

Appendix K-6

Preliminary Hydrology Study for Meridian
Park Upper Plateau - Building C

PRELIMINARY HYDROLOGY STUDY

For:

Meridian Park Upper Plateau – Building C

Project Site Location/Address:
NEC Linebacker Drive and Cactus Avenue
Riverside, CA

Prepared For:
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Upland, CA 91786
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Lead Agency:
March Joint Powers Authority
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Riverside, CA 92518

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May 5, 2022

Project No. 20-750

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Section I

Introduction

The following hydrology study has been prepared for the development of the Meridian Business Center Upper Plateau – Building C project. The project consists of a +/- 550,000 sf warehouse building with associated parking and landscape. The site is located on the east side of Linebacker Drive to the north of Cactus Avenue in an unincorporated portion of the County of Riverside, CA within the March Joint Powers Authority jurisdictional area. The project lies within the boundaries of the Upper Plateau portion of Meridian South Campus Business Center. The overall project is approximately 27.5 acres. The general location of the site is illustrated on the Vicinity Map (see Appendix A of this report).

Section II

Methodology

The hydrologic analysis was completed assuming the ultimate project condition based on conceptual site plans. For both the existing and proposed conditions, the peak storm discharge for the drainage sub areas were calculated using the Riverside County Hydrology Manual. The CivilDesign Riverside County Unit Hydrograph software was used to develop hydrographs for the existing and proposed 2-year 24-Hour storm and 100-year 24-Hour events (see calculations in Appendix C). A detention analysis was performed using Hydraflow Storm Sewers Software for the proposed storm events (see calculations in appendix D). A soil type of BC was assigned to the project site based on the Riverside County Flood Control and Water Conservation District Hydrology Manual Hydrologic Soils Group Map Plate C-1.16 (see portion of map in Appendix A). In such cases where a dual soil designation has been assigned, the more conservative value is recommended for use. For calculation purposes, a soil type of C was used for the project site. Soil group C is defined as soils having slow infiltration rates when thoroughly wetted and consisting chiefly of silty-loam soils with a layer that impedes downward movement of water, or soils with moderately fine to fine texture. These soils have a slow rate of water transmission.

Section III

Project Description

Existing Site Conditions

The pre development conditions for the site consist of rough graded land surface flowing to a desilting basin located at the northeast corner of the site. There are no sources of run-on to the site. Stormwater from the basin flows through a 24" riser and into a 36" storm drain flowing north and spilling out at a headwall structure to the east. Stormwater then surface flows to the northeast converging with other stormwater at a headwall structure built for Alessandro Commerce Center (County of Riverside Plot Plan No. 25422). The headwall is connected to a 42" RCP storm drain that per the approved hydrology report has been designed for a Q100 of 136.74 cfs. After bypassing the Alessandro Commerce Center, the 42" storm drain outlets to 6" cobble rip rap and flows northwest towards the southwest corner of Alessandro Boulevard and Meridian Parkway. Stormwater enters a wingtype headwall leading to a 60" RCP designed for a Q100 of 183 cfs per MJPA project no. 4-0530 & drawing no. 4-821. Stormwater flows to the east and outlets at the LLMD maintained Lot 69 North Detention Basin. The basin inlets into a 10'x6' RCB maintained by Riverside County Flood Control crossing under Van Buren Boulevard which outlets to the north and outlets to an existing creek crossing under Sycamore Canyon Boulevard and entering into Sycamore Canyon Wilderness Park. The creeks within Sycamore Canyon Wilderness Park combine and flow into Sycamore Damn to the north, and later downstream the Santa Ana River.



Proposed Site Conditions

The proposed development will consist of the construction of a 550,000 sf warehouse building along with parking, drive aisle and landscaped areas. The site will feature private storm drain lines collecting runoff from the surrounding site that will flow into a detention system. A diversion structure that features a weir with an orifice placed at a calculated height will be installed downstream of the detention system. This design will allow the design capture volume (as calculated per MJPA/Riverside County WQMP requirements) to flow to the Modular Wetland Unit, while also allowing higher flows to bypass the MWS unit by holding back both the 2-year and 100-year storm to existing conditions using both the weir and orifice. The detention system will feature 6,540 linear feet of 60-inch pipe and will continue to outflow to the existing 36" lateral serving the desilting basin currently on the site.

Section IV

Conclusion

The following tables summarize the data and results for the 2-year and 100-year 24-hour design storm in the existing and proposed conditions using the Riverside County Unit Hydrograph. The tables also show the approximate volume within the proposed detention systems that will be detained to meet existing flow rates.

2-YEAR 24-HOUR STORM HYDROGRAPH TABLE

Existing Flowrate (cfs)	Proposed Flowrate (cfs)	Volume to be detained (cf)	Flowrate After Detention (cfs)	Notes
0.598	4.950	99,095	0.597	• Diversion Structure: Weir Height: 3.90' Length: 3.10' 3.40" orifice at invert of weir

100-YEAR 24-HOUR STORM HYDROGRAPH TABLE

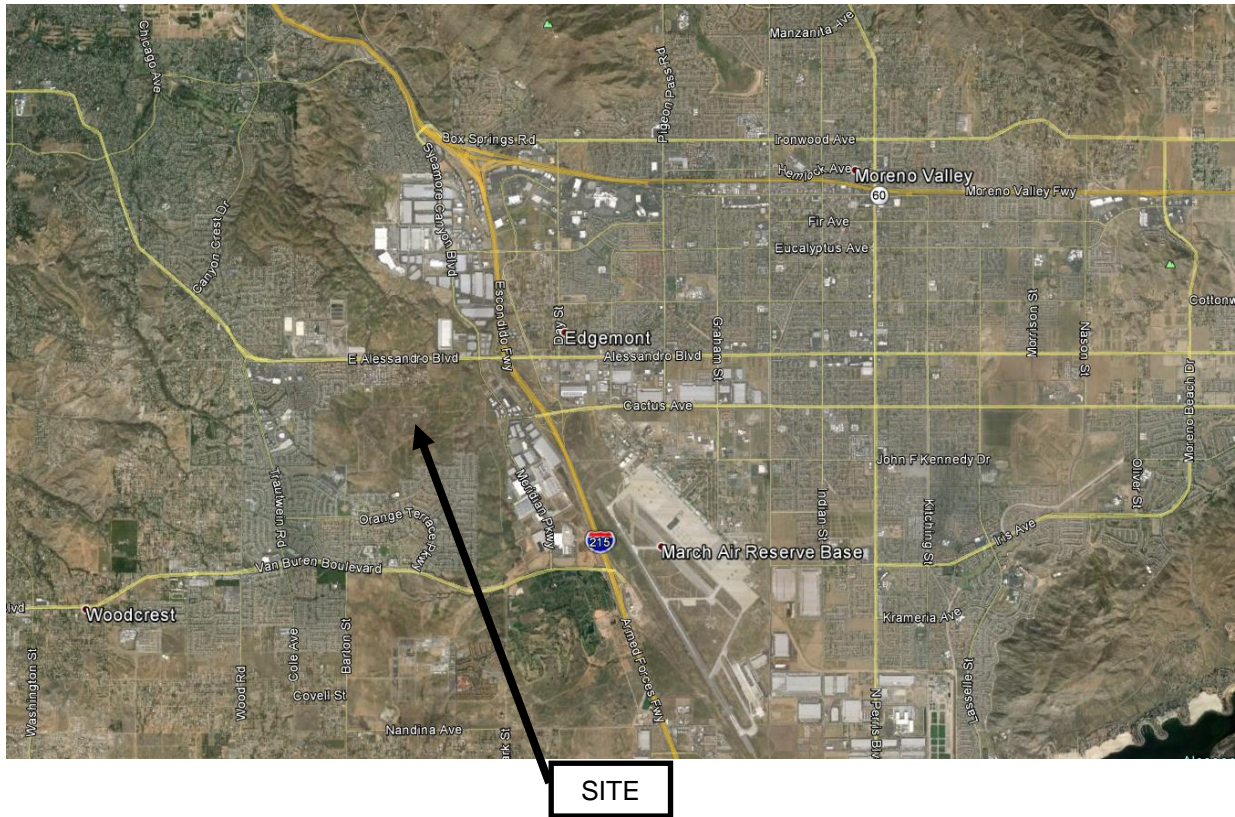
Existing Flowrate (cfs)	Proposed Flowrate (cfs)	Volume to be detained (cf)	Flowrate After Detention (cfs)	Notes
11.604	12.48	124,190	11.590	• Diversion Structure: Weir Height: 3.90' Length: 3.10' 3.40" orifice at invert of weir

The total proposed flow rate increased from the existing conditions prior to reaching the detention system. Hydrflow Storm Sewers Software used this hydrograph information to generate peak discharge rates for the proposed storm drain system utilizing the proposed detention system. Orifice sizes denoted in the Notes section of the table were placed at the invert of the weir to simulate both the modular wetlands outflow as well as the bypass orifice at the design capture volume height within the detention system. For the 2 year 24 hour storm, utilizing a total volume of 99,095 cf, the proposed flow rate after the detention systems dropped to 0.597 cfs which is lower than the existing flow of 0.598 cfs. For the 100 year 24 hour storm, utilizing a total volume of 124,190 cf, the proposed flow rate after the detention systems dropped to 11.590 cfs which is lower than the existing flow of 11.604 cfs.



APPENDIX A

VICINITY MAP



RAINFALL INTENSITY - INCHES PER HOUR

MIRA LOMA			MURRIETA - TEMECULA & RANCHO CALIFORNIA			NORCO			PALM SPRINGS			PERRIS VALLEY		
DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY	
	10 YEAR	100 YEAR		10 YEAR	100 YEAR		10 YEAR	100 YEAR		10 YEAR	100 YEAR		10 YEAR	100 YEAR
5	2.84	4.48	5	3.45	5.10	5	2.77	4.16	5	4.23	6.76	5	2.64	3.78
6	2.58	4.07	6	3.12	4.61	6	2.53	3.79	6	3.80	6.08	6	2.41	3.46
7	2.37	3.75	7	2.87	4.24	7	2.34	3.51	7	3.48	5.56	7	2.24	3.21
8	2.21	3.49	8	2.67	3.94	8	2.19	3.29	8	3.22	5.15	8	2.09	3.01
9	2.08	3.28	9	2.50	3.69	9	2.07	3.10	9	3.01	4.81	9	1.98	2.84
10	1.96	3.10	10	2.36	3.48	10	1.96	2.94	10	2.83	4.52	10	1.88	2.69
11	1.87	2.95	11	2.24	3.30	11	1.87	2.80	11	2.67	4.28	11	1.79	2.57
12	1.78	2.82	12	2.13	3.15	12	1.79	2.68	12	2.54	4.07	12	1.72	2.46
13	1.71	2.70	13	2.04	3.01	13	1.72	2.58	13	2.43	3.88	13	1.65	2.37
14	1.64	2.60	14	1.96	2.89	14	1.66	2.48	14	2.33	3.72	14	1.59	2.29
15	1.58	2.50	15	1.89	2.79	15	1.60	2.40	15	2.23	3.58	15	1.54	2.21
16	1.53	2.42	16	1.82	2.69	16	1.55	2.32	16	2.15	3.44	16	1.49	2.14
17	1.48	2.34	17	1.76	2.60	17	1.50	2.25	17	2.08	3.32	17	1.45	2.08
18	1.44	2.27	18	1.71	2.52	18	1.46	2.19	18	2.01	3.22	18	1.41	2.02
19	1.40	2.21	19	1.66	2.45	19	1.42	2.13	19	1.95	3.12	19	1.37	1.97
20	1.36	2.15	20	1.61	2.38	20	1.39	2.08	20	1.89	3.03	20	1.34	1.92
22	1.29	2.04	22	1.53	2.26	22	1.32	1.98	22	1.79	2.86	22	1.28	1.83
24	1.24	1.95	24	1.46	2.15	24	1.26	1.90	24	1.70	2.72	24	1.22	1.75
26	1.18	1.87	26	1.39	2.06	26	1.22	1.82	26	1.62	2.60	26	1.18	1.69
28	1.14	1.80	28	1.34	1.98	28	1.17	1.76	28	1.56	2.49	28	1.13	1.63
30	1.10	1.73	30	1.29	1.90	30	1.13	1.70	30	1.49	2.39	30	1.10	1.57
32	1.06	1.67	32	1.24	1.84	32	1.10	1.64	32	1.44	2.30	32	1.06	1.52
34	1.03	1.62	34	1.20	1.78	34	1.06	1.59	34	1.39	2.22	34	1.03	1.48
36	1.00	1.57	36	1.17	1.72	36	1.03	1.55	36	1.34	2.15	36	1.00	1.44
38	.97	1.53	38	1.13	1.67	38	1.01	1.51	38	1.30	2.09	38	.98	1.40
40	.94	1.49	40	1.10	1.62	40	.98	1.47	40	1.27	2.02	40	.95	1.37
45	.89	1.40	45	1.03	1.52	45	.92	1.39	45	1.18	1.89	45	.90	1.29
50	.84	1.32	50	.97	1.44	50	.88	1.31	50	1.11	1.78	50	.85	1.22
55	.80	1.26	55	.92	1.36	55	.84	1.25	55	1.05	1.68	55	.81	1.17
60	.76	1.20	60	.88	1.30	60	.80	1.20	60	1.00	1.60	60	.78	1.12
65	.73	1.15	65	.84	1.24	65	.77	1.15	65	.95	1.53	65	.75	1.08
70	.70	1.11	70	.81	1.19	70	.74	1.11	70	.91	1.46	70	.72	1.04
75	.68	1.07	75	.78	1.15	75	.72	1.07	75	.88	1.41	75	.70	1.00
80	.65	1.03	80	.75	1.11	80	.69	1.04	80	.85	1.35	80	.68	.97
85	.63	1.00	85	.73	1.07	85	.67	1.01	85	.82	1.31	85	.66	.94

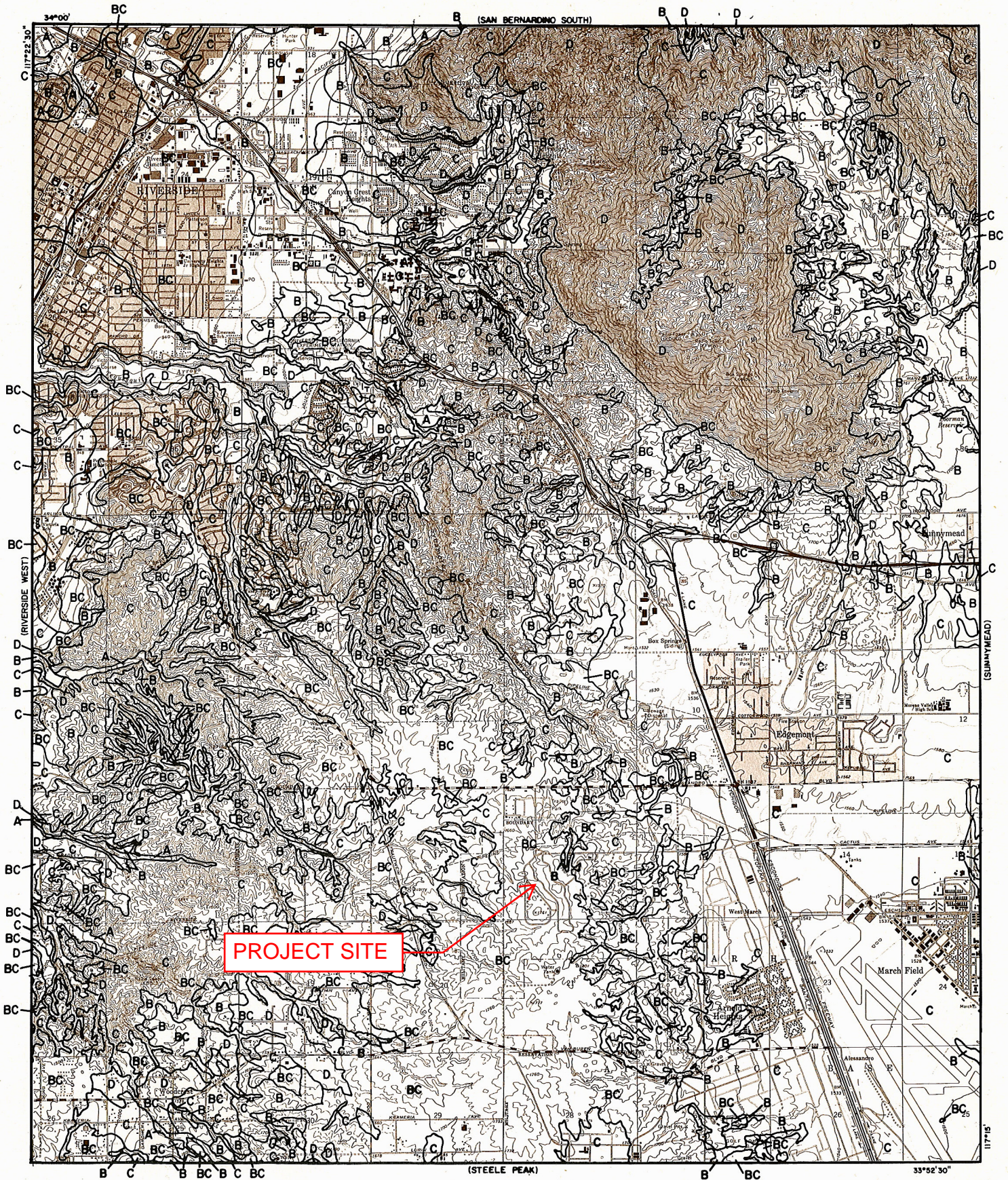
SLOPE = .530

SLOPE = .550

SLOPE = .500

SLOPE = .580

SLOPE = .490



LEGEND

— SOILS GROUP BOUNDARY
 A SOILS GROUP DESIGNATION

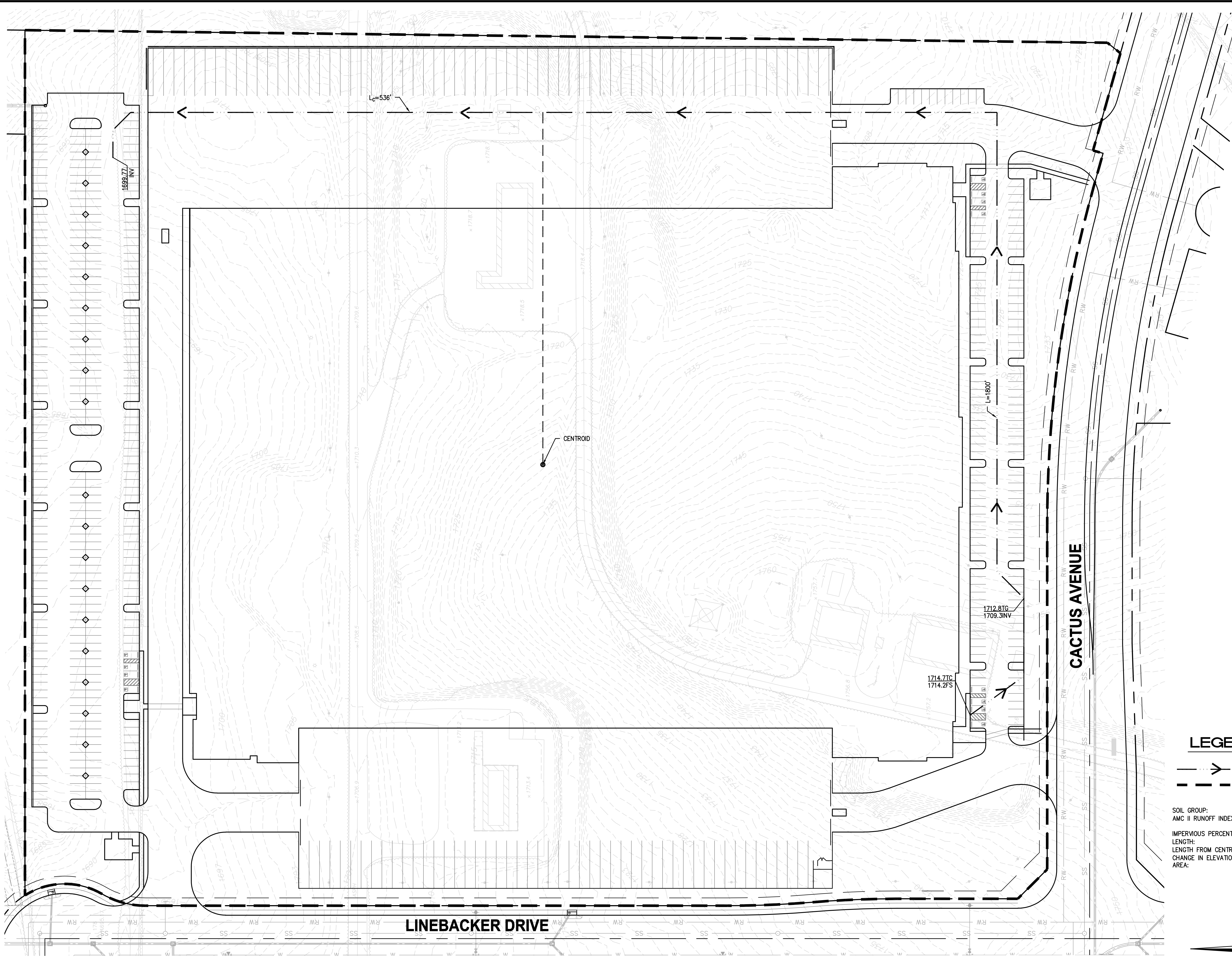
RCFC & WCD
 HYDROLOGY MANUAL

0 FEET 5000

HYDROLOGIC SOILS GROUP MAP
FOR
RIVERSIDE—EAST

APPENDIX B

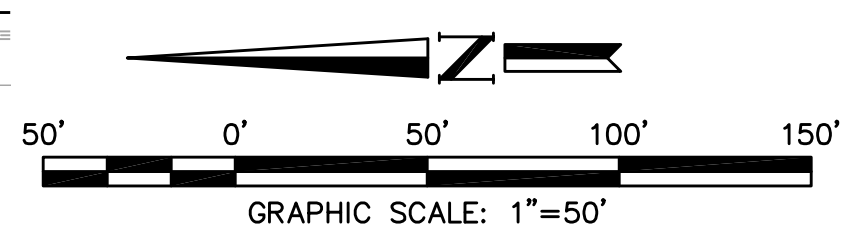
Existing Hydrology Map
Proposed Hydrology Map



LEGEND

- FLOW PATH
- WATERSHED AREA

SOIL GROUP: C [PLATE C1.30]
 AMC II RUNOFF INDEX NUMBER: 69 [COMMERCIAL L/S (LAWN, SHRUBS, ETC.)]
 IMPERVIOUS PERCENTAGE: 90.0%
 LENGTH: 1,800'
 LENGTH FROM CENTROID: 536'
 CHANGE IN ELEVATION: 10.9'
 AREA: 27.49 ACRES



NO.	REVISION:	DATE:

PROJECT: **MERIDIAN - UPPER PLATEAU
 LOT 5 - BUILDING C
 COUNTY OF RIVERSIDE, CALIFORNIA**
 DRAWING NAME: **PROPOSED HYDROLOGY MAP**

ISSUE:	HYDROLOGY
DATE:	05/06/2022
CHECKED: KH	DRAWN: KH
DRAWING FILE:	
PROJECT NO.:	20-760
SHEET NUMBER:	1
OF	1 SHEETS
SCALE:	AS SHOWN

APPENDIX C

Existing Condition Hydrograph (Unit Riverside)
Proposed Condition Hydrograph (Unit Riverside)

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
Study date 03/24/22 File: 20750EC242.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6310

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

20-750 Building C
existing
2 year 24 hour

Drainage Area = 27.49(Ac.) = 0.043 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 27.49(Ac.) = 0.043
Sq. Mi.
Length along longest watercourse = 1449.00(Ft.)
Length along longest watercourse measured to centroid = 707.00(Ft.)
Length along longest watercourse = 0.274 Mi.
Length along longest watercourse measured to centroid = 0.134 Mi.
Difference in elevation = 9.70(Ft.)
Slope along watercourse = 35.3458 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.104 Hr.
Lag time = 6.25 Min.
25% of lag time = 1.56 Min.
40% of lag time = 2.50 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
27.49	1.60	43.98

100 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
27.49	4.00	109.96

STORM EVENT (YEAR) = 2.00
 Area Averaged 2-Year Rainfall = 1.600 (In)
 Area Averaged 100-Year Rainfall = 4.000 (In)

Point rain (area averaged) = 1.600 (In)
 Areal adjustment factor = 99.99 %
 Adjusted average point rain = 1.600 (In)

Sub-Area Data:

Area (Ac.) Runoff Index Impervious %
 27.490 77.00 0.000
 Total Area Entered = 27.49 (Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-1	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
77.0	59.4	0.476	0.000	0.476	1.000	0.476
						Sum (F) = 0.476

Area averaged mean soil loss (F) (In/Hr) = 0.476
 Minimum soil loss rate ((In/Hr)) = 0.238
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

 U n i t H y d r o g r a p h
 VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	79.963	13.290
2	0.167	159.925	44.407
3	0.250	239.888	19.946
4	0.333	319.850	8.247
5	0.417	399.813	4.952
6	0.500	479.775	3.121
7	0.583	559.738	2.249
8	0.667	639.701	1.544
9	0.750	719.663	1.039
10	0.833	799.626	0.802
11	0.917	879.588	0.404
		Sum = 100.000	Sum= 27.705

 The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate (In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	0.07	(0.844)	0.012	0.001
2	0.17	0.07	(0.841)	0.012	0.001
3	0.25	0.07	(0.838)	0.012	0.001
4	0.33	0.10	(0.834)	0.017	0.002
5	0.42	0.10	(0.831)	0.017	0.002
6	0.50	0.10	(0.828)	0.017	0.002
7	0.58	0.10	(0.825)	0.017	0.002
8	0.67	0.10	(0.821)	0.017	0.002

9	0.75	0.10	0.019	(0.818)	0.017	0.002
10	0.83	0.13	0.026	(0.815)	0.023	0.003
11	0.92	0.13	0.026	(0.812)	0.023	0.003
12	1.00	0.13	0.026	(0.808)	0.023	0.003
13	1.08	0.10	0.019	(0.805)	0.017	0.002
14	1.17	0.10	0.019	(0.802)	0.017	0.002
15	1.25	0.10	0.019	(0.799)	0.017	0.002
16	1.33	0.10	0.019	(0.796)	0.017	0.002
17	1.42	0.10	0.019	(0.793)	0.017	0.002
18	1.50	0.10	0.019	(0.789)	0.017	0.002
19	1.58	0.10	0.019	(0.786)	0.017	0.002
20	1.67	0.10	0.019	(0.783)	0.017	0.002
21	1.75	0.10	0.019	(0.780)	0.017	0.002
22	1.83	0.13	0.026	(0.777)	0.023	0.003
23	1.92	0.13	0.026	(0.774)	0.023	0.003
24	2.00	0.13	0.026	(0.771)	0.023	0.003
25	2.08	0.13	0.026	(0.767)	0.023	0.003
26	2.17	0.13	0.026	(0.764)	0.023	0.003
27	2.25	0.13	0.026	(0.761)	0.023	0.003
28	2.33	0.13	0.026	(0.758)	0.023	0.003
29	2.42	0.13	0.026	(0.755)	0.023	0.003
30	2.50	0.13	0.026	(0.752)	0.023	0.003
31	2.58	0.17	0.032	(0.749)	0.029	0.003
32	2.67	0.17	0.032	(0.746)	0.029	0.003
33	2.75	0.17	0.032	(0.743)	0.029	0.003
34	2.83	0.17	0.032	(0.740)	0.029	0.003
35	2.92	0.17	0.032	(0.737)	0.029	0.003
36	3.00	0.17	0.032	(0.734)	0.029	0.003
37	3.08	0.17	0.032	(0.731)	0.029	0.003
38	3.17	0.17	0.032	(0.728)	0.029	0.003
39	3.25	0.17	0.032	(0.724)	0.029	0.003
40	3.33	0.17	0.032	(0.721)	0.029	0.003
41	3.42	0.17	0.032	(0.718)	0.029	0.003
42	3.50	0.17	0.032	(0.715)	0.029	0.003
43	3.58	0.17	0.032	(0.712)	0.029	0.003
44	3.67	0.17	0.032	(0.709)	0.029	0.003
45	3.75	0.17	0.032	(0.706)	0.029	0.003
46	3.83	0.20	0.038	(0.704)	0.035	0.004
47	3.92	0.20	0.038	(0.701)	0.035	0.004
48	4.00	0.20	0.038	(0.698)	0.035	0.004
49	4.08	0.20	0.038	(0.695)	0.035	0.004
50	4.17	0.20	0.038	(0.692)	0.035	0.004
51	4.25	0.20	0.038	(0.689)	0.035	0.004
52	4.33	0.23	0.045	(0.686)	0.040	0.004
53	4.42	0.23	0.045	(0.683)	0.040	0.004
54	4.50	0.23	0.045	(0.680)	0.040	0.004
55	4.58	0.23	0.045	(0.677)	0.040	0.004
56	4.67	0.23	0.045	(0.674)	0.040	0.004
57	4.75	0.23	0.045	(0.671)	0.040	0.004
58	4.83	0.27	0.051	(0.668)	0.046	0.005
59	4.92	0.27	0.051	(0.665)	0.046	0.005
60	5.00	0.27	0.051	(0.663)	0.046	0.005
61	5.08	0.20	0.038	(0.660)	0.035	0.004
62	5.17	0.20	0.038	(0.657)	0.035	0.004
63	5.25	0.20	0.038	(0.654)	0.035	0.004
64	5.33	0.23	0.045	(0.651)	0.040	0.004
65	5.42	0.23	0.045	(0.648)	0.040	0.004
66	5.50	0.23	0.045	(0.645)	0.040	0.004
67	5.58	0.27	0.051	(0.643)	0.046	0.005
68	5.67	0.27	0.051	(0.640)	0.046	0.005

69	5.75	0.27	0.051	(0.637)	0.046	0.005
70	5.83	0.27	0.051	(0.634)	0.046	0.005
71	5.92	0.27	0.051	(0.631)	0.046	0.005
72	6.00	0.27	0.051	(0.628)	0.046	0.005
73	6.08	0.30	0.058	(0.626)	0.052	0.006
74	6.17	0.30	0.058	(0.623)	0.052	0.006
75	6.25	0.30	0.058	(0.620)	0.052	0.006
76	6.33	0.30	0.058	(0.617)	0.052	0.006
77	6.42	0.30	0.058	(0.615)	0.052	0.006
78	6.50	0.30	0.058	(0.612)	0.052	0.006
79	6.58	0.33	0.064	(0.609)	0.058	0.006
80	6.67	0.33	0.064	(0.606)	0.058	0.006
81	6.75	0.33	0.064	(0.604)	0.058	0.006
82	6.83	0.33	0.064	(0.601)	0.058	0.006
83	6.92	0.33	0.064	(0.598)	0.058	0.006
84	7.00	0.33	0.064	(0.595)	0.058	0.006
85	7.08	0.33	0.064	(0.593)	0.058	0.006
86	7.17	0.33	0.064	(0.590)	0.058	0.006
87	7.25	0.33	0.064	(0.587)	0.058	0.006
88	7.33	0.37	0.070	(0.585)	0.063	0.007
89	7.42	0.37	0.070	(0.582)	0.063	0.007
90	7.50	0.37	0.070	(0.579)	0.063	0.007
91	7.58	0.40	0.077	(0.577)	0.069	0.008
92	7.67	0.40	0.077	(0.574)	0.069	0.008
93	7.75	0.40	0.077	(0.571)	0.069	0.008
94	7.83	0.43	0.083	(0.569)	0.075	0.008
95	7.92	0.43	0.083	(0.566)	0.075	0.008
96	8.00	0.43	0.083	(0.563)	0.075	0.008
97	8.08	0.50	0.096	(0.561)	0.086	0.010
98	8.17	0.50	0.096	(0.558)	0.086	0.010
99	8.25	0.50	0.096	(0.556)	0.086	0.010
100	8.33	0.50	0.096	(0.553)	0.086	0.010
101	8.42	0.50	0.096	(0.550)	0.086	0.010
102	8.50	0.50	0.096	(0.548)	0.086	0.010
103	8.58	0.53	0.102	(0.545)	0.092	0.010
104	8.67	0.53	0.102	(0.543)	0.092	0.010
105	8.75	0.53	0.102	(0.540)	0.092	0.010
106	8.83	0.57	0.109	(0.538)	0.098	0.011
107	8.92	0.57	0.109	(0.535)	0.098	0.011
108	9.00	0.57	0.109	(0.533)	0.098	0.011
109	9.08	0.63	0.122	(0.530)	0.109	0.012
110	9.17	0.63	0.122	(0.528)	0.109	0.012
111	9.25	0.63	0.122	(0.525)	0.109	0.012
112	9.33	0.67	0.128	(0.523)	0.115	0.013
113	9.42	0.67	0.128	(0.520)	0.115	0.013
114	9.50	0.67	0.128	(0.518)	0.115	0.013
115	9.58	0.70	0.134	(0.515)	0.121	0.013
116	9.67	0.70	0.134	(0.513)	0.121	0.013
117	9.75	0.70	0.134	(0.510)	0.121	0.013
118	9.83	0.73	0.141	(0.508)	0.127	0.014
119	9.92	0.73	0.141	(0.505)	0.127	0.014
120	10.00	0.73	0.141	(0.503)	0.127	0.014
121	10.08	0.50	0.096	(0.500)	0.086	0.010
122	10.17	0.50	0.096	(0.498)	0.086	0.010
123	10.25	0.50	0.096	(0.496)	0.086	0.010
124	10.33	0.50	0.096	(0.493)	0.086	0.010
125	10.42	0.50	0.096	(0.491)	0.086	0.010
126	10.50	0.50	0.096	(0.488)	0.086	0.010
127	10.58	0.67	0.128	(0.486)	0.115	0.013
128	10.67	0.67	0.128	(0.484)	0.115	0.013

129	10.75	0.67	0.128	(0.481)	0.115	0.013
130	10.83	0.67	0.128	(0.479)	0.115	0.013
131	10.92	0.67	0.128	(0.476)	0.115	0.013
132	11.00	0.67	0.128	(0.474)	0.115	0.013
133	11.08	0.63	0.122	(0.472)	0.109	0.012
134	11.17	0.63	0.122	(0.469)	0.109	0.012
135	11.25	0.63	0.122	(0.467)	0.109	0.012
136	11.33	0.63	0.122	(0.465)	0.109	0.012
137	11.42	0.63	0.122	(0.463)	0.109	0.012
138	11.50	0.63	0.122	(0.460)	0.109	0.012
139	11.58	0.57	0.109	(0.458)	0.098	0.011
140	11.67	0.57	0.109	(0.456)	0.098	0.011
141	11.75	0.57	0.109	(0.453)	0.098	0.011
142	11.83	0.60	0.115	(0.451)	0.104	0.012
143	11.92	0.60	0.115	(0.449)	0.104	0.012
144	12.00	0.60	0.115	(0.447)	0.104	0.012
145	12.08	0.83	0.160	(0.444)	0.144	0.016
146	12.17	0.83	0.160	(0.442)	0.144	0.016
147	12.25	0.83	0.160	(0.440)	0.144	0.016
148	12.33	0.87	0.166	(0.438)	0.150	0.017
149	12.42	0.87	0.166	(0.436)	0.150	0.017
150	12.50	0.87	0.166	(0.433)	0.150	0.017
151	12.58	0.93	0.179	(0.431)	0.161	0.018
152	12.67	0.93	0.179	(0.429)	0.161	0.018
153	12.75	0.93	0.179	(0.427)	0.161	0.018
154	12.83	0.97	0.186	(0.425)	0.167	0.019
155	12.92	0.97	0.186	(0.423)	0.167	0.019
156	13.00	0.97	0.186	(0.420)	0.167	0.019
157	13.08	1.13	0.218	(0.418)	0.196	0.022
158	13.17	1.13	0.218	(0.416)	0.196	0.022
159	13.25	1.13	0.218	(0.414)	0.196	0.022
160	13.33	1.13	0.218	(0.412)	0.196	0.022
161	13.42	1.13	0.218	(0.410)	0.196	0.022
162	13.50	1.13	0.218	(0.408)	0.196	0.022
163	13.58	0.77	0.147	(0.406)	0.132	0.015
164	13.67	0.77	0.147	(0.404)	0.132	0.015
165	13.75	0.77	0.147	(0.402)	0.132	0.015
166	13.83	0.77	0.147	(0.400)	0.132	0.015
167	13.92	0.77	0.147	(0.398)	0.132	0.015
168	14.00	0.77	0.147	(0.395)	0.132	0.015
169	14.08	0.90	0.173	(0.393)	0.156	0.017
170	14.17	0.90	0.173	(0.391)	0.156	0.017
171	14.25	0.90	0.173	(0.389)	0.156	0.017
172	14.33	0.87	0.166	(0.387)	0.150	0.017
173	14.42	0.87	0.166	(0.385)	0.150	0.017
174	14.50	0.87	0.166	(0.384)	0.150	0.017
175	14.58	0.87	0.166	(0.382)	0.150	0.017
176	14.67	0.87	0.166	(0.380)	0.150	0.017
177	14.75	0.87	0.166	(0.378)	0.150	0.017
178	14.83	0.83	0.160	(0.376)	0.144	0.016
179	14.92	0.83	0.160	(0.374)	0.144	0.016
180	15.00	0.83	0.160	(0.372)	0.144	0.016
181	15.08	0.80	0.154	(0.370)	0.138	0.015
182	15.17	0.80	0.154	(0.368)	0.138	0.015
183	15.25	0.80	0.154	(0.366)	0.138	0.015
184	15.33	0.77	0.147	(0.364)	0.132	0.015
185	15.42	0.77	0.147	(0.362)	0.132	0.015
186	15.50	0.77	0.147	(0.361)	0.132	0.015
187	15.58	0.63	0.122	(0.359)	0.109	0.012
188	15.67	0.63	0.122	(0.357)	0.109	0.012

189	15.75	0.63	0.122	(0.355)	0.109	0.012
190	15.83	0.63	0.122	(0.353)	0.109	0.012
191	15.92	0.63	0.122	(0.351)	0.109	0.012
192	16.00	0.63	0.122	(0.350)	0.109	0.012
193	16.08	0.13	0.026	(0.348)	0.023	0.003
194	16.17	0.13	0.026	(0.346)	0.023	0.003
195	16.25	0.13	0.026	(0.344)	0.023	0.003
196	16.33	0.13	0.026	(0.343)	0.023	0.003
197	16.42	0.13	0.026	(0.341)	0.023	0.003
198	16.50	0.13	0.026	(0.339)	0.023	0.003
199	16.58	0.10	0.019	(0.337)	0.017	0.002
200	16.67	0.10	0.019	(0.336)	0.017	0.002
201	16.75	0.10	0.019	(0.334)	0.017	0.002
202	16.83	0.10	0.019	(0.332)	0.017	0.002
203	16.92	0.10	0.019	(0.331)	0.017	0.002
204	17.00	0.10	0.019	(0.329)	0.017	0.002
205	17.08	0.17	0.032	(0.327)	0.029	0.003
206	17.17	0.17	0.032	(0.326)	0.029	0.003
207	17.25	0.17	0.032	(0.324)	0.029	0.003
208	17.33	0.17	0.032	(0.322)	0.029	0.003
209	17.42	0.17	0.032	(0.321)	0.029	0.003
210	17.50	0.17	0.032	(0.319)	0.029	0.003
211	17.58	0.17	0.032	(0.317)	0.029	0.003
212	17.67	0.17	0.032	(0.316)	0.029	0.003
213	17.75	0.17	0.032	(0.314)	0.029	0.003
214	17.83	0.13	0.026	(0.313)	0.023	0.003
215	17.92	0.13	0.026	(0.311)	0.023	0.003
216	18.00	0.13	0.026	(0.310)	0.023	0.003
217	18.08	0.13	0.026	(0.308)	0.023	0.003
218	18.17	0.13	0.026	(0.307)	0.023	0.003
219	18.25	0.13	0.026	(0.305)	0.023	0.003
220	18.33	0.13	0.026	(0.304)	0.023	0.003
221	18.42	0.13	0.026	(0.302)	0.023	0.003
222	18.50	0.13	0.026	(0.301)	0.023	0.003
223	18.58	0.10	0.019	(0.299)	0.017	0.002
224	18.67	0.10	0.019	(0.298)	0.017	0.002
225	18.75	0.10	0.019	(0.296)	0.017	0.002
226	18.83	0.07	0.013	(0.295)	0.012	0.001
227	18.92	0.07	0.013	(0.294)	0.012	0.001
228	19.00	0.07	0.013	(0.292)	0.012	0.001
229	19.08	0.10	0.019	(0.291)	0.017	0.002
230	19.17	0.10	0.019	(0.289)	0.017	0.002
231	19.25	0.10	0.019	(0.288)	0.017	0.002
232	19.33	0.13	0.026	(0.287)	0.023	0.003
233	19.42	0.13	0.026	(0.285)	0.023	0.003
234	19.50	0.13	0.026	(0.284)	0.023	0.003
235	19.58	0.10	0.019	(0.283)	0.017	0.002
236	19.67	0.10	0.019	(0.281)	0.017	0.002
237	19.75	0.10	0.019	(0.280)	0.017	0.002
238	19.83	0.07	0.013	(0.279)	0.012	0.001
239	19.92	0.07	0.013	(0.278)	0.012	0.001
240	20.00	0.07	0.013	(0.276)	0.012	0.001
241	20.08	0.10	0.019	(0.275)	0.017	0.002
242	20.17	0.10	0.019	(0.274)	0.017	0.002
243	20.25	0.10	0.019	(0.273)	0.017	0.002
244	20.33	0.10	0.019	(0.272)	0.017	0.002
245	20.42	0.10	0.019	(0.271)	0.017	0.002
246	20.50	0.10	0.019	(0.269)	0.017	0.002
247	20.58	0.10	0.019	(0.268)	0.017	0.002
248	20.67	0.10	0.019	(0.267)	0.017	0.002

249	20.75	0.10	0.019	(0.266)	0.017	0.002
250	20.83	0.07	0.013	(0.265)	0.012	0.001
251	20.92	0.07	0.013	(0.264)	0.012	0.001
252	21.00	0.07	0.013	(0.263)	0.012	0.001
253	21.08	0.10	0.019	(0.262)	0.017	0.002
254	21.17	0.10	0.019	(0.261)	0.017	0.002
255	21.25	0.10	0.019	(0.260)	0.017	0.002
256	21.33	0.07	0.013	(0.259)	0.012	0.001
257	21.42	0.07	0.013	(0.258)	0.012	0.001
258	21.50	0.07	0.013	(0.257)	0.012	0.001
259	21.58	0.10	0.019	(0.256)	0.017	0.002
260	21.67	0.10	0.019	(0.255)	0.017	0.002
261	21.75	0.10	0.019	(0.254)	0.017	0.002
262	21.83	0.07	0.013	(0.253)	0.012	0.001
263	21.92	0.07	0.013	(0.252)	0.012	0.001
264	22.00	0.07	0.013	(0.251)	0.012	0.001
265	22.08	0.10	0.019	(0.251)	0.017	0.002
266	22.17	0.10	0.019	(0.250)	0.017	0.002
267	22.25	0.10	0.019	(0.249)	0.017	0.002
268	22.33	0.07	0.013	(0.248)	0.012	0.001
269	22.42	0.07	0.013	(0.247)	0.012	0.001
270	22.50	0.07	0.013	(0.247)	0.012	0.001
271	22.58	0.07	0.013	(0.246)	0.012	0.001
272	22.67	0.07	0.013	(0.245)	0.012	0.001
273	22.75	0.07	0.013	(0.245)	0.012	0.001
274	22.83	0.07	0.013	(0.244)	0.012	0.001
275	22.92	0.07	0.013	(0.243)	0.012	0.001
276	23.00	0.07	0.013	(0.243)	0.012	0.001
277	23.08	0.07	0.013	(0.242)	0.012	0.001
278	23.17	0.07	0.013	(0.242)	0.012	0.001
279	23.25	0.07	0.013	(0.241)	0.012	0.001
280	23.33	0.07	0.013	(0.241)	0.012	0.001
281	23.42	0.07	0.013	(0.240)	0.012	0.001
282	23.50	0.07	0.013	(0.240)	0.012	0.001
283	23.58	0.07	0.013	(0.239)	0.012	0.001
284	23.67	0.07	0.013	(0.239)	0.012	0.001
285	23.75	0.07	0.013	(0.239)	0.012	0.001
286	23.83	0.07	0.013	(0.238)	0.012	0.001
287	23.92	0.07	0.013	(0.238)	0.012	0.001
288	24.00	0.07	0.013	(0.238)	0.012	0.001

(Loss Rate Not Used)

Sum = 100.0

Sum = 1.9

Flood volume = Effective rainfall 0.16(In)
times area 27.5(Ac.)/[(In)/(Ft.)] = 0.4(Ac.Ft)
Total soil loss = 1.44(In)
Total soil loss = 3.299(Ac.Ft)
Total rainfall = 1.60(In)
Flood volume = 15965.3 Cubic Feet
Total soil loss = 143688.0 Cubic Feet

Peak flow rate of this hydrograph = 0.598(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m) Volume Ac.Ft Q(CFS) 0 2.5 5.0 7.5 10.0

0+ 5	0.0000	0.00	Q				
0+10	0.0002	0.02	Q				
0+15	0.0004	0.03	Q				
0+20	0.0006	0.03	Q				
0+25	0.0009	0.04	Q				
0+30	0.0012	0.05	Q				
0+35	0.0015	0.05	Q				
0+40	0.0019	0.05	Q				
0+45	0.0023	0.05	Q				
0+50	0.0026	0.05	Q				
0+55	0.0031	0.06	Q				
1+ 0	0.0035	0.07	Q				
1+ 5	0.0040	0.07	Q				
1+10	0.0044	0.06	Q				
1+15	0.0048	0.06	Q				
1+20	0.0052	0.06	Q				
1+25	0.0055	0.05	Q				
1+30	0.0059	0.05	Q				
1+35	0.0063	0.05	Q				
1+40	0.0066	0.05	Q				
1+45	0.0070	0.05	Q				
1+50	0.0074	0.06	Q				
1+55	0.0078	0.06	Q				
2+ 0	0.0083	0.07	Q				
2+ 5	0.0088	0.07	Q				
2+10	0.0092	0.07	QV				
2+15	0.0097	0.07	QV				
2+20	0.0102	0.07	QV				
2+25	0.0107	0.07	QV				
2+30	0.0112	0.07	QV				
2+35	0.0117	0.07	QV				
2+40	0.0122	0.08	QV				
2+45	0.0128	0.08	QV				
2+50	0.0134	0.09	QV				
2+55	0.0140	0.09	QV				
3+ 0	0.0146	0.09	QV				
3+ 5	0.0152	0.09	QV				
3+10	0.0158	0.09	QV				
3+15	0.0164	0.09	QV				
3+20	0.0171	0.09	QV				
3+25	0.0177	0.09	QV				
3+30	0.0183	0.09	QV				
3+35	0.0189	0.09	Q V				
3+40	0.0195	0.09	Q V				
3+45	0.0201	0.09	Q V				
3+50	0.0207	0.09	Q V				
3+55	0.0214	0.10	Q V				
4+ 0	0.0221	0.10	Q V				
4+ 5	0.0228	0.10	Q V				
4+10	0.0236	0.10	Q V				
4+15	0.0243	0.11	Q V				
4+20	0.0250	0.11	Q V				
4+25	0.0258	0.12	Q V				
4+30	0.0267	0.12	Q V				
4+35	0.0275	0.12	Q V				
4+40	0.0283	0.12	Q V				
4+45	0.0292	0.12	Q V				
4+50	0.0301	0.13	Q V				
4+55	0.0310	0.13	Q V				

5+ 0	0.0319	0.14	Q	V				
5+ 5	0.0329	0.13	Q	V				
5+10	0.0337	0.12	Q	V				
5+15	0.0345	0.11	Q	V				
5+20	0.0352	0.11	Q	V				
5+25	0.0361	0.12	Q	V				
5+30	0.0369	0.12	Q	V				
5+35	0.0378	0.13	Q	V				
5+40	0.0387	0.13	Q	V				
5+45	0.0396	0.14	Q	V				
5+50	0.0406	0.14	Q	V				
5+55	0.0415	0.14	Q	V				
6+ 0	0.0425	0.14	Q	V				
6+ 5	0.0435	0.14	Q	V				
6+10	0.0446	0.15	Q	V				
6+15	0.0456	0.16	Q	V				
6+20	0.0467	0.16	Q	V				
6+25	0.0478	0.16	Q	V				
6+30	0.0489	0.16	Q	V				
6+35	0.0500	0.16	Q	V				
6+40	0.0512	0.17	Q	V				
6+45	0.0524	0.17	Q	V				
6+50	0.0536	0.17	Q	V				
6+55	0.0548	0.18	Q	V				
7+ 0	0.0560	0.18	Q	V				
7+ 5	0.0572	0.18	Q	V				
7+10	0.0584	0.18	Q	V				
7+15	0.0596	0.18	Q	V				
7+20	0.0609	0.18	Q	V				
7+25	0.0622	0.19	Q	V				
7+30	0.0635	0.19	Q	V				
7+35	0.0648	0.19	Q	V				
7+40	0.0662	0.20	Q	V				
7+45	0.0677	0.21	Q	V				
7+50	0.0691	0.21	Q	V				
7+55	0.0706	0.22	Q	V				
8+ 0	0.0722	0.23	Q	V				
8+ 5	0.0738	0.23	Q	V				
8+10	0.0755	0.25	Q	V				
8+15	0.0773	0.26	Q	V				
8+20	0.0791	0.26	Q	V				
8+25	0.0809	0.26	Q	V				
8+30	0.0827	0.26	Q	V				
8+35	0.0845	0.27	Q	V				
8+40	0.0864	0.28	Q	V				
8+45	0.0884	0.28	Q	V				
8+50	0.0903	0.28	Q	V				
8+55	0.0923	0.29	Q	V				
9+ 0	0.0944	0.30	Q	V				
9+ 5	0.0965	0.30	Q	V				
9+10	0.0987	0.32	Q	V				
9+15	0.1009	0.33	Q	V				
9+20	0.1032	0.33	Q	V				
9+25	0.1056	0.34	Q	V				
9+30	0.1080	0.35	Q	V				
9+35	0.1104	0.35	Q	V				
9+40	0.1129	0.36	Q	V				
9+45	0.1154	0.37	Q	V				
9+50	0.1180	0.37	Q	V				
9+55	0.1206	0.38	Q	V				

10+ 0	0.1233	0.39	Q		V			
10+ 5	0.1258	0.37	Q		V			
10+10	0.1280	0.32	Q		V			
10+15	0.1300	0.29	Q		V			
10+20	0.1320	0.28	Q		V			
10+25	0.1339	0.28	Q		V			
10+30	0.1358	0.27	Q		V			
10+35	0.1377	0.28	Q		V			
10+40	0.1399	0.32	Q		V			
10+45	0.1422	0.34	Q		V			
10+50	0.1446	0.34	Q		V			
10+55	0.1470	0.35	Q		V			
11+ 0	0.1494	0.35	Q		V			
11+ 5	0.1518	0.35	Q		V			
11+10	0.1541	0.34	Q		V			
11+15	0.1565	0.34	Q		V			
11+20	0.1588	0.34	Q		V			
11+25	0.1612	0.34	Q		V			
11+30	0.1635	0.34	Q		V			
11+35	0.1658	0.33	Q		V			
11+40	0.1680	0.32	Q		V			
11+45	0.1701	0.31	Q		V			
11+50	0.1722	0.31	Q		V			
11+55	0.1744	0.32	Q		V			
12+ 0	0.1766	0.32	Q		V			
12+ 5	0.1789	0.33	Q		V			
12+10	0.1816	0.39	Q		V			
12+15	0.1844	0.42	Q		V			
12+20	0.1874	0.43	Q		V			
12+25	0.1904	0.44	Q		V			
12+30	0.1935	0.45	Q		V			
12+35	0.1967	0.46	Q		V			
12+40	0.2000	0.48	Q		V			
12+45	0.2033	0.49	Q			V		
12+50	0.2067	0.49	Q			V		
12+55	0.2102	0.50	Q			V		
13+ 0	0.2137	0.51	Q			V		
13+ 5	0.2173	0.52	Q			V		
13+10	0.2211	0.56	Q			V		
13+15	0.2251	0.58	Q			V		
13+20	0.2292	0.59	Q			V		
13+25	0.2333	0.59	Q			V		
13+30	0.2374	0.60	Q			V		
13+35	0.2414	0.57	Q			V		
13+40	0.2447	0.49	Q			V		
13+45	0.2478	0.45	Q			V		
13+50	0.2508	0.44	Q			V		
13+55	0.2538	0.43	Q			V		
14+ 0	0.2567	0.42	Q			V		
14+ 5	0.2596	0.42	Q			V		
14+10	0.2627	0.45	Q			V		
14+15	0.2659	0.47	Q			V		
14+20	0.2691	0.47	Q			V		
14+25	0.2723	0.46	Q			V		
14+30	0.2755	0.46	Q			V		
14+35	0.2787	0.46	Q			V		
14+40	0.2818	0.46	Q			V		
14+45	0.2850	0.46	Q				V	
14+50	0.2882	0.46	Q					V
14+55	0.2913	0.45	Q					

15+ 0	0.2944	0.45	IQ			V	
15+ 5	0.2974	0.44	IQ			V	
15+10	0.3004	0.43	IQ			V	
15+15	0.3034	0.43	IQ			V	
15+20	0.3063	0.43	IQ			V	
15+25	0.3092	0.42	IQ			V	
15+30	0.3121	0.41	IQ			V	
15+35	0.3148	0.40	IQ			V	
15+40	0.3174	0.37	IQ			V	
15+45	0.3198	0.35	IQ			V	
15+50	0.3222	0.35	IQ			V	
15+55	0.3246	0.34	IQ			V	
16+ 0	0.3269	0.34	IQ			V	
16+ 5	0.3290	0.30	IQ			V	
16+10	0.3303	0.19	Q			V	
16+15	0.3312	0.13	Q			V	
16+20	0.3319	0.11	Q			V	
16+25	0.3326	0.10	Q			V	
16+30	0.3332	0.09	Q			V	
16+35	0.3337	0.08	Q			V	
16+40	0.3342	0.07	Q			V	
16+45	0.3346	0.06	Q			V	
16+50	0.3350	0.06	Q			V	
16+55	0.3354	0.05	Q			V	
17+ 0	0.3358	0.05	Q			V	
17+ 5	0.3362	0.06	Q			V	
17+10	0.3367	0.07	Q			V	
17+15	0.3372	0.08	Q			V	
17+20	0.3378	0.08	Q			V	
17+25	0.3384	0.09	Q			V	
17+30	0.3390	0.09	Q			V	
17+35	0.3396	0.09	Q			V	
17+40	0.3402	0.09	Q			V	
17+45	0.3408	0.09	Q			V	
17+50	0.3414	0.09	Q			V	
17+55	0.3419	0.08	Q			V	
18+ 0	0.3425	0.07	Q			V	
18+ 5	0.3430	0.07	Q			V	
18+10	0.3435	0.07	Q			V	
18+15	0.3440	0.07	Q			V	
18+20	0.3445	0.07	Q			V	
18+25	0.3449	0.07	Q			V	
18+30	0.3454	0.07	Q			V	
18+35	0.3459	0.07	Q			V	
18+40	0.3463	0.06	Q			V	
18+45	0.3467	0.06	Q			V	
18+50	0.3471	0.05	Q			V	
18+55	0.3474	0.04	Q			V	
19+ 0	0.3477	0.04	Q			V	
19+ 5	0.3480	0.04	Q			V	
19+10	0.3483	0.05	Q			V	
19+15	0.3486	0.05	Q			V	
19+20	0.3490	0.05	Q			V	
19+25	0.3494	0.06	Q			V	
19+30	0.3499	0.07	Q			V	
19+35	0.3503	0.07	Q			V	
19+40	0.3507	0.06	Q			V	
19+45	0.3511	0.06	Q			V	
19+50	0.3515	0.05	Q			V	
19+55	0.3518	0.04	Q			V	

20+ 0	0.3521	0.04	Q				V
20+ 5	0.3524	0.04	Q				V
20+10	0.3527	0.05	Q				V
20+15	0.3530	0.05	Q				V
20+20	0.3534	0.05	Q				V
20+25	0.3537	0.05	Q				V
20+30	0.3541	0.05	Q				V
20+35	0.3545	0.05	Q				V
20+40	0.3548	0.05	Q				V
20+45	0.3552	0.05	Q				V
20+50	0.3555	0.05	Q				V
20+55	0.3558	0.04	Q				V
21+ 0	0.3561	0.04	Q				V
21+ 5	0.3564	0.04	Q				V
21+10	0.3567	0.05	Q				V
21+15	0.3571	0.05	Q				V
21+20	0.3574	0.05	Q				V
21+25	0.3577	0.04	Q				V
21+30	0.3580	0.04	Q				V
21+35	0.3582	0.04	Q				V
21+40	0.3586	0.05	Q				V
21+45	0.3589	0.05	Q				V
21+50	0.3592	0.05	Q				V
21+55	0.3595	0.04	Q				V
22+ 0	0.3598	0.04	Q				V
22+ 5	0.3601	0.04	Q				V
22+10	0.3604	0.05	Q				V
22+15	0.3607	0.05	Q				V
22+20	0.3611	0.05	Q				V
22+25	0.3614	0.04	Q				V
22+30	0.3616	0.04	Q				V
22+35	0.3619	0.04	Q				V
22+40	0.3621	0.04	Q				V
22+45	0.3624	0.04	Q				V
22+50	0.3626	0.04	Q				V
22+55	0.3629	0.04	Q				V
23+ 0	0.3631	0.04	Q				V
23+ 5	0.3634	0.04	Q				V
23+10	0.3636	0.04	Q				V
23+15	0.3639	0.04	Q				V
23+20	0.3641	0.04	Q				V
23+25	0.3643	0.04	Q				V
23+30	0.3646	0.04	Q				V
23+35	0.3648	0.04	Q				V
23+40	0.3651	0.04	Q				V
23+45	0.3653	0.04	Q				V
23+50	0.3656	0.04	Q				V
23+55	0.3658	0.04	Q				V
24+ 0	0.3661	0.04	Q				V
24+ 5	0.3663	0.03	Q				V
24+10	0.3664	0.02	Q				V
24+15	0.3664	0.01	Q				V
24+20	0.3665	0.01	Q				V
24+25	0.3665	0.00	Q				V
24+30	0.3665	0.00	Q				V
24+35	0.3665	0.00	Q				V
24+40	0.3665	0.00	Q				V
24+45	0.3665	0.00	Q				V
24+50	0.3665	0.00	Q				V

Unit Hydrograph Analysis

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Study date 03/29/22 File: 20750ec24100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6310

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

20-750 Building C
existing
100 year 24 hour

Drainage Area = 27.49(Ac.) = 0.043 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 27.49(Ac.) = 0.043
Sq. Mi.
Length along longest watercourse = 1449.00(Ft.)
Length along longest watercourse measured to centroid = 707.00(Ft.)
Length along longest watercourse = 0.274 Mi.
Length along longest watercourse measured to centroid = 0.134 Mi.
Difference in elevation = 9.70(Ft.)
Slope along watercourse = 35.3458 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.104 Hr.
Lag time = 6.25 Min.
25% of lag time = 1.56 Min.
40% of lag time = 2.50 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
27.49	1.60	43.98

100 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
27.49	4.00	109.96

STORM EVENT (YEAR) = 100.00
 Area Averaged 2-Year Rainfall = 1.600 (In)
 Area Averaged 100-Year Rainfall = 4.000 (In)

Point rain (area averaged) = 4.000 (In)
 Areal adjustment factor = 99.99 %
 Adjusted average point rain = 4.000 (In)

Sub-Area Data:

Area (Ac.) Runoff Index Impervious %
 27.490 77.00 0.000
 Total Area Entered = 27.49 (Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
77.0	89.2	0.139	0.000	0.139	1.000	0.139
						Sum (F) = 0.139

Area averaged mean soil loss (F) (In/Hr) = 0.139
 Minimum soil loss rate ((In/Hr)) = 0.070
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

 U n i t H y d r o g r a p h
 VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	79.963	13.290
2	0.167	159.925	44.407
3	0.250	239.888	19.946
4	0.333	319.850	8.247
5	0.417	399.813	4.952
6	0.500	479.775	3.121
7	0.583	559.738	2.249
8	0.667	639.701	1.544
9	0.750	719.663	1.039
10	0.833	799.626	0.802
11	0.917	879.588	0.404
		Sum = 100.000	Sum= 27.705

 The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate (In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	0.032	(0.247)	0.029	0.003
2	0.17	0.032	(0.246)	0.029	0.003
3	0.25	0.032	(0.245)	0.029	0.003
4	0.33	0.048	(0.244)	0.043	0.005
5	0.42	0.048	(0.243)	0.043	0.005
6	0.50	0.048	(0.242)	0.043	0.005
7	0.58	0.048	(0.241)	0.043	0.005
8	0.67	0.048	(0.240)	0.043	0.005

9	0.75	0.10	0.048	(0.239)	0.043	0.005
10	0.83	0.13	0.064	(0.238)	0.058	0.006
11	0.92	0.13	0.064	(0.237)	0.058	0.006
12	1.00	0.13	0.064	(0.236)	0.058	0.006
13	1.08	0.10	0.048	(0.235)	0.043	0.005
14	1.17	0.10	0.048	(0.234)	0.043	0.005
15	1.25	0.10	0.048	(0.233)	0.043	0.005
16	1.33	0.10	0.048	(0.233)	0.043	0.005
17	1.42	0.10	0.048	(0.232)	0.043	0.005
18	1.50	0.10	0.048	(0.231)	0.043	0.005
19	1.58	0.10	0.048	(0.230)	0.043	0.005
20	1.67	0.10	0.048	(0.229)	0.043	0.005
21	1.75	0.10	0.048	(0.228)	0.043	0.005
22	1.83	0.13	0.064	(0.227)	0.058	0.006
23	1.92	0.13	0.064	(0.226)	0.058	0.006
24	2.00	0.13	0.064	(0.225)	0.058	0.006
25	2.08	0.13	0.064	(0.224)	0.058	0.006
26	2.17	0.13	0.064	(0.223)	0.058	0.006
27	2.25	0.13	0.064	(0.222)	0.058	0.006
28	2.33	0.13	0.064	(0.222)	0.058	0.006
29	2.42	0.13	0.064	(0.221)	0.058	0.006
30	2.50	0.13	0.064	(0.220)	0.058	0.006
31	2.58	0.17	0.080	(0.219)	0.072	0.008
32	2.67	0.17	0.080	(0.218)	0.072	0.008
33	2.75	0.17	0.080	(0.217)	0.072	0.008
34	2.83	0.17	0.080	(0.216)	0.072	0.008
35	2.92	0.17	0.080	(0.215)	0.072	0.008
36	3.00	0.17	0.080	(0.214)	0.072	0.008
37	3.08	0.17	0.080	(0.213)	0.072	0.008
38	3.17	0.17	0.080	(0.213)	0.072	0.008
39	3.25	0.17	0.080	(0.212)	0.072	0.008
40	3.33	0.17	0.080	(0.211)	0.072	0.008
41	3.42	0.17	0.080	(0.210)	0.072	0.008
42	3.50	0.17	0.080	(0.209)	0.072	0.008
43	3.58	0.17	0.080	(0.208)	0.072	0.008
44	3.67	0.17	0.080	(0.207)	0.072	0.008
45	3.75	0.17	0.080	(0.206)	0.072	0.008
46	3.83	0.20	0.096	(0.206)	0.086	0.010
47	3.92	0.20	0.096	(0.205)	0.086	0.010
48	4.00	0.20	0.096	(0.204)	0.086	0.010
49	4.08	0.20	0.096	(0.203)	0.086	0.010
50	4.17	0.20	0.096	(0.202)	0.086	0.010
51	4.25	0.20	0.096	(0.201)	0.086	0.010
52	4.33	0.23	0.112	(0.200)	0.101	0.011
53	4.42	0.23	0.112	(0.200)	0.101	0.011
54	4.50	0.23	0.112	(0.199)	0.101	0.011
55	4.58	0.23	0.112	(0.198)	0.101	0.011
56	4.67	0.23	0.112	(0.197)	0.101	0.011
57	4.75	0.23	0.112	(0.196)	0.101	0.011
58	4.83	0.27	0.128	(0.195)	0.115	0.013
59	4.92	0.27	0.128	(0.194)	0.115	0.013
60	5.00	0.27	0.128	(0.194)	0.115	0.013
61	5.08	0.20	0.096	(0.193)	0.086	0.010
62	5.17	0.20	0.096	(0.192)	0.086	0.010
63	5.25	0.20	0.096	(0.191)	0.086	0.010
64	5.33	0.23	0.112	(0.190)	0.101	0.011
65	5.42	0.23	0.112	(0.189)	0.101	0.011
66	5.50	0.23	0.112	(0.189)	0.101	0.011
67	5.58	0.27	0.128	(0.188)	0.115	0.013
68	5.67	0.27	0.128	(0.187)	0.115	0.013

69	5.75	0.27	0.128	(0.186)	0.115	0.013
70	5.83	0.27	0.128	(0.185)	0.115	0.013
71	5.92	0.27	0.128	(0.184)	0.115	0.013
72	6.00	0.27	0.128	(0.184)	0.115	0.013
73	6.08	0.30	0.144	(0.183)	0.130	0.014
74	6.17	0.30	0.144	(0.182)	0.130	0.014
75	6.25	0.30	0.144	(0.181)	0.130	0.014
76	6.33	0.30	0.144	(0.180)	0.130	0.014
77	6.42	0.30	0.144	(0.180)	0.130	0.014
78	6.50	0.30	0.144	(0.179)	0.130	0.014
79	6.58	0.33	0.160	(0.178)	0.144	0.016
80	6.67	0.33	0.160	(0.177)	0.144	0.016
81	6.75	0.33	0.160	(0.176)	0.144	0.016
82	6.83	0.33	0.160	(0.176)	0.144	0.016
83	6.92	0.33	0.160	(0.175)	0.144	0.016
84	7.00	0.33	0.160	(0.174)	0.144	0.016
85	7.08	0.33	0.160	(0.173)	0.144	0.016
86	7.17	0.33	0.160	(0.172)	0.144	0.016
87	7.25	0.33	0.160	(0.172)	0.144	0.016
88	7.33	0.37	0.176	(0.171)	0.158	0.018
89	7.42	0.37	0.176	(0.170)	0.158	0.018
90	7.50	0.37	0.176	(0.169)	0.158	0.018
91	7.58	0.40	0.192	0.168	(0.173)	0.023
92	7.67	0.40	0.192	0.168	(0.173)	0.024
93	7.75	0.40	0.192	0.167	(0.173)	0.025
94	7.83	0.43	0.208	0.166	(0.187)	0.042
95	7.92	0.43	0.208	0.165	(0.187)	0.043
96	8.00	0.43	0.208	0.165	(0.187)	0.043
97	8.08	0.50	0.240	0.164	(0.216)	0.076
98	8.17	0.50	0.240	0.163	(0.216)	0.077
99	8.25	0.50	0.240	0.162	(0.216)	0.078
100	8.33	0.50	0.240	0.162	(0.216)	0.078
101	8.42	0.50	0.240	0.161	(0.216)	0.079
102	8.50	0.50	0.240	0.160	(0.216)	0.080
103	8.58	0.53	0.256	0.159	(0.230)	0.097
104	8.67	0.53	0.256	0.159	(0.230)	0.097
105	8.75	0.53	0.256	0.158	(0.230)	0.098
106	8.83	0.57	0.272	0.157	(0.245)	0.115
107	8.92	0.57	0.272	0.156	(0.245)	0.116
108	9.00	0.57	0.272	0.156	(0.245)	0.116
109	9.08	0.63	0.304	0.155	(0.274)	0.149
110	9.17	0.63	0.304	0.154	(0.274)	0.150
111	9.25	0.63	0.304	0.153	(0.274)	0.151
112	9.33	0.67	0.320	0.153	(0.288)	0.167
113	9.42	0.67	0.320	0.152	(0.288)	0.168
114	9.50	0.67	0.320	0.151	(0.288)	0.169
115	9.58	0.70	0.336	0.150	(0.302)	0.185
116	9.67	0.70	0.336	0.150	(0.302)	0.186
117	9.75	0.70	0.336	0.149	(0.302)	0.187
118	9.83	0.73	0.352	0.148	(0.317)	0.204
119	9.92	0.73	0.352	0.148	(0.317)	0.204
120	10.00	0.73	0.352	0.147	(0.317)	0.205
121	10.08	0.50	0.240	0.146	(0.216)	0.094
122	10.17	0.50	0.240	0.145	(0.216)	0.094
123	10.25	0.50	0.240	0.145	(0.216)	0.095
124	10.33	0.50	0.240	0.144	(0.216)	0.096
125	10.42	0.50	0.240	0.143	(0.216)	0.097
126	10.50	0.50	0.240	0.143	(0.216)	0.097
127	10.58	0.67	0.320	0.142	(0.288)	0.178
128	10.67	0.67	0.320	0.141	(0.288)	0.179

129	10.75	0.67	0.320	0.141	(0.288)	0.179
130	10.83	0.67	0.320	0.140	(0.288)	0.180
131	10.92	0.67	0.320	0.139	(0.288)	0.181
132	11.00	0.67	0.320	0.139	(0.288)	0.181
133	11.08	0.63	0.304	0.138	(0.274)	0.166
134	11.17	0.63	0.304	0.137	(0.274)	0.167
135	11.25	0.63	0.304	0.137	(0.274)	0.167
136	11.33	0.63	0.304	0.136	(0.274)	0.168
137	11.42	0.63	0.304	0.135	(0.274)	0.169
138	11.50	0.63	0.304	0.134	(0.274)	0.169
139	11.58	0.57	0.272	0.134	(0.245)	0.138
140	11.67	0.57	0.272	0.133	(0.245)	0.139
141	11.75	0.57	0.272	0.132	(0.245)	0.139
142	11.83	0.60	0.288	0.132	(0.259)	0.156
143	11.92	0.60	0.288	0.131	(0.259)	0.157
144	12.00	0.60	0.288	0.131	(0.259)	0.157
145	12.08	0.83	0.400	0.130	(0.360)	0.270
146	12.17	0.83	0.400	0.129	(0.360)	0.271
147	12.25	0.83	0.400	0.129	(0.360)	0.271
148	12.33	0.87	0.416	0.128	(0.374)	0.288
149	12.42	0.87	0.416	0.127	(0.374)	0.289
150	12.50	0.87	0.416	0.127	(0.374)	0.289
151	12.58	0.93	0.448	0.126	(0.403)	0.322
152	12.67	0.93	0.448	0.125	(0.403)	0.323
153	12.75	0.93	0.448	0.125	(0.403)	0.323
154	12.83	0.97	0.464	0.124	(0.418)	0.340
155	12.92	0.97	0.464	0.123	(0.418)	0.340
156	13.00	0.97	0.464	0.123	(0.418)	0.341
157	13.08	1.13	0.544	0.122	(0.490)	0.422
158	13.17	1.13	0.544	0.122	(0.490)	0.422
159	13.25	1.13	0.544	0.121	(0.490)	0.423
160	13.33	1.13	0.544	0.120	(0.490)	0.424
161	13.42	1.13	0.544	0.120	(0.490)	0.424
162	13.50	1.13	0.544	0.119	(0.490)	0.425
163	13.58	0.77	0.368	0.119	(0.331)	0.249
164	13.67	0.77	0.368	0.118	(0.331)	0.250
165	13.75	0.77	0.368	0.117	(0.331)	0.251
166	13.83	0.77	0.368	0.117	(0.331)	0.251
167	13.92	0.77	0.368	0.116	(0.331)	0.252
168	14.00	0.77	0.368	0.116	(0.331)	0.252
169	14.08	0.90	0.432	0.115	(0.389)	0.317
170	14.17	0.90	0.432	0.114	(0.389)	0.318
171	14.25	0.90	0.432	0.114	(0.389)	0.318
172	14.33	0.87	0.416	0.113	(0.374)	0.303
173	14.42	0.87	0.416	0.113	(0.374)	0.303
174	14.50	0.87	0.416	0.112	(0.374)	0.304
175	14.58	0.87	0.416	0.111	(0.374)	0.304
176	14.67	0.87	0.416	0.111	(0.374)	0.305
177	14.75	0.87	0.416	0.110	(0.374)	0.306
178	14.83	0.83	0.400	0.110	(0.360)	0.290
179	14.92	0.83	0.400	0.109	(0.360)	0.291
180	15.00	0.83	0.400	0.109	(0.360)	0.291
181	15.08	0.80	0.384	0.108	(0.346)	0.276
182	15.17	0.80	0.384	0.108	(0.346)	0.276
183	15.25	0.80	0.384	0.107	(0.346)	0.277
184	15.33	0.77	0.368	0.106	(0.331)	0.262
185	15.42	0.77	0.368	0.106	(0.331)	0.262
186	15.50	0.77	0.368	0.105	(0.331)	0.263
187	15.58	0.63	0.304	0.105	(0.274)	0.199
188	15.67	0.63	0.304	0.104	(0.274)	0.200

189	15.75	0.63	0.304	0.104	(0.274)	0.200
190	15.83	0.63	0.304	0.103	(0.274)	0.201
191	15.92	0.63	0.304	0.103	(0.274)	0.201
192	16.00	0.63	0.304	0.102	(0.274)	0.202
193	16.08	0.13	0.064	(0.102)	0.058	0.006
194	16.17	0.13	0.064	(0.101)	0.058	0.006
195	16.25	0.13	0.064	(0.101)	0.058	0.006
196	16.33	0.13	0.064	(0.100)	0.058	0.006
197	16.42	0.13	0.064	(0.100)	0.058	0.006
198	16.50	0.13	0.064	(0.099)	0.058	0.006
199	16.58	0.10	0.048	(0.099)	0.043	0.005
200	16.67	0.10	0.048	(0.098)	0.043	0.005
201	16.75	0.10	0.048	(0.098)	0.043	0.005
202	16.83	0.10	0.048	(0.097)	0.043	0.005
203	16.92	0.10	0.048	(0.097)	0.043	0.005
204	17.00	0.10	0.048	(0.096)	0.043	0.005
205	17.08	0.17	0.080	(0.096)	0.072	0.008
206	17.17	0.17	0.080	(0.095)	0.072	0.008
207	17.25	0.17	0.080	(0.095)	0.072	0.008
208	17.33	0.17	0.080	(0.094)	0.072	0.008
209	17.42	0.17	0.080	(0.094)	0.072	0.008
210	17.50	0.17	0.080	(0.093)	0.072	0.008
211	17.58	0.17	0.080	(0.093)	0.072	0.008
212	17.67	0.17	0.080	(0.092)	0.072	0.008
213	17.75	0.17	0.080	(0.092)	0.072	0.008
214	17.83	0.13	0.064	(0.091)	0.058	0.006
215	17.92	0.13	0.064	(0.091)	0.058	0.006
216	18.00	0.13	0.064	(0.090)	0.058	0.006
217	18.08	0.13	0.064	(0.090)	0.058	0.006
218	18.17	0.13	0.064	(0.090)	0.058	0.006
219	18.25	0.13	0.064	(0.089)	0.058	0.006
220	18.33	0.13	0.064	(0.089)	0.058	0.006
221	18.42	0.13	0.064	(0.088)	0.058	0.006
222	18.50	0.13	0.064	(0.088)	0.058	0.006
223	18.58	0.10	0.048	(0.087)	0.043	0.005
224	18.67	0.10	0.048	(0.087)	0.043	0.005
225	18.75	0.10	0.048	(0.087)	0.043	0.005
226	18.83	0.07	0.032	(0.086)	0.029	0.003
227	18.92	0.07	0.032	(0.086)	0.029	0.003
228	19.00	0.07	0.032	(0.085)	0.029	0.003
229	19.08	0.10	0.048	(0.085)	0.043	0.005
230	19.17	0.10	0.048	(0.085)	0.043	0.005
231	19.25	0.10	0.048	(0.084)	0.043	0.005
232	19.33	0.13	0.064	(0.084)	0.058	0.006
233	19.42	0.13	0.064	(0.083)	0.058	0.006
234	19.50	0.13	0.064	(0.083)	0.058	0.006
235	19.58	0.10	0.048	(0.083)	0.043	0.005
236	19.67	0.10	0.048	(0.082)	0.043	0.005
237	19.75	0.10	0.048	(0.082)	0.043	0.005
238	19.83	0.07	0.032	(0.082)	0.029	0.003
239	19.92	0.07	0.032	(0.081)	0.029	0.003
240	20.00	0.07	0.032	(0.081)	0.029	0.003
241	20.08	0.10	0.048	(0.080)	0.043	0.005
242	20.17	0.10	0.048	(0.080)	0.043	0.005
243	20.25	0.10	0.048	(0.080)	0.043	0.005
244	20.33	0.10	0.048	(0.079)	0.043	0.005
245	20.42	0.10	0.048	(0.079)	0.043	0.005
246	20.50	0.10	0.048	(0.079)	0.043	0.005
247	20.58	0.10	0.048	(0.078)	0.043	0.005
248	20.67	0.10	0.048	(0.078)	0.043	0.005

249	20.75	0.10	0.048	(0.078)	0.043	0.005
250	20.83	0.07	0.032	(0.077)	0.029	0.003
251	20.92	0.07	0.032	(0.077)	0.029	0.003
252	21.00	0.07	0.032	(0.077)	0.029	0.003
253	21.08	0.10	0.048	(0.076)	0.043	0.005
254	21.17	0.10	0.048	(0.076)	0.043	0.005
255	21.25	0.10	0.048	(0.076)	0.043	0.005
256	21.33	0.07	0.032	(0.076)	0.029	0.003
257	21.42	0.07	0.032	(0.075)	0.029	0.003
258	21.50	0.07	0.032	(0.075)	0.029	0.003
259	21.58	0.10	0.048	(0.075)	0.043	0.005
260	21.67	0.10	0.048	(0.074)	0.043	0.005
261	21.75	0.10	0.048	(0.074)	0.043	0.005
262	21.83	0.07	0.032	(0.074)	0.029	0.003
263	21.92	0.07	0.032	(0.074)	0.029	0.003
264	22.00	0.07	0.032	(0.073)	0.029	0.003
265	22.08	0.10	0.048	(0.073)	0.043	0.005
266	22.17	0.10	0.048	(0.073)	0.043	0.005
267	22.25	0.10	0.048	(0.073)	0.043	0.005
268	22.33	0.07	0.032	(0.073)	0.029	0.003
269	22.42	0.07	0.032	(0.072)	0.029	0.003
270	22.50	0.07	0.032	(0.072)	0.029	0.003
271	22.58	0.07	0.032	(0.072)	0.029	0.003
272	22.67	0.07	0.032	(0.072)	0.029	0.003
273	22.75	0.07	0.032	(0.071)	0.029	0.003
274	22.83	0.07	0.032	(0.071)	0.029	0.003
275	22.92	0.07	0.032	(0.071)	0.029	0.003
276	23.00	0.07	0.032	(0.071)	0.029	0.003
277	23.08	0.07	0.032	(0.071)	0.029	0.003
278	23.17	0.07	0.032	(0.071)	0.029	0.003
279	23.25	0.07	0.032	(0.070)	0.029	0.003
280	23.33	0.07	0.032	(0.070)	0.029	0.003
281	23.42	0.07	0.032	(0.070)	0.029	0.003
282	23.50	0.07	0.032	(0.070)	0.029	0.003
283	23.58	0.07	0.032	(0.070)	0.029	0.003
284	23.67	0.07	0.032	(0.070)	0.029	0.003
285	23.75	0.07	0.032	(0.070)	0.029	0.003
286	23.83	0.07	0.032	(0.070)	0.029	0.003
287	23.92	0.07	0.032	(0.070)	0.029	0.003
288	24.00	0.07	0.032	(0.070)	0.029	0.003

(Loss Rate Not Used)

Sum = 100.0

Sum = 22.5

Flood volume = Effective rainfall 1.87(In)
times area 27.5(Ac.)/[(In)/(Ft.)] = 4.3(Ac.Ft)
Total soil loss = 2.13(In)
Total soil loss = 4.870(Ac.Ft)
Total rainfall = 4.00(In)
Flood volume = 186978.1 Cubic Feet
Total soil loss = 212155.3 Cubic Feet

Peak flow rate of this hydrograph = 11.604(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m) Volume Ac.Ft Q(CFS) 0 5.0 10.0 15.0 20.0

0+ 5	0.0001	0.01	Q
0+10	0.0004	0.05	Q
0+15	0.0009	0.07	Q
0+20	0.0015	0.08	Q
0+25	0.0022	0.11	Q
0+30	0.0030	0.12	Q
0+35	0.0039	0.12	Q
0+40	0.0047	0.13	Q
0+45	0.0056	0.13	Q
0+50	0.0066	0.14	Q
0+55	0.0077	0.16	Q
1+ 0	0.0088	0.17	Q
1+ 5	0.0099	0.17	Q
1+10	0.0110	0.15	Q
1+15	0.0119	0.14	Q
1+20	0.0129	0.14	Q
1+25	0.0138	0.14	Q
1+30	0.0147	0.14	Q
1+35	0.0157	0.13	Q
1+40	0.0166	0.13	Q
1+45	0.0175	0.13	Q
1+50	0.0185	0.14	Q
1+55	0.0196	0.16	Q
2+ 0	0.0207	0.17	Q
2+ 5	0.0219	0.17	Q
2+10	0.0231	0.17	Q
2+15	0.0243	0.17	Q
2+20	0.0255	0.18	Q
2+25	0.0267	0.18	Q
2+30	0.0279	0.18	Q
2+35	0.0292	0.18	Q
2+40	0.0306	0.20	Q
2+45	0.0321	0.21	Q
2+50	0.0335	0.22	Q
2+55	0.0350	0.22	Q
3+ 0	0.0365	0.22	Q
3+ 5	0.0381	0.22	Q
3+10	0.0396	0.22	Q
3+15	0.0411	0.22	Q
3+20	0.0426	0.22	Q
3+25	0.0442	0.22	Q
3+30	0.0457	0.22	Q
3+35	0.0472	0.22	Q
3+40	0.0487	0.22	Q
3+45	0.0503	0.22	Q
3+50	0.0518	0.23	Q
3+55	0.0535	0.25	Q
4+ 0	0.0553	0.26	Q
4+ 5	0.0571	0.26	Q
4+10	0.0589	0.26	Q
4+15	0.0607	0.26	Q
4+20	0.0626	0.27	Q
4+25	0.0646	0.29	Q
4+30	0.0666	0.30	Q
4+35	0.0687	0.30	Q
4+40	0.0708	0.31	Q
4+45	0.0730	0.31	Q
4+50	0.0751	0.31	Q
4+55	0.0774	0.34	Q

5+ 0	0.0798	0.34	Q				
5+ 5	0.0821	0.34	Q				
5+10	0.0842	0.30	Q				
5+15	0.0861	0.28	Q				
5+20	0.0881	0.28	Q				
5+25	0.0901	0.30	Q				
5+30	0.0923	0.31	Q				
5+35	0.0944	0.31	Q				
5+40	0.0967	0.33	Q				
5+45	0.0991	0.34	Q				
5+50	0.1015	0.35	Q				
5+55	0.1039	0.35	Q				
6+ 0	0.1063	0.35	Q				
6+ 5	0.1088	0.36	QV				
6+10	0.1114	0.38	QV				
6+15	0.1141	0.39	QV				
6+20	0.1168	0.39	QV				
6+25	0.1195	0.40	QV				
6+30	0.1222	0.40	QV				
6+35	0.1250	0.40	QV				
6+40	0.1279	0.42	QV				
6+45	0.1309	0.43	QV				
6+50	0.1339	0.44	QV				
6+55	0.1369	0.44	QV				
7+ 0	0.1400	0.44	QV				
7+ 5	0.1430	0.44	QV				
7+10	0.1461	0.44	QV				
7+15	0.1491	0.44	QV				
7+20	0.1522	0.45	QV				
7+25	0.1554	0.47	QV				
7+30	0.1587	0.48	QV				
7+35	0.1622	0.50	IQ				
7+40	0.1662	0.58	IQ				
7+45	0.1705	0.63	IQ				
7+50	0.1754	0.72	IQ				
7+55	0.1819	0.94	IQ				
8+ 0	0.1892	1.05	IVQ				
8+ 5	0.1977	1.23	IVQ				
8+10	0.2092	1.67	IV Q				
8+15	0.2222	1.89	I VQ				
8+20	0.2359	1.99	I VQ				
8+25	0.2501	2.06	I V Q				
8+30	0.2647	2.12	I V Q				
8+35	0.2800	2.22	I V Q				
8+40	0.2969	2.45	I V Q				
8+45	0.3146	2.57	I V Q				
8+50	0.3331	2.69	I V Q				
8+55	0.3534	2.94	I V Q				
9+ 0	0.3744	3.06	I V Q				
9+ 5	0.3968	3.25	I V Q				
9+10	0.4222	3.69	I V Q				
9+15	0.4491	3.90	I V Q				
9+20	0.4771	4.07	I V Q				
9+25	0.5070	4.34	I V Q				
9+30	0.5379	4.48	I V Q				
9+35	0.5697	4.62	I V Q				
9+40	0.6033	4.88	I V Q				
9+45	0.6378	5.01	I V Q				
9+50	0.6732	5.14	I V Q				
9+55	0.7103	5.39	I V Q				

10+ 0	0.7483	5.52	V	Q						
10+ 5	0.7839	5.17	V	Q						
10+10	0.8104	3.84	Q							
10+15	0.8329	3.26	QV							
10+20	0.8538	3.04	QV							
10+25	0.8739	2.92	Q	V						
10+30	0.8935	2.84	Q	V						
10+35	0.9148	3.09	Q	V						
10+40	0.9426	4.05	Q							
10+45	0.9735	4.48	QV							
10+50	1.0055	4.65	Q							
10+55	1.0384	4.77	Q							
11+ 0	1.0719	4.86	Q							
11+ 5	1.1054	4.87	QV							
11+10	1.1379	4.73	QV							
11+15	1.1702	4.68	QV							
11+20	1.2024	4.68	Q	V						
11+25	1.2347	4.69	Q	V						
11+30	1.2670	4.69	Q	V						
11+35	1.2985	4.58	Q	V						
11+40	1.3274	4.20	Q	V						
11+45	1.3552	4.04	Q	V						
11+50	1.3830	4.04	Q	V						
11+55	1.4120	4.21	Q	V						
12+ 0	1.4415	4.28	Q	V						
12+ 5	1.4741	4.73	Q	V						
12+10	1.5164	6.14		Q	V					
12+15	1.5630	6.78			QV					
12+20	1.6120	7.11			QV					
12+25	1.6636	7.49			QV					
12+30	1.7166	7.69			Q					
12+35	1.7713	7.94			QV					
12+40	1.8293	8.42			QV					
12+45	1.8890	8.66			Q					
12+50	1.9499	8.85			QV					
12+55	2.0128	9.13			Q					
13+ 0	2.0766	9.26			QV					
13+ 5	2.1429	9.64			Q					
13+10	2.2165	10.68				VQ				
13+15	2.2933	11.16					VQ			
13+20	2.3717	11.38					Q			
13+25	2.4510	11.51					VQ			
13+30	2.5309	11.60					Q			
13+35	2.6068	11.03					Q	V		
13+40	2.6682	8.91						V		
13+45	2.7232	7.98					Q		V	
13+50	2.7756	7.61					Q		V	
13+55	2.8265	7.40					Q		V	
14+ 0	2.8765	7.26					Q		V	
14+ 5	2.9275	7.40					Q		V	
14+10	2.9835	8.13					Q		V	
14+15	3.0417	8.45					Q		V	
14+20	3.1004	8.52					Q		V	
14+25	3.1582	8.40					Q		V	
14+30	3.2160	8.39					Q		V	
14+35	3.2739	8.41					Q		V	
14+40	3.3319	8.43					Q		V	
14+45	3.3901	8.45					Q		V	
14+50	3.4480	8.41					Q		V	
14+55	3.5047	8.23					Q		V	

15+ 0	3.5608	8.15			Q		V	
15+ 5	3.6163	8.07			Q		V	
15+10	3.6705	7.86			Q		V	
15+15	3.7240	7.77			Q		V	
15+20	3.7770	7.68			Q		V	
15+25	3.8284	7.47			Q		V	
15+30	3.8793	7.38			Q		V	
15+35	3.9283	7.11			Q		V	
15+40	3.9717	6.31			Q		V	
15+45	4.0127	5.95			Q		V	
15+50	4.0527	5.81			Q		V	
15+55	4.0921	5.72			Q		V	
16+ 0	4.1312	5.68			Q		V	
16+ 5	4.1652	4.93		Q			V	
16+10	4.1824	2.50		Q			V	
16+15	4.1920	1.40		Q			V	
16+20	4.1986	0.95		Q			V	
16+25	4.2032	0.67		Q			V	
16+30	4.2066	0.50		Q			V	
16+35	4.2092	0.38		Q			V	
16+40	4.2111	0.27		Q			V	
16+45	4.2126	0.21		Q			V	
16+50	4.2137	0.16		Q			V	
16+55	4.2146	0.14		Q			V	
17+ 0	4.2155	0.14		Q			V	
17+ 5	4.2166	0.15		Q			V	
17+10	4.2178	0.19		Q			V	
17+15	4.2192	0.20		Q			V	
17+20	4.2207	0.21		Q			V	
17+25	4.2221	0.21		Q			V	
17+30	4.2236	0.22		Q			V	
17+35	4.2251	0.22		Q			V	
17+40	4.2266	0.22		Q			V	
17+45	4.2282	0.22		Q			V	
17+50	4.2296	0.22		Q			V	
17+55	4.2310	0.20		Q			V	
18+ 0	4.2323	0.19		Q			V	
18+ 5	4.2336	0.18		Q			V	
18+10	4.2348	0.18		Q			V	
18+15	4.2360	0.18		Q			V	
18+20	4.2373	0.18		Q			V	
18+25	4.2385	0.18		Q			V	
18+30	4.2397	0.18		Q			V	
18+35	4.2409	0.17		Q			V	
18+40	4.2420	0.15		Q			V	
18+45	4.2429	0.14		Q			V	
18+50	4.2439	0.13		Q			V	
18+55	4.2446	0.11		Q			V	
19+ 0	4.2453	0.10		Q			V	
19+ 5	4.2460	0.10		Q			V	
19+10	4.2469	0.12		Q			V	
19+15	4.2477	0.13		Q			V	
19+20	4.2486	0.13		Q			V	
19+25	4.2497	0.16		Q			V	
19+30	4.2509	0.17		Q			V	
19+35	4.2520	0.16		Q			V	
19+40	4.2530	0.15		Q			V	
19+45	4.2540	0.14		Q			V	
19+50	4.2549	0.13		Q			V	
19+55	4.2556	0.11		Q			V	

20+ 0	4.2563	0.10	Q				V
20+ 5	4.2570	0.10	Q				V
20+10	4.2578	0.12	Q				V
20+15	4.2587	0.13	Q				V
20+20	4.2596	0.13	Q				V
20+25	4.2605	0.13	Q				V
20+30	4.2614	0.13	Q				V
20+35	4.2623	0.13	Q				V
20+40	4.2632	0.13	Q				V
20+45	4.2641	0.13	Q				V
20+50	4.2650	0.13	Q				V
20+55	4.2657	0.11	Q				V
21+ 0	4.2664	0.10	Q				V
21+ 5	4.2671	0.10	Q				V
21+10	4.2679	0.12	Q				V
21+15	4.2688	0.13	Q				V
21+20	4.2696	0.12	Q				V
21+25	4.2704	0.10	Q				V
21+30	4.2710	0.10	Q				V
21+35	4.2717	0.10	Q				V
21+40	4.2725	0.12	Q				V
21+45	4.2734	0.13	Q				V
21+50	4.2742	0.12	Q				V
21+55	4.2749	0.10	Q				V
22+ 0	4.2756	0.10	Q				V
22+ 5	4.2763	0.10	Q				V
22+10	4.2771	0.12	Q				V
22+15	4.2780	0.13	Q				V
22+20	4.2788	0.12	Q				V
22+25	4.2795	0.10	Q				V
22+30	4.2802	0.10	Q				V
22+35	4.2808	0.09	Q				V
22+40	4.2815	0.09	Q				V
22+45	4.2821	0.09	Q				V
22+50	4.2827	0.09	Q				V
22+55	4.2833	0.09	Q				V
23+ 0	4.2839	0.09	Q				V
23+ 5	4.2846	0.09	Q				V
23+10	4.2852	0.09	Q				V
23+15	4.2858	0.09	Q				V
23+20	4.2864	0.09	Q				V
23+25	4.2870	0.09	Q				V
23+30	4.2876	0.09	Q				V
23+35	4.2882	0.09	Q				V
23+40	4.2888	0.09	Q				V
23+45	4.2894	0.09	Q				V
23+50	4.2901	0.09	Q				V
23+55	4.2907	0.09	Q				V
24+ 0	4.2913	0.09	Q				V
24+ 5	4.2918	0.08	Q				V
24+10	4.2921	0.04	Q				V
24+15	4.2922	0.02	Q				V
24+20	4.2923	0.01	Q				V
24+25	4.2923	0.01	Q				V
24+30	4.2924	0.01	Q				V
24+35	4.2924	0.00	Q				V
24+40	4.2924	0.00	Q				V
24+45	4.2924	0.00	Q				V
24+50	4.2924	0.00	Q				V

Unit Hydrograph Analysis

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Study date 03/24/22 File: 20750cp242.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6310

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

20-750 Building C
PROPOSED
2 YEAR 24 HOUR

Drainage Area = 27.49(Ac.) = 0.043 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 27.49(Ac.) = 0.043 Sq. Mi.
Length along longest watercourse = 1800.00(Ft.)
Length along longest watercourse measured to centroid = 536.00(Ft.)
Length along longest watercourse = 0.341 Mi.
Length along longest watercourse measured to centroid = 0.102 Mi.
Difference in elevation = 10.90(Ft.)
Slope along watercourse = 31.9733 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.052 Hr.
Lag time = 3.11 Min.
25% of lag time = 0.78 Min.
40% of lag time = 1.25 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
27.49	1.60	43.98

100 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
27.49	4.00	109.96

STORM EVENT (YEAR) = 2.00
 Area Averaged 2-Year Rainfall = 1.600 (In)
 Area Averaged 100-Year Rainfall = 4.000 (In)

Point rain (area averaged) = 1.600 (In)
 Areal adjustment factor = 99.99 %
 Adjusted average point rain = 1.600 (In)

Sub-Area Data:

Area (Ac.)	Runoff Index	Impervious %
27.490	69.00	0.900
Total Area Entered = 27.49 (Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-1	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
69.0	49.8	0.574	0.900	0.109	1.000	0.109
						Sum (F) = 0.109

Area averaged mean soil loss (F) (In/Hr) = 0.109
 Minimum soil loss rate ((In/Hr)) = 0.055
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.180

 U n i t H y d r o g r a p h
 VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	160.525	9.871
2	0.167	321.049	12.807
3	0.250	481.574	2.938
4	0.333	642.098	1.264
5	0.417	802.623	0.824
		Sum = 100.000	Sum= 27.705

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate (In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	0.07	(0.193)	0.002	0.010
2	0.17	0.07	(0.193)	0.002	0.010
3	0.25	0.07	(0.192)	0.002	0.010
4	0.33	0.10	(0.191)	0.003	0.016
5	0.42	0.10	(0.190)	0.003	0.016
6	0.50	0.10	(0.190)	0.003	0.016
7	0.58	0.10	(0.189)	0.003	0.016
8	0.67	0.10	(0.188)	0.003	0.016
9	0.75	0.10	(0.187)	0.003	0.016
10	0.83	0.13	(0.187)	0.005	0.021
11	0.92	0.13	(0.186)	0.005	0.021
12	1.00	0.13	(0.185)	0.005	0.021
13	1.08	0.10	(0.184)	0.003	0.016
14	1.17	0.10	(0.184)	0.003	0.016

15	1.25	0.10	0.019	(0.183)	0.003	0.016
16	1.33	0.10	0.019	(0.182)	0.003	0.016
17	1.42	0.10	0.019	(0.182)	0.003	0.016
18	1.50	0.10	0.019	(0.181)	0.003	0.016
19	1.58	0.10	0.019	(0.180)	0.003	0.016
20	1.67	0.10	0.019	(0.179)	0.003	0.016
21	1.75	0.10	0.019	(0.179)	0.003	0.016
22	1.83	0.13	0.026	(0.178)	0.005	0.021
23	1.92	0.13	0.026	(0.177)	0.005	0.021
24	2.00	0.13	0.026	(0.176)	0.005	0.021
25	2.08	0.13	0.026	(0.176)	0.005	0.021
26	2.17	0.13	0.026	(0.175)	0.005	0.021
27	2.25	0.13	0.026	(0.174)	0.005	0.021
28	2.33	0.13	0.026	(0.174)	0.005	0.021
29	2.42	0.13	0.026	(0.173)	0.005	0.021
30	2.50	0.13	0.026	(0.172)	0.005	0.021
31	2.58	0.17	0.032	(0.172)	0.006	0.026
32	2.67	0.17	0.032	(0.171)	0.006	0.026
33	2.75	0.17	0.032	(0.170)	0.006	0.026
34	2.83	0.17	0.032	(0.169)	0.006	0.026
35	2.92	0.17	0.032	(0.169)	0.006	0.026
36	3.00	0.17	0.032	(0.168)	0.006	0.026
37	3.08	0.17	0.032	(0.167)	0.006	0.026
38	3.17	0.17	0.032	(0.167)	0.006	0.026
39	3.25	0.17	0.032	(0.166)	0.006	0.026
40	3.33	0.17	0.032	(0.165)	0.006	0.026
41	3.42	0.17	0.032	(0.165)	0.006	0.026
42	3.50	0.17	0.032	(0.164)	0.006	0.026
43	3.58	0.17	0.032	(0.163)	0.006	0.026
44	3.67	0.17	0.032	(0.162)	0.006	0.026
45	3.75	0.17	0.032	(0.162)	0.006	0.026
46	3.83	0.20	0.038	(0.161)	0.007	0.031
47	3.92	0.20	0.038	(0.160)	0.007	0.031
48	4.00	0.20	0.038	(0.160)	0.007	0.031
49	4.08	0.20	0.038	(0.159)	0.007	0.031
50	4.17	0.20	0.038	(0.158)	0.007	0.031
51	4.25	0.20	0.038	(0.158)	0.007	0.031
52	4.33	0.23	0.045	(0.157)	0.008	0.037
53	4.42	0.23	0.045	(0.156)	0.008	0.037
54	4.50	0.23	0.045	(0.156)	0.008	0.037
55	4.58	0.23	0.045	(0.155)	0.008	0.037
56	4.67	0.23	0.045	(0.154)	0.008	0.037
57	4.75	0.23	0.045	(0.154)	0.008	0.037
58	4.83	0.27	0.051	(0.153)	0.009	0.042
59	4.92	0.27	0.051	(0.152)	0.009	0.042
60	5.00	0.27	0.051	(0.152)	0.009	0.042
61	5.08	0.20	0.038	(0.151)	0.007	0.031
62	5.17	0.20	0.038	(0.150)	0.007	0.031
63	5.25	0.20	0.038	(0.150)	0.007	0.031
64	5.33	0.23	0.045	(0.149)	0.008	0.037
65	5.42	0.23	0.045	(0.148)	0.008	0.037
66	5.50	0.23	0.045	(0.148)	0.008	0.037
67	5.58	0.27	0.051	(0.147)	0.009	0.042
68	5.67	0.27	0.051	(0.147)	0.009	0.042
69	5.75	0.27	0.051	(0.146)	0.009	0.042
70	5.83	0.27	0.051	(0.145)	0.009	0.042
71	5.92	0.27	0.051	(0.145)	0.009	0.042
72	6.00	0.27	0.051	(0.144)	0.009	0.042
73	6.08	0.30	0.058	(0.143)	0.010	0.047
74	6.17	0.30	0.058	(0.143)	0.010	0.047

75	6.25	0.30	0.058	(0.142)	0.010	0.047
76	6.33	0.30	0.058	(0.141)	0.010	0.047
77	6.42	0.30	0.058	(0.141)	0.010	0.047
78	6.50	0.30	0.058	(0.140)	0.010	0.047
79	6.58	0.33	0.064	(0.140)	0.012	0.052
80	6.67	0.33	0.064	(0.139)	0.012	0.052
81	6.75	0.33	0.064	(0.138)	0.012	0.052
82	6.83	0.33	0.064	(0.138)	0.012	0.052
83	6.92	0.33	0.064	(0.137)	0.012	0.052
84	7.00	0.33	0.064	(0.136)	0.012	0.052
85	7.08	0.33	0.064	(0.136)	0.012	0.052
86	7.17	0.33	0.064	(0.135)	0.012	0.052
87	7.25	0.33	0.064	(0.135)	0.012	0.052
88	7.33	0.37	0.070	(0.134)	0.013	0.058
89	7.42	0.37	0.070	(0.133)	0.013	0.058
90	7.50	0.37	0.070	(0.133)	0.013	0.058
91	7.58	0.40	0.077	(0.132)	0.014	0.063
92	7.67	0.40	0.077	(0.131)	0.014	0.063
93	7.75	0.40	0.077	(0.131)	0.014	0.063
94	7.83	0.43	0.083	(0.130)	0.015	0.068
95	7.92	0.43	0.083	(0.130)	0.015	0.068
96	8.00	0.43	0.083	(0.129)	0.015	0.068
97	8.08	0.50	0.096	(0.128)	0.017	0.079
98	8.17	0.50	0.096	(0.128)	0.017	0.079
99	8.25	0.50	0.096	(0.127)	0.017	0.079
100	8.33	0.50	0.096	(0.127)	0.017	0.079
101	8.42	0.50	0.096	(0.126)	0.017	0.079
102	8.50	0.50	0.096	(0.125)	0.017	0.079
103	8.58	0.53	0.102	(0.125)	0.018	0.084
104	8.67	0.53	0.102	(0.124)	0.018	0.084
105	8.75	0.53	0.102	(0.124)	0.018	0.084
106	8.83	0.57	0.109	(0.123)	0.020	0.089
107	8.92	0.57	0.109	(0.123)	0.020	0.089
108	9.00	0.57	0.109	(0.122)	0.020	0.089
109	9.08	0.63	0.122	(0.121)	0.022	0.100
110	9.17	0.63	0.122	(0.121)	0.022	0.100
111	9.25	0.63	0.122	(0.120)	0.022	0.100
112	9.33	0.67	0.128	(0.120)	0.023	0.105
113	9.42	0.67	0.128	(0.119)	0.023	0.105
114	9.50	0.67	0.128	(0.119)	0.023	0.105
115	9.58	0.70	0.134	(0.118)	0.024	0.110
116	9.67	0.70	0.134	(0.117)	0.024	0.110
117	9.75	0.70	0.134	(0.117)	0.024	0.110
118	9.83	0.73	0.141	(0.116)	0.025	0.115
119	9.92	0.73	0.141	(0.116)	0.025	0.115
120	10.00	0.73	0.141	(0.115)	0.025	0.115
121	10.08	0.50	0.096	(0.115)	0.017	0.079
122	10.17	0.50	0.096	(0.114)	0.017	0.079
123	10.25	0.50	0.096	(0.113)	0.017	0.079
124	10.33	0.50	0.096	(0.113)	0.017	0.079
125	10.42	0.50	0.096	(0.112)	0.017	0.079
126	10.50	0.50	0.096	(0.112)	0.017	0.079
127	10.58	0.67	0.128	(0.111)	0.023	0.105
128	10.67	0.67	0.128	(0.111)	0.023	0.105
129	10.75	0.67	0.128	(0.110)	0.023	0.105
130	10.83	0.67	0.128	(0.110)	0.023	0.105
131	10.92	0.67	0.128	(0.109)	0.023	0.105
132	11.00	0.67	0.128	(0.109)	0.023	0.105
133	11.08	0.63	0.122	(0.108)	0.022	0.100
134	11.17	0.63	0.122	(0.108)	0.022	0.100

135	11.25	0.63	0.122	(0.107)	0.022	0.100
136	11.33	0.63	0.122	(0.106)	0.022	0.100
137	11.42	0.63	0.122	(0.106)	0.022	0.100
138	11.50	0.63	0.122	(0.105)	0.022	0.100
139	11.58	0.57	0.109	(0.105)	0.020	0.089
140	11.67	0.57	0.109	(0.104)	0.020	0.089
141	11.75	0.57	0.109	(0.104)	0.020	0.089
142	11.83	0.60	0.115	(0.103)	0.021	0.094
143	11.92	0.60	0.115	(0.103)	0.021	0.094
144	12.00	0.60	0.115	(0.102)	0.021	0.094
145	12.08	0.83	0.160	(0.102)	0.029	0.131
146	12.17	0.83	0.160	(0.101)	0.029	0.131
147	12.25	0.83	0.160	(0.101)	0.029	0.131
148	12.33	0.87	0.166	(0.100)	0.030	0.136
149	12.42	0.87	0.166	(0.100)	0.030	0.136
150	12.50	0.87	0.166	(0.099)	0.030	0.136
151	12.58	0.93	0.179	(0.099)	0.032	0.147
152	12.67	0.93	0.179	(0.098)	0.032	0.147
153	12.75	0.93	0.179	(0.098)	0.032	0.147
154	12.83	0.97	0.186	(0.097)	0.033	0.152
155	12.92	0.97	0.186	(0.097)	0.033	0.152
156	13.00	0.97	0.186	(0.096)	0.033	0.152
157	13.08	1.13	0.218	(0.096)	0.039	0.178
158	13.17	1.13	0.218	(0.095)	0.039	0.178
159	13.25	1.13	0.218	(0.095)	0.039	0.178
160	13.33	1.13	0.218	(0.094)	0.039	0.178
161	13.42	1.13	0.218	(0.094)	0.039	0.178
162	13.50	1.13	0.218	(0.093)	0.039	0.178
163	13.58	0.77	0.147	(0.093)	0.026	0.121
164	13.67	0.77	0.147	(0.092)	0.026	0.121
165	13.75	0.77	0.147	(0.092)	0.026	0.121
166	13.83	0.77	0.147	(0.092)	0.026	0.121
167	13.92	0.77	0.147	(0.091)	0.026	0.121
168	14.00	0.77	0.147	(0.091)	0.026	0.121
169	14.08	0.90	0.173	(0.090)	0.031	0.142
170	14.17	0.90	0.173	(0.090)	0.031	0.142
171	14.25	0.90	0.173	(0.089)	0.031	0.142
172	14.33	0.87	0.166	(0.089)	0.030	0.136
173	14.42	0.87	0.166	(0.088)	0.030	0.136
174	14.50	0.87	0.166	(0.088)	0.030	0.136
175	14.58	0.87	0.166	(0.087)	0.030	0.136
176	14.67	0.87	0.166	(0.087)	0.030	0.136
177	14.75	0.87	0.166	(0.086)	0.030	0.136
178	14.83	0.83	0.160	(0.086)	0.029	0.131
179	14.92	0.83	0.160	(0.086)	0.029	0.131
180	15.00	0.83	0.160	(0.085)	0.029	0.131
181	15.08	0.80	0.154	(0.085)	0.028	0.126
182	15.17	0.80	0.154	(0.084)	0.028	0.126
183	15.25	0.80	0.154	(0.084)	0.028	0.126
184	15.33	0.77	0.147	(0.083)	0.026	0.121
185	15.42	0.77	0.147	(0.083)	0.026	0.121
186	15.50	0.77	0.147	(0.083)	0.026	0.121
187	15.58	0.63	0.122	(0.082)	0.022	0.100
188	15.67	0.63	0.122	(0.082)	0.022	0.100
189	15.75	0.63	0.122	(0.081)	0.022	0.100
190	15.83	0.63	0.122	(0.081)	0.022	0.100
191	15.92	0.63	0.122	(0.080)	0.022	0.100
192	16.00	0.63	0.122	(0.080)	0.022	0.100
193	16.08	0.13	0.026	(0.080)	0.005	0.021
194	16.17	0.13	0.026	(0.079)	0.005	0.021

195	16.25	0.13	0.026	(0.079)	0.005	0.021
196	16.33	0.13	0.026	(0.078)	0.005	0.021
197	16.42	0.13	0.026	(0.078)	0.005	0.021
198	16.50	0.13	0.026	(0.078)	0.005	0.021
199	16.58	0.10	0.019	(0.077)	0.003	0.016
200	16.67	0.10	0.019	(0.077)	0.003	0.016
201	16.75	0.10	0.019	(0.076)	0.003	0.016
202	16.83	0.10	0.019	(0.076)	0.003	0.016
203	16.92	0.10	0.019	(0.076)	0.003	0.016
204	17.00	0.10	0.019	(0.075)	0.003	0.016
205	17.08	0.17	0.032	(0.075)	0.006	0.026
206	17.17	0.17	0.032	(0.075)	0.006	0.026
207	17.25	0.17	0.032	(0.074)	0.006	0.026
208	17.33	0.17	0.032	(0.074)	0.006	0.026
209	17.42	0.17	0.032	(0.073)	0.006	0.026
210	17.50	0.17	0.032	(0.073)	0.006	0.026
211	17.58	0.17	0.032	(0.073)	0.006	0.026
212	17.67	0.17	0.032	(0.072)	0.006	0.026
213	17.75	0.17	0.032	(0.072)	0.006	0.026
214	17.83	0.13	0.026	(0.072)	0.005	0.021
215	17.92	0.13	0.026	(0.071)	0.005	0.021
216	18.00	0.13	0.026	(0.071)	0.005	0.021
217	18.08	0.13	0.026	(0.071)	0.005	0.021
218	18.17	0.13	0.026	(0.070)	0.005	0.021
219	18.25	0.13	0.026	(0.070)	0.005	0.021
220	18.33	0.13	0.026	(0.070)	0.005	0.021
221	18.42	0.13	0.026	(0.069)	0.005	0.021
222	18.50	0.13	0.026	(0.069)	0.005	0.021
223	18.58	0.10	0.019	(0.069)	0.003	0.016
224	18.67	0.10	0.019	(0.068)	0.003	0.016
225	18.75	0.10	0.019	(0.068)	0.003	0.016
226	18.83	0.07	0.013	(0.068)	0.002	0.010
227	18.92	0.07	0.013	(0.067)	0.002	0.010
228	19.00	0.07	0.013	(0.067)	0.002	0.010
229	19.08	0.10	0.019	(0.067)	0.003	0.016
230	19.17	0.10	0.019	(0.066)	0.003	0.016
231	19.25	0.10	0.019	(0.066)	0.003	0.016
232	19.33	0.13	0.026	(0.066)	0.005	0.021
233	19.42	0.13	0.026	(0.065)	0.005	0.021
234	19.50	0.13	0.026	(0.065)	0.005	0.021
235	19.58	0.10	0.019	(0.065)	0.003	0.016
236	19.67	0.10	0.019	(0.064)	0.003	0.016
237	19.75	0.10	0.019	(0.064)	0.003	0.016
238	19.83	0.07	0.013	(0.064)	0.002	0.010
239	19.92	0.07	0.013	(0.064)	0.002	0.010
240	20.00	0.07	0.013	(0.063)	0.002	0.010
241	20.08	0.10	0.019	(0.063)	0.003	0.016
242	20.17	0.10	0.019	(0.063)	0.003	0.016
243	20.25	0.10	0.019	(0.062)	0.003	0.016
244	20.33	0.10	0.019	(0.062)	0.003	0.016
245	20.42	0.10	0.019	(0.062)	0.003	0.016
246	20.50	0.10	0.019	(0.062)	0.003	0.016
247	20.58	0.10	0.019	(0.061)	0.003	0.016
248	20.67	0.10	0.019	(0.061)	0.003	0.016
249	20.75	0.10	0.019	(0.061)	0.003	0.016
250	20.83	0.07	0.013	(0.061)	0.002	0.010
251	20.92	0.07	0.013	(0.060)	0.002	0.010
252	21.00	0.07	0.013	(0.060)	0.002	0.010
253	21.08	0.10	0.019	(0.060)	0.003	0.016
254	21.17	0.10	0.019	(0.060)	0.003	0.016

0+30	0.0123	0.43	VQ				
0+35	0.0152	0.43	VQ				
0+40	0.0182	0.44	VQ				
0+45	0.0212	0.44	VQ				
0+50	0.0246	0.49	VQ				
0+55	0.0284	0.56	V Q				
1+ 0	0.0324	0.57	V Q				
1+ 5	0.0360	0.53	V Q				
1+10	0.0392	0.46	VQ				
1+15	0.0423	0.45	VQ				
1+20	0.0453	0.44	VQ				
1+25	0.0483	0.44	VQ				
1+30	0.0513	0.44	VQ				
1+35	0.0543	0.44	VQ				
1+40	0.0573	0.44	VQ				
1+45	0.0603	0.44	VQ				
1+50	0.0637	0.49	VQ				
1+55	0.0675	0.56	V Q				
2+ 0	0.0714	0.57	V Q				
2+ 5	0.0754	0.58	VQ				
2+10	0.0794	0.58	VQ				
2+15	0.0834	0.58	VQ				
2+20	0.0874	0.58	VQ				
2+25	0.0914	0.58	VQ				
2+30	0.0955	0.58	VQ				
2+35	0.0998	0.63	VQ				
2+40	0.1046	0.70	VQ				
2+45	0.1096	0.72	VQ				
2+50	0.1146	0.72	VQ				
2+55	0.1196	0.73	VQ				
3+ 0	0.1246	0.73	VQ				
3+ 5	0.1296	0.73	VQ				
3+10	0.1346	0.73	VQ				
3+15	0.1396	0.73	VQ				
3+20	0.1446	0.73	VQ				
3+25	0.1496	0.73	VQ				
3+30	0.1546	0.73	Q				
3+35	0.1596	0.73	Q				
3+40	0.1646	0.73	Q				
3+45	0.1697	0.73	Q				
3+50	0.1750	0.78	VQ				
3+55	0.1808	0.85	VQ				
4+ 0	0.1868	0.86	VQ				
4+ 5	0.1928	0.87	VQ				
4+10	0.1988	0.87	VQ				
4+15	0.2048	0.87	VQ				
4+20	0.2112	0.92	VQ				
4+25	0.2180	0.99	VQ				
4+30	0.2249	1.01	V Q				
4+35	0.2319	1.01	VQ				
4+40	0.2389	1.02	VQ				
4+45	0.2459	1.02	VQ				
4+50	0.2533	1.07	VQ				
4+55	0.2611	1.14	VQ				
5+ 0	0.2691	1.15	VQ				
5+ 5	0.2763	1.06	VQ				
5+10	0.2827	0.93	Q				
5+15	0.2889	0.89	Q				
5+20	0.2953	0.93	Q				
5+25	0.3021	0.99	QV				

5+30	0.3091	1.01	Q				
5+35	0.3164	1.07	Q				
5+40	0.3242	1.14	Q				
5+45	0.3322	1.15	Q				
5+50	0.3402	1.16	Q				
5+55	0.3482	1.16	Q				
6+ 0	0.3562	1.16	Q				
6+ 5	0.3646	1.22	Q				
6+10	0.3734	1.28	VQ				
6+15	0.3823	1.30	Q				
6+20	0.3913	1.30	Q				
6+25	0.4003	1.31	Q				
6+30	0.4094	1.31	Q				
6+35	0.4187	1.36	Q				
6+40	0.4286	1.43	Q				
6+45	0.4385	1.44	Q				
6+50	0.4485	1.45	Q				
6+55	0.4585	1.45	QV				
7+ 0	0.4685	1.45	QV				
7+ 5	0.4786	1.45	QV				
7+10	0.4886	1.45	QV				
7+15	0.4986	1.45	QV				
7+20	0.5090	1.51	Q				
7+25	0.5198	1.57	Q				
7+30	0.5308	1.59	QV				
7+35	0.5421	1.65	QV				
7+40	0.5539	1.72	QV				
7+45	0.5659	1.73	QV				
7+50	0.5782	1.79	Q				
7+55	0.5911	1.86	Q				
8+ 0	0.6040	1.88	QV				
8+ 5	0.6177	1.99	QV				
8+10	0.6324	2.13	Q				
8+15	0.6473	2.16	Q				
8+20	0.6622	2.17	Q				
8+25	0.6773	2.18	QV				
8+30	0.6923	2.18	QV				
8+35	0.7077	2.23	QV				
8+40	0.7235	2.30	Q				
8+45	0.7395	2.32	Q				
8+50	0.7558	2.37	QV				
8+55	0.7727	2.45	QV				
9+ 0	0.7896	2.46	QV				
9+ 5	0.8074	2.57	Q				
9+10	0.8260	2.71	Q				
9+15	0.8449	2.74	QV				
9+20	0.8642	2.81	Q				
9+25	0.8841	2.88	Q				
9+30	0.9041	2.90	QV				
9+35	0.9244	2.96	QV				
9+40	0.9453	3.03	Q				
9+45	0.9662	3.04	Q				
9+50	0.9876	3.10	QV				
9+55	1.0095	3.17	QV				
10+ 0	1.0314	3.19	QV				
10+ 5	1.0509	2.83	Q V				
10+10	1.0672	2.37	Q	V			
10+15	1.0828	2.26	Q	V			
10+20	1.0980	2.21	Q	V			
10+25	1.1130	2.18	Q	V			

10+30	1.1281	2.18	Q	V				
10+35	1.1449	2.44	Q	V				
10+40	1.1640	2.78	Q	V				
10+45	1.1837	2.85	Q	V				
10+50	1.2036	2.89	Q	V				
10+55	1.2236	2.91	Q	V				
11+ 0	1.2436	2.91	Q	V				
11+ 5	1.2633	2.86	Q	V				
11+10	1.2825	2.79	Q	V				
11+15	1.3016	2.77	Q	V				
11+20	1.3207	2.77	Q	V				
11+25	1.3397	2.76	Q	V				
11+30	1.3588	2.76	Q	V				
11+35	1.3771	2.66	Q	V				
11+40	1.3945	2.53	Q	V				
11+45	1.4117	2.49	Q	V				
11+50	1.4291	2.53	Q	V				
11+55	1.4470	2.59	Q	V				
12+ 0	1.4649	2.61	Q	V				
12+ 5	1.4854	2.98	Q	V				
12+10	1.5092	3.45	Q	V				
12+15	1.5337	3.56	Q	V				
12+20	1.5589	3.66	Q	V				
12+25	1.5848	3.76	Q	V				
12+30	1.6107	3.77	Q	V				
12+35	1.6375	3.88	Q	V				
12+40	1.6652	4.02	Q	V				
12+45	1.6931	4.05	Q	V				
12+50	1.7214	4.12	Q	V				
12+55	1.7503	4.19	Q	V				
13+ 0	1.7793	4.21	Q	V				
13+ 5	1.8101	4.47	Q	V				
13+10	1.8432	4.81	Q	V				
13+15	1.8769	4.89	Q	V				
13+20	1.9108	4.92	Q	V				
13+25	1.9449	4.95	Q	V				
13+30	1.9789	4.95	Q	V				
13+35	2.0091	4.38	Q	V				
13+40	2.0341	3.64	Q	V				
13+45	2.0580	3.47	Q	V				
13+50	2.0814	3.39	Q	V				
13+55	2.1044	3.35	Q	V				
14+ 0	2.1274	3.35	Q	V				
14+ 5	2.1519	3.55	Q	V				
14+10	2.1782	3.82	Q	V				
14+15	2.2050	3.88	Q	V				
14+20	2.2315	3.86	Q	V				
14+25	2.2578	3.81	Q	V				
14+30	2.2839	3.79	Q	V				
14+35	2.3100	3.79	Q	V				
14+40	2.3360	3.78	Q	V				
14+45	2.3621	3.78	Q	V				
14+50	2.3878	3.73	Q	V				
14+55	2.4130	3.66	Q	V				
15+ 0	2.4381	3.65	Q	V				
15+ 5	2.4628	3.59	Q	V				
15+10	2.4870	3.52	Q	V				
15+15	2.5112	3.50	Q	V				
15+20	2.5349	3.44	Q	V				
15+25	2.5581	3.37	Q	V				

15+30	2.5812	3.36			Q		V	
15+35	2.6029	3.14			Q		V	
15+40	2.6226	2.87			Q		V	
15+45	2.6420	2.81			Q		V	
15+50	2.6611	2.78			Q		V	
15+55	2.6802	2.76			Q		V	
16+ 0	2.6992	2.76			Q		V	
16+ 5	2.7129	1.99		Q			V	
16+10	2.7196	0.98		Q			V	
16+15	2.7247	0.75		Q			V	
16+20	2.7292	0.65		Q			V	
16+25	2.7332	0.58		Q			V	
16+30	2.7372	0.58		Q			V	
16+35	2.7409	0.53		Q			V	
16+40	2.7440	0.46		Q			V	
16+45	2.7471	0.45		Q			V	
16+50	2.7502	0.44		Q			V	
16+55	2.7532	0.44		Q			V	
17+ 0	2.7562	0.44		Q			V	
17+ 5	2.7599	0.54		Q			V	
17+10	2.7645	0.67		Q			V	
17+15	2.7694	0.71		Q			V	
17+20	2.7743	0.72		Q			V	
17+25	2.7794	0.73		Q			V	
17+30	2.7844	0.73		Q			V	
17+35	2.7894	0.73		Q			V	
17+40	2.7944	0.73		Q			V	
17+45	2.7994	0.73		Q			V	
17+50	2.8040	0.68		Q			V	
17+55	2.8082	0.61		Q			V	
18+ 0	2.8123	0.59		Q			V	
18+ 5	2.8164	0.59		Q			V	
18+10	2.8204	0.58		Q			V	
18+15	2.8244	0.58		Q			V	
18+20	2.8284	0.58		Q			V	
18+25	2.8324	0.58		Q			V	
18+30	2.8364	0.58		Q			V	
18+35	2.8400	0.53		Q			V	
18+40	2.8432	0.46		Q			V	
18+45	2.8463	0.45		Q			V	
18+50	2.8490	0.39		Q			V	
18+55	2.8512	0.32		Q			V	
19+ 0	2.8532	0.30		Q			V	
19+ 5	2.8556	0.35		Q			V	
19+10	2.8585	0.41		Q			V	
19+15	2.8614	0.43		Q			V	
19+20	2.8647	0.48		Q			V	
19+25	2.8685	0.56		Q			V	
19+30	2.8725	0.57		Q			V	
19+35	2.8761	0.53		Q			V	
19+40	2.8793	0.46		Q			V	
19+45	2.8824	0.45		Q			V	
19+50	2.8850	0.39		Q			V	
19+55	2.8872	0.32		Q			V	
20+ 0	2.8893	0.30		Q			V	
20+ 5	2.8917	0.35		Q			V	
20+10	2.8945	0.41		Q			V	
20+15	2.8975	0.43		Q			V	
20+20	2.9004	0.43		Q			V	
20+25	2.9034	0.44		Q			V	

20+30	2.9064	0.44	Q				V	
20+35	2.9094	0.44	Q				V	
20+40	2.9125	0.44	Q				V	
20+45	2.9155	0.44	Q				V	
20+50	2.9181	0.38	Q				V	
20+55	2.9203	0.32	Q				V	
21+ 0	2.9224	0.30	Q				V	
21+ 5	2.9248	0.35	Q				V	
21+10	2.9276	0.41	Q				V	
21+15	2.9305	0.43	Q				V	
21+20	2.9331	0.38	Q				V	
21+25	2.9353	0.32	Q				V	
21+30	2.9374	0.30	Q				V	
21+35	2.9398	0.35	Q				V	
21+40	2.9426	0.41	Q				V	
21+45	2.9455	0.43	Q				V	
21+50	2.9482	0.38	Q				V	
21+55	2.9503	0.32	Q				V	
22+ 0	2.9524	0.30	Q				V	
22+ 5	2.9548	0.35	Q				V	
22+10	2.9576	0.41	Q				V	
22+15	2.9606	0.43	Q				V	
22+20	2.9632	0.38	Q				V	
22+25	2.9654	0.32	Q				V	
22+30	2.9675	0.30	Q				V	
22+35	2.9695	0.30	Q				V	
22+40	2.9715	0.29	Q				V	
22+45	2.9735	0.29	Q				V	
22+50	2.9755	0.29	Q				V	
22+55	2.9775	0.29	Q				V	
23+ 0	2.9795	0.29	Q				V	
23+ 5	2.9815	0.29	Q				V	
23+10	2.9835	0.29	Q				V	
23+15	2.9855	0.29	Q				V	
23+20	2.9875	0.29	Q				V	
23+25	2.9895	0.29	Q				V	
23+30	2.9915	0.29	Q				V	
23+35	2.9935	0.29	Q				V	
23+40	2.9955	0.29	Q				V	
23+45	2.9975	0.29	Q				V	
23+50	2.9995	0.29	Q				V	
23+55	3.0015	0.29	Q				V	
24+ 0	3.0035	0.29	Q				V	
24+ 5	3.0048	0.19	Q				V	
24+10	3.0052	0.05	Q				V	
24+15	3.0054	0.02	Q				V	
24+20	3.0054	0.01	Q				V	

Unit Hydrograph Analysis

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Study date 03/24/22 File: 20750cp24100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6310

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

20-750 Building C
PROPOSED
100 YEAR 24 HOUR

Drainage Area = 27.49(Ac.) = 0.043 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 27.49(Ac.) = 0.043
Sq. Mi.
Length along longest watercourse = 1800.00(Ft.)
Length along longest watercourse measured to centroid = 536.00(Ft.)
Length along longest watercourse = 0.341 Mi.
Length along longest watercourse measured to centroid = 0.102 Mi.
Difference in elevation = 10.90(Ft.)
Slope along watercourse = 31.9733 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.052 Hr.
Lag time = 3.11 Min.
25% of lag time = 0.78 Min.
40% of lag time = 1.25 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
27.49	1.60	43.98

100 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
27.49	4.00	109.96

STORM EVENT (YEAR) = 100.00
 Area Averaged 2-Year Rainfall = 1.600 (In)
 Area Averaged 100-Year Rainfall = 4.000 (In)

Point rain (area averaged) = 4.000 (In)
 Areal adjustment factor = 99.99 %
 Adjusted average point rain = 4.000 (In)

Sub-Area Data:

Area (Ac.)	Runoff Index	Impervious %
27.490	69.00	0.900
Total Area Entered = 27.49 (Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
69.0	84.4	0.194	0.900	0.037	1.000	0.037
Sum (F) =						0.037

Area averaged mean soil loss (F) (In/Hr) = 0.109
 Minimum soil loss rate ((In/Hr)) = 0.055
 (for 24 hour storm duration)
 Note: User entry of the f value
 Soil low loss rate (decimal) = 0.180

 U n i t H y d r o g r a p h
 VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	160.525	9.871
2	0.167	321.049	12.807
3	0.250	481.574	2.938
4	0.333	642.098	1.264
5	0.417	802.623	0.824
		Sum = 100.000	Sum= 27.705

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate (In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	0.032	(0.193)	0.006	0.026
2	0.17	0.032	(0.193)	0.006	0.026
3	0.25	0.032	(0.192)	0.006	0.026
4	0.33	0.048	(0.191)	0.009	0.039
5	0.42	0.048	(0.190)	0.009	0.039
6	0.50	0.048	(0.190)	0.009	0.039
7	0.58	0.048	(0.189)	0.009	0.039
8	0.67	0.048	(0.188)	0.009	0.039
9	0.75	0.048	(0.187)	0.009	0.039
10	0.83	0.064	(0.187)	0.012	0.052
11	0.92	0.064	(0.186)	0.012	0.052
12	1.00	0.064	(0.185)	0.012	0.052
13	1.08	0.048	(0.184)	0.009	0.039

14	1.17	0.10	0.048	(0.184)	0.009	0.039
15	1.25	0.10	0.048	(0.183)	0.009	0.039
16	1.33	0.10	0.048	(0.182)	0.009	0.039
17	1.42	0.10	0.048	(0.182)	0.009	0.039
18	1.50	0.10	0.048	(0.181)	0.009	0.039
19	1.58	0.10	0.048	(0.180)	0.009	0.039
20	1.67	0.10	0.048	(0.179)	0.009	0.039
21	1.75	0.10	0.048	(0.179)	0.009	0.039
22	1.83	0.13	0.064	(0.178)	0.012	0.052
23	1.92	0.13	0.064	(0.177)	0.012	0.052
24	2.00	0.13	0.064	(0.176)	0.012	0.052
25	2.08	0.13	0.064	(0.176)	0.012	0.052
26	2.17	0.13	0.064	(0.175)	0.012	0.052
27	2.25	0.13	0.064	(0.174)	0.012	0.052
28	2.33	0.13	0.064	(0.174)	0.012	0.052
29	2.42	0.13	0.064	(0.173)	0.012	0.052
30	2.50	0.13	0.064	(0.172)	0.012	0.052
31	2.58	0.17	0.080	(0.172)	0.014	0.066
32	2.67	0.17	0.080	(0.171)	0.014	0.066
33	2.75	0.17	0.080	(0.170)	0.014	0.066
34	2.83	0.17	0.080	(0.169)	0.014	0.066
35	2.92	0.17	0.080	(0.169)	0.014	0.066
36	3.00	0.17	0.080	(0.168)	0.014	0.066
37	3.08	0.17	0.080	(0.167)	0.014	0.066
38	3.17	0.17	0.080	(0.167)	0.014	0.066
39	3.25	0.17	0.080	(0.166)	0.014	0.066
40	3.33	0.17	0.080	(0.165)	0.014	0.066
41	3.42	0.17	0.080	(0.165)	0.014	0.066
42	3.50	0.17	0.080	(0.164)	0.014	0.066
43	3.58	0.17	0.080	(0.163)	0.014	0.066
44	3.67	0.17	0.080	(0.162)	0.014	0.066
45	3.75	0.17	0.080	(0.162)	0.014	0.066
46	3.83	0.20	0.096	(0.161)	0.017	0.079
47	3.92	0.20	0.096	(0.160)	0.017	0.079
48	4.00	0.20	0.096	(0.160)	0.017	0.079
49	4.08	0.20	0.096	(0.159)	0.017	0.079
50	4.17	0.20	0.096	(0.158)	0.017	0.079
51	4.25	0.20	0.096	(0.158)	0.017	0.079
52	4.33	0.23	0.112	(0.157)	0.020	0.092
53	4.42	0.23	0.112	(0.156)	0.020	0.092
54	4.50	0.23	0.112	(0.156)	0.020	0.092
55	4.58	0.23	0.112	(0.155)	0.020	0.092
56	4.67	0.23	0.112	(0.154)	0.020	0.092
57	4.75	0.23	0.112	(0.154)	0.020	0.092
58	4.83	0.27	0.128	(0.153)	0.023	0.105
59	4.92	0.27	0.128	(0.152)	0.023	0.105
60	5.00	0.27	0.128	(0.152)	0.023	0.105
61	5.08	0.20	0.096	(0.151)	0.017	0.079
62	5.17	0.20	0.096	(0.150)	0.017	0.079
63	5.25	0.20	0.096	(0.150)	0.017	0.079
64	5.33	0.23	0.112	(0.149)	0.020	0.092
65	5.42	0.23	0.112	(0.148)	0.020	0.092
66	5.50	0.23	0.112	(0.148)	0.020	0.092
67	5.58	0.27	0.128	(0.147)	0.023	0.105
68	5.67	0.27	0.128	(0.147)	0.023	0.105
69	5.75	0.27	0.128	(0.146)	0.023	0.105
70	5.83	0.27	0.128	(0.145)	0.023	0.105
71	5.92	0.27	0.128	(0.145)	0.023	0.105
72	6.00	0.27	0.128	(0.144)	0.023	0.105
73	6.08	0.30	0.144	(0.143)	0.026	0.118

74	6.17	0.30	0.144	(0.143)	0.026	0.118
75	6.25	0.30	0.144	(0.142)	0.026	0.118
76	6.33	0.30	0.144	(0.141)	0.026	0.118
77	6.42	0.30	0.144	(0.141)	0.026	0.118
78	6.50	0.30	0.144	(0.140)	0.026	0.118
79	6.58	0.33	0.160	(0.140)	0.029	0.131
80	6.67	0.33	0.160	(0.139)	0.029	0.131
81	6.75	0.33	0.160	(0.138)	0.029	0.131
82	6.83	0.33	0.160	(0.138)	0.029	0.131
83	6.92	0.33	0.160	(0.137)	0.029	0.131
84	7.00	0.33	0.160	(0.136)	0.029	0.131
85	7.08	0.33	0.160	(0.136)	0.029	0.131
86	7.17	0.33	0.160	(0.135)	0.029	0.131
87	7.25	0.33	0.160	(0.135)	0.029	0.131
88	7.33	0.37	0.176	(0.134)	0.032	0.144
89	7.42	0.37	0.176	(0.133)	0.032	0.144
90	7.50	0.37	0.176	(0.133)	0.032	0.144
91	7.58	0.40	0.192	(0.132)	0.035	0.157
92	7.67	0.40	0.192	(0.131)	0.035	0.157
93	7.75	0.40	0.192	(0.131)	0.035	0.157
94	7.83	0.43	0.208	(0.130)	0.037	0.171
95	7.92	0.43	0.208	(0.130)	0.037	0.171
96	8.00	0.43	0.208	(0.129)	0.037	0.171
97	8.08	0.50	0.240	(0.128)	0.043	0.197
98	8.17	0.50	0.240	(0.128)	0.043	0.197
99	8.25	0.50	0.240	(0.127)	0.043	0.197
100	8.33	0.50	0.240	(0.127)	0.043	0.197
101	8.42	0.50	0.240	(0.126)	0.043	0.197
102	8.50	0.50	0.240	(0.125)	0.043	0.197
103	8.58	0.53	0.256	(0.125)	0.046	0.210
104	8.67	0.53	0.256	(0.124)	0.046	0.210
105	8.75	0.53	0.256	(0.124)	0.046	0.210
106	8.83	0.57	0.272	(0.123)	0.049	0.223
107	8.92	0.57	0.272	(0.123)	0.049	0.223
108	9.00	0.57	0.272	(0.122)	0.049	0.223
109	9.08	0.63	0.304	(0.121)	0.055	0.249
110	9.17	0.63	0.304	(0.121)	0.055	0.249
111	9.25	0.63	0.304	(0.120)	0.055	0.249
112	9.33	0.67	0.320	(0.120)	0.058	0.262
113	9.42	0.67	0.320	(0.119)	0.058	0.262
114	9.50	0.67	0.320	(0.119)	0.058	0.262
115	9.58	0.70	0.336	(0.118)	0.060	0.276
116	9.67	0.70	0.336	(0.117)	0.060	0.276
117	9.75	0.70	0.336	(0.117)	0.060	0.276
118	9.83	0.73	0.352	(0.116)	0.063	0.289
119	9.92	0.73	0.352	(0.116)	0.063	0.289
120	10.00	0.73	0.352	(0.115)	0.063	0.289
121	10.08	0.50	0.240	(0.115)	0.043	0.197
122	10.17	0.50	0.240	(0.114)	0.043	0.197
123	10.25	0.50	0.240	(0.113)	0.043	0.197
124	10.33	0.50	0.240	(0.113)	0.043	0.197
125	10.42	0.50	0.240	(0.112)	0.043	0.197
126	10.50	0.50	0.240	(0.112)	0.043	0.197
127	10.58	0.67	0.320	(0.111)	0.058	0.262
128	10.67	0.67	0.320	(0.111)	0.058	0.262
129	10.75	0.67	0.320	(0.110)	0.058	0.262
130	10.83	0.67	0.320	(0.110)	0.058	0.262
131	10.92	0.67	0.320	(0.109)	0.058	0.262
132	11.00	0.67	0.320	(0.109)	0.058	0.262
133	11.08	0.63	0.304	(0.108)	0.055	0.249

134	11.17	0.63	0.304	(0.108)	0.055	0.249
135	11.25	0.63	0.304	(0.107)	0.055	0.249
136	11.33	0.63	0.304	(0.106)	0.055	0.249
137	11.42	0.63	0.304	(0.106)	0.055	0.249
138	11.50	0.63	0.304	(0.105)	0.055	0.249
139	11.58	0.57	0.272	(0.105)	0.049	0.223
140	11.67	0.57	0.272	(0.104)	0.049	0.223
141	11.75	0.57	0.272	(0.104)	0.049	0.223
142	11.83	0.60	0.288	(0.103)	0.052	0.236
143	11.92	0.60	0.288	(0.103)	0.052	0.236
144	12.00	0.60	0.288	(0.102)	0.052	0.236
145	12.08	0.83	0.400	(0.102)	0.072	0.328
146	12.17	0.83	0.400	(0.101)	0.072	0.328
147	12.25	0.83	0.400	(0.101)	0.072	0.328
148	12.33	0.87	0.416	(0.100)	0.075	0.341
149	12.42	0.87	0.416	(0.100)	0.075	0.341
150	12.50	0.87	0.416	(0.099)	0.075	0.341
151	12.58	0.93	0.448	(0.099)	0.081	0.367
152	12.67	0.93	0.448	(0.098)	0.081	0.367
153	12.75	0.93	0.448	(0.098)	0.081	0.367
154	12.83	0.97	0.464	(0.097)	0.084	0.380
155	12.92	0.97	0.464	(0.097)	0.084	0.380
156	13.00	0.97	0.464	(0.096)	0.084	0.380
157	13.08	1.13	0.544	0.096 (0.098)		0.448
158	13.17	1.13	0.544	0.095 (0.098)		0.449
159	13.25	1.13	0.544	0.095 (0.098)		0.449
160	13.33	1.13	0.544	0.094 (0.098)		0.450
161	13.42	1.13	0.544	0.094 (0.098)		0.450
162	13.50	1.13	0.544	0.093 (0.098)		0.451
163	13.58	0.77	0.368	(0.093)	0.066	0.302
164	13.67	0.77	0.368	(0.092)	0.066	0.302
165	13.75	0.77	0.368	(0.092)	0.066	0.302
166	13.83	0.77	0.368	(0.092)	0.066	0.302
167	13.92	0.77	0.368	(0.091)	0.066	0.302
168	14.00	0.77	0.368	(0.091)	0.066	0.302
169	14.08	0.90	0.432	(0.090)	0.078	0.354
170	14.17	0.90	0.432	(0.090)	0.078	0.354
171	14.25	0.90	0.432	(0.089)	0.078	0.354
172	14.33	0.87	0.416	(0.089)	0.075	0.341
173	14.42	0.87	0.416	(0.088)	0.075	0.341
174	14.50	0.87	0.416	(0.088)	0.075	0.341
175	14.58	0.87	0.416	(0.087)	0.075	0.341
176	14.67	0.87	0.416	(0.087)	0.075	0.341
177	14.75	0.87	0.416	(0.086)	0.075	0.341
178	14.83	0.83	0.400	(0.086)	0.072	0.328
179	14.92	0.83	0.400	(0.086)	0.072	0.328
180	15.00	0.83	0.400	(0.085)	0.072	0.328
181	15.08	0.80	0.384	(0.085)	0.069	0.315
182	15.17	0.80	0.384	(0.084)	0.069	0.315
183	15.25	0.80	0.384	(0.084)	0.069	0.315
184	15.33	0.77	0.368	(0.083)	0.066	0.302
185	15.42	0.77	0.368	(0.083)	0.066	0.302
186	15.50	0.77	0.368	(0.083)	0.066	0.302
187	15.58	0.63	0.304	(0.082)	0.055	0.249
188	15.67	0.63	0.304	(0.082)	0.055	0.249
189	15.75	0.63	0.304	(0.081)	0.055	0.249
190	15.83	0.63	0.304	(0.081)	0.055	0.249
191	15.92	0.63	0.304	(0.080)	0.055	0.249
192	16.00	0.63	0.304	(0.080)	0.055	0.249
193	16.08	0.13	0.064	(0.080)	0.012	0.052

194	16.17	0.13	0.064	(0.079)	0.012	0.052
195	16.25	0.13	0.064	(0.079)	0.012	0.052
196	16.33	0.13	0.064	(0.078)	0.012	0.052
197	16.42	0.13	0.064	(0.078)	0.012	0.052
198	16.50	0.13	0.064	(0.078)	0.012	0.052
199	16.58	0.10	0.048	(0.077)	0.009	0.039
200	16.67	0.10	0.048	(0.077)	0.009	0.039
201	16.75	0.10	0.048	(0.076)	0.009	0.039
202	16.83	0.10	0.048	(0.076)	0.009	0.039
203	16.92	0.10	0.048	(0.076)	0.009	0.039
204	17.00	0.10	0.048	(0.075)	0.009	0.039
205	17.08	0.17	0.080	(0.075)	0.014	0.066
206	17.17	0.17	0.080	(0.075)	0.014	0.066
207	17.25	0.17	0.080	(0.074)	0.014	0.066
208	17.33	0.17	0.080	(0.074)	0.014	0.066
209	17.42	0.17	0.080	(0.073)	0.014	0.066
210	17.50	0.17	0.080	(0.073)	0.014	0.066
211	17.58	0.17	0.080	(0.073)	0.014	0.066
212	17.67	0.17	0.080	(0.072)	0.014	0.066
213	17.75	0.17	0.080	(0.072)	0.014	0.066
214	17.83	0.13	0.064	(0.072)	0.012	0.052
215	17.92	0.13	0.064	(0.071)	0.012	0.052
216	18.00	0.13	0.064	(0.071)	0.012	0.052
217	18.08	0.13	0.064	(0.071)	0.012	0.052
218	18.17	0.13	0.064	(0.070)	0.012	0.052
219	18.25	0.13	0.064	(0.070)	0.012	0.052
220	18.33	0.13	0.064	(0.070)	0.012	0.052
221	18.42	0.13	0.064	(0.069)	0.012	0.052
222	18.50	0.13	0.064	(0.069)	0.012	0.052
223	18.58	0.10	0.048	(0.069)	0.009	0.039
224	18.67	0.10	0.048	(0.068)	0.009	0.039
225	18.75	0.10	0.048	(0.068)	0.009	0.039
226	18.83	0.07	0.032	(0.068)	0.006	0.026
227	18.92	0.07	0.032	(0.067)	0.006	0.026
228	19.00	0.07	0.032	(0.067)	0.006	0.026
229	19.08	0.10	0.048	(0.067)	0.009	0.039
230	19.17	0.10	0.048	(0.066)	0.009	0.039
231	19.25	0.10	0.048	(0.066)	0.009	0.039
232	19.33	0.13	0.064	(0.066)	0.012	0.052
233	19.42	0.13	0.064	(0.065)	0.012	0.052
234	19.50	0.13	0.064	(0.065)	0.012	0.052
235	19.58	0.10	0.048	(0.065)	0.009	0.039
236	19.67	0.10	0.048	(0.064)	0.009	0.039
237	19.75	0.10	0.048	(0.064)	0.009	0.039
238	19.83	0.07	0.032	(0.064)	0.006	0.026
239	19.92	0.07	0.032	(0.064)	0.006	0.026
240	20.00	0.07	0.032	(0.063)	0.006	0.026
241	20.08	0.10	0.048	(0.063)	0.009	0.039
242	20.17	0.10	0.048	(0.063)	0.009	0.039
243	20.25	0.10	0.048	(0.062)	0.009	0.039
244	20.33	0.10	0.048	(0.062)	0.009	0.039
245	20.42	0.10	0.048	(0.062)	0.009	0.039
246	20.50	0.10	0.048	(0.062)	0.009	0.039
247	20.58	0.10	0.048	(0.061)	0.009	0.039
248	20.67	0.10	0.048	(0.061)	0.009	0.039
249	20.75	0.10	0.048	(0.061)	0.009	0.039
250	20.83	0.07	0.032	(0.061)	0.006	0.026
251	20.92	0.07	0.032	(0.060)	0.006	0.026
252	21.00	0.07	0.032	(0.060)	0.006	0.026
253	21.08	0.10	0.048	(0.060)	0.009	0.039

0+25	0.0233	1.02	V Q				
0+30	0.0307	1.06	V Q				
0+35	0.0381	1.08	V Q				
0+40	0.0456	1.09	V Q				
0+45	0.0531	1.09	V Q				
0+50	0.0615	1.22	V Q				
0+55	0.0711	1.39	V Q				
1+ 0	0.0809	1.43	V Q				
1+ 5	0.0900	1.31	V Q				
1+10	0.0979	1.16	V Q				
1+15	0.1056	1.12	V Q				
1+20	0.1132	1.10	V Q				
1+25	0.1207	1.09	V Q				
1+30	0.1283	1.09	V Q				
1+35	0.1358	1.09	V Q				
1+40	0.1433	1.09	V Q				
1+45	0.1508	1.09	V Q				
1+50	0.1592	1.22	V Q				
1+55	0.1688	1.39	V Q				
2+ 0	0.1786	1.43	V Q				
2+ 5	0.1885	1.44	VQ				
2+10	0.1986	1.45	VQ				
2+15	0.2086	1.45	VQ				
2+20	0.2186	1.45	VQ				
2+25	0.2286	1.45	VQ				
2+30	0.2386	1.45	VQ				
2+35	0.2495	1.58	V Q				
2+40	0.2616	1.75	V Q				
2+45	0.2739	1.79	V Q				
2+50	0.2864	1.81	V Q				
2+55	0.2989	1.82	V Q				
3+ 0	0.3114	1.82	V Q				
3+ 5	0.3240	1.82	V Q				
3+10	0.3365	1.82	V Q				
3+15	0.3490	1.82	V Q				
3+20	0.3615	1.82	V Q				
3+25	0.3740	1.82	V Q				
3+30	0.3866	1.82	VQ				
3+35	0.3991	1.82	VQ				
3+40	0.4116	1.82	VQ				
3+45	0.4241	1.82	VQ				
3+50	0.4375	1.95	VQ				
3+55	0.4521	2.12	V Q				
4+ 0	0.4670	2.15	V Q				
4+ 5	0.4819	2.17	V Q				
4+10	0.4969	2.18	V Q				
4+15	0.5120	2.18	V Q				
4+20	0.5279	2.31	V Q				
4+25	0.5450	2.48	V Q				
4+30	0.5623	2.52	V Q				
4+35	0.5798	2.53	V Q				
4+40	0.5973	2.55	V Q				
4+45	0.6148	2.55	V Q				
4+50	0.6333	2.68	V Q				
4+55	0.6528	2.84	V Q				
5+ 0	0.6727	2.88	V Q				
5+ 5	0.6909	2.64	V Q				
5+10	0.7068	2.31	VQ				
5+15	0.7222	2.24	VQ				
5+20	0.7383	2.33	VQ				

5+25	0.7553	2.48	Q				
5+30	0.7727	2.52	VQ				
5+35	0.7910	2.66	VQ				
5+40	0.8106	2.84	VQ				
5+45	0.8305	2.88	VQ				
5+50	0.8504	2.90	VQ				
5+55	0.8705	2.91	VQ				
6+ 0	0.8905	2.91	VQ				
6+ 5	0.9114	3.04	V Q				
6+10	0.9335	3.21	V Q				
6+15	0.9559	3.25	VQ				
6+20	0.9783	3.26	VQ				
6+25	1.0009	3.27	VQ				
6+30	1.0234	3.27	VQ				
6+35	1.0468	3.40	VQ				
6+40	1.0714	3.57	V Q				
6+45	1.0963	3.61	V Q				
6+50	1.1213	3.63	V Q				
6+55	1.1463	3.64	VQ				
7+ 0	1.1714	3.64	VQ				
7+ 5	1.1964	3.64	VQ				
7+10	1.2214	3.64	VQ				
7+15	1.2465	3.64	VQ				
7+20	1.2724	3.77	VQ				
7+25	1.2995	3.93	VQ				
7+30	1.3269	3.97	Q				
7+35	1.3552	4.12	VQ				
7+40	1.3848	4.30	VQ				
7+45	1.4147	4.34	VQ				
7+50	1.4456	4.48	VQ				
7+55	1.4777	4.66	V Q				
8+ 0	1.5101	4.70	VQ				
8+ 5	1.5443	4.98	VQ				
8+10	1.5810	5.32	V Q				
8+15	1.6182	5.40	V Q				
8+20	1.6556	5.43	V Q				
8+25	1.6932	5.45	VQ				
8+30	1.7307	5.45	VQ				
8+35	1.7692	5.58	V Q				
8+40	1.8088	5.75	V Q				
8+45	1.8487	5.79	V Q				
8+50	1.8896	5.94	VQ				
8+55	1.9317	6.12	V Q				
9+ 0	1.9741	6.15	V Q				
9+ 5	2.0184	6.43	V Q				
9+10	2.0651	6.78	V Q				
9+15	2.1123	6.85	V Q				
9+20	2.1606	7.02	V Q				
9+25	2.2102	7.21	V Q				
9+30	2.2601	7.25	V Q				
9+35	2.3110	7.39	V Q				
9+40	2.3632	7.57	V Q				
9+45	2.4156	7.61	V Q				
9+50	2.4690	7.76	V Q				
9+55	2.5236	7.93	V Q				
10+ 0	2.5786	7.97	V Q				
10+ 5	2.6273	7.08	VQ				
10+10	2.6681	5.92	Q V				
10+15	2.7070	5.65	Q V				
10+20	2.7451	5.53	Q V				

10+25	2.7826	5.45	Q	V				
10+30	2.8202	5.45	Q	V				
10+35	2.8622	6.10		Q	V			
10+40	2.9100	6.94		Q	V			
10+45	2.9592	7.14			QV			
10+50	3.0089	7.22			Q	V		
10+55	3.0590	7.27			Q	V		
11+ 0	3.1091	7.27			Q	V		
11+ 5	3.1583	7.14			Q	V		
11+10	3.2063	6.98		Q	V			
11+15	3.2541	6.94		Q	V			
11+20	3.3018	6.92		Q	V			
11+25	3.3493	6.91		Q	V			
11+30	3.3969	6.91		Q	V			
11+35	3.4427	6.65		Q	V			
11+40	3.4862	6.31		Q	V			
11+45	3.5292	6.24		Q	V			
11+50	3.5728	6.33		Q	V			
11+55	3.6174	6.48		Q	V			
12+ 0	3.6623	6.52		Q	V			
12+ 5	3.7136	7.44		Q	V			
12+10	3.7730	8.63			Q	V		
12+15	3.8343	8.90			Q	V		
12+20	3.8973	9.15			Q	V		
12+25	3.9619	9.39			Q	V		
12+30	4.0269	9.43			Q	V		
12+35	4.0937	9.70			Q	V		
12+40	4.1629	10.05			Q	V		
12+45	4.2326	10.13			Q	V		
12+50	4.3035	10.29			Q	V		
12+55	4.3757	10.48			Q	V		
13+ 0	4.4481	10.52			Q	V		
13+ 5	4.5253	11.20			Q	V		
13+10	4.6085	12.09			Q			
13+15	4.6932	12.30			Q			
13+20	4.7786	12.39			QV			
13+25	4.8644	12.46			QV			
13+30	4.9504	12.48			Q	V		
13+35	5.0262	11.02			Q	V		
13+40	5.0890	9.11			Q	V		
13+45	5.1487	8.67			Q	V		
13+50	5.2072	8.49			Q	V		
13+55	5.2648	8.36			Q	V		
14+ 0	5.3224	8.36			Q	V		
14+ 5	5.3835	8.88			Q	V		
14+10	5.4494	9.55			Q	V		
14+15	5.5162	9.71			Q	V		
14+20	5.5826	9.65			Q	V		
14+25	5.6482	9.52			Q	V		
14+30	5.7135	9.48			Q	V		
14+35	5.7787	9.47			Q	V		
14+40	5.8438	9.46			Q	V		
14+45	5.9090	9.46			Q	V		
14+50	5.9732	9.33			Q	V		
14+55	6.0362	9.16			Q	V		
15+ 0	6.0990	9.12			Q	V		
15+ 5	6.1608	8.97			Q	V		
15+10	6.2214	8.79			Q	V		
15+15	6.2817	8.76			Q	V		
15+20	6.3410	8.61			Q	V		

15+25	6.3991	8.43					V
15+30	6.4568	8.39					V
15+35	6.5110	7.86					V
15+40	6.5604	7.17					V
15+45	6.6087	7.02					V
15+50	6.6566	6.95					V
15+55	6.7042	6.91					V
16+ 0	6.7518	6.91					V
16+ 5	6.7860	4.97		Q			V
16+10	6.8028	2.44		Q			V
16+15	6.8156	1.87		Q			V
16+20	6.8268	1.62		Q			V
16+25	6.8368	1.45		Q			V
16+30	6.8468	1.45		Q			V
16+35	6.8559	1.33		Q			V
16+40	6.8639	1.16		Q			V
16+45	6.8716	1.12		Q			V
16+50	6.8792	1.10		Q			V
16+55	6.8867	1.09		Q			V
17+ 0	6.8942	1.09		Q			V
17+ 5	6.9035	1.35		Q			V
17+10	6.9151	1.69		Q			V
17+15	6.9273	1.76		Q			V
17+20	6.9397	1.80		Q			V
17+25	6.9522	1.82		Q			V
17+30	6.9647	1.82		Q			V
17+35	6.9772	1.82		Q			V
17+40	6.9897	1.82		Q			V
17+45	7.0023	1.82		Q			V
17+50	7.0139	1.69		Q			V
17+55	7.0244	1.52		Q			V
18+ 0	7.0346	1.48		Q			V
18+ 5	7.0447	1.47		Q			V
18+10	7.0547	1.45		Q			V
18+15	7.0647	1.45		Q			V
18+20	7.0747	1.45		Q			V
18+25	7.0847	1.45		Q			V
18+30	7.0948	1.45		Q			V
18+35	7.1039	1.33		Q			V
18+40	7.1118	1.16		Q			V
18+45	7.1196	1.12		Q			V
18+50	7.1262	0.97		Q			V
18+55	7.1317	0.79		Q			V
19+ 0	7.1369	0.75		Q			V
19+ 5	7.1429	0.87		Q			V
19+10	7.1499	1.02		Q			V
19+15	7.1573	1.06		Q			V
19+20	7.1656	1.21		Q			V
19+25	7.1752	1.39		Q			V
19+30	7.1850	1.43		Q			V
19+35	7.1940	1.31		Q			V
19+40	7.2020	1.16		Q			V
19+45	7.2097	1.12		Q			V
19+50	7.2164	0.97		Q			V
19+55	7.2219	0.79		Q			V
20+ 0	7.2271	0.75		Q			V
20+ 5	7.2330	0.87		Q			V
20+10	7.2401	1.02		Q			V
20+15	7.2474	1.06		Q			V
20+20	7.2549	1.08		Q			V

20+25	7.2624	1.09	Q				V
20+30	7.2699	1.09	Q				V
20+35	7.2774	1.09	Q				V
20+40	7.2849	1.09	Q				V
20+45	7.2924	1.09	Q				V
20+50	7.2991	0.96	Q				V
20+55	7.3045	0.79	Q				V
21+ 0	7.3097	0.75	Q				V
21+ 5	7.3157	0.87	Q				V
21+10	7.3228	1.02	Q				V
21+15	7.3301	1.06	Q				V
21+20	7.3366	0.95	Q				V
21+25	7.3421	0.79	Q				V
21+30	7.3473	0.75	Q				V
21+35	7.3533	0.87	Q				V
21+40	7.3603	1.02	Q				V
21+45	7.3676	1.06	Q				V
21+50	7.3742	0.95	Q				V
21+55	7.3797	0.79	Q				V
22+ 0	7.3849	0.75	Q				V
22+ 5	7.3908	0.87	Q				V
22+10	7.3979	1.02	Q				V
22+15	7.4052	1.06	Q				V
22+20	7.4118	0.95	Q				V
22+25	7.4172	0.79	Q				V
22+30	7.4224	0.75	Q				V
22+35	7.4275	0.74	Q				V
22+40	7.4325	0.73	Q				V
22+45	7.4375	0.73	Q				V
22+50	7.4425	0.73	Q				V
22+55	7.4475	0.73	Q				V
23+ 0	7.4526	0.73	Q				V
23+ 5	7.4576	0.73	Q				V
23+10	7.4626	0.73	Q				V
23+15	7.4676	0.73	Q				V
23+20	7.4726	0.73	Q				V
23+25	7.4776	0.73	Q				V
23+30	7.4826	0.73	Q				V
23+35	7.4876	0.73	Q				V
23+40	7.4926	0.73	Q				V
23+45	7.4976	0.73	Q				V
23+50	7.5026	0.73	Q				V
23+55	7.5077	0.73	Q				V
24+ 0	7.5127	0.73	Q				V
24+ 5	7.5159	0.47	Q				V
24+10	7.5168	0.13	Q				V
24+15	7.5172	0.05	Q				V
24+20	7.5173	0.02	Q				V

APPENDIX D

Detention Analysis (Hydraflow)

2 - Year

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100 - Year

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Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Manual	4.950	5	805	130,935	-----	-----	-----	<no description>
3	Reservoir	0.587	5	1085	130,412	1	103.88	99,095	Detention Outflow

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4

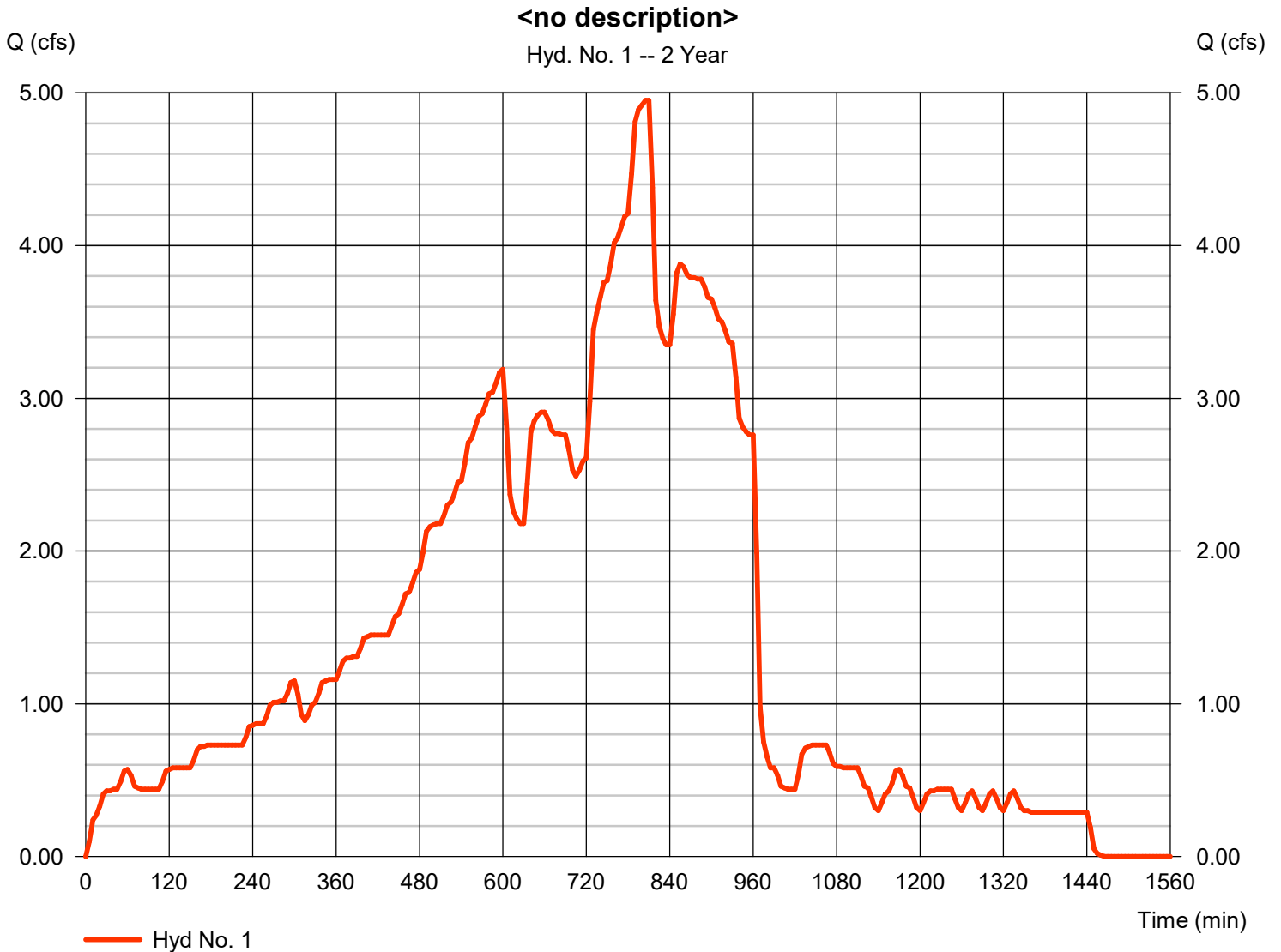
Tuesday, 03 / 29 / 2022

Hyd. No. 1

<no description>

Hydrograph type = Manual
Storm frequency = 2 yrs
Time interval = 5 min

Peak discharge = 4.950 cfs
Time to peak = 805 min
Hyd. volume = 130,935 cuft



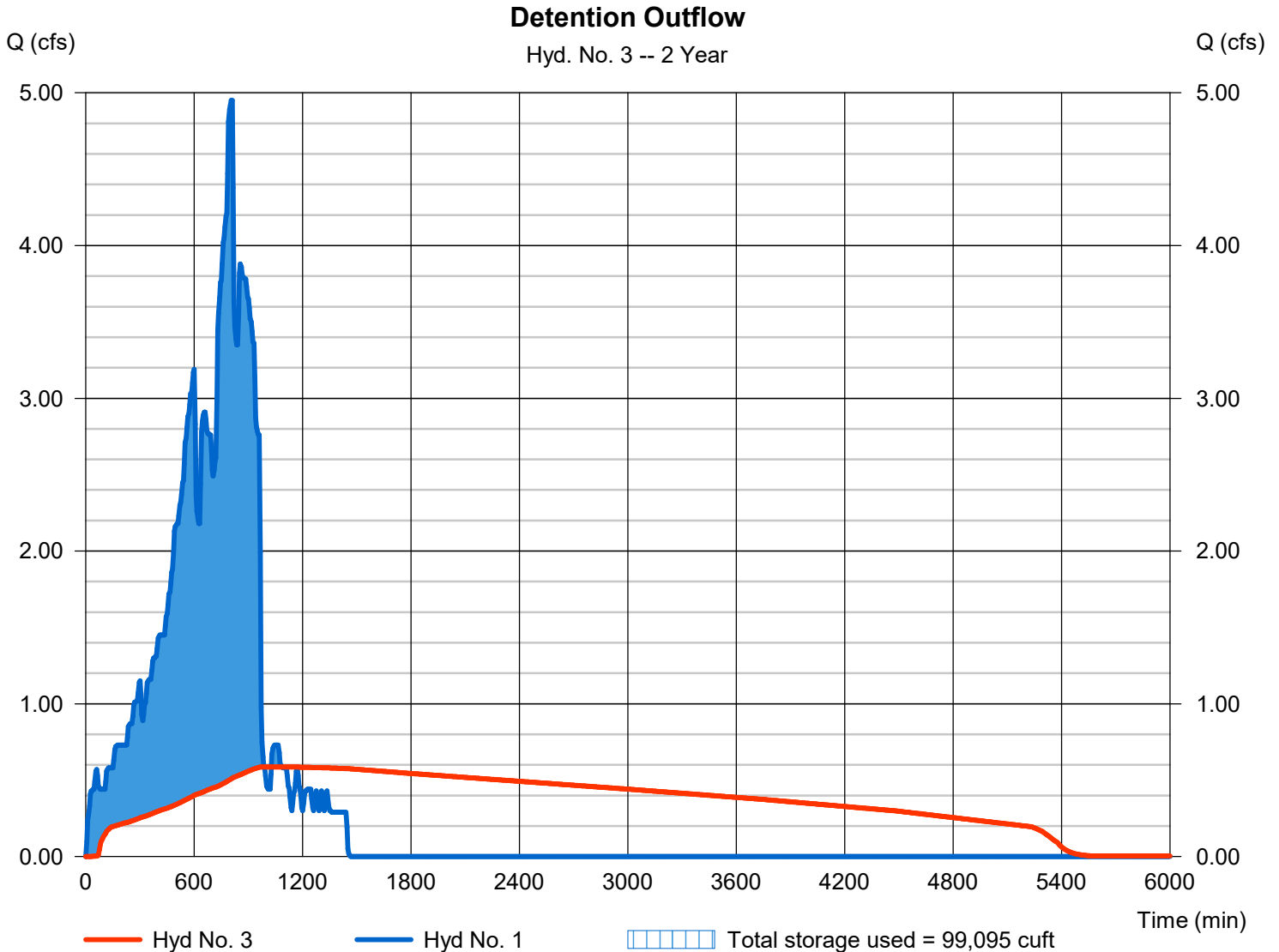
Hydrograph Report

Hyd. No. 3

Detention Outflow

Hydrograph type	= Reservoir	Peak discharge	= 0.587 cfs
Storm frequency	= 2 yrs	Time to peak	= 1085 min
Time interval	= 5 min	Hyd. volume	= 130,412 cuft
Inflow hyd. No.	= 1 - <no description>	Max. Elevation	= 103.88 ft
Reservoir name	= Detention System	Max. Storage	= 99,095 cuft

Storage Indication method used.



Pond Report

Pond No. 1 - Detention System

Pond Data

UG Chambers -Invert elev. = 100.00 ft, Rise x Span = 5.00 x 5.00 ft, Barrel Len = 545.00 ft, No. Barrels = 12, Slope = 0.10%, Headers = No

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	100.00	n/a	0	0
0.55	100.55	n/a	3,218	3,218
1.11	101.11	n/a	11,088	14,306
1.66	101.66	n/a	14,970	29,276
2.22	102.22	n/a	17,020	46,296
2.77	102.77	n/a	17,945	64,241
3.33	103.33	n/a	17,930	82,170
3.88	103.88	n/a	17,021	99,192
4.44	104.44	n/a	14,959	114,151
4.99	104.99	n/a	11,080	125,231
5.55	105.54	n/a	3,207	128,438

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 3.40	0.00	0.00	0.00
Span (in)	= 3.40	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 100.00	0.00	0.00	0.00
Length (ft)	= 0.08	0.00	0.00	0.00
Slope (%)	= 0.10	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 3.10	0.00	0.00	0.00
Crest El. (ft)	= 103.90	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 0.000 (by Contour)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	100.00	0.00	---	---	---	0.00	---	---	---	---	---	0.000
0.06	322	100.06	0.00 oc	---	---	---	0.00	---	---	---	---	---	0.000
0.11	644	100.11	0.00 oc	---	---	---	0.00	---	---	---	---	---	0.001
0.17	966	100.17	0.00 oc	---	---	---	0.00	---	---	---	---	---	0.002
0.22	1,287	100.22	0.00 oc	---	---	---	0.00	---	---	---	---	---	0.003
0.28	1,609	100.28	0.00 oc	---	---	---	0.00	---	---	---	---	---	0.004
0.33	1,931	100.33	0.09 oc	---	---	---	0.00	---	---	---	---	---	0.091
0.39	2,253	100.39	0.13 oc	---	---	---	0.00	---	---	---	---	---	0.133
0.44	2,575	100.44	0.16 oc	---	---	---	0.00	---	---	---	---	---	0.165
0.50	2,897	100.50	0.18 ic	---	---	---	0.00	---	---	---	---	---	0.181
0.55	3,218	100.55	0.20 ic	---	---	---	0.00	---	---	---	---	---	0.195
0.61	4,327	100.61	0.21 ic	---	---	---	0.00	---	---	---	---	---	0.208
0.67	5,436	100.67	0.22 ic	---	---	---	0.00	---	---	---	---	---	0.220
0.72	6,545	100.72	0.23 ic	---	---	---	0.00	---	---	---	---	---	0.231
0.78	7,653	100.78	0.24 ic	---	---	---	0.00	---	---	---	---	---	0.242
0.83	8,762	100.83	0.25 ic	---	---	---	0.00	---	---	---	---	---	0.252
0.89	9,871	100.89	0.26 ic	---	---	---	0.00	---	---	---	---	---	0.262
0.94	10,980	100.94	0.27 ic	---	---	---	0.00	---	---	---	---	---	0.272
1.00	12,089	101.00	0.28 ic	---	---	---	0.00	---	---	---	---	---	0.281
1.05	13,197	101.05	0.29 ic	---	---	---	0.00	---	---	---	---	---	0.290
1.11	14,306	101.11	0.30 ic	---	---	---	0.00	---	---	---	---	---	0.299
1.16	15,803	101.16	0.31 ic	---	---	---	0.00	---	---	---	---	---	0.307
1.22	17,300	101.22	0.32 ic	---	---	---	0.00	---	---	---	---	---	0.315
1.28	18,797	101.28	0.32 ic	---	---	---	0.00	---	---	---	---	---	0.323
1.33	20,294	101.33	0.33 ic	---	---	---	0.00	---	---	---	---	---	0.331
1.39	21,791	101.39	0.34 ic	---	---	---	0.00	---	---	---	---	---	0.339
1.44	23,288	101.44	0.35 ic	---	---	---	0.00	---	---	---	---	---	0.346
1.50	24,785	101.50	0.35 ic	---	---	---	0.00	---	---	---	---	---	0.353
1.55	26,282	101.55	0.36 ic	---	---	---	0.00	---	---	---	---	---	0.361
1.61	27,779	101.61	0.37 ic	---	---	---	0.00	---	---	---	---	---	0.368
1.66	29,276	101.66	0.37 ic	---	---	---	0.00	---	---	---	---	---	0.374
1.72	30,978	101.72	0.38 ic	---	---	---	0.00	---	---	---	---	---	0.381

Continues on next page...

Detention System

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
1.77	32,680	101.77	0.39 ic	---	---	---	0.00	---	---	---	---	---	0.388
1.83	34,382	101.83	0.39 ic	---	---	---	0.00	---	---	---	---	---	0.394
1.89	36,084	101.89	0.40 ic	---	---	---	0.00	---	---	---	---	---	0.401
1.94	37,786	101.94	0.41 ic	---	---	---	0.00	---	---	---	---	---	0.407
2.00	39,488	102.00	0.41 ic	---	---	---	0.00	---	---	---	---	---	0.413
2.05	41,190	102.05	0.42 ic	---	---	---	0.00	---	---	---	---	---	0.420
2.11	42,892	102.11	0.43 ic	---	---	---	0.00	---	---	---	---	---	0.426
2.16	44,594	102.16	0.43 ic	---	---	---	0.00	---	---	---	---	---	0.432
2.22	46,296	102.22	0.44 ic	---	---	---	0.00	---	---	---	---	---	0.437
2.27	48,091	102.27	0.44 ic	---	---	---	0.00	---	---	---	---	---	0.443
2.33	49,885	102.33	0.45 ic	---	---	---	0.00	---	---	---	---	---	0.449
2.38	51,679	102.38	0.45 ic	---	---	---	0.00	---	---	---	---	---	0.455
2.44	53,474	102.44	0.46 ic	---	---	---	0.00	---	---	---	---	---	0.460
2.50	55,268	102.50	0.47 ic	---	---	---	0.00	---	---	---	---	---	0.466
2.55	57,063	102.55	0.47 ic	---	---	---	0.00	---	---	---	---	---	0.471
2.61	58,857	102.61	0.48 ic	---	---	---	0.00	---	---	---	---	---	0.477
2.66	60,652	102.66	0.48 ic	---	---	---	0.00	---	---	---	---	---	0.482
2.72	62,446	102.72	0.49 ic	---	---	---	0.00	---	---	---	---	---	0.487
2.77	64,241	102.77	0.49 ic	---	---	---	0.00	---	---	---	---	---	0.492
2.83	66,034	102.83	0.50 ic	---	---	---	0.00	---	---	---	---	---	0.498
2.88	67,827	102.88	0.50 ic	---	---	---	0.00	---	---	---	---	---	0.503
2.94	69,619	102.94	0.51 ic	---	---	---	0.00	---	---	---	---	---	0.508
2.99	71,412	102.99	0.51 ic	---	---	---	0.00	---	---	---	---	---	0.513
3.05	73,205	103.05	0.52 ic	---	---	---	0.00	---	---	---	---	---	0.518
3.11	74,998	103.11	0.52 ic	---	---	---	0.00	---	---	---	---	---	0.523
3.16	76,791	103.16	0.53 ic	---	---	---	0.00	---	---	---	---	---	0.527
3.22	78,584	103.22	0.53 ic	---	---	---	0.00	---	---	---	---	---	0.532
3.27	80,377	103.27	0.54 ic	---	---	---	0.00	---	---	---	---	---	0.537
3.33	82,170	103.33	0.54 ic	---	---	---	0.00	---	---	---	---	---	0.542
3.38	83,872	103.38	0.55 ic	---	---	---	0.00	---	---	---	---	---	0.546
3.44	85,575	103.44	0.55 ic	---	---	---	0.00	---	---	---	---	---	0.551
3.49	87,277	103.49	0.56 ic	---	---	---	0.00	---	---	---	---	---	0.556
3.55	88,979	103.55	0.56 ic	---	---	---	0.00	---	---	---	---	---	0.560
3.60	90,681	103.60	0.56 ic	---	---	---	0.00	---	---	---	---	---	0.565
3.66	92,383	103.66	0.57 ic	---	---	---	0.00	---	---	---	---	---	0.569
3.72	94,085	103.72	0.57 ic	---	---	---	0.00	---	---	---	---	---	0.574
3.77	95,787	103.77	0.58 ic	---	---	---	0.00	---	---	---	---	---	0.578
3.83	97,489	103.83	0.58 ic	---	---	---	0.00	---	---	---	---	---	0.583
3.88	99,192	103.88	0.59 ic	---	---	---	0.00	---	---	---	---	---	0.587
3.94	100,687	103.94	0.59 ic	---	---	---	0.07	---	---	---	---	---	0.665
3.99	102,183	103.99	0.60 ic	---	---	---	0.29	---	---	---	---	---	0.886
4.05	103,679	104.05	0.60 ic	---	---	---	0.59	---	---	---	---	---	1.187
4.10	105,175	104.10	0.60 ic	---	---	---	0.95	---	---	---	---	---	1.550
4.16	106,671	104.16	0.61 ic	---	---	---	1.36	---	---	---	---	---	1.967
4.21	108,167	104.21	0.61 ic	---	---	---	1.82	---	---	---	---	---	2.431
4.27	109,663	104.27	0.62 ic	---	---	---	2.32	---	---	---	---	---	2.937
4.33	111,159	104.33	0.62 ic	---	---	---	2.86	---	---	---	---	---	3.482
4.38	112,655	104.38	0.62 ic	---	---	---	3.44	---	---	---	---	---	4.064
4.44	114,151	104.44	0.63 ic	---	---	---	4.05	---	---	---	---	---	4.680
4.49	115,259	104.49	0.63 ic	---	---	---	4.70	---	---	---	---	---	5.329
4.55	116,367	104.55	0.64 ic	---	---	---	5.37	---	---	---	---	---	6.008
4.60	117,475	104.60	0.64 ic	---	---	---	6.08	---	---	---	---	---	6.717
4.66	118,583	104.66	0.65 ic	---	---	---	6.81	---	---	---	---	---	7.455
4.71	119,691	104.71	0.65 ic	---	---	---	7.57	---	---	---	---	---	8.220
4.77	120,799	104.77	0.65 ic	---	---	---	8.36	---	---	---	---	---	9.011
4.82	121,907	104.82	0.66 ic	---	---	---	9.17	---	---	---	---	---	9.828
4.88	123,015	104.88	0.66 ic	---	---	---	10.01	---	---	---	---	---	10.67
4.94	124,123	104.94	0.66 ic	---	---	---	10.87	---	---	---	---	---	11.54
4.99	125,231	104.99	0.67 ic	---	---	---	11.76	---	---	---	---	---	12.42
5.05	125,552	105.05	0.67 ic	---	---	---	12.66	---	---	---	---	---	13.34
5.10	125,872	105.10	0.68 ic	---	---	---	13.59	---	---	---	---	---	14.27
5.16	126,193	105.16	0.68 ic	---	---	---	14.55	---	---	---	---	---	15.23
5.21	126,514	105.21	0.68 ic	---	---	---	15.52	---	---	---	---	---	16.20
5.27	126,835	105.27	0.69 ic	---	---	---	16.51	---	---	---	---	---	17.20
5.32	127,155	105.32	0.69 ic	---	---	---	17.53	---	---	---	---	---	18.22
5.38	127,476	105.38	0.69 ic	---	---	---	18.56	---	---	---	---	---	19.26
5.43	127,797	105.43	0.70 ic	---	---	---	19.61	---	---	---	---	---	20.31
5.49	128,118	105.49	0.70 ic	---	---	---	20.69	---	---	---	---	---	21.39
5.55	128,438	105.54	0.71 ic	---	---	---	21.78	---	---	---	---	---	22.49

...End

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description	
1	Manual	12.48	5	810	327,444	-----	-----	-----	<no description>	
3	Reservoir	11.59	5	815	326,921	1	104.94	124,190	Detention Outflow	
Building C.gpw					Return Period: 100 Year			Tuesday, 03 / 29 / 2022		

Hydrograph Report

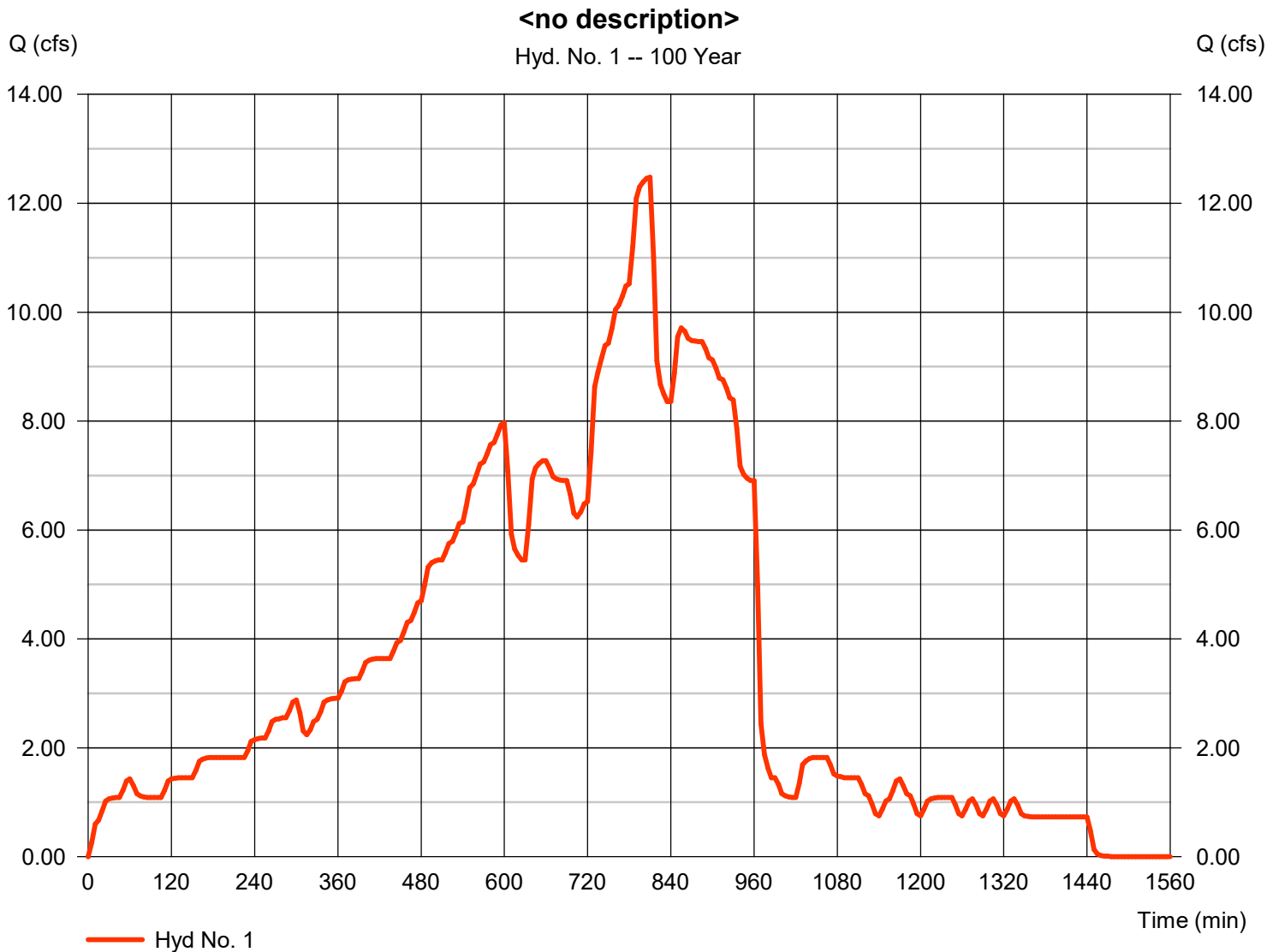
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4

Tuesday, 03 / 29 / 2022

Hyd. No. 1

<no description>

Hydrograph type	= Manual	Peak discharge	= 12.48 cfs
Storm frequency	= 100 yrs	Time to peak	= 810 min
Time interval	= 5 min	Hyd. volume	= 327,444 cuft



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4

Tuesday, 03 / 29 / 2022

Hyd. No. 3

Detention Outflow

Hydrograph type	= Reservoir	Peak discharge	= 11.59 cfs
Storm frequency	= 100 yrs	Time to peak	= 815 min
Time interval	= 5 min	Hyd. volume	= 326,921 cuft
Inflow hyd. No.	= 1 - <no description>	Max. Elevation	= 104.94 ft
Reservoir name	= Detention System	Max. Storage	= 124,190 cuft

Storage Indication method used.

