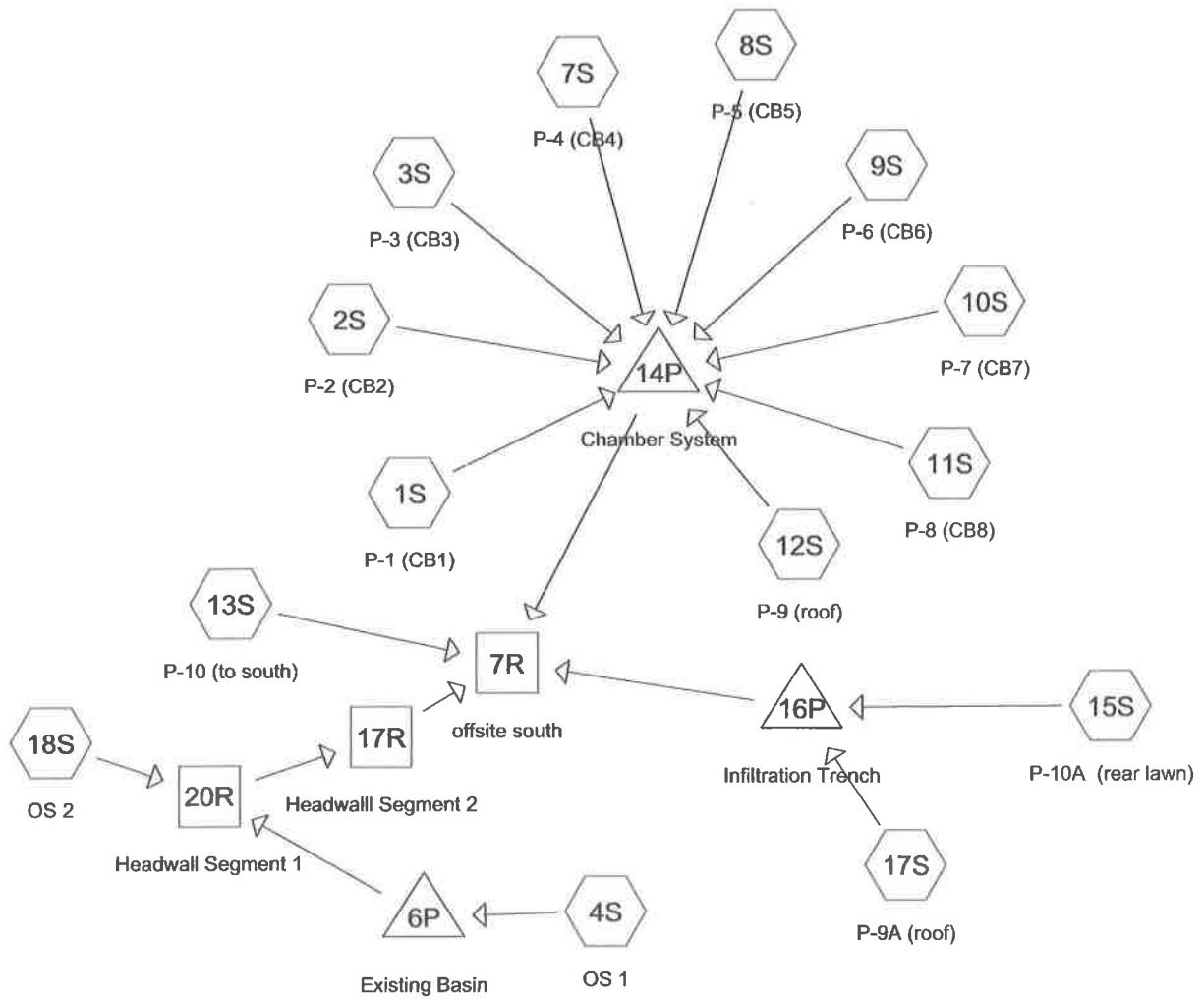


APPENDIX 8
PROPOSED CONDITIONS
HYDROCAD MODEL



Routing Diagram for proposed 2-1-24
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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	Type III 24-hr		Default	24.00	1	3.27	2
2	10-yr	Type III 24-hr		Default	24.00	1	4.96	2
3	25-yr	Type III 24-hr		Default	24.00	1	6.29	2
4	50-yr	Type III 24-hr		Default	24.00	1	7.54	2
5	100-yr	Type III 24-hr		Default	24.00	1	9.06	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.532	39	>75% Grass cover, Good, HSG A (1S, 2S, 3S, 4S, 7S, 8S, 9S, 10S, 11S, 13S, 15S)
0.165	30	Meadow, non-grazed, HSG A (15S)
2.404	98	Paved parking, HSG A (1S, 2S, 3S, 4S, 7S, 8S, 9S)
1.265	98	Roofs, HSG A (4S, 12S, 17S)
0.022	98	Water Surface, HSG A (15S)
0.143	98	Water Surface, HSG A Basin (4S)
1.677	30	Woods, Good, HSG A (4S, 10S, 13S, 18S)
10.207	60	TOTAL AREA

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	4S	0.00	0.00	475.0	0.0100	0.013	0.0	15.0	0.0	
2	4S	0.00	0.00	180.0	0.0280	0.013	0.0	18.0	0.0	
3	17R	211.67	200.25	76.0	0.1503	0.013	0.0	24.0	0.0	
4	20R	214.00	211.67	233.0	0.0100	0.012	0.0	24.0	0.0	
5	14P	214.00	206.60	157.0	0.0471	0.012	0.0	15.0	0.0	

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Type III 24-hr 2-yr Rainfall=3.27"

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: P-1 (CB1)	Runoff Area=3,398 sf 66.27% Impervious Runoff Depth=1.32" Tc=6.0 min CN=78 Runoff=0.12 cfs 0.009 af
Subcatchment 2S: P-2 (CB2)	Runoff Area=1,896 sf 87.45% Impervious Runoff Depth=2.32" Tc=6.0 min CN=91 Runoff=0.12 cfs 0.008 af
Subcatchment 3S: P-3 (CB3)	Runoff Area=9,124 sf 81.46% Impervious Runoff Depth=1.98" Tc=6.0 min CN=87 Runoff=0.48 cfs 0.035 af
Subcatchment 4S: OS 1	Runoff Area=242,335 sf 40.85% Impervious Runoff Depth=0.55" Flow Length=855' Tc=9.9 min CN=63 Runoff=2.27 cfs 0.255 af
Subcatchment 7S: P-4 (CB4)	Runoff Area=17,772 sf 64.68% Impervious Runoff Depth=1.26" Tc=6.0 min CN=77 Runoff=0.59 cfs 0.043 af
Subcatchment 8S: P-5 (CB5)	Runoff Area=5,781 sf 64.57% Impervious Runoff Depth=1.26" Tc=6.0 min CN=77 Runoff=0.19 cfs 0.014 af
Subcatchment 9S: P-6 (CB6)	Runoff Area=11,883 sf 57.73% Impervious Runoff Depth=1.03" Tc=6.0 min CN=73 Runoff=0.31 cfs 0.023 af
Subcatchment 10S: P-7 (CB7)	Runoff Area=13,474 sf 0.00% Impervious Runoff Depth=0.00" Tc=6.0 min CN=36 Runoff=0.00 cfs 0.000 af
Subcatchment 11S: P-8 (CB8)	Runoff Area=22,491 sf 0.00% Impervious Runoff Depth=0.00" Tc=6.0 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment 12S: P-9 (roof)	Runoff Area=27,632 sf 100.00% Impervious Runoff Depth=3.04" Tc=6.0 min CN=98 Runoff=2.01 cfs 0.161 af
Subcatchment 13S: P-10 (to south)	Runoff Area=15,401 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=145' Tc=8.4 min CN=35 Runoff=0.00 cfs 0.000 af
Subcatchment 15S: P-10A (rear lawn)	Runoff Area=21,516 sf 4.43% Impervious Runoff Depth=0.00" Tc=6.0 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment 17S: P-9A (roof)	Runoff Area=6,000 sf 100.00% Impervious Runoff Depth=3.04" Tc=6.0 min CN=98 Runoff=0.44 cfs 0.035 af
Subcatchment 18S: OS 2	Runoff Area=45,929 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=333' Slope=0.0700 '/' Tc=11.1 min CN=30 Runoff=0.00 cfs 0.000 af
Reach 7R: offsite south	Inflow=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
Reach 17R: Headwall Segment 2	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af 24.0" Round Pipe n=0.013 L=76.0' S=0.1503 '/' Capacity=87.69 cfs Outflow=0.00 cfs 0.000 af

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Type III 24-hr 2-yr Rainfall=3.27"

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Reach 20R: Headwall Segment 1 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
24.0" Round Pipe n=0.012 L=233.0' S=0.0100 '/ Capacity=24.51 cfs Outflow=0.00 cfs 0.000 af

Pond 6P: Existing Basin Peak Elev=220.76' Storage=3,654 cf Inflow=2.27 cfs 0.255 af
Discarded=0.42 cfs 0.184 af Primary=0.00 cfs 0.000 af Outflow=0.42 cfs 0.184 af

Pond 14P: Chamber System Peak Elev=209.67' Storage=0.047 af Inflow=3.82 cfs 0.292 af
Discarded=1.21 cfs 0.292 af Primary=0.00 cfs 0.000 af Outflow=1.21 cfs 0.292 af

Pond 16P: Infiltration Trench Peak Elev=195.43' Storage=162 cf Inflow=0.44 cfs 0.035 af
Outflow=0.18 cfs 0.035 af

Total Runoff Area = 10.207 ac Runoff Volume = 0.583 af Average Runoff Depth = 0.69"
62.44% Pervious = 6.373 ac 37.56% Impervious = 3.834 ac

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Type III 24-hr 2-yr Rainfall=3.27"

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Summary for Subcatchment 1S: P-1 (CB1)

Runoff = 0.12 cfs @ 12.09 hrs, Volume= 0.009 af, Depth= 1.32"
Routed to Pond 14P : Chamber System

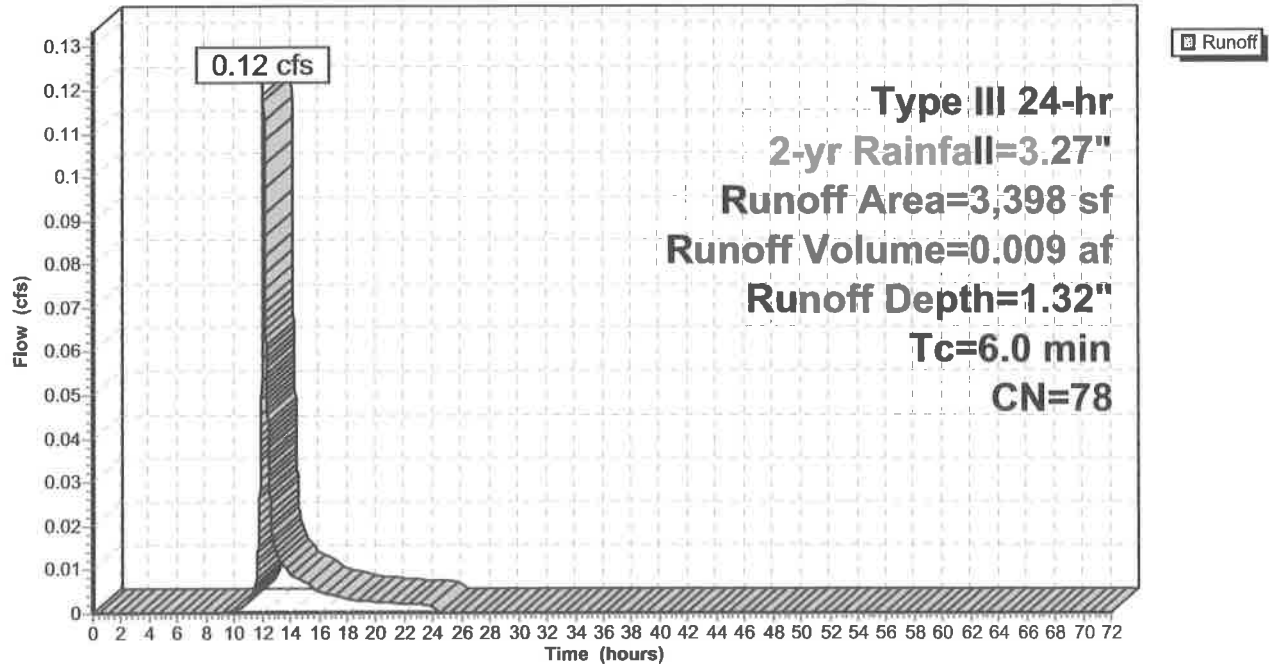
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.27"

Area (sf)	CN	Description
2,252	98	Paved parking, HSG A
1,146	39	>75% Grass cover, Good, HSG A
3,398	78	Weighted Average
1,146		33.73% Pervious Area
2,252		66.27% Impervious Area

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

Subcatchment 1S: P-1 (CB1)

Hydrograph



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Type III 24-hr 2-yr Rainfall=3.27"

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Summary for Subcatchment 2S: P-2 (CB2)

Runoff = 0.12 cfs @ 12.09 hrs, Volume= 0.008 af, Depth= 2.32"
 Routed to Pond 14P : Chamber System

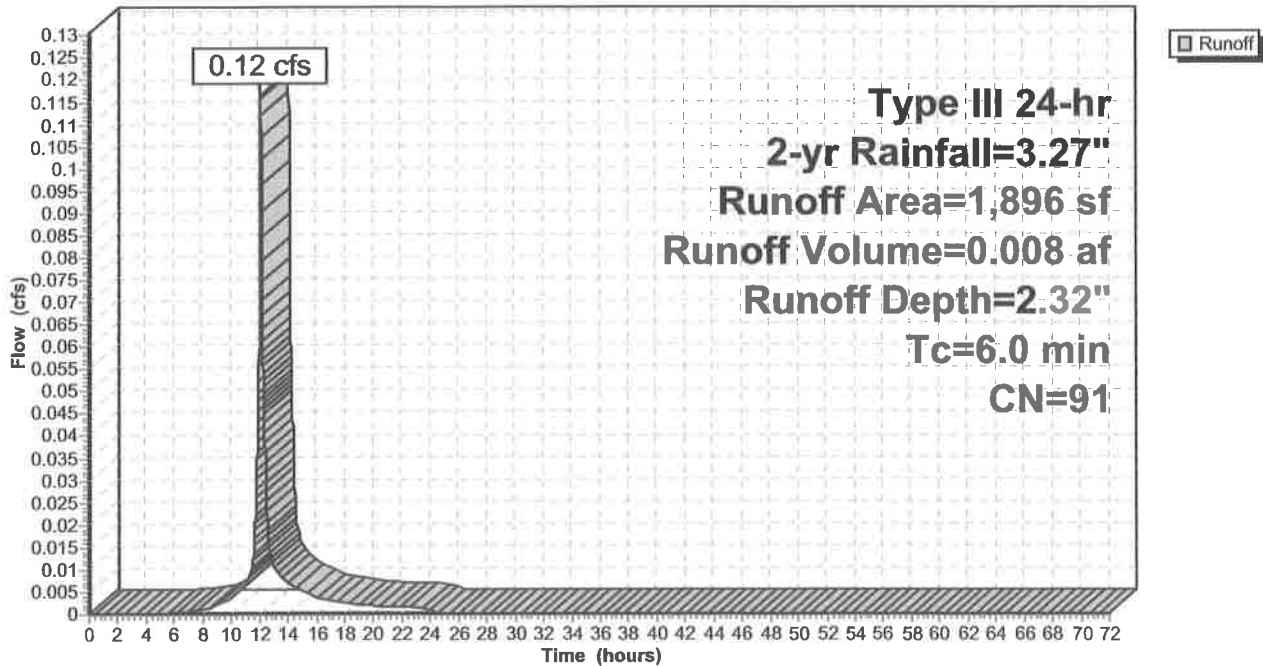
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.27"

Area (sf)	CN	Description
1,658	98	Paved parking, HSG A
238	39	>75% Grass cover, Good, HSG A
1,896	91	Weighted Average
238		12.55% Pervious Area
1,658		87.45% Impervious Area

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

Subcatchment 2S: P-2 (CB2)

Hydrograph



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Type III 24-hr 2-yr Rainfall=3.27"

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Summary for Subcatchment 3S: P-3 (CB3)

Runoff = 0.48 cfs @ 12.09 hrs, Volume= 0.035 af, Depth= 1.98"
Routed to Pond 14P : Chamber System

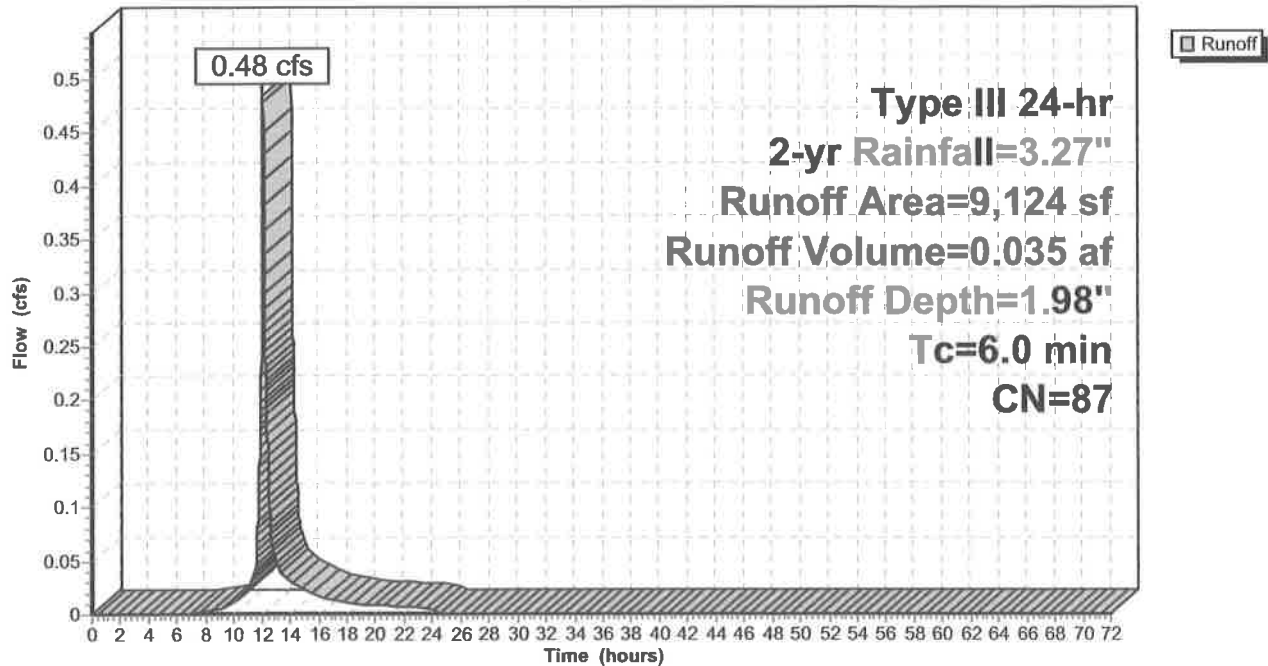
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.27"

Area (sf)	CN	Description
7,432	98	Paved parking, HSG A
1,692	39	>75% Grass cover, Good, HSG A
9,124	87	Weighted Average
1,692		18.54% Pervious Area
7,432		81.46% Impervious Area

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

Subcatchment 3S: P-3 (CB3)

Hydrograph



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Type III 24-hr 2-yr Rainfall=3.27"

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Summary for Subcatchment 4S: OS 1

Runoff = 2.27 cfs @ 12.17 hrs, Volume= 0.255 af, Depth= 0.55"
 Routed to Pond 6P : Existing Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.27"

Area (sf)	CN	Description
21,486	98	Roofs, HSG A
15,524	30	Woods, Good, HSG A
127,810	39	>75% Grass cover, Good, HSG A
* 6,241	98	Water Surface, HSG A Basin
71,274	98	Paved parking, HSG A
242,335	63	Weighted Average
143,334		59.15% Pervious Area
99,001		40.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	50	0.0300	0.12		Sheet Flow, Grass: Dense n= 0.240 P2= 3.20"
1.1	150	0.0120	2.22		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.5	475	0.0100	5.26	6.46	Pipe Channel, RCP_Round 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
0.3	180	0.0280	9.95	17.58	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
9.9	855	Total			

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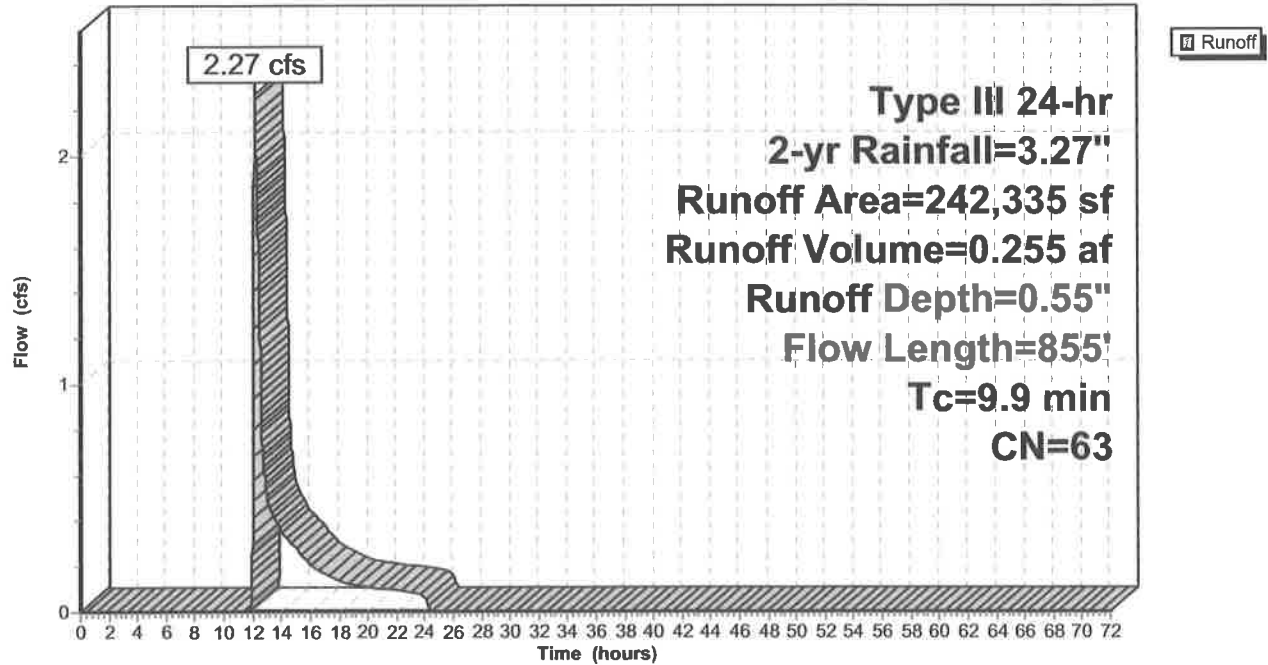
Type III 24-hr 2-yr Rainfall=3.27"

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Subcatchment 4S: OS 1

Hydrograph



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Type III 24-hr 2-yr Rainfall=3.27"

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Summary for Subcatchment 7S: P-4 (CB4)

Runoff = 0.59 cfs @ 12.09 hrs, Volume= 0.043 af, Depth= 1.26"
 Routed to Pond 14P : Chamber System

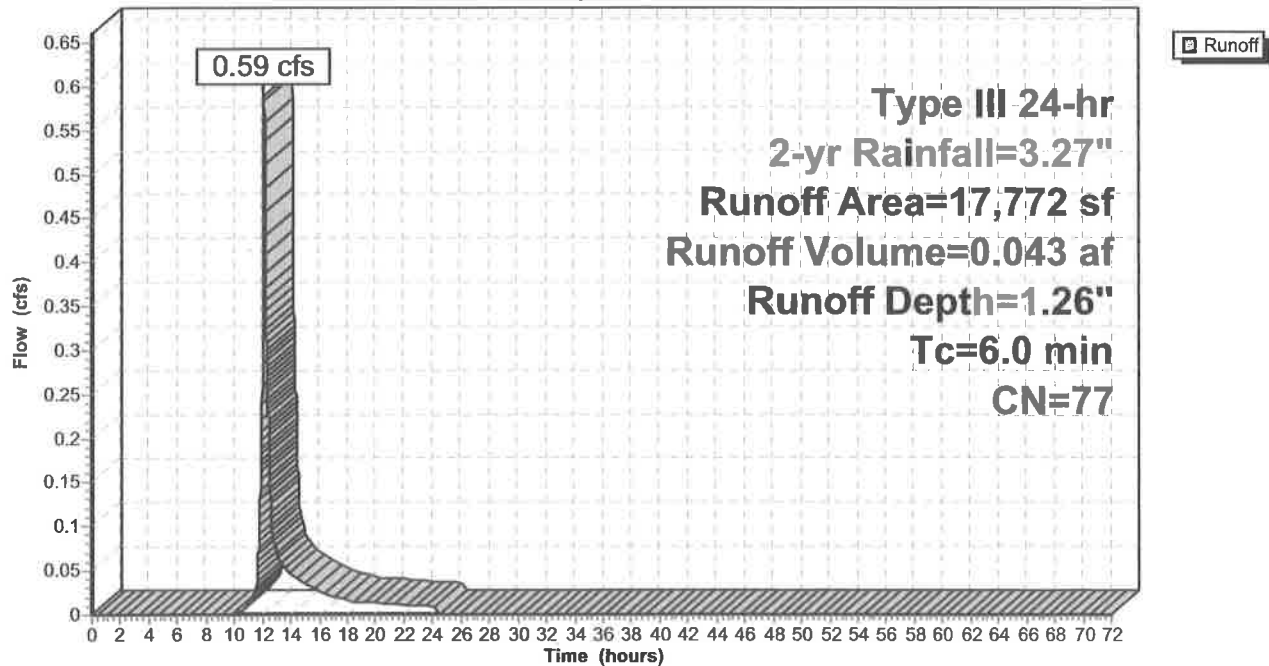
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.27"

Area (sf)	CN	Description
11,495	98	Paved parking, HSG A
6,277	39	>75% Grass cover, Good, HSG A
17,772	77	Weighted Average
6,277		35.32% Pervious Area
11,495		64.68% Impervious Area

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

Subcatchment 7S: P-4 (CB4)

Hydrograph



Summary for Subcatchment 8S: P-5 (CB5)

Runoff = 0.19 cfs @ 12.09 hrs, Volume= 0.014 af, Depth= 1.26"
 Routed to Pond 14P : Chamber System

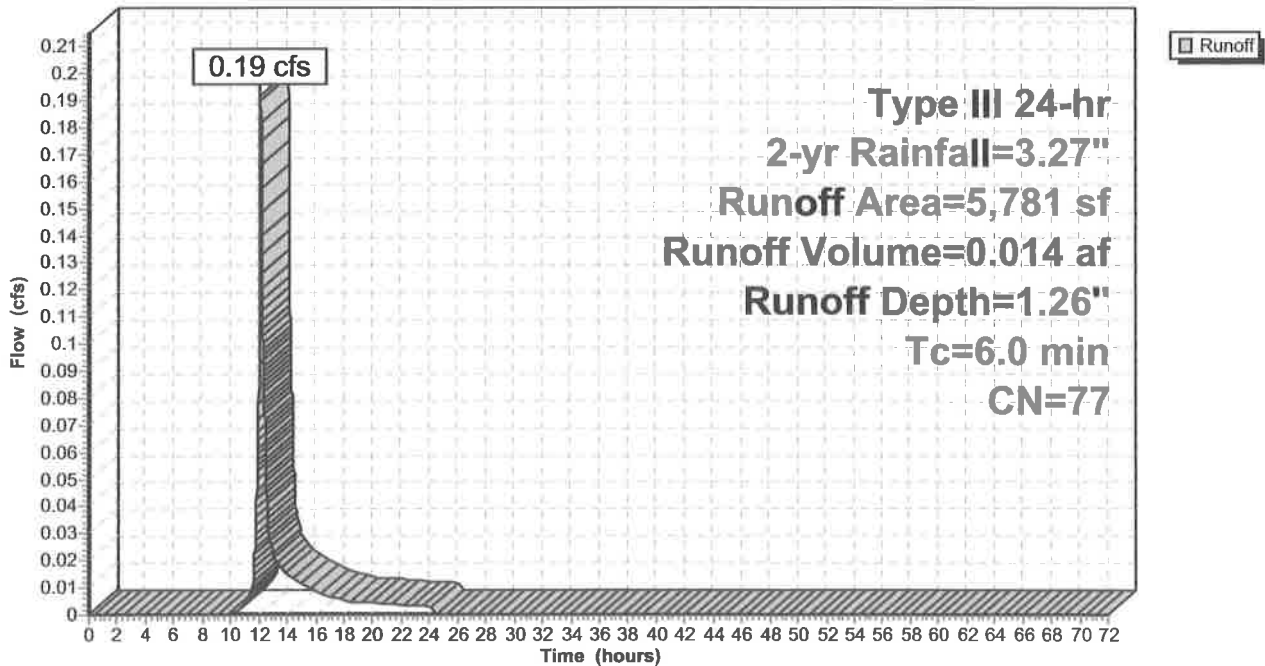
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.27"

Area (sf)	CN	Description
3,733	98	Paved parking, HSG A
2,048	39	>75% Grass cover, Good, HSG A
5,781	77	Weighted Average
2,048		35.43% Pervious Area
3,733		64.57% Impervious Area

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

Subcatchment 8S: P-5 (CB5)

Hydrograph



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Type III 24-hr 2-yr Rainfall=3.27"

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Summary for Subcatchment 9S: P-6 (CB6)

Runoff = 0.31 cfs @ 12.10 hrs, Volume= 0.023 af, Depth= 1.03"
Routed to Pond 14P : Chamber System

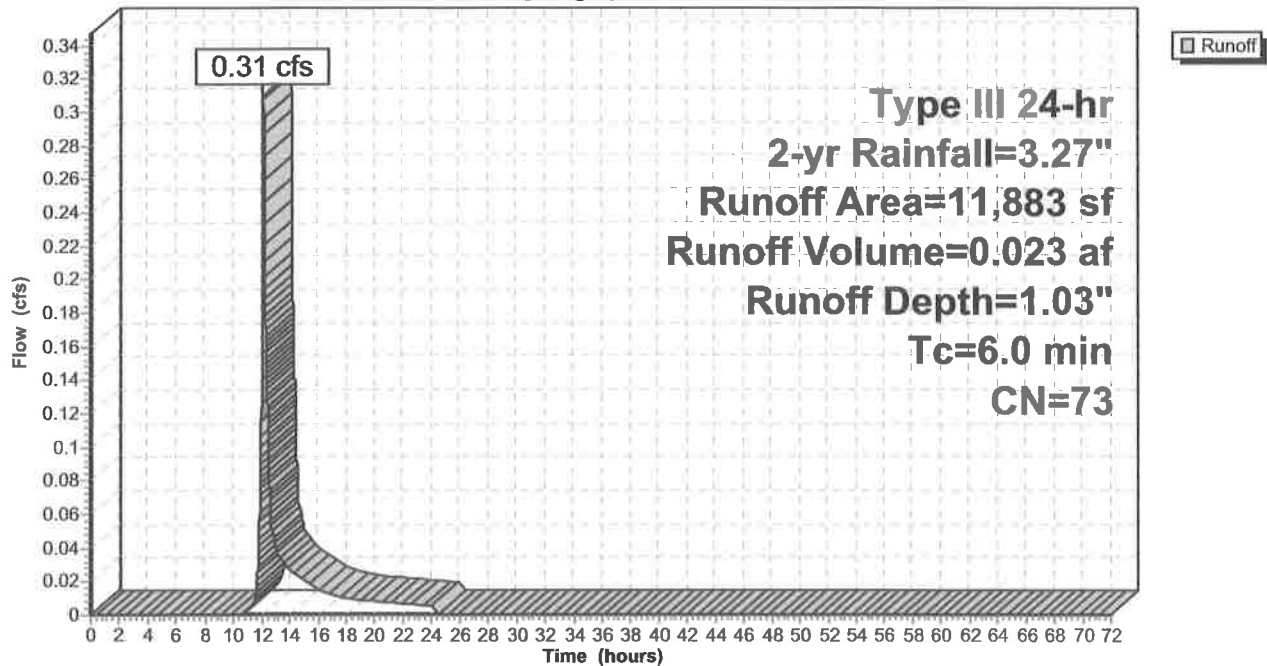
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.27"

Area (sf)	CN	Description
6,860	98	Paved parking, HSG A
5,023	39	>75% Grass cover, Good, HSG A
11,883	73	Weighted Average
5,023		42.27% Pervious Area
6,860		57.73% Impervious Area

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

Subcatchment 9S: P-6 (CB6)

Hydrograph



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Type III 24-hr 2-yr Rainfall=3.27"

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Summary for Subcatchment 10S: P-7 (CB7)

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 14P : Chamber System

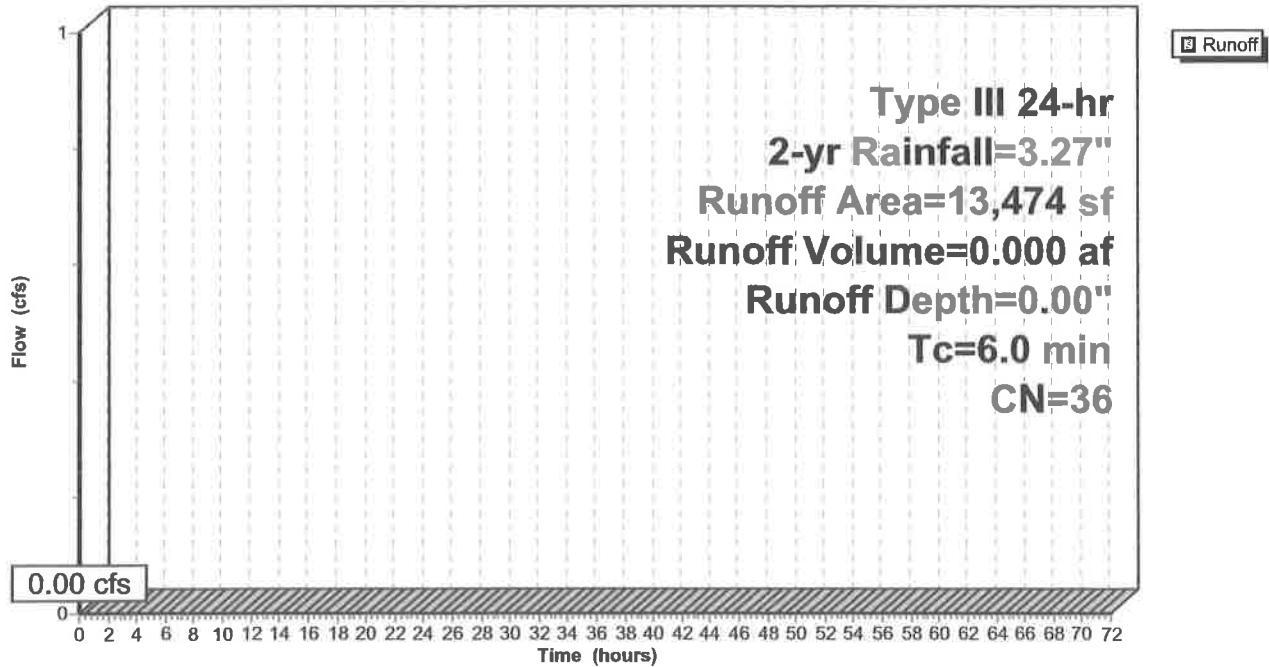
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.27"

Area (sf)	CN	Description
8,914	39	>75% Grass cover, Good, HSG A
4,560	30	Woods, Good, HSG A
13,474	36	Weighted Average
13,474		100.00% Pervious Area

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

Subcatchment 10S: P-7 (CB7)

Hydrograph



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Type III 24-hr 2-yr Rainfall=3.27"

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Summary for Subcatchment 11S: P-8 (CB8)

Runoff = 0.00 cfs @ 24.01 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 14P : Chamber System

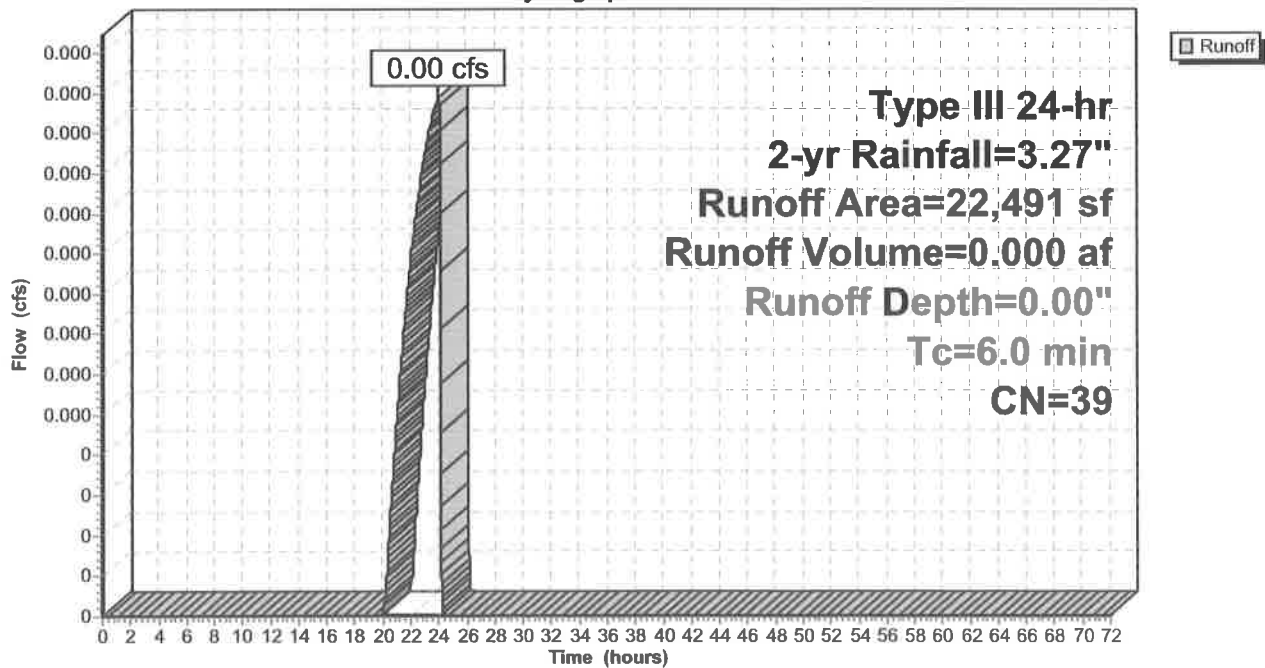
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.27"

Area (sf)	CN	Description
22,491	39	>75% Grass cover, Good, HSG A
22,491		100.00% Pervious Area

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

Subcatchment 11S: P-8 (CB8)

Hydrograph



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Type III 24-hr 2-yr Rainfall=3.27"

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Summary for Subcatchment 12S: P-9 (roof)

Runoff = 2.01 cfs @ 12.08 hrs, Volume= 0.161 af, Depth= 3.04"
Routed to Pond 14P : Chamber System

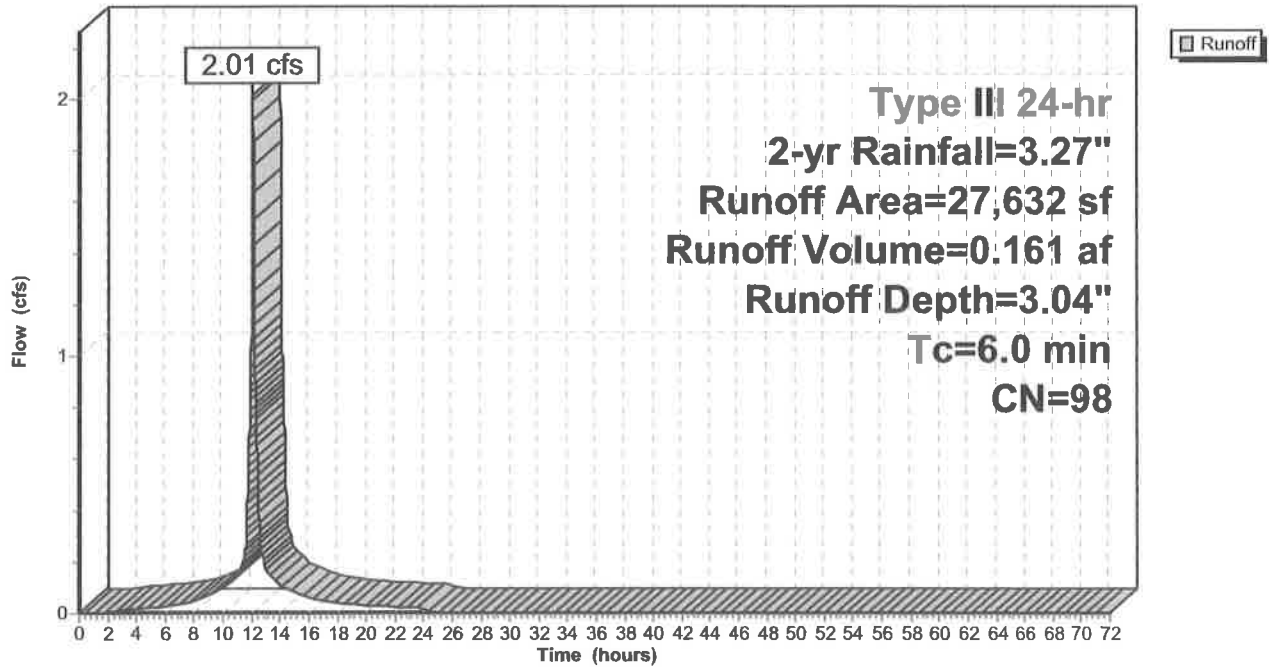
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.27"

Area (sf)	CN	Description
27,632	98	Roofs, HSG A
27,632		100.00% Impervious Area

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

Subcatchment 12S: P-9 (roof)

Hydrograph



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Type III 24-hr 2-yr Rainfall=3.27"

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Summary for Subcatchment 13S: P-10 (to south)

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Reach 7R : offsite south

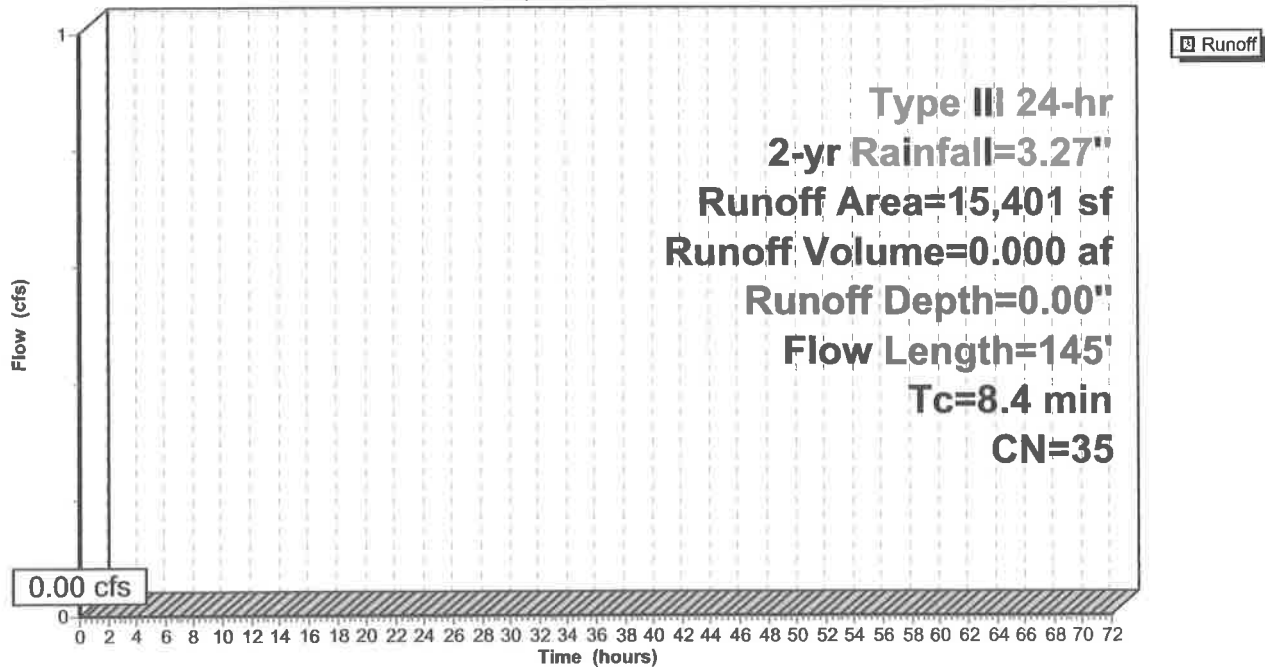
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.27"

Area (sf)	CN	Description
8,371	39	>75% Grass cover, Good, HSG A
7,030	30	Woods, Good, HSG A
15,401	35	Weighted Average
15,401		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		Sheet Flow, Grass: Dense n= 0.240 P2= 3.20"
0.2	95	0.1900	6.54		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
8.4	145	Total			

Subcatchment 13S: P-10 (to south)

Hydrograph



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Type III 24-hr 2-yr Rainfall=3.27"

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Summary for Subcatchment 17S: P-9A (roof)

Runoff = 0.44 cfs @ 12.08 hrs, Volume= 0.035 af, Depth= 3.04"
Routed to Pond 16P : Infiltration Trench

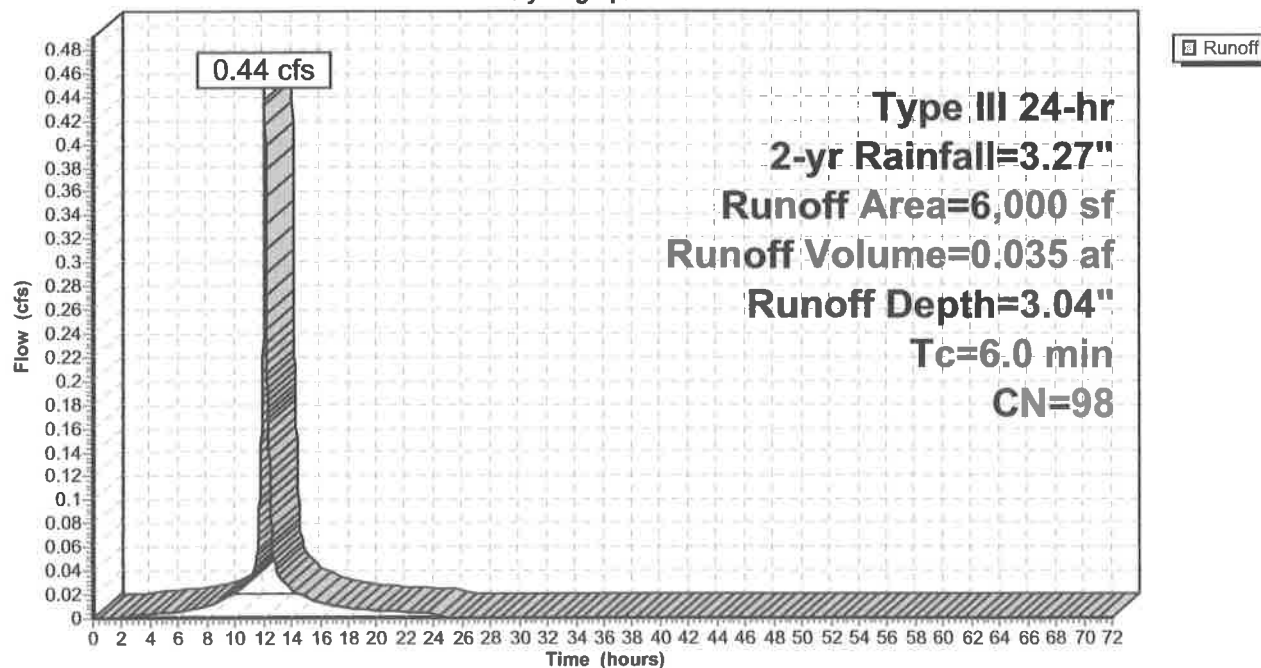
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.27"

Area (sf)	CN	Description
6,000	98	Roofs, HSG A
6,000		100.00% Impervious Area

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

Subcatchment 17S: P-9A (roof)

Hydrograph



Summary for Subcatchment 18S: OS 2

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
 Routed to Reach 20R : Headwall Segment 1

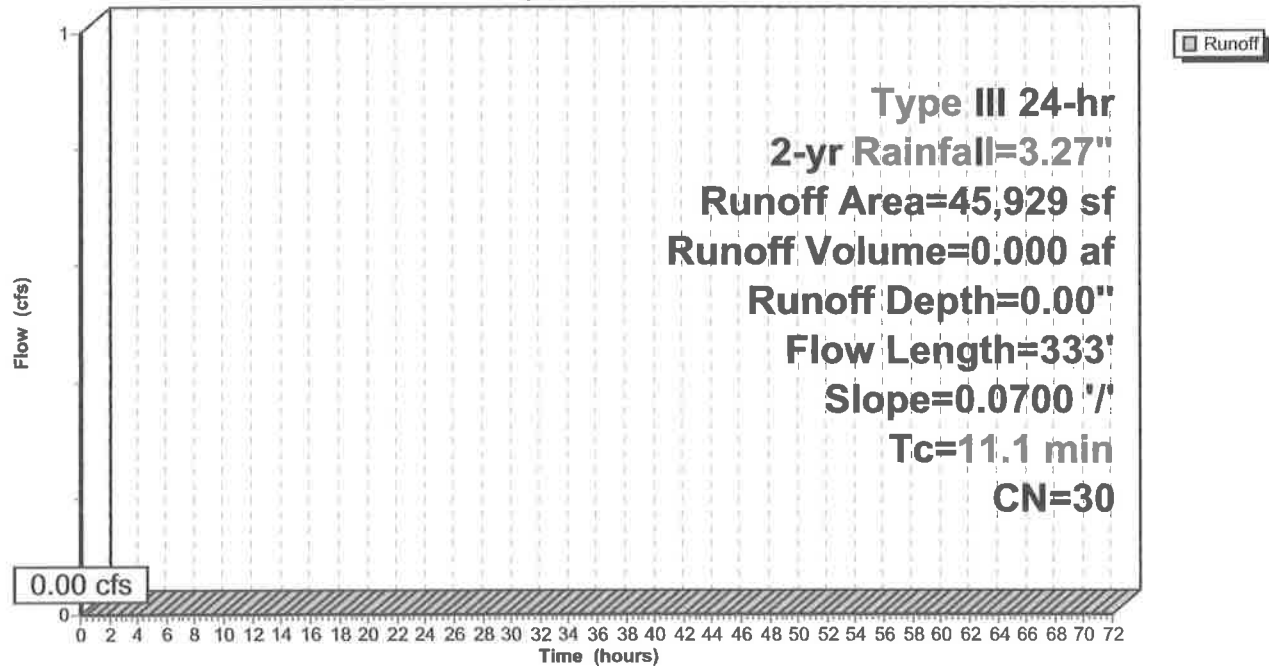
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-yr Rainfall=3.27"

Area (sf)	CN	Description
45,929	30	Woods, Good, HSG A
45,929		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	50	0.0700	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
3.6	283	0.0700	1.32		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
11.1	333	Total			

Subcatchment 18S: OS 2

Hydrograph



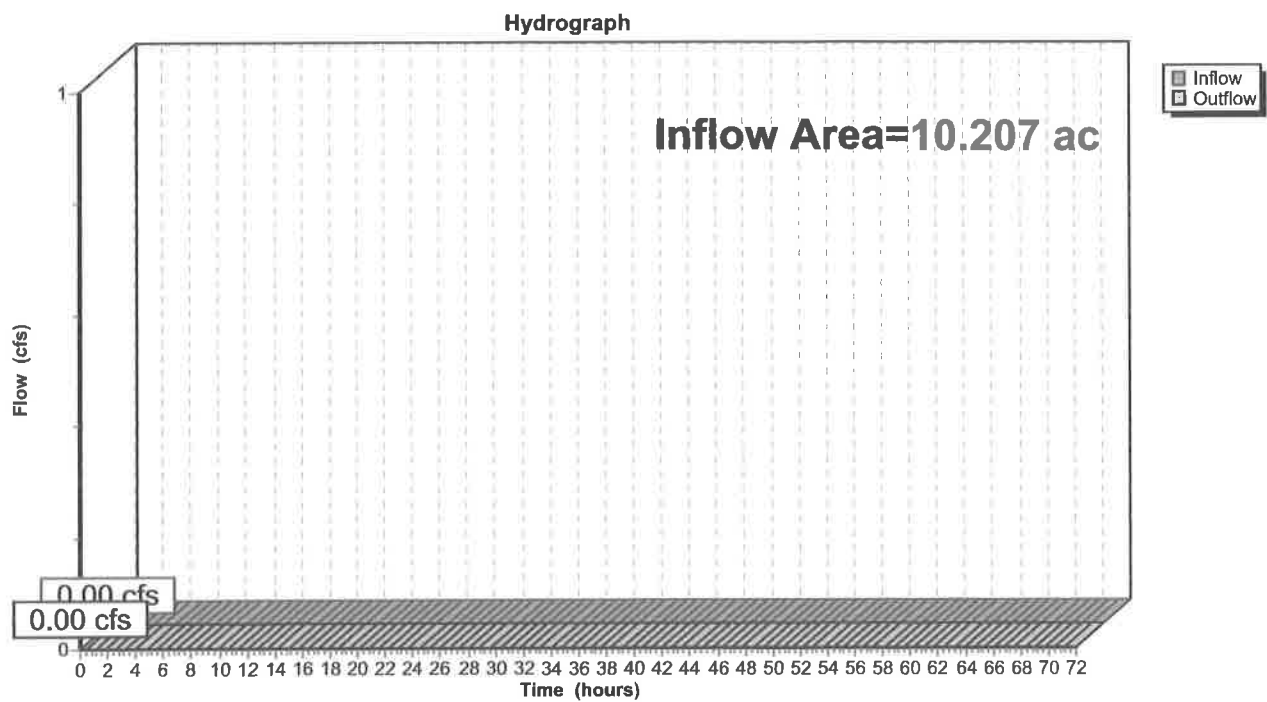
Summary for Reach 7R: offsite south

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 10.207 ac, 37.56% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Reach 7R: offsite south



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Type III 24-hr 2-yr Rainfall=3.27"

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Summary for Reach 17R: Headwall Segment 2

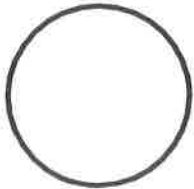
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 6.618 ac, 34.34% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 7R : offsite south

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

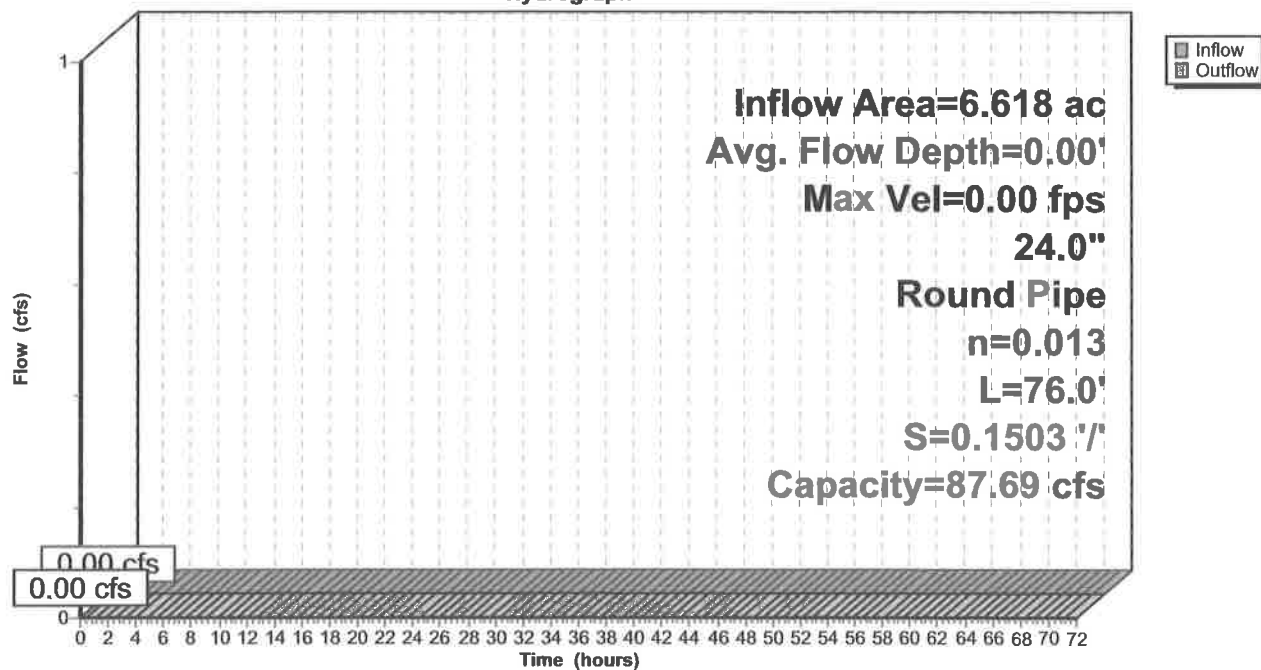
Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 87.69 cfs

24.0" Round Pipe
n= 0.013
Length= 76.0' Slope= 0.1503 '/'
Inlet Invert= 211.67', Outlet Invert= 200.25'



Reach 17R: Headwall Segment 2

Hydrograph



Summary for Reach 20R: Headwall Segment 1

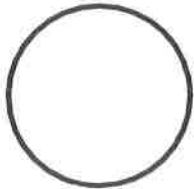
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 6.618 ac, 34.34% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 17R : Headwall Segment 2

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

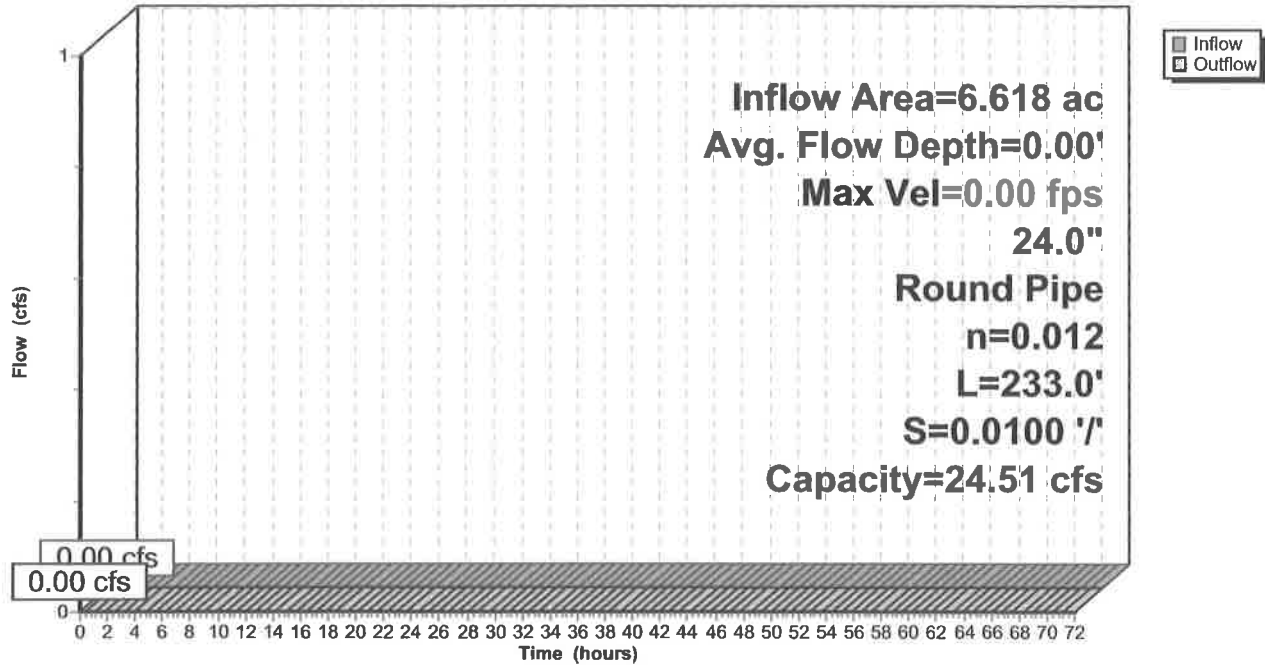
Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 24.51 cfs

24.0" Round Pipe
n= 0.012
Length= 233.0' Slope= 0.0100 '/
Inlet Invert= 214.00', Outlet Invert= 211.67'



Reach 20R: Headwall Segment 1

Hydrograph



Summary for Pond 6P: Existing Basin

Inflow Area = 5.563 ac, 40.85% Impervious, Inflow Depth = 0.55" for 2-yr event
 Inflow = 2.27 cfs @ 12.17 hrs, Volume= 0.255 af
 Outflow = 0.42 cfs @ 13.31 hrs, Volume= 0.184 af, Atten= 81%, Lag= 68.5 min
 Discarded = 0.42 cfs @ 13.31 hrs, Volume= 0.184 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Reach 20R : Headwall Segment 1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 220.76' @ 13.31 hrs Surf.Area= 2,649 sf Storage= 3,654 cf

Plug-Flow detention time= 179.8 min calculated for 0.184 af (72% of inflow)
 Center-of-Mass det. time= 73.4 min (979.1 - 905.8)

Volume	Invert	Avail.Storage	Storage Description
#1	211.00'	111 cf	10.00'D x 9.50'H Vertical Cone/Cylinder 746 cf Overall - 467 cf Embedded = 279 cf x 40.0% Voids
#2	211.20'	467 cf	8.00'D x 9.30'H Vertical Cone/Cylinder Inside #1
#3	211.00'	117 cf	10.00'D x 9.50'H Vertical Cone/Cylinder 746 cf Overall - 452 cf Embedded = 294 cf x 40.0% Voids
#4	211.50'	452 cf	8.00'D x 9.00'H Vertical Cone/Cylinder Inside #3
#5	210.50'	107 cf	10.00'D x 9.50'H Vertical Cone/Cylinder 746 cf Overall - 478 cf Embedded = 269 cf x 40.0% Voids
#6	210.50'	478 cf	8.00'D x 9.50'H Vertical Cone/Cylinder Inside #5
#7	210.50'	123 cf	10.00'D x 10.00'H Vertical Cone/Cylinder 785 cf Overall - 478 cf Embedded = 308 cf x 40.0% Voids
#8	210.70'	478 cf	8.00'D x 9.50'H Vertical Cone/Cylinder Inside #7
#9	211.00'	298 cf	10.00'D x 9.50'H Vertical Cone/Cylinder 746 cf Overall x 40.0% Voids
#10	211.20'	467 cf	8.00'D x 9.30'H Vertical Cone/Cylinder
#11	220.50'	23,070 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		26,170 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
220.50	2,038	0	0
222.00	3,006	3,783	3,783
224.00	4,743	7,749	11,532
225.00	5,659	5,201	16,733
225.50	6,241	2,975	19,708
226.00	7,205	3,362	23,070

Device	Routing	Invert	Outlet Devices
#1	Discarded	220.49'	8.270 in/hr Exfiltration over Surface area above 220.49' Excluded Surface area = 443 sf
#2	Primary	225.00'	10.0' long + 4.0 ' SideZ 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

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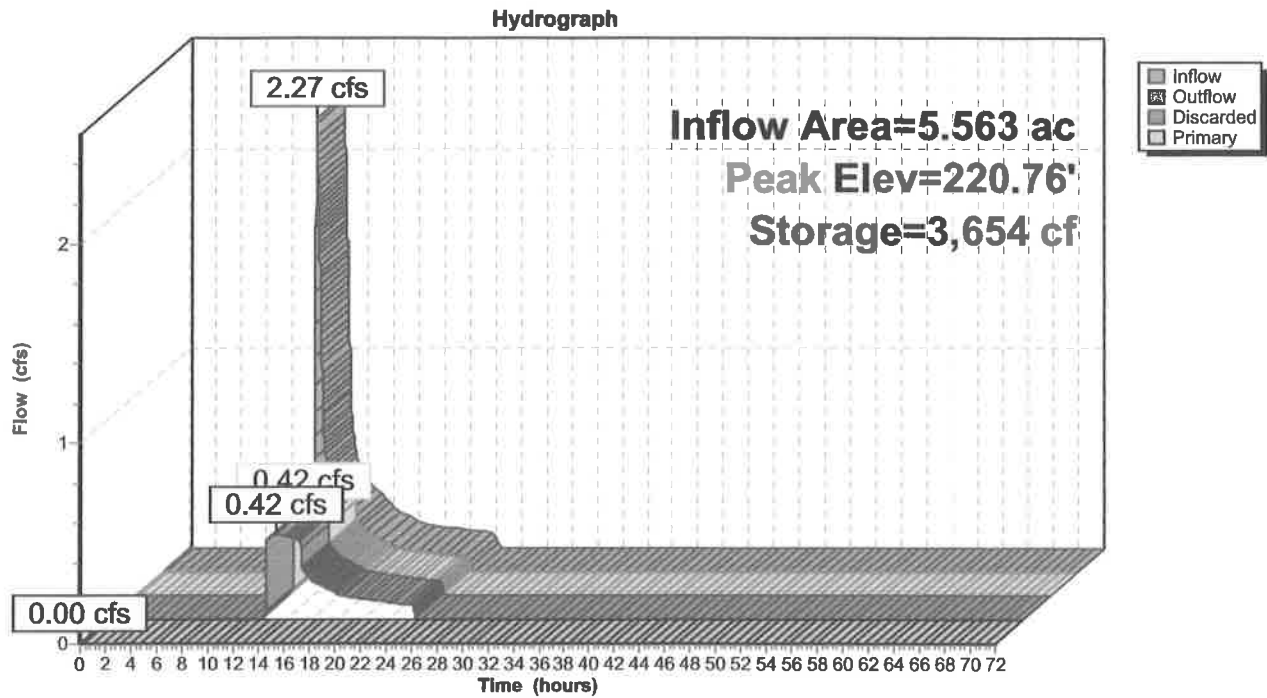
Discarded OutFlow Max=0.42 cfs @ 13.31 hrs HW=220.76' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.42 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=210.50' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 6P: Existing Basin



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Summary for Pond 14P: Chamber System

Inflow Area = 2.604 ac, 53.82% Impervious, Inflow Depth = 1.35" for 2-yr event
 Inflow = 3.82 cfs @ 12.09 hrs, Volume= 0.292 af
 Outflow = 1.21 cfs @ 11.90 hrs, Volume= 0.292 af, Atten= 68%, Lag= 0.0 min
 Discarded = 1.21 cfs @ 11.90 hrs, Volume= 0.292 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Reach 7R : offsite south

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 209.67' @ 12.41 hrs Surf.Area= 0.145 ac Storage= 0.047 af

Plug-Flow detention time= 8.8 min calculated for 0.292 af (100% of inflow)
 Center-of-Mass det. time= 8.8 min (803.3 - 794.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	209.00'	0.146 af	19.60'W x 322.00'L x 5.50'H Field A 0.797 af Overall - 0.433 af Embedded = 0.364 af x 40.0% Voids
#2A	209.50'	0.326 af	Galley 4x4x4 x 320 Inside #1 Inside= 42.0"W x 43.0"H => 12.67 sf x 3.50'L = 44.3 cf Outside= 52.8"W x 48.0"H => 14.72 sf x 4.00'L = 58.9 cf 320 Chambers in 4 Rows
		0.472 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	209.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	214.00'	15.0" Round Culvert L= 157.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.00' / 206.60' S= 0.0471 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf

Discarded OutFlow Max=1.21 cfs @ 11.90 hrs HW=209.06' (Free Discharge)
 ↳1=Exfiltration (Exfiltration Controls 1.21 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=209.00' (Free Discharge)
 ↳2=Culvert (Controls 0.00 cfs)

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Pond 14P: Chamber System - Chamber Wizard Field A

Chamber Model = Galley 4x4x4 (Concrete Galley, UCPI 4x4x4 Galley or equivalent)

Inside= 42.0"W x 43.0"H => 12.67 sf x 3.50'L = 44.3 cf

Outside= 52.8"W x 48.0"H => 14.72 sf x 4.00'L = 58.9 cf

80 Chambers/Row x 4.00' Long = 320.00' Row Length +12.0" End Stone x 2 = 322.00' Base Length

4 Rows x 52.8" Wide + 12.0" Side Stone x 2 = 19.60' Base Width

6.0" Stone Base + 48.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

320 Chambers x 44.3 cf = 14,190.3 cf Chamber Storage

320 Chambers x 58.9 cf = 18,840.4 cf Displacement

34,711.6 cf Field - 18,840.4 cf Chambers = 15,871.2 cf Stone x 40.0% Voids = 6,348.5 cf Stone Storage

Chamber Storage + Stone Storage = 20,538.8 cf = 0.472 af

Overall Storage Efficiency = 59.2%

Overall System Size = 322.00' x 19.60' x 5.50'

320 Chambers

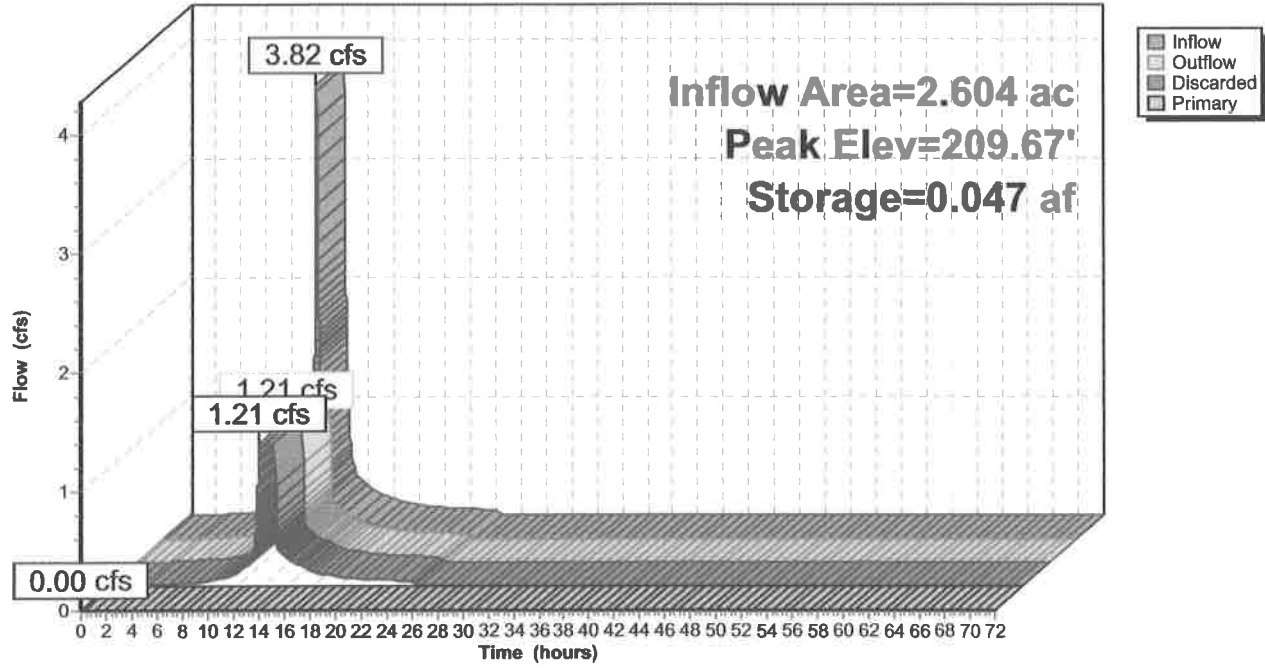
1,285.6 cy Field

587.8 cy Stone



Pond 14P: Chamber System

Hydrograph



Summary for Pond 16P: Infiltration Trench

Inflow Area = 0.632 ac, 25.27% Impervious, Inflow Depth = 0.66" for 2-yr event
 Inflow = 0.44 cfs @ 12.08 hrs, Volume= 0.035 af
 Outflow = 0.18 cfs @ 11.95 hrs, Volume= 0.035 af, Atten= 58%, Lag= 0.0 min
 Discarded = 0.18 cfs @ 11.95 hrs, Volume= 0.035 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 195.43' @ 12.28 hrs Surf.Area= 952 sf Storage= 162 cf

Plug-Flow detention time= 4.5 min calculated for 0.035 af (100% of inflow)
 Center-of-Mass det. time= 4.5 min (761.3 - 756.8)

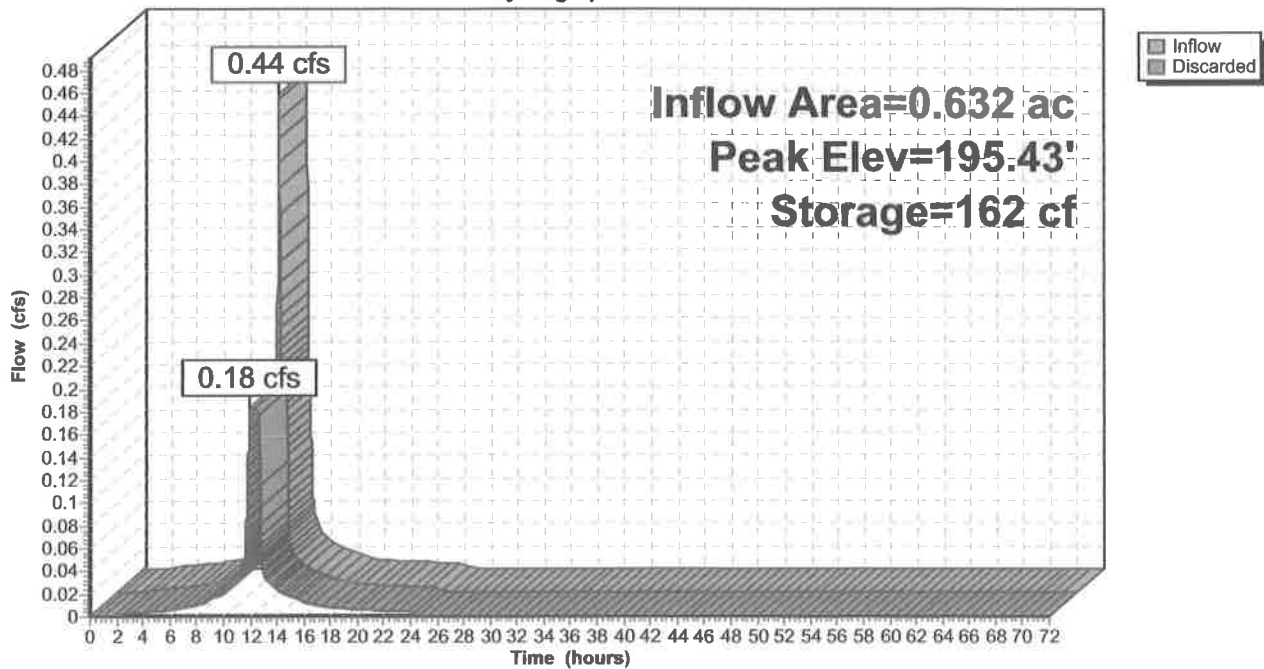
Volume	Invert	Avail.Storage	Storage Description
#1	195.00'	1,593 cf	8.50'W x 112.00'L x 5.00'H Prismatic 4,760 cf Overall - 778 cf Embedded = 3,982 cf x 40.0% Voids
#2	196.25'	778 cf	18.0" Round CMP_Round 18" x 4 Inside #1 L= 110.0'
		2,371 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	195.00'	8.270 in/hr Exfiltration over Horizontal area

Discarded OutFlow Max=0.18 cfs @ 11.95 hrs HW=195.05' (Free Discharge)
 1=Exfiltration (Exfiltration Controls 0.18 cfs)

Pond 16P: Infiltration Trench

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.96"

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: P-1 (CB1)	Runoff Area=3,398 sf 66.27% Impervious Runoff Depth=2.68" Tc=6.0 min CN=78 Runoff=0.25 cfs 0.017 af
Subcatchment 2S: P-2 (CB2)	Runoff Area=1,896 sf 87.45% Impervious Runoff Depth=3.94" Tc=6.0 min CN=91 Runoff=0.19 cfs 0.014 af
Subcatchment 3S: P-3 (CB3)	Runoff Area=9,124 sf 81.46% Impervious Runoff Depth=3.53" Tc=6.0 min CN=87 Runoff=0.85 cfs 0.062 af
Subcatchment 4S: OS 1	Runoff Area=242,335 sf 40.85% Impervious Runoff Depth=1.48" Flow Length=855' Tc=9.9 min CN=63 Runoff=7.85 cfs 0.688 af
Subcatchment 7S: P-4 (CB4)	Runoff Area=17,772 sf 64.68% Impervious Runoff Depth=2.59" Tc=6.0 min CN=77 Runoff=1.24 cfs 0.088 af
Subcatchment 8S: P-5 (CB5)	Runoff Area=5,781 sf 64.57% Impervious Runoff Depth=2.59" Tc=6.0 min CN=77 Runoff=0.40 cfs 0.029 af
Subcatchment 9S: P-6 (CB6)	Runoff Area=11,883 sf 57.73% Impervious Runoff Depth=2.25" Tc=6.0 min CN=73 Runoff=0.71 cfs 0.051 af
Subcatchment 10S: P-7 (CB7)	Runoff Area=13,474 sf 0.00% Impervious Runoff Depth=0.10" Tc=6.0 min CN=36 Runoff=0.00 cfs 0.003 af
Subcatchment 11S: P-8 (CB8)	Runoff Area=22,491 sf 0.00% Impervious Runoff Depth=0.19" Tc=6.0 min CN=39 Runoff=0.02 cfs 0.008 af
Subcatchment 12S: P-9 (roof)	Runoff Area=27,632 sf 100.00% Impervious Runoff Depth=4.72" Tc=6.0 min CN=98 Runoff=3.08 cfs 0.250 af
Subcatchment 13S: P-10 (to south)	Runoff Area=15,401 sf 0.00% Impervious Runoff Depth=0.08" Flow Length=145' Tc=8.4 min CN=35 Runoff=0.00 cfs 0.002 af
Subcatchment 15S: P-10A (rear lawn)	Runoff Area=21,516 sf 4.43% Impervious Runoff Depth=0.19" Tc=6.0 min CN=39 Runoff=0.02 cfs 0.008 af
Subcatchment 17S: P-9A (roof)	Runoff Area=6,000 sf 100.00% Impervious Runoff Depth=4.72" Tc=6.0 min CN=98 Runoff=0.67 cfs 0.054 af
Subcatchment 18S: OS 2	Runoff Area=45,929 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=333' Slope=0.0700 '/' Tc=11.1 min CN=30 Runoff=0.00 cfs 0.000 af
Reach 7R: offsite south	Inflow=0.00 cfs 0.003 af Outflow=0.00 cfs 0.003 af
Reach 17R: Headwall Segment 2	Avg. Flow Depth=0.00' Max Vel=2.48 fps Inflow=0.00 cfs 0.000 af 24.0" Round Pipe n=0.013 L=76.0' S=0.1503 '/' Capacity=87.69 cfs Outflow=0.00 cfs 0.000 af

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Reach 20R: Headwall Segment 1

Avg. Flow Depth=0.01' Max Vel=0.69 fps Inflow=0.00 cfs 0.000 af
24.0" Round Pipe n=0.012 L=233.0' S=0.0100 '/ Capacity=24.51 cfs Outflow=0.00 cfs 0.000 af

Pond 6P: Existing Basin

Peak Elev=223.63' Storage=12,947 cf Inflow=7.85 cfs 0.688 af
Discarded=0.85 cfs 0.617 af Primary=0.00 cfs 0.000 af Outflow=0.85 cfs 0.617 af

Pond 14P: Chamber System

Peak Elev=210.48' Storage=0.133 af Inflow=6.72 cfs 0.522 af
Discarded=1.21 cfs 0.522 af Primary=0.00 cfs 0.000 af Outflow=1.21 cfs 0.522 af

Pond 16P: Infiltration Trench

Peak Elev=196.10' Storage=419 cf Inflow=0.67 cfs 0.062 af
Outflow=0.18 cfs 0.062 af

Total Runoff Area = 10.207 ac Runoff Volume = 1.274 af Average Runoff Depth = 1.50"
62.44% Pervious = 6.373 ac 37.56% Impervious = 3.834 ac

Summary for Subcatchment 1S: P-1 (CB1)

Runoff = 0.25 cfs @ 12.09 hrs, Volume= 0.017 af, Depth= 2.68"
 Routed to Pond 14P : Chamber System

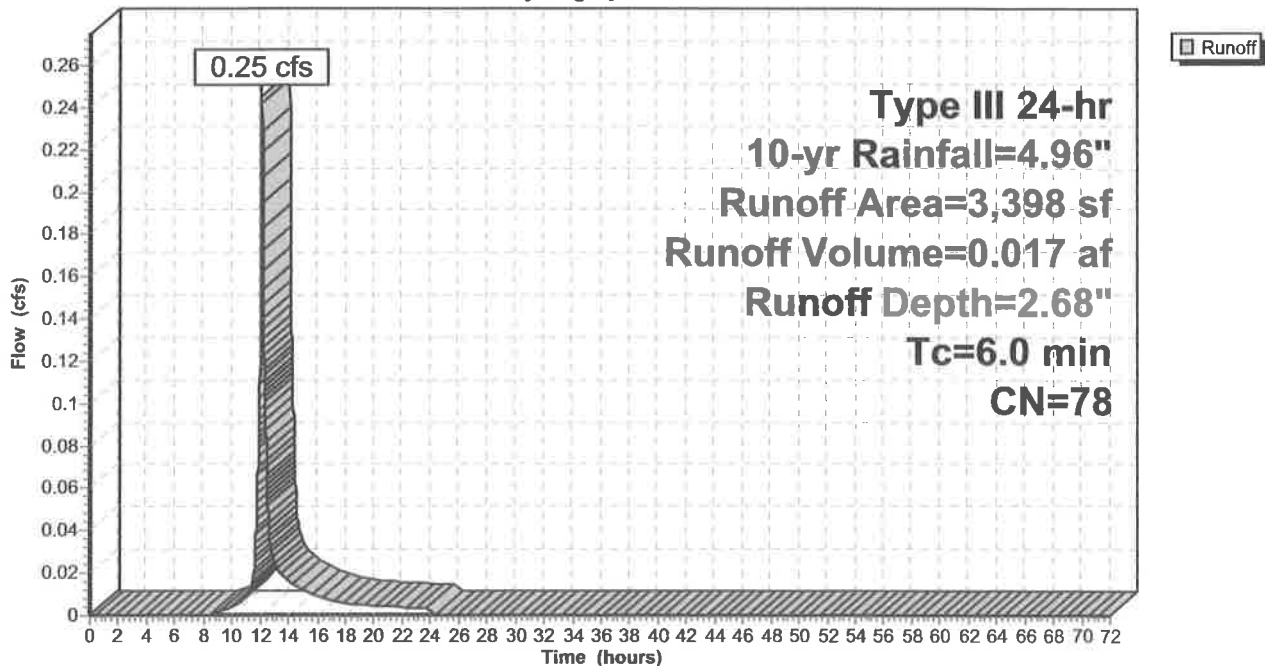
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-yr Rainfall=4.96"

Area (sf)	CN	Description
2,252	98	Paved parking, HSG A
1,146	39	>75% Grass cover, Good, HSG A
3,398	78	Weighted Average
1,146		33.73% Pervious Area
2,252		66.27% Impervious Area

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

Subcatchment 1S: P-1 (CB1)

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.96"

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Summary for Subcatchment 2S: P-2 (CB2)

Runoff = 0.19 cfs @ 12.08 hrs, Volume= 0.014 af, Depth= 3.94"
Routed to Pond 14P : Chamber System

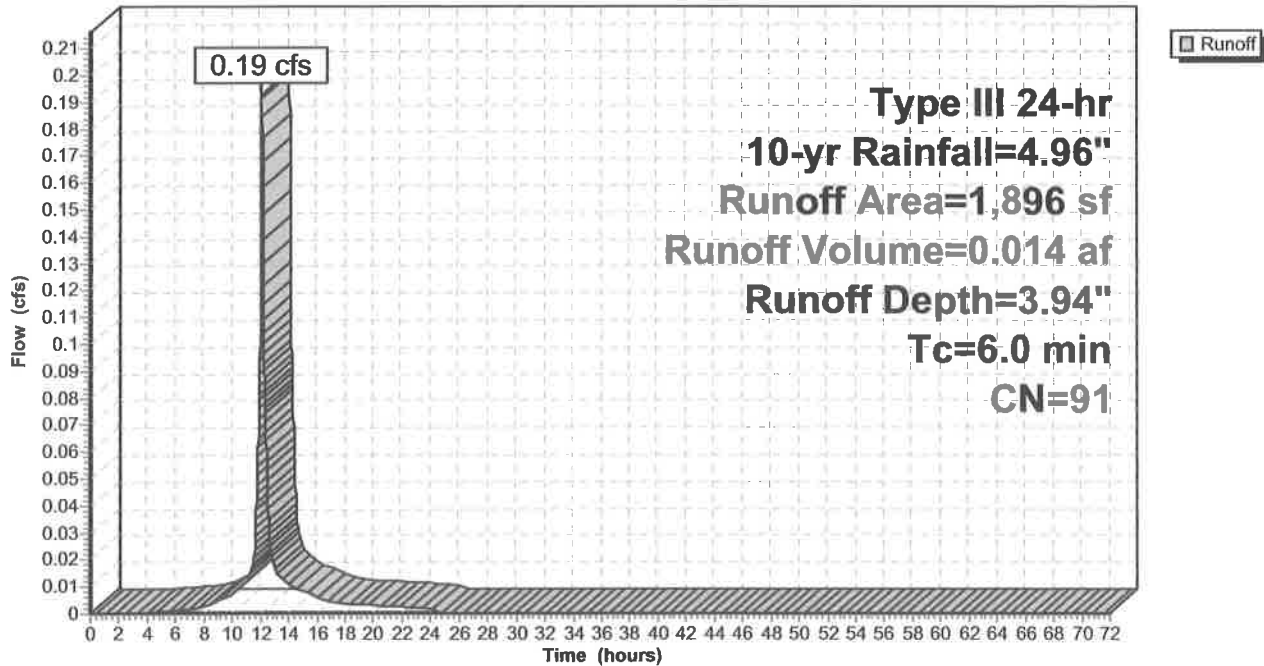
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.96"

Area (sf)	CN	Description
1,658	98	Paved parking, HSG A
238	39	>75% Grass cover, Good, HSG A
1,896	91	Weighted Average
238		12.55% Pervious Area
1,658		87.45% Impervious Area

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

Subcatchment 2S: P-2 (CB2)

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.96"

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Summary for Subcatchment 3S: P-3 (CB3)

Runoff = 0.85 cfs @ 12.09 hrs, Volume= 0.062 af, Depth= 3.53"
Routed to Pond 14P : Chamber System

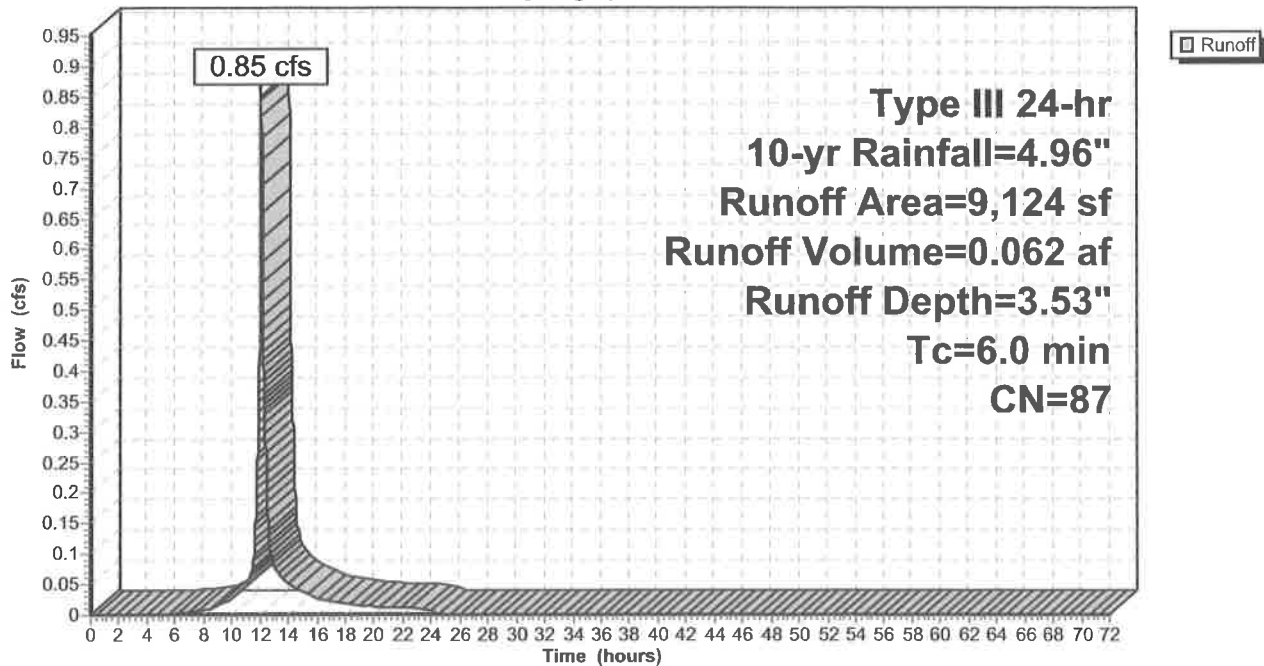
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.96"

Area (sf)	CN	Description
7,432	98	Paved parking, HSG A
1,692	39	>75% Grass cover, Good, HSG A
9,124	87	Weighted Average
1,692		18.54% Pervious Area
7,432		81.46% Impervious Area

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

Subcatchment 3S: P-3 (CB3)

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.96"

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Summary for Subcatchment 4S: OS 1

[47] Hint: Peak is 121% of capacity of segment #3

Runoff = 7.85 cfs @ 12.15 hrs, Volume= 0.688 af, Depth= 1.48"
 Routed to Pond 6P : Existing Basin

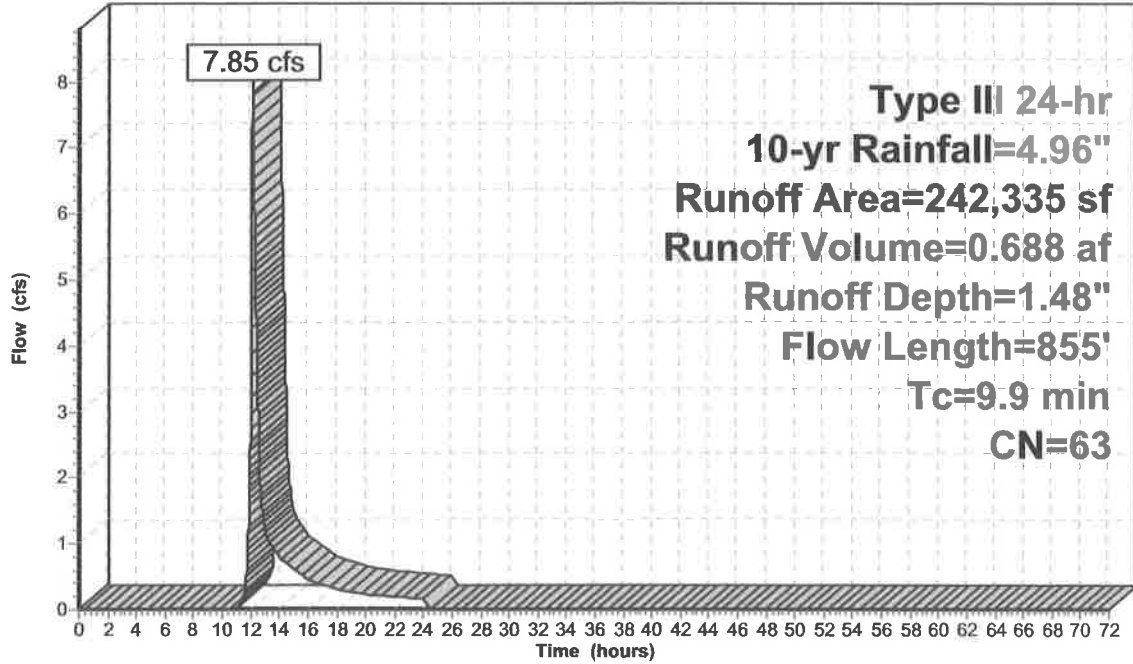
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-yr Rainfall=4.96"

Area (sf)	CN	Description
21,486	98	Roofs, HSG A
15,524	30	Woods, Good, HSG A
127,810	39	>75% Grass cover, Good, HSG A
* 6,241	98	Water Surface, HSG A Basin
71,274	98	Paved parking, HSG A
242,335	63	Weighted Average
143,334		59.15% Pervious Area
99,001		40.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	50	0.0300	0.12		Sheet Flow, Grass: Dense n= 0.240 P2= 3.20"
1.1	150	0.0120	2.22		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.5	475	0.0100	5.26	6.46	Pipe Channel, RCP_Round 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
0.3	180	0.0280	9.95	17.58	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
9.9	855	Total			

Subcatchment 4S: OS 1

Hydrograph



Runoff

Type III 24-hr
10-yr Rainfall=4.96"
Runoff Area=242,335 sf
Runoff Volume=0.688 af
Runoff Depth=1.48"
Flow Length=855'
Tc=9.9 min
CN=63

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Type III 24-hr 10-yr Rainfall=4.96"

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Summary for Subcatchment 7S: P-4 (CB4)

Runoff = 1.24 cfs @ 12.09 hrs, Volume= 0.088 af, Depth= 2.59"
Routed to Pond 14P : Chamber System

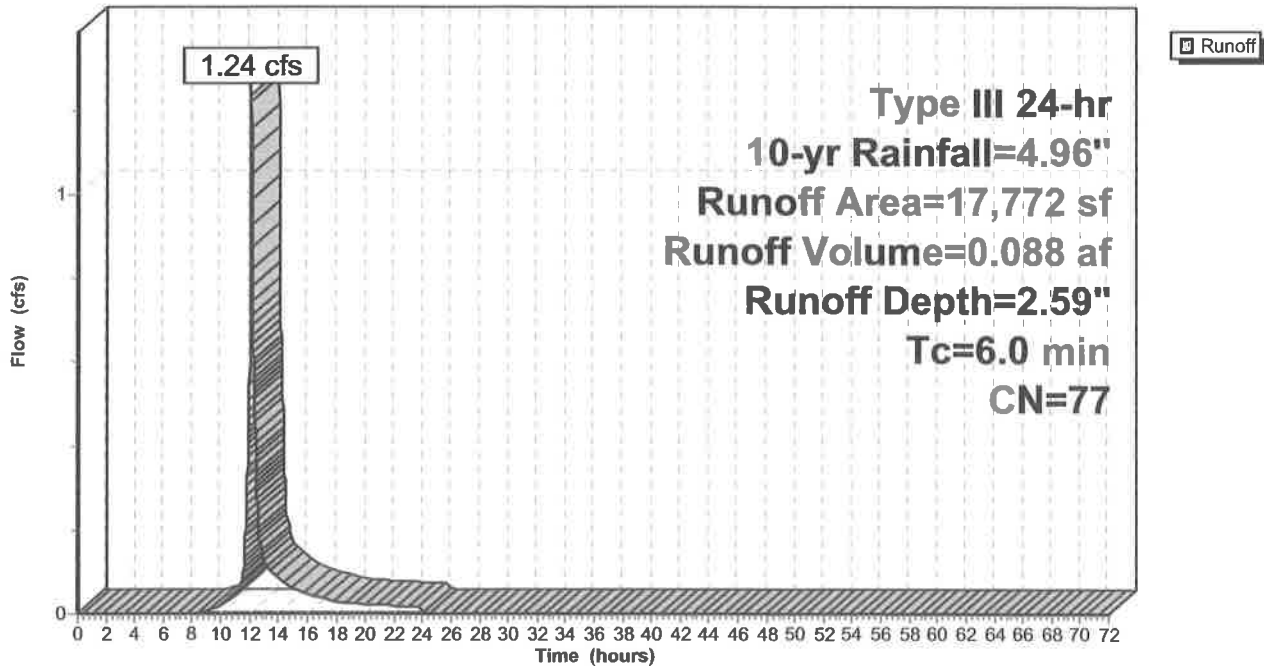
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.96"

Area (sf)	CN	Description
11,495	98	Paved parking, HSG A
6,277	39	>75% Grass cover, Good, HSG A
17,772	77	Weighted Average
6,277		35.32% Pervious Area
11,495		64.68% Impervious Area

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

Subcatchment 7S: P-4 (CB4)

Hydrograph



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Summary for Subcatchment 8S: P-5 (CB5)

Runoff = 0.40 cfs @ 12.09 hrs, Volume= 0.029 af, Depth= 2.59"
Routed to Pond 14P : Chamber System

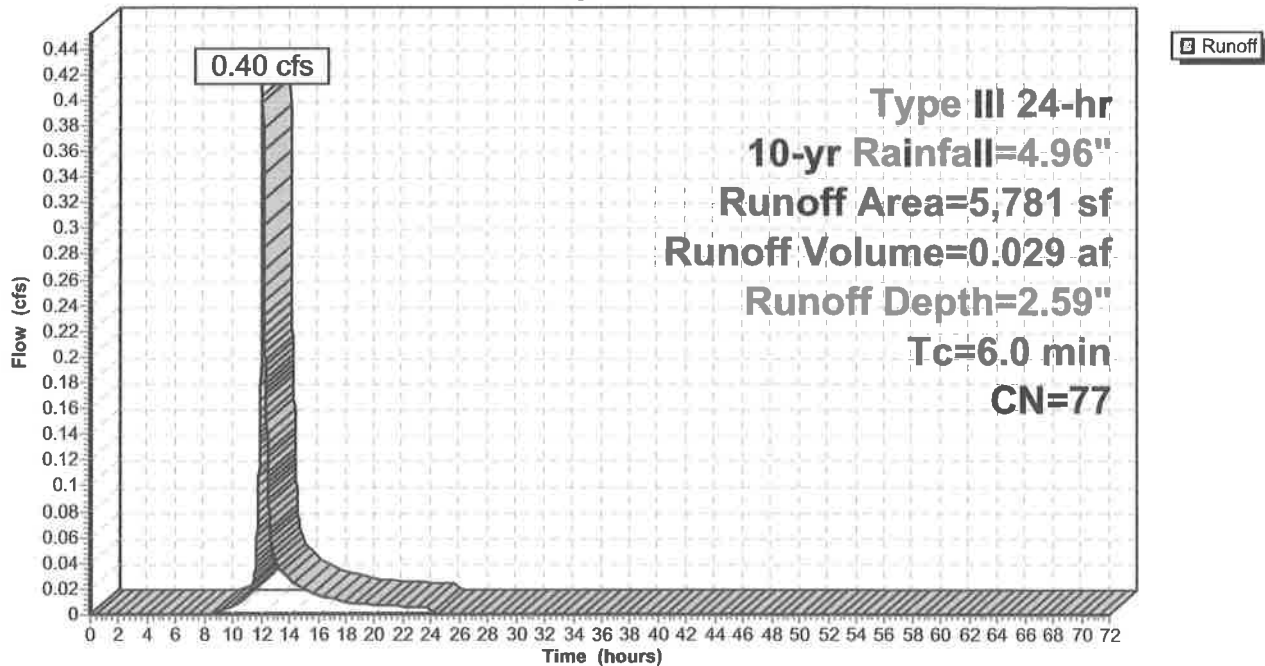
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.96"

Area (sf)	CN	Description
3,733	98	Paved parking, HSG A
2,048	39	>75% Grass cover, Good, HSG A
5,781	77	Weighted Average
2,048		35.43% Pervious Area
3,733		64.57% Impervious Area

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

Subcatchment 8S: P-5 (CB5)

Hydrograph



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Summary for Subcatchment 9S: P-6 (CB6)

Runoff = 0.71 cfs @ 12.09 hrs, Volume= 0.051 af, Depth= 2.25"
Routed to Pond 14P : Chamber System

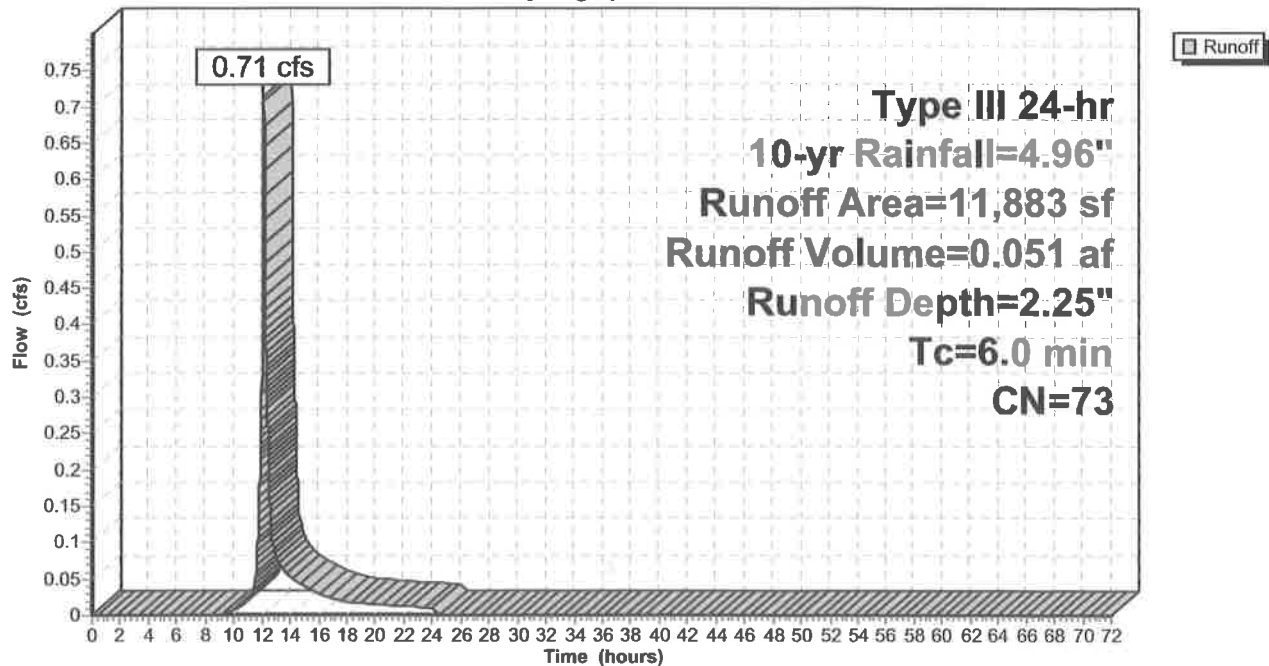
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.96"

Area (sf)	CN	Description
6,860	98	Paved parking, HSG A
5,023	39	>75% Grass cover, Good, HSG A
11,883	73	Weighted Average
5,023		42.27% Pervious Area
6,860		57.73% Impervious Area

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

Subcatchment 9S: P-6 (CB6)

Hydrograph



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Summary for Subcatchment 10S: P-7 (CB7)

Runoff = 0.00 cfs @ 14.90 hrs, Volume= 0.003 af, Depth= 0.10"
 Routed to Pond 14P : Chamber System

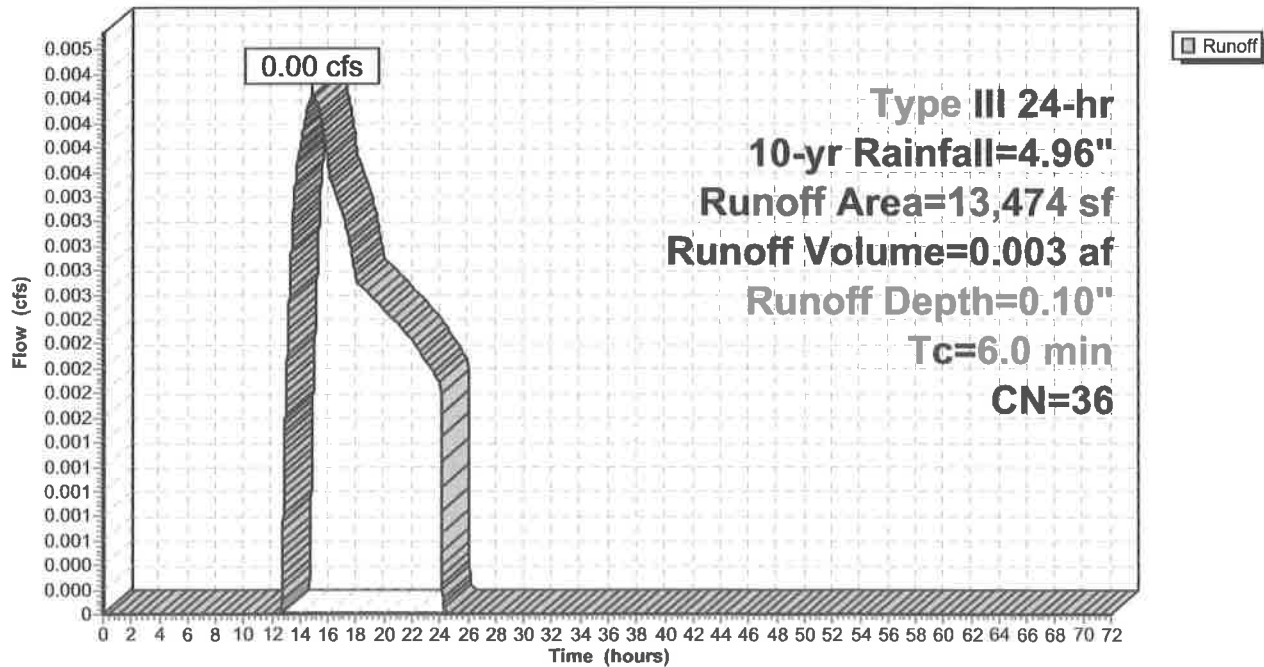
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-yr Rainfall=4.96"

Area (sf)	CN	Description
8,914	39	>75% Grass cover, Good, HSG A
4,560	30	Woods, Good, HSG A
13,474	36	Weighted Average
13,474		100.00% Pervious Area

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

Subcatchment 10S: P-7 (CB7)

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.96"

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Summary for Subcatchment 11S: P-8 (CB8)

Runoff = 0.02 cfs @ 12.48 hrs, Volume= 0.008 af, Depth= 0.19"
Routed to Pond 14P : Chamber System

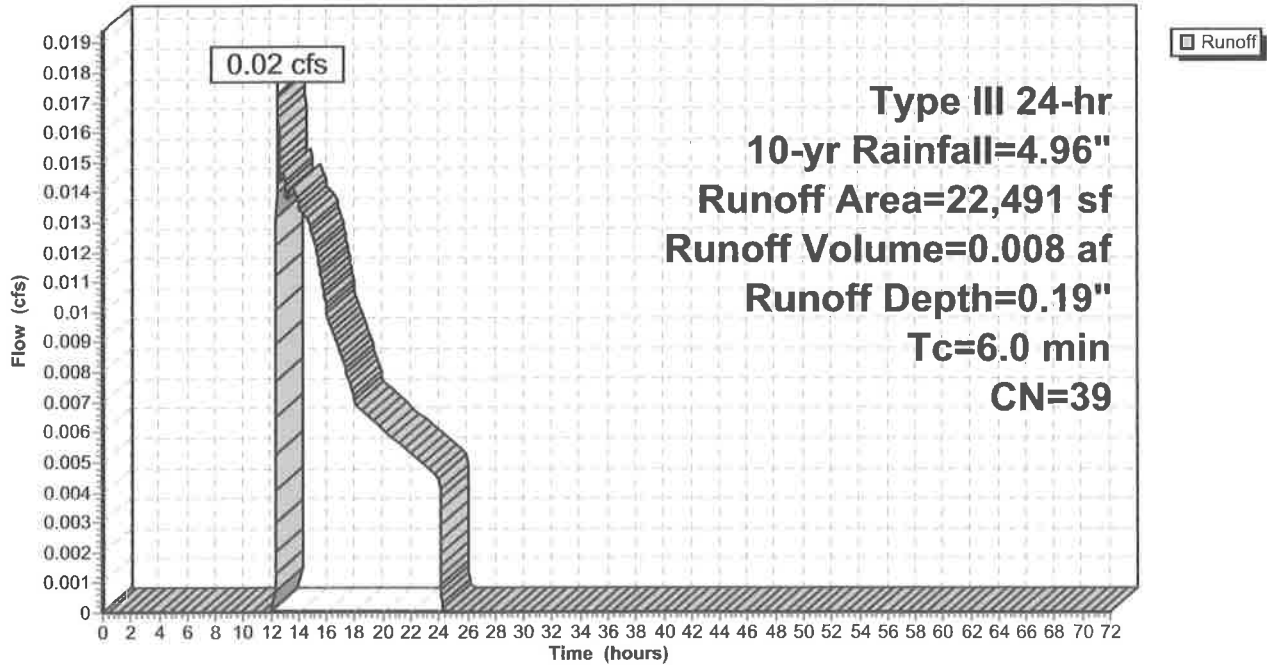
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.96"

Area (sf)	CN	Description
22,491	39	>75% Grass cover, Good, HSG A
22,491		100.00% Pervious Area

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

Subcatchment 11S: P-8 (CB8)

Hydrograph



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Type III 24-hr 10-yr Rainfall=4.96"

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Summary for Subcatchment 12S: P-9 (roof)

Runoff = 3.08 cfs @ 12.08 hrs, Volume= 0.250 af, Depth= 4.72"
Routed to Pond 14P : Chamber System

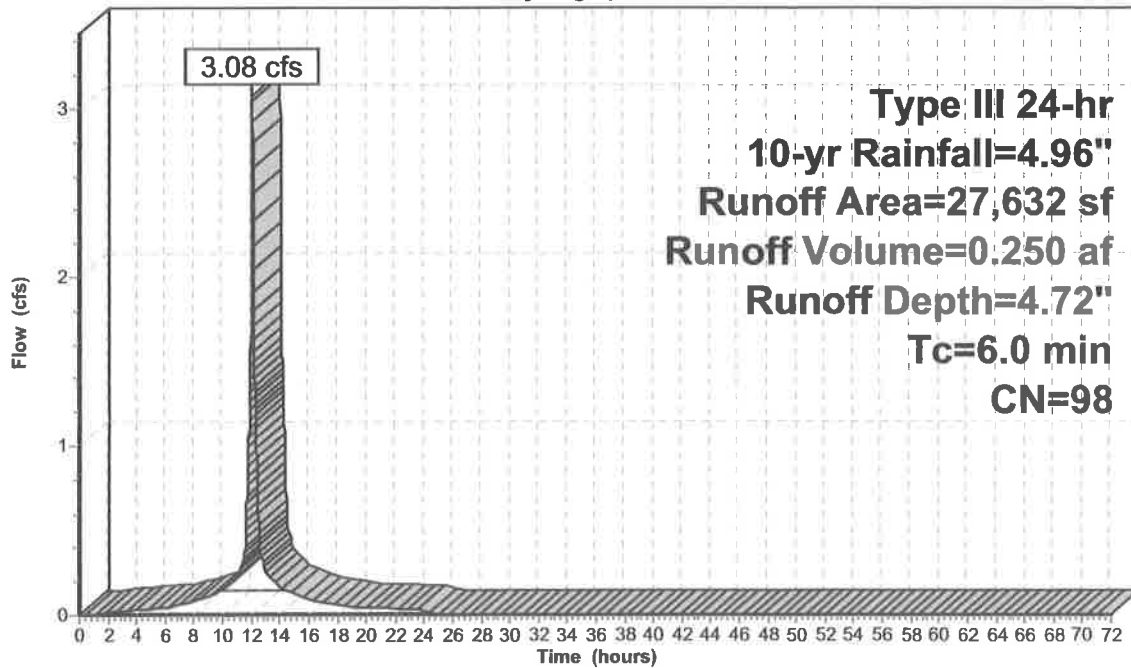
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.96"

Area (sf)	CN	Description
27,632	98	Roofs, HSG A
27,632		100.00% Impervious Area

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

Subcatchment 12S: P-9 (roof)

Hydrograph



Summary for Subcatchment 13S: P-10 (to south)

Runoff = 0.00 cfs @ 15.24 hrs, Volume= 0.002 af, Depth= 0.08"
 Routed to Reach 7R : offsite south

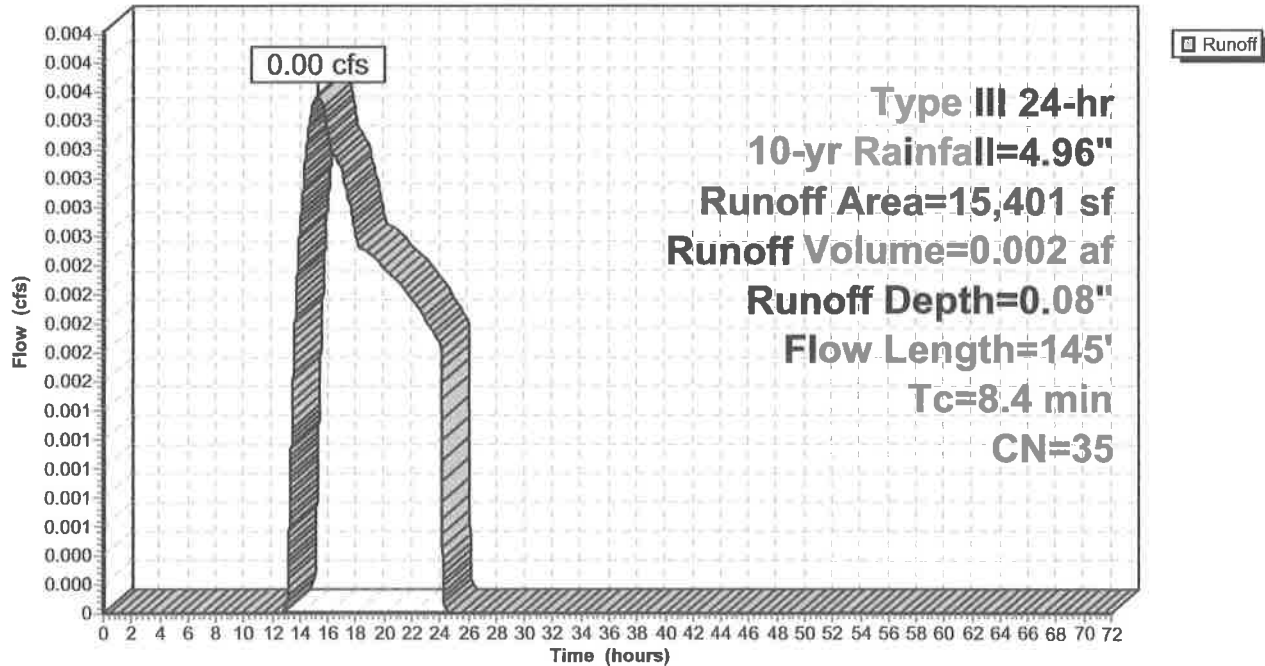
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-yr Rainfall=4.96"

Area (sf)	CN	Description
8,371	39	>75% Grass cover, Good, HSG A
7,030	30	Woods, Good, HSG A
15,401	35	Weighted Average
15,401		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		Sheet Flow, Grass: Dense n= 0.240 P2= 3.20"
0.2	95	0.1900	6.54		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
8.4	145	Total			

Subcatchment 13S: P-10 (to south)

Hydrograph



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Summary for Subcatchment 15S: P-10A (rear lawn)

Runoff = 0.02 cfs @ 12.48 hrs, Volume= 0.008 af, Depth= 0.19"
Routed to Pond 16P : Infiltration Trench

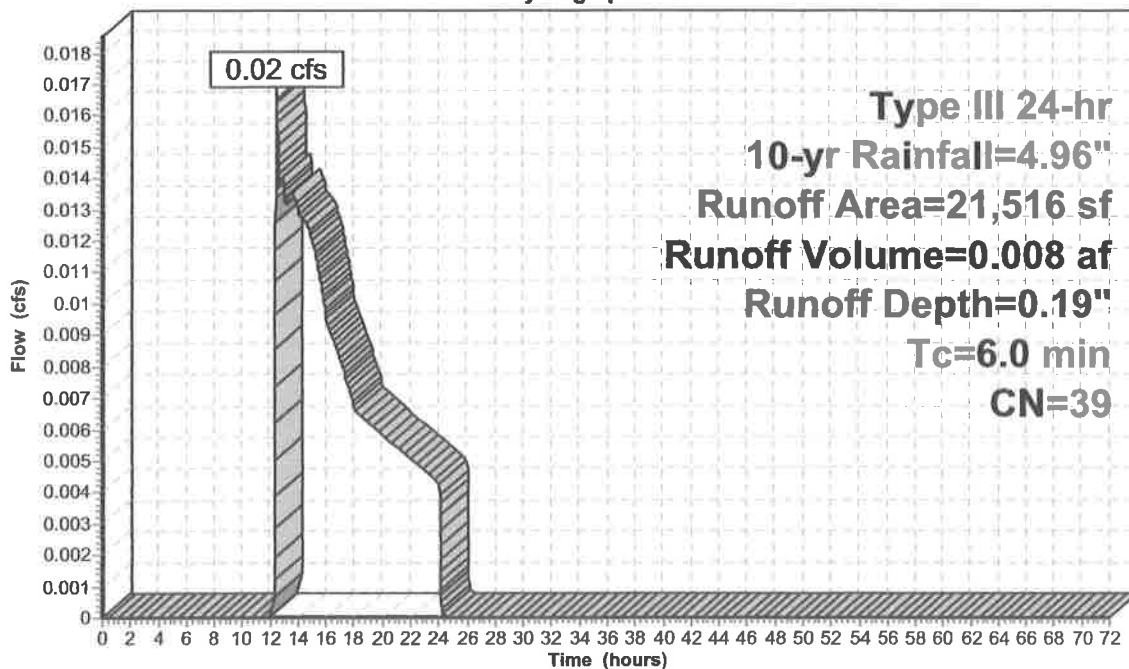
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.96"

Area (sf)	CN	Description
13,389	39	>75% Grass cover, Good, HSG A
953	98	Water Surface, HSG A
7,174	30	Meadow, non-grazed, HSG A
21,516	39	Weighted Average
20,563		95.57% Pervious Area
953		4.43% Impervious Area

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

Subcatchment 15S: P-10A (rear lawn)

Hydrograph



Runoff

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Summary for Subcatchment 17S: P-9A (roof)

Runoff = 0.67 cfs @ 12.08 hrs, Volume= 0.054 af, Depth= 4.72"
Routed to Pond 16P : Infiltration Trench

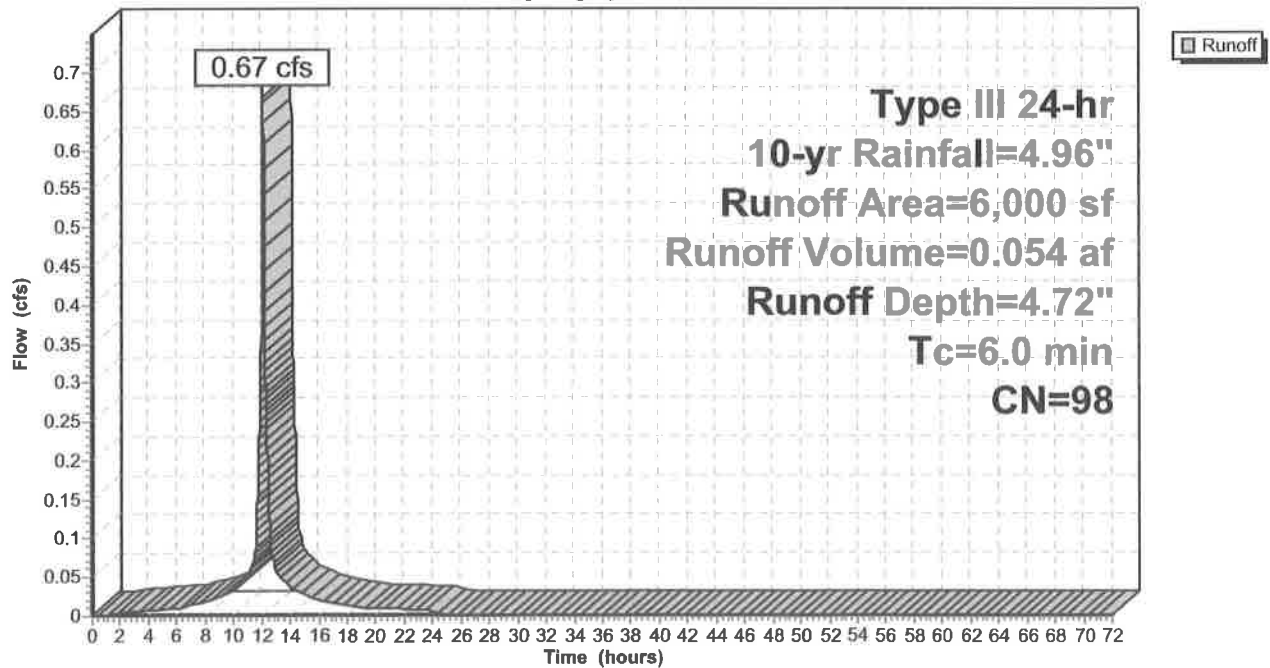
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.96"

Area (sf)	CN	Description
6,000	98	Roofs, HSG A
6,000		100.00% Impervious Area

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

Subcatchment 17S: P-9A (roof)

Hydrograph



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Summary for Subcatchment 18S: OS 2

Runoff = 0.00 cfs @ 24.01 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Reach 20R : Headwall Segment 1

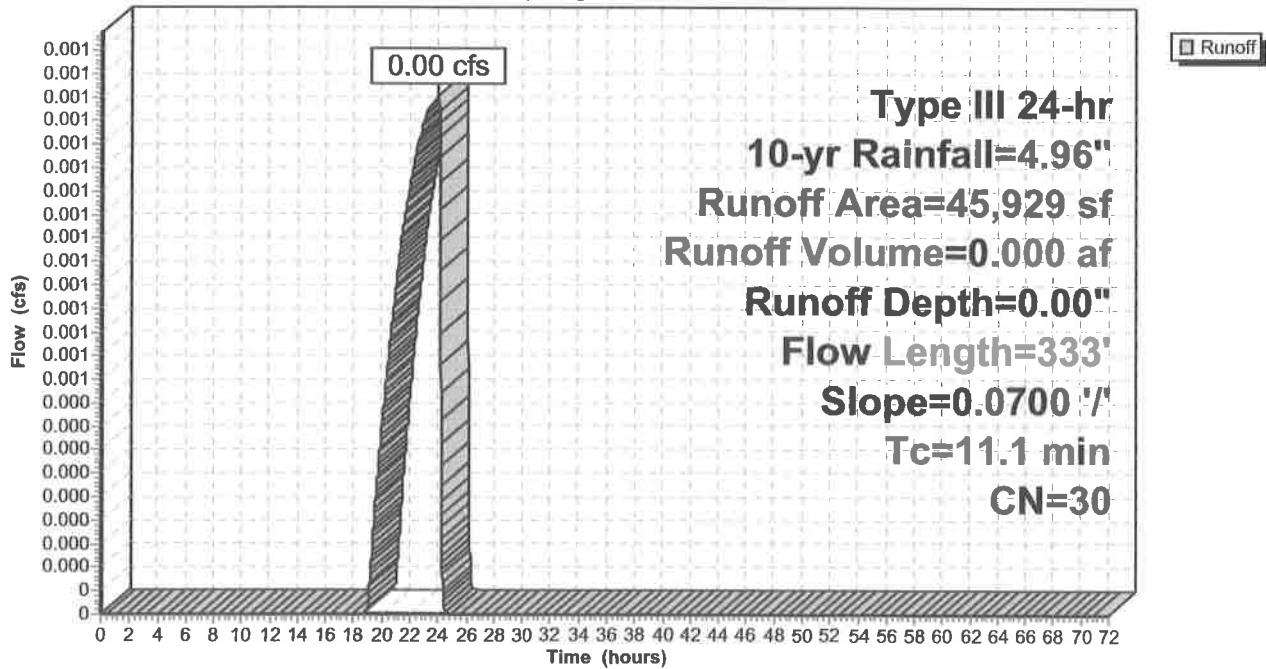
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.96"

Area (sf)	CN	Description
45,929	30	Woods, Good, HSG A
45,929		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	50	0.0700	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
3.6	283	0.0700	1.32		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
11.1	333	Total			

Subcatchment 18S: OS 2

Hydrograph



Summary for Reach 7R: offsite south

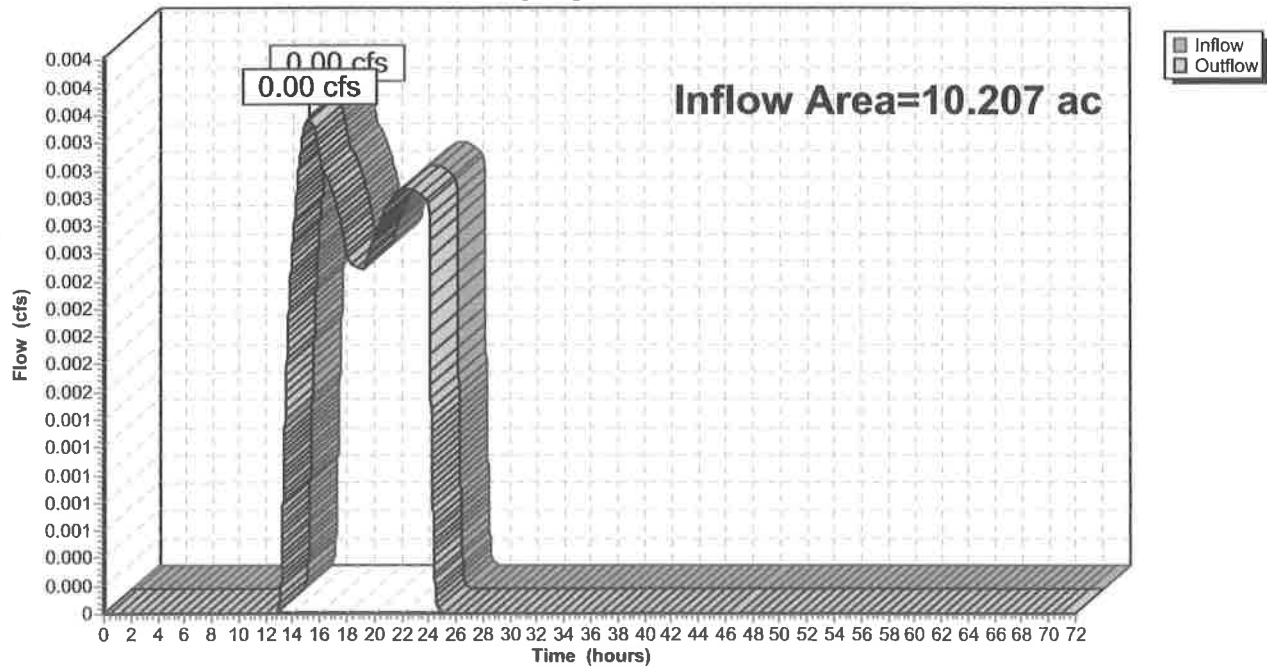
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 10.207 ac, 37.56% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 15.24 hrs, Volume= 0.003 af
Outflow = 0.00 cfs @ 15.24 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Reach 7R: offsite south

Hydrograph



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Summary for Reach 17R: Headwall Segment 2

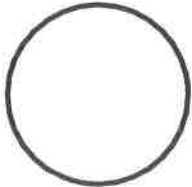
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 6.618 ac, 34.34% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 24.12 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 24.13 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.9 min
Routed to Reach 7R : offsite south

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.48 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 2.48 fps, Avg. Travel Time= 0.5 min

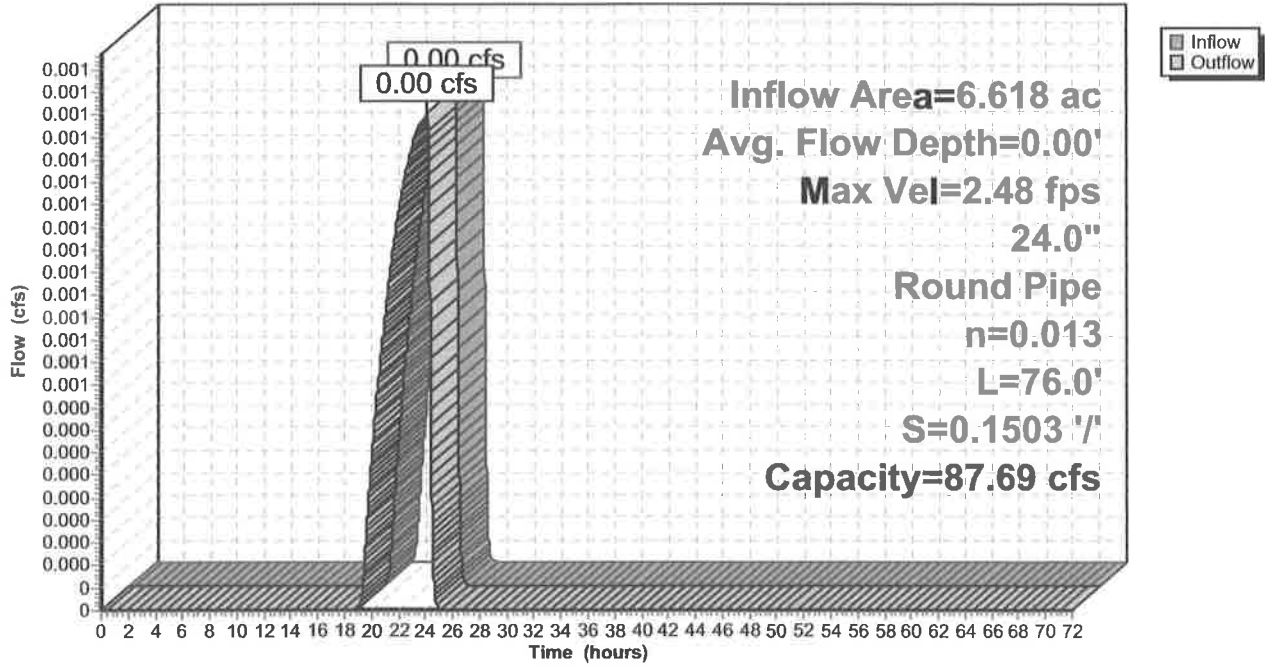
Peak Storage= 0 cf @ 24.13 hrs
Average Depth at Peak Storage= 0.00' , Surface Width= 0.12'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 87.69 cfs

24.0" Round Pipe
n= 0.013
Length= 76.0' Slope= 0.1503 '/'
Inlet Invert= 211.67', Outlet Invert= 200.25'



Reach 17R: Headwall Segment 2

Hydrograph



Summary for Reach 20R: Headwall Segment 1

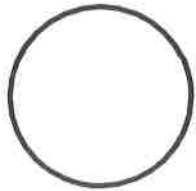
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 6.618 ac, 34.34% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 24.01 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 24.12 hrs, Volume= 0.000 af, Atten= 0%, Lag= 6.5 min
Routed to Reach 17R : Headwall Segment 2

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.69 fps, Min. Travel Time= 5.6 min
Avg. Velocity = 0.69 fps, Avg. Travel Time= 5.6 min

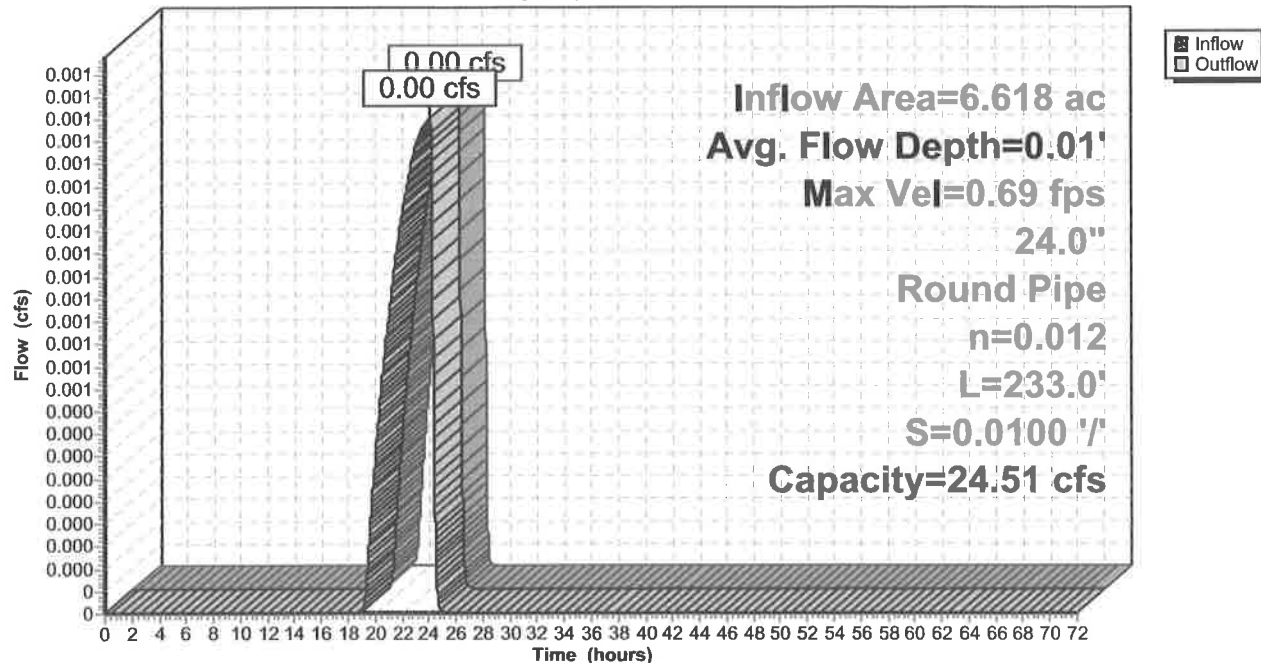
Peak Storage= 0 cf @ 24.03 hrs
Average Depth at Peak Storage= 0.01' , Surface Width= 0.22'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 24.51 cfs

24.0" Round Pipe
n= 0.012
Length= 233.0' Slope= 0.0100 '/'
Inlet Invert= 214.00', Outlet Invert= 211.67'



Reach 20R: Headwall Segment 1

Hydrograph



Summary for Pond 6P: Existing Basin

Inflow Area = 5.563 ac, 40.85% Impervious, Inflow Depth = 1.48" for 10-yr event
 Inflow = 7.85 cfs @ 12.15 hrs, Volume= 0.688 af
 Outflow = 0.85 cfs @ 13.84 hrs, Volume= 0.617 af, Atten= 89%, Lag= 101.1 min
 Discarded = 0.85 cfs @ 13.84 hrs, Volume= 0.617 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Reach 20R : Headwall Segment 1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 223.63' @ 13.84 hrs Surf.Area= 4,867 sf Storage= 12,947 cf

Plug-Flow detention time= 206.1 min calculated for 0.617 af (90% of inflow)
 Center-of-Mass det. time= 156.1 min (1,026.7 - 870.6)

Volume	Invert	Avail.Storage	Storage Description
#1	211.00'	111 cf	10.00'D x 9.50'H Vertical Cone/Cylinder 746 cf Overall - 467 cf Embedded = 279 cf x 40.0% Voids
#2	211.20'	467 cf	8.00'D x 9.30'H Vertical Cone/Cylinder Inside #1
#3	211.00'	117 cf	10.00'D x 9.50'H Vertical Cone/Cylinder 746 cf Overall - 452 cf Embedded = 294 cf x 40.0% Voids
#4	211.50'	452 cf	8.00'D x 9.00'H Vertical Cone/Cylinder Inside #3
#5	210.50'	107 cf	10.00'D x 9.50'H Vertical Cone/Cylinder 746 cf Overall - 478 cf Embedded = 269 cf x 40.0% Voids
#6	210.50'	478 cf	8.00'D x 9.50'H Vertical Cone/Cylinder Inside #5
#7	210.50'	123 cf	10.00'D x 10.00'H Vertical Cone/Cylinder 785 cf Overall - 478 cf Embedded = 308 cf x 40.0% Voids
#8	210.70'	478 cf	8.00'D x 9.50'H Vertical Cone/Cylinder Inside #7
#9	211.00'	298 cf	10.00'D x 9.50'H Vertical Cone/Cylinder 746 cf Overall x 40.0% Voids
#10	211.20'	467 cf	8.00'D x 9.30'H Vertical Cone/Cylinder
#11	220.50'	23,070 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		26,170 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
220.50	2,038	0	0
222.00	3,006	3,783	3,783
224.00	4,743	7,749	11,532
225.00	5,659	5,201	16,733
225.50	6,241	2,975	19,708
226.00	7,205	3,362	23,070

Device	Routing	Invert	Outlet Devices
#1	Discarded	220.49'	8.270 in/hr Exfiltration over Surface area above 220.49' Excluded Surface area = 443 sf
#2	Primary	225.00'	10.0' long + 4.0 ' SideZ 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

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Discarded OutFlow Max=0.85 cfs @ 13.84 hrs HW=223.63' (Free Discharge)

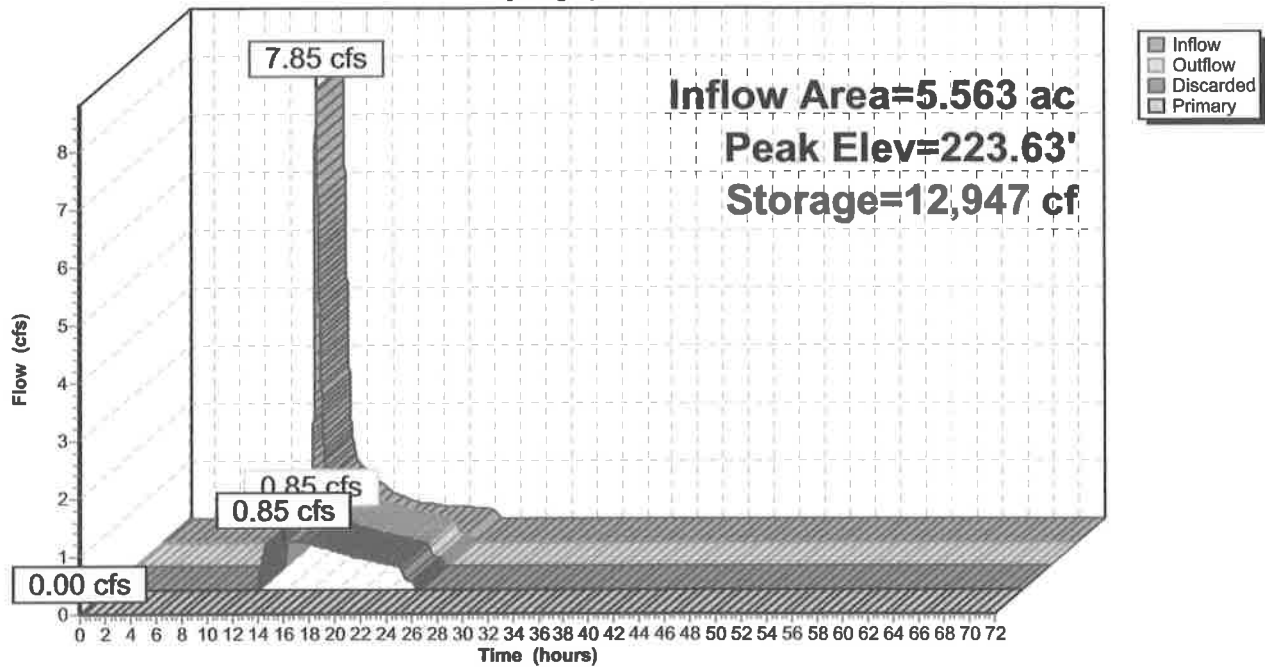
↑1=Exfiltration (Exfiltration Controls 0.85 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=210.50' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 6P: Existing Basin

Hydrograph



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Summary for Pond 14P: Chamber System

Inflow Area = 2.604 ac, 53.82% Impervious, Inflow Depth = 2.40" for 10-yr event
 Inflow = 6.72 cfs @ 12.09 hrs, Volume= 0.522 af
 Outflow = 1.21 cfs @ 11.73 hrs, Volume= 0.522 af, Atten= 82%, Lag= 0.0 min
 Discarded = 1.21 cfs @ 11.73 hrs, Volume= 0.522 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Reach 7R : offsite south

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 210.48' @ 12.55 hrs Surf.Area= 0.145 ac Storage= 0.133 af

Plug-Flow detention time= 27.7 min calculated for 0.522 af (100% of inflow)
 Center-of-Mass det. time= 27.7 min (819.0 - 791.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	209.00'	0.146 af	19.60'W x 322.00'L x 5.50'H Field A 0.797 af Overall - 0.433 af Embedded = 0.364 af x 40.0% Voids
#2A	209.50'	0.326 af	Galley 4x4x4 x 320 Inside #1 Inside= 42.0"W x 43.0"H => 12.67 sf x 3.50'L = 44.3 cf Outside= 52.8"W x 48.0"H => 14.72 sf x 4.00'L = 58.9 cf 320 Chambers in 4 Rows
		0.472 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	209.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	214.00'	15.0" Round Culvert L= 157.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.00' / 206.60' S= 0.0471 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf

Discarded OutFlow Max=1.21 cfs @ 11.73 hrs HW=209.06' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 1.21 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=209.00' (Free Discharge)

↑2=Culvert (Controls 0.00 cfs)

Pond 14P: Chamber System - Chamber Wizard Field A

Chamber Model = Galley 4x4x4 (Concrete Galley, UCPI 4x4x4 Galley or equivalent)

Inside= 42.0"W x 43.0"H => 12.67 sf x 3.50'L = 44.3 cf

Outside= 52.8"W x 48.0"H => 14.72 sf x 4.00'L = 58.9 cf

80 Chambers/Row x 4.00' Long = 320.00' Row Length +12.0" End Stone x 2 = 322.00' Base Length

4 Rows x 52.8" Wide + 12.0" Side Stone x 2 = 19.60' Base Width

6.0" Stone Base + 48.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

320 Chambers x 44.3 cf = 14,190.3 cf Chamber Storage

320 Chambers x 58.9 cf = 18,840.4 cf Displacement

34,711.6 cf Field - 18,840.4 cf Chambers = 15,871.2 cf Stone x 40.0% Voids = 6,348.5 cf Stone Storage

Chamber Storage + Stone Storage = 20,538.8 cf = 0.472 af

Overall Storage Efficiency = 59.2%

Overall System Size = 322.00' x 19.60' x 5.50'

320 Chambers

1,285.6 cy Field

587.8 cy Stone



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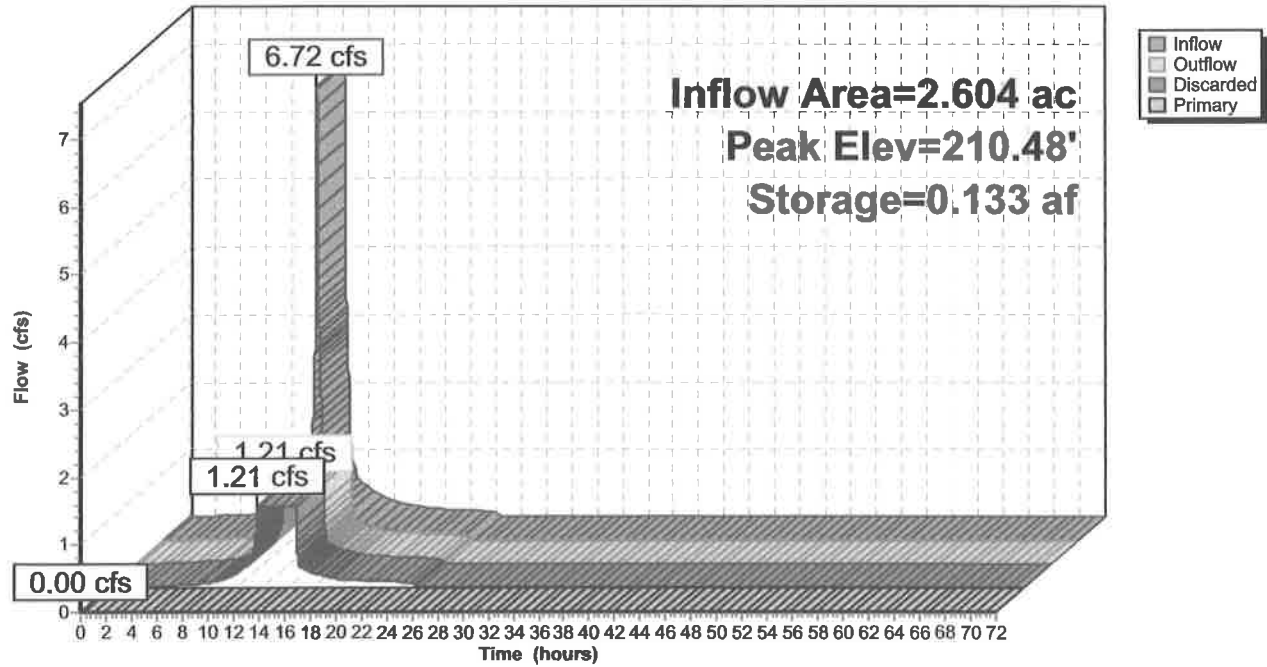
Type III 24-hr 10-yr Rainfall=4.96"

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Pond 14P: Chamber System

Hydrograph



Summary for Pond 16P: Infiltration Trench

Inflow Area = 0.632 ac, 25.27% Impervious, Inflow Depth = 1.18" for 10-yr event
 Inflow = 0.67 cfs @ 12.08 hrs, Volume= 0.062 af
 Outflow = 0.18 cfs @ 11.80 hrs, Volume= 0.062 af, Atten= 73%, Lag= 0.0 min
 Discarded = 0.18 cfs @ 11.80 hrs, Volume= 0.062 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 196.10' @ 12.45 hrs Surf.Area= 952 sf Storage= 419 cf

Plug-Flow detention time= 10.3 min calculated for 0.062 af (100% of inflow)
 Center-of-Mass det. time= 10.3 min (792.2 - 781.9)

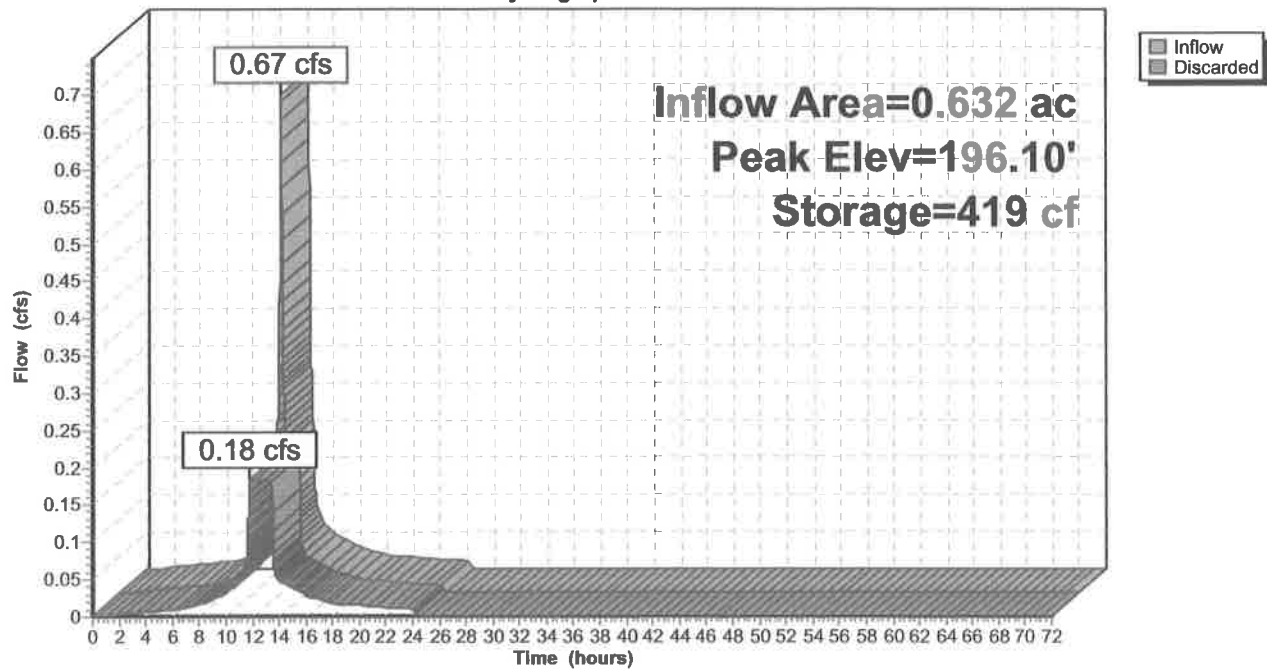
Volume	Invert	Avail.Storage	Storage Description
#1	195.00'	1,593 cf	8.50'W x 112.00'L x 5.00'H Prismatic 4,760 cf Overall - 778 cf Embedded = 3,982 cf x 40.0% Voids
#2	196.25'	778 cf	18.0" Round CMP_Round 18" x 4 Inside #1 L= 110.0'
		2,371 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	195.00'	8.270 in/hr Exfiltration over Horizontal area

Discarded OutFlow Max=0.18 cfs @ 11.80 hrs HW=195.05' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.18 cfs)

Pond 16P: Infiltration Trench

Hydrograph



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Type III 24-hr 25-yr Rainfall=6.29"

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: P-1 (CB1)	Runoff Area=3,398 sf 66.27% Impervious Runoff Depth=3.84" Tc=6.0 min CN=78 Runoff=0.35 cfs 0.025 af
Subcatchment 2S: P-2 (CB2)	Runoff Area=1,896 sf 87.45% Impervious Runoff Depth=5.24" Tc=6.0 min CN=91 Runoff=0.25 cfs 0.019 af
Subcatchment 3S: P-3 (CB3)	Runoff Area=9,124 sf 81.46% Impervious Runoff Depth=4.80" Tc=6.0 min CN=87 Runoff=1.14 cfs 0.084 af
Subcatchment 4S: OS 1	Runoff Area=242,335 sf 40.85% Impervious Runoff Depth=2.38" Flow Length=855' Tc=9.9 min CN=63 Runoff=13.19 cfs 1.104 af
Subcatchment 7S: P-4 (CB4)	Runoff Area=17,772 sf 64.68% Impervious Runoff Depth=3.73" Tc=6.0 min CN=77 Runoff=1.78 cfs 0.127 af
Subcatchment 8S: P-5 (CB5)	Runoff Area=5,781 sf 64.57% Impervious Runoff Depth=3.73" Tc=6.0 min CN=77 Runoff=0.58 cfs 0.041 af
Subcatchment 9S: P-6 (CB6)	Runoff Area=11,883 sf 57.73% Impervious Runoff Depth=3.33" Tc=6.0 min CN=73 Runoff=1.07 cfs 0.076 af
Subcatchment 10S: P-7 (CB7)	Runoff Area=13,474 sf 0.00% Impervious Runoff Depth=0.36" Tc=6.0 min CN=36 Runoff=0.04 cfs 0.009 af
Subcatchment 11S: P-8 (CB8)	Runoff Area=22,491 sf 0.00% Impervious Runoff Depth=0.53" Tc=6.0 min CN=39 Runoff=0.12 cfs 0.023 af
Subcatchment 12S: P-9 (roof)	Runoff Area=27,632 sf 100.00% Impervious Runoff Depth=6.05" Tc=6.0 min CN=98 Runoff=3.91 cfs 0.320 af
Subcatchment 13S: P-10 (to south)	Runoff Area=15,401 sf 0.00% Impervious Runoff Depth=0.31" Flow Length=145' Tc=8.4 min CN=35 Runoff=0.03 cfs 0.009 af
Subcatchment 15S: P-10A (rear lawn)	Runoff Area=21,516 sf 4.43% Impervious Runoff Depth=0.53" Tc=6.0 min CN=39 Runoff=0.11 cfs 0.022 af
Subcatchment 17S: P-9A (roof)	Runoff Area=6,000 sf 100.00% Impervious Runoff Depth=6.05" Tc=6.0 min CN=98 Runoff=0.85 cfs 0.069 af
Subcatchment 18S: OS 2	Runoff Area=45,929 sf 0.00% Impervious Runoff Depth=0.11" Flow Length=333' Slope=0.0700 '/' Tc=11.1 min CN=30 Runoff=0.01 cfs 0.009 af
Reach 7R: offsite south	Inflow=1.42 cfs 0.103 af Outflow=1.42 cfs 0.103 af
Reach 17R: Headwall Segment 2	Avg. Flow Depth=0.18' Max Vel=10.34 fps Inflow=1.40 cfs 0.094 af 24.0" Round Pipe n=0.013 L=76.0' S=0.1503 '/' Capacity=87.69 cfs Outflow=1.40 cfs 0.094 af

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Type III 24-hr 25-yr Rainfall=6.29"

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Reach 20R: Headwall Segment 1 Avg. Flow Depth=0.32' Max Vel=4.23 fps Inflow=1.41 cfs 0.094 af
24.0" Round Pipe n=0.012 L=233.0' S=0.0100 ' Capacity=24.51 cfs Outflow=1.40 cfs 0.094 af

Pond 6P: Existing Basin Peak Elev=225.14' Storage=20,614 cf Inflow=13.19 cfs 1.104 af
Discarded=1.11 cfs 0.948 af Primary=1.41 cfs 0.085 af Outflow=2.52 cfs 1.033 af

Pond 14P: Chamber System Peak Elev=211.27' Storage=0.216 af Inflow=9.12 cfs 0.724 af
Discarded=1.21 cfs 0.724 af Primary=0.00 cfs 0.000 af Outflow=1.21 cfs 0.724 af

Pond 16P: Infiltration Trench Peak Elev=196.76' Storage=812 cf Inflow=0.89 cfs 0.091 af
Outflow=0.18 cfs 0.091 af

Total Runoff Area = 10.207 ac Runoff Volume = 1.938 af Average Runoff Depth = 2.28"
62.44% Pervious = 6.373 ac 37.56% Impervious = 3.834 ac

Summary for Subcatchment 1S: P-1 (CB1)

Runoff = 0.35 cfs @ 12.09 hrs, Volume= 0.025 af, Depth= 3.84"
Routed to Pond 14P : Chamber System

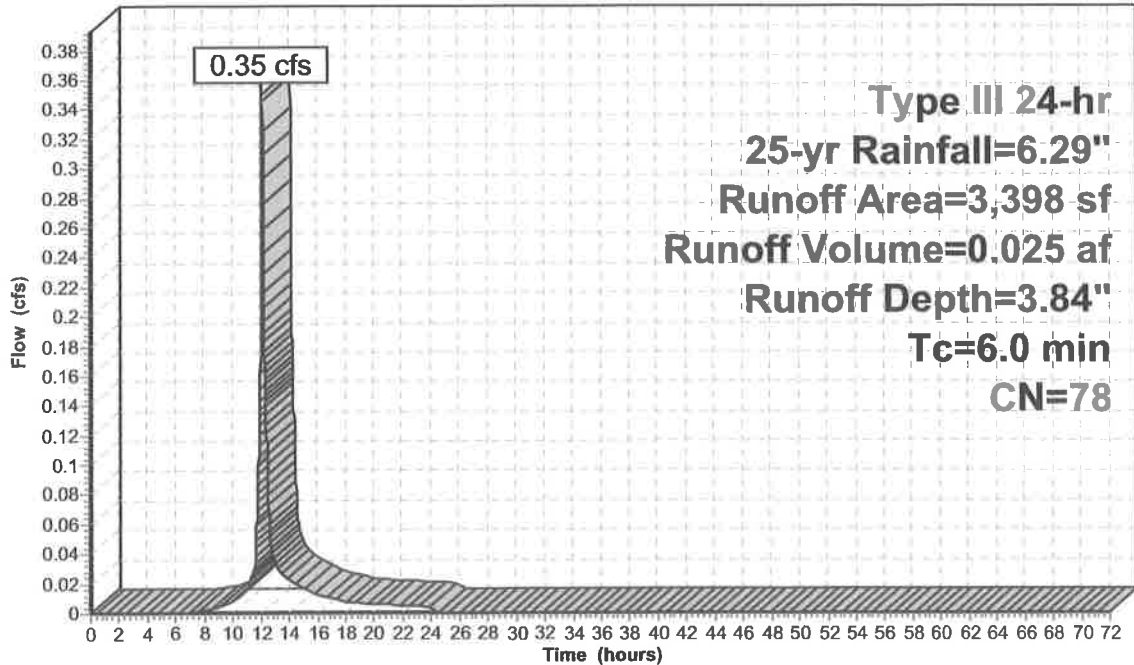
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
2,252	98	Paved parking, HSG A
1,146	39	>75% Grass cover, Good, HSG A
3,398	78	Weighted Average
1,146		33.73% Pervious Area
2,252		66.27% Impervious Area

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

Subcatchment 1S: P-1 (CB1)

Hydrograph



Runoff

Type III 24-hr
25-yr Rainfall=6.29"
Runoff Area=3,398 sf
Runoff Volume=0.025 af
Runoff Depth=3.84"
Tc=6.0 min
CN=78

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Type III 24-hr 25-yr Rainfall=6.29"

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Summary for Subcatchment 2S: P-2 (CB2)

Runoff = 0.25 cfs @ 12.08 hrs, Volume= 0.019 af, Depth= 5.24"
Routed to Pond 14P : Chamber System

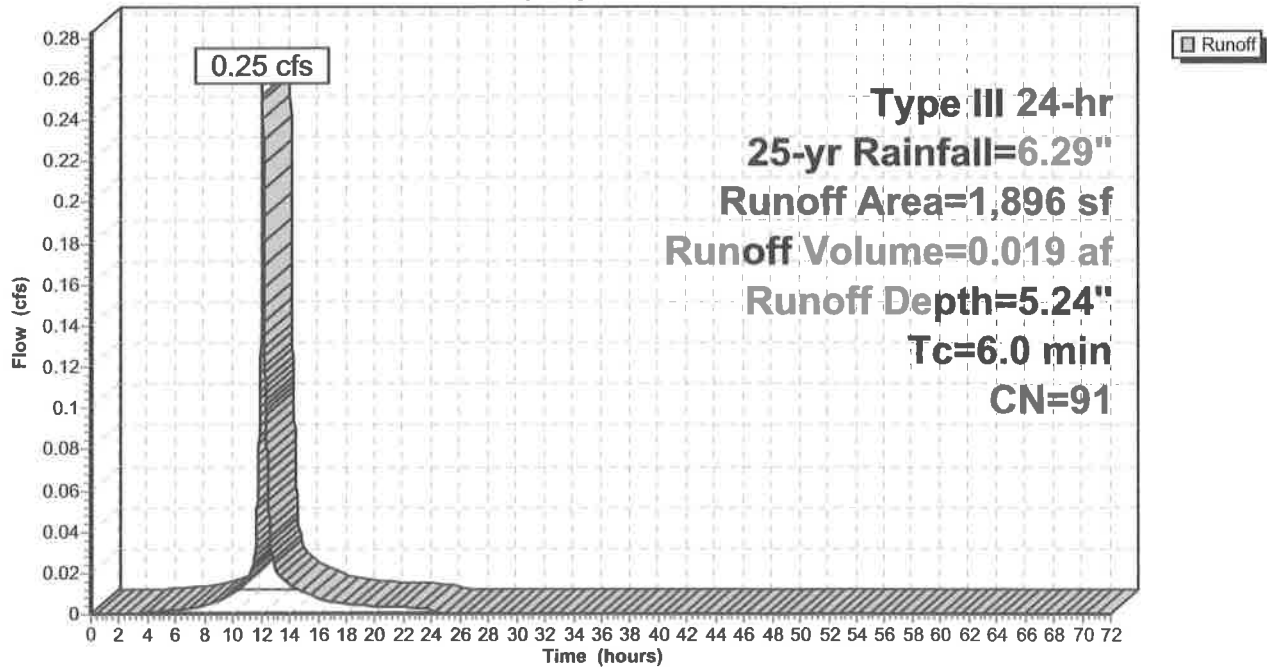
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
1,658	98	Paved parking, HSG A
238	39	>75% Grass cover, Good, HSG A
1,896	91	Weighted Average
238		12.55% Pervious Area
1,658		87.45% Impervious Area

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

Subcatchment 2S: P-2 (CB2)

Hydrograph



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Type III 24-hr 25-yr Rainfall=6.29"

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Summary for Subcatchment 3S: P-3 (CB3)

Runoff = 1.14 cfs @ 12.09 hrs, Volume= 0.084 af, Depth= 4.80"
Routed to Pond 14P : Chamber System

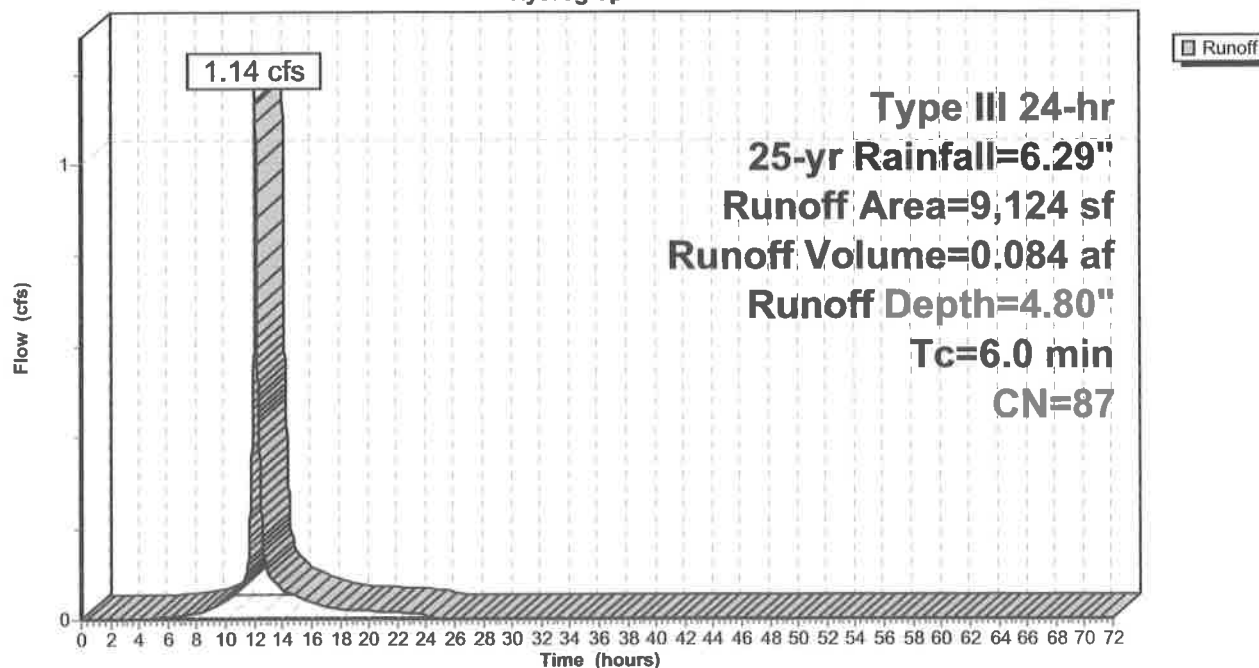
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
7,432	98	Paved parking, HSG A
1,692	39	>75% Grass cover, Good, HSG A
9,124	87	Weighted Average
1,692		18.54% Pervious Area
7,432		81.46% Impervious Area

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

Subcatchment 3S: P-3 (CB3)

Hydrograph



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Type III 24-hr 25-yr Rainfall=6.29"

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Summary for Subcatchment 4S: OS 1

[47] Hint: Peak is 204% of capacity of segment #3

Runoff = 13.19 cfs @ 12.15 hrs, Volume= 1.104 af, Depth= 2.38"
 Routed to Pond 6P : Existing Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
21,486	98	Roofs, HSG A
15,524	30	Woods, Good, HSG A
127,810	39	>75% Grass cover, Good, HSG A
* 6,241	98	Water Surface, HSG A Basin
71,274	98	Paved parking, HSG A
242,335	63	Weighted Average
143,334		59.15% Pervious Area
99,001		40.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	50	0.0300	0.12		Sheet Flow, Grass: Dense n= 0.240 P2= 3.20"
1.1	150	0.0120	2.22		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.5	475	0.0100	5.26	6.46	Pipe Channel, RCP_Round 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
0.3	180	0.0280	9.95	17.58	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
9.9	855	Total			

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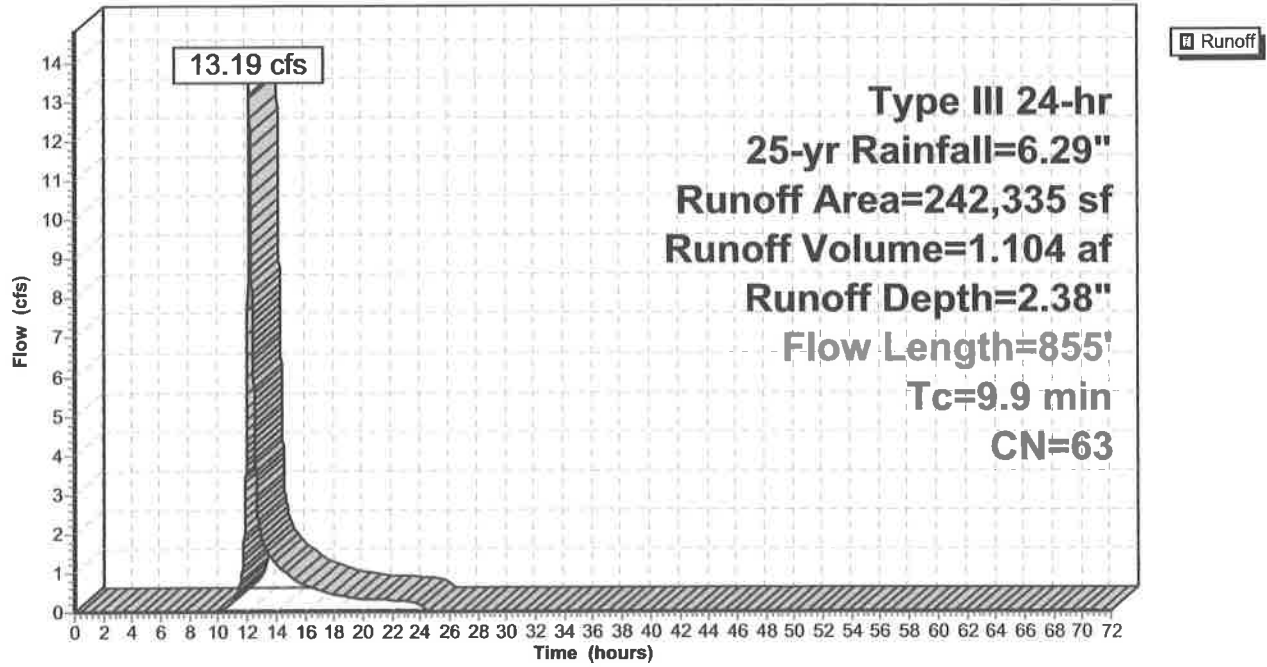
Type III 24-hr 25-yr Rainfall=6.29"

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Subcatchment 4S: OS 1

Hydrograph



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Type III 24-hr 25-yr Rainfall=6.29"

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Summary for Subcatchment 7S: P-4 (CB4)

Runoff = 1.78 cfs @ 12.09 hrs, Volume= 0.127 af, Depth= 3.73"
Routed to Pond 14P : Chamber System

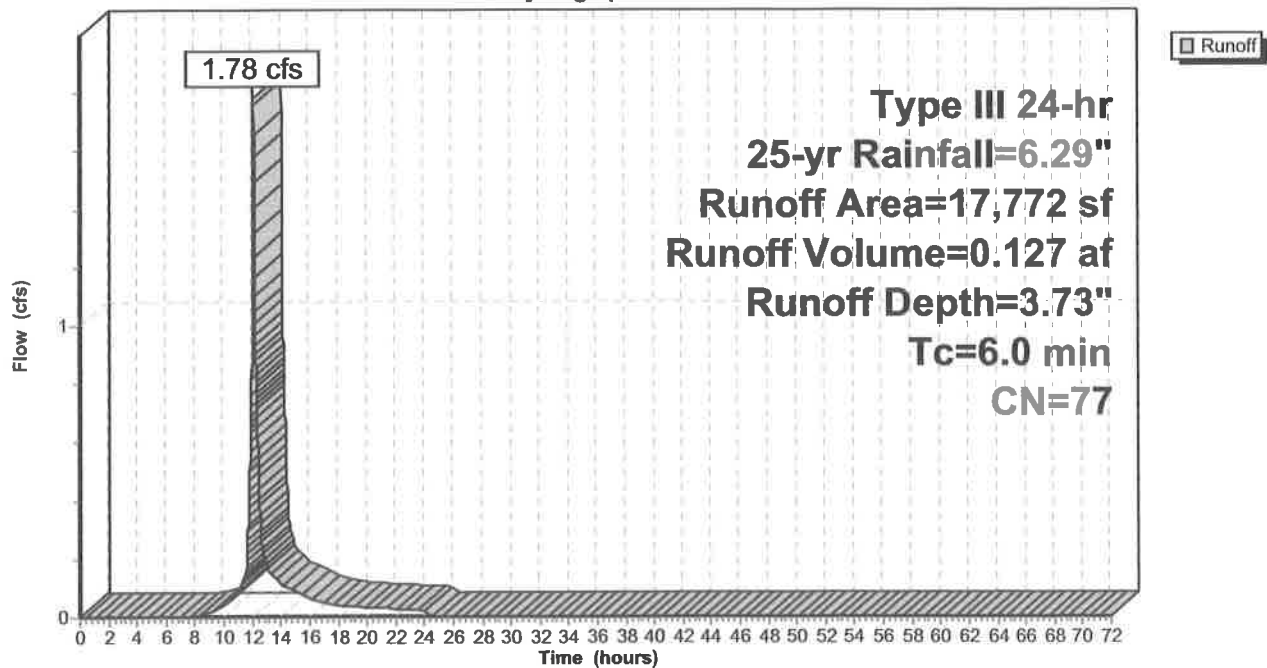
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
11,495	98	Paved parking, HSG A
6,277	39	>75% Grass cover, Good, HSG A
17,772	77	Weighted Average
6,277		35.32% Pervious Area
11,495		64.68% Impervious Area

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

Subcatchment 7S: P-4 (CB4)

Hydrograph



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Type III 24-hr 25-yr Rainfall=6.29"

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Summary for Subcatchment 8S: P-5 (CB5)

Runoff = 0.58 cfs @ 12.09 hrs, Volume= 0.041 af, Depth= 3.73"
Routed to Pond 14P : Chamber System

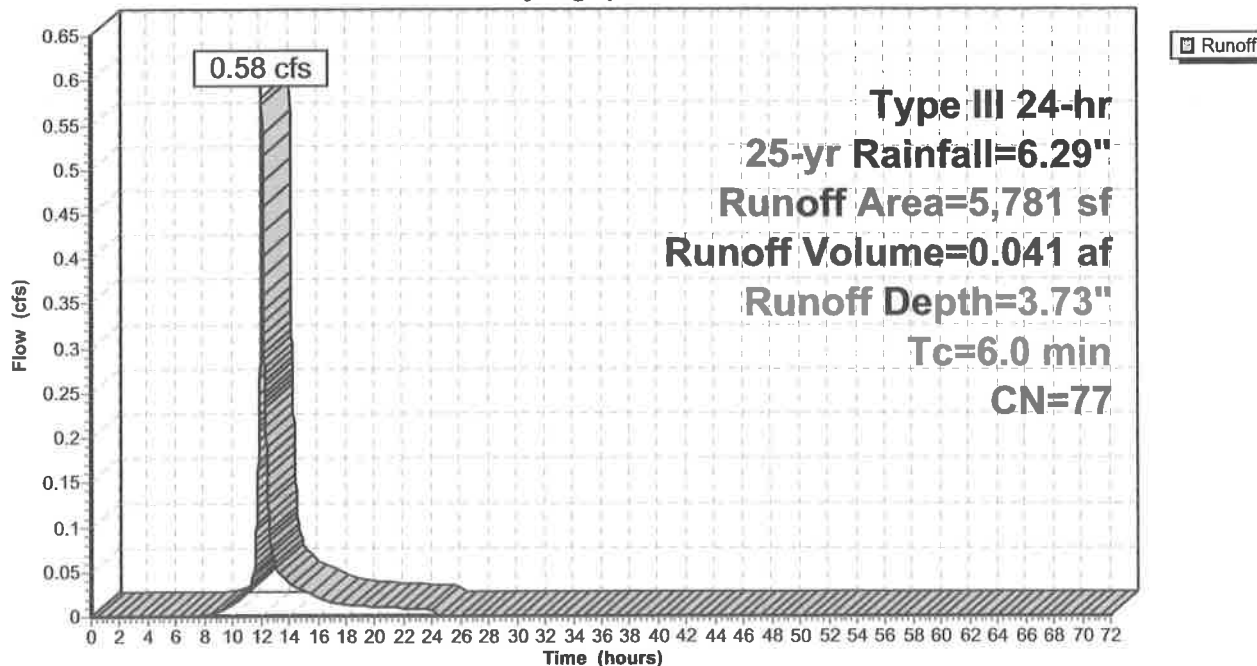
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
3,733	98	Paved parking, HSG A
2,048	39	>75% Grass cover, Good, HSG A
5,781	77	Weighted Average
2,048		35.43% Pervious Area
3,733		64.57% Impervious Area

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

Subcatchment 8S: P-5 (CB5)

Hydrograph



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Type III 24-hr 25-yr Rainfall=6.29"

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Summary for Subcatchment 9S: P-6 (CB6)

Runoff = 1.07 cfs @ 12.09 hrs, Volume= 0.076 af, Depth= 3.33"
Routed to Pond 14P : Chamber System

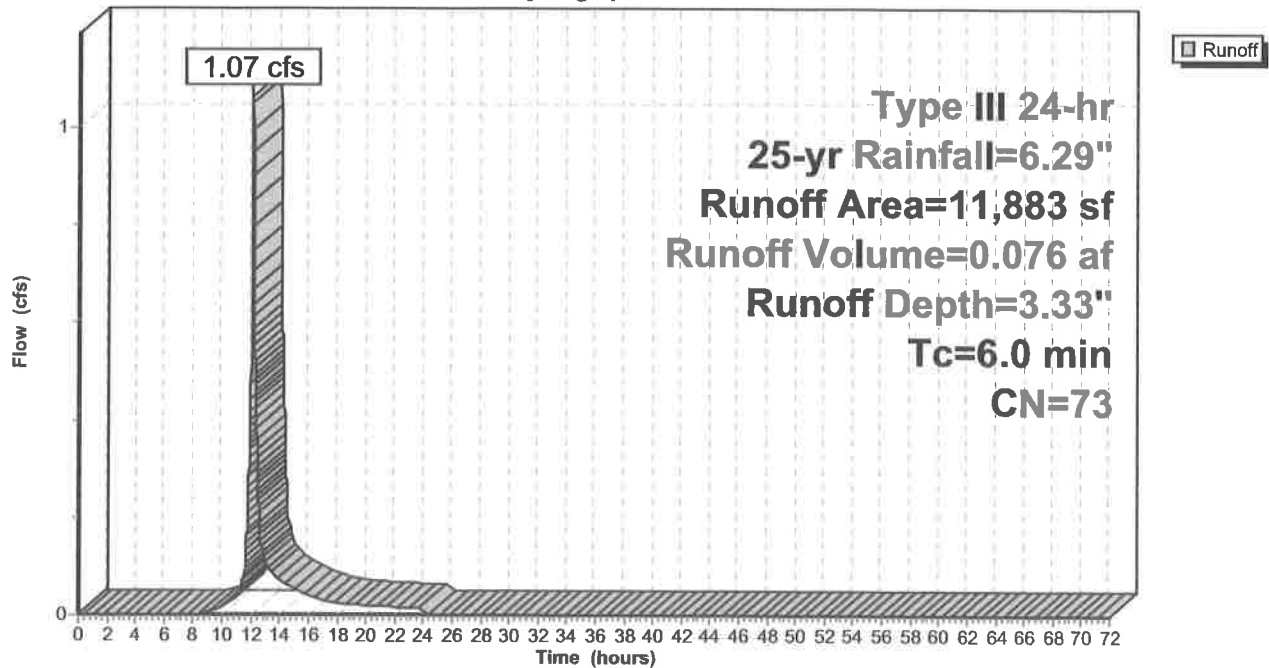
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
6,860	98	Paved parking, HSG A
5,023	39	>75% Grass cover, Good, HSG A
11,883	73	Weighted Average
5,023		42.27% Pervious Area
6,860		57.73% Impervious Area

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

Subcatchment 9S: P-6 (CB6)

Hydrograph



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Type III 24-hr 25-yr Rainfall=6.29"

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Summary for Subcatchment 10S: P-7 (CB7)

Runoff = 0.04 cfs @ 12.39 hrs, Volume= 0.009 af, Depth= 0.36"
Routed to Pond 14P : Chamber System

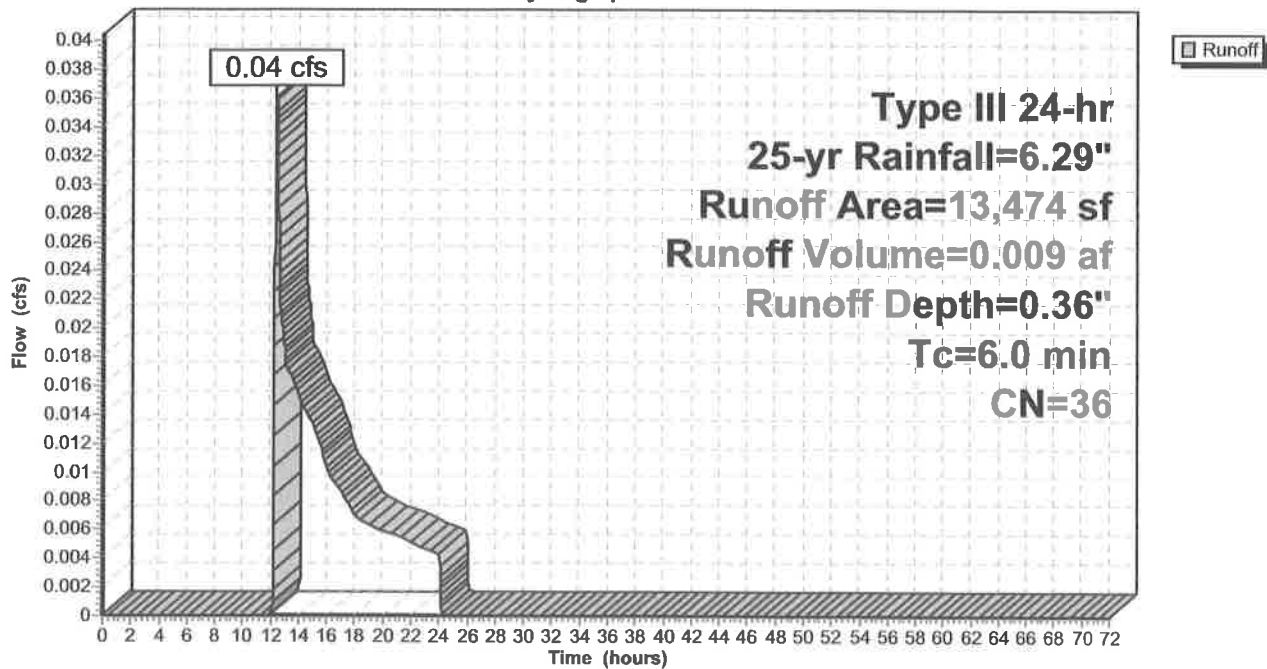
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
8,914	39	>75% Grass cover, Good, HSG A
4,560	30	Woods, Good, HSG A
13,474	36	Weighted Average
13,474		100.00% Pervious Area

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

Subcatchment 10S: P-7 (CB7)

Hydrograph



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Type III 24-hr 25-yr Rainfall=6.29"

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Summary for Subcatchment 11S: P-8 (CB8)

Runoff = 0.12 cfs @ 12.31 hrs, Volume= 0.023 af, Depth= 0.53"
Routed to Pond 14P : Chamber System

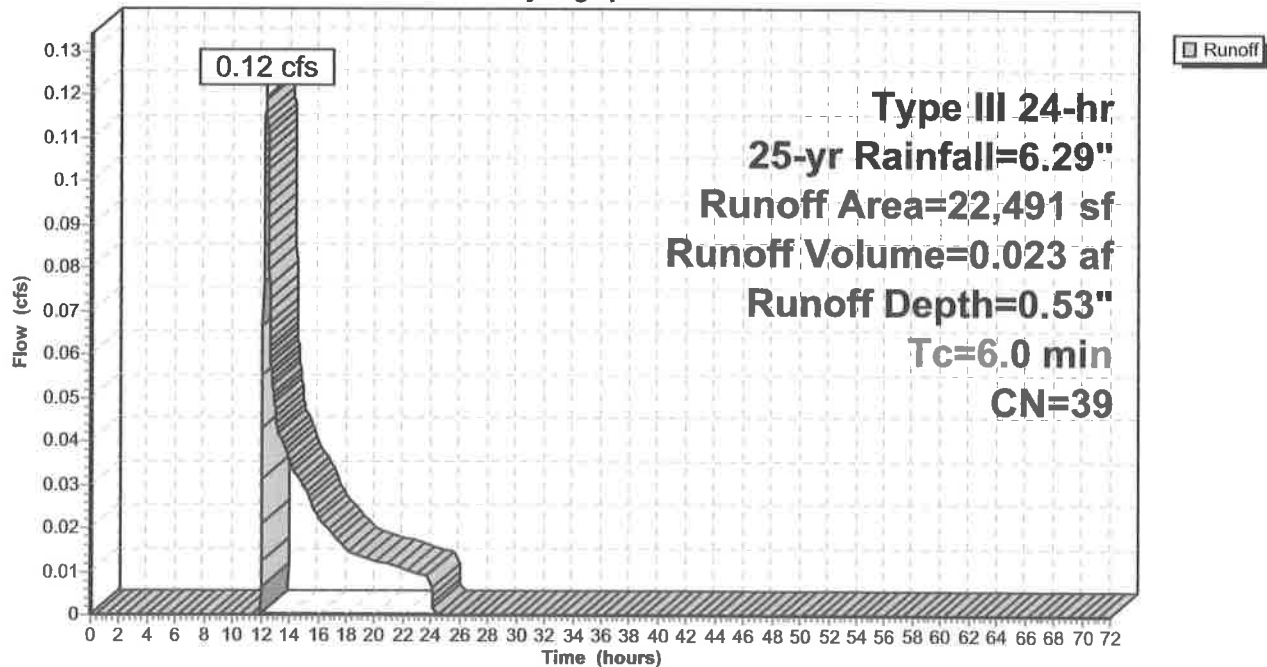
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
22,491	39	>75% Grass cover, Good, HSG A
22,491		100.00% Pervious Area

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

Subcatchment 11S: P-8 (CB8)

Hydrograph



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Type III 24-hr 25-yr Rainfall=6.29"

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Summary for Subcatchment 12S: P-9 (roof)

Runoff = 3.91 cfs @ 12.08 hrs, Volume= 0.320 af, Depth= 6.05"
Routed to Pond 14P : Chamber System

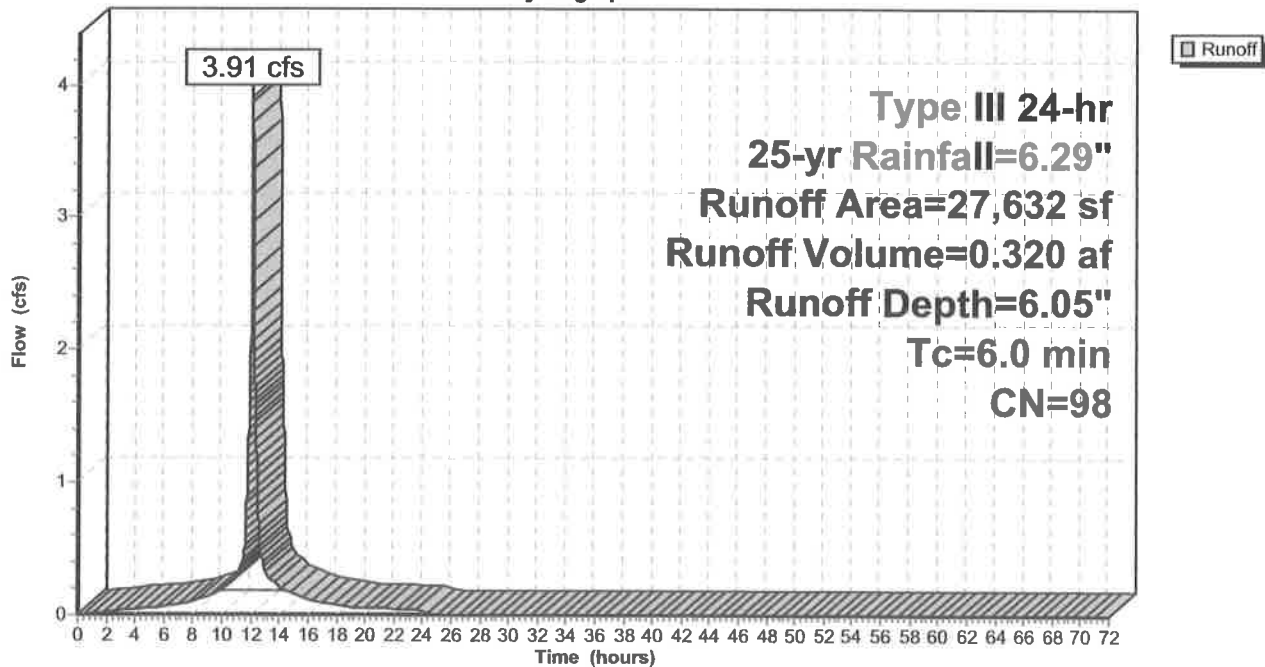
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
27,632	98	Roofs, HSG A
27,632		100.00% Impervious Area

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

Subcatchment 12S: P-9 (roof)

Hydrograph



Summary for Subcatchment 13S: P-10 (to south)

Runoff = 0.03 cfs @ 12.46 hrs, Volume= 0.009 af, Depth= 0.31"
 Routed to Reach 7R : offsite south

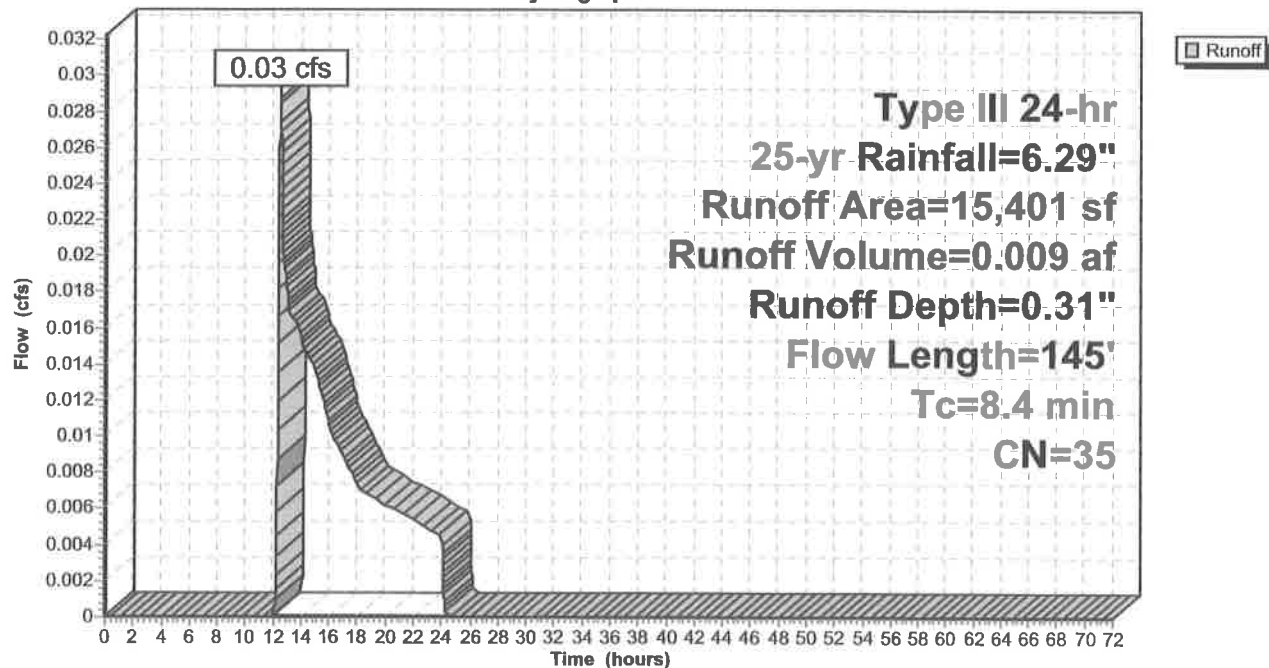
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
8,371	39	>75% Grass cover, Good, HSG A
7,030	30	Woods, Good, HSG A
15,401	35	Weighted Average
15,401		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		Sheet Flow, Grass: Dense n= 0.240 P2= 3.20"
0.2	95	0.1900	6.54		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
8.4	145	Total			

Subcatchment 13S: P-10 (to south)

Hydrograph



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Type III 24-hr 25-yr Rainfall=6.29"

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Summary for Subcatchment 15S: P-10A (rear lawn)

Runoff = 0.11 cfs @ 12.31 hrs, Volume= 0.022 af, Depth= 0.53"
Routed to Pond 16P : Infiltration Trench

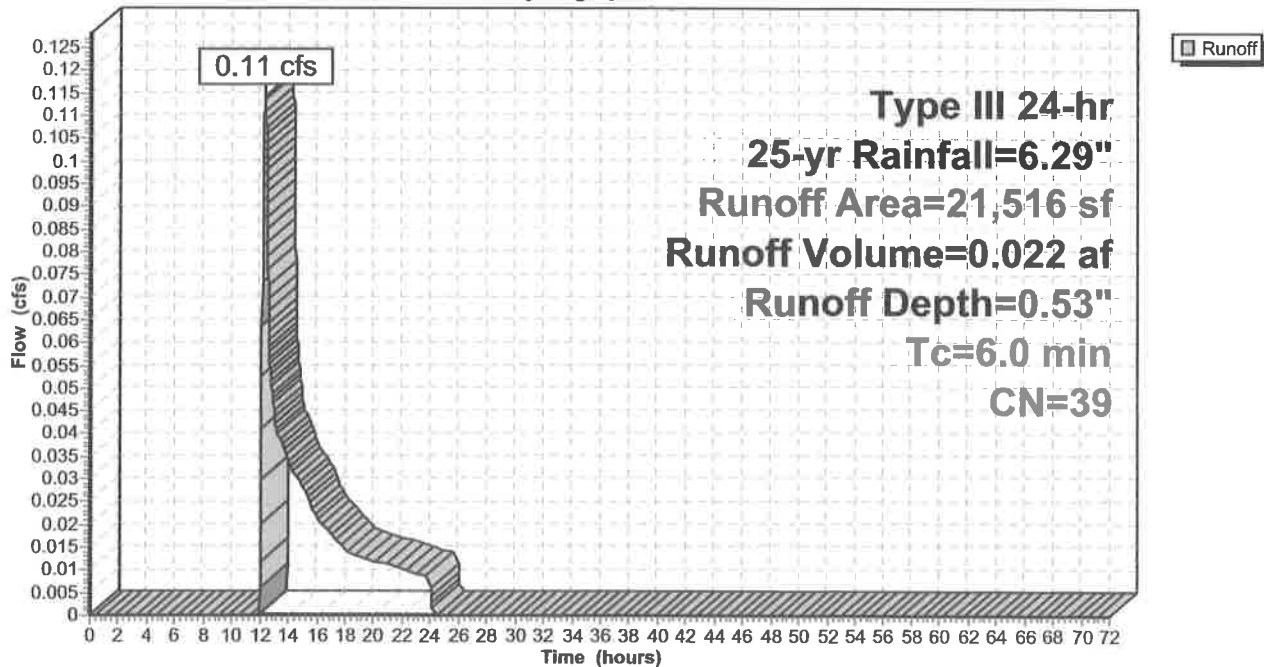
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
13,389	39	>75% Grass cover, Good, HSG A
953	98	Water Surface, HSG A
7,174	30	Meadow, non-grazed, HSG A
21,516	39	Weighted Average
20,563		95.57% Pervious Area
953		4.43% Impervious Area

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

Subcatchment 15S: P-10A (rear lawn)

Hydrograph



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Type III 24-hr 25-yr Rainfall=6.29"

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Summary for Subcatchment 17S: P-9A (roof)

Runoff = 0.85 cfs @ 12.08 hrs, Volume= 0.069 af, Depth= 6.05"
Routed to Pond 16P : Infiltration Trench

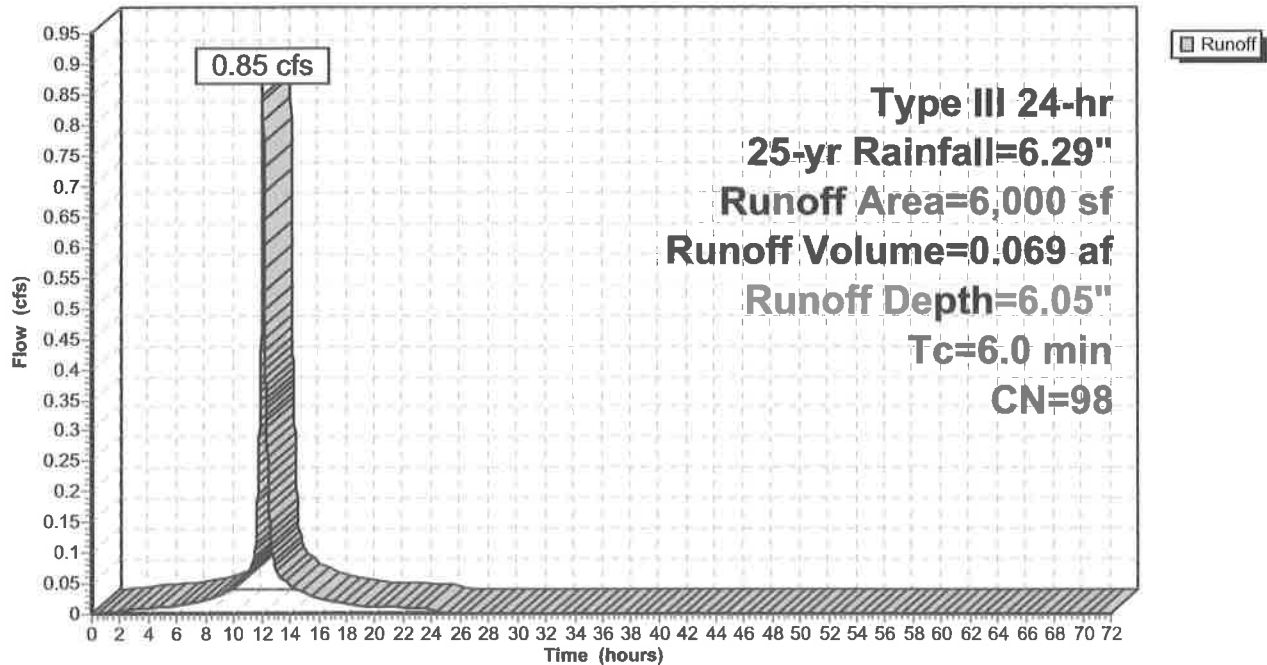
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
6,000	98	Roofs, HSG A
6,000		100.00% Impervious Area

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

Subcatchment 17S: P-9A (roof)

Hydrograph



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Type III 24-hr 25-yr Rainfall=6.29"

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Summary for Subcatchment 18S: OS 2

Runoff = 0.01 cfs @ 15.23 hrs, Volume= 0.009 af, Depth= 0.11"
Routed to Reach 20R : Headwall Segment 1

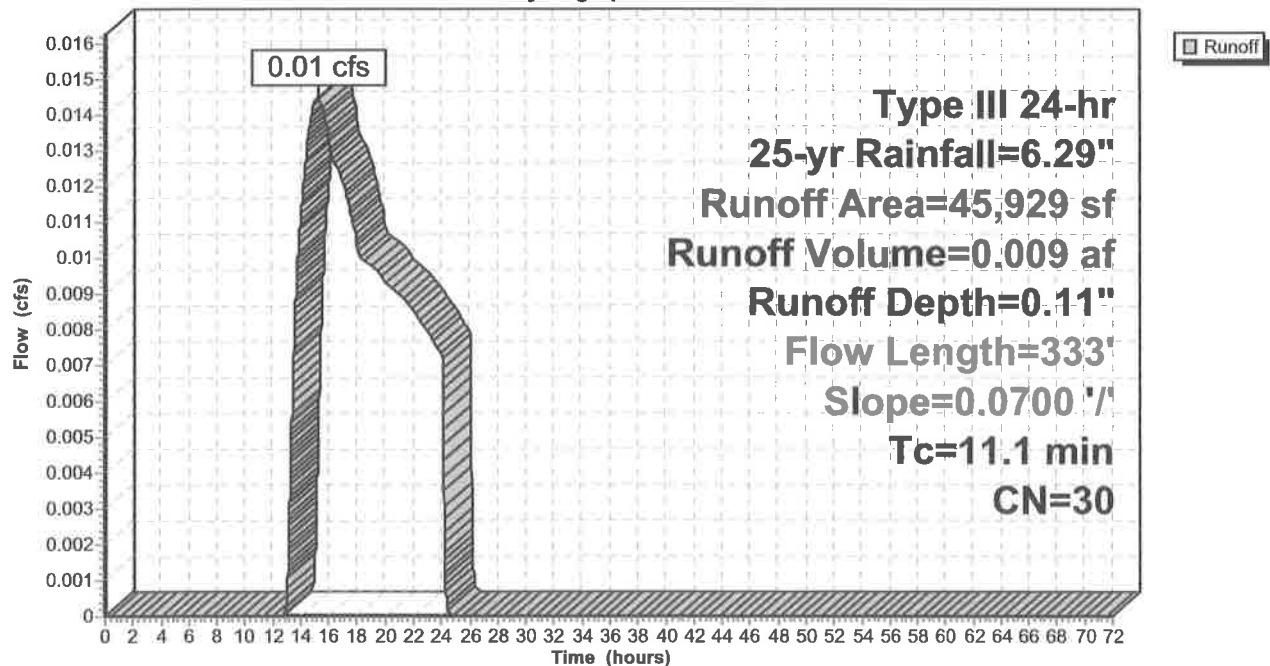
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.29"

Area (sf)	CN	Description
45,929	30	Woods, Good, HSG A
45,929		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	50	0.0700	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
3.6	283	0.0700	1.32		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
11.1	333	Total			

Subcatchment 18S: OS 2

Hydrograph



Summary for Reach 7R: offsite south

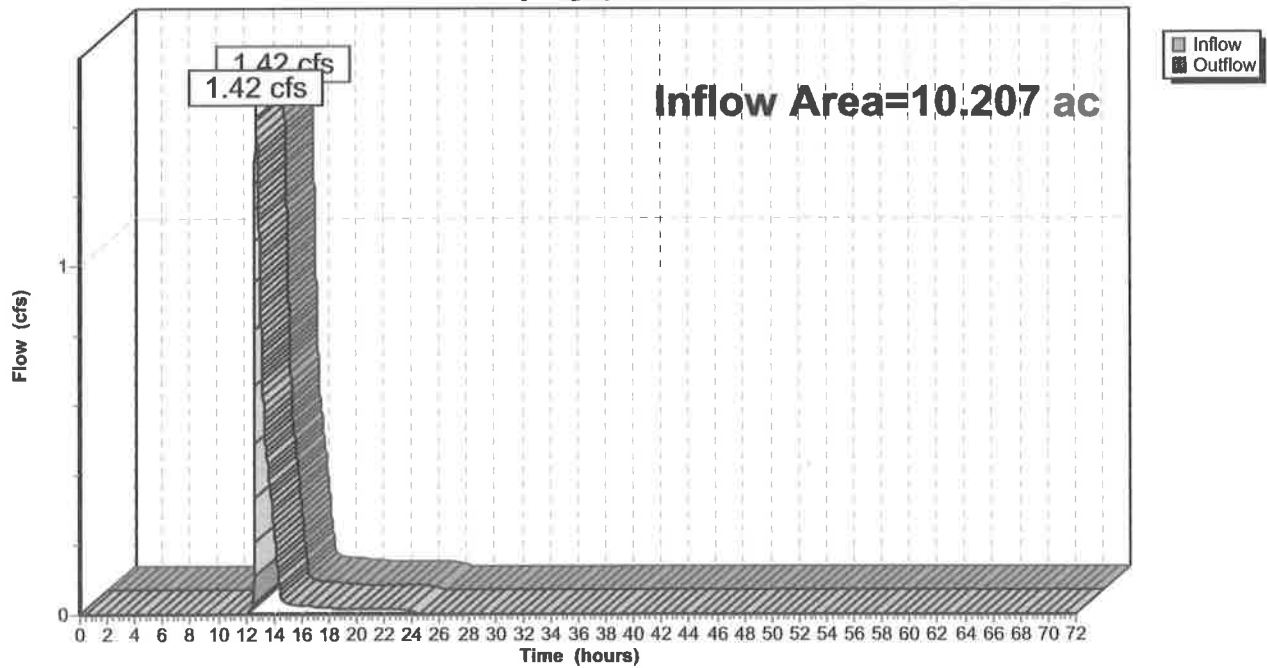
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 10.207 ac, 37.56% Impervious, Inflow Depth = 0.12" for 25-yr event
Inflow = 1.42 cfs @ 12.75 hrs, Volume= 0.103 af
Outflow = 1.42 cfs @ 12.75 hrs, Volume= 0.103 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Reach 7R: offsite south

Hydrograph



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Type III 24-hr 25-yr Rainfall=6.29"

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Summary for Reach 17R: Headwall Segment 2

[52] Hint: Inlet/Outlet conditions not evaluated

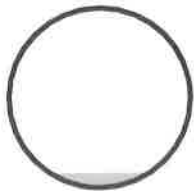
[61] Hint: Exceeded Reach 20R outlet invert by 0.18' @ 12.74 hrs

Inflow Area = 6.618 ac, 34.34% Impervious, Inflow Depth = 0.17" for 25-yr event
Inflow = 1.40 cfs @ 12.74 hrs, Volume= 0.094 af
Outflow = 1.40 cfs @ 12.75 hrs, Volume= 0.094 af, Atten= 0%, Lag= 0.2 min
Routed to Reach 7R : offsite south

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 10.34 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.26 fps, Avg. Travel Time= 0.4 min

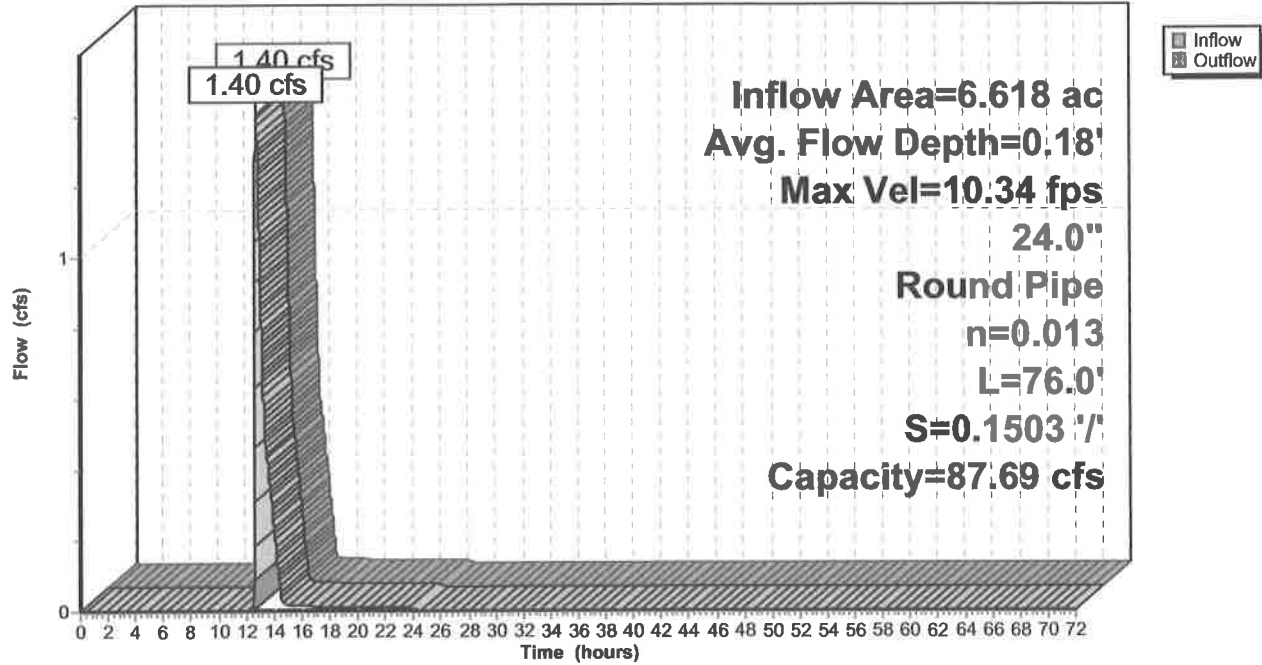
Peak Storage= 10 cf @ 12.74 hrs
Average Depth at Peak Storage= 0.18' , Surface Width= 1.13'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 87.69 cfs

24.0" Round Pipe
n= 0.013
Length= 76.0' Slope= 0.1503 '/'
Inlet Invert= 211.67', Outlet Invert= 200.25'



Reach 17R: Headwall Segment 2

Hydrograph



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Type III 24-hr 25-yr Rainfall=6.29"

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Summary for Reach 20R: Headwall Segment 1

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 6.618 ac, 34.34% Impervious, Inflow Depth = 0.17" for 25-yr event
Inflow = 1.41 cfs @ 12.72 hrs, Volume= 0.094 af
Outflow = 1.40 cfs @ 12.74 hrs, Volume= 0.094 af, Atten= 0%, Lag= 1.6 min
Routed to Reach 17R : Headwall Segment 2

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.23 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.30 fps, Avg. Travel Time= 3.0 min

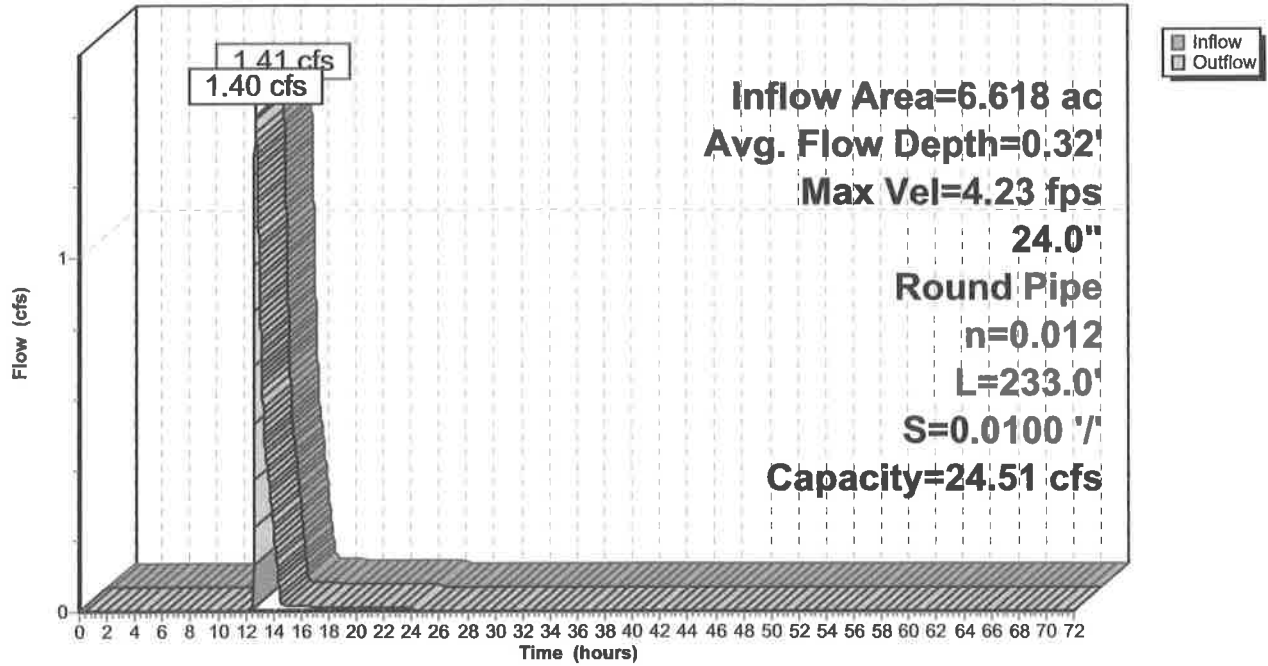
Peak Storage= 77 cf @ 12.73 hrs
Average Depth at Peak Storage= 0.32', Surface Width= 1.47'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 24.51 cfs

24.0" Round Pipe
n= 0.012
Length= 233.0' Slope= 0.0100 '/'
Inlet Invert= 214.00', Outlet Invert= 211.67'



Reach 20R: Headwall Segment 1

Hydrograph



Summary for Pond 6P: Existing Basin

Inflow Area = 5.563 ac, 40.85% Impervious, Inflow Depth = 2.38" for 25-yr event
 Inflow = 13.19 cfs @ 12.15 hrs, Volume= 1.104 af
 Outflow = 2.52 cfs @ 12.72 hrs, Volume= 1.033 af, Atten= 81%, Lag= 34.2 min
 Discarded = 1.11 cfs @ 12.72 hrs, Volume= 0.948 af
 Primary = 1.41 cfs @ 12.72 hrs, Volume= 0.085 af
 Routed to Reach 20R : Headwall Segment 1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 225.14' @ 12.72 hrs Surf.Area= 6,260 sf Storage= 20,614 cf

Plug-Flow detention time= 227.5 min calculated for 1.033 af (94% of inflow)
 Center-of-Mass det. time= 194.0 min (1,050.0 - 856.0)

Volume	Invert	Avail.Storage	Storage Description
#1	211.00'	111 cf	10.00'D x 9.50'H Vertical Cone/Cylinder 746 cf Overall - 467 cf Embedded = 279 cf x 40.0% Voids
#2	211.20'	467 cf	8.00'D x 9.30'H Vertical Cone/Cylinder Inside #1
#3	211.00'	117 cf	10.00'D x 9.50'H Vertical Cone/Cylinder 746 cf Overall - 452 cf Embedded = 294 cf x 40.0% Voids
#4	211.50'	452 cf	8.00'D x 9.00'H Vertical Cone/Cylinder Inside #3
#5	210.50'	107 cf	10.00'D x 9.50'H Vertical Cone/Cylinder 746 cf Overall - 478 cf Embedded = 269 cf x 40.0% Voids
#6	210.50'	478 cf	8.00'D x 9.50'H Vertical Cone/Cylinder Inside #5
#7	210.50'	123 cf	10.00'D x 10.00'H Vertical Cone/Cylinder 785 cf Overall - 478 cf Embedded = 308 cf x 40.0% Voids
#8	210.70'	478 cf	8.00'D x 9.50'H Vertical Cone/Cylinder Inside #7
#9	211.00'	298 cf	10.00'D x 9.50'H Vertical Cone/Cylinder 746 cf Overall x 40.0% Voids
#10	211.20'	467 cf	8.00'D x 9.30'H Vertical Cone/Cylinder
#11	220.50'	23,070 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		26,170 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
220.50	2,038	0	0
222.00	3,006	3,783	3,783
224.00	4,743	7,749	11,532
225.00	5,659	5,201	16,733
225.50	6,241	2,975	19,708
226.00	7,205	3,362	23,070

Device	Routing	Invert	Outlet Devices
#1	Discarded	220.49'	8.270 in/hr Exfiltration over Surface area above 220.49' Excluded Surface area = 443 sf
#2	Primary	225.00'	10.0' long + 4.0 ' SideZ 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

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Discarded OutFlow Max=1.11 cfs @ 12.72 hrs HW=225.14' (Free Discharge)

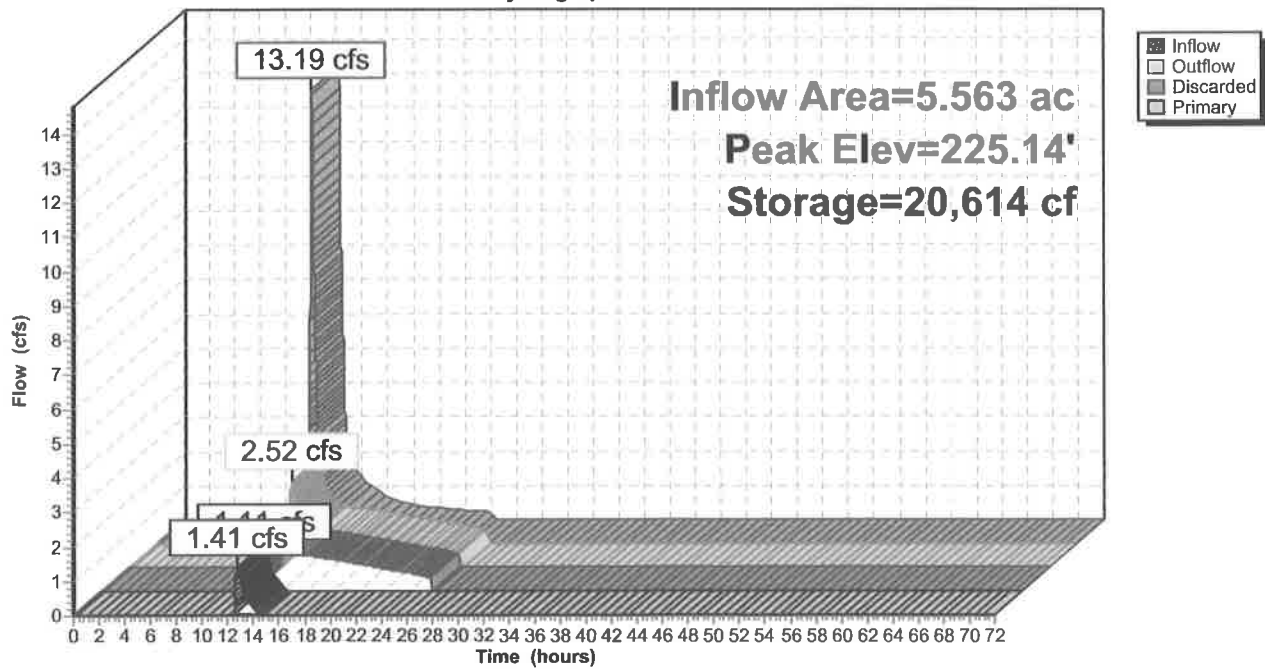
↑1=Exfiltration (Exfiltration Controls 1.11 cfs)

Primary OutFlow Max=1.23 cfs @ 12.72 hrs HW=225.14' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Weir Controls 1.23 cfs @ 0.85 fps)

Pond 6P: Existing Basin

Hydrograph



Summary for Pond 14P: Chamber System

Inflow Area = 2.604 ac, 53.82% Impervious, Inflow Depth = 3.33" for 25-yr event
Inflow = 9.12 cfs @ 12.09 hrs, Volume= 0.724 af
Outflow = 1.21 cfs @ 11.66 hrs, Volume= 0.724 af, Atten= 87%, Lag= 0.0 min
Discarded = 1.21 cfs @ 11.66 hrs, Volume= 0.724 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 7R : offsite south

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 211.27' @ 12.68 hrs Surf.Area= 0.145 ac Storage= 0.216 af

Plug-Flow detention time= 51.8 min calculated for 0.724 af (100% of inflow)
Center-of-Mass det. time= 51.8 min (841.1 - 789.3)

Table with 4 columns: Volume, Invert, Avail.Storage, Storage Description. Rows include #1A (Field A) and #2A (Galley 4x4x4) with detailed storage and volume calculations.

Storage Group A created with Chamber Wizard

Table with 4 columns: Device, Routing, Invert, Outlet Devices. Rows #1 and #2 describe discarded and primary outlet devices with technical specifications.

Discarded OutFlow Max=1.21 cfs @ 11.66 hrs HW=209.06' (Free Discharge)
↑1=Exfiltration (Exfiltration Controls 1.21 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=209.00' (Free Discharge)
↑2=Culvert (Controls 0.00 cfs)

Pond 14P: Chamber System - Chamber Wizard Field A

Chamber Model = Galley 4x4x4 (Concrete Galley, UCPI 4x4x4 Galley or equivalent)

Inside= 42.0"W x 43.0"H => 12.67 sf x 3.50'L = 44.3 cf

Outside= 52.8"W x 48.0"H => 14.72 sf x 4.00'L = 58.9 cf

80 Chambers/Row x 4.00' Long = 320.00' Row Length +12.0" End Stone x 2 = 322.00' Base Length

4 Rows x 52.8" Wide + 12.0" Side Stone x 2 = 19.60' Base Width

6.0" Stone Base + 48.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

320 Chambers x 44.3 cf = 14,190.3 cf Chamber Storage

320 Chambers x 58.9 cf = 18,840.4 cf Displacement

34,711.6 cf Field - 18,840.4 cf Chambers = 15,871.2 cf Stone x 40.0% Voids = 6,348.5 cf Stone Storage

Chamber Storage + Stone Storage = 20,538.8 cf = 0.472 af

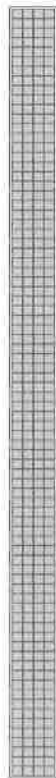
Overall Storage Efficiency = 59.2%

Overall System Size = 322.00' x 19.60' x 5.50'

320 Chambers

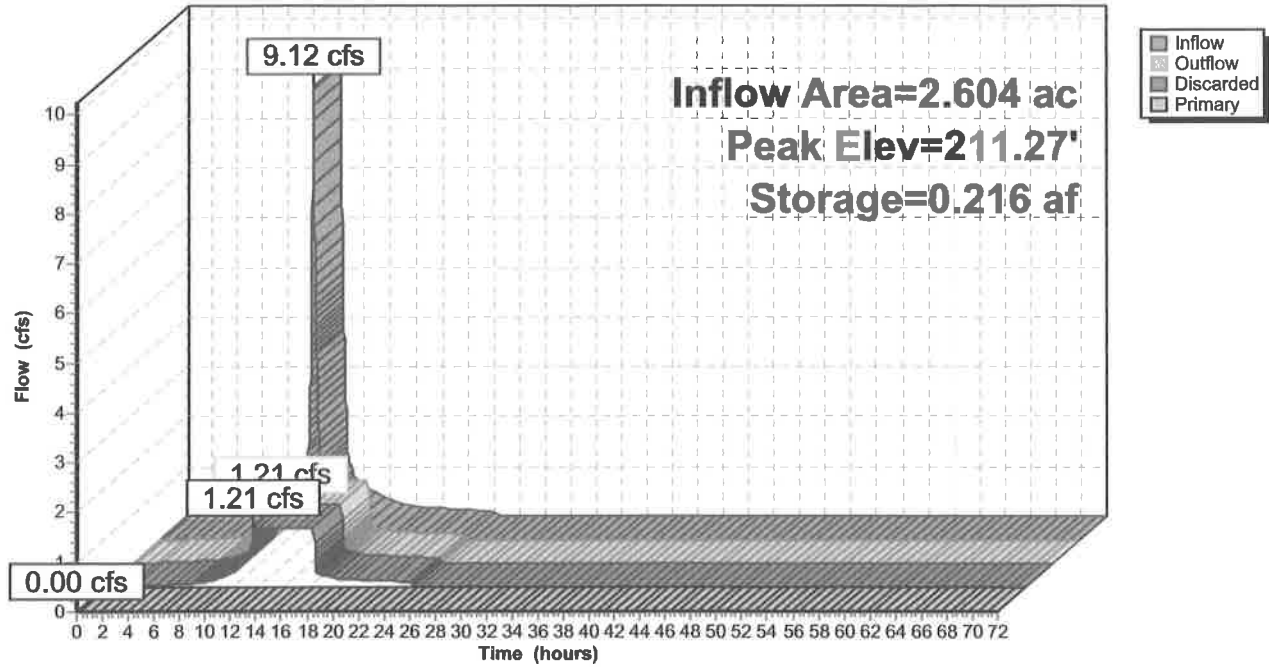
1,285.6 cy Field

587.8 cy Stone



Pond 14P: Chamber System

Hydrograph



Summary for Pond 16P: Infiltration Trench

Inflow Area = 0.632 ac, 25.27% Impervious, Inflow Depth = 1.74" for 25-yr event
 Inflow = 0.89 cfs @ 12.09 hrs, Volume= 0.091 af
 Outflow = 0.18 cfs @ 11.73 hrs, Volume= 0.091 af, Atten= 79%, Lag= 0.0 min
 Discarded = 0.18 cfs @ 11.73 hrs, Volume= 0.091 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 196.76' @ 12.58 hrs Surf.Area= 952 sf Storage= 812 cf

Plug-Flow detention time= 23.8 min calculated for 0.091 af (100% of inflow)
 Center-of-Mass det. time= 23.8 min (817.4 - 793.6)

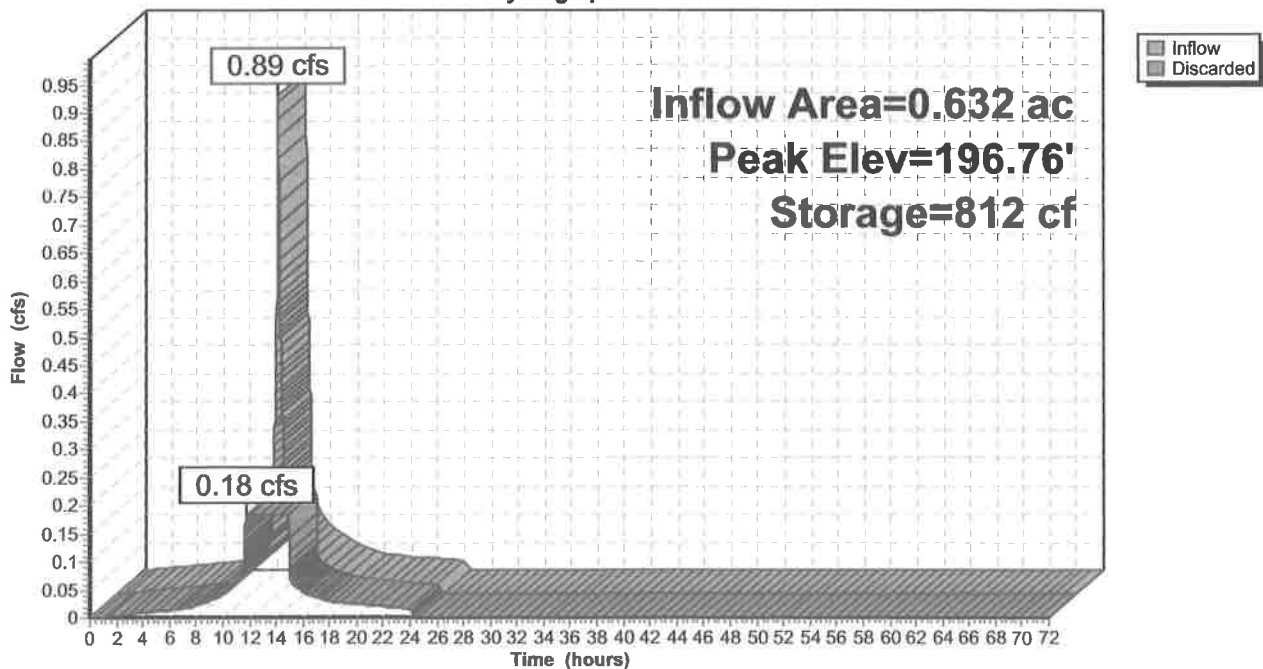
Volume	Invert	Avail.Storage	Storage Description
#1	195.00'	1,593 cf	8.50'W x 112.00'L x 5.00'H Prismatic 4,760 cf Overall - 778 cf Embedded = 3,982 cf x 40.0% Voids
#2	196.25'	778 cf	18.0" Round CMP_Round 18" x 4 Inside #1 L= 110.0'
		2,371 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	195.00'	8.270 in/hr Exfiltration over Horizontal area

Discarded OutFlow Max=0.18 cfs @ 11.73 hrs HW=195.05' (Free Discharge)
 ↑ 1=Exfiltration (Exfiltration Controls 0.18 cfs)

Pond 16P: Infiltration Trench

Hydrograph



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Type III 24-hr 50-yr Rainfall=7.54"

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: P-1 (CB1)	Runoff Area=3,398 sf 66.27% Impervious Runoff Depth=4.97" Tc=6.0 min CN=78 Runoff=0.45 cfs 0.032 af
Subcatchment 2S: P-2 (CB2)	Runoff Area=1,896 sf 87.45% Impervious Runoff Depth=6.47" Tc=6.0 min CN=91 Runoff=0.31 cfs 0.023 af
Subcatchment 3S: P-3 (CB3)	Runoff Area=9,124 sf 81.46% Impervious Runoff Depth=6.00" Tc=6.0 min CN=87 Runoff=1.41 cfs 0.105 af
Subcatchment 4S: OS 1	Runoff Area=242,335 sf 40.85% Impervious Runoff Depth=3.31" Flow Length=855' Tc=9.9 min CN=63 Runoff=18.68 cfs 1.535 af
Subcatchment 7S: P-4 (CB4)	Runoff Area=17,772 sf 64.68% Impervious Runoff Depth=4.85" Tc=6.0 min CN=77 Runoff=2.31 cfs 0.165 af
Subcatchment 8S: P-5 (CB5)	Runoff Area=5,781 sf 64.57% Impervious Runoff Depth=4.85" Tc=6.0 min CN=77 Runoff=0.75 cfs 0.054 af
Subcatchment 9S: P-6 (CB6)	Runoff Area=11,883 sf 57.73% Impervious Runoff Depth=4.40" Tc=6.0 min CN=73 Runoff=1.41 cfs 0.100 af
Subcatchment 10S: P-7 (CB7)	Runoff Area=13,474 sf 0.00% Impervious Runoff Depth=0.73" Tc=6.0 min CN=36 Runoff=0.11 cfs 0.019 af
Subcatchment 11S: P-8 (CB8)	Runoff Area=22,491 sf 0.00% Impervious Runoff Depth=0.97" Tc=6.0 min CN=39 Runoff=0.34 cfs 0.042 af
Subcatchment 12S: P-9 (roof)	Runoff Area=27,632 sf 100.00% Impervious Runoff Depth=7.30" Tc=6.0 min CN=98 Runoff=4.69 cfs 0.386 af
Subcatchment 13S: P-10 (to south)	Runoff Area=15,401 sf 0.00% Impervious Runoff Depth=0.65" Flow Length=145' Tc=8.4 min CN=35 Runoff=0.10 cfs 0.019 af
Subcatchment 15S: P-10A (rear lawn)	Runoff Area=21,516 sf 4.43% Impervious Runoff Depth=0.97" Tc=6.0 min CN=39 Runoff=0.33 cfs 0.040 af
Subcatchment 17S: P-9A (roof)	Runoff Area=6,000 sf 100.00% Impervious Runoff Depth=7.30" Tc=6.0 min CN=98 Runoff=1.02 cfs 0.084 af
Subcatchment 18S: OS 2	Runoff Area=45,929 sf 0.00% Impervious Runoff Depth=0.32" Flow Length=333' Slope=0.0700 '/ Tc=11.1 min CN=30 Runoff=0.06 cfs 0.028 af
Reach 7R: offsite south	Inflow=8.83 cfs 0.445 af Outflow=8.83 cfs 0.445 af
Reach 17R: Headwall Segment 2	Avg. Flow Depth=0.43' Max Vel=17.83 fps Inflow=8.74 cfs 0.425 af 24.0" Round Pipe n=0.013 L=76.0' S=0.1503 '/ Capacity=87.69 cfs Outflow=8.73 cfs 0.425 af

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Reach 20R: Headwall Segment 1 Avg. Flow Depth=0.83' Max Vel=7.15 fps Inflow=8.75 cfs 0.425 af
24.0" Round Pipe n=0.012 L=233.0' S=0.0100 '/ Capacity=24.51 cfs Outflow=8.74 cfs 0.425 af

Pond 6P: Existing Basin Peak Elev=225.44' Storage=22,459 cf Inflow=18.68 cfs 1.535 af
Discarded=1.18 cfs 1.066 af Primary=8.72 cfs 0.398 af Outflow=9.91 cfs 1.464 af

Pond 14P: Chamber System Peak Elev=212.14' Storage=0.309 af Inflow=11.68 cfs 0.926 af
Discarded=1.21 cfs 0.926 af Primary=0.00 cfs 0.000 af Outflow=1.21 cfs 0.926 af

Pond 16P: Infiltration Trench Peak Elev=197.52' Storage=1,379 cf Inflow=1.31 cfs 0.124 af
Outflow=0.18 cfs 0.124 af

Total Runoff Area = 10.207 ac Runoff Volume = 2.631 af Average Runoff Depth = 3.09"
62.44% Pervious = 6.373 ac 37.56% Impervious = 3.834 ac

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Type III 24-hr 50-yr Rainfall=7.54"

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Summary for Subcatchment 1S: P-1 (CB1)

Runoff = 0.45 cfs @ 12.09 hrs, Volume= 0.032 af, Depth= 4.97"
Routed to Pond 14P : Chamber System

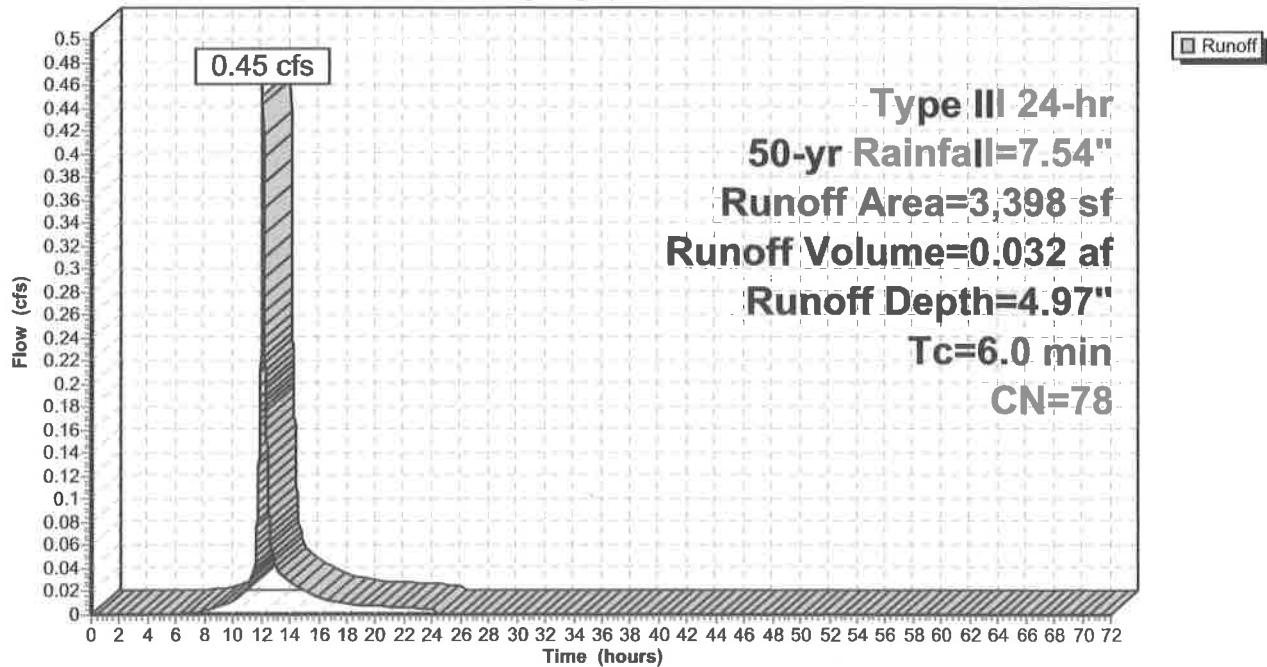
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=7.54"

Area (sf)	CN	Description
2,252	98	Paved parking, HSG A
1,146	39	>75% Grass cover, Good, HSG A
3,398	78	Weighted Average
1,146		33.73% Pervious Area
2,252		66.27% Impervious Area

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

Subcatchment 1S: P-1 (CB1)

Hydrograph



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Type III 24-hr 50-yr Rainfall=7.54"

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Summary for Subcatchment 2S: P-2 (CB2)

Runoff = 0.31 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.47"
Routed to Pond 14P : Chamber System

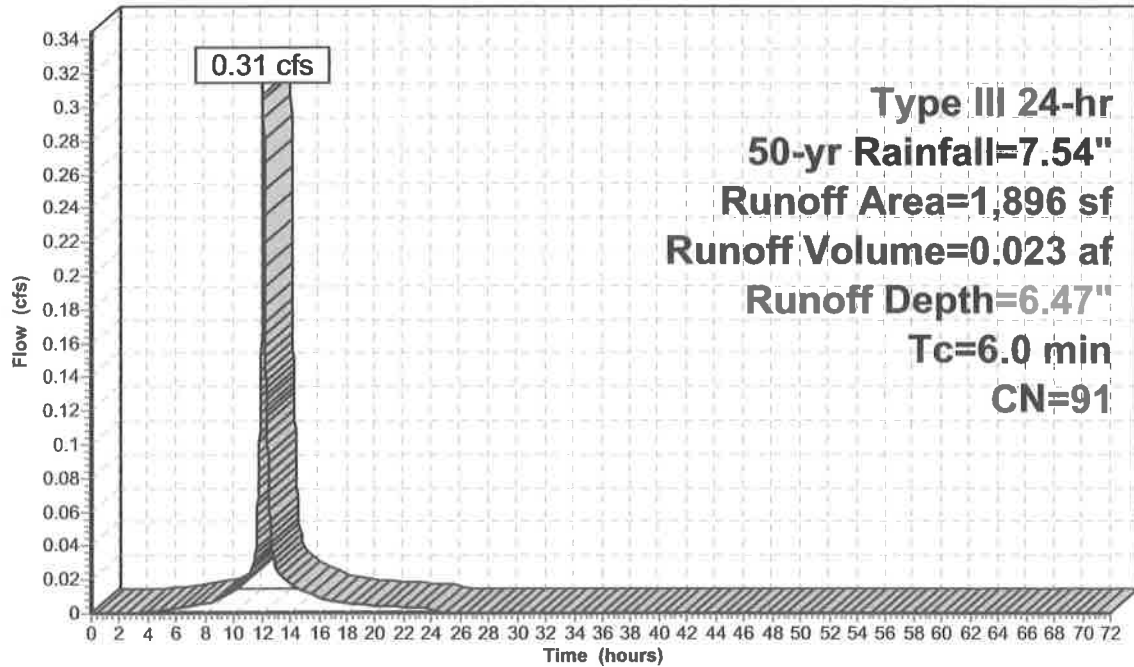
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=7.54"

Area (sf)	CN	Description
1,658	98	Paved parking, HSG A
238	39	>75% Grass cover, Good, HSG A
1,896	91	Weighted Average
238		12.55% Pervious Area
1,658		87.45% Impervious Area

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

Subcatchment 2S: P-2 (CB2)

Hydrograph



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Type III 24-hr 50-yr Rainfall=7.54"

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Summary for Subcatchment 3S: P-3 (CB3)

Runoff = 1.41 cfs @ 12.08 hrs, Volume= 0.105 af, Depth= 6.00"
Routed to Pond 14P : Chamber System

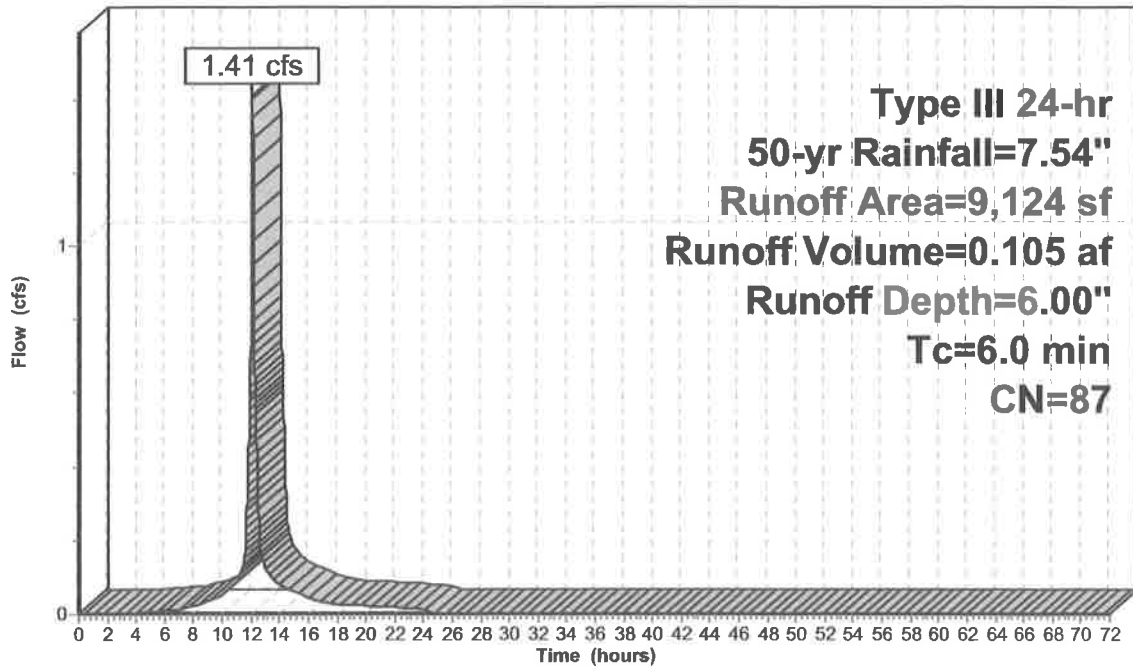
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=7.54"

Area (sf)	CN	Description
7,432	98	Paved parking, HSG A
1,692	39	>75% Grass cover, Good, HSG A
9,124	87	Weighted Average
1,692		18.54% Pervious Area
7,432		81.46% Impervious Area

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

Subcatchment 3S: P-3 (CB3)

Hydrograph



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Summary for Subcatchment 4S: OS 1

[47] Hint: Peak is 289% of capacity of segment #3

[47] Hint: Peak is 106% of capacity of segment #4

Runoff = 18.68 cfs @ 12.14 hrs, Volume= 1.535 af, Depth= 3.31"
 Routed to Pond 6P : Existing Basin

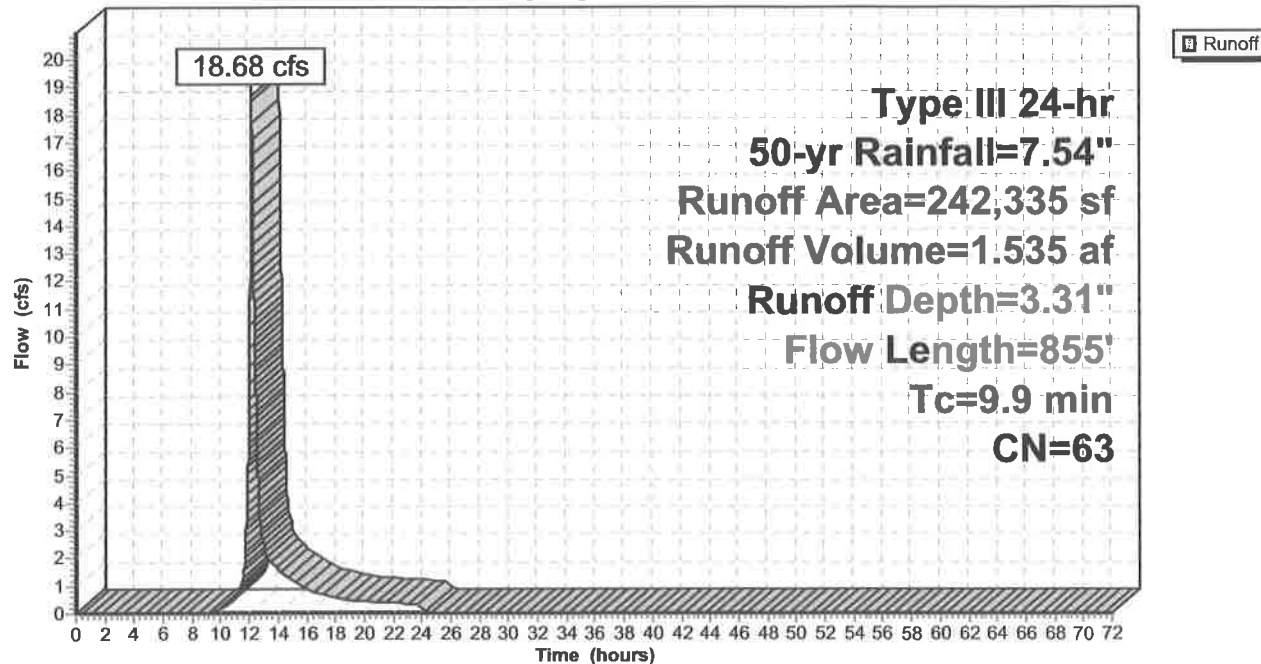
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 50-yr Rainfall=7.54"

Area (sf)	CN	Description
21,486	98	Roofs, HSG A
15,524	30	Woods, Good, HSG A
127,810	39	>75% Grass cover, Good, HSG A
* 6,241	98	Water Surface, HSG A Basin
71,274	98	Paved parking, HSG A
242,335	63	Weighted Average
143,334		59.15% Pervious Area
99,001		40.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	50	0.0300	0.12		Sheet Flow, Grass: Dense n= 0.240 P2= 3.20"
1.1	150	0.0120	2.22		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.5	475	0.0100	5.26	6.46	Pipe Channel, RCP_Round 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
0.3	180	0.0280	9.95	17.58	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
9.9	855	Total			

Subcatchment 4S: OS 1

Hydrograph



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Summary for Subcatchment 7S: P-4 (CB4)

Runoff = 2.31 cfs @ 12.09 hrs, Volume= 0.165 af, Depth= 4.85"
Routed to Pond 14P : Chamber System

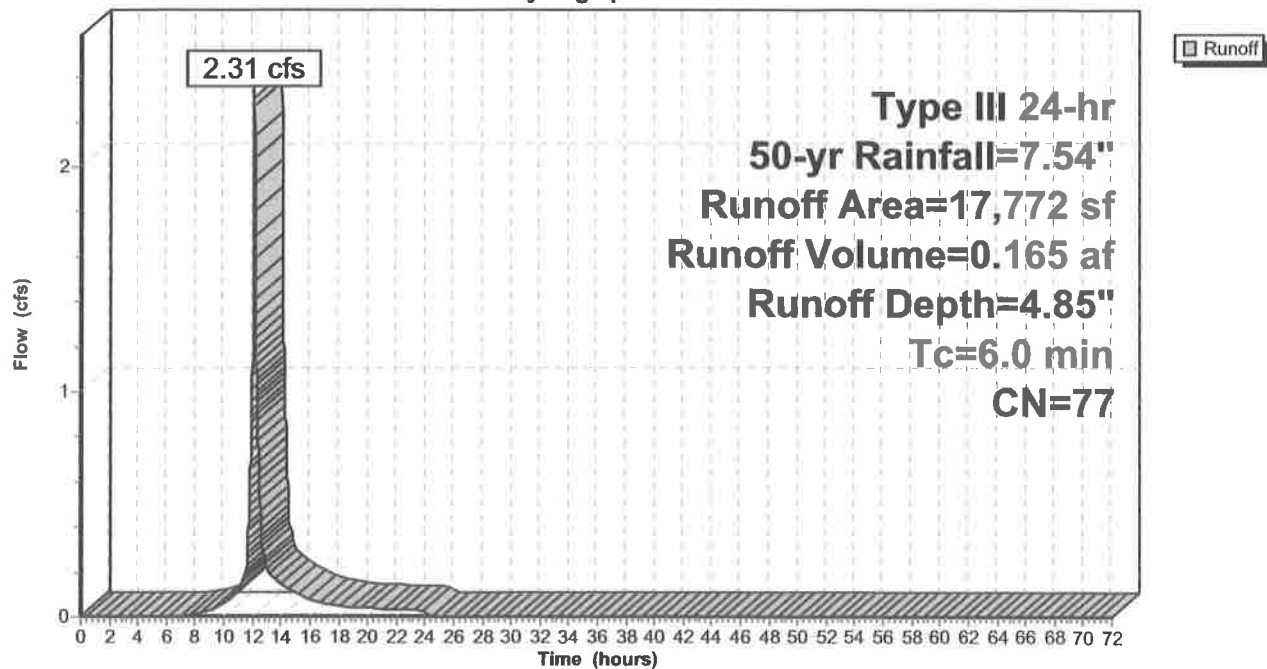
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=7.54"

Area (sf)	CN	Description
11,495	98	Paved parking, HSG A
6,277	39	>75% Grass cover, Good, HSG A
17,772	77	Weighted Average
6,277		35.32% Pervious Area
11,495		64.68% Impervious Area

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

Subcatchment 7S: P-4 (CB4)

Hydrograph



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Type III 24-hr 50-yr Rainfall=7.54"

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Summary for Subcatchment 8S: P-5 (CB5)

Runoff = 0.75 cfs @ 12.09 hrs, Volume= 0.054 af, Depth= 4.85"
Routed to Pond 14P : Chamber System

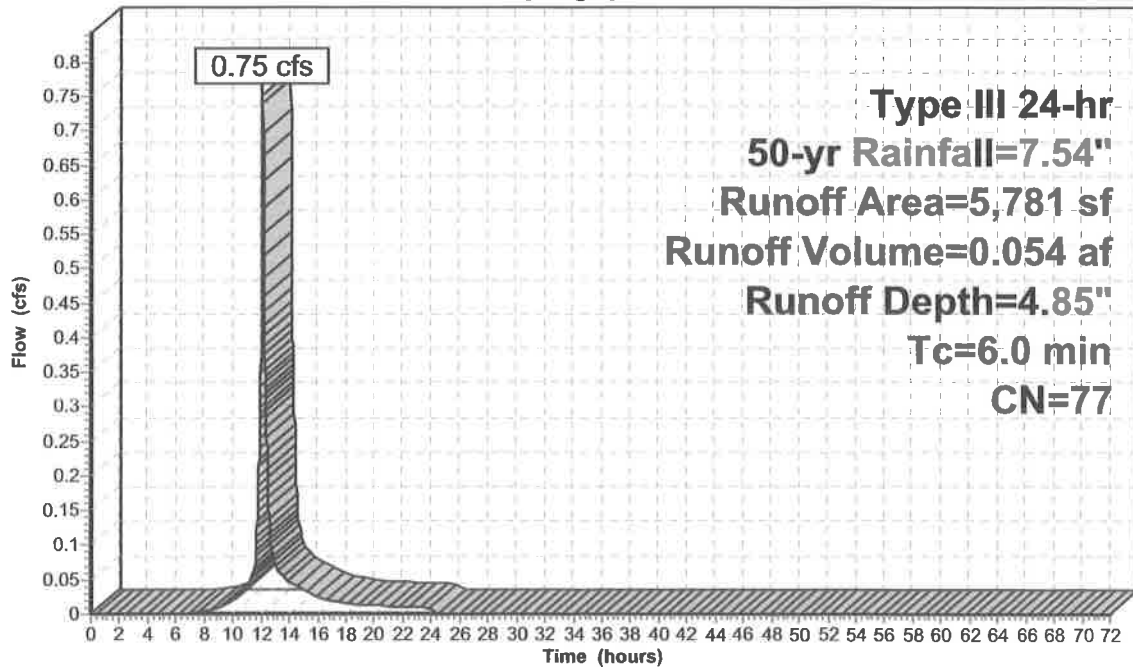
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=7.54"

Area (sf)	CN	Description
3,733	98	Paved parking, HSG A
2,048	39	>75% Grass cover, Good, HSG A
5,781	77	Weighted Average
2,048		35.43% Pervious Area
3,733		64.57% Impervious Area

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

Subcatchment 8S: P-5 (CB5)

Hydrograph



Runoff

**Type III 24-hr
50-yr Rainfall=7.54"
Runoff Area=5,781 sf
Runoff Volume=0.054 af
Runoff Depth=4.85"
Tc=6.0 min
CN=77**

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Type III 24-hr 50-yr Rainfall=7.54"

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Summary for Subcatchment 9S: P-6 (CB6)

Runoff = 1.41 cfs @ 12.09 hrs, Volume= 0.100 af, Depth= 4.40"
Routed to Pond 14P : Chamber System

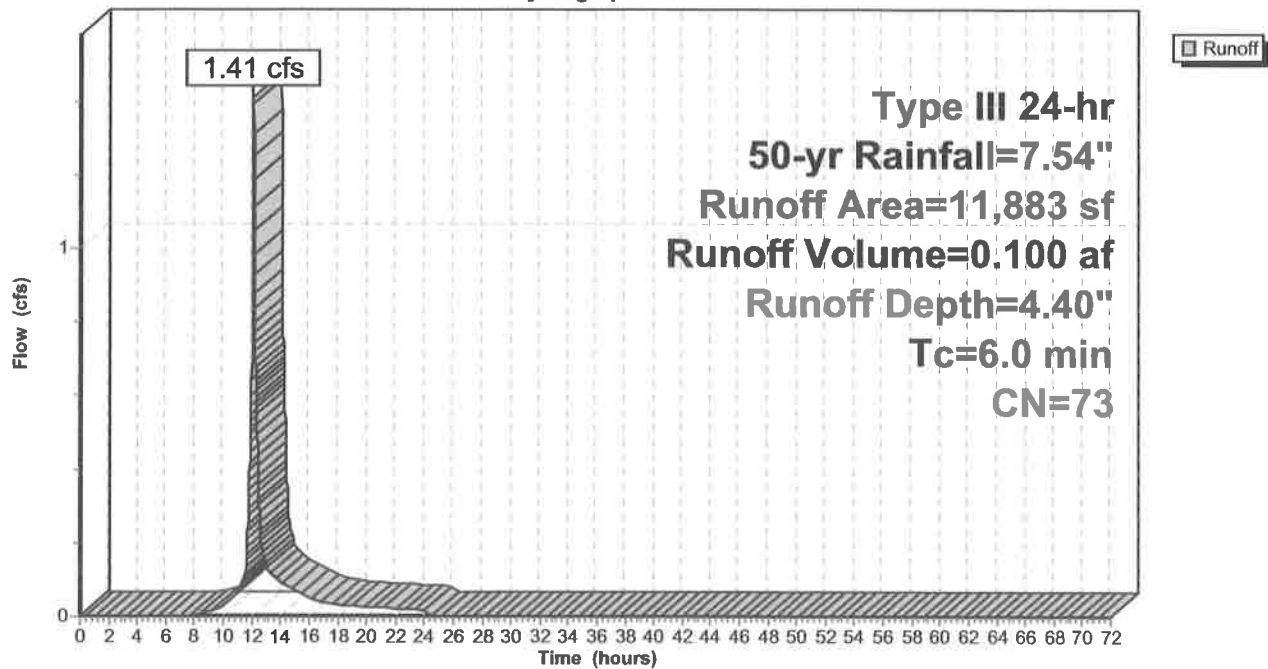
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=7.54"

Area (sf)	CN	Description
6,860	98	Paved parking, HSG A
5,023	39	>75% Grass cover, Good, HSG A
11,883	73	Weighted Average
5,023		42.27% Pervious Area
6,860		57.73% Impervious Area

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

Subcatchment 9S: P-6 (CB6)

Hydrograph



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Type III 24-hr 50-yr Rainfall=7.54"

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Summary for Subcatchment 10S: P-7 (CB7)

Runoff = 0.11 cfs @ 12.28 hrs, Volume= 0.019 af, Depth= 0.73"
Routed to Pond 14P : Chamber System

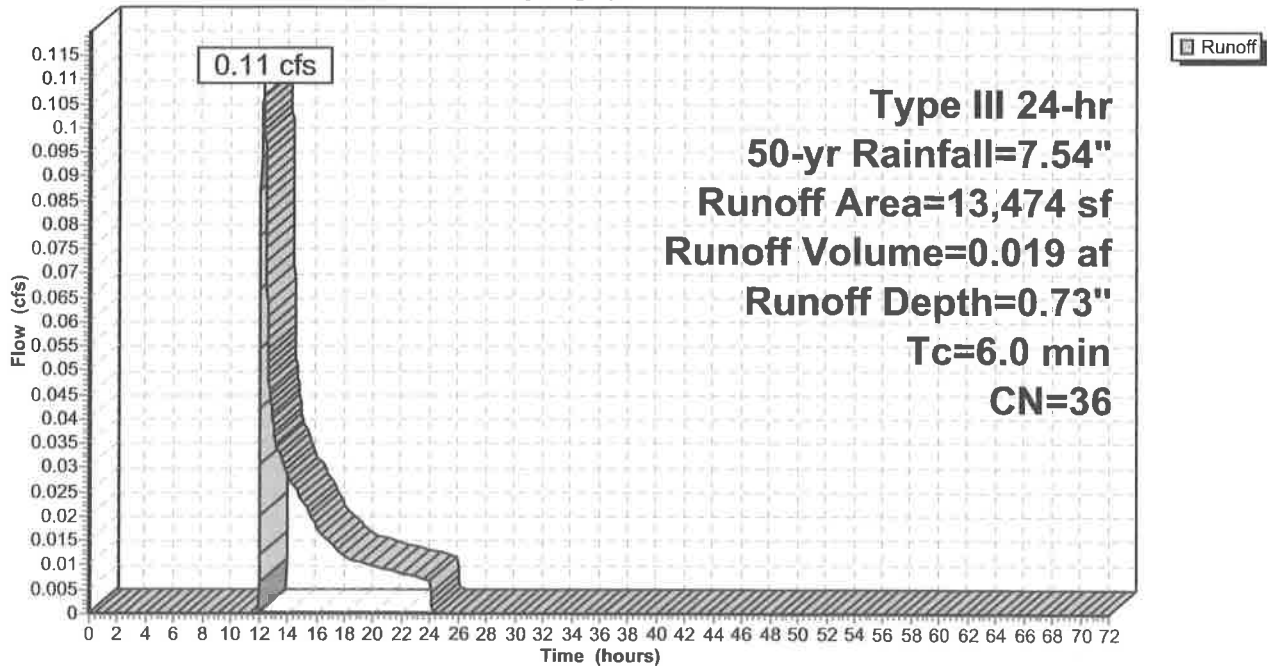
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=7.54"

Area (sf)	CN	Description
8,914	39	>75% Grass cover, Good, HSG A
4,560	30	Woods, Good, HSG A
13,474	36	Weighted Average
13,474		100.00% Pervious Area

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

Subcatchment 10S: P-7 (CB7)

Hydrograph



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Type III 24-hr 50-yr Rainfall=7.54"

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Summary for Subcatchment 11S: P-8 (CB8)

Runoff = 0.34 cfs @ 12.13 hrs, Volume= 0.042 af, Depth= 0.97"
Routed to Pond 14P : Chamber System

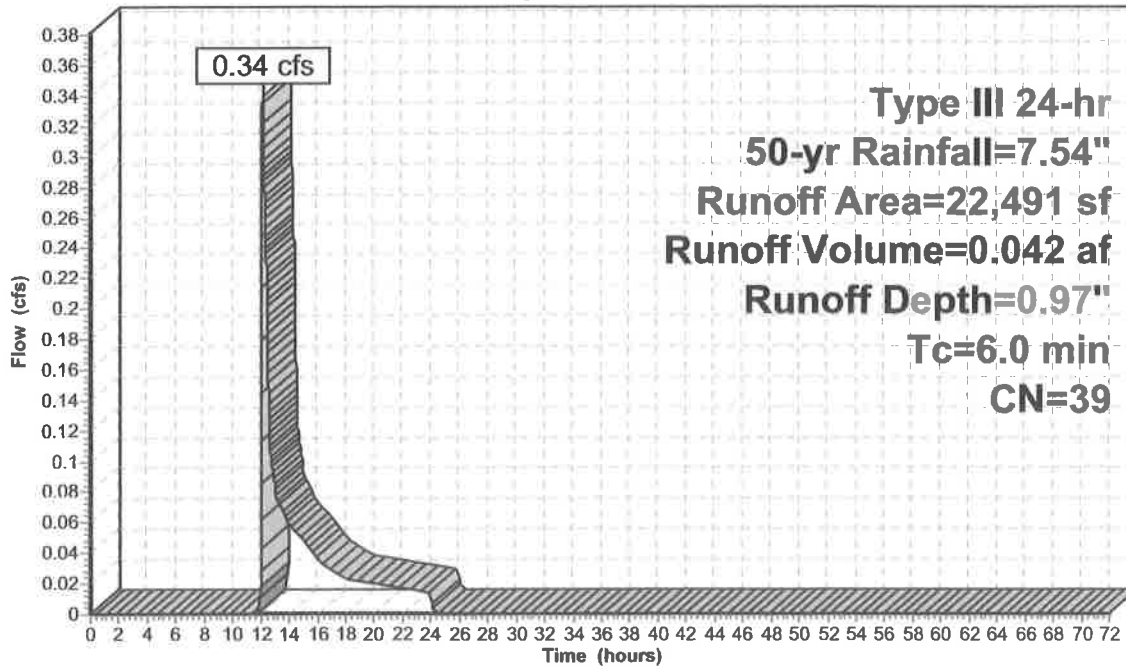
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=7.54"

Area (sf)	CN	Description
22,491	39	>75% Grass cover, Good, HSG A
22,491		100.00% Pervious Area

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

Subcatchment 11S: P-8 (CB8)

Hydrograph



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Type III 24-hr 50-yr Rainfall=7.54"

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Summary for Subcatchment 12S: P-9 (roof)

Runoff = 4.69 cfs @ 12.08 hrs, Volume= 0.386 af, Depth= 7.30"
Routed to Pond 14P : Chamber System

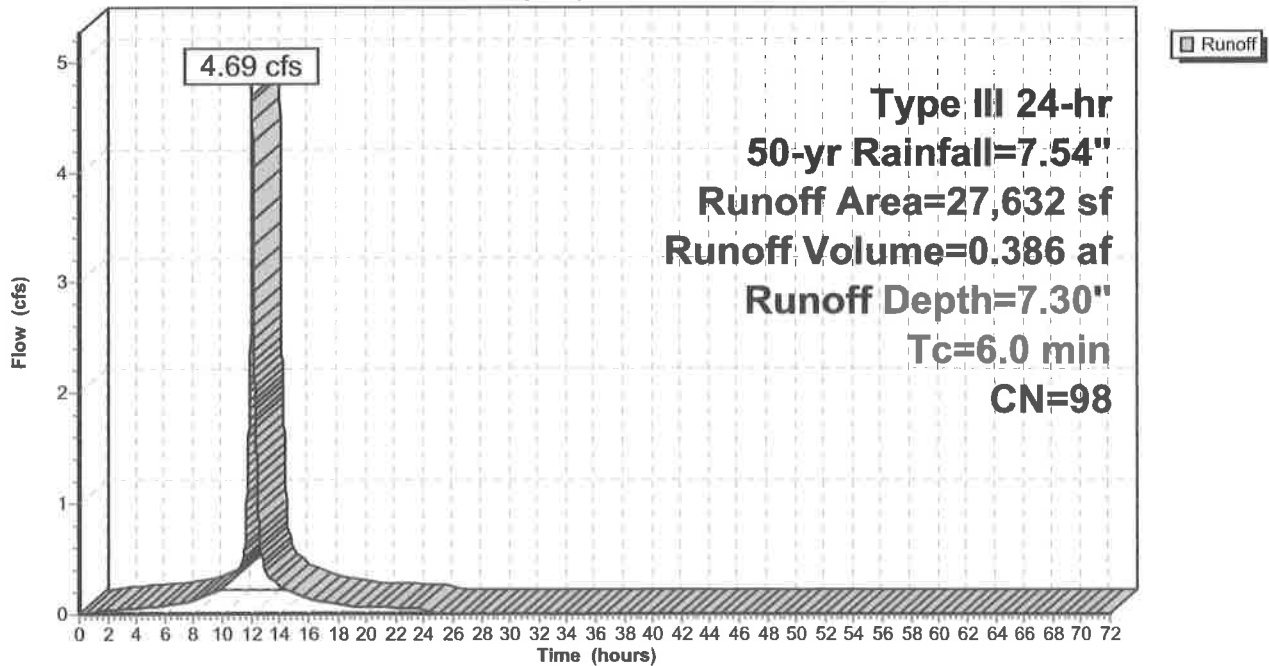
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=7.54"

Area (sf)	CN	Description
27,632	98	Roofs, HSG A
27,632		100.00% Impervious Area

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

Subcatchment 12S: P-9 (roof)

Hydrograph



Summary for Subcatchment 13S: P-10 (to south)

Runoff = 0.10 cfs @ 12.35 hrs, Volume= 0.019 af, Depth= 0.65"
 Routed to Reach 7R : offsite south

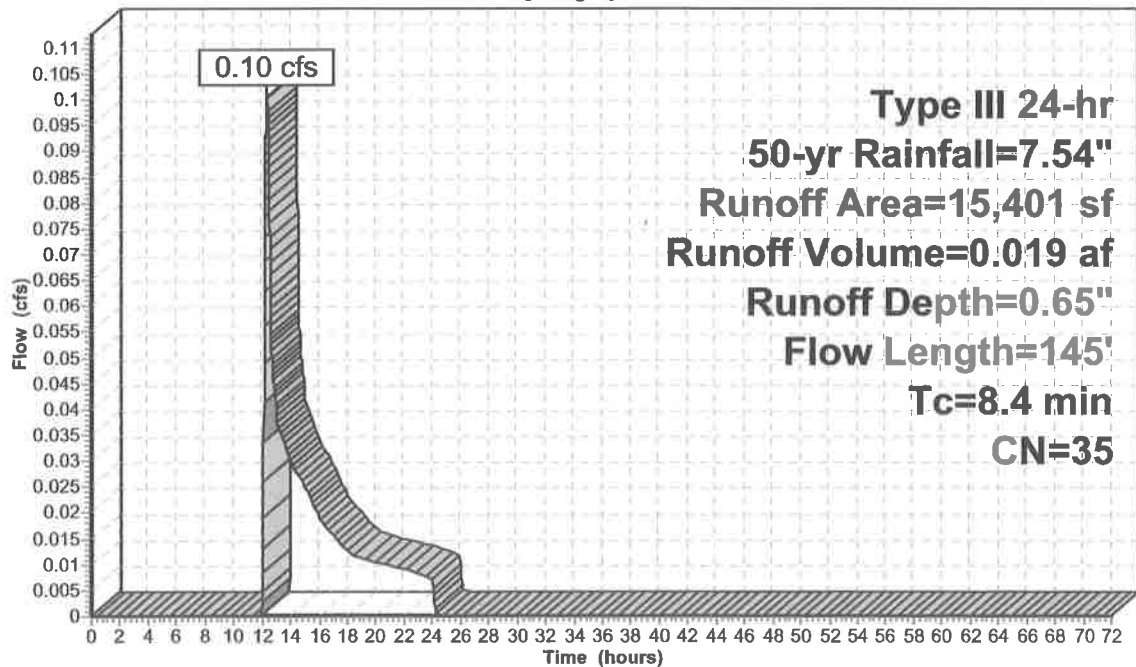
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 50-yr Rainfall=7.54"

Area (sf)	CN	Description
8,371	39	>75% Grass cover, Good, HSG A
7,030	30	Woods, Good, HSG A
15,401	35	Weighted Average
15,401		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		Sheet Flow, Grass: Dense n= 0.240 P2= 3.20"
0.2	95	0.1900	6.54		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
8.4	145	Total			

Subcatchment 13S: P-10 (to south)

Hydrograph



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Type III 24-hr 50-yr Rainfall=7.54"

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Summary for Subcatchment 15S: P-10A (rear lawn)

Runoff = 0.33 cfs @ 12.13 hrs, Volume= 0.040 af, Depth= 0.97"
 Routed to Pond 16P : Infiltration Trench

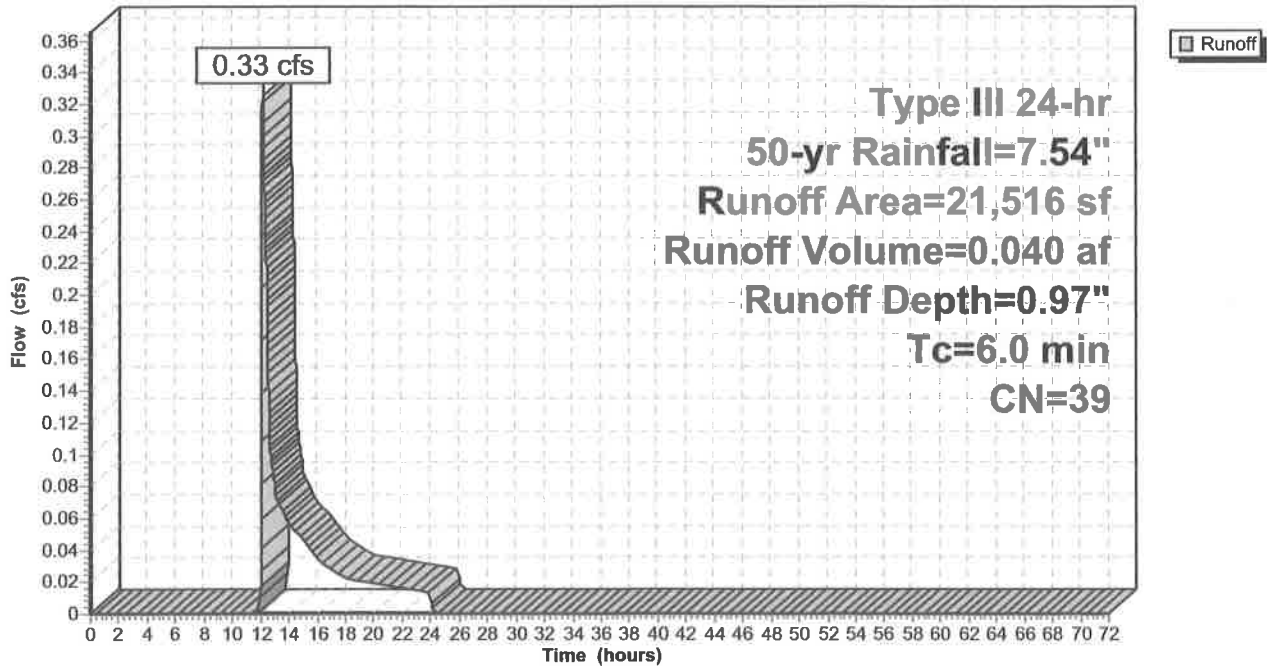
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 50-yr Rainfall=7.54"

Area (sf)	CN	Description
13,389	39	>75% Grass cover, Good, HSG A
953	98	Water Surface, HSG A
7,174	30	Meadow, non-grazed, HSG A
21,516	39	Weighted Average
20,563		95.57% Pervious Area
953		4.43% Impervious Area

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

Subcatchment 15S: P-10A (rear lawn)

Hydrograph



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Type III 24-hr 50-yr Rainfall=7.54"

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Summary for Subcatchment 17S: P-9A (roof)

Runoff = 1.02 cfs @ 12.08 hrs, Volume= 0.084 af, Depth= 7.30"
Routed to Pond 16P : Infiltration Trench

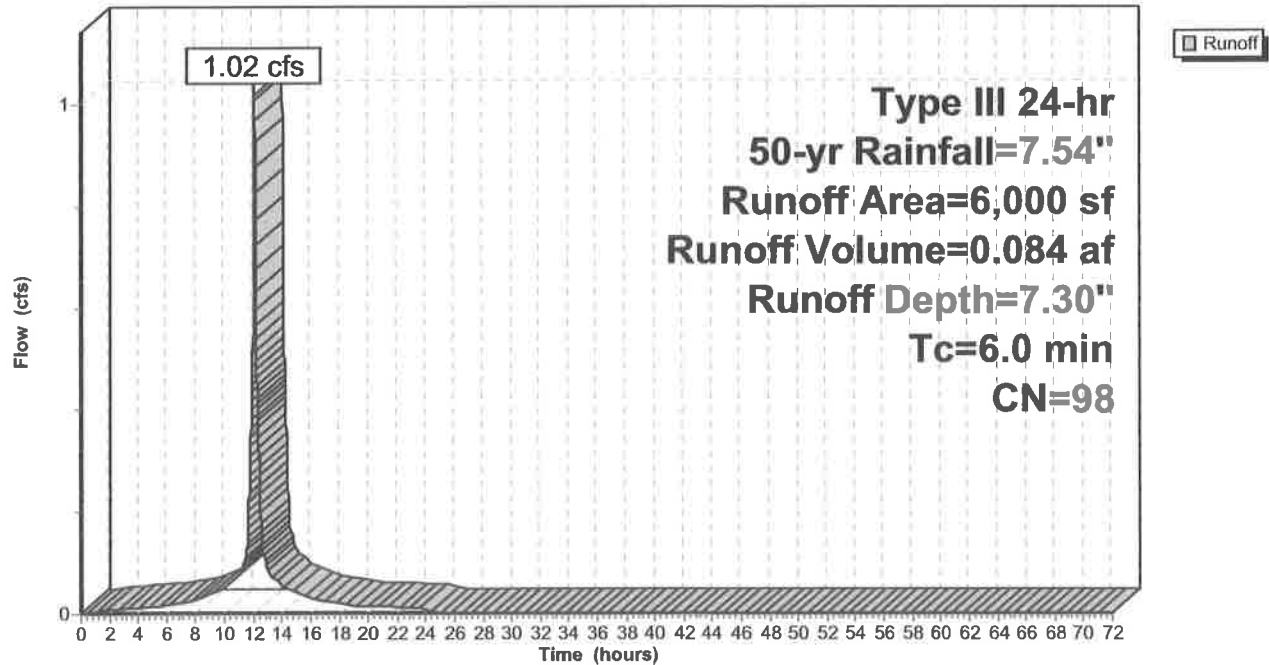
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-yr Rainfall=7.54"

Area (sf)	CN	Description
6,000	98	Roofs, HSG A
6,000		100.00% Impervious Area

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

Subcatchment 17S: P-9A (roof)

Hydrograph



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Type III 24-hr 50-yr Rainfall=7.54"

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Summary for Subcatchment 18S: OS 2

Runoff = 0.06 cfs @ 12.54 hrs, Volume= 0.028 af, Depth= 0.32"
 Routed to Reach 20R : Headwall Segment 1

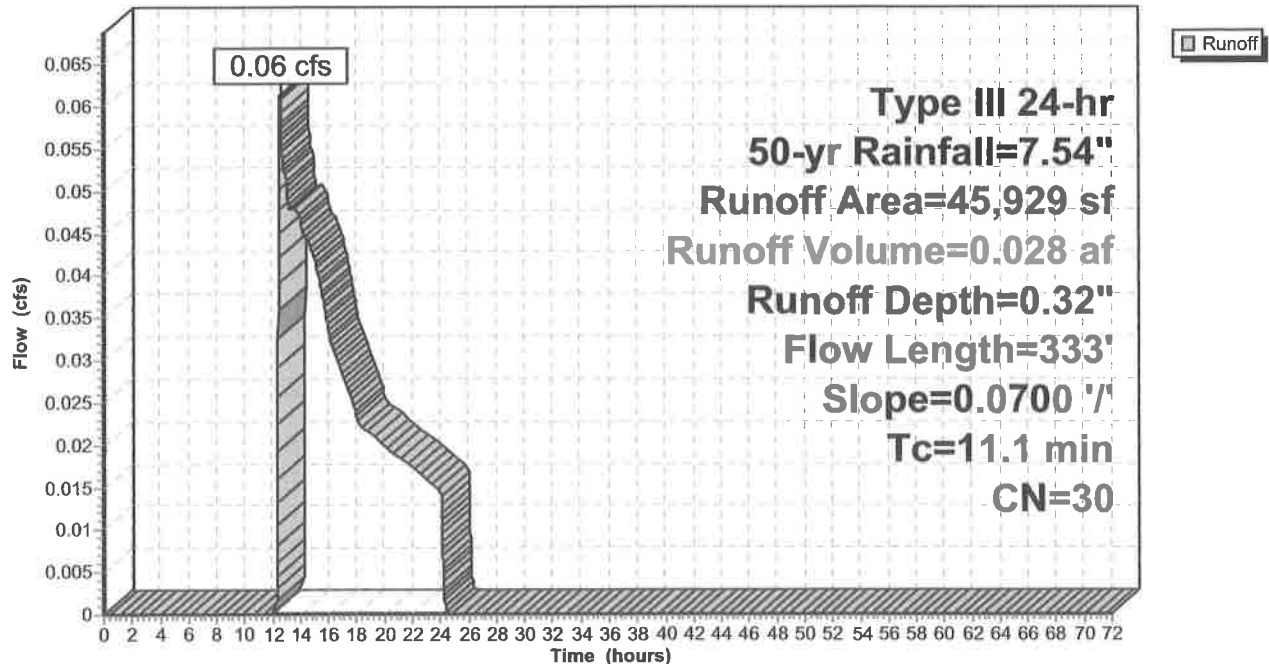
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 50-yr Rainfall=7.54"

Area (sf)	CN	Description
45,929	30	Woods, Good, HSG A
45,929		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	50	0.0700	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
3.6	283	0.0700	1.32		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
11.1	333	Total			

Subcatchment 18S: OS 2

Hydrograph



Summary for Reach 7R: offsite south

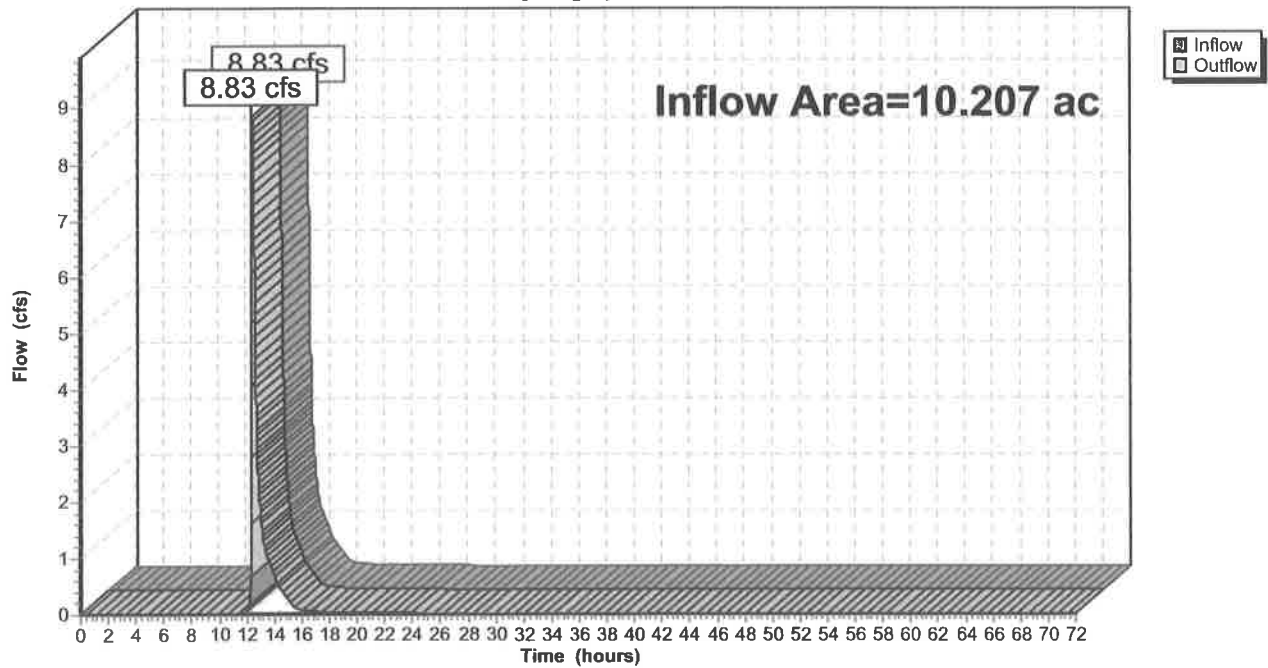
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 10.207 ac, 37.56% Impervious, Inflow Depth = 0.52" for 50-yr event
Inflow = 8.83 cfs @ 12.39 hrs, Volume= 0.445 af
Outflow = 8.83 cfs @ 12.39 hrs, Volume= 0.445 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Reach 7R: offsite south

Hydrograph



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Type III 24-hr 50-yr Rainfall=7.54"

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Summary for Reach 17R: Headwall Segment 2

[52] Hint: Inlet/Outlet conditions not evaluated

[61] Hint: Exceeded Reach 20R outlet invert by 0.43' @ 12.39 hrs

Inflow Area = 6.618 ac, 34.34% Impervious, Inflow Depth = 0.77" for 50-yr event
Inflow = 8.74 cfs @ 12.39 hrs, Volume= 0.425 af
Outflow = 8.73 cfs @ 12.39 hrs, Volume= 0.425 af, Atten= 0%, Lag= 0.1 min
Routed to Reach 7R : offsite south

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 17.83 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.60 fps, Avg. Travel Time= 0.3 min

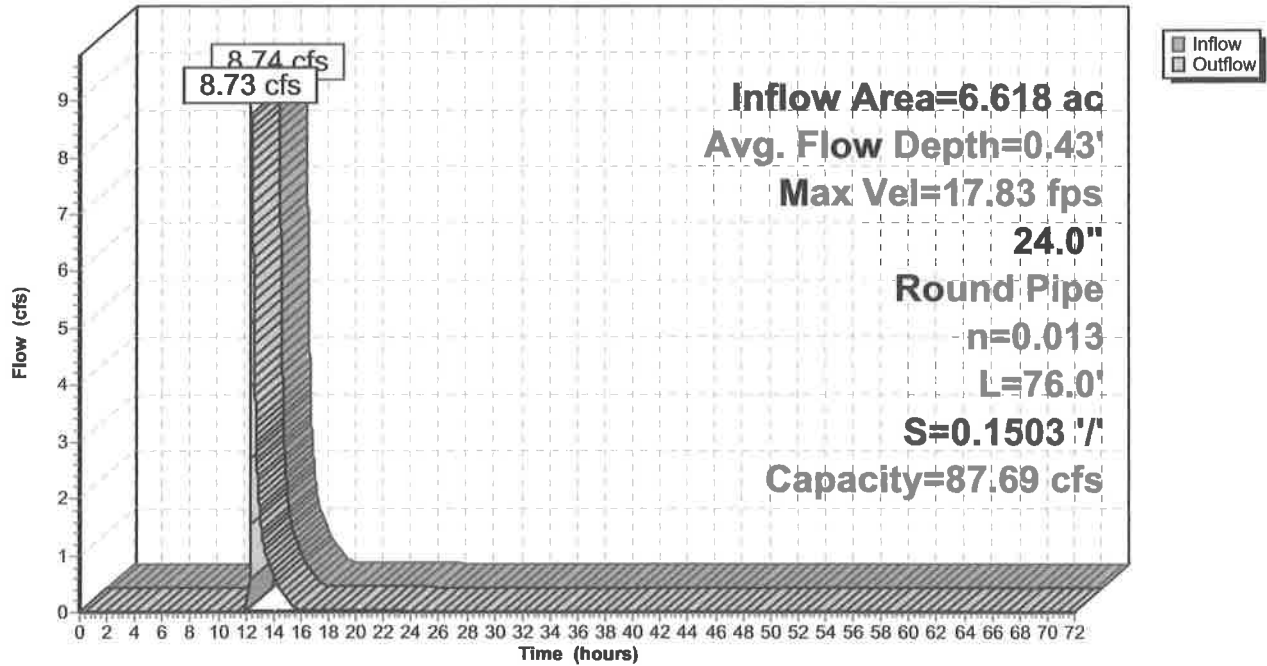
Peak Storage= 37 cf @ 12.39 hrs
Average Depth at Peak Storage= 0.43' , Surface Width= 1.64'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 87.69 cfs

24.0" Round Pipe
n= 0.013
Length= 76.0' Slope= 0.1503 '/'
Inlet Invert= 211.67', Outlet Invert= 200.25'



Reach 17R: Headwall Segment 2

Hydrograph



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Type III 24-hr 50-yr Rainfall=7.54"

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Summary for Reach 20R: Headwall Segment 1

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 6.618 ac, 34.34% Impervious, Inflow Depth = 0.77" for 50-yr event
Inflow = 8.75 cfs @ 12.37 hrs, Volume= 0.425 af
Outflow = 8.74 cfs @ 12.39 hrs, Volume= 0.425 af, Atten= 0%, Lag= 1.0 min
Routed to Reach 17R : Headwall Segment 2

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.15 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.84 fps, Avg. Travel Time= 2.1 min

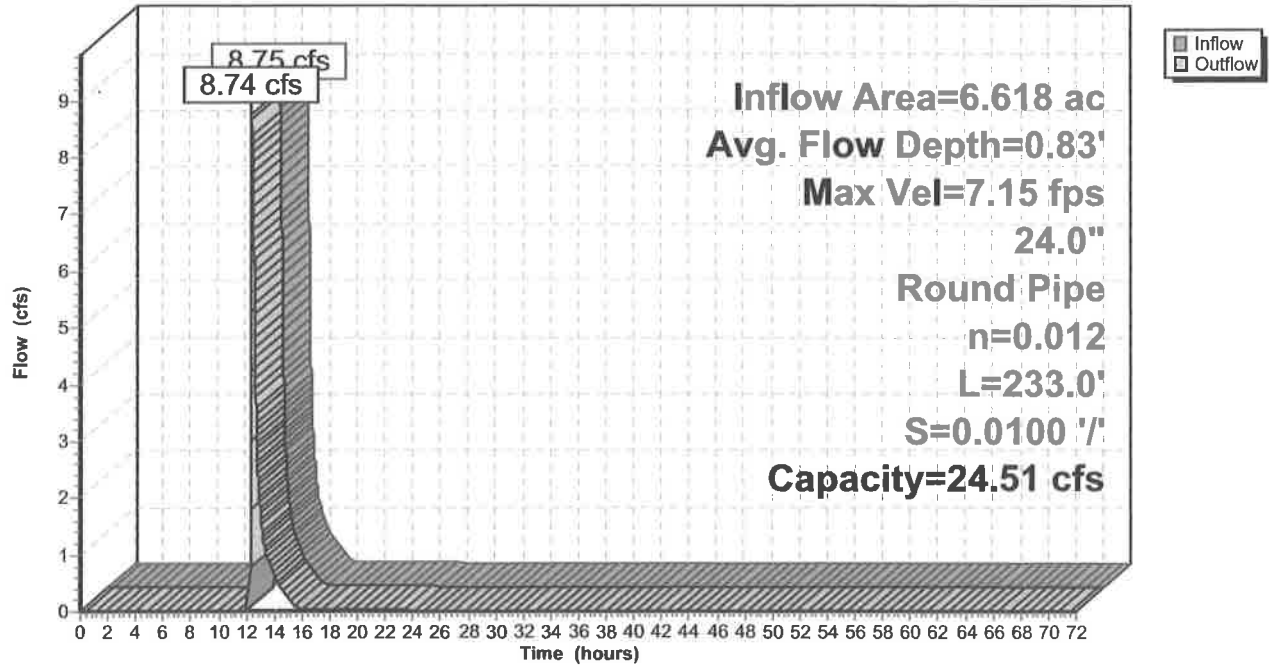
Peak Storage= 285 cf @ 12.38 hrs
Average Depth at Peak Storage= 0.83', Surface Width= 1.97'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 24.51 cfs

24.0" Round Pipe
n= 0.012
Length= 233.0' Slope= 0.0100 '/'
Inlet Invert= 214.00', Outlet Invert= 211.67'



Reach 20R: Headwall Segment 1

Hydrograph



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Type III 24-hr 50-yr Rainfall=7.54"

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Summary for Pond 6P: Existing Basin

Inflow Area = 5.563 ac, 40.85% Impervious, Inflow Depth = 3.31" for 50-yr event
 Inflow = 18.68 cfs @ 12.14 hrs, Volume= 1.535 af
 Outflow = 9.91 cfs @ 12.37 hrs, Volume= 1.464 af, Atten= 47%, Lag= 13.6 min
 Discarded = 1.18 cfs @ 12.37 hrs, Volume= 1.066 af
 Primary = 8.72 cfs @ 12.37 hrs, Volume= 0.398 af
 Routed to Reach 20R : Headwall Segment 1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 225.44' @ 12.37 hrs Surf.Area= 6,618 sf Storage= 22,459 cf

Plug-Flow detention time= 184.9 min calculated for 1.464 af (95% of inflow)
 Center-of-Mass det. time= 159.7 min (1,005.9 - 846.2)

Volume	Invert	Avail.Storage	Storage Description
#1	211.00'	111 cf	10.00'D x 9.50'H Vertical Cone/Cylinder 746 cf Overall - 467 cf Embedded = 279 cf x 40.0% Voids
#2	211.20'	467 cf	8.00'D x 9.30'H Vertical Cone/Cylinder Inside #1
#3	211.00'	117 cf	10.00'D x 9.50'H Vertical Cone/Cylinder 746 cf Overall - 452 cf Embedded = 294 cf x 40.0% Voids
#4	211.50'	452 cf	8.00'D x 9.00'H Vertical Cone/Cylinder Inside #3
#5	210.50'	107 cf	10.00'D x 9.50'H Vertical Cone/Cylinder 746 cf Overall - 478 cf Embedded = 269 cf x 40.0% Voids
#6	210.50'	478 cf	8.00'D x 9.50'H Vertical Cone/Cylinder Inside #5
#7	210.50'	123 cf	10.00'D x 10.00'H Vertical Cone/Cylinder 785 cf Overall - 478 cf Embedded = 308 cf x 40.0% Voids
#8	210.70'	478 cf	8.00'D x 9.50'H Vertical Cone/Cylinder Inside #7
#9	211.00'	298 cf	10.00'D x 9.50'H Vertical Cone/Cylinder 746 cf Overall x 40.0% Voids
#10	211.20'	467 cf	8.00'D x 9.30'H Vertical Cone/Cylinder
#11	220.50'	23,070 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		26,170 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
220.50	2,038	0	0
222.00	3,006	3,783	3,783
224.00	4,743	7,749	11,532
225.00	5,659	5,201	16,733
225.50	6,241	2,975	19,708
226.00	7,205	3,362	23,070

Device	Routing	Invert	Outlet Devices
#1	Discarded	220.49'	8.270 in/hr Exfiltration over Surface area above 220.49' Excluded Surface area = 443 sf
#2	Primary	225.00'	10.0' long + 4.0 ' SideZ 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

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Discarded OutFlow Max=1.18 cfs @ 12.37 hrs HW=225.44' (Free Discharge)

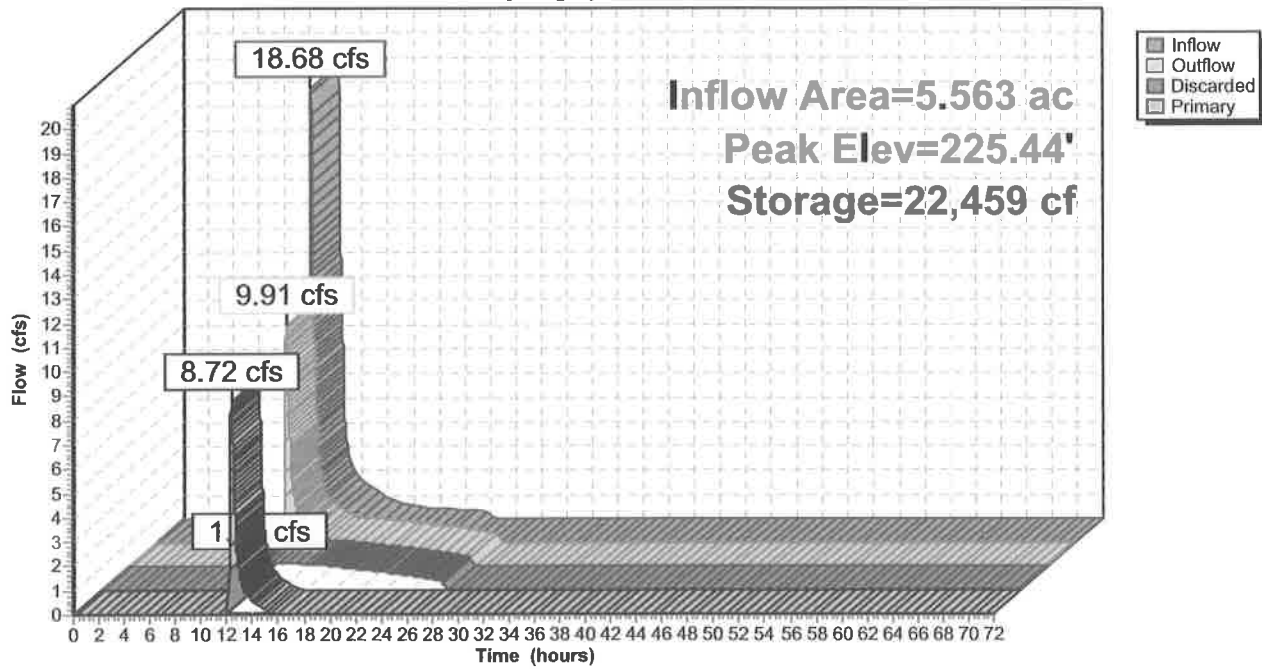
↑1=Exfiltration (Exfiltration Controls 1.18 cfs)

Primary OutFlow Max=8.59 cfs @ 12.37 hrs HW=225.44' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Weir Controls 8.59 cfs @ 1.64 fps)

Pond 6P: Existing Basin

Hydrograph



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Summary for Pond 14P: Chamber System

Inflow Area = 2.604 ac, 53.82% Impervious, Inflow Depth = 4.27" for 50-yr event
 Inflow = 11.68 cfs @ 12.09 hrs, Volume= 0.926 af
 Outflow = 1.21 cfs @ 11.59 hrs, Volume= 0.926 af, Atten= 90%, Lag= 0.0 min
 Discarded = 1.21 cfs @ 11.59 hrs, Volume= 0.926 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Reach 7R : offsite south

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 212.14' @ 12.94 hrs Surf.Area= 0.145 ac Storage= 0.309 af

Plug-Flow detention time= 81.3 min calculated for 0.926 af (100% of inflow)
 Center-of-Mass det. time= 81.3 min (868.7 - 787.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	209.00'	0.146 af	19.60'W x 322.00'L x 5.50'H Field A 0.797 af Overall - 0.433 af Embedded = 0.364 af x 40.0% Voids
#2A	209.50'	0.326 af	Galley 4x4x4 x 320 Inside #1 Inside= 42.0"W x 43.0"H => 12.67 sf x 3.50'L = 44.3 cf Outside= 52.8"W x 48.0"H => 14.72 sf x 4.00'L = 58.9 cf 320 Chambers in 4 Rows
		0.472 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	209.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	214.00'	15.0" Round Culvert L= 157.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.00' / 206.60' S= 0.0471 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf

Discarded OutFlow Max=1.21 cfs @ 11.59 hrs HW=209.06' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 1.21 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=209.00' (Free Discharge)

↑2=Culvert (Controls 0.00 cfs)

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Type III 24-hr 50-yr Rainfall=7.54"

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Pond 14P: Chamber System - Chamber Wizard Field A

Chamber Model = Galley 4x4x4 (Concrete Galley, UCPI 4x4x4 Galley or equivalent)

Inside= 42.0"W x 43.0"H => 12.67 sf x 3.50'L = 44.3 cf

Outside= 52.8"W x 48.0"H => 14.72 sf x 4.00'L = 58.9 cf

80 Chambers/Row x 4.00' Long = 320.00' Row Length +12.0" End Stone x 2 = 322.00' Base Length

4 Rows x 52.8" Wide + 12.0" Side Stone x 2 = 19.60' Base Width

6.0" Stone Base + 48.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

320 Chambers x 44.3 cf = 14,190.3 cf Chamber Storage

320 Chambers x 58.9 cf = 18,840.4 cf Displacement

34,711.6 cf Field - 18,840.4 cf Chambers = 15,871.2 cf Stone x 40.0% Voids = 6,348.5 cf Stone Storage

Chamber Storage + Stone Storage = 20,538.8 cf = 0.472 af

Overall Storage Efficiency = 59.2%

Overall System Size = 322.00' x 19.60' x 5.50'

320 Chambers

1,285.6 cy Field

587.8 cy Stone



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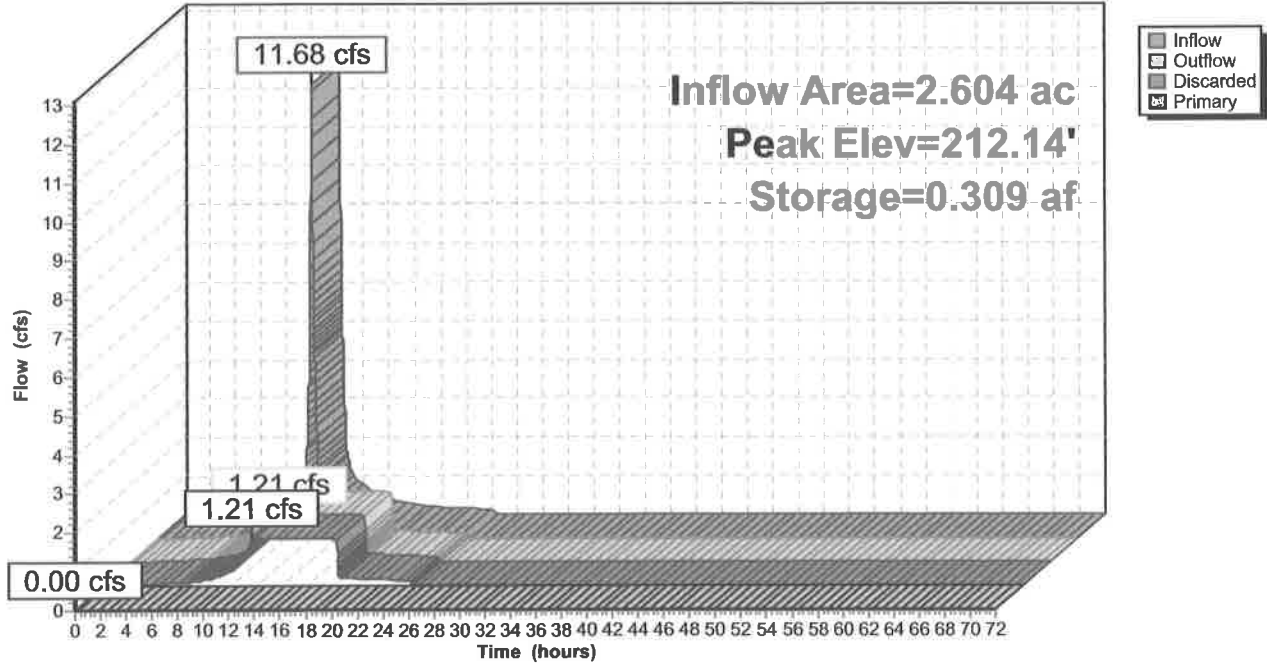
Type III 24-hr 50-yr Rainfall=7.54"

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Pond 14P: Chamber System

Hydrograph



Summary for Pond 16P: Infiltration Trench

Inflow Area = 0.632 ac, 25.27% Impervious, Inflow Depth = 2.35" for 50-yr event
 Inflow = 1.31 cfs @ 12.10 hrs, Volume= 0.124 af
 Outflow = 0.18 cfs @ 11.69 hrs, Volume= 0.124 af, Atten= 86%, Lag= 0.0 min
 Discarded = 0.18 cfs @ 11.69 hrs, Volume= 0.124 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 197.52' @ 12.88 hrs Surf.Area= 952 sf Storage= 1,379 cf

Plug-Flow detention time= 50.5 min calculated for 0.124 af (100% of inflow)
 Center-of-Mass det. time= 50.5 min (849.9 - 799.4)

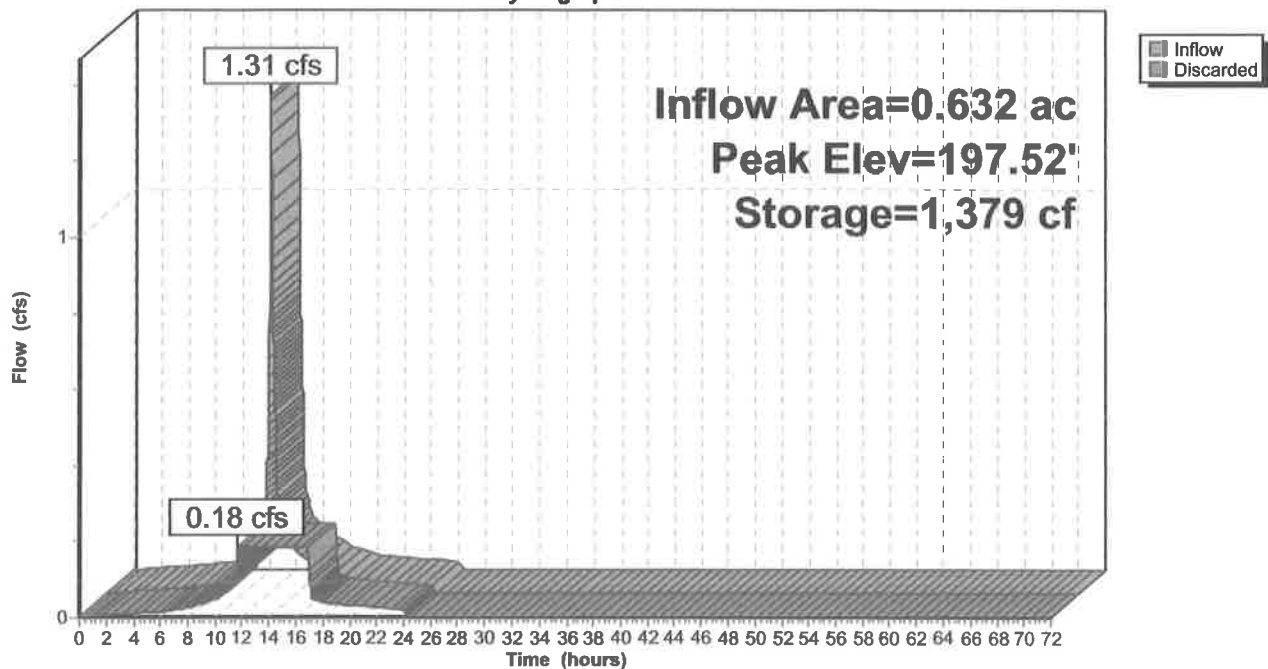
Volume	Invert	Avail.Storage	Storage Description
#1	195.00'	1,593 cf	8.50'W x 112.00'L x 5.00'H Prismatic 4,760 cf Overall - 778 cf Embedded = 3,982 cf x 40.0% Voids
#2	196.25'	778 cf	18.0" Round CMP_Round 18" x 4 Inside #1 L= 110.0'
		2,371 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	195.00'	8.270 in/hr Exfiltration over Horizontal area

Discarded OutFlow Max=0.18 cfs @ 11.69 hrs HW=195.05' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.18 cfs)

Pond 16P: Infiltration Trench

Hydrograph



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Type III 24-hr 100-yr Rainfall=9.06"

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: P-1 (CB1)	Runoff Area=3,398 sf 66.27% Impervious Runoff Depth=6.38" Tc=6.0 min CN=78 Runoff=0.57 cfs 0.041 af
Subcatchment 2S: P-2 (CB2)	Runoff Area=1,896 sf 87.45% Impervious Runoff Depth=7.97" Tc=6.0 min CN=91 Runoff=0.37 cfs 0.029 af
Subcatchment 3S: P-3 (CB3)	Runoff Area=9,124 sf 81.46% Impervious Runoff Depth=7.48" Tc=6.0 min CN=87 Runoff=1.74 cfs 0.131 af
Subcatchment 4S: OS 1	Runoff Area=242,335 sf 40.85% Impervious Runoff Depth=4.52" Flow Length=855' Tc=9.9 min CN=63 Runoff=25.75 cfs 2.095 af
Subcatchment 7S: P-4 (CB4)	Runoff Area=17,772 sf 64.68% Impervious Runoff Depth=6.25" Tc=6.0 min CN=77 Runoff=2.95 cfs 0.213 af
Subcatchment 8S: P-5 (CB5)	Runoff Area=5,781 sf 64.57% Impervious Runoff Depth=6.25" Tc=6.0 min CN=77 Runoff=0.96 cfs 0.069 af
Subcatchment 9S: P-6 (CB6)	Runoff Area=11,883 sf 57.73% Impervious Runoff Depth=5.76" Tc=6.0 min CN=73 Runoff=1.83 cfs 0.131 af
Subcatchment 10S: P-7 (CB7)	Runoff Area=13,474 sf 0.00% Impervious Runoff Depth=1.30" Tc=6.0 min CN=36 Runoff=0.30 cfs 0.034 af
Subcatchment 11S: P-8 (CB8)	Runoff Area=22,491 sf 0.00% Impervious Runoff Depth=1.63" Tc=6.0 min CN=39 Runoff=0.75 cfs 0.070 af
Subcatchment 12S: P-9 (roof)	Runoff Area=27,632 sf 100.00% Impervious Runoff Depth=8.82" Tc=6.0 min CN=98 Runoff=5.65 cfs 0.466 af
Subcatchment 13S: P-10 (to south)	Runoff Area=15,401 sf 0.00% Impervious Runoff Depth=1.19" Flow Length=145' Tc=8.4 min CN=35 Runoff=0.27 cfs 0.035 af
Subcatchment 15S: P-10A (rear lawn)	Runoff Area=21,516 sf 4.43% Impervious Runoff Depth=1.63" Tc=6.0 min CN=39 Runoff=0.72 cfs 0.067 af
Subcatchment 17S: P-9A (roof)	Runoff Area=6,000 sf 100.00% Impervious Runoff Depth=8.82" Tc=6.0 min CN=98 Runoff=1.23 cfs 0.101 af
Subcatchment 18S: OS 2	Runoff Area=45,929 sf 0.00% Impervious Runoff Depth=0.70" Flow Length=333' Slope=0.0700 '/' Tc=11.1 min CN=30 Runoff=0.28 cfs 0.061 af
Reach 7R: offsite south	Inflow=19.51 cfs 0.928 af Outflow=19.51 cfs 0.928 af
Reach 17R: Headwall Segment 2	Avg. Flow Depth=0.64' Max Vel=22.38 fps Inflow=19.28 cfs 0.893 af 24.0" Round Pipe n=0.013 L=76.0' S=0.1503 '/' Capacity=87.69 cfs Outflow=19.27 cfs 0.893 af

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Reach 20R: Headwall Segment 1 Avg. Flow Depth=1.34' Max Vel=8.64 fps Inflow=19.33 cfs 0.893 af
24.0" Round Pipe n=0.012 L=233.0' S=0.0100 '/' Capacity=24.51 cfs Outflow=19.28 cfs 0.893 af

Pond 6P: Existing Basin Peak Elev=225.70' Storage=24,073 cf Inflow=25.75 cfs 2.095 af
Discarded=1.27 cfs 1.193 af Primary=19.15 cfs 0.832 af Outflow=20.42 cfs 2.024 af

Pond 14P: Chamber System Peak Elev=213.93' Storage=0.438 af Inflow=15.07 cfs 1.184 af
Discarded=1.21 cfs 1.184 af Primary=0.00 cfs 0.000 af Outflow=1.21 cfs 1.184 af

Pond 16P: Infiltration Trench Peak Elev=199.92' Storage=2,342 cf Inflow=1.92 cfs 0.168 af
Outflow=0.18 cfs 0.168 af

Total Runoff Area = 10.207 ac Runoff Volume = 3.544 af Average Runoff Depth = 4.17"
62.44% Pervious = 6.373 ac 37.56% Impervious = 3.834 ac

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Type III 24-hr 100-yr Rainfall=9.06"

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Summary for Subcatchment 1S: P-1 (CB1)

Runoff = 0.57 cfs @ 12.09 hrs, Volume= 0.041 af, Depth= 6.38"
Routed to Pond 14P : Chamber System

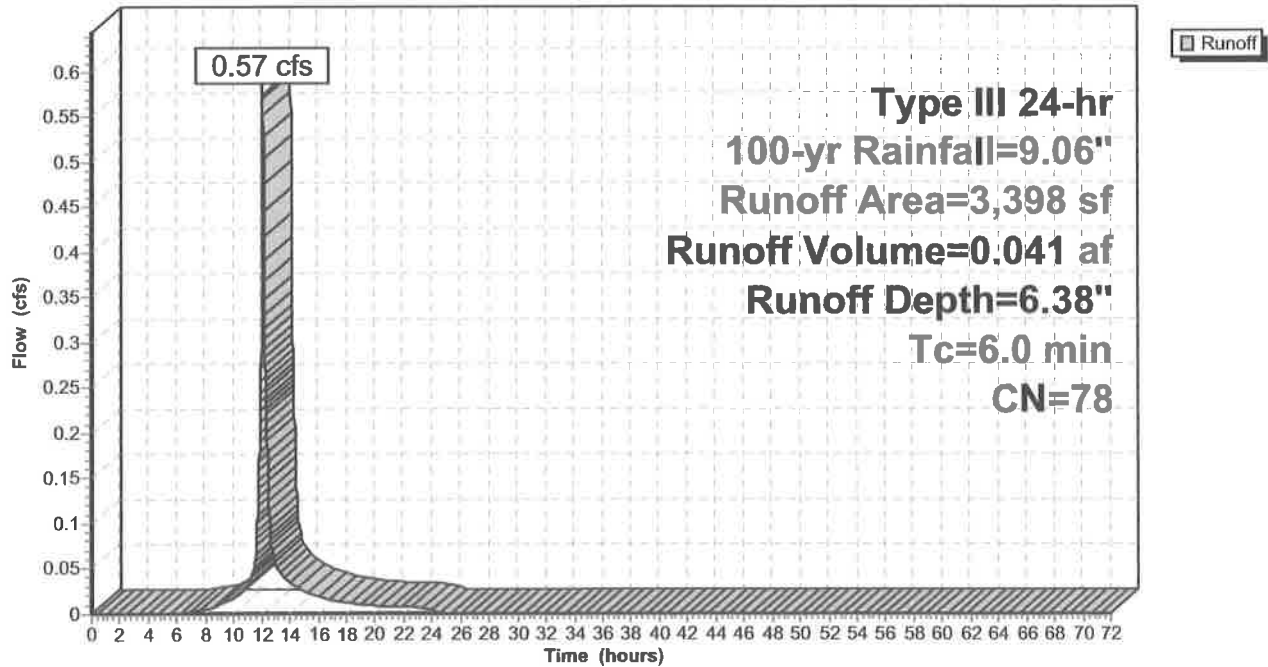
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=9.06"

Area (sf)	CN	Description
2,252	98	Paved parking, HSG A
1,146	39	>75% Grass cover, Good, HSG A
3,398	78	Weighted Average
1,146		33.73% Pervious Area
2,252		66.27% Impervious Area

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

Subcatchment 1S: P-1 (CB1)

Hydrograph



Summary for Subcatchment 2S: P-2 (CB2)

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.029 af, Depth= 7.97"
 Routed to Pond 14P : Chamber System

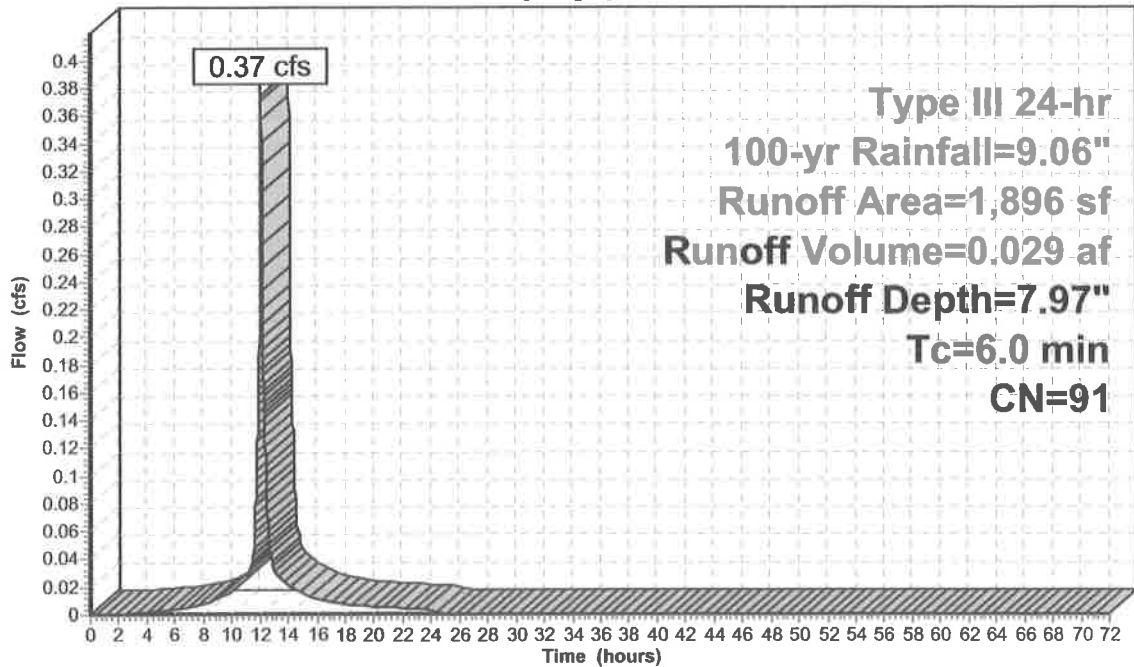
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100-yr Rainfall=9.06"

Area (sf)	CN	Description
1,658	98	Paved parking, HSG A
238	39	>75% Grass cover, Good, HSG A
1,896	91	Weighted Average
238		12.55% Pervious Area
1,658		87.45% Impervious Area

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

Subcatchment 2S: P-2 (CB2)

Hydrograph



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Type III 24-hr 100-yr Rainfall=9.06"

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Summary for Subcatchment 3S: P-3 (CB3)

Runoff = 1.74 cfs @ 12.08 hrs, Volume= 0.131 af, Depth= 7.48"
Routed to Pond 14P : Chamber System

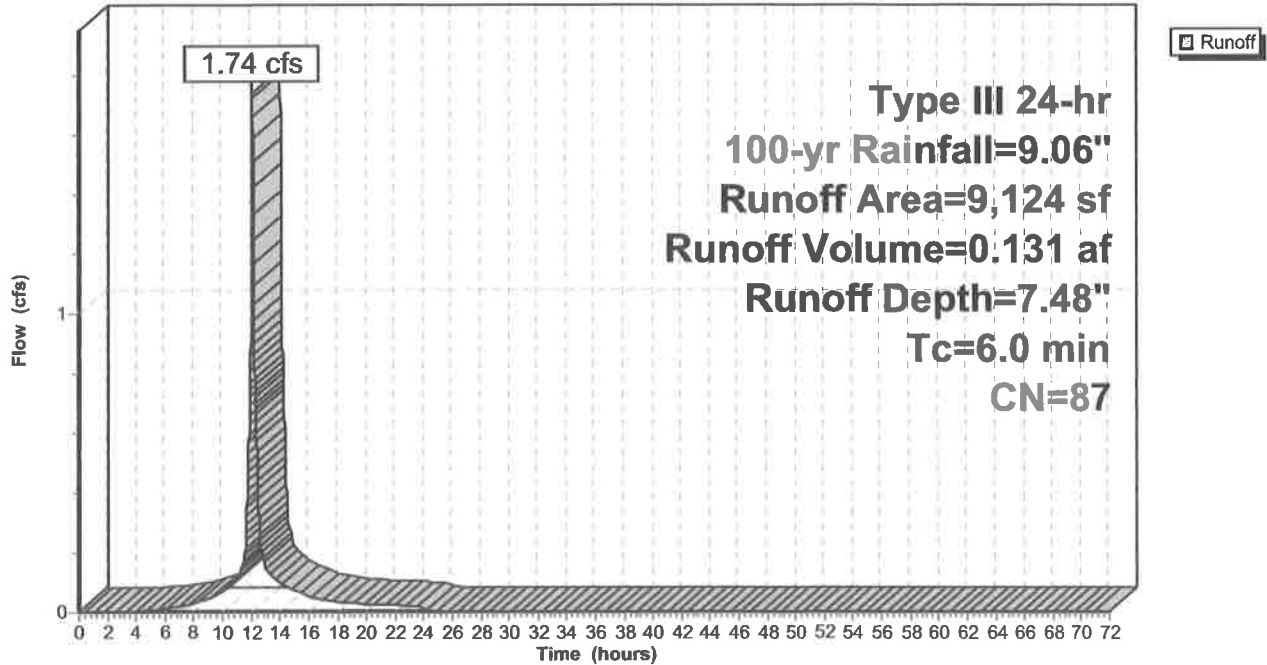
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=9.06"

Area (sf)	CN	Description
7,432	98	Paved parking, HSG A
1,692	39	>75% Grass cover, Good, HSG A
9,124	87	Weighted Average
1,692		18.54% Pervious Area
7,432		81.46% Impervious Area

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

Subcatchment 3S: P-3 (CB3)

Hydrograph



Summary for Subcatchment 4S: OS 1

[47] Hint: Peak is 399% of capacity of segment #3

[47] Hint: Peak is 146% of capacity of segment #4

Runoff = 25.75 cfs @ 12.14 hrs, Volume= 2.095 af, Depth= 4.52"
 Routed to Pond 6P : Existing Basin

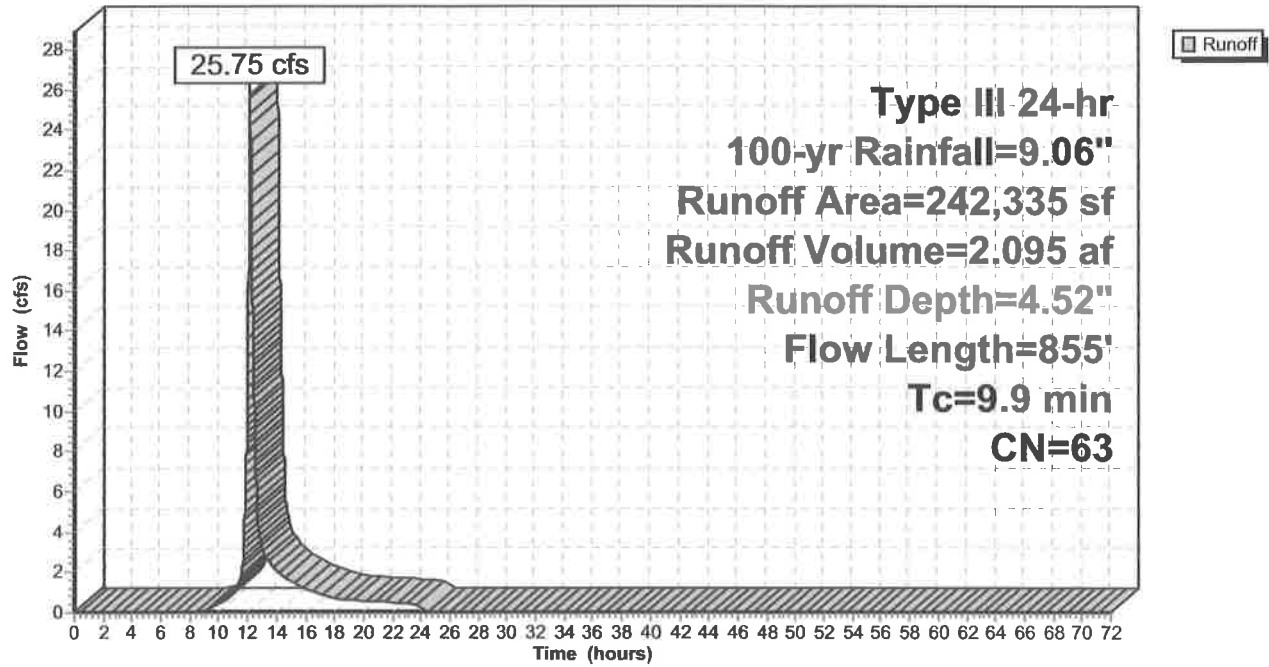
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100-yr Rainfall=9.06"

Area (sf)	CN	Description
21,486	98	Roofs, HSG A
15,524	30	Woods, Good, HSG A
127,810	39	>75% Grass cover, Good, HSG A
* 6,241	98	Water Surface, HSG A Basin
71,274	98	Paved parking, HSG A
242,335	63	Weighted Average
143,334		59.15% Pervious Area
99,001		40.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	50	0.0300	0.12		Sheet Flow, Grass: Dense n= 0.240 P2= 3.20"
1.1	150	0.0120	2.22		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.5	475	0.0100	5.26	6.46	Pipe Channel, RCP_Round 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Concrete pipe, bends & connections
0.3	180	0.0280	9.95	17.58	Pipe Channel, RCP_Round 18" 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
9.9	855	Total			

Subcatchment 4S: OS 1

Hydrograph



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Summary for Subcatchment 7S: P-4 (CB4)

Runoff = 2.95 cfs @ 12.09 hrs, Volume= 0.213 af, Depth= 6.25"
Routed to Pond 14P : Chamber System

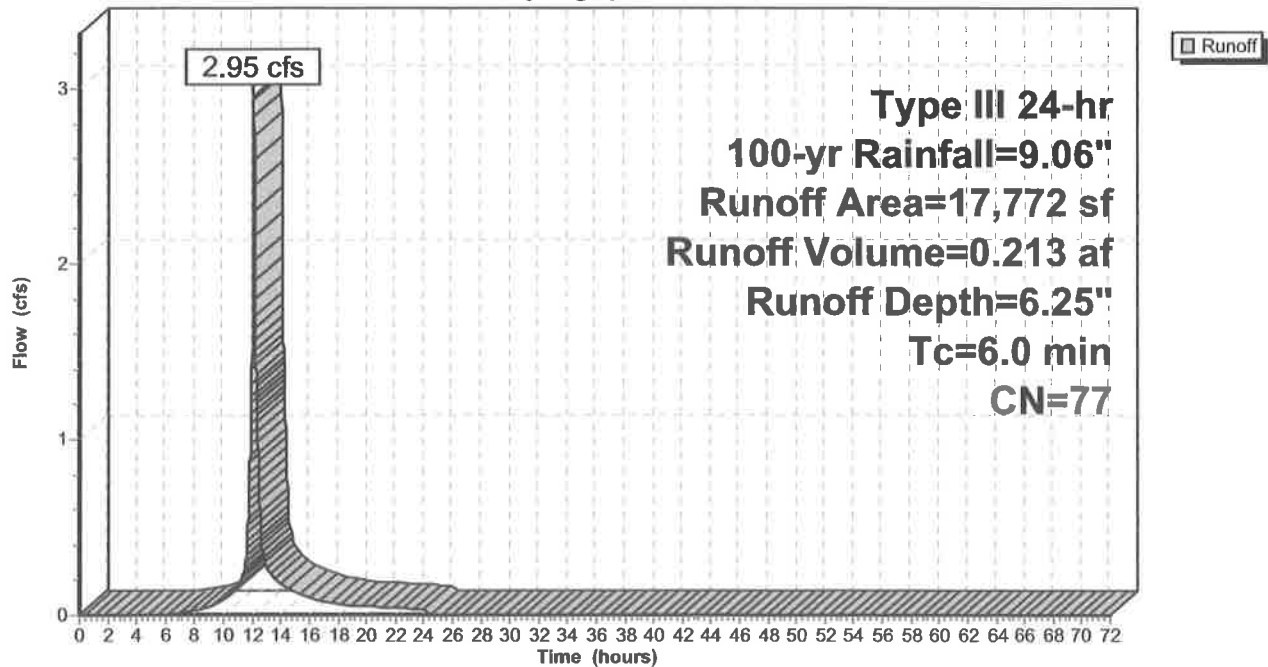
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=9.06"

Area (sf)	CN	Description
11,495	98	Paved parking, HSG A
6,277	39	>75% Grass cover, Good, HSG A
17,772	77	Weighted Average
6,277		35.32% Pervious Area
11,495		64.68% Impervious Area

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

Subcatchment 7S: P-4 (CB4)

Hydrograph



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Type III 24-hr 100-yr Rainfall=9.06"

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Summary for Subcatchment 8S: P-5 (CB5)

Runoff = 0.96 cfs @ 12.09 hrs, Volume= 0.069 af, Depth= 6.25"
Routed to Pond 14P : Chamber System

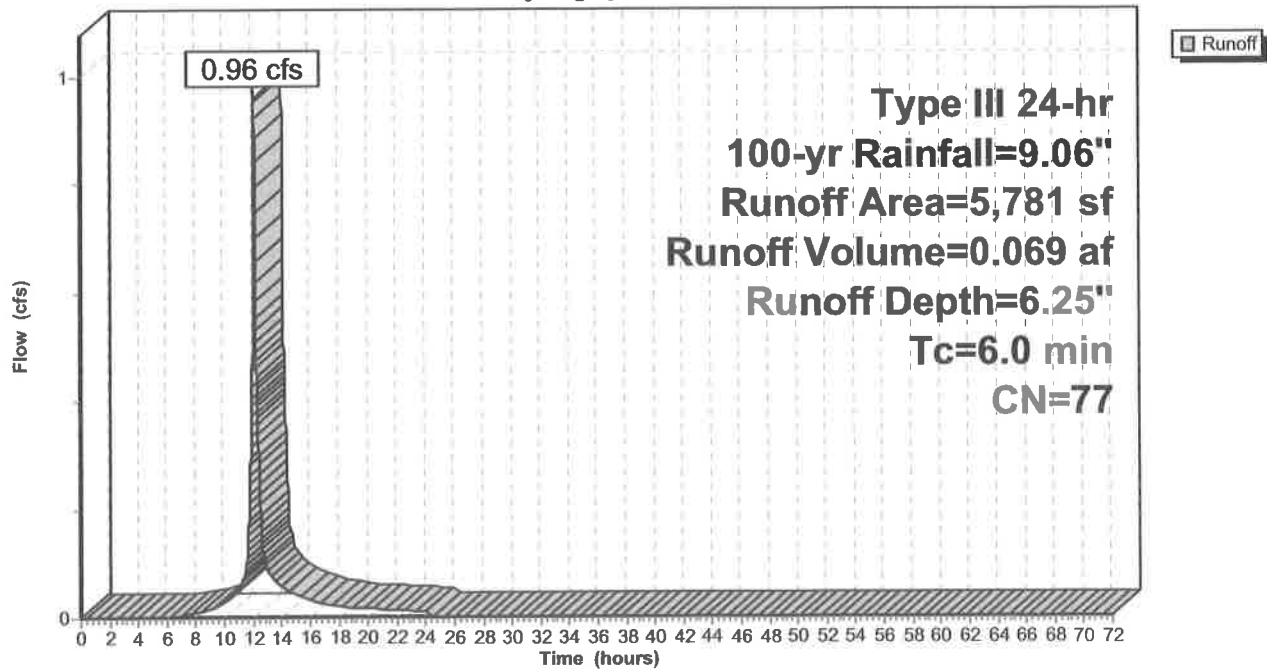
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=9.06"

Area (sf)	CN	Description
3,733	98	Paved parking, HSG A
2,048	39	>75% Grass cover, Good, HSG A
5,781	77	Weighted Average
2,048		35.43% Pervious Area
3,733		64.57% Impervious Area

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

Subcatchment 8S: P-5 (CB5)

Hydrograph



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Type III 24-hr 100-yr Rainfall=9.06"

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Summary for Subcatchment 9S: P-6 (CB6)

Runoff = 1.83 cfs @ 12.09 hrs, Volume= 0.131 af, Depth= 5.76"
Routed to Pond 14P : Chamber System

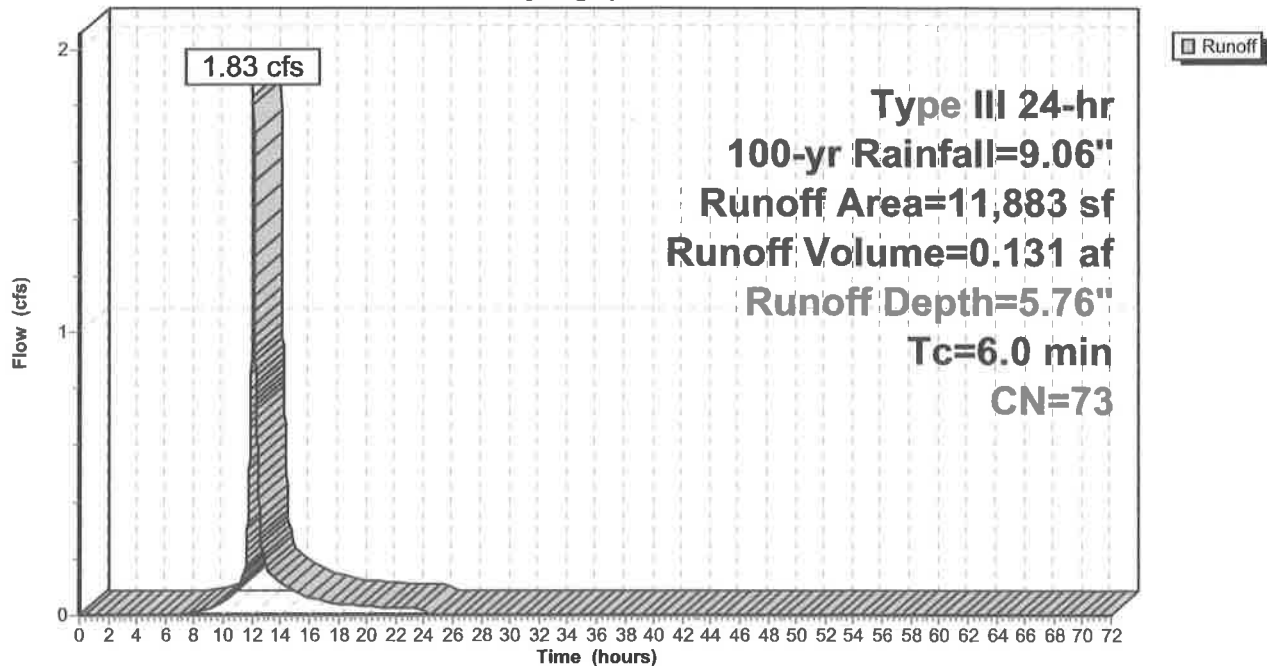
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=9.06"

Area (sf)	CN	Description
6,860	98	Paved parking, HSG A
5,023	39	>75% Grass cover, Good, HSG A
11,883	73	Weighted Average
5,023		42.27% Pervious Area
6,860		57.73% Impervious Area

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

Subcatchment 9S: P-6 (CB6)

Hydrograph



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Type III 24-hr 100-yr Rainfall=9.06"

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Summary for Subcatchment 10S: P-7 (CB7)

Runoff = 0.30 cfs @ 12.12 hrs, Volume= 0.034 af, Depth= 1.30"
Routed to Pond 14P : Chamber System

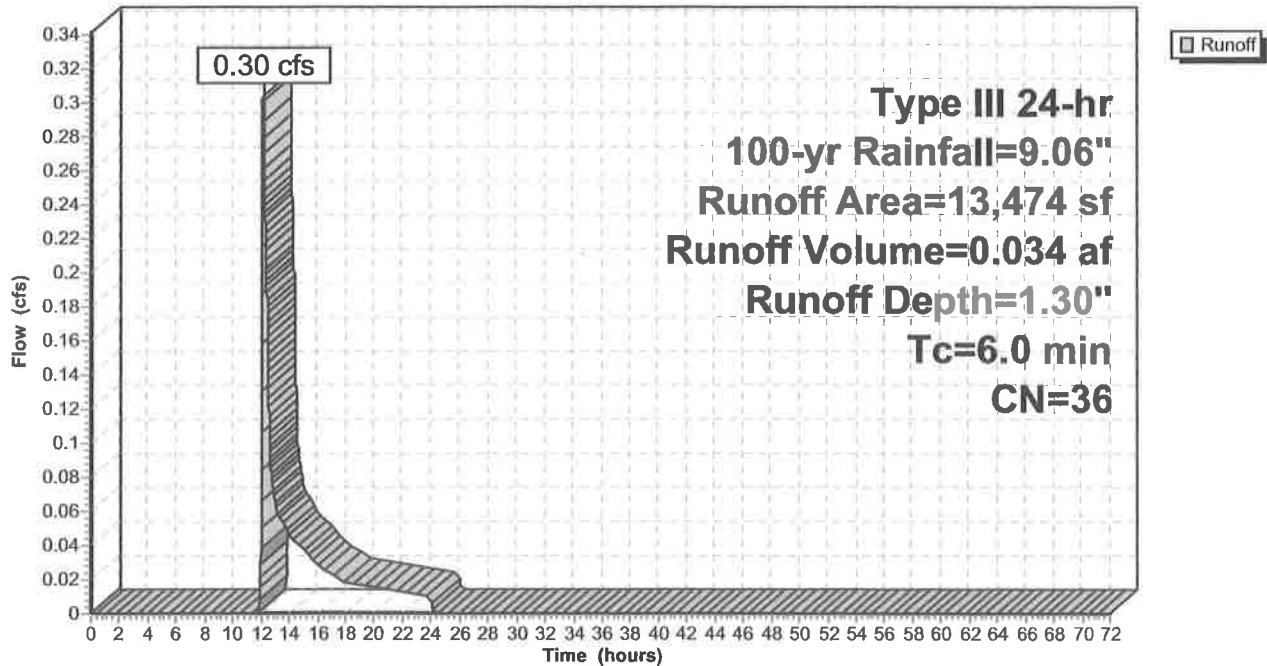
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=9.06"

Area (sf)	CN	Description
8,914	39	>75% Grass cover, Good, HSG A
4,560	30	Woods, Good, HSG A
13,474	36	Weighted Average
13,474		100.00% Pervious Area

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

Subcatchment 10S: P-7 (CB7)

Hydrograph



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Type III 24-hr 100-yr Rainfall=9.06"

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Summary for Subcatchment 11S: P-8 (CB8)

Runoff = 0.75 cfs @ 12.11 hrs, Volume= 0.070 af, Depth= 1.63"
Routed to Pond 14P : Chamber System

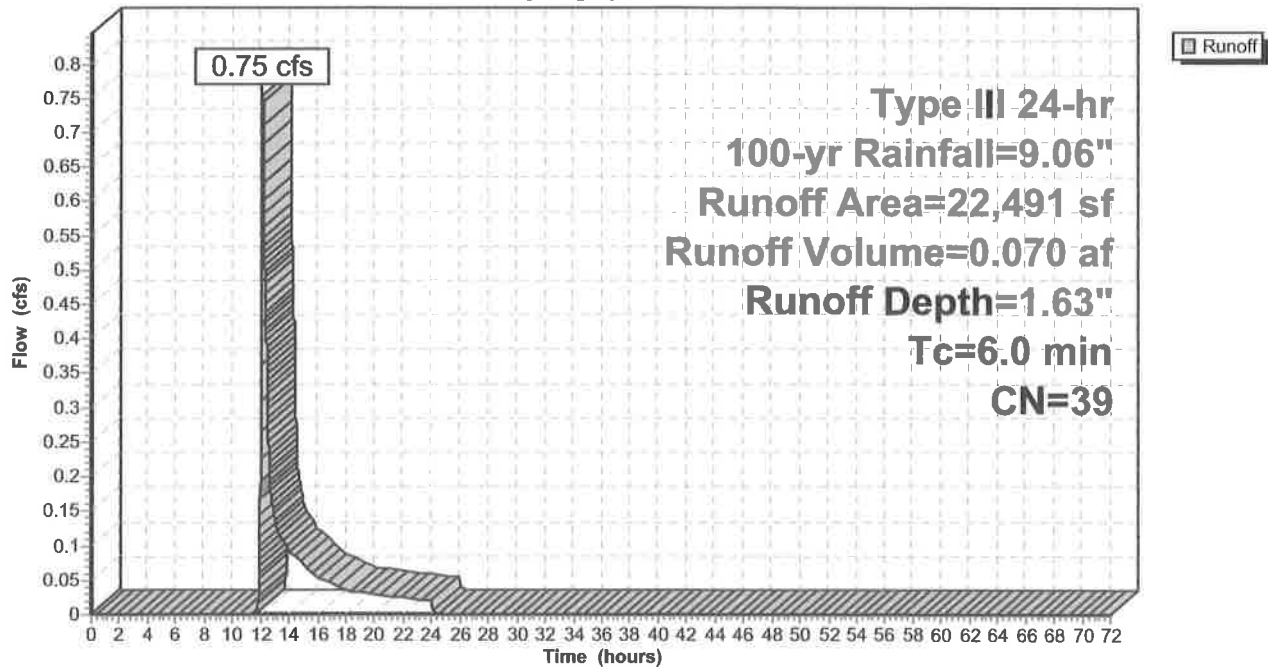
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=9.06"

Area (sf)	CN	Description
22,491	39	>75% Grass cover, Good, HSG A
22,491		100.00% Pervious Area

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

Subcatchment 11S: P-8 (CB8)

Hydrograph



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Type III 24-hr 100-yr Rainfall=9.06"

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Summary for Subcatchment 12S: P-9 (roof)

Runoff = 5.65 cfs @ 12.08 hrs, Volume= 0.466 af, Depth= 8.82"
Routed to Pond 14P : Chamber System

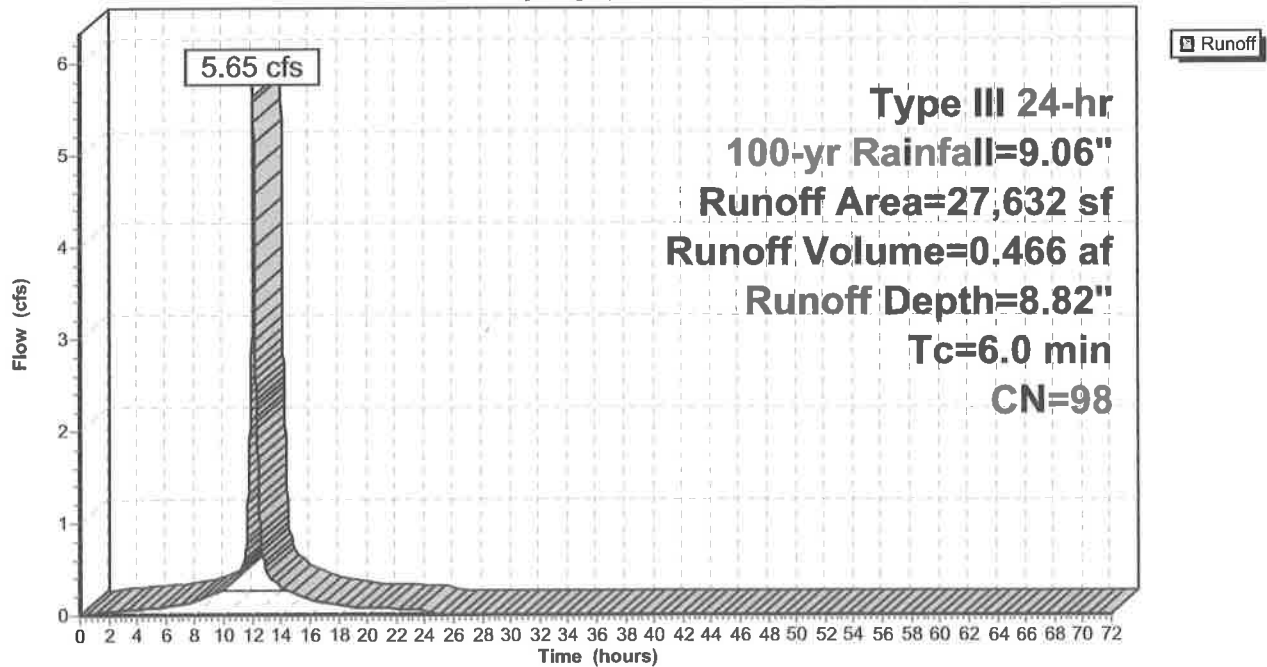
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=9.06"

Area (sf)	CN	Description
27,632	98	Roofs, HSG A
27,632		100.00% Impervious Area

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

Subcatchment 12S: P-9 (roof)

Hydrograph



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Type III 24-hr 100-yr Rainfall=9.06"

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Summary for Subcatchment 13S: P-10 (to south)

Runoff = 0.27 cfs @ 12.16 hrs, Volume= 0.035 af, Depth= 1.19"
Routed to Reach 7R : offsite south

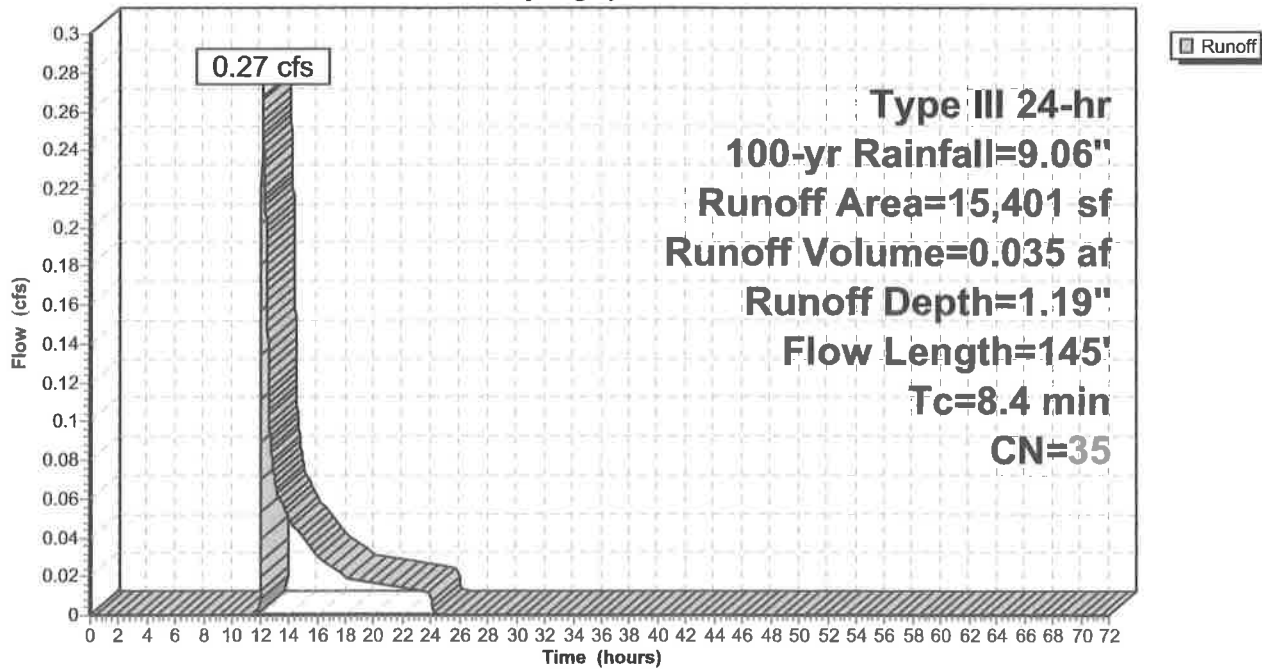
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=9.06"

Area (sf)	CN	Description
8,371	39	>75% Grass cover, Good, HSG A
7,030	30	Woods, Good, HSG A
15,401	35	Weighted Average
15,401		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.0200	0.10		Sheet Flow, Grass: Dense n= 0.240 P2= 3.20"
0.2	95	0.1900	6.54		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
8.4	145	Total			

Subcatchment 13S: P-10 (to south)

Hydrograph



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Type III 24-hr 100-yr Rainfall=9.06"

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Summary for Subcatchment 15S: P-10A (rear lawn)

Runoff = 0.72 cfs @ 12.11 hrs, Volume= 0.067 af, Depth= 1.63"
 Routed to Pond 16P : Infiltration Trench

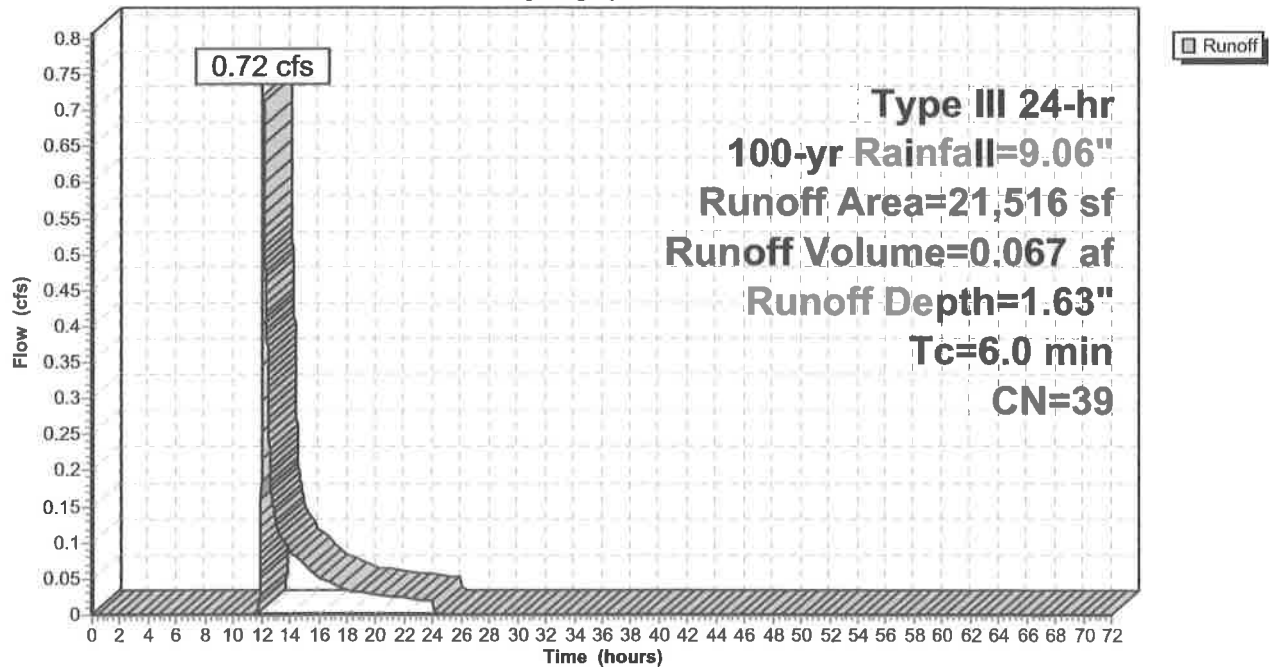
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100-yr Rainfall=9.06"

Area (sf)	CN	Description
13,389	39	>75% Grass cover, Good, HSG A
953	98	Water Surface, HSG A
7,174	30	Meadow, non-grazed, HSG A
21,516	39	Weighted Average
20,563		95.57% Pervious Area
953		4.43% Impervious Area

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

Subcatchment 15S: P-10A (rear lawn)

Hydrograph



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Type III 24-hr 100-yr Rainfall=9.06"

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Summary for Subcatchment 17S: P-9A (roof)

Runoff = 1.23 cfs @ 12.08 hrs, Volume= 0.101 af, Depth= 8.82"
Routed to Pond 16P : Infiltration Trench

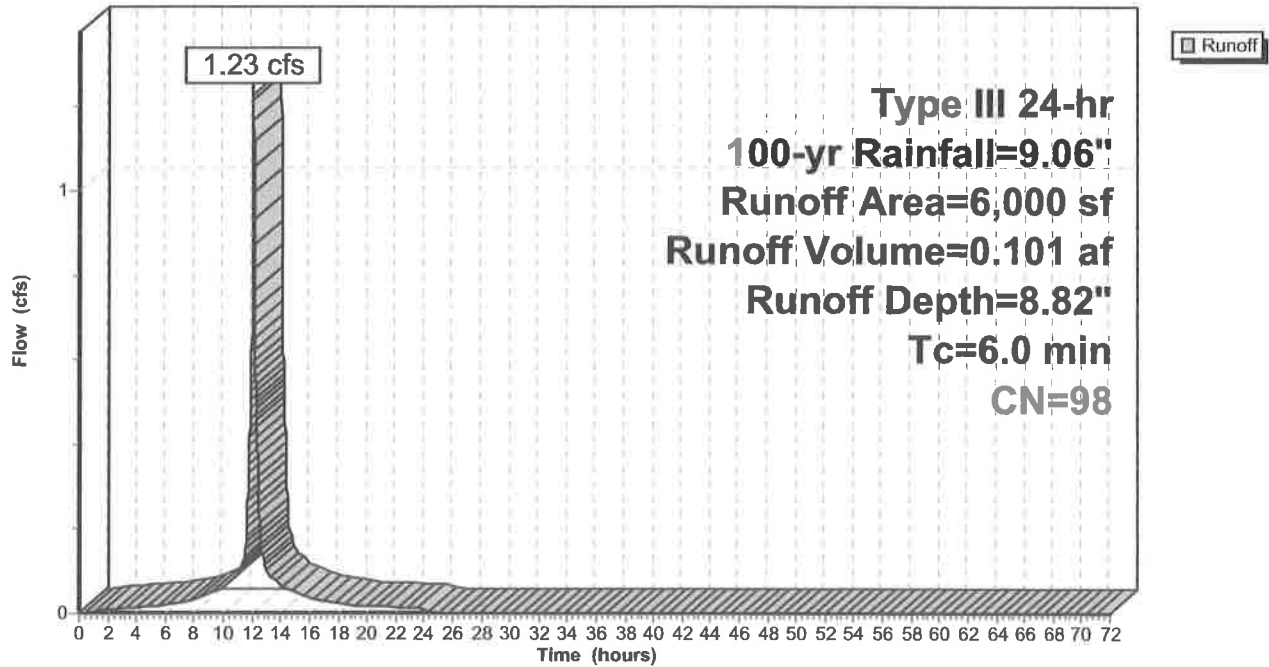
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=9.06"

Area (sf)	CN	Description
6,000	98	Roofs, HSG A
6,000		100.00% Impervious Area

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

Subcatchment 17S: P-9A (roof)

Hydrograph



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Type III 24-hr 100-yr Rainfall=9.06"

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Summary for Subcatchment 18S: OS 2

Runoff = 0.28 cfs @ 12.42 hrs, Volume= 0.061 af, Depth= 0.70"
Routed to Reach 20R : Headwall Segment 1

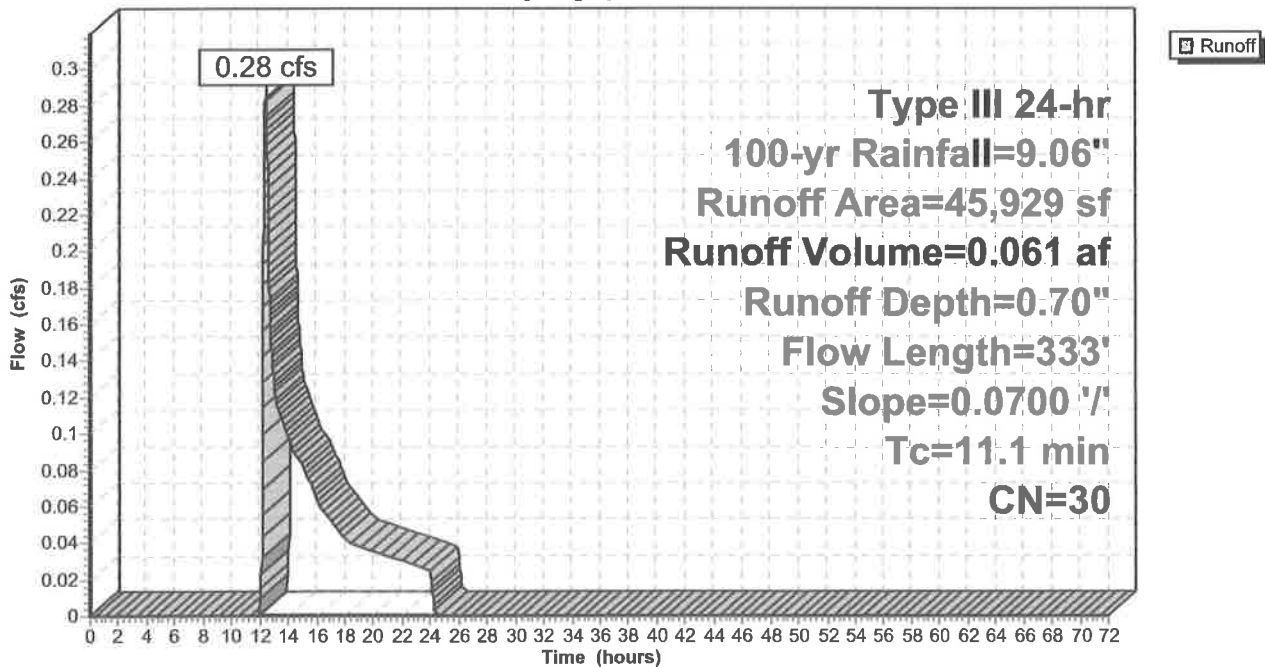
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=9.06"

Area (sf)	CN	Description
45,929	30	Woods, Good, HSG A
45,929		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	50	0.0700	0.11		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
3.6	283	0.0700	1.32		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
11.1	333	Total			

Subcatchment 18S: OS 2

Hydrograph



Summary for Reach 7R: offsite south

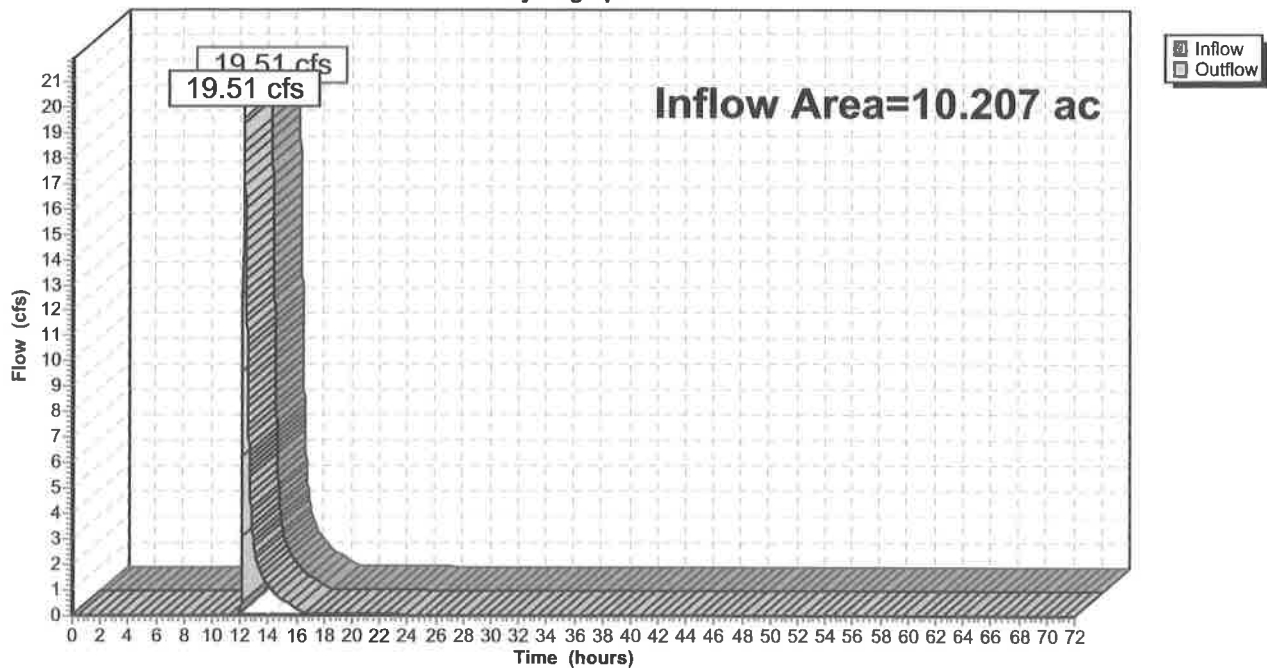
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 10.207 ac, 37.56% Impervious, Inflow Depth = 1.09" for 100-yr event
Inflow = 19.51 cfs @ 12.24 hrs, Volume= 0.928 af
Outflow = 19.51 cfs @ 12.24 hrs, Volume= 0.928 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Reach 7R: offsite south

Hydrograph



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Summary for Reach 17R: Headwall Segment 2

[52] Hint: Inlet/Outlet conditions not evaluated

[61] Hint: Exceeded Reach 20R outlet invert by 0.64' @ 12.24 hrs

Inflow Area = 6.618 ac, 34.34% Impervious, Inflow Depth = 1.62" for 100-yr event
Inflow = 19.28 cfs @ 12.24 hrs, Volume= 0.893 af
Outflow = 19.27 cfs @ 12.24 hrs, Volume= 0.893 af, Atten= 0%, Lag= 0.1 min
Routed to Reach 7R : offsite south

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 22.38 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 5.73 fps, Avg. Travel Time= 0.2 min

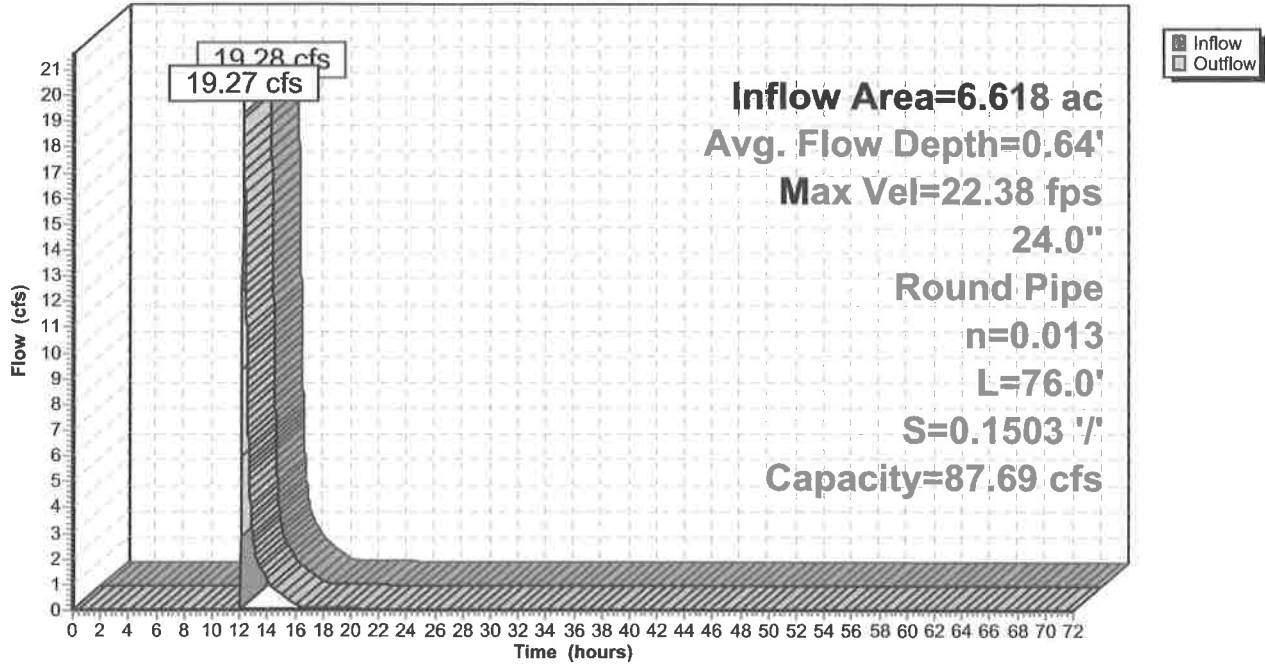
Peak Storage= 65 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.64' , Surface Width= 1.86'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 87.69 cfs

24.0" Round Pipe
n= 0.013
Length= 76.0' Slope= 0.1503 '/'
Inlet Invert= 211.67', Outlet Invert= 200.25'



Reach 17R: Headwall Segment 2

Hydrograph



Summary for Reach 20R: Headwall Segment 1

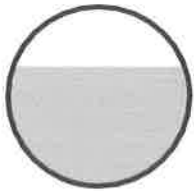
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 6.618 ac, 34.34% Impervious, Inflow Depth = 1.62" for 100-yr event
Inflow = 19.33 cfs @ 12.23 hrs, Volume= 0.893 af
Outflow = 19.28 cfs @ 12.24 hrs, Volume= 0.893 af, Atten= 0%, Lag= 0.9 min
Routed to Reach 17R : Headwall Segment 2

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 8.64 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.28 fps, Avg. Travel Time= 1.7 min

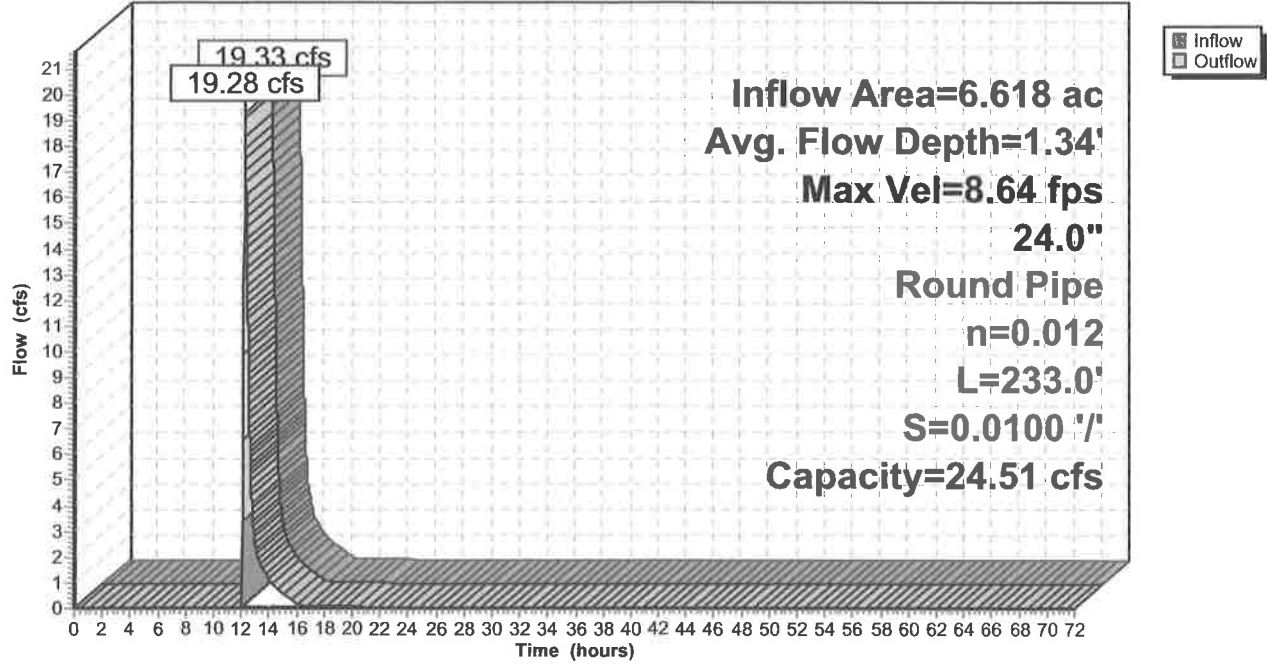
Peak Storage= 520 cf @ 12.23 hrs
Average Depth at Peak Storage= 1.34', Surface Width= 1.88'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 24.51 cfs

24.0" Round Pipe
n= 0.012
Length= 233.0' Slope= 0.0100 '/'
Inlet Invert= 214.00', Outlet Invert= 211.67'



Reach 20R: Headwall Segment 1

Hydrograph



Summary for Pond 6P: Existing Basin

Inflow Area = 5.563 ac, 40.85% Impervious, Inflow Depth = 4.52" for 100-yr event
 Inflow = 25.75 cfs @ 12.14 hrs, Volume= 2.095 af
 Outflow = 20.42 cfs @ 12.23 hrs, Volume= 2.024 af, Atten= 21%, Lag= 5.2 min
 Discarded = 1.27 cfs @ 12.23 hrs, Volume= 1.193 af
 Primary = 19.15 cfs @ 12.23 hrs, Volume= 0.832 af
 Routed to Reach 20R : Headwall Segment 1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 225.70' @ 12.23 hrs Surf.Area= 7,063 sf Storage= 24,073 cf

Plug-Flow detention time= 151.6 min calculated for 2.024 af (97% of inflow)
 Center-of-Mass det. time= 132.5 min (969.6 - 837.2)

Volume	Invert	Avail.Storage	Storage Description
#1	211.00'	111 cf	10.00'D x 9.50'H Vertical Cone/Cylinder 746 cf Overall - 467 cf Embedded = 279 cf x 40.0% Voids
#2	211.20'	467 cf	8.00'D x 9.30'H Vertical Cone/Cylinder Inside #1
#3	211.00'	117 cf	10.00'D x 9.50'H Vertical Cone/Cylinder 746 cf Overall - 452 cf Embedded = 294 cf x 40.0% Voids
#4	211.50'	452 cf	8.00'D x 9.00'H Vertical Cone/Cylinder Inside #3
#5	210.50'	107 cf	10.00'D x 9.50'H Vertical Cone/Cylinder 746 cf Overall - 478 cf Embedded = 269 cf x 40.0% Voids
#6	210.50'	478 cf	8.00'D x 9.50'H Vertical Cone/Cylinder Inside #5
#7	210.50'	123 cf	10.00'D x 10.00'H Vertical Cone/Cylinder 785 cf Overall - 478 cf Embedded = 308 cf x 40.0% Voids
#8	210.70'	478 cf	8.00'D x 9.50'H Vertical Cone/Cylinder Inside #7
#9	211.00'	298 cf	10.00'D x 9.50'H Vertical Cone/Cylinder 746 cf Overall x 40.0% Voids
#10	211.20'	467 cf	8.00'D x 9.30'H Vertical Cone/Cylinder
#11	220.50'	23,070 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		26,170 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
220.50	2,038	0	0
222.00	3,006	3,783	3,783
224.00	4,743	7,749	11,532
225.00	5,659	5,201	16,733
225.50	6,241	2,975	19,708
226.00	7,205	3,362	23,070

Device	Routing	Invert	Outlet Devices
#1	Discarded	220.49'	8.270 in/hr Exfiltration over Surface area above 220.49' Excluded Surface area = 443 sf
#2	Primary	225.00'	10.0' long + 4.0 'H SideZ 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

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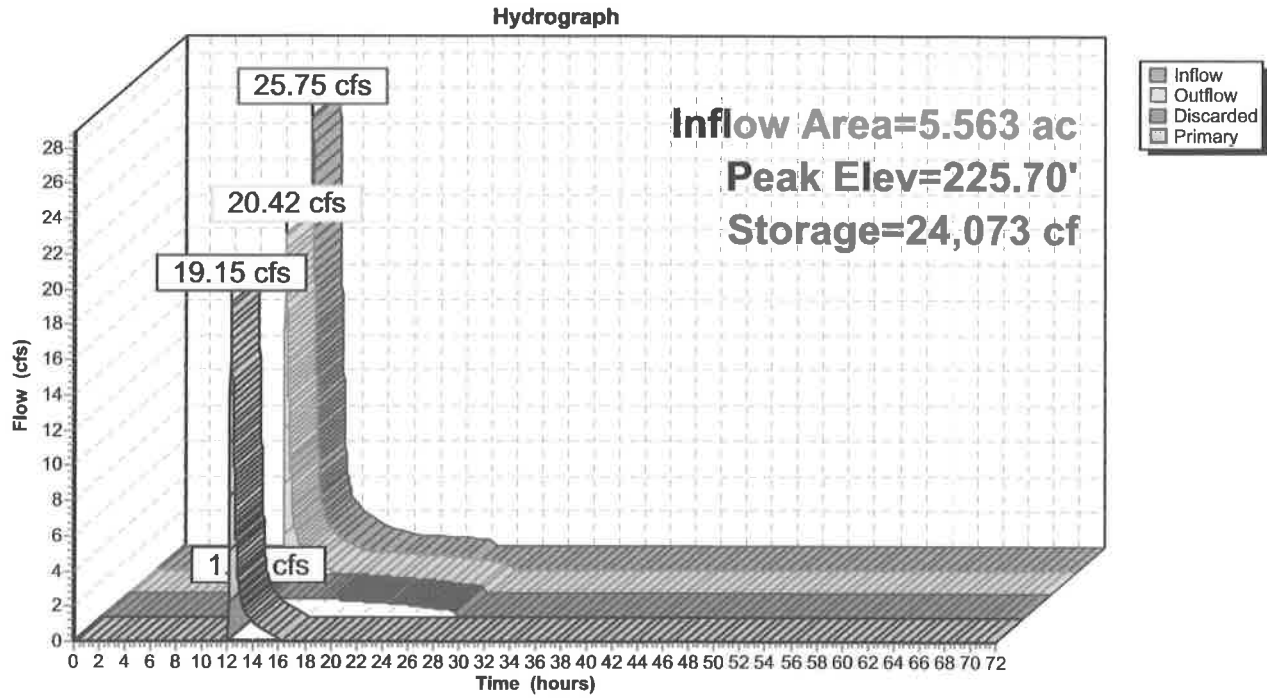
Discarded OutFlow Max=1.27 cfs @ 12.23 hrs HW=225.70' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 1.27 cfs)

Primary OutFlow Max=19.11 cfs @ 12.23 hrs HW=225.70' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Weir Controls 19.11 cfs @ 2.15 fps)

Pond 6P: Existing Basin



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Summary for Pond 14P: Chamber System

Inflow Area = 2.604 ac, 53.82% Impervious, Inflow Depth = 5.45" for 100-yr event
Inflow = 15.07 cfs @ 12.09 hrs, Volume= 1.184 af
Outflow = 1.21 cfs @ 11.39 hrs, Volume= 1.184 af, Atten= 92%, Lag= 0.0 min
Discarded = 1.21 cfs @ 11.39 hrs, Volume= 1.184 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 7R : offsite south

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 213.93' @ 13.30 hrs Surf.Area= 0.145 ac Storage= 0.438 af

Plug-Flow detention time= 125.3 min calculated for 1.184 af (100% of inflow)
Center-of-Mass det. time= 125.3 min (910.4 - 785.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	209.00'	0.146 af	19.60"W x 322.00'L x 5.50'H Field A 0.797 af Overall - 0.433 af Embedded = 0.364 af x 40.0% Voids
#2A	209.50'	0.326 af	Galley 4x4x4 x 320 Inside #1 Inside= 42.0"W x 43.0"H => 12.67 sf x 3.50'L = 44.3 cf Outside= 52.8"W x 48.0"H => 14.72 sf x 4.00'L = 58.9 cf 320 Chambers in 4 Rows
		0.472 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	209.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	214.00'	15.0" Round Culvert L= 157.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 214.00' / 206.60' S= 0.0471 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf

Discarded OutFlow Max=1.21 cfs @ 11.39 hrs HW=209.06' (Free Discharge)
↑1=Exfiltration (Exfiltration Controls 1.21 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=209.00' (Free Discharge)
↑2=Culvert (Controls 0.00 cfs)

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Pond 14P: Chamber System - Chamber Wizard Field A

Chamber Model = Galley 4x4x4 (Concrete Galley, UCPI 4x4x4 Galley or equivalent)

Inside= 42.0"W x 43.0"H => 12.67 sf x 3.50'L = 44.3 cf

Outside= 52.8"W x 48.0"H => 14.72 sf x 4.00'L = 58.9 cf

80 Chambers/Row x 4.00' Long = 320.00' Row Length +12.0" End Stone x 2 = 322.00' Base Length

4 Rows x 52.8" Wide + 12.0" Side Stone x 2 = 19.60' Base Width

6.0" Stone Base + 48.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

320 Chambers x 44.3 cf = 14,190.3 cf Chamber Storage

320 Chambers x 58.9 cf = 18,840.4 cf Displacement

34,711.6 cf Field - 18,840.4 cf Chambers = 15,871.2 cf Stone x 40.0% Voids = 6,348.5 cf Stone Storage

Chamber Storage + Stone Storage = 20,538.8 cf = 0.472 af

Overall Storage Efficiency = 59.2%

Overall System Size = 322.00' x 19.60' x 5.50'

320 Chambers

1,285.6 cy Field

587.8 cy Stone



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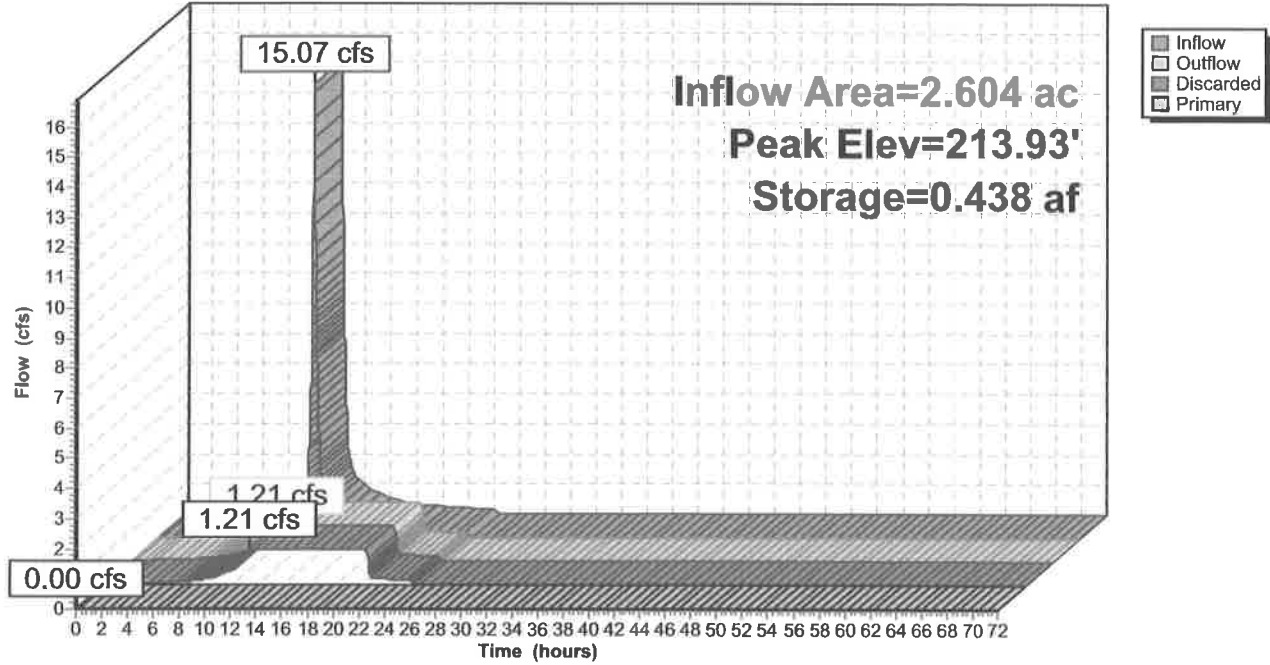
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Pond 14P: Chamber System

Hydrograph



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Summary for Pond 16P: Infiltration Trench

Inflow Area = 0.632 ac, 25.27% Impervious, Inflow Depth = 3.20" for 100-yr event
 Inflow = 1.92 cfs @ 12.09 hrs, Volume= 0.168 af
 Outflow = 0.18 cfs @ 11.64 hrs, Volume= 0.168 af, Atten= 91%, Lag= 0.0 min
 Discarded = 0.18 cfs @ 11.64 hrs, Volume= 0.168 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 199.92' @ 13.50 hrs Surf.Area= 952 sf Storage= 2,342 cf

Plug-Flow detention time= 102.6 min calculated for 0.168 af (100% of inflow)
 Center-of-Mass det. time= 102.6 min (905.4 - 802.8)

Volume	Invert	Avail.Storage	Storage Description
#1	195.00'	1,593 cf	8.50'W x 112.00'L x 5.00'H Prismaoid 4,760 cf Overall - 778 cf Embedded = 3,982 cf x 40.0% Voids
#2	196.25'	778 cf	18.0" Round CMP_Round 18" x 4 Inside #1 L= 110.0'
		2,371 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	195.00'	8.270 in/hr Exfiltration over Horizontal area

Discarded OutFlow Max=0.18 cfs @ 11.64 hrs HW=195.05' (Free Discharge)
 ↳1=Exfiltration (Exfiltration Controls 0.18 cfs)

Pond 16P: Infiltration Trench

