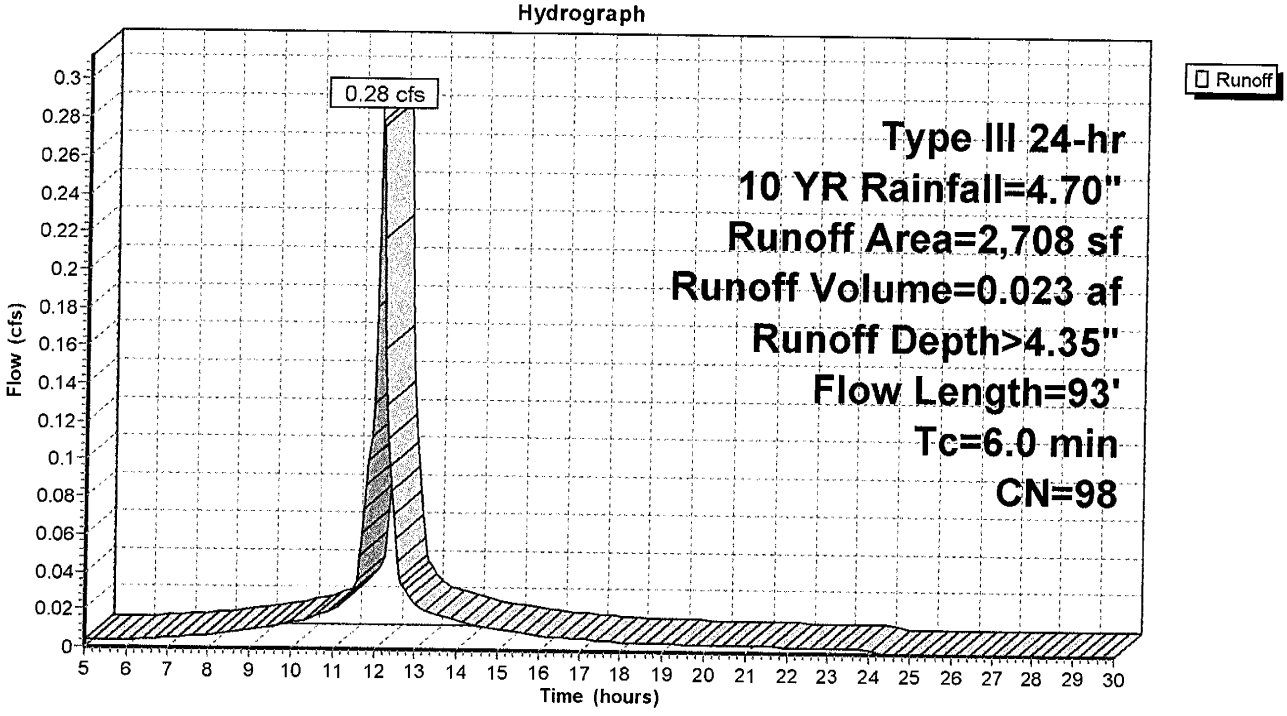
Runoff = 0.28 cfs @ 12.09 hrs, Volume= 0.023 af, Depth> 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

Area (sf)	CN	Description
2,708	98	Paved parking, HSG A
2,708		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	50	0.0280	1.37		**Sheet Flow, SHEET** Smooth surfaces n= 0.011 P2= 3.20"
0.2	43	0.0360	3.85		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
5.2					**Direct Entry, 6 MINUTE MIN**
6.0	93	Total			

Subcatchment PST 7: RD PAVE



Summary for Subcatchment PST 7A: FRONT LAWN AREAS

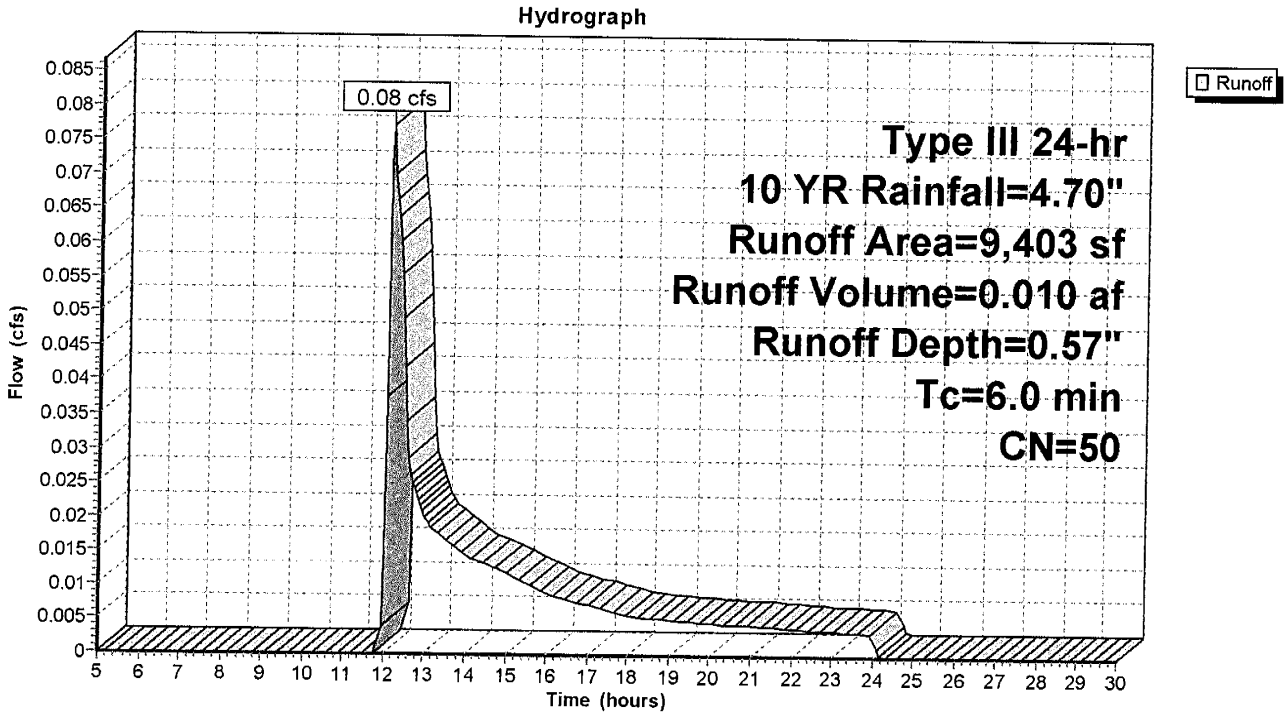
Runoff = 0.08 cfs @ 12.15 hrs, Volume= 0.010 af, Depth= 0.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

Area (sf)	CN	Description
1,788	98	Paved parking, HSG A
7,615	39	>75% Grass cover, Good, HSG A
9,403	50	Weighted Average
7,615		80.98% Pervious Area
1,788		19.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 MINUTE MIN**

Subcatchment PST 7A: FRONT LAWN AREAS



Summary for Subcatchment PST1 B: TO GALLEY

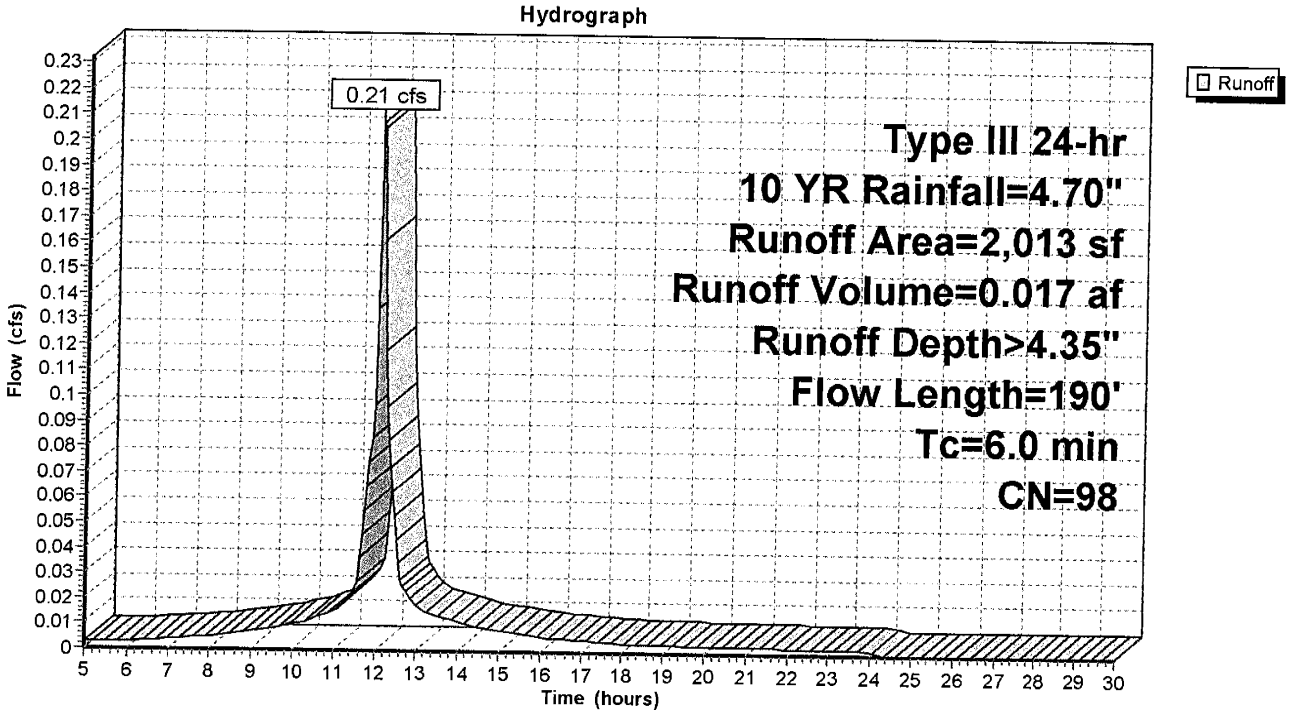
Runoff = 0.21 cfs @ 12.09 hrs, Volume= 0.017 af, Depth> 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

Area (sf)	CN	Description
2,013	98	Paved parking, HSG A
2,013		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	50	0.0500	1.73		**Sheet Flow, SHEET** Smooth surfaces n= 0.011 P2= 3.20"
0.7	140	0.0400	3.22		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
4.8					**Direct Entry, 6 MINUTE MIN.**
6.0	190	Total			

Subcatchment PST1 B: TO GALLEY



Summary for Subcatchment R1: ROOF RIGHT LOT 1

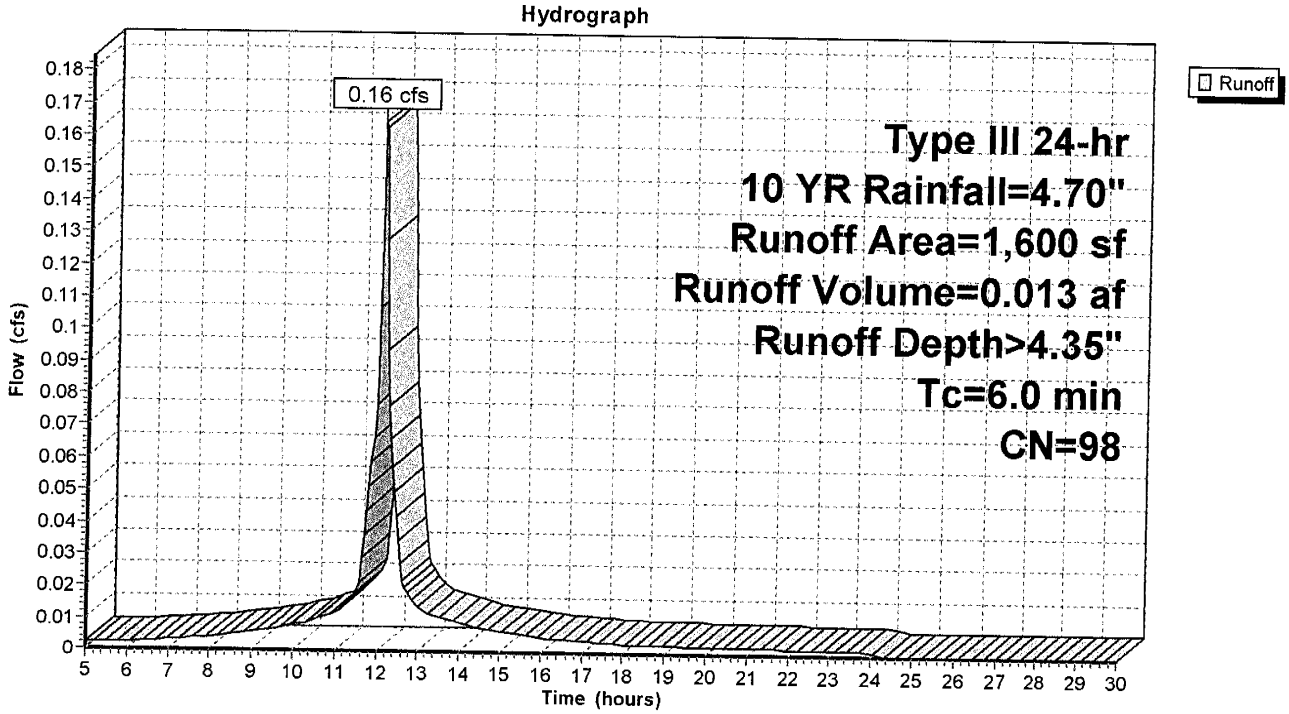
Runoff = 0.16 cfs @ 12.09 hrs, Volume= 0.013 af, Depth> 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

Area (sf)	CN	Description
1,600	98	Unconnected roofs, HSG A
1,600		100.00% Impervious Area
1,600		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 MINUTE MIN**

Subcatchment R1: ROOF RIGHT LOT 1



Summary for Subcatchment R2: ROOF LEFT LOT 2

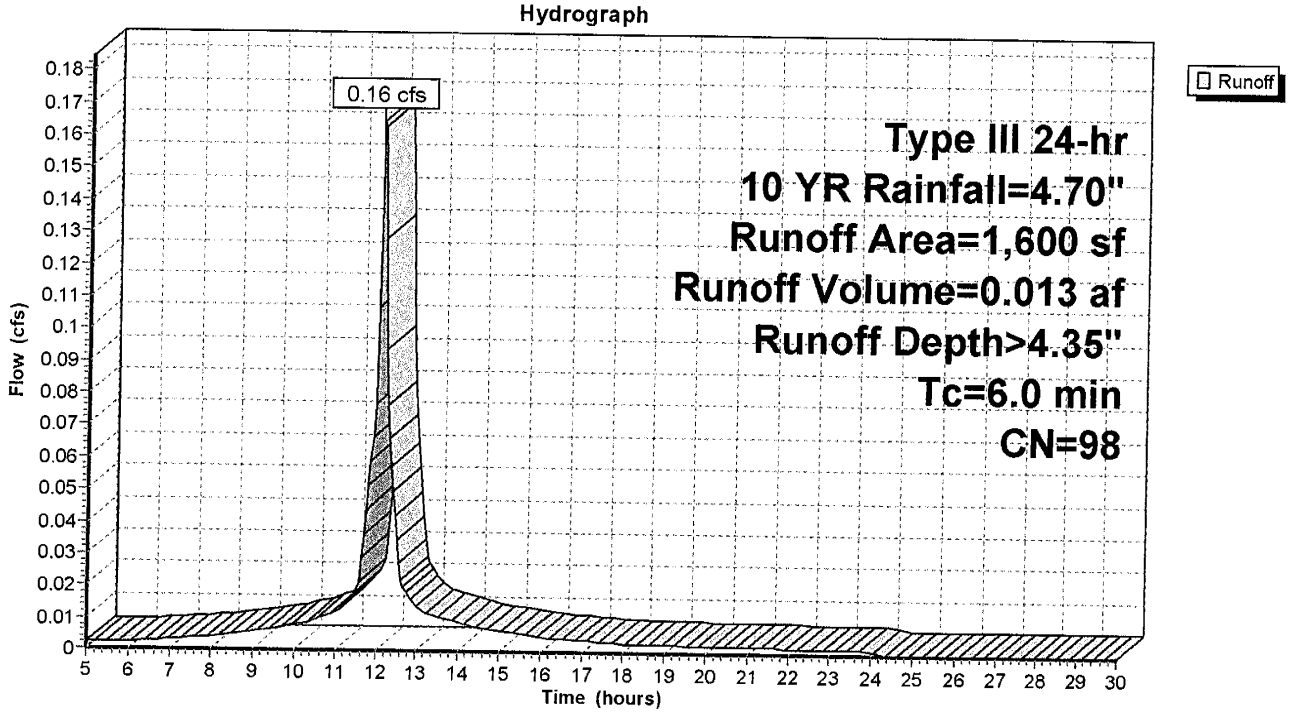
Runoff = 0.16 cfs @ 12.09 hrs, Volume= 0.013 af, Depth> 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=4.70"

Area (sf)	CN	Description
1,600	98	Unconnected roofs, HSG A
1,600		100.00% Impervious Area
1,600		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 MINUTE MIN**

Subcatchment R2: ROOF LEFT LOT 2



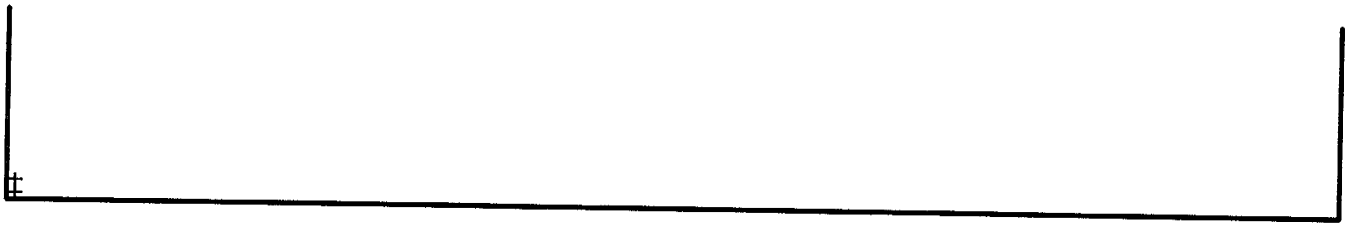
Summary for Reach DP 1: DES PT 1

Inflow Area = 0.719 ac, 7.48% Impervious, Inflow Depth = 0.67" for 10 YR event
Inflow = 0.28 cfs @ 12.29 hrs, Volume= 0.040 af
Outflow = 0.28 cfs @ 12.30 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.3 min

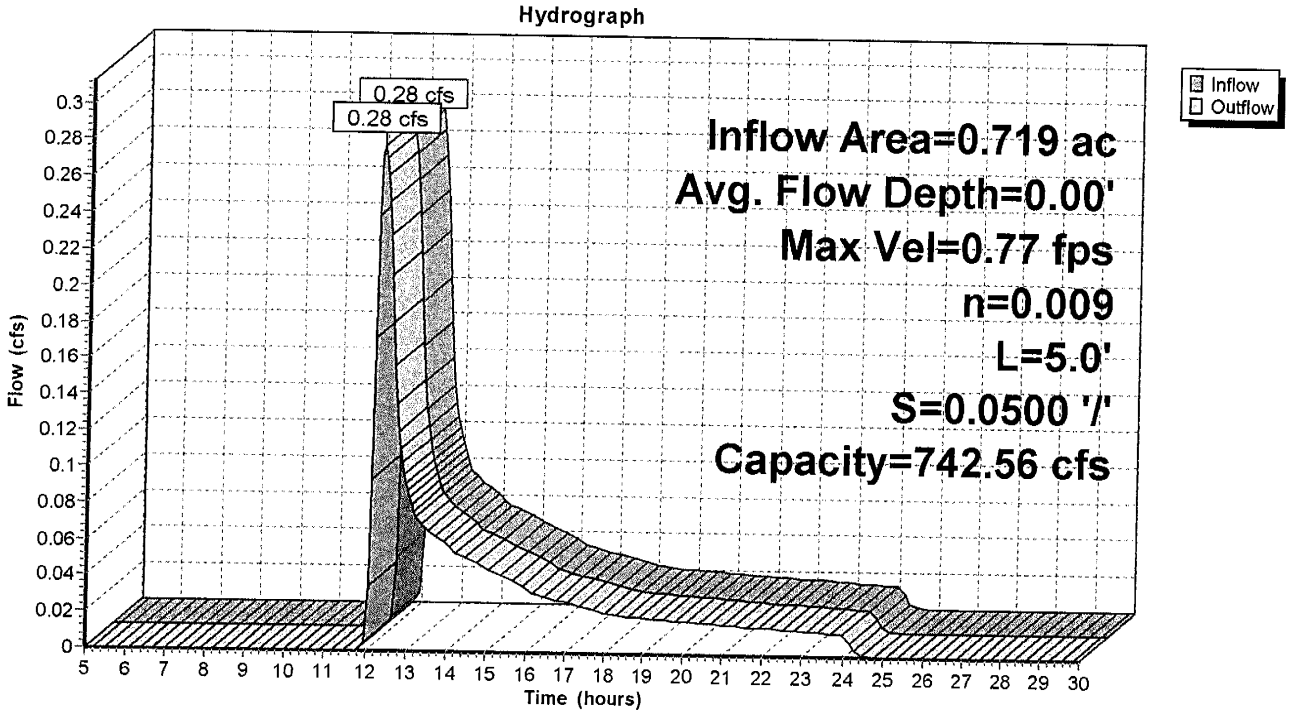
Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.77 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.77 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.29 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.30' Flow Area= 45.0 sf, Capacity= 742.56 cfs

150.00' x 0.30' deep channel, n= 0.009 PVC, smooth interior
Length= 5.0' Slope= 0.0500 '/'
Inlet Invert= 65.25', Outlet Invert= 65.00'



Reach DP 1: DES PT 1



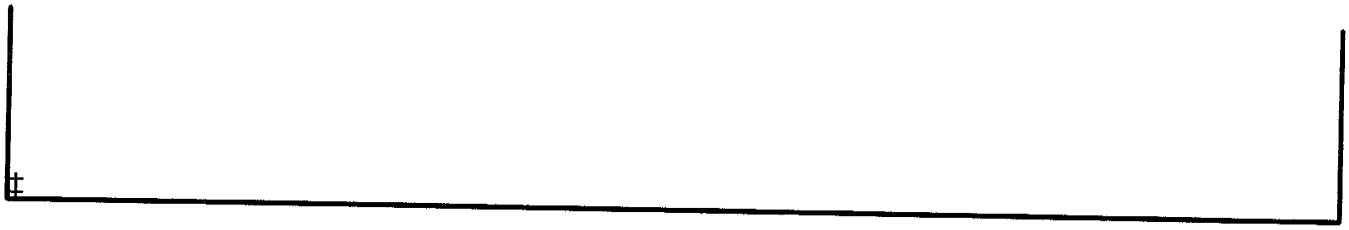
Summary for Reach DP 2: DES PT 2

Inflow Area = 0.686 ac, 0.00% Impervious, Inflow Depth = 0.47" for 10 YR event
Inflow = 0.26 cfs @ 12.11 hrs, Volume= 0.027 af
Outflow = 0.26 cfs @ 12.12 hrs, Volume= 0.027 af, Atten= 1%, Lag= 0.2 min

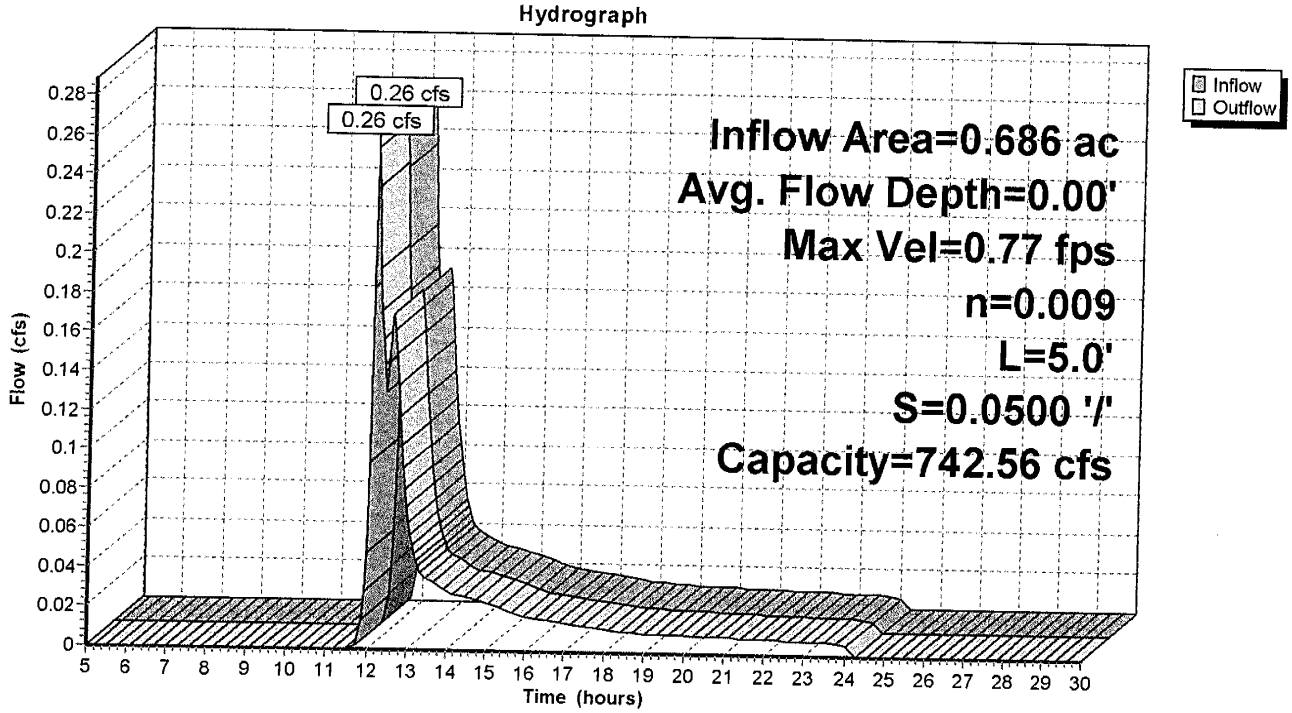
Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.77 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.77 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.30' Flow Area= 45.0 sf, Capacity= 742.56 cfs

150.00' x 0.30' deep channel, n= 0.009 PVC, smooth interior
Length= 5.0' Slope= 0.0500 '/'
Inlet Invert= 65.25', Outlet Invert= 65.00'



Reach DP 2: DES PT 2



Summary for Reach DP 3: DES PT 3

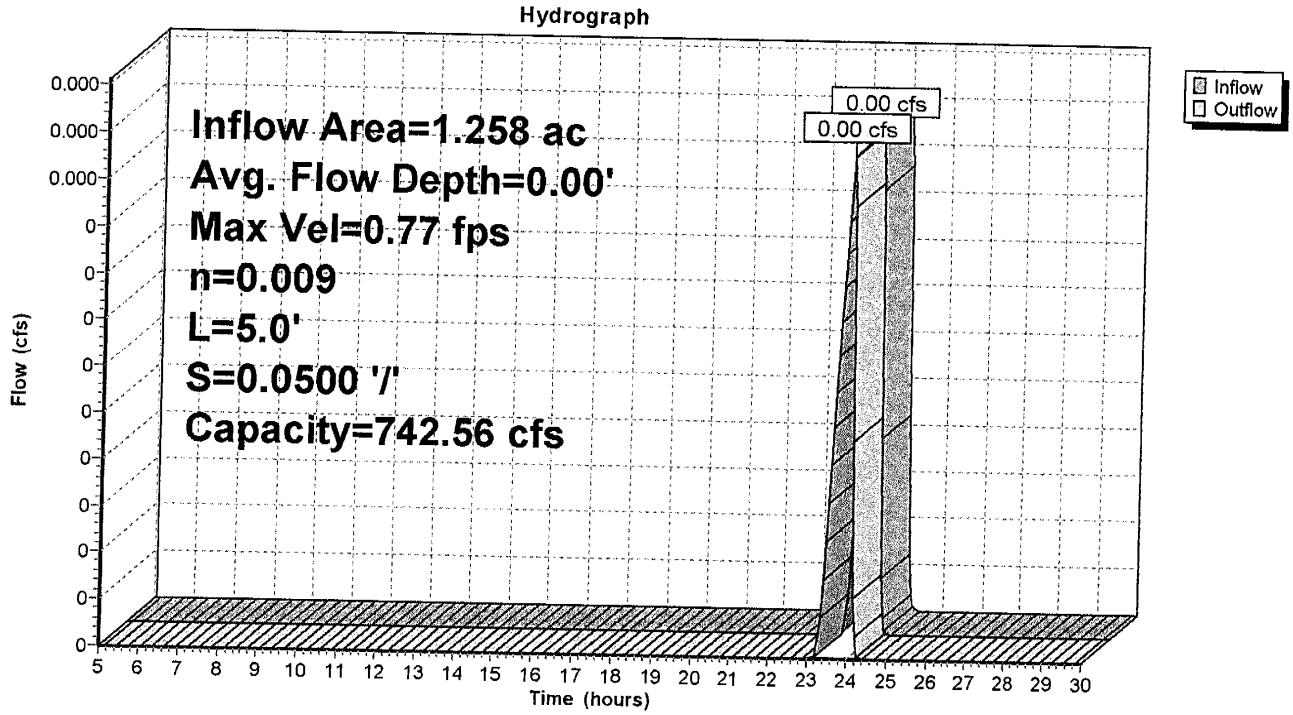
Inflow Area = 1.258 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10 YR event
Inflow = 0.00 cfs @ 23.99 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 23.99 hrs, Volume= 0.000 af, Atten= 1%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.77 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.77 fps, Avg. Travel Time= 0.1 min

Peak Storage= 0 cf @ 23.99 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.30' Flow Area= 45.0 sf, Capacity= 742.56 cfs

150.00' x 0.30' deep channel, n= 0.009 PVC, smooth interior
Length= 5.0' Slope= 0.0500 '/'
Inlet Invert= 65.25', Outlet Invert= 65.00'

Reach DP 3: DES PT 3



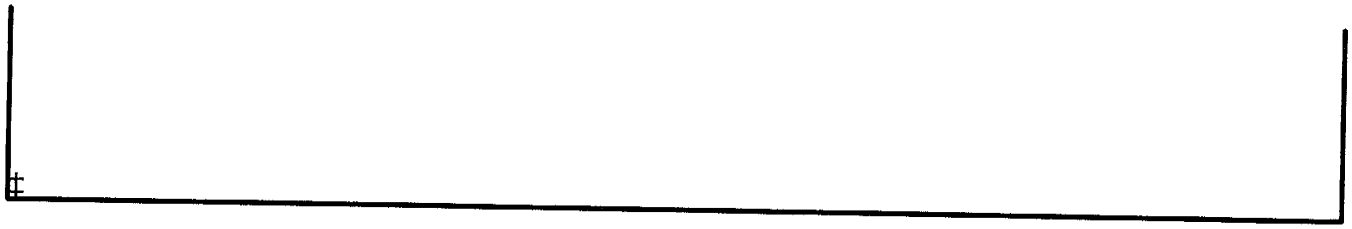
Summary for Reach DP 4: DES PT 4

Inflow Area = 0.757 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10 YR event
Inflow = 0.00 cfs @ 22.84 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 22.85 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.3 min

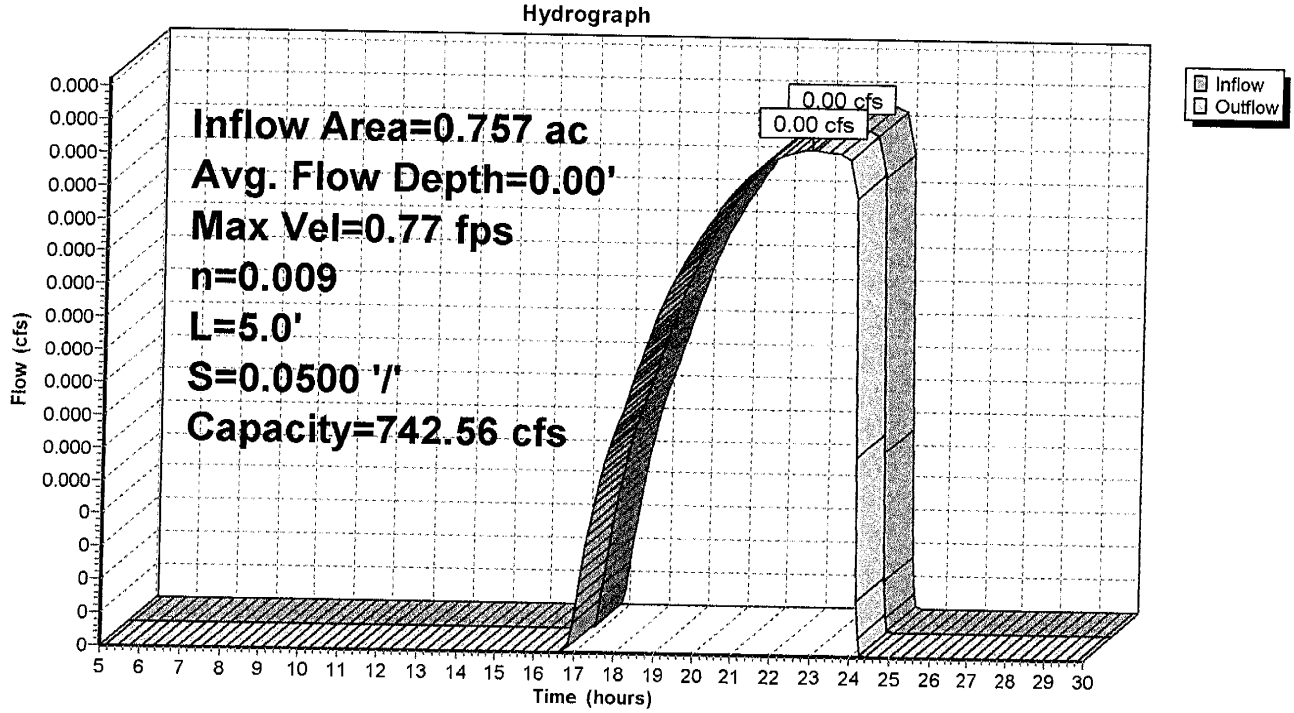
Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.77 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.77 fps, Avg. Travel Time= 0.1 min

Peak Storage= 0 cf @ 22.84 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.30' Flow Area= 45.0 sf, Capacity= 742.56 cfs

150.00' x 0.30' deep channel, n= 0.009 PVC, smooth interior
Length= 5.0' Slope= 0.0500 '/'
Inlet Invert= 65.25', Outlet Invert= 65.00'



Reach DP 4: DES PT 4



Summary for Pond 1P: GALLEY RECHARGE SYSTEM 2

Inflow Area =	0.431 ac, 48.53% Impervious, Inflow Depth > 1.65" for 10 YR event				
Inflow =	0.74 cfs @	12.09 hrs,	Volume=	0.059 af	
Outflow =	0.17 cfs @	12.50 hrs,	Volume=	0.059 af,	Atten= 77%, Lag= 24.6 min
Discarded =	0.17 cfs @	12.50 hrs,	Volume=	0.059 af	
Primary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 71.46' @ 12.50 hrs Surf.Area= 720 sf Storage= 596 cf

Plug-Flow detention time= 20.1 min calculated for 0.059 af (100% of inflow)
Center-of-Mass det. time= 19.9 min (799.9 - 780.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	69.75'	963 cf	**15.00'W x 48.00'L x 5.25'H Field A** 3,780 cf Overall - 1,371 cf Embedded = 2,409 cf x 40.0% Voids
#2A	70.75'	1,020 cf	**Concrete Galley 4x4x4.25** x 22 Inside #1 Inside= 42.2"W x 45.0"H => 13.25 sf x 3.50'L = 46.4 cf Outside= 54.0"W x 51.0"H => 15.58 sf x 4.00'L = 62.3 cf 2 Rows of 11 Chambers
		1,984 cf	Total Available Storage

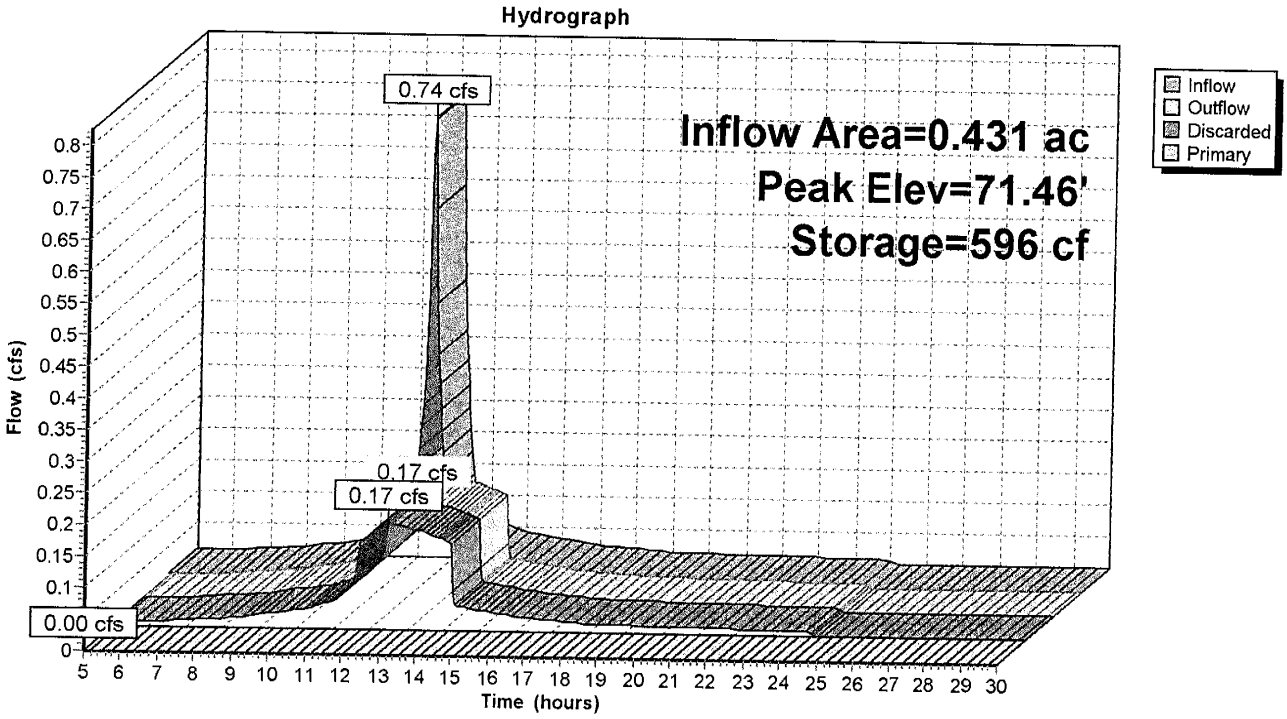
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	69.75'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 62.00'
#2	Primary	73.50'	**4.0" Round Culvert** L= 15.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 73.50' / 72.00' S= 0.1000 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.09 sf

Discarded OutFlow Max=0.17 cfs @ 12.50 hrs HW=71.46' (Free Discharge)
└**1=Exfiltration** (Controls 0.17 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=69.75' (Free Discharge)
└**2=Culvert** (Controls 0.00 cfs)

Pond 1P: GALLEY RECHARGE SYSTEM 2



Summary for Pond 2P: CB 2

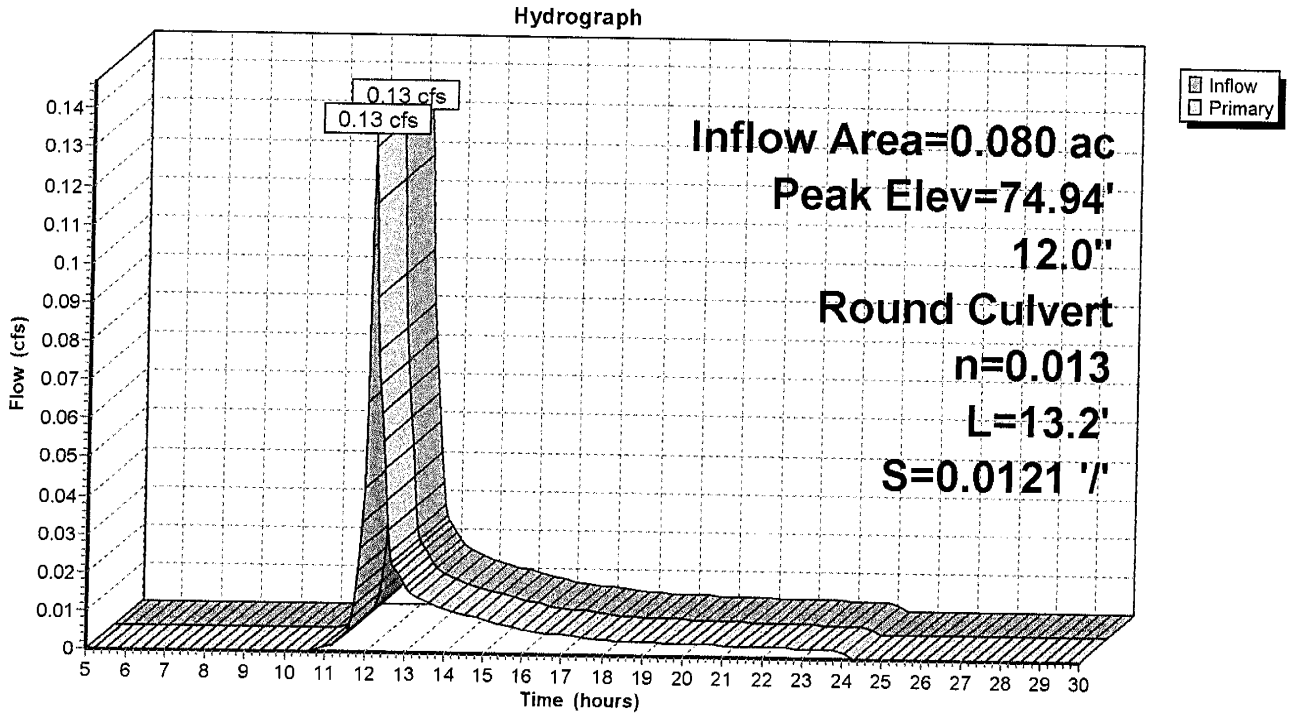
Inflow Area =	0.080 ac, 40.90% Impervious, Inflow Depth = 1.53" for 10 YR event				
Inflow =	0.13 cfs @ 12.11 hrs, Volume=	0.010 af			
Outflow =	0.13 cfs @ 12.11 hrs, Volume=	0.010 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.13 cfs @ 12.11 hrs, Volume=	0.010 af			

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 74.94' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	74.76'	**12.0" Round Culvert** L= 13.2' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 74.76' / 74.60' S= 0.0121 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.13 cfs @ 12.11 hrs HW=74.93' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.13 cfs @ 2.12 fps)

Pond 2P: CB 2



Summary for Pond 3P: CB 1

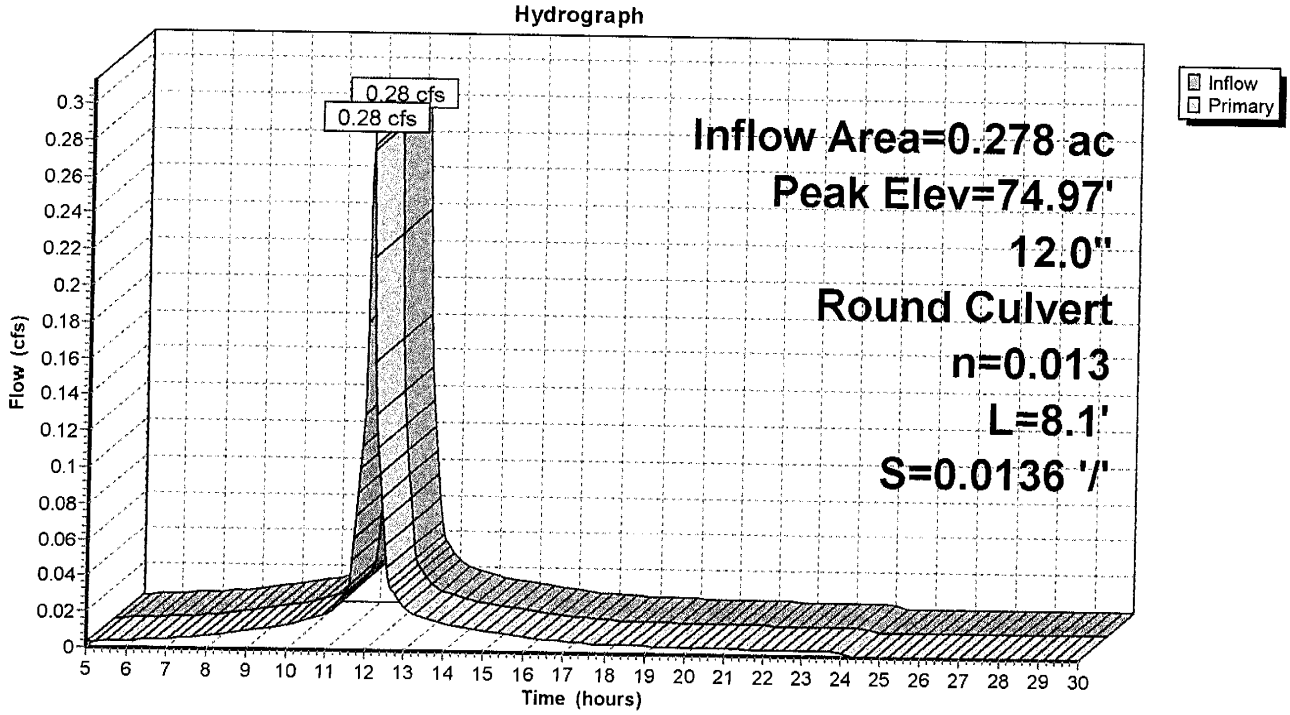
Inflow Area =	0.278 ac, 37.12% Impervious, Inflow Depth > 0.97" for 10 YR event				
Inflow =	0.28 cfs @ 12.09 hrs, Volume=	0.023 af			
Outflow =	0.28 cfs @ 12.09 hrs, Volume=	0.023 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.28 cfs @ 12.09 hrs, Volume=	0.023 af			

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 74.97' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	74.71'	**12.0" Round Culvert** L= 8.1' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 74.71' / 74.60' S= 0.0136 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.27 cfs @ 12.09 hrs HW=74.97' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.27 cfs @ 2.51 fps)

Pond 3P: CB 1



Summary for Pond 4P: DMH 1

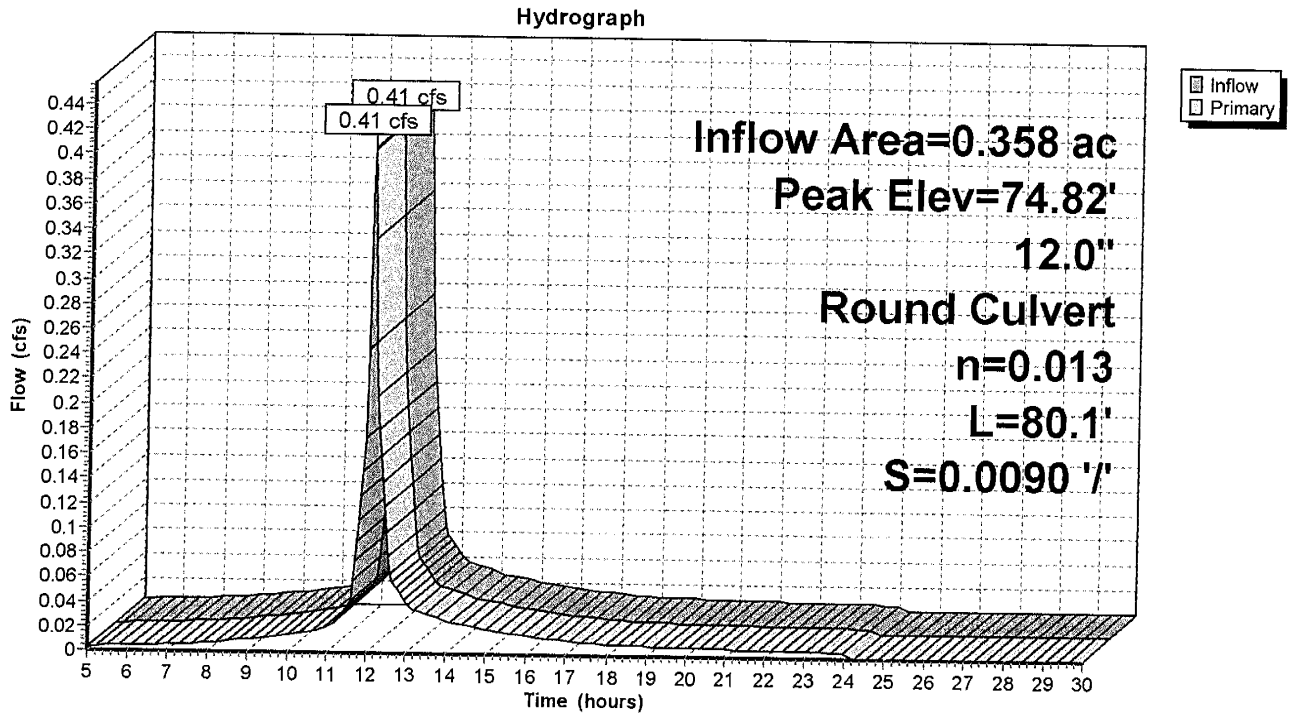
Inflow Area =	0.358 ac, 37.97% Impervious, Inflow Depth > 1.10" for 10 YR event				
Inflow =	0.41 cfs @ 12.09 hrs, Volume=	0.033 af			
Outflow =	0.41 cfs @ 12.09 hrs, Volume=	0.033 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.41 cfs @ 12.09 hrs, Volume=	0.033 af			

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 74.82' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	74.50'	**12.0" Round Culvert** L= 80.1' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 74.50' / 73.78' S= 0.0090 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.40 cfs @ 12.09 hrs HW=74.82' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.40 cfs @ 2.81 fps)

Pond 4P: DMH 1



Summary for Pond 5P: STORMCEPTOR 3

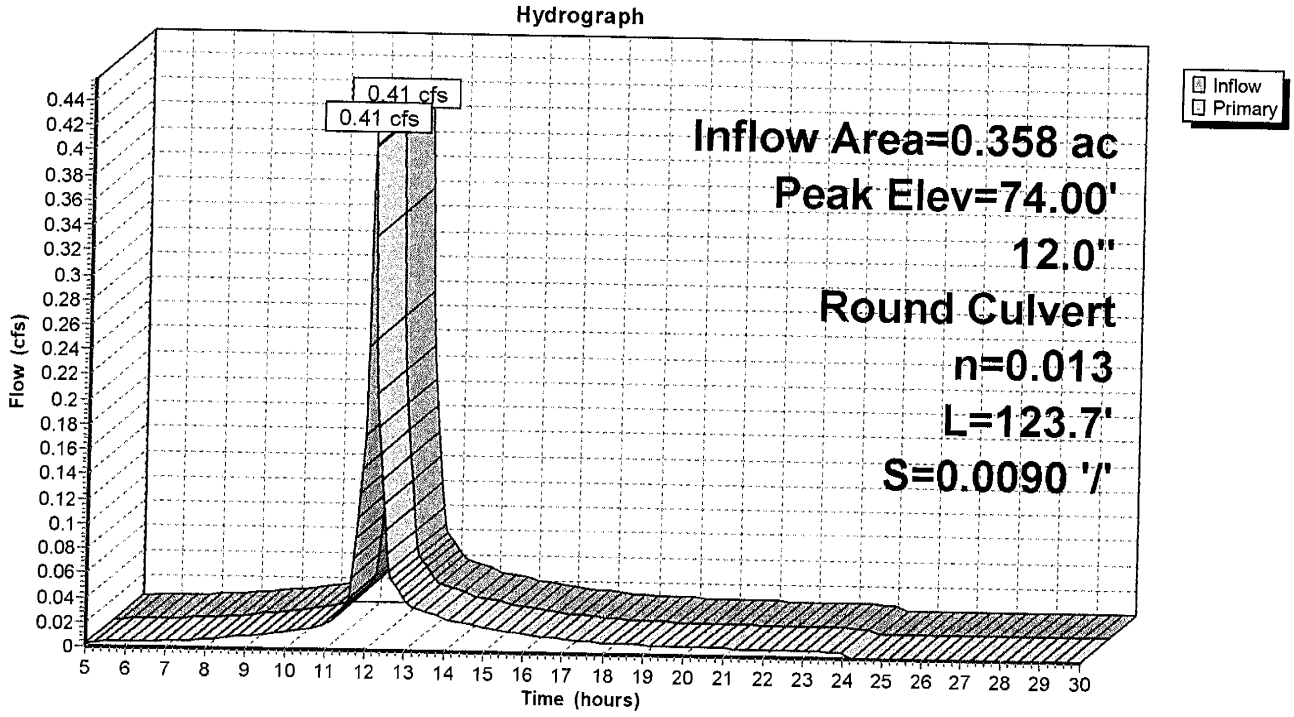
Inflow Area =	0.358 ac, 37.97% Impervious, Inflow Depth > 1.10" for 10 YR event				
Inflow =	0.41 cfs @ 12.09 hrs, Volume=	0.033 af			
Outflow =	0.41 cfs @ 12.09 hrs, Volume=	0.033 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.41 cfs @ 12.09 hrs, Volume=	0.033 af			

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 74.00' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	73.68'	**12.0" Round Culvert** L= 123.7' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 73.68' / 72.57' S= 0.0090 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.40 cfs @ 12.09 hrs HW=73.99' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.40 cfs @ 2.83 fps)

Pond 5P: STORMCEPTOR 3



Summary for Pond 6P: TRENCH DRAIN

Inflow Area =	0.100 ac,	0.00% Impervious,	Inflow Depth =	0.14"	for 10 YR event
Inflow =	0.00 cfs @	13.76 hrs, Volume=	0.001 af		
Outflow =	0.00 cfs @	13.77 hrs, Volume=	0.001 af,	Atten= 0%,	Lag= 0.7 min
Discarded =	0.00 cfs @	13.77 hrs, Volume=	0.001 af		
Primary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af		

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 72.00' @ 13.77 hrs Surf.Area= 188 sf Storage= 0 cf

Plug-Flow detention time= 0.7 min calculated for 0.001 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (1,034.9 - 1,034.2)

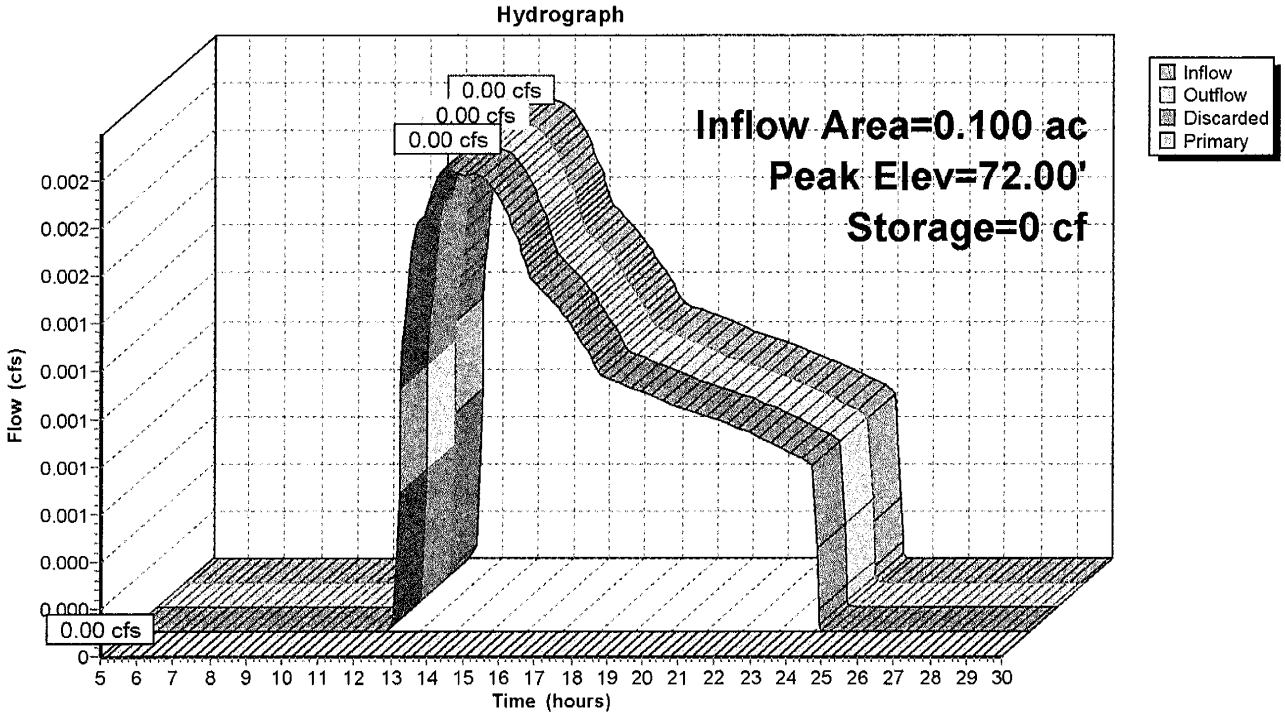
Volume	Invert	Avail.Storage	Storage Description
#1	72.00'	150 cf	**2.00'W x 94.00'L x 2.00'H Prismatoid** 376 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	72.00'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 65.00'
#2	Primary	73.80'	**10.0' 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

Discarded OutFlow Max=0.04 cfs @ 13.77 hrs HW=72.00' (Free Discharge)
└**1=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=72.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 6P: TRENCH DRAIN



Summary for Pond 7P: SAND FILTER

Inflow Area =	0.216 ac,	19.02% Impervious,	Inflow Depth =	0.57"	for 10 YR event
Inflow =	0.08 cfs @	12.15 hrs,	Volume=	0.010 af	
Outflow =	0.06 cfs @	12.40 hrs,	Volume=	0.010 af,	Atten= 28%, Lag= 15.3 min
Primary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	
Secondary =	0.06 cfs @	12.40 hrs,	Volume=	0.010 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 79.96' @ 12.40 hrs Surf.Area= 288 sf Storage= 40 cf

Plug-Flow detention time= 7.9 min calculated for 0.010 af (100% of inflow)
Center-of-Mass det. time= 7.9 min (931.2 - 923.4)

Volume	Invert	Avail.Storage	Storage Description
#1	79.60'	821 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

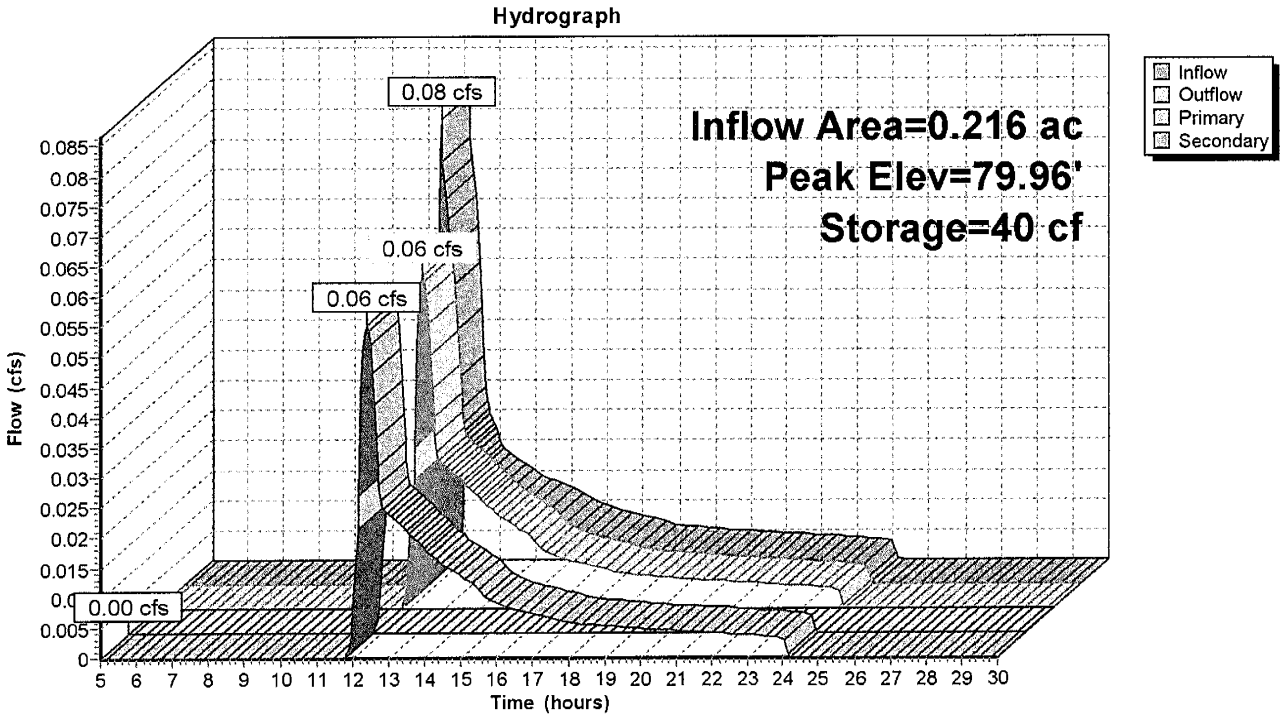
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.60	60	0	0
79.90	127	28	28
80.00	405	27	55
81.00	1,128	767	821

Device	Routing	Invert	Outlet Devices
#1	Primary	80.90'	**10.0' long x 2.0' 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Secondary	79.60'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 57.00'

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=79.60' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.06 cfs @ 12.40 hrs HW=79.96' (Free Discharge)
└**2=Exfiltration** (Controls 0.06 cfs)

Pond 7P: SAND FILTER



Summary for Pond 8P: GALLEY RECHARGE SYSTEM 1

Inflow Area =	0.093 ac,100.00% Impervious, Inflow Depth > 4.35" for 10 YR event				
Inflow =	0.42 cfs @	12.09 hrs, Volume=	0.034 af		
Outflow =	0.12 cfs @	12.41 hrs, Volume=	0.034 af,	Atten= 71%,	Lag= 19.6 min
Discarded =	0.12 cfs @	12.41 hrs, Volume=	0.034 af		

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 66.60' @ 12.41 hrs Surf.Area= 448 sf Storage= 286 cf

Plug-Flow detention time= 12.7 min calculated for 0.034 af (100% of inflow)
Center-of-Mass det. time= 12.5 min (775.5 - 762.9)

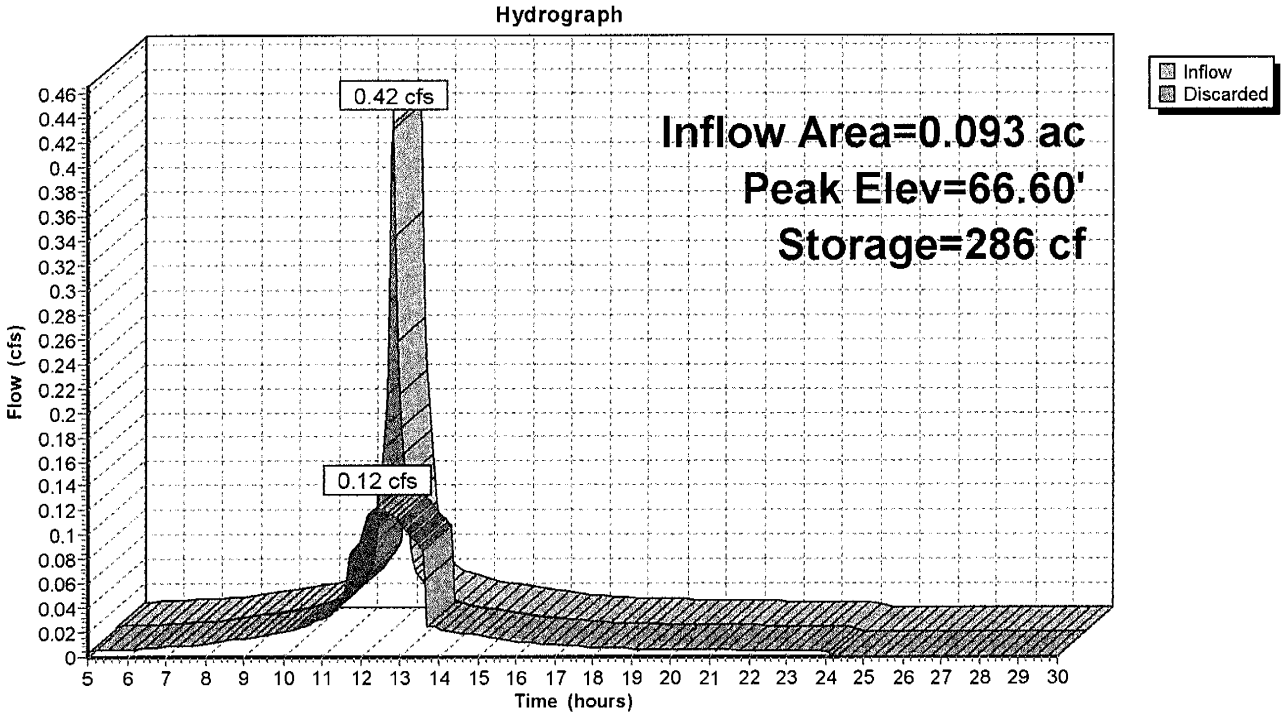
Volume	Invert	Avail.Storage	Storage Description
#1A	65.25'	406 cf	**16.00'W x 28.00'L x 4.00'H Field A** 1,792 cf Overall - 778 cf Embedded = 1,014 cf x 40.0% Voids
#2A	66.25'	561 cf	**Concrete Galley 4x4x3** x 18 Inside #1 Inside= 42.0"W x 30.0"H => 8.91 sf x 3.50'L = 31.2 cf Outside= 48.0"W x 36.0"H => 10.81 sf x 4.00'L = 43.2 cf 3 Rows of 6 Chambers
		967 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	65.25'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 62.00'

Discarded OutFlow Max=0.12 cfs @ 12.41 hrs HW=66.60' (Free Discharge)
└**1=Exfiltration** (Controls 0.12 cfs)

Pond 8P: GALLEY RECHARGE SYSTEM 1



Summary for Pond 9P: STORMCEPTOR 1

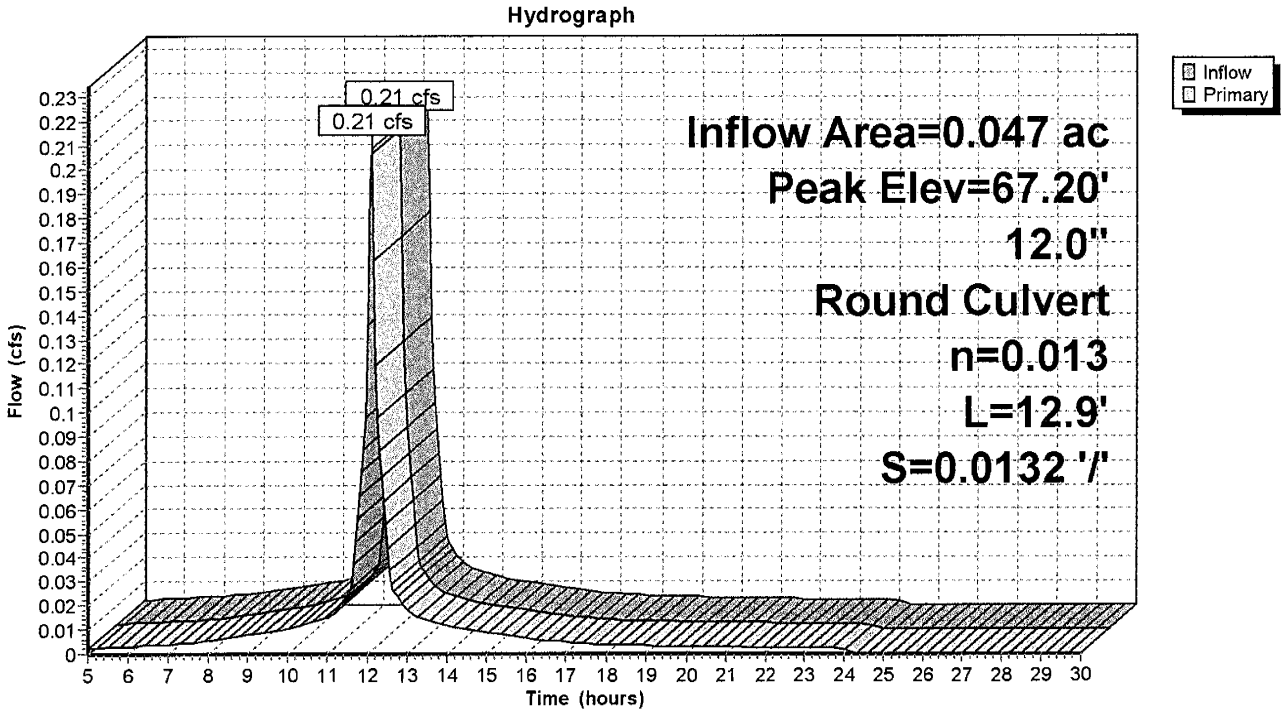
Inflow Area =	0.047 ac,100.00% Impervious, Inflow Depth > 4.35" for 10 YR event				
Inflow =	0.21 cfs @ 12.09 hrs, Volume=	0.017 af			
Outflow =	0.21 cfs @ 12.09 hrs, Volume=	0.017 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.21 cfs @ 12.09 hrs, Volume=	0.017 af			

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 67.20' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	66.97'	**12.0" Round Culvert** L= 12.9' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 66.97' / 66.80' S= 0.0132 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.20 cfs @ 12.09 hrs HW=67.20' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.20 cfs @ 2.29 fps)

Pond 9P: STORMCEPTOR 1



Summary for Pond 11P: STORMCEPTOR 2

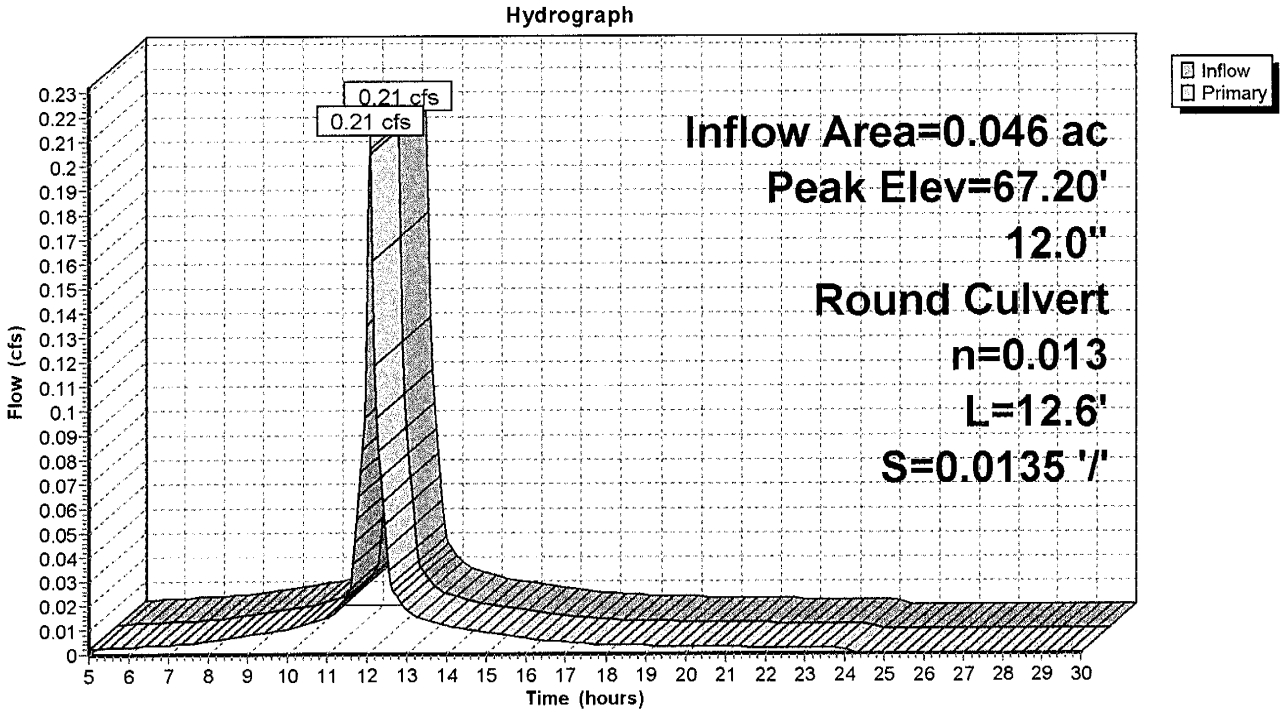
Inflow Area =	0.046 ac,100.00% Impervious, Inflow Depth > 4.35" for 10 YR event				
Inflow =	0.21 cfs @ 12.09 hrs, Volume=	0.017 af			
Outflow =	0.21 cfs @ 12.09 hrs, Volume=	0.017 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.21 cfs @ 12.09 hrs, Volume=	0.017 af			

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 67.20' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	66.97'	**12.0" Round Culvert** L= 12.6' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 66.97' / 66.80' S= 0.0135 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.20 cfs @ 12.09 hrs HW=67.20' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.20 cfs @ 2.29 fps)

Pond 11P: STORMCEPTOR 2



Summary for Pond 12P: Bio Retention System

Inflow Area =	0.369 ac,	0.00% Impervious,	Inflow Depth =	1.13"	for 10 YR event
Inflow =	0.32 cfs @	12.24 hrs,	Volume=	0.035 af	
Outflow =	0.16 cfs @	12.60 hrs,	Volume=	0.035 af,	Atten= 48%, Lag= 21.3 min
Discarded =	0.06 cfs @	12.60 hrs,	Volume=	0.032 af	
Primary =	0.10 cfs @	12.60 hrs,	Volume=	0.003 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 83.79' @ 12.60 hrs Surf.Area= 1,130 sf Storage= 325 cf

Plug-Flow detention time= 32.7 min calculated for 0.035 af (100% of inflow)
Center-of-Mass det. time= 32.6 min (921.2 - 888.5)

Volume	Invert	Avail.Storage	Storage Description
#1	83.50'	563 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

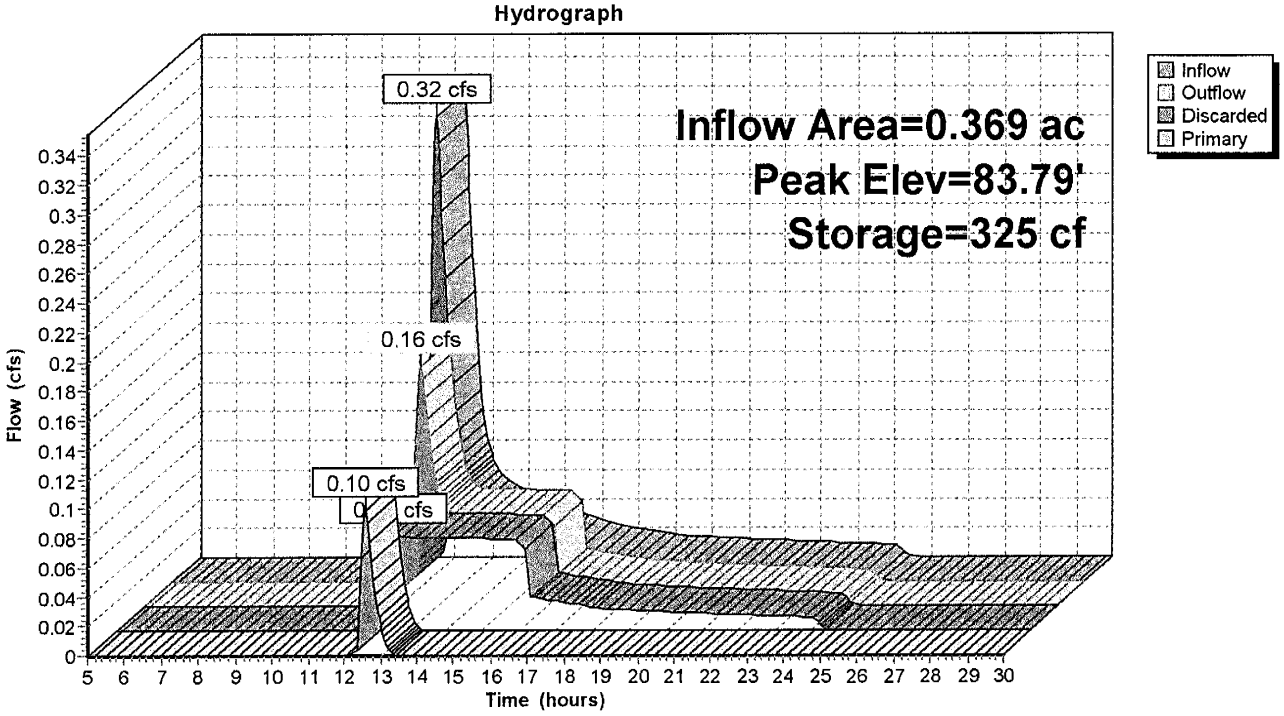
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
83.50	1,100	0	0
84.00	1,151	563	563

Device	Routing	Invert	Outlet Devices
#1	Discarded	83.50'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 67.00'
#2	Primary	83.75'	**5.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=0.06 cfs @ 12.60 hrs HW=83.79' (Free Discharge)
└**1=Exfiltration** (Controls 0.06 cfs)

Primary OutFlow Max=0.10 cfs @ 12.60 hrs HW=83.79' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.10 cfs @ 0.48 fps)

Pond 12P: Bio Retention System



Summary for Pond 14P: TRENCH DRAIN

Inflow Area =	0.110 ac,	0.00% Impervious,	Inflow Depth =	0.14"	for 10 YR event
Inflow =	0.00 cfs @	13.76 hrs, Volume=	0.001 af		
Outflow =	0.00 cfs @	13.77 hrs, Volume=	0.001 af,	Atten= 0%,	Lag= 0.7 min
Discarded =	0.00 cfs @	13.77 hrs, Volume=	0.001 af		
Primary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af		

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 77.00' @ 13.77 hrs Surf.Area= 156 sf Storage= 0 cf

Plug-Flow detention time= 0.7 min calculated for 0.001 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (1,034.9 - 1,034.2)

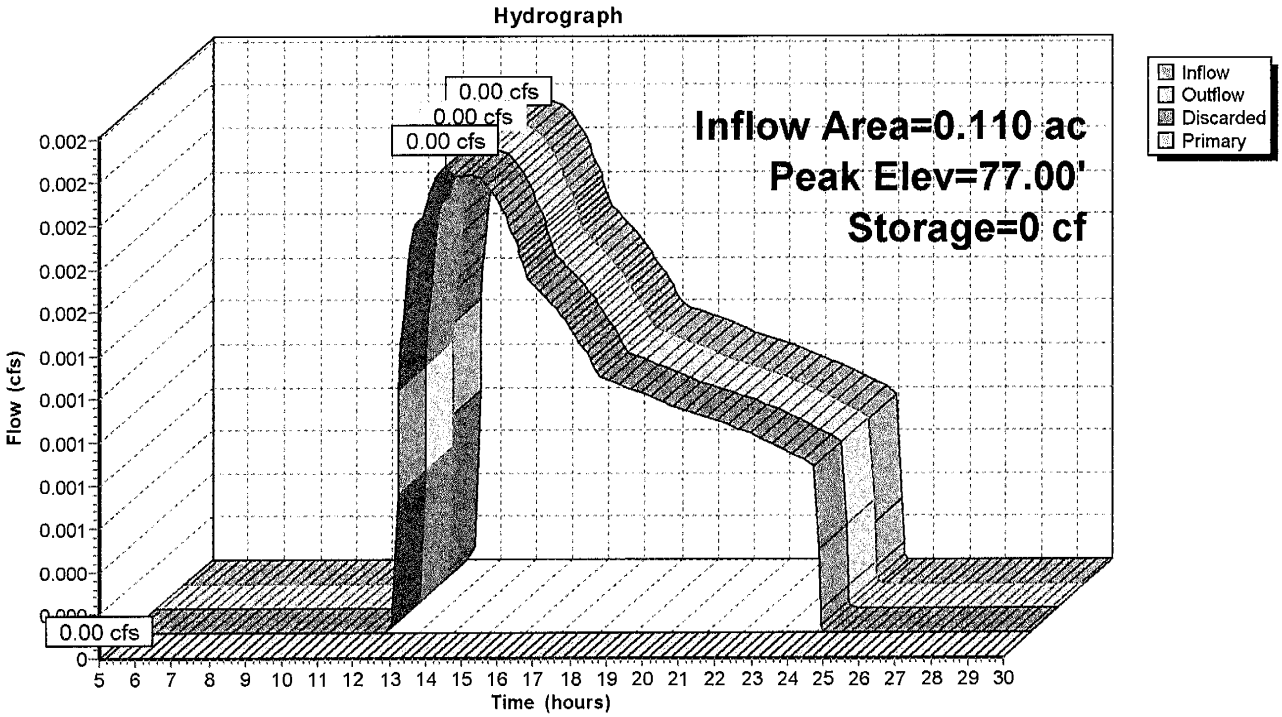
Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	125 cf	**2.00'W x 78.00'L x 2.00'H Prismatoid** 312 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	77.00'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 65.00'
#2	Primary	78.80'	**10.0' 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

Discarded OutFlow Max=0.03 cfs @ 13.77 hrs HW=77.00' (Free Discharge)
└**1=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=77.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 14P: TRENCH DRAIN



Summary for Pond DW1: 8' DIA DRYWELL 1

Inflow Area =	0.577 ac,	0.00% Impervious,	Inflow Depth =	0.12"	for 10 YR event
Inflow =	0.01 cfs @	14.88 hrs, Volume=	0.006 af		
Outflow =	0.01 cfs @	14.89 hrs, Volume=	0.006 af,	Atten= 0%,	Lag= 0.4 min
Discarded =	0.01 cfs @	14.89 hrs, Volume=	0.006 af		
Primary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af		

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 62.01' @ 14.89 hrs Surf.Area= 201 sf Storage= 1 cf

Plug-Flow detention time= 1.4 min calculated for 0.006 af (100% of inflow)
Center-of-Mass det. time= 1.4 min (1,064.2 - 1,062.9)

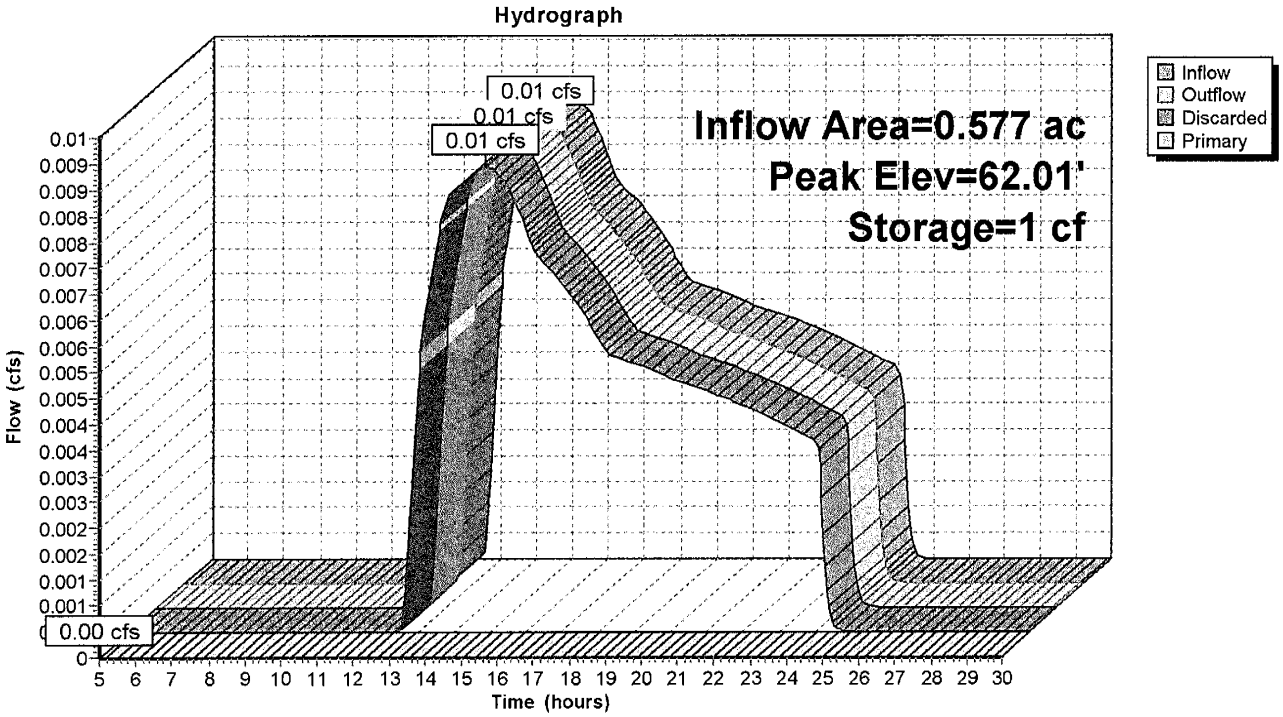
Volume	Invert	Avail.Storage	Storage Description
#1	62.00'	322 cf	**16.00'D x 4.00'H Vertical Cone/Cylinder** 804 cf Overall x 40.0% Voids
#2	63.00'	151 cf	**8.00'D x 3.00'H Vertical Cone/Cylinder**
		472 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	62.00'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 56.00'
#2	Primary	65.00'	**4.0" Round Culvert** L= 12.6' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 65.00' / 64.00' S= 0.0794 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.09 sf

Discarded OutFlow Max=0.04 cfs @ 14.89 hrs HW=62.01' (Free Discharge)
└**1=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=62.00' (Free Discharge)
└**2=Culvert** (Controls 0.00 cfs)

Pond DW1: 8' DIA DRYWELL 1



Summary for Pond SRS1: ROOF RECHARGE

Inflow Area =	0.037 ac,100.00% Impervious, Inflow Depth > 4.35" for 10 YR event				
Inflow =	0.16 cfs @	12.09 hrs,	Volume=	0.013 af	
Outflow =	0.02 cfs @	12.89 hrs,	Volume=	0.013 af,	Atten= 90%, Lag= 48.4 min
Discarded =	0.02 cfs @	12.89 hrs,	Volume=	0.013 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 81.90' @ 12.89 hrs Surf.Area= 268 sf Storage= 205 cf

Plug-Flow detention time= 92.8 min calculated for 0.013 af (100% of inflow)
Center-of-Mass det. time= 92.4 min (855.3 - 762.9)

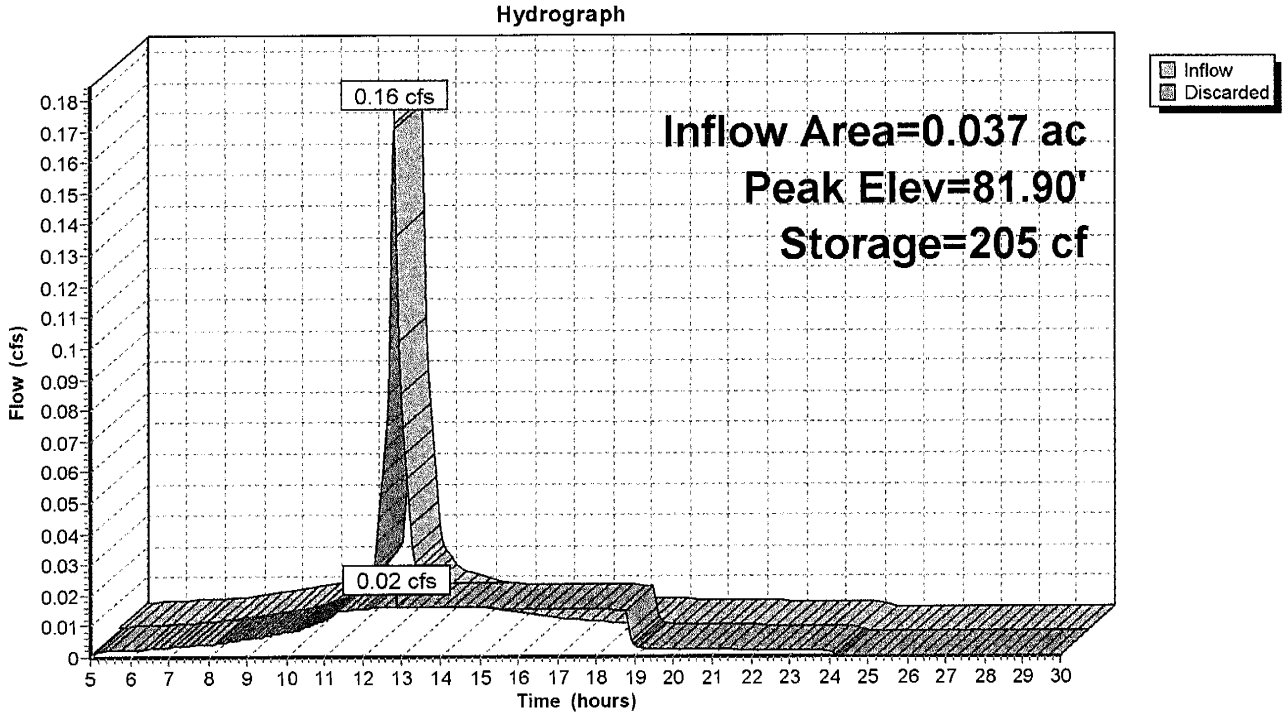
Volume	Invert	Avail.Storage	Storage Description
#1A	80.50'	302 cf	**13.50'W x 19.86'L x 3.50'H Field A** 938 cf Overall - 184 cf Embedded = 754 cf x 40.0% Voids
#2A	81.00'	184 cf	**ADS_StormTech SC-740 +Cap** x 4 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 2 Chambers
		486 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	80.50'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 57.00'

Discarded OutFlow Max=0.02 cfs @ 12.89 hrs HW=81.90' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.02 cfs)

Pond SRS1: ROOF RECHARGE



Summary for Pond SRS2: ROOF RECHARGE

Inflow Area =	0.037 ac,100.00% Impervious, Inflow Depth > 4.35" for 10 YR event			
Inflow =	0.16 cfs @ 12.09 hrs, Volume=	0.013 af		
Outflow =	0.05 cfs @ 12.38 hrs, Volume=	0.013 af, Atten= 67%, Lag= 17.5 min		
Discarded =	0.05 cfs @ 12.38 hrs, Volume=	0.013 af		

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 73.21' @ 12.38 hrs Surf.Area= 268 sf Storage= 89 cf

Plug-Flow detention time= 7.8 min calculated for 0.013 af (100% of inflow)
Center-of-Mass det. time= 7.7 min (770.6 - 762.9)

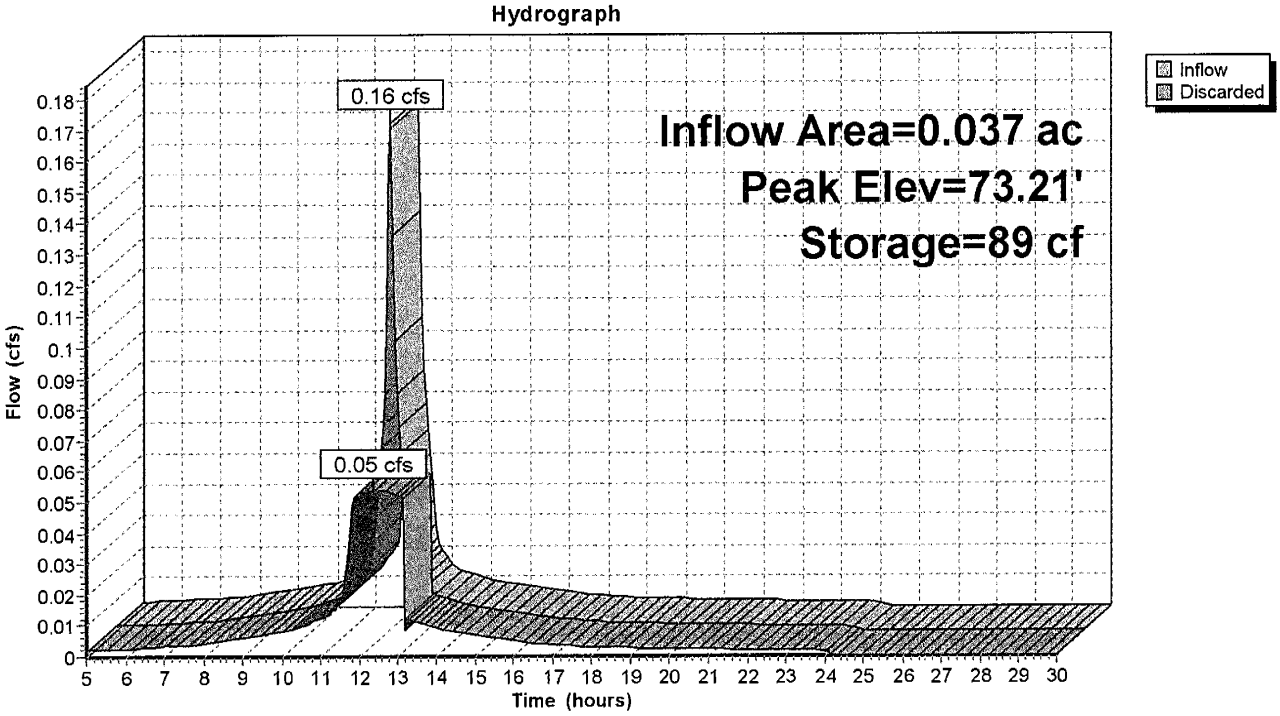
Volume	Invert	Avail.Storage	Storage Description
#1A	72.50'	302 cf	**13.50'W x 19.86'L x 3.50'H Field A** 938 cf Overall - 184 cf Embedded = 754 cf x 40.0% Voids
#2A	73.00'	184 cf	**ADS_StormTech SC-740 +Cap** x 4 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 2 Chambers
		486 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	72.50'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 57.00'

Discarded OutFlow Max=0.05 cfs @ 12.38 hrs HW=73.20' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.05 cfs)

Pond SRS2: ROOF RECHARGE



Summary for Pond SRS3: FROM SAND FILTER

Inflow	=	0.06 cfs @	12.40 hrs,	Volume=	0.010 af
Outflow	=	0.01 cfs @	15.44 hrs,	Volume=	0.010 af, Atten= 78%, Lag= 182.2 min
Discarded	=	0.01 cfs @	15.44 hrs,	Volume=	0.010 af
Primary	=	0.00 cfs @	5.00 hrs,	Volume=	0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 75.16' @ 15.44 hrs Surf.Area= 201 sf Storage= 134 cf

Plug-Flow detention time= 113.1 min calculated for 0.010 af (100% of inflow)
Center-of-Mass det. time= 112.8 min (1,044.1 - 931.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	74.00'	207 cf	**6.25'W x 32.10'L x 3.50'H Field A** 702 cf Overall - 184 cf Embedded = 518 cf x 40.0% Voids
#2A	74.50'	184 cf	**ADS_StormTech SC-740 +Cap** x 4 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		391 cf	Total Available Storage

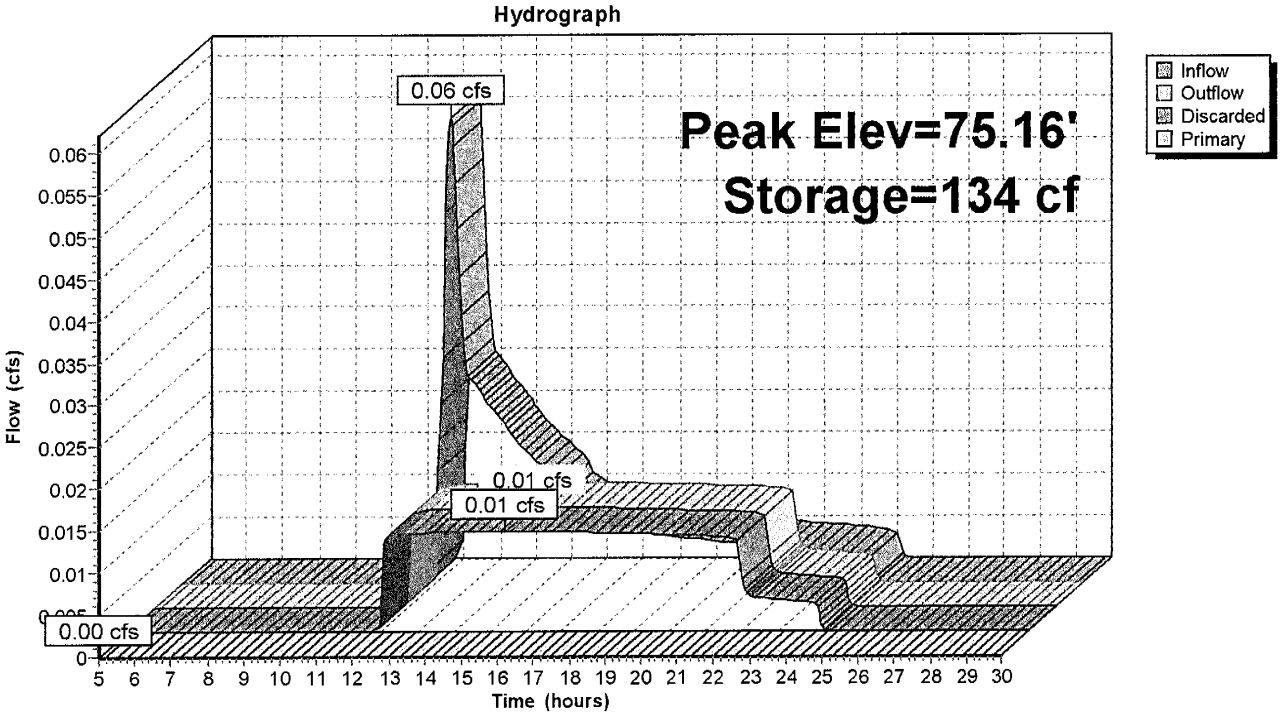
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	74.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 57.00'
#2	Primary	76.36'	**4.0" Round Culvert** L= 20.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 76.36' / 76.00' S= 0.0180 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.09 sf

Discarded OutFlow Max=0.01 cfs @ 15.44 hrs HW=75.16' (Free Discharge)
└**1=Exfiltration** (Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=74.00' (Free Discharge)
└**2=Culvert** (Controls 0.00 cfs)

Pond SRS3: FROM SAND FILTER



Summary for Subcatchment L1: ROOF LEFT LOT 1

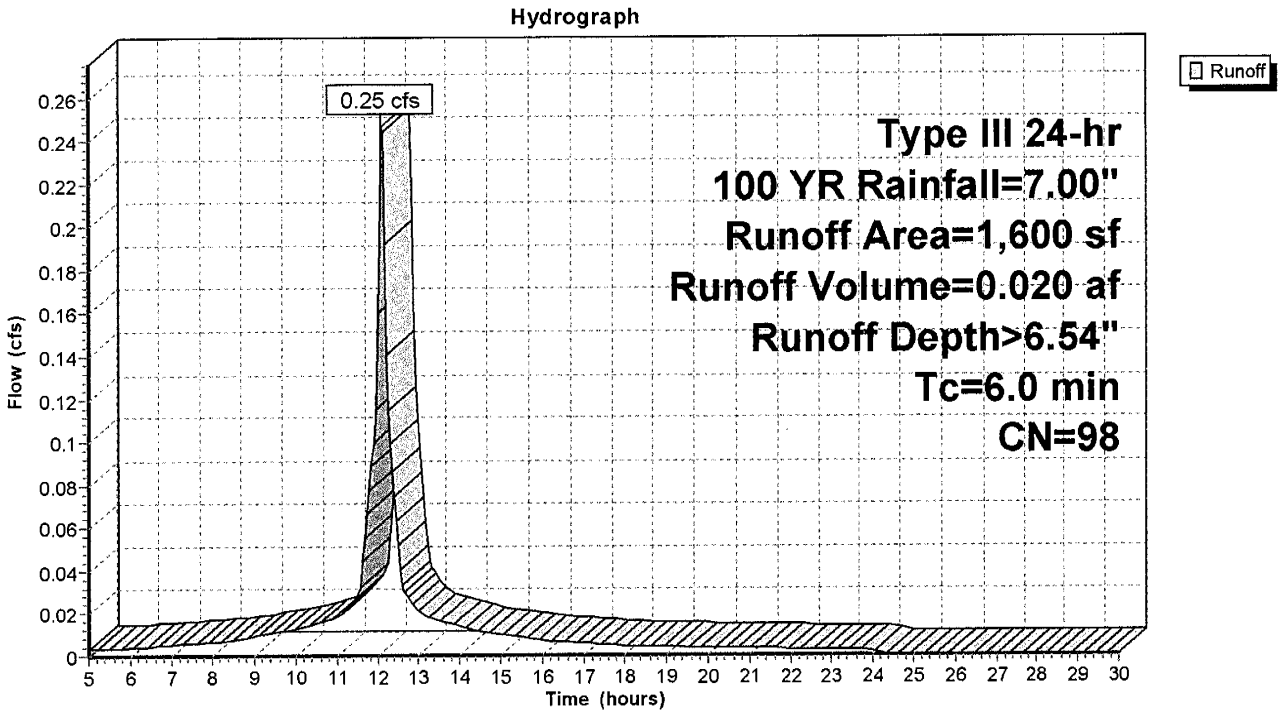
Runoff = 0.25 cfs @ 12.09 hrs, Volume= 0.020 af, Depth> 6.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

Area (sf)	CN	Description
1,600	98	Unconnected roofs, HSG A
1,600		100.00% Impervious Area
1,600		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 MINUTE MIN**

Subcatchment L1: ROOF LEFT LOT 1



Summary for Subcatchment L2: ROOF LEFT LOT 2

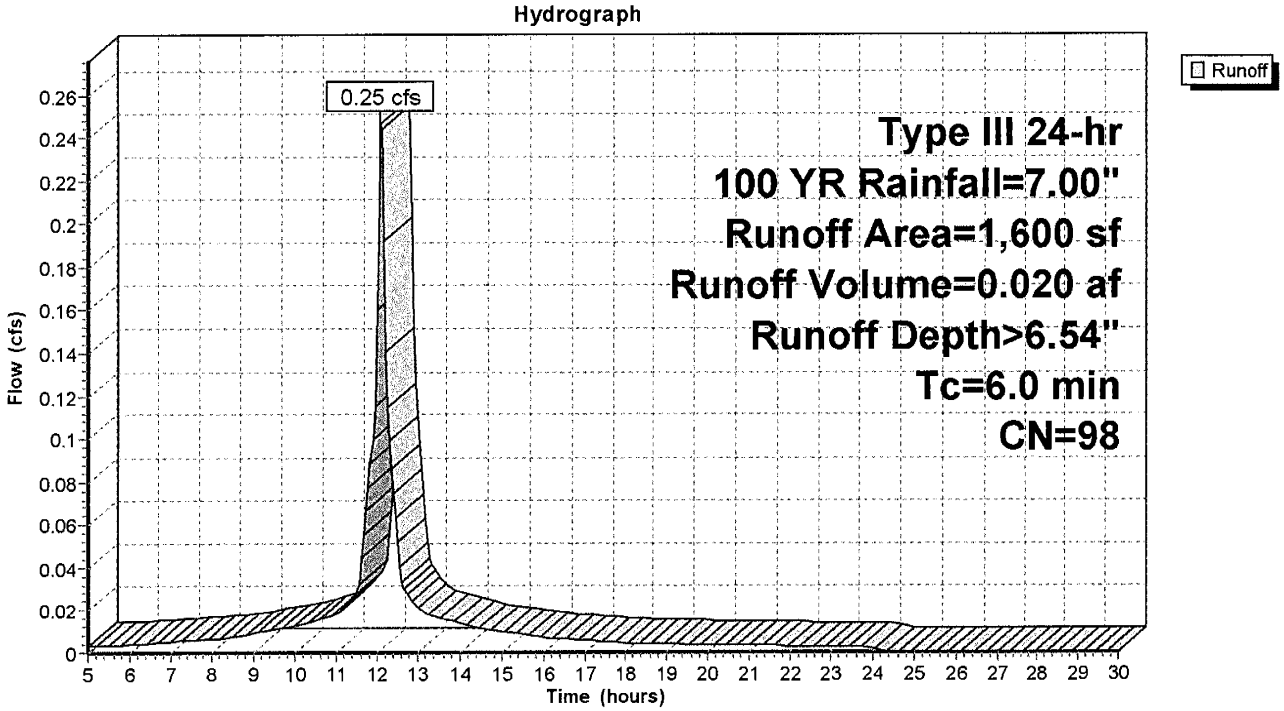
Runoff = 0.25 cfs @ 12.09 hrs, Volume= 0.020 af, Depth> 6.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

Area (sf)	CN	Description
1,600	98	Unconnected roofs, HSG A
1,600		100.00% Impervious Area
1,600		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 MINUTE MIN**

Subcatchment L2: ROOF LEFT LOT 2



Summary for Subcatchment PST 1 A: TO DP 1

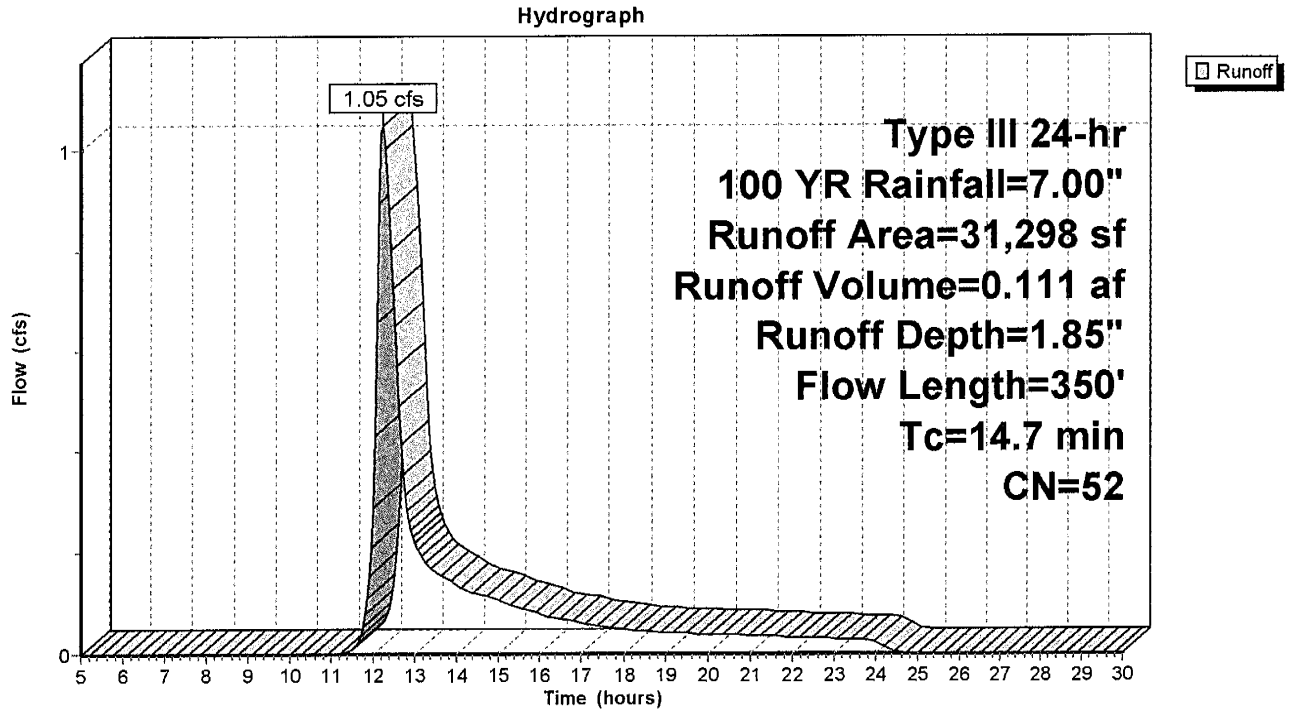
Runoff = 1.05 cfs @ 12.23 hrs, Volume= 0.111 af, Depth= 1.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

Area (sf)	CN	Description
1,929	98	Paved parking, HSG A
7,560	39	>75% Grass cover, Good, HSG A
14,622	61	>75% Grass cover, Good, HSG B
6,662	30	Woods, Good, HSG A
114	55	Woods, Good, HSG B
411	98	Paved parking, HSG A
31,298	52	Weighted Average
28,958		92.52% Pervious Area
2,340		7.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	50	0.0060	0.06		**Sheet Flow, SHEET** Grass: Dense n= 0.240 P2= 3.20"
1.4	300	0.0460	3.45		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
14.7	350	Total			

Subcatchment PST 1 A: TO DP 1



Summary for Subcatchment PST 1 C: TO GALLEY

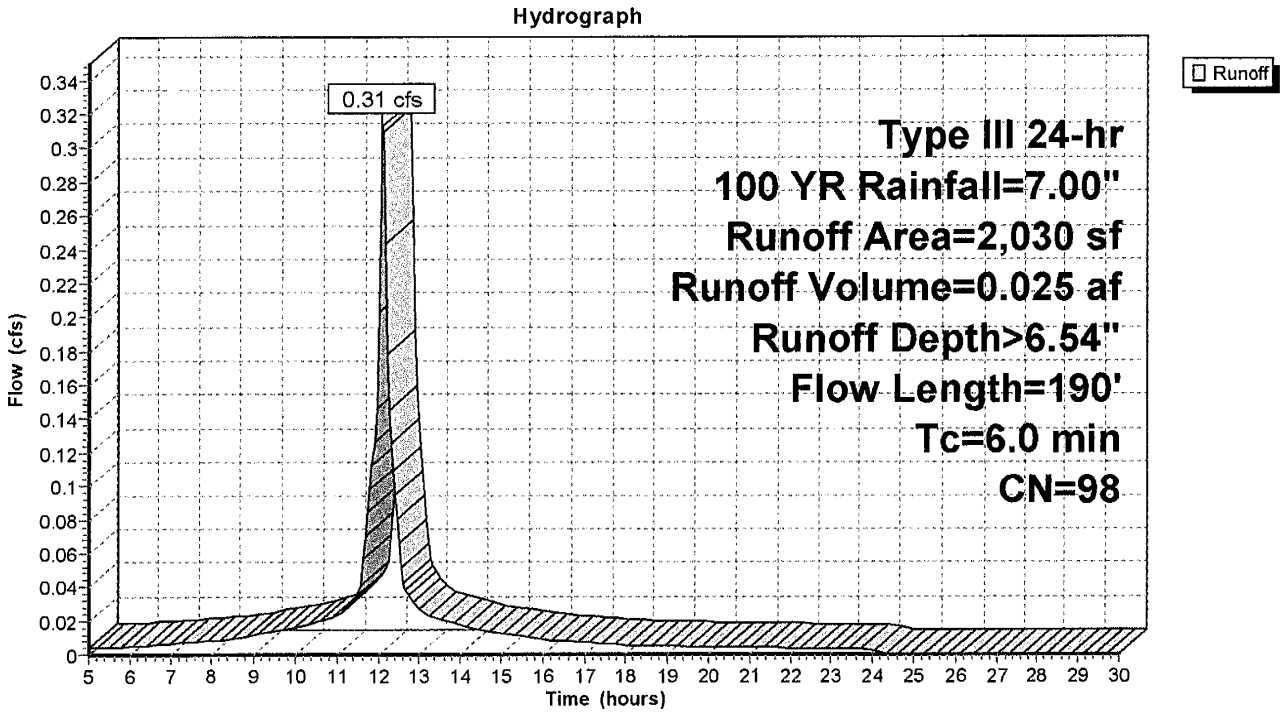
Runoff = 0.31 cfs @ 12.09 hrs, Volume= 0.025 af, Depth> 6.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

Area (sf)	CN	Description
2,030	98	Paved parking, HSG A
2,030		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	50	0.0500	1.73		**Sheet Flow, SHEET** Smooth surfaces n= 0.011 P2= 3.20"
0.6	140	0.0400	4.06		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.9					**Direct Entry, 6 MIN. MIN**
6.0	190	Total			

Subcatchment PST 1 C: TO GALLEY



Summary for Subcatchment PST 2: LOT 1

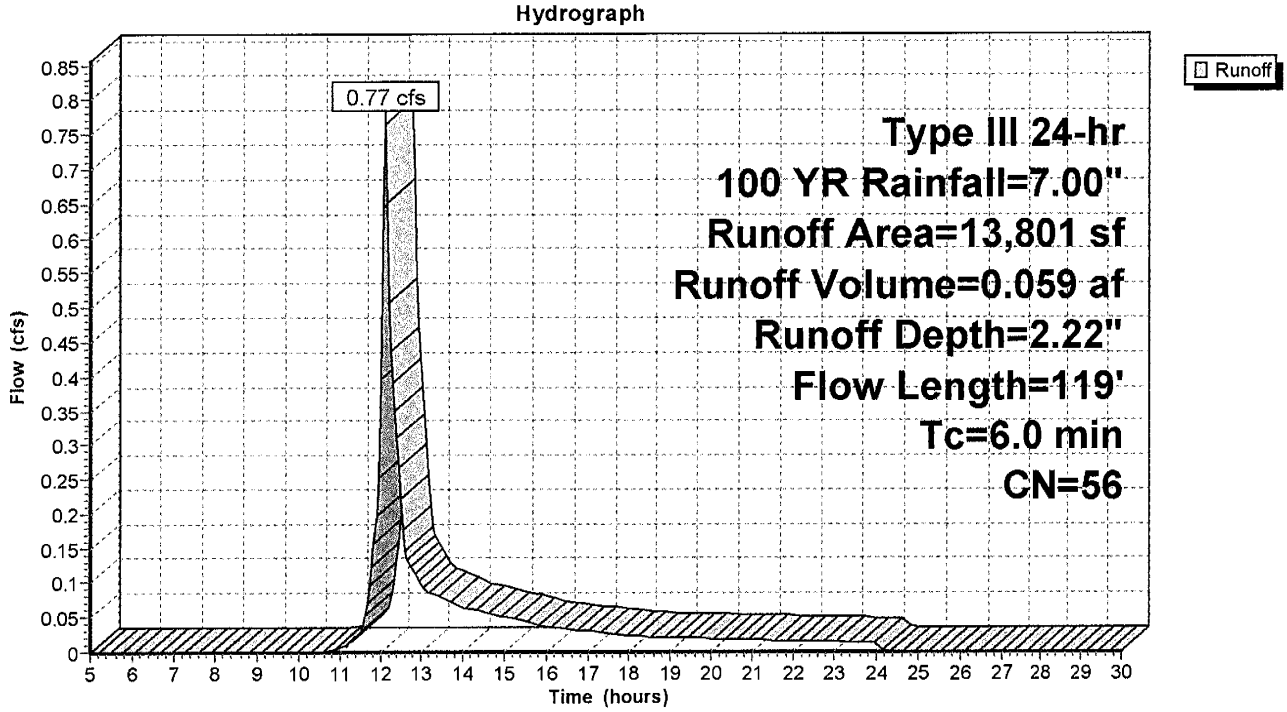
Runoff = 0.77 cfs @ 12.10 hrs, Volume= 0.059 af, Depth= 2.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

Area (sf)	CN	Description
2,904	61	>75% Grass cover, Good, HSG B
10,897	55	Woods, Good, HSG B
13,801	56	Weighted Average
13,801		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	14	0.3330	0.24		**Sheet Flow, SEG 1** Grass: Dense n= 0.240 P2= 3.20"
0.8	105	0.1750	2.09		**Shallow Concentrated Flow, SEG 2** Woodland Kv= 5.0 fps
4.2					**Direct Entry,**
6.0	119	Total			

Subcatchment PST 2: LOT 1



Summary for Subcatchment PST 2A: LOT 1

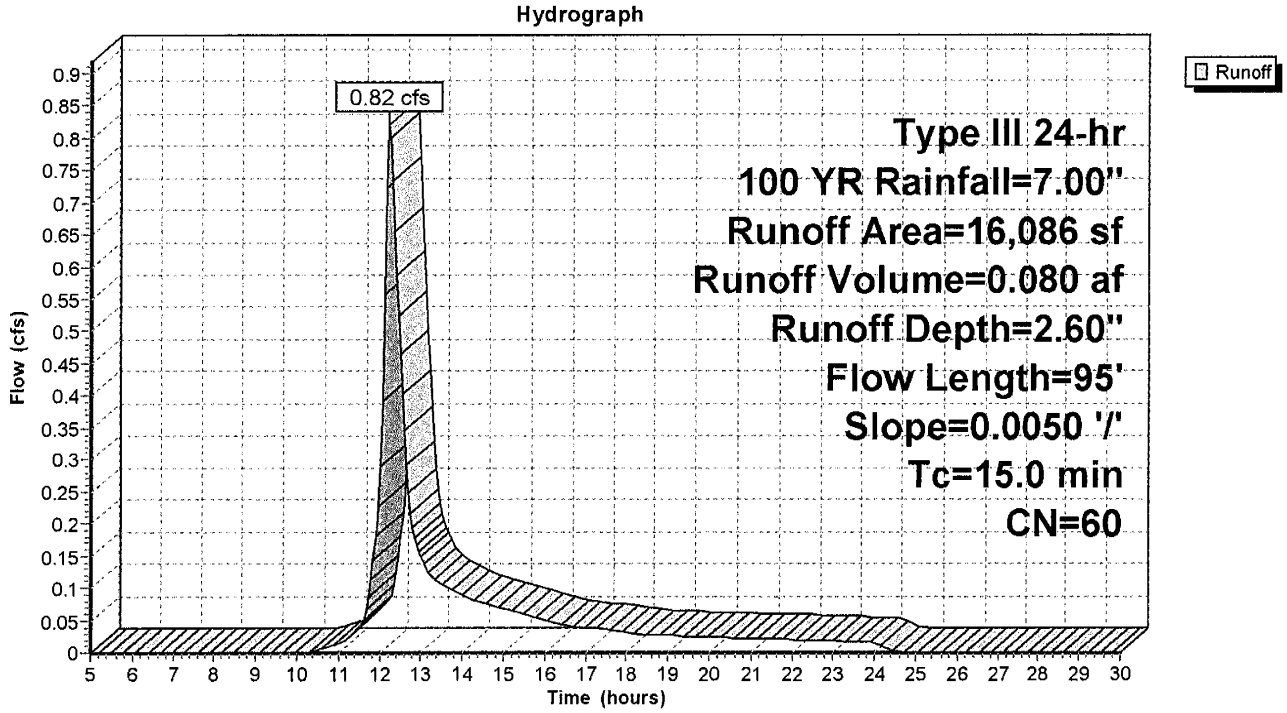
Runoff = 0.82 cfs @ 12.22 hrs, Volume= 0.080 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

Area (sf)	CN	Description
653	39	>75% Grass cover, Good, HSG A
15,433	61	>75% Grass cover, Good, HSG B
16,086	60	Weighted Average
16,086		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	50	0.0050	0.06		**Sheet Flow, SEG 1** Grass: Dense n= 0.240 P2= 3.20"
0.7	45	0.0050	1.14		**Shallow Concentrated Flow, SEG 2** Unpaved Kv= 16.1 fps
15.0	95	Total			

Subcatchment PST 2A: LOT 1



Summary for Subcatchment PST 3: WODDS OF LOT 2

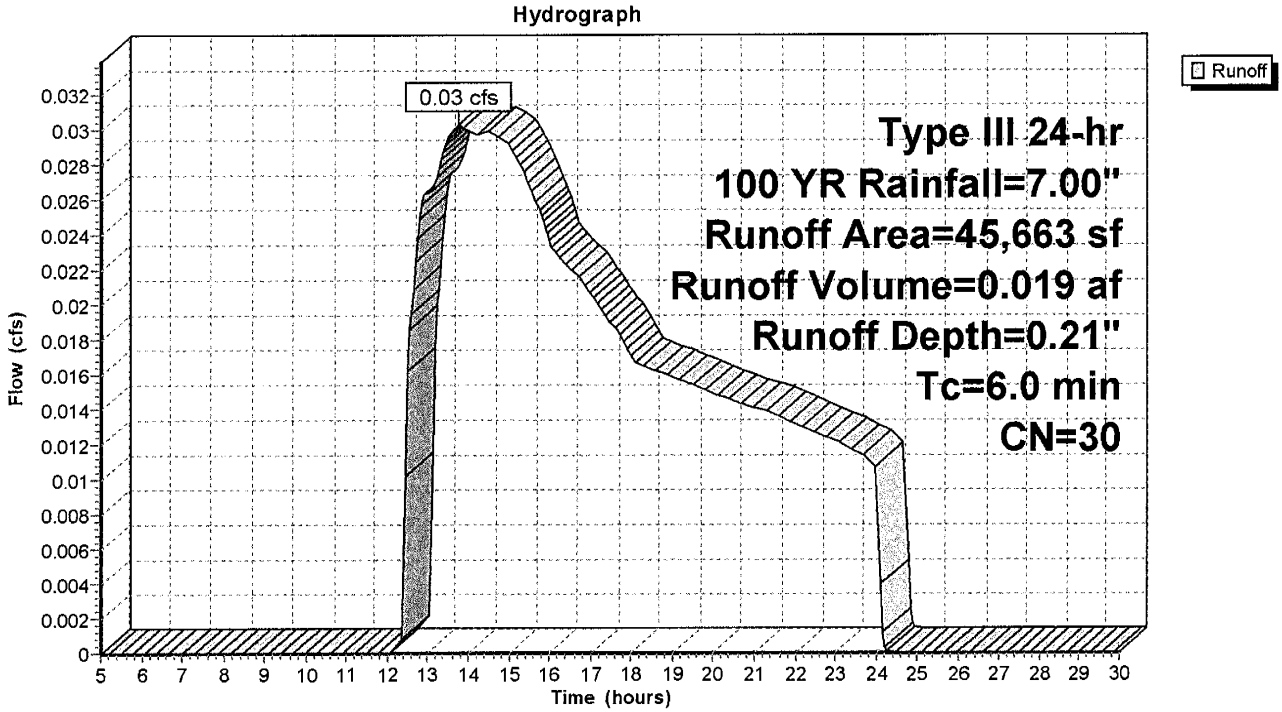
Runoff = 0.03 cfs @ 13.77 hrs, Volume= 0.019 af, Depth= 0.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

Area (sf)	CN	Description
44,440	30	Woods, Good, HSG A
1,223	39	>75% Grass cover, Good, HSG A
45,663	30	Weighted Average
45,663		100.00% Pervious Area

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

Subcatchment PST 3: WODDS OF LOT 2



Summary for Subcatchment PST 3A: LOT 2

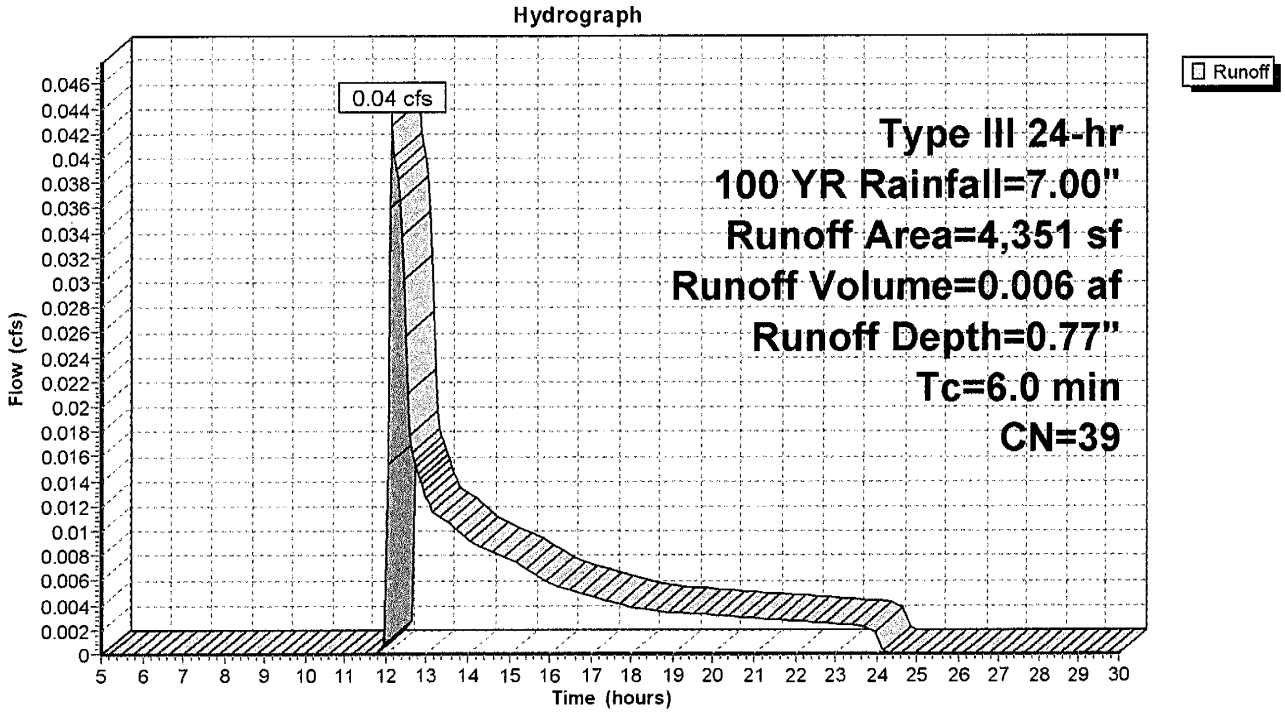
Runoff = 0.04 cfs @ 12.16 hrs, Volume= 0.006 af, Depth= 0.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

Area (sf)	CN	Description
4,351	39	>75% Grass cover, Good, HSG A
4,351		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 MINUTE MIN**

Subcatchment PST 3A: LOT 2



Summary for Subcatchment PST 3B: LOT 2

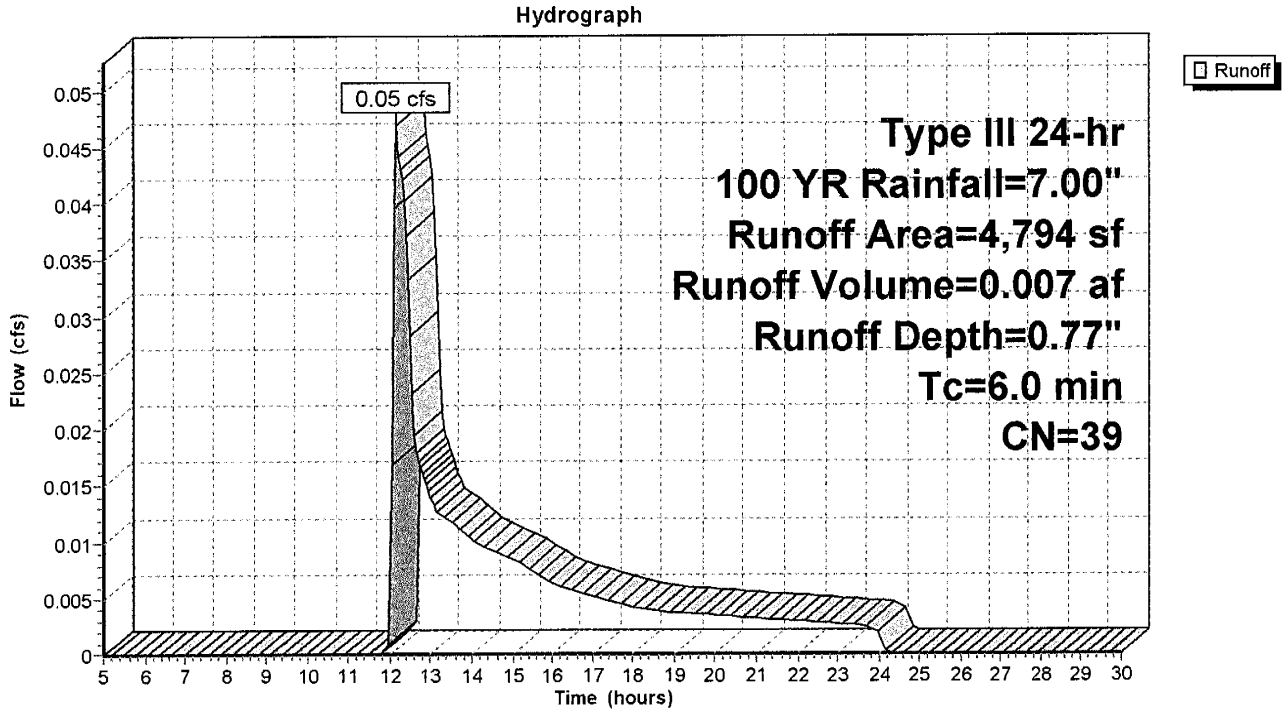
Runoff = 0.05 cfs @ 12.16 hrs, Volume= 0.007 af, Depth= 0.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

Area (sf)	CN	Description
4,794	39	>75% Grass cover, Good, HSG A
4,794		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 MINUTE MIN**

Subcatchment PST 3B: LOT 2



Summary for Subcatchment PST 4: LOTS 1&2

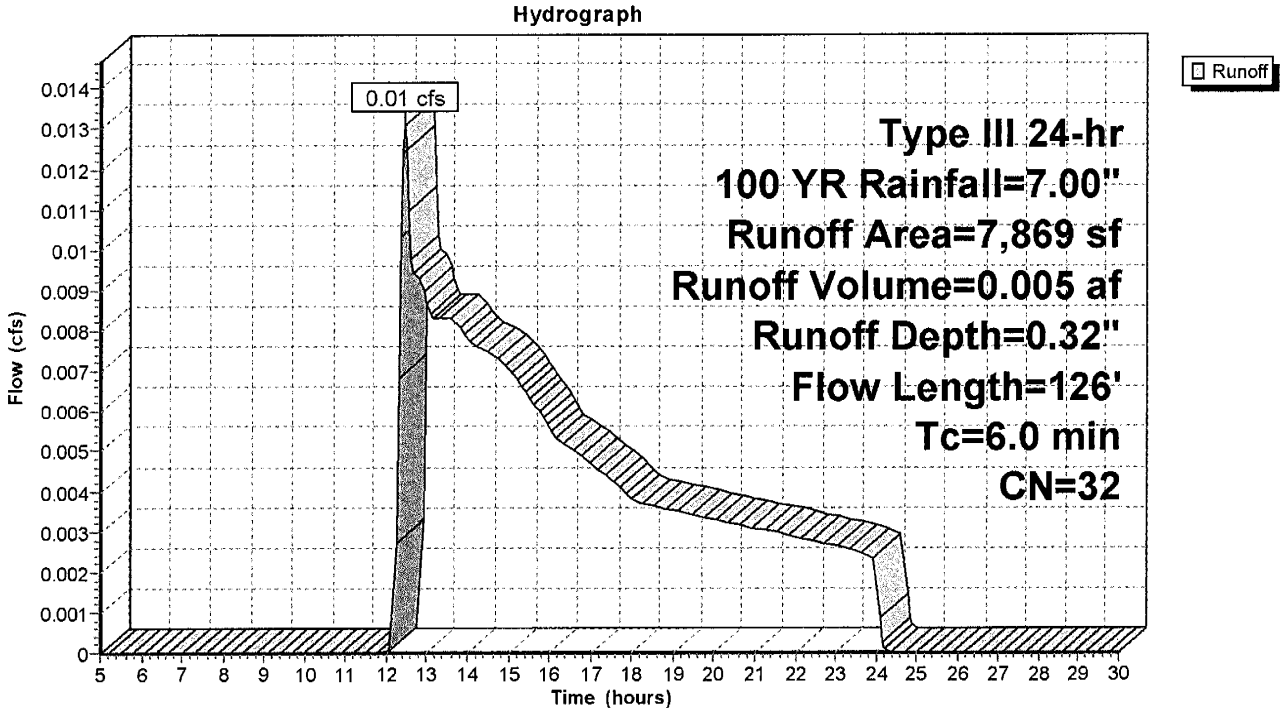
Runoff = 0.01 cfs @ 12.45 hrs, Volume= 0.005 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

Area (sf)	CN	Description
1,500	39	>75% Grass cover, Good, HSG A
6,369	30	Woods, Good, HSG A
7,869	32	Weighted Average
7,869		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	50	0.4400	0.23		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 3.20"
0.9	76	0.0816	1.43		**Shallow Concentrated Flow, wood** Woodland Kv= 5.0 fps
1.5					**Direct Entry, 6 minute min.**
6.0	126	Total			

Subcatchment PST 4: LOTS 1&2



Summary for Subcatchment PST 4A: LOT 2 REAR YARD

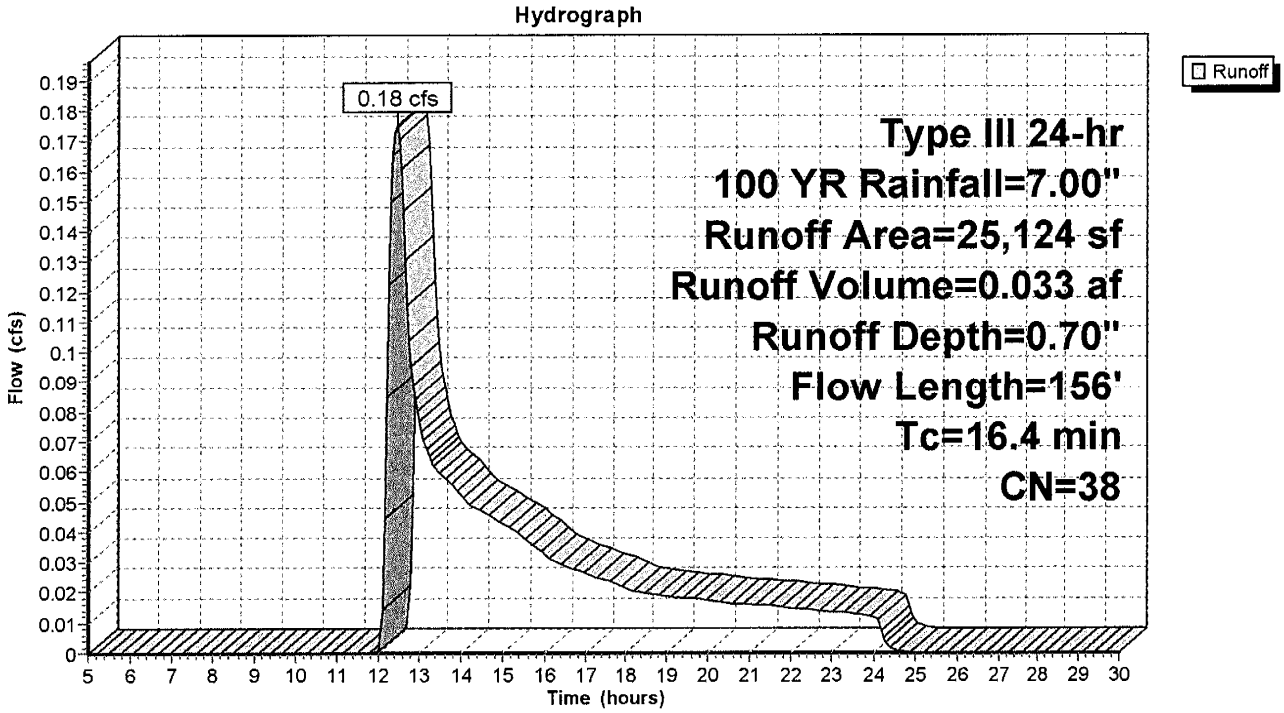
Runoff = 0.18 cfs @ 12.44 hrs, Volume= 0.033 af, Depth= 0.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

Area (sf)	CN	Description
19,893	39	>75% Grass cover, Good, HSG A
2,061	30	Woods, Good, HSG A
1,500	39	>75% Grass cover, Good, HSG A
1,670	30	Woods, Good, HSG A
25,124	38	Weighted Average
25,124		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	50	0.0110	0.05		**Sheet Flow, SHEET** Grass: Bermuda n= 0.410 P2= 3.20"
0.4	106	0.0750	4.41		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
16.4	156	Total			

Subcatchment PST 4A: LOT 2 REAR YARD



Summary for Subcatchment PST 5: TO IVW

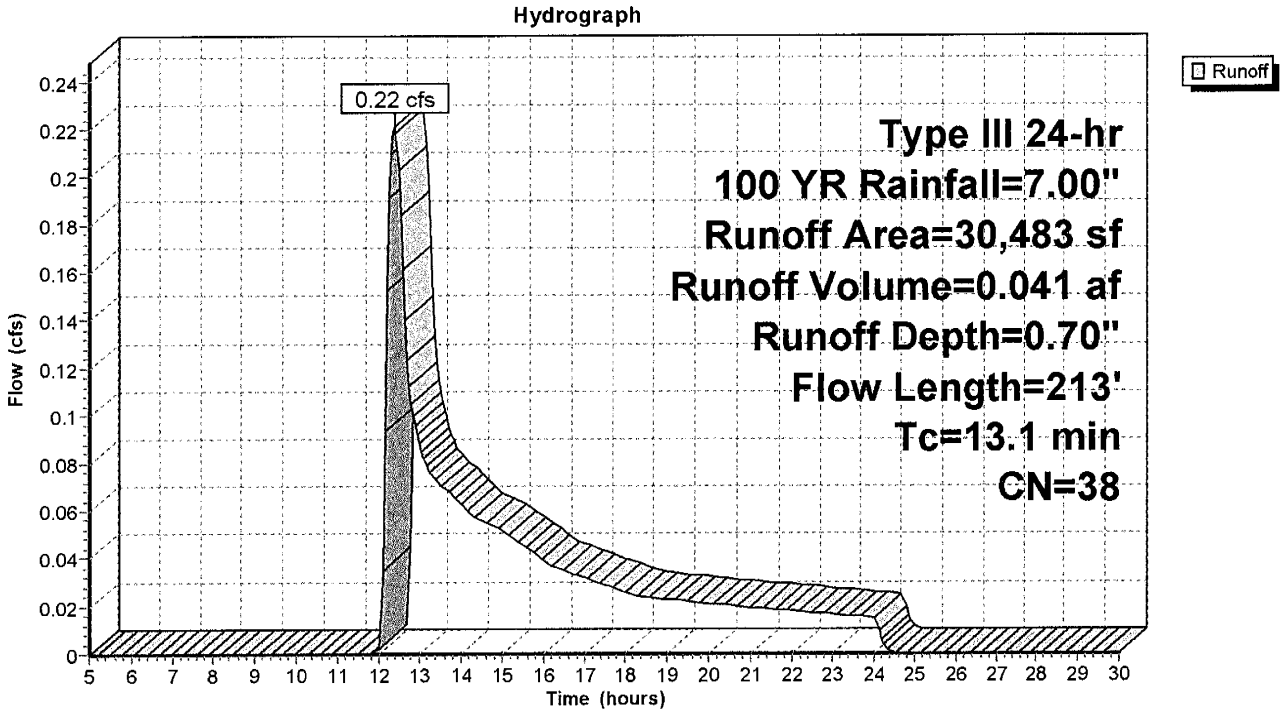
Runoff = 0.22 cfs @ 12.39 hrs, Volume= 0.041 af, Depth= 0.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

	Area (sf)	CN	Description
*	2,432	78	WETLAND
	23,166	30	Woods, Good, HSG A
	4,885	55	Woods, Good, HSG B
	30,483	38	Weighted Average
	30,483		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	46	0.0217	0.07		**Sheet Flow, SEG 1** Woods: Light underbrush n= 0.400 P2= 3.20"
1.9	167	0.0880	1.48		**Shallow Concentrated Flow, SEG 2** Woodland Kv= 5.0 fps
13.1	213	Total			

Subcatchment PST 5: TO IVW



Summary for Subcatchment PST 6: RD PAVE

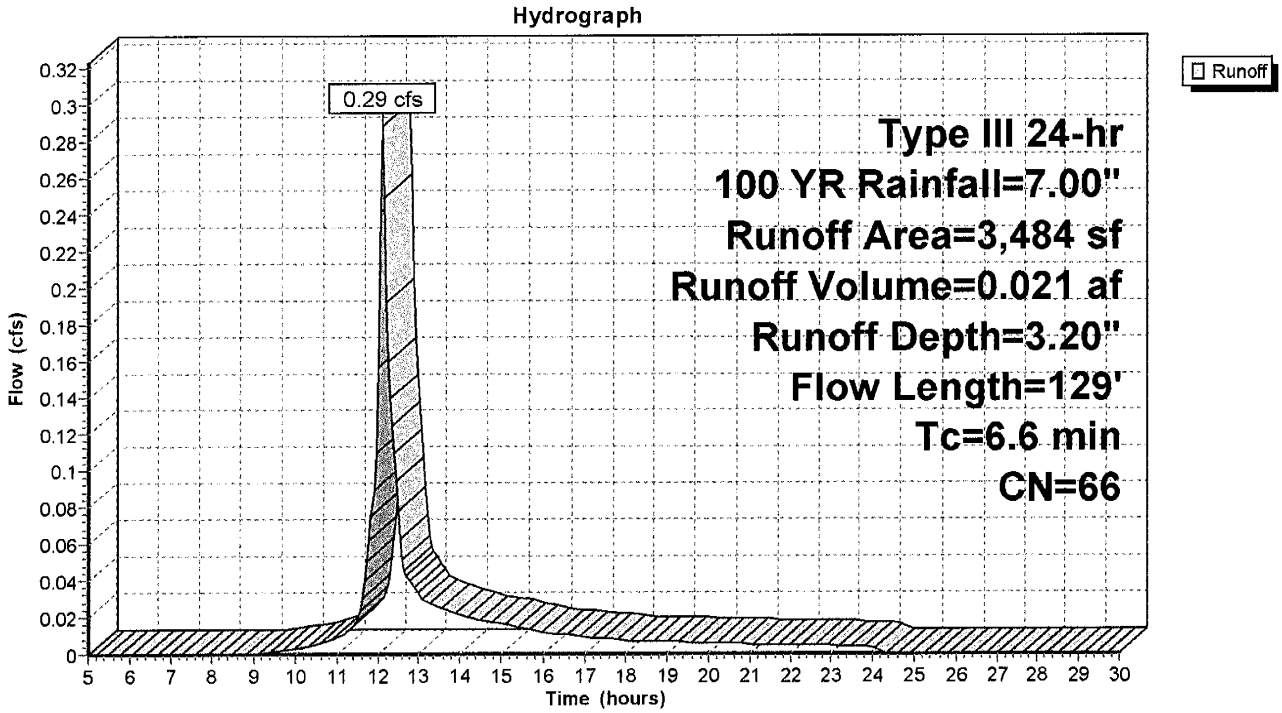
Runoff = 0.29 cfs @ 12.10 hrs, Volume= 0.021 af, Depth= 3.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

Area (sf)	CN	Description
1,565	39	>75% Grass cover, Good, HSG A
494	61	>75% Grass cover, Good, HSG B
1,425	98	Paved parking, HSG A
3,484	66	Weighted Average
2,059		59.10% Pervious Area
1,425		40.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0410	0.14		**Sheet Flow, SHEET** Grass: Dense n= 0.240 P2= 3.20"
0.4	79	0.0500	3.60		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
6.6	129	Total			

Subcatchment PST 6: RD PAVE



Summary for Subcatchment PST 7: RD PAVE

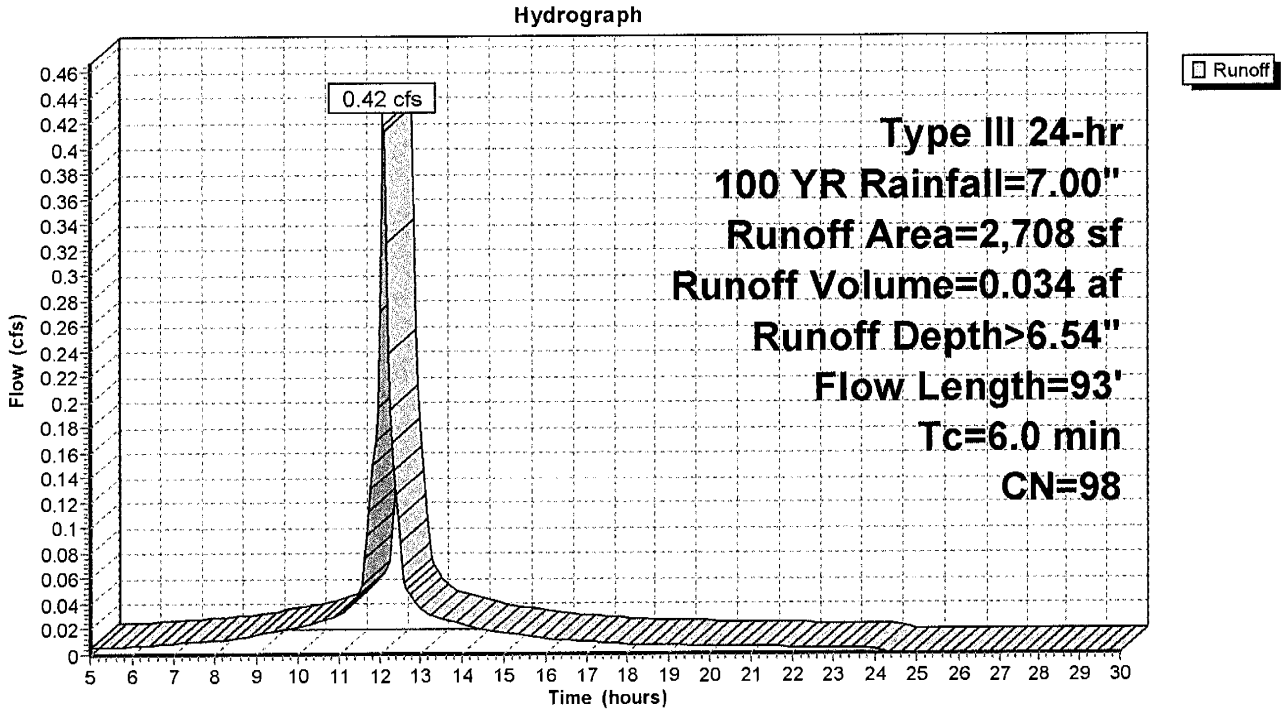
Runoff = 0.42 cfs @ 12.09 hrs, Volume= 0.034 af, Depth> 6.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

Area (sf)	CN	Description
2,708	98	Paved parking, HSG A
2,708		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	50	0.0280	1.37		**Sheet Flow, SHEET** Smooth surfaces n= 0.011 P2= 3.20"
0.2	43	0.0360	3.85		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
5.2					**Direct Entry, 6 MINUTE MIN**
6.0	93	Total			

Subcatchment PST 7: RD PAVE



Summary for Subcatchment PST 7A: FRONT LAWN AREAS

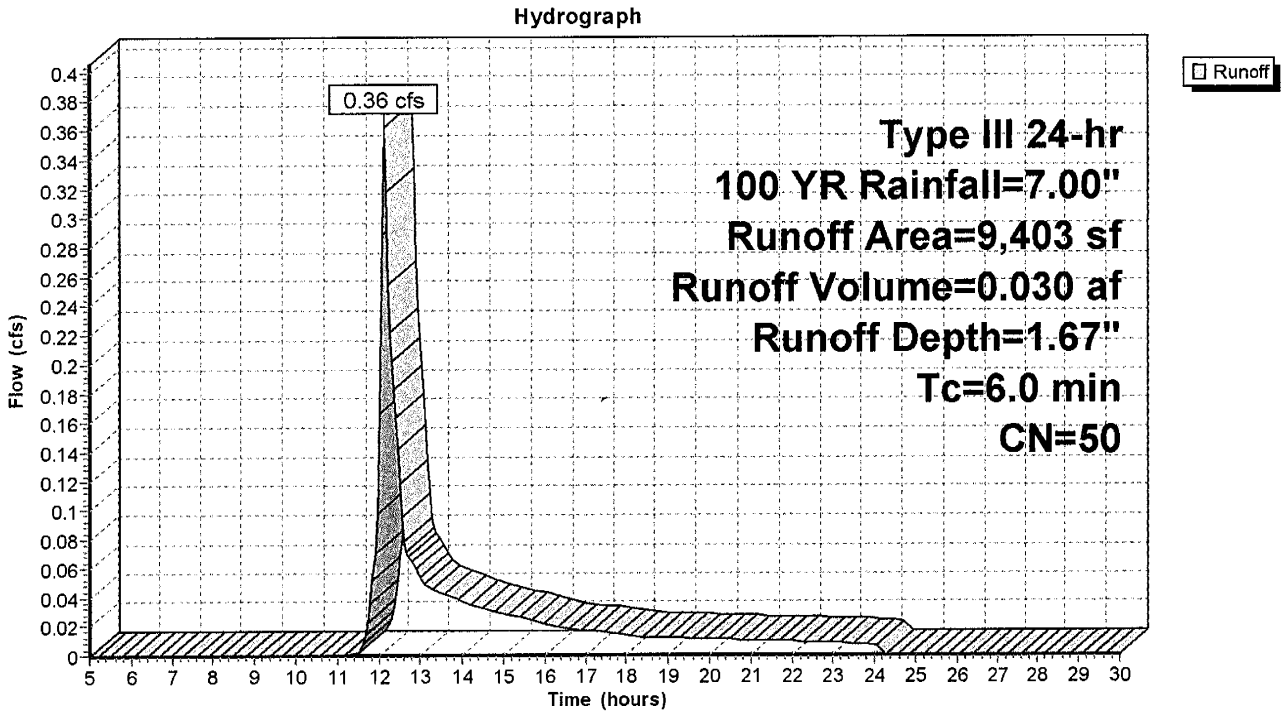
Runoff = 0.36 cfs @ 12.11 hrs, Volume= 0.030 af, Depth= 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

Area (sf)	CN	Description
1,788	98	Paved parking, HSG A
7,615	39	>75% Grass cover, Good, HSG A
9,403	50	Weighted Average
7,615		80.98% Pervious Area
1,788		19.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 MINUTE MIN**

Subcatchment PST 7A: FRONT LAWN AREAS



Summary for Subcatchment PST1 B: TO GALLEY

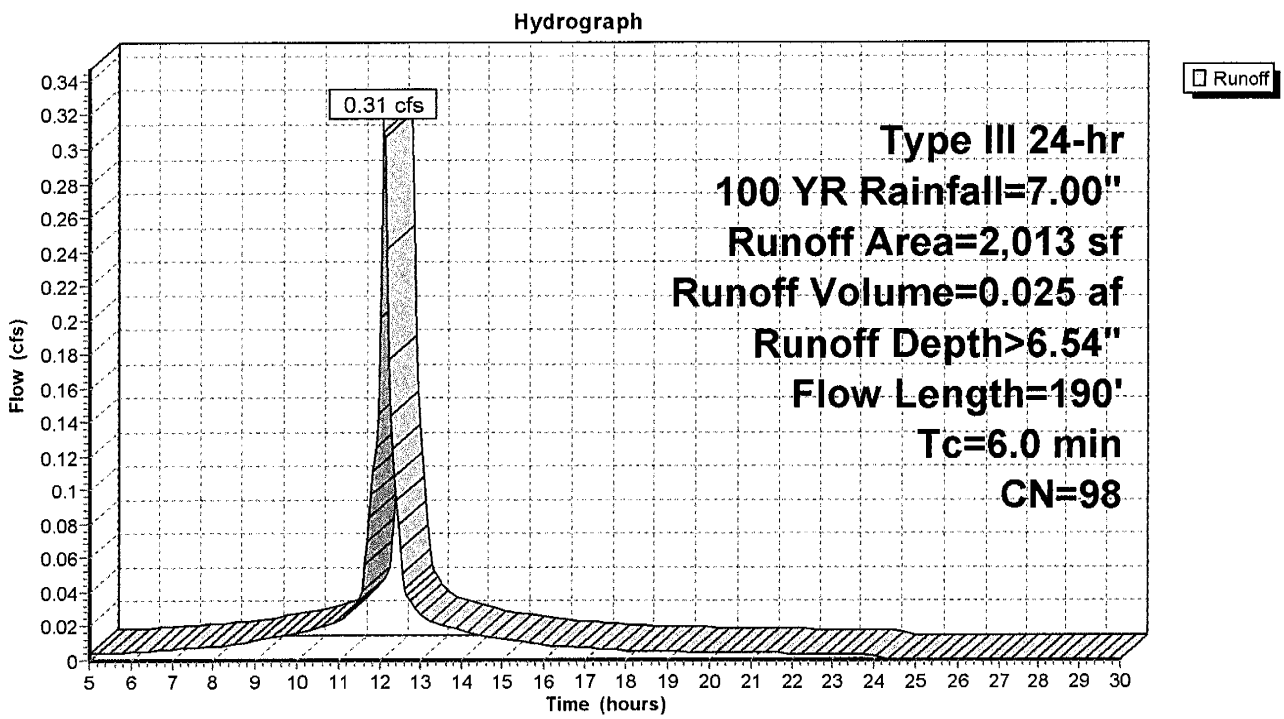
Runoff = 0.31 cfs @ 12.09 hrs, Volume= 0.025 af, Depth> 6.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

Area (sf)	CN	Description
2,013	98	Paved parking, HSG A
2,013		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	50	0.0500	1.73		**Sheet Flow, SHEET** Smooth surfaces n= 0.011 P2= 3.20"
0.7	140	0.0400	3.22		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
4.8					**Direct Entry, 6 MINUTE MIN.**
6.0	190	Total			

Subcatchment PST1 B: TO GALLEY



Summary for Subcatchment R1: ROOF RIGHT LOT 1

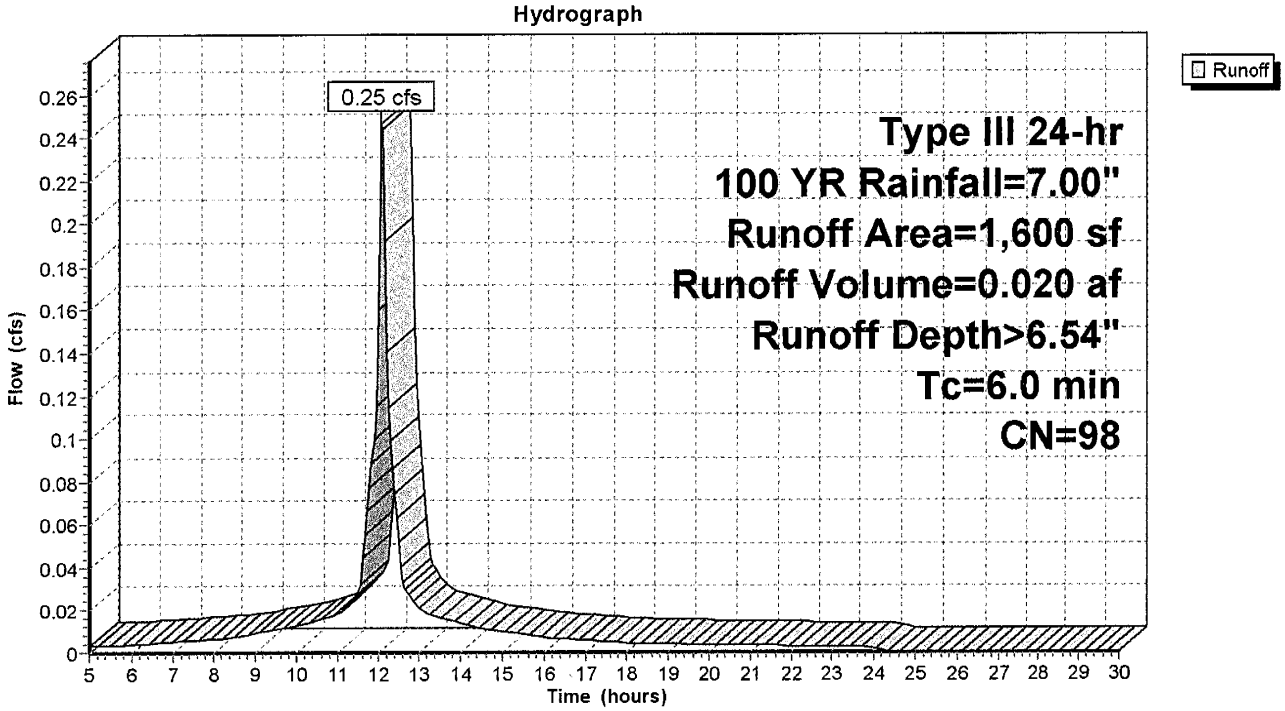
Runoff = 0.25 cfs @ 12.09 hrs, Volume= 0.020 af, Depth> 6.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

Area (sf)	CN	Description
1,600	98	Unconnected roofs, HSG A
1,600		100.00% Impervious Area
1,600		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 MINUTE MIN**

Subcatchment R1: ROOF RIGHT LOT 1



Summary for Subcatchment R2: ROOF LEFT LOT 2

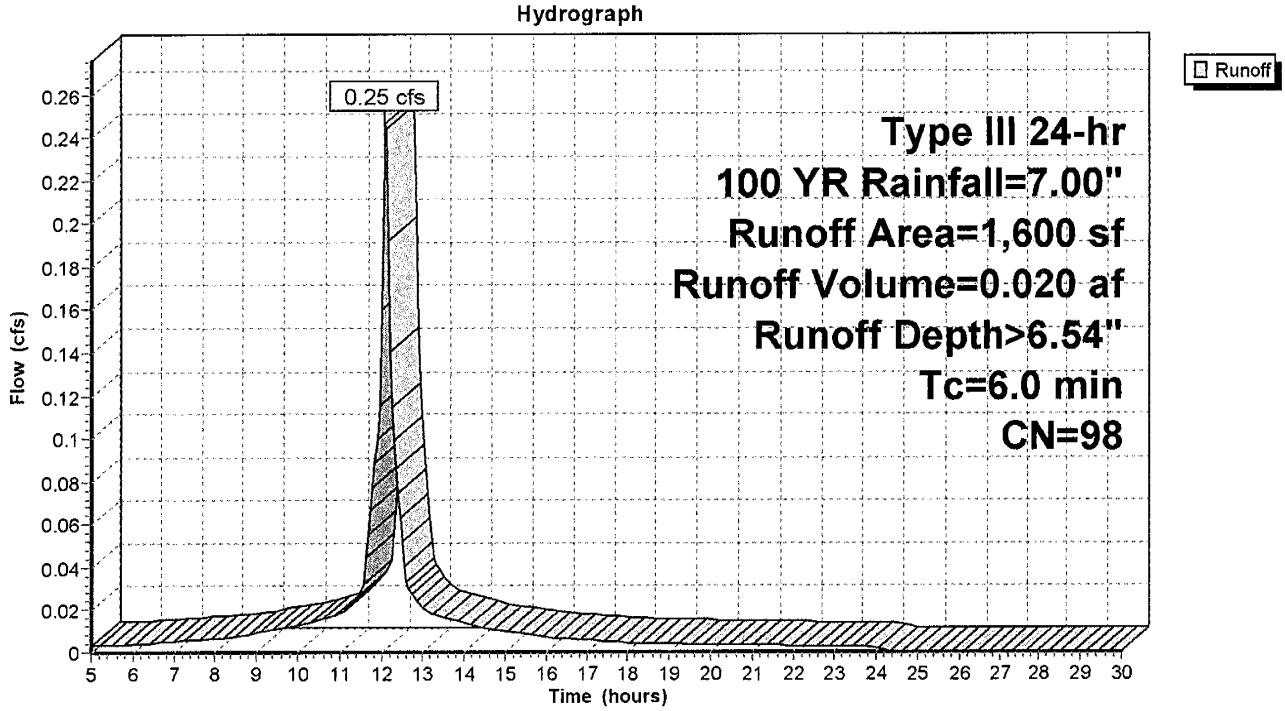
Runoff = 0.25 cfs @ 12.09 hrs, Volume= 0.020 af, Depth> 6.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.00"

Area (sf)	CN	Description
1,600	98	Unconnected roofs, HSG A
1,600		100.00% Impervious Area
1,600		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 MINUTE MIN**

Subcatchment R2: ROOF LEFT LOT 2



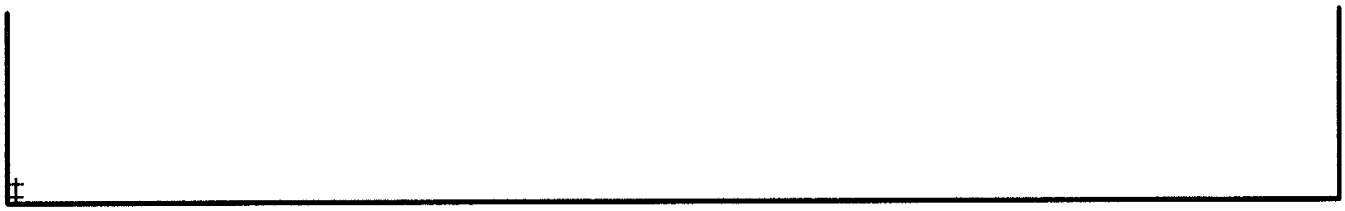
Summary for Reach DP 1: DES PT 1

Inflow Area = 0.719 ac, 7.48% Impervious, Inflow Depth = 1.85" for 100 YR event
Inflow = 1.05 cfs @ 12.23 hrs, Volume= 0.111 af
Outflow = 1.05 cfs @ 12.23 hrs, Volume= 0.111 af, Atten= 0%, Lag= 0.2 min

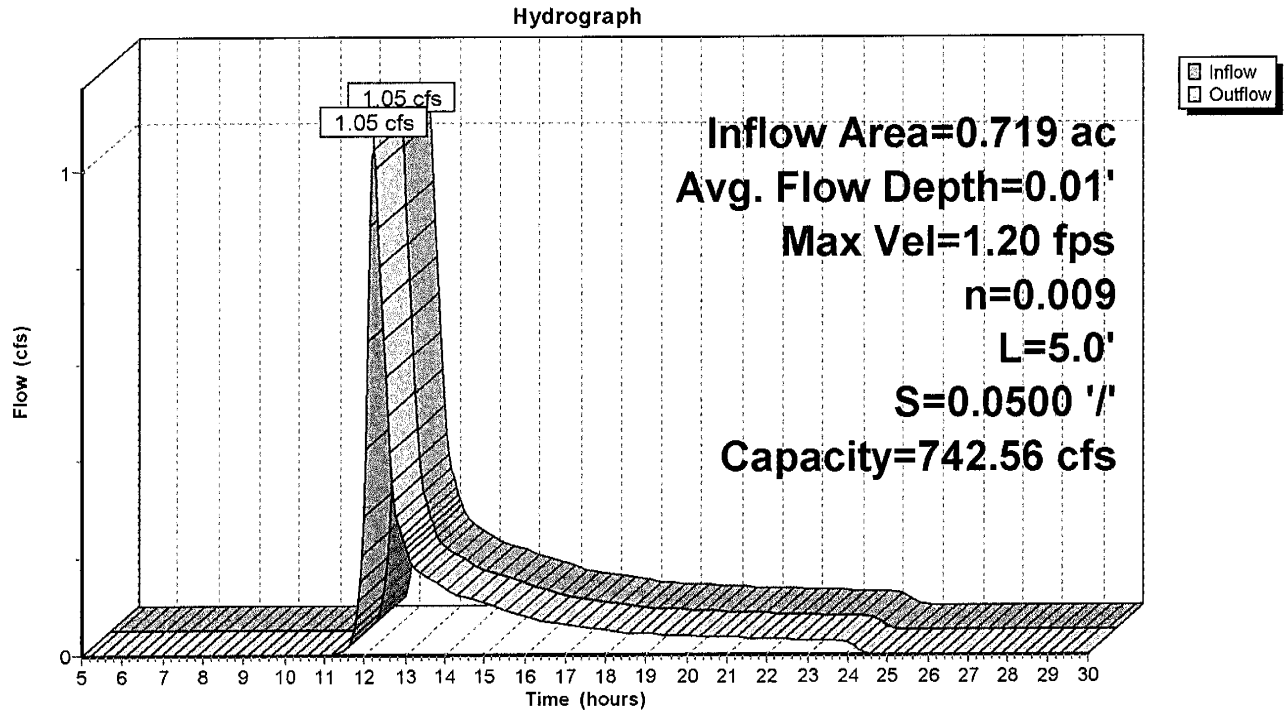
Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.20 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.78 fps, Avg. Travel Time= 0.1 min

Peak Storage= 4 cf @ 12.23 hrs
Average Depth at Peak Storage= 0.01'
Bank-Full Depth= 0.30' Flow Area= 45.0 sf, Capacity= 742.56 cfs

150.00' x 0.30' deep channel, n= 0.009 PVC, smooth interior
Length= 5.0' Slope= 0.0500 '/'
Inlet Invert= 65.25', Outlet Invert= 65.00'



Reach DP 1: DES PT 1



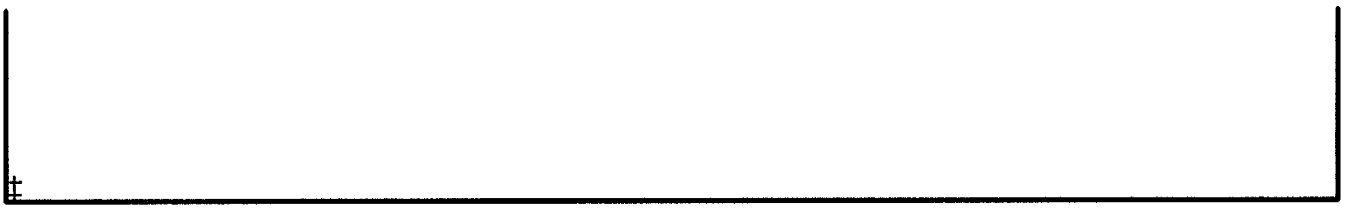
Summary for Reach DP 2: DES PT 2

Inflow Area = 0.686 ac, 0.00% Impervious, Inflow Depth = 1.57" for 100 YR event
Inflow = 1.09 cfs @ 12.27 hrs, Volume= 0.090 af
Outflow = 1.09 cfs @ 12.27 hrs, Volume= 0.090 af, Atten= 0%, Lag= 0.0 min

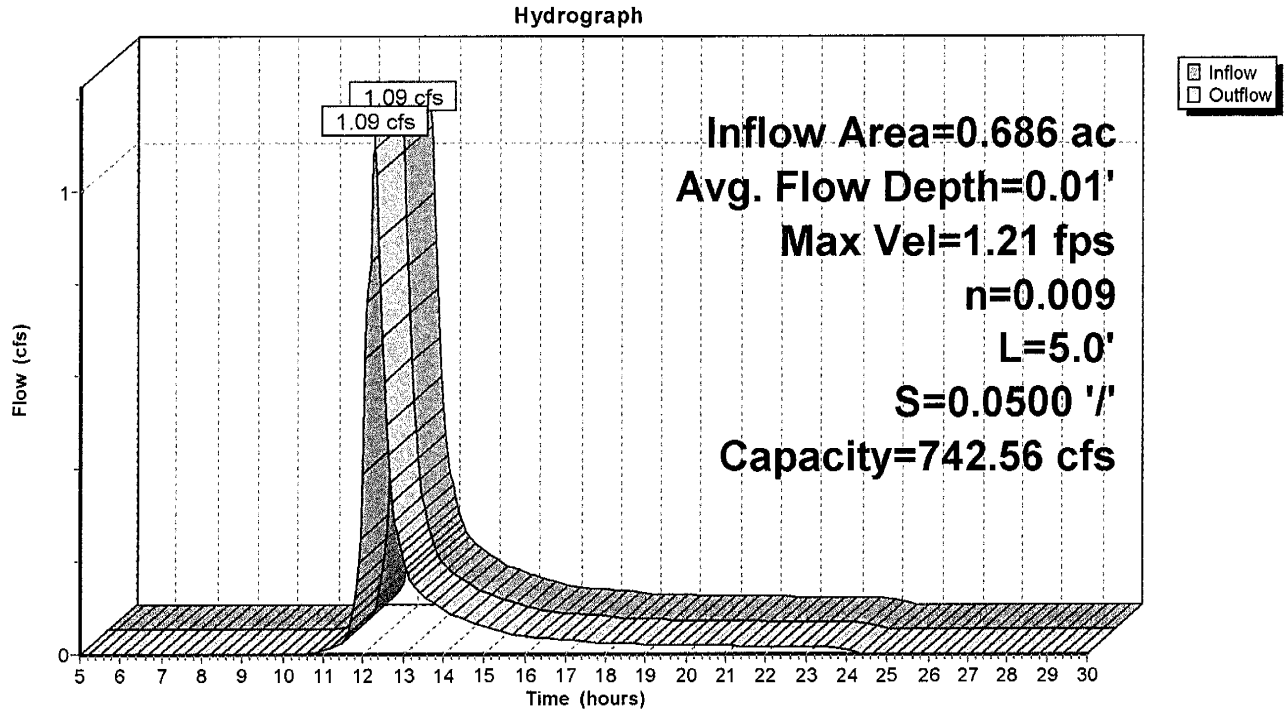
Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.21 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.78 fps, Avg. Travel Time= 0.1 min

Peak Storage= 4 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.01'
Bank-Full Depth= 0.30' Flow Area= 45.0 sf, Capacity= 742.56 cfs

150.00' x 0.30' deep channel, n= 0.009 PVC, smooth interior
Length= 5.0' Slope= 0.0500 '/'
Inlet Invert= 65.25', Outlet Invert= 65.00'



Reach DP 2: DES PT 2



Summary for Reach DP 3: DES PT 3

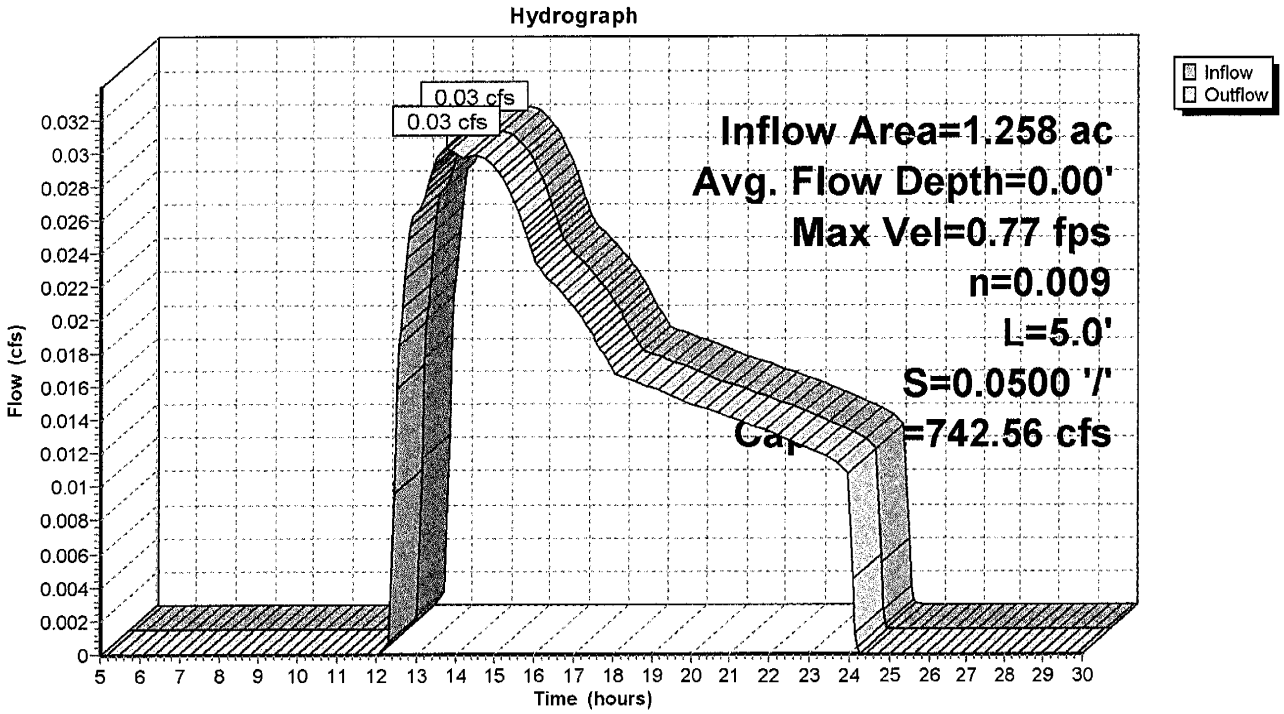
Inflow Area = 1.258 ac, 0.00% Impervious, Inflow Depth = 0.18" for 100 YR event
Inflow = 0.03 cfs @ 13.77 hrs, Volume= 0.019 af
Outflow = 0.03 cfs @ 13.78 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.77 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.77 fps, Avg. Travel Time= 0.1 min

Peak Storage= 0 cf @ 13.77 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.30' Flow Area= 45.0 sf, Capacity= 742.56 cfs

150.00' x 0.30' deep channel, n= 0.009 PVC, smooth interior
Length= 5.0' Slope= 0.0500 '/'
Inlet Invert= 65.25', Outlet Invert= 65.00'

Reach DP 3: DES PT 3



Summary for Reach DP 4: DES PT 4

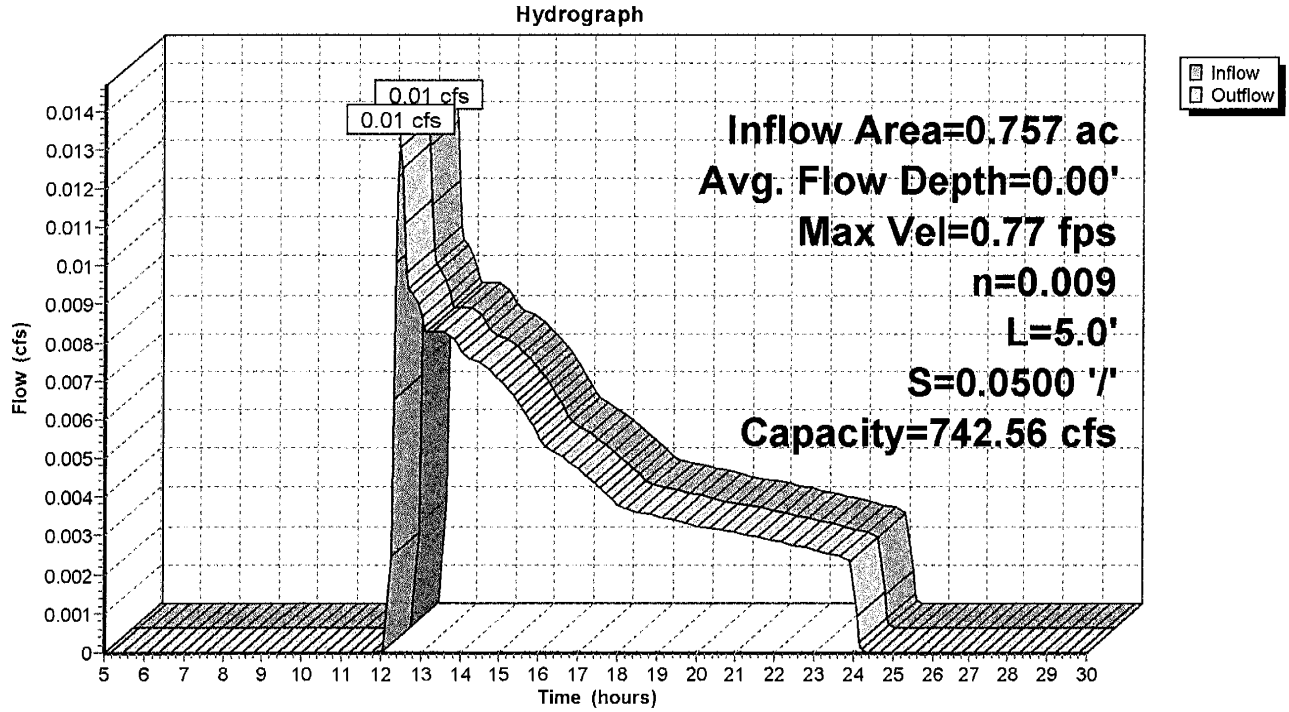
Inflow Area = 0.757 ac, 0.00% Impervious, Inflow Depth = 0.08" for 100 YR event
Inflow = 0.01 cfs @ 12.45 hrs, Volume= 0.005 af
Outflow = 0.01 cfs @ 12.45 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.77 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.77 fps, Avg. Travel Time= 0.1 min

Peak Storage= 0 cf @ 12.45 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.30' Flow Area= 45.0 sf, Capacity= 742.56 cfs

150.00' x 0.30' deep channel, n= 0.009 PVC, smooth interior
Length= 5.0' Slope= 0.0500 '/'
Inlet Invert= 65.25', Outlet Invert= 65.00'

Reach DP 4: DES PT 4



Summary for Pond 1P: GALLEY RECHARGE SYSTEM 2

Inflow Area =	0.431 ac,	48.53% Impervious,	Inflow Depth >	2.98"	for 100 YR event
Inflow =	1.19 cfs @	12.09 hrs,	Volume=	0.107 af	
Outflow =	0.19 cfs @	12.58 hrs,	Volume=	0.107 af,	Atten= 84%, Lag= 29.2 min
Discarded =	0.19 cfs @	12.58 hrs,	Volume=	0.107 af	
Primary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 72.92' @ 12.58 hrs Surf.Area= 720 sf Storage= 1,224 cf

Plug-Flow detention time= 50.9 min calculated for 0.107 af (100% of inflow)
Center-of-Mass det. time= 50.7 min (836.6 - 785.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	69.75'	963 cf	**15.00'W x 48.00'L x 5.25'H Field A** 3,780 cf Overall - 1,371 cf Embedded = 2,409 cf x 40.0% Voids
#2A	70.75'	1,020 cf	**Concrete Galley 4x4x4.25** x 22 Inside #1 Inside= 42.2"W x 45.0"H => 13.25 sf x 3.50'L = 46.4 cf Outside= 54.0"W x 51.0"H => 15.58 sf x 4.00'L = 62.3 cf 2 Rows of 11 Chambers
		1,984 cf	Total Available Storage

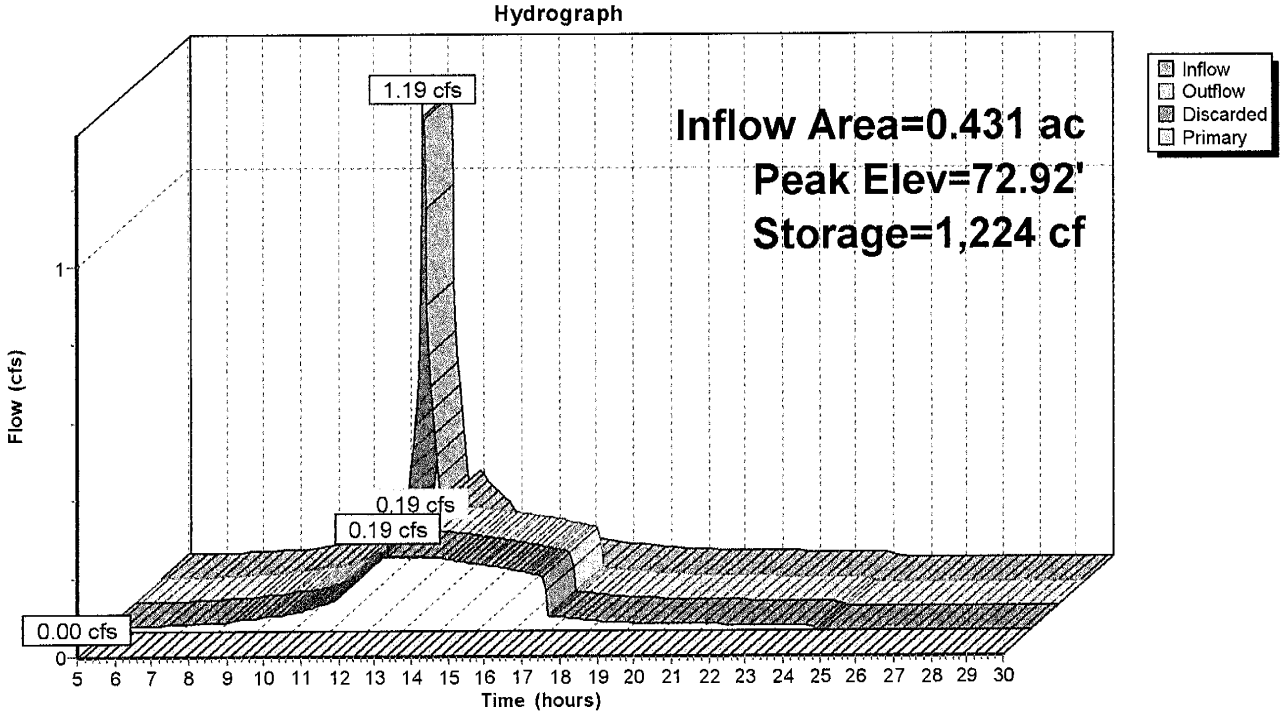
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	69.75'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 62.00'
#2	Primary	73.50'	**4.0" Round Culvert** L= 15.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 73.50' / 72.00' S= 0.1000 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.09 sf

Discarded OutFlow Max=0.19 cfs @ 12.58 hrs HW=72.91' (Free Discharge)
└**1=Exfiltration** (Controls 0.19 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=69.75' (Free Discharge)
└**2=Culvert** (Controls 0.00 cfs)

Pond 1P: GALLEY RECHARGE SYSTEM 2



Summary for Pond 2P: CB 2

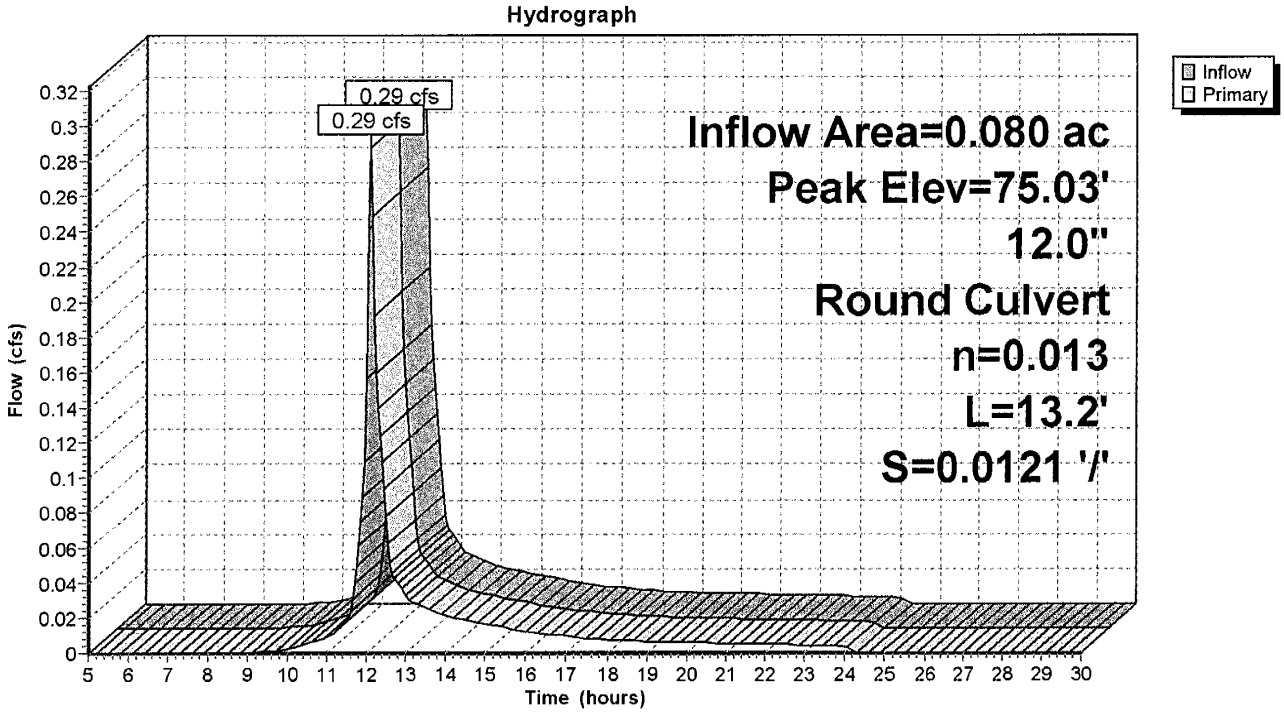
Inflow Area =	0.080 ac, 40.90% Impervious, Inflow Depth = 3.20" for 100 YR event				
Inflow =	0.29 cfs @ 12.10 hrs, Volume=	0.021 af			
Outflow =	0.29 cfs @ 12.10 hrs, Volume=	0.021 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.29 cfs @ 12.10 hrs, Volume=	0.021 af			

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 75.03' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	74.76'	**12.0" Round Culvert** L= 13.2' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 74.76' / 74.60' S= 0.0121 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.29 cfs @ 12.10 hrs HW=75.03' (Free Discharge)
└─**1=Culvert** (Barrel Controls 0.29 cfs @ 2.57 fps)

Pond 2P: CB 2



Summary for Pond 3P: CB 1

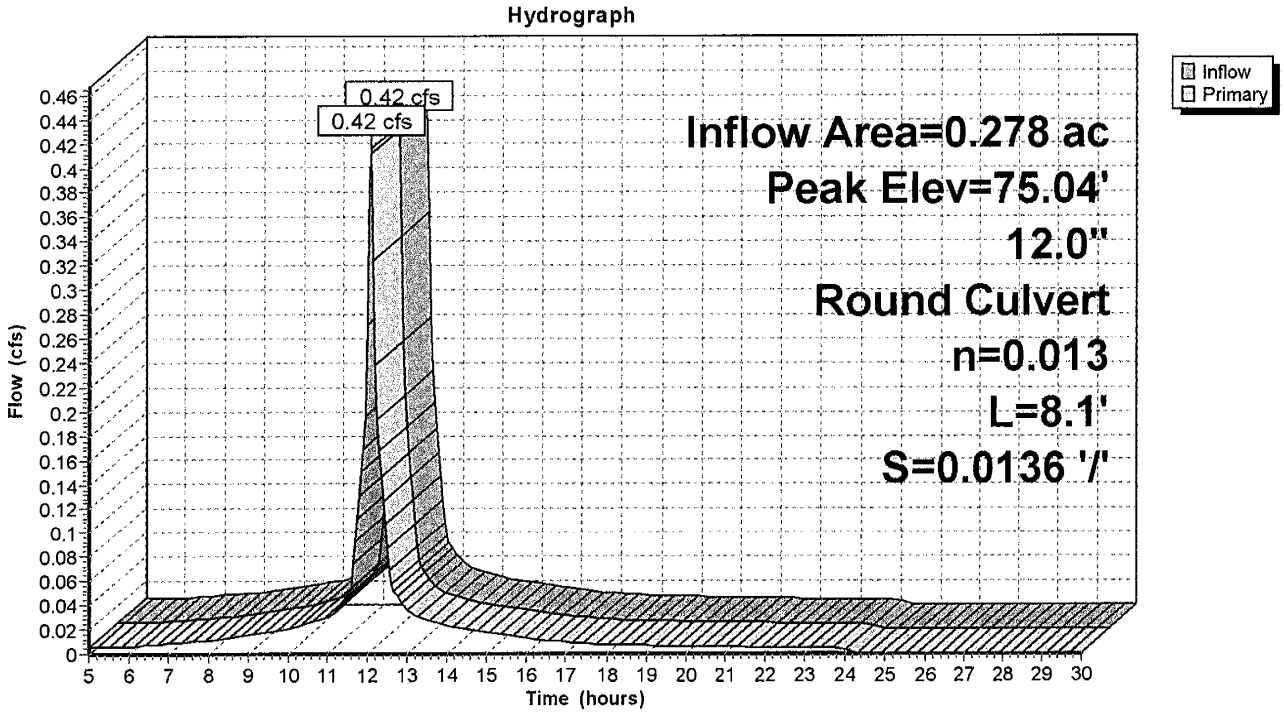
Inflow Area =	0.278 ac, 37.12% Impervious, Inflow Depth > 1.46" for 100 YR event				
Inflow =	0.42 cfs @ 12.09 hrs, Volume=	0.034 af			
Outflow =	0.42 cfs @ 12.09 hrs, Volume=	0.034 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.42 cfs @ 12.09 hrs, Volume=	0.034 af			

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 75.04' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	74.71'	**12.0" Round Culvert** L= 8.1' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 74.71' / 74.60' S= 0.0136 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.41 cfs @ 12.09 hrs HW=75.03' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.41 cfs @ 2.74 fps)

Pond 3P: CB 1



Summary for Pond 4P: DMH 1

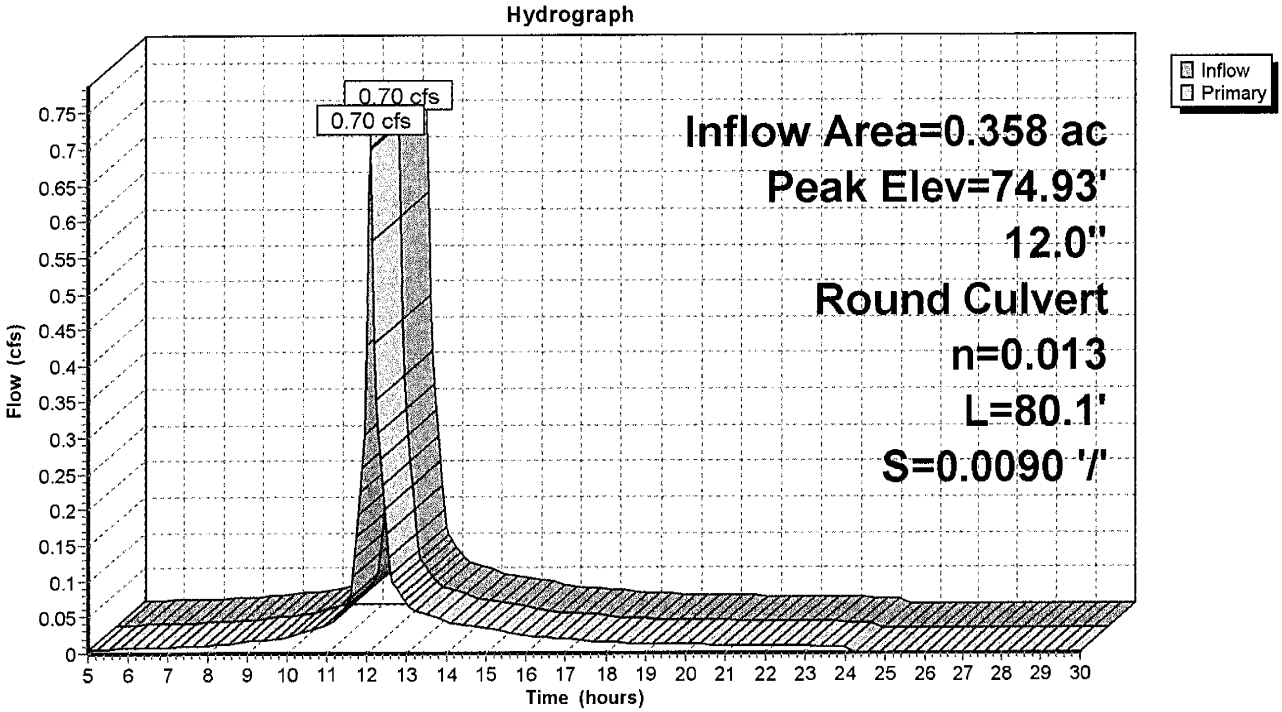
Inflow Area =	0.358 ac; 37.97% Impervious, Inflow Depth > 1.85" for 100 YR event				
Inflow =	0.70 cfs @ 12.09 hrs, Volume=	0.055 af			
Outflow =	0.70 cfs @ 12.09 hrs, Volume=	0.055 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.70 cfs @ 12.09 hrs, Volume=	0.055 af			

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 74.93' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	74.50'	**12.0" Round Culvert** L= 80.1' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 74.50' / 73.78' S= 0.0090 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.69 cfs @ 12.09 hrs HW=74.92' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.69 cfs @ 3.25 fps)

Pond 4P: DMH 1



Summary for Pond 5P: STORMCEPTOR 3

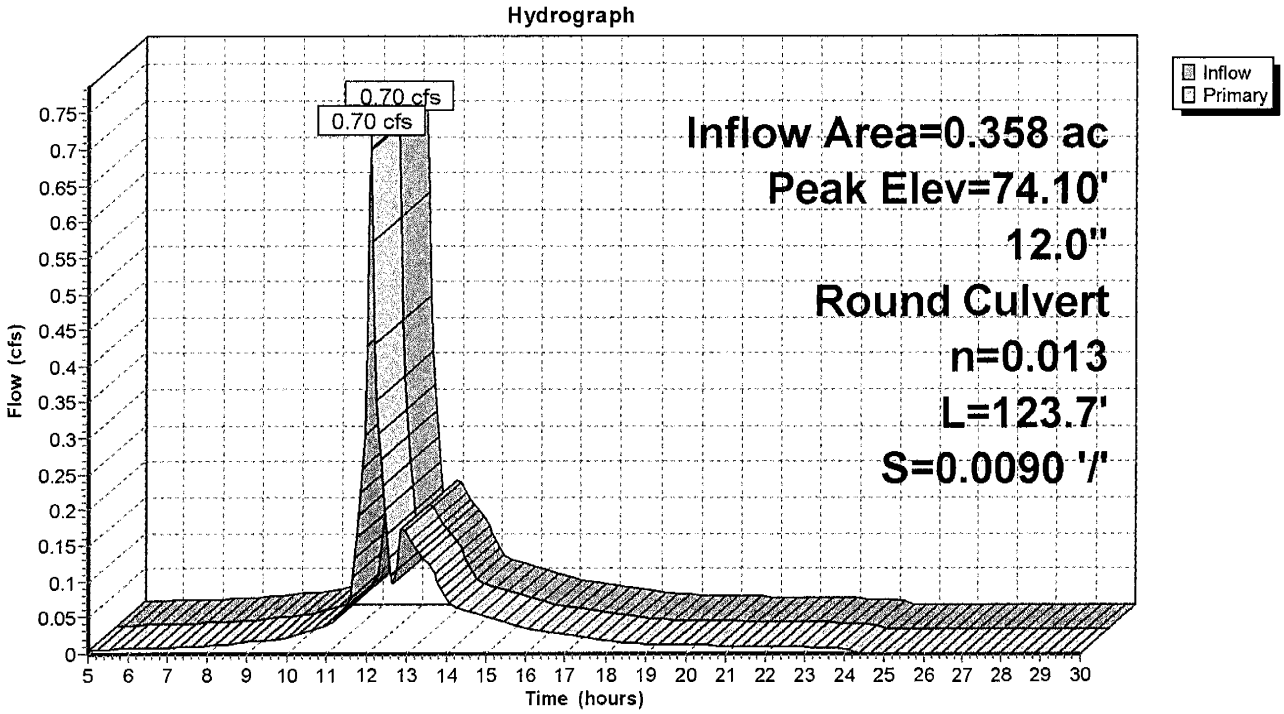
Inflow Area =	0.358 ac, 37.97% Impervious, Inflow Depth > 2.24" for 100 YR event				
Inflow =	0.70 cfs @ 12.09 hrs, Volume=	0.067 af			
Outflow =	0.70 cfs @ 12.09 hrs, Volume=	0.067 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.70 cfs @ 12.09 hrs, Volume=	0.067 af			

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 74.10' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	73.68'	**12.0" Round Culvert** L= 123.7' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 73.68' / 72.57' S= 0.0090 '/' Cc= 0.900 n= 0.013 Concrete pipe, straight & clean, Flow Area= 0.79 sf

Primary OutFlow Max=0.69 cfs @ 12.09 hrs HW=74.10' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.69 cfs @ 3.28 fps)

Pond 5P: STORMCEPTOR 3



Summary for Pond 6P: TRENCH DRAIN

Inflow Area =	0.100 ac,	0.00% Impervious,	Inflow Depth =	0.77"	for 100 YR event
Inflow =	0.04 cfs @	12.16 hrs,	Volume=	0.006 af	
Outflow =	0.04 cfs @	12.35 hrs,	Volume=	0.006 af,	Atten= 15%, Lag= 11.3 min
Discarded =	0.04 cfs @	12.35 hrs,	Volume=	0.006 af	
Primary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 72.06' @ 12.35 hrs Surf.Area= 188 sf Storage= 4 cf

Plug-Flow detention time= 0.9 min calculated for 0.006 af (100% of inflow)
Center-of-Mass det. time= 0.9 min (931.6 - 930.8)

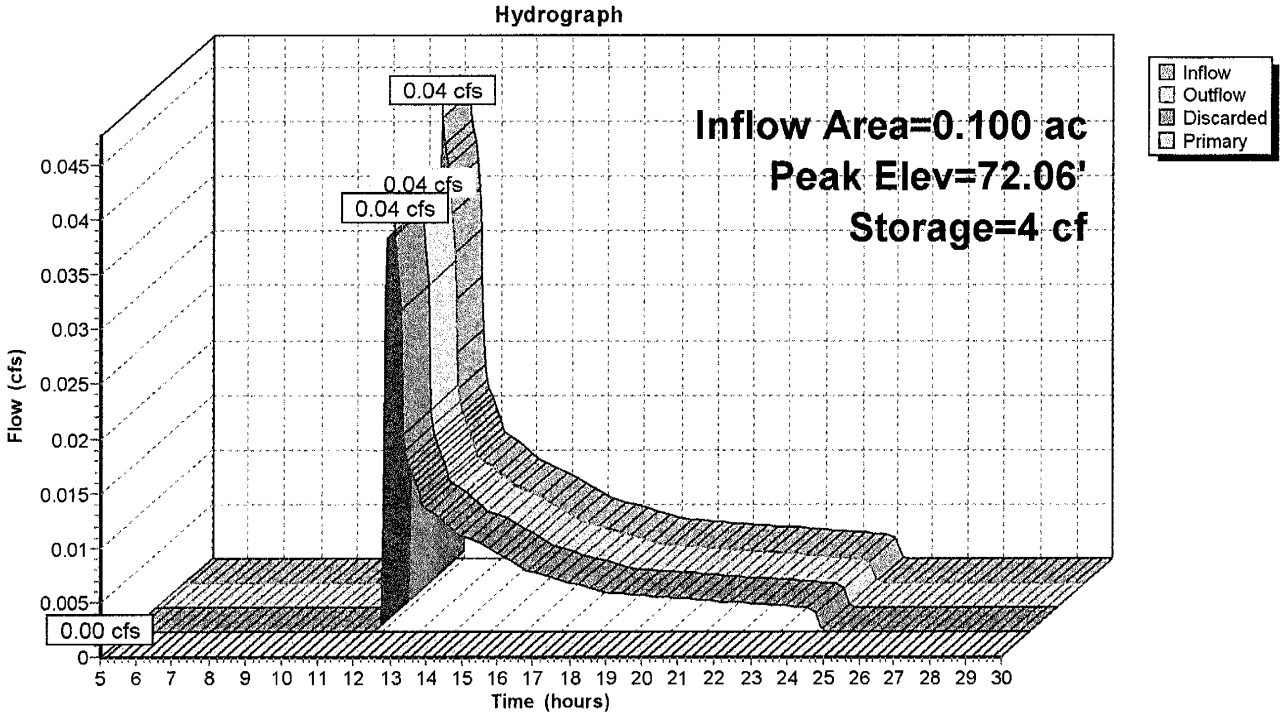
Volume	Invert	Avail.Storage	Storage Description
#1	72.00'	150 cf	**2.00'W x 94.00'L x 2.00'H Prismatoid** 376 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	72.00'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 65.00'
#2	Primary	73.80'	**10.0' 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

Discarded OutFlow Max=0.04 cfs @ 12.35 hrs HW=72.06' (Free Discharge)
└**1=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=72.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 6P: TRENCH DRAIN



Summary for Pond 7P: SAND FILTER

Inflow Area =	0.216 ac,	19.02% Impervious,	Inflow Depth =	1.67"	for 100 YR event
Inflow =	0.36 cfs @	12.11 hrs,	Volume=	0.030 af	
Outflow =	0.13 cfs @	12.48 hrs,	Volume=	0.030 af,	Atten= 64%, Lag= 22.2 min
Primary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	
Secondary =	0.13 cfs @	12.48 hrs,	Volume=	0.030 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 80.37' @ 12.48 hrs Surf.Area= 669 sf Storage= 251 cf

Plug-Flow detention time= 17.3 min calculated for 0.030 af (100% of inflow)
Center-of-Mass det. time= 17.3 min (898.1 - 880.8)

Volume	Invert	Avail.Storage	Storage Description
#1	79.60'	821 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

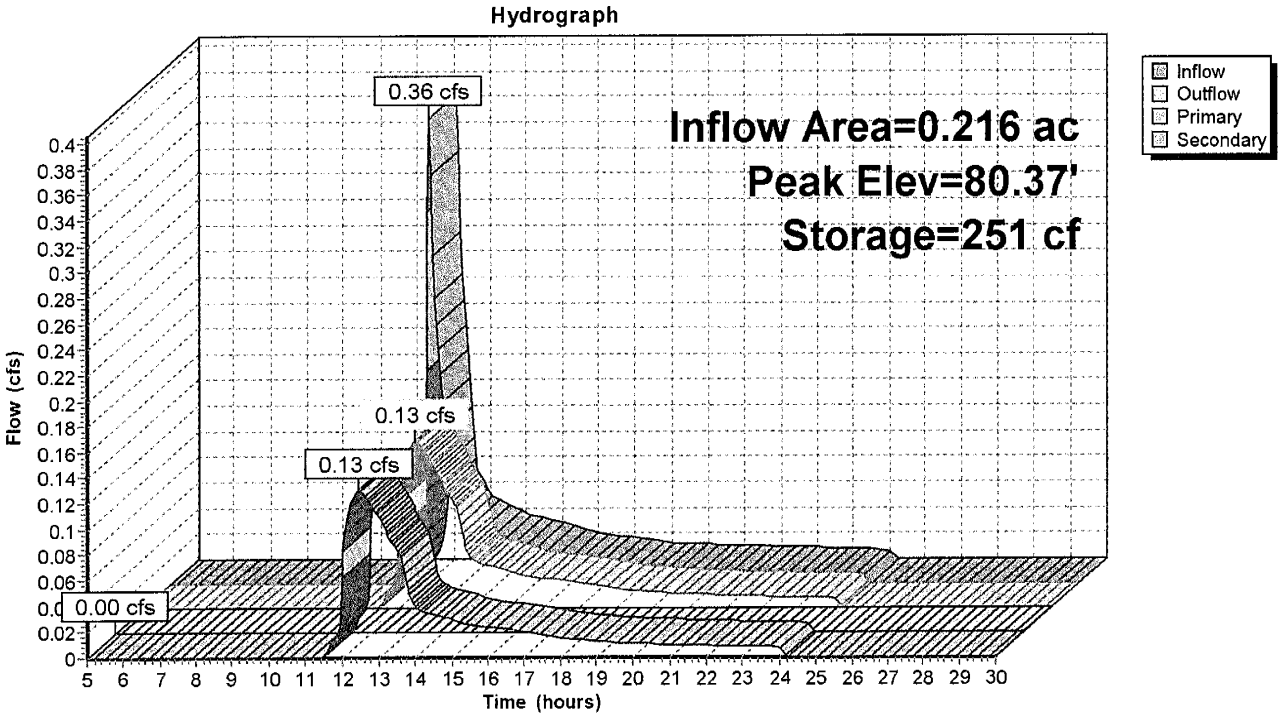
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.60	60	0	0
79.90	127	28	28
80.00	405	27	55
81.00	1,128	767	821

Device	Routing	Invert	Outlet Devices
#1	Primary	80.90'	**10.0' long x 2.0' 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Secondary	79.60'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 57.00'

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=79.60' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.13 cfs @ 12.48 hrs HW=80.36' (Free Discharge)
└**2=Exfiltration** (Controls 0.13 cfs)

Pond 7P: SAND FILTER



Summary for Pond 8P: GALLEY RECHARGE SYSTEM 1

Inflow Area =	0.093 ac,100.00% Impervious, Inflow Depth > 6.54" for 100 YR event			
Inflow =	0.62 cfs @ 12.09 hrs, Volume=	0.051 af		
Outflow =	0.14 cfs @ 12.48 hrs, Volume=	0.051 af,	Atten= 77%,	Lag= 23.5 min
Discarded =	0.14 cfs @ 12.48 hrs, Volume=	0.051 af		

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 67.44' @ 12.48 hrs Surf.Area= 448 sf Storage= 538 cf

Plug-Flow detention time= 22.5 min calculated for 0.051 af (100% of inflow)
Center-of-Mass det. time= 22.3 min (783.1 - 760.8)

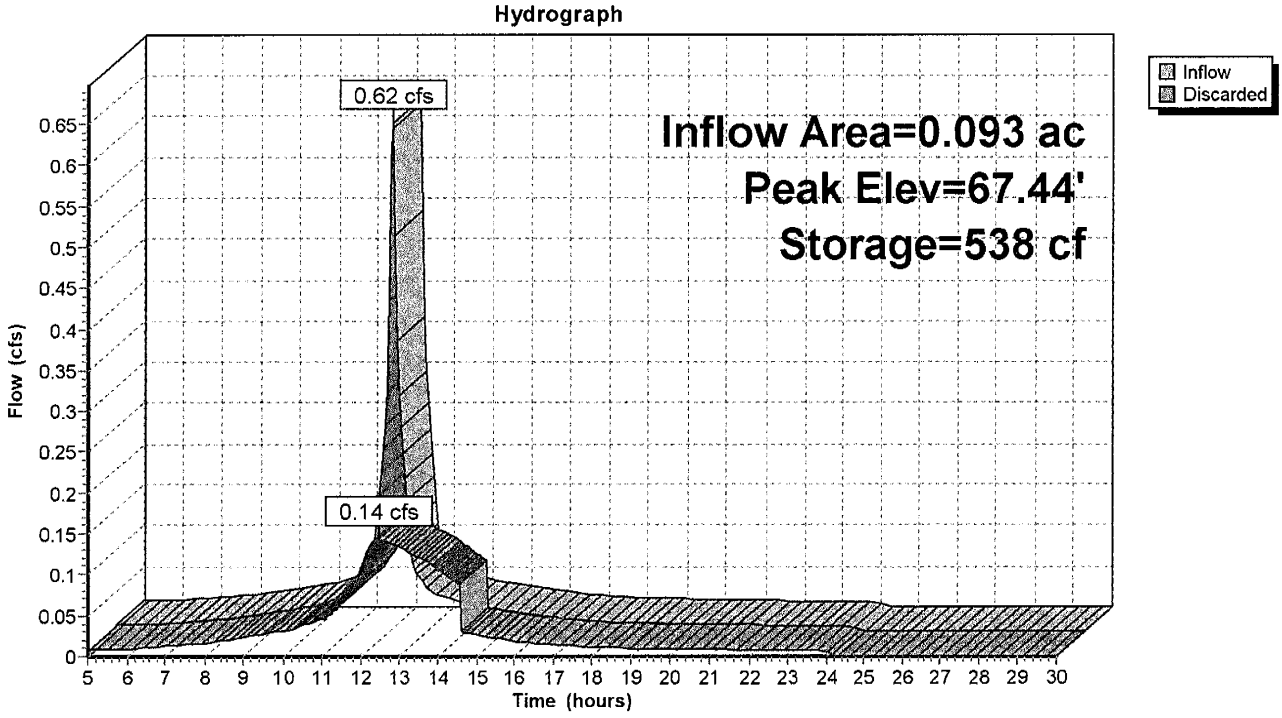
Volume	Invert	Avail.Storage	Storage Description
#1A	65.25'	406 cf	**16.00'W x 28.00'L x 4.00'H Field A** 1,792 cf Overall - 778 cf Embedded = 1,014 cf x 40.0% Voids
#2A	66.25'	561 cf	**Concrete Galley 4x4x3** x 18 Inside #1 Inside= 42.0"W x 30.0"H => 8.91 sf x 3.50'L = 31.2 cf Outside= 48.0"W x 36.0"H => 10.81 sf x 4.00'L = 43.2 cf 3 Rows of 6 Chambers
		967 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	65.25'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 62.00'

Discarded OutFlow Max=0.14 cfs @ 12.48 hrs HW=67.44' (Free Discharge)
└**1=Exfiltration** (Controls 0.14 cfs)

Pond 8P: GALLEY RECHARGE SYSTEM 1



Summary for Pond 9P: STORMCEPTOR 1

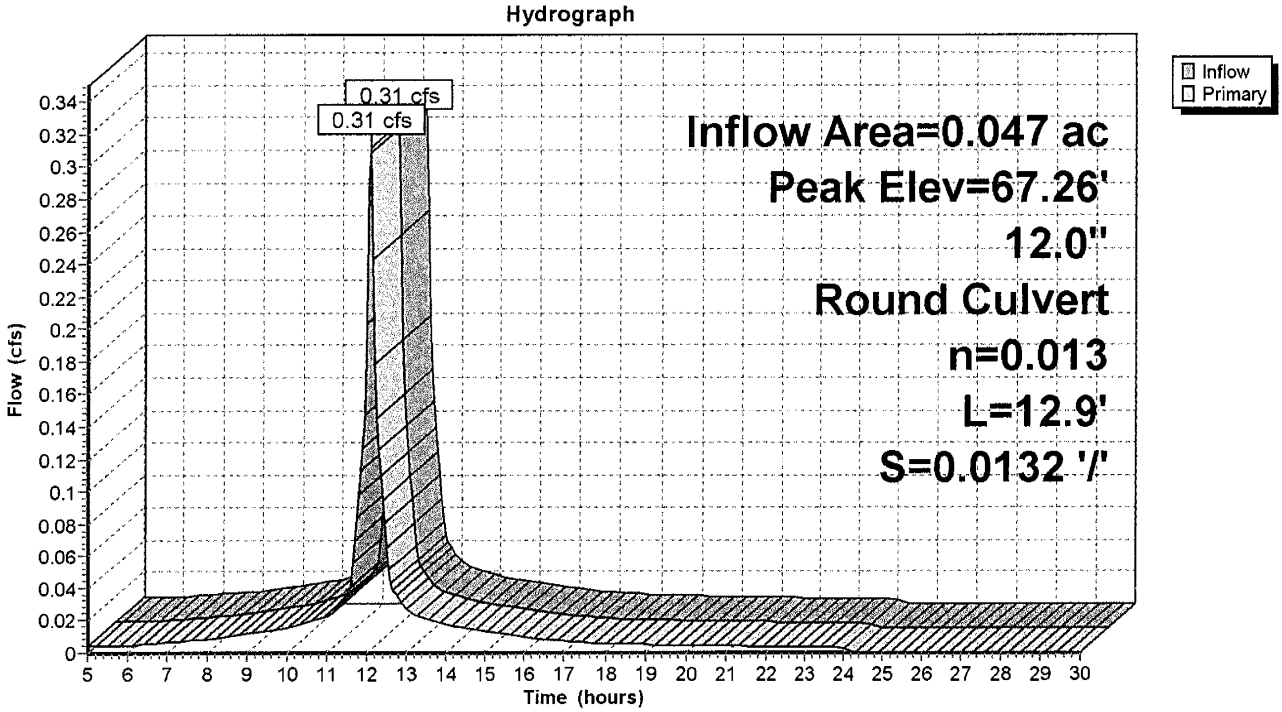
Inflow Area =	0.047 ac,100.00% Impervious, Inflow Depth > 6.54" for 100 YR event				
Inflow =	0.31 cfs @	12.09 hrs, Volume=	0.025 af		
Outflow =	0.31 cfs @	12.09 hrs, Volume=	0.025 af, Atten= 0%, Lag= 0.0 min		
Primary =	0.31 cfs @	12.09 hrs, Volume=	0.025 af		

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 67.26' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	66.97'	**12.0" Round Culvert** L= 12.9' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 66.97' / 66.80' S= 0.0132 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.30 cfs @ 12.09 hrs HW=67.25' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.30 cfs @ 2.49 fps)

Pond 9P: STORMCEPTOR 1



Summary for Pond 11P: STORMCEPTOR 2

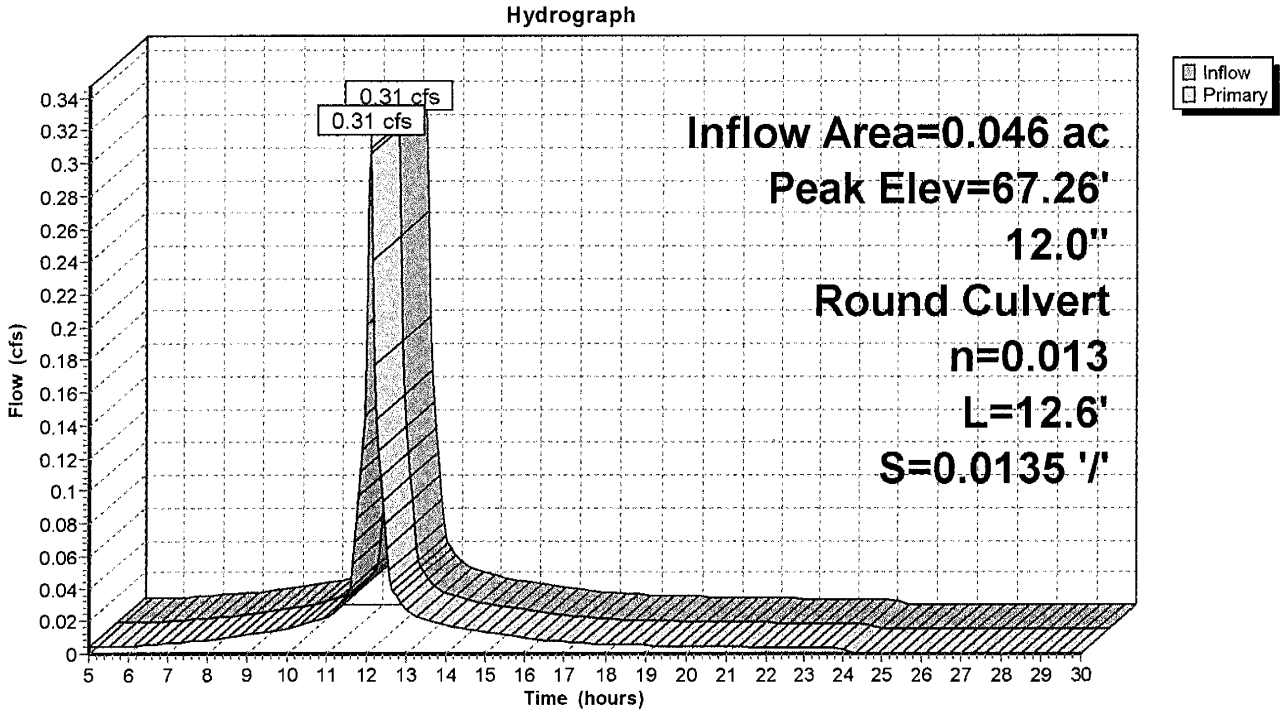
Inflow Area =	0.046 ac,100.00% Impervious, Inflow Depth > 6.54" for 100 YR event				
Inflow =	0.31 cfs @ 12.09 hrs, Volume=	0.025 af			
Outflow =	0.31 cfs @ 12.09 hrs, Volume=	0.025 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.31 cfs @ 12.09 hrs, Volume=	0.025 af			

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 67.26' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	66.97'	**12.0" Round Culvert** L= 12.6' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 66.97' / 66.80' S= 0.0135 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.30 cfs @ 12.09 hrs HW=67.25' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.30 cfs @ 2.50 fps)

Pond 11P: STORMCEPTOR 2



Summary for Pond 12P: Bio Retention System

Inflow Area =	0.369 ac,	0.00% Impervious,	Inflow Depth =	2.60"	for 100 YR event
Inflow =	0.82 cfs @	12.22 hrs,	Volume=	0.080 af	
Outflow =	0.75 cfs @	12.30 hrs,	Volume=	0.080 af,	Atten= 9%, Lag= 4.9 min
Discarded =	0.07 cfs @	12.30 hrs,	Volume=	0.049 af	
Primary =	0.68 cfs @	12.30 hrs,	Volume=	0.031 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 83.90' @ 12.30 hrs Surf.Area= 1,141 sf Storage= 447 cf

Plug-Flow detention time= 28.7 min calculated for 0.080 af (100% of inflow)
Center-of-Mass det. time= 28.6 min (890.5 - 861.9)

Volume	Invert	Avail.Storage	Storage Description
#1	83.50'	563 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

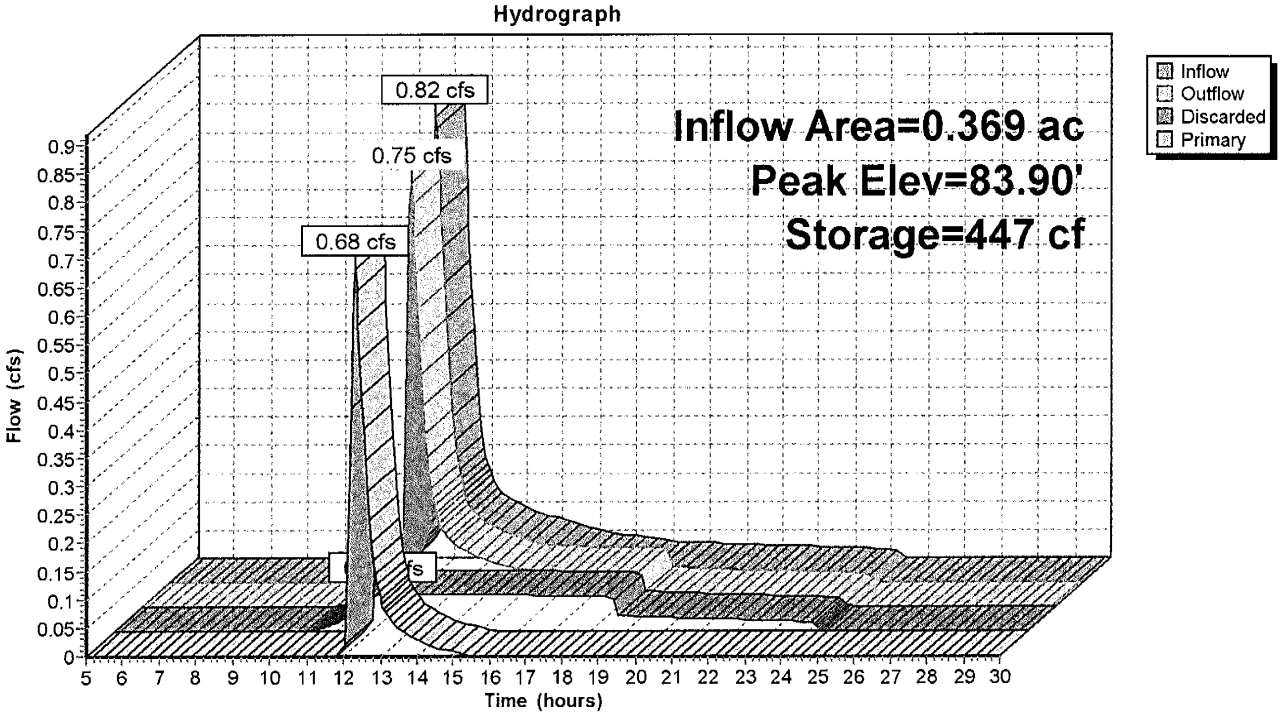
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
83.50	1,100	0	0
84.00	1,151	563	563

Device	Routing	Invert	Outlet Devices
#1	Discarded	83.50'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 67.00'
#2	Primary	83.75'	**5.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=0.07 cfs @ 12.30 hrs HW=83.90' (Free Discharge)
└**1=Exfiltration** (Controls 0.07 cfs)

Primary OutFlow Max=0.68 cfs @ 12.30 hrs HW=83.90' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.68 cfs @ 0.92 fps)

Pond 12P: Bio Retention System



Summary for Pond 14P: TRENCH DRAIN

Inflow Area =	0.110 ac,	0.00% Impervious,	Inflow Depth =	0.77"	for 100 YR event
Inflow =	0.05 cfs @	12.16 hrs, Volume=	0.007 af		
Outflow =	0.03 cfs @	12.48 hrs, Volume=	0.007 af,	Atten= 35%,	Lag= 19.0 min
Discarded =	0.03 cfs @	12.48 hrs, Volume=	0.007 af		
Primary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af		

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 77.26' @ 12.48 hrs Surf.Area= 156 sf Storage= 16 cf

Plug-Flow detention time= 2.0 min calculated for 0.007 af (100% of inflow)
Center-of-Mass det. time= 2.0 min (932.8 - 930.8)

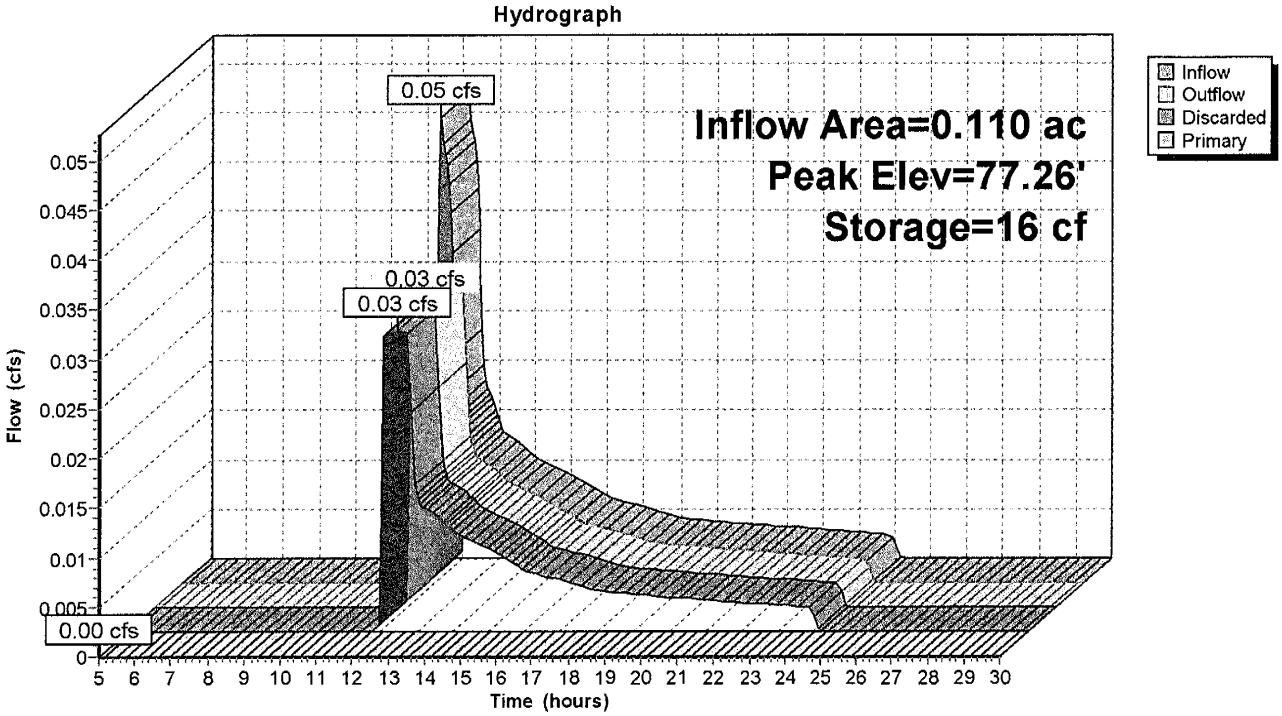
Volume	Invert	Avail.Storage	Storage Description
#1	77.00'	125 cf	**2.00'W x 78.00'L x 2.00'H Prismatoid** 312 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	77.00'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 65.00'
#2	Primary	78.80'	**10.0' 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

Discarded OutFlow Max=0.03 cfs @ 12.48 hrs HW=77.26' (Free Discharge)
└**1=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=77.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 14P: TRENCH DRAIN



Summary for Pond DW1: 8' DIA DRYWELL 1

Inflow Area =	0.577 ac,	0.00% Impervious,	Inflow Depth =	0.70" for 100 YR event
Inflow =	0.18 cfs @	12.44 hrs, Volume=	0.033 af	
Outflow =	0.06 cfs @	13.27 hrs, Volume=	0.033 af,	Atten= 64%, Lag= 49.9 min
Discarded =	0.06 cfs @	13.27 hrs, Volume=	0.033 af	
Primary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 64.09' @ 13.27 hrs Surf.Area= 251 sf Storage= 223 cf

Plug-Flow detention time= 29.7 min calculated for 0.033 af (100% of inflow)
Center-of-Mass det. time= 29.7 min (977.0 - 947.4)

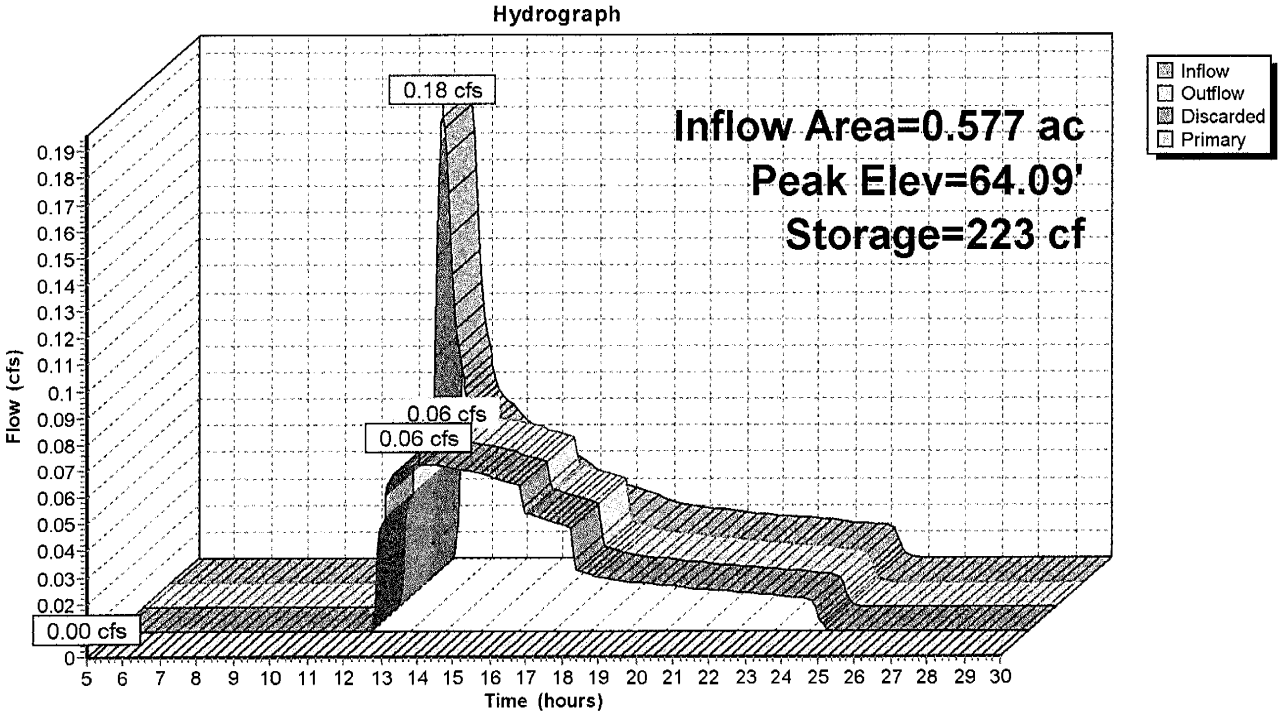
Volume	Invert	Avail.Storage	Storage Description
#1	62.00'	322 cf	**16.00'D x 4.00'H Vertical Cone/Cylinder** 804 cf Overall x 40.0% Voids
#2	63.00'	151 cf	**8.00'D x 3.00'H Vertical Cone/Cylinder**
		472 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	62.00'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 56.00'
#2	Primary	65.00'	**4.0" Round Culvert** L= 12.6' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 65.00' / 64.00' S= 0.0794 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.09 sf

Discarded OutFlow Max=0.06 cfs @ 13.27 hrs HW=64.09' (Free Discharge)
└**1=Exfiltration** (Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=62.00' (Free Discharge)
└**2=Culvert** (Controls 0.00 cfs)

Pond DW1: 8' DIA DRYWELL 1



Summary for Pond SRS1: ROOF RECHARGE

Inflow Area =	0.037 ac,100.00% Impervious, Inflow Depth > 6.54" for 100 YR event				
Inflow =	0.25 cfs @	12.09 hrs,	Volume=	0.020 af	
Outflow =	0.02 cfs @	13.48 hrs,	Volume=	0.020 af,	Atten= 93%, Lag= 83.6 min
Discarded =	0.02 cfs @	13.48 hrs,	Volume=	0.020 af	

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 82.92' @ 13.48 hrs Surf.Area= 268 sf Storage= 361 cf

Plug-Flow detention time= 177.3 min calculated for 0.020 af (100% of inflow)
Center-of-Mass det. time= 176.6 min (937.4 - 760.8)

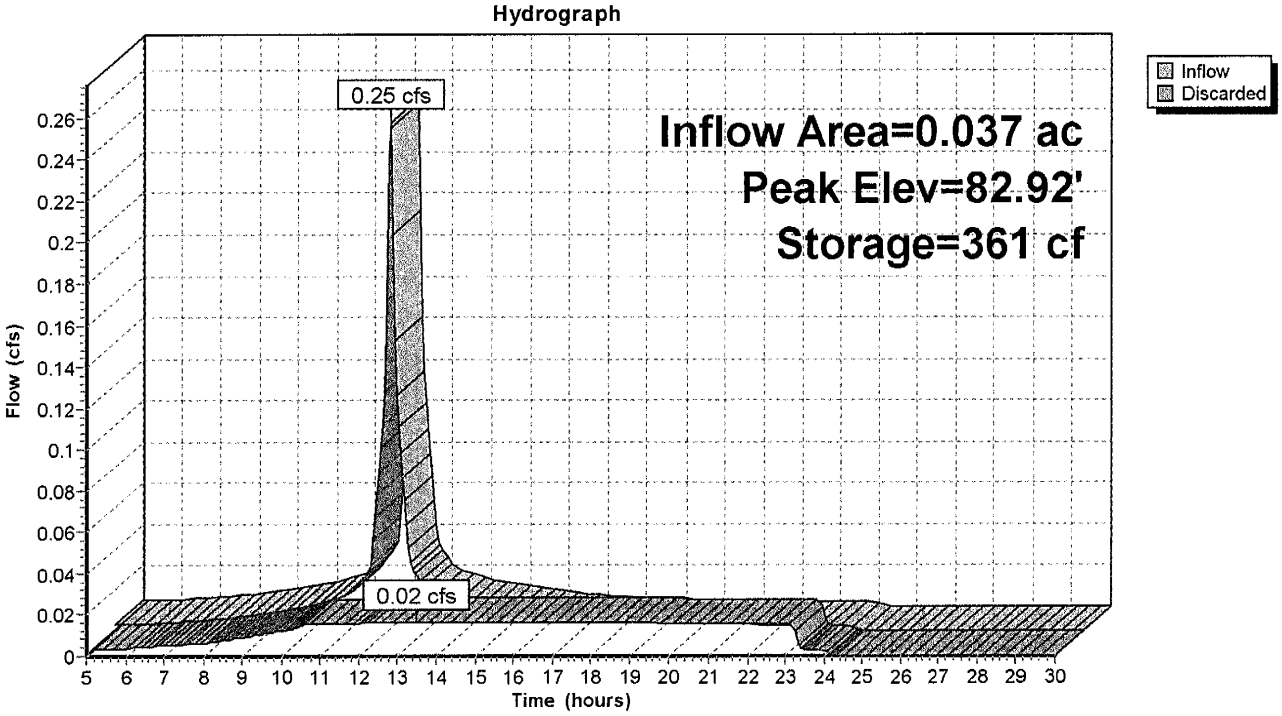
Volume	Invert	Avail.Storage	Storage Description
#1A	80.50'	302 cf	**13.50'W x 19.86'L x 3.50'H Field A** 938 cf Overall - 184 cf Embedded = 754 cf x 40.0% Voids
#2A	81.00'	184 cf	**ADS_StormTech SC-740 +Cap** x 4 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 2 Chambers
		486 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	80.50'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 57.00'

Discarded OutFlow Max=0.02 cfs @ 13.48 hrs HW=82.92' (Free Discharge)
└**1=Exfiltration** (Controls 0.02 cfs)

Pond SRS1: ROOF RECHARGE



Summary for Pond SRS2: ROOF RECHARGE

Inflow Area = 0.037 ac,100.00% Impervious, Inflow Depth > 6.54" for 100 YR event
Inflow = 0.25 cfs @ 12.09 hrs, Volume= 0.020 af
Outflow = 0.06 cfs @ 12.48 hrs, Volume= 0.020 af, Atten= 77%, Lag= 23.8 min
Discarded = 0.06 cfs @ 12.48 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 73.83' @ 12.48 hrs Surf.Area= 268 sf Storage= 192 cf

Plug-Flow detention time= 17.8 min calculated for 0.020 af (100% of inflow)
Center-of-Mass det. time= 17.6 min (778.4 - 760.8)

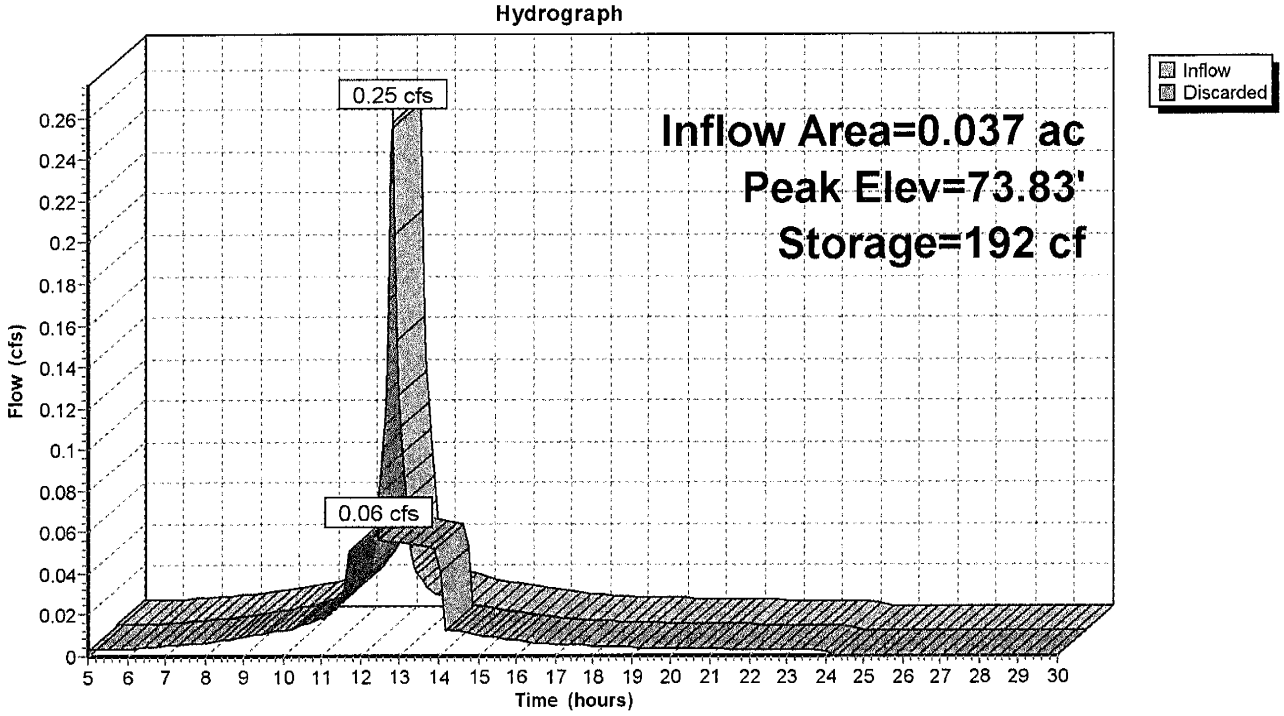
Volume	Invert	Avail.Storage	Storage Description
#1A	72.50'	302 cf	**13.50'W x 19.86'L x 3.50'H Field A** 938 cf Overall - 184 cf Embedded = 754 cf x 40.0% Voids
#2A	73.00'	184 cf	**ADS_StormTech SC-740 +Cap** x 4 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 2 Chambers
		486 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	72.50'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 57.00'

Discarded OutFlow Max=0.06 cfs @ 12.48 hrs HW=73.82' (Free Discharge)
└**1=Exfiltration** (Controls 0.06 cfs)

Pond SRS2: ROOF RECHARGE



Summary for Pond SRS3: FROM SAND FILTER

Inflow	=	0.13 cfs @	12.48 hrs,	Volume=	0.030 af
Outflow	=	0.11 cfs @	12.92 hrs,	Volume=	0.030 af, Atten= 12%, Lag= 26.6 min
Discarded	=	0.01 cfs @	12.92 hrs,	Volume=	0.018 af
Primary	=	0.10 cfs @	12.92 hrs,	Volume=	0.012 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 76.58' @ 12.92 hrs Surf.Area= 201 sf Storage= 313 cf

Plug-Flow detention time= 181.3 min calculated for 0.030 af (100% of inflow)
Center-of-Mass det. time= 181.6 min (1,079.7 - 898.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	74.00'	207 cf	**6.25'W x 32.10'L x 3.50'H Field A** 702 cf Overall - 184 cf Embedded = 518 cf x 40.0% Voids
#2A	74.50'	184 cf	**ADS_StormTech SC-740 +Cap** x 4 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		391 cf	Total Available Storage

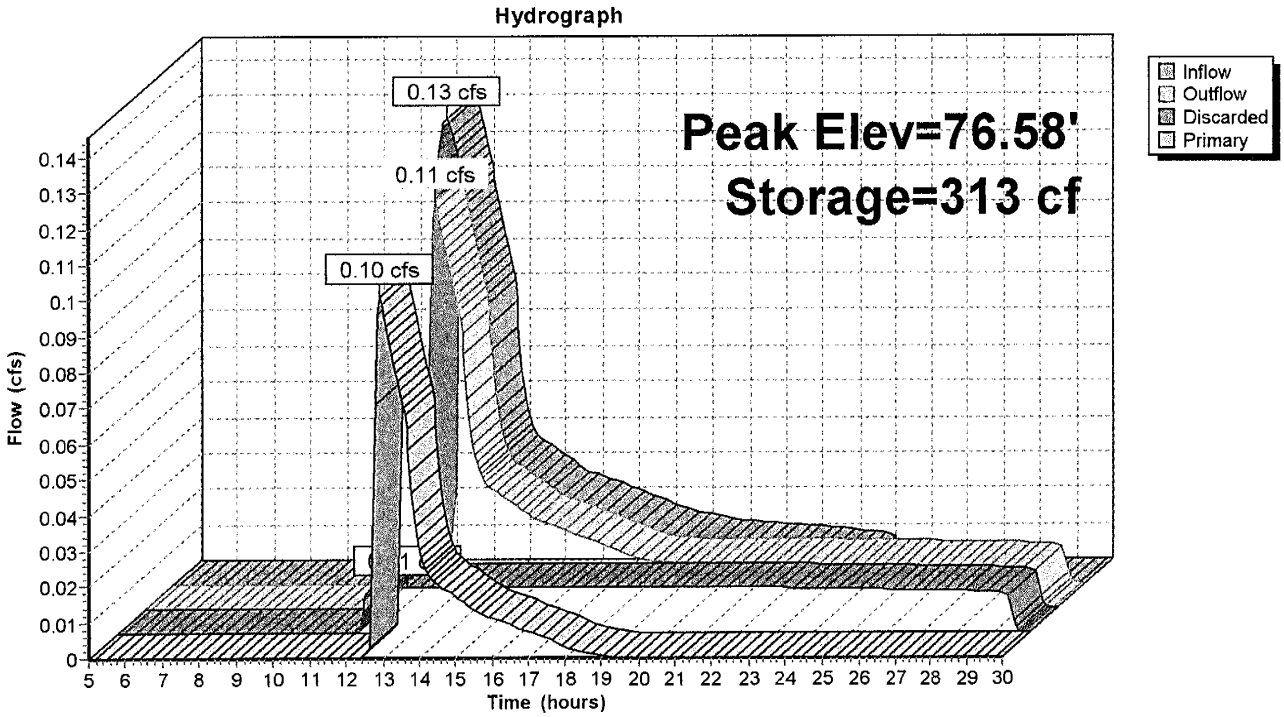
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	74.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 57.00'
#2	Primary	76.36'	**4.0" Round Culvert** L= 20.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 76.36' / 76.00' S= 0.0180 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.09 sf

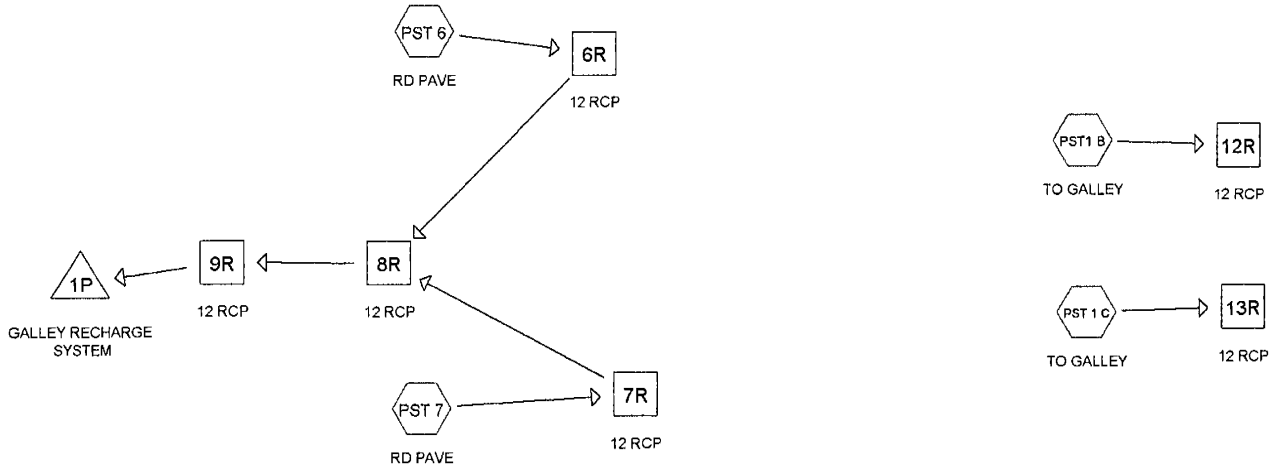
Discarded OutFlow Max=0.01 cfs @ 12.92 hrs HW=76.58' (Free Discharge)
└**1=Exfiltration** (Controls 0.01 cfs)

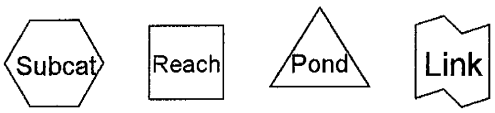
Primary OutFlow Max=0.10 cfs @ 12.92 hrs HW=76.58' (Free Discharge)
└**2=Culvert** (Inlet Controls 0.10 cfs @ 1.61 fps)

Pond SRS3: FROM SAND FILTER



PIPE SIZING ANALYSIS





Routing Diagram for 4072 PST RATIONAL
Prepared by Microsoft, Printed 9/21/2020
HydroCAD® 10.00-20 s/n 02764 © 2017 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	C	Description (subcatchment-numbers)
0.036	0.35	>75% Grass cover, Good, HSG A (PST 6)
0.011	0.40	>75% Grass cover, Good, HSG B (PST 6)
0.188	0.95	Paved parking, HSG A (PST 1 C, PST 6, PST 7, PST1 B)
0.235	**0.83**	**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.036	0.011	0.000	0.000	0.000	0.047	>75% Grass cover, Good	PST 6
0.188	0.000	0.000	0.000	0.000	0.188	Paved parking	PST 1 C, PST 6, PST 7, PST1 B
0.224	**0.011**	**0.000**	**0.000**	**0.000**	**0.235**	**TOTAL AREA**	

Summary for Subcatchment PST 1 C: TO GALLEY

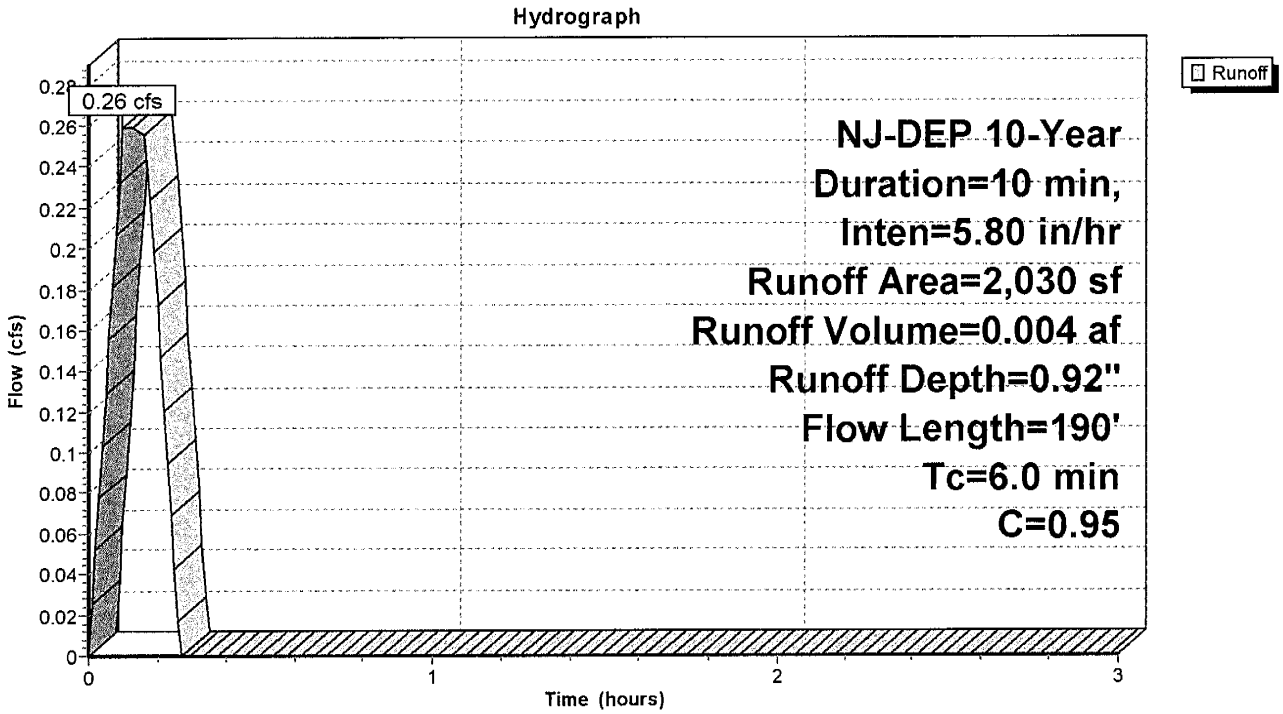
Runoff = 0.26 cfs @ 0.10 hrs, Volume= 0.004 af, Depth= 0.92"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
NJ-DEP 10-Year Duration=10 min, Inten=5.80 in/hr

Area (sf)	C	Description
2,030	0.95	Paved parking, HSG A
2,030		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	50	0.0500	1.73		**Sheet Flow, SHEET** Smooth surfaces n= 0.011 P2= 3.20"
0.6	140	0.0400	4.06		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.9					**Direct Entry, 6 MIN. MIN**
6.0	190	Total			

Subcatchment PST 1 C: TO GALLEY



Summary for Subcatchment PST 6: RD PAVE

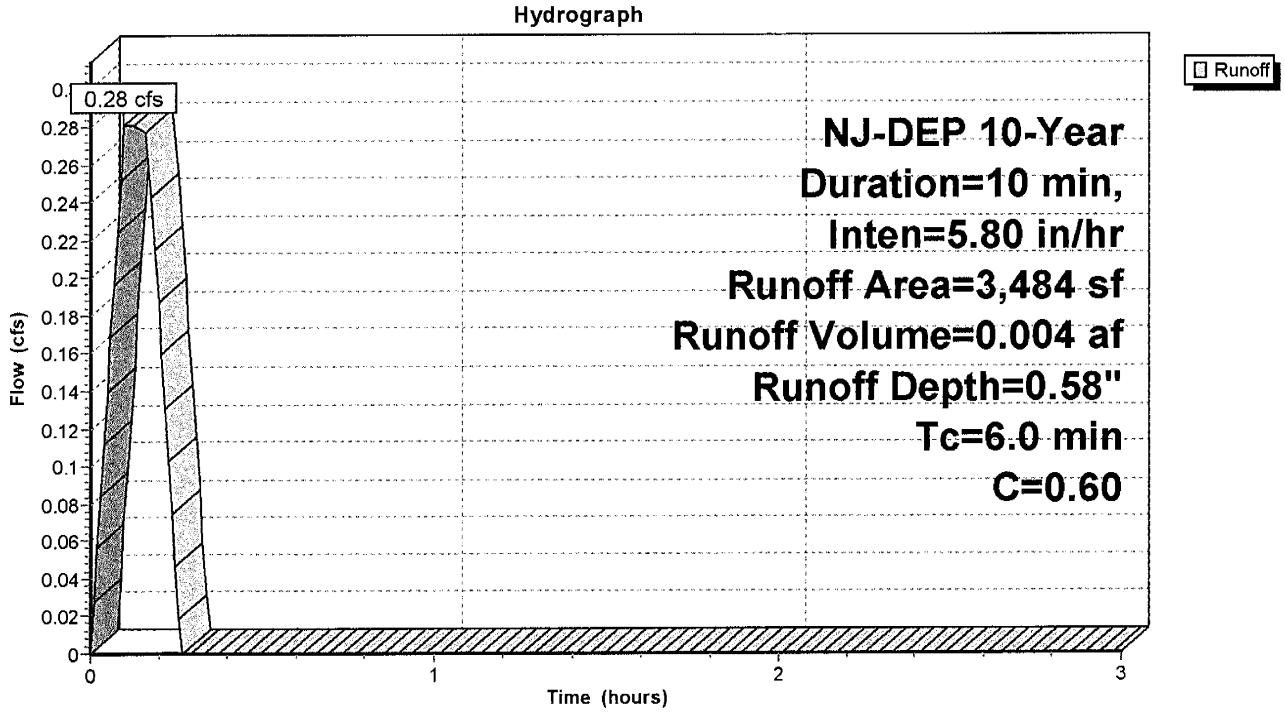
Runoff = 0.28 cfs @ 0.10 hrs, Volume= 0.004 af, Depth= 0.58"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
NJ-DEP 10-Year Duration=10 min, Inten=5.80 in/hr

Area (sf)	C	Description
1,565	0.35	>75% Grass cover, Good, HSG A
494	0.40	>75% Grass cover, Good, HSG B
1,425	0.95	Paved parking, HSG A
3,484	0.60	Weighted Average
2,059		59.10% Pervious Area
1,425		40.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 MINUTE MIN**

Subcatchment PST 6: RD PAVE



Summary for Subcatchment PST 7: RD PAVE

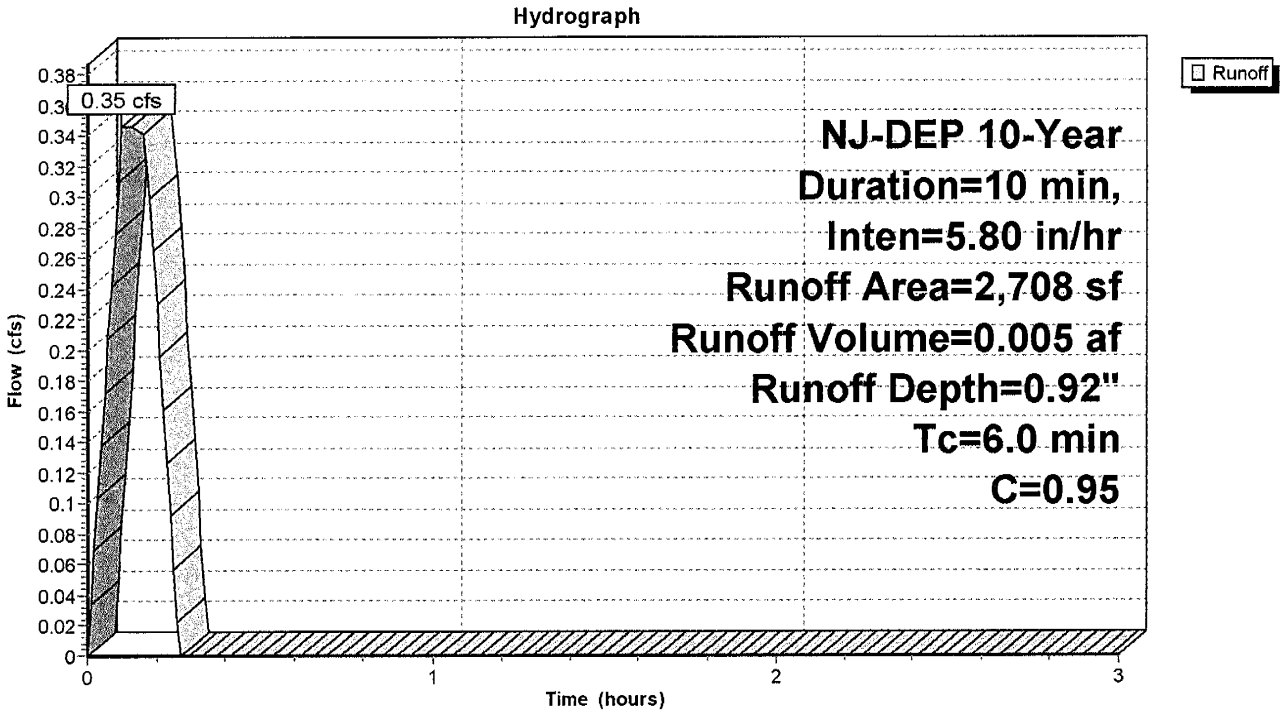
Runoff = 0.35 cfs @ 0.10 hrs, Volume= 0.005 af, Depth= 0.92"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
NJ-DEP 10-Year Duration=10 min, Inten=5.80 in/hr

Area (sf)	C	Description
2,708	0.95	Paved parking, HSG A
2,708		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6 MINUTE MIN**

Subcatchment PST 7: RD PAVE



Summary for Subcatchment PST1 B: TO GALLEY

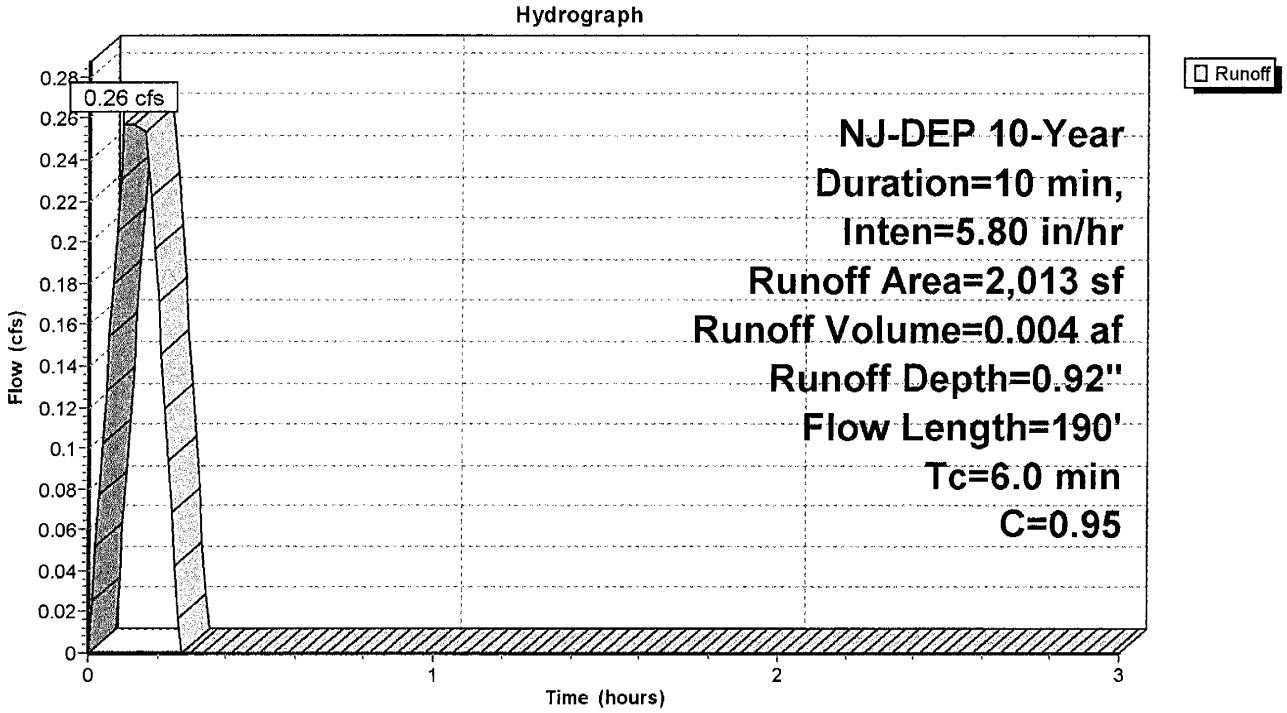
Runoff = 0.26 cfs @ 0.10 hrs, Volume= 0.004 af, Depth= 0.92"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
NJ-DEP 10-Year Duration=10 min, Inten=5.80 in/hr

Area (sf)	C	Description
2,013	0.95	Paved parking, HSG A
2,013		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	50	0.0500	1.73		**Sheet Flow, SHEET** Smooth surfaces n= 0.011 P2= 3.20"
0.7	140	0.0400	3.22		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
4.8					**Direct Entry, 6 MINUTE MIN.**
6.0	190	Total			

Subcatchment PST1 B: TO GALLEY



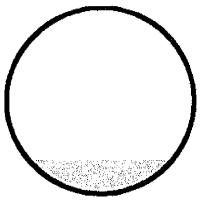
Summary for Reach 6R: 12 RCP

Inflow Area = 0.080 ac, 40.90% Impervious, Inflow Depth = 0.58" for 10-Year event
Inflow = 0.28 cfs @ 0.10 hrs, Volume= 0.004 af
Outflow = 0.28 cfs @ 0.11 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.6 min

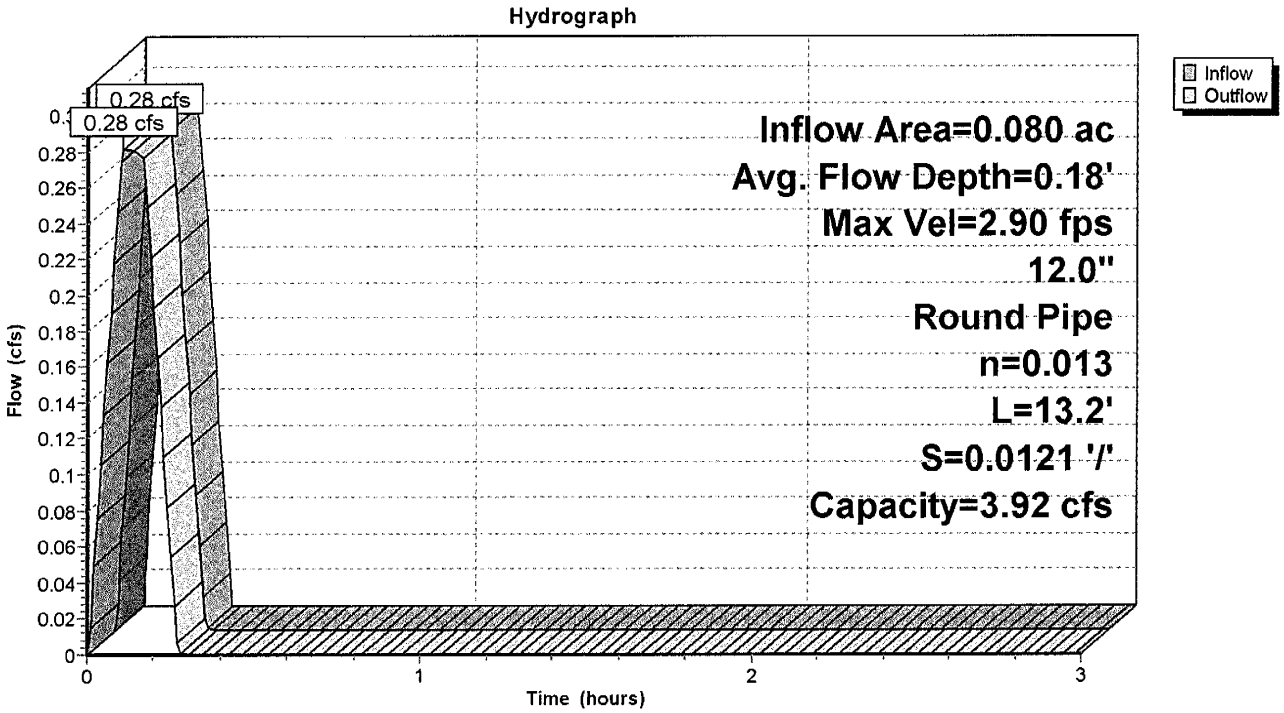
Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.90 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.38 fps, Avg. Travel Time= 0.1 min

Peak Storage= 1 cf @ 0.11 hrs
Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.92 cfs

12.0" Round Pipe
n= 0.013
Length= 13.2' Slope= 0.0121 '/'
Inlet Invert= 74.76', Outlet Invert= 74.60'



Reach 6R: 12 RCP



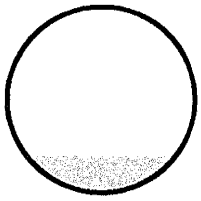
Summary for Reach 7R: 12 RCP

Inflow Area = 0.062 ac,100.00% Impervious, Inflow Depth = 0.92" for 10-Year event
Inflow = 0.35 cfs @ 0.10 hrs, Volume= 0.005 af
Outflow = 0.35 cfs @ 0.11 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.6 min

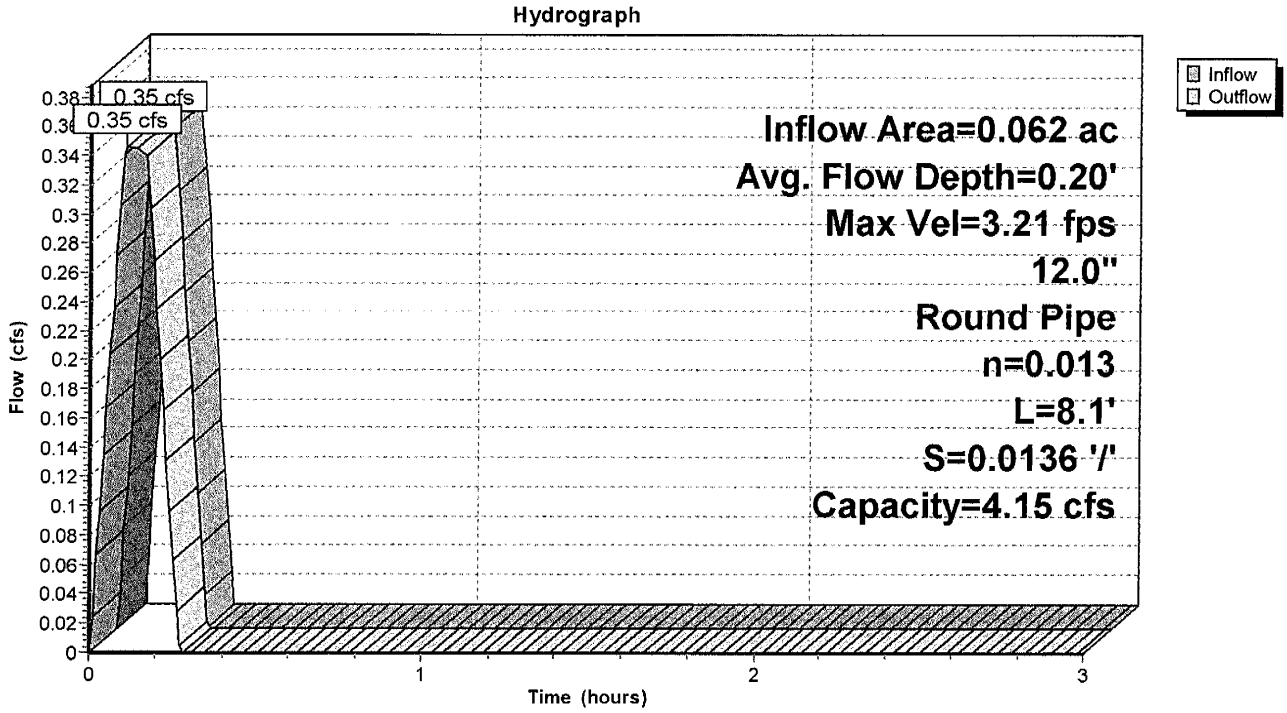
Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.21 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.63 fps, Avg. Travel Time= 0.1 min

Peak Storage= 1 cf @ 0.11 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.15 cfs

12.0" Round Pipe
n= 0.013
Length= 8.1' Slope= 0.0136 '/'
Inlet Invert= 74.71', Outlet Invert= 74.60'



Reach 7R: 12 RCP



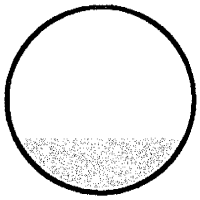
Summary for Reach 8R: 12 RCP

Inflow Area = 0.142 ac, 66.75% Impervious, Inflow Depth = 0.73" for 10-Year event
Inflow = 0.63 cfs @ 0.11 hrs, Volume= 0.009 af
Outflow = 0.63 cfs @ 0.13 hrs, Volume= 0.009 af, Atten= 0%, Lag= 1.2 min

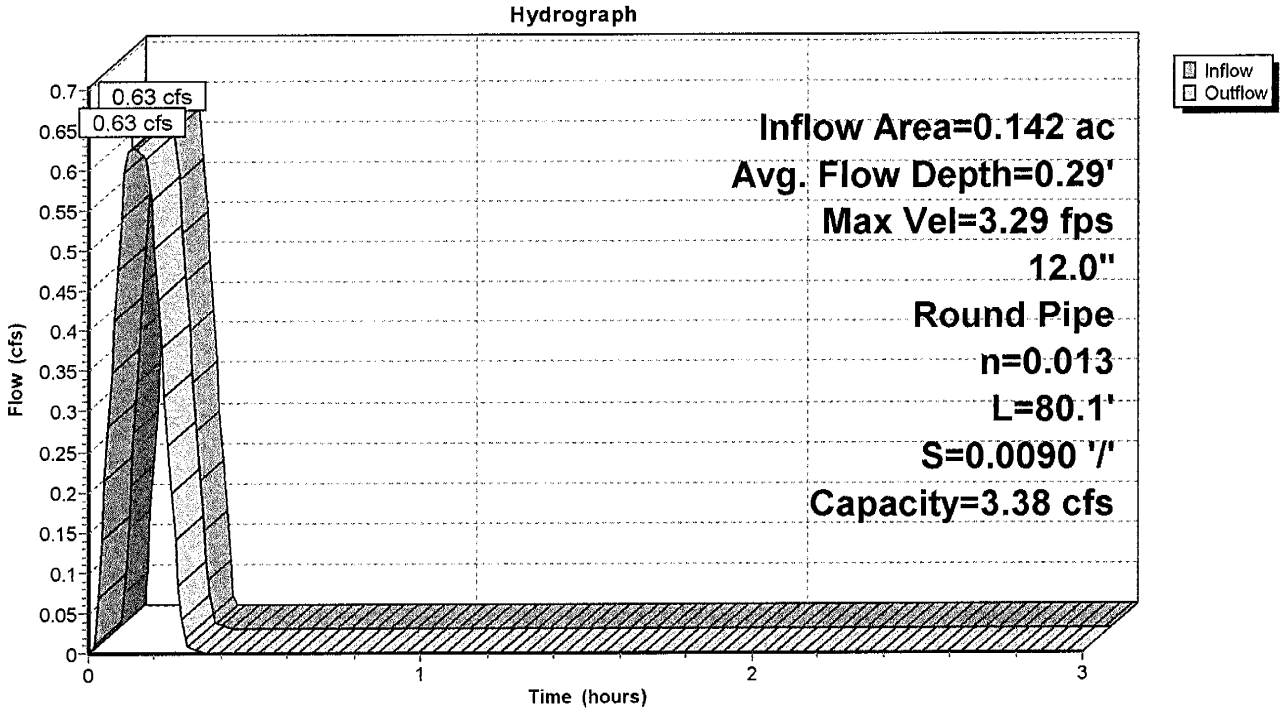
Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.29 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.67 fps, Avg. Travel Time= 0.8 min

Peak Storage= 15 cf @ 0.12 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.38 cfs

12.0" Round Pipe
n= 0.013
Length= 80.1' Slope= 0.0090 '/'
Inlet Invert= 74.50', Outlet Invert= 73.78'



Reach 8R: 12 RCP



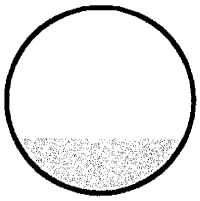
Summary for Reach 9R: 12 RCP

Inflow Area = 0.142 ac, 66.75% Impervious, Inflow Depth = 0.73" for 10-Year event
Inflow = 0.63 cfs @ 0.13 hrs, Volume= 0.009 af
Outflow = 0.63 cfs @ 0.17 hrs, Volume= 0.009 af, Atten= 0%, Lag= 2.2 min

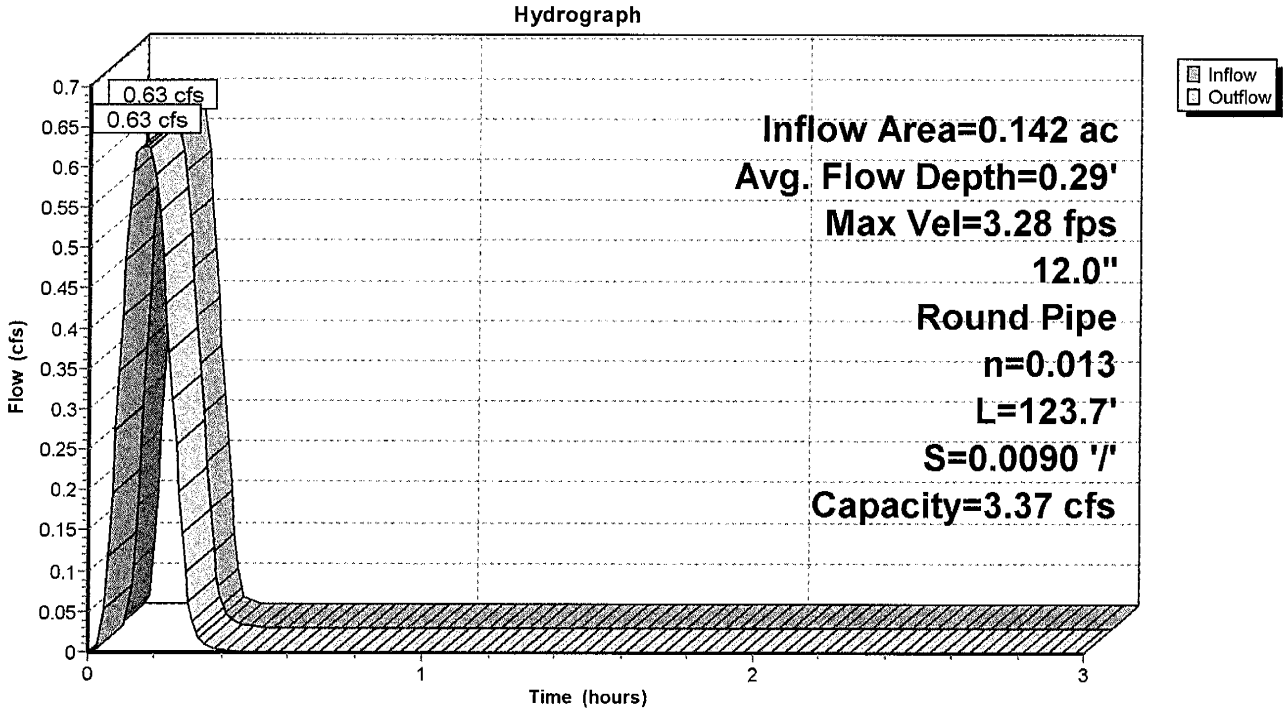
Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.28 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.34 fps, Avg. Travel Time= 1.5 min

Peak Storage= 24 cf @ 0.16 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.37 cfs

12.0" Round Pipe
n= 0.013
Length= 123.7' Slope= 0.0090 '/'
Inlet Invert= 73.68', Outlet Invert= 72.57'



Reach 9R: 12 RCP



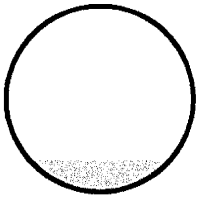
Summary for Reach 12R: 12 RCP

Inflow Area = 0.046 ac,100.00% Impervious, Inflow Depth = 0.92" for 10-Year event
Inflow = 0.26 cfs @ 0.10 hrs, Volume= 0.004 af
Outflow = 0.26 cfs @ 0.11 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.6 min

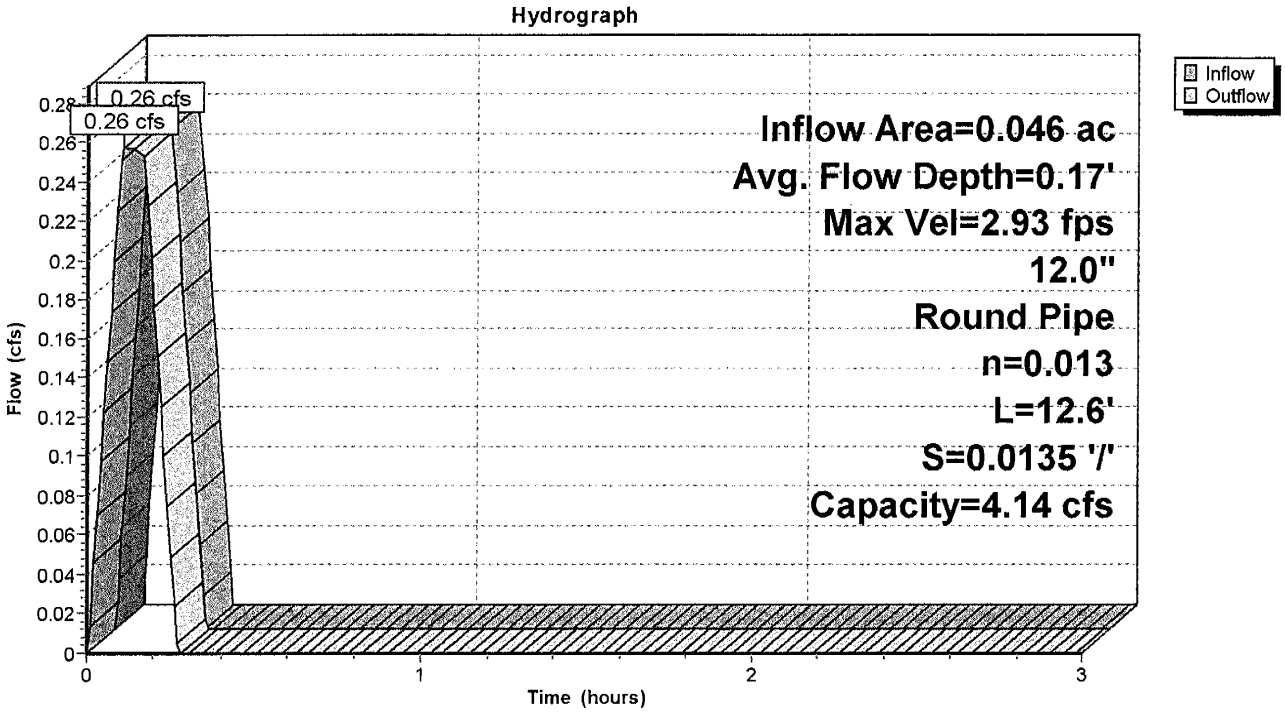
Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.93 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.40 fps, Avg. Travel Time= 0.1 min

Peak Storage= 1 cf @ 0.11 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.14 cfs

12.0" Round Pipe
n= 0.013
Length= 12.6' Slope= 0.0135 '/'
Inlet Invert= 66.97', Outlet Invert= 66.80'



Reach 12R: 12 RCP



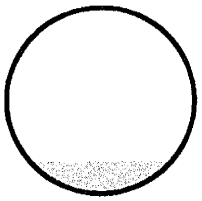
Summary for Reach 13R: 12 RCP

Inflow Area = 0.047 ac,100.00% Impervious, Inflow Depth = 0.92" for 10-Year event
Inflow = 0.26 cfs @ 0.10 hrs, Volume= 0.004 af
Outflow = 0.26 cfs @ 0.11 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.6 min

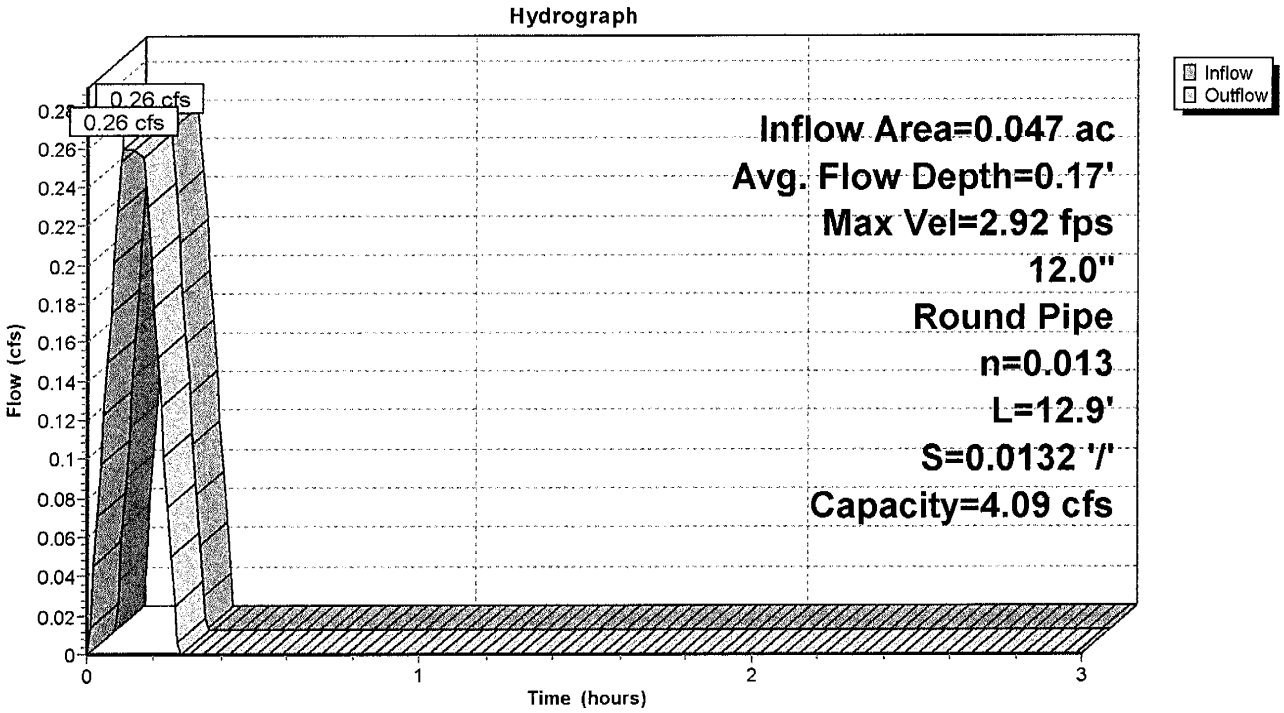
Routing by Stor-Ind+Trans method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.92 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.39 fps, Avg. Travel Time= 0.1 min

Peak Storage= 1 cf @ 0.11 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.09 cfs

12.0" Round Pipe
n= 0.013
Length= 12.9' Slope= 0.0132 '/'
Inlet Invert= 66.97', Outlet Invert= 66.80'



Reach 13R: 12 RCP



Summary for Pond 1P: GALLEY RECHARGE SYSTEM

Inflow Area =	0.142 ac, 66.75% Impervious, Inflow Depth = 0.73" for 10-Year event				
Inflow =	0.63 cfs @	0.17 hrs, Volume=	0.009 af		
Outflow =	0.15 cfs @	0.28 hrs, Volume=	0.009 af, Atten= 77%, Lag= 6.8 min		
Discarded =	0.15 cfs @	0.28 hrs, Volume=	0.009 af		

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 70.84' @ 0.28 hrs Surf.Area= 680 sf Storage= 258 cf

Plug-Flow detention time= 16.4 min calculated for 0.009 af (100% of inflow)
Center-of-Mass det. time= 16.4 min (26.7 - 10.3)

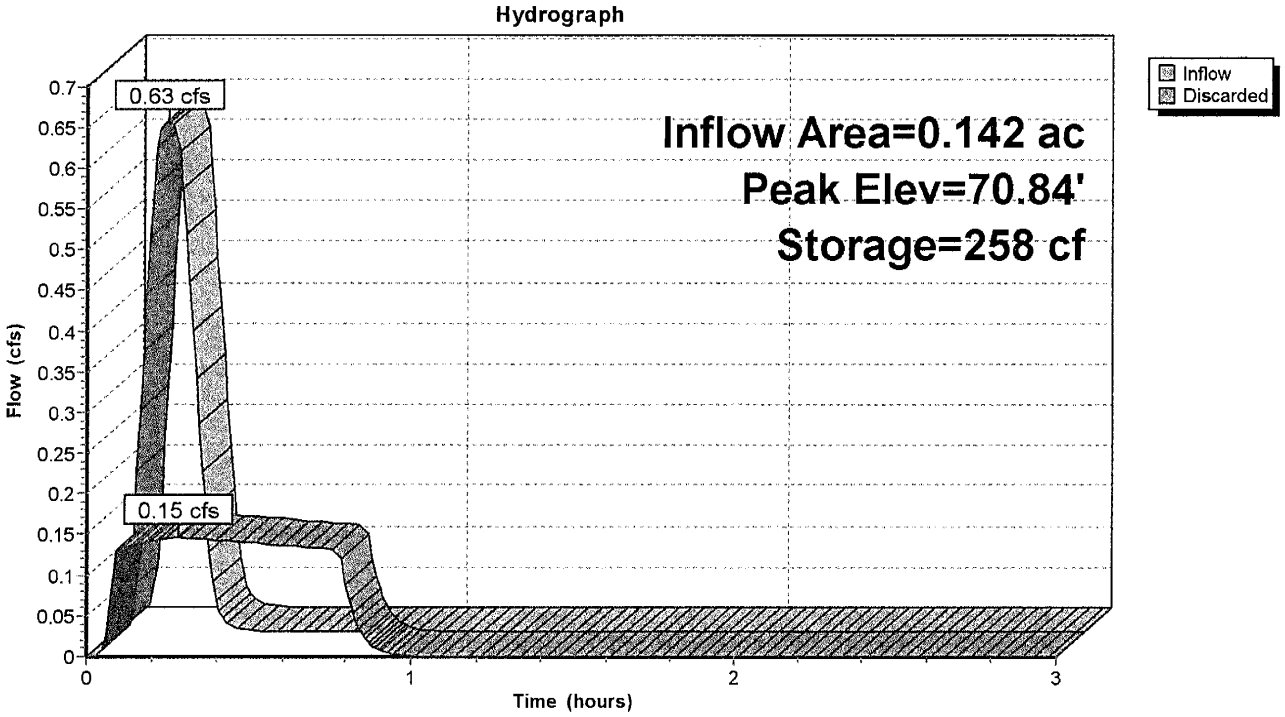
Volume	Invert	Avail.Storage	Storage Description
#1A	69.89'	1,498 cf	**8.50'W x 80.00'L x 7.25'H Field A** 4,930 cf Overall - 1,184 cf Embedded = 3,746 cf x 40.0% Voids
#2A	70.89'	881 cf	**Concrete Galley 4x4x4.25** x 19 Inside #1 Inside= 42.2"W x 45.0"H => 13.25 sf x 3.50'L = 46.4 cf Outside= 54.0"W x 51.0"H => 15.58 sf x 4.00'L = 62.3 cf
		2,380 cf	Total Available Storage

Storage Group A created with Chamber Wizard

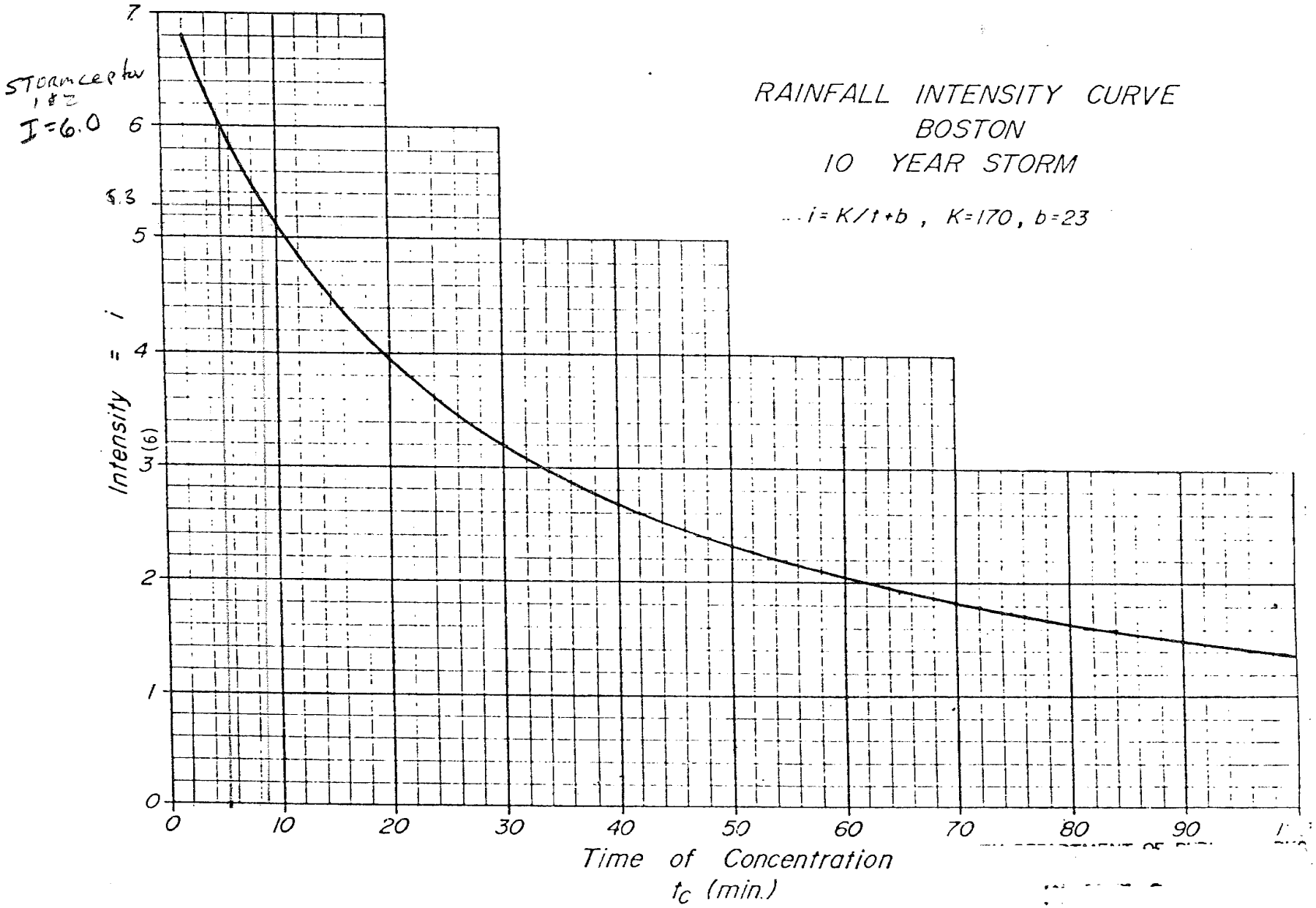
Device	Routing	Invert	Outlet Devices
#1	Discarded	69.89'	**8.270 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 62.00'

Discarded OutFlow Max=0.15 cfs @ 0.28 hrs HW=70.84' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.15 cfs)

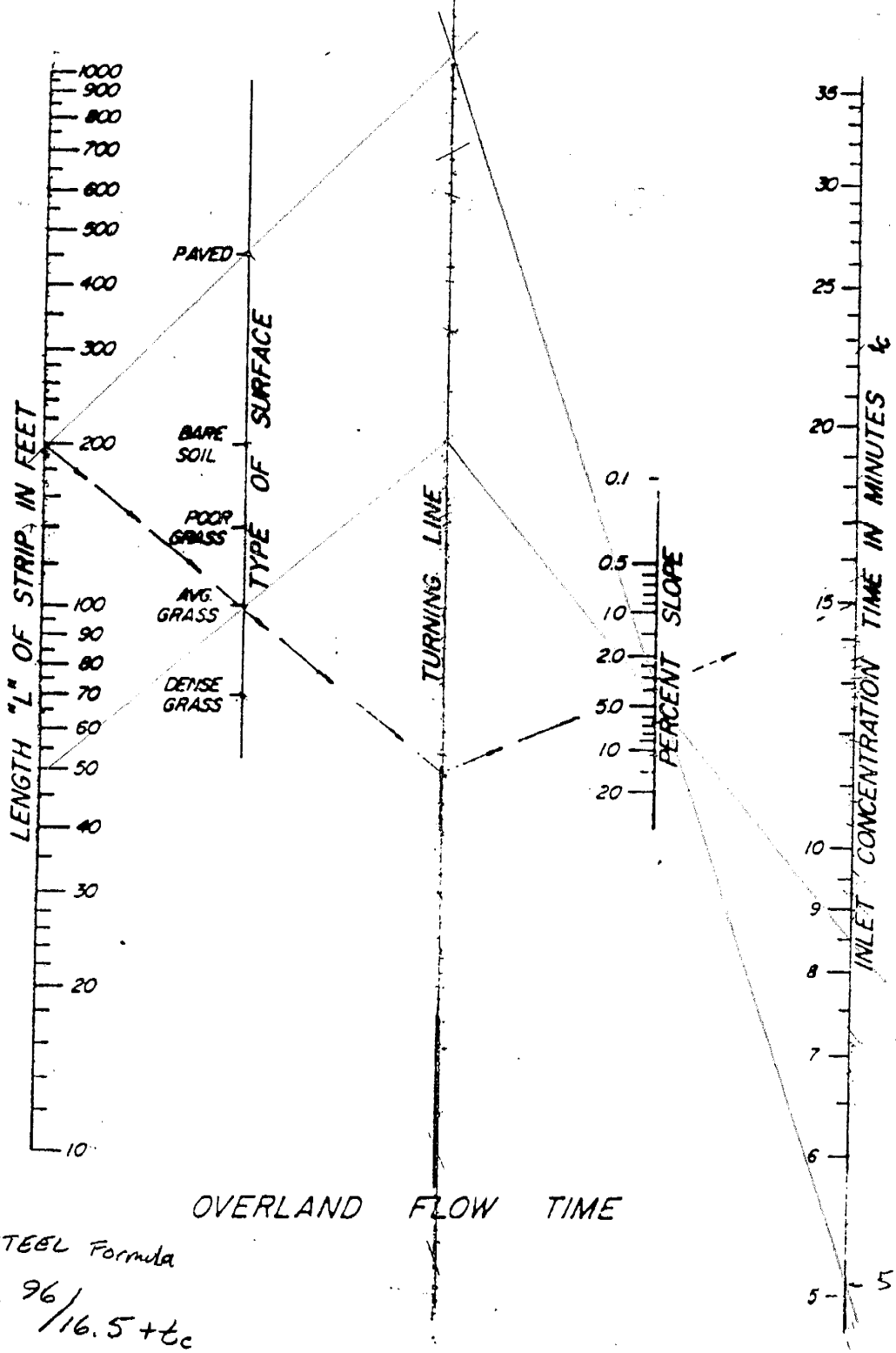
Pond 1P: GALLEY RECHARGE SYSTEM



STORMCEPTORS
1 & 2



STOMCOPTORS 1 + 2



OVERLAND FLOW TIME

9 min

8.5

7 min

5.1 MIN

STEEL Formula

$i_{(1)} = 96/16.5 + t_c$

$i_{(10)}$ $170/23. + t_c$

$i_{(25)} = 230/30 + t_c$

$i_{(100)} =$

Ensure that any alternate methods are applicable.

Runoff Coefficient

The assignment of the runoff coefficient (C) is somewhat subjective. At the time the rainfall producing runoff occurs, the coefficient varies with topography, land use, vegetal cover, soil type, and moisture content of the soil. In selecting the runoff coefficient, consider the future characteristics of the watershed. If land use varies within a watershed, you must consider watershed segments individually, and you can calculate a weighted runoff coefficient value.

The following table suggests ranges of C values for various categories of ground cover. This table is typical of design guides found in civil engineering texts dealing with hydrology. You must subjectively assign a C value based on what you see or anticipate in the watershed with reference to the table.

Runoff Coefficients for Urban Watersheds

Type of Drainage Area	Runoff Coefficient
Business:	
• downtown areas	0.70-0.95
• neighborhood areas	0.30-0.70
Residential:	
• single-family areas	0.30-0.50
• multi-units, detached	0.40-0.60
• multi-units, attached	0.60-0.75
• suburban	0.35-0.40
• apartment dwelling areas	0.30-0.70
Industrial:	
• light areas	0.30-0.80
• heavy areas	0.60-0.90
Parks, cemeteries	0.10-0.25
Playgrounds	0.30-0.40
Railroad yards	0.30-0.40
Unimproved areas:	
• sand or sandy loam soil, 0-3%	0.15-0.20
• sand or sandy loam soil, 3-5%	0.20-0.25
• black or loessial soil, 0-3%	0.18-0.25
• black or loessial soil, 3-5%	0.25-0.30
• black or loessial soil, [illegible]5%	0.70-0.80
• deep sand area	0.05-0.15
• steep grassed slopes	0.70
Lawns:	
• sandy soil, flat 2%	0.05-0.10
• sandy soil, average 2-7%	0.10-0.15
• sandy soil, steep 7%	0.15-0.20
• heavy soil, flat 2%	0.13-0.17
• heavy soil, average 2-7%	0.18-0.22

RUN TO GALLEY SYSTEM 1

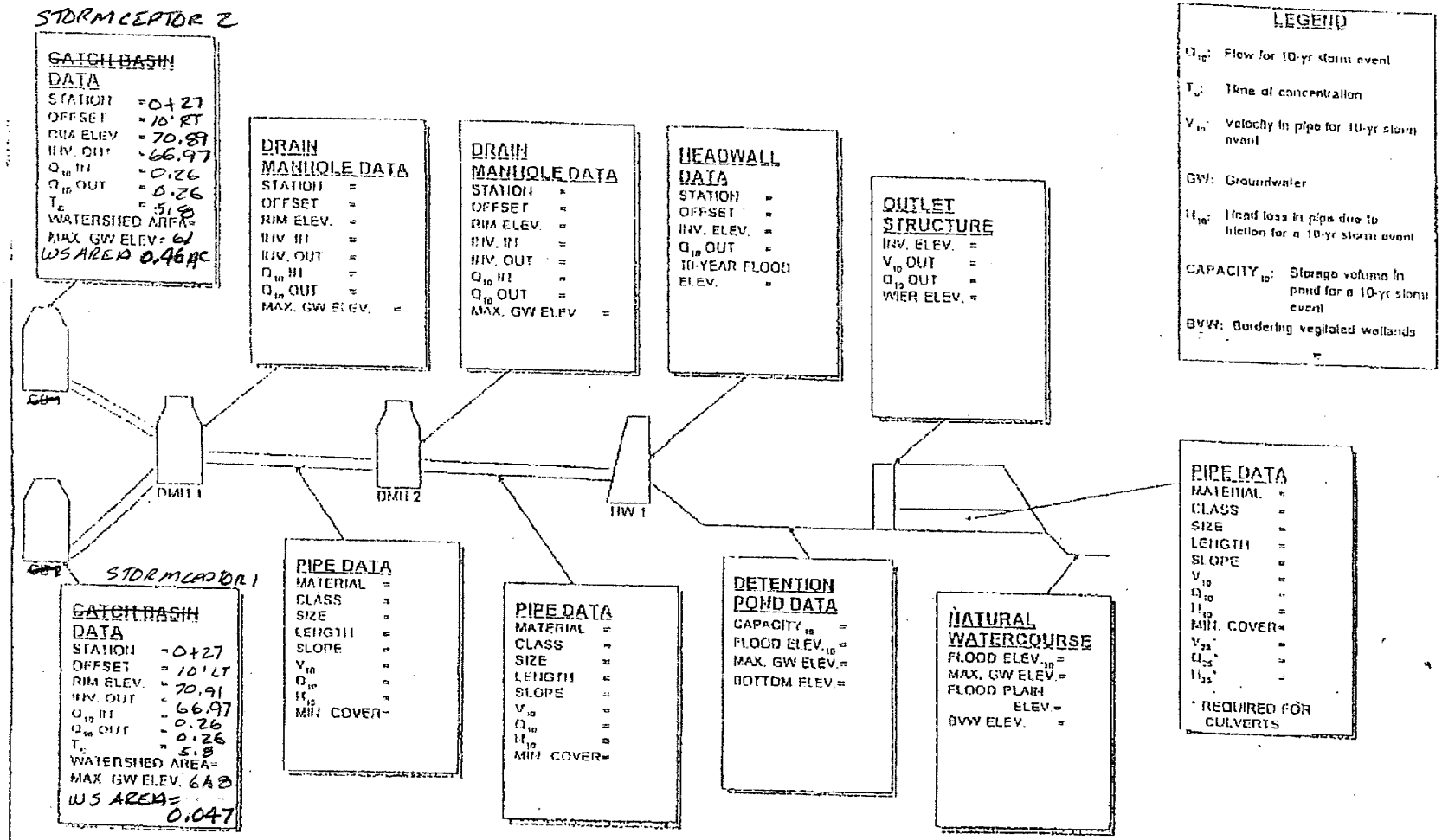


FIGURE 3
EXAMPLE STORMWATER FLOW CHART
NOT TO SCALE

Run into GALLEY SYSTEM 2

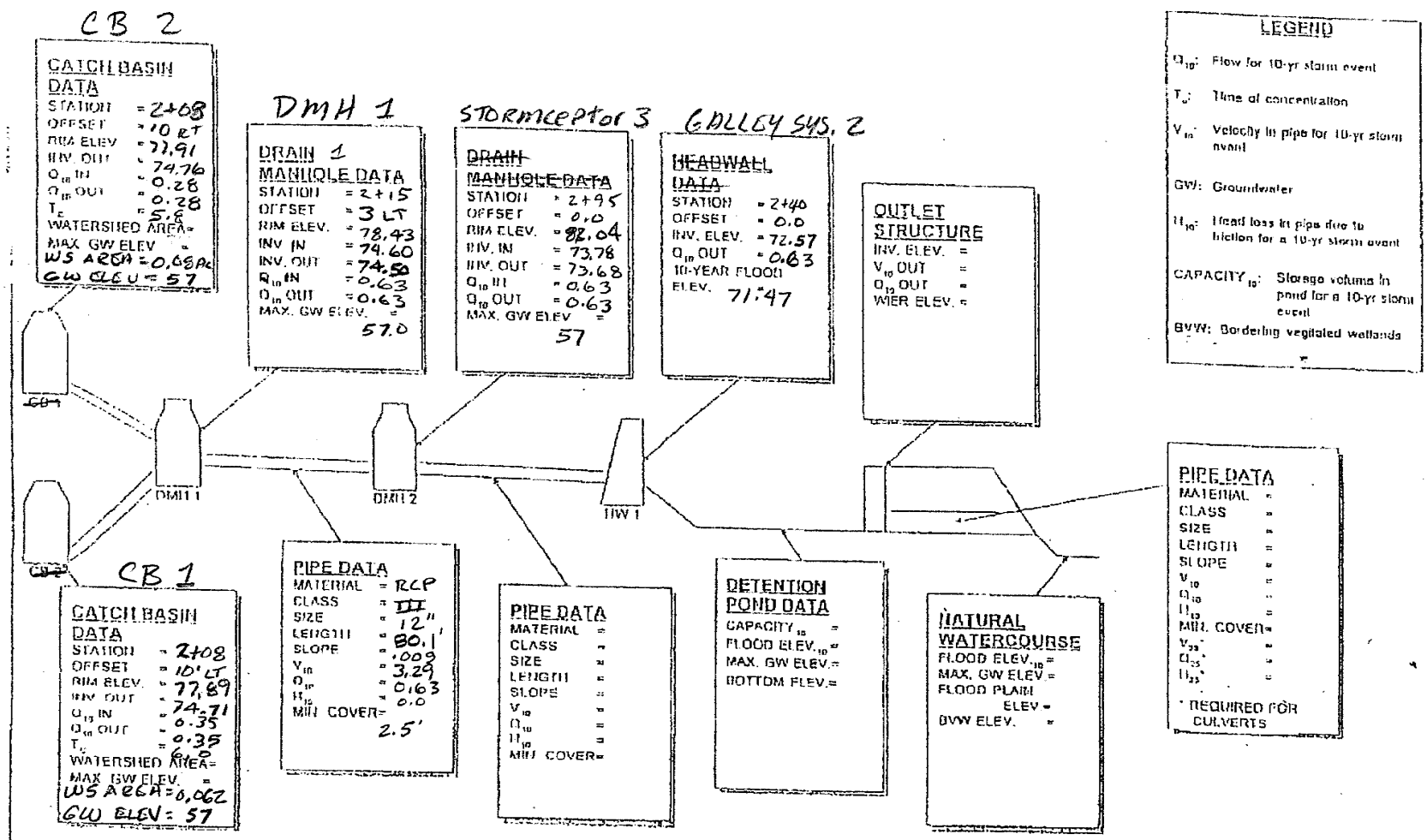


FIGURE 3
EXAMPLE STORMWATER FLOW CHART
NOT TO SCALE

STORMCEPTOR 2

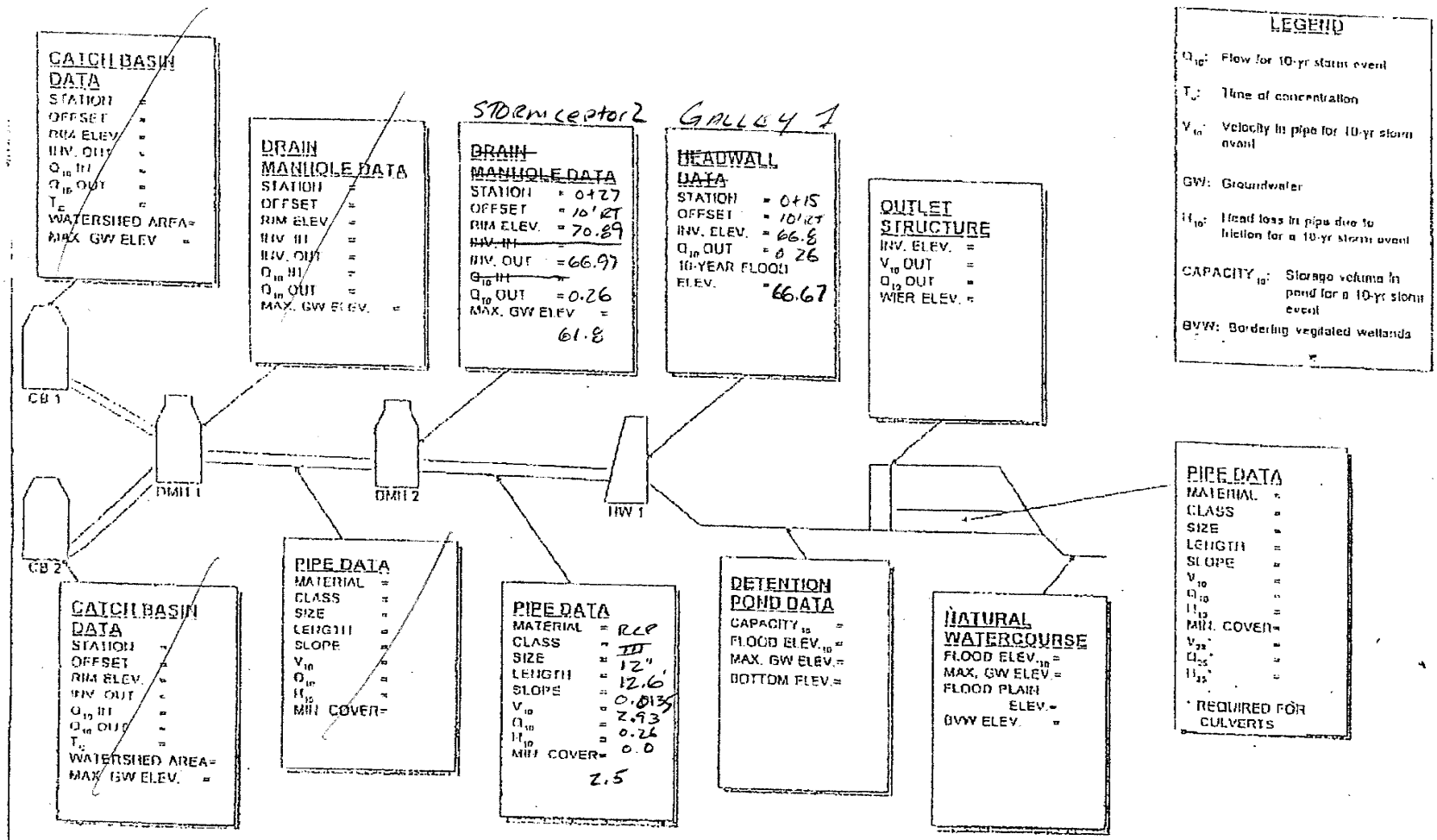


FIGURE 3
EXAMPLE STORMWATER FLOW CHART
NOT TO SCALE

STORMCEPTOR 1

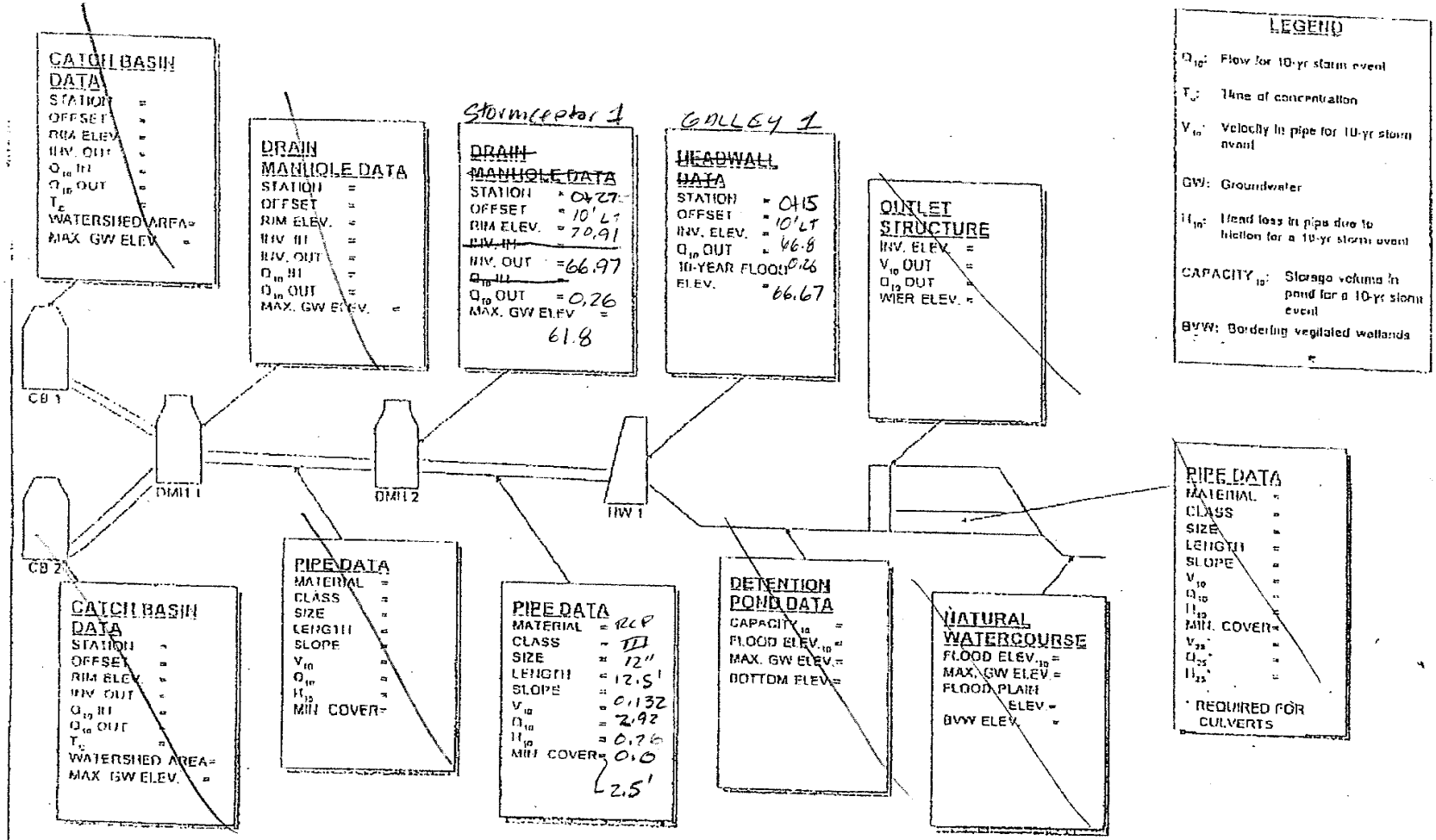


FIGURE 3
EXAMPLE STORMWATER FLOW CHART
NOT TO SCALE

BYPASS CALCULATIONS

Inlet Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Sep 21 2020

<Name>

Curb Inlet

Location	= On grade
Curb Length (ft)	= 15.34
Throat Height (in)	= 6.00
Grate Area (sqft)	= -0-
Grate Width (ft)	= -0-
Grate Length (ft)	= -0-

Gutter

Slope, Sw (ft/ft)	= 0.020
Slope, Sx (ft/ft)	= 0.020
Local Depr (in)	= 0.10
Gutter Width (ft)	= 2.00
Gutter Slope (%)	= 3.00
Gutter n-value	= 0.012

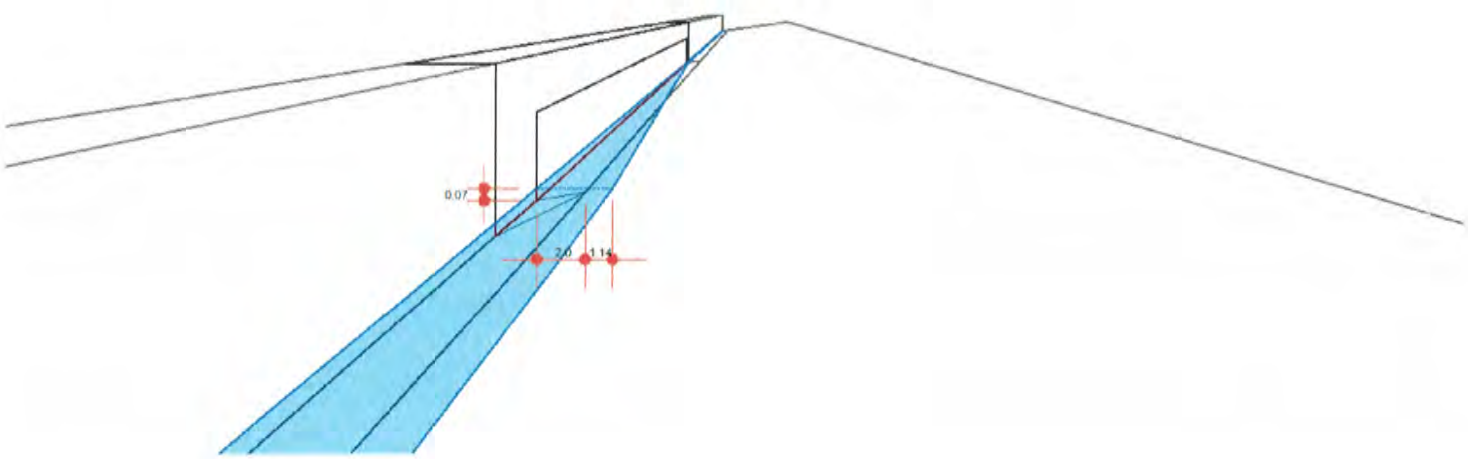
Calculations

Compute by:	Q vs Depth
Max Depth (in)	= 6

Highlighted

Q Total (cfs)	= 0.25
Q Capt (cfs)	= 0.25
Q Bypass (cfs)	= -0-
Depth at Inlet (in)	= 0.85
Efficiency (%)	= 100
Gutter Spread (ft)	= 3.14
Gutter Vel (ft/s)	= 2.54
Bypass Spread (ft)	= 0.22
Bypass Depth (in)	= 0.05

All dimensions in feet



Inlet Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Sep 21 2020

<Name>

Curb Inlet

Location	= On grade
Curb Length (ft)	= 15.34
Throat Height (in)	= 6.00
Grate Area (sqft)	= -0-
Grate Width (ft)	= -0-
Grate Length (ft)	= -0-

Gutter

Slope, Sw (ft/ft)	= 0.020
Slope, Sx (ft/ft)	= 0.020
Local Depr (in)	= 0.10
Gutter Width (ft)	= 2.00
Gutter Slope (%)	= 3.00
Gutter n-value	= 0.012

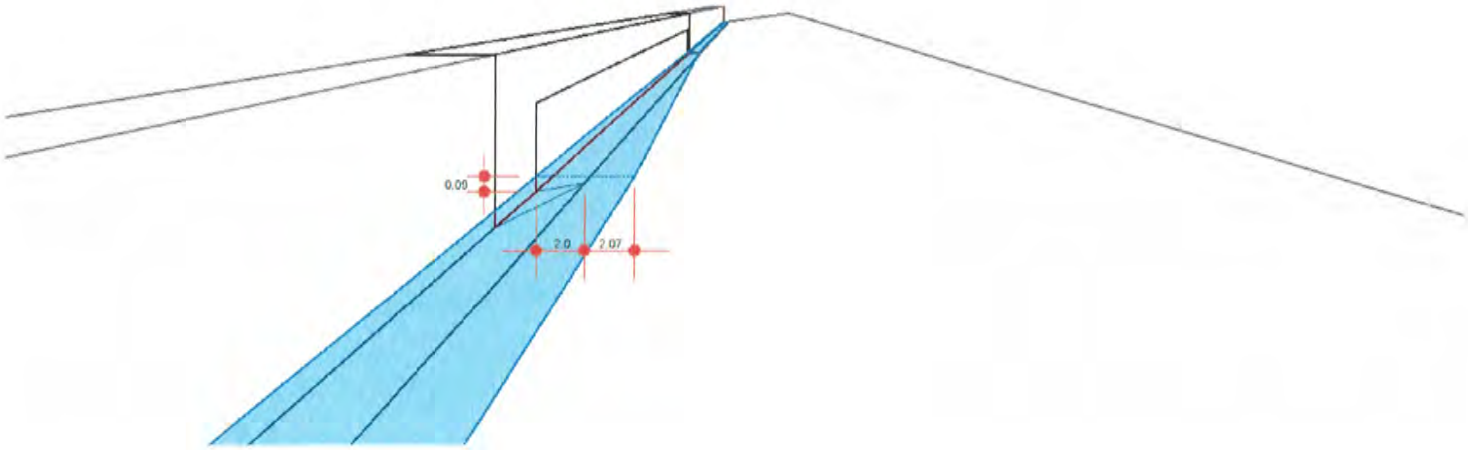
Calculations

Compute by:	Q vs Depth
Max Depth (in)	= 6

Highlighted

Q Total (cfs)	= 0.50
Q Capt (cfs)	= 0.45
Q Bypass (cfs)	= 0.05
Depth at Inlet (in)	= 1.08
Efficiency (%)	= 90
Gutter Spread (ft)	= 4.07
Gutter Vel (ft/s)	= 3.03
Bypass Spread (ft)	= 1.70
Bypass Depth (in)	= 0.41

All dimensions in feet



Inlet Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Sep 21 2020

<Name>

Curb Inlet

Location	= On grade
Curb Length (ft)	= 15.34
Throat Height (in)	= 6.00
Grate Area (sqft)	= -0-
Grate Width (ft)	= -0-
Grate Length (ft)	= -0-

Gutter

Slope, Sw (ft/ft)	= 0.020
Slope, Sx (ft/ft)	= 0.020
Local Depr (in)	= 0.10
Gutter Width (ft)	= 2.00
Gutter Slope (%)	= 5.00
Gutter n-value	= 0.012

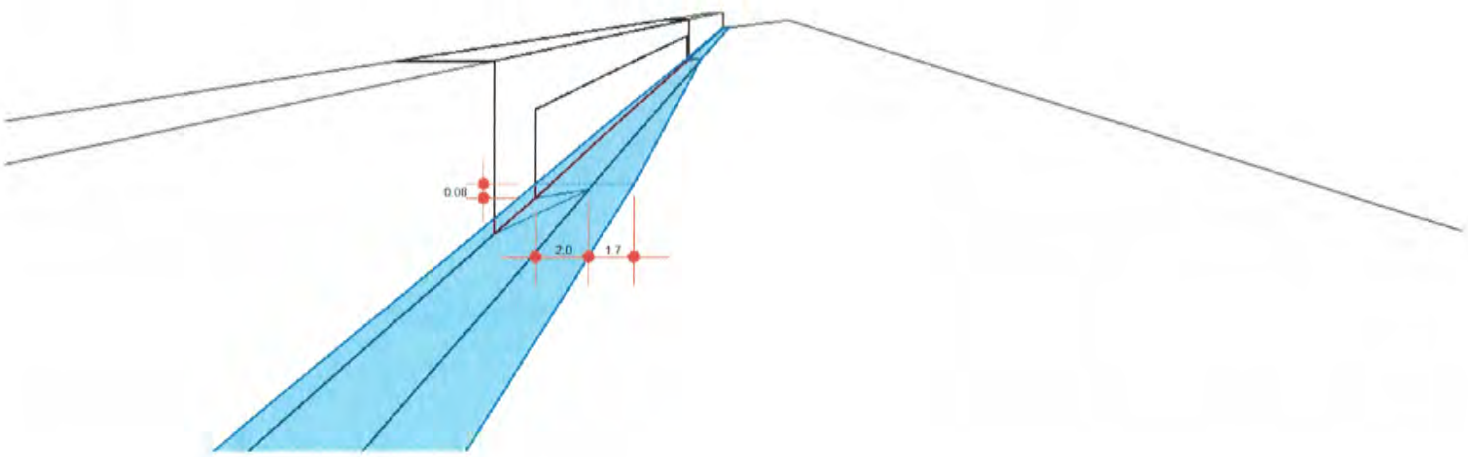
Calculations

Compute by:	Q vs Depth
Max Depth (in)	= 6

Highlighted

Q Total (cfs)	= 0.50
Q Capt (cfs)	= 0.41
Q Bypass (cfs)	= 0.09
Depth at Inlet (in)	= 0.99
Efficiency (%)	= 83
Gutter Spread (ft)	= 3.70
Gutter Vel (ft/s)	= 3.66
Bypass Spread (ft)	= 1.91
Bypass Depth (in)	= 0.46

All dimensions in feet



APPENDIX A