APPENDIX G1

Preliminary Hydrology and Hydraulic Study

Preliminary Hydrology and Hydraulic Study
For
J.D. RANCH
TENTATIVE TRACT NO. 38330

Located in Riverside County
City of Norco

Prepared Date:
April 2022
Revised:
July 2023
February 2024

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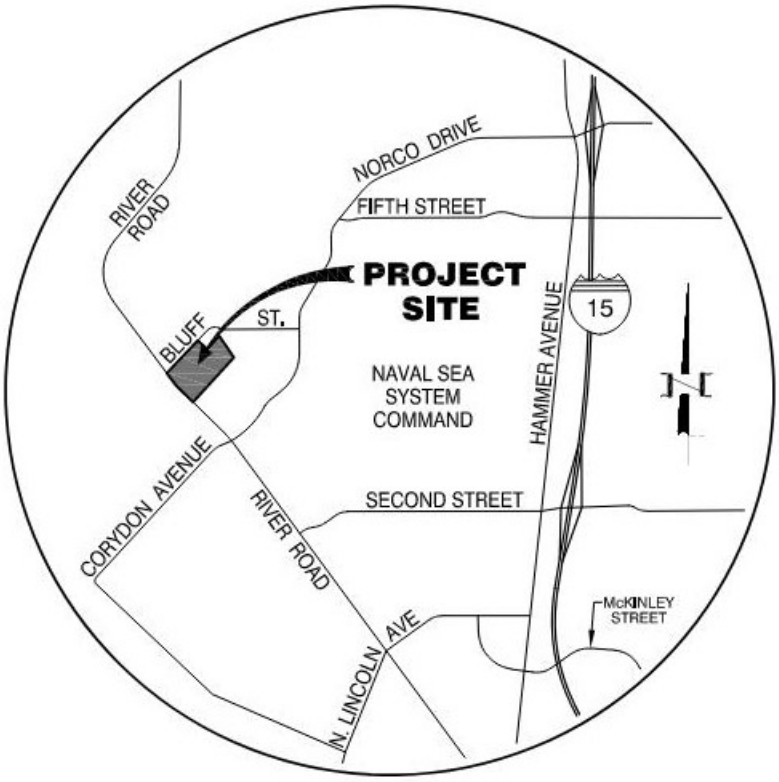

VICINITY MAP

NOT TO SCALE

2/2024

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Preliminary Hydrology and Hydraulic Study
For
J.D. Ranch TT 38330
JN 908-00

I. PROJECT DISCUSSION

J.D. RANCH, TENTATIVE TRACT NO. 38330

A. PURPOSE

The purpose of this report is to quantify the storm water runoff for the 10-year and 100-year storm event and verify that the 10-year storm is below the top of curb elevation and the middle 22' of roadway (2-11' lanes) must be free and clear of runoff during 10-year storm and that the 100-year storm is within the property line and to mitigate the developed condition peak flow to that of the of the pre-developed peak flow for both 10-yeqr and 100-year storm event.

B. PROJECT DISCRIPTION/DISCUSSION

Sixty-nine (69) single family residential, a water quality/storm detention basin, sewer lift station facility and a city water well site is proposed on this 34.4 gross acre project as well as an existing 1.0 acre residential lot. An open space, Lot B, covering 6.7 acres will be dedicated to the city of Norco. Of the 34.4 gross acres, 25.9 acres is tributary to the proposed basin. The basin will serve both as a water quality infiltration basin and storm detention basin.
The project is bounded by Bluff Street and River Road to the north and west respectively. South and east of the project sire are existing residential lots.
A dairy facility was previously on the site. The land drains from north-east to south-west to a sump. There is an existing 54" storm drain along River Road. This storm drain will be the outfall for the project runoff.

II. METHODOLOGY

A. HYDROLOGY

The Rational Method Hydrology was used to determine and peak flow rate. All the data input is per Riverside County Flood control and Water Conservation District Hydrology Manual.

The meteorological data from National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 6, Version 2 was used. Using the USDA website, the Soil Types within the project are Types B, Type C and Type D.

III. CONCLUSION

Based on the hydrologic and hydraulic calculations, we conclude that the structures are protected from the 100-year storm event, 10-year storm is below the top of curb elevation and the middle 22' of roadway (2-11' lanes) must be free and clear of runoff during 10-year storm that the proposed basin is capable in attenuating the post developed peak flow to that of the pre-developed flow. The Rational Method, Synthetic Unit Hydrograph and Storm Routing results are tabulated on the next page.

908-00 Tentative Tract No. 38330
Hydrology Results
drainage area = 25.9 acres

	Rational Method		Synthetic Unit Hydrograph				Attenuated Flow					
	Q10	Q100	Q10-yr / 24-hr	Flood Volume	Q100-yr / 24-hr	Flood Volume	Q10-yr / 24-hr	depth	dewater time	Q100-yr / 24-hr	depth	dewater time
	(cfs)	(cfs)	(cfs)	(ac-ft)	(cfs)	(ac-ft)	(cfs)	(ft)	(hrs)	(cfs)	(ft)	(hrs)
Existing Condition	17.5	33.1	8.4	4.317	16.3	8.190	N/A	N/A	N/A	N/A	N/A	N/A
Developed Condition	29.8	51.6	11.1	4.548	19.3	8.447	6.2	2.33	45.8	15.7	3.17	46.4

predeveloped - post developed Q comparison

10-yr/24-hr: **Q attenuated = 6.2 cfs < 11.1 cfs = Q developed**

100-yr/24-hr: **Q attenuated = 15.7 cfs < 19.3 cfs = Q developed**

SECTION A

REFERENCES:

1. NOAA Atlas 14, Volume 6, Version 2
2. USDA Custom Soils Resource Report for Western Riverside Area
3. Infiltration Test Report
4. Tentative Tract Map

NOAA Atlas 14, Volume 6, Version 2
Location name: Norco, California, USA*
Latitude: 33.9195°, Longitude: -117.5934°
Elevation: 563.79 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.105 (0.087-0.126)	0.140 (0.117-0.169)	0.188 (0.156-0.228)	0.227 (0.188-0.278)	0.283 (0.225-0.358)	0.326 (0.254-0.423)	0.372 (0.282-0.494)	0.419 (0.309-0.574)	0.486 (0.343-0.694)	0.538 (0.367-0.798)
10-min	0.150 (0.125-0.181)	0.201 (0.168-0.243)	0.269 (0.224-0.326)	0.326 (0.269-0.399)	0.405 (0.323-0.514)	0.468 (0.365-0.606)	0.533 (0.405-0.708)	0.601 (0.443-0.823)	0.696 (0.492-0.995)	0.771 (0.525-1.14)
15-min	0.181 (0.152-0.219)	0.243 (0.203-0.294)	0.325 (0.271-0.395)	0.394 (0.325-0.482)	0.490 (0.390-0.621)	0.566 (0.441-0.733)	0.644 (0.489-0.856)	0.727 (0.536-0.995)	0.842 (0.594-1.20)	0.933 (0.635-1.38)
30-min	0.263 (0.220-0.318)	0.352 (0.294-0.426)	0.472 (0.393-0.572)	0.571 (0.471-0.699)	0.710 (0.566-0.900)	0.820 (0.639-1.06)	0.934 (0.709-1.24)	1.05 (0.777-1.44)	1.22 (0.862-1.75)	1.35 (0.921-2.01)
60-min	0.384 (0.321-0.464)	0.514 (0.429-0.622)	0.688 (0.573-0.835)	0.834 (0.688-1.02)	1.04 (0.826-1.31)	1.20 (0.933-1.55)	1.36 (1.04-1.81)	1.54 (1.14-2.11)	1.78 (1.26-2.55)	1.97 (1.35-2.93)
2-hr	0.571 (0.478-0.690)	0.757 (0.632-0.916)	1.00 (0.837-1.22)	1.21 (0.999-1.48)	1.50 (1.19-1.90)	1.72 (1.34-2.23)	1.95 (1.48-2.60)	2.20 (1.62-3.01)	2.53 (1.79-3.62)	2.80 (1.91-4.15)
3-hr	0.709 (0.592-0.856)	0.937 (0.782-1.13)	1.24 (1.03-1.51)	1.49 (1.23-1.83)	1.84 (1.47-2.33)	2.12 (1.65-2.74)	2.40 (1.82-3.19)	2.69 (1.99-3.69)	3.10 (2.19-4.43)	3.42 (2.33-5.07)
6-hr	0.995 (0.832-1.20)	1.32 (1.10-1.60)	1.75 (1.46-2.12)	2.10 (1.73-2.57)	2.59 (2.06-3.28)	2.97 (2.32-3.85)	3.37 (2.56-4.47)	3.78 (2.79-5.17)	4.34 (3.07-6.21)	4.79 (3.26-7.10)
12-hr	1.29 (1.08-1.56)	1.74 (1.45-2.10)	2.33 (1.94-2.83)	2.81 (2.32-3.44)	3.48 (2.77-4.41)	4.00 (3.12-5.18)	4.53 (3.44-6.03)	5.09 (3.75-6.96)	5.85 (4.13-8.36)	6.44 (4.39-9.55)
24-hr	1.70 (1.51-1.97)	2.34 (2.06-2.70)	3.17 (2.79-3.67)	3.85 (3.37-4.50)	4.79 (4.05-5.77)	5.51 (4.57-6.78)	6.26 (5.07-7.88)	7.03 (5.54-9.10)	8.08 (6.11-10.9)	8.90 (6.52-12.4)
2-day	2.11 (1.86-2.43)	2.92 (2.58-3.37)	3.99 (3.51-4.62)	4.87 (4.26-5.68)	6.08 (5.14-7.32)	7.02 (5.82-8.63)	7.98 (6.46-10.1)	8.98 (7.08-11.6)	10.4 (7.83-14.0)	11.4 (8.36-15.9)
3-day	2.27 (2.01-2.62)	3.17 (2.80-3.66)	4.37 (3.85-5.06)	5.35 (4.68-6.25)	6.71 (5.68-8.09)	7.76 (6.44-9.55)	8.85 (7.17-11.2)	9.98 (7.87-12.9)	11.5 (8.74-15.6)	12.8 (9.35-17.8)
4-day	2.47 (2.18-2.85)	3.46 (3.06-3.99)	4.78 (4.21-5.54)	5.88 (5.14-6.86)	7.38 (6.25-8.90)	8.56 (7.10-10.5)	9.78 (7.92-12.3)	11.0 (8.71-14.3)	12.8 (9.68-17.3)	14.2 (10.4-19.8)
7-day	2.82 (2.50-3.25)	3.96 (3.50-4.57)	5.49 (4.84-6.36)	6.76 (5.91-7.89)	8.52 (7.21-10.3)	9.90 (8.21-12.2)	11.3 (9.18-14.3)	12.8 (10.1-16.6)	14.9 (11.3-20.1)	16.6 (12.1-23.1)
10-day	3.04 (2.69-3.51)	4.28 (3.78-4.94)	5.94 (5.24-6.88)	7.34 (6.41-8.56)	9.28 (7.85-11.2)	10.8 (8.97-13.3)	12.4 (10.0-15.6)	14.1 (11.1-18.2)	16.4 (12.4-22.1)	18.3 (13.4-25.5)
20-day	3.63 (3.21-4.18)	5.12 (4.52-5.91)	7.17 (6.32-8.30)	8.90 (7.78-10.4)	11.4 (9.62-13.7)	13.3 (11.1-16.4)	15.4 (12.5-19.4)	17.6 (13.9-22.8)	20.8 (15.7-28.0)	23.3 (17.0-32.5)
30-day	4.30 (3.80-4.96)	6.06 (5.36-7.00)	8.51 (7.50-9.86)	10.6 (9.28-12.4)	13.6 (11.6-16.5)	16.1 (13.4-19.8)	18.7 (15.2-23.6)	21.5 (17.0-27.9)	25.6 (19.3-34.5)	28.8 (21.1-40.2)
45-day	5.08 (4.49-5.86)	7.13 (6.30-8.23)	10.0 (8.83-11.6)	12.5 (11.0-14.6)	16.2 (13.7-19.5)	19.2 (16.0-23.7)	22.5 (18.2-28.3)	26.0 (20.5-33.7)	31.2 (23.6-42.0)	35.4 (25.9-49.3)
60-day	5.85 (5.17-6.75)	8.15 (7.20-9.41)	11.4 (10.1-13.2)	14.3 (12.5-16.7)	18.5 (15.7-22.3)	22.1 (18.3-27.1)	25.9 (21.0-32.6)	30.0 (23.7-38.9)	36.1 (27.3-48.7)	41.2 (30.2-57.5)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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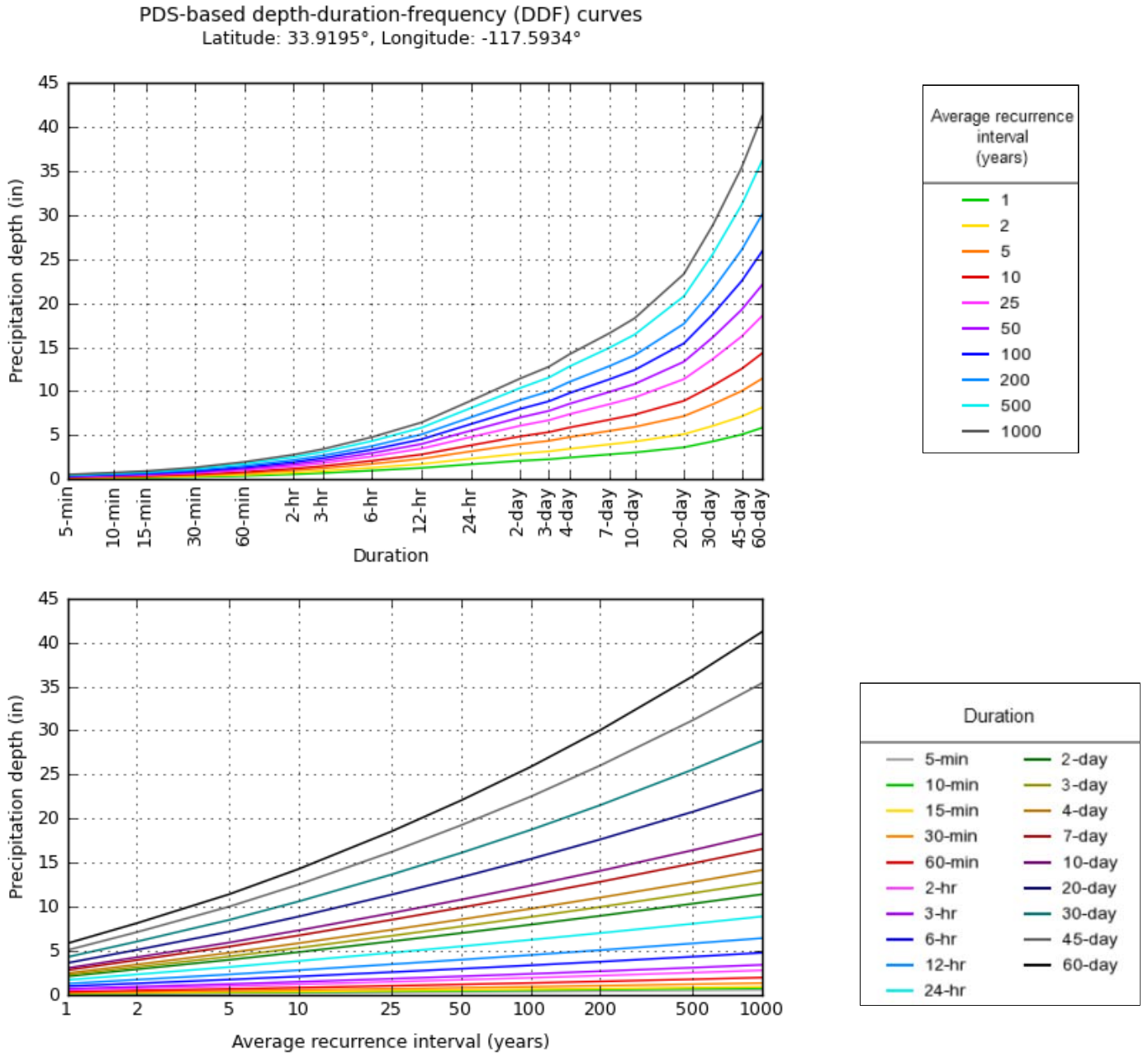
PF graphical



NOAA Atlas 14, Volume 6, Version 2

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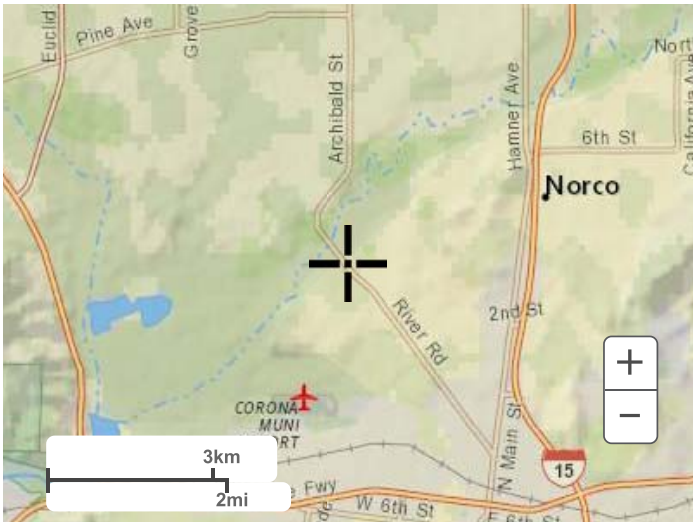
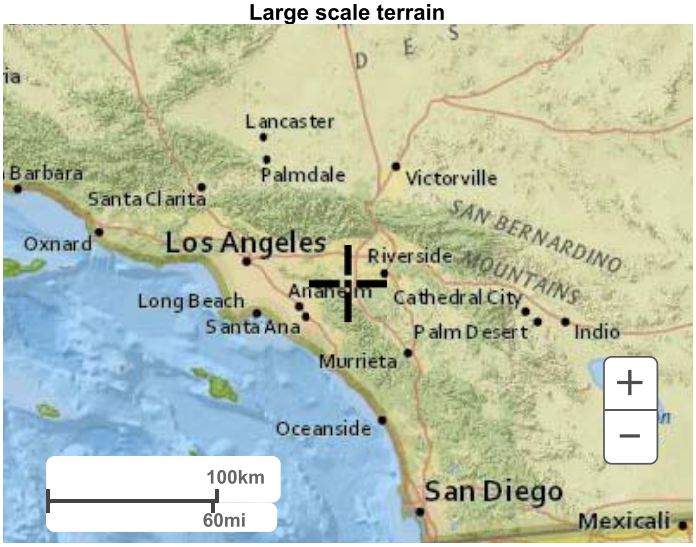
Maps & aerials

Small scale terrain

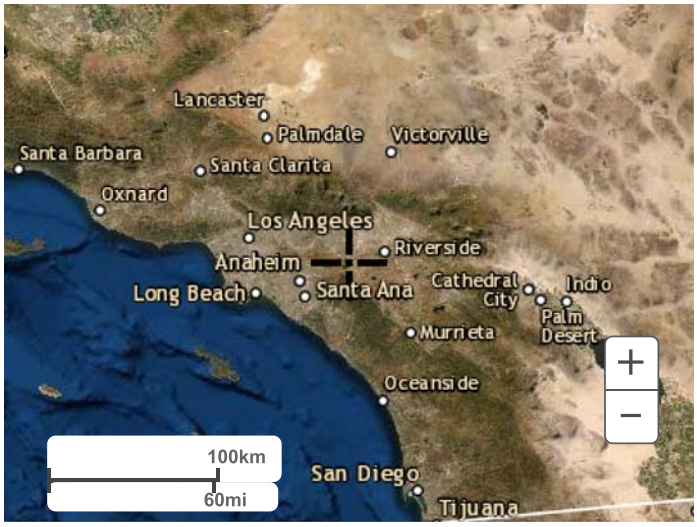


Large scale terrain



Large scale map

Large scale aerial



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Disclaimer

NOAA Atlas 14, Volume 6, Version 2
Location name: Norco, California, USA*
Latitude: 33.9195°, Longitude: -117.5934°
Elevation: 563.79 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**1.26** (1.04-1.51)	**1.68** (1.40-2.03)	**2.26** (1.87-2.74)	**2.72** (2.26-3.34)	**3.40** (2.70-4.30)	**3.91** (3.05-5.08)	**4.46** (3.38-5.93)	**5.03** (3.71-6.89)	**5.83** (4.12-8.33)	**6.46** (4.40-9.58)
10-min	**0.900** (0.750-1.09)	**1.21** (1.01-1.46)	**1.61** (1.34-1.96)	**1.96** (1.61-2.39)	**2.43** (1.94-3.08)	**2.81** (2.19-3.64)	**3.20** (2.43-4.25)	**3.61** (2.66-4.94)	**4.18** (2.95-5.97)	**4.63** (3.15-6.86)
15-min	**0.724** (0.608-0.876)	**0.972** (0.812-1.18)	**1.30** (1.08-1.58)	**1.58** (1.30-1.93)	**1.96** (1.56-2.48)	**2.26** (1.76-2.93)	**2.58** (1.96-3.42)	**2.91** (2.14-3.98)	**3.37** (2.38-4.82)	**3.73** (2.54-5.53)
30-min	**0.526** (0.440-0.636)	**0.704** (0.588-0.852)	**0.944** (0.786-1.14)	**1.14** (0.942-1.40)	**1.42** (1.13-1.80)	**1.64** (1.28-2.12)	**1.87** (1.42-2.48)	**2.11** (1.55-2.88)	**2.44** (1.72-3.49)	**2.70** (1.84-4.01)
60-min	**0.384** (0.321-0.464)	**0.514** (0.429-0.622)	**0.688** (0.573-0.835)	**0.834** (0.688-1.02)	**1.04** (0.826-1.31)	**1.20** (0.933-1.55)	**1.36** (1.04-1.81)	**1.54** (1.14-2.11)	**1.78** (1.26-2.55)	**1.97** (1.35-2.93)
2-hr	**0.286** (0.239-0.345)	**0.378** (0.316-0.458)	**0.502** (0.418-0.610)	**0.606** (0.500-0.741)	**0.748** (0.596-0.948)	**0.860** (0.670-1.12)	**0.976** (0.742-1.30)	**1.10** (0.810-1.50)	**1.27** (0.894-1.81)	**1.40** (0.953-2.07)
3-hr	**0.236** (0.197-0.285)	**0.312** (0.260-0.377)	**0.413** (0.344-0.501)	**0.497** (0.410-0.608)	**0.613** (0.489-0.777)	**0.704** (0.549-0.912)	**0.798** (0.606-1.06)	**0.897** (0.662-1.23)	**1.03** (0.729-1.48)	**1.14** (0.776-1.69)
6-hr	**0.166** (0.139-0.201)	**0.220** (0.184-0.266)	**0.292** (0.243-0.354)	**0.351** (0.290-0.429)	**0.433** (0.345-0.548)	**0.496** (0.387-0.643)	**0.562** (0.427-0.747)	**0.630** (0.465-0.863)	**0.725** (0.512-1.04)	**0.799** (0.545-1.19)
12-hr	**0.107** (0.090-0.129)	**0.144** (0.120-0.174)	**0.193** (0.161-0.234)	**0.234** (0.193-0.286)	**0.289** (0.230-0.366)	**0.332** (0.259-0.430)	**0.376** (0.286-0.500)	**0.422** (0.311-0.578)	**0.485** (0.343-0.694)	**0.535** (0.364-0.793)
24-hr	**0.071** (0.063-0.082)	**0.097** (0.086-0.112)	**0.132** (0.116-0.153)	**0.161** (0.140-0.187)	**0.199** (0.169-0.240)	**0.230** (0.191-0.283)	**0.261** (0.211-0.328)	**0.293** (0.231-0.379)	**0.337** (0.255-0.454)	**0.371** (0.271-0.517)
2-day	**0.044** (0.039-0.051)	**0.061** (0.054-0.070)	**0.083** (0.073-0.096)	**0.101** (0.089-0.118)	**0.127** (0.107-0.153)	**0.146** (0.121-0.180)	**0.166** (0.135-0.209)	**0.187** (0.147-0.242)	**0.216** (0.163-0.291)	**0.238** (0.174-0.332)
3-day	**0.032** (0.028-0.036)	**0.044** (0.039-0.051)	**0.061** (0.053-0.070)	**0.074** (0.065-0.087)	**0.093** (0.079-0.112)	**0.108** (0.089-0.133)	**0.123** (0.100-0.155)	**0.139** (0.109-0.180)	**0.160** (0.121-0.216)	**0.177** (0.130-0.247)
4-day	**0.026** (0.023-0.030)	**0.036** (0.032-0.042)	**0.050** (0.044-0.058)	**0.061** (0.054-0.071)	**0.077** (0.065-0.093)	**0.089** (0.074-0.110)	**0.102** (0.082-0.128)	**0.115** (0.091-0.149)	**0.133** (0.101-0.180)	**0.148** (0.108-0.206)
7-day	**0.017** (0.015-0.019)	**0.024** (0.021-0.027)	**0.033** (0.029-0.038)	**0.040** (0.035-0.047)	**0.051** (0.043-0.061)	**0.059** (0.049-0.073)	**0.067** (0.055-0.085)	**0.076** (0.060-0.099)	**0.089** (0.067-0.120)	**0.099** (0.072-0.137)
10-day	**0.013** (0.011-0.015)	**0.018** (0.016-0.021)	**0.025** (0.022-0.029)	**0.031** (0.027-0.036)	**0.039** (0.033-0.047)	**0.045** (0.037-0.055)	**0.052** (0.042-0.065)	**0.059** (0.046-0.076)	**0.068** (0.052-0.092)	**0.076** (0.056-0.106)
20-day	**0.008** (0.007-0.009)	**0.011** (0.009-0.012)	**0.015** (0.013-0.017)	**0.019** (0.016-0.022)	**0.024** (0.020-0.029)	**0.028** (0.023-0.034)	**0.032** (0.026-0.040)	**0.037** (0.029-0.048)	**0.043** (0.033-0.058)	**0.049** (0.036-0.068)
30-day	**0.006** (0.005-0.007)	**0.008** (0.007-0.010)	**0.012** (0.010-0.014)	**0.015** (0.013-0.017)	**0.019** (0.016-0.023)	**0.022** (0.019-0.028)	**0.026** (0.021-0.033)	**0.030** (0.024-0.039)	**0.035** (0.027-0.048)	**0.040** (0.029-0.056)
45-day	**0.005** (0.004-0.005)	**0.007** (0.006-0.008)	**0.009** (0.008-0.011)	**0.012** (0.010-0.014)	**0.015** (0.013-0.018)	**0.018** (0.015-0.022)	**0.021** (0.017-0.026)	**0.024** (0.019-0.031)	**0.029** (0.022-0.039)	**0.033** (0.024-0.046)
60-day	**0.004** (0.004-0.005)	**0.006** (0.005-0.007)	**0.008** (0.007-0.009)	**0.010** (0.009-0.012)	**0.013** (0.011-0.016)	**0.015** (0.013-0.019)	**0.018** (0.015-0.023)	**0.021** (0.016-0.027)	**0.025** (0.019-0.034)	**0.029** (0.021-0.040)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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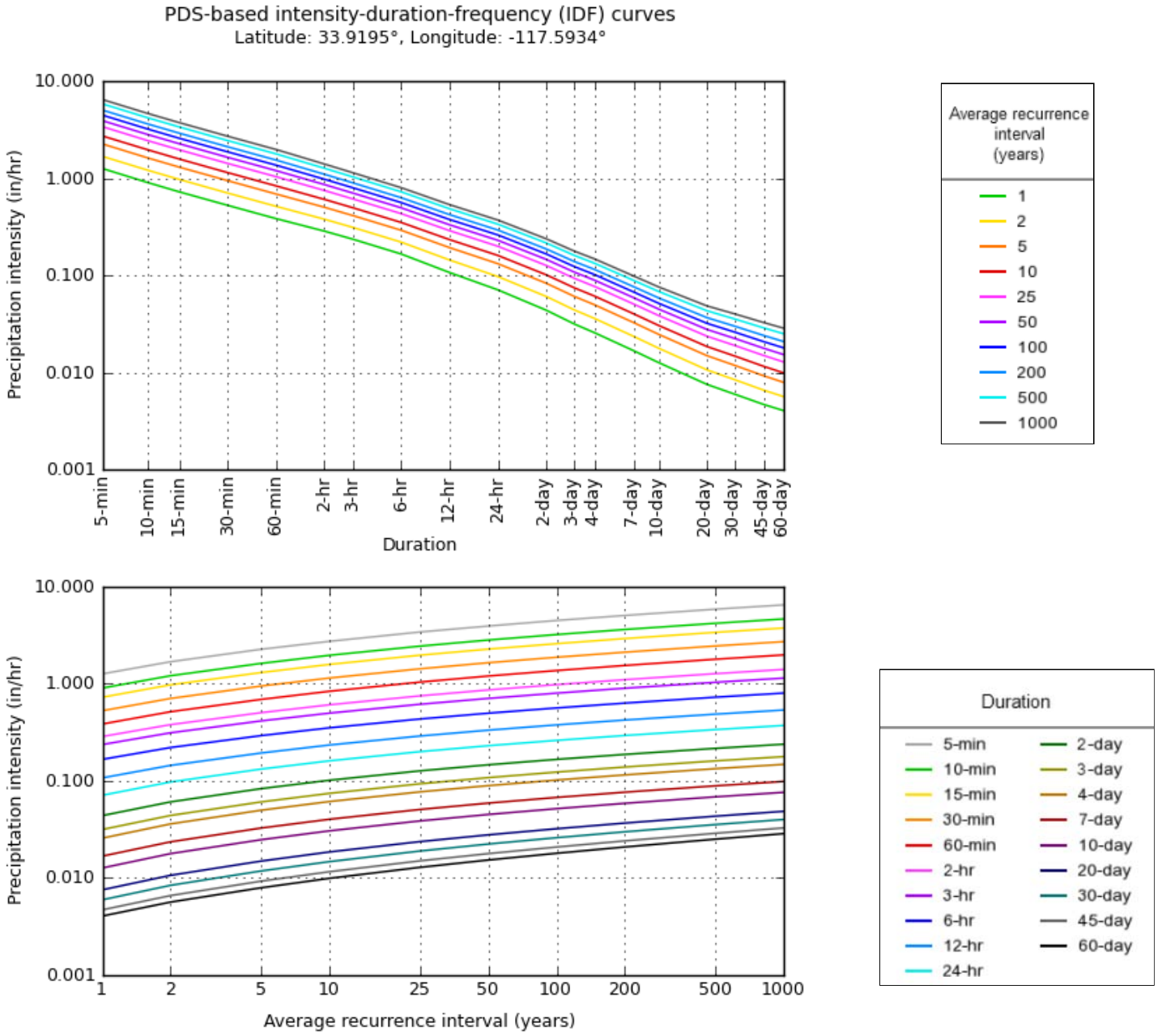
PF graphical



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Created (GMT): Wed Mar 9 19:00:58 2022

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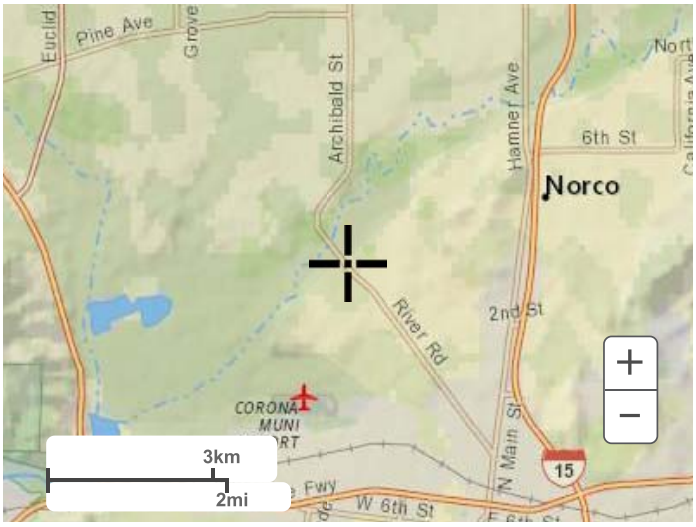
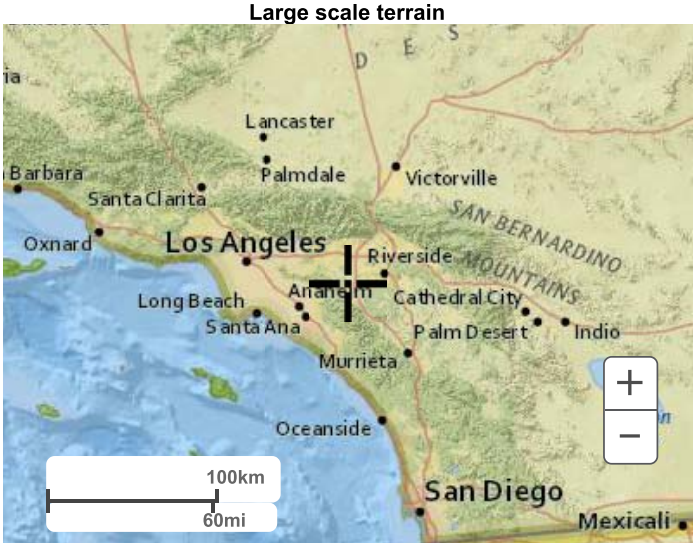
Maps & aerials

Small scale terrain

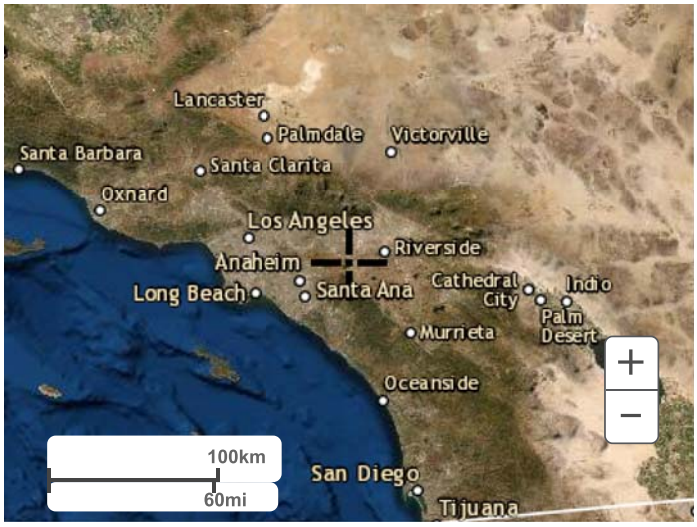


Large scale terrain



Large scale map

Large scale aerial



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National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
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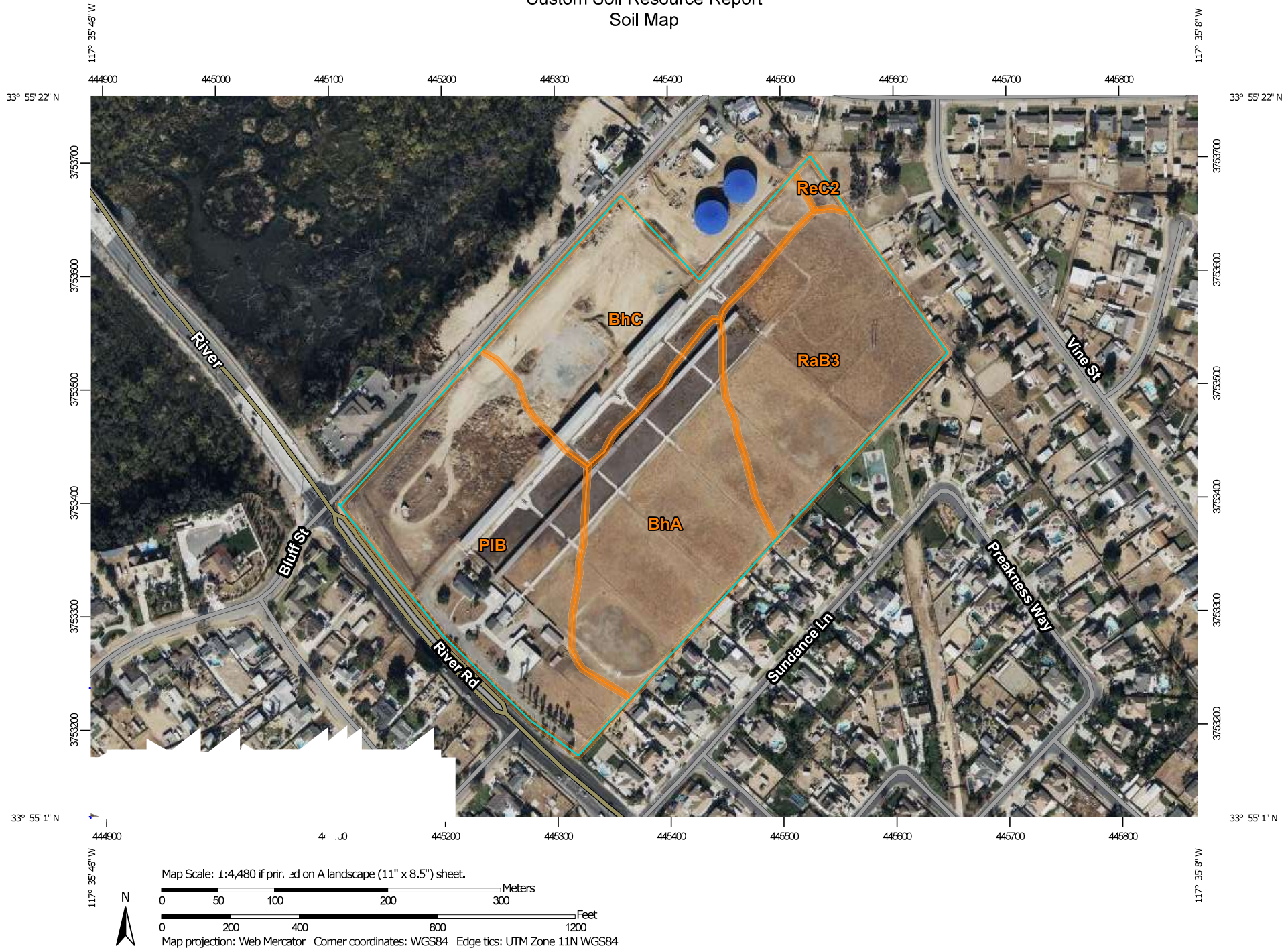
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Custom Soil Resource Report
Soil Map



Map Scale: 1:4,480 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Western Riverside Area, California

March 9, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:4,480 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

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

Soil Survey Area: Western Riverside Area, California
Survey Area Data: Version 14, Sep 13, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 15, 2020—Nov 19, 2020

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BhA	Buchenau loam, slightly saline-alkali, 0 to 2 percent slopes	8.4	24.0%
BhC	Buchenau loam, slightly saline-alkali, 2 to 8 percent slopes	7.3	20.9%
PlB	Placentia fine sandy loam, 0 to 5 percent slopes	10.9	31.0%
RaB3	Ramona sandy loam, 0 to 5 percent slopes, severely eroded	8.2	23.4%
ReC2	Ramona very fine sandy loam, 0 to 8 percent slopes, eroded	0.3	0.7%
Totals for Area of Interest		**35.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Western Riverside Area, California

BhA—Buchenau loam, slightly saline-alkali, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hcrk
Elevation: 500 to 1,500 feet
Mean annual precipitation: 13 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 250 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Buchenau and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Buchenau

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed sources

Typical profile

H1 - 0 to 10 inches: loam
H2 - 10 to 52 inches: loam
H3 - 52 to 61 inches: cemented

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 40 to 60 inches to duripan
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: R019XD029CA - LOAMY
Hydric soil rating: No

Minor Components

Buren

Percent of map unit: 5 percent

Hydric soil rating: No

Arlington

Percent of map unit: 5 percent
Hydric soil rating: No

Porteville

Percent of map unit: 2 percent
Hydric soil rating: No

Greenfield

Percent of map unit: 2 percent
Hydric soil rating: No

Unnamed

Percent of map unit: 1 percent
Hydric soil rating: No

BhC—Buchenau loam, slightly saline-alkali, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: hcrl
Elevation: 500 to 1,500 feet
Mean annual precipitation: 13 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 250 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Buchenau and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Buchenau

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed sources

Typical profile

H1 - 0 to 10 inches: loam
H2 - 10 to 52 inches: loam
H3 - 52 to 61 inches: cemented

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: 40 to 60 inches to duripan
Drainage class: Moderately well drained
Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: R019XD029CA - LOAMY
Hydric soil rating: No

Minor Components

Buren

Percent of map unit: 5 percent
Hydric soil rating: No

Greenfield

Percent of map unit: 5 percent
Hydric soil rating: No

Arlington

Percent of map unit: 5 percent
Hydric soil rating: No

PlB—Placentia fine sandy loam, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: hcxv
Elevation: 50 to 2,500 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 200 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Placentia and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Placentia

Setting

Landform: Terraces, alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear

Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 18 inches: fine sandy loam
H2 - 18 to 39 inches: clay
H3 - 39 to 57 inches: clay loam
H4 - 57 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 50.0
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R019XD061CA - CLAYPAN (1975)
Hydric soil rating: No

Minor Components

Hanford

Percent of map unit: 5 percent
Hydric soil rating: No

Greenfield

Percent of map unit: 5 percent
Hydric soil rating: No

Ramona

Percent of map unit: 4 percent
Hydric soil rating: No

Unnamed, ponded

Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

RaB3—Ramona sandy loam, 0 to 5 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: hcy6
Elevation: 250 to 3,500 feet
Mean annual precipitation: 10 to 20 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 230 to 320 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Ramona and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ramona

Setting

Landform: Terraces, alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 8 inches: sandy loam
H2 - 8 to 17 inches: fine sandy loam
H3 - 17 to 68 inches: sandy clay loam
H4 - 68 to 74 inches: gravelly sandy loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R019XD029CA - LOAMY
Hydric soil rating: No

Minor Components

Tujunga
Percent of map unit: 5 percent
Hydric soil rating: No

Hanford
Percent of map unit: 5 percent
Hydric soil rating: No

Greenfield
Percent of map unit: 5 percent
Hydric soil rating: No

ReC2—Ramona very fine sandy loam, 0 to 8 percent slopes, eroded

Map Unit Setting
National map unit symbol: hcyg
Elevation: 250 to 3,500 feet
Mean annual precipitation: 10 to 20 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 230 to 320 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Ramona and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ramona

Setting
Landform: Terraces, alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear, concave
Across-slope shape: Linear, convex
Parent material: Alluvium derived from granite

Typical profile
H1 - 0 to 14 inches: very fine sandy loam
H2 - 14 to 23 inches: fine sandy loam
H3 - 23 to 68 inches: sandy clay loam
H4 - 68 to 74 inches: gravelly sandy loam

Properties and qualities
Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R019XD029CA - LOAMY
Hydric soil rating: No

Minor Components

Hanford

Percent of map unit: 5 percent
Hydric soil rating: No

Greenfield

Percent of map unit: 5 percent
Hydric soil rating: No

Tujunga

Percent of map unit: 5 percent
Hydric soil rating: No

References

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LOR GEOTECHNICAL GROUP, INC.
Soil Engineering ▲ Geology ▲ Environmental

INFILTRATION FEASIBILITY INVESTIGATION
APN 121-110-003
NORCO, CALIFORNIA

PROJECT NO. 33184.4
JULY 2, 2015

Prepared For:

HC&D Architects
c/o Thatcher Engineering and Assocaites, Inc.
1461 Ford Street, Suite 105
Redlands, California 92373

Attention: Ms. Kristin Tissot

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LOR GEOTECHNICAL GROUP, INC.
Soil Engineering ▲ Geology ▲ Environmental

July 2, 2015

HC&D Architects
c/o Thatcher Engineering and Associates, Inc.
1461 Ford Avenue, Suite 105
Redlands, California 92373

Project No. 33184.4

Attention: Ms. Kristin Tissot

Subject: Infiltration Feasibility Investigation, APN 121-110-003, Norco, California.

LOR Geotechnical Group, Inc. is pleased to present this report summarizing the results of our double-ring infiltrometer testing recently conducted within the proposed residential development of APN 121-110-003 located at the east corner of Bluff Street and Rivers Road in the City of Norco, California.

Information provided by you indicates that an infiltration basin will be used for the infiltration of onsite runoff waters. The location and elevation of the proposed facility were indicated on the plan provided (Thatcher Engineering and Associates, Inc., 2015).

INFILTRATION TESTING AND TEST RESULTS

A double ring infiltration test was conducted at each of the two requested locations approximately illustrated on Enclosure 1. The testing was conducted within the bottom of an excavation that was made, and later backfilled, using a rubber-tire backhoe. A 12-inch diameter steel casing was installed within the center of the test location, with a 24-inch diameter steel casing centered around it. Each casing was imbedded approximately 5 inches. These liners extended approximately 15-inches above the bottom of the test location. The test location was tested immediately after the casings were installed by filling both the inside and outside casings and maintaining a water level to a depth of approximately 1-inch above the ground surface.

The testing procedure was as follows:

Both the inside and outside area of the casings were filled with water to a level of approximately 1 inch above the ground surface. Water was then metered into the test holes to maintain this water level within both casings. The volume of water used in a given time period was recorded at various time intervals to establish the infiltration rate of the inner ring.

The infiltration rate is measured as the drop in water level compared to the permeability of the bottom surface area soils in the bottom of the test hole. If casing is not used, the water column in the test hole is allowed to seep into both the bottom and sidewalls of the hole, for which the drop in water level must be corrected and reduced for the volume of water seeping into the sidewall and for the diameter of the test hole. As described above, the tests described herein were conducted using a 12-inch diameter inner casing and 24-inch diameter outer casing.

The test holes were found to have the following measured clear water infiltration rates:

Infiltration Test No.	Depth (ft.)*	Elevation (msl)	Clear Water Infiltration Rate (inches/hour)**
DRI-1	6	567	9.6
DRI-2	6	567	7.4

* depth measured below existing ground surface
** average of final two readings

The results of our testing are attached as Enclosures 2 and 3. Our test results are presented graphically on Enclosures 4 and 5.

SUBSURFACE CONDITIONS

During this investigation, an exploratory trench was excavated within the general area of the proposed infiltration systems to a depth of approximately15 feet below the existing ground surface. The excavation found that area to be underlain by approximately 0.5 feet of fill/topsoil material comprised of silty sand underlain by natural alluvial deposits comprised of sandy silt to a depth of approximately 4 feet. Beneath a depth of approximately 4 feet, the alluvial materials were granular consisting of well graded sand with silt and poorly graded sand to a depth of approximately 13 feet. Below this depth, sandy silt was encountered. The fill/topsoil materials are believed to be associated with the current/past weed abatement and dairy farming practices at the site. Caving was experienced within the granular units from a depth of approximately 4 to 13 feet. No groundwater was encountered within this exploration.

The approximate locations of our exploratory trench is illustrated on Enclosure 1. A log of the conditions encountered is presented on Enclosure 6.

During our site reconnaissance, we spoke with the property owner, Mr. Dallape. He indicated that two water wells were present on the site. One well, located in the northeastern portion of the site has never been used. The second well near the existing residence, was previously in use, however, it is no longer being used. Mr. Dallape indicated that the last time he used the well, water was at approximately 50 feet and as shallow as approximately 30 feet.

In order to estimate the approximate depth to groundwater in this area, a search was conducted for local municipal water wells on the Western Municipal Water District Cooperative Well Measuring Program, Fall 2014. The closest wells found were listed as Dallape Dairy, located on site. In this well, given by the State Well numbering system as 03S07W11N, only one groundwater measurement was available. The measurement indicated that groundwater was at a depth of approximately 30 feet below an estimated ground surface elevation of 600 feet above mean sea level in January of 1995. As noted on Enclosure 1, site elevations range from 575 feet in the west portion of the site to 567 feet in the south portion. The next nearest well on this database was well #13 owned by the City of Norco. Records for this well, State Well numbering system 01S07WM02S located just northeast of the site, were available from December of 1994 when it was constructed to December of 2014. Groundwater in this well has varied from a high of approximately 38 feet in November of 2010 to a low of 318 feet in June of 1998. The most recent measurement was at a depth 128 feet in December of 2014. The reported well surface elevation was 564 feet above mean sea level.

We also conducted a search of the water well database provided in the State of California Department of Water Resources website. The nearest well found by this search was located to the north approximately 1 kilometer (0.62 miles) within the Santa Ana River bottom some 30 feet lower in elevation than the site. This well, State Well numbering system 03S07W10A001S, had a well elevation of 538 feet above mean sea level. Data was available from November 2011 to March of 2015. Groundwater varied vary slightly over that time, on the order of 1 to 2 feet at an elevation of 537 to 533 feet above mean sea level.

Thus, groundwater appears to have lied at elevations ranging from 526 to 537 feet above mean sea level (using 567 feet above mean sea level rather than the estimated 600 feet above mean sea level for the on site well). As previously mentioned, the elevation of the proposed basin is to be 6 feet below the existing ground elevation of 567 feet above mean sea level, or at an elevation of 561 feet above mean sea level.

CONCLUSIONS

Based upon our infiltration test data, the clear water infiltration rate ranges from 9.6 inches per hour (143 gal/sf/day) to 7.4 inches per hour (110 gal/sf/day).

Based on our findings, it is our opinion that the clear water rate of 8 inches per hour appears appropriate for design of the basin.

A factor of safety should be applied as indicated by the Design Handbook for Low Impact Development Best Management Practices (RCFCWCD, 2011). The design infiltration rate should be adjusted using a factor of safety of 3.0 (RCFCWCD, 2011).

To ensure continued infiltration capability of the infiltration areas, a program to maintain the facilities should be considered. This program should include periodic removal of accumulated materials, which can slow the infiltration and decrease the water quality. Materials to be removed from the catch basin areas typically consist of litter, dead plant matter, and soil fines (silts and clays). Proper maintenance of the system is critical. A maintenance program which meets or exceeds those developed by the local governing agency should be prepared and properly executed. At a minimum, the program should be as outlined in the Design Handbook for Low Impact Development Best Management Practices (RCFCWCD, 2011).

The program should also incorporate the recommendations presented below and other jurisdictional agency requirements such as the design requirements presented within Appendix C of the Design Handbook for Low Impact Development Best Management Practices (RCFCWCD, 2011).

Systems should be set back at least 10 feet from foundations or as required by the design engineer.

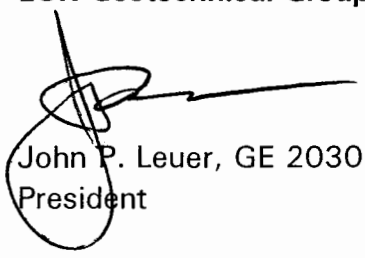
Systems should be set back at least 100 feet horizontally from wells. Although the exact location and dimensions of the basin was not provided and if the wells are to remain after development, it appears that the basin will be located at least 100 feet horizontally from wells based on the requested test locations and existing well locations.

During site development, care should be taken to not disturb the area(s) proposed for infiltration as changes in the soil structure could occur resulting in a change of the soil infiltration characteristics. While no grading plan is yet available, no fill should be placed in the area of the basin and the basin should be constructed by cut grading to the elevation tested.

A geotechnical report has yet to be prepared for the site. Based on the granular nature of the materials encountered beneath a depth of approximately 4 feet, hydro-collaspe prone soils were not identified during this investigation as explored to a maximum depth of approximately 15 feet. It is anticipated that the upper fine grained soils will require re-working during grading. However, soils beneath a depth of approximately 15 feet were not investigated. Future geotechnical investigation(s) should explore the deeper soils to verify that no hydro-collapsible soils are present. The future report should identify any deeper site-specific factors not discussed herein that would preclude effective and safe infiltration.

Should you have any questions regarding this report, please do not hesitate to contact us at your convenience.

Respectfully submitted,
LOR Geotechnical Group, Inc.



John P. Leuer, GE 2030
President

AAT:JPL:aat

Distribution: Addressee (2) and PDF via email
Don Dallape via email don@pacenviro.com

Enclosures: Infiltration Test/Exploratory Trench Location Exhibit (1)
Double Ring Infiltrometer Test Data (2-3)
Double Ring Infiltrometer Test Graphs (4-5)
Trench Log (6)

REFERENCES

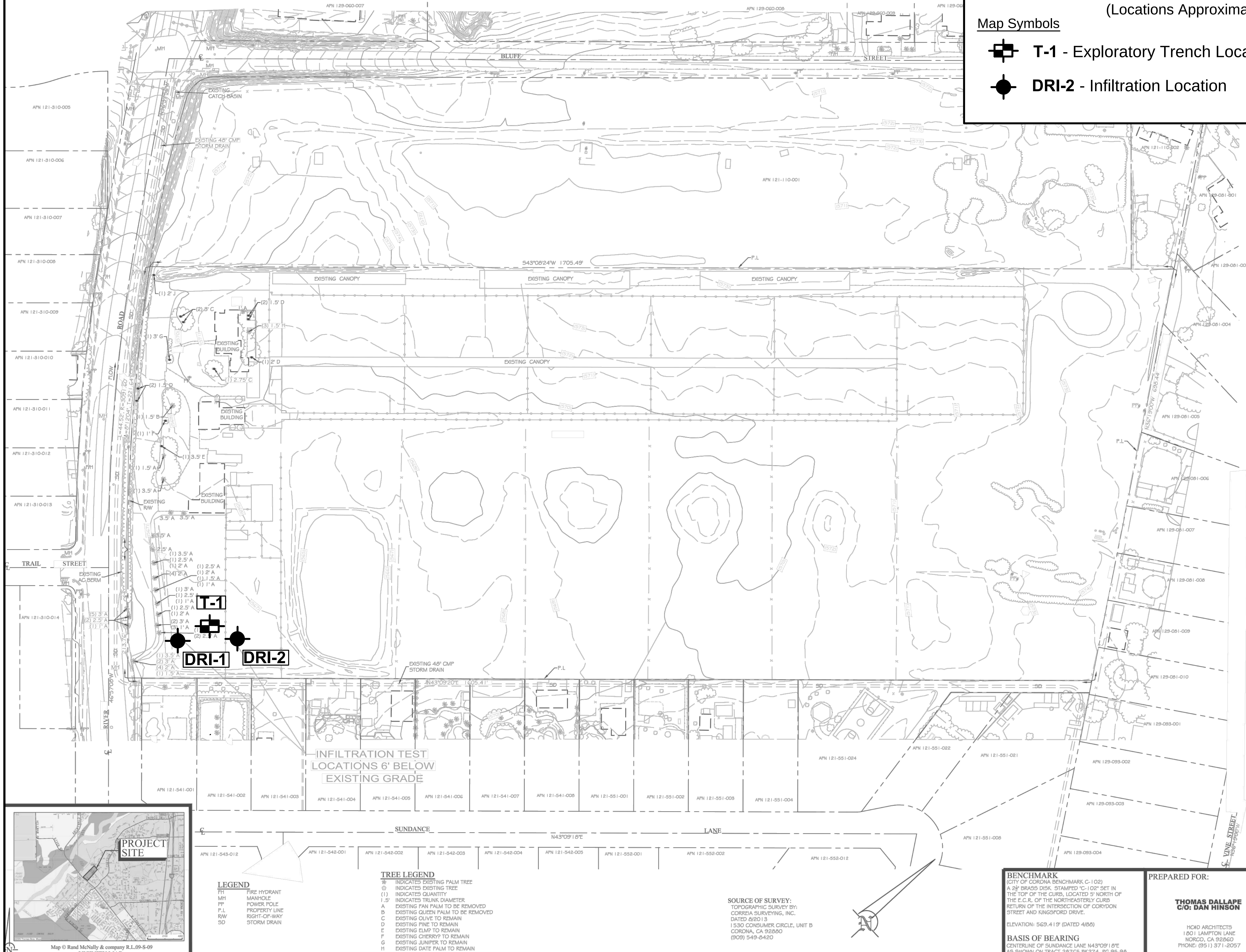
California Department of Water Resources, 2015, http://www.water.ca.gov/waterdatalibrary/.

Riverside County Flood Control and Water Conservation District, 2011, Design Handbook for Low Impact Development Best Management Practices, dated September 2011.

Thatcher Engineering and Associates, Inc., 2015, Infiltration Test Location Exhibit, Assessor's Parcel Number 121-110-003, City of Norco, dated May 26, 2015.

Western Municipal Water District, 2014, Cooperative Well Measuring Program Fall 2014, January 2015.

INFILTRATION TEST LOCATION EXHIBIT



Legend

(Locations Approximate)

Map Symbols

T-1 - Exploratory Trench Location

DRI-2 - Infiltration Location

LEGEND

FH	FIRE HYDRANT
MH	MANHOLE
PP	POWER POLE
P.L	PROPERTY LINE
R/W	RIGHT-OF-WAY
SD	STORM DRAIN

TREE LEGEND

✲	INDICATES EXISTING PALM TREE
✿	INDICATES EXISTING TREE
(1)	INDICATES QUANTITY
1.5'	INDICATES TRUNK DIAMETER
A	EXISTING FAN PALM TO BE REMOVED
B	EXISTING QUEEN PALM TO BE REMOVED
C	EXISTING OLIVE TO REMAIN
D	EXISTING PINE TO REMAIN
E	EXISTING ELM? TO REMAIN
F	EXISTING CHERRY? TO REMAIN
G	EXISTING JUNIPER TO REMAIN
H	EXISTING DATE PALM TO REMAIN
J	EXISTING FAN PALM TO REMAIN

SOURCE OF SURVEY:
TOPOGRAPHIC SURVEY BY:
CORREIA SURVEYING, INC.
DATED 8/2013
1530 CONSUMER CIRCLE, UNIT B
CORONA, CA 92880
(909) 549-8420

BENCHMARK
(CITY OF CORONA BENCHMARK C-102)
A 2½" BRASS DISK STAMPED "C-102" SET IN THE TOP OF THE CURB, LOCATED 5' NORTH OF THE E.C.R. OF THE NORTHEASTERLY CURB RETURN OF THE INTERSECTION OF CORYDON STREET AND KINGSFORD DRIVE.

ELEVATION: 569.419' (DATED 4/88)

BASIS OF BEARING
CENTERLINE OF SUNDANCE LANE N43°09'18"E AS SHOWN ON TRACT 28765 BK274, PG 95-98

PREPARED FOR:

THOMAS DALLAPE
C/O: DAN HINSON

HC&D ARCHITECTS
1801 LAMPTON LANE
NORCO, CA 92860
PHONE: (951) 371-2057

INFILTRATION TEST
LOCATION EXHIBIT
ASSESSOR'S PARCEL NUMBER: 121-110-
CITY OF NORCO

- land planning
- civil engineering
- landscape architecture

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Melvin W. Thatcher, III R.C.E. 39964 Exp. Dec 31, 2015

Job No.	Date Prepared	Designed By	Drawn By	Reference N
154402	5/26/15	MWT	BK	154402Infiltra

INFILTRATION TEST LOCATION MAP

PROJECT NO: 33184.4

ENCLOSURE: 1

DATE: JUNE 2015

SCALE: 1" ≈ 165'

PROJECT: APN 121-110-003, NORCO, CA.

CLIENT: HC&D ARCHITECTS

LOR Geotechnical Group, Inc.

DOUBLE RING INFILTROMETER TEST DATA

Project:	APN 121-110-003	Test Date:	June 22, 2015
Project No.:	33184.4	Test Hole No.:	DRI-1
Soil Classification:	(SP) Poorly Graded Sand	Test Hole Diameter:	12-in inner 24-in annular
Depth of Test Hole:	6 ft.	Date Excavated:	June 22, 2015
Liquid Used:	Tap Water	pH:	7.8
Area of Rings:	Inner = 0.785 ft^2 Annular = 2.36 ft^2	Depth of Water in Rings:	1 in
Tested By:	DAW / AAT	Ring Penetration:	5 in
Liquid Level Maintained Using:	Vacuum Seal		
Depth to Water Table:	current: 50 ft / historic: 30 ft		

TEST PERIOD

TRIAL NO.	INNER/ANNULAR SPACE TIME		TIME INTERVAL (minutes)	TOTAL ELAPSED TIME (minutes)	WATER USED (lbs.) inner	WATER USED (lbs.) annular space	WATER USED (gal) inner	WATER USED (gal) annular space	INFILTRATION RATE (gal/sf./day) inner	INFILTRATION RATE (gal/sf./day) annular space	INFILTRATION RATE (in/hr) inner	INFILTRATION RATE (in/hr) annular space	REMARKS
1	S	8:43	10	10	3.15	18.56	0.38	2.2	136	4.6	4.6	9.1	refilled outer
	E	8:53											

Enclosure 2

TEST PERIOD													
TRIAL NO.	INNER/ANNULAR SPACE TIME		TIME INTERVAL (minutes)	TOTAL ELAPSED TIME (minutes)	WATER USED (lbs.) inner	WATER USED (lbs.) annular space	WATER USED (gal) inner	WATER USED (gal) annular space	INFILTRATION RATE (gal/sf./day) inner	INFILTRATION RATE (gal/sf./day) annular space	INFILTRATION RATE (in/hr) inner	INFILTRATION RATE (in/hr) annular space	REMARKS
2	S	8:58	10	20	7.21	30.25	0.87	3.6	222	10.6	10.6	14.8	refilled outer
	E	9:58											
3	S	10:03	10	30	7.40	30.65	0.89	3.7	225	10.9	10.9	15.0	refilled outer
	E	10:13											
4	S	10:18	10	40	7.66	29.34	0.92	3.5	169	11.3	11.3	14.4	refilled outer
	E	10:28											
5	S	10:33	10	50	7.68	29.29	0.92	3.5	169	11.2	11.2	14.4	refilled both
	E	10:43											
6	S	10:48	10	60	7.56	29.18	0.91	3.5	166	214	11.2	14.3	refilled outer
	E	10:58											
7	S	11:03	10	70	7.25	28.94	0.87	3.5	160	212	10.6	14.2	refilled outer
	E	11:13											
8	S	11:18	10	80	6.69	28.65	0.80	3.4	147	210	9.9	14.1	refilled outer
	E	11:28											

Enclosure 2 continued

TEST PERIOD													
TRIAL NO.	INNER/ANNULAR SPACE TIME		TIME INTERVAL (minutes)	TOTAL ELAPSED TIME (minutes)	WATER USED (lbs.) inner	WATER USED (lbs.) annular space	WATER USED (gal) inner	WATER USED (gal) annular space	INFILTRATION RATE (gal/sf./day) inner	INFILTRATION RATE (gal/sf./day) annular space	INFILTRATION RATE (in/hr) inner	INFILTRATION RATE (in/hr) annular space	REMARKS
9	S	11:33	10	90	6.57	28.52	0.79	3.4	145	209	9.7	14.0	refilled both
	E	11:43											
10	S	11:48	10	100	6.51	28.49	0.78	3.4	143	209	9.6	14.0	refilled outer
	E	11:58											
11	S	12:03	10	110	6.56	28.37	0.79	3.4	144	208	9.7	14.0	refilled outer
	E	12:13											
12	S	12:18	10	120	6.49	28.42	0.78	3.4	143	208	9.6	14.0	
	E	12:28											

Enclosure 2 continued

DOUBLE RING INFILTROMETER TEST DATA

Project:	APN 121-110-003	Test Date:	June 22, 2015
Project No.:	33184.4	Test Hole No.:	DRI-2
Soil Classification:	(SP) Poorly Graded Sand	Test Hole Diameter:	12-in inner 24-in annular
Depth of Test Hole:	6 ft	Date Excavated:	June 22, 2015
Liquid Used:	Tap Water	pH:	7.8
Area of Rings:	Inner = 0.785 ft^2 Annular = 2.36 ft^2	Depth of Water in Rings:	1 in
Tested By:	DAW / AAT	Ring Penetration:	5 in
Liquid Level Maintained Using:	Vacuum Seal		
Depth to Water Table:	current: 50 ft. / historic 30 ft.		

TEST PERIOD

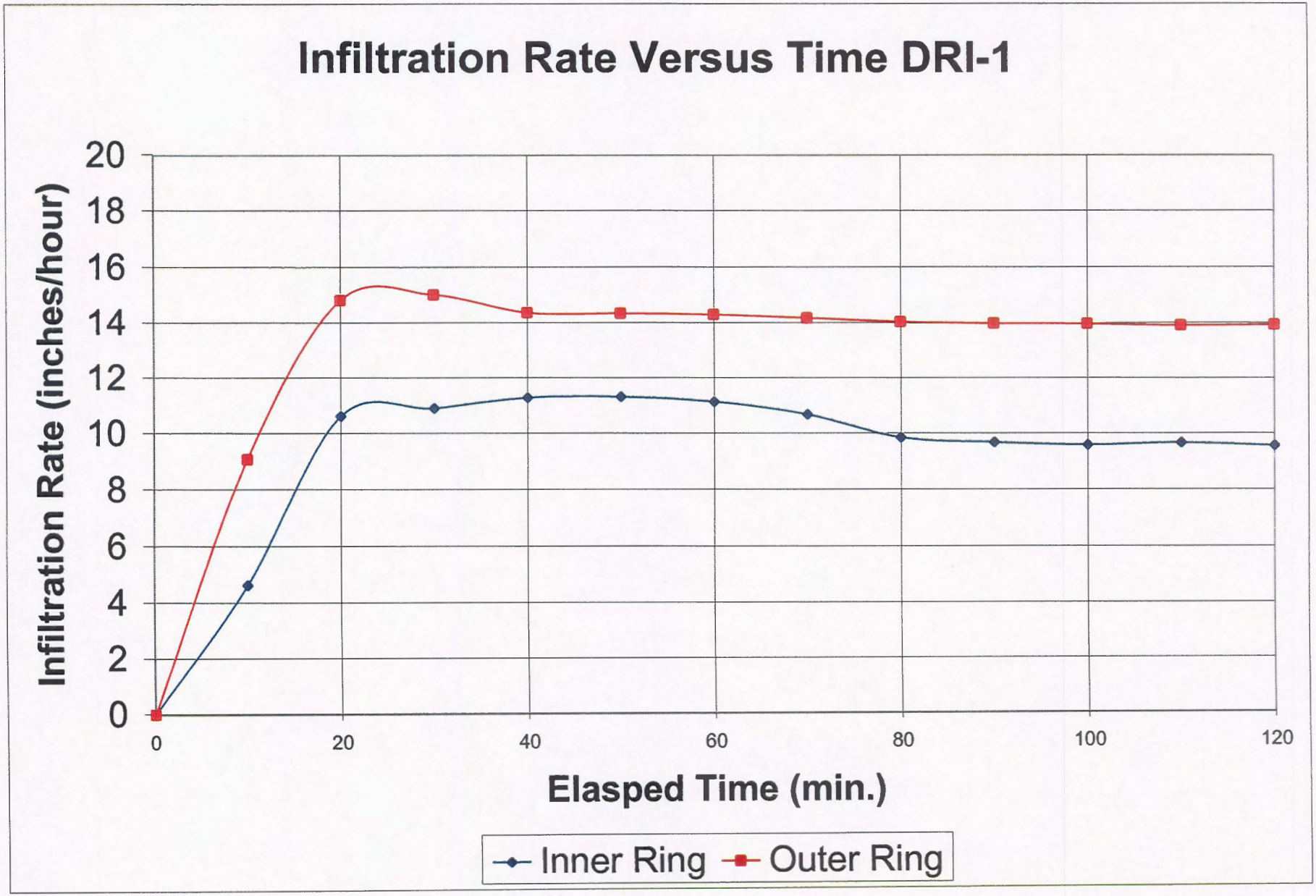
TRIAL NO.	INNER				ANNULAR SPACE				WATER USED (lbs.)		WATER USED (gal)		INFILTRATION RATE (gal/sf./day)		INFILTRATION RATE (in/hr)		REMARKS
	TIME		TIME INTERVAL (minutes)	TOTAL ELASPED TIME (minutes)	TIME		TIME INTERVAL (minutes)	TOTAL ELASPED TIME (minutes)	inner	annular space	inner	annular space	inner	annular space	inner	annular space	
1	S	9:24	60	60	S	9:24	10	10	30.66	26.48	3.7	3.2	113	194	7.5	13.0	refilled both
	E	10:24			E	9:34											
2	S	10:29	60	120	S	9:39	10	20	31.07	25.89	3.7	3.1	114	190	7.6	12.9	refilled both
	E	11:29			E	9:49											
3	S	11:33	60	180	S	9:54	10	30	31.05	24.76	3.7	3.0	114	181	7.6	12.2	refilled both
	E	12:33			E	10:04											
4	S	12:38	60	240	S	10:09	10	40	29.89	24.12	3.6	2.9	110	177	7.4	11.8	refilled both
	E	1:38			E	10:19											
5	S	--	--	--	S	10:23	10	50	--	23.79	--	2.9	--	174	--	11.7	refilled outer
	E	--			E	10:33											

TEST PERIOD																	
TRIAL NO.	INNER				ANNULAR SPACE				WATER USED (lbs.)		WATER USED (gal)		INFILTRATION RATE (gal/sf./day)		INFILTRATION RATE (in/hr)		REMARKS
	TIME		TIME INTERVAL (minutes)	TOTAL ELASPED TIME (minutes)	TIME		TIME INTERVAL (minutes)	TOTAL ELASPED TIME (minutes)	inner	annular space	inner	annular space	inner	annular space	inner	annular space	
6	S	--	--	--	S	10:38	10	60	--	23.55	--	2.8	--	173	--	11.6	refilled outer
	E	--			E	10:48											
7	S	--	--	--	S	10:53	10	70	--	23.42	--	2.8	--	172	--	11.5	refilled outer
	E	--			E	11:03											
8	S	--	--	--	S	11:08	10	80	--	23.25	--	2.8	--	170	--	11.4	refilled outer
	E	--			E	11:18											
9	S	--	--	--	S	11:22	10	90	--	23.12	--	2.8	--	169	--	11.3	refilled outer
	E	--			E	11:32											
10	S	--	--	--	S	11:37	10	100	--	23.16	--	2.8	--	170	--	11.4	refilled outer
	E	--			E	11:47											
11	S	--	--	--	S	11:52	10	110	--	23.20	--	2.8	--	170	--	11.4	refilled outer
	E	--			E	12:02											
12	S	--	--	--	S	12:07	10	120	--	23.19	--	2.8	--	170	--	11.4	refilled outer
	E	--			E	12:17											
13	S	--	--	--	S	12:22	10	130	--	23.05	--	28	--	169	--	11.3	refilled outer
	E	--			E	12:32											
14	S	--	--	--	S	12:37	10	140	--	23.10	--	2.8	--	169	--	11.3	refilled outer
	E	--			E	12:47											
15	S	--	--	--	S	12:52	10	150	--	23.20	--	2.8	--	169	--	11.4	refilled outer
	E	--			E	1:02											
16	S	--	--	--	S	1:06	10	160	--	23.03	--	2.8	--	169	--	11.3	refilled outer
	E	--			E	1:16											

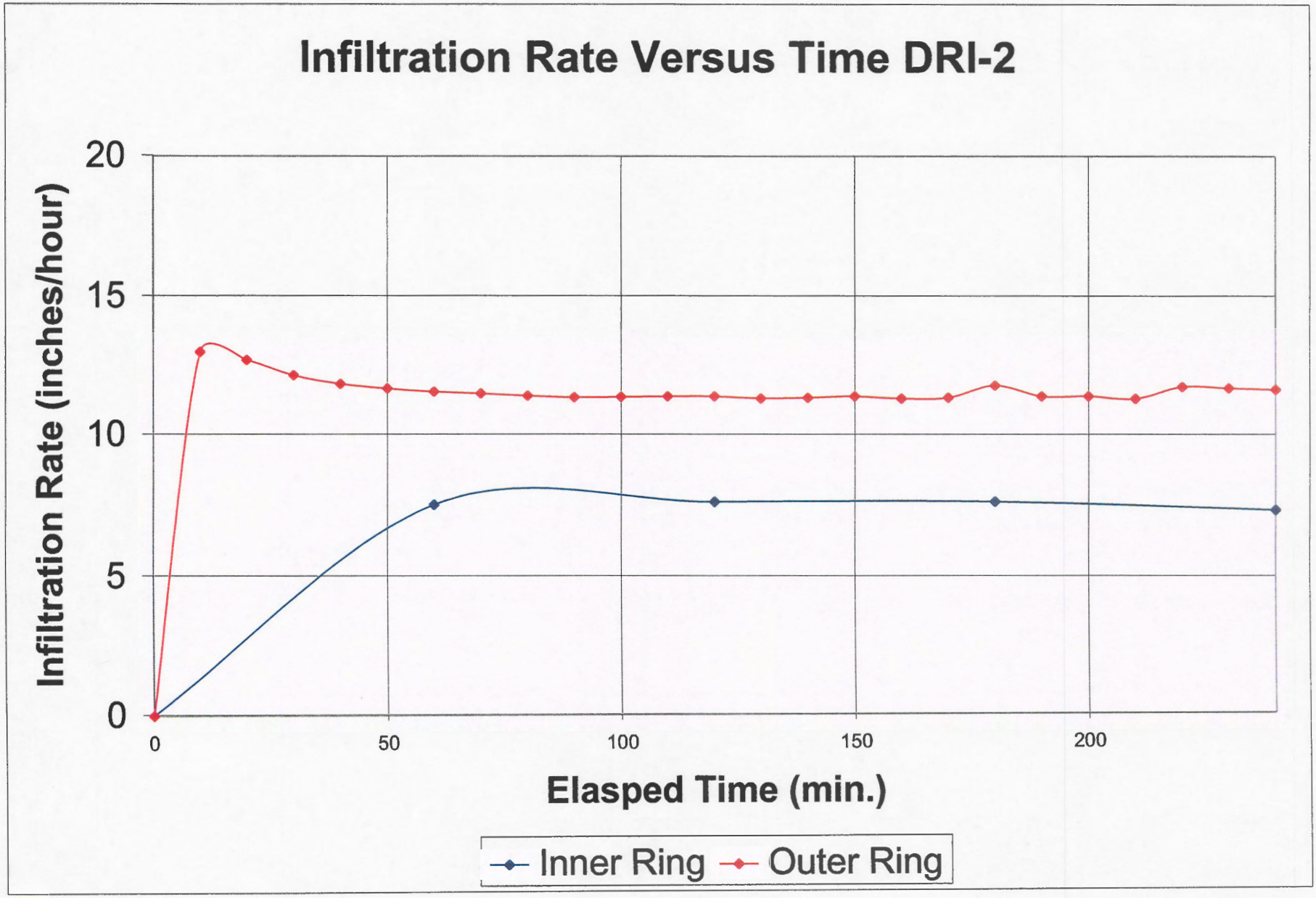
Enclosure 3 continued

TEST PERIOD																	
TRIAL NO.	INNER				ANNULAR SPACE				WATER USED (lbs.)		WATER USED (gal)		INFILTRATION RATE (gal/sf./day)		INFILTRATION RATE (in/hr)		REMARKS
	TIME		TIME INTERVAL (minutes)	TOTAL ELASPED TIME (minutes)	TIME		TIME INTERVAL (minutes)	TOTAL ELASPED TIME (minutes)	inner	annular space	inner	annular space	inner	annular space	inner	annular space	
17	S	--	--	--	S	1:21	10	170	--	23.10	--	2.8	--	16.9	--	11.3	refilled outer
	E	--			E	1:31											
18	S	--	--	--	S	1:36	10	180	--	23.98	--	2.8	--	176	--	11.8	refilled outer
	E	--			E	1:46											
19	S	--	--	--	S	1:51	10	190	--	23.20	---	2.8	--	170	--	11.4	refilled outer
	E	--			E	2:01											
20	S	--	--	--	S	2:11	10	200	--	23.39	---	2.8	--	171	--	11.5	refilled outer
	E	--			E	2:21											
21	S	--	--	--	S	2:26	10	210	--	23.01	---	2.8	--	168	--	11.3	refilled outer
	E	--			E	2:36											
22	S	--	--	--	S	2:41	10	220	--	23.89	--	2.9	--	175	--	11.7	refilled outer
	E	--			E	2:51											
23	S	--	--	--	S	2:56	10	230	--	23.78	--	2.9	--	174	--	11.7	refilled outer
	E	--			E	3:06											
24	S	--	--	--	S	3:11	10	240	--	23.69	--	2.8	--	174	--	11.6	
	E	--			E	3:21											

Enclosure 3 continued


Infiltration Rate Versus Time DRI-1
Infiltration Rate (inches/hour)
20
18
16
14
12
10
8
6
4
2
0
0
20
40
60
80
100
120
Elasped Time (min.)
Inner Ring
Outer Ring

Enclosure 4


Infiltration Rate Versus Time DRI-2
Infiltration Rate (inches/hour)
20
15
10
5
0
0
50
100
150
200
Elasped Time (min.)
Inner Ring
Outer Ring

Enclosure 5

LOG OF TRENCH T-1

DEPTH IN FEET	LABORATORY TESTS	ESTIMATED COMPACTION (%)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
0							SM	@ 0 feet, FILL/TOPSOIL: SILTY SAND, approximately 10% coarse grained sand, 20% medium grained sand, 30% fine grained sand, 40% silty fines, brown, dry.
							ML	@ 0.5 feet ALLUVIUM: SANDY SILT, approxiamtely 5% coarse grained sand, 10% medium grained sand, 15% fine grained sand, 70% silty fines, light brown, dry, some pinhole porosity.
							SW SM	@ 4 feet, WELL GRADED SAND with SILT, approximately 20% coarse grained sand, 35% medium grained sand, 35% fine grained sand, 10% silty fines, tan, dry, caving.
5							SP	@ 5 feet, POORLY GRADED SAND, approximately 15% coarse grained sand, 30% medium grained sand, 50% fine grained sand, 5% silty fines, light red brown, caving.
10							ML	@ 13 feet, SANDY SILT, approximately 40% fine grained sand, 60% silty fines with trace clay, gray-brown, damp.
15								END OF TRENCH Fill to 0.5 feet Caving 4 to 13 feet No groundwater No bedrock

TEST DATA

PROJECT:	APN 121-111-003	PROJECT NUMBER:	33184.4
CLIENT:	HC&D Architects	ELEVATION:	567.0
		DATE EXCAVATED:	June 15, 2015
LOR GEOTECHNICAL GROUP INC.		EQUIPMENT:	John Deere
		BUCKET W.: 24"	ENCLOSURE: 6

APPENDIX B

1. RATIONAL METHOD HYDROLOGY: PRE-DEVELOPED
   (10-YEAR STORM and 100-YEAR STORM)

2. RATIONAL METHOD HYDROLOGY: DEVELOPED CONDITION
   (10-YEAR STORM and 100-YEAR STORM)

```
************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                      (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                      (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1269

                          Analysis prepared by:

                              MDS Consulting
                       17310 Redhill Avenue, Suite 350
                              Irvine, CA 92614
                                949.251.8821

 ************************** DESCRIPTION OF STUDY **************************
* Tentative Tract No.38330 - J.D.Ranch                                    *
* Predeveloped Condition                                                  *
* 10-year storm                                                           *
 ************************************************************************

  FILE NAME: 90800X.DAT
  TIME/DATE OF STUDY: 11:51 04/05/2022
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  1.960
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.834
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  3.200
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.360
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.4768866
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.4775562
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =   10.00   1-HOUR INTENSITY(INCH/HOUR) =   0.842
  SLOPE OF INTENSITY DURATION CURVE = 0.4769
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ==================  ======  ===== ====== ===== =======
  1   18.0     13.0    0.020/0.020/0.020   0.50    2.00 0.0313 0.013 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      1.20 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   915.00
  UPSTREAM ELEVATION(FEET) =    571.70
  DOWNSTREAM ELEVATION(FEET) =    569.00
  ELEVATION DIFFERENCE(FEET) =      2.70
  TC = 0.533*[(  915.00**3)/(     2.70)]**.2 =   26.120
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.252
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .4901
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      3.96
  TOTAL AREA(ACRES) =      6.45   TOTAL RUNOFF(CFS) =      3.96

************************************************************************
  FLOW PROCESS FROM NODE      1.20 TO NODE      1.20 IS CODE =  81
------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
========================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.252
```

```
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6088
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    0.12   SUBAREA RUNOFF(CFS) =    0.09
  TOTAL AREA(ACRES) =        6.6   TOTAL RUNOFF(CFS) =       4.05
  TC(MIN.) =   26.12

****************************************************************************
  FLOW PROCESS FROM NODE      1.20 TO NODE      1.20 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.252
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6643
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    4.57   SUBAREA RUNOFF(CFS) =    3.80
  TOTAL AREA(ACRES) =       11.1   TOTAL RUNOFF(CFS) =       7.85
  TC(MIN.) =   26.12

****************************************************************************
  FLOW PROCESS FROM NODE      1.20 TO NODE      1.90 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    569.00  DOWNSTREAM(FEET) =    563.60
  CHANNEL LENGTH THRU SUBAREA(FEET) =   425.00   CHANNEL SLOPE =  0.0127
  CHANNEL FLOW THRU SUBAREA(CFS) =       7.85
  FLOW VELOCITY(FEET/SEC) =   2.65 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.67   Tc(MIN.) =   28.79
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.90 =    1340.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.90 TO NODE      1.90 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.196
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .4797
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    8.00   SUBAREA RUNOFF(CFS) =    4.59
  TOTAL AREA(ACRES) =       19.1   TOTAL RUNOFF(CFS) =      12.44
  TC(MIN.) =   28.79

****************************************************************************
  FLOW PROCESS FROM NODE      1.90 TO NODE      1.90 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.196
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .5996
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    4.10   SUBAREA RUNOFF(CFS) =    2.94
  TOTAL AREA(ACRES) =       23.2   TOTAL RUNOFF(CFS) =      15.38
  TC(MIN.) =   28.79

****************************************************************************
  FLOW PROCESS FROM NODE      1.90 TO NODE      1.90 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.196
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6561
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    2.67   SUBAREA RUNOFF(CFS) =    2.09
  TOTAL AREA(ACRES) =       25.9   TOTAL RUNOFF(CFS) =      17.47
  TC(MIN.) =   28.79
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       25.9  TC(MIN.) =     28.79
  PEAK FLOW RATE(CFS)   =      17.47
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                      (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                      (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1269

                          Analysis prepared by:

                              MDS Consulting
                       17310 Redhill Avenue, Suite 350
                              Irvine, CA 92614
                                949.251.8821

 ************************** DESCRIPTION OF STUDY **************************
* Tentative Tract No.38330 - J.D.Ranch                                    *
* Predeveloped Condition                                                  *
* 100-year storm                                                          *
 ************************************************************************

  FILE NAME: 90800X.DAT
  TIME/DATE OF STUDY: 21:17 04/12/2022
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  1.960
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.834
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  3.200
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.360
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.4768866
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.4775562
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.360
  SLOPE OF INTENSITY DURATION CURVE = 0.4776
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ==================  ======  ===== ====== ===== =======
  1   18.0     13.0    0.020/0.020/0.020   0.50    2.00 0.0313 0.013 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      1.20 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   915.00
  UPSTREAM ELEVATION(FEET) =    571.70
  DOWNSTREAM ELEVATION(FEET) =    569.00
  ELEVATION DIFFERENCE(FEET) =      2.70
  TC = 0.533*[(  915.00**3)/(     2.70)]**.2 =   26.120
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.023
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .5930
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      7.74
  TOTAL AREA(ACRES) =      6.45   TOTAL RUNOFF(CFS) =      7.74

************************************************************************
  FLOW PROCESS FROM NODE      1.20 TO NODE      1.20 IS CODE =  81
------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
========================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.023
```

```
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6944
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    0.12   SUBAREA RUNOFF(CFS) =    0.17
  TOTAL AREA(ACRES) =        6.6   TOTAL RUNOFF(CFS) =       7.91
  TC(MIN.) =   26.12

****************************************************************************
  FLOW PROCESS FROM NODE      1.20 TO NODE      1.20 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.023
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7379
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    4.57   SUBAREA RUNOFF(CFS) =    6.82
  TOTAL AREA(ACRES) =       11.1   TOTAL RUNOFF(CFS) =      14.73
  TC(MIN.) =   26.12

****************************************************************************
  FLOW PROCESS FROM NODE      1.20 TO NODE      1.90 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    569.00  DOWNSTREAM(FEET) =    563.60
  CHANNEL LENGTH THRU SUBAREA(FEET) =   425.00   CHANNEL SLOPE =  0.0127
  CHANNEL FLOW THRU SUBAREA(CFS) =      14.73
  FLOW VELOCITY(FEET/SEC) =   3.11 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.28   Tc(MIN.) =   28.40
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.90 =    1340.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.90 TO NODE      1.90 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.944
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .5848
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    8.00   SUBAREA RUNOFF(CFS) =    9.10
  TOTAL AREA(ACRES) =       19.1   TOTAL RUNOFF(CFS) =      23.82
  TC(MIN.) =   28.40

****************************************************************************
  FLOW PROCESS FROM NODE      1.90 TO NODE      1.90 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.944
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6880
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    4.10   SUBAREA RUNOFF(CFS) =    5.48
  TOTAL AREA(ACRES) =       23.2   TOTAL RUNOFF(CFS) =      29.31
  TC(MIN.) =   28.40

****************************************************************************
  FLOW PROCESS FROM NODE      1.90 TO NODE      1.90 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.944
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7325
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    2.67   SUBAREA RUNOFF(CFS) =    3.80
  TOTAL AREA(ACRES) =       25.9   TOTAL RUNOFF(CFS) =      33.11
  TC(MIN.) =   28.40
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       25.9  TC(MIN.) =     28.40
  PEAK FLOW RATE(CFS)   =      33.11
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
**************************************************************************
           RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                    (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1269

                          Analysis prepared by:

                              MDS Consulting
                5 Peters Canyon Road, Suite 305, Irvine CA 92606
                              Phone: (949) 251-8821
                        Email: mdsirvine@mdsconsulting.net

 ************************ DESCRIPTION OF STUDY ************************
* Tentative Tract No.38330 - J.D.Ranch                                   *
* Post-developed Condition                                               *
* 10-year storm                                                          *
 **************************************************************************

  FILE NAME: C:\AES2016\HYDROSFT\RATSCX\90800\90800.DAT
  TIME/DATE OF STUDY: 14:39 02/14/2024
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  1.960
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.834
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  3.200
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.360
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.4768866
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.4775562
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =   10.00   1-HOUR INTENSITY(INCH/HOUR) =   0.842
  SLOPE OF INTENSITY DURATION CURVE = 0.4769
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     13.0    0.020/0.020/0.020   0.50    2.00 0.0312 0.013 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
```

OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

```
****************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      1.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   730.00
  UPSTREAM ELEVATION(FEET) =    572.40
  DOWNSTREAM ELEVATION(FEET) =    568.50
  ELEVATION DIFFERENCE(FEET) =      3.90
  TC = 0.393*[(  730.00**3)/(     3.90)]**.2 =   15.622
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.600
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7774
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =      1.90
  TOTAL AREA(ACRES) =      1.53   TOTAL RUNOFF(CFS) =      1.90

****************************************************************************
  FLOW PROCESS FROM NODE      1.10 TO NODE      1.40 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   562.50  DOWNSTREAM(FEET) =   562.30
  FLOW LENGTH(FEET) =    63.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.93
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.90
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =   15.98
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.40 =     793.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.40 TO NODE      1.40 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.98
  RAINFALL INTENSITY(INCH/HR) =   1.58
  TOTAL STREAM AREA(ACRES) =     1.53
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.90

****************************************************************************
  FLOW PROCESS FROM NODE      1.20 TO NODE      1.30 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
```

```
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   858.00
  UPSTREAM ELEVATION(FEET) =    574.30
  DOWNSTREAM ELEVATION(FEET) =    568.40
  ELEVATION DIFFERENCE(FEET) =      5.90
  TC = 0.393*[(  858.00**3)/(     5.90)]**.2 =   15.844
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.590
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7212
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      0.38
  TOTAL AREA(ACRES) =      0.33   TOTAL RUNOFF(CFS) =      0.38

****************************************************************************
  FLOW PROCESS FROM NODE      1.30 TO NODE      1.30 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.590
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7768
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    1.60   SUBAREA RUNOFF(CFS) =    1.98
  TOTAL AREA(ACRES) =        1.9   TOTAL RUNOFF(CFS) =       2.35
  TC(MIN.) =   15.84

****************************************************************************
  FLOW PROCESS FROM NODE      1.30 TO NODE      1.40 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   562.80  DOWNSTREAM(FEET) =   562.30
  FLOW LENGTH(FEET) =    24.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.12
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.35
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =   15.91
  LONGEST FLOWPATH FROM NODE      1.20 TO NODE      1.40 =     882.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.40 TO NODE      1.40 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.91
  RAINFALL INTENSITY(INCH/HR) =   1.59
  TOTAL STREAM AREA(ACRES) =     1.93
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.35
```

```
 ** CONFLUENCE DATA **
 STREAM     RUNOFF        Tc       INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        1.90    15.98        1.583          1.53
     2        2.35    15.91        1.586          1.93

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        4.25    15.91       1.586
     2        4.25    15.98       1.583

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       4.25   Tc(MIN.) =   15.91
 TOTAL AREA(ACRES) =        3.5
 LONGEST FLOWPATH FROM NODE      1.20 TO NODE      1.40 =     882.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      1.40 TO NODE      2.50 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   562.30  DOWNSTREAM(FEET) =   561.90
 FLOW LENGTH(FEET) =    54.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.94
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       4.25
 PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =   16.09
 LONGEST FLOWPATH FROM NODE      1.20 TO NODE      2.50 =     936.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      2.50 TO NODE      2.50 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE      2.00 TO NODE      2.10 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
```

```
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   710.00
  UPSTREAM ELEVATION(FEET) =    575.30
  DOWNSTREAM ELEVATION(FEET) =    569.70
  ELEVATION DIFFERENCE(FEET) =      5.60
  TC = 0.393*[(  710.00**3)/(     5.60)]**.2 =   14.291
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.670
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7265
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      2.30
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      2.30

****************************************************************************
  FLOW PROCESS FROM NODE      2.10 TO NODE      2.40 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   564.00  DOWNSTREAM(FEET) =   562.20
  FLOW LENGTH(FEET) =   356.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.65
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.30
  PIPE TRAVEL TIME(MIN.) =   1.62    Tc(MIN.) =   15.92
  LONGEST FLOWPATH FROM NODE      2.00 TO NODE      2.40 =    1066.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      2.40 TO NODE      2.40 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.92
  RAINFALL INTENSITY(INCH/HR) =   1.59
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.30

****************************************************************************
  FLOW PROCESS FROM NODE      2.20 TO NODE      2.30 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   735.00
  UPSTREAM ELEVATION(FEET) =    572.80
  DOWNSTREAM ELEVATION(FEET) =    568.00
  ELEVATION DIFFERENCE(FEET) =      4.80
```

```
 TC = 0.393*[(  735.00**3)/(     4.80)]**.2 =   15.048
   10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.629
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7239
 SOIL CLASSIFICATION IS "B"
 SUBAREA RUNOFF(CFS) =      2.36
 TOTAL AREA(ACRES) =      2.00   TOTAL RUNOFF(CFS) =      2.36

****************************************************************************
 FLOW PROCESS FROM NODE      2.30 TO NODE      2.40 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   563.00  DOWNSTREAM(FEET) =   562.20
 FLOW LENGTH(FEET) =    24.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.23
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       2.36
 PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   15.10
 LONGEST FLOWPATH FROM NODE      2.20 TO NODE      2.40 =     759.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      2.40 TO NODE      2.40 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   15.10
 RAINFALL INTENSITY(INCH/HR) =   1.63
 TOTAL STREAM AREA(ACRES) =     2.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.36

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        2.30    15.92        1.586          1.90
     2        2.36    15.10        1.626          2.00

 ********************************WARNING*************************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
```

```
     1        4.55    15.10       1.626
     2        4.61    15.92       1.586

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       4.55   Tc(MIN.) =   15.10
  TOTAL AREA(ACRES) =        3.9
  LONGEST FLOWPATH FROM NODE      2.00 TO NODE      2.40 =    1066.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      2.40 TO NODE      2.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   562.20  DOWNSTREAM(FEET) =   561.90
  FLOW LENGTH(FEET) =    41.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.00
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.55
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =   15.24
  LONGEST FLOWPATH FROM NODE      2.00 TO NODE      2.50 =    1107.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      2.50 TO NODE      2.50 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        4.55    15.24       1.619        3.90
  LONGEST FLOWPATH FROM NODE      2.00 TO NODE      2.50 =    1107.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        4.25    16.09       1.578        3.46
  LONGEST FLOWPATH FROM NODE      1.20 TO NODE      2.50 =     936.00 FEET.

 ****************************WARNING*****************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1       8.57      15.24       1.619
     2       8.68      16.09       1.578
```

```
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       8.57   Tc(MIN.) =   15.24
 TOTAL AREA(ACRES) =        7.4

****************************************************************************
 FLOW PROCESS FROM NODE      2.50 TO NODE      2.50 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE      2.50 TO NODE      2.80 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   561.90  DOWNSTREAM(FEET) =   561.20
 FLOW LENGTH(FEET) =   238.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.14
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       8.57
 PIPE TRAVEL TIME(MIN.) =   0.96    Tc(MIN.) =   16.20
 LONGEST FLOWPATH FROM NODE      2.00 TO NODE      2.80 =    1345.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      2.80 TO NODE      2.80 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   16.20
 RAINFALL INTENSITY(INCH/HR) =   1.57
 TOTAL STREAM AREA(ACRES) =     7.36
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.57

****************************************************************************
 FLOW PROCESS FROM NODE      2.60 TO NODE      2.70 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   785.00
 UPSTREAM ELEVATION(FEET) =    571.90
 DOWNSTREAM ELEVATION(FEET) =    566.80
 ELEVATION DIFFERENCE(FEET) =      5.10
 TC = 0.393*[(  785.00**3)/(     5.10)]**.2 =   15.465
   10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.608
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7225
 SOIL CLASSIFICATION IS "B"
 SUBAREA RUNOFF(CFS) =      1.00
```

```
 TOTAL AREA(ACRES) =      0.86   TOTAL RUNOFF(CFS) =      1.00

****************************************************************************
 FLOW PROCESS FROM NODE      2.70 TO NODE      2.70 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.608
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7779
 SOIL CLASSIFICATION IS "C"
 SUBAREA AREA(ACRES) =    0.63   SUBAREA RUNOFF(CFS) =    0.79
 TOTAL AREA(ACRES) =        1.5   TOTAL RUNOFF(CFS) =       1.79
 TC(MIN.) =   15.47

****************************************************************************
 FLOW PROCESS FROM NODE      2.70 TO NODE      2.80 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   561.50  DOWNSTREAM(FEET) =   561.20
 FLOW LENGTH(FEET) =    24.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.72
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       1.79
 PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   15.55
 LONGEST FLOWPATH FROM NODE      2.60 TO NODE      2.80 =     809.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      2.80 TO NODE      2.80 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   15.55
 RAINFALL INTENSITY(INCH/HR) =   1.60
 TOTAL STREAM AREA(ACRES) =     1.49
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.79

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        8.57    16.20        1.573          7.36
     2        1.79    15.55        1.604          1.49

 ********************************WARNING*************************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************
```

```
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       10.01    15.55       1.604
      2       10.32    16.20       1.573

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      10.32   Tc(MIN.) =   16.20
  TOTAL AREA(ACRES) =        8.9
  LONGEST FLOWPATH FROM NODE      2.00 TO NODE      2.80 =    1345.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      2.80 TO NODE      3.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   561.20  DOWNSTREAM(FEET) =   561.00
  FLOW LENGTH(FEET) =    53.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.75
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.32
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =   16.38
  LONGEST FLOWPATH FROM NODE      2.00 TO NODE      3.50 =    1398.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      3.50 TO NODE      3.50 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      3.00 TO NODE      3.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   682.00
  UPSTREAM ELEVATION(FEET) =    572.20
  DOWNSTREAM ELEVATION(FEET) =    567.60
  ELEVATION DIFFERENCE(FEET) =      4.60
  TC = 0.393*[(  682.00**3)/(     4.60)]**.2 =   14.510
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.658
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7257
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      2.13
  TOTAL AREA(ACRES) =      1.77   TOTAL RUNOFF(CFS) =      2.13
```

```
****************************************************************************
  FLOW PROCESS FROM NODE      3.10 TO NODE      3.40 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   562.20  DOWNSTREAM(FEET) =   561.20
  FLOW LENGTH(FEET) =   191.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.62
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.13
  PIPE TRAVEL TIME(MIN.) =   0.88    Tc(MIN.) =   15.39
  LONGEST FLOWPATH FROM NODE      3.00 TO NODE      3.40 =     873.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      3.40 TO NODE      3.40 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.39
  RAINFALL INTENSITY(INCH/HR) =   1.61
  TOTAL STREAM AREA(ACRES) =     1.77
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.13

****************************************************************************
  FLOW PROCESS FROM NODE      3.20 TO NODE      3.30 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   735.00
  UPSTREAM ELEVATION(FEET) =    571.50
  DOWNSTREAM ELEVATION(FEET) =    566.80
  ELEVATION DIFFERENCE(FEET) =      4.70
  TC = 0.393*[(  735.00**3)/(     4.70)]**.2 =   15.111
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.626
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7237
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      1.36
  TOTAL AREA(ACRES) =      1.16   TOTAL RUNOFF(CFS) =      1.36

****************************************************************************
  FLOW PROCESS FROM NODE      3.30 TO NODE      3.30 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.626
```

```
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .8034
 SOIL CLASSIFICATION IS "D"
 SUBAREA AREA(ACRES) =    0.84   SUBAREA RUNOFF(CFS) =    1.10
 TOTAL AREA(ACRES) =        2.0   TOTAL RUNOFF(CFS) =       2.46
 TC(MIN.) =   15.11

****************************************************************************
 FLOW PROCESS FROM NODE      3.30 TO NODE      3.40 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   561.40  DOWNSTREAM(FEET) =   561.20
 FLOW LENGTH(FEET) =    24.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.46
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       2.46
 PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   15.20
 LONGEST FLOWPATH FROM NODE      3.20 TO NODE      3.40 =     759.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      3.40 TO NODE      3.40 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   15.20
 RAINFALL INTENSITY(INCH/HR) =   1.62
 TOTAL STREAM AREA(ACRES) =     2.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.46

 ** CONFLUENCE DATA **
 STREAM     RUNOFF        Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        2.13    15.39        1.612          1.77
     2        2.46    15.20        1.621          2.00

 ********************************WARNING*************************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        4.57    15.20       1.621
```

```
     2        4.58    15.39       1.612

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       4.57   Tc(MIN.) =   15.20
  TOTAL AREA(ACRES) =        3.8
  LONGEST FLOWPATH FROM NODE      3.00 TO NODE      3.40 =     873.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      3.40 TO NODE      3.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   561.20  DOWNSTREAM(FEET) =   561.00
  FLOW LENGTH(FEET) =    41.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.29
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.57
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =   15.36
  LONGEST FLOWPATH FROM NODE      3.00 TO NODE      3.50 =     914.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      3.50 TO NODE      3.50 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        4.57    15.36       1.613        3.77
  LONGEST FLOWPATH FROM NODE      3.00 TO NODE      3.50 =     914.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       10.32    16.38       1.564        8.85
  LONGEST FLOWPATH FROM NODE      2.00 TO NODE      3.50 =    1398.00 FEET.

 ****************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ********************************************************************

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc       INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      14.24      15.36        1.613
      2      14.75      16.38        1.564

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      14.75   Tc(MIN.) =   16.38
```

```
 TOTAL AREA(ACRES) =       12.6

****************************************************************************
 FLOW PROCESS FROM NODE      3.50 TO NODE      3.50 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE      3.50 TO NODE      4.40 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   561.00  DOWNSTREAM(FEET) =   560.40
 FLOW LENGTH(FEET) =   208.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.62
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      14.75
 PIPE TRAVEL TIME(MIN.) =   0.75    Tc(MIN.) =   17.13
 LONGEST FLOWPATH FROM NODE      2.00 TO NODE      4.40 =    1606.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      4.40 TO NODE      4.40 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   17.13
 RAINFALL INTENSITY(INCH/HR) =   1.53
 TOTAL STREAM AREA(ACRES) =    12.62
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.75

****************************************************************************
 FLOW PROCESS FROM NODE      4.00 TO NODE      4.10 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   588.00
 UPSTREAM ELEVATION(FEET) =    569.80
 DOWNSTREAM ELEVATION(FEET) =    565.50
 ELEVATION DIFFERENCE(FEET) =      4.30
 TC = 0.393*[(  588.00**3)/(     4.30)]**.2 =   13.455
   10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.718
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7296
 SOIL CLASSIFICATION IS "B"
 SUBAREA RUNOFF(CFS) =      1.05
 TOTAL AREA(ACRES) =      0.84   TOTAL RUNOFF(CFS) =      1.05
```

```
****************************************************************************
  FLOW PROCESS FROM NODE      4.10 TO NODE      4.10 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.718
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7296
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    0.81   SUBAREA RUNOFF(CFS) =    1.02
  TOTAL AREA(ACRES) =        1.6   TOTAL RUNOFF(CFS) =       2.07
  TC(MIN.) =   13.45

****************************************************************************
  FLOW PROCESS FROM NODE      4.10 TO NODE      4.40 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   561.00  DOWNSTREAM(FEET) =   560.40
  FLOW LENGTH(FEET) =    24.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.29
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.07
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   13.52
  LONGEST FLOWPATH FROM NODE      4.00 TO NODE      4.40 =     612.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      4.40 TO NODE      4.40 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   13.52
  RAINFALL INTENSITY(INCH/HR) =   1.71
  TOTAL STREAM AREA(ACRES) =     1.65
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.07

****************************************************************************
  FLOW PROCESS FROM NODE      4.20 TO NODE      4.30 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   768.00
  UPSTREAM ELEVATION(FEET) =    570.50
  DOWNSTREAM ELEVATION(FEET) =    565.50
  ELEVATION DIFFERENCE(FEET) =      5.00
  TC = 0.393*[(  768.00**3)/(     5.00)]**.2 =   15.324
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.615
```

```
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7229
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      1.68
  TOTAL AREA(ACRES) =      1.44   TOTAL RUNOFF(CFS) =      1.68

****************************************************************************
  FLOW PROCESS FROM NODE      4.30 TO NODE      4.30 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.615
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7782
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    0.53   SUBAREA RUNOFF(CFS) =    0.67
  TOTAL AREA(ACRES) =        2.0   TOTAL RUNOFF(CFS) =       2.35
  TC(MIN.) =   15.32

****************************************************************************
  FLOW PROCESS FROM NODE      4.30 TO NODE      4.30 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.615
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7229
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    0.40   SUBAREA RUNOFF(CFS) =    0.47
  TOTAL AREA(ACRES) =        2.4   TOTAL RUNOFF(CFS) =       2.81
  TC(MIN.) =   15.32

****************************************************************************
  FLOW PROCESS FROM NODE      4.30 TO NODE      4.40 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   561.00  DOWNSTREAM(FEET) =   560.40
  FLOW LENGTH(FEET) =    24.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.87
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.81
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   15.38
  LONGEST FLOWPATH FROM NODE      4.20 TO NODE      4.40 =     792.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      4.40 TO NODE      4.40 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.38
```

```
 RAINFALL INTENSITY(INCH/HR) =   1.61
 TOTAL STREAM AREA(ACRES) =     2.37
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.81

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       14.75    17.13        1.531         12.62
     2        2.07    13.52        1.715          1.65
     3        2.81    15.38        1.612          2.37

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       16.18    13.52       1.715
     2       18.00    15.38       1.612
     3       19.27    17.13       1.531

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      19.27   Tc(MIN.) =   17.13
 TOTAL AREA(ACRES) =       16.6
 LONGEST FLOWPATH FROM NODE      2.00 TO NODE      4.40 =    1606.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      4.40 TO NODE      4.50 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   560.40  DOWNSTREAM(FEET) =   560.00
 FLOW LENGTH(FEET) =   122.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.23
 ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      19.27
 PIPE TRAVEL TIME(MIN.) =   0.39    Tc(MIN.) =   17.52
 LONGEST FLOWPATH FROM NODE      2.00 TO NODE      4.50 =    1728.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      4.50 TO NODE      4.50 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
```

```
 FLOW PROCESS FROM NODE      5.00 TO NODE      5.10 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   665.00
 UPSTREAM ELEVATION(FEET) =    575.30
 DOWNSTREAM ELEVATION(FEET) =    571.00
 ELEVATION DIFFERENCE(FEET) =      4.30
 TC = 0.393*[(  665.00**3)/(     4.30)]**.2 =   14.486
   10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.659
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7258
 SOIL CLASSIFICATION IS "B"
 SUBAREA RUNOFF(CFS) =      2.36
 TOTAL AREA(ACRES) =      1.96   TOTAL RUNOFF(CFS) =      2.36

****************************************************************************
 FLOW PROCESS FROM NODE      5.10 TO NODE      5.40 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   565.00  DOWNSTREAM(FEET) =   562.60
 FLOW LENGTH(FEET) =   462.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   3.71
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       2.36
 PIPE TRAVEL TIME(MIN.) =   2.07    Tc(MIN.) =   16.56
 LONGEST FLOWPATH FROM NODE      5.00 TO NODE      5.40 =    1127.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      5.40 TO NODE      5.40 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   16.56
 RAINFALL INTENSITY(INCH/HR) =   1.56
 TOTAL STREAM AREA(ACRES) =     1.96
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.36

****************************************************************************
 FLOW PROCESS FROM NODE      5.20 TO NODE      5.30 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   655.00
 UPSTREAM ELEVATION(FEET) =    572.90
 DOWNSTREAM ELEVATION(FEET) =    568.10
 ELEVATION DIFFERENCE(FEET) =      4.80
 TC = 0.393*[(  655.00**3)/(     4.80)]**.2 =   14.043
   10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.684
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .8060
 SOIL CLASSIFICATION IS "D"
 SUBAREA RUNOFF(CFS) =      2.78
 TOTAL AREA(ACRES) =      2.05   TOTAL RUNOFF(CFS) =      2.78

****************************************************************************
 FLOW PROCESS FROM NODE      5.30 TO NODE      5.40 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   563.10  DOWNSTREAM(FEET) =   562.60
 FLOW LENGTH(FEET) =    24.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.41
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       2.78
 PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   14.10
 LONGEST FLOWPATH FROM NODE      5.20 TO NODE      5.40 =     679.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      5.40 TO NODE      5.40 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   14.10
 RAINFALL INTENSITY(INCH/HR) =   1.68
 TOTAL STREAM AREA(ACRES) =     2.05
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.78

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        2.36    16.56        1.556          1.96
     2        2.78    14.10        1.680          2.05

 ********************************WARNING*********************************
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 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.
```

```
  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        4.79    14.10       1.680
      2        4.94    16.56       1.556

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       4.79   Tc(MIN.) =   14.10
  TOTAL AREA(ACRES) =        4.0
  LONGEST FLOWPATH FROM NODE      5.00 TO NODE      5.40 =    1127.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      5.40 TO NODE      5.90 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   562.60  DOWNSTREAM(FEET) =   561.00
  FLOW LENGTH(FEET) =   325.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.35
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.79
  PIPE TRAVEL TIME(MIN.) =   1.24    Tc(MIN.) =   15.35
  LONGEST FLOWPATH FROM NODE      5.00 TO NODE      5.90 =    1452.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      5.90 TO NODE      5.90 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.35
  RAINFALL INTENSITY(INCH/HR) =   1.61
  TOTAL STREAM AREA(ACRES) =     4.01
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.79

****************************************************************************
  FLOW PROCESS FROM NODE      5.50 TO NODE      5.60 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS SINGLE FAMILY(1/2 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   663.00
  UPSTREAM ELEVATION(FEET) =    572.30
  DOWNSTREAM ELEVATION(FEET) =    566.50
  ELEVATION DIFFERENCE(FEET) =      5.80
  TC = 0.422*[(  663.00**3)/(     5.80)]**.2 =   14.643
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.650
  SINGLE-FAMILY(1/2 ACRE LOT) RUNOFF COEFFICIENT = .7854
```

```
  SOIL CLASSIFICATION IS "D"
  SUBAREA RUNOFF(CFS) =      1.94
  TOTAL AREA(ACRES) =      1.50   TOTAL RUNOFF(CFS) =      1.94

****************************************************************************
  FLOW PROCESS FROM NODE      5.60 TO NODE      5.90 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   561.40  DOWNSTREAM(FEET) =   561.00
  FLOW LENGTH(FEET) =    24.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.35
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.94
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =   14.72
  LONGEST FLOWPATH FROM NODE      5.50 TO NODE      5.90 =     687.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      5.90 TO NODE      5.90 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   14.72
  RAINFALL INTENSITY(INCH/HR) =   1.65
  TOTAL STREAM AREA(ACRES) =     1.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.94

****************************************************************************
  FLOW PROCESS FROM NODE      5.70 TO NODE      5.80 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   680.00
  UPSTREAM ELEVATION(FEET) =    571.00
  DOWNSTREAM ELEVATION(FEET) =    566.50
  ELEVATION DIFFERENCE(FEET) =      4.50
  TC = 0.393*[(  680.00**3)/(     4.50)]**.2 =   14.548
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.656
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .8048
  SOIL CLASSIFICATION IS "D"
  SUBAREA RUNOFF(CFS) =      2.22
  TOTAL AREA(ACRES) =      1.67   TOTAL RUNOFF(CFS) =      2.22

****************************************************************************
  FLOW PROCESS FROM NODE      5.80 TO NODE      5.80 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.656
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7256
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    0.12   SUBAREA RUNOFF(CFS) =    0.14
  TOTAL AREA(ACRES) =        1.8   TOTAL RUNOFF(CFS) =       2.37
  TC(MIN.) =   14.55

****************************************************************************
  FLOW PROCESS FROM NODE      5.80 TO NODE      5.90 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   561.40  DOWNSTREAM(FEET) =   561.00
  FLOW LENGTH(FEET) =    24.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.66
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.37
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =   14.62
  LONGEST FLOWPATH FROM NODE      5.70 TO NODE      5.90 =     704.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      5.90 TO NODE      5.90 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   14.62
  RAINFALL INTENSITY(INCH/HR) =   1.65
  TOTAL STREAM AREA(ACRES) =     1.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.37

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.79    15.35        1.614          4.01
      2        1.94    14.72        1.646          1.50
      3        2.37    14.62        1.652          1.79

 **********************************WARNING***********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.
```

```
 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        8.86    14.62       1.652
     2        8.90    14.72       1.646
     3        9.01    15.35       1.614

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       9.01   Tc(MIN.) =   15.35
 TOTAL AREA(ACRES) =        7.3
 LONGEST FLOWPATH FROM NODE      5.00 TO NODE      5.90 =    1452.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      5.90 TO NODE      4.50 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   561.00  DOWNSTREAM(FEET) =   560.00
 FLOW LENGTH(FEET) =   195.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.13
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       9.01
 PIPE TRAVEL TIME(MIN.) =   0.63    Tc(MIN.) =   15.98
 LONGEST FLOWPATH FROM NODE      5.00 TO NODE      4.50 =    1647.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      4.50 TO NODE      4.50 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        9.01    15.98       1.583        7.30
 LONGEST FLOWPATH FROM NODE      5.00 TO NODE      4.50 =    1647.00 FEET.

 ** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1       19.27    17.52       1.515       16.64
 LONGEST FLOWPATH FROM NODE      2.00 TO NODE      4.50 =    1728.00 FEET.

 ****************************WARNING*************************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 ** PEAK FLOW RATE TABLE **
 STREAM    RUNOFF       Tc      INTENSITY
 NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
```

```
      1      26.59      15.98        1.583
      2      27.90      17.52        1.515

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      27.90   Tc(MIN.) =   17.52
  TOTAL AREA(ACRES) =       23.9

****************************************************************************
  FLOW PROCESS FROM NODE      4.50 TO NODE      4.50 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      4.50 TO NODE      6.20 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   560.00  DOWNSTREAM(FEET) =   559.20
  FLOW LENGTH(FEET) =   130.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  22.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.22
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      27.90
  PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =   17.82
  LONGEST FLOWPATH FROM NODE      2.00 TO NODE      6.20 =    1858.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      6.20 TO NODE      6.20 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   17.82
  RAINFALL INTENSITY(INCH/HR) =   1.50
  TOTAL STREAM AREA(ACRES) =    23.94
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     27.90

****************************************************************************
  FLOW PROCESS FROM NODE      6.00 TO NODE      6.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   344.00
  UPSTREAM ELEVATION(FEET) =    568.00
  DOWNSTREAM ELEVATION(FEET) =    565.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  TC = 0.393*[(  344.00**3)/(     3.00)]**.2 =   10.482
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.936
```

```
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7420
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      0.43
  TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      0.43

****************************************************************************
  FLOW PROCESS FROM NODE      6.10 TO NODE      6.10 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.936
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .8160
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    0.68   SUBAREA RUNOFF(CFS) =    1.07
  TOTAL AREA(ACRES) =        1.0   TOTAL RUNOFF(CFS) =       1.50
  TC(MIN.) =   10.48

****************************************************************************
  FLOW PROCESS FROM NODE      6.10 TO NODE      6.20 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   560.00  DOWNSTREAM(FEET) =   559.20
  FLOW LENGTH(FEET) =    22.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   3.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.54
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.50
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   10.54
  LONGEST FLOWPATH FROM NODE      6.00 TO NODE      6.20 =     366.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      6.20 TO NODE      6.20 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.54
  RAINFALL INTENSITY(INCH/HR) =   1.93
  TOTAL STREAM AREA(ACRES) =     0.98
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.50

  ** CONFLUENCE DATA **
  STREAM     RUNOFF        Tc       INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       27.90    17.82        1.503         23.94
      2        1.50    10.54        1.931          0.98

 ********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
```

```
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
****************************************************************************

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       18.00    10.54       1.931
     2       29.07    17.82       1.503

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      29.07   Tc(MIN.) =   17.82
 TOTAL AREA(ACRES) =       24.9
 LONGEST FLOWPATH FROM NODE      2.00 TO NODE      6.20 =    1858.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      6.20 TO NODE      6.30 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   559.20  DOWNSTREAM(FEET) =   559.10
 FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  33.0 INCH PIPE IS  21.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.96
 ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      29.07
 PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   17.87
 LONGEST FLOWPATH FROM NODE      2.00 TO NODE      6.30 =    1877.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      6.30 TO NODE      6.30 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.501
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8630
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    0.06   SUBAREA RUNOFF(CFS) =    0.08
 TOTAL AREA(ACRES) =       25.0   TOTAL RUNOFF(CFS) =      29.14
 TC(MIN.) =   17.87

****************************************************************************
 FLOW PROCESS FROM NODE      6.30 TO NODE      6.30 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.501
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8794
 SOIL CLASSIFICATION IS "D"
 SUBAREA AREA(ACRES) =    0.04   SUBAREA RUNOFF(CFS) =    0.05
```

```
 TOTAL AREA(ACRES) =       25.0   TOTAL RUNOFF(CFS) =      29.20
 TC(MIN.) =   17.87

****************************************************************************
 FLOW PROCESS FROM NODE      6.30 TO NODE      6.40 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   559.10  DOWNSTREAM(FEET) =   558.90
 FLOW LENGTH(FEET) =    18.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   9.08
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      29.20
 PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =   17.90
 LONGEST FLOWPATH FROM NODE      2.00 TO NODE      6.40 =    1895.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      6.40 TO NODE      6.40 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.500
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .5298
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    0.47   SUBAREA RUNOFF(CFS) =    0.37
 TOTAL AREA(ACRES) =       25.5   TOTAL RUNOFF(CFS) =      29.57
 TC(MIN.) =   17.90

****************************************************************************
 FLOW PROCESS FROM NODE      6.40 TO NODE      6.40 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.500
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6942
 SOIL CLASSIFICATION IS "D"
 SUBAREA AREA(ACRES) =    0.42   SUBAREA RUNOFF(CFS) =    0.44
 TOTAL AREA(ACRES) =       25.9   TOTAL RUNOFF(CFS) =      30.01
 TC(MIN.) =   17.90
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)     =       25.9  TC(MIN.) =     17.90
 PEAK FLOW RATE(CFS)   =      30.01
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

```
**************************************************************************
           RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                    (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1269

                          Analysis prepared by:

                              MDS Consulting
                5 Peters Canyon Road, Suite 305, Irvine CA 92606
                              Phone: (949) 251-8821
                        Email: mdsirvine@mdsconsulting.net

 ************************ DESCRIPTION OF STUDY ************************
* Tentative Tract No.38330 - J.D. Ranch                                  *
* Post-developed Condition                                               *
* 100-year storm                                                         *
 **************************************************************************

  FILE NAME: C:\AES2016\HYDROSFT\RATSCX\90800\90800.DAT
  TIME/DATE OF STUDY: 15:34 02/14/2024
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  1.960
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.834
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  3.200
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.360
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.4768866
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.4775562
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.360
  SLOPE OF INTENSITY DURATION CURVE = 0.4776
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     13.0    0.020/0.020/0.020   0.50    2.00 0.0312 0.013 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
```

OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

```
****************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      1.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   730.00
  UPSTREAM ELEVATION(FEET) =    572.40
  DOWNSTREAM ELEVATION(FEET) =    568.50
  ELEVATION DIFFERENCE(FEET) =      3.90
  TC = 0.393*[(  730.00**3)/(     3.90)]**.2 =   15.622
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.586
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .8154
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =      3.23
  TOTAL AREA(ACRES) =      1.53   TOTAL RUNOFF(CFS) =      3.23

****************************************************************************
  FLOW PROCESS FROM NODE      1.10 TO NODE      1.40 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   562.50  DOWNSTREAM(FEET) =   562.30
  FLOW LENGTH(FEET) =    63.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.35
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.23
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =   15.93
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.40 =     793.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.40 TO NODE      1.40 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.93
  RAINFALL INTENSITY(INCH/HR) =   2.56
  TOTAL STREAM AREA(ACRES) =     1.53
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.23

****************************************************************************
  FLOW PROCESS FROM NODE      1.20 TO NODE      1.30 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
```

```
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   858.00
  UPSTREAM ELEVATION(FEET) =    574.30
  DOWNSTREAM ELEVATION(FEET) =    568.40
  ELEVATION DIFFERENCE(FEET) =      5.90
  TC = 0.393*[(  858.00**3)/(     5.90)]**.2 =   15.844
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.569
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7696
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      0.65
  TOTAL AREA(ACRES) =      0.33   TOTAL RUNOFF(CFS) =      0.65

****************************************************************************
  FLOW PROCESS FROM NODE      1.30 TO NODE      1.30 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.569
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .8149
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    1.60   SUBAREA RUNOFF(CFS) =    3.35
  TOTAL AREA(ACRES) =        1.9   TOTAL RUNOFF(CFS) =       4.00
  TC(MIN.) =   15.84

****************************************************************************
  FLOW PROCESS FROM NODE      1.30 TO NODE      1.40 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   562.80  DOWNSTREAM(FEET) =   562.30
  FLOW LENGTH(FEET) =    24.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.11
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.00
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   15.90
  LONGEST FLOWPATH FROM NODE      1.20 TO NODE      1.40 =     882.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.40 TO NODE      1.40 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.90
  RAINFALL INTENSITY(INCH/HR) =   2.56
  TOTAL STREAM AREA(ACRES) =     1.93
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.00
```

```
 ** CONFLUENCE DATA **
 STREAM     RUNOFF        Tc       INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        3.23    15.93        2.562          1.53
     2        4.00    15.90        2.564          1.93

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        7.22    15.90       2.564
     2        7.22    15.93       2.562

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       7.22   Tc(MIN.) =   15.90
 TOTAL AREA(ACRES) =        3.5
 LONGEST FLOWPATH FROM NODE      1.20 TO NODE      1.40 =     882.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      1.40 TO NODE      2.50 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   562.30  DOWNSTREAM(FEET) =   561.90
 FLOW LENGTH(FEET) =    54.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.56
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       7.22
 PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =   16.06
 LONGEST FLOWPATH FROM NODE      1.20 TO NODE      2.50 =     936.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      2.50 TO NODE      2.50 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE      2.00 TO NODE      2.10 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
```

```
        DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   710.00
  UPSTREAM ELEVATION(FEET) =    575.30
  DOWNSTREAM ELEVATION(FEET) =    569.70
  ELEVATION DIFFERENCE(FEET) =      5.60
  TC = 0.393*[(  710.00**3)/(     5.60)]**.2 =   14.291
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.698
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7741
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      3.97
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =      3.97

****************************************************************************
  FLOW PROCESS FROM NODE      2.10 TO NODE      2.40 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   564.00  DOWNSTREAM(FEET) =   562.20
  FLOW LENGTH(FEET) =   356.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.21
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.97
  PIPE TRAVEL TIME(MIN.) =   1.41    Tc(MIN.) =   15.70
  LONGEST FLOWPATH FROM NODE      2.00 TO NODE      2.40 =    1066.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      2.40 TO NODE      2.40 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.70
  RAINFALL INTENSITY(INCH/HR) =   2.58
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.97

****************************************************************************
  FLOW PROCESS FROM NODE      2.20 TO NODE      2.30 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   735.00
  UPSTREAM ELEVATION(FEET) =    572.80
  DOWNSTREAM ELEVATION(FEET) =    568.00
  ELEVATION DIFFERENCE(FEET) =      4.80
  TC = 0.393*[(  735.00**3)/(     4.80)]**.2 =   15.048
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.633
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7719
 SOIL CLASSIFICATION IS "B"
 SUBAREA RUNOFF(CFS) =      4.06
 TOTAL AREA(ACRES) =      2.00   TOTAL RUNOFF(CFS) =      4.06

****************************************************************************
 FLOW PROCESS FROM NODE      2.30 TO NODE      2.40 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   563.00  DOWNSTREAM(FEET) =   562.20
 FLOW LENGTH(FEET) =    24.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   8.46
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       4.06
 PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   15.10
 LONGEST FLOWPATH FROM NODE      2.20 TO NODE      2.40 =     759.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      2.40 TO NODE      2.40 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   15.10
 RAINFALL INTENSITY(INCH/HR) =   2.63
 TOTAL STREAM AREA(ACRES) =     2.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.06

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        3.97    15.70        2.580          1.90
     2        4.06    15.10        2.629          2.00

 ********************************WARNING*************************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        7.88    15.10       2.629
```

```
     2        7.96    15.70       2.580

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       7.88   Tc(MIN.) =   15.10
  TOTAL AREA(ACRES) =        3.9
  LONGEST FLOWPATH FROM NODE      2.00 TO NODE      2.40 =    1066.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      2.40 TO NODE      2.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   562.20  DOWNSTREAM(FEET) =   561.90
  FLOW LENGTH(FEET) =    41.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.61
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.88
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   15.22
  LONGEST FLOWPATH FROM NODE      2.00 TO NODE      2.50 =    1107.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      2.50 TO NODE      2.50 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        7.88    15.22       2.619        3.90
  LONGEST FLOWPATH FROM NODE      2.00 TO NODE      2.50 =    1107.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1        7.22    16.06       2.552        3.46
  LONGEST FLOWPATH FROM NODE      1.20 TO NODE      2.50 =     936.00 FEET.

 ****************************WARNING*************************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc       INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      14.72      15.22        2.619
      2      14.90      16.06        2.552

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      14.72   Tc(MIN.) =   15.22
```

```
 TOTAL AREA(ACRES) =        7.4

****************************************************************************
 FLOW PROCESS FROM NODE      2.50 TO NODE      2.50 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE      2.50 TO NODE      2.80 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   561.90  DOWNSTREAM(FEET) =   561.20
 FLOW LENGTH(FEET) =   238.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.66
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      14.72
 PIPE TRAVEL TIME(MIN.) =   0.85    Tc(MIN.) =   16.07
 LONGEST FLOWPATH FROM NODE      2.00 TO NODE      2.80 =    1345.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      2.80 TO NODE      2.80 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   16.07
 RAINFALL INTENSITY(INCH/HR) =   2.55
 TOTAL STREAM AREA(ACRES) =     7.36
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.72

****************************************************************************
 FLOW PROCESS FROM NODE      2.60 TO NODE      2.70 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   785.00
 UPSTREAM ELEVATION(FEET) =    571.90
 DOWNSTREAM ELEVATION(FEET) =    566.80
 ELEVATION DIFFERENCE(FEET) =      5.10
 TC = 0.393*[(  785.00**3)/(     5.10)]**.2 =   15.465
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.598
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7707
 SOIL CLASSIFICATION IS "B"
 SUBAREA RUNOFF(CFS) =      1.72
 TOTAL AREA(ACRES) =      0.86   TOTAL RUNOFF(CFS) =      1.72
```

```
**************************************************************************
 FLOW PROCESS FROM NODE      2.70 TO NODE      2.70 IS CODE =  81
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.598
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .8157
 SOIL CLASSIFICATION IS "C"
 SUBAREA AREA(ACRES) =    0.63   SUBAREA RUNOFF(CFS) =    1.34
 TOTAL AREA(ACRES) =        1.5   TOTAL RUNOFF(CFS) =       3.06
 TC(MIN.) =   15.47

**************************************************************************
 FLOW PROCESS FROM NODE      2.70 TO NODE      2.80 IS CODE =  31
--------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   561.50  DOWNSTREAM(FEET) =   561.20
 FLOW LENGTH(FEET) =    24.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.48
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       3.06
 PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =   15.54
 LONGEST FLOWPATH FROM NODE      2.60 TO NODE      2.80 =     809.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE      2.80 TO NODE      2.80 IS CODE =   1
--------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==========================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   15.54
 RAINFALL INTENSITY(INCH/HR) =   2.59
 TOTAL STREAM AREA(ACRES) =     1.49
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.06

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       14.72    16.07        2.551          7.36
     2        3.06    15.54        2.593          1.49

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
```

```
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       17.29    15.54       2.593
     2       17.73    16.07       2.551

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      17.73   Tc(MIN.) =   16.07
 TOTAL AREA(ACRES) =        8.9
 LONGEST FLOWPATH FROM NODE      2.00 TO NODE      2.80 =    1345.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      2.80 TO NODE      3.50 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   561.20  DOWNSTREAM(FEET) =   561.00
 FLOW LENGTH(FEET) =    53.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  27.0 INCH PIPE IS  21.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.31
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      17.73
 PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   16.23
 LONGEST FLOWPATH FROM NODE      2.00 TO NODE      3.50 =    1398.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      3.50 TO NODE      3.50 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE      3.00 TO NODE      3.10 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   682.00
 UPSTREAM ELEVATION(FEET) =    572.20
 DOWNSTREAM ELEVATION(FEET) =    567.60
 ELEVATION DIFFERENCE(FEET) =      4.60
 TC = 0.393*[(  682.00**3)/(     4.60)]**.2 =   14.510
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.679
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7735
 SOIL CLASSIFICATION IS "B"
 SUBAREA RUNOFF(CFS) =      3.67
 TOTAL AREA(ACRES) =      1.77   TOTAL RUNOFF(CFS) =      3.67

****************************************************************************
```

```
 FLOW PROCESS FROM NODE      3.10 TO NODE      3.40 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   562.20  DOWNSTREAM(FEET) =   561.20
 FLOW LENGTH(FEET) =   191.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.18
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       3.67
 PIPE TRAVEL TIME(MIN.) =   0.76    Tc(MIN.) =   15.27
 LONGEST FLOWPATH FROM NODE      3.00 TO NODE      3.40 =     873.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      3.40 TO NODE      3.40 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   15.27
 RAINFALL INTENSITY(INCH/HR) =   2.61
 TOTAL STREAM AREA(ACRES) =     1.77
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.67

****************************************************************************
 FLOW PROCESS FROM NODE      3.20 TO NODE      3.30 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   735.00
 UPSTREAM ELEVATION(FEET) =    571.50
 DOWNSTREAM ELEVATION(FEET) =    566.80
 ELEVATION DIFFERENCE(FEET) =      4.70
 TC = 0.393*[(  735.00**3)/(     4.70)]**.2 =   15.111
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.627
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7717
 SOIL CLASSIFICATION IS "B"
 SUBAREA RUNOFF(CFS) =      2.35
 TOTAL AREA(ACRES) =      1.16   TOTAL RUNOFF(CFS) =      2.35

****************************************************************************
 FLOW PROCESS FROM NODE      3.30 TO NODE      3.30 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.627
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .8349
 SOIL CLASSIFICATION IS "D"
```

```
 SUBAREA AREA(ACRES) =    0.84   SUBAREA RUNOFF(CFS) =    1.84
 TOTAL AREA(ACRES) =        2.0   TOTAL RUNOFF(CFS) =       4.19
 TC(MIN.) =   15.11

****************************************************************************
 FLOW PROCESS FROM NODE      3.30 TO NODE      3.40 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   561.40  DOWNSTREAM(FEET) =   561.20
 FLOW LENGTH(FEET) =    24.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.14
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       4.19
 PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   15.19
 LONGEST FLOWPATH FROM NODE      3.20 TO NODE      3.40 =     759.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      3.40 TO NODE      3.40 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   15.19
 RAINFALL INTENSITY(INCH/HR) =   2.62
 TOTAL STREAM AREA(ACRES) =     2.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.19

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        3.67    15.27        2.614          1.77
     2        4.19    15.19        2.621          2.00

 *********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 *************************************************************************

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        7.84    15.19       2.621
     2        7.85    15.27       2.614
```

```
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       7.84   Tc(MIN.) =   15.19
 TOTAL AREA(ACRES) =        3.8
 LONGEST FLOWPATH FROM NODE      3.00 TO NODE      3.40 =     873.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      3.40 TO NODE      3.50 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   561.20  DOWNSTREAM(FEET) =   561.00
 FLOW LENGTH(FEET) =    41.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.89
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       7.84
 PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =   15.33
 LONGEST FLOWPATH FROM NODE      3.00 TO NODE      3.50 =     914.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      3.50 TO NODE      3.50 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     RUNOFF       Tc       INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        7.84    15.33       2.610        3.77
 LONGEST FLOWPATH FROM NODE      3.00 TO NODE      3.50 =     914.00 FEET.

 ** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM     RUNOFF       Tc       INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1       17.73    16.23       2.539        8.85
 LONGEST FLOWPATH FROM NODE      2.00 TO NODE      3.50 =    1398.00 FEET.

 ****************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ********************************************************************

 ** PEAK FLOW RATE TABLE **
 STREAM    RUNOFF       Tc       INTENSITY
 NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1      24.58      15.33        2.610
     2      25.36      16.23        2.539

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      25.36   Tc(MIN.) =   16.23
 TOTAL AREA(ACRES) =       12.6
```

```
**************************************************************************
 FLOW PROCESS FROM NODE      3.50 TO NODE      3.50 IS CODE =  12
--------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
==========================================================================

**************************************************************************
 FLOW PROCESS FROM NODE      3.50 TO NODE      4.40 IS CODE =  31
--------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   561.00  DOWNSTREAM(FEET) =   560.40
 FLOW LENGTH(FEET) =   208.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  33.0 INCH PIPE IS  24.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.29
 ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      25.36
 PIPE TRAVEL TIME(MIN.) =   0.66    Tc(MIN.) =   16.89
 LONGEST FLOWPATH FROM NODE      2.00 TO NODE      4.40 =    1606.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE      4.40 TO NODE      4.40 IS CODE =   1
--------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   16.89
 RAINFALL INTENSITY(INCH/HR) =   2.49
 TOTAL STREAM AREA(ACRES) =    12.62
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     25.36

**************************************************************************
 FLOW PROCESS FROM NODE      4.00 TO NODE      4.10 IS CODE =  21
--------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   588.00
 UPSTREAM ELEVATION(FEET) =    569.80
 DOWNSTREAM ELEVATION(FEET) =    565.50
 ELEVATION DIFFERENCE(FEET) =      4.30
 TC = 0.393*[(  588.00**3)/(     4.30)]**.2 =   13.455
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.777
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7767
 SOIL CLASSIFICATION IS "B"
 SUBAREA RUNOFF(CFS) =      1.81
 TOTAL AREA(ACRES) =      0.84   TOTAL RUNOFF(CFS) =      1.81

**************************************************************************
 FLOW PROCESS FROM NODE      4.10 TO NODE      4.10 IS CODE =  81
```

```
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.777
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7767
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    0.81   SUBAREA RUNOFF(CFS) =    1.75
  TOTAL AREA(ACRES) =        1.6   TOTAL RUNOFF(CFS) =       3.56
  TC(MIN.) =   13.45

****************************************************************************
  FLOW PROCESS FROM NODE      4.10 TO NODE      4.40 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   561.00  DOWNSTREAM(FEET) =   560.40
  FLOW LENGTH(FEET) =    24.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.34
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.56
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   13.51
  LONGEST FLOWPATH FROM NODE      4.00 TO NODE      4.40 =     612.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      4.40 TO NODE      4.40 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   13.51
  RAINFALL INTENSITY(INCH/HR) =   2.77
  TOTAL STREAM AREA(ACRES) =     1.65
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.56

****************************************************************************
  FLOW PROCESS FROM NODE      4.20 TO NODE      4.30 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   768.00
  UPSTREAM ELEVATION(FEET) =    570.50
  DOWNSTREAM ELEVATION(FEET) =    565.50
  ELEVATION DIFFERENCE(FEET) =      5.00
  TC = 0.393*[(  768.00**3)/(     5.00)]**.2 =   15.324
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.610
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7711
  SOIL CLASSIFICATION IS "B"
```

```
 SUBAREA RUNOFF(CFS) =      2.90
 TOTAL AREA(ACRES) =      1.44   TOTAL RUNOFF(CFS) =      2.90

****************************************************************************
 FLOW PROCESS FROM NODE      4.30 TO NODE      4.30 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.610
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .8160
 SOIL CLASSIFICATION IS "C"
 SUBAREA AREA(ACRES) =    0.53   SUBAREA RUNOFF(CFS) =    1.13
 TOTAL AREA(ACRES) =        2.0   TOTAL RUNOFF(CFS) =       4.03
 TC(MIN.) =   15.32

****************************************************************************
 FLOW PROCESS FROM NODE      4.30 TO NODE      4.30 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.610
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7711
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    0.40   SUBAREA RUNOFF(CFS) =    0.81
 TOTAL AREA(ACRES) =        2.4   TOTAL RUNOFF(CFS) =       4.83
 TC(MIN.) =   15.32

****************************************************************************
 FLOW PROCESS FROM NODE      4.30 TO NODE      4.40 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   561.00  DOWNSTREAM(FEET) =   560.40
 FLOW LENGTH(FEET) =    24.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   8.00
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       4.83
 PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   15.37
 LONGEST FLOWPATH FROM NODE      4.20 TO NODE      4.40 =     792.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      4.40 TO NODE      4.40 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =   15.37
 RAINFALL INTENSITY(INCH/HR) =   2.61
 TOTAL STREAM AREA(ACRES) =     2.37
```

```
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.83

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       25.36    16.89        2.491         12.62
     2        3.56    13.51        2.772          1.65
     3        4.83    15.37        2.606          2.37

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       28.09    13.51       2.772
     2       31.26    15.37       2.606
     3       33.18    16.89       2.491

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      33.18   Tc(MIN.) =   16.89
 TOTAL AREA(ACRES) =       16.6
 LONGEST FLOWPATH FROM NODE      2.00 TO NODE      4.40 =    1606.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      4.40 TO NODE      4.50 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   560.40  DOWNSTREAM(FEET) =   560.00
 FLOW LENGTH(FEET) =   122.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  36.0 INCH PIPE IS  26.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.95
 ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      33.18
 PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =   17.23
 LONGEST FLOWPATH FROM NODE      2.00 TO NODE      4.50 =    1728.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      4.50 TO NODE      4.50 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE      5.00 TO NODE      5.10 IS CODE =  21
----------------------------------------------------------------------------
```

```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   665.00
  UPSTREAM ELEVATION(FEET) =    575.30
  DOWNSTREAM ELEVATION(FEET) =    571.00
  ELEVATION DIFFERENCE(FEET) =      4.30
  TC = 0.393*[(  665.00**3)/(     4.30)]**.2 =   14.486
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.681
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7736
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      4.06
  TOTAL AREA(ACRES) =      1.96   TOTAL RUNOFF(CFS) =      4.06

****************************************************************************
  FLOW PROCESS FROM NODE      5.10 TO NODE      5.40 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   565.00  DOWNSTREAM(FEET) =   562.60
  FLOW LENGTH(FEET) =   462.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.28
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.06
  PIPE TRAVEL TIME(MIN.) =   1.80    Tc(MIN.) =   16.29
  LONGEST FLOWPATH FROM NODE      5.00 TO NODE      5.40 =    1127.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      5.40 TO NODE      5.40 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   16.29
  RAINFALL INTENSITY(INCH/HR) =   2.54
  TOTAL STREAM AREA(ACRES) =     1.96
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.06

****************************************************************************
  FLOW PROCESS FROM NODE      5.20 TO NODE      5.30 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   655.00
  UPSTREAM ELEVATION(FEET) =    572.90
```

```
 DOWNSTREAM ELEVATION(FEET) =    568.10
 ELEVATION DIFFERENCE(FEET) =      4.80
 TC = 0.393*[(  655.00**3)/(     4.80)]**.2 =   14.043
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.721
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .8368
 SOIL CLASSIFICATION IS "D"
 SUBAREA RUNOFF(CFS) =      4.67
 TOTAL AREA(ACRES) =      2.05   TOTAL RUNOFF(CFS) =      4.67

****************************************************************************
 FLOW PROCESS FROM NODE      5.30 TO NODE      5.40 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   563.10  DOWNSTREAM(FEET) =   562.60
 FLOW LENGTH(FEET) =    24.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.41
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       4.67
 PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   14.10
 LONGEST FLOWPATH FROM NODE      5.20 TO NODE      5.40 =     679.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      5.40 TO NODE      5.40 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   14.10
 RAINFALL INTENSITY(INCH/HR) =   2.72
 TOTAL STREAM AREA(ACRES) =     2.05
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.67

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        4.06    16.29        2.535          1.96
     2        4.67    14.10        2.716          2.05

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
```

```
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        8.19    14.10       2.716
      2        8.42    16.29       2.535

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       8.19   Tc(MIN.) =   14.10
  TOTAL AREA(ACRES) =        4.0
  LONGEST FLOWPATH FROM NODE      5.00 TO NODE      5.40 =    1127.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      5.40 TO NODE      5.90 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   562.60  DOWNSTREAM(FEET) =   561.00
  FLOW LENGTH(FEET) =   325.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.95
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.19
  PIPE TRAVEL TIME(MIN.) =   1.09    Tc(MIN.) =   15.19
  LONGEST FLOWPATH FROM NODE      5.00 TO NODE      5.90 =    1452.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      5.90 TO NODE      5.90 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.19
  RAINFALL INTENSITY(INCH/HR) =   2.62
  TOTAL STREAM AREA(ACRES) =     4.01
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.19

****************************************************************************
  FLOW PROCESS FROM NODE      5.50 TO NODE      5.60 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS SINGLE FAMILY(1/2 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   663.00
  UPSTREAM ELEVATION(FEET) =    572.30
  DOWNSTREAM ELEVATION(FEET) =    566.50
  ELEVATION DIFFERENCE(FEET) =      5.80
  TC = 0.422*[(  663.00**3)/(     5.80)]**.2 =   14.643
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.667
  SINGLE-FAMILY(1/2 ACRE LOT) RUNOFF COEFFICIENT = .8229
  SOIL CLASSIFICATION IS "D"
  SUBAREA RUNOFF(CFS) =      3.29
```

```
  TOTAL AREA(ACRES) =      1.50   TOTAL RUNOFF(CFS) =      3.29

****************************************************************************
  FLOW PROCESS FROM NODE      5.60 TO NODE      5.90 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   561.40  DOWNSTREAM(FEET) =   561.00
  FLOW LENGTH(FEET) =    24.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.21
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.29
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   14.71
  LONGEST FLOWPATH FROM NODE      5.50 TO NODE      5.90 =     687.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      5.90 TO NODE      5.90 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   14.71
  RAINFALL INTENSITY(INCH/HR) =   2.66
  TOTAL STREAM AREA(ACRES) =     1.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.29

****************************************************************************
  FLOW PROCESS FROM NODE      5.70 TO NODE      5.80 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   680.00
  UPSTREAM ELEVATION(FEET) =    571.00
  DOWNSTREAM ELEVATION(FEET) =    566.50
  ELEVATION DIFFERENCE(FEET) =      4.50
  TC = 0.393*[(  680.00**3)/(     4.50)]**.2 =   14.548
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.675
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .8359
  SOIL CLASSIFICATION IS "D"
  SUBAREA RUNOFF(CFS) =      3.73
  TOTAL AREA(ACRES) =      1.67   TOTAL RUNOFF(CFS) =      3.73

****************************************************************************
  FLOW PROCESS FROM NODE      5.80 TO NODE      5.80 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.675
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7734
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    0.12   SUBAREA RUNOFF(CFS) =    0.25
 TOTAL AREA(ACRES) =        1.8   TOTAL RUNOFF(CFS) =       3.98
 TC(MIN.) =   14.55

****************************************************************************
 FLOW PROCESS FROM NODE      5.80 TO NODE      5.90 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   561.40  DOWNSTREAM(FEET) =   561.00
 FLOW LENGTH(FEET) =    24.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.54
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       3.98
 PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   14.61
 LONGEST FLOWPATH FROM NODE      5.70 TO NODE      5.90 =     704.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      5.90 TO NODE      5.90 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =   14.61
 RAINFALL INTENSITY(INCH/HR) =   2.67
 TOTAL STREAM AREA(ACRES) =     1.79
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.98

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        8.19    15.19        2.621          4.01
     2        3.29    14.71        2.662          1.50
     3        3.98    14.61        2.670          1.79

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ************************************************************************

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
```

```
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       15.13    14.61       2.670
     2       15.19    14.71       2.662
     3       15.34    15.19       2.621

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      15.34   Tc(MIN.) =   15.19
 TOTAL AREA(ACRES) =        7.3
 LONGEST FLOWPATH FROM NODE      5.00 TO NODE      5.90 =    1452.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      5.90 TO NODE      4.50 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   561.00  DOWNSTREAM(FEET) =   560.00
 FLOW LENGTH(FEET) =   195.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  24.0 INCH PIPE IS  19.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.73
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      15.34
 PIPE TRAVEL TIME(MIN.) =   0.57    Tc(MIN.) =   15.76
 LONGEST FLOWPATH FROM NODE      5.00 TO NODE      4.50 =    1647.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      4.50 TO NODE      4.50 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     RUNOFF       Tc       INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1       15.34    15.76       2.575        7.30
 LONGEST FLOWPATH FROM NODE      5.00 TO NODE      4.50 =    1647.00 FEET.

 ** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM     RUNOFF       Tc       INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1       33.18    17.23       2.468       16.64
 LONGEST FLOWPATH FROM NODE      2.00 TO NODE      4.50 =    1728.00 FEET.

 ********************************WARNING*************************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

 ** PEAK FLOW RATE TABLE **
 STREAM    RUNOFF       Tc       INTENSITY
 NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1      45.68      15.76        2.575
     2      47.88      17.23        2.468
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      47.88   Tc(MIN.) =   17.23
  TOTAL AREA(ACRES) =       23.9

****************************************************************************
  FLOW PROCESS FROM NODE      4.50 TO NODE      4.50 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      4.50 TO NODE      6.20 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   560.00  DOWNSTREAM(FEET) =   559.20
  FLOW LENGTH(FEET) =   130.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  27.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.20
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      47.88
  PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   17.50
  LONGEST FLOWPATH FROM NODE      2.00 TO NODE      6.20 =    1858.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      6.20 TO NODE      6.20 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   17.50
  RAINFALL INTENSITY(INCH/HR) =   2.45
  TOTAL STREAM AREA(ACRES) =    23.94
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     47.88

****************************************************************************
  FLOW PROCESS FROM NODE      6.00 TO NODE      6.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   344.00
  UPSTREAM ELEVATION(FEET) =    568.00
  DOWNSTREAM ELEVATION(FEET) =    565.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  TC = 0.393*[(  344.00**3)/(     3.00)]**.2 =   10.482
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.129
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7871
  SOIL CLASSIFICATION IS "B"
```

```
 SUBAREA RUNOFF(CFS) =      0.74
 TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      0.74

****************************************************************************
 FLOW PROCESS FROM NODE      6.10 TO NODE      6.10 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.129
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .8440
 SOIL CLASSIFICATION IS "D"
 SUBAREA AREA(ACRES) =    0.68   SUBAREA RUNOFF(CFS) =    1.80
 TOTAL AREA(ACRES) =        1.0   TOTAL RUNOFF(CFS) =       2.53
 TC(MIN.) =   10.48

****************************************************************************
 FLOW PROCESS FROM NODE      6.10 TO NODE      6.20 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   560.00  DOWNSTREAM(FEET) =   559.20
 FLOW LENGTH(FEET) =    22.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.62
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       2.53
 PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   10.53
 LONGEST FLOWPATH FROM NODE      6.00 TO NODE      6.20 =     366.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      6.20 TO NODE      6.20 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   10.53
 RAINFALL INTENSITY(INCH/HR) =   3.12
 TOTAL STREAM AREA(ACRES) =     0.98
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.53

 ** CONFLUENCE DATA **
 STREAM     RUNOFF        Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       47.88    17.50        2.450         23.94
     2        2.53    10.53        3.122          0.98

 ********************************WARNING*********************************
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
```

```
 ****************************************************************************

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       31.35    10.53       3.122
      2       49.86    17.50       2.450

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      49.86   Tc(MIN.) =   17.50
  TOTAL AREA(ACRES) =       24.9
  LONGEST FLOWPATH FROM NODE      2.00 TO NODE      6.20 =    1858.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      6.20 TO NODE      6.30 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   559.20  DOWNSTREAM(FEET) =   559.10
  FLOW LENGTH(FEET) =    19.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  27.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.91
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      49.86
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   17.54
  LONGEST FLOWPATH FROM NODE      2.00 TO NODE      6.30 =    1877.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      6.30 TO NODE      6.30 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.447
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8730
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    0.06   SUBAREA RUNOFF(CFS) =    0.13
  TOTAL AREA(ACRES) =       25.0   TOTAL RUNOFF(CFS) =      49.99
  TC(MIN.) =   17.54

****************************************************************************
  FLOW PROCESS FROM NODE      6.30 TO NODE      6.30 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.447
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8862
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    0.04   SUBAREA RUNOFF(CFS) =    0.09
  TOTAL AREA(ACRES) =       25.0   TOTAL RUNOFF(CFS) =      50.08
  TC(MIN.) =   17.54
```

```
****************************************************************************
  FLOW PROCESS FROM NODE      6.30 TO NODE      6.40 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   559.10  DOWNSTREAM(FEET) =   558.90
  FLOW LENGTH(FEET) =    18.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  25.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.38
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      50.08
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =   17.57
  LONGEST FLOWPATH FROM NODE      2.00 TO NODE      6.40 =    1895.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      6.40 TO NODE      6.40 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.445
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6301
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    0.47   SUBAREA RUNOFF(CFS) =    0.72
  TOTAL AREA(ACRES) =       25.5   TOTAL RUNOFF(CFS) =      50.80
  TC(MIN.) =   17.57

****************************************************************************
  FLOW PROCESS FROM NODE      6.40 TO NODE      6.40 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.445
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7616
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    0.42   SUBAREA RUNOFF(CFS) =    0.78
  TOTAL AREA(ACRES) =       25.9   TOTAL RUNOFF(CFS) =      51.59
  TC(MIN.) =   17.57
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       25.9  TC(MIN.) =     17.57
  PEAK FLOW RATE(CFS)   =      51.59
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

APPENDIX C

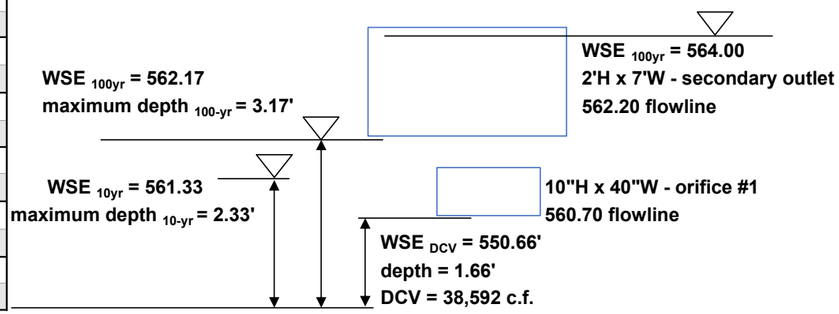
1. STAGE – DISCHARGE TABULTATION

2. SYNTHETIC UNIT HYDROGRAPH 100-YEAR/24-HOUR AND 10-YEAR/24-HOUR (PREDEVELOPED AND DEVELOPED CONDITION)

3. STORM ROUTING OF 100-YEAR/24-HOUR AND 10-YEAR/24-HOUR

908-00 Basin 'A'
Depth / Storage /Outflow Relationship

Elevation (ft)	Depth (ft)	Area (sf)	Average Area (sf)	Volume (ft^3)	Cumulative Volume (ft^3)	Cumulative Volume (ac-ft)	Infiltration 2.00 (ft/sec)	orifice #1 h (ft)	orifice #1 outflow (cfs)	total outflow (cfs)
									10"H x 40"W	
565.00	6.00	29,195		29,020	159,608	3.664	0.58	3.88	29.44	30.02
			29,020							
564.00	5.00	28,845		28,595	130,588	2.998	0.58	2.88	25.37	25.95
			28,595							
563.00	4.00	28,345		28,058	101,993	2.341	0.57	1.88	20.50	21.07
			28,058							
562.00	3.00	27,770		26,918	73,935	1.697	0.56	0.88	14.02	14.58
			26,918							
561.00	2.00	26,065		24,775	47,018	1.079	0.52	0.30	1.53	2.05
			24,775					weir		
560.00	1.00	23,485		22,243	22,243	0.511	0.47	0.00	0.00	0.47
			22,243							
559.00	0.00	21,000		0	0	0.000	0.00	0.00	0.00	0.00

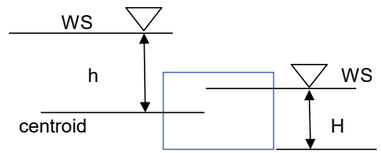


Notes:

1. **basin is Bio-Infitration and Storm Detention Basin**
2. **average infilration rate = 8.5 in/hr = (9.6+7.4) / 2 = 8.5 in/hr**
3. **design infiltration = 2.0 in/hr , maximum allowable rate per Riverside County Flood Control design guideline**
4. **design capture volume (DCV) = 38,592 c.f.**
5. **DCV per Water Quality Management Plan for the project**
6. **Q100 per Rational Method = 51.6 cfs**

Orifice Equaltion
$Q = CA(2gh)^{1/2}$ where: C = 0.67
A = 0.83 s.f. x 3.33 s.f.
g = 32.2 ft / sec

Weir Equaltion
$Q=CLH^{3/2}$ where: C = 2.8
L = 7.0 ft
H = 2.0 ft



U n i t H y d r o g r a p h A n a l y s i s

Study date 07/23/22 File: 90800x2410.out

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

Program License Serial Number 4027

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

English Units used in output format

Existing
10-yr/24-hr

Drainage Area = 25.91(Ac.) = 0.040 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 25.91(Ac.) = 0.040 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.480 Hr.
Lag time = 28.80 Min.
25% of lag time = 7.20 Min.
40% of lag time = 11.52 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]
25.91	2.34	60.63

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
25.91	6.26	162.20

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 2.340(In)
Area Averaged 100-Year Rainfall = 6.260(In)

Point rain (area averaged) = 3.953(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 3.953(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
14.450	56.00	0.500
4.220	56.00	0.900
7.240	56.00	0.150

Total Area Entered = 25.91(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.500	0.281	0.558	0.157
56.0	56.0	0.511	0.900	0.097	0.163	0.016
56.0	56.0	0.511	0.150	0.442	0.279	0.123
					Sum (F) =	0.296

Area averaged mean soil loss (F) (In/Hr) = 0.177
Minimum soil loss rate ((In/Hr)) = 0.088
(for 24 hour storm duration)
Note: User entry of the f value
Soil low loss rate (decimal) = 0.520

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	17.361	1.515	0.396
2	0.167	34.722	4.061	1.061
3	0.250	52.083	6.911	1.804

4	0.333	69.444	9.868	2.577
5	0.417	86.806	11.913	3.111
6	0.500	104.167	12.386	3.234
7	0.583	121.528	9.970	2.603
8	0.667	138.889	7.012	1.831
9	0.750	156.250	5.135	1.341
10	0.833	173.611	3.737	0.976
11	0.917	190.972	2.871	0.750
12	1.000	208.333	2.515	0.657
13	1.083	225.694	2.149	0.561
14	1.167	243.056	1.896	0.495
15	1.250	260.417	1.699	0.444
16	1.333	277.778	1.541	0.402
17	1.417	295.139	1.348	0.352
18	1.500	312.500	1.196	0.312
19	1.583	329.861	1.050	0.274
20	1.667	347.222	1.042	0.272
21	1.750	364.583	0.944	0.246
22	1.833	381.944	0.767	0.200
23	1.917	399.306	0.764	0.199
24	2.000	416.667	0.668	0.174
25	2.083	434.028	0.556	0.145
26	2.167	451.389	0.555	0.145
27	2.250	468.750	0.536	0.140
28	2.333	486.111	0.521	0.136
29	2.417	503.472	0.518	0.135
30	2.500	520.833	0.426	0.111
31	2.583	538.194	0.382	0.100
32	2.667	555.556	0.378	0.099
33	2.750	572.917	0.329	0.086
34	2.833	590.278	0.313	0.082
35	2.917	607.639	0.306	0.080
36	3.000	625.000	0.254	0.066
37	3.083	642.361	0.243	0.063
38	3.167	659.722	0.232	0.061
39	3.250	677.083	0.180	0.047
40	3.333	694.444	0.174	0.045
41	3.417	711.806	0.174	0.045
42	3.500	729.167	0.174	0.045
43	3.583	746.528	0.174	0.045
44	3.667	763.889	0.174	0.045
45	3.750	781.250	0.174	0.045
46	3.833	798.611	0.174	0.045
47	3.917	815.972	0.101	0.026
			Sum = 100.000 Sum=	26.112

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.032	0.314	0.016	0.02
2	0.17	0.07	0.032	0.312	0.016	0.02
3	0.25	0.07	0.032	0.311	0.016	0.02
4	0.33	0.10	0.047	0.310	0.025	0.02
5	0.42	0.10	0.047	0.309	0.025	0.02
6	0.50	0.10	0.047	0.308	0.025	0.02
7	0.58	0.10	0.047	0.306	0.025	0.02
8	0.67	0.10	0.047	0.305	0.025	0.02
9	0.75	0.10	0.047	0.304	0.025	0.02
10	0.83	0.13	0.063	0.303	0.033	0.03
11	0.92	0.13	0.063	0.302	0.033	0.03
12	1.00	0.13	0.063	0.300	0.033	0.03
13	1.08	0.10	0.047	0.299	0.025	0.02
14	1.17	0.10	0.047	0.298	0.025	0.02
15	1.25	0.10	0.047	0.297	0.025	0.02
16	1.33	0.10	0.047	0.296	0.025	0.02
17	1.42	0.10	0.047	0.295	0.025	0.02
18	1.50	0.10	0.047	0.293	0.025	0.02
19	1.58	0.10	0.047	0.292	0.025	0.02
20	1.67	0.10	0.047	0.291	0.025	0.02
21	1.75	0.10	0.047	0.290	0.025	0.02
22	1.83	0.13	0.063	0.289	0.033	0.03
23	1.92	0.13	0.063	0.287	0.033	0.03
24	2.00	0.13	0.063	0.286	0.033	0.03
25	2.08	0.13	0.063	0.285	0.033	0.03
26	2.17	0.13	0.063	0.284	0.033	0.03
27	2.25	0.13	0.063	0.283	0.033	0.03
28	2.33	0.13	0.063	0.282	0.033	0.03
29	2.42	0.13	0.063	0.281	0.033	0.03
30	2.50	0.13	0.063	0.279	0.033	0.03
31	2.58	0.17	0.079	0.278	0.041	0.04
32	2.67	0.17	0.079	0.277	0.041	0.04
33	2.75	0.17	0.079	0.276	0.041	0.04
34	2.83	0.17	0.079	0.275	0.041	0.04
35	2.92	0.17	0.079	0.274	0.041	0.04
36	3.00	0.17	0.079	0.273	0.041	0.04
37	3.08	0.17	0.079	0.271	0.041	0.04
38	3.17	0.17	0.079	0.270	0.041	0.04
39	3.25	0.17	0.079	0.269	0.041	0.04
40	3.33	0.17	0.079	0.268	0.041	0.04
41	3.42	0.17	0.079	0.267	0.041	0.04
42	3.50	0.17	0.079	0.266	0.041	0.04
43	3.58	0.17	0.079	0.265	0.041	0.04

44	3.67	0.17	0.079	0.264	0.041	0.04
45	3.75	0.17	0.079	0.263	0.041	0.04
46	3.83	0.20	0.095	0.261	0.049	0.05
47	3.92	0.20	0.095	0.260	0.049	0.05
48	4.00	0.20	0.095	0.259	0.049	0.05
49	4.08	0.20	0.095	0.258	0.049	0.05
50	4.17	0.20	0.095	0.257	0.049	0.05
51	4.25	0.20	0.095	0.256	0.049	0.05
52	4.33	0.23	0.111	0.255	0.058	0.05
53	4.42	0.23	0.111	0.254	0.058	0.05
54	4.50	0.23	0.111	0.253	0.058	0.05
55	4.58	0.23	0.111	0.252	0.058	0.05
56	4.67	0.23	0.111	0.250	0.058	0.05
57	4.75	0.23	0.111	0.249	0.058	0.05
58	4.83	0.27	0.126	0.248	0.066	0.06
59	4.92	0.27	0.126	0.247	0.066	0.06
60	5.00	0.27	0.126	0.246	0.066	0.06
61	5.08	0.20	0.095	0.245	0.049	0.05
62	5.17	0.20	0.095	0.244	0.049	0.05
63	5.25	0.20	0.095	0.243	0.049	0.05
64	5.33	0.23	0.111	0.242	0.058	0.05
65	5.42	0.23	0.111	0.241	0.058	0.05
66	5.50	0.23	0.111	0.240	0.058	0.05
67	5.58	0.27	0.126	0.239	0.066	0.06
68	5.67	0.27	0.126	0.238	0.066	0.06
69	5.75	0.27	0.126	0.237	0.066	0.06
70	5.83	0.27	0.126	0.236	0.066	0.06
71	5.92	0.27	0.126	0.235	0.066	0.06
72	6.00	0.27	0.126	0.234	0.066	0.06
73	6.08	0.30	0.142	0.232	0.074	0.07
74	6.17	0.30	0.142	0.231	0.074	0.07
75	6.25	0.30	0.142	0.230	0.074	0.07
76	6.33	0.30	0.142	0.229	0.074	0.07
77	6.42	0.30	0.142	0.228	0.074	0.07
78	6.50	0.30	0.142	0.227	0.074	0.07
79	6.58	0.33	0.158	0.226	0.082	0.08
80	6.67	0.33	0.158	0.225	0.082	0.08
81	6.75	0.33	0.158	0.224	0.082	0.08
82	6.83	0.33	0.158	0.223	0.082	0.08
83	6.92	0.33	0.158	0.222	0.082	0.08
84	7.00	0.33	0.158	0.221	0.082	0.08
85	7.08	0.33	0.158	0.220	0.082	0.08
86	7.17	0.33	0.158	0.219	0.082	0.08
87	7.25	0.33	0.158	0.218	0.082	0.08
88	7.33	0.37	0.174	0.217	0.090	0.08
89	7.42	0.37	0.174	0.216	0.090	0.08
90	7.50	0.37	0.174	0.215	0.090	0.08
91	7.58	0.40	0.190	0.214	0.099	0.09
92	7.67	0.40	0.190	0.213	0.099	0.09
93	7.75	0.40	0.190	0.212	0.099	0.09
94	7.83	0.43	0.206	0.211	0.107	0.10
95	7.92	0.43	0.206	0.210	0.107	0.10
96	8.00	0.43	0.206	0.209	0.107	0.10
97	8.08	0.50	0.237	0.208	---	0.03
98	8.17	0.50	0.237	0.207	---	0.03
99	8.25	0.50	0.237	0.206	---	0.03
100	8.33	0.50	0.237	0.206	---	0.03
101	8.42	0.50	0.237	0.205	---	0.03
102	8.50	0.50	0.237	0.204	---	0.03
103	8.58	0.53	0.253	0.203	---	0.05
104	8.67	0.53	0.253	0.202	---	0.05
105	8.75	0.53	0.253	0.201	---	0.05
106	8.83	0.57	0.269	0.200	---	0.07
107	8.92	0.57	0.269	0.199	---	0.07
108	9.00	0.57	0.269	0.198	---	0.07
109	9.08	0.63	0.300	0.197	---	0.10
110	9.17	0.63	0.300	0.196	---	0.10
111	9.25	0.63	0.300	0.195	---	0.11
112	9.33	0.67	0.316	0.194	---	0.12
113	9.42	0.67	0.316	0.193	---	0.12
114	9.50	0.67	0.316	0.192	---	0.12
115	9.58	0.70	0.332	0.191	---	0.14
116	9.67	0.70	0.332	0.190	---	0.14
117	9.75	0.70	0.332	0.190	---	0.14
118	9.83	0.73	0.348	0.189	---	0.16
119	9.92	0.73	0.348	0.188	---	0.16
120	10.00	0.73	0.348	0.187	---	0.16
121	10.08	0.50	0.237	0.186	---	0.05
122	10.17	0.50	0.237	0.185	---	0.05
123	10.25	0.50	0.237	0.184	---	0.05
124	10.33	0.50	0.237	0.183	---	0.05
125	10.42	0.50	0.237	0.182	---	0.05
126	10.50	0.50	0.237	0.181	---	0.06
127	10.58	0.67	0.316	0.181	---	0.14
128	10.67	0.67	0.316	0.180	---	0.14
129	10.75	0.67	0.316	0.179	---	0.14
130	10.83	0.67	0.316	0.178	---	0.14
131	10.92	0.67	0.316	0.177	---	0.14
132	11.00	0.67	0.316	0.176	---	0.14
133	11.08	0.63	0.300	0.175	---	0.13
134	11.17	0.63	0.300	0.174	---	0.13
135	11.25	0.63	0.300	0.174	---	0.13
136	11.33	0.63	0.300	0.173	---	0.13

137	11.42	0.63	0.300	0.172	---	0.13
138	11.50	0.63	0.300	0.171	---	0.13
139	11.58	0.57	0.269	0.170	---	0.10
140	11.67	0.57	0.269	0.169	---	0.10
141	11.75	0.57	0.269	0.168	---	0.10
142	11.83	0.60	0.285	0.168	---	0.12
143	11.92	0.60	0.285	0.167	---	0.12
144	12.00	0.60	0.285	0.166	---	0.12
145	12.08	0.83	0.395	0.165	---	0.23
146	12.17	0.83	0.395	0.164	---	0.23
147	12.25	0.83	0.395	0.164	---	0.23
148	12.33	0.87	0.411	0.163	---	0.25
149	12.42	0.87	0.411	0.162	---	0.25
150	12.50	0.87	0.411	0.161	---	0.25
151	12.58	0.93	0.443	0.160	---	0.28
152	12.67	0.93	0.443	0.159	---	0.28
153	12.75	0.93	0.443	0.159	---	0.28
154	12.83	0.97	0.458	0.158	---	0.30
155	12.92	0.97	0.458	0.157	---	0.30
156	13.00	0.97	0.458	0.156	---	0.30
157	13.08	1.13	0.538	0.155	---	0.38
158	13.17	1.13	0.538	0.155	---	0.38
159	13.25	1.13	0.538	0.154	---	0.38
160	13.33	1.13	0.538	0.153	---	0.38
161	13.42	1.13	0.538	0.152	---	0.39
162	13.50	1.13	0.538	0.152	---	0.39
163	13.58	0.77	0.364	0.151	---	0.21
164	13.67	0.77	0.364	0.150	---	0.21
165	13.75	0.77	0.364	0.149	---	0.21
166	13.83	0.77	0.364	0.148	---	0.22
167	13.92	0.77	0.364	0.148	---	0.22
168	14.00	0.77	0.364	0.147	---	0.22
169	14.08	0.90	0.427	0.146	---	0.28
170	14.17	0.90	0.427	0.145	---	0.28
171	14.25	0.90	0.427	0.145	---	0.28
172	14.33	0.87	0.411	0.144	---	0.27
173	14.42	0.87	0.411	0.143	---	0.27
174	14.50	0.87	0.411	0.143	---	0.27
175	14.58	0.87	0.411	0.142	---	0.27
176	14.67	0.87	0.411	0.141	---	0.27
177	14.75	0.87	0.411	0.140	---	0.27
178	14.83	0.83	0.395	0.140	---	0.26
179	14.92	0.83	0.395	0.139	---	0.26
180	15.00	0.83	0.395	0.138	---	0.26
181	15.08	0.80	0.379	0.137	---	0.24
182	15.17	0.80	0.379	0.137	---	0.24
183	15.25	0.80	0.379	0.136	---	0.24
184	15.33	0.77	0.364	0.135	---	0.23
185	15.42	0.77	0.364	0.135	---	0.23
186	15.50	0.77	0.364	0.134	---	0.23
187	15.58	0.63	0.300	0.133	---	0.17
188	15.67	0.63	0.300	0.133	---	0.17
189	15.75	0.63	0.300	0.132	---	0.17
190	15.83	0.63	0.300	0.131	---	0.17
191	15.92	0.63	0.300	0.131	---	0.17
192	16.00	0.63	0.300	0.130	---	0.17
193	16.08	0.13	0.063	0.129	0.033	0.03
194	16.17	0.13	0.063	0.129	0.033	0.03
195	16.25	0.13	0.063	0.128	0.033	0.03
196	16.33	0.13	0.063	0.127	0.033	0.03
197	16.42	0.13	0.063	0.127	0.033	0.03
198	16.50	0.13	0.063	0.126	0.033	0.03
199	16.58	0.10	0.047	0.125	0.025	0.02
200	16.67	0.10	0.047	0.125	0.025	0.02
201	16.75	0.10	0.047	0.124	0.025	0.02
202	16.83	0.10	0.047	0.123	0.025	0.02
203	16.92	0.10	0.047	0.123	0.025	0.02
204	17.00	0.10	0.047	0.122	0.025	0.02
205	17.08	0.17	0.079	0.122	0.041	0.04
206	17.17	0.17	0.079	0.121	0.041	0.04
207	17.25	0.17	0.079	0.120	0.041	0.04
208	17.33	0.17	0.079	0.120	0.041	0.04
209	17.42	0.17	0.079	0.119	0.041	0.04
210	17.50	0.17	0.079	0.119	0.041	0.04
211	17.58	0.17	0.079	0.118	0.041	0.04
212	17.67	0.17	0.079	0.117	0.041	0.04
213	17.75	0.17	0.079	0.117	0.041	0.04
214	17.83	0.13	0.063	0.116	0.033	0.03
215	17.92	0.13	0.063	0.116	0.033	0.03
216	18.00	0.13	0.063	0.115	0.033	0.03
217	18.08	0.13	0.063	0.115	0.033	0.03
218	18.17	0.13	0.063	0.114	0.033	0.03
219	18.25	0.13	0.063	0.113	0.033	0.03
220	18.33	0.13	0.063	0.113	0.033	0.03
221	18.42	0.13	0.063	0.112	0.033	0.03
222	18.50	0.13	0.063	0.112	0.033	0.03
223	18.58	0.10	0.047	0.111	0.025	0.02
224	18.67	0.10	0.047	0.111	0.025	0.02
225	18.75	0.10	0.047	0.110	0.025	0.02
226	18.83	0.07	0.032	0.110	0.016	0.02
227	18.92	0.07	0.032	0.109	0.016	0.02
228	19.00	0.07	0.032	0.109	0.016	0.02
229	19.08	0.10	0.047	0.108	0.025	0.02

230	19.17	0.10	0.047	0.108	0.025	0.02
231	19.25	0.10	0.047	0.107	0.025	0.02
232	19.33	0.13	0.063	0.107	0.033	0.03
233	19.42	0.13	0.063	0.106	0.033	0.03
234	19.50	0.13	0.063	0.106	0.033	0.03
235	19.58	0.10	0.047	0.105	0.025	0.02
236	19.67	0.10	0.047	0.105	0.025	0.02
237	19.75	0.10	0.047	0.104	0.025	0.02
238	19.83	0.07	0.032	0.104	0.016	0.02
239	19.92	0.07	0.032	0.103	0.016	0.02
240	20.00	0.07	0.032	0.103	0.016	0.02
241	20.08	0.10	0.047	0.102	0.025	0.02
242	20.17	0.10	0.047	0.102	0.025	0.02
243	20.25	0.10	0.047	0.101	0.025	0.02
244	20.33	0.10	0.047	0.101	0.025	0.02
245	20.42	0.10	0.047	0.101	0.025	0.02
246	20.50	0.10	0.047	0.100	0.025	0.02
247	20.58	0.10	0.047	0.100	0.025	0.02
248	20.67	0.10	0.047	0.099	0.025	0.02
249	20.75	0.10	0.047	0.099	0.025	0.02
250	20.83	0.07	0.032	0.098	0.016	0.02
251	20.92	0.07	0.032	0.098	0.016	0.02
252	21.00	0.07	0.032	0.098	0.016	0.02
253	21.08	0.10	0.047	0.097	0.025	0.02
254	21.17	0.10	0.047	0.097	0.025	0.02
255	21.25	0.10	0.047	0.097	0.025	0.02
256	21.33	0.07	0.032	0.096	0.016	0.02
257	21.42	0.07	0.032	0.096	0.016	0.02
258	21.50	0.07	0.032	0.095	0.016	0.02
259	21.58	0.10	0.047	0.095	0.025	0.02
260	21.67	0.10	0.047	0.095	0.025	0.02
261	21.75	0.10	0.047	0.094	0.025	0.02
262	21.83	0.07	0.032	0.094	0.016	0.02
263	21.92	0.07	0.032	0.094	0.016	0.02
264	22.00	0.07	0.032	0.093	0.016	0.02
265	22.08	0.10	0.047	0.093	0.025	0.02
266	22.17	0.10	0.047	0.093	0.025	0.02
267	22.25	0.10	0.047	0.093	0.025	0.02
268	22.33	0.07	0.032	0.092	0.016	0.02
269	22.42	0.07	0.032	0.092	0.016	0.02
270	22.50	0.07	0.032	0.092	0.016	0.02
271	22.58	0.07	0.032	0.091	0.016	0.02
272	22.67	0.07	0.032	0.091	0.016	0.02
273	22.75	0.07	0.032	0.091	0.016	0.02
274	22.83	0.07	0.032	0.091	0.016	0.02
275	22.92	0.07	0.032	0.090	0.016	0.02
276	23.00	0.07	0.032	0.090	0.016	0.02
277	23.08	0.07	0.032	0.090	0.016	0.02
278	23.17	0.07	0.032	0.090	0.016	0.02
279	23.25	0.07	0.032	0.090	0.016	0.02
280	23.33	0.07	0.032	0.089	0.016	0.02
281	23.42	0.07	0.032	0.089	0.016	0.02
282	23.50	0.07	0.032	0.089	0.016	0.02
283	23.58	0.07	0.032	0.089	0.016	0.02
284	23.67	0.07	0.032	0.089	0.016	0.02
285	23.75	0.07	0.032	0.089	0.016	0.02
286	23.83	0.07	0.032	0.089	0.016	0.02
287	23.92	0.07	0.032	0.089	0.016	0.02
288	24.00	0.07	0.032	0.088	0.016	0.02
Sum =		100.0			Sum =	24.0

Flood volume = Effective rainfall 2.00(In)
times area 25.9(Ac.)/[(In)/(Ft.)] = 4.3(Ac.Ft)
Total soil loss = 1.95(In)
Total soil loss = 4.217(Ac.Ft)
Total rainfall = 3.95(In)
Flood volume = 188065.7 Cubic Feet
Total soil loss = 183681.8 Cubic Feet

Peak flow rate of this hydrograph = 8.352(CFS)

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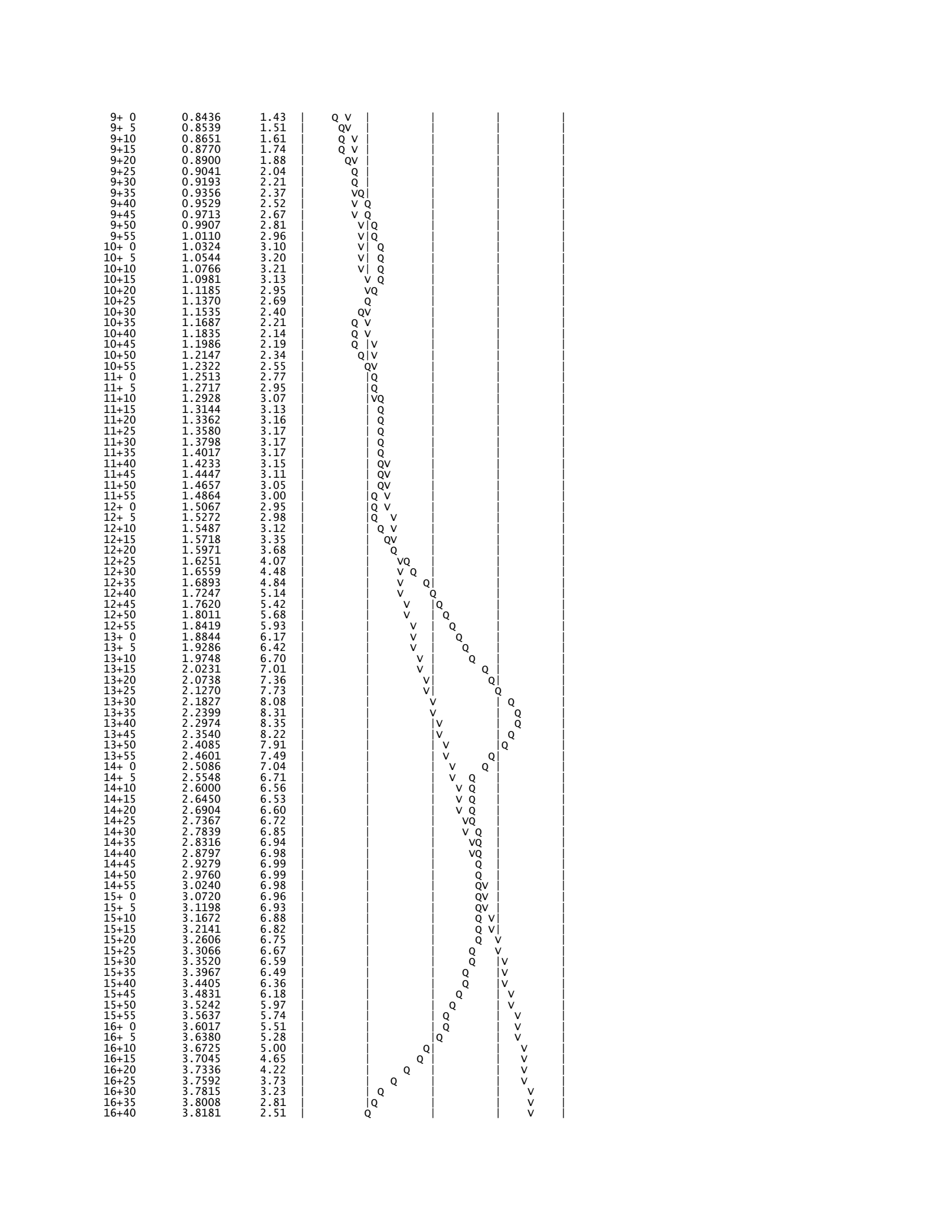
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

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	0.01	Q	|	|	|	|
0+10	0.0002	0.02	Q	|	|	|	|
0+15	0.0005	0.05	Q	|	|	|	|
0+20	0.0012	0.09	Q	|	|	|	|
0+25	0.0022	0.15	Q	|	|	|	|
0+30	0.0036	0.21	Q	|	|	|	|
0+35	0.0055	0.27	VQ	|	|	|	|
0+40	0.0077	0.32	VQ	|	|	|	|
0+45	0.0102	0.37	VQ	|	|	|	|
0+50	0.0130	0.40	VQ	|	|	|	|
0+55	0.0160	0.44	VQ	|	|	|	|
1+ 0	0.0192	0.47	VQ	|	|	|	|
1+ 5	0.0227	0.50	V Q	|	|	|	|
1+10	0.0263	0.53	V Q	|	|	|	|

1+15	0.0301	0.55	V Q	|	|	|	|
1+20	0.0340	0.56	V Q	|	|	|	|
1+25	0.0379	0.56	V Q	|	|	|	|
1+30	0.0418	0.56	V Q	|	|	|	|
1+35	0.0456	0.55	V Q	|	|	|	|
1+40	0.0494	0.55	V Q	|	|	|	|
1+45	0.0532	0.55	V Q	|	|	|	|
1+50	0.0570	0.56	V Q	|	|	|	|
1+55	0.0609	0.57	V Q	|	|	|	|
2+ 0	0.0649	0.58	V Q	|	|	|	|
2+ 5	0.0691	0.61	V Q	|	|	|	|
2+10	0.0735	0.63	V Q	|	|	|	|
2+15	0.0780	0.66	V Q	|	|	|	|
2+20	0.0827	0.68	V Q	|	|	|	|
2+25	0.0875	0.70	V Q	|	|	|	|
2+30	0.0924	0.71	V Q	|	|	|	|
2+35	0.0974	0.72	V Q	|	|	|	|
2+40	0.1025	0.74	V Q	|	|	|	|
2+45	0.1077	0.76	V Q	|	|	|	|
2+50	0.1131	0.78	|V Q	|	|	|	|
2+55	0.1187	0.81	|V Q	|	|	|	|
3+ 0	0.1245	0.84	|V Q	|	|	|	|
3+ 5	0.1305	0.87	|V Q	|	|	|	|
3+10	0.1366	0.89	|V Q	|	|	|	|
3+15	0.1428	0.90	|V Q	|	|	|	|
3+20	0.1490	0.91	|V Q	|	|	|	|
3+25	0.1554	0.92	|V Q	|	|	|	|
3+30	0.1617	0.93	|V Q	|	|	|	|
3+35	0.1682	0.93	|V Q	|	|	|	|
3+40	0.1746	0.94	|V Q	|	|	|	|
3+45	0.1811	0.94	|V Q	|	|	|	|
3+50	0.1877	0.95	|V Q	|	|	|	|
3+55	0.1943	0.96	|V Q	|	|	|	|
4+ 0	0.2011	0.98	|V Q	|	|	|	|
4+ 5	0.2080	1.00	|V Q	|	|	|	|
4+10	0.2151	1.03	|V Q	|	|	|	|
4+15	0.2224	1.06	| V Q	|	|	|	|
4+20	0.2299	1.08	| V Q	|	|	|	|
4+25	0.2375	1.11	| V Q	|	|	|	|
4+30	0.2453	1.13	| V Q	|	|	|	|
4+35	0.2533	1.16	| V Q	|	|	|	|
4+40	0.2615	1.19	| V Q	|	|	|	|
4+45	0.2700	1.22	| V Q	|	|	|	|
4+50	0.2786	1.25	| V Q	|	|	|	|
4+55	0.2874	1.28	| V Q	|	|	|	|
5+ 0	0.2964	1.31	| V Q	|	|	|	|
5+ 5	0.3056	1.33	| V Q	|	|	|	|
5+10	0.3149	1.35	| V Q	|	|	|	|
5+15	0.3242	1.36	| V Q	|	|	|	|
5+20	0.3335	1.35	| V Q	|	|	|	|
5+25	0.3426	1.33	| V Q	|	|	|	|
5+30	0.3517	1.31	| V Q	|	|	|	|
5+35	0.3606	1.30	| V Q	|	|	|	|
5+40	0.3697	1.32	| V Q	|	|	|	|
5+45	0.3790	1.35	| V Q	|	|	|	|
5+50	0.3885	1.38	| V Q	|	|	|	|
5+55	0.3982	1.41	| V Q	|	|	|	|
6+ 0	0.4081	1.44	| V Q	|	|	|	|
6+ 5	0.4183	1.47	| V Q	|	|	|	|
6+10	0.4286	1.50	| V Q	|	|	|	|
6+15	0.4391	1.52	| V Q	|	|	|	|
6+20	0.4498	1.55	| V Q	|	|	|	|
6+25	0.4607	1.58	| V Q	|	|	|	|
6+30	0.4718	1.62	| V Q	|	|	|	|
6+35	0.4831	1.65	| V Q	|	|	|	|
6+40	0.4947	1.67	| V Q	|	|	|	|
6+45	0.5064	1.70	| V Q	|	|	|	|
6+50	0.5183	1.73	| V Q	|	|	|	|
6+55	0.5305	1.77	| V Q	|	|	|	|
7+ 0	0.5429	1.80	| V Q	|	|	|	|
7+ 5	0.5554	1.83	| V Q	|	|	|	|
7+10	0.5682	1.85	| V Q	|	|	|	|
7+15	0.5810	1.86	| V Q	|	|	|	|
7+20	0.5940	1.88	| V Q	|	|	|	|
7+25	0.6070	1.90	| V Q	|	|	|	|
7+30	0.6203	1.92	| V Q	|	|	|	|
7+35	0.6337	1.95	| V Q	|	|	|	|
7+40	0.6474	1.99	| V Q	|	|	|	|
7+45	0.6615	2.04	| V Q	|	|	|	|
7+50	0.6758	2.08	| V Q	|	|	|	|
7+55	0.6905	2.14	| V Q	|	|	|	|
8+ 0	0.7056	2.19	| V Q	|	|	|	|
8+ 5	0.7208	2.21	| V Q	|	|	|	|
8+10	0.7359	2.19	| V Q	|	|	|	|
8+15	0.7504	2.10	| V Q	|	|	|	|
8+20	0.7639	1.96	| Q	|	|	|	|
8+25	0.7761	1.78	| Q	|	|	|	|
8+30	0.7870	1.58	| QV	|	|	|	|
8+35	0.7969	1.43	| Q V	|	|	|	|
8+40	0.8062	1.35	| Q V	|	|	|	|
8+45	0.8153	1.31	| Q V	|	|	|	|
8+50	0.8244	1.32	| Q V	|	|	|	|
8+55	0.8337	1.36	| Q V	|	|	|	|



16+45	3.8338	2.27		Q			V
16+50	3.8481	2.08		Q			V
16+55	3.8614	1.93		Q			V
17+ 0	3.8737	1.78		Q			V
17+ 5	3.8851	1.66		Q			V
17+10	3.8959	1.57		Q			V
17+15	3.9062	1.50		Q			V
17+20	3.9162	1.45		Q			V
17+25	3.9260	1.42		Q			V
17+30	3.9357	1.41		Q			V
17+35	3.9454	1.40		Q			V
17+40	3.9548	1.37		Q			V
17+45	3.9641	1.35		Q			V
17+50	3.9732	1.32		Q			V
17+55	3.9820	1.28		Q			V
18+ 0	3.9906	1.24		Q			V
18+ 5	3.9989	1.20		Q			V
18+10	4.0068	1.15		Q			V
18+15	4.0144	1.11		Q			V
18+20	4.0218	1.07		Q			V
18+25	4.0289	1.03		Q			V
18+30	4.0358	1.00		Q			V
18+35	4.0425	0.98		Q			V
18+40	4.0490	0.95		Q			V
18+45	4.0553	0.91		Q			V
18+50	4.0613	0.87		Q			V
18+55	4.0670	0.83		Q			V
19+ 0	4.0723	0.77		Q			V
19+ 5	4.0773	0.72		Q			V
19+10	4.0820	0.68		Q			V
19+15	4.0864	0.65		Q			V
19+20	4.0908	0.64		Q			V
19+25	4.0952	0.64		Q			V
19+30	4.0997	0.66		Q			V
19+35	4.1044	0.67		Q			V
19+40	4.1091	0.69		Q			V
19+45	4.1139	0.69		Q			V
19+50	4.1186	0.68		Q			V
19+55	4.1231	0.66		Q			V
20+ 0	4.1275	0.63		Q			V
20+ 5	4.1316	0.60		Q			V
20+10	4.1356	0.58		Q			V
20+15	4.1394	0.56		Q			V
20+20	4.1432	0.55		Q			V
20+25	4.1471	0.56		Q			V
20+30	4.1510	0.57		Q			V
20+35	4.1550	0.58		Q			V
20+40	4.1591	0.59		Q			V
20+45	4.1632	0.59		Q			V
20+50	4.1673	0.59		Q			V
20+55	4.1713	0.59		Q			V
21+ 0	4.1753	0.57		Q			V
21+ 5	4.1791	0.55		Q			V
21+10	4.1828	0.54		Q			V
21+15	4.1864	0.53		Q			V
21+20	4.1900	0.52		Q			V
21+25	4.1937	0.53		Q			V
21+30	4.1973	0.53		Q			V
21+35	4.2009	0.52		Q			V
21+40	4.2044	0.51		Q			V
21+45	4.2079	0.51		Q			V
21+50	4.2114	0.51		Q			V
21+55	4.2149	0.51		Q			V
22+ 0	4.2185	0.51		Q			V
22+ 5	4.2220	0.51		Q			V
22+10	4.2255	0.50		Q			V
22+15	4.2289	0.50	Q				V
22+20	4.2323	0.50	Q				V
22+25	4.2358	0.50	Q				V
22+30	4.2393	0.51	Q				V
22+35	4.2428	0.50	Q				V
22+40	4.2461	0.49	Q				V
22+45	4.2494	0.47	Q				V
22+50	4.2525	0.46	Q				V
22+55	4.2556	0.45	Q				V
23+ 0	4.2586	0.44	Q				V
23+ 5	4.2615	0.43	Q				V
23+10	4.2645	0.43	Q				V
23+15	4.2674	0.42	Q				V
23+20	4.2703	0.42	Q				V
23+25	4.2732	0.42	Q				V
23+30	4.2761	0.42	Q				V
23+35	4.2789	0.41	Q				V
23+40	4.2818	0.41	Q				V
23+45	4.2846	0.41	Q				V
23+50	4.2874	0.41	Q				V
23+55	4.2902	0.41	Q				V
24+ 0	4.2931	0.41	Q				V
24+ 5	4.2958	0.40	Q				V
24+10	4.2985	0.38	Q				V
24+15	4.3009	0.36	Q				V
24+20	4.3031	0.32	Q				V
24+25	4.3049	0.27	Q				V

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   24+30       4.3064      0.22  Q          |          |          |         V|
   24+35       4.3076      0.18  Q          |          |          |         V|
   24+40       4.3087      0.15  Q          |          |          |         V|
   24+45       4.3096      0.13  Q          |          |          |         V|
   24+50       4.3103      0.11  Q          |          |          |         V|
   24+55       4.3110      0.10  Q          |          |          |         V|
   25+ 0       4.3117      0.09  Q          |          |          |         V|
   25+ 5       4.3122      0.08  Q          |          |          |         V|
   25+10       4.3127      0.07  Q          |          |          |         V|
   25+15       4.3132      0.07  Q          |          |          |         V|
   25+20       4.3136      0.06  Q          |          |          |         V|
   25+25       4.3140      0.06  Q          |          |          |         V|
   25+30       4.3143      0.05  Q          |          |          |         V|
   25+35       4.3147      0.05  Q          |          |          |         V|
   25+40       4.3149      0.04  Q          |          |          |         V|
   25+45       4.3152      0.04  Q          |          |          |         V|
   25+50       4.3154      0.03  Q          |          |          |         V|
   25+55       4.3157      0.03  Q          |          |          |         V|
   26+ 0       4.3159      0.03  Q          |          |          |         V|
   26+ 5       4.3160      0.03  Q          |          |          |         V|
   26+10       4.3162      0.02  Q          |          |          |         V|
   26+15       4.3163      0.02  Q          |          |          |         V|
   26+20       4.3165      0.02  Q          |          |          |         V|
   26+25       4.3166      0.02  Q          |          |          |         V|
   26+30       4.3167      0.02  Q          |          |          |         V|
   26+35       4.3168      0.01  Q          |          |          |         V|
   26+40       4.3169      0.01  Q          |          |          |         V|
   26+45       4.3170      0.01  Q          |          |          |         V|
   26+50       4.3170      0.01  Q          |          |          |         V|
   26+55       4.3171      0.01  Q          |          |          |         V|
   27+ 0       4.3172      0.01  Q          |          |          |         V|
   27+ 5       4.3172      0.01  Q          |          |          |         V|
   27+10       4.3172      0.01  Q          |          |          |         V|
   27+15       4.3173      0.01  Q          |          |          |         V|
   27+20       4.3173      0.00  Q          |          |          |         V|
   27+25       4.3173      0.00  Q          |          |          |         V|
   27+30       4.3174      0.00  Q          |          |          |         V|
   27+35       4.3174      0.00  Q          |          |          |         V|
   27+40       4.3174      0.00  Q          |          |          |         V|
   27+45       4.3174      0.00  Q          |          |          |         V|
   27+50       4.3174      0.00  Q          |          |          |         V|
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U n i t H y d r o g r a p h A n a l y s i s

Study date 07/22/22 File: 90800x24100.out

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

Program License Serial Number 4027

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

English Units used in output format

Existing
100-yr/24-hr

Drainage Area = 25.91(Ac.) = 0.040 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 25.91(Ac.) = 0.040 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.380 Hr.
Lag time = 22.80 Min.
25% of lag time = 5.70 Min.
40% of lag time = 9.12 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]
25.91	2.34	60.63

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
25.91	6.26	162.20

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 2.340(In)
Area Averaged 100-Year Rainfall = 6.260(In)

Point rain (area averaged) = 6.260(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 6.260(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
14.450	56.00	0.500
4.220	56.00	0.900
7.240	56.00	0.150

Total Area Entered = 25.91(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	74.8	0.305	0.500	0.168	0.558	0.094
56.0	74.8	0.305	0.900	0.058	0.163	0.009
56.0	74.8	0.305	0.150	0.264	0.279	0.074
					Sum (F) =	0.177

Area averaged mean soil loss (F) (In/Hr) = 0.177
Minimum soil loss rate ((In/Hr)) = 0.088
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.520

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	21.930	1.974	0.515
2	0.167	43.860	6.073	1.586
3	0.250	65.789	10.659	2.783
4	0.333	87.719	14.596	3.811

5	0.417	109.649	15.340	4.006
6	0.500	131.579	11.395	2.975
7	0.583	153.509	7.351	1.920
8	0.667	175.439	5.012	1.309
9	0.750	197.368	3.588	0.937
10	0.833	219.298	3.008	0.785
11	0.917	241.228	2.516	0.657
12	1.000	263.158	2.160	0.564
13	1.083	285.088	1.914	0.500
14	1.167	307.018	1.617	0.422
15	1.250	328.947	1.377	0.359
16	1.333	350.877	1.316	0.344
17	1.417	372.807	1.127	0.294
18	1.500	394.737	0.965	0.252
19	1.583	416.667	0.889	0.232
20	1.667	438.596	0.709	0.185
21	1.750	460.526	0.697	0.182
22	1.833	482.456	0.664	0.173
23	1.917	504.386	0.654	0.171
24	2.000	526.316	0.539	0.141
25	2.083	548.246	0.482	0.126
26	2.167	570.175	0.445	0.116
27	2.250	592.105	0.395	0.103
28	2.333	614.035	0.377	0.098
29	2.417	635.965	0.313	0.082
30	2.500	657.895	0.301	0.079
31	2.583	679.825	0.237	0.062
32	2.667	701.754	0.219	0.057
33	2.750	723.684	0.219	0.057
34	2.833	745.614	0.219	0.057
35	2.917	767.544	0.219	0.057
36	3.000	789.474	0.219	0.057
37	3.083	811.404	0.215	0.056
			Sum = 100.000	Sum= 26.112

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.050	0.314	0.026	0.02
2	0.17	0.07	0.050	0.312	0.026	0.02
3	0.25	0.07	0.050	0.311	0.026	0.02
4	0.33	0.10	0.075	0.310	0.039	0.04
5	0.42	0.10	0.075	0.309	0.039	0.04
6	0.50	0.10	0.075	0.308	0.039	0.04
7	0.58	0.10	0.075	0.306	0.039	0.04
8	0.67	0.10	0.075	0.305	0.039	0.04
9	0.75	0.10	0.075	0.304	0.039	0.04
10	0.83	0.13	0.100	0.303	0.052	0.05
11	0.92	0.13	0.100	0.302	0.052	0.05
12	1.00	0.13	0.100	0.300	0.052	0.05
13	1.08	0.10	0.075	0.299	0.039	0.04
14	1.17	0.10	0.075	0.298	0.039	0.04
15	1.25	0.10	0.075	0.297	0.039	0.04
16	1.33	0.10	0.075	0.296	0.039	0.04
17	1.42	0.10	0.075	0.295	0.039	0.04
18	1.50	0.10	0.075	0.293	0.039	0.04
19	1.58	0.10	0.075	0.292	0.039	0.04
20	1.67	0.10	0.075	0.291	0.039	0.04
21	1.75	0.10	0.075	0.290	0.039	0.04
22	1.83	0.13	0.100	0.289	0.052	0.05
23	1.92	0.13	0.100	0.287	0.052	0.05
24	2.00	0.13	0.100	0.286	0.052	0.05
25	2.08	0.13	0.100	0.285	0.052	0.05
26	2.17	0.13	0.100	0.284	0.052	0.05
27	2.25	0.13	0.100	0.283	0.052	0.05
28	2.33	0.13	0.100	0.282	0.052	0.05
29	2.42	0.13	0.100	0.281	0.052	0.05
30	2.50	0.13	0.100	0.279	0.052	0.05
31	2.58	0.17	0.125	0.278	0.065	0.06
32	2.67	0.17	0.125	0.277	0.065	0.06
33	2.75	0.17	0.125	0.276	0.065	0.06
34	2.83	0.17	0.125	0.275	0.065	0.06
35	2.92	0.17	0.125	0.274	0.065	0.06
36	3.00	0.17	0.125	0.273	0.065	0.06
37	3.08	0.17	0.125	0.271	0.065	0.06
38	3.17	0.17	0.125	0.270	0.065	0.06
39	3.25	0.17	0.125	0.269	0.065	0.06
40	3.33	0.17	0.125	0.268	0.065	0.06
41	3.42	0.17	0.125	0.267	0.065	0.06
42	3.50	0.17	0.125	0.266	0.065	0.06
43	3.58	0.17	0.125	0.265	0.065	0.06
44	3.67	0.17	0.125	0.264	0.065	0.06
45	3.75	0.17	0.125	0.263	0.065	0.06
46	3.83	0.20	0.150	0.261	0.078	0.07
47	3.92	0.20	0.150	0.260	0.078	0.07
48	4.00	0.20	0.150	0.259	0.078	0.07
49	4.08	0.20	0.150	0.258	0.078	0.07
50	4.17	0.20	0.150	0.257	0.078	0.07
51	4.25	0.20	0.150	0.256	0.078	0.07
52	4.33	0.23	0.175	0.255	0.091	0.08
53	4.42	0.23	0.175	0.254	0.091	0.08
54	4.50	0.23	0.175	0.253	0.091	0.08

55	4.58	0.23	0.175	0.252	0.091	0.08
56	4.67	0.23	0.175	0.250	0.091	0.08
57	4.75	0.23	0.175	0.249	0.091	0.08
58	4.83	0.27	0.200	0.248	0.104	0.10
59	4.92	0.27	0.200	0.247	0.104	0.10
60	5.00	0.27	0.200	0.246	0.104	0.10
61	5.08	0.20	0.150	0.245	0.078	0.07
62	5.17	0.20	0.150	0.244	0.078	0.07
63	5.25	0.20	0.150	0.243	0.078	0.07
64	5.33	0.23	0.175	0.242	0.091	0.08
65	5.42	0.23	0.175	0.241	0.091	0.08
66	5.50	0.23	0.175	0.240	0.091	0.08
67	5.58	0.27	0.200	0.239	0.104	0.10
68	5.67	0.27	0.200	0.238	0.104	0.10
69	5.75	0.27	0.200	0.237	0.104	0.10
70	5.83	0.27	0.200	0.236	0.104	0.10
71	5.92	0.27	0.200	0.235	0.104	0.10
72	6.00	0.27	0.200	0.234	0.104	0.10
73	6.08	0.30	0.225	0.232	0.117	0.11
74	6.17	0.30	0.225	0.231	0.117	0.11
75	6.25	0.30	0.225	0.230	0.117	0.11
76	6.33	0.30	0.225	0.229	0.117	0.11
77	6.42	0.30	0.225	0.228	0.117	0.11
78	6.50	0.30	0.225	0.227	0.117	0.11
79	6.58	0.33	0.250	0.226	---	0.02
80	6.67	0.33	0.250	0.225	---	0.03
81	6.75	0.33	0.250	0.224	---	0.03
82	6.83	0.33	0.250	0.223	---	0.03
83	6.92	0.33	0.250	0.222	---	0.03
84	7.00	0.33	0.250	0.221	---	0.03
85	7.08	0.33	0.250	0.220	---	0.03
86	7.17	0.33	0.250	0.219	---	0.03
87	7.25	0.33	0.250	0.218	---	0.03
88	7.33	0.37	0.275	0.217	---	0.06
89	7.42	0.37	0.275	0.216	---	0.06
90	7.50	0.37	0.275	0.215	---	0.06
91	7.58	0.40	0.300	0.214	---	0.09
92	7.67	0.40	0.300	0.213	---	0.09
93	7.75	0.40	0.300	0.212	---	0.09
94	7.83	0.43	0.326	0.211	---	0.11
95	7.92	0.43	0.326	0.210	---	0.12
96	8.00	0.43	0.326	0.209	---	0.12
97	8.08	0.50	0.376	0.208	---	0.17
98	8.17	0.50	0.376	0.207	---	0.17
99	8.25	0.50	0.376	0.206	---	0.17
100	8.33	0.50	0.376	0.206	---	0.17
101	8.42	0.50	0.376	0.205	---	0.17
102	8.50	0.50	0.376	0.204	---	0.17
103	8.58	0.53	0.401	0.203	---	0.20
104	8.67	0.53	0.401	0.202	---	0.20
105	8.75	0.53	0.401	0.201	---	0.20
106	8.83	0.57	0.426	0.200	---	0.23
107	8.92	0.57	0.426	0.199	---	0.23
108	9.00	0.57	0.426	0.198	---	0.23
109	9.08	0.63	0.476	0.197	---	0.28
110	9.17	0.63	0.476	0.196	---	0.28
111	9.25	0.63	0.476	0.195	---	0.28
112	9.33	0.67	0.501	0.194	---	0.31
113	9.42	0.67	0.501	0.193	---	0.31
114	9.50	0.67	0.501	0.192	---	0.31
115	9.58	0.70	0.526	0.191	---	0.33
116	9.67	0.70	0.526	0.190	---	0.34
117	9.75	0.70	0.526	0.190	---	0.34
118	9.83	0.73	0.551	0.189	---	0.36
119	9.92	0.73	0.551	0.188	---	0.36
120	10.00	0.73	0.551	0.187	---	0.36
121	10.08	0.50	0.376	0.186	---	0.19
122	10.17	0.50	0.376	0.185	---	0.19
123	10.25	0.50	0.376	0.184	---	0.19
124	10.33	0.50	0.376	0.183	---	0.19
125	10.42	0.50	0.376	0.182	---	0.19
126	10.50	0.50	0.376	0.181	---	0.19
127	10.58	0.67	0.501	0.181	---	0.32
128	10.67	0.67	0.501	0.180	---	0.32
129	10.75	0.67	0.501	0.179	---	0.32
130	10.83	0.67	0.501	0.178	---	0.32
131	10.92	0.67	0.501	0.177	---	0.32
132	11.00	0.67	0.501	0.176	---	0.32
133	11.08	0.63	0.476	0.175	---	0.30
134	11.17	0.63	0.476	0.174	---	0.30
135	11.25	0.63	0.476	0.174	---	0.30
136	11.33	0.63	0.476	0.173	---	0.30
137	11.42	0.63	0.476	0.172	---	0.30
138	11.50	0.63	0.476	0.171	---	0.30
139	11.58	0.57	0.426	0.170	---	0.26
140	11.67	0.57	0.426	0.169	---	0.26
141	11.75	0.57	0.426	0.168	---	0.26
142	11.83	0.60	0.451	0.168	---	0.28
143	11.92	0.60	0.451	0.167	---	0.28
144	12.00	0.60	0.451	0.166	---	0.28
145	12.08	0.83	0.626	0.165	---	0.46
146	12.17	0.83	0.626	0.164	---	0.46
147	12.25	0.83	0.626	0.164	---	0.46

148	12.33	0.87	0.651	0.163	---	0.49
149	12.42	0.87	0.651	0.162	---	0.49
150	12.50	0.87	0.651	0.161	---	0.49
151	12.58	0.93	0.701	0.160	---	0.54
152	12.67	0.93	0.701	0.159	---	0.54
153	12.75	0.93	0.701	0.159	---	0.54
154	12.83	0.97	0.726	0.158	---	0.57
155	12.92	0.97	0.726	0.157	---	0.57
156	13.00	0.97	0.726	0.156	---	0.57
157	13.08	1.13	0.851	0.155	---	0.70
158	13.17	1.13	0.851	0.155	---	0.70
159	13.25	1.13	0.851	0.154	---	0.70
160	13.33	1.13	0.851	0.153	---	0.70
161	13.42	1.13	0.851	0.152	---	0.70
162	13.50	1.13	0.851	0.152	---	0.70
163	13.58	0.77	0.576	0.151	---	0.43
164	13.67	0.77	0.576	0.150	---	0.43
165	13.75	0.77	0.576	0.149	---	0.43
166	13.83	0.77	0.576	0.148	---	0.43
167	13.92	0.77	0.576	0.148	---	0.43
168	14.00	0.77	0.576	0.147	---	0.43
169	14.08	0.90	0.676	0.146	---	0.53
170	14.17	0.90	0.676	0.145	---	0.53
171	14.25	0.90	0.676	0.145	---	0.53
172	14.33	0.87	0.651	0.144	---	0.51
173	14.42	0.87	0.651	0.143	---	0.51
174	14.50	0.87	0.651	0.143	---	0.51
175	14.58	0.87	0.651	0.142	---	0.51
176	14.67	0.87	0.651	0.141	---	0.51
177	14.75	0.87	0.651	0.140	---	0.51
178	14.83	0.83	0.626	0.140	---	0.49
179	14.92	0.83	0.626	0.139	---	0.49
180	15.00	0.83	0.626	0.138	---	0.49
181	15.08	0.80	0.601	0.137	---	0.46
182	15.17	0.80	0.601	0.137	---	0.46
183	15.25	0.80	0.601	0.136	---	0.46
184	15.33	0.77	0.576	0.135	---	0.44
185	15.42	0.77	0.576	0.135	---	0.44
186	15.50	0.77	0.576	0.134	---	0.44
187	15.58	0.63	0.476	0.133	---	0.34
188	15.67	0.63	0.476	0.133	---	0.34
189	15.75	0.63	0.476	0.132	---	0.34
190	15.83	0.63	0.476	0.131	---	0.34
191	15.92	0.63	0.476	0.131	---	0.35
192	16.00	0.63	0.476	0.130	---	0.35
193	16.08	0.13	0.100	0.129	0.052	0.05
194	16.17	0.13	0.100	0.129	0.052	0.05
195	16.25	0.13	0.100	0.128	0.052	0.05
196	16.33	0.13	0.100	0.127	0.052	0.05
197	16.42	0.13	0.100	0.127	0.052	0.05
198	16.50	0.13	0.100	0.126	0.052	0.05
199	16.58	0.10	0.075	0.125	0.039	0.04
200	16.67	0.10	0.075	0.125	0.039	0.04
201	16.75	0.10	0.075	0.124	0.039	0.04
202	16.83	0.10	0.075	0.123	0.039	0.04
203	16.92	0.10	0.075	0.123	0.039	0.04
204	17.00	0.10	0.075	0.122	0.039	0.04
205	17.08	0.17	0.125	0.122	---	0.00
206	17.17	0.17	0.125	0.121	---	0.00
207	17.25	0.17	0.125	0.120	---	0.00
208	17.33	0.17	0.125	0.120	---	0.01
209	17.42	0.17	0.125	0.119	---	0.01
210	17.50	0.17	0.125	0.119	---	0.01
211	17.58	0.17	0.125	0.118	---	0.01
212	17.67	0.17	0.125	0.117	---	0.01
213	17.75	0.17	0.125	0.117	---	0.01
214	17.83	0.13	0.100	0.116	0.052	0.05
215	17.92	0.13	0.100	0.116	0.052	0.05
216	18.00	0.13	0.100	0.115	0.052	0.05
217	18.08	0.13	0.100	0.115	0.052	0.05
218	18.17	0.13	0.100	0.114	0.052	0.05
219	18.25	0.13	0.100	0.113	0.052	0.05
220	18.33	0.13	0.100	0.113	0.052	0.05
221	18.42	0.13	0.100	0.112	0.052	0.05
222	18.50	0.13	0.100	0.112	0.052	0.05
223	18.58	0.10	0.075	0.111	0.039	0.04
224	18.67	0.10	0.075	0.111	0.039	0.04
225	18.75	0.10	0.075	0.110	0.039	0.04
226	18.83	0.07	0.050	0.110	0.026	0.02
227	18.92	0.07	0.050	0.109	0.026	0.02
228	19.00	0.07	0.050	0.109	0.026	0.02
229	19.08	0.10	0.075	0.108	0.039	0.04
230	19.17	0.10	0.075	0.108	0.039	0.04
231	19.25	0.10	0.075	0.107	0.039	0.04
232	19.33	0.13	0.100	0.107	0.052	0.05
233	19.42	0.13	0.100	0.106	0.052	0.05
234	19.50	0.13	0.100	0.106	0.052	0.05
235	19.58	0.10	0.075	0.105	0.039	0.04
236	19.67	0.10	0.075	0.105	0.039	0.04
237	19.75	0.10	0.075	0.104	0.039	0.04
238	19.83	0.07	0.050	0.104	0.026	0.02
239	19.92	0.07	0.050	0.103	0.026	0.02
240	20.00	0.07	0.050	0.103	0.026	0.02

241	20.08	0.10	0.075	0.102	0.039	0.04
242	20.17	0.10	0.075	0.102	0.039	0.04
243	20.25	0.10	0.075	0.101	0.039	0.04
244	20.33	0.10	0.075	0.101	0.039	0.04
245	20.42	0.10	0.075	0.101	0.039	0.04
246	20.50	0.10	0.075	0.100	0.039	0.04
247	20.58	0.10	0.075	0.100	0.039	0.04
248	20.67	0.10	0.075	0.099	0.039	0.04
249	20.75	0.10	0.075	0.099	0.039	0.04
250	20.83	0.07	0.050	0.098	0.026	0.02
251	20.92	0.07	0.050	0.098	0.026	0.02
252	21.00	0.07	0.050	0.098	0.026	0.02
253	21.08	0.10	0.075	0.097	0.039	0.04
254	21.17	0.10	0.075	0.097	0.039	0.04
255	21.25	0.10	0.075	0.097	0.039	0.04
256	21.33	0.07	0.050	0.096	0.026	0.02
257	21.42	0.07	0.050	0.096	0.026	0.02
258	21.50	0.07	0.050	0.095	0.026	0.02
259	21.58	0.10	0.075	0.095	0.039	0.04
260	21.67	0.10	0.075	0.095	0.039	0.04
261	21.75	0.10	0.075	0.094	0.039	0.04
262	21.83	0.07	0.050	0.094	0.026	0.02
263	21.92	0.07	0.050	0.094	0.026	0.02
264	22.00	0.07	0.050	0.093	0.026	0.02
265	22.08	0.10	0.075	0.093	0.039	0.04
266	22.17	0.10	0.075	0.093	0.039	0.04
267	22.25	0.10	0.075	0.093	0.039	0.04
268	22.33	0.07	0.050	0.092	0.026	0.02
269	22.42	0.07	0.050	0.092	0.026	0.02
270	22.50	0.07	0.050	0.092	0.026	0.02
271	22.58	0.07	0.050	0.091	0.026	0.02
272	22.67	0.07	0.050	0.091	0.026	0.02
273	22.75	0.07	0.050	0.091	0.026	0.02
274	22.83	0.07	0.050	0.091	0.026	0.02
275	22.92	0.07	0.050	0.090	0.026	0.02
276	23.00	0.07	0.050	0.090	0.026	0.02
277	23.08	0.07	0.050	0.090	0.026	0.02
278	23.17	0.07	0.050	0.090	0.026	0.02
279	23.25	0.07	0.050	0.090	0.026	0.02
280	23.33	0.07	0.050	0.089	0.026	0.02
281	23.42	0.07	0.050	0.089	0.026	0.02
282	23.50	0.07	0.050	0.089	0.026	0.02
283	23.58	0.07	0.050	0.089	0.026	0.02
284	23.67	0.07	0.050	0.089	0.026	0.02
285	23.75	0.07	0.050	0.089	0.026	0.02
286	23.83	0.07	0.050	0.089	0.026	0.02
287	23.92	0.07	0.050	0.089	0.026	0.02
288	24.00	0.07	0.050	0.088	0.026	0.02
Sum =		100.0			Sum =	45.5

Flood volume = Effective rainfall 3.79(In)
times area 25.9(Ac.)/[(In)/(Ft.)] = 8.2(Ac.Ft)
Total soil loss = 2.47(In)
Total soil loss = 5.326(Ac.Ft)
Total rainfall = 6.26(In)
Flood volume = 356762.8 Cubic Feet
Total soil loss = 231981.1 Cubic Feet

Peak flow rate of this hydrograph = 16.253(CFS)

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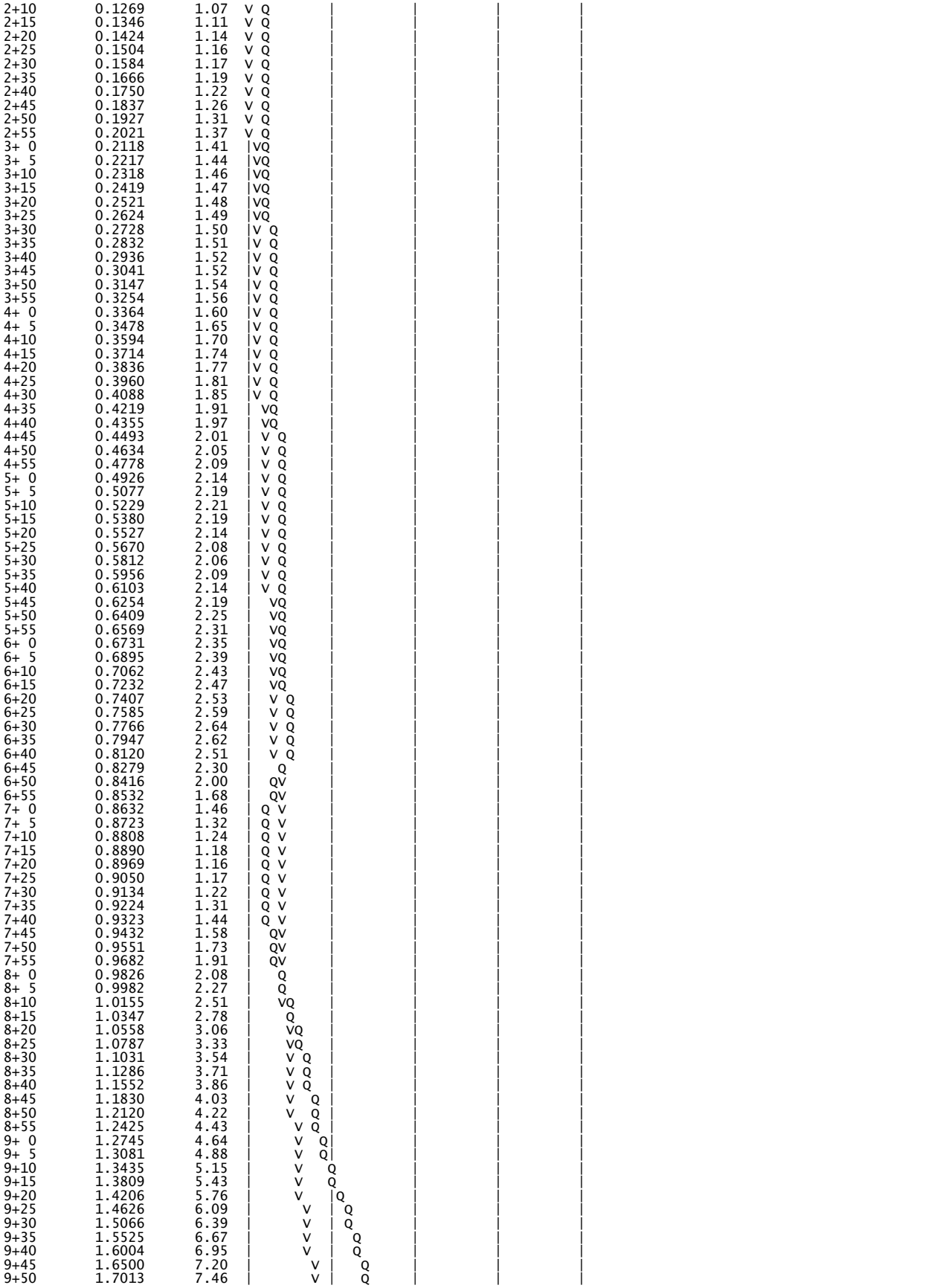
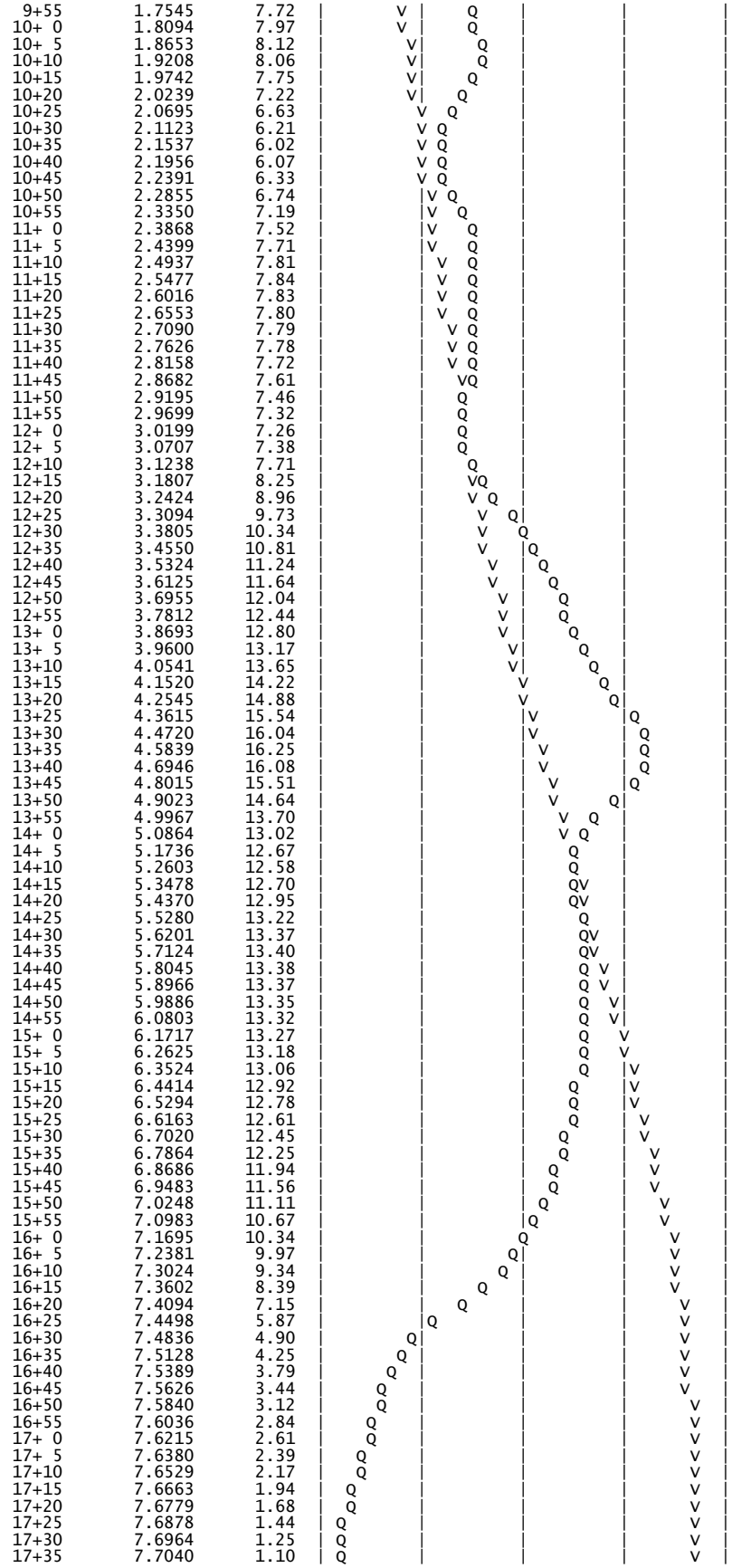
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

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	0.0012	0.12	Q				
0+20	0.0027	0.22	Q				
0+25	0.0050	0.33	Q				
0+30	0.0080	0.44	Q				
0+35	0.0116	0.53	VQ				
0+40	0.0158	0.61	VQ				
0+45	0.0204	0.67	VQ				
0+50	0.0253	0.71	VQ				
0+55	0.0306	0.76	VQ				
1+ 0	0.0363	0.82	VQ				
1+ 5	0.0423	0.88	VQ				
1+10	0.0488	0.93	VQ				
1+15	0.0553	0.95	VQ				
1+20	0.0618	0.94	VQ				
1+25	0.0681	0.92	VQ				
1+30	0.0743	0.91	VQ				
1+35	0.0806	0.90	VQ				
1+40	0.0868	0.90	VQ				
1+45	0.0930	0.91	VQ				
1+50	0.0993	0.91	VQ				
1+55	0.1058	0.94	VQ				
2+ 0	0.1125	0.97	VQ				
2+ 5	0.1195	1.02	V Q				





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17+40       7.7109      1.00  |Q        |         |         |       V  |
17+45       7.7171      0.91  |Q        |         |         |       V  |
17+50       7.7229      0.84  |Q        |         |         |       V  |
17+55       7.7286      0.83  |Q        |         |         |       V  |
18+ 0       7.7347      0.88  |Q        |         |         |       V  |
18+ 5       7.7414      0.97  |Q        |         |         |       V  |
18+10       7.7488      1.08  | Q       |         |         |       V  |
18+15       7.7567      1.15  | Q       |         |         |       V  |
18+20       7.7648      1.18  | Q       |         |         |       V  |
18+25       7.7731      1.19  | Q       |         |         |       V  |
18+30       7.7813      1.19  | Q       |         |         |        V |
18+35       7.7895      1.19  | Q       |         |         |        V |
18+40       7.7976      1.17  | Q       |         |         |        V |
18+45       7.8054      1.14  | Q       |         |         |        V |
18+50       7.8129      1.09  | Q       |         |         |        V |
18+55       7.8199      1.01  | Q       |         |         |        V |
19+ 0       7.8263      0.94  |Q        |         |         |        V |
19+ 5       7.8323      0.87  |Q        |         |         |        V |
19+10       7.8380      0.83  |Q        |         |         |        V |
19+15       7.8436      0.82  |Q        |         |         |        V |
19+20       7.8495      0.85  |Q        |         |         |        V |
19+25       7.8557      0.90  |Q        |         |         |        V |
19+30       7.8622      0.95  |Q        |         |         |        V |
19+35       7.8691      1.00  | Q       |         |         |        V |
19+40       7.8763      1.04  | Q       |         |         |        V |
19+45       7.8835      1.05  | Q       |         |         |        V |
19+50       7.8906      1.02  | Q       |         |         |        V |
19+55       7.8973      0.97  |Q        |         |         |        V |
20+ 0       7.9036      0.92  |Q        |         |         |        V |
20+ 5       7.9096      0.87  |Q        |         |         |        V |
20+10       7.9153      0.83  |Q        |         |         |        V |
20+15       7.9210      0.83  |Q        |         |         |        V |
20+20       7.9268      0.85  |Q        |         |         |        V |
20+25       7.9329      0.88  |Q        |         |         |        V |
20+30       7.9391      0.90  |Q        |         |         |        V |
20+35       7.9454      0.92  |Q        |         |         |        V |
20+40       7.9518      0.92  |Q        |         |         |        V |
20+45       7.9582      0.93  |Q        |         |         |        V |
20+50       7.9645      0.93  |Q        |         |         |        V |
20+55       7.9708      0.91  |Q        |         |         |        V |
21+ 0       7.9768      0.88  |Q        |         |         |        V |
21+ 5       7.9826      0.84  |Q        |         |         |        V |
21+10       7.9881      0.81  |Q        |         |         |         V|
21+15       7.9937      0.81  |Q        |         |         |         V|
21+20       7.9994      0.82  |Q        |         |         |         V|
21+25       8.0052      0.84  |Q        |         |         |         V|
21+30       8.0109      0.83  |Q        |         |         |         V|
21+35       8.0164      0.80  |Q        |         |         |         V|
21+40       8.0218      0.78  |Q        |         |         |         V|
21+45       8.0272      0.78  |Q        |         |         |         V|
21+50       8.0327      0.80  |Q        |         |         |         V|
21+55       8.0383      0.82  |Q        |         |         |         V|
22+ 0       8.0440      0.82  |Q        |         |         |         V|
22+ 5       8.0494      0.79  |Q        |         |         |         V|
22+10       8.0547      0.77  |Q        |         |         |         V|
22+15       8.0601      0.78  |Q        |         |         |         V|
22+20       8.0656      0.80  |Q        |         |         |         V|
22+25       8.0712      0.82  |Q        |         |         |         V|
22+30       8.0768      0.81  |Q        |         |         |         V|
22+35       8.0821      0.78  |Q        |         |         |         V|
22+40       8.0872      0.74  |Q        |         |         |         V|
22+45       8.0921      0.71  |Q        |         |         |         V|
22+50       8.0969      0.69  |Q        |         |         |         V|
22+55       8.1016      0.68  |Q        |         |         |         V|
23+ 0       8.1062      0.68  |Q        |         |         |         V|
23+ 5       8.1109      0.67  |Q        |         |         |         V|
23+10       8.1154      0.66  |Q        |         |         |         V|
23+15       8.1200      0.66  |Q        |         |         |         V|
23+20       8.1245      0.66  |Q        |         |         |         V|
23+25       8.1290      0.65  |Q        |         |         |         V|
23+30       8.1335      0.65  |Q        |         |         |         V|
23+35       8.1379      0.65  |Q        |         |         |         V|
23+40       8.1424      0.64  |Q        |         |         |         V|
23+45       8.1468      0.64  |Q        |         |         |         V|
23+50       8.1512      0.64  |Q        |         |         |         V|
23+55       8.1556      0.64  |Q        |         |         |         V|
24+ 0       8.1600      0.64  |Q        |         |         |         V|
24+ 5       8.1643      0.63  |Q        |         |         |         V|
24+10       8.1684      0.59  |Q        |         |         |         V|
24+15       8.1719      0.52  |Q        |         |         |         V|
24+20       8.1748      0.42  Q        |         |         |         V|
24+25       8.1771      0.33  Q        |         |         |         V|
24+30       8.1789      0.26  Q        |         |         |         V|
24+35       8.1803      0.21  Q        |         |         |         V|
24+40       8.1815      0.18  Q        |         |         |         V|
24+45       8.1826      0.15  Q        |         |         |         V|
24+50       8.1835      0.13  Q        |         |         |         V|
24+55       8.1843      0.12  Q        |         |         |         V|
25+ 0       8.1850      0.10  Q        |         |         |         V|
25+ 5       8.1857      0.09  Q        |         |         |         V|
25+10       8.1862      0.08  Q        |         |         |         V|
25+15       8.1867      0.07  Q        |         |         |         V|
25+20       8.1872      0.06  Q        |         |         |         V|
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   25+25       8.1876      0.06  Q          |          |          |         V|
   25+30       8.1879      0.05  Q          |          |          |         V|
   25+35       8.1882      0.04  Q          |          |          |         V|
   25+40       8.1885      0.04  Q          |          |          |         V|
   25+45       8.1887      0.04  Q          |          |          |         V|
   25+50       8.1890      0.03  Q          |          |          |         V|
   25+55       8.1892      0.03  Q          |          |          |         V|
   26+ 0       8.1893      0.02  Q          |          |          |         V|
   26+ 5       8.1895      0.02  Q          |          |          |         V|
   26+10       8.1896      0.02  Q          |          |          |         V|
   26+15       8.1897      0.02  Q          |          |          |         V|
   26+20       8.1898      0.01  Q          |          |          |         V|
   26+25       8.1899      0.01  Q          |          |          |         V|
   26+30       8.1899      0.01  Q          |          |          |         V|
   26+35       8.1900      0.01  Q          |          |          |         V|
   26+40       8.1901      0.01  Q          |          |          |         V|
   26+45       8.1901      0.01  Q          |          |          |         V|
   26+50       8.1901      0.00  Q          |          |          |         V|
   26+55       8.1901      0.00  Q          |          |          |         V|
   27+ 0       8.1901      0.00  Q          |          |          |         V|
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U n i t H y d r o g r a p h A n a l y s i s

Study date 07/27/22 File: p908002410.out

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

Program License Serial Number 4027

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

English Units used in output format

Unit Hydrograph 10-yr/24hr - Developed
Tentative Tract No. 383330 - J.D.Ranch
908-00

Drainage Area = 25.91(Ac.) = 0.040 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 25.91(Ac.) = 0.040 Sq. Mi.
Length along longest watercourse = 1942.00(Ft.)
Length along longest watercourse measured to centroid = 969.00(Ft.)
Length along longest watercourse = 0.368 Mi.
Length along longest watercourse measured to centroid = 0.184 Mi.
Difference in elevation = 16.30(Ft.)
Slope along watercourse = 44.3172 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.063 Hr.
Lag time = 3.77 Min.
25% of lag time = 0.94 Min.
40% of lag time = 1.51 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]
25.91	2.34	60.63

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
25.91	6.26	162.20

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 2.340(In)
Area Averaged 100-Year Rainfall = 6.260(In)

Point rain (area averaged) = 3.953(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 3.953(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
12.380	56.00	0.500
0.450	56.00	0.900
0.470	56.00	0.150
4.210	69.00	0.500
7.580	75.00	0.500
0.400	75.00	0.900
0.420	75.00	0.150

Total Area Entered = 25.91(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.500	0.281	0.478	0.134
56.0	56.0	0.511	0.900	0.097	0.017	0.002
56.0	56.0	0.511	0.150	0.442	0.018	0.008
69.0	69.0	0.373	0.500	0.205	0.162	0.033
75.0	75.0	0.303	0.500	0.167	0.293	0.049
75.0	75.0	0.303	0.900	0.058	0.015	0.001
75.0	75.0	0.303	0.150	0.262	0.016	0.004
					Sum (F) =	0.231

Area averaged mean soil loss (F) (In/Hr) = 0.131
Minimum soil loss rate ((In/Hr)) = 0.065
(for 24 hour storm duration)
Note: User entry of the f value

Soil low loss rate (decimal) = 0.710

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	132.504	28.701	7.495
2	0.167	265.008	48.158	12.575
3	0.250	397.512	12.319	3.217
4	0.333	530.016	5.487	1.433
5	0.417	662.520	3.001	0.784
6	0.500	795.024	1.622	0.424
7	0.583	927.528	0.712	0.186
			Sum = 100.000	Sum= 26.112

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.032	0.231	0.022	0.01
2	0.17	0.07	0.032	0.231	0.022	0.01
3	0.25	0.07	0.032	0.230	0.022	0.01
4	0.33	0.10	0.047	0.229	0.034	0.01
5	0.42	0.10	0.047	0.228	0.034	0.01
6	0.50	0.10	0.047	0.227	0.034	0.01
7	0.58	0.10	0.047	0.226	0.034	0.01
8	0.67	0.10	0.047	0.225	0.034	0.01
9	0.75	0.10	0.047	0.224	0.034	0.01
10	0.83	0.13	0.063	0.223	0.045	0.02
11	0.92	0.13	0.063	0.223	0.045	0.02
12	1.00	0.13	0.063	0.222	0.045	0.02
13	1.08	0.10	0.047	0.221	0.034	0.01
14	1.17	0.10	0.047	0.220	0.034	0.01
15	1.25	0.10	0.047	0.219	0.034	0.01
16	1.33	0.10	0.047	0.218	0.034	0.01
17	1.42	0.10	0.047	0.217	0.034	0.01
18	1.50	0.10	0.047	0.216	0.034	0.01
19	1.58	0.10	0.047	0.216	0.034	0.01
20	1.67	0.10	0.047	0.215	0.034	0.01
21	1.75	0.10	0.047	0.214	0.034	0.01
22	1.83	0.13	0.063	0.213	0.045	0.02
23	1.92	0.13	0.063	0.212	0.045	0.02
24	2.00	0.13	0.063	0.211	0.045	0.02
25	2.08	0.13	0.063	0.210	0.045	0.02
26	2.17	0.13	0.063	0.210	0.045	0.02
27	2.25	0.13	0.063	0.209	0.045	0.02
28	2.33	0.13	0.063	0.208	0.045	0.02
29	2.42	0.13	0.063	0.207	0.045	0.02
30	2.50	0.13	0.063	0.206	0.045	0.02
31	2.58	0.17	0.079	0.205	0.056	0.02
32	2.67	0.17	0.079	0.204	0.056	0.02
33	2.75	0.17	0.079	0.204	0.056	0.02
34	2.83	0.17	0.079	0.203	0.056	0.02
35	2.92	0.17	0.079	0.202	0.056	0.02
36	3.00	0.17	0.079	0.201	0.056	0.02
37	3.08	0.17	0.079	0.200	0.056	0.02
38	3.17	0.17	0.079	0.199	0.056	0.02
39	3.25	0.17	0.079	0.199	0.056	0.02
40	3.33	0.17	0.079	0.198	0.056	0.02
41	3.42	0.17	0.079	0.197	0.056	0.02
42	3.50	0.17	0.079	0.196	0.056	0.02
43	3.58	0.17	0.079	0.195	0.056	0.02
44	3.67	0.17	0.079	0.195	0.056	0.02
45	3.75	0.17	0.079	0.194	0.056	0.02
46	3.83	0.20	0.095	0.193	0.067	0.03
47	3.92	0.20	0.095	0.192	0.067	0.03
48	4.00	0.20	0.095	0.191	0.067	0.03
49	4.08	0.20	0.095	0.190	0.067	0.03
50	4.17	0.20	0.095	0.190	0.067	0.03
51	4.25	0.20	0.095	0.189	0.067	0.03
52	4.33	0.23	0.111	0.188	0.079	0.03
53	4.42	0.23	0.111	0.187	0.079	0.03
54	4.50	0.23	0.111	0.186	0.079	0.03
55	4.58	0.23	0.111	0.186	0.079	0.03
56	4.67	0.23	0.111	0.185	0.079	0.03
57	4.75	0.23	0.111	0.184	0.079	0.03
58	4.83	0.27	0.126	0.183	0.090	0.04
59	4.92	0.27	0.126	0.182	0.090	0.04
60	5.00	0.27	0.126	0.182	0.090	0.04
61	5.08	0.20	0.095	0.181	0.067	0.03
62	5.17	0.20	0.095	0.180	0.067	0.03
63	5.25	0.20	0.095	0.179	0.067	0.03
64	5.33	0.23	0.111	0.179	0.079	0.03
65	5.42	0.23	0.111	0.178	0.079	0.03
66	5.50	0.23	0.111	0.177	0.079	0.03
67	5.58	0.27	0.126	0.176	0.090	0.04
68	5.67	0.27	0.126	0.175	0.090	0.04
69	5.75	0.27	0.126	0.175	0.090	0.04

70	5.83	0.27	0.126	0.174	0.090	0.04
71	5.92	0.27	0.126	0.173	0.090	0.04
72	6.00	0.27	0.126	0.172	0.090	0.04
73	6.08	0.30	0.142	0.172	0.101	0.04
74	6.17	0.30	0.142	0.171	0.101	0.04
75	6.25	0.30	0.142	0.170	0.101	0.04
76	6.33	0.30	0.142	0.169	0.101	0.04
77	6.42	0.30	0.142	0.169	0.101	0.04
78	6.50	0.30	0.142	0.168	0.101	0.04
79	6.58	0.33	0.158	0.167	0.112	0.05
80	6.67	0.33	0.158	0.166	0.112	0.05
81	6.75	0.33	0.158	0.165	0.112	0.05
82	6.83	0.33	0.158	0.165	0.112	0.05
83	6.92	0.33	0.158	0.164	0.112	0.05
84	7.00	0.33	0.158	0.163	0.112	0.05
85	7.08	0.33	0.158	0.163	0.112	0.05
86	7.17	0.33	0.158	0.162	0.112	0.05
87	7.25	0.33	0.158	0.161	0.112	0.05
88	7.33	0.37	0.174	0.160	---	0.01
89	7.42	0.37	0.174	0.160	---	0.01
90	7.50	0.37	0.174	0.159	---	0.02
91	7.58	0.40	0.190	0.158	---	0.03
92	7.67	0.40	0.190	0.157	---	0.03
93	7.75	0.40	0.190	0.157	---	0.03
94	7.83	0.43	0.206	0.156	---	0.05
95	7.92	0.43	0.206	0.155	---	0.05
96	8.00	0.43	0.206	0.154	---	0.05
97	8.08	0.50	0.237	0.154	---	0.08
98	8.17	0.50	0.237	0.153	---	0.08
99	8.25	0.50	0.237	0.152	---	0.08
100	8.33	0.50	0.237	0.152	---	0.09
101	8.42	0.50	0.237	0.151	---	0.09
102	8.50	0.50	0.237	0.150	---	0.09
103	8.58	0.53	0.253	0.150	---	0.10
104	8.67	0.53	0.253	0.149	---	0.10
105	8.75	0.53	0.253	0.148	---	0.10
106	8.83	0.57	0.269	0.147	---	0.12
107	8.92	0.57	0.269	0.147	---	0.12
108	9.00	0.57	0.269	0.146	---	0.12
109	9.08	0.63	0.300	0.145	---	0.16
110	9.17	0.63	0.300	0.145	---	0.16
111	9.25	0.63	0.300	0.144	---	0.16
112	9.33	0.67	0.316	0.143	---	0.17
113	9.42	0.67	0.316	0.143	---	0.17
114	9.50	0.67	0.316	0.142	---	0.17
115	9.58	0.70	0.332	0.141	---	0.19
116	9.67	0.70	0.332	0.141	---	0.19
117	9.75	0.70	0.332	0.140	---	0.19
118	9.83	0.73	0.348	0.139	---	0.21
119	9.92	0.73	0.348	0.139	---	0.21
120	10.00	0.73	0.348	0.138	---	0.21
121	10.08	0.50	0.237	0.137	---	0.10
122	10.17	0.50	0.237	0.137	---	0.10
123	10.25	0.50	0.237	0.136	---	0.10
124	10.33	0.50	0.237	0.135	---	0.10
125	10.42	0.50	0.237	0.135	---	0.10
126	10.50	0.50	0.237	0.134	---	0.10
127	10.58	0.67	0.316	0.133	---	0.18
128	10.67	0.67	0.316	0.133	---	0.18
129	10.75	0.67	0.316	0.132	---	0.18
130	10.83	0.67	0.316	0.131	---	0.18
131	10.92	0.67	0.316	0.131	---	0.19
132	11.00	0.67	0.316	0.130	---	0.19
133	11.08	0.63	0.300	0.129	---	0.17
134	11.17	0.63	0.300	0.129	---	0.17
135	11.25	0.63	0.300	0.128	---	0.17
136	11.33	0.63	0.300	0.127	---	0.17
137	11.42	0.63	0.300	0.127	---	0.17
138	11.50	0.63	0.300	0.126	---	0.17
139	11.58	0.57	0.269	0.126	---	0.14
140	11.67	0.57	0.269	0.125	---	0.14
141	11.75	0.57	0.269	0.124	---	0.14
142	11.83	0.60	0.285	0.124	---	0.16
143	11.92	0.60	0.285	0.123	---	0.16
144	12.00	0.60	0.285	0.122	---	0.16
145	12.08	0.83	0.395	0.122	---	0.27
146	12.17	0.83	0.395	0.121	---	0.27
147	12.25	0.83	0.395	0.121	---	0.27
148	12.33	0.87	0.411	0.120	---	0.29
149	12.42	0.87	0.411	0.119	---	0.29
150	12.50	0.87	0.411	0.119	---	0.29
151	12.58	0.93	0.443	0.118	---	0.32
152	12.67	0.93	0.443	0.118	---	0.33
153	12.75	0.93	0.443	0.117	---	0.33
154	12.83	0.97	0.458	0.116	---	0.34
155	12.92	0.97	0.458	0.116	---	0.34
156	13.00	0.97	0.458	0.115	---	0.34
157	13.08	1.13	0.538	0.115	---	0.42
158	13.17	1.13	0.538	0.114	---	0.42
159	13.25	1.13	0.538	0.114	---	0.42
160	13.33	1.13	0.538	0.113	---	0.42
161	13.42	1.13	0.538	0.112	---	0.43
162	13.50	1.13	0.538	0.112	---	0.43

163	13.58	0.77	0.364	0.111	---	0.25
164	13.67	0.77	0.364	0.111	---	0.25
165	13.75	0.77	0.364	0.110	---	0.25
166	13.83	0.77	0.364	0.110	---	0.25
167	13.92	0.77	0.364	0.109	---	0.25
168	14.00	0.77	0.364	0.108	---	0.26
169	14.08	0.90	0.427	0.108	---	0.32
170	14.17	0.90	0.427	0.107	---	0.32
171	14.25	0.90	0.427	0.107	---	0.32
172	14.33	0.87	0.411	0.106	---	0.30
173	14.42	0.87	0.411	0.106	---	0.31
174	14.50	0.87	0.411	0.105	---	0.31
175	14.58	0.87	0.411	0.105	---	0.31
176	14.67	0.87	0.411	0.104	---	0.31
177	14.75	0.87	0.411	0.104	---	0.31
178	14.83	0.83	0.395	0.103	---	0.29
179	14.92	0.83	0.395	0.102	---	0.29
180	15.00	0.83	0.395	0.102	---	0.29
181	15.08	0.80	0.379	0.101	---	0.28
182	15.17	0.80	0.379	0.101	---	0.28
183	15.25	0.80	0.379	0.100	---	0.28
184	15.33	0.77	0.364	0.100	---	0.26
185	15.42	0.77	0.364	0.099	---	0.26
186	15.50	0.77	0.364	0.099	---	0.26
187	15.58	0.63	0.300	0.098	---	0.20
188	15.67	0.63	0.300	0.098	---	0.20
189	15.75	0.63	0.300	0.097	---	0.20
190	15.83	0.63	0.300	0.097	---	0.20
191	15.92	0.63	0.300	0.096	---	0.20
192	16.00	0.63	0.300	0.096	---	0.20
193	16.08	0.13	0.063	0.095	0.045	0.02
194	16.17	0.13	0.063	0.095	0.045	0.02
195	16.25	0.13	0.063	0.094	0.045	0.02
196	16.33	0.13	0.063	0.094	0.045	0.02
197	16.42	0.13	0.063	0.093	0.045	0.02
198	16.50	0.13	0.063	0.093	0.045	0.02
199	16.58	0.10	0.047	0.092	0.034	0.01
200	16.67	0.10	0.047	0.092	0.034	0.01
201	16.75	0.10	0.047	0.092	0.034	0.01
202	16.83	0.10	0.047	0.091	0.034	0.01
203	16.92	0.10	0.047	0.091	0.034	0.01
204	17.00	0.10	0.047	0.090	0.034	0.01
205	17.08	0.17	0.079	0.090	0.056	0.02
206	17.17	0.17	0.079	0.089	0.056	0.02
207	17.25	0.17	0.079	0.089	0.056	0.02
208	17.33	0.17	0.079	0.088	0.056	0.02
209	17.42	0.17	0.079	0.088	0.056	0.02
210	17.50	0.17	0.079	0.087	0.056	0.02
211	17.58	0.17	0.079	0.087	0.056	0.02
212	17.67	0.17	0.079	0.087	0.056	0.02
213	17.75	0.17	0.079	0.086	0.056	0.02
214	17.83	0.13	0.063	0.086	0.045	0.02
215	17.92	0.13	0.063	0.085	0.045	0.02
216	18.00	0.13	0.063	0.085	0.045	0.02
217	18.08	0.13	0.063	0.084	0.045	0.02
218	18.17	0.13	0.063	0.084	0.045	0.02
219	18.25	0.13	0.063	0.084	0.045	0.02
220	18.33	0.13	0.063	0.083	0.045	0.02
221	18.42	0.13	0.063	0.083	0.045	0.02
222	18.50	0.13	0.063	0.082	0.045	0.02
223	18.58	0.10	0.047	0.082	0.034	0.01
224	18.67	0.10	0.047	0.082	0.034	0.01
225	18.75	0.10	0.047	0.081	0.034	0.01
226	18.83	0.07	0.032	0.081	0.022	0.01
227	18.92	0.07	0.032	0.080	0.022	0.01
228	19.00	0.07	0.032	0.080	0.022	0.01
229	19.08	0.10	0.047	0.080	0.034	0.01
230	19.17	0.10	0.047	0.079	0.034	0.01
231	19.25	0.10	0.047	0.079	0.034	0.01
232	19.33	0.13	0.063	0.079	0.045	0.02
233	19.42	0.13	0.063	0.078	0.045	0.02
234	19.50	0.13	0.063	0.078	0.045	0.02
235	19.58	0.10	0.047	0.078	0.034	0.01
236	19.67	0.10	0.047	0.077	0.034	0.01
237	19.75	0.10	0.047	0.077	0.034	0.01
238	19.83	0.07	0.032	0.076	0.022	0.01
239	19.92	0.07	0.032	0.076	0.022	0.01
240	20.00	0.07	0.032	0.076	0.022	0.01
241	20.08	0.10	0.047	0.075	0.034	0.01
242	20.17	0.10	0.047	0.075	0.034	0.01
243	20.25	0.10	0.047	0.075	0.034	0.01
244	20.33	0.10	0.047	0.074	0.034	0.01
245	20.42	0.10	0.047	0.074	0.034	0.01
246	20.50	0.10	0.047	0.074	0.034	0.01
247	20.58	0.10	0.047	0.074	0.034	0.01
248	20.67	0.10	0.047	0.073	0.034	0.01
249	20.75	0.10	0.047	0.073	0.034	0.01
250	20.83	0.07	0.032	0.073	0.022	0.01
251	20.92	0.07	0.032	0.072	0.022	0.01
252	21.00	0.07	0.032	0.072	0.022	0.01
253	21.08	0.10	0.047	0.072	0.034	0.01
254	21.17	0.10	0.047	0.071	0.034	0.01
255	21.25	0.10	0.047	0.071	0.034	0.01

256	21.33	0.07	0.032	0.071	0.022	0.01
257	21.42	0.07	0.032	0.071	0.022	0.01
258	21.50	0.07	0.032	0.070	0.022	0.01
259	21.58	0.10	0.047	0.070	0.034	0.01
260	21.67	0.10	0.047	0.070	0.034	0.01
261	21.75	0.10	0.047	0.070	0.034	0.01
262	21.83	0.07	0.032	0.069	0.022	0.01
263	21.92	0.07	0.032	0.069	0.022	0.01
264	22.00	0.07	0.032	0.069	0.022	0.01
265	22.08	0.10	0.047	0.069	0.034	0.01
266	22.17	0.10	0.047	0.068	0.034	0.01
267	22.25	0.10	0.047	0.068	0.034	0.01
268	22.33	0.07	0.032	0.068	0.022	0.01
269	22.42	0.07	0.032	0.068	0.022	0.01
270	22.50	0.07	0.032	0.068	0.022	0.01
271	22.58	0.07	0.032	0.067	0.022	0.01
272	22.67	0.07	0.032	0.067	0.022	0.01
273	22.75	0.07	0.032	0.067	0.022	0.01
274	22.83	0.07	0.032	0.067	0.022	0.01
275	22.92	0.07	0.032	0.067	0.022	0.01
276	23.00	0.07	0.032	0.067	0.022	0.01
277	23.08	0.07	0.032	0.066	0.022	0.01
278	23.17	0.07	0.032	0.066	0.022	0.01
279	23.25	0.07	0.032	0.066	0.022	0.01
280	23.33	0.07	0.032	0.066	0.022	0.01
281	23.42	0.07	0.032	0.066	0.022	0.01
282	23.50	0.07	0.032	0.066	0.022	0.01
283	23.58	0.07	0.032	0.066	0.022	0.01
284	23.67	0.07	0.032	0.066	0.022	0.01
285	23.75	0.07	0.032	0.065	0.022	0.01
286	23.83	0.07	0.032	0.065	0.022	0.01
287	23.92	0.07	0.032	0.065	0.022	0.01
288	24.00	0.07	0.032	0.065	0.022	0.01
Sum =		100.0			Sum =	25.3

Flood volume = Effective rainfall 2.11(In)
times area 25.9(Ac.)/[(In)/(Ft.)] = 4.5(Ac.Ft)
Total soil loss = 1.85(In)
Total soil loss = 3.986(Ac.Ft)
Total rainfall = 3.95(In)
Flood volume = 198100.8 Cubic Feet
Total soil loss = 173646.7 Cubic Feet

Peak flow rate of this hydrograph = 11.091(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	0.0005	0.07	Q				
0+10	0.0017	0.18	Q				
0+15	0.0032	0.21	Q				
0+20	0.0050	0.26	Q				
0+25	0.0073	0.33	Q				
0+30	0.0096	0.34	Q				
0+35	0.0121	0.35	Q				
0+40	0.0145	0.36	Q				
0+45	0.0170	0.36	Q				
0+50	0.0197	0.39	Q				
0+55	0.0228	0.45	Q				
1+ 0	0.0260	0.47	Q				
1+ 5	0.0290	0.44	Q				
1+10	0.0317	0.38	Q				
1+15	0.0342	0.37	Q				
1+20	0.0368	0.37	Q				
1+25	0.0393	0.36	Q				
1+30	0.0417	0.36	Q				
1+35	0.0442	0.36	Q				
1+40	0.0467	0.36	Q				
1+45	0.0492	0.36	Q				
1+50	0.0519	0.39	Q				
1+55	0.0550	0.45	Q				
2+ 0	0.0582	0.47	Q				
2+ 5	0.0614	0.47	Q				
2+10	0.0647	0.48	Q				
2+15	0.0680	0.48	Q				
2+20	0.0713	0.48	Q				
2+25	0.0746	0.48	Q				
2+30	0.0779	0.48	Q				
2+35	0.0815	0.51	VQ				
2+40	0.0854	0.57	VQ				
2+45	0.0894	0.59	VQ				
2+50	0.0935	0.59	VQ				
2+55	0.0976	0.60	VQ				
3+ 0	0.1017	0.60	VQ				
3+ 5	0.1059	0.60	VQ				
3+10	0.1100	0.60	VQ				
3+15	0.1141	0.60	|Q				
3+20	0.1182	0.60	|Q				

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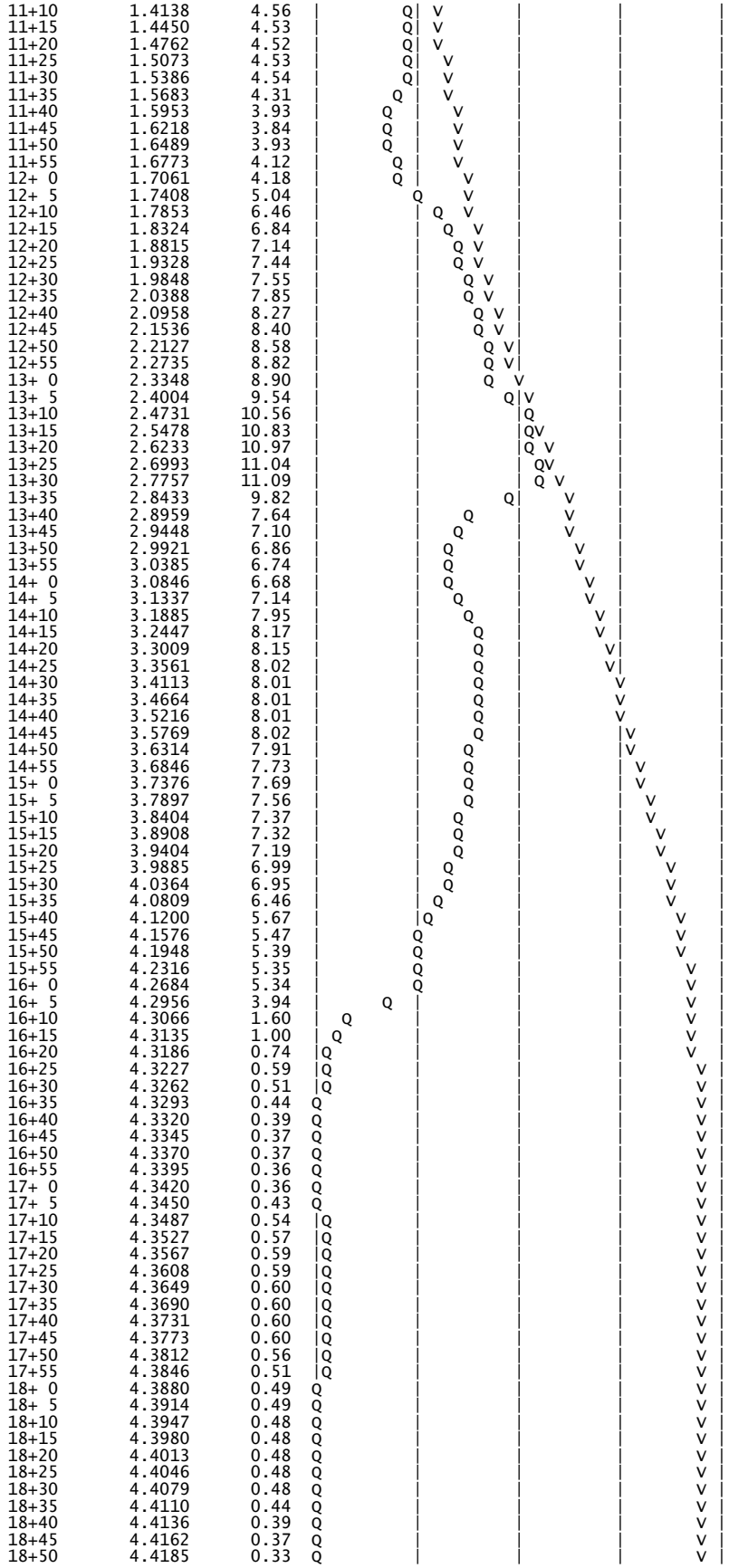
 3+25       0.1224      0.60  |Q         |          |          |          |
 3+30       0.1265      0.60  |Q         |          |          |          |
 3+35       0.1306      0.60  |Q         |          |          |          |
 3+40       0.1347      0.60  |Q         |          |          |          |
 3+45       0.1389      0.60  |Q         |          |          |          |
 3+50       0.1432      0.63  |Q         |          |          |          |
 3+55       0.1480      0.69  |Q         |          |          |          |
 4+ 0       0.1528      0.71  |Q         |          |          |          |
 4+ 5       0.1577      0.71  |Q         |          |          |          |
 4+10       0.1627      0.72  |Q         |          |          |          |
 4+15       0.1676      0.72  |Q         |          |          |          |
 4+20       0.1728      0.75  |Q         |          |          |          |
 4+25       0.1784      0.81  |Q         |          |          |          |
 4+30       0.1841      0.83  |Q         |          |          |          |
 4+35       0.1898      0.83  |Q         |          |          |          |
 4+40       0.1956      0.84  |Q         |          |          |          |
 4+45       0.2013      0.84  |Q         |          |          |          |
 4+50       0.2073      0.87  |Q         |          |          |          |
 4+55       0.2137      0.93  |Q         |          |          |          |
 5+ 0       0.2203      0.95  |Q         |          |          |          |
 5+ 5       0.2263      0.88  |Q         |          |          |          |
 5+10       0.2317      0.77  |QV        |          |          |          |
 5+15       0.2368      0.74  |QV        |          |          |          |
 5+20       0.2421      0.77  |QV        |          |          |          |
 5+25       0.2477      0.82  |QV        |          |          |          |
 5+30       0.2534      0.83  |QV        |          |          |          |
 5+35       0.2593      0.87  |QV        |          |          |          |
 5+40       0.2657      0.93  |QV        |          |          |          |
 5+45       0.2722      0.94  |QV        |          |          |          |
 5+50       0.2788      0.95  |QV        |          |          |          |
 5+55       0.2854      0.96  |QV        |          |          |          |
 6+ 0       0.2920      0.96  |QV        |          |          |          |
 6+ 5       0.2988      0.99  |QV        |          |          |          |
 6+10       0.3060      1.05  | Q        |          |          |          |
 6+15       0.3134      1.07  | Q        |          |          |          |
 6+20       0.3207      1.07  | Q        |          |          |          |
 6+25       0.3282      1.08  | Q        |          |          |          |
 6+30       0.3356      1.08  | Q        |          |          |          |
 6+35       0.3432      1.11  | QV       |          |          |          |
 6+40       0.3513      1.17  | QV       |          |          |          |
 6+45       0.3595      1.18  | QV       |          |          |          |
 6+50       0.3677      1.19  | QV       |          |          |          |
 6+55       0.3759      1.20  | QV       |          |          |          |
 7+ 0       0.3841      1.20  | QV       |          |          |          |
 7+ 5       0.3924      1.20  | QV       |          |          |          |
 7+10       0.4006      1.20  | QV       |          |          |          |
 7+15       0.4089      1.20  | QV       |          |          |          |
 7+20       0.4155      0.96  |Q V       |          |          |          |
 7+25       0.4193      0.56  |Q V       |          |          |          |
 7+30       0.4225      0.47  Q  V       |          |          |          |
 7+35       0.4263      0.56  |Q V       |          |          |          |
 7+40       0.4315      0.75  |Q V       |          |          |          |
 7+45       0.4370      0.80  |Q V       |          |          |          |
 7+50       0.4436      0.96  |Q V       |          |          |          |
 7+55       0.4518      1.19  | QV       |          |          |          |
 8+ 0       0.4605      1.26  | Q V      |          |          |          |
 8+ 5       0.4712      1.55  |  QV      |          |          |          |
 8+10       0.4848      1.97  |  QV      |          |          |          |
 8+15       0.4992      2.10  |   Q      |          |          |          |
 8+20       0.5142      2.17  |   Q      |          |          |          |
 8+25       0.5294      2.21  |   Q      |          |          |          |
 8+30       0.5449      2.24  |   Q      |          |          |          |
 8+35       0.5613      2.39  |   Q      |          |          |          |
 8+40       0.5792      2.60  |    Q     |          |          |          |
 8+45       0.5977      2.67  |    Q     |          |          |          |
 8+50       0.6172      2.83  |    Q     |          |          |          |
 8+55       0.6383      3.06  |    VQ    |          |          |          |
 9+ 0       0.6599      3.14  |    VQ    |          |          |          |
 9+ 5       0.6834      3.42  |     Q    |          |          |          |
 9+10       0.7099      3.85  |     VQ   |          |          |          |
 9+15       0.7373      3.97  |     VQ   |          |          |          |
 9+20       0.7659      4.16  |     V Q  |          |          |          |
 9+25       0.7962      4.40  |      VQ  |          |          |          |
 9+30       0.8271      4.48  |      VQ  |          |          |          |
 9+35       0.8591      4.65  |      V Q|          |          |          |
 9+40       0.8927      4.88  |      V Q|          |          |          |
 9+45       0.9268      4.95  |       VQ|          |          |          |
 9+50       0.9620      5.11  |       V Q          |          |          |
 9+55       0.9988      5.34  |       V Q          |          |          |
10+ 0       1.0362      5.42  |        VQ          |          |          |
10+ 5       1.0681      4.63  |        Q|          |          |          |
10+10       1.0906      3.27  |     Q  V|          |          |          |
10+15       1.1108      2.94  |    Q   V|          |          |          |
10+20       1.1301      2.80  |    Q   V|          |          |          |
10+25       1.1488      2.73  |    Q    V          |          |          |
10+30       1.1674      2.70  |    Q    V          |          |          |
10+35       1.1901      3.29  |     Q   V          |          |          |
10+40       1.2197      4.30  |       Q V          |          |          |
10+45       1.2512      4.57  |        Q|V         |          |          |
10+50       1.2836      4.70  |        Q|V         |          |          |
10+55       1.3165      4.78  |        Q|V         |          |          |
11+ 0       1.3498      4.83  |        Q|V         |          |          |
11+ 5       1.3824      4.74  |        Q| V        |          |          |
```



18+55	4.4203	0.27	Q				V
19+ 0	4.4221	0.25	Q				V
19+ 5	4.4240	0.28	Q				V
19+10	4.4263	0.33	Q				V
19+15	4.4287	0.35	Q				V
19+20	4.4314	0.39	Q				V
19+25	4.4345	0.45	Q				V
19+30	4.4377	0.47	Q				V
19+35	4.4407	0.44	Q				V
19+40	4.4433	0.38	Q				V
19+45	4.4459	0.37	Q				V
19+50	4.4482	0.33	Q				V
19+55	4.4500	0.27	Q				V
20+ 0	4.4518	0.25	Q				V
20+ 5	4.4537	0.28	Q				V
20+10	4.4560	0.33	Q				V
20+15	4.4584	0.35	Q				V
20+20	4.4608	0.35	Q				V
20+25	4.4633	0.36	Q				V
20+30	4.4658	0.36	Q				V
20+35	4.4682	0.36	Q				V
20+40	4.4707	0.36	Q				V
20+45	4.4732	0.36	Q				V
20+50	4.4754	0.32	Q				V
20+55	4.4773	0.27	Q				V
21+ 0	4.4790	0.25	Q				V
21+ 5	4.4809	0.28	Q				V
21+10	4.4832	0.33	Q				V
21+15	4.4856	0.35	Q				V
21+20	4.4878	0.32	Q				V
21+25	4.4896	0.26	Q				V
21+30	4.4914	0.25	Q				V
21+35	4.4933	0.28	Q				V
21+40	4.4956	0.33	Q				V
21+45	4.4980	0.35	Q				V
21+50	4.5002	0.32	Q				V
21+55	4.5020	0.26	Q				V
22+ 0	4.5038	0.25	Q				V
22+ 5	4.5057	0.28	Q				V
22+10	4.5080	0.33	Q				V
22+15	4.5104	0.35	Q				V
22+20	4.5126	0.32	Q				V
22+25	4.5144	0.26	Q				V
22+30	4.5161	0.25	Q				V
22+35	4.5178	0.25	Q				V
22+40	4.5195	0.24	Q				V
22+45	4.5211	0.24	Q				V
22+50	4.5228	0.24	Q				V
22+55	4.5244	0.24	Q				V
23+ 0	4.5261	0.24	Q				V
23+ 5	4.5277	0.24	Q				V
23+10	4.5294	0.24	Q				V
23+15	4.5310	0.24	Q				V
23+20	4.5327	0.24	Q				V
23+25	4.5343	0.24	Q				V
23+30	4.5360	0.24	Q				V
23+35	4.5376	0.24	Q				V
23+40	4.5393	0.24	Q				V
23+45	4.5409	0.24	Q				V
23+50	4.5426	0.24	Q				V
23+55	4.5442	0.24	Q				V
24+ 0	4.5459	0.24	Q				V
24+ 5	4.5471	0.17	Q				V
24+10	4.5475	0.06	Q				V
24+15	4.5476	0.03	Q				V
24+20	4.5477	0.01	Q				V
24+25	4.5478	0.01	Q				V
24+30	4.5478	0.00	Q				V

```
        U n i t   H y d r o g r a p h   A n a l y s i s

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                Study date  07/27/22 File: p9080024100.out

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


Program License Serial Number 4027

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

 English Units used in output format



------------------------------------------------------------------------
Unit Hydrograph - Developed 100-yr/24-hr
Tentative Tract No. 383330 - J.D.Ranch
908-00

------------------------------------------------------------------------
Drainage Area =      25.91(Ac.)  =      0.040 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      25.91(Ac.)  =      0.040 Sq. Mi.
Length along longest watercourse =    1942.00(Ft.)
Length along longest watercourse measured to centroid =     969.00(Ft.)
Length along longest watercourse =      0.368 Mi.
Length along longest watercourse measured to centroid =      0.184 Mi.
Difference in elevation =      16.30(Ft.)
Slope along watercourse =     44.3172 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time =    0.063 Hr.
Lag time =     3.77 Min.
25% of lag time =     0.94 Min.
40% of lag time =     1.51 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]
       25.91            2.34                  60.63

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       25.91            6.26                 162.20

STORM EVENT (YEAR) =  100.00
Area Averaged 2-Year Rainfall =    2.340(In)
Area Averaged 100-Year Rainfall =    6.260(In)

Point rain (area averaged) =    6.260(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    6.260(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    12.380           56.00          0.500
     0.450           56.00          0.900
     0.470           56.00          0.150
     4.210           69.00          0.500
     7.580           75.00          0.500
     0.400           75.00          0.900
     0.420           75.00          0.150
 Total Area Entered =     25.91(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-3     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
56.0  74.8      0.305     0.500        0.168       0.478      0.080
56.0  74.8      0.305     0.900        0.058       0.017      0.001
56.0  74.8      0.305     0.150        0.264       0.018      0.005
69.0  84.4      0.194     0.500        0.107       0.162      0.017
75.0  88.0      0.153     0.500        0.084       0.293      0.025
75.0  88.0      0.153     0.900        0.029       0.015      0.000
75.0  88.0      0.153     0.150        0.132       0.016      0.002
                                                 Sum (F) =   0.131
Area averaged mean soil loss (F) (In/Hr) =  0.131
Minimum soil loss rate ((In/Hr)) =  0.065
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.710
```

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	132.504	28.701	7.495
2	0.167	265.008	48.158	12.575
3	0.250	397.512	12.319	3.217
4	0.333	530.016	5.487	1.433
5	0.417	662.520	3.001	0.784
6	0.500	795.024	1.622	0.424
7	0.583	927.528	0.712	0.186
			Sum = 100.000	Sum= 26.112

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.050	0.231	0.036	0.01
2	0.17	0.07	0.050	0.231	0.036	0.01
3	0.25	0.07	0.050	0.230	0.036	0.01
4	0.33	0.10	0.075	0.229	0.053	0.02
5	0.42	0.10	0.075	0.228	0.053	0.02
6	0.50	0.10	0.075	0.227	0.053	0.02
7	0.58	0.10	0.075	0.226	0.053	0.02
8	0.67	0.10	0.075	0.225	0.053	0.02
9	0.75	0.10	0.075	0.224	0.053	0.02
10	0.83	0.13	0.100	0.223	0.071	0.03
11	0.92	0.13	0.100	0.223	0.071	0.03
12	1.00	0.13	0.100	0.222	0.071	0.03
13	1.08	0.10	0.075	0.221	0.053	0.02
14	1.17	0.10	0.075	0.220	0.053	0.02
15	1.25	0.10	0.075	0.219	0.053	0.02
16	1.33	0.10	0.075	0.218	0.053	0.02
17	1.42	0.10	0.075	0.217	0.053	0.02
18	1.50	0.10	0.075	0.216	0.053	0.02
19	1.58	0.10	0.075	0.216	0.053	0.02
20	1.67	0.10	0.075	0.215	0.053	0.02
21	1.75	0.10	0.075	0.214	0.053	0.02
22	1.83	0.13	0.100	0.213	0.071	0.03
23	1.92	0.13	0.100	0.212	0.071	0.03
24	2.00	0.13	0.100	0.211	0.071	0.03
25	2.08	0.13	0.100	0.210	0.071	0.03
26	2.17	0.13	0.100	0.210	0.071	0.03
27	2.25	0.13	0.100	0.209	0.071	0.03
28	2.33	0.13	0.100	0.208	0.071	0.03
29	2.42	0.13	0.100	0.207	0.071	0.03
30	2.50	0.13	0.100	0.206	0.071	0.03
31	2.58	0.17	0.125	0.205	0.089	0.04
32	2.67	0.17	0.125	0.204	0.089	0.04
33	2.75	0.17	0.125	0.204	0.089	0.04
34	2.83	0.17	0.125	0.203	0.089	0.04
35	2.92	0.17	0.125	0.202	0.089	0.04
36	3.00	0.17	0.125	0.201	0.089	0.04
37	3.08	0.17	0.125	0.200	0.089	0.04
38	3.17	0.17	0.125	0.199	0.089	0.04
39	3.25	0.17	0.125	0.199	0.089	0.04
40	3.33	0.17	0.125	0.198	0.089	0.04
41	3.42	0.17	0.125	0.197	0.089	0.04
42	3.50	0.17	0.125	0.196	0.089	0.04
43	3.58	0.17	0.125	0.195	0.089	0.04
44	3.67	0.17	0.125	0.195	0.089	0.04
45	3.75	0.17	0.125	0.194	0.089	0.04
46	3.83	0.20	0.150	0.193	0.107	0.04
47	3.92	0.20	0.150	0.192	0.107	0.04
48	4.00	0.20	0.150	0.191	0.107	0.04
49	4.08	0.20	0.150	0.190	0.107	0.04
50	4.17	0.20	0.150	0.190	0.107	0.04
51	4.25	0.20	0.150	0.189	0.107	0.04
52	4.33	0.23	0.175	0.188	0.124	0.05
53	4.42	0.23	0.175	0.187	0.124	0.05
54	4.50	0.23	0.175	0.186	0.124	0.05
55	4.58	0.23	0.175	0.186	0.124	0.05
56	4.67	0.23	0.175	0.185	0.124	0.05
57	4.75	0.23	0.175	0.184	0.124	0.05
58	4.83	0.27	0.200	0.183	---	0.02
59	4.92	0.27	0.200	0.182	---	0.02
60	5.00	0.27	0.200	0.182	---	0.02
61	5.08	0.20	0.150	0.181	0.107	0.04
62	5.17	0.20	0.150	0.180	0.107	0.04
63	5.25	0.20	0.150	0.179	0.107	0.04
64	5.33	0.23	0.175	0.179	0.124	0.05
65	5.42	0.23	0.175	0.178	0.124	0.05
66	5.50	0.23	0.175	0.177	0.124	0.05
67	5.58	0.27	0.200	0.176	---	0.02
68	5.67	0.27	0.200	0.175	---	0.02
69	5.75	0.27	0.200	0.175	---	0.03
70	5.83	0.27	0.200	0.174	---	0.03

71	5.92	0.27	0.200	0.173	---	0.03
72	6.00	0.27	0.200	0.172	---	0.03
73	6.08	0.30	0.225	0.172	---	0.05
74	6.17	0.30	0.225	0.171	---	0.05
75	6.25	0.30	0.225	0.170	---	0.06
76	6.33	0.30	0.225	0.169	---	0.06
77	6.42	0.30	0.225	0.169	---	0.06
78	6.50	0.30	0.225	0.168	---	0.06
79	6.58	0.33	0.250	0.167	---	0.08
80	6.67	0.33	0.250	0.166	---	0.08
81	6.75	0.33	0.250	0.165	---	0.08
82	6.83	0.33	0.250	0.165	---	0.09
83	6.92	0.33	0.250	0.164	---	0.09
84	7.00	0.33	0.250	0.163	---	0.09
85	7.08	0.33	0.250	0.163	---	0.09
86	7.17	0.33	0.250	0.162	---	0.09
87	7.25	0.33	0.250	0.161	---	0.09
88	7.33	0.37	0.275	0.160	---	0.12
89	7.42	0.37	0.275	0.160	---	0.12
90	7.50	0.37	0.275	0.159	---	0.12
91	7.58	0.40	0.300	0.158	---	0.14
92	7.67	0.40	0.300	0.157	---	0.14
93	7.75	0.40	0.300	0.157	---	0.14
94	7.83	0.43	0.326	0.156	---	0.17
95	7.92	0.43	0.326	0.155	---	0.17
96	8.00	0.43	0.326	0.154	---	0.17
97	8.08	0.50	0.376	0.154	---	0.22
98	8.17	0.50	0.376	0.153	---	0.22
99	8.25	0.50	0.376	0.152	---	0.22
100	8.33	0.50	0.376	0.152	---	0.22
101	8.42	0.50	0.376	0.151	---	0.22
102	8.50	0.50	0.376	0.150	---	0.23
103	8.58	0.53	0.401	0.150	---	0.25
104	8.67	0.53	0.401	0.149	---	0.25
105	8.75	0.53	0.401	0.148	---	0.25
106	8.83	0.57	0.426	0.147	---	0.28
107	8.92	0.57	0.426	0.147	---	0.28
108	9.00	0.57	0.426	0.146	---	0.28
109	9.08	0.63	0.476	0.145	---	0.33
110	9.17	0.63	0.476	0.145	---	0.33
111	9.25	0.63	0.476	0.144	---	0.33
112	9.33	0.67	0.501	0.143	---	0.36
113	9.42	0.67	0.501	0.143	---	0.36
114	9.50	0.67	0.501	0.142	---	0.36
115	9.58	0.70	0.526	0.141	---	0.38
116	9.67	0.70	0.526	0.141	---	0.39
117	9.75	0.70	0.526	0.140	---	0.39
118	9.83	0.73	0.551	0.139	---	0.41
119	9.92	0.73	0.551	0.139	---	0.41
120	10.00	0.73	0.551	0.138	---	0.41
121	10.08	0.50	0.376	0.137	---	0.24
122	10.17	0.50	0.376	0.137	---	0.24
123	10.25	0.50	0.376	0.136	---	0.24
124	10.33	0.50	0.376	0.135	---	0.24
125	10.42	0.50	0.376	0.135	---	0.24
126	10.50	0.50	0.376	0.134	---	0.24
127	10.58	0.67	0.501	0.133	---	0.37
128	10.67	0.67	0.501	0.133	---	0.37
129	10.75	0.67	0.501	0.132	---	0.37
130	10.83	0.67	0.501	0.131	---	0.37
131	10.92	0.67	0.501	0.131	---	0.37
132	11.00	0.67	0.501	0.130	---	0.37
133	11.08	0.63	0.476	0.129	---	0.35
134	11.17	0.63	0.476	0.129	---	0.35
135	11.25	0.63	0.476	0.128	---	0.35
136	11.33	0.63	0.476	0.127	---	0.35
137	11.42	0.63	0.476	0.127	---	0.35
138	11.50	0.63	0.476	0.126	---	0.35
139	11.58	0.57	0.426	0.126	---	0.30
140	11.67	0.57	0.426	0.125	---	0.30
141	11.75	0.57	0.426	0.124	---	0.30
142	11.83	0.60	0.451	0.124	---	0.33
143	11.92	0.60	0.451	0.123	---	0.33
144	12.00	0.60	0.451	0.122	---	0.33
145	12.08	0.83	0.626	0.122	---	0.50
146	12.17	0.83	0.626	0.121	---	0.50
147	12.25	0.83	0.626	0.121	---	0.51
148	12.33	0.87	0.651	0.120	---	0.53
149	12.42	0.87	0.651	0.119	---	0.53
150	12.50	0.87	0.651	0.119	---	0.53
151	12.58	0.93	0.701	0.118	---	0.58
152	12.67	0.93	0.701	0.118	---	0.58
153	12.75	0.93	0.701	0.117	---	0.58
154	12.83	0.97	0.726	0.116	---	0.61
155	12.92	0.97	0.726	0.116	---	0.61
156	13.00	0.97	0.726	0.115	---	0.61
157	13.08	1.13	0.851	0.115	---	0.74
158	13.17	1.13	0.851	0.114	---	0.74
159	13.25	1.13	0.851	0.114	---	0.74
160	13.33	1.13	0.851	0.113	---	0.74
161	13.42	1.13	0.851	0.112	---	0.74
162	13.50	1.13	0.851	0.112	---	0.74
163	13.58	0.77	0.576	0.111	---	0.46

164	13.67	0.77	0.576	0.111	---	0.47
165	13.75	0.77	0.576	0.110	---	0.47
166	13.83	0.77	0.576	0.110	---	0.47
167	13.92	0.77	0.576	0.109	---	0.47
168	14.00	0.77	0.576	0.108	---	0.47
169	14.08	0.90	0.676	0.108	---	0.57
170	14.17	0.90	0.676	0.107	---	0.57
171	14.25	0.90	0.676	0.107	---	0.57
172	14.33	0.87	0.651	0.106	---	0.54
173	14.42	0.87	0.651	0.106	---	0.55
174	14.50	0.87	0.651	0.105	---	0.55
175	14.58	0.87	0.651	0.105	---	0.55
176	14.67	0.87	0.651	0.104	---	0.55
177	14.75	0.87	0.651	0.104	---	0.55
178	14.83	0.83	0.626	0.103	---	0.52
179	14.92	0.83	0.626	0.102	---	0.52
180	15.00	0.83	0.626	0.102	---	0.52
181	15.08	0.80	0.601	0.101	---	0.50
182	15.17	0.80	0.601	0.101	---	0.50
183	15.25	0.80	0.601	0.100	---	0.50
184	15.33	0.77	0.576	0.100	---	0.48
185	15.42	0.77	0.576	0.099	---	0.48
186	15.50	0.77	0.576	0.099	---	0.48
187	15.58	0.63	0.476	0.098	---	0.38
188	15.67	0.63	0.476	0.098	---	0.38
189	15.75	0.63	0.476	0.097	---	0.38
190	15.83	0.63	0.476	0.097	---	0.38
191	15.92	0.63	0.476	0.096	---	0.38
192	16.00	0.63	0.476	0.096	---	0.38
193	16.08	0.13	0.100	0.095	---	0.00
194	16.17	0.13	0.100	0.095	---	0.01
195	16.25	0.13	0.100	0.094	---	0.01
196	16.33	0.13	0.100	0.094	---	0.01
197	16.42	0.13	0.100	0.093	---	0.01
198	16.50	0.13	0.100	0.093	---	0.01
199	16.58	0.10	0.075	0.092	0.053	0.02
200	16.67	0.10	0.075	0.092	0.053	0.02
201	16.75	0.10	0.075	0.092	0.053	0.02
202	16.83	0.10	0.075	0.091	0.053	0.02
203	16.92	0.10	0.075	0.091	0.053	0.02
204	17.00	0.10	0.075	0.090	0.053	0.02
205	17.08	0.17	0.125	0.090	---	0.04
206	17.17	0.17	0.125	0.089	---	0.04
207	17.25	0.17	0.125	0.089	---	0.04
208	17.33	0.17	0.125	0.088	---	0.04
209	17.42	0.17	0.125	0.088	---	0.04
210	17.50	0.17	0.125	0.087	---	0.04
211	17.58	0.17	0.125	0.087	---	0.04
212	17.67	0.17	0.125	0.087	---	0.04
213	17.75	0.17	0.125	0.086	---	0.04
214	17.83	0.13	0.100	0.086	---	0.01
215	17.92	0.13	0.100	0.085	---	0.01
216	18.00	0.13	0.100	0.085	---	0.02
217	18.08	0.13	0.100	0.084	---	0.02
218	18.17	0.13	0.100	0.084	---	0.02
219	18.25	0.13	0.100	0.084	---	0.02
220	18.33	0.13	0.100	0.083	---	0.02
221	18.42	0.13	0.100	0.083	---	0.02
222	18.50	0.13	0.100	0.082	---	0.02
223	18.58	0.10	0.075	0.082	0.053	0.02
224	18.67	0.10	0.075	0.082	0.053	0.02
225	18.75	0.10	0.075	0.081	0.053	0.02
226	18.83	0.07	0.050	0.081	0.036	0.01
227	18.92	0.07	0.050	0.080	0.036	0.01
228	19.00	0.07	0.050	0.080	0.036	0.01
229	19.08	0.10	0.075	0.080	0.053	0.02
230	19.17	0.10	0.075	0.079	0.053	0.02
231	19.25	0.10	0.075	0.079	0.053	0.02
232	19.33	0.13	0.100	0.079	---	0.02
233	19.42	0.13	0.100	0.078	---	0.02
234	19.50	0.13	0.100	0.078	---	0.02
235	19.58	0.10	0.075	0.078	0.053	0.02
236	19.67	0.10	0.075	0.077	0.053	0.02
237	19.75	0.10	0.075	0.077	0.053	0.02
238	19.83	0.07	0.050	0.076	0.036	0.01
239	19.92	0.07	0.050	0.076	0.036	0.01
240	20.00	0.07	0.050	0.076	0.036	0.01
241	20.08	0.10	0.075	0.075	0.053	0.02
242	20.17	0.10	0.075	0.075	0.053	0.02
243	20.25	0.10	0.075	0.075	---	0.00
244	20.33	0.10	0.075	0.074	---	0.00
245	20.42	0.10	0.075	0.074	---	0.00
246	20.50	0.10	0.075	0.074	---	0.00
247	20.58	0.10	0.075	0.074	---	0.00
248	20.67	0.10	0.075	0.073	---	0.00
249	20.75	0.10	0.075	0.073	---	0.00
250	20.83	0.07	0.050	0.073	0.036	0.01
251	20.92	0.07	0.050	0.072	0.036	0.01
252	21.00	0.07	0.050	0.072	0.036	0.01
253	21.08	0.10	0.075	0.072	---	0.00
254	21.17	0.10	0.075	0.071	---	0.00
255	21.25	0.10	0.075	0.071	---	0.00
256	21.33	0.07	0.050	0.071	0.036	0.01

257	21.42	0.07	0.050	0.071	0.036	0.01
258	21.50	0.07	0.050	0.070	0.036	0.01
259	21.58	0.10	0.075	0.070	---	0.00
260	21.67	0.10	0.075	0.070	---	0.01
261	21.75	0.10	0.075	0.070	---	0.01
262	21.83	0.07	0.050	0.069	0.036	0.01
263	21.92	0.07	0.050	0.069	0.036	0.01
264	22.00	0.07	0.050	0.069	0.036	0.01
265	22.08	0.10	0.075	0.069	---	0.01
266	22.17	0.10	0.075	0.068	---	0.01
267	22.25	0.10	0.075	0.068	---	0.01
268	22.33	0.07	0.050	0.068	0.036	0.01
269	22.42	0.07	0.050	0.068	0.036	0.01
270	22.50	0.07	0.050	0.068	0.036	0.01
271	22.58	0.07	0.050	0.067	0.036	0.01
272	22.67	0.07	0.050	0.067	0.036	0.01
273	22.75	0.07	0.050	0.067	0.036	0.01
274	22.83	0.07	0.050	0.067	0.036	0.01
275	22.92	0.07	0.050	0.067	0.036	0.01
276	23.00	0.07	0.050	0.067	0.036	0.01
277	23.08	0.07	0.050	0.066	0.036	0.01
278	23.17	0.07	0.050	0.066	0.036	0.01
279	23.25	0.07	0.050	0.066	0.036	0.01
280	23.33	0.07	0.050	0.066	0.036	0.01
281	23.42	0.07	0.050	0.066	0.036	0.01
282	23.50	0.07	0.050	0.066	0.036	0.01
283	23.58	0.07	0.050	0.066	0.036	0.01
284	23.67	0.07	0.050	0.066	0.036	0.01
285	23.75	0.07	0.050	0.065	0.036	0.01
286	23.83	0.07	0.050	0.065	0.036	0.01
287	23.92	0.07	0.050	0.065	0.036	0.01
288	24.00	0.07	0.050	0.065	0.036	0.01
Sum =		100.0			Sum =	46.9

Flood volume = Effective rainfall 3.91(In)
times area 25.9(Ac.)/[(In)/(Ft.)] = 8.4(Ac.Ft)
Total soil loss = 2.35(In)
Total soil loss = 5.069(Ac.Ft)
Total rainfall = 6.26(In)
Flood volume = 367934.7 Cubic Feet
Total soil loss = 220809.2 Cubic Feet

Peak flow rate of this hydrograph = 19.280(CFS)

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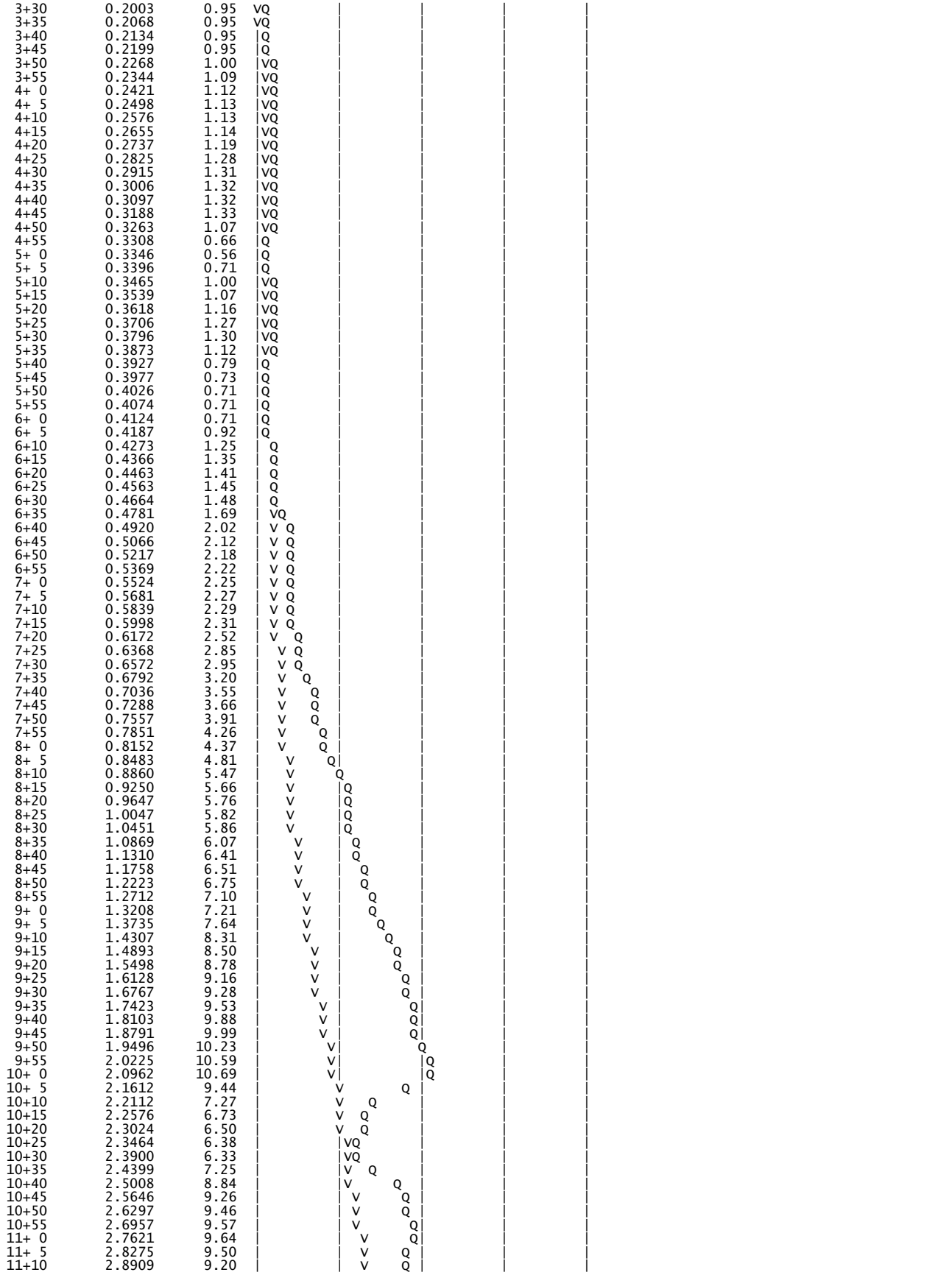
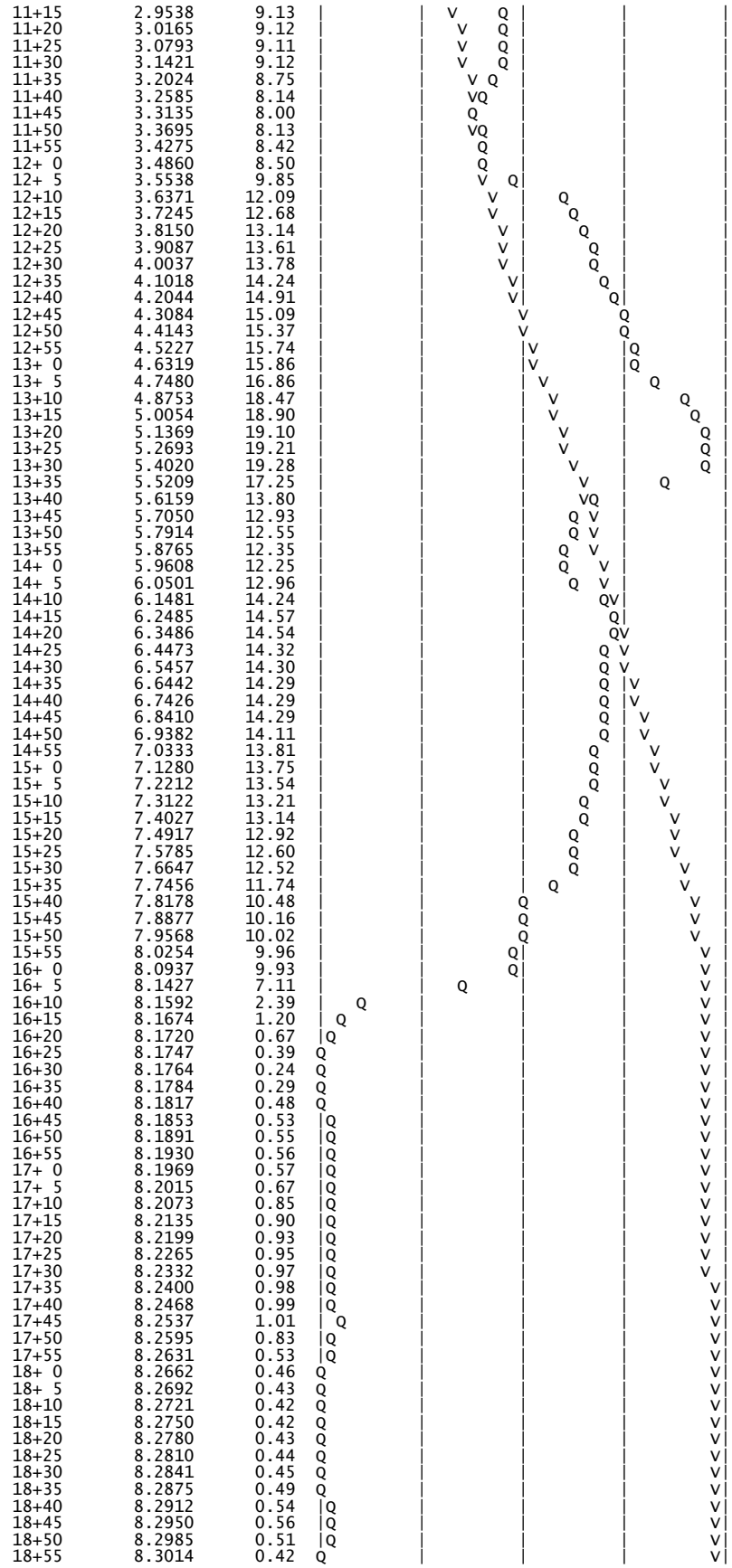
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

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	0.0007	0.11	Q	|	|	|	|
0+10	0.0028	0.29	Q	|	|	|	|
0+15	0.0051	0.34	Q	|	|	|	|
0+20	0.0079	0.41	Q	|	|	|	|
0+25	0.0115	0.52	VQ	|	|	|	|
0+30	0.0153	0.55	VQ	|	|	|	|
0+35	0.0191	0.56	VQ	|	|	|	|
0+40	0.0230	0.56	VQ	|	|	|	|
0+45	0.0269	0.57	VQ	|	|	|	|
0+50	0.0312	0.62	VQ	|	|	|	|
0+55	0.0361	0.71	VQ	|	|	|	|
1+ 0	0.0412	0.74	VQ	|	|	|	|
1+ 5	0.0460	0.69	VQ	|	|	|	|
1+10	0.0502	0.61	VQ	|	|	|	|
1+15	0.0542	0.59	VQ	|	|	|	|
1+20	0.0582	0.58	VQ	|	|	|	|
1+25	0.0622	0.57	VQ	|	|	|	|
1+30	0.0661	0.57	VQ	|	|	|	|
1+35	0.0700	0.57	VQ	|	|	|	|
1+40	0.0739	0.57	VQ	|	|	|	|
1+45	0.0779	0.57	VQ	|	|	|	|
1+50	0.0822	0.62	VQ	|	|	|	|
1+55	0.0871	0.71	VQ	|	|	|	|
2+ 0	0.0922	0.74	VQ	|	|	|	|
2+ 5	0.0973	0.75	VQ	|	|	|	|
2+10	0.1025	0.75	VQ	|	|	|	|
2+15	0.1077	0.76	VQ	|	|	|	|
2+20	0.1130	0.76	VQ	|	|	|	|
2+25	0.1182	0.76	VQ	|	|	|	|
2+30	0.1234	0.76	VQ	|	|	|	|
2+35	0.1290	0.81	VQ	|	|	|	|
2+40	0.1352	0.90	VQ	|	|	|	|
2+45	0.1416	0.93	VQ	|	|	|	|
2+50	0.1481	0.94	VQ	|	|	|	|
2+55	0.1546	0.94	VQ	|	|	|	|
3+ 0	0.1611	0.95	VQ	|	|	|	|
3+ 5	0.1676	0.95	VQ	|	|	|	|
3+10	0.1742	0.95	VQ	|	|	|	|
3+15	0.1807	0.95	VQ	|	|	|	|
3+20	0.1872	0.95	VQ	|	|	|	|
3+25	0.1938	0.95	VQ	|	|	|	|





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  19+ 0       8.3042      0.40  Q         |         |         |         V|
  19+ 5       8.3072      0.44  Q         |         |         |         V|
  19+10       8.3109      0.53  |Q        |         |         |         V|
  19+15       8.3147      0.55  |Q        |         |         |         V|
  19+20       8.3185      0.56  |Q        |         |         |         V|
  19+25       8.3224      0.56  |Q        |         |         |         V|
  19+30       8.3263      0.57  |Q        |         |         |         V|
  19+35       8.3303      0.58  |Q        |         |         |         V|
  19+40       8.3342      0.57  |Q        |         |         |         V|
  19+45       8.3381      0.57  |Q        |         |         |         V|
  19+50       8.3417      0.52  |Q        |         |         |         V|
  19+55       8.3446      0.42  Q         |         |         |         V|
  20+ 0       8.3474      0.40  Q         |         |         |         V|
  20+ 5       8.3504      0.44  Q         |         |         |         V|
  20+10       8.3541      0.53  |Q        |         |         |         V|
  20+15       8.3568      0.39  Q         |         |         |         V|
  20+20       8.3576      0.13  Q         |         |         |         V|
  20+25       8.3582      0.07  Q         |         |         |         V|
  20+30       8.3585      0.05  Q         |         |         |         V|
  20+35       8.3588      0.05  Q         |         |         |         V|
  20+40       8.3591      0.04  Q         |         |         |         V|
  20+45       8.3595      0.05  Q         |         |         |         V|
  20+50       8.3605      0.15  Q         |         |         |         V|
  20+55       8.3626      0.30  Q         |         |         |         V|
  21+ 0       8.3649      0.34  Q         |         |         |         V|
  21+ 5       8.3668      0.28  Q         |         |         |         V|
  21+10       8.3679      0.15  Q         |         |         |         V|
  21+15       8.3687      0.12  Q         |         |         |         V|
  21+20       8.3701      0.19  Q         |         |         |         V|
  21+25       8.3723      0.32  Q         |         |         |         V|
  21+30       8.3747      0.35  Q         |         |         |         V|
  21+35       8.3767      0.29  Q         |         |         |         V|
  21+40       8.3780      0.18  Q         |         |         |         V|
  21+45       8.3791      0.16  Q         |         |         |         V|
  21+50       8.3806      0.22  Q         |         |         |         V|
  21+55       8.3829      0.33  Q         |         |         |         V|
  22+ 0       8.3853      0.36  Q         |         |         |         V|
  22+ 5       8.3874      0.31  Q         |         |         |         V|
  22+10       8.3889      0.21  Q         |         |         |         V|
  22+15       8.3902      0.20  Q         |         |         |         V|
  22+20       8.3919      0.25  Q         |         |         |         V|
  22+25       8.3943      0.34  Q         |         |         |         V|
  22+30       8.3967      0.36  Q         |         |         |         V|
  22+35       8.3993      0.37  Q         |         |         |         V|
  22+40       8.4018      0.37  Q         |         |         |         V|
  22+45       8.4045      0.38  Q         |         |         |         V|
  22+50       8.4071      0.38  Q         |         |         |         V|
  22+55       8.4097      0.38  Q         |         |         |         V|
  23+ 0       8.4123      0.38  Q         |         |         |         V|
  23+ 5       8.4149      0.38  Q         |         |         |         V|
  23+10       8.4175      0.38  Q         |         |         |         V|
  23+15       8.4201      0.38  Q         |         |         |         V|
  23+20       8.4227      0.38  Q         |         |         |         V|
  23+25       8.4254      0.38  Q         |         |         |         V|
  23+30       8.4280      0.38  Q         |         |         |         V|
  23+35       8.4306      0.38  Q         |         |         |         V|
  23+40       8.4332      0.38  Q         |         |         |         V|
  23+45       8.4358      0.38  Q         |         |         |         V|
  23+50       8.4384      0.38  Q         |         |         |         V|
  23+55       8.4410      0.38  Q         |         |         |         V|
  24+ 0       8.4436      0.38  Q         |         |         |         V|
  24+ 5       8.4455      0.27  Q         |         |         |         V|
  24+10       8.4461      0.09  Q         |         |         |         V|
  24+15       8.4464      0.04  Q         |         |         |         V|
  24+20       8.4465      0.02  Q         |         |         |         V|
  24+25       8.4466      0.01  Q         |         |         |         V|
  24+30       8.4466      0.00  Q         |         |         |          V
-------------------------------------------------------------------------
```

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
Study date: 07/26/22

Flood Routing
10-yr/24-hr

Program License Serial Number 4027

********** HYDROGRAPH INFORMATION **********

From study/file name: P908002410.rte
**********HYDROGRAPH DATA**********
Number of intervals = 294
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 8.827 (CFS)
Total volume = 3.165 (Ac.Ft)
Status of hydrographs being held in storage
Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
Peak (CFS) 0.000 0.000 0.000 0.000 0.000
Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000
****

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Process from Point/Station 0.000 to Point/Station 0.000
**** RETARDING BASIN ROUTING ****
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User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 294
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 1.00(Ft.)

Initial basin depth = 1.00 (Ft.)
Initial basin storage = 0.51 (Ac.Ft)
Initial basin outflow = 0.47 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

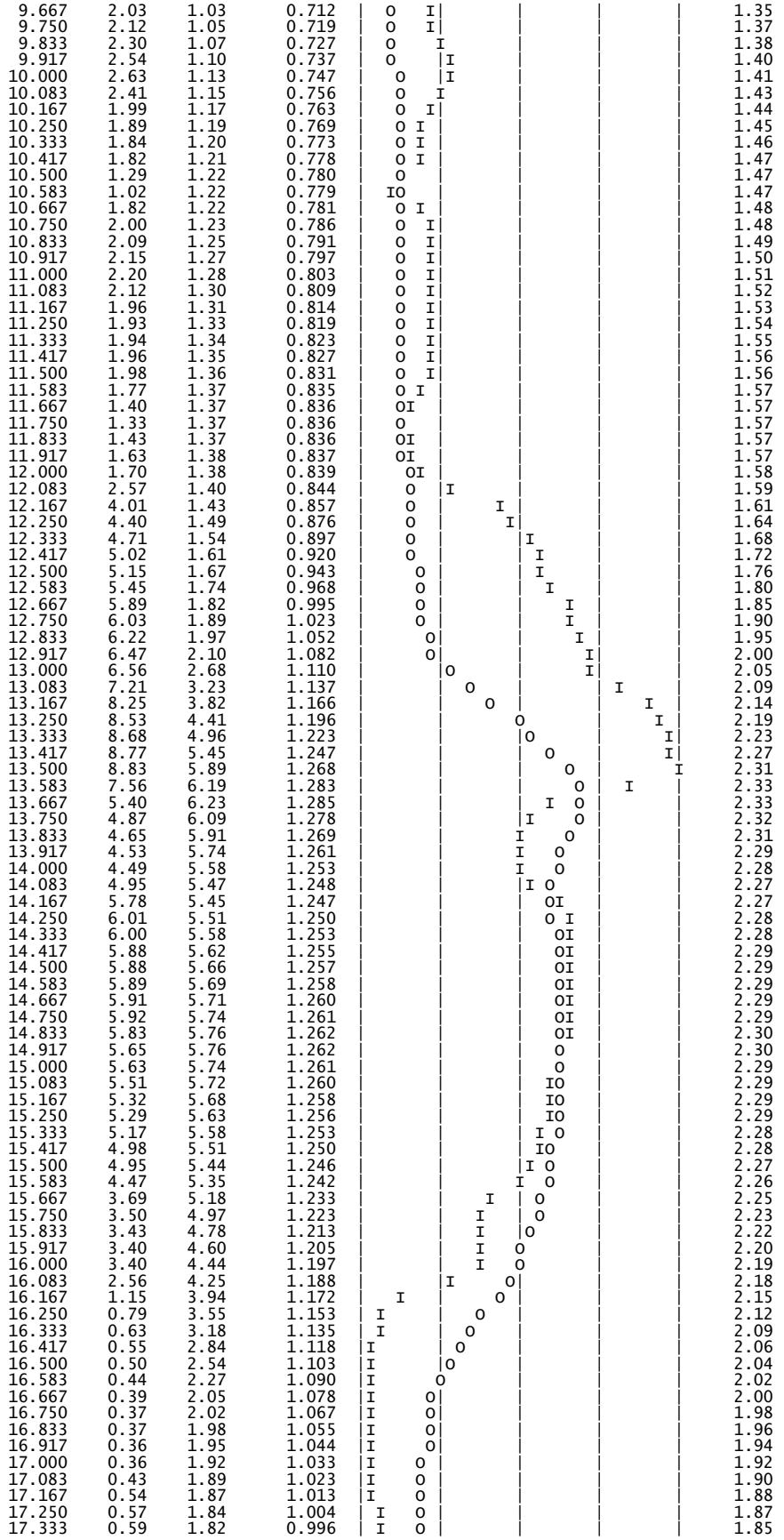
Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.511	0.470	0.509	0.513
2.000	1.079	2.050	1.072	1.086
3.000	1.697	14.580	1.647	1.747
4.000	2.341	21.070	2.268	2.414
5.000	2.998	25.950	2.909	3.087
6.000	3.664	30.020	3.561	3.767

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	2.2	4.41	6.62	8.83	Depth (Ft.)
0.083	0.07	0.47	0.506	IO	|	|	|	|	0.99
0.167	0.18	0.46	0.504	IO	|	|	|	|	0.99
0.250	0.21	0.46	0.502	IO	|	|	|	|	0.98
0.333	0.26	0.46	0.501	IO	|	|	|	|	0.98
0.417	0.33	0.46	0.500	|O	|	|	|	|	0.98
0.500	0.34	0.46	0.499	|O	|	|	|	|	0.98
0.583	0.35	0.46	0.498	|O	|	|	|	|	0.97
0.667	0.36	0.46	0.497	|O	|	|	|	|	0.97
0.750	0.36	0.46	0.497	|O	|	|	|	|	0.97
0.833	0.39	0.46	0.496	|O	|	|	|	|	0.97
0.917	0.45	0.46	0.496	|O	|	|	|	|	0.97
1.000	0.47	0.46	0.496	|O	|	|	|	|	0.97
1.083	0.44	0.46	0.496	|O	|	|	|	|	0.97
1.167	0.38	0.46	0.495	|O	|	|	|	|	0.97
1.250	0.37	0.46	0.495	|O	|	|	|	|	0.97
1.333	0.37	0.45	0.494	|O	|	|	|	|	0.97
1.417	0.36	0.45	0.494	|O	|	|	|	|	0.97
1.500	0.36	0.45	0.493	|O	|	|	|	|	0.96
1.583	0.36	0.45	0.492	|O	|	|	|	|	0.96
1.667	0.36	0.45	0.492	|O	|	|	|	|	0.96
1.750	0.36	0.45	0.491	|O	|	|	|	|	0.96
1.833	0.39	0.45	0.491	|O	|	|	|	|	0.96

1.917	0.45	0.45	0.490	O				0.96
2.000	0.47	0.45	0.490	O				0.96
2.083	0.47	0.45	0.491	O				0.96
2.167	0.48	0.45	0.491	O				0.96
2.250	0.48	0.45	0.491	O				0.96
2.333	0.48	0.45	0.491	O				0.96
2.417	0.48	0.45	0.491	O				0.96
2.500	0.48	0.45	0.492	O				0.96
2.583	0.51	0.45	0.492	O				0.96
2.667	0.57	0.45	0.492	OI				0.96
2.750	0.59	0.45	0.493	OI				0.97
2.833	0.59	0.45	0.494	OI				0.97
2.917	0.60	0.46	0.495	OI				0.97
3.000	0.60	0.46	0.496	OI				0.97
3.083	0.60	0.46	0.497	OI				0.97
3.167	0.60	0.46	0.498	OI				0.97
3.250	0.60	0.46	0.499	OI				0.98
3.333	0.60	0.46	0.500	OI				0.98
3.417	0.60	0.46	0.501	OI				0.98
3.500	0.60	0.46	0.502	OI				0.98
3.583	0.60	0.46	0.503	OI				0.98
3.667	0.60	0.46	0.504	OI				0.99
3.750	0.60	0.46	0.505	OI				0.99
3.833	0.63	0.47	0.506	OI				0.99
3.917	0.69	0.47	0.507	OI				0.99
4.000	0.71	0.47	0.509	OI				1.00
4.083	0.71	0.47	0.510	OI				1.00
4.167	0.72	0.47	0.512	OI				1.00
4.250	0.72	0.48	0.514	OI				1.00
4.333	0.75	0.48	0.515	OI				1.01
4.417	0.81	0.49	0.518	OI				1.01
4.500	0.83	0.49	0.520	OI				1.02
4.583	0.83	0.50	0.522	O I				1.02
4.667	0.84	0.51	0.524	O I				1.02
4.750	0.84	0.51	0.527	O I				1.03
4.833	0.87	0.52	0.529	O I				1.03
4.917	0.93	0.53	0.532	O I				1.04
5.000	0.95	0.53	0.534	O I				1.04
5.083	0.88	0.54	0.537	O I				1.05
5.167	0.77	0.55	0.539	OI				1.05
5.250	0.74	0.55	0.540	OI				1.05
5.333	0.77	0.56	0.542	O				1.05
5.417	0.82	0.56	0.543	O				1.06
5.500	0.83	0.56	0.545	O				1.06
5.583	0.87	0.57	0.547	OI				1.06
5.667	0.93	0.58	0.549	OI				1.07
5.750	0.94	0.58	0.552	OI				1.07
5.833	0.95	0.59	0.554	OI				1.08
5.917	0.96	0.60	0.557	OI				1.08
6.000	0.96	0.60	0.559	OI				1.08
6.083	0.99	0.61	0.562	OI				1.09
6.167	1.05	0.62	0.564	OI				1.09
6.250	1.07	0.63	0.567	OI				1.10
6.333	1.07	0.64	0.570	OI				1.10
6.417	1.08	0.64	0.573	OI				1.11
6.500	1.08	0.65	0.576	OI				1.12
6.583	1.11	0.66	0.579	O I				1.12
6.667	1.17	0.67	0.583	O I				1.13
6.750	1.18	0.68	0.586	O I				1.13
6.833	1.19	0.69	0.590	O I				1.14
6.917	1.20	0.70	0.593	O I				1.14
7.000	1.20	0.71	0.596	O I				1.15
7.083	1.20	0.72	0.600	O I				1.16
7.167	1.20	0.73	0.603	O I				1.16
7.250	1.20	0.74	0.606	O I				1.17
7.333	1.23	0.74	0.610	O I				1.17
7.417	1.29	0.75	0.613	O I				1.18
7.500	1.30	0.76	0.617	O I				1.19
7.583	1.35	0.77	0.621	O I				1.19
7.667	1.41	0.79	0.625	O I				1.20
7.750	1.42	0.80	0.629	O I				1.21
7.833	1.47	0.81	0.633	O I				1.22
7.917	1.53	0.82	0.638	O I				1.22
8.000	1.54	0.84	0.643	O I				1.23
8.083	1.62	0.85	0.648	O I				1.24
8.167	1.74	0.87	0.654	O I				1.25
8.250	1.77	0.88	0.660	O I				1.26
8.333	1.78	0.90	0.666	O I				1.27
8.417	1.79	0.92	0.672	O I				1.28
8.500	1.80	0.93	0.678	O I				1.29
8.583	1.83	0.95	0.684	O I				1.30
8.667	1.89	0.97	0.690	O I				1.32
8.750	1.90	0.99	0.696	O I				1.33
8.833	1.42	1.00	0.701	O I				1.33
8.917	0.61	1.00	0.701	IO				1.33
9.000	0.42	0.99	0.698	I O				1.33
9.083	0.59	0.98	0.694	IO				1.32
9.167	0.97	0.98	0.693	O				1.32
9.250	1.08	0.98	0.693	O				1.32
9.333	1.26	0.98	0.695	OI				1.32
9.417	1.51	0.99	0.698	O I				1.33
9.500	1.61	1.00	0.701	O I				1.34
9.583	1.79	1.01	0.706	O I				1.34



17.417	0.59	1.80	0.987	| I O |	|	|	|	1.84
17.500	0.60	1.77	0.979	| I O |	|	|	|	1.82
17.583	0.60	1.75	0.971	| I O |	|	|	|	1.81
17.667	0.60	1.73	0.963	| I O |	|	|	|	1.80
17.750	0.60	1.71	0.956	| I O |	|	|	|	1.78
17.833	0.56	1.69	0.948	| I O |	|	|	|	1.77
17.917	0.51	1.66	0.940	|I O |	|	|	|	1.76
18.000	0.49	1.64	0.932	|I O |	|	|	|	1.74
18.083	0.49	1.62	0.924	|I O |	|	|	|	1.73
18.167	0.48	1.60	0.917	|I O |	|	|	|	1.71
18.250	0.48	1.58	0.909	|I O |	|	|	|	1.70
18.333	0.48	1.56	0.901	|I O |	|	|	|	1.69
18.417	0.48	1.54	0.894	|I O |	|	|	|	1.67
18.500	0.48	1.52	0.887	|I O |	|	|	|	1.66
18.583	0.44	1.50	0.880	|I O |	|	|	|	1.65
18.667	0.39	1.48	0.872	|I O |	|	|	|	1.64
18.750	0.37	1.45	0.865	|I O |	|	|	|	1.62
18.833	0.33	1.43	0.857	|I O |	|	|	|	1.61
18.917	0.27	1.41	0.850	I O |	|	|	|	1.60
19.000	0.25	1.39	0.842	I O |	|	|	|	1.58
19.083	0.28	1.37	0.834	|I O |	|	|	|	1.57
19.167	0.33	1.35	0.827	|I O |	|	|	|	1.56
19.250	0.35	1.33	0.820	|I O |	|	|	|	1.54
19.333	0.39	1.31	0.813	|I O |	|	|	|	1.53
19.417	0.45	1.29	0.807	|I O |	|	|	|	1.52
19.500	0.47	1.28	0.802	|I O |	|	|	|	1.51
19.583	0.44	1.26	0.796	|I O |	|	|	|	1.50
19.667	0.38	1.25	0.790	|I O |	|	|	|	1.49
19.750	0.37	1.23	0.784	|I O |	|	|	|	1.48
19.833	0.33	1.21	0.778	|I O |	|	|	|	1.47
19.917	0.27	1.20	0.772	I O |	|	|	|	1.46
20.000	0.25	1.18	0.766	I O |	|	|	|	1.45
20.083	0.28	1.16	0.759	|I O |	|	|	|	1.44
20.167	0.33	1.14	0.754	|I O |	|	|	|	1.43
20.250	0.35	1.13	0.748	|I O |	|	|	|	1.42
20.333	0.35	1.11	0.743	|I O |	|	|	|	1.41
20.417	0.36	1.10	0.738	|I O |	|	|	|	1.40
20.500	0.36	1.09	0.733	|I O |	|	|	|	1.39
20.583	0.36	1.07	0.728	|I O |	|	|	|	1.38
20.667	0.36	1.06	0.723	|I O |	|	|	|	1.37
20.750	0.36	1.05	0.718	|I O |	|	|	|	1.36
20.833	0.32	1.03	0.713	|I O |	|	|	|	1.36
20.917	0.27	1.02	0.708	I O |	|	|	|	1.35
21.000	0.25	1.00	0.703	I O |	|	|	|	1.34
21.083	0.28	0.99	0.698	|I O |	|	|	|	1.33
21.167	0.33	0.98	0.693	|I O |	|	|	|	1.32
21.250	0.35	0.97	0.689	|I O |	|	|	|	1.31
21.333	0.32	0.95	0.685	|I O |	|	|	|	1.31
21.417	0.26	0.94	0.680	I O |	|	|	|	1.30
21.500	0.25	0.93	0.675	I O |	|	|	|	1.29
21.583	0.28	0.91	0.671	|I O |	|	|	|	1.28
21.667	0.33	0.90	0.667	|I O |	|	|	|	1.27
21.750	0.35	0.89	0.663	|I O |	|	|	|	1.27
21.833	0.32	0.88	0.659	|I O |	|	|	|	1.26
21.917	0.26	0.87	0.655	I O |	|	|	|	1.25
22.000	0.25	0.86	0.651	I O |	|	|	|	1.25
22.083	0.28	0.85	0.647	|I O |	|	|	|	1.24
22.167	0.33	0.84	0.643	|I O |	|	|	|	1.23
22.250	0.35	0.83	0.640	|I O |	|	|	|	1.23
22.333	0.32	0.82	0.636	|IO |	|	|	|	1.22
22.417	0.26	0.81	0.633	I O |	|	|	|	1.21
22.500	0.25	0.80	0.629	I O |	|	|	|	1.21
22.583	0.25	0.79	0.625	I O |	|	|	|	1.20
22.667	0.24	0.78	0.622	I O |	|	|	|	1.19
22.750	0.24	0.77	0.618	I O |	|	|	|	1.19
22.833	0.24	0.76	0.614	I O |	|	|	|	1.18
22.917	0.24	0.75	0.611	I O |	|	|	|	1.18
23.000	0.24	0.74	0.607	I O |	|	|	|	1.17
23.083	0.24	0.73	0.604	I O |	|	|	|	1.16
23.167	0.24	0.72	0.601	I O |	|	|	|	1.16
23.250	0.24	0.71	0.597	I O |	|	|	|	1.15
23.333	0.24	0.70	0.594	I O |	|	|	|	1.15
23.417	0.24	0.69	0.591	I O |	|	|	|	1.14
23.500	0.24	0.68	0.588	I O |	|	|	|	1.14
23.583	0.24	0.68	0.585	I O |	|	|	|	1.13
23.667	0.24	0.67	0.582	I O |	|	|	|	1.12
23.750	0.24	0.66	0.579	I O |	|	|	|	1.12
23.833	0.24	0.65	0.576	I O |	|	|	|	1.11
23.917	0.24	0.64	0.573	I O |	|	|	|	1.11
24.000	0.24	0.64	0.571	I O |	|	|	|	1.10
24.083	0.17	0.63	0.568	I O |	|	|	|	1.10
24.167	0.06	0.62	0.564	I O |	|	|	|	1.09
24.250	0.03	0.61	0.560	I O |	|	|	|	1.09
24.333	0.01	0.60	0.556	I O |	|	|	|	1.08
24.417	0.01	0.58	0.552	I O |	|	|	|	1.07
24.500	0.00	0.57	0.548	I O |	|	|	|	1.07
24.583	0.00	0.56	0.544	I O |	|	|	|	1.06
24.667	0.00	0.55	0.540	I O |	|	|	|	1.05
24.750	0.00	0.54	0.537	IO |	|	|	|	1.05
24.833	0.00	0.53	0.533	IO |	|	|	|	1.04
24.917	0.00	0.52	0.529	IO |	|	|	|	1.03
25.000	0.00	0.51	0.526	IO |	|	|	|	1.03
25.083	0.00	0.50	0.522	IO |	|	|	|	1.02

25.167	0.00	0.49	0.519	IO					1.01
25.250	0.00	0.48	0.516	IO					1.01
25.333	0.00	0.47	0.512	IO					1.00
25.417	0.00	0.47	0.509	IO					1.00
25.500	0.00	0.47	0.506	IO					0.99
25.583	0.00	0.46	0.503	IO					0.98
25.667	0.00	0.46	0.499	IO					0.98
25.750	0.00	0.46	0.496	IO					0.97
25.833	0.00	0.45	0.493	IO					0.97
25.917	0.00	0.45	0.490	IO					0.96
26.000	0.00	0.45	0.487	IO					0.95
26.083	0.00	0.45	0.484	IO					0.95
26.167	0.00	0.44	0.481	IO					0.94
26.250	0.00	0.44	0.478	IO					0.93
26.333	0.00	0.44	0.475	IO					0.93
26.417	0.00	0.43	0.472	IO					0.92
26.500	0.00	0.43	0.469	IO					0.92
26.583	0.00	0.43	0.466	IO					0.91
26.667	0.00	0.43	0.463	IO					0.91
26.750	0.00	0.42	0.460	IO					0.90
26.833	0.00	0.42	0.457	IO					0.89
26.917	0.00	0.42	0.454	IO					0.89
27.000	0.00	0.42	0.451	IO					0.88
27.083	0.00	0.41	0.448	IO					0.88
27.167	0.00	0.41	0.446	IO					0.87
27.250	0.00	0.41	0.443	IO					0.87
27.333	0.00	0.40	0.440	IO					0.86
27.417	0.00	0.40	0.437	IO					0.86
27.500	0.00	0.40	0.434	IO					0.85
27.583	0.00	0.40	0.432	IO					0.84
27.667	0.00	0.39	0.429	IO					0.84
27.750	0.00	0.39	0.426	IO					0.83
27.833	0.00	0.39	0.424	IO					0.83
27.917	0.00	0.39	0.421	IO					0.82
28.000	0.00	0.38	0.418	IO					0.82
28.083	0.00	0.38	0.416	IO					0.81
28.167	0.00	0.38	0.413	IO					0.81
28.250	0.00	0.38	0.410	IO					0.80
28.333	0.00	0.38	0.408	IO					0.80
28.417	0.00	0.37	0.405	IO					0.79
28.500	0.00	0.37	0.403	IO					0.79
28.583	0.00	0.37	0.400	IO					0.78
28.667	0.00	0.37	0.398	IO					0.78
28.750	0.00	0.36	0.395	IO					0.77
28.833	0.00	0.36	0.393	IO					0.77
28.917	0.00	0.36	0.390	IO					0.76
29.000	0.00	0.36	0.388	IO					0.76
29.083	0.00	0.35	0.385	IO					0.75
29.167	0.00	0.35	0.383	IO					0.75
29.250	0.00	0.35	0.380	IO					0.74
29.333	0.00	0.35	0.378	IO					0.74
29.417	0.00	0.35	0.376	IO					0.73
29.500	0.00	0.34	0.373	IO					0.73
29.583	0.00	0.34	0.371	IO					0.73
29.667	0.00	0.34	0.368	IO					0.72
29.750	0.00	0.34	0.366	IO					0.72
29.833	0.00	0.33	0.364	IO					0.71
29.917	0.00	0.33	0.362	IO					0.71
30.000	0.00	0.33	0.359	IO					0.70
30.083	0.00	0.33	0.357	IO					0.70
30.167	0.00	0.33	0.355	IO					0.69
30.250	0.00	0.32	0.353	IO					0.69
30.333	0.00	0.32	0.350	IO					0.69
30.417	0.00	0.32	0.348	IO					0.68
30.500	0.00	0.32	0.346	IO					0.68
30.583	0.00	0.32	0.344	IO					0.67
30.667	0.00	0.31	0.342	IO					0.67
30.750	0.00	0.31	0.339	IO					0.66
30.833	0.00	0.31	0.337	IO					0.66
30.917	0.00	0.31	0.335	IO					0.66
31.000	0.00	0.31	0.333	IO					0.65
31.083	0.00	0.30	0.331	IO					0.65
31.167	0.00	0.30	0.329	IO					0.64
31.250	0.00	0.30	0.327	IO					0.64
31.333	0.00	0.30	0.325	IO					0.64
31.417	0.00	0.30	0.323	IO					0.63
31.500	0.00	0.29	0.321	IO					0.63
31.583	0.00	0.29	0.319	IO					0.62
31.667	0.00	0.29	0.317	IO					0.62
31.750	0.00	0.29	0.315	IO					0.62
31.833	0.00	0.29	0.313	IO					0.61
31.917	0.00	0.29	0.311	IO					0.61
32.000	0.00	0.28	0.309	IO					0.60
32.083	0.00	0.28	0.307	IO					0.60
32.167	0.00	0.28	0.305	IO					0.60
32.250	0.00	0.28	0.303	IO					0.59
32.333	0.00	0.28	0.301	IO					0.59
32.417	0.00	0.27	0.299	O					0.59
32.500	0.00	0.27	0.297	O					0.58
32.583	0.00	0.27	0.295	O					0.58
32.667	0.00	0.27	0.293	O					0.57
32.750	0.00	0.27	0.292	O					0.57
32.833	0.00	0.27	0.290	O					0.57

32.917	0.00	0.26	0.288	o					0.56
33.000	0.00	0.26	0.286	o					0.56
33.083	0.00	0.26	0.284	o					0.56
33.167	0.00	0.26	0.282	o					0.55
33.250	0.00	0.26	0.281	o					0.55
33.333	0.00	0.26	0.279	o					0.55
33.417	0.00	0.25	0.277	o					0.54
33.500	0.00	0.25	0.275	o					0.54
33.583	0.00	0.25	0.274	o					0.54
33.667	0.00	0.25	0.272	o					0.53
33.750	0.00	0.25	0.270	o					0.53
33.833	0.00	0.25	0.268	o					0.53
33.917	0.00	0.25	0.267	o					0.52
34.000	0.00	0.24	0.265	o					0.52
34.083	0.00	0.24	0.263	o					0.52
34.167	0.00	0.24	0.262	o					0.51
34.250	0.00	0.24	0.260	o					0.51
34.333	0.00	0.24	0.258	o					0.51
34.417	0.00	0.24	0.257	o					0.50
34.500	0.00	0.23	0.255	o					0.50
34.583	0.00	0.23	0.254	o					0.50
34.667	0.00	0.23	0.252	o					0.49
34.750	0.00	0.23	0.250	o					0.49
34.833	0.00	0.23	0.249	o					0.49
34.917	0.00	0.23	0.247	o					0.48
35.000	0.00	0.23	0.246	o					0.48
35.083	0.00	0.22	0.244	o					0.48
35.167	0.00	0.22	0.243	o					0.47
35.250	0.00	0.22	0.241	o					0.47
35.333	0.00	0.22	0.240	o					0.47
35.417	0.00	0.22	0.238	o					0.47
35.500	0.00	0.22	0.237	o					0.46
35.583	0.00	0.22	0.235	o					0.46
35.667	0.00	0.21	0.234	o					0.46
35.750	0.00	0.21	0.232	o					0.45
35.833	0.00	0.21	0.231	o					0.45
35.917	0.00	0.21	0.229	o					0.45
36.000	0.00	0.21	0.228	o					0.45
36.083	0.00	0.21	0.226	o					0.44
36.167	0.00	0.21	0.225	o					0.44
36.250	0.00	0.21	0.223	o					0.44
36.333	0.00	0.20	0.222	o					0.43
36.417	0.00	0.20	0.221	o					0.43
36.500	0.00	0.20	0.219	o					0.43
36.583	0.00	0.20	0.218	o					0.43
36.667	0.00	0.20	0.216	o					0.42
36.750	0.00	0.20	0.215	o					0.42
36.833	0.00	0.20	0.214	o					0.42
36.917	0.00	0.20	0.212	o					0.42
37.000	0.00	0.19	0.211	o					0.41
37.083	0.00	0.19	0.210	o					0.41
37.167	0.00	0.19	0.208	o					0.41
37.250	0.00	0.19	0.207	o					0.41
37.333	0.00	0.19	0.206	o					0.40
37.417	0.00	0.19	0.204	o					0.40
37.500	0.00	0.19	0.203	o					0.40
37.583	0.00	0.19	0.202	o					0.40
37.667	0.00	0.18	0.201	o					0.39
37.750	0.00	0.18	0.199	o					0.39
37.833	0.00	0.18	0.198	o					0.39
37.917	0.00	0.18	0.197	o					0.39
38.000	0.00	0.18	0.196	o					0.38
38.083	0.00	0.18	0.194	o					0.38
38.167	0.00	0.18	0.193	o					0.38
38.250	0.00	0.18	0.192	o					0.38
38.333	0.00	0.18	0.191	o					0.37
38.417	0.00	0.17	0.189	o					0.37
38.500	0.00	0.17	0.188	o					0.37
38.583	0.00	0.17	0.187	o					0.37
38.667	0.00	0.17	0.186	o					0.36
38.750	0.00	0.17	0.185	o					0.36
38.833	0.00	0.17	0.184	o					0.36
38.917	0.00	0.17	0.182	o					0.36
39.000	0.00	0.17	0.181	o					0.35
39.083	0.00	0.17	0.180	o					0.35
39.167	0.00	0.16	0.179	o					0.35
39.250	0.00	0.16	0.178	o					0.35
39.333	0.00	0.16	0.177	o					0.35
39.417	0.00	0.16	0.176	o					0.34
39.500	0.00	0.16	0.175	o					0.34
39.583	0.00	0.16	0.173	o					0.34
39.667	0.00	0.16	0.172	o					0.34
39.750	0.00	0.16	0.171	o					0.34
39.833	0.00	0.16	0.170	o					0.33
39.917	0.00	0.16	0.169	o					0.33
40.000	0.00	0.15	0.168	o					0.33
40.083	0.00	0.15	0.167	o					0.33
40.167	0.00	0.15	0.166	o					0.32
40.250	0.00	0.15	0.165	o					0.32
40.333	0.00	0.15	0.164	o					0.32
40.417	0.00	0.15	0.163	o					0.32
40.500	0.00	0.15	0.162	o					0.32
40.583	0.00	0.15	0.161	o					0.31

40.667	0.00	0.15	0.160	o	|	|	|	|	0.31
40.750	0.00	0.15	0.159	o	|	|	|	|	0.31
40.833	0.00	0.15	0.158	o	|	|	|	|	0.31
40.917	0.00	0.14	0.157	o	|	|	|	|	0.31
41.000	0.00	0.14	0.156	o	|	|	|	|	0.30
41.083	0.00	0.14	0.155	o	|	|	|	|	0.30
41.167	0.00	0.14	0.154	o	|	|	|	|	0.30
41.250	0.00	0.14	0.153	o	|	|	|	|	0.30
41.333	0.00	0.14	0.152	o	|	|	|	|	0.30
41.417	0.00	0.14	0.151	o	|	|	|	|	0.30
41.500	0.00	0.14	0.150	o	|	|	|	|	0.29
41.583	0.00	0.14	0.149	o	|	|	|	|	0.29
41.667	0.00	0.14	0.148	o	|	|	|	|	0.29
41.750	0.00	0.14	0.147	o	|	|	|	|	0.29
41.833	0.00	0.13	0.146	o	|	|	|	|	0.29
41.917	0.00	0.13	0.145	o	|	|	|	|	0.28
42.000	0.00	0.13	0.144	o	|	|	|	|	0.28
42.083	0.00	0.13	0.143	o	|	|	|	|	0.28
42.167	0.00	0.13	0.142	o	|	|	|	|	0.28
42.250	0.00	0.13	0.142	o	|	|	|	|	0.28
42.333	0.00	0.13	0.141	o	|	|	|	|	0.28
42.417	0.00	0.13	0.140	o	|	|	|	|	0.27
42.500	0.00	0.13	0.139	o	|	|	|	|	0.27
42.583	0.00	0.13	0.138	o	|	|	|	|	0.27
42.667	0.00	0.13	0.137	o	|	|	|	|	0.27
42.750	0.00	0.13	0.136	o	|	|	|	|	0.27
42.833	0.00	0.12	0.135	o	|	|	|	|	0.27
42.917	0.00	0.12	0.135	o	|	|	|	|	0.26
43.000	0.00	0.12	0.134	o	|	|	|	|	0.26
43.083	0.00	0.12	0.133	o	|	|	|	|	0.26
43.167	0.00	0.12	0.132	o	|	|	|	|	0.26
43.250	0.00	0.12	0.131	o	|	|	|	|	0.26
43.333	0.00	0.12	0.130	o	|	|	|	|	0.26
43.417	0.00	0.12	0.130	o	|	|	|	|	0.25
43.500	0.00	0.12	0.129	o	|	|	|	|	0.25
43.583	0.00	0.12	0.128	o	|	|	|	|	0.25
43.667	0.00	0.12	0.127	o	|	|	|	|	0.25
43.750	0.00	0.12	0.126	o	|	|	|	|	0.25
43.833	0.00	0.12	0.126	o	|	|	|	|	0.25
43.917	0.00	0.11	0.125	o	|	|	|	|	0.24
44.000	0.00	0.11	0.124	o	|	|	|	|	0.24
44.083	0.00	0.11	0.123	o	|	|	|	|	0.24
44.167	0.00	0.11	0.122	o	|	|	|	|	0.24
44.250	0.00	0.11	0.122	o	|	|	|	|	0.24
44.333	0.00	0.11	0.121	o	|	|	|	|	0.24
44.417	0.00	0.11	0.120	o	|	|	|	|	0.24
44.500	0.00	0.11	0.119	o	|	|	|	|	0.23
44.583	0.00	0.11	0.119	o	|	|	|	|	0.23
44.667	0.00	0.11	0.118	o	|	|	|	|	0.23
44.750	0.00	0.11	0.117	o	|	|	|	|	0.23
44.833	0.00	0.11	0.116	o	|	|	|	|	0.23
44.917	0.00	0.11	0.116	o	|	|	|	|	0.23
45.000	0.00	0.11	0.115	o	|	|	|	|	0.22
45.083	0.00	0.10	0.114	o	|	|	|	|	0.22
45.167	0.00	0.10	0.113	o	|	|	|	|	0.22
45.250	0.00	0.10	0.113	o	|	|	|	|	0.22
45.333	0.00	0.10	0.112	o	|	|	|	|	0.22
45.417	0.00	0.10	0.111	o	|	|	|	|	0.22
45.500	0.00	0.10	0.111	o	|	|	|	|	0.22
45.583	0.00	0.10	0.110	o	|	|	|	|	0.22
45.667	0.00	0.10	0.109	o	|	|	|	|	0.21
45.750	0.00	0.10	0.109	o	|	|	|	|	0.21

**********HYDROGRAPH DATA**********

Number of intervals = 549
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 6.228 (CFS)
Total volume = 3.565 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

FLOOD HYDROGRAPH ROUTING PROGRAM
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Study date: 07/26/22

Flood Routing
100-yr/24-hr

Program License Serial Number 4027

********** HYDROGRAPH INFORMATION **********

From study/file name: P9080024100.rte
**********HYDROGRAPH DATA**********
Number of intervals = 294
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 19.280 (CFS)
Total volume = 8.447 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 0.000 to Point/Station 0.000
**** RETARDING BASIN ROUTING ****
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User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 294
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 1.00(Ft.)

Initial basin depth = 1.00 (Ft.)
Initial basin storage = 0.51 (Ac.Ft)
Initial basin outflow = 0.47 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

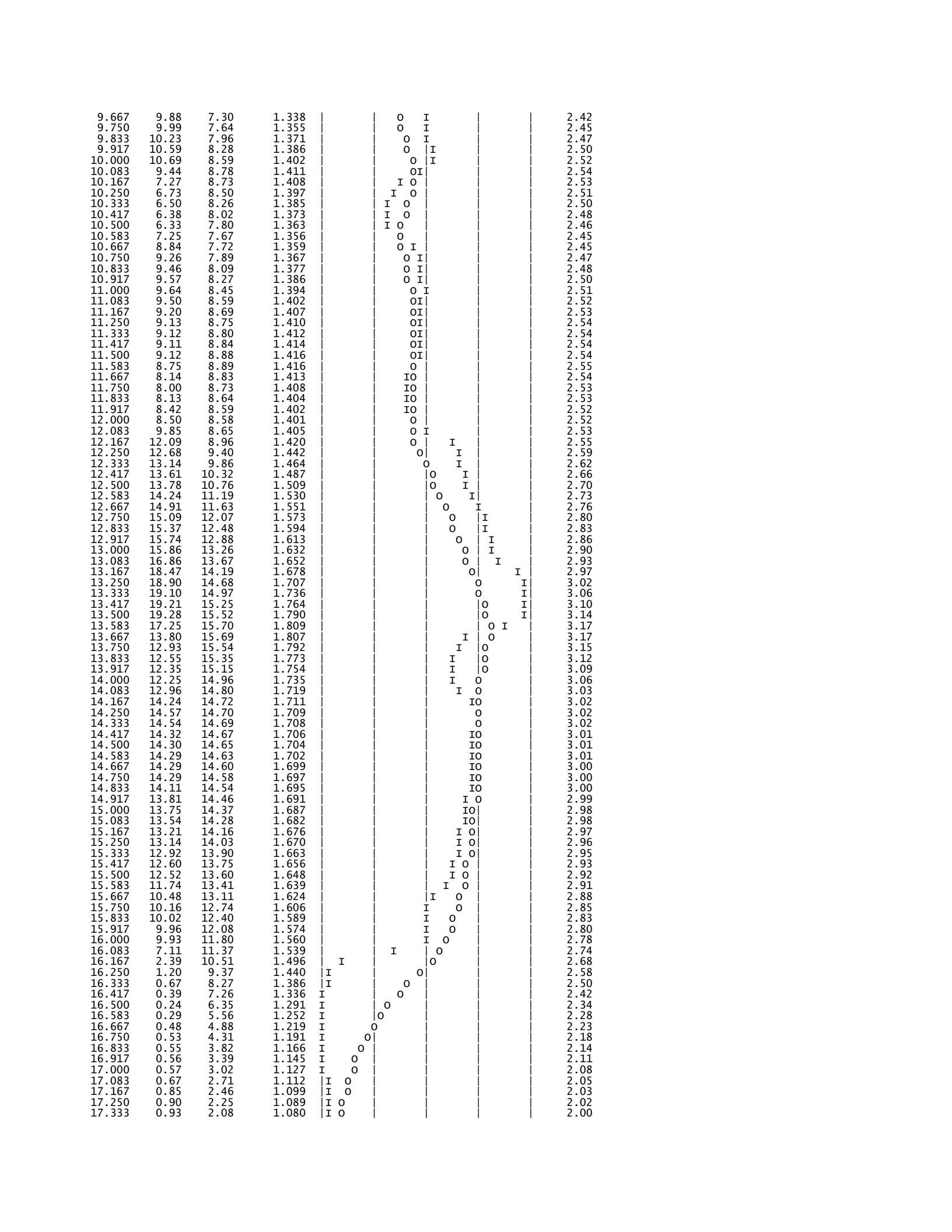
Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.511	0.470	0.509	0.513
2.000	1.079	2.050	1.072	1.086
3.000	1.697	14.580	1.647	1.747
4.000	2.341	21.070	2.268	2.414
5.000	2.998	25.950	2.909	3.087
6.000	3.664	30.020	3.561	3.767

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	4.8	9.64	14.46	19.28	Depth (Ft.)
0.083	0.11	0.47	0.507	O	|	|	|	|	0.99
0.167	0.29	0.46	0.505	O	|	|	|	|	0.99
0.250	0.34	0.46	0.504	O	|	|	|	|	0.99
0.333	0.41	0.46	0.503	O	|	|	|	|	0.98
0.417	0.52	0.46	0.503	O	|	|	|	|	0.98
0.500	0.55	0.46	0.504	O	|	|	|	|	0.99
0.583	0.56	0.46	0.504	O	|	|	|	|	0.99
0.667	0.56	0.46	0.505	O	|	|	|	|	0.99
0.750	0.57	0.46	0.506	O	|	|	|	|	0.99
0.833	0.62	0.47	0.506	OI	|	|	|	|	0.99
0.917	0.71	0.47	0.508	OI	|	|	|	|	0.99
1.000	0.74	0.47	0.510	OI	|	|	|	|	1.00
1.083	0.69	0.47	0.511	OI	|	|	|	|	1.00
1.167	0.61	0.47	0.513	OI	|	|	|	|	1.00
1.250	0.59	0.48	0.513	O	|	|	|	|	1.00
1.333	0.58	0.48	0.514	O	|	|	|	|	1.01
1.417	0.57	0.48	0.515	O	|	|	|	|	1.01
1.500	0.57	0.48	0.515	O	|	|	|	|	1.01
1.583	0.57	0.48	0.516	O	|	|	|	|	1.01
1.667	0.57	0.49	0.517	O	|	|	|	|	1.01
1.750	0.57	0.49	0.517	O	|	|	|	|	1.01
1.833	0.62	0.49	0.518	OI	|	|	|	|	1.01

1.917	0.71	0.49	0.519	OI	|	|	|	1.01
2.000	0.74	0.50	0.521	OI	|	|	|	1.02
2.083	0.75	0.50	0.522	OI	|	|	|	1.02
2.167	0.75	0.51	0.524	OI	|	|	|	1.02
2.250	0.76	0.51	0.526	OI	|	|	|	1.03
2.333	0.76	0.52	0.528	OI	|	|	|	1.03
2.417	0.76	0.52	0.529	OI	|	|	|	1.03
2.500	0.76	0.53	0.531	OI	|	|	|	1.03
2.583	0.81	0.53	0.533	OI	|	|	|	1.04
2.667	0.90	0.54	0.535	OI	|	|	|	1.04
2.750	0.93	0.54	0.537	OI	|	|	|	1.05
2.833	0.94	0.55	0.540	OI	|	|	|	1.05
2.917	0.94	0.56	0.543	OI	|	|	|	1.06
3.000	0.95	0.57	0.545	OI	|	|	|	1.06
3.083	0.95	0.57	0.548	OI	|	|	|	1.07
3.167	0.95	0.58	0.551	OI	|	|	|	1.07
3.250	0.95	0.59	0.553	OI	|	|	|	1.07
3.333	0.95	0.59	0.556	OI	|	|	|	1.08
3.417	0.95	0.60	0.558	OI	|	|	|	1.08
3.500	0.95	0.61	0.560	|O	|	|	|	1.09
3.583	0.95	0.61	0.563	|O	|	|	|	1.09
3.667	0.95	0.62	0.565	|O	|	|	|	1.09
3.750	0.95	0.63	0.567	|O	|	|	|	1.10
3.833	1.00	0.63	0.570	|O	|	|	|	1.10
3.917	1.09	0.64	0.572	|O	|	|	|	1.11
4.000	1.12	0.65	0.576	|O	|	|	|	1.11
4.083	1.13	0.66	0.579	|O	|	|	|	1.12
4.167	1.13	0.67	0.582	|O	|	|	|	1.13
4.250	1.14	0.68	0.585	|O	|	|	|	1.13
4.333	1.19	0.69	0.589	|O	|	|	|	1.14
4.417	1.28	0.70	0.592	|OI	|	|	|	1.14
4.500	1.31	0.71	0.596	|OI	|	|	|	1.15
4.583	1.32	0.72	0.601	|OI	|	|	|	1.16
4.667	1.32	0.73	0.605	|OI	|	|	|	1.16
4.750	1.33	0.74	0.609	|OI	|	|	|	1.17
4.833	1.07	0.75	0.612	|O	|	|	|	1.18
4.917	0.66	0.75	0.613	|O	|	|	|	1.18
5.000	0.56	0.75	0.612	IO	|	|	|	1.18
5.083	0.71	0.75	0.611	|O	|	|	|	1.18
5.167	1.00	0.75	0.612	|O	|	|	|	1.18
5.250	1.07	0.76	0.614	|O	|	|	|	1.18
5.333	1.16	0.76	0.616	|O	|	|	|	1.18
5.417	1.27	0.77	0.619	|OI	|	|	|	1.19
5.500	1.30	0.78	0.623	|OI	|	|	|	1.20
5.583	1.12	0.79	0.626	|O	|	|	|	1.20
5.667	0.79	0.79	0.627	|O	|	|	|	1.20
5.750	0.73	0.79	0.626	|O	|	|	|	1.20
5.833	0.71	0.79	0.626	|O	|	|	|	1.20
5.917	0.71	0.79	0.625	|O	|	|	|	1.20
6.000	0.71	0.79	0.625	|O	|	|	|	1.20
6.083	0.92	0.79	0.625	|O	|	|	|	1.20
6.167	1.25	0.79	0.627	|OI	|	|	|	1.20
6.250	1.35	0.80	0.631	|OI	|	|	|	1.21
6.333	1.41	0.81	0.634	|OI	|	|	|	1.22
6.417	1.45	0.83	0.639	|OI	|	|	|	1.22
6.500	1.48	0.84	0.643	|OI	|	|	|	1.23
6.583	1.69	0.85	0.648	|OI	|	|	|	1.24
6.667	2.02	0.87	0.655	|O I	|	|	|	1.25
6.750	2.12	0.89	0.663	|O I	|	|	|	1.27
6.833	2.18	0.92	0.672	|O I	|	|	|	1.28
6.917	2.22	0.94	0.681	|O I	|	|	|	1.30
7.000	2.25	0.97	0.689	|O I	|	|	|	1.31
7.083	2.27	0.99	0.698	|O I	|	|	|	1.33
7.167	2.29	1.02	0.707	|O I	|	|	|	1.35
7.250	2.31	1.04	0.716	|O I	|	|	|	1.36
7.333	2.52	1.07	0.725	|O I	|	|	|	1.38
7.417	2.85	1.10	0.736	|O I	|	|	|	1.40
7.500	2.95	1.13	0.749	|O I	|	|	|	1.42
7.583	3.20	1.17	0.762	|O I	|	|	|	1.44
7.667	3.55	1.21	0.777	| O I	|	|	|	1.47
7.750	3.66	1.26	0.793	| O I	|	|	|	1.50
7.833	3.91	1.30	0.810	| O I	|	|	|	1.53
7.917	4.26	1.36	0.829	| O I|	|	|	1.56
8.000	4.37	1.41	0.850	| O I|	|	|	1.60
8.083	4.81	1.47	0.871	| O I|	|	|	1.63
8.167	5.47	1.54	0.896	| O |I	|	|	1.68
8.250	5.66	1.62	0.924	| O |I	|	|	1.73
8.333	5.76	1.70	0.952	| O |I	|	|	1.78
8.417	5.82	1.77	0.980	| O |I	|	|	1.83
8.500	5.86	1.85	1.007	| O |I	|	|	1.87
8.583	6.07	1.93	1.035	| O | I	|	|	1.92
8.667	6.41	2.01	1.065	| O | I	|	|	1.98
8.750	6.51	2.36	1.094	| O | I	|	|	2.02
8.833	6.75	2.92	1.122	| O | I	|	|	2.07
8.917	7.10	3.44	1.148	| O | I	|	|	2.11
9.000	7.21	3.92	1.171	| O| I	|	|	2.15
9.083	7.64	4.38	1.194	| O| I	|	|	2.19
9.167	8.31	4.85	1.217	| O I	|	|	2.22
9.250	8.50	5.31	1.240	| O I	|	|	2.26
9.333	8.78	5.75	1.261	| |O I	|	|	2.30
9.417	9.16	6.17	1.282	| | O I|	|	|	2.33
9.500	9.28	6.57	1.302	| | O I|	|	|	2.36
9.583	9.53	6.94	1.320	| | O I|	|	|	2.39



17.417	0.95	2.03	1.073	|I o	|	|	|	1.99
17.500	0.97	2.01	1.065	|I o	|	|	|	1.98
17.583	0.98	1.99	1.058	|I o	|	|	|	1.96
17.667	0.99	1.97	1.051	|I o	|	|	|	1.95
17.750	1.01	1.95	1.045	|I o	|	|	|	1.94
17.833	0.83	1.94	1.038	|I o	|	|	|	1.93
17.917	0.53	1.91	1.029	I o	|	|	|	1.91
18.000	0.46	1.88	1.019	I o	|	|	|	1.90
18.083	0.43	1.86	1.010	I o	|	|	|	1.88
18.167	0.42	1.83	1.000	I o	|	|	|	1.86
18.250	0.42	1.80	0.990	I o	|	|	|	1.84
18.333	0.43	1.78	0.981	I o	|	|	|	1.83
18.417	0.44	1.75	0.972	I o	|	|	|	1.81
18.500	0.45	1.73	0.963	I o	|	|	|	1.80
18.583	0.49	1.70	0.954	I o	|	|	|	1.78
18.667	0.54	1.68	0.946	I o	|	|	|	1.77
18.750	0.56	1.66	0.938	I o	|	|	|	1.75
18.833	0.51	1.64	0.931	I o	|	|	|	1.74
18.917	0.42	1.62	0.923	I o	|	|	|	1.72
19.000	0.40	1.59	0.914	I o	|	|	|	1.71
19.083	0.44	1.57	0.906	I o	|	|	|	1.70
19.167	0.53	1.55	0.899	I o	|	|	|	1.68
19.250	0.55	1.53	0.892	I o	|	|	|	1.67
19.333	0.56	1.51	0.886	I o	|	|	|	1.66
19.417	0.56	1.49	0.879	I o	|	|	|	1.65
19.500	0.57	1.48	0.873	I o	|	|	|	1.64
19.583	0.58	1.46	0.867	I o	|	|	|	1.63
19.667	0.57	1.44	0.861	I o	|	|	|	1.62
19.750	0.57	1.43	0.855	I o	|	|	|	1.60
19.833	0.52	1.41	0.849	I o	|	|	|	1.59
19.917	0.42	1.39	0.842	I o	|	|	|	1.58
20.000	0.40	1.37	0.835	I o	|	|	|	1.57
20.083	0.44	1.35	0.829	I o	|	|	|	1.56
20.167	0.53	1.34	0.823	I o	|	|	|	1.55
20.250	0.39	1.32	0.817	I o	|	|	|	1.54
20.333	0.13	1.30	0.810	I o	|	|	|	1.53
20.417	0.07	1.28	0.802	I o	|	|	|	1.51
20.500	0.05	1.26	0.793	I o	|	|	|	1.50
20.583	0.05	1.23	0.785	I o	|	|	|	1.48
20.667	0.04	1.21	0.777	I o	|	|	|	1.47
20.750	0.05	1.19	0.769	IO	|	|	|	1.45
20.833	0.15	1.17	0.762	IO	|	|	|	1.44
20.917	0.30	1.15	0.755	IO	|	|	|	1.43
21.000	0.34	1.13	0.750	IO	|	|	|	1.42
21.083	0.28	1.12	0.744	IO	|	|	|	1.41
21.167	0.15	1.10	0.738	IO	|	|	|	1.40
21.250	0.12	1.08	0.731	IO	|	|	|	1.39
21.333	0.19	1.07	0.725	IO	|	|	|	1.38
21.417	0.32	1.05	0.719	IO	|	|	|	1.37
21.500	0.35	1.04	0.715	IO	|	|	|	1.36
21.583	0.29	1.02	0.710	IO	|	|	|	1.35
21.667	0.18	1.01	0.704	IO	|	|	|	1.34
21.750	0.16	0.99	0.699	IO	|	|	|	1.33
21.833	0.22	0.98	0.693	IO	|	|	|	1.32
21.917	0.33	0.96	0.688	IO	|	|	|	1.31
22.000	0.36	0.95	0.684	IO	|	|	|	1.30
22.083	0.31	0.94	0.680	IO	|	|	|	1.30
22.167	0.21	0.93	0.675	IO	|	|	|	1.29
22.250	0.20	0.91	0.670	IO	|	|	|	1.28
22.333	0.25	0.90	0.666	IO	|	|	|	1.27
22.417	0.34	0.89	0.661	IO	|	|	|	1.26
22.500	0.36	0.88	0.658	IO	|	|	|	1.26
22.583	0.37	0.87	0.654	IO	|	|	|	1.25
22.667	0.37	0.86	0.651	IO	|	|	|	1.25
22.750	0.38	0.85	0.648	IO	|	|	|	1.24
22.833	0.38	0.84	0.644	IO	|	|	|	1.23
22.917	0.38	0.83	0.641	IO	|	|	|	1.23
23.000	0.38	0.82	0.638	IO	|	|	|	1.22
23.083	0.38	0.82	0.635	IO	|	|	|	1.22
23.167	0.38	0.81	0.632	IO	|	|	|	1.21
23.250	0.38	0.80	0.629	IO	|	|	|	1.21
23.333	0.38	0.79	0.626	IO	|	|	|	1.20
23.417	0.38	0.78	0.624	IO	|	|	|	1.20
23.500	0.38	0.78	0.621	IO	|	|	|	1.19
23.583	0.38	0.77	0.618	IO	|	|	|	1.19
23.667	0.38	0.76	0.615	IO	|	|	|	1.18
23.750	0.38	0.75	0.613	IO	|	|	|	1.18
23.833	0.38	0.75	0.610	IO	|	|	|	1.17
23.917	0.38	0.74	0.608	IO	|	|	|	1.17
24.000	0.38	0.73	0.605	IO	|	|	|	1.17
24.083	0.27	0.72	0.603	IO	|	|	|	1.16
24.167	0.09	0.71	0.599	IO	|	|	|	1.15
24.250	0.04	0.70	0.594	IO	|	|	|	1.15
24.333	0.02	0.69	0.590	IO	|	|	|	1.14
24.417	0.01	0.68	0.585	IO	|	|	|	1.13
24.500	0.00	0.66	0.581	IO	|	|	|	1.12
24.583	0.00	0.65	0.576	IO	|	|	|	1.11
24.667	0.00	0.64	0.572	IO	|	|	|	1.11
24.750	0.00	0.63	0.567	IO	|	|	|	1.10
24.833	0.00	0.61	0.563	IO	|	|	|	1.09
24.917	0.00	0.60	0.559	IO	|	|	|	1.08
25.000	0.00	0.59	0.555	O	|	|	|	1.08
25.083	0.00	0.58	0.551	O	|	|	|	1.07

25.167	0.00	0.57	0.547	o	|	|	|	|	1.06
25.250	0.00	0.56	0.543	o	|	|	|	|	1.06
25.333	0.00	0.55	0.539	o	|	|	|	|	1.05
25.417	0.00	0.54	0.535	o	|	|	|	|	1.04
25.500	0.00	0.53	0.532	o	|	|	|	|	1.04
25.583	0.00	0.52	0.528	o	|	|	|	|	1.03
25.667	0.00	0.51	0.525	o	|	|	|	|	1.02
25.750	0.00	0.50	0.521	o	|	|	|	|	1.02
25.833	0.00	0.49	0.518	o	|	|	|	|	1.01
25.917	0.00	0.48	0.514	o	|	|	|	|	1.01
26.000	0.00	0.47	0.511	o	|	|	|	|	1.00
26.083	0.00	0.47	0.508	o	|	|	|	|	0.99
26.167	0.00	0.46	0.505	o	|	|	|	|	0.99
26.250	0.00	0.46	0.501	o	|	|	|	|	0.98
26.333	0.00	0.46	0.498	o	|	|	|	|	0.98
26.417	0.00	0.46	0.495	o	|	|	|	|	0.97
26.500	0.00	0.45	0.492	o	|	|	|	|	0.96
26.583	0.00	0.45	0.489	o	|	|	|	|	0.96
26.667	0.00	0.45	0.486	o	|	|	|	|	0.95
26.750	0.00	0.44	0.483	o	|	|	|	|	0.94
26.833	0.00	0.44	0.480	o	|	|	|	|	0.94
26.917	0.00	0.44	0.477	o	|	|	|	|	0.93
27.000	0.00	0.44	0.474	o	|	|	|	|	0.93
27.083	0.00	0.43	0.471	o	|	|	|	|	0.92
27.167	0.00	0.43	0.468	o	|	|	|	|	0.92
27.250	0.00	0.43	0.465	o	|	|	|	|	0.91
27.333	0.00	0.42	0.462	o	|	|	|	|	0.90
27.417	0.00	0.42	0.459	o	|	|	|	|	0.90
27.500	0.00	0.42	0.456	o	|	|	|	|	0.89
27.583	0.00	0.42	0.453	o	|	|	|	|	0.89
27.667	0.00	0.41	0.450	o	|	|	|	|	0.88
27.750	0.00	0.41	0.447	o	|	|	|	|	0.88
27.833	0.00	0.41	0.445	o	|	|	|	|	0.87
27.917	0.00	0.41	0.442	o	|	|	|	|	0.86
28.000	0.00	0.40	0.439	o	|	|	|	|	0.86
28.083	0.00	0.40	0.436	o	|	|	|	|	0.85
28.167	0.00	0.40	0.433	o	|	|	|	|	0.85
28.250	0.00	0.40	0.431	o	|	|	|	|	0.84
28.333	0.00	0.39	0.428	o	|	|	|	|	0.84
28.417	0.00	0.39	0.425	o	|	|	|	|	0.83
28.500	0.00	0.39	0.423	o	|	|	|	|	0.83
28.583	0.00	0.39	0.420	o	|	|	|	|	0.82
28.667	0.00	0.38	0.417	o	|	|	|	|	0.82
28.750	0.00	0.38	0.415	o	|	|	|	|	0.81
28.833	0.00	0.38	0.412	o	|	|	|	|	0.81
28.917	0.00	0.38	0.409	o	|	|	|	|	0.80
29.000	0.00	0.37	0.407	o	|	|	|	|	0.80
29.083	0.00	0.37	0.404	o	|	|	|	|	0.79
29.167	0.00	0.37	0.402	o	|	|	|	|	0.79
29.250	0.00	0.37	0.399	o	|	|	|	|	0.78
29.333	0.00	0.36	0.397	o	|	|	|	|	0.78
29.417	0.00	0.36	0.394	o	|	|	|	|	0.77
29.500	0.00	0.36	0.392	o	|	|	|	|	0.77
29.583	0.00	0.36	0.389	o	|	|	|	|	0.76
29.667	0.00	0.36	0.387	o	|	|	|	|	0.76
29.750	0.00	0.35	0.384	o	|	|	|	|	0.75
29.833	0.00	0.35	0.382	o	|	|	|	|	0.75
29.917	0.00	0.35	0.379	o	|	|	|	|	0.74
30.000	0.00	0.35	0.377	o	|	|	|	|	0.74
30.083	0.00	0.34	0.375	o	|	|	|	|	0.73
30.167	0.00	0.34	0.372	o	|	|	|	|	0.73
30.250	0.00	0.34	0.370	o	|	|	|	|	0.72
30.333	0.00	0.34	0.368	o	|	|	|	|	0.72
30.417	0.00	0.34	0.365	o	|	|	|	|	0.71
30.500	0.00	0.33	0.363	o	|	|	|	|	0.71
30.583	0.00	0.33	0.361	o	|	|	|	|	0.71
30.667	0.00	0.33	0.358	o	|	|	|	|	0.70
30.750	0.00	0.33	0.356	o	|	|	|	|	0.70
30.833	0.00	0.33	0.354	o	|	|	|	|	0.69
30.917	0.00	0.32	0.352	o	|	|	|	|	0.69
31.000	0.00	0.32	0.349	o	|	|	|	|	0.68
31.083	0.00	0.32	0.347	o	|	|	|	|	0.68
31.167	0.00	0.32	0.345	o	|	|	|	|	0.68
31.250	0.00	0.32	0.343	o	|	|	|	|	0.67
31.333	0.00	0.31	0.341	o	|	|	|	|	0.67
31.417	0.00	0.31	0.339	o	|	|	|	|	0.66
31.500	0.00	0.31	0.336	o	|	|	|	|	0.66
31.583	0.00	0.31	0.334	o	|	|	|	|	0.65
31.667	0.00	0.31	0.332	o	|	|	|	|	0.65
31.750	0.00	0.30	0.330	o	|	|	|	|	0.65
31.833	0.00	0.30	0.328	o	|	|	|	|	0.64
31.917	0.00	0.30	0.326	o	|	|	|	|	0.64
32.000	0.00	0.30	0.324	o	|	|	|	|	0.63
32.083	0.00	0.30	0.322	o	|	|	|	|	0.63
32.167	0.00	0.29	0.320	o	|	|	|	|	0.63
32.250	0.00	0.29	0.318	o	|	|	|	|	0.62
32.333	0.00	0.29	0.316	o	|	|	|	|	0.62
32.417	0.00	0.29	0.314	o	|	|	|	|	0.61
32.500	0.00	0.29	0.312	o	|	|	|	|	0.61
32.583	0.00	0.28	0.310	o	|	|	|	|	0.61
32.667	0.00	0.28	0.308	o	|	|	|	|	0.60
32.750	0.00	0.28	0.306	o	|	|	|	|	0.60
32.833	0.00	0.28	0.304	o	|	|	|	|	0.59

32.917	0.00	0.28	0.302	o	|	|	|	|	0.59
33.000	0.00	0.28	0.300	o	|	|	|	|	0.59
33.083	0.00	0.27	0.298	o	|	|	|	|	0.58
33.167	0.00	0.27	0.296	o	|	|	|	|	0.58
33.250	0.00	0.27	0.295	o	|	|	|	|	0.58
33.333	0.00	0.27	0.293	o	|	|	|	|	0.57
33.417	0.00	0.27	0.291	o	|	|	|	|	0.57
33.500	0.00	0.27	0.289	o	|	|	|	|	0.57
33.583	0.00	0.26	0.287	o	|	|	|	|	0.56
33.667	0.00	0.26	0.285	o	|	|	|	|	0.56
33.750	0.00	0.26	0.284	o	|	|	|	|	0.55
33.833	0.00	0.26	0.282	o	|	|	|	|	0.55
33.917	0.00	0.26	0.280	o	|	|	|	|	0.55
34.000	0.00	0.26	0.278	o	|	|	|	|	0.54
34.083	0.00	0.25	0.276	o	|	|	|	|	0.54
34.167	0.00	0.25	0.275	o	|	|	|	|	0.54
34.250	0.00	0.25	0.273	o	|	|	|	|	0.53
34.333	0.00	0.25	0.271	o	|	|	|	|	0.53
34.417	0.00	0.25	0.270	o	|	|	|	|	0.53
34.500	0.00	0.25	0.268	o	|	|	|	|	0.52
34.583	0.00	0.24	0.266	o	|	|	|	|	0.52
34.667	0.00	0.24	0.264	o	|	|	|	|	0.52
34.750	0.00	0.24	0.263	o	|	|	|	|	0.51
34.833	0.00	0.24	0.261	o	|	|	|	|	0.51
34.917	0.00	0.24	0.259	o	|	|	|	|	0.51
35.000	0.00	0.24	0.258	o	|	|	|	|	0.50
35.083	0.00	0.24	0.256	o	|	|	|	|	0.50
35.167	0.00	0.23	0.255	o	|	|	|	|	0.50
35.250	0.00	0.23	0.253	o	|	|	|	|	0.50
35.333	0.00	0.23	0.251	o	|	|	|	|	0.49
35.417	0.00	0.23	0.250	o	|	|	|	|	0.49
35.500	0.00	0.23	0.248	o	|	|	|	|	0.49
35.583	0.00	0.23	0.247	o	|	|	|	|	0.48
35.667	0.00	0.23	0.245	o	|	|	|	|	0.48
35.750	0.00	0.22	0.244	o	|	|	|	|	0.48
35.833	0.00	0.22	0.242	o	|	|	|	|	0.47
35.917	0.00	0.22	0.240	o	|	|	|	|	0.47
36.000	0.00	0.22	0.239	o	|	|	|	|	0.47
36.083	0.00	0.22	0.237	o	|	|	|	|	0.46
36.167	0.00	0.22	0.236	o	|	|	|	|	0.46
36.250	0.00	0.22	0.234	o	|	|	|	|	0.46
36.333	0.00	0.21	0.233	o	|	|	|	|	0.46
36.417	0.00	0.21	0.232	o	|	|	|	|	0.45
36.500	0.00	0.21	0.230	o	|	|	|	|	0.45
36.583	0.00	0.21	0.229	o	|	|	|	|	0.45
36.667	0.00	0.21	0.227	o	|	|	|	|	0.44
36.750	0.00	0.21	0.226	o	|	|	|	|	0.44
36.833	0.00	0.21	0.224	o	|	|	|	|	0.44
36.917	0.00	0.20	0.223	o	|	|	|	|	0.44
37.000	0.00	0.20	0.221	o	|	|	|	|	0.43
37.083	0.00	0.20	0.220	o	|	|	|	|	0.43
37.167	0.00	0.20	0.219	o	|	|	|	|	0.43
37.250	0.00	0.20	0.217	o	|	|	|	|	0.43
37.333	0.00	0.20	0.216	o	|	|	|	|	0.42
37.417	0.00	0.20	0.215	o	|	|	|	|	0.42
37.500	0.00	0.20	0.213	o	|	|	|	|	0.42
37.583	0.00	0.19	0.212	o	|	|	|	|	0.41
37.667	0.00	0.19	0.211	o	|	|	|	|	0.41
37.750	0.00	0.19	0.209	o	|	|	|	|	0.41
37.833	0.00	0.19	0.208	o	|	|	|	|	0.41
37.917	0.00	0.19	0.207	o	|	|	|	|	0.40
38.000	0.00	0.19	0.205	o	|	|	|	|	0.40
38.083	0.00	0.19	0.204	o	|	|	|	|	0.40
38.167	0.00	0.19	0.203	o	|	|	|	|	0.40
38.250	0.00	0.19	0.201	o	|	|	|	|	0.39
38.333	0.00	0.18	0.200	o	|	|	|	|	0.39
38.417	0.00	0.18	0.199	o	|	|	|	|	0.39
38.500	0.00	0.18	0.198	o	|	|	|	|	0.39
38.583	0.00	0.18	0.196	o	|	|	|	|	0.38
38.667	0.00	0.18	0.195	o	|	|	|	|	0.38
38.750	0.00	0.18	0.194	o	|	|	|	|	0.38
38.833	0.00	0.18	0.193	o	|	|	|	|	0.38
38.917	0.00	0.18	0.191	o	|	|	|	|	0.37
39.000	0.00	0.17	0.190	o	|	|	|	|	0.37
39.083	0.00	0.17	0.189	o	|	|	|	|	0.37
39.167	0.00	0.17	0.188	o	|	|	|	|	0.37
39.250	0.00	0.17	0.187	o	|	|	|	|	0.37
39.333	0.00	0.17	0.185	o	|	|	|	|	0.36
39.417	0.00	0.17	0.184	o	|	|	|	|	0.36
39.500	0.00	0.17	0.183	o	|	|	|	|	0.36
39.583	0.00	0.17	0.182	o	|	|	|	|	0.36
39.667	0.00	0.17	0.181	o	|	|	|	|	0.35
39.750	0.00	0.17	0.180	o	|	|	|	|	0.35
39.833	0.00	0.16	0.179	o	|	|	|	|	0.35
39.917	0.00	0.16	0.177	o	|	|	|	|	0.35
40.000	0.00	0.16	0.176	o	|	|	|	|	0.35
40.083	0.00	0.16	0.175	o	|	|	|	|	0.34
40.167	0.00	0.16	0.174	o	|	|	|	|	0.34
40.250	0.00	0.16	0.173	o	|	|	|	|	0.34
40.333	0.00	0.16	0.172	o	|	|	|	|	0.34
40.417	0.00	0.16	0.171	o	|	|	|	|	0.33
40.500	0.00	0.16	0.170	o	|	|	|	|	0.33
40.583	0.00	0.16	0.169	o	|	|	|	|	0.33

40.667	0.00	0.15	0.168	o	|	|	|	|	0.33
40.750	0.00	0.15	0.167	o	|	|	|	|	0.33
40.833	0.00	0.15	0.165	o	|	|	|	|	0.32
40.917	0.00	0.15	0.164	o	|	|	|	|	0.32
41.000	0.00	0.15	0.163	o	|	|	|	|	0.32
41.083	0.00	0.15	0.162	o	|	|	|	|	0.32
41.167	0.00	0.15	0.161	o	|	|	|	|	0.32
41.250	0.00	0.15	0.160	o	|	|	|	|	0.31
41.333	0.00	0.15	0.159	o	|	|	|	|	0.31
41.417	0.00	0.15	0.158	o	|	|	|	|	0.31
41.500	0.00	0.14	0.157	o	|	|	|	|	0.31
41.583	0.00	0.14	0.156	o	|	|	|	|	0.31
41.667	0.00	0.14	0.155	o	|	|	|	|	0.30
41.750	0.00	0.14	0.154	o	|	|	|	|	0.30
41.833	0.00	0.14	0.153	o	|	|	|	|	0.30
41.917	0.00	0.14	0.152	o	|	|	|	|	0.30
42.000	0.00	0.14	0.151	o	|	|	|	|	0.30
42.083	0.00	0.14	0.150	o	|	|	|	|	0.29
42.167	0.00	0.14	0.150	o	|	|	|	|	0.29
42.250	0.00	0.14	0.149	o	|	|	|	|	0.29
42.333	0.00	0.14	0.148	o	|	|	|	|	0.29
42.417	0.00	0.13	0.147	o	|	|	|	|	0.29
42.500	0.00	0.13	0.146	o	|	|	|	|	0.29
42.583	0.00	0.13	0.145	o	|	|	|	|	0.28
42.667	0.00	0.13	0.144	o	|	|	|	|	0.28
42.750	0.00	0.13	0.143	o	|	|	|	|	0.28
42.833	0.00	0.13	0.142	o	|	|	|	|	0.28
42.917	0.00	0.13	0.141	o	|	|	|	|	0.28
43.000	0.00	0.13	0.140	o	|	|	|	|	0.27
43.083	0.00	0.13	0.139	o	|	|	|	|	0.27
43.167	0.00	0.13	0.139	o	|	|	|	|	0.27
43.250	0.00	0.13	0.138	o	|	|	|	|	0.27
43.333	0.00	0.13	0.137	o	|	|	|	|	0.27
43.417	0.00	0.13	0.136	o	|	|	|	|	0.27
43.500	0.00	0.12	0.135	o	|	|	|	|	0.26
43.583	0.00	0.12	0.134	o	|	|	|	|	0.26
43.667	0.00	0.12	0.133	o	|	|	|	|	0.26
43.750	0.00	0.12	0.133	o	|	|	|	|	0.26
43.833	0.00	0.12	0.132	o	|	|	|	|	0.26
43.917	0.00	0.12	0.131	o	|	|	|	|	0.26
44.000	0.00	0.12	0.130	o	|	|	|	|	0.25
44.083	0.00	0.12	0.129	o	|	|	|	|	0.25
44.167	0.00	0.12	0.128	o	|	|	|	|	0.25
44.250	0.00	0.12	0.128	o	|	|	|	|	0.25
44.333	0.00	0.12	0.127	o	|	|	|	|	0.25
44.417	0.00	0.12	0.126	o	|	|	|	|	0.25
44.500	0.00	0.12	0.125	o	|	|	|	|	0.25
44.583	0.00	0.11	0.124	o	|	|	|	|	0.24
44.667	0.00	0.11	0.124	o	|	|	|	|	0.24
44.750	0.00	0.11	0.123	o	|	|	|	|	0.24
44.833	0.00	0.11	0.122	o	|	|	|	|	0.24
44.917	0.00	0.11	0.121	o	|	|	|	|	0.24
45.000	0.00	0.11	0.121	o	|	|	|	|	0.24
45.083	0.00	0.11	0.120	o	|	|	|	|	0.23
45.167	0.00	0.11	0.119	o	|	|	|	|	0.23
45.250	0.00	0.11	0.118	o	|	|	|	|	0.23
45.333	0.00	0.11	0.118	o	|	|	|	|	0.23
45.417	0.00	0.11	0.117	o	|	|	|	|	0.23
45.500	0.00	0.11	0.116	o	|	|	|	|	0.23
45.583	0.00	0.11	0.115	o	|	|	|	|	0.23
45.667	0.00	0.11	0.115	o	|	|	|	|	0.22
45.750	0.00	0.10	0.114	o	|	|	|	|	0.22
45.833	0.00	0.10	0.113	o	|	|	|	|	0.22
45.917	0.00	0.10	0.112	o	|	|	|	|	0.22
46.000	0.00	0.10	0.112	o	|	|	|	|	0.22
46.083	0.00	0.10	0.111	o	|	|	|	|	0.22
46.167	0.00	0.10	0.110	o	|	|	|	|	0.22
46.250	0.00	0.10	0.110	o	|	|	|	|	0.21
46.333	0.00	0.10	0.109	o	|	|	|	|	0.21
46.417	0.00	0.10	0.108	o	|	|	|	|	0.21

**********HYDROGRAPH DATA**********

Number of intervals = 557
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 15.704 (CFS)
Total volume = 8.846 (Ac.Ft)

Status of hydrographs being held in storage

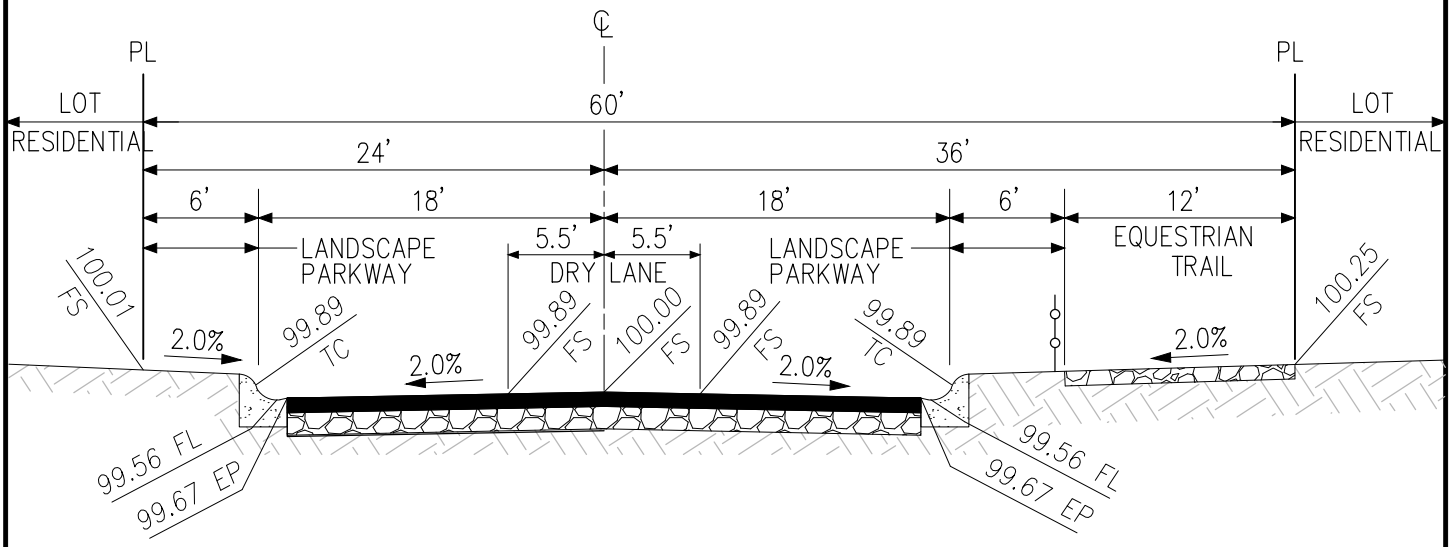
	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

APPENDIX D

1. STREET HYDRAULICS

TYPICAL STREET SECTION



PROPOSED STREETS 'A'-'F' (PUBLIC)

SCALE: 1"=10'

MDS CONSULTING
5 PETERS CANYON ROAD
SUITE 305
IRVINE, CA 92606
(949) 251-8821
WWW.MDSCONSULTING.NET
PLANNERS ENGINEERS SURVEYORS

```
==========================================================================
               ** RESULTS OF IRREGULAR CHANNEL ANALYSIS **
                 CALCULATIONS BASED ON MANNINGS EQUATION
              WITH ALL DIMENSIONS IN FEET OR FEET AND SECONDS

==========================================================================
```


Ver. 23.0 Release Date: 07/01/2016 License ID 1269

Analysis prepared by:

MDS Consulting
5 Peters Canyon Road, Suite 305, Irvine CA 92606
Phone: (949) 251-8821
Email: mdsirvine@mdsconsulting.net

```
 ************************* DESCRIPTION OF STUDY *************************
* TENTATIVE TRACT NO. 38330                                             *
* HALF STREET CAPACITY, WITH 11' DRIVING LANE                           *
* Q10 = 2.67 CFS, S=0.0050                                              *
 ************************************************************************

    TIME/DATE OF STUDY: 13:33 02/14/2024
--------------------------------------------------------------------------
            * ENTERED INFORMATION FOR SUBCHANNEL NUMBER  1 :
            NODE NUMBER      "X" COORDINATE     "Y" COORDINATE

                 1                 0.00             100.01
                 2                 6.00              99.89
                 3                 7.50              99.56
                 4                 8.00              99.67
                 5                18.50              99.89
                 6                24.00             100.00
            SUBCHANNEL SLOPE(FEET/FEET) = 0.005000
            SUBCHANNEL MANNINGS FRICTION FACTOR = 0.015000

..........................................................................
         SUBCHANNEL FLOW(CFS) =       2.7
         SUBCHANNEL FLOW AREA(SQUARE FEET) =       1.54
         SUBCHANNEL FLOW VELOCITY(FEET/SEC.) =    1.730
         SUBCHANNEL FROUDE NUMBER =  0.868
         SUBCHANNEL FLOW TOP-WIDTH(FEET) =      12.51
         SUBCHANNEL HYDRAULIC DEPTH(FEET) =    0.12

--------------------------------------------------------------------------
--------------------------------------------------------------------------
         TOTAL IRREGULAR CHANNEL FLOW(CFS) WANTED =       2.65
         COMPUTED IRREGULAR CHANNEL FLOW(CFS) =       2.67

         ESTIMATED IRREGULAR CHANNEL NORMAL DEPTH WATER SURFACE
         ELEVATION.............................     99.89
```

NOTE: WATER SURFACE IS BELOW EXTREME
LEFT AND RIGHT BANK ELEVATIONS.

```
==========================================================================
               ** RESULTS OF IRREGULAR CHANNEL ANALYSIS **
                 CALCULATIONS BASED ON MANNINGS EQUATION
              WITH ALL DIMENSIONS IN FEET OR FEET AND SECONDS

==========================================================================
```



```
        Ver. 23.0  Release Date: 07/01/2016  License ID 1269

                          Analysis prepared by:
```

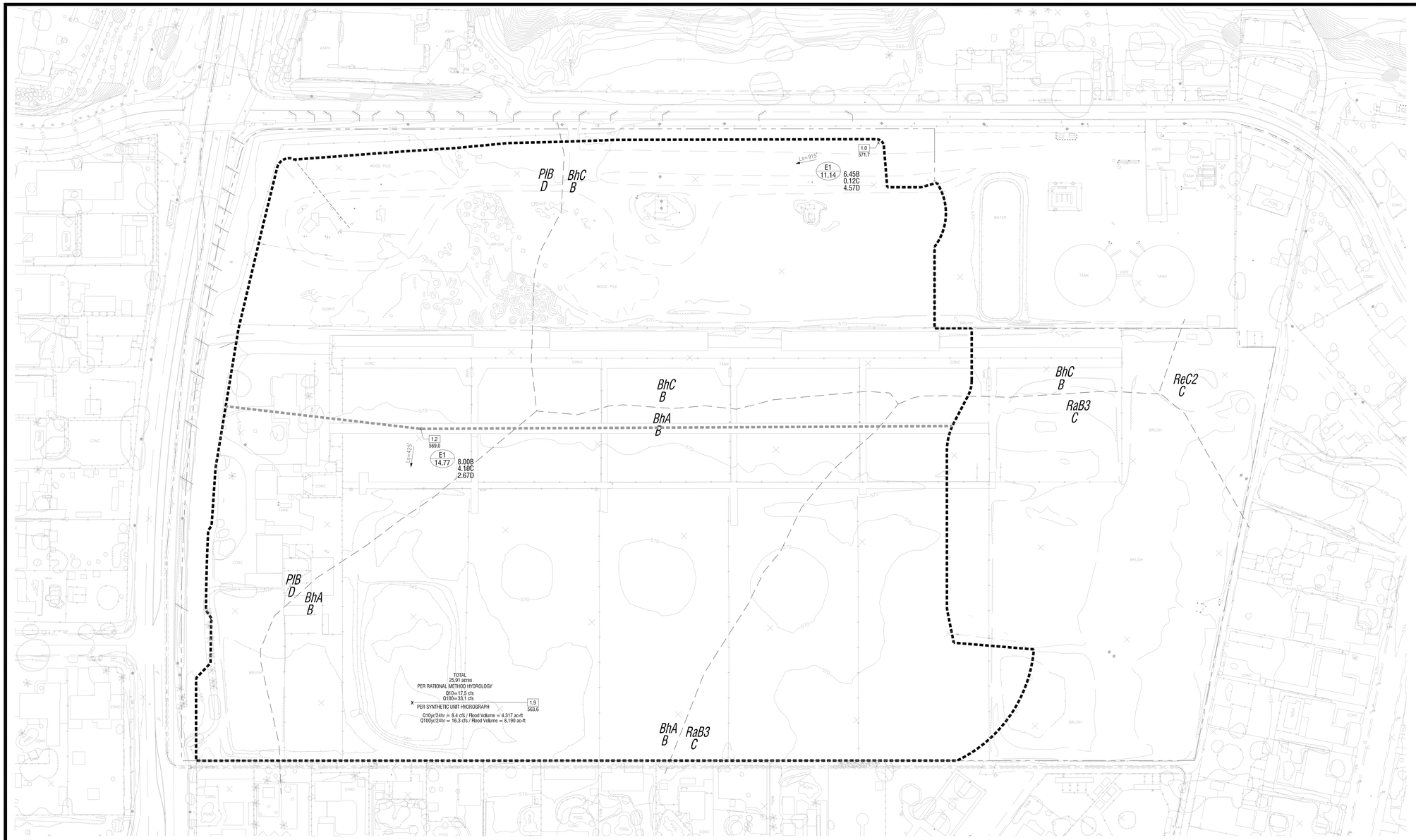
MDS Consulting
5 Peters Canyon Road, Suite 305, Irvine CA 92606
Phone: (949) 251-8821
Email: mdsirvine@mdsconsulting.net

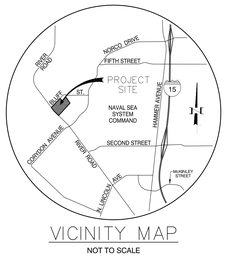
```
 ************************* DESCRIPTION OF STUDY *************************
* TENTATIVE TRACT NO. 38330                                             *
* HALF STREET CAPACITY TO P/L (6' FROM CURB)                            *
* Q100 = 7.64 CFS, S=0.0050                                             *
 ************************************************************************

    TIME/DATE OF STUDY: 13:41 02/14/2024
--------------------------------------------------------------------------
           * ENTERED INFORMATION FOR SUBCHANNEL NUMBER  1 :
           NODE NUMBER      "X" COORDINATE     "Y" COORDINATE

                1                 0.00             100.01
                2                 6.00              99.89
                3                 7.50              99.56
                4                 8.00              99.67
                5                18.50              99.89
                6                24.00             100.00
           SUBCHANNEL SLOPE(FEET/FEET) = 0.005000
           SUBCHANNEL MANNINGS FRICTION FACTOR = 0.015000

..........................................................................
         SUBCHANNEL FLOW(CFS) =       7.6
         SUBCHANNEL FLOW AREA(SQUARE FEET) =       3.76
         SUBCHANNEL FLOW VELOCITY(FEET/SEC.) =    2.033
         SUBCHANNEL FROUDE NUMBER =  0.905
         SUBCHANNEL FLOW TOP-WIDTH(FEET) =      24.00
         SUBCHANNEL HYDRAULIC DEPTH(FEET) =    0.16

--------------------------------------------------------------------------
--------------------------------------------------------------------------
         TOTAL IRREGULAR CHANNEL FLOW(CFS) WANTED =       7.60
         COMPUTED IRREGULAR CHANNEL FLOW(CFS) =       7.64

         ESTIMATED IRREGULAR CHANNEL NORMAL DEPTH WATER SURFACE
         ELEVATION.............................    100.01
```

NOTE: WATER SURFACE IS ABOVE LEFT OR RIGHT
BANK ELEVATIONS.

APPENDIX E

1. PLATE 1: PRE-DEVELOPED CONDITION HYDROLOGY MAP
2. PLATE 2: DEVELOPED CONDITION HYDROLOGY MAP





VICINITY MAP

NOT TO SCALE

LEGEND:

XY / Z.ZZ	DRAINAGE AREA DESIGNATION / DRAINAGE AREA (ACRES)
XX / YYY.Y / ZZZ.Z	NODE NUMBER / SURFACE ELEVATION / INVERT ELEVATION
	TRACT BOUNDARY
	DRAINAGE BOUNDARY
	DRAINAGE SUBAREA BOUNDARY
Ls=XXX'	SURFACE FLOW LENGTH (FEET)
Lp=XX'	PIPE FLOW LENGTH (FEET)
Q10	10-YEAR PEAK FLOW (CFS)
Q100	100-YEAR PEAK FLOW (CFS)
A / D	SOIL TYPE / SOIL TYPE BOUNDARY
sfr	SINGLE FAMILY RESIDENTIAL
Q100cb	100-YEAR PEAK FLOW IN CATCH BASIN (CFS)
Q100pipe	100-YEAR PEAK FLOW IN PIPE (CFS)

GRAPHIC SCALE

0 30 60 120

(IN FEET)
1 inch = 60 ft.

J.D. RANCH
TENTATIVE TRACT NO. 38330
PRE-DEVELOPED CONDITION HYDROLOGY MAP

CREATED: APRIL 2022
REVISED: JULY 2022

CITY OF NORCO, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA
SHEET 1 OF 1

TENTATIVE TRACT MAP NO. 37714

DATE:	NO.	REVISIONS

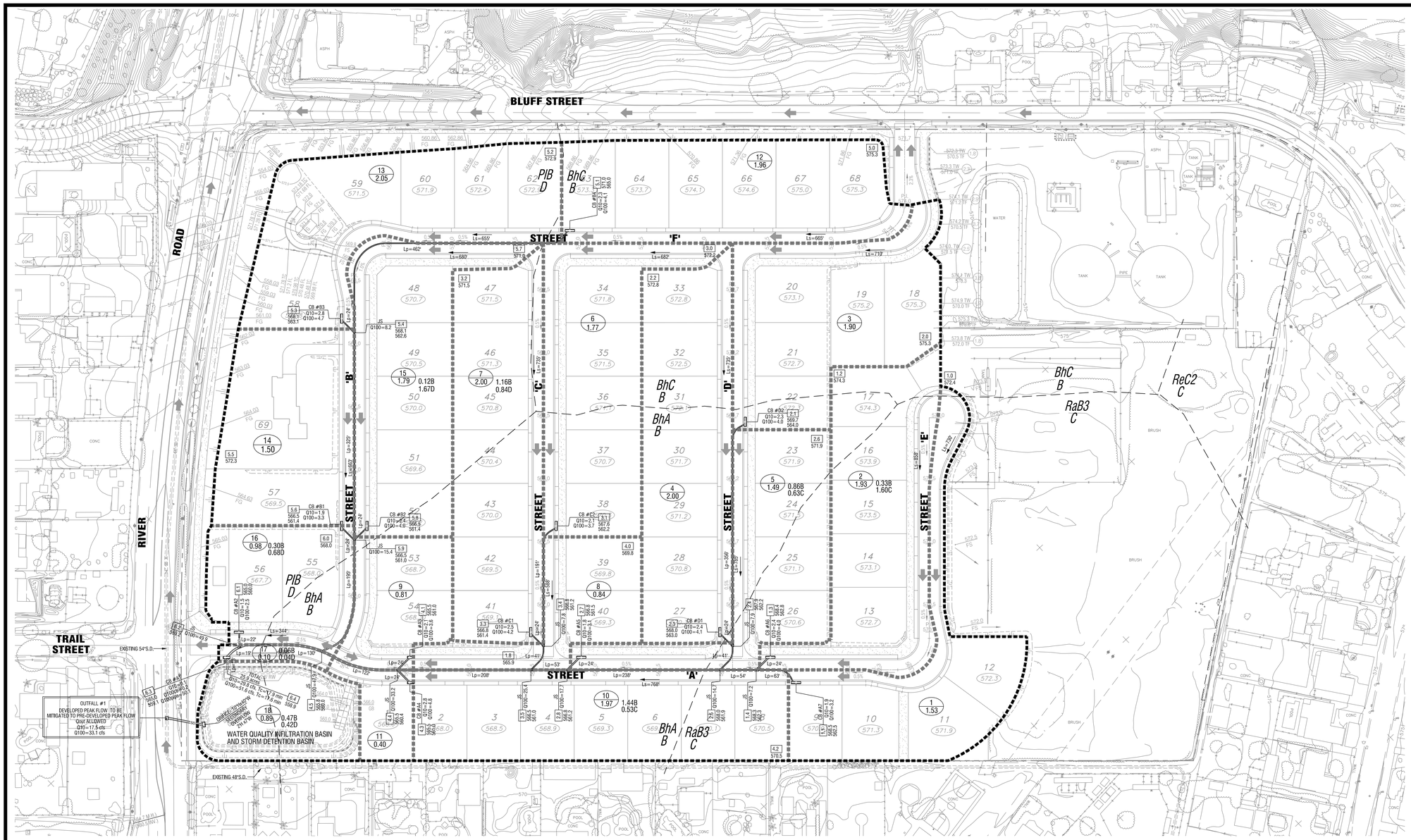
ENGINEER

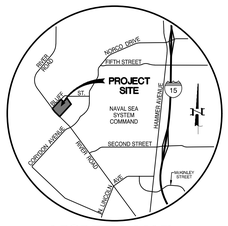
MDS CONSULTING
MORSE SCHULTZ
17320 Redhill Avenue
Suite 350
Irvine, CA 92614
Voice: 949-251-8821
PLANNERS ENGINEERS SURVEYORS

REGISTERED PROFESSIONAL ENGINEER
EDWARD J. LEITH
No. 052496
Exp. 12-31-22
STATE OF CALIFORNIA - CIVIL

EDWARD J. LEITH RCE 052496
EXP. DATE: DECEMBER 31, 2022

I:\90800\DRAINAGE\Hydrology\Prelim\Drawings\90800-Prelim Hydro (TTM 38330).dwg 7/27/22





VICINITY MAP

NOT TO SCALE

LEGEND:

XX / 3.69	DRAINAGE AREA DESIGNATION / DRAINAGE AREA (ACRES)
XX / YYY.Y / ZZZ.Z	NODE NUMBER / SURFACE ELEVATION / INVERT ELEVATION
	TRACT BOUNDARY
	DRAINAGE BOUNDARY
	DRAINAGE SUBAREA BOUNDARY
Ls=XXX'	SURFACE FLOW LENGTH (FEET)
Lp=XX'	PIPE FLOW LENGTH (FEET)
Q10	10-YEAR PEAK FLOW (CFS)
Q100	100-YEAR PEAK FLOW (CFS)
A / D	SOIL TYPE / SOIL TYPE BOUNDARY
sfr	SINGLE FAMILY RESIDENTIAL
Q100cb	100-YEAR PEAK FLOW IN CATCH BASIN (CFS)
Q100pipe	100-YEAR PEAK FLOW IN PIPE (CFS)
CB	CATCH BASIN
JS	JUNCTION STRUCTURE

GRAPHIC SCALE

0 30 60 120

(IN FEET)

1 inch = 60 ft.

DATE:	NO.	REVISIONS

ENGINEER

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EDWARD J. LENTH
No. 052496
CIVIL
STATE OF CALIFORNIA

EDWARD J. LENTH RCE 052496
EXP. DATE: DECEMBER 31, 2024

J.D. RANCH
TENTATIVE TRACT NO. 38330
PRELIMINARY DEVELOPED CONDITION HYDROLOGY MAP

CREATED: APRIL 2022
REVISED: FEBRUARY 2024
CITY OF NORCO, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA
SHEET 1 OF 1

TENTATIVE TRACT MAP NO. 37714

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