

*North Shook's Run
Templeton Gap Basin A
Subbasin 2*

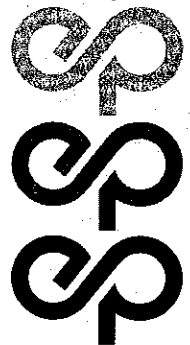
*Technical Addendum
Hydrology*

FOR CHECK-OUT ONLY

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SCANNED



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**Technical Addendum Hydrology
North Shook's Run, Templeton Gap Basin A, Sub-basin 2**

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Technical Addendum Hydrology North Shook's Run, Templeton Gap Basin A, Sub-basin 2

INTRODUCTION

This Technical Addendum is in support of the Preliminary Engineering Report prepared by Engineering Professionals for the City of Colorado Springs. Contained within this Technical Addendum are the hydrologic computer runs for the four design storms. The design storms used in this analysis are for 2 hour and 24 hour durations and 10 year and 100 year return intervals.

The computer model used to generate the hydrologic output is *Hydrosim*. *Hydrosim* is a hydrograph simulation computer model developed by Ronald K. Christensen, P.E. for Hydrosoft Microcomputer Software. The software is a complete hydrograph analysis package which has the capability to model complex drainage basins. The program is fully interactive.

Hydrosim can compute and handle up to 145 hydrographs for any combination of subareas, channels, diversions, reservoirs, and extraneous inflows. It can model up to ten stream branches for urban, agricultural, or forested watersheds and can be used for storm drainage design, detention pond design, and flood plain mapping.

Hydrographs for drainage subareas may be computed using either unit hydrograph methods or kinematic wave techniques. In this analysis the SCS Dimensionless Unit Hydrograph was utilized using the City's design storm criteria. Detention storage and infiltration loss rates were computed using the SCS Curve Number method.

The software allows reservoir routing options which include the ability to model separate outflows from a low-level outlet, a principal spillway, and an emergency spillway. It is also possible to provide your own elevation-discharge curve.

Channel routing is accomplished through storage routing techniques for trapezoidal, rectangular, triangular, or circular channels or a storage-discharge curve may be given for irregular channels. The program also allows for the diversion and retrieval or introduction of known hydrographs into the drainage system. In this case, a portion of a hydrograph was diverted from the Templeton Gap Basin to the Cottonwood Creek Basin.

PROGRAM STRUCTURE

Hydrosim Hydrograph Simulation software consists of three interconnected programs. The main program is used to specify the data input and to provide control between the data input and editing program and the computation program. The main program is *Hydrosim*. Once a temporary file has been created, the other two programs may be entered. The data input and editing program allows for editing of input data. The computation program provides the means to analyze the input data. All the programs can be entered by following directions on the screen.

PROGRAM COMPONENTS AND THEORY

Hydrosim can perform seven major hydrograph computations for a drainage system. The program can

1. Compute a hydrograph for a subarea of a drainage basin from rainfall-runoff relationships.
2. Accept a user introduced input hydrograph at any point in the system.
3. Divert all or a portion of any hydrograph from the system.
4. Retrieve a previously diverted hydrograph.
5. Route a hydrograph through a reservoir or detention basin.
6. Route a hydrograph down a channel.
7. Combine hydrographs from different branches at a confluence.

Through the use of these model components nearly any complex drainage network can be modeled. The result of the modeling process is the computation of stream flow hydrographs at desired locations in the drainage system.

Due to the inadequate pipe sizes in this basin, some of the computed hydrographs in this basin have been truncated by the computer program. When a hydrograph enters a pipe or channel, the computer allows the hydrograph to route itself through the pipe based on the pipe's capacity. If the capacity of the pipe is reached, then the computer program assumes that there is an infinite amount of head that can be generated at the pipe entrance. At this point, the pipe then acts as an outlet to a detention pond causing the truncation of the inflow hydrograph. This is the reason that the hydrograph summary table at the end of each run is showing a peak flow much smaller than the actual peak flow. A revised hydrograph summary table for all the design storms is shown on the following page. This table reflects the actual conditions of the basin, which in most cases will not allow for much head water depth at pipe entrances.

**North Shook's Run
Templeton Gap Basin A
Subbasin 2**

			HYDROLOGY							
Hydrograph Number	Branch Number	Design Point	2 Hour	10 Year	24 Hour	10 Year	Description	Acres		
			100 Year Peak Flow	Peak Flow	100 Year Peak Flow	Peak Flow				
1	1	1	1.97	1.30	1.93	1.35		-	0.38	
2	2	2	27.67	17.06	29.71	19.13		-	6.9	
3	2	2	11.35	9.28	12.19	10.31	Hydrograph Diversion			
4	2	3	39.39	26.20	38.65 (52.6)	25.51		6.9	7.48	
5	3	4	6.80	4.00	6.20	3.67			2.21	
6	3	5	5.34	3.10	4.84 (11)	2.87		2.21	1.73	
7	3	6	17.72	11.37	16.05 (27.08)	9.07		3.94	5.89	
8	3	7	52.68	29.80	44.95 (71)	25.44		9.83	17.82	
9	3	8	7.33	4.54	6.94 (78.98)	4.17		27.65	2.34	
10	3	9	22.82	14.94	22.04 (100.42)	13.23		34	7.17	
11	2	9	147.14	98.23	153.01	90.94	Branch Confluence	49.2		
12	3	10	3.98	2.62	3.87	2.65			.78	
13	3	11	0.92	0.61	0.93 (4.79)	0.64		.78	.18	
14	2	11	152.04	101.47	157.81	94.24	Branch Confluence	50.16		
15	3	12	19.97	13.45	20.78	13.78			2.82	
16	2	12	172.01	114.92	178.60	108.03	Branch Confluence	54.48		
17	4	13	5.20	3.37	4.82	3.03			1.32	
18	4	14	28.93	18.30	24.88 (29.6)	13.95		1.32	8.34	
19	4	15	8.89	5.76	8.30 (38)	4.91		10.16	2.75	
20	4	16	14.98	9.65	13.72 (51.71)	8.11		12.91	4.27	
21	4	17	3.26	2.15	3.20 (45.33)	2.24		17.38	.63	
22	4	18	89.73	55.24	86.14 (29.47)	52.47		18.01	28.34	
23	4	19	2.78	1.81	2.65 (90.02)	1.57		46.35	.89	
24	4	20	3.04	1.95	2.77 (90.26)	1.64		47.24	0.9	
25	4	22	4.66	3.22	5.30 (81.02)	3.60		48.14	1.7	
26	5	21	44.05	30.35	49.58	33.71			10.89	
27	2	22	296.44	224.21	309.19	221.06	Branch Confluence	114.7		
28	2	22	176.43	176.43	176.43	176.43	Channel Routing			
29	2	22	176.43	176.43	176.43	176.43	Channel Routing			
30	3	23	39.94	26.86	41.79	28.43			8.93	
31	2	23	216.38	203.30	218.22	204.86	Branch Confluence			
32	2	23	167.84	167.84	167.84	167.84	Channel Routing			
33	2	29	7.63	5.03	8.23 (176.06)	5.02				

Bold Numbers indicate hydrographs that have been truncated due to inadequate pipe size

Hydrology
24 Hour -- 10 Year Storm

Date: 05-03-1989
 Project: T-Gap Sub basin 2 Drainage Study
 Description: Templeton Heights Filing No. 1
 Existing Design Points using
 New City/County Criteria 24 hr Storm

Units: Drainage area acres
 Precipitation depth inches
 Length, elevation feet
 Flow cubic feet per second
 Storage volume acre-feet
 Time minutes

Beginning time: 0
 Ending time: 440
 Time interval: 10
 Number of intervals: 45

*Design Station
 1250-1260*

Total Precipitation (inches): 3.1
 Total Storm Duration (hours): 23.75

Precipitation Distribution:

Time	0.00	15.00	30.00	45.00	60.00
Unit depth	0.0005	0.0010	0.0015	0.0015	0.0015
Time	75.00	90.00	105.00	120.00	135.00
Unit depth	0.0020	0.0020	0.0020	0.0023	0.0022
Time	150.00	165.00	180.00	195.00	210.00
Unit depth	0.0023	0.0022	0.0023	0.0022	0.0023
Time	225.00	240.00	255.00	270.00	285.00
Unit depth	0.0042	0.0070	0.0070	0.0070	0.0070
Time	300.00	315.00	330.00	345.00	360.00
Unit depth	0.0150	0.0250	0.3000	0.3000	0.0250
Time	375.00	390.00	405.00	420.00	435.00
Unit depth	0.0250	0.0150	0.0150	0.0100	0.0100
Time	450.00	465.00	480.00	495.00	510.00
Unit depth	0.0100	0.0100	0.0050	0.0050	0.0050
Time	525.00	540.00	555.00	570.00	585.00
Unit depth	0.0050	0.0050	0.0050	0.0050	0.0050
Time	600.00	615.00	630.00	645.00	660.00
Unit depth	0.0038	0.0037	0.0038	0.0037	0.0038
Time	675.00	690.00	705.00	720.00	735.00
Unit depth	0.0037	0.0038	0.0037	0.0038	0.0037
Time	750.00	765.00	780.00	795.00	810.00
Unit depth	0.0038	0.0037	0.0033	0.0032	0.0033
Time	825.00	840.00	855.00	870.00	885.00
Unit depth	0.0032	0.0030	0.0030	0.0030	0.0030
Time	900.00	915.00	930.00	945.00	960.00
Unit depth	0.0025	0.0025	0.0025	0.0025	0.0025
Time	975.00	990.00	1005.00	1020.00	1035.00
Unit depth	0.0025	0.0025	0.0025	0.0025	0.0025
Time	1050.00	1065.00	1080.00	1095.00	1110.00
Unit depth	0.0025	0.0025	0.0025	0.0025	0.0025
Time	1125.00	1140.00	1155.00	1170.00	1185.00
Unit depth	0.0025	0.0025	0.0025	0.0025	0.0025
Time	1200.00	1215.00	1230.00	1245.00	1260.00

Unit depth	0.0013	0.0012	0.0013	0.0012	0.0013
Time	1275.00	1290.00	1305.00	1320.00	1335.00
Unit depth	0.0012	0.0013	0.0012	0.0013	0.0012
Time	1350.00	1365.00	1380.00	1395.00	1410.00
Unit depth	0.0013	0.0012	0.0013	0.0012	0.0013
Time	1425.00				
Unit depth	0.0012				

SCS curve number equation initial abstraction coefficient: .2

Subarea Hydrograph Computation

Title: Design Point 1

Description: 24 Hr Storm
100 Year

Hydrograph No.: 1
Branch No.: 1

Subarea drainage area (acres): .38
Total upstream drainage area (acres): 0
Percent impervious area: 100
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 92

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 5

		Unit hydrograph				
Time	0.00	0.80	1.60	2.40	3.20	
Discharge	0.0000	0.0647	0.2155	0.4095	0.6681	
Time	4.00	4.80	5.60	6.40	7.20	
Discharge	1.01	1.42	1.77	2.00	2.13	
Time	8.00	8.80	9.60	10.40	11.20	
Discharge	2.16	2.13	2.00	1.85	1.68	
Time	12.00	12.80	13.60	14.40	15.20	
Discharge	1.47	1.21	0.9914	0.8406	0.7113	
Time	16.00	17.60	19.20	20.80	22.40	
Discharge	0.6035	0.4461	0.3168	0.2306	0.1832	
Time	24.00	25.60	27.20	28.80	30.40	
Discharge	0.1423	0.1078	0.0754	0.0474	0.0216	
Time	32.00					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
       ous  ous  erv.  erv.  Hydro- Routed  Hyd.
       Loss Excess Loss Excess graph  Upstream
*****
0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
10.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
20.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
30.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
40.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
50.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
60.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
70.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
80.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
90.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
100.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
110.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
120.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
130.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
140.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
150.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
160.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
170.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
180.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
190.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
200.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
210.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
220.00 0.01  0.01  0.00  0.01  0.00  0.00  0.00  0.00
230.00 0.01  0.01  0.00  0.01  0.00  0.01  0.00  0.01
240.00 0.01  0.01  0.00  0.01  0.01  0.01  0.00  0.01
250.00 0.01  0.01  0.00  0.01  0.01  0.01  0.00  0.01
260.00 0.01  0.01  0.00  0.01  0.01  0.02  0.00  0.02
270.00 0.01  0.01  0.00  0.01  0.01  0.02  0.00  0.02
280.00 0.01  0.01  0.00  0.01  0.01  0.02  0.00  0.02
290.00 0.02  0.02  0.00  0.01  0.02  0.02  0.00  0.02
300.00 0.03  0.03  0.00  0.01  0.02  0.03  0.00  0.03
310.00 0.05  0.04  0.01  0.01  0.04  0.05  0.00  0.05
320.00 0.34  0.20  0.14  0.04  0.30  0.08  0.00  0.08
330.00 0.62  0.18  0.44  0.02  0.60  0.58  0.00  0.58
340.00 0.62  0.09  0.53  0.01  0.61  1.23  0.00  1.23
350.00 0.34  0.03  0.30  0.00  0.33  1.35  0.00  1.35
360.00 0.05  0.00  0.05  0.00  0.05  0.83  0.00  0.83
370.00 0.05  0.00  0.05  0.00  0.05  0.21  0.00  0.21
380.00 0.04  0.00  0.04  0.00  0.04  0.12  0.00  0.12
390.00 0.03  0.00  0.03  0.00  0.03  0.09  0.00  0.09
400.00 0.03  0.00  0.03  0.00  0.03  0.07  0.00  0.07
410.00 0.03  0.00  0.02  0.00  0.03  0.07  0.00  0.07
420.00 0.02  0.00  0.02  0.00  0.02  0.06  0.00  0.06
430.00 0.02  0.00  0.02  0.00  0.02  0.05  0.00  0.05
440.00 0.02  0.00  0.02  0.00  0.02  0.05  0.00  0.05
*****
Totals 2.49  0.81  1.68  0.23  2.26

```

Runoff volume= 6.843321E-02 acre-ft
Total volume= 6.843321E-02 acre-ft
Peak discharge (cfs)= 1.350009

Subarea Hydrograph Computation

Title: Design Point 2

Description: 24 Hour
100 Year

Hydrograph No.: 2
Branch No.: 2

Subarea drainage area (acres): 6.9
Total upstream drainage area (acres): 0
Percent impervious area: 12
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 92

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 13.5

		Unit hydrograph				
Time	0.00	1.31	2.62	3.93	5.24	
Discharge	0.0000	0.7170	2.39	4.54	7.41	
Time	6.55	7.86	9.17	10.48	11.79	
Discharge	11.23	15.77	19.60	22.23	23.66	
Time	13.10	14.41	15.72	17.03	18.34	
Discharge	23.90	23.66	22.23	20.55	18.64	
Time	19.65	20.96	22.27	23.58	24.89	
Discharge	16.25	13.38	10.99	9.32	7.89	
Time	26.20	28.82	31.44	34.06	36.68	
Discharge	6.69	4.95	3.51	2.56	2.03	
Time	39.30	41.92	44.54	47.16	49.78	
Discharge	1.58	1.19	0.8365	0.5258	0.2390	
Time	52.40					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
       ious ious  erv.  erv.  Hydro- Upstream Total
       Loss Excess Loss Excess graph  Hyd.
*****
0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
10.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
20.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
30.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
40.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
50.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
60.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
70.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
80.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
90.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
100.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
110.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
120.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
130.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
140.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
150.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
160.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
170.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
180.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
190.00 0.00  0.00  0.00  0.00  0.00  0.01  0.00  0.01
200.00 0.00  0.00  0.00  0.00  0.00  0.01  0.00  0.01
210.00 0.00  0.00  0.00  0.00  0.00  0.01  0.00  0.01
220.00 0.01  0.01  0.00  0.01  0.00  0.01  0.00  0.01
230.00 0.01  0.01  0.00  0.01  0.00  0.01  0.00  0.01
240.00 0.01  0.01  0.00  0.01  0.01  0.02  0.00  0.02
250.00 0.01  0.01  0.00  0.01  0.01  0.03  0.00  0.03
260.00 0.01  0.01  0.00  0.01  0.01  0.03  0.00  0.03
270.00 0.01  0.01  0.00  0.01  0.01  0.04  0.00  0.04
280.00 0.01  0.01  0.00  0.01  0.01  0.04  0.00  0.04
290.00 0.02  0.02  0.00  0.01  0.02  0.05  0.00  0.05
300.00 0.03  0.03  0.00  0.01  0.02  0.08  0.00  0.08
310.00 0.05  0.04  0.01  0.01  0.04  0.16  0.00  0.16
320.00 0.34  0.20  0.14  0.04  0.30  0.36  0.00  0.36
330.00 0.62  0.18  0.44  0.02  0.60  3.57  0.00  3.57
340.00 0.62  0.09  0.53  0.01  0.61  12.18  0.00  12.18
350.00 0.34  0.03  0.30  0.00  0.33  19.13  0.00  19.13
360.00 0.05  0.00  0.05  0.00  0.05  16.98  0.00  16.98
370.00 0.05  0.00  0.05  0.00  0.05  8.75  0.00  8.75
380.00 0.04  0.00  0.04  0.00  0.04  3.95  0.00  3.95
390.00 0.03  0.00  0.03  0.00  0.03  2.33  0.00  2.33
400.00 0.03  0.00  0.03  0.00  0.03  1.55  0.00  1.55
410.00 0.03  0.00  0.02  0.00  0.03  1.30  0.00  1.30
420.00 0.02  0.00  0.02  0.00  0.02  1.15  0.00  1.15
430.00 0.02  0.00  0.02  0.00  0.02  0.96  0.00  0.96
440.00 0.02  0.00  0.02  0.00  0.02  0.86  0.00  0.86
*****
Totals 2.49  0.81  1.68  0.23  2.26

```

Runoff volume= 1.007108 acre-ft
Total volume= 1.007108 acre-ft
Peak discharge (cfs)= 19.1334

Hydrograph Diversion

Title: Design Point 2 Diversion

Description: 24 Hour
100 Year

Hydrograph No.: 3
Branch No.: 2

Hydrograph Diversion Table

Inflow	11.60	19.10	20.30	29.70
Diversion	7.48	10.39	10.94	12.18

Diverted hydrograph

```

*****
Time          Flow *    Time          Flow *    Time          Flow
*****
10.00         0.00 *    160.00         0.00 *    310.00         0.10
20.00         0.00 *    170.00         0.00 *    320.00         0.23
30.00         0.00 *    180.00         0.00 *    330.00         2.30
40.00         0.00 *    190.00         0.00 *    340.00         6.63
50.00         0.00 *    200.00         0.00 *    350.00        10.31
60.00         0.00 *    210.00         0.00 *    360.00         9.23
70.00         0.00 *    220.00         0.00 *    370.00         5.64
80.00         0.00 *    230.00         0.01 *    380.00         2.55
90.00         0.00 *    240.00         0.01 *    390.00         1.50
100.00        0.00 *    250.00         0.02 *    400.00         1.00
110.00        0.00 *    260.00         0.02 *    410.00         0.84
120.00        0.00 *    270.00         0.02 *    420.00         0.74
130.00        0.00 *    280.00         0.03 *    430.00         0.62
140.00        0.00 *    290.00         0.03 *    440.00         0.55
150.00        0.00 *    300.00         0.05 *
*****

```

Remaining hydrograph

```
*****  
Time          Flow *      Time          Flow *      Time          Flow  
*****  
10.00         0.00 *    160.00         0.00 *    310.00         0.06  
20.00         0.00 *    170.00         0.00 *    320.00         0.13  
30.00         0.00 *    180.00         0.00 *    330.00         1.27  
40.00         0.00 *    190.00         0.00 *    340.00         5.56  
50.00         0.00 *    200.00         0.00 *    350.00         8.82  
60.00         0.00 *    210.00         0.00 *    360.00         7.74  
70.00         0.00 *    220.00         0.00 *    370.00         3.11  
80.00         0.00 *    230.00         0.00 *    380.00         1.40  
90.00         0.00 *    240.00         0.01 *    390.00         0.83  
100.00        0.00 *    250.00         0.01 *    400.00         0.55  
110.00        0.00 *    260.00         0.01 *    410.00         0.46  
120.00        0.00 *    270.00         0.01 *    420.00         0.41  
130.00        0.00 *    280.00         0.01 *    430.00         0.34  
140.00        0.00 *    290.00         0.02 *    440.00         0.31  
150.00        0.00 *    300.00         0.03 *  
*****
```

Subarea Hydrograph Computation

Title: Design Point 3

Description: 24 Hour
100 Yr

Hydrograph No.: 4
Branch No.: 2

Subarea drainage area (acres): 7.98
Total upstream drainage area (acres): 6.9
Percent impervious area: 20
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 92

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 6.72

Channel routing method: Channel storage

Reach length (ft)= 2300
Slope (ft/ft)= .0634
Manning's n= .016

Channel type is trapezoidal: Bottom width (ft)= 0
Sideslope (H to 1V)= 25

		Unit hydrograph				
Time	0.00	0.90	1.81	2.71	3.61	
Discharge	0.0000	1.20	4.01	7.62	12.43	
Time	4.52	5.42	6.32	7.23	8.13	
Discharge	18.84	26.46	32.87	37.28	39.69	
Time	9.03	9.94	10.84	11.74	12.64	
Discharge	40.09	39.69	37.28	34.48	31.27	
Time	13.55	14.45	15.35	16.26	17.16	
Discharge	27.26	22.45	18.44	15.64	13.23	
Time	18.06	19.87	21.68	23.48	25.29	
Discharge	11.23	8.30	5.89	4.29	3.41	
Time	27.10	28.90	30.71	32.52	34.32	
Discharge	2.65	2.00	1.40	0.8820	0.4009	
Time	36.13					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
       ious ious  erv.  erv.  Hydro- Upstream Total
       Loss Excess Loss Excess graph  Hyd.
*****
0.00   0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
10.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
20.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
30.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
40.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
50.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
60.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
70.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
80.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
90.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
100.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
110.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
120.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
130.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
140.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
150.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
160.00 0.00  0.00  0.00  0.00  0.00    0.01    0.00    0.01
170.00 0.00  0.00  0.00  0.00  0.00    0.01    0.00    0.01
180.00 0.00  0.00  0.00  0.00  0.00    0.01    0.00    0.01
190.00 0.00  0.00  0.00  0.00  0.00    0.01    0.00    0.01
200.00 0.00  0.00  0.00  0.00  0.00    0.01    0.00    0.01
210.00 0.00  0.00  0.00  0.00  0.00    0.01    0.00    0.02
220.00 0.01  0.01  0.00  0.01  0.00    0.01    0.00    0.02
230.00 0.01  0.01  0.00  0.01  0.00    0.03    0.00    0.03
240.00 0.01  0.01  0.00  0.01  0.01    0.04    0.00    0.05
250.00 0.01  0.01  0.00  0.01  0.01    0.06    0.01    0.07
260.00 0.01  0.01  0.00  0.01  0.01    0.07    0.01    0.08
270.00 0.01  0.01  0.00  0.01  0.01    0.08    0.01    0.09
280.00 0.01  0.01  0.00  0.01  0.01    0.08    0.01    0.10
290.00 0.02  0.02  0.00  0.01  0.02    0.09    0.02    0.10
300.00 0.03  0.03  0.00  0.01  0.02    0.16    0.02    0.18
310.00 0.05  0.04  0.01  0.01  0.04    0.30    0.04    0.34
320.00 0.34  0.20  0.14  0.04  0.30    0.65    0.08    0.73
330.00 0.62  0.18  0.44  0.02  0.60    6.86    0.62    7.48
340.00 0.62  0.09  0.53  0.01  0.61    19.90    2.99    22.90
350.00 0.34  0.03  0.30  0.00  0.33    25.51    6.98    32.49
360.00 0.05  0.00  0.05  0.00  0.05    17.34    7.98    25.32
370.00 0.05  0.00  0.05  0.00  0.05    5.28    4.97    10.25
380.00 0.04  0.00  0.04  0.00  0.04    2.79    2.85    5.65
390.00 0.03  0.00  0.03  0.00  0.03    1.99    1.54    3.53
400.00 0.03  0.00  0.03  0.00  0.03    1.54    0.89    2.43
410.00 0.03  0.00  0.02  0.00  0.03    1.44    0.60    2.05
420.00 0.02  0.00  0.02  0.00  0.02    1.24    0.48    1.72
430.00 0.02  0.00  0.02  0.00  0.02    1.01    0.40    1.41
440.00 0.02  0.00  0.02  0.00  0.02    0.96    0.34    1.30
*****
Totals 2.49  0.81  1.68  0.23  2.26

```

Runoff volume= 1.198681 acre-ft
Total volume= 1.621433 acre-ft
Peak discharge (cfs)= 32.49161

Subarea Hydrograph Computation

Title: Design Point 4

Description: 24 Hour
100 Yr

Hydrograph No.: 5
Branch No.: 3

Subarea drainage area (acres): 2.21
Total upstream drainage area (acres): 0
Percent impervious area: 39
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 68

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 11.48

		Unit hydrograph				
Time	0.00	1.19	2.38	3.57	4.76	
Discharge	0.0000	0.2531	0.8435	1.60	2.61	
Time	5.94	7.13	8.32	9.51	10.70	
Discharge	3.96	5.57	6.92	7.84	8.35	
Time	11.89	13.08	14.27	15.45	16.64	
Discharge	8.44	8.35	7.84	7.25	6.58	
Time	17.83	19.02	20.21	21.40	22.59	
Discharge	5.74	4.72	3.88	3.29	2.78	
Time	23.78	26.15	28.53	30.91	33.29	
Discharge	2.36	1.75	1.24	0.9026	0.7170	
Time	35.66	38.04	40.42	42.80	45.17	
Discharge	0.5567	0.4218	0.2952	0.1856	0.0844	
Time	47.55					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
        ious ious  erv.  erv.  Hydro- Upstream Total
        Loss Excess Loss Excess graph  Hyd.
*****
0.00   0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
10.00  0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
20.00  0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
30.00  0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
40.00  0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
50.00  0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
60.00  0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
70.00  0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
80.00  0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
90.00  0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
100.00 0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
110.00 0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
120.00 0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
130.00 0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
140.00 0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
150.00 0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
160.00 0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
170.00 0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
180.00 0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
190.00 0.00  0.00  0.00  0.00  0.00    0.01   0.00   0.01
200.00 0.00  0.00  0.00  0.00  0.00    0.01   0.00   0.01
210.00 0.00  0.00  0.00  0.00  0.00    0.01   0.00   0.01
220.00 0.01  0.01  0.00  0.01  0.00    0.01   0.00   0.01
230.00 0.01  0.01  0.00  0.01  0.00    0.01   0.00   0.01
240.00 0.01  0.01  0.00  0.01  0.01    0.02   0.00   0.02
250.00 0.01  0.01  0.00  0.01  0.01    0.03   0.00   0.03
260.00 0.01  0.01  0.00  0.01  0.01    0.04   0.00   0.04
270.00 0.01  0.01  0.00  0.01  0.01    0.04   0.00   0.04
280.00 0.01  0.01  0.00  0.01  0.01    0.04   0.00   0.04
290.00 0.02  0.02  0.00  0.01  0.02    0.05   0.00   0.05
300.00 0.03  0.03  0.00  0.01  0.02    0.07   0.00   0.07
310.00 0.05  0.05  0.00  0.01  0.04    0.10   0.00   0.10
320.00 0.34  0.34  0.00  0.04  0.30    0.17   0.00   0.17
330.00 0.62  0.60  0.02  0.02  0.60    1.00   0.00   1.00
340.00 0.62  0.49  0.13  0.01  0.61    2.44   0.00   2.44
350.00 0.34  0.22  0.11  0.00  0.33    3.67   0.00   3.67
360.00 0.05  0.03  0.02  0.00  0.05    3.18   0.00   3.18
370.00 0.05  0.03  0.02  0.00  0.05    1.47   0.00   1.47
380.00 0.04  0.02  0.02  0.00  0.04    0.70   0.00   0.70
390.00 0.03  0.02  0.01  0.00  0.03    0.44   0.00   0.44
400.00 0.03  0.02  0.01  0.00  0.03    0.31   0.00   0.31
410.00 0.03  0.01  0.01  0.00  0.03    0.28   0.00   0.28
420.00 0.02  0.01  0.01  0.00  0.02    0.24   0.00   0.24
430.00 0.02  0.01  0.01  0.00  0.02    0.20   0.00   0.20
440.00 0.02  0.01  0.01  0.00  0.02    0.19   0.00   0.19
*****
Totals 2.49  2.11  0.38  0.23  2.26

```

Runoff volume= .2013548 acre-ft
Total volume= .2013548 acre-ft
Peak discharge (cfs)= 3.673482

Subarea Hydrograph Computation

Title: Design Point 5

Description: 24 Hour
100 Yr

Hydrograph No.: 6
Branch No.: 3

Subarea drainage area (acres): 1.73
Total upstream drainage area (acres): 2.21
Percent impervious area: 39
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 68

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 11.7

Channel routing method: Channel storage

Reach length (ft)= 400
Slope (ft/ft)= .16
Manning's n= .035

Channel type is trapezoidal: Bottom width (ft)= 1
Sideslope (H to 1V)= 4

		Unit hydrograph				
Time	0.00	1.20	2.40	3.61	4.81	
Discharge	0.0000	0.1959	0.6531	1.24	2.02	
Time	6.01	7.21	8.41	9.62	10.82	
Discharge	3.07	4.31	5.36	6.07	6.47	
Time	12.02	13.22	14.42	15.63	16.83	
Discharge	6.53	6.47	6.07	5.62	5.09	
Time	18.03	19.23	20.43	21.64	22.84	
Discharge	4.44	3.66	3.00	2.55	2.16	
Time	24.04	26.44	28.85	31.25	33.66	
Discharge	1.83	1.35	0.9600	0.6988	0.5551	
Time	36.06	38.46	40.87	43.27	45.68	
Discharge	0.4310	0.3265	0.2286	0.1437	0.0653	
Time	48.08					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
        ious ious  erv.  erv.  Hydro-  Upstream Total
        Loss Excess Loss Excess graph  Hyd.
*****
0.00   0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
10.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
20.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
30.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
40.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
50.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
60.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
70.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
80.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
90.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
100.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
110.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
120.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
130.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
140.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
150.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
160.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
170.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.01
180.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.01
190.00 0.00  0.00  0.00  0.00  0.00    0.00    0.01    0.01
200.00 0.00  0.00  0.00  0.00  0.00    0.00    0.01    0.01
210.00 0.00  0.00  0.00  0.00  0.00    0.01    0.01    0.01
220.00 0.01  0.01  0.00  0.01  0.00    0.01    0.01    0.01
230.00 0.01  0.01  0.00  0.01  0.00    0.01    0.01    0.02
240.00 0.01  0.01  0.00  0.01  0.01    0.02    0.02    0.04
250.00 0.01  0.01  0.00  0.01  0.01    0.02    0.03    0.05
260.00 0.01  0.01  0.00  0.01  0.01    0.03    0.04    0.06
270.00 0.01  0.01  0.00  0.01  0.01    0.03    0.04    0.07
280.00 0.01  0.01  0.00  0.01  0.01    0.03    0.04    0.08
290.00 0.02  0.02  0.00  0.01  0.02    0.04    0.05    0.08
300.00 0.03  0.03  0.00  0.01  0.02    0.05    0.07    0.12
310.00 0.05  0.05  0.00  0.01  0.04    0.08    0.10    0.17
320.00 0.34  0.34  0.00  0.04  0.30    0.13    0.17    0.30
330.00 0.62  0.60  0.02  0.02  0.60    0.77    1.00    1.78
340.00 0.62  0.49  0.13  0.01  0.61    1.90    2.44    4.34
350.00 0.34  0.22  0.11  0.00  0.33    2.87    3.67    6.54
360.00 0.05  0.03  0.02  0.00  0.05    2.50    3.18    5.68
370.00 0.05  0.03  0.02  0.00  0.05    1.18    1.47    2.64
380.00 0.04  0.02  0.02  0.00  0.04    0.56    0.70    1.25
390.00 0.03  0.02  0.01  0.00  0.03    0.35    0.44    0.78
400.00 0.03  0.02  0.01  0.00  0.03    0.24    0.31    0.55
410.00 0.03  0.01  0.01  0.00  0.03    0.22    0.28    0.49
420.00 0.02  0.01  0.01  0.00  0.02    0.19    0.24    0.43
430.00 0.02  0.01  0.01  0.00  0.02    0.16    0.20    0.36
440.00 0.02  0.01  0.01  0.00  0.02    0.15    0.19    0.33
*****
Totals 2.49  2.11  0.38  0.23  2.26

```

Runoff volume= .1579367 acre-ft
Total volume= .3592915 acre-ft
Peak discharge (cfs)= 6.53982

Subarea Hydrograph Computation

Title: Design Point 6

Description: 24 Hour
100 Yr

Hydrograph No.: 7
Branch No.: 3

Subarea drainage area (acres): 5.89
Total upstream drainage area (acres): 3.94
Percent impervious area: 31
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 68

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 8.64

Channel routing method: Channel storage

Reach length (ft)= 265
Slope (ft/ft)= .071
Manning's n= .013

Channel type is circular: Diameter (inches)= 24

		Unit hydrograph				
Time	0.00	1.02	2.04	3.06	4.07	
Discharge	0.0000	0.7873	2.62	4.99	8.14	
Time	5.09	6.11	7.13	8.15	9.17	
Discharge	12.33	17.32	21.52	24.41	25.98	
Time	10.18	11.20	12.22	13.24	14.26	
Discharge	26.24	25.98	24.41	22.57	20.47	
Time	15.28	16.29	17.31	18.33	19.35	
Discharge	17.85	14.70	12.07	10.23	8.66	
Time	20.37	22.40	24.44	26.48	28.52	
Discharge	7.35	5.43	3.86	2.81	2.23	
Time	30.55	32.59	34.63	36.66	38.70	
Discharge	1.73	1.31	0.9185	0.5773	0.2624	
Time	40.74					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
       ious ious  erv.  erv.  Hydro- Routed  Hyd.
       Loss Excess Loss Excess graph  Upstream
*****
0.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
10.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
20.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
30.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
40.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
50.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
60.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
70.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
80.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
90.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
100.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
110.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
120.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
130.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
140.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
150.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.01
160.00 0.00  0.00  0.00  0.00  0.00    0.01    0.00    0.01
170.00 0.00  0.00  0.00  0.00  0.00    0.01    0.01    0.01
180.00 0.00  0.00  0.00  0.00  0.00    0.01    0.01    0.02
190.00 0.00  0.00  0.00  0.00  0.00    0.01    0.01    0.02
200.00 0.00  0.00  0.00  0.00  0.00    0.01    0.01    0.02
210.00 0.00  0.00  0.00  0.00  0.00    0.01    0.01    0.03
220.00 0.01  0.01  0.00  0.01  0.00    0.02    0.01    0.03
230.00 0.01  0.01  0.00  0.01  0.00    0.03    0.02    0.05
240.00 0.01  0.01  0.00  0.01  0.01    0.05    0.04    0.08
250.00 0.01  0.01  0.00  0.01  0.01    0.07    0.05    0.12
260.00 0.01  0.01  0.00  0.01  0.01    0.08    0.06    0.14
270.00 0.01  0.01  0.00  0.01  0.01    0.09    0.07    0.16
280.00 0.01  0.01  0.00  0.01  0.01    0.09    0.08    0.17
290.00 0.02  0.02  0.00  0.01  0.02    0.10    0.08    0.18
300.00 0.03  0.03  0.00  0.01  0.02    0.15    0.12    0.27
310.00 0.05  0.05  0.00  0.01  0.04    0.22    0.17    0.40
320.00 0.34  0.34  0.00  0.04  0.30    0.38    0.30    0.68
330.00 0.62  0.60  0.02  0.02  0.60    2.51    1.78    4.29
340.00 0.62  0.49  0.13  0.01  0.61    5.91    4.34    10.25
350.00 0.34  0.22  0.11  0.00  0.33    9.07    6.54    15.61
360.00 0.05  0.03  0.02  0.00  0.05    7.34    5.68    13.02
370.00 0.05  0.03  0.02  0.00  0.05    2.74    2.64    5.38
380.00 0.04  0.02  0.02  0.00  0.04    1.38    1.25    2.63
390.00 0.03  0.02  0.01  0.00  0.03    0.94    0.78    1.72
400.00 0.03  0.02  0.01  0.00  0.03    0.73    0.55    1.28
410.00 0.03  0.01  0.01  0.00  0.03    0.67    0.49    1.17
420.00 0.02  0.01  0.01  0.00  0.02    0.59    0.43    1.02
430.00 0.02  0.01  0.01  0.00  0.02    0.48    0.36    0.84
440.00 0.02  0.01  0.01  0.00  0.02    0.45    0.33    0.79
*****
Totals 2.49  2.11  0.38  0.23  2.26

```

Runoff volume= .4671882 acre-ft
Total volume= .8264798 acre-ft
Peak discharge (cfs)= 15.60641

Subarea Hydrograph Computation

Title: Design Point 7

Description: 24 Hour
100 Yr

Hydrograph No.: 8
Branch No.: 3

Subarea drainage area (acres): 17.82
Total upstream drainage area (acres): 9.83
Percent impervious area: 31
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 68

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 11.44

Channel routing method: Channel storage

Reach length (ft)= 141
Slope (ft/ft)= .0629
Manning's n= .013

Channel type is circular: Diameter (inches)= 24

		Unit hydrograph				
Time	0.00	1.19	2.37	3.56	4.75	
Discharge	0.0000	2.04	6.82	12.95	21.13	
Time	5.93	7.12	8.30	9.49	10.68	
Discharge	32.03	44.98	55.89	63.38	67.47	
Time	11.86	13.05	14.24	15.42	16.61	
Discharge	68.15	67.47	63.38	58.61	53.16	
Time	17.80	18.98	20.17	21.36	22.54	
Discharge	46.34	38.17	31.35	26.58	22.49	
Time	23.73	26.10	28.47	30.85	33.22	
Discharge	19.08	14.11	10.02	7.29	5.79	
Time	35.59	37.96	40.34	42.71	45.08	
Discharge	4.50	3.41	2.39	1.50	0.6815	
Time	47.46					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
       ious ious  erv.  erv.  Hydro- Upstream Total
       Loss Excess Loss Excess graph  Hyd.
*****
0.00   0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
10.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
20.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
30.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
40.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
50.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
60.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
70.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
80.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
90.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
100.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
110.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
120.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
130.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
140.00 0.00 0.00 0.00 0.00 0.00 0.01 0.00 0.01
150.00 0.00 0.00 0.00 0.00 0.00 0.01 0.01 0.02
160.00 0.00 0.00 0.00 0.00 0.00 0.02 0.01 0.03
170.00 0.00 0.00 0.00 0.00 0.00 0.02 0.01 0.04
180.00 0.00 0.00 0.00 0.00 0.00 0.03 0.02 0.05
190.00 0.00 0.00 0.00 0.00 0.00 0.03 0.02 0.06
200.00 0.00 0.00 0.00 0.00 0.00 0.04 0.02 0.06
210.00 0.00 0.00 0.00 0.00 0.00 0.04 0.03 0.07
220.00 0.01 0.01 0.00 0.01 0.00 0.05 0.03 0.08
230.00 0.01 0.01 0.00 0.01 0.00 0.08 0.05 0.13
240.00 0.01 0.01 0.00 0.01 0.01 0.13 0.08 0.21
250.00 0.01 0.01 0.00 0.01 0.01 0.19 0.12 0.31
260.00 0.01 0.01 0.00 0.01 0.01 0.23 0.14 0.37
270.00 0.01 0.01 0.00 0.01 0.01 0.26 0.16 0.41
280.00 0.01 0.01 0.00 0.01 0.01 0.28 0.17 0.45
290.00 0.02 0.02 0.00 0.01 0.02 0.30 0.18 0.48
300.00 0.03 0.03 0.00 0.01 0.02 0.43 0.27 0.69
310.00 0.05 0.05 0.00 0.01 0.04 0.63 0.40 1.02
320.00 0.34 0.34 0.00 0.04 0.30 1.06 0.68 1.74
330.00 0.62 0.60 0.02 0.02 0.60 6.44 4.29 10.73
340.00 0.62 0.49 0.13 0.01 0.61 15.93 10.25 26.18
350.00 0.34 0.22 0.11 0.00 0.33 25.44 15.61 41.05
360.00 0.05 0.03 0.02 0.00 0.05 22.78 13.02 35.80
370.00 0.05 0.03 0.02 0.00 0.05 10.62 5.38 16.00
380.00 0.04 0.02 0.02 0.00 0.04 5.11 2.63 7.75
390.00 0.03 0.02 0.01 0.00 0.03 3.25 1.72 4.97
400.00 0.03 0.02 0.01 0.00 0.03 2.30 1.28 3.57
410.00 0.03 0.01 0.01 0.00 0.03 2.07 1.17 3.23
420.00 0.02 0.01 0.01 0.00 0.02 1.81 1.02 2.83
430.00 0.02 0.01 0.01 0.00 0.02 1.51 0.84 2.35
440.00 0.02 0.01 0.01 0.00 0.02 1.39 0.79 2.17
*****
Totals 2.49 2.11 0.38 0.23 2.26

```

Runoff volume= 1.401838 acre-ft
Total volume= 2.228318 acre-ft
Peak discharge (cfs)= 41.0499

Subarea Hydrograph Computation

Title: Design Point 8

Description: 24 Hour
100 Yr

Hydrograph No.: 9
Branch No.: 3

Subarea drainage area (acres): 2.34
Total upstream drainage area (acres): 27.65
Percent impervious area: 42
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 68

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 10.72

Channel routing method: Channel storage

Reach length (ft)= 214

Slope (ft/ft)= .0122

Manning's n= .013

Channel type is circular: Diameter (inches)= 36

		Unit hydrograph				
Time	0.00	1.14	2.29	3.43	4.57	
Discharge	0.0000	0.2786	0.9288	1.76	2.88	
Time	5.72	6.86	8.00	9.15	10.29	
Discharge	4.37	6.13	7.62	8.64	9.19	
Time	11.43	12.58	13.72	14.86	16.00	
Discharge	9.29	9.19	8.64	7.99	7.24	
Time	17.15	18.29	19.43	20.58	21.72	
Discharge	6.32	5.20	4.27	3.62	3.06	
Time	22.86	25.15	27.44	29.72	32.01	
Discharge	2.60	1.92	1.37	0.9938	0.7895	
Time	34.30	36.58	38.87	41.16	43.44	
Discharge	0.6130	0.4644	0.3251	0.2043	0.0929	
Time	45.73					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
        ious ious erv.  erv.  Hydro- Upstream Total
        Loss Excess Loss Excess graph  Hyd.
*****
0.00   0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
10.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
20.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
30.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
40.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
50.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
60.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
70.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
80.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
90.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
100.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
110.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
120.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
130.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
140.00 0.00  0.00  0.00  0.00  0.00    0.00    0.01    0.01
150.00 0.00  0.00  0.00  0.00  0.00    0.00    0.02    0.02
160.00 0.00  0.00  0.00  0.00  0.00    0.00    0.03    0.03
170.00 0.00  0.00  0.00  0.00  0.00    0.00    0.04    0.04
180.00 0.00  0.00  0.00  0.00  0.00    0.01    0.05    0.05
190.00 0.00  0.00  0.00  0.00  0.00    0.01    0.06    0.06
200.00 0.00  0.00  0.00  0.00  0.00    0.01    0.06    0.07
210.00 0.00  0.00  0.00  0.00  0.00    0.01    0.07    0.08
220.00 0.01  0.01  0.00  0.01  0.00    0.01    0.08    0.09
230.00 0.01  0.01  0.00  0.01  0.00    0.01    0.13    0.15
240.00 0.01  0.01  0.00  0.01  0.01    0.02    0.21    0.24
250.00 0.01  0.01  0.00  0.01  0.01    0.03    0.31    0.34
260.00 0.01  0.01  0.00  0.01  0.01    0.04    0.37    0.41
270.00 0.01  0.01  0.00  0.01  0.01    0.05    0.41    0.46
280.00 0.01  0.01  0.00  0.01  0.01    0.05    0.45    0.50
290.00 0.02  0.02  0.00  0.01  0.02    0.05    0.48    0.53
300.00 0.03  0.03  0.00  0.01  0.02    0.08    0.69    0.77
310.00 0.05  0.05  0.00  0.01  0.04    0.11    1.02    1.14
320.00 0.34  0.34  0.00  0.04  0.30    0.19    1.74    1.94
330.00 0.62  0.60  0.02  0.02  0.60    1.20    10.73   11.93
340.00 0.62  0.49  0.13  0.01  0.61    2.87    26.18   29.05
350.00 0.34  0.22  0.11  0.00  0.33    4.17    41.05   45.22
360.00 0.05  0.03  0.02  0.00  0.05    3.47    35.80   39.26
370.00 0.05  0.03  0.02  0.00  0.05    1.50    16.00   17.51
380.00 0.04  0.02  0.02  0.00  0.04    0.72    7.75    8.47
390.00 0.03  0.02  0.01  0.00  0.03    0.46    4.97    5.43
400.00 0.03  0.02  0.01  0.00  0.03    0.33    3.57    3.90
410.00 0.03  0.01  0.01  0.00  0.03    0.30    3.23    3.53
420.00 0.02  0.01  0.01  0.00  0.02    0.26    2.83    3.09
430.00 0.02  0.01  0.01  0.00  0.02    0.22    2.35    2.57
440.00 0.02  0.01  0.01  0.00  0.02    0.20    2.17    2.37
*****
Totals 2.49  2.11  0.38  0.23  2.26

```

Runoff volume= .2245296 acre-ft
Total volume= 2.452848 acre-ft
Peak discharge (cfs)= 45.22301

Subarea Hydrograph Computation

Title: Design Point 9

Description: 24 Hour
100 Year

Hydrograph No.: 10
Branch No.: 3

Subarea drainage area (acres): 7.17
Total upstream drainage area (acres): 29.99
Percent impervious area: 42
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 68

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 9.19

Channel routing method: Channel storage

Reach length (ft)= 123
Slope (ft/ft)= .0122
Manning's n= .013

Channel type is circular: Diameter (inches)= 36

		Unit hydrograph				
Time	0.00	1.05	2.10	3.15	4.21	
Discharge	0.0000	0.9283	3.09	5.88	9.59	
Time	5.26	6.31	7.36	8.41	9.46	
Discharge	14.54	20.42	25.37	28.78	30.63	
Time	10.51	11.57	12.62	13.67	14.72	
Discharge	30.94	30.63	28.78	26.61	24.14	
Time	15.77	16.82	17.87	18.93	19.98	
Discharge	21.04	17.33	14.23	12.07	10.21	
Time	21.03	23.13	25.23	27.34	29.44	
Discharge	8.66	6.41	4.55	3.31	2.63	
Time	31.54	33.64	35.75	37.85	39.95	
Discharge	2.04	1.55	1.08	0.6808	0.3094	
Time	42.06					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
        ious ious  erv.  erv.  Hydro- Upstream Total
        Loss Excess Loss Excess graph  Hyd.
*****
0.00   0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
10.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
20.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
30.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
40.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
50.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
60.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
70.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
80.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
90.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
100.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
110.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
120.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
130.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
140.00 0.00 0.00 0.00 0.00 0.00 0.00 0.01 0.01
150.00 0.00 0.00 0.00 0.00 0.00 0.01 0.02 0.03
160.00 0.00 0.00 0.00 0.00 0.00 0.01 0.03 0.04
170.00 0.00 0.00 0.00 0.00 0.00 0.01 0.04 0.05
180.00 0.00 0.00 0.00 0.00 0.00 0.02 0.05 0.07
190.00 0.00 0.00 0.00 0.00 0.00 0.02 0.06 0.08
200.00 0.00 0.00 0.00 0.00 0.00 0.02 0.07 0.09
210.00 0.00 0.00 0.00 0.00 0.00 0.02 0.08 0.10
220.00 0.01 0.01 0.00 0.01 0.00 0.03 0.09 0.11
230.00 0.01 0.01 0.00 0.01 0.00 0.05 0.15 0.20
240.00 0.01 0.01 0.00 0.01 0.01 0.07 0.24 0.31
250.00 0.01 0.01 0.00 0.01 0.01 0.11 0.34 0.45
260.00 0.01 0.01 0.00 0.01 0.01 0.13 0.41 0.54
270.00 0.01 0.01 0.00 0.01 0.01 0.14 0.46 0.60
280.00 0.01 0.01 0.00 0.01 0.01 0.15 0.50 0.65
290.00 0.02 0.02 0.00 0.01 0.02 0.16 0.53 0.69
300.00 0.03 0.03 0.00 0.01 0.02 0.24 0.77 1.02
310.00 0.05 0.05 0.00 0.01 0.04 0.36 1.14 1.50
320.00 0.34 0.34 0.00 0.04 0.30 0.62 1.94 2.56
330.00 0.62 0.60 0.02 0.02 0.60 4.02 11.93 15.95
340.00 0.62 0.49 0.13 0.01 0.61 9.34 29.05 38.39
350.00 0.34 0.22 0.11 0.00 0.33 13.23 45.22 58.45
360.00 0.05 0.03 0.02 0.00 0.05 10.42 39.26 49.68
370.00 0.05 0.03 0.02 0.00 0.05 4.01 17.51 21.52
380.00 0.04 0.02 0.02 0.00 0.04 1.97 8.47 10.44
390.00 0.03 0.02 0.01 0.00 0.03 1.31 5.43 6.74
400.00 0.03 0.02 0.01 0.00 0.03 0.99 3.90 4.89
410.00 0.03 0.01 0.01 0.00 0.03 0.91 3.53 4.45
420.00 0.02 0.01 0.01 0.00 0.02 0.79 3.09 3.89
430.00 0.02 0.01 0.01 0.00 0.02 0.65 2.57 3.22
440.00 0.02 0.01 0.01 0.00 0.02 0.61 2.37 2.99
*****
Totals 2.49 2.11 0.38 0.23 2.26

```

Runoff volume= .6907002 acre-ft
Total volume= 3.143548 acre-ft
Peak discharge (cfs)= 58.453

Branch Confluence

Title: Design Point 9 Combined

Description: 24 Hour
100 Yr

Hydrograph No.: 11
Branch No.: 2

Combined Branches: 2 3

```
*****  
Time          Flow *    Time          Flow *    Time          Flow  
*****  
10.00         0.00 *    140.00        0.05 *    310.00         1.83  
20.00         0.00 *    170.00        0.06 *    320.00         3.29  
30.00         0.00 *    180.00        0.08 *    330.00        23.43  
40.00         0.00 *    190.00        0.09 *    340.00        61.29  
50.00         0.00 *    200.00        0.10 *    350.00        90.94  
60.00         0.00 *    210.00        0.12 *    360.00        75.00  
70.00         0.00 *    220.00        0.13 *    370.00        31.77  
80.00         0.00 *    230.00        0.23 *    380.00        16.08  
90.00         0.00 *    240.00        0.36 *    390.00        10.27  
100.00        0.00 *    250.00        0.52 *    400.00         7.32  
110.00        0.00 *    260.00        0.62 *    410.00         6.49  
120.00        0.00 *    270.00        0.69 *    420.00         5.60  
130.00        0.00 *    280.00        0.75 *    430.00         4.62  
140.00        0.02 *    290.00        0.80 *    440.00         4.29  
150.00        0.03 *    300.00        1.20 *  
*****
```

Subarea Hydrograph Computation

Title: Design Point 10

Description: 24 Hour
100 Yr

Hydrograph No.: 12
Branch No.: 3

Subarea drainage area (acres): .78
Total upstream drainage area (acres): 0
Percent impervious area: 67
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 93

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 5

Channel routing method: Channel storage

Reach length (ft)= 44
Slope (ft/ft)= .022
Manning's n= .013

Channel type is circular: Diameter (inches)= 36

		Unit hydrograph				
Time	0.00	0.80	1.60	2.40	3.20	
Discharge	0.0000	0.1327	0.4424	0.8406	1.37	
Time	4.00	4.80	5.60	6.40	7.20	
Discharge	2.08	2.92	3.63	4.11	4.38	
Time	8.00	8.80	9.60	10.40	11.20	
Discharge	4.42	4.38	4.11	3.80	3.45	
Time	12.00	12.80	13.60	14.40	15.20	
Discharge	3.01	2.48	2.04	1.73	1.46	
Time	16.00	17.60	19.20	20.80	22.40	
Discharge	1.24	0.9158	0.6503	0.4734	0.3760	
Time	24.00	25.60	27.20	28.80	30.40	
Discharge	0.2920	0.2212	0.1548	0.0973	0.0442	
Time	32.00					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
        ious ious  erv.  erv.  Hydro- Routed  Hyd.
        Loss Excess Loss Excess graph  Upstream
*****
0.00   0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
10.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
20.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
30.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
40.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
50.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
60.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
70.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
80.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
90.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
100.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
110.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
120.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
130.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
140.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
150.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
160.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
170.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
180.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
190.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
200.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
210.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
220.00 0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
230.00 0.01 0.01 0.00 0.01 0.00 0.01 0.00 0.01
240.00 0.01 0.01 0.00 0.01 0.01 0.01 0.00 0.01
250.00 0.01 0.01 0.00 0.01 0.01 0.02 0.00 0.02
260.00 0.01 0.01 0.00 0.01 0.01 0.02 0.00 0.02
270.00 0.01 0.01 0.00 0.01 0.01 0.02 0.00 0.02
280.00 0.01 0.01 0.00 0.01 0.01 0.03 0.00 0.03
290.00 0.02 0.02 0.00 0.01 0.02 0.03 0.00 0.03
300.00 0.03 0.03 0.00 0.01 0.02 0.05 0.00 0.05
310.00 0.05 0.04 0.01 0.01 0.04 0.07 0.00 0.07
320.00 0.34 0.18 0.16 0.04 0.30 0.13 0.00 0.13
330.00 0.62 0.16 0.46 0.02 0.60 1.01 0.00 1.01
340.00 0.62 0.08 0.54 0.01 0.61 2.33 0.00 2.33
350.00 0.34 0.03 0.31 0.00 0.33 2.65 0.00 2.65
360.00 0.05 0.00 0.05 0.00 0.05 1.65 0.00 1.65
370.00 0.05 0.00 0.05 0.00 0.05 0.42 0.00 0.42
380.00 0.04 0.00 0.04 0.00 0.04 0.25 0.00 0.25
390.00 0.03 0.00 0.03 0.00 0.03 0.19 0.00 0.19
400.00 0.03 0.00 0.03 0.00 0.03 0.15 0.00 0.15
410.00 0.03 0.00 0.02 0.00 0.03 0.14 0.00 0.14
420.00 0.02 0.00 0.02 0.00 0.02 0.12 0.00 0.12
430.00 0.02 0.00 0.02 0.00 0.02 0.10 0.00 0.10
440.00 0.02 0.00 0.02 0.00 0.02 0.09 0.00 0.09
*****
Totals 2.49 0.72 1.77 0.23 2.26

```

```

Runoff volume= .1302912 acre-ft
Total volume= .1302912 acre-ft
Peak discharge (cfs)= 2.654616

```

Subarea Hydrograph Computation

Title: Design Point 11

Description: 24 Hour
100 Yr

Hydrograph No.: 13
Branch No.: 3

Subarea drainage area (acres): .18
Total upstream drainage area (acres): .78
Percent impervious area: 80
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 93

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 6.46

Channel routing method: Channel storage

Reach length (ft)= 16
Slope (ft/ft)= .02
Manning's n= .013

Channel type is circular: Diameter (inches)= 18

		Unit hydrograph				
Time	0.00	0.89	1.78	2.66	3.55	
Discharge	0.0000	0.0276	0.0920	0.1748	0.2853	
Time	4.44	5.33	6.21	7.10	7.99	
Discharge	0.4325	0.6073	0.7545	0.8558	0.9110	
Time	8.88	9.76	10.65	11.54	12.43	
Discharge	0.9202	0.9110	0.8558	0.7914	0.7177	
Time	13.31	14.20	15.09	15.98	16.86	
Discharge	0.6257	0.5153	0.4233	0.3589	0.3037	
Time	17.75	19.53	21.30	23.08	24.85	
Discharge	0.2576	0.1905	0.1353	0.0985	0.0782	
Time	26.63	28.40	30.18	31.95	33.73	
Discharge	0.0607	0.0460	0.0322	0.0202	0.0092	
Time	35.50					
Discharge	0.0000					


```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
       ous  ous  erv.  erv.  Hydro- Upstream Total
       Loss Excess Loss Excess graph  Hyd.
*****
0.00   0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
10.00  0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
20.00  0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
30.00  0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
40.00  0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
50.00  0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
60.00  0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
70.00  0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
80.00  0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
90.00  0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
100.00 0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
110.00 0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
120.00 0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
130.00 0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
140.00 0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
150.00 0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
160.00 0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
170.00 0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
180.00 0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
190.00 0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
200.00 0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
210.00 0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.01
220.00 0.01  0.01  0.00  0.01  0.00   0.00   0.00   0.01
230.00 0.01  0.01  0.00  0.01  0.00   0.00   0.01   0.01
240.00 0.01  0.01  0.00  0.01  0.01   0.00   0.01   0.02
250.00 0.01  0.01  0.00  0.01  0.01   0.01   0.02   0.02
260.00 0.01  0.01  0.00  0.01  0.01   0.01   0.02   0.03
270.00 0.01  0.01  0.00  0.01  0.01   0.01   0.02   0.03
280.00 0.01  0.01  0.00  0.01  0.01   0.01   0.03   0.03
290.00 0.02  0.02  0.00  0.01  0.02   0.01   0.03   0.04
300.00 0.03  0.03  0.00  0.01  0.02   0.01   0.05   0.06
310.00 0.05  0.04  0.01  0.01  0.04   0.02   0.07   0.09
320.00 0.34  0.18  0.16  0.04  0.30   0.03   0.13   0.16
330.00 0.62  0.16  0.46  0.02  0.60   0.25   1.01   1.26
340.00 0.62  0.08  0.54  0.01  0.61   0.56   2.33   2.89
350.00 0.34  0.03  0.31  0.00  0.33   0.64   2.65   3.30
360.00 0.05  0.00  0.05  0.00  0.05   0.42   1.65   2.07
370.00 0.05  0.00  0.05  0.00  0.05   0.12   0.42   0.54
380.00 0.04  0.00  0.04  0.00  0.04   0.07   0.25   0.31
390.00 0.03  0.00  0.03  0.00  0.03   0.05   0.19   0.24
400.00 0.03  0.00  0.03  0.00  0.03   0.04   0.15   0.18
410.00 0.03  0.00  0.02  0.00  0.03   0.03   0.14   0.17
420.00 0.02  0.00  0.02  0.00  0.02   0.03   0.12   0.15
430.00 0.02  0.00  0.02  0.00  0.02   0.02   0.10   0.12
440.00 0.02  0.00  0.02  0.00  0.02   0.02   0.09   0.12
*****
Totals 2.49  0.72  1.77  0.23  2.26

```

Runoff volume= 3.240566E-02 acre-ft
Total volume= .1626969 acre-ft
Peak discharge (cfs)= 3.299121

Branch Confluence

Title: Design Point 11 Combined

Description: 24 Hour
100 Yr

Hydrograph No.: 14
Branch No.: 2

Combined Branches: 2 3

```
*****  
Time          Flow *    Time          Flow *    Time          Flow  
*****  
10.00         0.00 *    160.00         0.05 *    310.00         1.92  
20.00         0.00 *    170.00         0.07 *    320.00         3.45  
30.00         0.00 *    180.00         0.08 *    330.00        24.69  
40.00         0.00 *    190.00         0.10 *    340.00        64.18  
50.00         0.00 *    200.00         0.11 *    350.00        94.24  
60.00         0.00 *    210.00         0.12 *    360.00       77.06  
70.00         0.00 *    220.00         0.14 *    370.00       32.31  
80.00         0.00 *    230.00         0.24 *    380.00       16.40  
90.00         0.00 *    240.00         0.37 *    390.00       10.51  
100.00        0.00 *    250.00         0.54 *    400.00        7.51  
110.00        0.00 *    260.00         0.65 *    410.00        6.67  
120.00        0.00 *    270.00         0.72 *    420.00        5.75  
130.00        0.00 *    280.00         0.78 *    430.00        4.74  
140.00        0.02 *    290.00         0.84 *    440.00        4.40  
150.00        0.03 *    300.00         1.26 *  
*****
```

Subarea Hydrograph Computation

Title: Design Point 12

Description: 24 Hour
100 Yr

Hydrograph No.: 15
Branch No.: 3

Subarea drainage area (acres): 4.32
Total upstream drainage area (acres): 0
Percent impervious area: 15
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 93

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 8.14

Channel routing method: Channel storage

Reach length (ft)= 1000
Slope (ft/ft)= .0373
Manning's n = .013

Channel type is circular: Diameter (inches)= 36

		Unit hydrograph				
Time	0.00	0.99	1.98	2.97	3.95	
Discharge	0.0000	0.5950	1.98	3.77	6.15	
Time	4.94	5.93	6.92	7.91	8.90	
Discharge	9.32	13.09	16.26	18.44	19.63	
Time	9.98	10.87	11.86	12.85	13.84	
Discharge	19.83	19.63	18.44	17.06	15.47	
Time	14.83	15.81	16.80	17.79	18.78	
Discharge	13.49	11.11	9.12	7.73	6.54	
Time	19.77	21.74	23.72	25.70	27.68	
Discharge	5.55	4.11	2.92	2.12	1.69	
Time	29.65	31.63	33.61	35.58	37.56	
Discharge	1.31	0.9916	0.6941	0.4363	0.1983	
Time	39.54					
Discharge	0.0000					

```

*****
Time   Rain Perv-  Perv-  Imp-  Imp-  Subarea  Routed  Total
       Loss Excess Loss Excess  Hydro-  Upstream  Hyd.
*****
0.00   0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
10.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
20.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
30.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
40.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
50.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
60.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
70.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
80.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
90.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
100.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
110.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
120.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
130.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
140.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
150.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
160.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
170.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
180.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
190.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
200.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
210.00 0.00  0.00  0.00  0.00  0.00    0.01    0.00    0.01
220.00 0.01  0.01  0.00  0.01  0.00    0.01    0.00    0.01
230.00 0.01  0.01  0.00  0.01  0.00    0.01    0.00    0.01
240.00 0.01  0.01  0.00  0.01  0.01    0.02    0.00    0.02
250.00 0.01  0.01  0.00  0.01  0.01    0.02    0.00    0.02
260.00 0.01  0.01  0.00  0.01  0.01    0.03    0.00    0.03
270.00 0.01  0.01  0.00  0.01  0.01    0.03    0.00    0.03
280.00 0.01  0.01  0.00  0.01  0.01    0.04    0.00    0.04
290.00 0.02  0.02  0.00  0.01  0.02    0.05    0.00    0.05
300.00 0.03  0.03  0.00  0.01  0.02    0.09    0.00    0.09
310.00 0.05  0.04  0.01  0.01  0.04    0.17    0.00    0.17
320.00 0.34  0.18  0.16  0.04  0.30    0.37    0.00    0.37
330.00 0.62  0.16  0.46  0.02  0.60    3.67    0.00    3.67
340.00 0.62  0.08  0.54  0.01  0.61    10.58   0.00    10.58
350.00 0.34  0.03  0.31  0.00  0.33    13.78   0.00    13.78
360.00 0.05  0.00  0.05  0.00  0.05    9.76    0.00    9.76
370.00 0.05  0.00  0.05  0.00  0.05    3.33    0.00    3.33
380.00 0.04  0.00  0.04  0.00  0.04    1.61    0.00    1.61
390.00 0.03  0.00  0.03  0.00  0.03    1.09    0.00    1.09
400.00 0.03  0.00  0.03  0.00  0.03    0.85    0.00    0.85
410.00 0.03  0.00  0.02  0.00  0.03    0.79    0.00    0.79
420.00 0.02  0.00  0.02  0.00  0.02    0.68    0.00    0.68
430.00 0.02  0.00  0.02  0.00  0.02    0.56    0.00    0.56
440.00 0.02  0.00  0.02  0.00  0.02    0.52    0.00    0.52
*****
Totals 2.49  0.72  1.77  0.23  2.26

```

Runoff volume= .6587604 acre-ft
Total volume= .6587604 acre-ft
Peak discharge (cfs)= 13.78137

Branch Confluence

Title: Design Point 12

Description: 24 Hour
100 Yr

Hydrograph No.: 16
Branch No.: 2

Combined Branches: 2 3

```
*****  
Time          Flow *    Time          Flow *    Time          Flow  
*****  
10.00         0.00 *    160.00         0.05 *    310.00         2.09  
20.00         0.00 *    170.00         0.07 *    320.00         3.82  
30.00         0.00 *    180.00         0.08 *    330.00        28.36  
40.00         0.00 *    190.00         0.10 *    340.00        74.76  
50.00         0.00 *    200.00         0.11 *    350.00       108.03  
60.00         0.00 *    210.00         0.13 *    360.00        86.82  
70.00         0.00 *    220.00         0.14 *    370.00        35.64  
80.00         0.00 *    230.00         0.25 *    380.00        18.01  
90.00         0.00 *    240.00         0.39 *    390.00        11.60  
100.00        0.00 *    250.00         0.57 *    400.00         8.36  
110.00        0.00 *    260.00         0.68 *    410.00         7.45  
120.00        0.00 *    270.00         0.76 *    420.00         6.43  
130.00        0.00 *    280.00         0.82 *    430.00         5.30  
140.00        0.02 *    290.00         0.89 *    440.00         4.93  
150.00        0.04 *    300.00         1.35 *  
*****
```

Subarea Hydrograph Computation

Title: Design Point 13

Description: 24 Hour
100 Yr

Hydrograph No.: 17
Branch No.: 4

Subarea drainage area (acres): 1.32
Total upstream drainage area (acres): 0
Percent impervious area: 54
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 68

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 6.31

		Unit hydrograph				
Time	0.00	0.88	1.76	2.64	3.51	
Discharge	0.0000	0.2045	0.6817	1.30	2.11	
Time	4.39	5.27	6.15	7.03	7.91	
Discharge	3.20	4.50	5.59	6.34	6.75	
Time	8.79	9.66	10.54	11.42	12.30	
Discharge	6.82	6.75	6.34	5.86	5.32	
Time	13.18	14.06	14.94	15.81	16.69	
Discharge	4.64	3.82	3.14	2.66	2.25	
Time	17.57	19.33	21.09	22.84	24.60	
Discharge	1.91	1.41	1.00	0.7294	0.5795	
Time	26.36	28.12	29.87	31.63	33.39	
Discharge	0.4499	0.3409	0.2386	0.1500	0.0682	
Time	35.14					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
       ious ious  erv.  erv.  Hydro- Routed  Hyd.
       Loss Excess Loss Excess graph  Upstream
*****
0.00   0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
10.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
20.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
30.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
40.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
50.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
60.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
70.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
80.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
90.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
100.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
110.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
120.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
130.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
140.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
150.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
160.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
170.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
180.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
190.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
200.00 0.00  0.00  0.00  0.00  0.00    0.01    0.00    0.01
210.00 0.00  0.00  0.00  0.00  0.00    0.01    0.00    0.01
220.00 0.01  0.01  0.00  0.01  0.00    0.01    0.00    0.01
230.00 0.01  0.01  0.00  0.01  0.00    0.01    0.00    0.01
240.00 0.01  0.01  0.00  0.01  0.01    0.02    0.00    0.02
250.00 0.01  0.01  0.00  0.01  0.01    0.03    0.00    0.03
260.00 0.01  0.01  0.00  0.01  0.01    0.03    0.00    0.03
270.00 0.01  0.01  0.00  0.01  0.01    0.03    0.00    0.03
280.00 0.01  0.01  0.00  0.01  0.01    0.04    0.00    0.04
290.00 0.02  0.02  0.00  0.01  0.02    0.04    0.00    0.04
300.00 0.03  0.03  0.00  0.01  0.02    0.06    0.00    0.06
310.00 0.05  0.05  0.00  0.01  0.04    0.09    0.00    0.09
320.00 0.34  0.34  0.00  0.04  0.30    0.16    0.00    0.16
330.00 0.62  0.60  0.02  0.02  0.60    1.08    0.00    1.08
340.00 0.62  0.49  0.13  0.01  0.61    2.38    0.00    2.38
350.00 0.34  0.22  0.11  0.00  0.33    3.03    0.00    3.03
360.00 0.05  0.03  0.02  0.00  0.05    2.10    0.00    2.10
370.00 0.05  0.03  0.02  0.00  0.05    0.62    0.00    0.62
380.00 0.04  0.02  0.02  0.00  0.04    0.34    0.00    0.34
390.00 0.03  0.02  0.01  0.00  0.03    0.25    0.00    0.25
400.00 0.03  0.02  0.01  0.00  0.03    0.19    0.00    0.19
410.00 0.03  0.01  0.01  0.00  0.03    0.18    0.00    0.18
420.00 0.02  0.01  0.01  0.00  0.02    0.16    0.00    0.16
430.00 0.02  0.01  0.01  0.00  0.02    0.13    0.00    0.13
440.00 0.02  0.01  0.01  0.00  0.02    0.12    0.00    0.12
*****
Totals 2.49  2.11  0.38  0.23  2.26

```

Runoff volume= .1526275 acre-ft
Total volume= .1526275 acre-ft
Peak discharge (cfs)= 3.027613

Subarea Hydrograph Computation

Title: Design Point 14

Description: 24 Hour
100 Yr

Hydrograph No.: 18
Branch No.: 4

Subarea drainage area (acres): 8.84
Total upstream drainage area (acres): 1.32
Percent impervious area: 30
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 68

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 6.85

Channel routing method: Channel storage

Reach length (ft)= 220
Slope (ft/ft)= .0951
Manning's n= .013

Channel type is circular: Diameter (inches)= 18

		Unit hydrograph				
Time	0.00	0.91	1.82	2.73	3.64	
Discharge	0.0000	1.32	4.40	8.37	13.65	
Time	4.55	5.47	6.38	7.29	8.20	
Discharge	20.69	29.06	36.10	40.95	43.59	
Time	9.11	10.02	10.93	11.84	12.75	
Discharge	44.03	43.59	40.95	37.87	34.34	
Time	13.66	14.58	15.49	16.40	17.31	
Discharge	29.94	24.66	20.25	17.17	14.53	
Time	18.22	20.04	21.86	23.69	25.51	
Discharge	12.33	9.11	6.47	4.71	3.74	
Time	27.33	29.15	30.97	32.80	34.62	
Discharge	2.91	2.20	1.54	0.9687	0.4403	
Time	36.44					
Discharge	0.0000					

Time	Rain	Perv- Loss	Perv- Excess	Imp- Loss	Imp- Excess	Subarea Hydro- graph	Routed Upstream Hyd.	Total Hyd.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
160.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
170.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02
180.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02
190.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02
200.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02
210.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.03
220.00	0.01	0.01	0.00	0.01	0.00	0.02	0.01	0.03
230.00	0.01	0.01	0.00	0.01	0.00	0.05	0.01	0.06
240.00	0.01	0.01	0.00	0.01	0.01	0.07	0.02	0.09
250.00	0.01	0.01	0.00	0.01	0.01	0.10	0.03	0.13
260.00	0.01	0.01	0.00	0.01	0.01	0.12	0.03	0.15
270.00	0.01	0.01	0.00	0.01	0.01	0.13	0.03	0.16
280.00	0.01	0.01	0.00	0.01	0.01	0.14	0.04	0.18
290.00	0.02	0.02	0.00	0.01	0.02	0.15	0.04	0.19
300.00	0.03	0.03	0.00	0.01	0.02	0.23	0.06	0.29
310.00	0.05	0.05	0.00	0.01	0.04	0.34	0.09	0.43
320.00	0.34	0.34	0.00	0.04	0.30	0.59	0.16	0.74
330.00	0.62	0.60	0.02	0.02	0.60	3.99	1.08	5.08
340.00	0.62	0.49	0.13	0.01	0.61	9.19	2.38	11.57
350.00	0.34	0.22	0.11	0.00	0.33	13.95	3.03	16.98
360.00	0.05	0.03	0.02	0.00	0.05	10.73	2.10	12.83
370.00	0.05	0.03	0.02	0.00	0.05	3.45	0.62	4.07
380.00	0.04	0.02	0.02	0.00	0.04	1.90	0.34	2.24
390.00	0.03	0.02	0.01	0.00	0.03	1.37	0.25	1.62
400.00	0.03	0.02	0.01	0.00	0.03	1.07	0.19	1.26
410.00	0.03	0.01	0.01	0.00	0.03	1.01	0.18	1.19
420.00	0.02	0.01	0.01	0.00	0.02	0.87	0.16	1.03
430.00	0.02	0.01	0.01	0.00	0.02	0.71	0.13	0.84
440.00	0.02	0.01	0.01	0.00	0.02	0.68	0.12	0.80
Totals	2.49	2.11	0.38	0.23	2.26			

Runoff volume= .6969424 acre-ft
 Total volume= .84957 acre-ft
 Peak discharge (cfs)= 16.98178

Subarea Hydrograph Computation

Title: Design Point 15

Description: 24 Hour
100 Yr

Hydrograph No.: 19
Branch No.: 4

Subarea drainage area (acres): 2.75
Total upstream drainage area (acres): 10.16
Percent impervious area: 39
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 68

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 8.5

Channel routing method: Channel storage

Reach length (ft)= 235
Slope (ft/ft)= .005
Manning's n= .016

Channel type is trapezoidal: Bottom width (ft)= 0
Sideslope (H to 1V)= 25

		Unit hydrograph				
Time	0.00	1.01	2.02	3.03	4.04	
Discharge	0.0000	0.3706	1.24	2.35	3.83	
Time	5.05	6.06	7.07	8.08	9.09	
Discharge	5.81	8.15	10.13	11.49	12.23	
Time	10.10	11.11	12.12	13.13	14.14	
Discharge	12.35	12.23	11.49	10.62	9.64	
Time	15.15	16.16	17.17	18.18	19.19	
Discharge	8.40	6.92	5.68	4.82	4.08	
Time	20.20	22.22	24.24	26.26	28.28	
Discharge	3.46	2.56	1.82	1.32	1.05	
Time	30.30	32.32	34.34	36.36	38.38	
Discharge	0.8154	0.6177	0.4324	0.2718	0.1235	
Time	40.40					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
       ious ious  erv.  erv.  Hydro- Routed  Hyd.
       Loss Excess Loss Excess graph  Upstream
*****
0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
10.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
20.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
30.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
40.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
50.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
60.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
70.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
80.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
90.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
100.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
110.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
120.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
130.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
140.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.01
150.00 0.00  0.00  0.00  0.00  0.00  0.00  0.01  0.01
160.00 0.00  0.00  0.00  0.00  0.00  0.00  0.01  0.02
170.00 0.00  0.00  0.00  0.00  0.00  0.00  0.02  0.02
180.00 0.00  0.00  0.00  0.00  0.00  0.01  0.02  0.02
190.00 0.00  0.00  0.00  0.00  0.00  0.01  0.02  0.03
200.00 0.00  0.00  0.00  0.00  0.00  0.01  0.02  0.03
210.00 0.00  0.00  0.00  0.00  0.00  0.01  0.03  0.04
220.00 0.01  0.01  0.00  0.01  0.00  0.01  0.03  0.04
230.00 0.01  0.01  0.00  0.01  0.00  0.02  0.06  0.07
240.00 0.01  0.01  0.00  0.01  0.01  0.03  0.09  0.12
250.00 0.01  0.01  0.00  0.01  0.01  0.04  0.13  0.17
260.00 0.01  0.01  0.00  0.01  0.01  0.05  0.15  0.19
270.00 0.01  0.01  0.00  0.01  0.01  0.05  0.16  0.21
280.00 0.01  0.01  0.00  0.01  0.01  0.06  0.18  0.23
290.00 0.02  0.02  0.00  0.01  0.02  0.06  0.19  0.24
300.00 0.03  0.03  0.00  0.01  0.02  0.09  0.29  0.38
310.00 0.05  0.05  0.00  0.01  0.04  0.13  0.43  0.56
320.00 0.34  0.34  0.00  0.04  0.30  0.23  0.74  0.97
330.00 0.62  0.60  0.02  0.02  0.60  1.49  5.08  6.56
340.00 0.62  0.49  0.13  0.01  0.61  3.43  11.57  15.00
350.00 0.34  0.22  0.11  0.00  0.33  4.91  16.98  21.89
360.00 0.05  0.03  0.02  0.00  0.05  3.81  12.83  16.64
370.00 0.05  0.03  0.02  0.00  0.05  1.39  4.07  5.46
380.00 0.04  0.02  0.02  0.00  0.04  0.69  2.24  2.93
390.00 0.03  0.02  0.01  0.00  0.03  0.47  1.62  2.09
400.00 0.03  0.02  0.01  0.00  0.03  0.37  1.26  1.63
410.00 0.03  0.01  0.01  0.00  0.03  0.34  1.19  1.53
420.00 0.02  0.01  0.01  0.00  0.02  0.29  1.03  1.32
430.00 0.02  0.01  0.01  0.00  0.02  0.24  0.84  1.08
440.00 0.02  0.01  0.01  0.00  0.02  0.23  0.80  1.03
*****
Totals 2.49  2.11  0.38  0.23  2.26

```

Runoff volume= .2525166 acre-ft
Total volume= 1.102087 acre-ft
Peak discharge (cfs)= 21.88879

Subarea Hydrograph Computation

Title: Design Point 16

Description: 24 Hour
100 Yr

Hydrograph No.: 20
Branch No.: 4

Subarea drainage area (acres): 4.47
Total upstream drainage area (acres): 12.91
Percent impervious area: 39
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 68

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 7.78

Channel routing method: Channel storage

Reach length (ft)= .01
Slope (ft/ft)= .001
Manning's n= .05

Channel type is trapezoidal: Bottom width (ft)= 0
Sideslope (H to 1V)= 100

		Unit hydrograph				
Time	0.00	0.97	1.93	2.90	3.87	
Discharge	0.0000	0.6294	2.10	3.99	6.50	
Time	4.83	5.80	6.77	7.73	8.70	
Discharge	9.86	13.85	17.20	19.51	20.77	
Time	9.67	10.63	11.60	12.57	13.54	
Discharge	20.98	20.77	19.51	18.04	16.36	
Time	14.50	15.47	16.44	17.40	18.37	
Discharge	14.27	11.75	9.65	8.18	6.92	
Time	19.34	21.27	23.20	25.14	27.07	
Discharge	5.87	4.34	3.08	2.24	1.78	
Time	29.00	30.94	32.87	34.80	36.74	
Discharge	1.38	1.05	0.7343	0.4615	0.2098	
Time	38.67					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
       Loss Excess Loss Excess graph  Upstream Hyd.
*****
0.00   0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
10.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
20.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
30.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
40.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
50.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
60.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
70.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
80.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
90.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
100.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
110.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
120.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
130.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
140.00 0.00 0.00 0.00 0.00 0.00 0.00 0.01 0.01
150.00 0.00 0.00 0.00 0.00 0.00 0.00 0.01 0.01
160.00 0.00 0.00 0.00 0.00 0.00 0.01 0.02 0.02
170.00 0.00 0.00 0.00 0.00 0.00 0.01 0.02 0.03
180.00 0.00 0.00 0.00 0.00 0.00 0.01 0.02 0.03
190.00 0.00 0.00 0.00 0.00 0.00 0.01 0.03 0.04
200.00 0.00 0.00 0.00 0.00 0.00 0.01 0.03 0.04
210.00 0.00 0.00 0.00 0.00 0.00 0.01 0.04 0.05
220.00 0.01 0.01 0.00 0.01 0.00 0.02 0.04 0.06
230.00 0.01 0.01 0.00 0.01 0.00 0.03 0.07 0.10
240.00 0.01 0.01 0.00 0.01 0.01 0.05 0.12 0.16
250.00 0.01 0.01 0.00 0.01 0.01 0.07 0.17 0.23
260.00 0.01 0.01 0.00 0.01 0.01 0.08 0.19 0.27
270.00 0.01 0.01 0.00 0.01 0.01 0.08 0.21 0.30
280.00 0.01 0.01 0.00 0.01 0.01 0.09 0.23 0.32
290.00 0.02 0.02 0.00 0.01 0.02 0.10 0.24 0.34
300.00 0.03 0.03 0.00 0.01 0.02 0.15 0.38 0.52
310.00 0.05 0.05 0.00 0.01 0.04 0.22 0.56 0.77
320.00 0.34 0.34 0.00 0.04 0.30 0.38 0.97 1.35
330.00 0.62 0.60 0.02 0.02 0.60 2.51 6.56 9.07
340.00 0.62 0.49 0.13 0.01 0.61 5.73 15.00 20.73
350.00 0.34 0.22 0.11 0.00 0.33 8.11 21.89 30.00
360.00 0.05 0.03 0.02 0.00 0.05 6.17 16.64 22.81
370.00 0.05 0.03 0.02 0.00 0.05 2.12 5.46 7.58
380.00 0.04 0.02 0.02 0.00 0.04 1.09 2.93 4.02
390.00 0.03 0.02 0.01 0.00 0.03 0.76 2.09 2.85
400.00 0.03 0.02 0.01 0.00 0.03 0.59 1.63 2.22
410.00 0.03 0.01 0.01 0.00 0.03 0.55 1.53 2.08
420.00 0.02 0.01 0.01 0.00 0.02 0.48 1.32 1.80
430.00 0.02 0.01 0.01 0.00 0.02 0.39 1.08 1.47
440.00 0.02 0.01 0.01 0.00 0.02 0.37 1.03 1.40
*****
Totals 2.49 2.11 0.38 0.23 2.26

```

Runoff volume= .413072 acre-ft
Total volume= 1.515159 acre-ft
Peak discharge (cfs)= 29.99887

Subarea Hydrograph Computation

Title: Design Point 17

Description: 24 Hour
100 Yr

Hydrograph No.: 21
Branch No.: 4

Subarea drainage area (acres): .63
Total upstream drainage area (acres): 17.38
Percent impervious area: 100
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 68

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 5

Channel routing method: Channel storage

Reach length (ft)= 61
Slope (ft/ft)= .0277
Manning's n= .013

Channel type is circular: Diameter (inches)= 24

		Unit hydrograph				
Time	0.00	0.80	1.60	2.40	3.20	
Discharge	0.0000	0.1072	0.3573	0.6789	1.11	
Time	4.00	4.80	5.60	6.40	7.20	
Discharge	1.68	2.36	2.93	3.32	3.54	
Time	8.00	8.80	9.60	10.40	11.20	
Discharge	3.57	3.54	3.32	3.07	2.79	
Time	12.00	12.80	13.60	14.40	15.20	
Discharge	2.43	2.00	1.64	1.39	1.18	
Time	16.00	17.60	19.20	20.80	22.40	
Discharge	1.00	0.7397	0.5253	0.3823	0.3037	
Time	24.00	25.60	27.20	28.80	30.40	
Discharge	0.2358	0.1787	0.1251	0.0786	0.0357	
Time	32.00					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
       ous  ous  erv.  erv.  Hydro-  Upstream  Hyd.
       Loss Excess Loss Excess graph      Hyd.
*****
0.00   0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
10.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
20.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
30.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
40.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
50.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
60.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
70.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
80.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
90.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
100.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
110.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
120.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
130.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
140.00 0.00  0.00  0.00  0.00  0.00    0.00    0.01    0.01
150.00 0.00  0.00  0.00  0.00  0.00    0.00    0.01    0.02
160.00 0.00  0.00  0.00  0.00  0.00    0.00    0.02    0.02
170.00 0.00  0.00  0.00  0.00  0.00    0.00    0.03    0.03
180.00 0.00  0.00  0.00  0.00  0.00    0.00    0.03    0.04
190.00 0.00  0.00  0.00  0.00  0.00    0.00    0.04    0.04
200.00 0.00  0.00  0.00  0.00  0.00    0.00    0.04    0.05
210.00 0.00  0.00  0.00  0.00  0.00    0.00    0.05    0.05
220.00 0.01  0.01  0.00  0.01  0.00    0.01    0.06    0.06
230.00 0.01  0.01  0.00  0.01  0.00    0.01    0.10    0.11
240.00 0.01  0.01  0.00  0.01  0.01    0.02    0.16    0.18
250.00 0.01  0.01  0.00  0.01  0.01    0.02    0.23    0.26
260.00 0.01  0.01  0.00  0.01  0.01    0.03    0.27    0.30
270.00 0.01  0.01  0.00  0.01  0.01    0.03    0.30    0.33
280.00 0.01  0.01  0.00  0.01  0.01    0.03    0.32    0.35
290.00 0.02  0.02  0.00  0.01  0.02    0.03    0.34    0.37
300.00 0.03  0.03  0.00  0.01  0.02    0.05    0.52    0.58
310.00 0.05  0.05  0.00  0.01  0.04    0.08    0.77    0.85
320.00 0.34  0.34  0.00  0.04  0.30    0.14    1.35    1.48
330.00 0.62  0.60  0.02  0.02  0.60    0.97    9.07    10.03
340.00 0.62  0.49  0.13  0.01  0.61    2.04    20.73    22.77
350.00 0.34  0.22  0.11  0.00  0.33    2.24    30.00    32.24
360.00 0.05  0.03  0.02  0.00  0.05    1.37    22.81    24.18
370.00 0.05  0.03  0.02  0.00  0.05    0.34    7.58    7.92
380.00 0.04  0.02  0.02  0.00  0.04    0.20    4.02    4.23
390.00 0.03  0.02  0.01  0.00  0.03    0.16    2.85    3.01
400.00 0.03  0.02  0.01  0.00  0.03    0.12    2.22    2.34
410.00 0.03  0.01  0.01  0.00  0.03    0.11    2.08    2.20
420.00 0.02  0.01  0.01  0.00  0.02    0.10    1.80    1.90
430.00 0.02  0.01  0.01  0.00  0.02    0.08    1.47    1.55
440.00 0.02  0.01  0.01  0.00  0.02    0.08    1.40    1.48
*****
Totals 2.49  2.11  0.38  0.23  2.26

```

Runoff volume= .113455 acre-ft
Total volume= 1.628614 acre-ft
Peak discharge (cfs)= 32.23705

Subarea Hydrograph Computation

Title: Design Point 18

Description: 24 Hour
100 Yr

Hydrograph No.: 22
Branch No.: 4

Subarea drainage area (acres): 28.34
Total upstream drainage area (acres): 18.01
Percent impervious area: 45
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 68

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 11.11

Channel routing method: Channel storage

Reach length (ft)= 58
Slope (ft/ft)= .0405
Manning's n= .013

Channel type is circular: Diameter (inches)= 24

		Unit hydrograph				
Time	0.00	1.17	2.33	3.50	4.67	
Discharge	0.0000	3.31	11.02	20.94	34.17	
Time	5.83	7.00	8.17	9.33	10.50	
Discharge	51.81	72.75	90.39	102.51	109.13	
Time	11.67	12.83	14.00	15.17	16.33	
Discharge	110.23	109.13	102.51	94.80	85.98	
Time	17.50	18.67	19.83	21.00	22.17	
Discharge	74.96	61.73	50.71	42.99	36.38	
Time	23.33	25.67	28.00	30.33	32.66	
Discharge	30.86	22.82	16.20	11.79	9.37	
Time	35.00	37.33	39.66	42.00	44.33	
Discharge	7.28	5.51	3.86	2.43	1.10	
Time	46.66					
Discharge	0.0000					


```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
       Loss Excess Loss Excess graph Upstream Hyd.
*****
0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
10.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
20.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
30.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
40.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
50.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
60.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
70.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
80.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
90.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
100.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
110.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
120.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
130.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
140.00 0.00  0.00  0.00  0.00  0.00  0.01  0.01  0.02
150.00 0.00  0.00  0.00  0.00  0.00  0.03  0.02  0.04
160.00 0.00  0.00  0.00  0.00  0.00  0.04  0.02  0.07
170.00 0.00  0.00  0.00  0.00  0.00  0.05  0.03  0.08
180.00 0.00  0.00  0.00  0.00  0.00  0.07  0.04  0.10
190.00 0.00  0.00  0.00  0.00  0.00  0.08  0.04  0.12
200.00 0.00  0.00  0.00  0.00  0.00  0.09  0.05  0.14
210.00 0.00  0.00  0.00  0.00  0.00  0.10  0.05  0.15
220.00 0.01  0.01  0.00  0.01  0.00  0.11  0.06  0.17
230.00 0.01  0.01  0.00  0.01  0.00  0.19  0.11  0.30
240.00 0.01  0.01  0.00  0.01  0.01  0.30  0.18  0.48
250.00 0.01  0.01  0.00  0.01  0.01  0.44  0.26  0.69
260.00 0.01  0.01  0.00  0.01  0.01  0.53  0.30  0.83
270.00 0.01  0.01  0.00  0.01  0.01  0.59  0.33  0.92
280.00 0.01  0.01  0.00  0.01  0.01  0.64  0.35  0.99
290.00 0.02  0.02  0.00  0.01  0.02  0.68  0.37  1.06
300.00 0.03  0.03  0.00  0.01  0.02  0.99  0.58  1.57
310.00 0.05  0.05  0.00  0.01  0.04  1.46  0.85  2.31
320.00 0.34  0.34  0.00  0.04  0.30  2.48  1.48  3.96
330.00 0.62  0.60  0.02  0.02  0.60  15.18  10.03  25.22
340.00 0.62  0.49  0.13  0.01  0.61  36.44  22.77  59.21
350.00 0.34  0.22  0.11  0.00  0.33  52.47  32.24  84.71
360.00 0.05  0.03  0.02  0.00  0.05  43.77  24.18  67.95
370.00 0.05  0.03  0.02  0.00  0.05  19.48  7.92  27.40
380.00 0.04  0.02  0.02  0.00  0.04  9.23  4.23  13.46
390.00 0.03  0.02  0.01  0.00  0.03  5.83  3.01  8.84
400.00 0.03  0.02  0.01  0.00  0.03  4.13  2.34  6.47
410.00 0.03  0.01  0.01  0.00  0.03  3.73  2.20  5.92
420.00 0.02  0.01  0.01  0.00  0.02  3.26  1.90  5.16
430.00 0.02  0.01  0.01  0.00  0.02  2.70  1.55  4.25
440.00 0.02  0.01  0.01  0.00  0.02  2.49  1.48  3.97
*****
Totals 2.49  2.11  0.38  0.23  2.26

```

Runoff volume= 2.84239 acre-ft
Total volume= 4.471004 acre-ft
Peak discharge (cfs)= 84.70857

Subarea Hydrograph Computation

Title: Design Point 19

Description: 24 Hour
100 Yr

Hydrograph No.: 23
Branch No.: 4

Subarea drainage area (acres): .89
Total upstream drainage area (acres): 46.35
Percent impervious area: 39
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 68

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 9.09

Channel routing method: Channel storage

Reach length (ft)= 440
Slope (ft/ft)= .04
Manning's n= .013

Channel type is circular: Diameter (inches)= 30

		Unit hydrograph				
Time	0.00	1.05	2.09	3.14	4.18	
Discharge	0.0000	0.1159	0.3863	0.7340	1.20	
Time	5.23	6.27	7.32	8.36	9.41	
Discharge	1.82	2.55	3.17	3.59	3.82	
Time	10.45	11.50	12.54	13.59	14.64	
Discharge	3.86	3.82	3.59	3.32	3.01	
Time	15.68	16.73	17.77	18.82	19.86	
Discharge	2.63	2.16	1.78	1.51	1.27	
Time	20.91	23.00	25.09	27.18	29.27	
Discharge	1.08	0.7996	0.5679	0.4133	0.3284	
Time	31.36	33.45	35.54	37.63	39.73	
Discharge	0.2550	0.1931	0.1352	0.0850	0.0386	
Time	41.82					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
        ious ious  erv.  erv.  Hydro- Upstream Total
        Loss Excess Loss Excess graph   Hyd.
*****
0.00   0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
10.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
20.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
30.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
40.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
50.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
60.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
70.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
80.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
90.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
100.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
110.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
120.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
130.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
140.00 0.00  0.00  0.00  0.00  0.00    0.00    0.02    0.02
150.00 0.00  0.00  0.00  0.00  0.00    0.00    0.04    0.04
160.00 0.00  0.00  0.00  0.00  0.00    0.00    0.07    0.07
170.00 0.00  0.00  0.00  0.00  0.00    0.00    0.08    0.09
180.00 0.00  0.00  0.00  0.00  0.00    0.00    0.10    0.11
190.00 0.00  0.00  0.00  0.00  0.00    0.00    0.12    0.13
200.00 0.00  0.00  0.00  0.00  0.00    0.00    0.14    0.14
210.00 0.00  0.00  0.00  0.00  0.00    0.00    0.15    0.16
220.00 0.01  0.01  0.00  0.01  0.00    0.00    0.17    0.18
230.00 0.01  0.01  0.00  0.01  0.00    0.01    0.30    0.31
240.00 0.01  0.01  0.00  0.01  0.01    0.01    0.48    0.49
250.00 0.01  0.01  0.00  0.01  0.01    0.01    0.69    0.71
260.00 0.01  0.01  0.00  0.01  0.01    0.01    0.83    0.84
270.00 0.01  0.01  0.00  0.01  0.01    0.02    0.92    0.94
280.00 0.01  0.01  0.00  0.01  0.01    0.02    0.99    1.01
290.00 0.02  0.02  0.00  0.01  0.02    0.02    1.06    1.08
300.00 0.03  0.03  0.00  0.01  0.02    0.03    1.57    1.59
310.00 0.05  0.05  0.00  0.01  0.04    0.04    2.31    2.35
320.00 0.34  0.34  0.00  0.04  0.30    0.07    3.96    4.04
330.00 0.62  0.60  0.02  0.02  0.60    0.47    25.22    25.68
340.00 0.62  0.49  0.13  0.01  0.61    1.09    59.21    60.29
350.00 0.34  0.22  0.11  0.00  0.33    1.57    84.71    86.27
360.00 0.05  0.03  0.02  0.00  0.05    1.24    67.95    69.20
370.00 0.05  0.03  0.02  0.00  0.05    0.48    27.40    27.88
380.00 0.04  0.02  0.02  0.00  0.04    0.24    13.46    13.70
390.00 0.03  0.02  0.01  0.00  0.03    0.16     8.84     9.00
400.00 0.03  0.02  0.01  0.00  0.03    0.12     6.47     6.59
410.00 0.03  0.01  0.01  0.00  0.03    0.11     5.92     6.03
420.00 0.02  0.01  0.01  0.00  0.02    0.10     5.16     5.25
430.00 0.02  0.01  0.01  0.00  0.02    0.08     4.25     4.33
440.00 0.02  0.01  0.01  0.00  0.02    0.07     3.97     4.05
*****
Totals 2.49  2.11  0.38  0.23  2.26

```

Runoff volume= 8.160841E-02 acre-ft
Total volume= 4.552611 acre-ft
Peak discharge (cfs)= 86.27495

Subarea Hydrograph Computation

Title: Design Point 20

Description: 24 Hour
100 Yr

Hydrograph No.: 24
Branch No.: 4

Subarea drainage area (acres): .9
Total upstream drainage area (acres): 47.24
Percent impervious area: 39
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 68

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 7.64

Channel routing method: Channel storage

Reach length (ft)= 30
Slope (ft/ft)= .04
Manning's n= .013

Channel type is circular: Diameter (inches)= 30

		Unit hydrograph				
Time	0.00	0.96	1.92	2.88	3.83	
Discharge	0.0000	0.1278	0.4261	0.8096	1.32	
Time	4.79	5.75	6.71	7.67	8.63	
Discharge	2.00	2.81	3.49	3.96	4.22	
Time	9.58	10.54	11.50	12.46	13.42	
Discharge	4.26	4.22	3.96	3.66	3.32	
Time	14.38	15.33	16.29	17.25	18.21	
Discharge	2.90	2.39	1.96	1.66	1.41	
Time	19.17	21.08	23.00	24.92	26.84	
Discharge	1.19	0.8820	0.6264	0.4559	0.3622	
Time	28.75	30.67	32.59	34.50	36.42	
Discharge	0.2812	0.2131	0.1491	0.0937	0.0426	
Time	38.34					
Discharge	0.0000					

Time	Rain	Perv- Loss	Perv- Excess	Imp- Loss	Imp- Excess	Subarea Hydro- graph	Routed Upstream Hyd.	Total Hyd.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
150.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04
160.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.07
170.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.09
180.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.11
190.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.13
200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.14
210.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.16
220.00	0.01	0.01	0.00	0.01	0.00	0.00	0.18	0.18
230.00	0.01	0.01	0.00	0.01	0.00	0.01	0.31	0.31
240.00	0.01	0.01	0.00	0.01	0.01	0.01	0.49	0.50
250.00	0.01	0.01	0.00	0.01	0.01	0.01	0.71	0.72
260.00	0.01	0.01	0.00	0.01	0.01	0.02	0.84	0.86
270.00	0.01	0.01	0.00	0.01	0.01	0.02	0.94	0.95
280.00	0.01	0.01	0.00	0.01	0.01	0.02	1.01	1.03
290.00	0.02	0.02	0.00	0.01	0.02	0.02	1.08	1.10
300.00	0.03	0.03	0.00	0.01	0.02	0.03	1.59	1.62
310.00	0.05	0.05	0.00	0.01	0.04	0.04	2.35	2.39
320.00	0.34	0.34	0.00	0.04	0.30	0.08	4.04	4.11
330.00	0.62	0.60	0.02	0.02	0.60	0.51	25.68	26.19
340.00	0.62	0.49	0.13	0.01	0.61	1.16	60.29	61.45
350.00	0.34	0.22	0.11	0.00	0.33	1.64	86.27	87.91
360.00	0.05	0.03	0.02	0.00	0.05	1.24	69.20	70.44
370.00	0.05	0.03	0.02	0.00	0.05	0.42	27.88	28.30
380.00	0.04	0.02	0.02	0.00	0.04	0.22	13.70	13.91
390.00	0.03	0.02	0.01	0.00	0.03	0.15	9.00	9.15
400.00	0.03	0.02	0.01	0.00	0.03	0.12	6.59	6.71
410.00	0.03	0.01	0.01	0.00	0.03	0.11	6.03	6.14
420.00	0.02	0.01	0.01	0.00	0.02	0.10	5.25	5.35
430.00	0.02	0.01	0.01	0.00	0.02	0.08	4.33	4.41
440.00	0.02	0.01	0.01	0.00	0.02	0.07	4.05	4.12
Totals	2.49	2.11	0.38	0.23	2.26			

Runoff volume= 8.328284E-02 acre-ft
 Total volume= 4.635895 acre-ft
 Peak discharge (cfs)= 87.91299

Subarea Hydrograph Computation

Title: Design Point 22

Description: 24 Hour
100 Yr

Hydrograph No.: 25
Branch No.: 4

Subarea drainage area (acres): 1.17
Total upstream drainage area (acres): 48.14
Percent impervious area: 85
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 68

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 10.37

Channel routing method: Channel storage

Reach length (ft)= 900
Slope (ft/ft)= .03
Manning's n= .013

Channel type is circular: Diameter (inches)= 30

		Unit hydrograph				
Time	0.00	1.12	2.24	3.37	4.49	
Discharge	0.0000	0.1419	0.4731	0.8988	1.47	
Time	5.61	6.73	7.86	8.98	10.10	
Discharge	2.22	3.12	3.88	4.40	4.68	
Time	11.22	12.34	13.47	14.59	15.71	
Discharge	4.73	4.68	4.40	4.07	3.69	
Time	16.83	17.96	19.08	20.20	21.32	
Discharge	3.22	2.65	2.18	1.85	1.56	
Time	22.44	24.69	26.93	29.18	31.42	
Discharge	1.32	0.9793	0.6954	0.5062	0.4021	
Time	33.67	35.91	38.15	40.40	42.64	
Discharge	0.3122	0.2365	0.1656	0.1041	0.0473	
Time	44.89					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
       ious ious  erv.  erv.  Hydro- Upstream Total
       Loss Excess Loss Excess graph  Hyd.
*****
0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
10.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
20.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
30.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
40.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
50.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
60.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
70.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
80.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
90.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
100.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
110.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
120.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
130.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
140.00 0.00  0.00  0.00  0.00  0.00  0.00  0.02  0.02
150.00 0.00  0.00  0.00  0.00  0.00  0.00  0.04  0.04
160.00 0.00  0.00  0.00  0.00  0.00  0.00  0.06  0.07
170.00 0.00  0.00  0.00  0.00  0.00  0.00  0.08  0.09
180.00 0.00  0.00  0.00  0.00  0.00  0.01  0.10  0.11
190.00 0.00  0.00  0.00  0.00  0.00  0.01  0.12  0.13
200.00 0.00  0.00  0.00  0.00  0.00  0.01  0.14  0.15
210.00 0.00  0.00  0.00  0.00  0.00  0.01  0.15  0.16
220.00 0.01  0.01  0.00  0.01  0.00  0.01  0.17  0.18
230.00 0.01  0.01  0.00  0.01  0.00  0.02  0.28  0.29
240.00 0.01  0.01  0.00  0.01  0.01  0.02  0.45  0.47
250.00 0.01  0.01  0.00  0.01  0.01  0.04  0.66  0.69
260.00 0.01  0.01  0.00  0.01  0.01  0.04  0.82  0.86
270.00 0.01  0.01  0.00  0.01  0.01  0.05  0.93  0.97
280.00 0.01  0.01  0.00  0.01  0.01  0.05  1.01  1.06
290.00 0.02  0.02  0.00  0.01  0.02  0.05  1.08  1.13
300.00 0.03  0.03  0.00  0.01  0.02  0.08  1.54  1.62
310.00 0.05  0.05  0.00  0.01  0.04  0.12  2.28  2.39
320.00 0.34  0.34  0.00  0.04  0.30  0.20  3.86  4.05
330.00 0.62  0.60  0.02  0.02  0.60  1.25  24.33  25.58
340.00 0.62  0.49  0.13  0.01  0.61  2.87  58.76  61.63
350.00 0.34  0.22  0.11  0.00  0.33  3.60  75.72  79.32
360.00 0.05  0.03  0.02  0.00  0.05  2.69  75.72  78.41
370.00 0.05  0.03  0.02  0.00  0.05  1.10  31.59  32.69
380.00 0.04  0.02  0.02  0.00  0.04  0.51  15.25  15.76
390.00 0.03  0.02  0.01  0.00  0.03  0.32  9.68  10.00
400.00 0.03  0.02  0.01  0.00  0.03  0.23  6.98  7.21
410.00 0.03  0.01  0.01  0.00  0.03  0.21  6.21  6.41
420.00 0.02  0.01  0.01  0.00  0.02  0.18  5.44  5.62
430.00 0.02  0.01  0.01  0.00  0.02  0.15  4.55  4.70
440.00 0.02  0.01  0.01  0.00  0.02  0.14  4.16  4.30
*****
Totals 2.49  2.11  0.38  0.23  2.26

```

Runoff volume= .1911849 acre-ft
Total volume= 4.737809 acre-ft
Peak discharge (cfs)= 79.32156

Subarea Hydrograph Computation

Title: Design point 21

Description: 24 Hour
100 Yr

Hydrograph No.: 26
Branch No.: 5

Subarea drainage area (acres): 10.89
Total upstream drainage area (acres): 0
Percent impervious area: 85
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 68

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 10.11

		Unit hydrograph				
Time	0.00	1.11	2.21	3.32	4.43	
Discharge	0.0000	1.34	4.47	8.48	13.84	
Time	5.53	6.64	7.75	8.85	9.96	
Discharge	20.99	29.47	36.62	41.53	44.21	
Time	11.07	12.17	13.28	14.39	15.49	
Discharge	44.65	44.21	41.53	38.40	34.83	
Time	16.60	17.71	18.81	19.92	21.03	
Discharge	30.36	25.01	20.54	17.41	14.74	
Time	22.13	24.35	26.56	28.77	30.98	
Discharge	12.50	9.24	6.56	4.78	3.80	
Time	33.20	35.41	37.62	39.84	42.05	
Discharge	2.95	2.23	1.56	0.9824	0.4465	
Time	44.26					
Discharge	0.0000					


```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
       ous  ous  erv.  erv.  Hydro-  Upstream  Hyd.
       Loss Excess Loss Excess graph  Hyd.
*****
0.00   0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
10.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
20.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
30.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
40.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
50.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
60.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
70.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
80.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
90.00  0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
100.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
110.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
120.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
130.00 0.00  0.00  0.00  0.00  0.00    0.00    0.00    0.00
140.00 0.00  0.00  0.00  0.00  0.00    0.01    0.00    0.01
150.00 0.00  0.00  0.00  0.00  0.00    0.02    0.00    0.02
160.00 0.00  0.00  0.00  0.00  0.00    0.03    0.00    0.03
170.00 0.00  0.00  0.00  0.00  0.00    0.04    0.00    0.04
180.00 0.00  0.00  0.00  0.00  0.00    0.05    0.00    0.05
190.00 0.00  0.00  0.00  0.00  0.00    0.06    0.00    0.06
200.00 0.00  0.00  0.00  0.00  0.00    0.07    0.00    0.07
210.00 0.00  0.00  0.00  0.00  0.00    0.07    0.00    0.07
220.00 0.01  0.01  0.00  0.01  0.00    0.08    0.00    0.08
230.00 0.01  0.01  0.00  0.01  0.00    0.14    0.00    0.14
240.00 0.01  0.01  0.00  0.01  0.01    0.23    0.00    0.23
250.00 0.01  0.01  0.00  0.01  0.01    0.33    0.00    0.33
260.00 0.01  0.01  0.00  0.01  0.01    0.39    0.00    0.39
270.00 0.01  0.01  0.00  0.01  0.01    0.44    0.00    0.44
280.00 0.01  0.01  0.00  0.01  0.01    0.47    0.00    0.47
290.00 0.02  0.02  0.00  0.01  0.02    0.50    0.00    0.50
300.00 0.03  0.03  0.00  0.01  0.02    0.74    0.00    0.74
310.00 0.05  0.05  0.00  0.01  0.04    1.09    0.00    1.09
320.00 0.34  0.34  0.00  0.04  0.30    1.87    0.00    1.87
330.00 0.62  0.60  0.02  0.02  0.60    11.79    0.00    11.79
340.00 0.62  0.49  0.13  0.01  0.61    27.03    0.00    27.03
350.00 0.34  0.22  0.11  0.00  0.33    33.71    0.00    33.71
360.00 0.05  0.03  0.02  0.00  0.05    24.95    0.00    24.95
370.00 0.05  0.03  0.02  0.00  0.05     9.99    0.00     9.99
380.00 0.04  0.02  0.02  0.00  0.04     4.64    0.00     4.64
390.00 0.03  0.02  0.01  0.00  0.03     2.94    0.00     2.94
400.00 0.03  0.02  0.01  0.00  0.03     2.13    0.00     2.13
410.00 0.03  0.01  0.01  0.00  0.03     1.93    0.00     1.93
420.00 0.02  0.01  0.01  0.00  0.02     1.68    0.00     1.68
430.00 0.02  0.01  0.01  0.00  0.02     1.38    0.00     1.38
440.00 0.02  0.01  0.01  0.00  0.02     1.28    0.00     1.28
*****
Totals 2.49  2.11  0.38  0.23  2.26

```

Runoff volume= 1.782813 acre-ft
Total volume= 1.782813 acre-ft
Peak discharge (cfs)= 33.7136

Branch Confluence

Title: Design Point 22

Description: 24 Hour
100 Yr

Hydrograph No.: 27
Branch No.: 2

Combined Branches: 2 3 4 5

```

*****
Time          Flow %      Time          Flow %      Time          Flow
*****
10.00         0.00 %    160.00         0.15 %    310.00         5.58
20.00         0.00 %    170.00         0.19 %    320.00         9.75
30.00         0.00 %    180.00         0.24 %    330.00        65.73
40.00         0.00 %    190.00         0.29 %    340.00       163.42
50.00         0.00 %    200.00         0.32 %    350.00       221.06
60.00         0.00 %    210.00         0.36 %    360.00       190.18
70.00         0.00 %    220.00         0.41 %    370.00        78.33
80.00         0.00 %    230.00         0.68 %    380.00        38.41
90.00         0.00 %    240.00         1.09 %    390.00        24.53
100.00        0.00 %    250.00         1.59 %    400.00        17.69
110.00        0.00 %    260.00         1.93 %    410.00        15.80
120.00        0.00 %    270.00         2.17 %    420.00        13.72
130.00        0.01 %    280.00         2.35 %    430.00        11.38
140.00        0.05 %    290.00         2.52 %    440.00        10.51
150.00        0.10 %    300.00         3.72 %
*****

```

Channel Routing

Title: Design Point 22 Routed Thru Pipe

Description: 24 Hour
100 Yr

Hydrograph No.: 28
Branch No.: 2

Channel routing method: Channel storage

Reach length (ft)= 205
Slope (ft/ft)= .0616
Manning's n= .013

Channel type is circular: Diameter (inches)= 36

Routed Hydrograph

```
*****  
Time Flow * Time Flow * Time Flow  
*****  
10.00 0.00 * 160.00 0.15 * 310.00 5.54  
20.00 0.00 * 170.00 0.19 * 320.00 9.66  
30.00 0.00 * 180.00 0.24 * 330.00 65.65  
40.00 0.00 * 190.00 0.29 * 340.00 101.46  
50.00 0.00 * 200.00 0.32 * 350.00 176.43  
60.00 0.00 * 210.00 0.36 * 360.00 176.43  
70.00 0.00 * 220.00 0.40 * 370.00 176.43  
80.00 0.00 * 230.00 0.67 * 380.00 115.37  
90.00 0.00 * 240.00 1.07 * 390.00 24.75  
100.00 0.00 * 250.00 1.57 * 400.00 17.80  
110.00 0.00 * 260.00 1.92 * 410.00 15.82  
120.00 0.00 * 270.00 2.16 * 420.00 13.75  
130.00 0.01 * 280.00 2.35 * 430.00 11.43  
140.00 0.05 * 290.00 2.51 * 440.00 10.53  
150.00 0.09 * 300.00 3.69 *  
*****
```

Channel capacity was exceeded.

Maximum ponded storage at channel inlet (cubic-ft)= 28389.83

Channel Routing

Title: Design Point 22 Routed Thru Channel

Description: 24 Hour
100 Yr

Hydrograph No.: 29
Branch No.: 2

Channel routing method: Channel storage

Reach length (ft)= 415
Slope (ft/ft)= .0372
Manning's n= .035

Channel type is trapezoidal: Bottom width (ft)= 3
Sideslope (H to 1V)= 2

Routed Hydrograph

```
*****  
Time          Flow *    Time          Flow *    Time          Flow  
*****  
10.00         0.00 *    160.00         0.15 *    310.00         5.54  
20.00         0.00 *    170.00         0.19 *    320.00         9.66  
30.00         0.00 *    180.00         0.24 *    330.00        65.65  
40.00         0.00 *    190.00         0.29 *    340.00       101.46  
50.00         0.00 *    200.00         0.32 *    350.00       176.43  
60.00         0.00 *    210.00         0.36 *    360.00       176.43  
70.00         0.00 *    220.00         0.40 *    370.00       176.43  
80.00         0.00 *    230.00         0.67 *    380.00       115.37  
90.00         0.00 *    240.00         1.07 *    390.00        24.75  
100.00        0.00 *    250.00         1.57 *    400.00        17.80  
110.00        0.00 *    260.00         1.92 *    410.00        15.82  
120.00        0.00 *    270.00         2.16 *    420.00        13.75  
130.00        0.01 *    280.00         2.35 *    430.00        11.43  
140.00        0.05 *    290.00         2.51 *    440.00        10.53  
150.00        0.09 *    300.00         3.69 *  
*****
```

Subarea Hydrograph Computation

Title: Design Point 23

Description: 24 Hour
100 Yr

Hydrograph No.: 30
Branch No.: 3

Subarea drainage area (acres): 8.92
Total upstream drainage area (acres): 0
Percent impervious area: 85
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 68

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 8.01

		Unit hydrograph				
Time	0.00	0.98	1.96	2.94	3.92	
Discharge	0.0000	1.24	4.13	7.84	12.80	
Time	4.90	5.88	6.86	7.84	8.83	
Discharge	19.40	27.24	33.85	38.39	40.86	
Time	9.81	10.79	11.77	12.75	13.73	
Discharge	41.28	40.86	38.39	35.50	32.19	
Time	14.71	15.69	16.67	17.65	18.63	
Discharge	28.07	23.11	18.99	16.10	13.62	
Time	19.61	21.57	23.53	25.50	27.46	
Discharge	11.56	8.54	6.07	4.42	3.51	
Time	29.42	31.38	33.34	35.30	37.26	
Discharge	2.72	2.06	1.44	0.9081	0.4128	
Time	39.22					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
       ious ious  erv.  erv.  Hydro- Routed  Hyd.
       Loss Excess Loss Excess graph  Upstream
*****
0.00   0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
10.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
20.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
30.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
40.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
50.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
60.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
70.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
80.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
90.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
100.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
110.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
120.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
130.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
140.00 0.00 0.00 0.00 0.00 0.00 0.01 0.00 0.01
150.00 0.00 0.00 0.00 0.00 0.00 0.02 0.00 0.02
160.00 0.00 0.00 0.00 0.00 0.00 0.03 0.00 0.03
170.00 0.00 0.00 0.00 0.00 0.00 0.03 0.00 0.03
180.00 0.00 0.00 0.00 0.00 0.00 0.04 0.00 0.04
190.00 0.00 0.00 0.00 0.00 0.00 0.05 0.00 0.05
200.00 0.00 0.00 0.00 0.00 0.00 0.05 0.00 0.05
210.00 0.00 0.00 0.00 0.00 0.00 0.06 0.00 0.06
220.00 0.01 0.01 0.00 0.01 0.00 0.07 0.00 0.07
230.00 0.01 0.01 0.00 0.01 0.00 0.12 0.00 0.12
240.00 0.01 0.01 0.00 0.01 0.01 0.19 0.00 0.19
250.00 0.01 0.01 0.00 0.01 0.01 0.28 0.00 0.28
260.00 0.01 0.01 0.00 0.01 0.01 0.33 0.00 0.33
270.00 0.01 0.01 0.00 0.01 0.01 0.36 0.00 0.36
280.00 0.01 0.01 0.00 0.01 0.01 0.39 0.00 0.39
290.00 0.02 0.02 0.00 0.01 0.02 0.42 0.00 0.42
300.00 0.03 0.03 0.00 0.01 0.02 0.63 0.00 0.63
310.00 0.05 0.05 0.00 0.01 0.04 0.93 0.00 0.93
320.00 0.34 0.34 0.00 0.04 0.30 1.62 0.00 1.62
330.00 0.62 0.60 0.02 0.02 0.60 10.78 0.00 10.78
340.00 0.62 0.49 0.13 0.01 0.61 23.84 0.00 23.84
350.00 0.34 0.22 0.11 0.00 0.33 28.43 0.00 28.43
360.00 0.05 0.03 0.02 0.00 0.05 19.56 0.00 19.56
370.00 0.05 0.03 0.02 0.00 0.05 6.57 0.00 6.57
380.00 0.04 0.02 0.02 0.00 0.04 3.19 0.00 3.19
390.00 0.03 0.02 0.01 0.00 0.03 2.17 0.00 2.17
400.00 0.03 0.02 0.01 0.00 0.03 1.68 0.00 1.68
410.00 0.03 0.01 0.01 0.00 0.03 1.56 0.00 1.56
420.00 0.02 0.01 0.01 0.00 0.02 1.35 0.00 1.35
430.00 0.02 0.01 0.01 0.00 0.02 1.10 0.00 1.10
440.00 0.02 0.01 0.01 0.00 0.02 1.04 0.00 1.04
*****
Totals 2.49 2.11 0.38 0.23 2.26

```

Runoff volume= 1.465465 acre-ft
Total volume= 1.465465 acre-ft
Peak discharge (cfs)= 28.43056

Branch Confluence

Title: Design Point 23 Combined

Description: 24 Hour
100 Yr

Hydrograph No.: 31
Branch No.: 2

Combined Branches: 2 3

```
*****  
Time      Flow *      Time      Flow *      Time      Flow  
*****  
10.00     0.00 *      160.00     0.17 *      310.00     6.47  
20.00     0.00 *      170.00     0.23 *      320.00     11.28  
30.00     0.00 *      180.00     0.28 *      330.00     76.43  
40.00     0.00 *      190.00     0.34 *      340.00     125.29  
50.00     0.00 *      200.00     0.38 *      350.00     204.86  
60.00     0.00 *      210.00     0.42 *      360.00     195.99  
70.00     0.00 *      220.00     0.47 *      370.00     183.00  
80.00     0.00 *      230.00     0.80 *      380.00     118.56  
90.00     0.00 *      240.00     1.27 *      390.00     26.92  
100.00    0.00 *      250.00     1.85 *      400.00     19.48  
110.00    0.00 *      260.00     2.25 *      410.00     17.38  
120.00    0.00 *      270.00     2.52 *      420.00     15.10  
130.00    0.01 *      280.00     2.74 *      430.00     12.53  
140.00    0.05 *      290.00     2.93 *      440.00     11.57  
150.00    0.11 *      300.00     4.32 *  
*****
```

Channel Routing

Title: Design Point 23 Routed Thru Pipe

Description: 24 Hour
100 Yr

Hydrograph No.: 32
Branch No.: 2

Channel routing method: Channel storage

Reach length (ft)= 438
Slope (ft/ft)= .0245
Manning's n= .013

Channel type is circular: Diameter (inches)= 42

Routed Hydrograph

```
*****  
Time          Flow *    Time          Flow *    Time          Flow  
*****  
10.00         0.00 *    160.00         0.17 *    310.00         6.33  
20.00         0.00 *    170.00         0.22 *    320.00        10.97  
30.00         0.00 *    180.00         0.27 *    330.00        74.24  
40.00         0.00 *    190.00         0.33 *    340.00       123.69  
50.00         0.00 *    200.00         0.37 *    350.00       167.84  
60.00         0.00 *    210.00         0.42 *    360.00       167.84  
70.00         0.00 *    220.00         0.47 *    370.00       167.84  
80.00         0.00 *    230.00         0.76 *    380.00       167.84  
90.00         0.00 *    240.00         1.21 *    390.00        30.58  
100.00        0.00 *    250.00         1.78 *    400.00        19.84  
110.00        0.00 *    260.00         2.20 *    410.00        17.48  
120.00        0.00 *    270.00         2.49 *    420.00        15.21  
130.00        0.01 *    280.00         2.72 *    430.00        12.65  
140.00        0.05 *    290.00         2.92 *    440.00        11.61  
150.00        0.11 *    300.00         4.23 *  
*****
```

Channel capacity was exceeded.
Maximum ponded storage at channel inlet (cubic-ft)= 38738.53

Subarea Hydrograph Computation

Title: Design Point 29

Description: 24 Hour
100 Yr

Hydrograph No.: 33
Branch No.: 2

Subarea drainage area (acres): 2.26
Total upstream drainage area (acres): 126.44
Percent impervious area: 39
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 78.5

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 10.1

Channel routing method: Channel storage

Reach length (ft)= 600
Slope (ft/ft)= .0235
Manning's n= .013

Channel type is trapezoidal: Bottom width (ft)= 4.5
Sideslope (H to 1V)= .88

		Unit hydrograph				
Time	0.00	1.11	2.21	3.32	4.42	
Discharge	0.0000	0.2782	0.9272	1.76	2.87	
Time	5.53	6.64	7.74	8.85	9.95	
Discharge	4.36	6.12	7.60	8.62	9.18	
Time	11.06	12.17	13.27	14.38	15.48	
Discharge	9.27	9.18	8.62	7.97	7.23	
Time	16.59	17.70	18.80	19.91	21.01	
Discharge	6.30	5.19	4.27	3.62	3.06	
Time	22.12	24.33	26.54	28.76	30.97	
Discharge	2.60	1.92	1.36	0.9921	0.7881	
Time	33.18	35.39	37.60	39.82	42.03	
Discharge	0.6119	0.4636	0.3245	0.2040	0.0927	
Time	44.24					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
        ious ious erv.  erv.  Hydro- Upstream Total
        Loss Excess Loss Excess graph  Hyd.
*****
0.00   0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
10.00  0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
20.00  0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
30.00  0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
40.00  0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
50.00  0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
60.00  0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
70.00  0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
80.00  0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
90.00  0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
100.00 0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
110.00 0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
120.00 0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
130.00 0.00  0.00  0.00  0.00  0.00   0.00   0.01   0.01
140.00 0.00  0.00  0.00  0.00  0.00   0.00   0.05   0.05
150.00 0.00  0.00  0.00  0.00  0.00   0.00   0.11   0.11
160.00 0.00  0.00  0.00  0.00  0.00   0.00   0.17   0.17
170.00 0.00  0.00  0.00  0.00  0.00   0.00   0.22   0.22
180.00 0.00  0.00  0.00  0.00  0.00   0.00   0.27   0.28
190.00 0.00  0.00  0.00  0.00  0.00   0.01   0.33   0.34
200.00 0.00  0.00  0.00  0.00  0.00   0.01   0.37   0.38
210.00 0.00  0.00  0.00  0.00  0.00   0.01   0.42   0.42
220.00 0.01  0.01  0.00  0.01  0.00   0.01   0.47   0.47
230.00 0.01  0.01  0.00  0.01  0.00   0.01   0.76   0.77
240.00 0.01  0.01  0.00  0.01  0.01   0.02   1.21   1.23
250.00 0.01  0.01  0.00  0.01  0.01   0.03   1.78   1.81
260.00 0.01  0.01  0.00  0.01  0.01   0.04   2.20   2.24
270.00 0.01  0.01  0.00  0.01  0.01   0.04   2.49   2.53
280.00 0.01  0.01  0.00  0.01  0.01   0.04   2.72   2.77
290.00 0.02  0.02  0.00  0.01  0.02   0.05   2.92   2.96
300.00 0.03  0.03  0.00  0.01  0.02   0.07   4.23   4.31
310.00 0.05  0.05  0.00  0.01  0.04   0.10   6.33   6.44
320.00 0.34  0.33  0.00  0.04  0.30   0.18  10.97  11.15
330.00 0.62  0.48  0.14  0.02  0.60   1.13  74.24  75.38
340.00 0.62  0.33  0.29  0.01  0.61   3.34 123.69 127.03
350.00 0.34  0.14  0.19  0.00  0.33   5.02 167.84 172.86
360.00 0.05  0.02  0.03  0.00  0.05   4.05 167.84 171.89
370.00 0.05  0.02  0.03  0.00  0.05   1.67 167.84 169.51
380.00 0.04  0.02  0.03  0.00  0.04   0.80 167.84 168.64
390.00 0.03  0.01  0.02  0.00  0.03   0.52  30.58  31.10
400.00 0.03  0.01  0.02  0.00  0.03   0.38  19.84  20.21
410.00 0.03  0.01  0.02  0.00  0.03   0.34  17.48  17.83
420.00 0.02  0.01  0.01  0.00  0.02   0.30  15.21  15.50
430.00 0.02  0.01  0.01  0.00  0.02   0.25  12.65  12.90
440.00 0.02  0.01  0.01  0.00  0.02   0.23  11.61  11.84
*****
Totals 2.49 1.68 0.81 0.23 2.26

```

Runoff volume= .2555362 acre-ft
Total volume= 14.15159 acre-ft
Peak discharge (cfs)= 172.8633

Hydrology 24 Hour -- 10 Year Storm

SUMMARY TABLE

UNITS
 Flow: cubic feet per second
 Time: minutes
 Volume: acre-feet
 Area: acres
 Stage: feet
 Pipe size: inches

```

*****
Hyd. Brch   Peak   Time   Volume   Basin   Maximum   Pipe
No.   No.   Flow   of       Area   Stage   size
                Peak
*****
  1     1     1.4   350.00   0.07   0.38
  2     2    19.1   350.00   1.01   6.90
  3     2     8.8   350.00   0.43   6.90
  4     2    32.5   350.00   1.62  14.88
  5     3     3.7   350.00   0.20   2.21
  6     3     6.5   350.00   0.36   3.94
  7     3    15.6   350.00   0.83   9.83
  8     3    41.0   350.00   2.23  27.65
  9     3    45.2   350.00   2.45  29.99
 10     3    58.5   350.00   3.14  37.16
 11     2    90.9   350.00   4.76  52.04
 12     3     2.7   350.00   0.13   0.78
 13     3     3.3   350.00   0.16   0.96
 14     2    94.2   350.00   4.93  53.00
 15     3    13.8   350.00   0.66   4.32
 16     2   108.0   350.00   5.59  57.32
 17     4     3.0   350.00   0.15   1.32
 18     4    17.0   350.00   0.85  10.16
 19     4    21.9   350.00   1.10  12.91
 20     4    30.0   350.00   1.52  17.38
 21     4    32.2   350.00   1.63  18.01
 22     4    84.7   350.00   4.47  46.35
 23     4    86.3   350.00   4.55  47.24
 24     4    87.9   350.00   4.64  48.14
 25     4    79.3   350.00   4.74  49.31
 26     5     33.7   350.00   1.78  10.89
 27     2   221.1   350.00  12.11 117.52
 28     2   176.4   350.00  12.86 117.52
 29     2   176.4   350.00  12.86 117.52
 30     3    28.4   350.00   1.47   8.92
 31     2   204.9   350.00  14.33 126.44
 32     2   167.8   350.00  13.90 126.44
 33     2   172.9   350.00  14.15 128.70
*****
  
```

Hydrology 24 Hour -- 100 Year Storm

Date: 05-03-1989
 Project: T-Gap Sub basin 2 Drainage Study
 Description: Templeton Heights Filing No. 1
 Existing Design Points using
 New City/County Criteria 24 hr Storm

Units: Drainage area acres
 Precipitation depth inches
 Length, elevation feet
 Flow cubic feet per second
 Storage volume acre-feet
 Time minutes

Beginning time: 0
 Ending time: 440
 Time interval: 10
 Number of intervals: 45

Total Precipitation (inches): 4.4
 Total Storm Duration (hours): 23.75

Precipitation Distribution:

Time	0.00	15.00	30.00	45.00	60.00
Unit depth	0.0005	0.0010	0.0015	0.0015	0.0015
Time	75.00	90.00	105.00	120.00	135.00
Unit depth	0.0020	0.0020	0.0020	0.0023	0.0022
Time	150.00	165.00	180.00	195.00	210.00
Unit depth	0.0023	0.0022	0.0023	0.0022	0.0023
Time	225.00	240.00	255.00	270.00	285.00
Unit depth	0.0042	0.0070	0.0070	0.0070	0.0070
Time	300.00	315.00	330.00	345.00	360.00
Unit depth	0.0150	0.0250	0.3000	0.3000	0.0250
Time	375.00	390.00	405.00	420.00	435.00
Unit depth	0.0250	0.0150	0.0150	0.0100	0.0100
Time	450.00	465.00	480.00	495.00	510.00
Unit depth	0.0100	0.0100	0.0050	0.0050	0.0050
Time	525.00	540.00	555.00	570.00	585.00
Unit depth	0.0050	0.0050	0.0050	0.0050	0.0050
Time	600.00	615.00	630.00	645.00	660.00
Unit depth	0.0038	0.0037	0.0038	0.0037	0.0038
Time	675.00	690.00	705.00	720.00	735.00
Unit depth	0.0037	0.0038	0.0037	0.0038	0.0037
Time	750.00	765.00	780.00	795.00	810.00
Unit depth	0.0038	0.0037	0.0033	0.0032	0.0033
Time	825.00	840.00	855.00	870.00	885.00
Unit depth	0.0032	0.0030	0.0030	0.0030	0.0030
Time	900.00	915.00	930.00	945.00	960.00
Unit depth	0.0025	0.0025	0.0025	0.0025	0.0025
Time	975.00	990.00	1005.00	1020.00	1035.00
Unit depth	0.0025	0.0025	0.0025	0.0025	0.0025
Time	1050.00	1065.00	1080.00	1095.00	1110.00
Unit depth	0.0025	0.0025	0.0025	0.0025	0.0025
Time	1125.00	1140.00	1155.00	1170.00	1185.00
Unit depth	0.0025	0.0025	0.0025	0.0025	0.0025

Unit depth	0.0013	0.0012	0.0013	0.0012	0.0013
Time	1275.00	1290.00	1305.00	1320.00	1335.00
Unit depth	0.0012	0.0013	0.0012	0.0013	0.0012
Time	1350.00	1365.00	1380.00	1395.00	1410.00
Unit depth	0.0013	0.0012	0.0013	0.0012	0.0013
Time	1425.00				
Unit depth	0.0012				

SCS curve number equation initial abstraction coefficient: .2

Subarea Hydrograph Computation

Title: Design Point 1

Description: 24 Hr Storm
100 Year

Hydrograph No.: 1
Branch No.: 1

Subarea drainage area (acres): .38
Total upstream drainage area (acres): 0
Percent impervious area: 100
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 92

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 5

		Unit hydrograph				
Time	0.00	0.80	1.60	2.40	3.20	
Discharge	0.0000	0.0647	0.2155	0.4095	0.6681	
Time	4.00	4.80	5.60	6.40	7.20	
Discharge	1.01	1.42	1.77	2.00	2.13	
Time	8.00	8.80	9.60	10.40	11.20	
Discharge	2.16	2.13	2.00	1.85	1.68	
Time	12.00	12.80	13.60	14.40	15.20	
Discharge	1.47	1.21	0.9914	0.8406	0.7113	
Time	16.00	17.60	19.20	20.80	22.40	
Discharge	0.6035	0.4461	0.3168	0.2306	0.1832	
Time	24.00	25.60	27.20	28.80	30.40	
Discharge	0.1423	0.1078	0.0754	0.0474	0.0216	
Time	32.00					
Discharge	0.0000					

Time	Rain	Perv- Loss	Perv- Excess	Imp- Loss	Imp- Excess	Subarea Hydro- graph	Routed Upstream Hyd.	Total Hyd.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00
80.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00
90.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00
100.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00
110.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00
120.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00
130.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00
140.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
150.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
160.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
170.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
180.00	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.01
190.00	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.01
200.00	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.01
210.00	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.01
220.00	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.01
230.00	0.02	0.02	0.00	0.01	0.01	0.01	0.00	0.01
240.00	0.02	0.02	0.00	0.01	0.01	0.02	0.00	0.02
250.00	0.02	0.02	0.00	0.01	0.01	0.03	0.00	0.03
260.00	0.02	0.02	0.00	0.01	0.01	0.03	0.00	0.03
270.00	0.02	0.02	0.00	0.01	0.01	0.03	0.00	0.03
280.00	0.02	0.02	0.00	0.01	0.02	0.03	0.00	0.03
290.00	0.03	0.03	0.01	0.01	0.03	0.03	0.00	0.03
300.00	0.04	0.03	0.01	0.01	0.04	0.05	0.00	0.05
310.00	0.07	0.05	0.02	0.01	0.06	0.08	0.00	0.08
320.00	0.48	0.21	0.27	0.03	0.44	0.13	0.00	0.13
330.00	0.88	0.17	0.71	0.02	0.86	0.87	0.00	0.87
340.00	0.88	0.08	0.80	0.01	0.87	1.79	0.00	1.79
350.00	0.48	0.03	0.45	0.00	0.47	1.93	0.00	1.93
360.00	0.07	0.00	0.07	0.00	0.07	1.18	0.00	1.18
370.00	0.07	0.00	0.07	0.00	0.07	0.30	0.00	0.30
380.00	0.06	0.00	0.06	0.00	0.06	0.17	0.00	0.17
390.00	0.04	0.00	0.04	0.00	0.04	0.13	0.00	0.13
400.00	0.04	0.00	0.04	0.00	0.04	0.10	0.00	0.10
410.00	0.04	0.00	0.04	0.00	0.04	0.10	0.00	0.10
420.00	0.03	0.00	0.03	0.00	0.03	0.08	0.00	0.08
430.00	0.03	0.00	0.03	0.00	0.03	0.07	0.00	0.07
440.00	0.03	0.00	0.03	0.00	0.03	0.07	0.00	0.07
Totals	3.53	0.86	2.67	0.23	3.30			

Runoff volume= 9.994376E-02 acre-ft
 Total volume= 9.994376E-02 acre-ft
 Peak discharge (cfs)= 1.932703

Subarea Hydrograph Computation

Title: Design Point 2

Description: 24 Hour
100 Year

Hydrograph No.: 2
Branch No.: 2

Subarea drainage area (acres): 6.9
Total upstream drainage area (acres): 0
Percent impervious area: 12
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 92

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 13.5

		Unit hydrograph				
Time	0.00	1.31	2.62	3.93	5.24	
Discharge	0.0000	0.7170	2.39	4.54	7.41	
Time	6.55	7.86	9.17	10.48	11.79	
Discharge	11.23	15.77	19.60	22.23	23.66	
Time	13.10	14.41	15.72	17.03	18.34	
Discharge	23.90	23.66	22.23	20.55	18.64	
Time	19.65	20.96	22.27	23.58	24.89	
Discharge	16.25	13.39	10.99	9.32	7.89	
Time	26.20	28.82	31.44	34.06	36.68	
Discharge	6.69	4.95	3.51	2.56	2.03	
Time	39.30	41.92	44.54	47.16	49.78	
Discharge	1.58	1.19	0.8365	0.5258	0.2390	
Time	52.40					
Discharge	0.0000					


```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
       ious ious  erv.  erv.  Hydro- Upstream Total
       Loss Excess Loss Excess graph   Hyd.
*****
0.00   0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
10.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
20.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
30.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
40.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
50.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
60.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
70.00  0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
80.00  0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
90.00  0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
100.00 0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
110.00 0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
120.00 0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
130.00 0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
140.00 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.01
150.00 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.01
160.00 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.01
170.00 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.01
180.00 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.01
190.00 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.01
200.00 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.01
210.00 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.01
220.00 0.01 0.01 0.00 0.01 0.01 0.02 0.00 0.02
230.00 0.02 0.02 0.00 0.01 0.01 0.02 0.00 0.02
240.00 0.02 0.02 0.00 0.01 0.01 0.04 0.00 0.04
250.00 0.02 0.02 0.00 0.01 0.01 0.05 0.00 0.05
260.00 0.02 0.02 0.00 0.01 0.01 0.07 0.00 0.07
270.00 0.02 0.02 0.00 0.01 0.01 0.10 0.00 0.10
280.00 0.02 0.02 0.00 0.01 0.02 0.13 0.00 0.13
290.00 0.03 0.03 0.01 0.01 0.03 0.17 0.00 0.17
300.00 0.04 0.03 0.01 0.01 0.04 0.27 0.00 0.27
310.00 0.07 0.05 0.02 0.01 0.06 0.45 0.00 0.45
320.00 0.48 0.21 0.27 0.03 0.44 0.87 0.00 0.87
330.00 0.88 0.17 0.71 0.02 0.86 6.67 0.00 6.67
340.00 0.88 0.08 0.80 0.01 0.87 20.08 0.00 20.08
350.00 0.48 0.03 0.45 0.00 0.47 29.71 0.00 29.71
360.00 0.07 0.00 0.07 0.00 0.07 25.67 0.00 25.67
370.00 0.07 0.00 0.07 0.00 0.07 13.09 0.00 13.09
380.00 0.06 0.00 0.06 0.00 0.06 5.87 0.00 5.87
390.00 0.04 0.00 0.04 0.00 0.04 3.42 0.00 3.42
400.00 0.04 0.00 0.04 0.00 0.04 2.27 0.00 2.27
410.00 0.04 0.00 0.04 0.00 0.04 1.91 0.00 1.91
420.00 0.03 0.00 0.03 0.00 0.03 1.68 0.00 1.68
430.00 0.03 0.00 0.03 0.00 0.03 1.40 0.00 1.40
440.00 0.03 0.00 0.03 0.00 0.03 1.26 0.00 1.26
*****
Totals 3.53 0.86 2.67 0.23 3.30

```

Runoff volume= 1.579594 acre-ft
Total volume= 1.579594 acre-ft
Peak discharge (cfs)= 29.71495

Hydrograph Diversion

Title: Design Point 2 Diversion

Description: 24 Hour
100 Year

Hydrograph No.: 3
Branch No.: 2

Hydrograph Diversion Table

Inflow	11.60	19.10	20.30	29.70
Diversion	7.48	10.39	10.94	12.18

Diverted hydrograph

```

*****
Time          Flow *    Time          Flow *    Time          Flow
*****
10.00         0.00 *    160.00         0.01 *    310.00         0.29
20.00         0.00 *    170.00         0.01 *    320.00         0.56
30.00         0.00 *    180.00         0.01 *    330.00         4.30
40.00         0.00 *    190.00         0.01 *    340.00        10.82
50.00         0.00 *    200.00         0.01 *    350.00        12.19
60.00         0.00 *    210.00         0.01 *    360.00        10.53
70.00         0.00 *    220.00         0.01 *    370.00         7.12
80.00         0.00 *    230.00         0.02 *    380.00         3.78
90.00         0.00 *    240.00         0.02 *    390.00         2.21
100.00        0.00 *    250.00         0.03 *    400.00         1.46
110.00        0.00 *    260.00         0.05 *    410.00         1.23
120.00        0.00 *    270.00         0.06 *    420.00         1.08
130.00        0.00 *    280.00         0.09 *    430.00         0.90
140.00        0.00 *    290.00         0.11 *    440.00         0.81
150.00        0.00 *    300.00         0.17 *
*****

```

Remaining hydrograph

```
*****  
Time          Flow *      Time          Flow *      Time          Flow  
*****  
10.00         0.00 *    160.00         0.00 *    310.00         0.16  
20.00         0.00 *    170.00         0.00 *    320.00         0.31  
30.00         0.00 *    180.00         0.00 *    330.00         2.37  
40.00         0.00 *    190.00         0.00 *    340.00         9.26  
50.00         0.00 *    200.00         0.00 *    350.00        17.53  
60.00         0.00 *    210.00         0.01 *    360.00        15.14  
70.00         0.00 *    220.00         0.01 *    370.00         5.97  
80.00         0.00 *    230.00         0.01 *    380.00         2.08  
90.00         0.00 *    240.00         0.01 *    390.00         1.22  
100.00        0.00 *    250.00         0.02 *    400.00         0.81  
110.00        0.00 *    260.00         0.02 *    410.00         0.68  
120.00        0.00 *    270.00         0.03 *    420.00         0.60  
130.00        0.00 *    280.00         0.05 *    430.00         0.50  
140.00        0.00 *    290.00         0.06 *    440.00         0.45  
150.00        0.00 *    300.00         0.09 *  
*****
```

Subarea Hydrograph Computation

Title: Design Point 3

Description: 24 Hour
100 Yr

Hydrograph No.: 4
Branch No.: 2

Subarea drainage area (acres): 7.98
Total upstream drainage area (acres): 6.9
Percent impervious area: 20
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 92

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 6.72

Channel routing method: Channel storage

Reach length (ft)= 2300

Slope (ft/ft)= .0634

Manning's n= .016

Channel type is trapezoidal: Bottom width (ft)= 0

Sideslope (H to 1V)= 25

		Unit hydrograph				
Time	0.00	0.90	1.81	2.71	3.61	
Discharge	0.0000	1.20	4.01	7.62	12.43	
Time	4.52	5.42	6.32	7.23	8.13	
Discharge	18.84	26.46	32.87	37.28	39.69	
Time	9.03	9.94	10.84	11.74	12.64	
Discharge	40.09	39.69	37.28	34.48	31.27	
Time	13.55	14.45	15.35	16.26	17.16	
Discharge	27.26	22.45	18.44	15.64	13.23	
Time	18.06	19.87	21.68	23.48	25.29	
Discharge	11.23	8.30	5.89	4.29	3.41	
Time	27.10	28.90	30.71	32.52	34.32	
Discharge	2.65	2.00	1.40	0.8820	0.4009	
Time	36.13					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
       ious ious  erv.  erv.  Hydro- Routed  Hyd.
       Loss Excess Loss Excess graph  Upstream
*****
0.00   0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
10.00  0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
20.00  0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
30.00  0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
40.00  0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
50.00  0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
60.00  0.00  0.00  0.00  0.00  0.00   0.00   0.00   0.00
70.00  0.01  0.01  0.00  0.01  0.00   0.00   0.00   0.00
80.00  0.01  0.01  0.00  0.01  0.00   0.00   0.00   0.00
90.00  0.01  0.01  0.00  0.01  0.00   0.00   0.00   0.00
100.00 0.01  0.01  0.00  0.01  0.00   0.00   0.00   0.00
110.00 0.01  0.01  0.00  0.01  0.00   0.00   0.00   0.00
120.00 0.01  0.01  0.00  0.01  0.00   0.01   0.00   0.01
130.00 0.01  0.01  0.00  0.01  0.00   0.01   0.00   0.01
140.00 0.01  0.01  0.00  0.00  0.00   0.01   0.00   0.01
150.00 0.01  0.01  0.00  0.00  0.00   0.02   0.00   0.02
160.00 0.01  0.01  0.00  0.00  0.00   0.02   0.00   0.02
170.00 0.01  0.01  0.00  0.00  0.00   0.02   0.00   0.02
180.00 0.01  0.01  0.00  0.00  0.00   0.02   0.00   0.03
190.00 0.01  0.01  0.00  0.00  0.00   0.03   0.00   0.03
200.00 0.01  0.01  0.00  0.00  0.00   0.03   0.00   0.03
210.00 0.01  0.01  0.00  0.00  0.00   0.03   0.00   0.03
220.00 0.01  0.01  0.00  0.01  0.01   0.03   0.01   0.04
230.00 0.02  0.02  0.00  0.01  0.01   0.06   0.01   0.06
240.00 0.02  0.02  0.00  0.01  0.01   0.08   0.01   0.09
250.00 0.02  0.02  0.00  0.01  0.01   0.11   0.01   0.13
260.00 0.02  0.02  0.00  0.01  0.01   0.14   0.02   0.16
270.00 0.02  0.02  0.00  0.01  0.01   0.18   0.03   0.21
280.00 0.02  0.02  0.00  0.01  0.02   0.22   0.04   0.26
290.00 0.03  0.03  0.01  0.01  0.03   0.26   0.05   0.31
300.00 0.04  0.03  0.01  0.01  0.04   0.44   0.07   0.51
310.00 0.07  0.05  0.02  0.01  0.06   0.72   0.12   0.84
320.00 0.48  0.21  0.27  0.03  0.44   1.40   0.21   1.62
330.00 0.88  0.17  0.71  0.02  0.86  12.28   1.20  13.47
340.00 0.88  0.08  0.80  0.01  0.87  31.71   5.16  36.87
350.00 0.48  0.03  0.45  0.00  0.47  38.65  13.94  52.60
360.00 0.07  0.00  0.07  0.00  0.07  25.75  15.72  41.47
370.00 0.07  0.00  0.07  0.00  0.07   7.80   9.57  17.36
380.00 0.06  0.00  0.06  0.00  0.06   4.10   4.34   8.44
390.00 0.04  0.00  0.04  0.00  0.04   2.92   2.31   5.22
400.00 0.04  0.00  0.04  0.00  0.04   2.25   1.33   3.57
410.00 0.04  0.00  0.04  0.00  0.04   2.11   0.89   3.00
420.00 0.03  0.00  0.03  0.00  0.03   1.81   0.70   2.51
430.00 0.03  0.00  0.03  0.00  0.03   1.47   0.58   2.06
440.00 0.03  0.00  0.03  0.00  0.03   1.41   0.50   1.90
*****
Totals 3.53  0.86  2.67  0.23  3.30

```

Runoff volume= 1.864638 acre-ft
Total volume= 2.644118 acre-ft
Peak discharge (cfs)= 52.5963

Subarea Hydrograph Computation

Title: Design Point 4

Description: 24 Hour
100 Yr

Hydrograph No.: 5
Branch No.: 3

Subarea drainage area (acres): 2.21
 Total upstream drainage area (acres): 0
 Percent impervious area: 39
 Total precipitation multiplication factor: 1
 Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 68

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 11.48

		Unit hydrograph				
Time	0.00	1.19	2.38	3.57	4.76	
Discharge	0.0000	0.2531	0.8435	1.60	2.61	
Time	5.94	7.13	8.32	9.51	10.70	
Discharge	3.96	5.57	6.92	7.84	8.35	
Time	11.89	13.08	14.27	15.45	16.64	
Discharge	8.44	8.35	7.84	7.25	6.58	
Time	17.83	19.02	20.21	21.40	22.59	
Discharge	5.74	4.72	3.88	3.29	2.78	
Time	23.78	26.15	28.53	30.91	33.29	
Discharge	2.36	1.75	1.24	0.9026	0.7170	
Time	35.66	38.04	40.42	42.80	45.17	
Discharge	0.5567	0.4218	0.2952	0.1856	0.0844	
Time	47.55					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
       ious ious  erv.  erv.  Hydro- Upstream Total
       Loss Excess Loss Excess graph  Hyd.
*****
0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
10.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
20.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
30.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
40.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
50.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
60.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
70.00 0.01  0.01  0.00  0.01  0.00  0.00  0.00  0.00
80.00 0.01  0.01  0.00  0.01  0.00  0.00  0.00  0.00
90.00 0.01  0.01  0.00  0.01  0.00  0.00  0.00  0.00
100.00 0.01  0.01  0.00  0.01  0.00  0.00  0.00  0.00
110.00 0.01  0.01  0.00  0.01  0.00  0.00  0.00  0.00
120.00 0.01  0.01  0.00  0.01  0.00  0.00  0.00  0.00
130.00 0.01  0.01  0.00  0.01  0.00  0.00  0.00  0.00
140.00 0.01  0.01  0.00  0.00  0.00  0.01  0.00  0.01
150.00 0.01  0.01  0.00  0.00  0.00  0.01  0.00  0.01
160.00 0.01  0.01  0.00  0.00  0.00  0.01  0.00  0.01
170.00 0.01  0.01  0.00  0.00  0.00  0.01  0.00  0.01
180.00 0.01  0.01  0.00  0.00  0.00  0.01  0.00  0.01
190.00 0.01  0.01  0.00  0.00  0.00  0.01  0.00  0.01
200.00 0.01  0.01  0.00  0.00  0.00  0.01  0.00  0.01
210.00 0.01  0.01  0.00  0.00  0.00  0.02  0.00  0.02
220.00 0.01  0.01  0.00  0.01  0.01  0.02  0.00  0.02
230.00 0.02  0.02  0.00  0.01  0.01  0.03  0.00  0.03
240.00 0.02  0.02  0.00  0.01  0.01  0.04  0.00  0.04
250.00 0.02  0.02  0.00  0.01  0.01  0.06  0.00  0.06
260.00 0.02  0.02  0.00  0.01  0.01  0.07  0.00  0.07
270.00 0.02  0.02  0.00  0.01  0.01  0.07  0.00  0.07
280.00 0.02  0.02  0.00  0.01  0.02  0.08  0.00  0.08
290.00 0.03  0.03  0.00  0.01  0.03  0.08  0.00  0.08
300.00 0.04  0.04  0.00  0.01  0.04  0.11  0.00  0.11
310.00 0.07  0.07  0.00  0.01  0.06  0.16  0.00  0.16
320.00 0.48  0.48  0.00  0.03  0.44  0.26  0.00  0.26
330.00 0.88  0.76  0.12  0.02  0.86  1.51  0.00  1.51
340.00 0.88  0.55  0.33  0.01  0.87  4.03  0.00  4.03
350.00 0.48  0.24  0.24  0.00  0.47  6.20  0.00  6.20
360.00 0.07  0.03  0.04  0.00  0.07  5.31  0.00  5.31
370.00 0.07  0.03  0.04  0.00  0.07  2.44  0.00  2.44
380.00 0.06  0.03  0.03  0.00  0.06  1.15  0.00  1.15
390.00 0.04  0.02  0.02  0.00  0.04  0.72  0.00  0.72
400.00 0.04  0.02  0.02  0.00  0.04  0.50  0.00  0.50
410.00 0.04  0.02  0.02  0.00  0.04  0.45  0.00  0.45
420.00 0.03  0.01  0.02  0.00  0.03  0.39  0.00  0.39
430.00 0.03  0.01  0.02  0.00  0.03  0.33  0.00  0.33
440.00 0.03  0.01  0.02  0.00  0.03  0.30  0.00  0.30
*****
Totals 3.53  2.61  0.92  0.23  3.30

```

Runoff volume= .3339081 acre-ft
Total volume= .3339081 acre-ft
Peak discharge (cfs)= 6.198233

Subarea Hydrograph Computation

Title: Design Point 5

Description: 24 Hour
100 Yr

Hydrograph No.: 6
Branch No.: 3

Subarea drainage area (acres): 1.73
Total upstream drainage area (acres): 2.21
Percent impervious area: 39
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 68

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 11.7

Channel routing method: Channel storage

Reach length (ft)= 400
Slope (ft/ft)= .16
Manning's n= .035

Channel type is trapezoidal: Bottom width (ft)= 1
Sideslope (H to 1V)= 4

		Unit hydrograph				
Time	0.00	1.20	2.40	3.61	4.81	
Discharge	0.0000	0.1959	0.6531	1.24	2.02	
Time	6.01	7.21	8.41	9.62	10.82	
Discharge	3.07	4.31	5.36	6.07	6.47	
Time	12.02	13.22	14.42	15.63	16.83	
Discharge	6.53	6.47	6.07	5.62	5.09	
Time	18.03	19.23	20.43	21.64	22.84	
Discharge	4.44	3.66	3.00	2.55	2.16	
Time	24.04	26.44	28.85	31.25	33.66	
Discharge	1.83	1.35	0.9600	0.6988	0.5551	
Time	36.06	38.46	40.87	43.27	45.68	
Discharge	0.4310	0.3265	0.2286	0.1437	0.0653	
Time	48.08					
Discharge	0.0000					


```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
       ious ious  erv.  erv.  Hydro- Upstream Total
       Loss Excess Loss Excess graph  Hyd.
*****
0.00   0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
10.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
20.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
30.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
40.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
50.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
60.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
70.00  0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
80.00  0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
90.00  0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
100.00 0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
110.00 0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
120.00 0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
130.00 0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.01
140.00 0.01 0.01 0.00 0.00 0.00 0.00 0.01 0.01
150.00 0.01 0.01 0.00 0.00 0.00 0.01 0.01 0.01
160.00 0.01 0.01 0.00 0.00 0.00 0.01 0.01 0.02
170.00 0.01 0.01 0.00 0.00 0.00 0.01 0.01 0.02
180.00 0.01 0.01 0.00 0.00 0.00 0.01 0.01 0.02
190.00 0.01 0.01 0.00 0.00 0.00 0.01 0.01 0.02
200.00 0.01 0.01 0.00 0.00 0.00 0.01 0.01 0.03
210.00 0.01 0.01 0.00 0.00 0.00 0.01 0.02 0.03
220.00 0.01 0.01 0.00 0.01 0.01 0.01 0.02 0.03
230.00 0.02 0.02 0.00 0.01 0.01 0.02 0.03 0.05
240.00 0.02 0.02 0.00 0.01 0.01 0.03 0.04 0.07
250.00 0.02 0.02 0.00 0.01 0.01 0.04 0.06 0.10
260.00 0.02 0.02 0.00 0.01 0.01 0.05 0.07 0.12
270.00 0.02 0.02 0.00 0.01 0.01 0.06 0.07 0.13
280.00 0.02 0.02 0.00 0.01 0.02 0.06 0.08 0.13
290.00 0.03 0.03 0.00 0.01 0.03 0.06 0.08 0.14
300.00 0.04 0.04 0.00 0.01 0.04 0.09 0.11 0.20
310.00 0.07 0.07 0.00 0.01 0.06 0.12 0.16 0.28
320.00 0.48 0.48 0.00 0.03 0.44 0.21 0.26 0.47
330.00 0.88 0.76 0.12 0.02 0.86 1.16 1.51 2.67
340.00 0.88 0.55 0.33 0.01 0.87 3.13 4.03 7.15
350.00 0.48 0.24 0.24 0.00 0.47 4.84 6.20 11.03
360.00 0.07 0.03 0.04 0.00 0.07 4.19 5.31 9.50
370.00 0.07 0.03 0.04 0.00 0.07 1.95 2.44 4.39
380.00 0.06 0.03 0.03 0.00 0.06 0.92 1.15 2.07
390.00 0.04 0.02 0.02 0.00 0.04 0.57 0.72 1.28
400.00 0.04 0.02 0.02 0.00 0.04 0.40 0.50 0.90
410.00 0.04 0.02 0.02 0.00 0.04 0.35 0.45 0.81
420.00 0.03 0.01 0.02 0.00 0.03 0.31 0.39 0.71
430.00 0.03 0.01 0.02 0.00 0.03 0.26 0.33 0.59
440.00 0.03 0.01 0.02 0.00 0.03 0.24 0.30 0.54
*****
Totals 3.53 2.61 0.92 0.23 3.30

```

```

Runoff volume= .2619087 acre-ft
Total volume= .5958169 acre-ft
Peak discharge (cfs)= 11.03354

```

Subarea Hydrograph Computation

Title: Design Point 6

Description: 24 Hour
100 Yr

Hydrograph No.: 7
Branch No.: 3

Subarea drainage area (acres): 5.89
Total upstream drainage area (acres): 3.94
Percent impervious area: 31
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 68

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 8.64✓

Channel routing method: Channel storage

Reach length (ft)= 265
Slope (ft/ft)= .071
Manning's n= .013

Channel type is circular: Diameter (inches)= 24

		Unit hydrograph				
Time	0.00	1.02	2.04	3.06	4.07	
Discharge	0.0000	0.7873	2.62	4.99	8.14	
Time	5.09	6.11	7.13	8.15	9.17	
Discharge	12.33	17.32	21.52	24.41	25.98	
Time	10.18	11.20	12.22	13.24	14.26	
Discharge	26.24	25.98	24.41	22.57	20.47	
Time	15.28	16.29	17.31	18.33	19.35	
Discharge	17.85	14.70	12.07	10.23	8.66	
Time	20.37	22.40	24.44	26.48	28.52	
Discharge	7.35	5.43	3.86	2.81	2.23	
Time	30.55	32.59	34.63	36.66	38.70	
Discharge	1.73	1.31	0.9185	0.5773	0.2624	
Time	40.74					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
       Loss Excess Loss Excess graph Upstream Hyd.
*****
0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
10.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
20.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
30.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
40.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
50.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
60.00 0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
70.00 0.01  0.01  0.00  0.01  0.00  0.00  0.00  0.00
80.00 0.01  0.01  0.00  0.01  0.00  0.00  0.00  0.00
90.00 0.01  0.01  0.00  0.01  0.00  0.00  0.00  0.00
100.00 0.01  0.01  0.00  0.01  0.00  0.00  0.00  0.00
110.00 0.01  0.01  0.00  0.01  0.00  0.00  0.00  0.00
120.00 0.01  0.01  0.00  0.01  0.00  0.01  0.00  0.01
130.00 0.01  0.01  0.00  0.01  0.00  0.01  0.01  0.02
140.00 0.01  0.01  0.00  0.00  0.00  0.01  0.01  0.03
150.00 0.01  0.01  0.00  0.00  0.00  0.02  0.01  0.03
160.00 0.01  0.01  0.00  0.00  0.00  0.02  0.02  0.04
170.00 0.01  0.01  0.00  0.00  0.00  0.02  0.02  0.04
180.00 0.01  0.01  0.00  0.00  0.00  0.03  0.02  0.05
190.00 0.01  0.01  0.00  0.00  0.00  0.03  0.02  0.05
200.00 0.01  0.01  0.00  0.00  0.00  0.03  0.03  0.06
210.00 0.01  0.01  0.00  0.00  0.00  0.03  0.03  0.06
220.00 0.01  0.01  0.00  0.01  0.01  0.04  0.03  0.06
230.00 0.02  0.02  0.00  0.01  0.01  0.06  0.05  0.11
240.00 0.02  0.02  0.00  0.01  0.01  0.09  0.07  0.16
250.00 0.02  0.02  0.00  0.01  0.01  0.13  0.10  0.23
260.00 0.02  0.02  0.00  0.01  0.01  0.14  0.12  0.26
270.00 0.02  0.02  0.00  0.01  0.01  0.15  0.13  0.28
280.00 0.02  0.02  0.00  0.01  0.02  0.16  0.13  0.30
290.00 0.03  0.03  0.00  0.01  0.03  0.17  0.14  0.31
300.00 0.04  0.04  0.00  0.01  0.04  0.25  0.20  0.45
310.00 0.07  0.07  0.00  0.01  0.06  0.36  0.28  0.64
320.00 0.48  0.48  0.00  0.03  0.44  0.61  0.47  1.08
330.00 0.88  0.76  0.12  0.02  0.86  3.77  2.67  6.44
340.00 0.88  0.55  0.33  0.01  0.87  10.30  7.15  17.46
350.00 0.48  0.24  0.24  0.00  0.47  16.05  11.03  27.08
360.00 0.07  0.03  0.04  0.00  0.07  12.70  9.50  22.20
370.00 0.07  0.03  0.04  0.00  0.07  4.70  4.39  9.09
380.00 0.06  0.03  0.03  0.00  0.06  2.34  2.07  4.40
390.00 0.04  0.02  0.02  0.00  0.04  1.58  1.28  2.86
400.00 0.04  0.02  0.02  0.00  0.04  1.22  0.90  2.12
410.00 0.04  0.02  0.02  0.00  0.04  1.13  0.81  1.93
420.00 0.03  0.01  0.02  0.00  0.03  0.98  0.71  1.68
430.00 0.03  0.01  0.02  0.00  0.03  0.81  0.59  1.39
440.00 0.03  0.01  0.02  0.00  0.03  0.76  0.54  1.30
*****
Totals 3.53  2.61  0.92  0.23  3.30

```

Runoff volume= .8032702 acre-ft
Total volume= 1.399087 acre-ft
Peak discharge (cfs)= 27.07854

Subarea Hydrograph Computation

Title: Design Point 7

Description: 24 Hour
100 Yr

Hydrograph No.: 8
Branch No.: 3

Subarea drainage area (acres): 17.82
Total upstream drainage area (acres): 9.83
Percent impervious area: 31
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 68

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 11.44

Channel routing method: Channel storage

Reach length (ft)= 141
Slope (ft/ft)= .0629
Manning's n= .013

Channel type is circular: Diameter (inches)= 24

		Unit hydrograph				
Time	0.00	1.19	2.37	3.56	4.75	
Discharge	0.0000	2.04	6.82	12.95	21.13	
Time	5.93	7.12	8.30	9.49	10.68	
Discharge	32.03	44.98	55.89	63.38	67.47	
Time	11.86	13.05	14.24	15.42	16.61	
Discharge	68.15	67.47	63.38	58.61	53.16	
Time	17.80	18.98	20.17	21.36	22.54	
Discharge	46.34	38.17	31.35	26.58	22.49	
Time	23.73	26.10	28.47	30.85	33.22	
Discharge	19.08	14.11	10.02	7.29	5.79	
Time	35.59	37.96	40.34	42.71	45.08	
Discharge	4.50	3.41	2.39	1.50	0.6815	
Time	47.46					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
        ious ious  erv.  erv.  Hydro- Upstream Total
        Loss Excess Loss Excess graph  Hyd.
*****
0.00   0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
10.00  0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
20.00  0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
30.00  0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
40.00  0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
50.00  0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
60.00  0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
70.00  0.01  0.01  0.00  0.01  0.00    0.00   0.00   0.00
80.00  0.01  0.01  0.00  0.01  0.00    0.00   0.00   0.00
90.00  0.01  0.01  0.00  0.01  0.00    0.00   0.00   0.00
100.00 0.01  0.01  0.00  0.01  0.00    0.00   0.00   0.00
110.00 0.01  0.01  0.00  0.01  0.00    0.01   0.00   0.01
120.00 0.01  0.01  0.00  0.01  0.00    0.02   0.01   0.03
130.00 0.01  0.01  0.00  0.01  0.00    0.03   0.02   0.05
140.00 0.01  0.01  0.00  0.00  0.00    0.04   0.03   0.07
150.00 0.01  0.01  0.00  0.00  0.00    0.05   0.03   0.08
160.00 0.01  0.01  0.00  0.00  0.00    0.06   0.04   0.10
170.00 0.01  0.01  0.00  0.00  0.00    0.07   0.04   0.11
180.00 0.01  0.01  0.00  0.00  0.00    0.08   0.05   0.12
190.00 0.01  0.01  0.00  0.00  0.00    0.08   0.05   0.14
200.00 0.01  0.01  0.00  0.00  0.00    0.09   0.06   0.14
210.00 0.01  0.01  0.00  0.00  0.00    0.10   0.06   0.16
220.00 0.01  0.01  0.00  0.01  0.01    0.10   0.06   0.17
230.00 0.02  0.02  0.00  0.01  0.01    0.17   0.11   0.28
240.00 0.02  0.02  0.00  0.01  0.01    0.26   0.16   0.42
250.00 0.02  0.02  0.00  0.01  0.01    0.36   0.23   0.59
260.00 0.02  0.02  0.00  0.01  0.01    0.42   0.26   0.68
270.00 0.02  0.02  0.00  0.01  0.01    0.46   0.28   0.74
280.00 0.02  0.02  0.00  0.01  0.02    0.48   0.30   0.78
290.00 0.03  0.03  0.00  0.01  0.03    0.51   0.31   0.81
300.00 0.04  0.04  0.00  0.01  0.04    0.71   0.45   1.16
310.00 0.07  0.07  0.00  0.01  0.06    1.02   0.64   1.67
320.00 0.48  0.48  0.00  0.03  0.44    1.69   1.08   2.77
330.00 0.88  0.76  0.12  0.02  0.86    9.68   6.44  16.13
340.00 0.88  0.55  0.33  0.01  0.87   27.48  17.46  44.94
350.00 0.48  0.24  0.24  0.00  0.47   44.95  27.08  72.03
360.00 0.07  0.03  0.04  0.00  0.07   39.58  22.20  61.78
370.00 0.07  0.03  0.04  0.00  0.07   18.29   9.09  27.39
380.00 0.06  0.03  0.03  0.00  0.06    8.72   4.40  13.12
390.00 0.04  0.02  0.02  0.00  0.04    5.47   2.86   8.33
400.00 0.04  0.02  0.02  0.00  0.04    3.85   2.12   5.97
410.00 0.04  0.02  0.02  0.00  0.04    3.46   1.93   5.39
420.00 0.03  0.01  0.02  0.00  0.03    3.03   1.68   4.72
430.00 0.03  0.01  0.02  0.00  0.03    2.52   1.39   3.91
440.00 0.03  0.01  0.02  0.00  0.03    2.32   1.30   3.61
*****
Totals 3.53  2.61  0.92  0.23  3.30

```

Runoff volume= 2.410475 acre-ft
Total volume= 3.809562 acre-ft
Peak discharge (cfs)= 72.03334

Subarea Hydrograph Computation

Title: Design Point 8

Description: 24 Hour
100 Yr

Hydrograph No.: 9
Branch No.: 3

Subarea drainage area (acres): 2.34
Total upstream drainage area (acres): 27.65
Percent impervious area: 42
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 68

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 10.72

Channel routing method: Channel storage

Reach length (ft)= 214
Slope (ft/ft)= .0122
Manning's n= .013

Channel type is circular: Diameter (inches)= 36

		Unit hydrograph				
Time	0.00	1.14	2.29	3.43	4.57	
Discharge	0.0000	0.2786	0.9288	1.76	2.88	
Time	5.72	6.86	8.00	9.15	10.29	
Discharge	4.37	6.13	7.62	8.64	9.19	
Time	11.43	12.58	13.72	14.86	16.00	
Discharge	9.29	9.19	8.64	7.99	7.24	
Time	17.15	18.29	19.43	20.58	21.72	
Discharge	6.32	5.20	4.27	3.62	3.06	
Time	22.86	25.15	27.44	29.72	32.01	
Discharge	2.60	1.92	1.37	0.9938	0.7895	
Time	34.30	36.58	38.87	41.16	43.44	
Discharge	0.6130	0.4644	0.3251	0.2043	0.0929	
Time	45.73					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
       ous  ous  erv.  erv.  Hydro- Upstream Total
       Loss Excess Loss Excess graph  Hyd.
*****
0.00   0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
10.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
20.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
30.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
40.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
50.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
60.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
70.00  0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
80.00  0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
90.00  0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
100.00 0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
110.00 0.01 0.01 0.00 0.01 0.00 0.00 0.01 0.01
120.00 0.01 0.01 0.00 0.01 0.00 0.00 0.03 0.03
130.00 0.01 0.01 0.00 0.01 0.00 0.01 0.05 0.05
140.00 0.01 0.01 0.00 0.00 0.00 0.01 0.07 0.07
150.00 0.01 0.01 0.00 0.00 0.00 0.01 0.08 0.09
160.00 0.01 0.01 0.00 0.00 0.00 0.01 0.10 0.11
170.00 0.01 0.01 0.00 0.00 0.00 0.01 0.11 0.12
180.00 0.01 0.01 0.00 0.00 0.00 0.01 0.12 0.14
190.00 0.01 0.01 0.00 0.00 0.00 0.02 0.14 0.15
200.00 0.01 0.01 0.00 0.00 0.00 0.02 0.14 0.16
210.00 0.01 0.01 0.00 0.00 0.00 0.02 0.16 0.17
220.00 0.01 0.01 0.00 0.01 0.01 0.02 0.17 0.19
230.00 0.02 0.02 0.00 0.01 0.01 0.03 0.28 0.31
240.00 0.02 0.02 0.00 0.01 0.01 0.05 0.42 0.47
250.00 0.02 0.02 0.00 0.01 0.01 0.07 0.59 0.65
260.00 0.02 0.02 0.00 0.01 0.01 0.08 0.68 0.76
270.00 0.02 0.02 0.00 0.01 0.01 0.08 0.74 0.82
280.00 0.02 0.02 0.00 0.01 0.02 0.09 0.78 0.87
290.00 0.03 0.03 0.00 0.01 0.03 0.09 0.81 0.91
300.00 0.04 0.04 0.00 0.01 0.04 0.13 1.16 1.29
310.00 0.07 0.07 0.00 0.01 0.06 0.19 1.67 1.85
320.00 0.48 0.48 0.00 0.03 0.44 0.31 2.77 3.08
330.00 0.88 0.76 0.12 0.02 0.86 1.81 16.13 17.93
340.00 0.88 0.55 0.33 0.01 0.87 4.68 44.94 49.62
350.00 0.48 0.24 0.24 0.00 0.47 6.94 72.03 78.98
360.00 0.07 0.03 0.04 0.00 0.07 5.72 61.78 67.50
370.00 0.07 0.03 0.04 0.00 0.07 2.47 27.39 29.86
380.00 0.06 0.03 0.03 0.00 0.06 1.17 13.12 14.29
390.00 0.04 0.02 0.02 0.00 0.04 0.75 8.33 9.08
400.00 0.04 0.02 0.02 0.00 0.04 0.53 5.97 6.50
410.00 0.04 0.02 0.02 0.00 0.04 0.48 5.39 5.88
420.00 0.03 0.01 0.02 0.00 0.03 0.42 4.72 5.14
430.00 0.03 0.01 0.02 0.00 0.03 0.35 3.91 4.26
440.00 0.03 0.01 0.02 0.00 0.03 0.32 3.61 3.93
*****
Totals 3.53 2.61 0.92 0.23 3.30

```

Runoff volume= .3680994 acre-ft
Total volume= 4.177661 acre-ft
Peak discharge (cfs)= 78.97813

Subarea Hydrograph Computation

Title: Design Point 9

Description: 24 Hour
100 Year

Hydrograph No.: 10
Branch No.: 3

Subarea drainage area (acres): 7.17
 Total upstream drainage area (acres): ~~29.99~~ 34
 Percent impervious area: 42
 Total precipitation multiplication factor: 1
 Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 68

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 9.19

Channel routing method: Channel storage

Reach length (ft)= 123
 Slope (ft/ft)= .0122
 Manning's n= .013

Channel type is circular: Diameter (inches)= 36

		Unit hydrograph				
Time	0.00	1.05	2.10	3.15	4.21	
Discharge	0.0000	0.9283	3.09	5.88	9.59	
Time	5.26	6.31	7.36	8.41	9.46	
Discharge	14.54	20.42	25.37	28.78	30.63	
Time	10.51	11.57	12.62	13.67	14.72	
Discharge	30.94	30.63	28.78	26.61	24.14	
Time	15.77	16.82	17.87	18.93	19.98	
Discharge	21.04	17.33	14.23	12.07	10.21	
Time	21.03	23.13	25.23	27.34	29.44	
Discharge	8.66	6.41	4.55	3.31	2.63	
Time	31.54	33.64	35.75	37.85	39.95	
Discharge	2.04	1.55	1.08	0.6808	0.3094	
Time	42.06					
Discharge	0.0000					

Time	Rain	Pervious Loss	Pervious Excess	Imperv. Loss	Imperv. Excess	Subarea Hydrograph	Routed Upstream Hyd.	Total Hyd.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00
80.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00
90.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00
100.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00
110.00	0.01	0.01	0.00	0.01	0.00	0.00	0.01	0.02
120.00	0.01	0.01	0.00	0.01	0.00	0.01	0.03	0.04
130.00	0.01	0.01	0.00	0.01	0.00	0.02	0.05	0.07
140.00	0.01	0.01	0.00	0.00	0.00	0.02	0.07	0.09
150.00	0.01	0.01	0.00	0.00	0.00	0.03	0.09	0.12
160.00	0.01	0.01	0.00	0.00	0.00	0.03	0.11	0.14
170.00	0.01	0.01	0.00	0.00	0.00	0.04	0.12	0.16
180.00	0.01	0.01	0.00	0.00	0.00	0.04	0.14	0.18
190.00	0.01	0.01	0.00	0.00	0.00	0.05	0.15	0.20
200.00	0.01	0.01	0.00	0.00	0.00	0.05	0.16	0.21
210.00	0.01	0.01	0.00	0.00	0.00	0.05	0.17	0.23
220.00	0.01	0.01	0.00	0.01	0.01	0.06	0.19	0.24
230.00	0.02	0.02	0.00	0.01	0.01	0.10	0.30	0.40
240.00	0.02	0.02	0.00	0.01	0.01	0.15	0.46	0.61
250.00	0.02	0.02	0.00	0.01	0.01	0.21	0.64	0.85
260.00	0.02	0.02	0.00	0.01	0.01	0.24	0.75	0.99
270.00	0.02	0.02	0.00	0.01	0.01	0.25	0.82	1.07
280.00	0.02	0.02	0.00	0.01	0.02	0.27	0.87	1.13
290.00	0.03	0.03	0.00	0.01	0.03	0.28	0.90	1.18
300.00	0.04	0.04	0.00	0.01	0.04	0.41	1.27	1.68
310.00	0.07	0.07	0.00	0.01	0.06	0.59	1.84	2.42
320.00	0.48	0.48	0.00	0.03	0.44	0.99	3.05	4.03
330.00	0.88	0.76	0.12	0.02	0.86	6.04	17.67	23.71
340.00	0.88	0.55	0.33	0.01	0.87	15.28	49.17	64.44
350.00	0.48	0.24	0.24	0.00	0.47	22.04	78.38	100.42
360.00	0.07	0.03	0.04	0.00	0.07	17.17	67.68	84.86
370.00	0.07	0.03	0.04	0.00	0.07	6.59	30.43	37.01
380.00	0.06	0.03	0.03	0.00	0.06	3.21	14.57	17.77
390.00	0.04	0.02	0.02	0.00	0.04	2.12	9.19	11.31
400.00	0.04	0.02	0.02	0.00	0.04	1.60	6.56	8.16
410.00	0.04	0.02	0.02	0.00	0.04	1.47	5.89	7.36
420.00	0.03	0.01	0.02	0.00	0.03	1.28	5.16	6.44
430.00	0.03	0.01	0.02	0.00	0.03	1.05	4.28	5.33
440.00	0.03	0.01	0.02	0.00	0.03	0.98	3.94	4.93
Totals	3.53	2.61	0.92	0.23	3.30			

Runoff volume= 1.132324 acre-ft
 Total volume= 5.307537 acre-ft
 Peak discharge (cfs)= 100.4175

Branch Confluence

Title: Design Point 9 Combined

Description: 24 Hour
100 Yr

Hydrograph No.: 11
Branch No.: 2

Combined Branches: 2 3

```
*****  
Time      Flow *    Time      Flow *    Time      Flow  
*****  
10.00     0.00 *    160.00     0.16 *    310.00     3.26  
20.00     0.00 *    170.00     0.18 *    320.00     5.65  
30.00     0.00 *    180.00     0.20 *    330.00    37.18  
40.00     0.00 *    190.00     0.23 *    340.00    101.31  
50.00     0.00 *    200.00     0.24 *    350.00    153.01  
60.00     0.00 *    210.00     0.26 *    360.00    126.32  
70.00     0.00 *    220.00     0.28 *    370.00     54.38  
80.00     0.00 *    230.00     0.46 *    380.00     26.22  
90.00     0.00 *    240.00     0.70 *    390.00     16.53  
100.00    0.00 *    250.00     0.98 *    400.00     11.73  
110.00    0.02 *    260.00     1.15 *    410.00     10.36  
120.00    0.05 *    270.00     1.28 *    420.00     8.95  
130.00    0.08 *    280.00     1.39 *    430.00     7.39  
140.00    0.11 *    290.00     1.49 *    440.00     6.83  
150.00    0.14 *    300.00     2.20 *  
*****
```

Subarea Hydrograph Computation

Title: Design Point 10

Description: 24 Hour
100 Yr

Hydrograph No.: 12
Branch No.: 3

Subarea drainage area (acres): .78
Total upstream drainage area (acres): 0
Percent impervious area: 67
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 93

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 5

Channel routing method: Channel storage

Reach length (ft)= 44
Slope (ft/ft)= .022
Manning's n= .013

Channel type is circular: Diameter (inches)= 36

		Unit hydrograph				
Time	0.00	0.80	1.60	2.40	3.20	
Discharge	0.0000	0.1327	0.4424	0.8406	1.37	
Time	4.00	4.80	5.60	6.40	7.20	
Discharge	2.08	2.92	3.63	4.11	4.38	
Time	8.00	8.80	9.60	10.40	11.20	
Discharge	4.42	4.38	4.11	3.80	3.45	
Time	12.00	12.80	13.60	14.40	15.20	
Discharge	3.01	2.48	2.04	1.73	1.46	
Time	16.00	17.60	19.20	20.80	22.40	
Discharge	1.24	0.9158	0.6503	0.4734	0.3760	
Time	24.00	25.60	27.20	28.80	30.40	
Discharge	0.2920	0.2212	0.1548	0.0973	0.0442	
Time	32.00					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
       ious ious  erv.  erv.  Hydro- Upstream Total
       Loss Excess Loss Excess graph  Hyd.
*****
0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
10.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
20.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
30.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
40.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
50.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
60.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00
70.00  0.01  0.01  0.00  0.01  0.00  0.00  0.00  0.00
80.00  0.01  0.01  0.00  0.01  0.00  0.00  0.00  0.00
90.00  0.01  0.01  0.00  0.01  0.00  0.00  0.00  0.00
100.00 0.01  0.01  0.00  0.01  0.00  0.00  0.00  0.00
110.00 0.01  0.01  0.00  0.01  0.00  0.00  0.00  0.00
120.00 0.01  0.01  0.00  0.01  0.00  0.00  0.00  0.00
130.00 0.01  0.01  0.00  0.01  0.00  0.00  0.00  0.00
140.00 0.01  0.01  0.00  0.00  0.00  0.00  0.00  0.00
150.00 0.01  0.01  0.00  0.00  0.00  0.00  0.00  0.00
160.00 0.01  0.01  0.00  0.00  0.00  0.01  0.00  0.01
170.00 0.01  0.01  0.00  0.00  0.00  0.01  0.00  0.01
180.00 0.01  0.01  0.00  0.00  0.00  0.01  0.00  0.01
190.00 0.01  0.01  0.00  0.00  0.00  0.01  0.00  0.01
200.00 0.01  0.01  0.00  0.00  0.00  0.01  0.00  0.01
210.00 0.01  0.01  0.00  0.00  0.00  0.01  0.00  0.01
220.00 0.01  0.01  0.00  0.01  0.01  0.01  0.00  0.01
230.00 0.02  0.02  0.00  0.01  0.01  0.02  0.00  0.02
240.00 0.02  0.02  0.00  0.01  0.01  0.03  0.00  0.03
250.00 0.02  0.02  0.00  0.01  0.01  0.04  0.00  0.04
260.00 0.02  0.02  0.00  0.01  0.01  0.04  0.00  0.04
270.00 0.02  0.02  0.00  0.01  0.01  0.05  0.00  0.05
280.00 0.02  0.02  0.00  0.01  0.02  0.05  0.00  0.05
290.00 0.03  0.02  0.01  0.01  0.03  0.05  0.00  0.05
300.00 0.04  0.03  0.01  0.01  0.04  0.08  0.00  0.08
310.00 0.07  0.04  0.03  0.01  0.06  0.12  0.00  0.12
320.00 0.48  0.18  0.30  0.03  0.44  0.22  0.00  0.22
330.00 0.88  0.14  0.74  0.02  0.86  1.59  0.00  1.59
340.00 0.88  0.07  0.81  0.01  0.87  3.47  0.00  3.47
350.00 0.48  0.02  0.45  0.00  0.47  3.87  0.00  3.87
360.00 0.07  0.00  0.07  0.00  0.07  2.38  0.00  2.38
370.00 0.07  0.00  0.07  0.00  0.07  0.60  0.00  0.60
380.00 0.06  0.00  0.06  0.00  0.06  0.35  0.00  0.35
390.00 0.04  0.00  0.04  0.00  0.04  0.27  0.00  0.27
400.00 0.04  0.00  0.04  0.00  0.04  0.21  0.00  0.21
410.00 0.04  0.00  0.04  0.00  0.04  0.20  0.00  0.20
420.00 0.03  0.00  0.03  0.00  0.03  0.17  0.00  0.17
430.00 0.03  0.00  0.03  0.00  0.03  0.14  0.00  0.14
440.00 0.03  0.00  0.03  0.00  0.03  0.13  0.00  0.13
*****
Totals 3.53  0.77  2.77  0.23  3.30

```

Runoff volume= .1940928 acre-ft
Total volume= .1940928 acre-ft
Peak discharge (cfs)= 3.865132

Subarea Hydrograph Computation

Title: Design Point 11

Description: 24 Hour
100 Yr

Hydrograph No.: 13
Branch No.: 3

Subarea drainage area (acres): .18
Total upstream drainage area (acres): .78
Percent impervious area: 80
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 93

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 6.46

Channel routing method: Channel storage

Reach length (ft)= 16
Slope (ft/ft)= .02
Manning's n= .013

Channel type is circular: Diameter (inches)= 18

		Unit hydrograph				
Time	0.00	0.89	1.78	2.66	3.55	
Discharge	0.0000	0.0276	0.0920	0.1748	0.2853	
Time	4.44	5.33	6.21	7.10	7.99	
Discharge	0.4325	0.6073	0.7545	0.8558	0.9110	
Time	8.88	9.76	10.65	11.54	12.43	
Discharge	0.9202	0.9110	0.8558	0.7914	0.7177	
Time	13.31	14.20	15.09	15.98	16.86	
Discharge	0.6257	0.5153	0.4233	0.3589	0.3037	
Time	17.75	19.53	21.30	23.08	24.85	
Discharge	0.2576	0.1905	0.1353	0.0985	0.0782	
Time	26.63	28.40	30.18	31.95	33.73	
Discharge	0.0607	0.0460	0.0322	0.0202	0.0092	
Time	35.50					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
       ious ious  erv.  erv.  Hydro- Upstream Total
       Loss Excess Loss Excess graph  Hyd.
*****
0.00   0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
10.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
20.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
30.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
40.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
50.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
60.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
70.00  0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
80.00  0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
90.00  0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
100.00 0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
110.00 0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
120.00 0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
130.00 0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
140.00 0.01 0.01 0.00 0.00 0.00 0.00 0.00 0.01
150.00 0.01 0.01 0.00 0.00 0.00 0.00 0.00 0.01
160.00 0.01 0.01 0.00 0.00 0.00 0.00 0.01 0.01
170.00 0.01 0.01 0.00 0.00 0.00 0.00 0.01 0.01
180.00 0.01 0.01 0.00 0.00 0.00 0.00 0.01 0.01
190.00 0.01 0.01 0.00 0.00 0.00 0.00 0.01 0.01
200.00 0.01 0.01 0.00 0.00 0.00 0.00 0.01 0.01
210.00 0.01 0.01 0.00 0.00 0.00 0.00 0.01 0.01
220.00 0.01 0.01 0.00 0.01 0.01 0.00 0.01 0.01
230.00 0.02 0.02 0.00 0.01 0.01 0.01 0.02 0.02
240.00 0.02 0.02 0.00 0.01 0.01 0.01 0.03 0.03
250.00 0.02 0.02 0.00 0.01 0.01 0.01 0.04 0.05
260.00 0.02 0.02 0.00 0.01 0.01 0.01 0.04 0.05
270.00 0.02 0.02 0.00 0.01 0.01 0.01 0.05 0.06
280.00 0.02 0.02 0.00 0.01 0.02 0.01 0.05 0.06
290.00 0.03 0.02 0.01 0.01 0.03 0.01 0.05 0.07
300.00 0.04 0.03 0.01 0.01 0.04 0.02 0.08 0.11
310.00 0.07 0.04 0.03 0.01 0.06 0.03 0.12 0.16
320.00 0.48 0.18 0.30 0.03 0.44 0.06 0.22 0.28
330.00 0.88 0.14 0.74 0.02 0.86 0.38 1.59 1.97
340.00 0.88 0.07 0.81 0.01 0.87 0.82 3.47 4.30
350.00 0.48 0.02 0.45 0.00 0.47 0.93 3.87 4.80
360.00 0.07 0.00 0.07 0.00 0.07 0.60 2.38 2.98
370.00 0.07 0.00 0.07 0.00 0.07 0.18 0.60 0.77
380.00 0.06 0.00 0.06 0.00 0.06 0.09 0.35 0.45
390.00 0.04 0.00 0.04 0.00 0.04 0.07 0.27 0.34
400.00 0.04 0.00 0.04 0.00 0.04 0.05 0.21 0.26
410.00 0.04 0.00 0.04 0.00 0.04 0.05 0.20 0.25
420.00 0.03 0.00 0.03 0.00 0.03 0.04 0.17 0.21
430.00 0.03 0.00 0.03 0.00 0.03 0.03 0.14 0.17
440.00 0.03 0.00 0.03 0.00 0.03 0.03 0.13 0.17
*****
Totals 3.53 0.77 2.77 0.23 3.30

```

Runoff volume= 4.788503E-02 acre-ft
Total volume= .2419779 acre-ft
Peak discharge (cfs)= 4.798305

Branch Confluence

Title: Design Point 11 Combined

Description: 24 Hour
100 Yr

Hydrograph No.: 14
Branch No.: 2

Combined Branches: 2 3

```
*****  
Time          Flow *      Time          Flow *      Time          Flow  
*****  
10.00         0.00 *      160.00         0.17 *      310.00         3.42  
20.00         0.00 *      170.00         0.19 *      320.00         5.93  
30.00         0.00 *      180.00         0.21 *      330.00        39.15  
40.00         0.00 *      190.00         0.24 *      340.00       105.61  
50.00         0.00 *      200.00         0.25 *      350.00       157.81  
60.00         0.00 *      210.00         0.27 *      360.00       129.30  
70.00         0.00 *      220.00         0.29 *      370.00        55.15  
80.00         0.00 *      230.00         0.49 *      380.00        26.66  
90.00         0.00 *      240.00         0.74 *      390.00        16.87  
100.00        0.00 *      250.00         1.03 *      400.00        11.99  
110.00        0.02 *      260.00         1.20 *      410.00         10.61  
120.00        0.05 *      270.00         1.34 *      420.00          9.16  
130.00        0.09 *      280.00         1.46 *      430.00          7.56  
140.00        0.11 *      290.00         1.56 *      440.00          7.00  
150.00        0.14 *      300.00         2.30 *  
*****
```

Subarea Hydrograph Computation

Title: Design Point 12

Description: 24 Hour
100 Yr

Hydrograph No.: 15
Branch No.: 3

Subarea drainage area (acres): 4.32
Total upstream drainage area (acres): 0
Percent impervious area: 15
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 93

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 8.14

Channel routing method: Channel storage

Reach length (ft)= 1000
Slope (ft/ft)= .0373
Manning's n= .013

Channel type is circular: Diameter (inches)= 36

		Unit hydrograph				
Time	0.00	0.99	1.98	2.97	3.95	
Discharge	0.0000	0.5950	1.98	3.77	6.15	
Time	4.94	5.93	6.92	7.91	8.90	
Discharge	9.32	13.09	16.26	18.44	19.63	
Time	9.88	10.87	11.86	12.85	13.84	
Discharge	19.83	19.63	18.44	17.06	15.47	
Time	14.83	15.81	16.80	17.79	18.78	
Discharge	13.49	11.11	9.12	7.73	6.54	
Time	19.77	21.74	23.72	25.70	27.68	
Discharge	5.55	4.11	2.92	2.12	1.69	
Time	29.65	31.63	33.61	35.58	37.56	
Discharge	1.31	0.9916	0.6941	0.4363	0.1983	
Time	39.54					
Discharge	0.0000					


```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
        ious ious  erv.  erv.  Hydro- Upstream Total
        Loss Excess Loss Excess graph  Hyd.
*****
0.00   0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
10.00  0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
20.00  0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
30.00  0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
40.00  0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
50.00  0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
60.00  0.00  0.00  0.00  0.00  0.00    0.00   0.00   0.00
70.00  0.01  0.01  0.00  0.01  0.00    0.00   0.00   0.00
80.00  0.01  0.01  0.00  0.01  0.00    0.00   0.00   0.00
90.00  0.01  0.01  0.00  0.01  0.00    0.00   0.00   0.00
100.00 0.01  0.01  0.00  0.01  0.00    0.00   0.00   0.00
110.00 0.01  0.01  0.00  0.01  0.00    0.00   0.00   0.00
120.00 0.01  0.01  0.00  0.01  0.00    0.00   0.00   0.00
130.00 0.01  0.01  0.00  0.01  0.00    0.00   0.00   0.00
140.00 0.01  0.01  0.00  0.00  0.00    0.01   0.00   0.01
150.00 0.01  0.01  0.00  0.00  0.00    0.01   0.00   0.01
160.00 0.01  0.01  0.00  0.00  0.00    0.01   0.00   0.01
170.00 0.01  0.01  0.00  0.00  0.00    0.01   0.00   0.01
180.00 0.01  0.01  0.00  0.00  0.00    0.01   0.00   0.01
190.00 0.01  0.01  0.00  0.00  0.00    0.01   0.00   0.01
200.00 0.01  0.01  0.00  0.00  0.00    0.01   0.00   0.01
210.00 0.01  0.01  0.00  0.00  0.00    0.01   0.00   0.01
220.00 0.01  0.01  0.00  0.01  0.01    0.01   0.00   0.01
230.00 0.02  0.02  0.00  0.01  0.01    0.02   0.00   0.02
240.00 0.02  0.02  0.00  0.01  0.01    0.03   0.00   0.03
250.00 0.02  0.02  0.00  0.01  0.01    0.06   0.00   0.06
260.00 0.02  0.02  0.00  0.01  0.01    0.08   0.00   0.08
270.00 0.02  0.02  0.00  0.01  0.01    0.11   0.00   0.11
280.00 0.02  0.02  0.00  0.01  0.02    0.13   0.00   0.13
290.00 0.03  0.02  0.01  0.01  0.03    0.15   0.00   0.15
300.00 0.04  0.03  0.01  0.01  0.04    0.25   0.00   0.25
310.00 0.07  0.04  0.03  0.01  0.06    0.41   0.00   0.41
320.00 0.48  0.18  0.30  0.03  0.44    0.78   0.00   0.78
330.00 0.88  0.14  0.74  0.02  0.86    6.50   0.00   6.50
340.00 0.88  0.07  0.81  0.01  0.87   16.73   0.00  16.73
350.00 0.48  0.02  0.45  0.00  0.47   20.78   0.00  20.78
360.00 0.07  0.00  0.07  0.00  0.07   14.44   0.00  14.44
370.00 0.07  0.00  0.07  0.00  0.07    4.90   0.00    4.90
380.00 0.06  0.00  0.06  0.00  0.06    2.36   0.00    2.36
390.00 0.04  0.00  0.04  0.00  0.04    1.59   0.00    1.59
400.00 0.04  0.00  0.04  0.00  0.04    1.24   0.00    1.24
410.00 0.04  0.00  0.04  0.00  0.04    1.15   0.00    1.15
420.00 0.03  0.00  0.03  0.00  0.03    0.99   0.00    0.99
430.00 0.03  0.00  0.03  0.00  0.03    0.81   0.00    0.81
440.00 0.03  0.00  0.03  0.00  0.03    0.76   0.00    0.76
*****
Totals 3.53  0.77  2.77  0.23  3.30

```

Runoff volume= 1.018747 acre-ft
Total volume= 1.018747 acre-ft
Peak discharge (cfs)= 20.78418

Branch Confluence

Title: Design Point 12

Description: 24 Hour
100 Yr

Hydrograph No.: 16
Branch No.: 2

Combined Branches: 2 3

```
*****  
Time      Flow *   Time      Flow *   Time      Flow  
*****  
10.00     0.00 *   160.00    0.18 *   310.00    3.82  
20.00     0.00 *   170.00    0.20 *   320.00    6.71  
30.00     0.00 *   180.00    0.22 *   330.00   45.65  
40.00     0.00 *   190.00    0.25 *   340.00  122.35  
50.00     0.00 *   200.00    0.26 *   350.00  178.60  
60.00     0.00 *   210.00    0.28 *   360.00  143.74  
70.00     0.00 *   220.00    0.30 *   370.00   60.05  
80.00     0.00 *   230.00    0.51 *   380.00   29.02  
90.00     0.00 *   240.00    0.77 *   390.00   18.47  
100.00    0.00 *   250.00    1.08 *   400.00   13.23  
110.00    0.02 *   260.00    1.29 *   410.00   11.75  
120.00    0.05 *   270.00    1.45 *   420.00   10.14  
130.00    0.09 *   280.00    1.58 *   430.00    8.37  
140.00    0.12 *   290.00    1.71 *   440.00    7.76  
150.00    0.15 *   300.00    2.55 *  
*****
```

Subarea Hydrograph Computation

Title: Design Point 13

Description: 24 Hour
100 Yr

Hydrograph No.: 17
Branch No.: 4

Subarea drainage area (acres): 1.32
Total upstream drainage area (acres): 0
Percent impervious area: 54
Total precipitation multiplication factor: 1
Hydrograph base flow (cfs): 0

Impervious area; SCS curve number: 98

Pervious area; SCS curve number: 68

Computation method selection: SCS Dimensionless Hydrograph

Time of concentration (minutes)= 6.31

		Unit hydrograph				
Time	0.00	0.88	1.76	2.64	3.51	
Discharge	0.0000	0.2045	0.6817	1.30	2.11	
Time	4.39	5.27	6.15	7.03	7.91	
Discharge	3.20	4.50	5.59	6.34	6.75	
Time	8.79	9.66	10.54	11.42	12.30	
Discharge	6.82	6.75	6.34	5.86	5.32	
Time	13.18	14.06	14.94	15.81	16.69	
Discharge	4.64	3.82	3.14	2.66	2.25	
Time	17.57	19.33	21.09	22.84	24.60	
Discharge	1.91	1.41	1.00	0.7294	0.5795	
Time	26.36	28.12	29.87	31.63	33.39	
Discharge	0.4499	0.3409	0.2386	0.1500	0.0682	
Time	35.14					
Discharge	0.0000					

```

*****
Time   Rain Perv- Perv- Imp- Imp- Subarea Routed Total
       Loss Excess Loss Excess Hydro- Upstream Total
       Loss Excess Loss Excess graph   Hyd.
*****
0.00   0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
10.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
20.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
30.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
40.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
50.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
60.00  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
70.00  0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
80.00  0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
90.00  0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
100.00 0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
110.00 0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
120.00 0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
130.00 0.01 0.01 0.00 0.01 0.00 0.00 0.00 0.00
140.00 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.01
150.00 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.01
160.00 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.01
170.00 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.01
180.00 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.01
190.00 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.01
200.00 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.01
210.00 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.01
220.00 0.01 0.01 0.00 0.01 0.01 0.01 0.00 0.01
230.00 0.02 0.02 0.00 0.01 0.01 0.02 0.00 0.02
240.00 0.02 0.02 0.00 0.01 0.01 0.04 0.00 0.04
250.00 0.02 0.02 0.00 0.01 0.01 0.05 0.00 0.05
260.00 0.02 0.02 0.00 0.01 0.01 0.06 0.00 0.06
270.00 0.02 0.02 0.00 0.01 0.01 0.06 0.00 0.06
280.00 0.02 0.02 0.00 0.01 0.02 0.06 0.00 0.06
290.00 0.03 0.03 0.00 0.01 0.03 0.07 0.00 0.07
300.00 0.04 0.04 0.00 0.01 0.04 0.10 0.00 0.10
310.00 0.07 0.07 0.00 0.01 0.06 0.15 0.00 0.15
320.00 0.48 0.48 0.00 0.03 0.44 0.25 0.00 0.25
330.00 0.88 0.76 0.12 0.02 0.86 1.62 0.00 1.62
340.00 0.88 0.55 0.33 0.01 0.87 3.74 0.00 3.74
350.00 0.48 0.24 0.24 0.00 0.47 4.82 0.00 4.82
360.00 0.07 0.03 0.04 0.00 0.07 3.31 0.00 3.31
370.00 0.07 0.03 0.04 0.00 0.07 0.98 0.00 0.98
380.00 0.06 0.03 0.03 0.00 0.06 0.54 0.00 0.54
390.00 0.04 0.02 0.02 0.00 0.04 0.39 0.00 0.39
400.00 0.04 0.02 0.02 0.00 0.04 0.30 0.00 0.30
410.00 0.04 0.02 0.02 0.00 0.04 0.29 0.00 0.29
420.00 0.03 0.01 0.02 0.00 0.03 0.25 0.00 0.25
430.00 0.03 0.01 0.02 0.00 0.03 0.20 0.00 0.20
440.00 0.03 0.01 0.02 0.00 0.03 0.19 0.00 0.19
*****
Totals 3.53 2.61 0.92 0.23 3.30

```

Runoff volume= .2410403 acre-ft
Total volume= .2410403 acre-ft
Peak discharge (cfs)= 4.816794