



Appendix F

Preliminary Hydrology Study

PRELIMINARY HYDROLOGY STUDY

For:

Orange Avenue Warehouse
24016 Orange Ave.
Perris, CA 92570
APN: 317-270-013, 317-270-013

Prepared for:

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RCE 43714, Exp. 3/31/23

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Storage vs. Outflow Design

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I. Project Description

Introduction

The purpose of this study is to determine the storm flows of the pre-developed condition and post-developed condition of the project site, to determine the storm water flows tributary to the project site, and to design the hydraulic structures proposed by the project. The project proposes to construct a commercial building and parking lot located at 24016 Orange Ave. in the city of Perris. The site is bounded to the west and north by graded undeveloped properties, to the east by the right-of-way of Harvill Ave., and to the south by the right-of-way of Orange Ave.

The project site has not been developed. The project proposes to develop the site for commercial use. Improvements proposed include a building structure, hardscape, landscape, and structural storm water BMPs.

Existing Condition

In its existing condition, the project site is undeveloped graded land with seasonal natural grass coverage and there are no existing impervious surfaces. There are no existing trees and shrubs within the project limits. There are three drainage areas considered by this drainage study.

Drainage Area A consists of a large area along the southerly limit of Orange Ave. and a small area along the northerly limit of said street. This area consists of mostly undisturbed land with poor natural cover. There are some single-family residences within this area, however they encompass such a small part of this drainage area that the land cover of “undeveloped” was used to model its runoff. Storm water sheets in a northeasterly direction towards the right-of-way of Orange Ave. Two existing public catch basins intercept runoff at the westerly side of the intersection of Orange Ave. and Harvill Ave. and discharge into the public storm drain system of Orange Ave. An existing public storm drain Line E conveys storm water from said catch basins easterly in Orange Ave. This public storm drain system is owned and maintained by Riverside County Transportation.

Drainage Area B consists of the southerly portion of the project site. This area is undeveloped graded land with poor natural cover. The project site accepts storm water run-on from the property adjacent to its westerly boundary. This run-on sheets easterly across said boundary into the project site and comingles with site runoff. Storm water runoff of the project site continues to sheets southeasterly across the site and discharges into the right of way of

Harvill Ave. Flows continue southerly to be intercepted by the public storm drain system of Orange Ave.

Drainage Area C consists of the northerly portion of the project site. This area consists of mostly undisturbed land with poor natural cover. The project site accepts storm water run-on from the property adjacent to its westerly boundary. There are some single-family residences within this tributary area, however they encompass such a small part of this drainage area that the land cover of “undeveloped” was used to model its runoff. This run-on sheets easterly across said boundary into the project site and comingles with site runoff. Storm water runoff of the project site continues to sheet easterly across the site, is intercepted by an existing storm drain crossing of Harvill Ave., and discharged into a property easterly of Harvill Ave. The storm drain system is owned and maintained by Riverside County Transportation.

See the Hydrology Map for the Pre-Developed condition of the project site in Appendix F.

Proposed Condition

The project proposes to develop the site for commercial use. Improvements proposed include a building structure, hardscape, landscape, and structural storm water BMPs. Impervious surfaces account for 82% of the project site area. There are two drainage areas considered by this drainage study. Drainage Area A consists of a large area along the southerly limit of Orange Ave. This area consists of mostly undisturbed land with poor natural cover. There are some single-family residences within this area, however they encompass such a small part of this drainage area that the land cover of “undeveloped” was used to model its runoff. Storm water sheets in a northeasterly direction towards the right-of-way of Orange Ave. Two public catch basins are proposed at the westerly side of the intersection of Orange Ave. and Harvill Ave. These will discharge into the proposed public storm drain Line J-9 in Orange Ave. that will be owned and maintained by Perris Valley MDP. Line J-9 is proposed to replace Line E under a future permit.

Drainage Area B consists of the project site. The project site accepts storm water run-on from the properties adjacent to its westerly boundary. These properties consist of undeveloped graded land with poor natural cover. Along the northerly portion of the westerly boundary of the project site, a concrete channel is proposed to intercept run-on. The channel discharges into a proposed grate inlet that discharges into a proposed bypass storm drain. This pipe conveys run-on easterly through the project site and discharges into the existing public storm drain crossing of Harvill Ave. Along the southerly portion of the westerly boundary of the project site, a

concrete channel is proposed to intercept run-on. The channel discharges into a proposed grate inlet located at the southwesterly corner of the project site. The inlet discharges run-on into a proposed storm drain pipe that conveys flows northerly, discharging into the aforementioned bypass storm drain pipe. Within the project site, storm water sheets across proposed AC pavement and landscape in a southeasterly direction. A proposed concrete gutter along the easterly limit of the site intercepts flows and discharges them into a proposed retention basin along said boundary. Storm water is infiltrated into native soils by two proposed drywells located within the basin limits. Overflows pond up to openings in a proposed inlet located at the northerly corner of the basin and then discharge into the proposed bypass storm drain pipe. See the Hydrology Map for the Post-Developed condition of the project site in Appendix G.

Design Criteria and Methods

The Rational Study has been performed by modeling the design storm at the project site using CivilD software. The rainfall modeled by the software is for the Perris Valley Area where the project site is located, and the soil type modeled is Type B (see Appendix B). AMC II is applied to the 10-year storm and 100-year storm analysis. Undeveloped graded land has been assigned a land cover type of “Undeveloped (poor cover) with an impervious ratio of 0%,” and the developed project site has been assigned a land cover type of “Commercial” with an impervious ratio of 90% to be conservative. Westerly of the project site and tributary to it is a subarea that has been partially developed for residential use. This area is DA C1 in the pre-developed condition and DA B1 in the post-developed condition. It has been assigned a land cover type of “Single Family (1 acre lot) with an impervious ratio of 20%.” The modeling software calculates the Runoff Coefficient.

II. Hydrology Analysis

Rational Method Peak Flow

A Rational Study has been prepared of both the pre-developed and post-developed conditions of the site during a 10-year and 100-year storm event. See Appendix D and E. The results of the Rational Study are summarized as follows:

Discharge to Orange Ave.	Pre-Developed DA A & B (CFS)	Post-Developed DA A (CFS)	% Change
10-YR	148.6	135.8	-8.6%
100-YR	231.1	211.1	-8.6%

Discharge to Harvill Ave.	Pre-Developed DA C (CFS)	Post-Developed DA B (CFS)	% Change
10-YR	14.4	28.3	96%
100-YR	22.6	44.2	96%

The discharge rate of storm water to Orange Ave. decreases in the post-developed condition, and that to Harvill Ave. increases. Per direction of Riverside County Planning, the project site and all properties along its westerly boundary and northerly of Orange Ave. are to discharge to the existing public storm drain crossing of Harvill Ave. post-development. Therefore, the tributary area to Harvill Ave. increases, in addition to the imperviousness of the project site increasing post-development, and these factors increase the rate of discharge to Harvill Ave. while decreasing the discharge rate to Orange Ave.

Basin Design and Storm Routing

To mitigate the increase in discharge rate to the existing storm drain crossing of Harvill Ave., a retention basin is proposed along the easterly boundary of the project site. Unit hydrographs have been prepared to model the 100-year storm events of the post-developed project site (see Appendix I). The largest volume of storm water above the pre-developed discharge rate of 22.6-cfs is the volume required to be retained on-site; this volume is produced by the 100yr-1hr storm event. The retention volume required is 10,568-cf (see Appendix J). This volume is in addition to the water quality volume of 11,634-cf. Therefore, the proposed retention basin must provide a total storage volume of 22,202-cf. The basin has a design volume of 26,292-cf (see Appendix J). Furthermore, two dry wells are proposed within the basin to infiltrate storm water into native soils. The drawdown time of the proposed basin volume is 43.8-hr (see Appendix J).

The 100-yr storm events have been routed through the proposed retention basin, dry wells, and overflow structure. Storm water flows enter the proposed basin and are intercepted

by the two proposed dry wells, beginning to infiltrate immediately with a design rate of 0.08-cfs each. The basin bottom also allows incidental infiltration with a design rate of 0.67-in/hr. Storm water ponds up in the basin to the water quality depth in the basin of 2.33-lf at which point four openings in the sides of the proposed outlet structure begin to discharge storm water to the proposed bypass storm drain to Harvill Ave. During the 100yr-1hr storm event, storm water reaches a maximum depth of 4.17-lf above the basin bottom. This is below the top of grate of the proposed overflow structure, which is set at 4.7-lf above the basin bottom. Storm water only discharges through the four openings in the sides of the overflow structure. The peak discharge rate from the basin after storm routing is 17.3-cfs and occurs during the 100yr-1hr storm event. This is less than the pre-developed discharge rate of the project site to Harvill Ave. of 22.6-cfs. See Stage Storage vs. Outflow design in Appendix J and Basin Routing Hydrographs in Appendix K.

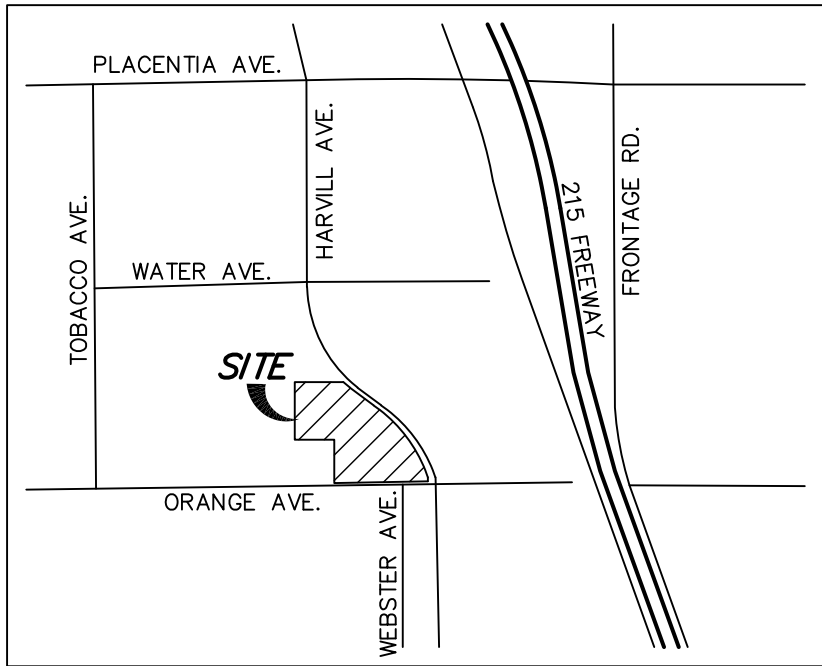
III. Hydraulic Analysis

Hydraulic analysis of the proposed storm drain inlets, pipes, and channels is included in Appendix H. These storm water structures have been designed with a capacity for the runoff generated by the 100-yr storm event.

IV. Conclusion

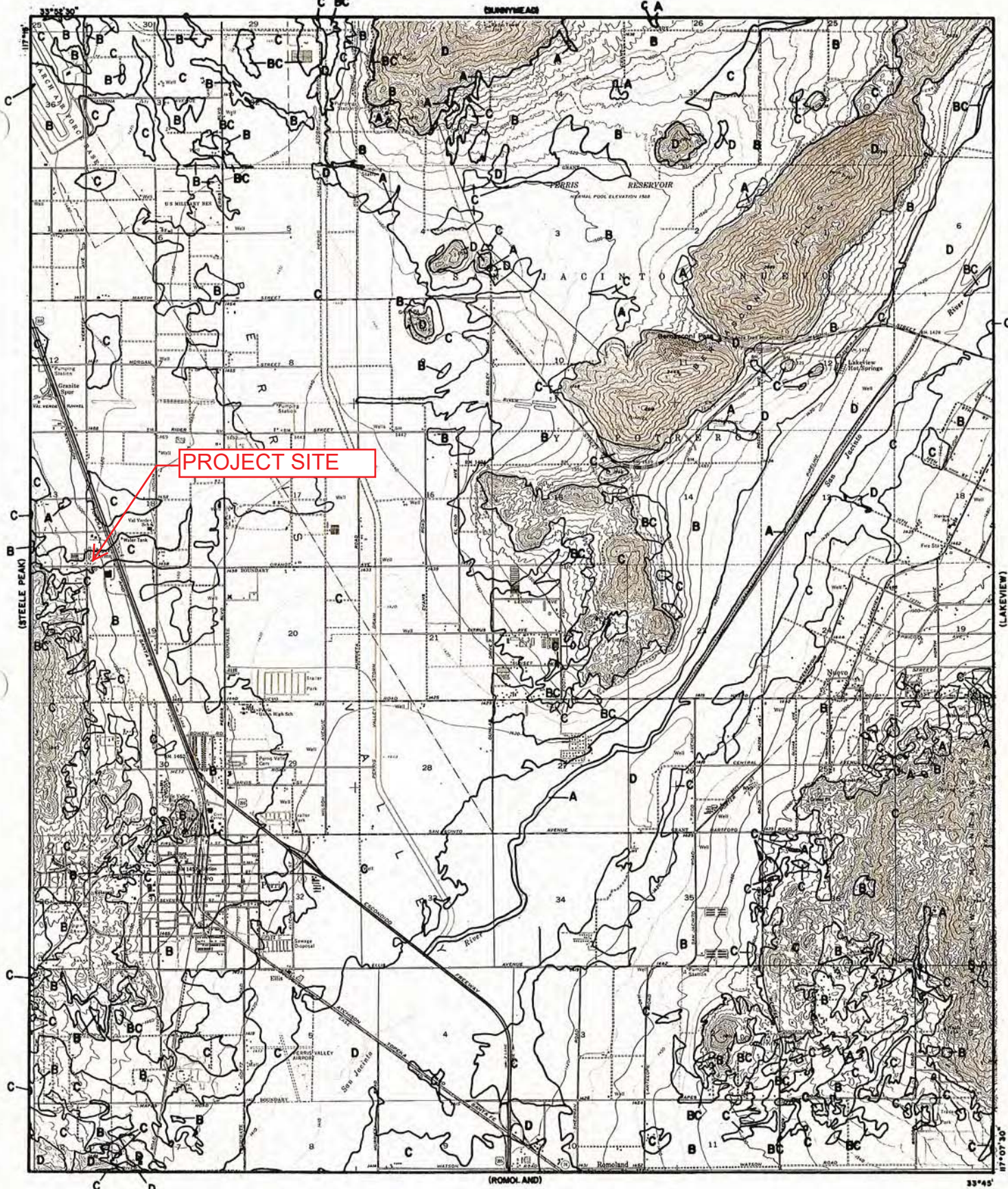
In summary, the proposed development will not increase the storm water runoff discharging from the project site to the existing storm drain crossing of Harvill Ave. Any increase in storm water runoff is mitigated by the proposed infiltration basin and drywells that are to be constructed on-site along the easterly boundary of the project site. The hydraulic structures being proposed by the project have a design capacity that exceeds the flows of the 100-year storm event.

Appendix A



VICINITY MAP
N.T.S.

Appendix B



PROJECT SITE

LEGEND

— SOILS GROUP BOUNDARY
 A SOILS GROUP DESIGNATION

RCFC & WCD
 HYDROLOGY MANUAL

0 FEET 5000

**HYDROLOGIC SOILS GROUP MAP
 FOR
 PERRIS**

Appendix C

RAINFALL INTENSITY - INCHES PER HOUR

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

SLOPE = .530

SLOPE = .550

SLOPE = .500

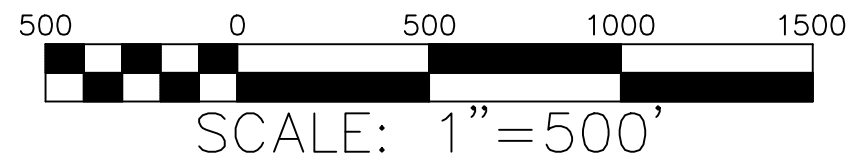
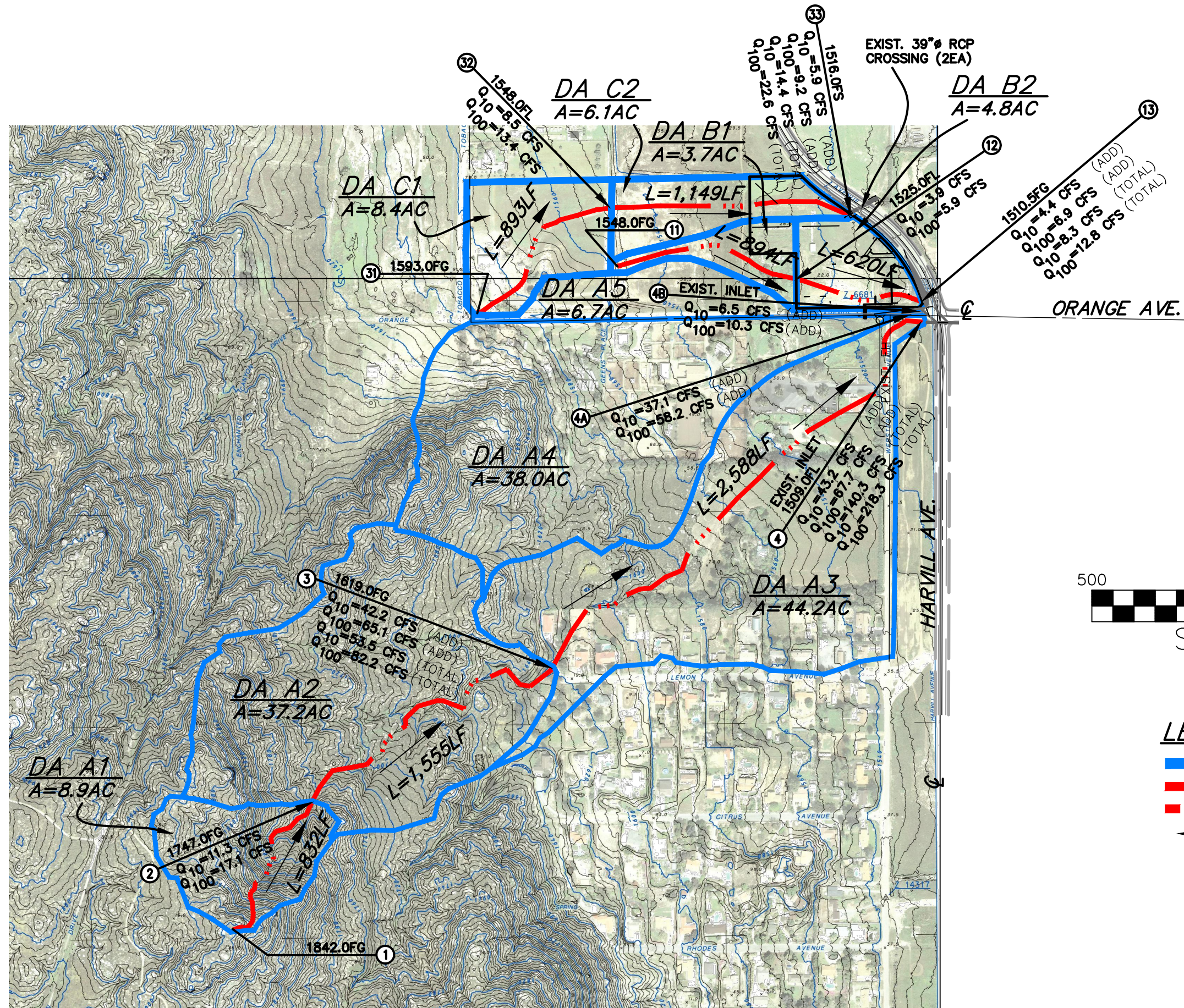
SLOPE = .580

SLOPE = .490

RCFC & WCD
HYDROLOGY MANUAL

STANDARD
INTENSITY - DURATION
CURVES DATA

Appendix D



LEGEND

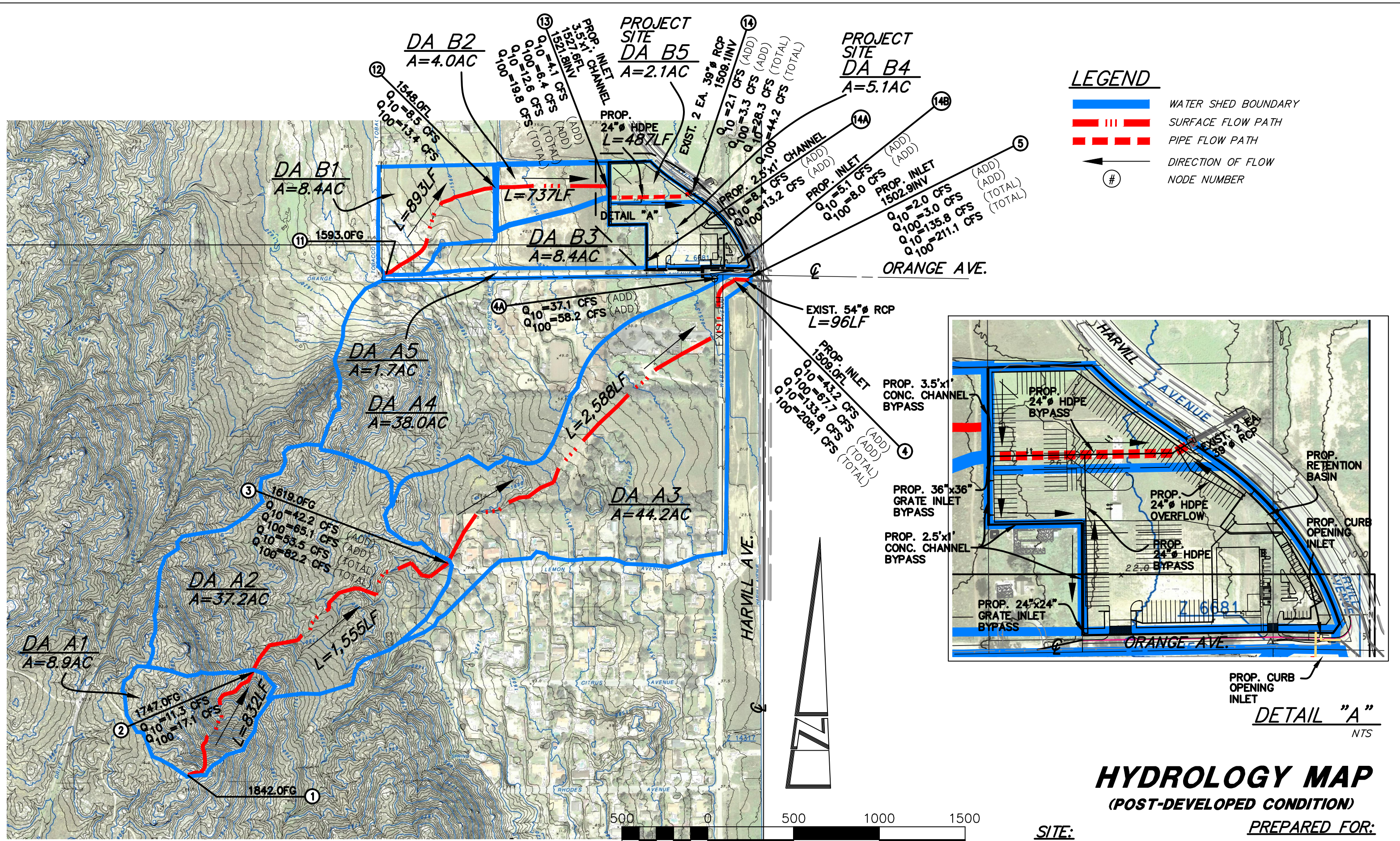
- WATER SHED BOUNDARY
- - - SURFACE FLOW PATH
- - - PIPE FLOW PATH
- DIRECTION OF FLOW
- Ⓝ NODE NUMBER

HYDROLOGY MAP
(PRE-DEVELOPED CONDITION)

SITE:
24016 ORANGE AVE.
PERRIS, CA 92510

PREPARED FOR:
-

Appendix E



Appendix F

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
Rational Hydrology Study Date: 06/10/21 File:6303RU10A.out

JN636 RATIONAL STUDY
PRE-DEVELOPED CONDITION
10YR STORM
DA A

***** Hydrology Study Control Information *****

English (in-lb) Units used in input data file

Program License Serial Number 5016

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)

For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.780(In/Hr)
Slope of intensity duration curve = 0.4900

+++++
Process from Point/Station 1.000 to Point/Station 2.000
**** INITIAL AREA EVALUATION **** DA A1

Initial area flow distance = 832.000(Ft.)
Top (of initial area) elevation = 1842.000(Ft.)
Bottom (of initial area) elevation = 1747.000(Ft.)
Difference in elevation = 95.000(Ft.)
Slope = 0.11418 s(percent)= 11.42
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.045 min.
Rainfall intensity = 1.713(In/Hr) for a 10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.738
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 11.252(CFS)
Total initial stream area = 8.900(Ac.)
Pervious area fraction = 1.000

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+++++
Process from Point/Station      2.000 to Point/Station      3.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME **** DA A2

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Estimated mean flow rate at midpoint of channel =      32.413(CFS)
Depth of flow =  1.386(Ft.), Average velocity = 10.605(Ft/s)
***** Irregular Channel Data *****

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```

-----
Information entered for subchannel number 1 :

```

Point number	'X' coordinate	'Y' coordinate
1	0.00	4.50
2	4.00	0.50
3	5.00	0.00
4	6.00	0.50
5	10.00	4.50

```

Manning's 'N' friction factor =  0.030
-----

```

```

Sub-Channel flow =      32.413(CFS)
'   '   flow top width =      3.772(Ft.)
'   '   velocity=     10.605(Ft/s)
'   '   area =        3.057(Sq.Ft)
'   '   Froude number =      2.076

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Upstream point elevation = 1747.000(Ft.)
Downstream point elevation = 1619.000(Ft.)
Flow length = 1555.000(Ft.)
Travel time = 2.44 min.
Time of concentration = 14.49 min.
Depth of flow = 1.386(Ft.)
Average velocity = 10.605(Ft/s)
Total irregular channel flow = 32.413(CFS)
Irregular channel normal depth above invert elev. = 1.386(Ft.)
Average velocity of channel(s) = 10.605(Ft/s)
Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.726
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Rainfall intensity = 1.565(In/Hr) for a 10.0 year storm
Subarea runoff = 42.241(CFS) for 37.200(Ac.)
Total runoff = 53.493(CFS) Total area = 46.100(Ac.)
Depth of flow = 1.723(Ft.), Average velocity = 12.042(Ft/s)

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+++++
Process from Point/Station      3.000 to Point/Station      4.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME **** DA A3

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Estimated mean flow rate at midpoint of channel =      75.111(CFS)
Depth of flow =  2.301(Ft.), Average velocity = 10.226(Ft/s)
***** Irregular Channel Data *****

```

```

-----
Information entered for subchannel number 1 :

```

Point number	'X' coordinate	'Y' coordinate
1	0.00	4.50
2	4.00	0.50
3	5.00	0.00
4	6.00	0.50
5	10.00	4.50

```

Manning's 'N' friction factor =  0.030

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```
-----
Sub-Channel flow = 75.111(CFS)
'   '   flow top width = 5.602(Ft.)
'   '   velocity= 10.226(Ft/s)
'   '   area = 7.345(Sq.Ft)
'   '   Froude number = 1.574
```

```
Upstream point elevation = 1619.000(Ft.)
Downstream point elevation = 1509.000(Ft.)
Flow length = 2588.000(Ft.)
Travel time = 4.22 min.
Time of concentration = 18.71 min.
Depth of flow = 2.301(Ft.)
Average velocity = 10.226(Ft/s)
Total irregular channel flow = 75.111(CFS)
Irregular channel normal depth above invert elev. = 2.301(Ft.)
Average velocity of channel(s) = 10.226(Ft/s)
Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.707
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Rainfall intensity = 1.381(In/Hr) for a 10.0 year storm
Subarea runoff = 43.168(CFS) for 44.200(Ac.)
Total runoff = 96.661(CFS) Total area = 90.300(Ac.)
Depth of flow = 2.563(Ft.), Average velocity = 10.884(Ft/s)
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+++++
Process from Point/Station 4.000 to Point/Station 4.000
**** SUBAREA FLOW ADDITION **** DA A4
```

```
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.707
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Time of concentration = 18.71 min.
Rainfall intensity = 1.381(In/Hr) for a 10.0 year storm
Subarea runoff = 37.113(CFS) for 38.000(Ac.)
Total runoff = 133.774(CFS) Total area = 128.300(Ac.)
```

```
+++++
Process from Point/Station 4.000 to Point/Station 4.000
**** SUBAREA FLOW ADDITION **** DA A5
```

```
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.707
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Time of concentration = 18.71 min.
Rainfall intensity = 1.381(In/Hr) for a 10.0 year storm
Subarea runoff = 6.544(CFS) for 6.700(Ac.)
Total runoff = 140.317(CFS) Total area = 135.000(Ac.)
```

6303RU10A

End of computations, total study area = 135.00 (Ac.)

The following figures may

be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(A_p) = 1.000

Area averaged RI index number = 78.0

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
Rational Hydrology Study Date: 06/10/21 File:6303RU10B.out

JN6303 RATIONAL STUDY
PRE-DEVELOPED CONDITION
10YR STORM
DA B

***** Hydrology Study Control Information *****

English (in-lb) Units used in input data file

Program License Serial Number 5016

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)

For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.780(In/Hr)
Slope of intensity duration curve = 0.4900

+++++
Process from Point/Station 11.000 to Point/Station 12.000
**** INITIAL AREA EVALUATION **** DA B1

Initial area flow distance = 894.000(Ft.)
Top (of initial area) elevation = 1548.000(Ft.)
Bottom (of initial area) elevation = 1525.000(Ft.)
Difference in elevation = 23.000(Ft.)
Slope = 0.02573 s(percent)= 2.57
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 16.701 min.
Rainfall intensity = 1.460(In/Hr) for a 10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.716
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 3.865(CFS)
Total initial stream area = 3.700(Ac.)
Pervious area fraction = 1.000

+++++
 Process from Point/Station 12.000 to Point/Station 13.000
 **** IRREGULAR CHANNEL FLOW TRAVEL TIME **** DA B2

 Estimated mean flow rate at midpoint of channel = 6.111(CFS)
 Depth of flow = 0.307(Ft.), Average velocity = 2.602(Ft/s)
 ***** Irregular Channel Data *****

 Information entered for subchannel number 1 :
 Point number 'X' coordinate 'Y' coordinate
 1 0.00 0.50
 2 12.50 0.00
 3 25.00 0.50
 Manning's 'N' friction factor = 0.025

 Sub-Channel flow = 6.111(CFS)
 ' ' flow top width = 15.326(Ft.)
 ' ' velocity = 2.602(Ft/s)
 ' ' area = 2.349(Sq.Ft)
 ' ' Froude number = 1.171

Upstream point elevation = 1525.000(Ft.)
 Downstream point elevation = 1510.500(Ft.)
 Flow length = 620.000(Ft.)
 Travel time = 3.97 min.
 Time of concentration = 20.67 min.
 Depth of flow = 0.307(Ft.)
 Average velocity = 2.602(Ft/s)
 Total irregular channel flow = 6.111(CFS)
 Irregular channel normal depth above invert elev. = 0.307(Ft.)
 Average velocity of channel(s) = 2.602(Ft/s)
 Adding area flow to channel
 UNDEVELOPED (poor cover) subarea
 Runoff Coefficient = 0.700
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 1.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 RI index for soil(AMC 2) = 78.00
 Pervious area fraction = 1.000; Impervious fraction = 0.000
 Rainfall intensity = 1.315(In/Hr) for a 10.0 year storm
 Subarea runoff = 4.417(CFS) for 4.800(Ac.)
 Total runoff = 8.281(CFS) Total area = 8.500(Ac.)
 Depth of flow = 0.344(Ft.), Average velocity = 2.807(Ft/s)
 End of computations, total study area = 8.50 (Ac.)
 The following figures may
 be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
 Area averaged RI index number = 78.0

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
Rational Hydrology Study Date: 06/10/21 File:6303RU10C.out

JN6303 RATIONAL STUDY
PRE-DEVELOPED CONDITION
10YR STORM
DA C

***** Hydrology Study Control Information *****

English (in-lb) Units used in input data file

Program License Serial Number 5016

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)

For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.780(In/Hr)
Slope of intensity duration curve = 0.4900

+++++
Process from Point/Station 31.000 to Point/Station 32.000
**** INITIAL AREA EVALUATION **** DA C1

Initial area flow distance = 893.000(Ft.)
Top (of initial area) elevation = 1593.000(Ft.)
Bottom (of initial area) elevation = 1548.000(Ft.)
Difference in elevation = 45.000(Ft.)
Slope = 0.05039 s(percent)= 5.04
TC = k(0.480)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 13.216 min.
Rainfall intensity = 1.637(In/Hr) for a 10.0 year storm
SINGLE FAMILY (1 Acre Lot)
Runoff Coefficient = 0.619
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 56.00
Pervious area fraction = 0.800; Impervious fraction = 0.200
Initial subarea runoff = 8.512(CFS)
Total initial stream area = 8.400(Ac.)
Pervious area fraction = 0.800

```

+++++
Process from Point/Station      32.000 to Point/Station      33.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME **** DA C2

```

```

-----
Estimated mean flow rate at midpoint of channel =    11.492(CFS)
Depth of flow =  0.376(Ft.), Average velocity =   3.253(Ft/s)
***** Irregular Channel Data *****

```

```

-----
Information entered for subchannel number 1 :
Point number      'X' coordinate      'Y' coordinate
      1              0.00              0.50
      2             12.50              0.00
      3             25.00              0.50
Manning's 'N' friction factor =  0.025

```

```

-----
Sub-Channel flow =    11.492(CFS)
'   '   flow top width =    18.795(Ft.)
'   '   velocity =     3.253(Ft/s)
'   '   area =        3.533(Sq.Ft)
'   '   Froude number =    1.322

```

```

Upstream point elevation = 1548.000(Ft.)
Downstream point elevation = 1516.000(Ft.)
Flow length = 1149.000(Ft.)
Travel time = 5.89 min.
Time of concentration = 19.10 min.
Depth of flow = 0.376(Ft.)
Average velocity = 3.253(Ft/s)
Total irregular channel flow = 11.492(CFS)
Irregular channel normal depth above invert elev. = 0.376(Ft.)
Average velocity of channel(s) = 3.253(Ft/s)
Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.706
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Rainfall intensity = 1.367(In/Hr) for a 10.0 year storm
Subarea runoff = 5.884(CFS) for 6.100(Ac.)
Total runoff = 14.396(CFS) Total area = 14.500(Ac.)
Depth of flow = 0.409(Ft.), Average velocity = 3.442(Ft/s)
End of computations, total study area = 14.50 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

```

```

Area averaged pervious area fraction(Ap) = 0.884
Area averaged RI index number = 65.3

```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
Rational Hydrology Study Date: 06/07/21 File:6303RU100A.out

JN636 RATIONAL STUDY
PRE-DEVELOPED CONDITION
100YR STORM
DA A

***** Hydrology Study Control Information *****

English (in-lb) Units used in input data file

Program License Serial Number 5016

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)

For the [Perris Valley] area used.

10 year storm 10 minute intensity = 1.880(In/Hr)

10 year storm 60 minute intensity = 0.780(In/Hr)

100 year storm 10 minute intensity = 2.690(In/Hr)

100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 100.0

Calculated rainfall intensity data:

1 hour intensity = 1.120(In/Hr)

Slope of intensity duration curve = 0.4900

+++++

Process from Point/Station 1.000 to Point/Station 2.000

**** INITIAL AREA EVALUATION ****

DA A1

Initial area flow distance = 832.000(Ft.)

Top (of initial area) elevation = 1842.000(Ft.)

Bottom (of initial area) elevation = 1747.000(Ft.)

Difference in elevation = 95.000(Ft.)

Slope = 0.11418 s(percent)= 11.42

TC = k(0.530)*[(length^3)/(elevation change)]^0.2

Initial area time of concentration = 12.045 min.

Rainfall intensity = 2.460(In/Hr) for a 100.0 year storm

UNDEVELOPED (poor cover) subarea

Runoff Coefficient = 0.781

Decimal fraction soil group A = 0.000

Decimal fraction soil group B = 1.000

Decimal fraction soil group C = 0.000

Decimal fraction soil group D = 0.000

RI index for soil(AMC 2) = 78.00

Pervious area fraction = 1.000; Impervious fraction = 0.000

Initial subarea runoff = 17.091(CFS)

Total initial stream area = 8.900(Ac.)

Pervious area fraction = 1.000

++++
 Process from Point/Station 2.000 to Point/Station 3.000
 **** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
 DA A2

 Estimated mean flow rate at midpoint of channel = 49.657(CFS)
 Depth of flow = 1.668(Ft.), Average velocity = 11.818(Ft/s)
 ***** Irregular Channel Data *****

 Information entered for subchannel number 1 :
 Point number 'X' coordinate 'Y' coordinate
 1 0.00 4.50
 2 4.00 0.50
 3 5.00 0.00
 4 6.00 0.50
 5 10.00 4.50
 Manning's 'N' friction factor = 0.030

 Sub-Channel flow = 49.657(CFS)
 ' ' flow top width = 4.337(Ft.)
 ' ' velocity= 11.818(Ft/s)
 ' ' area = 4.202(Sq.Ft)
 ' ' Froude number = 2.116

Upstream point elevation = 1747.000(Ft.)
 Downstream point elevation = 1619.000(Ft.)
 Flow length = 1555.000(Ft.)
 Travel time = 2.19 min.
 Time of concentration = 14.24 min.
 Depth of flow = 1.668(Ft.)
 Average velocity = 11.818(Ft/s)
 Total irregular channel flow = 49.657(CFS)
 Irregular channel normal depth above invert elev. = 1.668(Ft.)
 Average velocity of channel(s) = 11.818(Ft/s)
 Adding area flow to channel
 UNDEVELOPED (poor cover) subarea
 Runoff Coefficient = 0.772
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 1.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 RI index for soil(AMC 2) = 78.00
 Pervious area fraction = 1.000; Impervious fraction = 0.000
 Rainfall intensity = 2.266(In/Hr) for a 100.0 year storm
 Subarea runoff = 65.078(CFS) for 37.200(Ac.)
 Total runoff = 82.169(CFS) Total area = 46.100(Ac.)
 Depth of flow = 2.075(Ft.), Average velocity = 13.406(Ft/s)

++++
 Process from Point/Station 3.000 to Point/Station 4.000
 **** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
 DA A3

 Estimated mean flow rate at midpoint of channel = 116.066(CFS)
 Depth of flow = 2.770(Ft.), Average velocity = 11.387(Ft/s)
 ***** Irregular Channel Data *****

 Information entered for subchannel number 1 :
 Point number 'X' coordinate 'Y' coordinate
 1 0.00 4.50
 2 4.00 0.50
 3 5.00 0.00

4 6.00 0.50
5 10.00 4.50

Manning's 'N' friction factor = 0.030

Sub-Channel flow = 116.066(CFS)
' ' flow top width = 6.540(Ft.)
' ' velocity= 11.387(Ft/s)
' ' area = 10.193(Sq.Ft)
' ' Froude number = 1.607

Upstream point elevation = 1619.000(Ft.)
Downstream point elevation = 1509.000(Ft.)
Flow length = 2588.000(Ft.)
Travel time = 3.79 min.
Time of concentration = 18.03 min.
Depth of flow = 2.770(Ft.)
Average velocity = 11.387(Ft/s)
Total irregular channel flow = 116.066(CFS)
Irregular channel normal depth above invert elev. = 2.770(Ft.)
Average velocity of channel(s) = 11.387(Ft/s)
Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.759
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Rainfall intensity = 2.019(In/Hr) for a 100.0 year storm
Subarea runoff = 67.702(CFS) for 44.200(Ac.)
Total runoff = 149.871(CFS) Total area = 90.300(Ac.)
Depth of flow = 3.086(Ft.), Average velocity = 12.127(Ft/s)

++++
Process from Point/Station 4.000 to Point/Station 4.000
**** SUBAREA FLOW ADDITION ****
DA A4

UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.759
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Time of concentration = 18.03 min.
Rainfall intensity = 2.019(In/Hr) for a 100.0 year storm
Subarea runoff = 58.206(CFS) for 38.000(Ac.)
Total runoff = 208.077(CFS) Total area = 128.300(Ac.)

++++
Process from Point/Station 4.000 to Point/Station 4.000
**** SUBAREA FLOW ADDITION ****
DA A5

UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.759
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00

6303RU100A

Pervious area fraction = 1.000; Impervious fraction = 0.000
Time of concentration = 18.03 min.
Rainfall intensity = 2.019(In/Hr) for a 100.0 year storm
Subarea runoff = 10.263(CFS) for 6.700(Ac.)
Total runoff = 218.340(CFS) Total area = 135.000(Ac.)
End of computations, total study area = 135.00 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(A_p) = 1.000
Area averaged RI index number = 78.0

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
Rational Hydrology Study Date: 06/07/21 File:6303RU100B.out

JN6303 RATIONAL STUDY
PRE-DEVELOPED CONDITION
100YR STORM
DA B

***** Hydrology Study Control Information *****

English (in-lb) Units used in input data file

Program License Serial Number 5016

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)

For the [Perris Valley] area used.

10 year storm 10 minute intensity = 1.880(In/Hr)

10 year storm 60 minute intensity = 0.780(In/Hr)

100 year storm 10 minute intensity = 2.690(In/Hr)

100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 100.0

Calculated rainfall intensity data:

1 hour intensity = 1.120(In/Hr)

Slope of intensity duration curve = 0.4900

+++++
Process from Point/Station 11.000 to Point/Station 12.000
**** INITIAL AREA EVALUATION **** DA B1

Initial area flow distance = 894.000(Ft.)
Top (of initial area) elevation = 1548.000(Ft.)
Bottom (of initial area) elevation = 1525.000(Ft.)
Difference in elevation = 23.000(Ft.)
Slope = 0.02573 s(percent)= 2.57
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 16.701 min.
Rainfall intensity = 2.096(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.763
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 5.918(CFS)
Total initial stream area = 3.700(Ac.)
Pervious area fraction = 1.000

+++++
 Process from Point/Station 12.000 to Point/Station 13.000
 **** IRREGULAR CHANNEL FLOW TRAVEL TIME **** DA B2

 Estimated mean flow rate at midpoint of channel = 9.382(CFS)
 Depth of flow = 0.360(Ft.), Average velocity = 2.896(Ft/s)
 ***** Irregular Channel Data *****

 Information entered for subchannel number 1 :
 Point number 'X' coordinate 'Y' coordinate
 1 0.00 0.50
 2 12.50 0.00
 3 25.00 0.50
 Manning's 'N' friction factor = 0.025

 Sub-Channel flow = 9.382(CFS)
 ' ' flow top width = 17.999(Ft.)
 ' ' velocity = 2.896(Ft/s)
 ' ' area = 3.239(Sq.Ft)
 ' ' Froude number = 1.203

Upstream point elevation = 1525.000(Ft.)
 Downstream point elevation = 1510.500(Ft.)
 Flow length = 620.000(Ft.)
 Travel time = 3.57 min.
 Time of concentration = 20.27 min.
 Depth of flow = 0.360(Ft.)
 Average velocity = 2.896(Ft/s)
 Total irregular channel flow = 9.382(CFS)
 Irregular channel normal depth above invert elev. = 0.360(Ft.)
 Average velocity of channel(s) = 2.896(Ft/s)
 Adding area flow to channel
 UNDEVELOPED (poor cover) subarea
 Runoff Coefficient = 0.752
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 1.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 RI index for soil(AMC 2) = 78.00
 Pervious area fraction = 1.000; Impervious fraction = 0.000
 Rainfall intensity = 1.906(In/Hr) for a 100.0 year storm
 Subarea runoff = 6.878(CFS) for 4.800(Ac.)
 Total runoff = 12.795(CFS) Total area = 8.500(Ac.)
 Depth of flow = 0.404(Ft.), Average velocity = 3.130(Ft/s)
 End of computations, total study area = 8.50 (Ac.)
 The following figures may
 be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
 Area averaged RI index number = 78.0

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
Rational Hydrology Study Date: 06/10/21 File:6303RU100C.out

JN6303 RATIONAL STUDY
PRE-DEVELOPED CONDITION
100YR STORM
DA C

***** Hydrology Study Control Information *****

English (in-lb) Units used in input data file

Program License Serial Number 5016

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)

For the [Perris Valley] area used.

10 year storm 10 minute intensity = 1.880(In/Hr)

10 year storm 60 minute intensity = 0.780(In/Hr)

100 year storm 10 minute intensity = 2.690(In/Hr)

100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 100.0

Calculated rainfall intensity data:

1 hour intensity = 1.120(In/Hr)

Slope of intensity duration curve = 0.4900

+++++
Process from Point/Station 31.000 to Point/Station 32.000
**** INITIAL AREA EVALUATION **** DA C1

Initial area flow distance = 893.000(Ft.)

Top (of initial area) elevation = 1593.000(Ft.)

Bottom (of initial area) elevation = 1548.000(Ft.)

Difference in elevation = 45.000(Ft.)

Slope = 0.05039 s(percent)= 5.04

TC = k(0.480)*[(length^3)/(elevation change)]^0.2

Initial area time of concentration = 13.216 min.

Rainfall intensity = 2.351(In/Hr) for a 100.0 year storm

SINGLE FAMILY (1 Acre Lot)

Runoff Coefficient = 0.678

Decimal fraction soil group A = 0.000

Decimal fraction soil group B = 1.000

Decimal fraction soil group C = 0.000

Decimal fraction soil group D = 0.000

RI index for soil(AMC 2) = 56.00

Pervious area fraction = 0.800; Impervious fraction = 0.200

Initial subarea runoff = 13.387(CFS)

Total initial stream area = 8.400(Ac.)

Pervious area fraction = 0.800

```

+++++
Process from Point/Station      32.000 to Point/Station      33.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME **** DA C2

```

```

-----
Estimated mean flow rate at midpoint of channel =      18.027(CFS)
Depth of flow =  0.445(Ft.), Average velocity =  3.641(Ft/s)
***** Irregular Channel Data *****

```

```

-----
Information entered for subchannel number 1 :
Point number      'X' coordinate      'Y' coordinate
      1              0.00              0.50
      2             12.50              0.00
      3             25.00              0.50
Manning's 'N' friction factor =  0.025

```

```

-----
Sub-Channel flow =      18.027(CFS)
'   '   flow top width =      22.252(Ft.)
'   '   velocity =      3.641(Ft/s)
'   '   area =      4.952(Sq.Ft)
'   '   Froude number =      1.360

```

```

Upstream point elevation = 1548.000(Ft.)
Downstream point elevation = 1516.000(Ft.)
Flow length = 1149.000(Ft.)
Travel time = 5.26 min.
Time of concentration = 18.48 min.
Depth of flow = 0.445(Ft.)
Average velocity = 3.641(Ft/s)
Total irregular channel flow = 18.027(CFS)
Irregular channel normal depth above invert elev. = 0.445(Ft.)
Average velocity of channel(s) = 3.641(Ft/s)
Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.757
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Rainfall intensity = 1.995(In/Hr) for a 100.0 year storm
Subarea runoff = 9.214(CFS) for 6.100(Ac.)
Total runoff = 22.601(CFS) Total area = 14.500(Ac.)
Depth of flow = 0.484(Ft.), Average velocity = 3.852(Ft/s)
End of computations, total study area = 14.50 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

```

```

Area averaged pervious area fraction(Ap) = 0.884
Area averaged RI index number = 65.3

```

Appendix G

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
Rational Hydrology Study Date: 10/08/21 File:6303RD10A.out

JN6303 RATIONAL STUDY
POST-DEVELOPED CONDITION
10YR STORM
DA A

***** Hydrology Study Control Information *****

English (in-lb) Units used in input data file

Program License Serial Number 5016

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)

For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.780(In/Hr)
Slope of intensity duration curve = 0.4900

+++++
Process from Point/Station 1.000 to Point/Station 2.000
**** INITIAL AREA EVALUATION **** DA A1

Initial area flow distance = 832.000(Ft.)
Top (of initial area) elevation = 1842.000(Ft.)
Bottom (of initial area) elevation = 1747.000(Ft.)
Difference in elevation = 95.000(Ft.)
Slope = 0.11418 s(percent)= 11.42
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.045 min.
Rainfall intensity = 1.713(In/Hr) for a 10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.738
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 11.252(CFS)
Total initial stream area = 8.900(Ac.)
Pervious area fraction = 1.000

+++++
 Process from Point/Station 2.000 to Point/Station 3.000
 **** IRREGULAR CHANNEL FLOW TRAVEL TIME **** DA A2

 Estimated mean flow rate at midpoint of channel = 32.413(CFS)
 Depth of flow = 1.386(Ft.), Average velocity = 10.605(Ft/s)
 ***** Irregular Channel Data *****

 Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	4.50
2	4.00	0.50
3	5.00	0.00
4	6.00	0.50
5	10.00	4.50

Manning's 'N' friction factor = 0.030

Sub-Channel flow = 32.413(CFS)
 ' ' flow top width = 3.772(Ft.)
 ' ' velocity = 10.605(Ft/s)
 ' ' area = 3.057(Sq.Ft)
 ' ' Froude number = 2.076

Upstream point elevation = 1747.000(Ft.)
 Downstream point elevation = 1619.000(Ft.)
 Flow length = 1555.000(Ft.)
 Travel time = 2.44 min.
 Time of concentration = 14.49 min.
 Depth of flow = 1.386(Ft.)
 Average velocity = 10.605(Ft/s)
 Total irregular channel flow = 32.413(CFS)
 Irregular channel normal depth above invert elev. = 1.386(Ft.)
 Average velocity of channel(s) = 10.605(Ft/s)
 Adding area flow to channel
 UNDEVELOPED (poor cover) subarea
 Runoff Coefficient = 0.726
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 1.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 RI index for soil(AMC 2) = 78.00
 Pervious area fraction = 1.000; Impervious fraction = 0.000
 Rainfall intensity = 1.565(In/Hr) for a 10.0 year storm
 Subarea runoff = 42.241(CFS) for 37.200(Ac.)
 Total runoff = 53.493(CFS) Total area = 46.100(Ac.)
 Depth of flow = 1.723(Ft.), Average velocity = 12.042(Ft/s)

+++++
 Process from Point/Station 3.000 to Point/Station 4.000
 **** IRREGULAR CHANNEL FLOW TRAVEL TIME **** DA A3

 Estimated mean flow rate at midpoint of channel = 75.111(CFS)
 Depth of flow = 2.301(Ft.), Average velocity = 10.226(Ft/s)
 ***** Irregular Channel Data *****

 Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	4.50
2	4.00	0.50
3	5.00	0.00
4	6.00	0.50
5	10.00	4.50

Manning's 'N' friction factor = 0.030

```

-----
Sub-Channel flow = 75.111(CFS)
'   '   flow top width = 5.602(Ft.)
'   '   velocity= 10.226(Ft/s)
'   '   area = 7.345(Sq.Ft)
'   '   Froude number = 1.574

```

```

Upstream point elevation = 1619.000(Ft.)
Downstream point elevation = 1509.000(Ft.)
Flow length = 2588.000(Ft.)
Travel time = 4.22 min.
Time of concentration = 18.71 min.
Depth of flow = 2.301(Ft.)
Average velocity = 10.226(Ft/s)
Total irregular channel flow = 75.111(CFS)
Irregular channel normal depth above invert elev. = 2.301(Ft.)
Average velocity of channel(s) = 10.226(Ft/s)
Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.707
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Rainfall intensity = 1.381(In/Hr) for a 10.0 year storm
Subarea runoff = 43.168(CFS) for 44.200(Ac.)
Total runoff = 96.661(CFS) Total area = 90.300(Ac.)
Depth of flow = 2.563(Ft.), Average velocity = 10.884(Ft/s)

```

```

+++++
Process from Point/Station 4.000 to Point/Station 4.000
**** SUBAREA FLOW ADDITION **** DA A4

```

```

UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.707
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Time of concentration = 18.71 min.
Rainfall intensity = 1.381(In/Hr) for a 10.0 year storm
Subarea runoff = 37.113(CFS) for 38.000(Ac.)
Total runoff = 133.774(CFS) Total area = 128.300(Ac.)

```

```

+++++
Process from Point/Station 4.000 to Point/Station 5.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****

```

```

Upstream point/station elevation = 1509.000(Ft.)
Downstream point/station elevation = 1502.900(Ft.)
Pipe length = 96.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 133.774(CFS)
Given pipe size = 54.00(In.)
Calculated individual pipe flow = 133.774(CFS)
Normal flow depth in pipe = 19.17(In.)
Flow top width inside pipe = 51.68(In.)
Critical Depth = 40.84(In.)
Pipe flow velocity = 26.47(Ft/s)
Travel time through pipe = 0.06 min.
Time of concentration (TC) = 18.77 min.

```



```

+++++
Process from Point/Station      5.000 to Point/Station      5.000
**** SUBAREA FLOW ADDITION **** DA A5

```

```

COMMERCIAL subarea type
Runoff Coefficient = 0.861
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 56.00
Pervious area fraction = 0.100; Impervious fraction = 0.900
Time of concentration = 18.77 min.
Rainfall intensity = 1.379(In/Hr) for a 10.0 year storm
Subarea runoff = 2.018(CFS) for 1.700(Ac.)
Total runoff = 135.792(CFS) Total area = 130.000(Ac.)
End of computations, total study area = 130.00 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

```

```

Area averaged pervious area fraction(Ap) = 0.988
Area averaged RI index number = 77.7

```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
Rational Hydrology Study Date: 10/08/21 File:6303RD10B.out

JN6303 RATIONAL STUDY
POST-DEVELOPED CONDITION
10YR STORM
DA B

***** Hydrology Study Control Information *****

English (in-lb) Units used in input data file

Program License Serial Number 5016

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)

For the [Perris Valley] area used.

10 year storm 10 minute intensity = 1.880(In/Hr)

10 year storm 60 minute intensity = 0.780(In/Hr)

100 year storm 10 minute intensity = 2.690(In/Hr)

100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 10.0

Calculated rainfall intensity data:

1 hour intensity = 0.780(In/Hr)

Slope of intensity duration curve = 0.4900

+++++
Process from Point/Station 11.000 to Point/Station 12.000
**** INITIAL AREA EVALUATION **** DA B1

Initial area flow distance = 893.000(Ft.)

Top (of initial area) elevation = 1593.000(Ft.)

Bottom (of initial area) elevation = 1548.000(Ft.)

Difference in elevation = 45.000(Ft.)

Slope = 0.05039 s(percent)= 5.04

TC = k(0.480)*[(length^3)/(elevation change)]^0.2

Initial area time of concentration = 13.216 min.

Rainfall intensity = 1.637(In/Hr) for a 10.0 year storm

SINGLE FAMILY (1 Acre Lot)

Runoff Coefficient = 0.619

Decimal fraction soil group A = 0.000

Decimal fraction soil group B = 1.000

Decimal fraction soil group C = 0.000

Decimal fraction soil group D = 0.000

RI index for soil(AMC 2) = 56.00

Pervious area fraction = 0.800; Impervious fraction = 0.200

Initial subarea runoff = 8.512(CFS)

Total initial stream area = 8.400(Ac.)

Pervious area fraction = 0.800

```

+++++
Process from Point/Station      12.000 to Point/Station      13.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME **** DA B2

```

```

-----
Estimated mean flow rate at midpoint of channel =    10.539(CFS)
Depth of flow =  0.364(Ft.), Average velocity =   3.176(Ft/s)
***** Irregular Channel Data *****

```

```

-----
Information entered for subchannel number 1 :
Point number      'X' coordinate      'Y' coordinate
      1              0.00              0.50
      2             12.50              0.00
      3             25.00              0.50
Manning's 'N' friction factor =   0.025

```

```

-----
Sub-Channel flow =    10.539(CFS)
'   '   flow top width =    18.216(Ft.)
'   '   velocity =     3.176(Ft/s)
'   '   area =        3.318(Sq.Ft)
'   '   Froude number =    1.311

```

```

Upstream point elevation = 1548.000(Ft.)
Downstream point elevation = 1527.600(Ft.)
Flow length = 737.000(Ft.)
Travel time = 3.87 min.
Time of concentration = 17.08 min.
Depth of flow = 0.364(Ft.)
Average velocity = 3.176(Ft/s)
Total irregular channel flow = 10.539(CFS)
Irregular channel normal depth above invert elev. = 0.364(Ft.)
Average velocity of channel(s) = 3.176(Ft/s)
Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.714
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Rainfall intensity = 1.444(In/Hr) for a 10.0 year storm
Subarea runoff = 4.123(CFS) for 4.000(Ac.)
Total runoff = 12.635(CFS) Total area = 12.400(Ac.)
Depth of flow = 0.390(Ft.), Average velocity = 3.323(Ft/s)

```

```

+++++
Process from Point/Station      13.000 to Point/Station      14.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****

```

```

-----
Upstream point/station elevation = 1521.800(Ft.)
Downstream point/station elevation = 1509.100(Ft.)
Pipe length = 487.00(Ft.) Manning's N = 0.012
No. of pipes = 1 Required pipe flow = 12.635(CFS)
Given pipe size = 24.00(In.)
Calculated individual pipe flow = 12.635(CFS)
Normal flow depth in pipe = 9.32(In.)
Flow top width inside pipe = 23.39(In.)
Critical Depth = 15.34(In.)
Pipe flow velocity = 11.20(Ft/s)
Travel time through pipe = 0.72 min.
Time of concentration (TC) = 17.81 min.

```

+++++
 Process from Point/Station 14.000 to Point/Station 14.000
 **** SUBAREA FLOW ADDITION **** DA B3

UNDEVELOPED (poor cover) subarea
 Runoff Coefficient = 0.711
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 1.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 RI index for soil(AMC 2) = 78.00
 Pervious area fraction = 1.000; Impervious fraction = 0.000
 Time of concentration = 17.81 min.
 Rainfall intensity = 1.414(In/Hr) for a 10.0 year storm
 Subarea runoff = 8.447(CFS) for 8.400(Ac.)
 Total runoff = 21.082(CFS) Total area = 20.800(Ac.)

+++++
 Process from Point/Station 14.000 to Point/Station 14.000
 **** SUBAREA FLOW ADDITION **** DA B4

UNDEVELOPED (poor cover) subarea
 Runoff Coefficient = 0.711
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 1.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 RI index for soil(AMC 2) = 78.00
 Pervious area fraction = 1.000; Impervious fraction = 0.000
 Time of concentration = 17.81 min.
 Rainfall intensity = 1.414(In/Hr) for a 10.0 year storm
 Subarea runoff = 5.129(CFS) for 5.100(Ac.)
 Total runoff = 26.211(CFS) Total area = 25.900(Ac.)

+++++
 Process from Point/Station 14.000 to Point/Station 14.000
 **** SUBAREA FLOW ADDITION **** DA B5

UNDEVELOPED (poor cover) subarea
 Runoff Coefficient = 0.711
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 1.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 RI index for soil(AMC 2) = 78.00
 Pervious area fraction = 1.000; Impervious fraction = 0.000
 Time of concentration = 17.81 min.
 Rainfall intensity = 1.414(In/Hr) for a 10.0 year storm
 Subarea runoff = 2.112(CFS) for 2.100(Ac.)
 Total runoff = 28.322(CFS) Total area = 28.000(Ac.)
 End of computations, total study area = 28.00 (Ac.)
 The following figures may
 be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.940
 Area averaged RI index number = 71.4

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
Rational Hydrology Study Date: 10/08/21 File:6303RD100A.out

JN6303 RATIONAL STUDY
POST-DEVELOPED CONDITION
100YR STORM
DA A

***** Hydrology Study Control Information *****

English (in-lb) Units used in input data file

Program License Serial Number 5016

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)

For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.120(In/Hr)
Slope of intensity duration curve = 0.4900

+++++
Process from Point/Station 1.000 to Point/Station 2.000
**** INITIAL AREA EVALUATION **** DA A1

Initial area flow distance = 832.000(Ft.)
Top (of initial area) elevation = 1842.000(Ft.)
Bottom (of initial area) elevation = 1747.000(Ft.)
Difference in elevation = 95.000(Ft.)
Slope = 0.11418 s(percent)= 11.42
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.045 min.
Rainfall intensity = 2.460(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.781
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 17.091(CFS)
Total initial stream area = 8.900(Ac.)
Pervious area fraction = 1.000

```

+++++
Process from Point/Station      2.000 to Point/Station      3.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME **** DA A2

```

```

-----
Estimated mean flow rate at midpoint of channel =    49.657(CFS)
Depth of flow =  1.668(Ft.), Average velocity =  11.818(Ft/s)
***** Irregular Channel Data *****

```

```

-----
Information entered for subchannel number 1 :

```

Point number	'X' coordinate	'Y' coordinate
1	0.00	4.50
2	4.00	0.50
3	5.00	0.00
4	6.00	0.50
5	10.00	4.50

```

Manning's 'N' friction factor =  0.030
-----

```

```

Sub-Channel flow =    49.657(CFS)
'   '   flow top width =    4.337(Ft.)
'   '   velocity=    11.818(Ft/s)
'   '   area =    4.202(Sq.Ft)
'   '   Froude number =    2.116

```

```

Upstream point elevation =  1747.000(Ft.)
Downstream point elevation =  1619.000(Ft.)
Flow length =  1555.000(Ft.)
Travel time =  2.19 min.
Time of concentration =  14.24 min.
Depth of flow =  1.668(Ft.)
Average velocity =  11.818(Ft/s)
Total irregular channel flow =    49.657(CFS)
Irregular channel normal depth above invert elev. =  1.668(Ft.)
Average velocity of channel(s) =  11.818(Ft/s)
Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.772
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Rainfall intensity = 2.266(In/Hr) for a 100.0 year storm
Subarea runoff = 65.078(CFS) for 37.200(Ac.)
Total runoff = 82.169(CFS) Total area = 46.100(Ac.)
Depth of flow = 2.075(Ft.), Average velocity = 13.406(Ft/s)

```

```

+++++
Process from Point/Station      3.000 to Point/Station      4.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME **** DA A3

```

```

-----
Estimated mean flow rate at midpoint of channel =    116.066(CFS)
Depth of flow =  2.770(Ft.), Average velocity =  11.387(Ft/s)
***** Irregular Channel Data *****

```

```

-----
Information entered for subchannel number 1 :

```

Point number	'X' coordinate	'Y' coordinate
1	0.00	4.50
2	4.00	0.50
3	5.00	0.00
4	6.00	0.50
5	10.00	4.50

```

Manning's 'N' friction factor =  0.030

```

```

-----
Sub-Channel flow = 116.066(CFS)
'   '   flow top width = 6.540(Ft.)
'   '   velocity= 11.387(Ft/s)
'   '   area = 10.193(Sq.Ft)
'   '   Froude number = 1.607

```

```

Upstream point elevation = 1619.000(Ft.)
Downstream point elevation = 1509.000(Ft.)
Flow length = 2588.000(Ft.)
Travel time = 3.79 min.
Time of concentration = 18.03 min.
Depth of flow = 2.770(Ft.)
Average velocity = 11.387(Ft/s)
Total irregular channel flow = 116.066(CFS)
Irregular channel normal depth above invert elev. = 2.770(Ft.)
Average velocity of channel(s) = 11.387(Ft/s)
Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.759
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Rainfall intensity = 2.019(In/Hr) for a 100.0 year storm
Subarea runoff = 67.702(CFS) for 44.200(Ac.)
Total runoff = 149.871(CFS) Total area = 90.300(Ac.)
Depth of flow = 3.086(Ft.), Average velocity = 12.127(Ft/s)

```

```

+++++
Process from Point/Station 4.000 to Point/Station 4.000
**** SUBAREA FLOW ADDITION **** DA A4

```

```

UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.759
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Time of concentration = 18.03 min.
Rainfall intensity = 2.019(In/Hr) for a 100.0 year storm
Subarea runoff = 58.206(CFS) for 38.000(Ac.)
Total runoff = 208.077(CFS) Total area = 128.300(Ac.)

```

```

+++++
Process from Point/Station 4.000 to Point/Station 5.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****

```

```

Upstream point/station elevation = 1509.000(Ft.)
Downstream point/station elevation = 1502.900(Ft.)
Pipe length = 96.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 208.077(CFS)
Given pipe size = 54.00(In.)
Calculated individual pipe flow = 208.077(CFS)
Normal flow depth in pipe = 24.40(In.)
Flow top width inside pipe = 53.75(In.)
Critical Depth = 49.06(In.)
Pipe flow velocity = 29.80(Ft/s)
Travel time through pipe = 0.05 min.
Time of concentration (TC) = 18.08 min.

```

```

+++++
Process from Point/Station      5.000 to Point/Station      5.000
**** SUBAREA FLOW ADDITION **** DA A5

```

```

COMMERCIAL subarea type
Runoff Coefficient = 0.869
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 56.00
Pervious area fraction = 0.100; Impervious fraction = 0.900
Time of concentration = 18.08 min.
Rainfall intensity = 2.016(In/Hr) for a 100.0 year storm
Subarea runoff = 2.979(CFS) for 1.700(Ac.)
Total runoff = 211.056(CFS) Total area = 130.000(Ac.)
End of computations, total study area = 130.00 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

```

```

Area averaged pervious area fraction(Ap) = 0.988
Area averaged RI index number = 77.7

```


Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
Rational Hydrology Study Date: 10/08/21 File:6303RD100B.out

JN6303 RATIONAL STUDY
POST-DEVELOPED CONDITION
100YR STORM
DA B

***** Hydrology Study Control Information *****

English (in-lb) Units used in input data file

Program License Serial Number 5016

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)

For the [Perris Valley] area used.

10 year storm 10 minute intensity = 1.880(In/Hr)

10 year storm 60 minute intensity = 0.780(In/Hr)

100 year storm 10 minute intensity = 2.690(In/Hr)

100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 100.0

Calculated rainfall intensity data:

1 hour intensity = 1.120(In/Hr)

Slope of intensity duration curve = 0.4900

+++++
Process from Point/Station 11.000 to Point/Station 12.000
**** INITIAL AREA EVALUATION **** DA B1

Initial area flow distance = 893.000(Ft.)

Top (of initial area) elevation = 1593.000(Ft.)

Bottom (of initial area) elevation = 1548.000(Ft.)

Difference in elevation = 45.000(Ft.)

Slope = 0.05039 s(percent)= 5.04

TC = k(0.480)*[(length^3)/(elevation change)]^0.2

Initial area time of concentration = 13.216 min.

Rainfall intensity = 2.351(In/Hr) for a 100.0 year storm

SINGLE FAMILY (1 Acre Lot)

Runoff Coefficient = 0.678

Decimal fraction soil group A = 0.000

Decimal fraction soil group B = 1.000

Decimal fraction soil group C = 0.000

Decimal fraction soil group D = 0.000

RI index for soil(AMC 2) = 56.00

Pervious area fraction = 0.800; Impervious fraction = 0.200

Initial subarea runoff = 13.387(CFS)

Total initial stream area = 8.400(Ac.)

Pervious area fraction = 0.800

```

+++++
Process from Point/Station      12.000 to Point/Station      13.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME **** DA B2

```

```

-----
Estimated mean flow rate at midpoint of channel =      16.575(CFS)
Depth of flow =  0.432(Ft.), Average velocity =  3.557(Ft/s)
***** Irregular Channel Data *****

```

```

-----
Information entered for subchannel number 1 :
Point number      'X' coordinate      'Y' coordinate
      1              0.00              0.50
      2             12.50              0.00
      3             25.00              0.50
Manning's 'N' friction factor =  0.025

```

```

-----
Sub-Channel flow =  16.575(CFS)
'      '      flow top width =  21.587(Ft.)
'      '      velocity=  3.557(Ft/s)
'      '      area =  4.660(Sq.Ft)
'      '      Froude number =  1.349

```

```

Upstream point elevation = 1548.000(Ft.)
Downstream point elevation = 1527.600(Ft.)
Flow length = 737.000(Ft.)
Travel time = 3.45 min.
Time of concentration = 16.67 min.
Depth of flow = 0.432(Ft.)
Average velocity = 3.557(Ft/s)
Total irregular channel flow = 16.575(CFS)
Irregular channel normal depth above invert elev. = 0.432(Ft.)
Average velocity of channel(s) = 3.557(Ft/s)
Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.763
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Rainfall intensity = 2.098(In/Hr) for a 100.0 year storm
Subarea runoff = 6.404(CFS) for 4.000(Ac.)
Total runoff = 19.792(CFS) Total area = 12.400(Ac.)
Depth of flow = 0.461(Ft.), Average velocity = 3.718(Ft/s)

```

```

+++++
Process from Point/Station      13.000 to Point/Station      14.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****

```

```

-----
Upstream point/station elevation = 1521.800(Ft.)
Downstream point/station elevation = 1509.100(Ft.)
Pipe length = 487.00(Ft.) Manning's N = 0.012
No. of pipes = 1 Required pipe flow = 19.792(CFS)
Given pipe size = 24.00(In.)
Calculated individual pipe flow = 19.792(CFS)
Normal flow depth in pipe = 12.00(In.)
Flow top width inside pipe = 24.00(In.)
Critical Depth = 19.18(In.)
Pipe flow velocity = 12.60(Ft/s)
Travel time through pipe = 0.64 min.
Time of concentration (TC) = 17.31 min.

```

Process from Point/Station 14.000 to Point/Station 14.000
**** SUBAREA FLOW ADDITION **** DA B3

UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.761
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Time of concentration = 17.31 min.
Rainfall intensity = 2.059(In/Hr) for a 100.0 year storm
Subarea runoff = 13.163(CFS) for 8.400(Ac.)
Total runoff = 32.955(CFS) Total area = 20.800(Ac.)

Process from Point/Station 14.000 to Point/Station 14.000
**** SUBAREA FLOW ADDITION **** DA B4

UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.761
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Time of concentration = 17.31 min.
Rainfall intensity = 2.059(In/Hr) for a 100.0 year storm
Subarea runoff = 7.992(CFS) for 5.100(Ac.)
Total runoff = 40.947(CFS) Total area = 25.900(Ac.)

Process from Point/Station 14.000 to Point/Station 14.000
**** SUBAREA FLOW ADDITION **** DA B5

UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.761
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Time of concentration = 17.31 min.
Rainfall intensity = 2.059(In/Hr) for a 100.0 year storm
Subarea runoff = 3.291(CFS) for 2.100(Ac.)
Total runoff = 44.238(CFS) Total area = 28.000(Ac.)
End of computations, total study area = 28.00 (Ac.)

The following figures may be used for a unit hydrograph study of the same area.

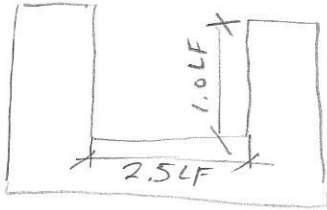
Area averaged pervious area fraction(Ap) = 0.940
Area averaged RI index number = 71.4

Appendix H

PRIVATE STRUCTURES

CONC. CHANNEL (14A)

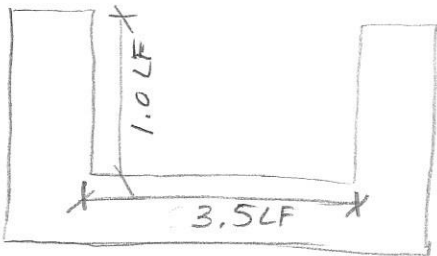
$$Q_{100} = 13.2 \text{ CFS} \quad \eta = 0.013 \quad s = 0.005 \quad A = 2.5 \text{ SF} \quad P = 4.5 \text{ LF}$$



$$Q_{\text{DESIGN}} = \frac{1.486}{0.013} \left(\frac{2.5}{4.5} \right)^{2/3} (0.005)^{1/2} (2.5) = 13.7 \text{ CFS}$$

CONC. CHANNEL (13)

$$Q_{100} = 19.8 \text{ CFS} \quad \eta = 0.013 \quad s = 0.005 \quad A = 3.5 \text{ SF} \quad P = 5.5 \text{ LF}$$



$$Q_{\text{DESIGN}} = \frac{1.486}{0.013} \left(\frac{3.5}{5.5} \right)^{2/3} (0.005)^{1/2} (3.5) = 20.9 \text{ CFS}$$

PIPES

PER KING'S MANUAL TABLE L-2

NODE (13) TO (14) - BYPASS

$$Q_{100} = 19.8 + 13.2 = 33.0 \text{ CFS} \quad \eta = 0.012 \quad s = 0.020 \rightarrow 24" \phi \text{ MINIMUM}$$

NODE (14A) TO (14) - BYPASS

$$Q_{100} = 13.2 \text{ CFS} \quad \eta = 0.012 \quad s = 0.005 \rightarrow 24" \phi \text{ MINIMUM}$$

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DESIGN
COMPANY
2313 E. Philadelphia St., Ste. F
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DATE:	SCALE:	SHEET:	JOB NO.
-------	--------	--------	---------

GRATE INLETS

KING'S
MANUAL

$$\frac{Q}{P} = 3.0 H^{3/2}$$

$$H \leq 0.5 \text{ LF}$$

ASSUME 25% CLOGGING

$$\frac{Q}{A} = 5.37 H^{1/2}$$

$$H \geq 1.4 \text{ LF}$$

NODE (13) - BYPASS

$$Q_{100} = 19.8 \text{ CFS} \quad H = 1.0 \text{ LF}$$

TRY 36" x 36"

$$H = 0.4 \text{ LF}; Q = (75\%) (3.0) (0.4^{3/2}) (12) = 6.8 \text{ CFS}$$

$$H = 1.4 \text{ LF}; Q = (75\%) (5.37) (1.4^{3/2}) (9) = 60.0 \text{ CFS}$$

$$Q_{\text{DESIGN}} = \frac{(1.0 - 0.4)}{(1.4 - 0.4)} (60.0 - 6.8) = 32 \text{ CFS}$$

$$> Q_{100} \quad \checkmark$$

NODE (14A) - BYPASS

$$Q_{100} = 13.2 \text{ CFS} \quad H = 1.0 \text{ LF}$$

TRY 24" x 24"

$$H = 0.4 \text{ LF}; Q = (75\%) (3.0) (0.4^{3/2}) (8) = 1.6 \text{ CFS}$$

$$H = 1.4 \text{ LF}; Q = (75\%) (5.37) (1.4^{3/2}) (4) = 26.7 \text{ CFS}$$

$$Q_{\text{DESIGN}} = \frac{(1.0 - 0.4)}{(1.4 - 0.4)} (26.7 - 1.6) = 15.1 \text{ CFS} > Q_{100} \quad \checkmark$$

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PUBLIC STRUCTURES

CURB OPENING INLETS

OPEN CHANNEL FLOW

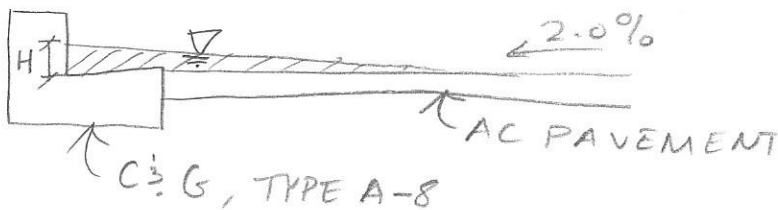
$$Q = \frac{1.486}{n} R^{2/3} S^{1/2} A$$

WEIR OPENING

$$Q = 3.087 L H^{3/2}$$

NODE ⑤

$$Q_{100} = 3.0 \text{ CFS} \quad n = 0.013 \quad S = 0.017$$



$$\text{TRY } H = 0.26 \text{ LF}; \quad A = 0.973 \text{ SF} \quad P = 9.765 \text{ LF}$$

$$Q = \left(\frac{1.486}{0.013} \right) \left(\frac{0.973}{9.765} \right)^{2/3} (0.017)^{1/2} (0.973) = 3.1 \text{ CFS} \sim Q_{100} \checkmark$$

$$\text{@ CURB OPENING}; \quad H = 0.33 \text{ LF} + 0.26 \text{ LF} = 0.59 \text{ LF}$$

$$3.0 = 3.087 L (0.59^{3/2}) \quad L = 2.1 \text{ LF} \quad \rightarrow 4 \text{ LF OPENING AT MINIMUM}$$

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Appendix I

Unit Hydrograph Analysis

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Study date 10/15/21 File: 6303UHD100Y1H1100.out

+++++

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

Program License Serial Number 5016

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

English Units used in output format

JN6303 UNIT HYDROGRAPH
POST-DEVELOPED CONDITION
PROJECT SITE
100YR-1HR STORM

Drainage Area = 7.20(Ac.) = 0.011 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 7.20(Ac.) = 0.011 Sq. Mi.
Length along longest watercourse = 1499.00(Ft.)
Length along longest watercourse measured to centroid = 736.00(Ft.)
Length along longest watercourse = 0.284 Mi.
Length along longest watercourse measured to centroid = 0.139 Mi.
Difference in elevation = 20.90(Ft.)
Slope along watercourse = 73.6171 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.047 Hr.
Lag time = 2.80 Min.
25% of lag time = 0.70 Min.
40% of lag time = 1.12 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
7.20 0.48 3.46

100 YEAR Area rainfall data:

Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
7.20 1.70 12.24

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.480(In)
Area Averaged 100-Year Rainfall = 1.700(In)

Point rain (area averaged) = 1.700(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 1.700(In)

6303UHD100Y1H1100
 1 - 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	7.5	15.0	22.5	30.0
0+ 5	0.0150	2.18	V Q					
0+10	0.0474	4.71	V Q					
0+15	0.0868	5.72	V Q					
0+20	0.1311	6.42	V Q					
0+25	0.1800	7.10	V Q					
0+30	0.2357	8.09	V Q					
0+35	0.2992	9.22			Q			
0+40	0.3726	10.66			QV			
0+45	0.4678	13.82				QV		
0+50	0.6492	26.34					V	
0+55	0.8221	25.10						Q
1+ 0	0.9040	11.90			Q			
1+ 5	0.9450	5.95		Q				V
1+10	0.9577	1.85	Q					V
1+15	0.9608	0.45	Q					V
1+20	0.9617	0.13	Q					V

Unit Hydrograph Analysis

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Study date 10/14/21 File: 6303UHD100Y3H3100.out

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

Program License Serial Number 5016

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

English Units used in output format

JN6303 UNIT HYDROGRAPH
POST-DEVELOPED CONDITION
PROJECT SITE
100YR-3HR STORM

Drainage Area = 7.20(Ac.) = 0.011 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 7.20(Ac.) = 0.011 Sq. Mi.
Length along longest watercourse = 1499.00(Ft.)
Length along longest watercourse measured to centroid = 736.00(Ft.)
Length along longest watercourse = 0.284 Mi.
Length along longest watercourse measured to centroid = 0.139 Mi.
Difference in elevation = 20.90(Ft.)
Slope along watercourse = 73.6171 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.047 Hr.
Lag time = 2.80 Min.
25% of lag time = 0.70 Min.
40% of lag time = 1.12 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
7.20 0.80 5.76

100 YEAR Area rainfall data:

Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
7.20 1.95 14.04

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.800(In)
Area Averaged 100-Year Rainfall = 1.950(In)

Point rain (area averaged) = 1.950(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.950(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 7.200 56.00 0.900
 Total Area Entered = 7.20(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
56.0	56.0	0.511	0.900	0.097	1.000	0.097
						Sum (F) = 0.097

Area averaged mean soil loss (F) (In/Hr) = 0.097
 Minimum soil loss rate ((In/Hr)) = 0.049
 (for 24 hour storm duration)
 Soil loss rate (decimal) = 0.180

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	178.742	39.473
2	0.167	357.483	44.877
3	0.250	536.225	9.717
4	0.333	714.967	3.996
5	0.417	893.708	1.937
		Sum = 100.000	Sum= 7.256

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	1.30	(0.097)	0.055	0.249
2	0.17	1.30	(0.097)	0.055	0.249
3	0.25	1.10	(0.097)	0.046	0.211
4	0.33	1.50	(0.097)	0.063	0.288
5	0.42	1.50	(0.097)	0.063	0.288
6	0.50	1.80	(0.097)	0.076	0.345
7	0.58	1.50	(0.097)	0.063	0.288
8	0.67	1.80	(0.097)	0.076	0.345
9	0.75	1.80	(0.097)	0.076	0.345
10	0.83	1.50	(0.097)	0.063	0.288
11	0.92	1.60	(0.097)	0.067	0.307
12	1.00	1.80	(0.097)	0.076	0.345
13	1.08	2.20	(0.097)	0.093	0.422
14	1.17	2.20	(0.097)	0.093	0.422
15	1.25	2.20	(0.097)	0.093	0.422
16	1.33	2.00	(0.097)	0.084	0.384
17	1.42	2.60	0.097	(0.110)	0.511
18	1.50	2.70	0.097	(0.114)	0.535
19	1.58	2.40	0.097	(0.101)	0.465
20	1.67	2.70	0.097	(0.114)	0.535
21	1.75	3.30	0.097	(0.139)	0.675
22	1.83	3.10	0.097	(0.131)	0.628
23	1.92	2.90	0.097	(0.122)	0.582
24	2.00	3.00	0.097	(0.126)	0.605
25	2.08	3.10	0.097	(0.131)	0.628
26	2.17	4.20	0.097	(0.177)	0.886
27	2.25	5.00	0.097	(0.211)	1.073

28	2.33	3.50	0.819	0.097	(0.147)	0.722
29	2.42	6.80	1.591	0.097	(0.286)	1.494
30	2.50	7.30	1.708	0.097	(0.307)	1.611
31	2.58	8.20	1.919	0.097	(0.345)	1.822
32	2.67	5.90	1.381	0.097	(0.249)	1.284
33	2.75	2.00	0.468	(0.097)	0.084	0.384
34	2.83	1.80	0.421	(0.097)	0.076	0.345
35	2.92	1.80	0.421	(0.097)	0.076	0.345
36	3.00	0.60	0.140	(0.097)	0.025	0.115

(Loss Rate Not Used)

Sum = 100.0 Sum = 20.4

Flood volume = Effective rainfall 1.70(In)
times area 7.2(Ac.)/[(In)/(Ft.)] = 1.0(Ac.Ft)

Total soil loss = 0.25(In)
Total soil loss = 0.148(Ac.Ft)
Total rainfall = 1.95(In)
Flood volume = 44526.8 Cubic Feet
Total soil loss = 6436.8 Cubic Feet

Peak flow rate of this hydrograph = 11.884(CFS)

+++++

3 - 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	0.0049	0.71	VQ				
0+10	0.0154	1.53	V Q				
0+15	0.0264	1.59	V Q				
0+20	0.0385	1.76	V Q				
0+25	0.0524	2.02	V Q				
0+30	0.0678	2.23	V Q				
0+35	0.0834	2.27	VQ				
0+40	0.0992	2.30	VQ				
0+45	0.1161	2.46	Q				
0+50	0.1321	2.33	QV				
0+55	0.1473	2.20	QV				
1+ 0	0.1634	2.34	Q V				
1+ 5	0.1819	2.68	Q V				
1+10	0.2023	2.96	Q V				
1+15	0.2231	3.03	Q V				
1+20	0.2434	2.94	Q V				
1+25	0.2654	3.20	Q V				
1+30	0.2906	3.65	Q V				
1+35	0.3154	3.60	Q V				
1+40	0.3404	3.63	Q V				
1+45	0.3695	4.23	Q V				
1+50	0.4011	4.59	Q V				
1+55	0.4315	4.41	Q V				
2+ 0	0.4614	4.34	Q V				
2+ 5	0.4921	4.46	Q V				
2+10	0.5284	5.27	Q V				
2+15	0.5742	6.66	Q V				
2+20	0.6187	6.46	Q V				
2+25	0.6720	7.74	Q V				
2+30	0.7438	10.43	Q V				
2+35	0.8257	11.88	Q V				
2+40	0.9034	11.28	Q V				
2+45	0.9533	7.24	Q V				
2+50	0.9801	3.90	Q V				
2+55	1.0009	3.01	Q V				
3+ 0	1.0146	1.99	Q V				

6303UHD100Y3H3100

3+ 5	1.0199	0.77	Q				V
3+10	1.0215	0.23	Q				V
3+15	1.0221	0.08	Q				V
3+20	1.0222	0.02	Q				V

Unit Hydrograph Analysis

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Study date 10/14/21 File: 6303UHD100Y6H6100.out

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

Program License Serial Number 5016

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

English Units used in output format

JN6303 UNIT HYDROGRAPH
POST-DEVELOPED CONDITION
PROJECT SITE
100YR-6HR STORM

Drainage Area = 7.20(Ac.) = 0.011 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 7.20(Ac.) = 0.011 Sq. Mi.
Length along longest watercourse = 1499.00(Ft.)
Length along longest watercourse measured to centroid = 736.00(Ft.)
Length along longest watercourse = 0.284 Mi.
Length along longest watercourse measured to centroid = 0.139 Mi.
Difference in elevation = 20.90(Ft.)
Slope along watercourse = 73.6171 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.047 Hr.
Lag time = 2.80 Min.
25% of lag time = 0.70 Min.
40% of lag time = 1.12 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
7.20 1.10 7.92

100 YEAR Area rainfall data:

Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
7.20 2.60 18.72

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.100(In)
Area Averaged 100-Year Rainfall = 2.600(In)

Point rain (area averaged) = 2.600(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.600(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 7.200 56.00 0.900
 Total Area Entered = 7.20(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
56.0	56.0	0.511	0.900	0.097	1.000	0.097
						Sum (F) = 0.097

Area averaged mean soil loss (F) (In/Hr) = 0.097
 Minimum soil loss rate ((In/Hr)) = 0.049
 (for 24 hour storm duration)
 Soil loss rate (decimal) = 0.180

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)	
1	0.083	178.742	39.473	2.864
2	0.167	357.483	44.877	3.256
3	0.250	536.225	9.717	0.705
4	0.333	714.967	3.996	0.290
5	0.417	893.708	1.937	0.141
Sum = 100.000			Sum=	7.256

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	0.50	(0.097)	0.028	0.128
2	0.17	0.60	(0.097)	0.034	0.154
3	0.25	0.60	(0.097)	0.034	0.154
4	0.33	0.60	(0.097)	0.034	0.154
5	0.42	0.60	(0.097)	0.034	0.154
6	0.50	0.70	(0.097)	0.039	0.179
7	0.58	0.70	(0.097)	0.039	0.179
8	0.67	0.70	(0.097)	0.039	0.179
9	0.75	0.70	(0.097)	0.039	0.179
10	0.83	0.70	(0.097)	0.039	0.179
11	0.92	0.70	(0.097)	0.039	0.179
12	1.00	0.80	(0.097)	0.045	0.205
13	1.08	0.80	(0.097)	0.045	0.205
14	1.17	0.80	(0.097)	0.045	0.205
15	1.25	0.80	(0.097)	0.045	0.205
16	1.33	0.80	(0.097)	0.045	0.205
17	1.42	0.80	(0.097)	0.045	0.205
18	1.50	0.80	(0.097)	0.045	0.205
19	1.58	0.80	(0.097)	0.045	0.205
20	1.67	0.80	(0.097)	0.045	0.205
21	1.75	0.80	(0.097)	0.045	0.205
22	1.83	0.80	(0.097)	0.045	0.205
23	1.92	0.80	(0.097)	0.045	0.205
24	2.00	0.90	(0.097)	0.051	0.230
25	2.08	0.80	(0.097)	0.045	0.205
26	2.17	0.90	(0.097)	0.051	0.230
27	2.25	0.90	(0.097)	0.051	0.230

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5+35	1.2707	8.27			Q			V	
5+40	1.2983	4.01		Q				V	
5+45	1.3136	2.21		Q				V	
5+50	1.3232	1.40		Q				V	
5+55	1.3293	0.88		Q				V	
6+ 0	1.3332	0.56		Q				V	
6+ 5	1.3351	0.28	Q					V	
6+10	1.3356	0.08	Q					V	
6+15	1.3358	0.03	Q					V	
6+20	1.3359	0.01	Q					V	

Unit Hydrograph Analysis

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Study date 10/14/21 File: 6303UHD100Y24H24100.out

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

Program License Serial Number 5016

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

English Units used in output format

JN6303 UNIT HYDROGRAPH
POST-DEVELOPED CONDITION
PROJECT SITE
100YR-24HR STORM

Drainage Area = 7.20(Ac.) = 0.011 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 7.20(Ac.) = 0.011 Sq. Mi.
Length along longest watercourse = 1499.00(Ft.)
Length along longest watercourse measured to centroid = 736.00(Ft.)
Length along longest watercourse = 0.284 Mi.
Length along longest watercourse measured to centroid = 0.139 Mi.
Difference in elevation = 20.90(Ft.)
Slope along watercourse = 73.6171 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.047 Hr.
Lag time = 2.80 Min.
25% of lag time = 0.70 Min.
40% of lag time = 1.12 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]
7.20 1.90 13.68

100 YEAR Area rainfall data:

Area(Ac.)[1] Rainfall(In)[2] Weighting[1*2]
7.20 4.90 35.28

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.900(In)
Area Averaged 100-Year Rainfall = 4.900(In)

Point rain (area averaged) = 4.900(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 4.900(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 7.200 56.00 0.900
 Total Area Entered = 7.20(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
56.0	56.0	0.511	0.900	0.097	1.000	0.097
						Sum (F) = 0.097

Area averaged mean soil loss (F) (In/Hr) = 0.097
 Minimum soil loss rate ((In/Hr)) = 0.049
 (for 24 hour storm duration)
 Soil loss rate (decimal) = 0.180

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)	
1	0.083	178.742	39.473	2.864
2	0.167	357.483	44.877	3.256
3	0.250	536.225	9.717	0.705
4	0.333	714.967	3.996	0.290
5	0.417	893.708	1.937	0.141
		Sum = 100.000	Sum=	7.256

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	0.07	(0.172)	0.007	0.032
2	0.17	0.07	(0.171)	0.007	0.032
3	0.25	0.07	(0.171)	0.007	0.032
4	0.33	0.10	(0.170)	0.011	0.048
5	0.42	0.10	(0.169)	0.011	0.048
6	0.50	0.10	(0.169)	0.011	0.048
7	0.58	0.10	(0.168)	0.011	0.048
8	0.67	0.10	(0.167)	0.011	0.048
9	0.75	0.10	(0.167)	0.011	0.048
10	0.83	0.13	(0.166)	0.014	0.064
11	0.92	0.13	(0.165)	0.014	0.064
12	1.00	0.13	(0.165)	0.014	0.064
13	1.08	0.10	(0.164)	0.011	0.048
14	1.17	0.10	(0.163)	0.011	0.048
15	1.25	0.10	(0.163)	0.011	0.048
16	1.33	0.10	(0.162)	0.011	0.048
17	1.42	0.10	(0.162)	0.011	0.048
18	1.50	0.10	(0.161)	0.011	0.048
19	1.58	0.10	(0.160)	0.011	0.048
20	1.67	0.10	(0.160)	0.011	0.048
21	1.75	0.10	(0.159)	0.011	0.048
22	1.83	0.13	(0.158)	0.014	0.064
23	1.92	0.13	(0.158)	0.014	0.064
24	2.00	0.13	(0.157)	0.014	0.064
25	2.08	0.13	(0.156)	0.014	0.064
26	2.17	0.13	(0.156)	0.014	0.064
27	2.25	0.13	(0.155)	0.014	0.064

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28	2.33	0.13	0.078	(0.155)	0.014	0.064
29	2.42	0.13	0.078	(0.154)	0.014	0.064
30	2.50	0.13	0.078	(0.153)	0.014	0.064
31	2.58	0.17	0.098	(0.153)	0.018	0.080
32	2.67	0.17	0.098	(0.152)	0.018	0.080
33	2.75	0.17	0.098	(0.151)	0.018	0.080
34	2.83	0.17	0.098	(0.151)	0.018	0.080
35	2.92	0.17	0.098	(0.150)	0.018	0.080
36	3.00	0.17	0.098	(0.150)	0.018	0.080
37	3.08	0.17	0.098	(0.149)	0.018	0.080
38	3.17	0.17	0.098	(0.148)	0.018	0.080
39	3.25	0.17	0.098	(0.148)	0.018	0.080
40	3.33	0.17	0.098	(0.147)	0.018	0.080
41	3.42	0.17	0.098	(0.146)	0.018	0.080
42	3.50	0.17	0.098	(0.146)	0.018	0.080
43	3.58	0.17	0.098	(0.145)	0.018	0.080
44	3.67	0.17	0.098	(0.145)	0.018	0.080
45	3.75	0.17	0.098	(0.144)	0.018	0.080
46	3.83	0.20	0.118	(0.143)	0.021	0.096
47	3.92	0.20	0.118	(0.143)	0.021	0.096
48	4.00	0.20	0.118	(0.142)	0.021	0.096
49	4.08	0.20	0.118	(0.142)	0.021	0.096
50	4.17	0.20	0.118	(0.141)	0.021	0.096
51	4.25	0.20	0.118	(0.140)	0.021	0.096
52	4.33	0.23	0.137	(0.140)	0.025	0.113
53	4.42	0.23	0.137	(0.139)	0.025	0.113
54	4.50	0.23	0.137	(0.139)	0.025	0.113
55	4.58	0.23	0.137	(0.138)	0.025	0.113
56	4.67	0.23	0.137	(0.137)	0.025	0.113
57	4.75	0.23	0.137	(0.137)	0.025	0.113
58	4.83	0.27	0.157	(0.136)	0.028	0.129
59	4.92	0.27	0.157	(0.136)	0.028	0.129
60	5.00	0.27	0.157	(0.135)	0.028	0.129
61	5.08	0.20	0.118	(0.134)	0.021	0.096
62	5.17	0.20	0.118	(0.134)	0.021	0.096
63	5.25	0.20	0.118	(0.133)	0.021	0.096
64	5.33	0.23	0.137	(0.133)	0.025	0.113
65	5.42	0.23	0.137	(0.132)	0.025	0.113
66	5.50	0.23	0.137	(0.132)	0.025	0.113
67	5.58	0.27	0.157	(0.131)	0.028	0.129
68	5.67	0.27	0.157	(0.130)	0.028	0.129
69	5.75	0.27	0.157	(0.130)	0.028	0.129
70	5.83	0.27	0.157	(0.129)	0.028	0.129
71	5.92	0.27	0.157	(0.129)	0.028	0.129
72	6.00	0.27	0.157	(0.128)	0.028	0.129
73	6.08	0.30	0.176	(0.128)	0.032	0.145
74	6.17	0.30	0.176	(0.127)	0.032	0.145
75	6.25	0.30	0.176	(0.126)	0.032	0.145
76	6.33	0.30	0.176	(0.126)	0.032	0.145
77	6.42	0.30	0.176	(0.125)	0.032	0.145
78	6.50	0.30	0.176	(0.125)	0.032	0.145
79	6.58	0.33	0.196	(0.124)	0.035	0.161
80	6.67	0.33	0.196	(0.124)	0.035	0.161
81	6.75	0.33	0.196	(0.123)	0.035	0.161
82	6.83	0.33	0.196	(0.122)	0.035	0.161
83	6.92	0.33	0.196	(0.122)	0.035	0.161
84	7.00	0.33	0.196	(0.121)	0.035	0.161
85	7.08	0.33	0.196	(0.121)	0.035	0.161
86	7.17	0.33	0.196	(0.120)	0.035	0.161
87	7.25	0.33	0.196	(0.120)	0.035	0.161
88	7.33	0.37	0.216	(0.119)	0.039	0.177
89	7.42	0.37	0.216	(0.119)	0.039	0.177
90	7.50	0.37	0.216	(0.118)	0.039	0.177
91	7.58	0.40	0.235	(0.118)	0.042	0.193
92	7.67	0.40	0.235	(0.117)	0.042	0.193
93	7.75	0.40	0.235	(0.116)	0.042	0.193

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94	7.83	0.43	0.255	(0.116)	0.046	0.209
95	7.92	0.43	0.255	(0.115)	0.046	0.209
96	8.00	0.43	0.255	(0.115)	0.046	0.209
97	8.08	0.50	0.294	(0.114)	0.053	0.241
98	8.17	0.50	0.294	(0.114)	0.053	0.241
99	8.25	0.50	0.294	(0.113)	0.053	0.241
100	8.33	0.50	0.294	(0.113)	0.053	0.241
101	8.42	0.50	0.294	(0.112)	0.053	0.241
102	8.50	0.50	0.294	(0.112)	0.053	0.241
103	8.58	0.53	0.314	(0.111)	0.056	0.257
104	8.67	0.53	0.314	(0.111)	0.056	0.257
105	8.75	0.53	0.314	(0.110)	0.056	0.257
106	8.83	0.57	0.333	(0.110)	0.060	0.273
107	8.92	0.57	0.333	(0.109)	0.060	0.273
108	9.00	0.57	0.333	(0.109)	0.060	0.273
109	9.08	0.63	0.372	(0.108)	0.067	0.305
110	9.17	0.63	0.372	(0.108)	0.067	0.305
111	9.25	0.63	0.372	(0.107)	0.067	0.305
112	9.33	0.67	0.392	(0.107)	0.071	0.321
113	9.42	0.67	0.392	(0.106)	0.071	0.321
114	9.50	0.67	0.392	(0.105)	0.071	0.321
115	9.58	0.70	0.412	(0.105)	0.074	0.338
116	9.67	0.70	0.412	(0.104)	0.074	0.338
117	9.75	0.70	0.412	(0.104)	0.074	0.338
118	9.83	0.73	0.431	(0.103)	0.078	0.354
119	9.92	0.73	0.431	(0.103)	0.078	0.354
120	10.00	0.73	0.431	(0.102)	0.078	0.354
121	10.08	0.50	0.294	(0.102)	0.053	0.241
122	10.17	0.50	0.294	(0.101)	0.053	0.241
123	10.25	0.50	0.294	(0.101)	0.053	0.241
124	10.33	0.50	0.294	(0.101)	0.053	0.241
125	10.42	0.50	0.294	(0.100)	0.053	0.241
126	10.50	0.50	0.294	(0.100)	0.053	0.241
127	10.58	0.67	0.392	(0.099)	0.071	0.321
128	10.67	0.67	0.392	(0.099)	0.071	0.321
129	10.75	0.67	0.392	(0.098)	0.071	0.321
130	10.83	0.67	0.392	(0.098)	0.071	0.321
131	10.92	0.67	0.392	(0.097)	0.071	0.321
132	11.00	0.67	0.392	(0.097)	0.071	0.321
133	11.08	0.63	0.372	(0.096)	0.067	0.305
134	11.17	0.63	0.372	(0.096)	0.067	0.305
135	11.25	0.63	0.372	(0.095)	0.067	0.305
136	11.33	0.63	0.372	(0.095)	0.067	0.305
137	11.42	0.63	0.372	(0.094)	0.067	0.305
138	11.50	0.63	0.372	(0.094)	0.067	0.305
139	11.58	0.57	0.333	(0.093)	0.060	0.273
140	11.67	0.57	0.333	(0.093)	0.060	0.273
141	11.75	0.57	0.333	(0.092)	0.060	0.273
142	11.83	0.60	0.353	(0.092)	0.064	0.289
143	11.92	0.60	0.353	(0.092)	0.064	0.289
144	12.00	0.60	0.353	(0.091)	0.064	0.289
145	12.08	0.83	0.490	(0.091)	0.088	0.402
146	12.17	0.83	0.490	(0.090)	0.088	0.402
147	12.25	0.83	0.490	(0.090)	0.088	0.402
148	12.33	0.87	0.510	0.089	(0.092)	0.420
149	12.42	0.87	0.510	0.089	(0.092)	0.421
150	12.50	0.87	0.510	0.088	(0.092)	0.421
151	12.58	0.93	0.549	0.088	(0.099)	0.461
152	12.67	0.93	0.549	0.087	(0.099)	0.461
153	12.75	0.93	0.549	0.087	(0.099)	0.462
154	12.83	0.97	0.568	0.087	(0.102)	0.482
155	12.92	0.97	0.568	0.086	(0.102)	0.482
156	13.00	0.97	0.568	0.086	(0.102)	0.483
157	13.08	1.13	0.666	0.085	(0.120)	0.581
158	13.17	1.13	0.666	0.085	(0.120)	0.582
159	13.25	1.13	0.666	0.084	(0.120)	0.582

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160	13.33	1.13	0.666	0.084	(0.120)	0.582
161	13.42	1.13	0.666	0.084	(0.120)	0.583
162	13.50	1.13	0.666	0.083	(0.120)	0.583
163	13.58	0.77	0.451	(0.083)	0.081	0.370
164	13.67	0.77	0.451	(0.082)	0.081	0.370
165	13.75	0.77	0.451	(0.082)	0.081	0.370
166	13.83	0.77	0.451	(0.081)	0.081	0.370
167	13.92	0.77	0.451	0.081	(0.081)	0.370
168	14.00	0.77	0.451	0.081	(0.081)	0.370
169	14.08	0.90	0.529	0.080	(0.095)	0.449
170	14.17	0.90	0.529	0.080	(0.095)	0.449
171	14.25	0.90	0.529	0.079	(0.095)	0.450
172	14.33	0.87	0.510	0.079	(0.092)	0.431
173	14.42	0.87	0.510	0.079	(0.092)	0.431
174	14.50	0.87	0.510	0.078	(0.092)	0.431
175	14.58	0.87	0.510	0.078	(0.092)	0.432
176	14.67	0.87	0.510	0.077	(0.092)	0.432
177	14.75	0.87	0.510	0.077	(0.092)	0.433
178	14.83	0.83	0.490	0.077	(0.088)	0.413
179	14.92	0.83	0.490	0.076	(0.088)	0.414
180	15.00	0.83	0.490	0.076	(0.088)	0.414
181	15.08	0.80	0.470	0.075	(0.085)	0.395
182	15.17	0.80	0.470	0.075	(0.085)	0.395
183	15.25	0.80	0.470	0.075	(0.085)	0.396
184	15.33	0.77	0.451	0.074	(0.081)	0.377
185	15.42	0.77	0.451	0.074	(0.081)	0.377
186	15.50	0.77	0.451	0.073	(0.081)	0.377
187	15.58	0.63	0.372	(0.073)	0.067	0.305
188	15.67	0.63	0.372	(0.073)	0.067	0.305
189	15.75	0.63	0.372	(0.072)	0.067	0.305
190	15.83	0.63	0.372	(0.072)	0.067	0.305
191	15.92	0.63	0.372	(0.072)	0.067	0.305
192	16.00	0.63	0.372	(0.071)	0.067	0.305
193	16.08	0.13	0.078	(0.071)	0.014	0.064
194	16.17	0.13	0.078	(0.071)	0.014	0.064
195	16.25	0.13	0.078	(0.070)	0.014	0.064
196	16.33	0.13	0.078	(0.070)	0.014	0.064
197	16.42	0.13	0.078	(0.069)	0.014	0.064
198	16.50	0.13	0.078	(0.069)	0.014	0.064
199	16.58	0.10	0.059	(0.069)	0.011	0.048
200	16.67	0.10	0.059	(0.068)	0.011	0.048
201	16.75	0.10	0.059	(0.068)	0.011	0.048
202	16.83	0.10	0.059	(0.068)	0.011	0.048
203	16.92	0.10	0.059	(0.067)	0.011	0.048
204	17.00	0.10	0.059	(0.067)	0.011	0.048
205	17.08	0.17	0.098	(0.067)	0.018	0.080
206	17.17	0.17	0.098	(0.066)	0.018	0.080
207	17.25	0.17	0.098	(0.066)	0.018	0.080
208	17.33	0.17	0.098	(0.066)	0.018	0.080
209	17.42	0.17	0.098	(0.065)	0.018	0.080
210	17.50	0.17	0.098	(0.065)	0.018	0.080
211	17.58	0.17	0.098	(0.065)	0.018	0.080
212	17.67	0.17	0.098	(0.064)	0.018	0.080
213	17.75	0.17	0.098	(0.064)	0.018	0.080
214	17.83	0.13	0.078	(0.064)	0.014	0.064
215	17.92	0.13	0.078	(0.063)	0.014	0.064
216	18.00	0.13	0.078	(0.063)	0.014	0.064
217	18.08	0.13	0.078	(0.063)	0.014	0.064
218	18.17	0.13	0.078	(0.063)	0.014	0.064
219	18.25	0.13	0.078	(0.062)	0.014	0.064
220	18.33	0.13	0.078	(0.062)	0.014	0.064
221	18.42	0.13	0.078	(0.062)	0.014	0.064
222	18.50	0.13	0.078	(0.061)	0.014	0.064
223	18.58	0.10	0.059	(0.061)	0.011	0.048
224	18.67	0.10	0.059	(0.061)	0.011	0.048
225	18.75	0.10	0.059	(0.060)	0.011	0.048

times area 7.2(Ac.)/[(In)/(Ft.)] = 2.4(Ac.Ft)
 Total soil loss = 0.84(In)
 Total soil loss = 0.503(Ac.Ft)
 Total rainfall = 4.90(In)
 Flood volume = 106150.1 Cubic Feet
 Total soil loss = 21914.5 Cubic Feet

 Peak flow rate of this hydrograph = 4.232(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	0.0006	0.09	Q				
0+10	0.0020	0.20	Q				
0+15	0.0035	0.22	Q				
0+20	0.0054	0.27	VQ				
0+25	0.0077	0.33	VQ				
0+30	0.0100	0.34	VQ				
0+35	0.0124	0.35	VQ				
0+40	0.0148	0.35	VQ				
0+45	0.0173	0.35	VQ				
0+50	0.0200	0.40	VQ				
0+55	0.0231	0.45	VQ				
1+ 0	0.0262	0.46	VQ				
1+ 5	0.0291	0.42	VQ				
1+10	0.0317	0.37	VQ				
1+15	0.0341	0.36	VQ				
1+20	0.0365	0.35	VQ				
1+25	0.0390	0.35	VQ				
1+30	0.0414	0.35	VQ				
1+35	0.0438	0.35	VQ				
1+40	0.0462	0.35	VQ				
1+45	0.0486	0.35	VQ				
1+50	0.0513	0.40	VQ				
1+55	0.0544	0.45	VQ				
2+ 0	0.0576	0.46	VQ				
2+ 5	0.0608	0.46	VQ				
2+10	0.0640	0.47	Q				
2+15	0.0672	0.47	Q				
2+20	0.0704	0.47	Q				
2+25	0.0736	0.47	Q				
2+30	0.0769	0.47	Q				
2+35	0.0804	0.51	VQ				
2+40	0.0843	0.57	VQ				
2+45	0.0882	0.58	VQ				
2+50	0.0923	0.58	VQ				
2+55	0.0963	0.58	VQ				
3+ 0	0.1003	0.58	VQ				
3+ 5	0.1043	0.58	VQ				
3+10	0.1083	0.58	VQ				
3+15	0.1123	0.58	VQ				
3+20	0.1164	0.58	VQ				
3+25	0.1204	0.58	VQ				
3+30	0.1244	0.58	Q				
3+35	0.1284	0.58	Q				
3+40	0.1324	0.58	Q				
3+45	0.1364	0.58	Q				
3+50	0.1408	0.63	Q				
3+55	0.1455	0.68	Q				
4+ 0	0.1503	0.69	Q				

4+ 5	0.1551	0.70	Q
4+10	0.1599	0.70	Q
4+15	0.1647	0.70	Q
4+20	0.1698	0.75	Q
4+25	0.1753	0.80	VQ
4+30	0.1809	0.81	VQ
4+35	0.1865	0.81	Q
4+40	0.1922	0.82	Q
4+45	0.1978	0.82	Q
4+50	0.2037	0.86	Q
4+55	0.2100	0.92	Q
5+ 0	0.2164	0.93	Q
5+ 5	0.2222	0.84	Q
5+10	0.2273	0.74	QV
5+15	0.2322	0.71	QV
5+20	0.2373	0.75	Q
5+25	0.2428	0.80	Q
5+30	0.2484	0.81	QV
5+35	0.2543	0.86	QV
5+40	0.2606	0.92	QV
5+45	0.2670	0.93	QV
5+50	0.2734	0.93	QV
5+55	0.2799	0.93	QV
6+ 0	0.2863	0.93	QV
6+ 5	0.2930	0.98	QV
6+10	0.3002	1.03	Q
6+15	0.3073	1.04	QV
6+20	0.3146	1.05	QV
6+25	0.3218	1.05	QV
6+30	0.3290	1.05	QV
6+35	0.3366	1.10	QV
6+40	0.3445	1.15	QV
6+45	0.3525	1.16	QV
6+50	0.3605	1.16	QV
6+55	0.3685	1.17	Q V
7+ 0	0.3766	1.17	Q V
7+ 5	0.3846	1.17	Q V
7+10	0.3926	1.17	Q V
7+15	0.4007	1.17	Q V
7+20	0.4090	1.21	Q V
7+25	0.4177	1.27	QV
7+30	0.4265	1.28	Q V
7+35	0.4357	1.33	Q V
7+40	0.4452	1.38	Q V
7+45	0.4548	1.39	Q V
7+50	0.4647	1.44	Q V
7+55	0.4750	1.50	Q V
8+ 0	0.4854	1.51	QV
8+ 5	0.4965	1.61	Q V
8+10	0.5083	1.71	Q V
8+15	0.5203	1.74	Q V
8+20	0.5323	1.75	Q V
8+25	0.5443	1.75	QV
8+30	0.5564	1.75	Q V
8+35	0.5688	1.80	Q V
8+40	0.5815	1.85	Q V
8+45	0.5943	1.86	Q V
8+50	0.6075	1.91	Q V
8+55	0.6210	1.97	Q V
9+ 0	0.6346	1.98	Q V
9+ 5	0.6489	2.07	Q V
9+10	0.6639	2.18	Q V
9+15	0.6791	2.20	Q V
9+20	0.6946	2.26	Q V
9+25	0.7106	2.32	Q V
9+30	0.7266	2.33	Q V

9+35	0.7430	2.38	Q	V			
9+40	0.7597	2.43	Q	V			
9+45	0.7766	2.44	Q	V			
9+50	0.7937	2.49	Q	V			
9+55	0.8113	2.55	Q	V			
10+ 0	0.8289	2.56	Q	V			
10+ 5	0.8444	2.24	Q	V			
10+10	0.8573	1.88	Q	V			
10+15	0.8697	1.80	Q	V			
10+20	0.8819	1.77	Q	V			
10+25	0.8939	1.75	Q	V			
10+30	0.9060	1.75	Q	V			
10+35	0.9196	1.98	Q	V			
10+40	0.9350	2.24	Q	V			
10+45	0.9509	2.30	Q	V			
10+50	0.9669	2.32	Q	V			
10+55	0.9829	2.33	Q	V			
11+ 0	0.9990	2.33	Q	V			
11+ 5	1.0148	2.29	Q	V			
11+10	1.0302	2.24	Q	V			
11+15	1.0455	2.22	Q	V			
11+20	1.0608	2.22	Q	V			
11+25	1.0760	2.22	Q	V			
11+30	1.0913	2.22	Q	V			
11+35	1.1059	2.12	Q	V			
11+40	1.1198	2.02	Q	V			
11+45	1.1336	2.00	Q	V			
11+50	1.1476	2.03	Q	V			
11+55	1.1619	2.08	Q	V			
12+ 0	1.1764	2.09	Q	V			
12+ 5	1.1930	2.42	Q	V			
12+10	1.2122	2.79	Q	V			
12+15	1.2320	2.87	Q	V			
12+20	1.2523	2.95	Q	V			
12+25	1.2732	3.03	Q	V			
12+30	1.2942	3.05	Q	V			
12+35	1.3160	3.17	Q	V			
12+40	1.3388	3.30	Q	V			
12+45	1.3617	3.33	Q	V			
12+50	1.3852	3.40	Q	V			
12+55	1.4091	3.48	Q	V			
13+ 0	1.4332	3.49	Q	V			
13+ 5	1.4592	3.78	Q	V			
13+10	1.4875	4.11	Q	V			
13+15	1.5163	4.18	Q	V			
13+20	1.5453	4.21	Q	V			
13+25	1.5744	4.23	Q	V			
13+30	1.6036	4.23	Q	V			
13+35	1.6285	3.62	Q	V			
13+40	1.6487	2.93	Q	V			
13+45	1.6678	2.78	Q	V			
13+50	1.6865	2.71	Q	V			
13+55	1.7050	2.68	Q	V			
14+ 0	1.7235	2.69	Q	V			
14+ 5	1.7435	2.91	Q	V			
14+10	1.7654	3.17	Q	V			
14+15	1.7876	3.23	Q	V			
14+20	1.8096	3.20	Q	V			
14+25	1.8313	3.15	Q	V			
14+30	1.8529	3.14	Q	V			
14+35	1.8745	3.14	Q	V			
14+40	1.8961	3.14	Q	V			
14+45	1.9177	3.14	Q	V			
14+50	1.9390	3.09	Q	V			
14+55	1.9598	3.02	Q	V			
15+ 0	1.9806	3.01	Q	V			

15+ 5	2.0009	2.95		Q		V
15+10	2.0208	2.89		Q		V
15+15	2.0406	2.88		Q		V
15+20	2.0601	2.82		Q		V
15+25	2.0791	2.76		Q		V
15+30	2.0980	2.75		Q		V
15+35	2.1154	2.54		Q		V
15+40	2.1312	2.30		Q		V
15+45	2.1467	2.25		Q		V
15+50	2.1621	2.23		Q		V
15+55	2.1773	2.22		Q		V
16+ 0	2.1926	2.22		Q		V
16+ 5	2.2031	1.53	Q			V
16+10	2.2082	0.74	Q			V
16+15	2.2121	0.57	Q			V
16+20	2.2156	0.50	Q			V
16+25	2.2188	0.47	Q			V
16+30	2.2220	0.47	Q			V
16+35	2.2249	0.42	Q			V
16+40	2.2275	0.37	Q			V
16+45	2.2299	0.36	Q			V
16+50	2.2323	0.35	Q			V
16+55	2.2348	0.35	Q			V
17+ 0	2.2372	0.35	Q			V
17+ 5	2.2402	0.44	Q			V
17+10	2.2440	0.55	Q			V
17+15	2.2479	0.57	Q			V
17+20	2.2519	0.58	Q			V
17+25	2.2559	0.58	Q			V
17+30	2.2599	0.58	Q			V
17+35	2.2639	0.58	Q			V
17+40	2.2680	0.58	Q			V
17+45	2.2720	0.58	Q			V
17+50	2.2757	0.54	Q			V
17+55	2.2790	0.48	Q			V
18+ 0	2.2823	0.47	Q			V
18+ 5	2.2855	0.47	Q			V
18+10	2.2887	0.47	Q			V
18+15	2.2919	0.47	Q			V
18+20	2.2951	0.47	Q			V
18+25	2.2984	0.47	Q			V
18+30	2.3016	0.47	Q			V
18+35	2.3045	0.42	Q			V
18+40	2.3070	0.37	Q			V
18+45	2.3095	0.36	Q			V
18+50	2.3116	0.31	Q			V
18+55	2.3133	0.25	Q			V
19+ 0	2.3150	0.24	Q			V
19+ 5	2.3169	0.28	Q			V
19+10	2.3192	0.33	Q			V
19+15	2.3216	0.34	Q			V
19+20	2.3243	0.39	Q			V
19+25	2.3274	0.45	Q			V
19+30	2.3305	0.46	Q			V
19+35	2.3334	0.42	Q			V
19+40	2.3359	0.37	Q			V
19+45	2.3384	0.36	Q			V
19+50	2.3405	0.31	Q			V
19+55	2.3422	0.25	Q			V
20+ 0	2.3439	0.24	Q			V
20+ 5	2.3458	0.28	Q			V
20+10	2.3481	0.33	Q			V
20+15	2.3505	0.34	Q			V
20+20	2.3529	0.35	Q			V
20+25	2.3553	0.35	Q			V
20+30	2.3577	0.35	Q			V

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20+35	2.3601	0.35	Q			V
20+40	2.3625	0.35	Q			V
20+45	2.3649	0.35	Q			V
20+50	2.3670	0.30	Q			V
20+55	2.3688	0.25	Q			V
21+ 0	2.3704	0.24	Q			V
21+ 5	2.3724	0.28	Q			V
21+10	2.3746	0.33	Q			V
21+15	2.3770	0.34	Q			V
21+20	2.3791	0.30	Q			V
21+25	2.3808	0.25	Q			V
21+30	2.3825	0.24	Q			V
21+35	2.3844	0.28	Q			V
21+40	2.3867	0.33	Q			V
21+45	2.3891	0.34	Q			V
21+50	2.3911	0.30	Q			V
21+55	2.3929	0.25	Q			V
22+ 0	2.3945	0.24	Q			V
22+ 5	2.3965	0.28	Q			V
22+10	2.3987	0.33	Q			V
22+15	2.4011	0.34	Q			V
22+20	2.4032	0.30	Q			V
22+25	2.4049	0.25	Q			V
22+30	2.4066	0.24	Q			V
22+35	2.4082	0.24	Q			V
22+40	2.4098	0.23	Q			V
22+45	2.4114	0.23	Q			V
22+50	2.4130	0.23	Q			V
22+55	2.4146	0.23	Q			V
23+ 0	2.4162	0.23	Q			V
23+ 5	2.4178	0.23	Q			V
23+10	2.4194	0.23	Q			V
23+15	2.4211	0.23	Q			V
23+20	2.4227	0.23	Q			V
23+25	2.4243	0.23	Q			V
23+30	2.4259	0.23	Q			V
23+35	2.4275	0.23	Q			V
23+40	2.4291	0.23	Q			V
23+45	2.4307	0.23	Q			V
23+50	2.4323	0.23	Q			V
23+55	2.4339	0.23	Q			V
24+ 0	2.4355	0.23	Q			V
24+ 5	2.4365	0.14	Q			V
24+10	2.4367	0.04	Q			V
24+15	2.4368	0.01	Q			V
24+20	2.4369	0.00	Q			V

Appendix J

$Q_{100, PRE} = 22.6 \text{ CFS}$ → DETERMINE VOLUME OF STORM ABOVE THIS RATE

100 YR-1 HR UNIT HYDROGRAPH

@ 48.5 MIN. $V = 0.5950 \text{ AC-FT}$

@ 59.1 MIN. $V = 0.8376 \text{ AC-FT}$

$V_{RET} = 0.2426 \text{ AC-FT}$ REQUIRED FOR HYDROMOD

100 YR-3 HR UNIT HYDROGRAPH

100 YR-6 HR

100 YR-24 HR

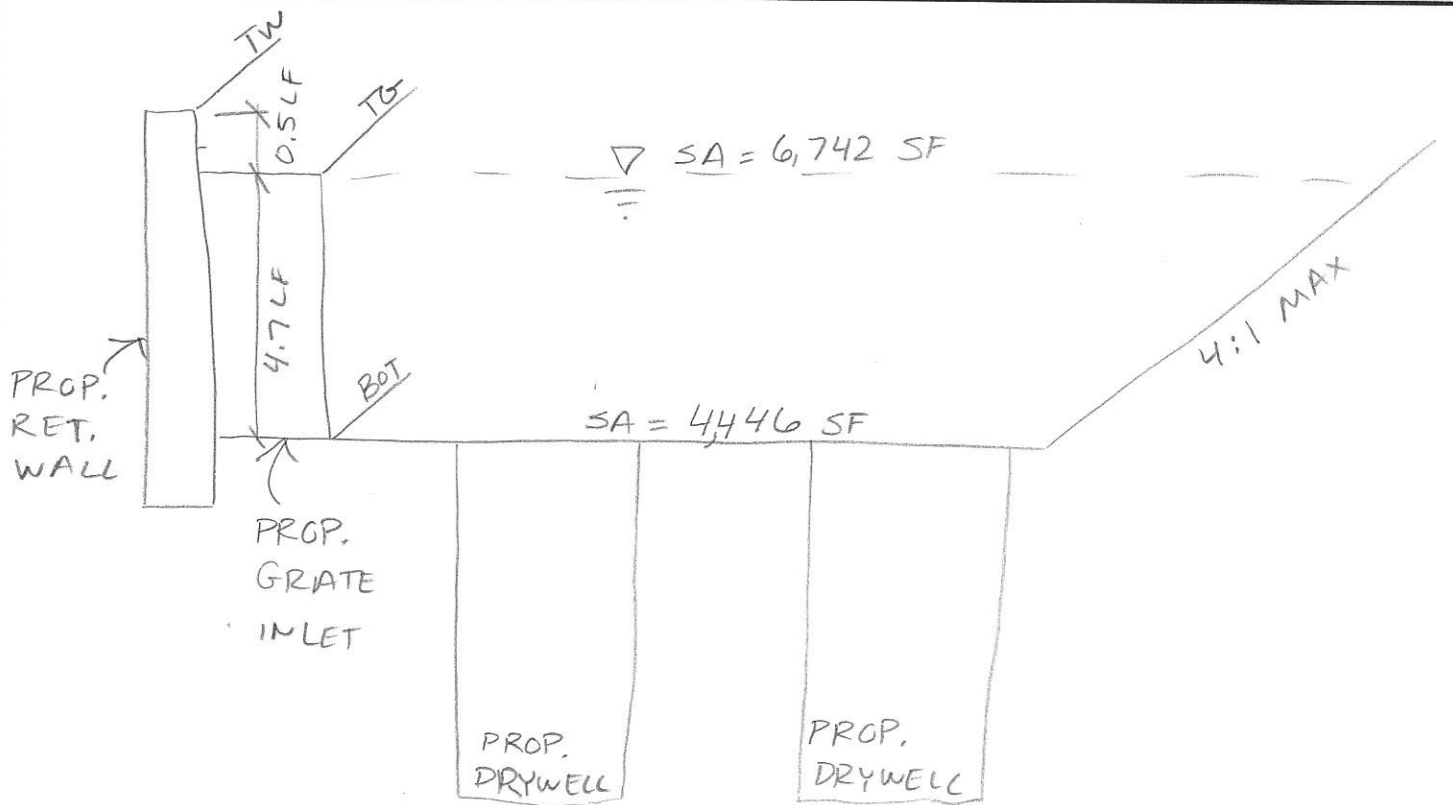
THESE STORMS DO NOT EXCEED THE PRE-DEVELOPED RATE

$$V_{HYDROMOD} = (0.2426 \text{ AC-FT})(43560) = 10,568 \text{ CF}$$

$$V_{WATER QUALITY} = 11,634 \text{ CF}$$

$$10,568 + 11,634 = 22,202 \text{ CF} < V_{BASIN}$$

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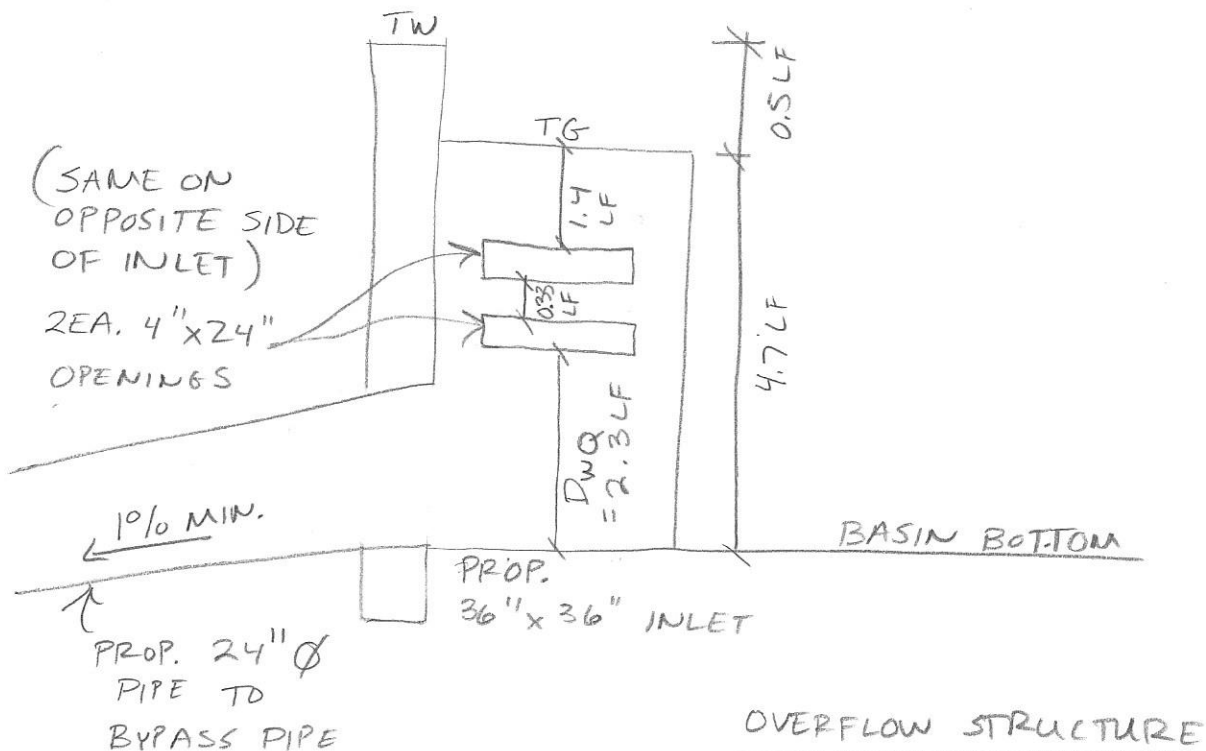


$$V_{\text{BASIN}} = \frac{6742 + 4446}{2} (4.7) = 26,292 \text{ CF}$$

$$P_{\text{DRYWELL}} = 0.25 \text{ CFS} \quad FS = 3$$

$$T = \frac{26,292}{(2)(0.25/3)(60)(60)} = 43.8 \text{ HR} < 72 \text{ HR} \checkmark$$

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PEAK DISCHARGE OCCURS @ 100YR-1 HR STORM

$Q = 17.3 \text{ CFS}$ $n = 0.012$ $S = 0.010$

PER KING'S MANUAL
TABLE 6-2

→ 24" ϕ MINIMUM

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$$D = 0 \text{ LF}$$

$$\text{STORAGE} = 0 \text{ AC-FT}$$

$$\text{OUTFLOW} = 0 \text{ CFS}$$

$$D = 0.01 \text{ LF}$$

$$\text{STORAGE} = 0.001 \text{ AC-FT}$$

$$\text{BASIN INFIL: } P = 0.2 \text{ IN/HR } FS = 3 \quad A_{\text{BOTTOM}} = 4,446 \text{ SF}$$

$$Q = (4446)(0.2/3) / 12 / 3600 = 0.007 \text{ CFS}$$

$$\text{OUTFLOW} = 0.007 \text{ CFS}$$

$$D = 0.1 \text{ LF}$$

$$\text{STORAGE} = (0.1 \text{ LF}) \left(\frac{4494.0 \text{ SF} + 4446 \text{ SF}}{2} \right) / 43560 = 0.010 \text{ AC-FT}$$

$$Q_{\text{BASIN}} = 0.007 \text{ CFS}$$

$$\text{DRYWELL: } P = 0.25 \text{ CFS } FS = 3$$

$$Q_{\text{DW}} = (2EA)(0.25/3) = 0.16 \text{ CFS}$$

$$\text{OUTFLOW} = 0.007 + \frac{1}{2}(0.16) = 0.087 \text{ CFS}$$

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$$D = 0.2 \text{ LF}$$

$$\text{STORAGE} = (0.2 \text{ LF}) \left(\frac{4535.9 \text{ SF} + 4446 \text{ SF}}{2} \right) / 43560 = 0.021 \text{ AC-FT}$$

$$Q_{\text{BASIN}} = 0.007 \text{ CFS}$$

$$Q_{\text{DW}} = 0.16 \text{ CFS}$$

$$\text{OUTFLOW} = 0.167 \text{ CFS}$$

$$D = 0.5 \text{ LF}$$

$$\text{STORAGE} = (0.5 \text{ LF}) \left(\frac{4671.0 \text{ SF} + 4446 \text{ SF}}{2} \right) / 43560 = 0.052 \text{ AC-FT}$$

$$\text{OUTFLOW} = 0.167 \text{ CFS}$$

$$D = 1.0 \text{ LF}$$

$$\text{STORAGE} = (1.0 \text{ LF}) \left(\frac{4898.9 \text{ SF} + 4446 \text{ SF}}{2} \right) / 43560 = 0.107 \text{ AC-FT}$$

$$\text{OUTFLOW} = 0.167 \text{ CFS}$$

$$D = 2.0 \text{ LF}$$

$$\text{STORAGE} = (2.0 \text{ LF}) \left(\frac{5368.8 \text{ SF} + 4446 \text{ SF}}{2} \right) / 43560 = 0.225 \text{ AC-FT}$$

$$\text{OUTFLOW} = 0.167 \text{ CFS}$$

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$$D = 2.33 \text{ LF}$$

$$\text{STORAGE} = (2.33 \text{ LF}) \left(\frac{5530.05 \text{ SF} + 4446 \text{ SF}}{2} \right) / 43560 = 0.267 \text{ AC-FT}$$

$$\text{OUTFLOW} = 0.167 \text{ CFS}$$

$$D = 2.38 \text{ LF}$$

$$\text{STORAGE} = (2.38 \text{ LF}) \left(\frac{5552.8 \text{ SF} + 4446 \text{ SF}}{2} \right) / 43560 = 0.273 \text{ AC-FT}$$

2EA 4" x 24" OPENINGS IN OVERFLOW STRUCTURE

WEIR CONDITION $Q_{\text{OF}} = (2EA)(3.087)(2 \text{ LF})(2.38 \text{ LF} - 2.33 \text{ LF})^{3/2} = 0.138 \text{ CFS}$

$$Q_{\text{BASIN}} = 0.007 \text{ CFS} \quad Q_{\text{DW}} = 0.160 \text{ CFS}$$

$$\text{OUTFLOW} = 0.138 + 0.007 + 0.160 = 0.305 \text{ CFS}$$

$$D = 2.42 \text{ LF}$$

$$\text{STORAGE} = (2.42 \text{ LF}) \left(\frac{5572.45 \text{ SF} + 4446 \text{ SF}}{2} \right) / 43560 = 0.278 \text{ AC-FT}$$

$$Q_{\text{OF}} = (2EA)(3.087)(2 \text{ LF})(2.42 \text{ LF} - 2.33 \text{ LF})^{3/2} = 0.333 \text{ CFS}$$

$$Q_{\text{BASIN}} = 0.007 \text{ CFS} \quad Q_{\text{DW}} = 0.160 \text{ CFS}$$

$$\text{OUTFLOW} = 0.333 + 0.007 + 0.160 = 0.500 \text{ CFS}$$

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$$D = 2.67 \text{ LF}$$

$$\text{STORAGE} = (2.67 \text{ LF}) \left(\frac{5693.7 \text{ SF} + 44416 \text{ SF}}{2} \right) / 43560 = 0.310 \text{ AC-FT}$$

$$Q_{OF} = (2EA)(3.087)(2 \text{ LF})(2.67 \text{ LF} - 2.33 \text{ LF})^{3/2} = 2.376 \text{ CFS}$$

$$\text{OUTFLOW} = 2.376 + 0.007 + 0.160 = 2.543 \text{ CFS}$$

$$D = 2.70 \text{ LF}$$

$$\text{STORAGE} = (2.70 \text{ LF}) \left(\frac{5710.2 \text{ SF} + 44416 \text{ SF}}{2} \right) / 43560 = 0.315 \text{ AC-FT}$$

OUTFLOW OPENINGS IN ORIFICE CONDITION

$$Q_{OF} = (2EA)(0.7)(2 \text{ LF})(0.33 \text{ LF}) \sqrt{(64.4)(0.167 \text{ LF} + 0.03 \text{ LF})} = 3.32 \text{ CFS}$$

$$\text{OUTFLOW} = 3.32 + 0.007 + 0.160 = 3.489 \text{ CFS}$$

$$D = 2.85 \text{ LF}$$

$$\text{STORAGE} = (2.85 \text{ LF}) \left(\frac{5784.7 \text{ SF} + 44416 \text{ SF}}{2} \right) / 43560 = 0.335 \text{ AC-FT}$$

$$Q_{OF} = (2EA)(0.7)(2 \text{ LF})(0.33 \text{ LF}) \sqrt{(64.4)(0.167 \text{ LF} + 0.18 \text{ LF})} = 4.410 \text{ CFS}$$

$$\text{OUTFLOW} = 4.410 + 0.007 + 0.160 = 4.577 \text{ CFS}$$

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$$D = 3.0 \text{ LF}$$

$$\text{STORAGE} = (3.0 \text{ LF}) \left(\frac{5859.75 \text{ SF} + 4446 \text{ SF}}{2} \right) / 43560 = 0.355 \text{ AC-FT}$$

$$Q_{OF} = (2EA)(0.7)(2 \text{ LF})(0.33 \text{ LF}) \sqrt{(64.4)(0.167 \text{ LF} + 0.33 \text{ LF})} = 5.296 \text{ CFS}$$

$$\text{OUTFLOW} = 5.296 + 0.007 + 0.160 = 5.463 \text{ CFS}$$

$$D = 3.05 \text{ LF}$$

$$\text{STORAGE} = (3.05 \text{ LF}) \left(\frac{5884.8 \text{ SF} + 4446 \text{ SF}}{2} \right) / 43560 = 0.362 \text{ AC-FT}$$

2EA ADDITIONAL 4" x 24" OPENINGS IN OVERFLOW STRUCTURE
IN WEIR CONDITION

$$Q_{OF} = (2EA)(3.087)(2 \text{ LF})(0.05 \text{ LF})^{3/2} \\ + (2EA)(0.7)(2 \text{ LF})(0.33 \text{ LF}) \sqrt{(64.4)(0.167 \text{ LF} + 0.38 \text{ LF})} = 5.676 \text{ CFS}$$

$$\text{OUTFLOW} = 5.676 + 0.007 + 0.160 = 5.843 \text{ CFS}$$

$$D = 3.19 \text{ LF}$$

$$\text{STORAGE} = (3.19 \text{ LF}) \left(\frac{5955.4 \text{ SF} + 4446 \text{ SF}}{2} \right) / 43560 = 0.381 \text{ AC-FT}$$

$$Q_{OF} = (2EA)(3.087)(2 \text{ LF})(0.19 \text{ LF})^{3/2} \\ + (2EA)(0.7)(2 \text{ LF})(0.33 \text{ LF}) \sqrt{(64.4)(0.167 \text{ LF} + 0.52 \text{ LF})} = 7.229 \text{ CFS}$$

$$\text{OUTFLOW} = 7.229 + 0.007 + 0.160 = 7.396 \text{ CFS}$$

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$$D = 3.33 \text{ LF}$$

$$\text{STORAGE} = (3.33 \text{ LF}) \left(\frac{6028.1 \text{ SF} + 4446 \text{ SF}}{2} \right) / 43560 = 0.401 \text{ AC-FT}$$

$$Q_{OF} = (2EA)(3.087)(2 \text{ LF})(0.33 \text{ LF})^{3/2} \\ + (2EA)(0.7)(2 \text{ LF})(0.33 \text{ LF}) \sqrt{(64.4)(0.167 + 0.667)} = 9.214 \text{ CFS}$$

$$\text{OUTFLOW} = 9.214 + 0.007 + 0.160 = 9.381 \text{ CFS}$$

$$D = 3.5 \text{ LF}$$

$$\text{STORAGE} = (3.5 \text{ LF}) \left(\frac{6113.3 \text{ SF} + 4446 \text{ SF}}{2} \right) / 43560 = 0.424 \text{ AC-FT}$$

ALL OPENINGS IN ORIFICE CONDITION

$$Q_{OF} = (2EA)(0.7)(2 \text{ LF})(0.33 \text{ LF}) \sqrt{(64.4)(0.167 \text{ LF} + 0.17 \text{ LF})} \\ + (2EA)(0.7)(2 \text{ LF})(0.33 \text{ LF}) \sqrt{(64.4)(0.167 + 0.833 \text{ LF})} = 11.738 \text{ CFS}$$

$$\text{OUTFLOW} = 11.738 + 0.007 + 0.160 = 11.905 \text{ CFS}$$

$$D = 4.1 \text{ LF}$$

$$\text{STORAGE} = (4.1 \text{ LF}) \left(\frac{6424.7 \text{ SF} + 4446 \text{ SF}}{2} \right) / 43560 = 0.512 \text{ AC-FT}$$

$$Q_{OF} = (2EA)(0.7)(2 \text{ LF})(0.33 \text{ LF}) \sqrt{(64.4)(0.167 \text{ LF} + 0.77 \text{ LF})} \\ + (2EA)(0.7)(2 \text{ LF})(0.33 \text{ LF}) \sqrt{(64.4)(0.167 \text{ LF} + 1.43 \text{ LF})} = 16.723 \text{ CFS}$$

$$\text{OUTFLOW} = 16.723 + 0.007 + 0.160 = 16.890 \text{ CFS}$$

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$$D = 4.7 \text{ LF}$$

$$\text{STORAGE} = (4.7 \text{ LF}) \left(\frac{6744.2 \text{ SF} + 4446 \text{ SF}}{2} \right) / 43560 = 0.601 \text{ AC-FT}$$

$$Q_{OF} = (2EA)(0.7)(2 \text{ LF})(0.33 \text{ LF}) \sqrt{(64.4)(0.167 \text{ LF} + 1.367 \text{ LF})} \\ + (2EA)(0.7)(2 \text{ LF})(0.33 \text{ LF}) \sqrt{(64.4)(0.167 \text{ LF} + 2.03 \text{ LF})} = 20.38 \text{ CFS}$$

$$\text{OUTFLOW} = 20.38 + 0.007 + 0.160 = 20.543 \text{ CFS}$$

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Appendix K

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2005
Study date: 11/04/21

JN6303 ROUTING
100YR-1HR STORM

Program License Serial Number 5016

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

From study/file name: 6303UHD100Y1H1100.rte

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

Number of intervals = 16
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 26.343 (CFS)
Total volume = 0.962 (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

+++++
Process from Point/Station 0.000 to Point/Station 0.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 16
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-0*dt/2) (Ac.Ft)	(S+0*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.010	0.001	0.007	0.001	0.001
0.100	0.010	0.087	0.010	0.010
0.200	0.021	0.167	0.020	0.022
0.500	0.052	0.167	0.051	0.053
1.000	0.107	0.167	0.106	0.108
2.000	0.225	0.167	0.224	0.226
2.330	0.267	0.167	0.266	0.268
2.380	0.273	0.305	0.272	0.274
2.420	0.278	0.500	0.276	0.280

6303RT100Y1H

2.670	0.310	2.543	0.301	0.319
2.700	0.315	3.489	0.303	0.327
2.850	0.335	4.577	0.319	0.351
3.000	0.355	5.463	0.336	0.374
3.050	0.362	5.843	0.342	0.382
3.190	0.381	7.396	0.356	0.406
3.330	0.401	9.381	0.369	0.433
3.500	0.424	11.905	0.383	0.465
4.100	0.512	16.890	0.454	0.570
4.700	0.604	20.543	0.533	0.675

Hydrograph Detention Basin Routing

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

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	0	6.6	13.17	19.76	26.34	Depth (Ft.)
0.083	2.18	0.06	0.007	0 I					0.07
0.167	4.71	0.17	0.030	0 I					0.29
0.250	5.72	0.17	0.065	0 I					0.62
0.333	6.42	0.17	0.106	0 I					0.99
0.417	7.10	0.17	0.151	0 I					1.37
0.500	8.09	0.17	0.202	0 I					1.81
0.583	9.22	0.17	0.261	0 I					2.28
0.667	10.66	3.56	0.316	0 O	I				2.71
0.750	13.82	6.24	0.367	0 O	I				3.09
0.833	26.34	12.79	0.440			O		I	3.61
0.917	25.10	16.98	0.514				O	I	4.11
1.000	11.90	17.35	0.523			I	O		4.17
1.083	5.95	14.76	0.474		I	O			3.84
1.167	1.85	10.74	0.413	I	O				3.42
1.250	0.45	5.98	0.364	I	O				3.06
1.333	0.13	4.32	0.330	I	O				2.81
1.417	0.00	2.39	0.308	I O					2.65
1.500	0.00	1.53	0.294	I O					2.55
1.583	0.00	0.98	0.285	I O					2.48
1.667	0.00	0.62	0.280	O					2.44
1.750	0.00	0.43	0.276	O					2.41
1.833	0.00	0.33	0.274	O					2.39
1.917	0.00	0.27	0.272	O					2.37
2.000	0.00	0.23	0.270	O					2.35
2.083	0.00	0.20	0.268	O					2.34
2.167	0.00	0.17	0.267	O					2.33
2.250	0.00	0.17	0.266	O					2.32
2.333	0.00	0.17	0.265	O					2.31
2.417	0.00	0.17	0.264	O					2.30
2.500	0.00	0.17	0.262	O					2.29
2.583	0.00	0.17	0.261	O					2.29
2.667	0.00	0.17	0.260	O					2.28
2.750	0.00	0.17	0.259	O					2.27
2.833	0.00	0.17	0.258	O					2.26
2.917	0.00	0.17	0.257	O					2.25
3.000	0.00	0.17	0.256	O					2.24
3.083	0.00	0.17	0.254	O					2.23
3.167	0.00	0.17	0.253	O					2.22
3.250	0.00	0.17	0.252	O					2.21
3.333	0.00	0.17	0.251	O					2.20
3.417	0.00	0.17	0.250	O					2.20
3.500	0.00	0.17	0.249	O					2.19
3.583	0.00	0.17	0.248	O					2.18
3.667	0.00	0.17	0.246	O					2.17
3.750	0.00	0.17	0.245	O					2.16
3.833	0.00	0.17	0.244	O					2.15
3.917	0.00	0.17	0.243	O					2.14
4.000	0.00	0.17	0.242	O					2.13

4.083	0.00	0.17	0.241	0	2.12
4.167	0.00	0.17	0.239	0	2.11
4.250	0.00	0.17	0.238	0	2.10
4.333	0.00	0.17	0.237	0	2.10
4.417	0.00	0.17	0.236	0	2.09
4.500	0.00	0.17	0.235	0	2.08
4.583	0.00	0.17	0.234	0	2.07
4.667	0.00	0.17	0.233	0	2.06
4.750	0.00	0.17	0.231	0	2.05
4.833	0.00	0.17	0.230	0	2.04
4.917	0.00	0.17	0.229	0	2.03
5.000	0.00	0.17	0.228	0	2.02
5.083	0.00	0.17	0.227	0	2.01
5.167	0.00	0.17	0.226	0	2.01
5.250	0.00	0.17	0.225	0	2.00
5.333	0.00	0.17	0.223	0	1.99
5.417	0.00	0.17	0.222	0	1.98
5.500	0.00	0.17	0.221	0	1.97
5.583	0.00	0.17	0.220	0	1.96
5.667	0.00	0.17	0.219	0	1.95
5.750	0.00	0.17	0.218	0	1.94
5.833	0.00	0.17	0.216	0	1.93
5.917	0.00	0.17	0.215	0	1.92
6.000	0.00	0.17	0.214	0	1.91
6.083	0.00	0.17	0.213	0	1.90
6.167	0.00	0.17	0.212	0	1.89
6.250	0.00	0.17	0.211	0	1.88
6.333	0.00	0.17	0.210	0	1.87
6.417	0.00	0.17	0.208	0	1.86
6.500	0.00	0.17	0.207	0	1.85
6.583	0.00	0.17	0.206	0	1.84
6.667	0.00	0.17	0.205	0	1.83
6.750	0.00	0.17	0.204	0	1.82
6.833	0.00	0.17	0.203	0	1.81
6.917	0.00	0.17	0.202	0	1.80
7.000	0.00	0.17	0.200	0	1.79
7.083	0.00	0.17	0.199	0	1.78
7.167	0.00	0.17	0.198	0	1.77
7.250	0.00	0.17	0.197	0	1.76
7.333	0.00	0.17	0.196	0	1.75
7.417	0.00	0.17	0.195	0	1.74
7.500	0.00	0.17	0.193	0	1.73
7.583	0.00	0.17	0.192	0	1.72
7.667	0.00	0.17	0.191	0	1.71
7.750	0.00	0.17	0.190	0	1.70
7.833	0.00	0.17	0.189	0	1.69
7.917	0.00	0.17	0.188	0	1.68
8.000	0.00	0.17	0.187	0	1.67
8.083	0.00	0.17	0.185	0	1.66
8.167	0.00	0.17	0.184	0	1.65
8.250	0.00	0.17	0.183	0	1.65
8.333	0.00	0.17	0.182	0	1.64
8.417	0.00	0.17	0.181	0	1.63
8.500	0.00	0.17	0.180	0	1.62
8.583	0.00	0.17	0.179	0	1.61
8.667	0.00	0.17	0.177	0	1.60
8.750	0.00	0.17	0.176	0	1.59
8.833	0.00	0.17	0.175	0	1.58
8.917	0.00	0.17	0.174	0	1.57
9.000	0.00	0.17	0.173	0	1.56
9.083	0.00	0.17	0.172	0	1.55
9.167	0.00	0.17	0.170	0	1.54
9.250	0.00	0.17	0.169	0	1.53
9.333	0.00	0.17	0.168	0	1.52
9.417	0.00	0.17	0.167	0	1.51
9.500	0.00	0.17	0.166	0	1.50

9.583	0.00	0.17	0.165	0	1.49
9.667	0.00	0.17	0.164	0	1.48
9.750	0.00	0.17	0.162	0	1.47
9.833	0.00	0.17	0.161	0	1.46
9.917	0.00	0.17	0.160	0	1.45
10.000	0.00	0.17	0.159	0	1.44
10.083	0.00	0.17	0.158	0	1.43
10.167	0.00	0.17	0.157	0	1.42
10.250	0.00	0.17	0.156	0	1.41
10.333	0.00	0.17	0.154	0	1.40
10.417	0.00	0.17	0.153	0	1.39
10.500	0.00	0.17	0.152	0	1.38
10.583	0.00	0.17	0.151	0	1.37
10.667	0.00	0.17	0.150	0	1.36
10.750	0.00	0.17	0.149	0	1.35
10.833	0.00	0.17	0.147	0	1.34
10.917	0.00	0.17	0.146	0	1.33
11.000	0.00	0.17	0.145	0	1.32
11.083	0.00	0.17	0.144	0	1.31
11.167	0.00	0.17	0.143	0	1.30
11.250	0.00	0.17	0.142	0	1.29
11.333	0.00	0.17	0.141	0	1.28
11.417	0.00	0.17	0.139	0	1.27
11.500	0.00	0.17	0.138	0	1.27
11.583	0.00	0.17	0.137	0	1.26
11.667	0.00	0.17	0.136	0	1.25
11.750	0.00	0.17	0.135	0	1.24
11.833	0.00	0.17	0.134	0	1.23
11.917	0.00	0.17	0.133	0	1.22
12.000	0.00	0.17	0.131	0	1.21
12.083	0.00	0.17	0.130	0	1.20
12.167	0.00	0.17	0.129	0	1.19
12.250	0.00	0.17	0.128	0	1.18
12.333	0.00	0.17	0.127	0	1.17
12.417	0.00	0.17	0.126	0	1.16
12.500	0.00	0.17	0.124	0	1.15
12.583	0.00	0.17	0.123	0	1.14
12.667	0.00	0.17	0.122	0	1.13
12.750	0.00	0.17	0.121	0	1.12
12.833	0.00	0.17	0.120	0	1.11
12.917	0.00	0.17	0.119	0	1.10
13.000	0.00	0.17	0.118	0	1.09
13.083	0.00	0.17	0.116	0	1.08
13.167	0.00	0.17	0.115	0	1.07
13.250	0.00	0.17	0.114	0	1.06
13.333	0.00	0.17	0.113	0	1.05
13.417	0.00	0.17	0.112	0	1.04
13.500	0.00	0.17	0.111	0	1.03
13.583	0.00	0.17	0.110	0	1.02
13.667	0.00	0.17	0.108	0	1.01
13.750	0.00	0.17	0.107	0	1.00
13.833	0.00	0.17	0.106	0	0.99
13.917	0.00	0.17	0.105	0	0.98
14.000	0.00	0.17	0.104	0	0.97
14.083	0.00	0.17	0.103	0	0.96
14.167	0.00	0.17	0.101	0	0.95
14.250	0.00	0.17	0.100	0	0.94
14.333	0.00	0.17	0.099	0	0.93
14.417	0.00	0.17	0.098	0	0.92
14.500	0.00	0.17	0.097	0	0.91
14.583	0.00	0.17	0.096	0	0.90
14.667	0.00	0.17	0.095	0	0.89
14.750	0.00	0.17	0.093	0	0.88
14.833	0.00	0.17	0.092	0	0.87
14.917	0.00	0.17	0.091	0	0.86
15.000	0.00	0.17	0.090	0	0.85

15.083	0.00	0.17	0.089	0				0.83
15.167	0.00	0.17	0.088	0				0.82
15.250	0.00	0.17	0.087	0				0.81
15.333	0.00	0.17	0.085	0				0.80
15.417	0.00	0.17	0.084	0				0.79
15.500	0.00	0.17	0.083	0				0.78
15.583	0.00	0.17	0.082	0				0.77
15.667	0.00	0.17	0.081	0				0.76
15.750	0.00	0.17	0.080	0				0.75
15.833	0.00	0.17	0.078	0				0.74
15.917	0.00	0.17	0.077	0				0.73
16.000	0.00	0.17	0.076	0				0.72
16.083	0.00	0.17	0.075	0				0.71
16.167	0.00	0.17	0.074	0				0.70
16.250	0.00	0.17	0.073	0				0.69
16.333	0.00	0.17	0.072	0				0.68
16.417	0.00	0.17	0.070	0				0.67
16.500	0.00	0.17	0.069	0				0.66
16.583	0.00	0.17	0.068	0				0.65
16.667	0.00	0.17	0.067	0				0.64
16.750	0.00	0.17	0.066	0				0.63
16.833	0.00	0.17	0.065	0				0.62
16.917	0.00	0.17	0.064	0				0.60
17.000	0.00	0.17	0.062	0				0.59
17.083	0.00	0.17	0.061	0				0.58
17.167	0.00	0.17	0.060	0				0.57
17.250	0.00	0.17	0.059	0				0.56
17.333	0.00	0.17	0.058	0				0.55
17.417	0.00	0.17	0.057	0				0.54
17.500	0.00	0.17	0.055	0				0.53
17.583	0.00	0.17	0.054	0				0.52
17.667	0.00	0.17	0.053	0				0.51
17.750	0.00	0.17	0.052	0				0.50
17.833	0.00	0.17	0.051	0				0.49
17.917	0.00	0.17	0.050	0				0.48
18.000	0.00	0.17	0.049	0				0.47
18.083	0.00	0.17	0.047	0				0.46
18.167	0.00	0.17	0.046	0				0.44
18.250	0.00	0.17	0.045	0				0.43
18.333	0.00	0.17	0.044	0				0.42
18.417	0.00	0.17	0.043	0				0.41
18.500	0.00	0.17	0.042	0				0.40
18.583	0.00	0.17	0.041	0				0.39
18.667	0.00	0.17	0.039	0				0.38
18.750	0.00	0.17	0.038	0				0.37
18.833	0.00	0.17	0.037	0				0.36
18.917	0.00	0.17	0.036	0				0.34
19.000	0.00	0.17	0.035	0				0.33
19.083	0.00	0.17	0.034	0				0.32
19.167	0.00	0.17	0.032	0				0.31
19.250	0.00	0.17	0.031	0				0.30
19.333	0.00	0.17	0.030	0				0.29
19.417	0.00	0.17	0.029	0				0.28
19.500	0.00	0.17	0.028	0				0.27
19.583	0.00	0.17	0.027	0				0.26
19.667	0.00	0.17	0.026	0				0.24
19.750	0.00	0.17	0.024	0				0.23
19.833	0.00	0.17	0.023	0				0.22
19.917	0.00	0.17	0.022	0				0.21
20.000	0.00	0.17	0.021	0				0.20
20.083	0.00	0.16	0.020	0				0.19
20.167	0.00	0.15	0.019	0				0.18
20.250	0.00	0.14	0.018	0				0.17
20.333	0.00	0.14	0.017	0				0.16
20.417	0.00	0.13	0.016	0				0.15
20.500	0.00	0.12	0.015	0				0.15

20.583	0.00	0.12	0.014	0				0.14
20.667	0.00	0.11	0.013	0				0.13
20.750	0.00	0.11	0.013	0				0.12
20.833	0.00	0.10	0.012	0				0.12
20.917	0.00	0.10	0.011	0				0.11
21.000	0.00	0.09	0.011	0				0.11
21.083	0.00	0.09	0.010	0				0.10
21.167	0.00	0.08	0.009	0				0.09
21.250	0.00	0.08	0.009	0				0.09
21.333	0.00	0.07	0.008	0				0.08
21.417	0.00	0.07	0.008	0				0.08
21.500	0.00	0.06	0.007	0				0.07
21.583	0.00	0.06	0.007	0				0.07
21.667	0.00	0.06	0.007	0				0.07
21.750	0.00	0.05	0.006	0				0.06
21.833	0.00	0.05	0.006	0				0.06
21.917	0.00	0.05	0.006	0				0.06
22.000	0.00	0.04	0.005	0				0.05
22.083	0.00	0.04	0.005	0				0.05
22.167	0.00	0.04	0.005	0				0.05
22.250	0.00	0.04	0.004	0				0.04
22.333	0.00	0.03	0.004	0				0.04
22.417	0.00	0.03	0.004	0				0.04
22.500	0.00	0.03	0.004	0				0.04
22.583	0.00	0.03	0.003	0				0.03
22.667	0.00	0.03	0.003	0				0.03
22.750	0.00	0.03	0.003	0				0.03
22.833	0.00	0.02	0.003	0				0.03
22.917	0.00	0.02	0.003	0				0.03
23.000	0.00	0.02	0.003	0				0.03
23.083	0.00	0.02	0.002	0				0.02
23.167	0.00	0.02	0.002	0				0.02
23.250	0.00	0.02	0.002	0				0.02
23.333	0.00	0.02	0.002	0				0.02
23.417	0.00	0.02	0.002	0				0.02
23.500	0.00	0.01	0.002	0				0.02
23.583	0.00	0.01	0.002	0				0.02
23.667	0.00	0.01	0.002	0				0.02
23.750	0.00	0.01	0.002	0				0.02
23.833	0.00	0.01	0.002	0				0.02
23.917	0.00	0.01	0.001	0				0.01
24.000	0.00	0.01	0.001	0				0.01
24.083	0.00	0.01	0.001	0				0.01
24.167	0.00	0.01	0.001	0				0.01
24.250	0.00	0.01	0.001	0				0.01
24.333	0.00	0.01	0.001	0				0.01
24.417	0.00	0.01	0.001	0				0.01
24.500	0.00	0.01	0.001	0				0.01
24.583	0.00	0.01	0.001	0				0.01
24.667	0.00	0.01	0.001	0				0.01
24.750	0.00	0.01	0.001	0				0.01
24.833	0.00	0.01	0.001	0				0.01
24.917	0.00	0.01	0.001	0				0.01
25.000	0.00	0.01	0.001	0				0.01
25.083	0.00	0.01	0.001	0				0.01
25.167	0.00	0.00	0.001	0				0.01
25.250	0.00	0.00	0.001	0				0.01
25.333	0.00	0.00	0.001	0				0.01
25.417	0.00	0.00	0.001	0				0.01
25.500	0.00	0.00	0.001	0				0.01
25.583	0.00	0.00	0.001	0				0.01
25.667	0.00	0.00	0.001	0				0.01
25.750	0.00	0.00	0.000	0				0.00
25.833	0.00	0.00	0.000	0				0.00
25.917	0.00	0.00	0.000	0				0.00
26.000	0.00	0.00	0.000	0				0.00

6303RT100Y1H

26.083	0.00	0.00	0.000	0					0.00
26.167	0.00	0.00	0.000	0					0.00
26.250	0.00	0.00	0.000	0					0.00
26.333	0.00	0.00	0.000	0					0.00
26.417	0.00	0.00	0.000	0					0.00
26.500	0.00	0.00	0.000	0					0.00
26.583	0.00	0.00	0.000	0					0.00
26.667	0.00	0.00	0.000	0					0.00
26.750	0.00	0.00	0.000	0					0.00
26.833	0.00	0.00	0.000	0					0.00
26.917	0.00	0.00	0.000	0					0.00
27.000	0.00	0.00	0.000	0					0.00
27.083	0.00	0.00	0.000	0					0.00
27.167	0.00	0.00	0.000	0					0.00
27.250	0.00	0.00	0.000	0					0.00
27.333	0.00	0.00	0.000	0					0.00
27.417	0.00	0.00	0.000	0					0.00
27.500	0.00	0.00	0.000	0					0.00
27.583	0.00	0.00	0.000	0					0.00
27.667	0.00	0.00	0.000	0					0.00
27.750	0.00	0.00	0.000	0					0.00
27.833	0.00	0.00	0.000	0					0.00
27.917	0.00	0.00	0.000	0					0.00

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

Number of intervals = 335
 Time interval = 5.0 (Min.)
 Maximum/Peak flow rate = 17.346 (CFS)
 Total volume = 0.962 (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
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2005
Study date: 11/04/21

JN6303 ROUTING
100YR-3HR STORM

Program License Serial Number 5016

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

From study/file name: 6303uhd100y3h3100.rte

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

Number of intervals = 40
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 11.884 (CFS)
Total volume = 1.022 (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

+++++
Process from Point/Station 0.000 to Point/Station 0.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 40
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-0*dt/2) (Ac.Ft)	(S+0*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.010	0.001	0.007	0.001	0.001
0.100	0.010	0.087	0.010	0.010
0.200	0.021	0.167	0.020	0.022
0.500	0.052	0.167	0.051	0.053
1.000	0.107	0.167	0.106	0.108
2.000	0.225	0.167	0.224	0.226
2.330	0.267	0.167	0.266	0.268
2.380	0.273	0.305	0.272	0.274
2.420	0.278	0.500	0.276	0.280

6303RT100Y3H

2.670	0.310	2.543	0.301	0.319
2.700	0.315	3.489	0.303	0.327
2.850	0.335	4.577	0.319	0.351
3.000	0.355	5.463	0.336	0.374
3.050	0.362	5.843	0.342	0.382
3.190	0.381	7.396	0.356	0.406
3.330	0.401	9.381	0.369	0.433
3.500	0.424	11.905	0.383	0.465
4.100	0.512	16.890	0.454	0.570
4.700	0.604	20.543	0.533	0.675

 Hydrograph Detention Basin Routing

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

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	Depth (Ft.)
0.083	0.71	0.02	0.002	0.02
0.167	1.53	0.08	0.010	0.10
0.250	1.59	0.16	0.020	0.19
0.333	1.76	0.17	0.030	0.29
0.417	2.02	0.17	0.042	0.40
0.500	2.23	0.17	0.055	0.53
0.583	2.27	0.17	0.070	0.66
0.667	2.30	0.17	0.084	0.79
0.750	2.46	0.17	0.100	0.93
0.833	2.33	0.17	0.115	1.07
0.917	2.20	0.17	0.129	1.19
1.000	2.34	0.17	0.144	1.31
1.083	2.68	0.17	0.160	1.45
1.167	2.96	0.17	0.178	1.60
1.250	3.03	0.17	0.198	1.77
1.333	2.94	0.17	0.217	1.93
1.417	3.20	0.17	0.237	2.09
1.500	3.65	0.17	0.260	2.27
1.583	3.60	0.72	0.281	2.45
1.667	3.63	1.76	0.298	2.57
1.750	4.23	2.54	0.310	2.67
1.833	4.59	3.70	0.319	2.73
1.917	4.41	3.95	0.324	2.76
2.000	4.34	4.09	0.326	2.78
2.083	4.46	4.19	0.328	2.80
2.167	5.27	4.40	0.332	2.83
2.250	6.66	4.84	0.341	2.89
2.333	6.46	5.30	0.351	2.97
2.417	7.74	5.83	0.362	3.05
2.500	10.43	7.26	0.379	3.18
2.583	11.88	9.22	0.399	3.32
2.667	11.28	10.50	0.411	3.41
2.750	7.24	9.82	0.405	3.36
2.833	3.90	7.63	0.383	3.21
2.917	3.01	5.79	0.361	3.04
3.000	1.99	4.87	0.342	2.90
3.083	0.77	3.82	0.321	2.75
3.167	0.23	2.16	0.304	2.62
3.250	0.08	1.44	0.293	2.53
3.333	0.02	0.94	0.285	2.47
3.417	0.00	0.60	0.280	2.43
3.500	0.00	0.42	0.276	2.40
3.583	0.00	0.32	0.273	2.38
3.667	0.00	0.27	0.271	2.37
3.750	0.00	0.23	0.270	2.35
3.833	0.00	0.20	0.268	2.34
3.917	0.00	0.17	0.267	2.33
4.000	0.00	0.17	0.266	2.32

4.083	0.00	0.17	0.265	0	2.31
4.167	0.00	0.17	0.264	0	2.30
4.250	0.00	0.17	0.262	0	2.29
4.333	0.00	0.17	0.261	0	2.28
4.417	0.00	0.17	0.260	0	2.28
4.500	0.00	0.17	0.259	0	2.27
4.583	0.00	0.17	0.258	0	2.26
4.667	0.00	0.17	0.257	0	2.25
4.750	0.00	0.17	0.256	0	2.24
4.833	0.00	0.17	0.254	0	2.23
4.917	0.00	0.17	0.253	0	2.22
5.000	0.00	0.17	0.252	0	2.21
5.083	0.00	0.17	0.251	0	2.20
5.167	0.00	0.17	0.250	0	2.19
5.250	0.00	0.17	0.249	0	2.19
5.333	0.00	0.17	0.247	0	2.18
5.417	0.00	0.17	0.246	0	2.17
5.500	0.00	0.17	0.245	0	2.16
5.583	0.00	0.17	0.244	0	2.15
5.667	0.00	0.17	0.243	0	2.14
5.750	0.00	0.17	0.242	0	2.13
5.833	0.00	0.17	0.241	0	2.12
5.917	0.00	0.17	0.239	0	2.11
6.000	0.00	0.17	0.238	0	2.10
6.083	0.00	0.17	0.237	0	2.10
6.167	0.00	0.17	0.236	0	2.09
6.250	0.00	0.17	0.235	0	2.08
6.333	0.00	0.17	0.234	0	2.07
6.417	0.00	0.17	0.233	0	2.06
6.500	0.00	0.17	0.231	0	2.05
6.583	0.00	0.17	0.230	0	2.04
6.667	0.00	0.17	0.229	0	2.03
6.750	0.00	0.17	0.228	0	2.02
6.833	0.00	0.17	0.227	0	2.01
6.917	0.00	0.17	0.226	0	2.00
7.000	0.00	0.17	0.224	0	2.00
7.083	0.00	0.17	0.223	0	1.99
7.167	0.00	0.17	0.222	0	1.98
7.250	0.00	0.17	0.221	0	1.97
7.333	0.00	0.17	0.220	0	1.96
7.417	0.00	0.17	0.219	0	1.95
7.500	0.00	0.17	0.218	0	1.94
7.583	0.00	0.17	0.216	0	1.93
7.667	0.00	0.17	0.215	0	1.92
7.750	0.00	0.17	0.214	0	1.91
7.833	0.00	0.17	0.213	0	1.90
7.917	0.00	0.17	0.212	0	1.89
8.000	0.00	0.17	0.211	0	1.88
8.083	0.00	0.17	0.210	0	1.87
8.167	0.00	0.17	0.208	0	1.86
8.250	0.00	0.17	0.207	0	1.85
8.333	0.00	0.17	0.206	0	1.84
8.417	0.00	0.17	0.205	0	1.83
8.500	0.00	0.17	0.204	0	1.82
8.583	0.00	0.17	0.203	0	1.81
8.667	0.00	0.17	0.201	0	1.80
8.750	0.00	0.17	0.200	0	1.79
8.833	0.00	0.17	0.199	0	1.78
8.917	0.00	0.17	0.198	0	1.77
9.000	0.00	0.17	0.197	0	1.76
9.083	0.00	0.17	0.196	0	1.75
9.167	0.00	0.17	0.195	0	1.74
9.250	0.00	0.17	0.193	0	1.73
9.333	0.00	0.17	0.192	0	1.72
9.417	0.00	0.17	0.191	0	1.71
9.500	0.00	0.17	0.190	0	1.70

9.583	0.00	0.17	0.189	0				1.69
9.667	0.00	0.17	0.188	0				1.68
9.750	0.00	0.17	0.186	0				1.67
9.833	0.00	0.17	0.185	0				1.66
9.917	0.00	0.17	0.184	0				1.65
10.000	0.00	0.17	0.183	0				1.64
10.083	0.00	0.17	0.182	0				1.63
10.167	0.00	0.17	0.181	0				1.62
10.250	0.00	0.17	0.180	0				1.62
10.333	0.00	0.17	0.178	0				1.61
10.417	0.00	0.17	0.177	0				1.60
10.500	0.00	0.17	0.176	0				1.59
10.583	0.00	0.17	0.175	0				1.58
10.667	0.00	0.17	0.174	0				1.57
10.750	0.00	0.17	0.173	0				1.56
10.833	0.00	0.17	0.172	0				1.55
10.917	0.00	0.17	0.170	0				1.54
11.000	0.00	0.17	0.169	0				1.53
11.083	0.00	0.17	0.168	0				1.52
11.167	0.00	0.17	0.167	0				1.51
11.250	0.00	0.17	0.166	0				1.50
11.333	0.00	0.17	0.165	0				1.49
11.417	0.00	0.17	0.163	0				1.48
11.500	0.00	0.17	0.162	0				1.47
11.583	0.00	0.17	0.161	0				1.46
11.667	0.00	0.17	0.160	0				1.45
11.750	0.00	0.17	0.159	0				1.44
11.833	0.00	0.17	0.158	0				1.43
11.917	0.00	0.17	0.157	0				1.42
12.000	0.00	0.17	0.155	0				1.41
12.083	0.00	0.17	0.154	0				1.40
12.167	0.00	0.17	0.153	0				1.39
12.250	0.00	0.17	0.152	0				1.38
12.333	0.00	0.17	0.151	0				1.37
12.417	0.00	0.17	0.150	0				1.36
12.500	0.00	0.17	0.149	0				1.35
12.583	0.00	0.17	0.147	0				1.34
12.667	0.00	0.17	0.146	0				1.33
12.750	0.00	0.17	0.145	0				1.32
12.833	0.00	0.17	0.144	0				1.31
12.917	0.00	0.17	0.143	0				1.30
13.000	0.00	0.17	0.142	0				1.29
13.083	0.00	0.17	0.140	0				1.28
13.167	0.00	0.17	0.139	0				1.27
13.250	0.00	0.17	0.138	0				1.26
13.333	0.00	0.17	0.137	0				1.25
13.417	0.00	0.17	0.136	0				1.24
13.500	0.00	0.17	0.135	0				1.24
13.583	0.00	0.17	0.134	0				1.23
13.667	0.00	0.17	0.132	0				1.22
13.750	0.00	0.17	0.131	0				1.21
13.833	0.00	0.17	0.130	0				1.20
13.917	0.00	0.17	0.129	0				1.19
14.000	0.00	0.17	0.128	0				1.18
14.083	0.00	0.17	0.127	0				1.17
14.167	0.00	0.17	0.126	0				1.16
14.250	0.00	0.17	0.124	0				1.15
14.333	0.00	0.17	0.123	0				1.14
14.417	0.00	0.17	0.122	0				1.13
14.500	0.00	0.17	0.121	0				1.12
14.583	0.00	0.17	0.120	0				1.11
14.667	0.00	0.17	0.119	0				1.10
14.750	0.00	0.17	0.117	0				1.09
14.833	0.00	0.17	0.116	0				1.08
14.917	0.00	0.17	0.115	0				1.07
15.000	0.00	0.17	0.114	0				1.06

15.083	0.00	0.17	0.113	0					1.05
15.167	0.00	0.17	0.112	0					1.04
15.250	0.00	0.17	0.111	0					1.03
15.333	0.00	0.17	0.109	0					1.02
15.417	0.00	0.17	0.108	0					1.01
15.500	0.00	0.17	0.107	0					1.00
15.583	0.00	0.17	0.106	0					0.99
15.667	0.00	0.17	0.105	0					0.98
15.750	0.00	0.17	0.104	0					0.97
15.833	0.00	0.17	0.103	0					0.96
15.917	0.00	0.17	0.101	0					0.95
16.000	0.00	0.17	0.100	0					0.94
16.083	0.00	0.17	0.099	0					0.93
16.167	0.00	0.17	0.098	0					0.92
16.250	0.00	0.17	0.097	0					0.91
16.333	0.00	0.17	0.096	0					0.90
16.417	0.00	0.17	0.094	0					0.89
16.500	0.00	0.17	0.093	0					0.88
16.583	0.00	0.17	0.092	0					0.87
16.667	0.00	0.17	0.091	0					0.85
16.750	0.00	0.17	0.090	0					0.84
16.833	0.00	0.17	0.089	0					0.83
16.917	0.00	0.17	0.088	0					0.82
17.000	0.00	0.17	0.086	0					0.81
17.083	0.00	0.17	0.085	0					0.80
17.167	0.00	0.17	0.084	0					0.79
17.250	0.00	0.17	0.083	0					0.78
17.333	0.00	0.17	0.082	0					0.77
17.417	0.00	0.17	0.081	0					0.76
17.500	0.00	0.17	0.080	0					0.75
17.583	0.00	0.17	0.078	0					0.74
17.667	0.00	0.17	0.077	0					0.73
17.750	0.00	0.17	0.076	0					0.72
17.833	0.00	0.17	0.075	0					0.71
17.917	0.00	0.17	0.074	0					0.70
18.000	0.00	0.17	0.073	0					0.69
18.083	0.00	0.17	0.071	0					0.68
18.167	0.00	0.17	0.070	0					0.67
18.250	0.00	0.17	0.069	0					0.66
18.333	0.00	0.17	0.068	0					0.65
18.417	0.00	0.17	0.067	0					0.64
18.500	0.00	0.17	0.066	0					0.62
18.583	0.00	0.17	0.065	0					0.61
18.667	0.00	0.17	0.063	0					0.60
18.750	0.00	0.17	0.062	0					0.59
18.833	0.00	0.17	0.061	0					0.58
18.917	0.00	0.17	0.060	0					0.57
19.000	0.00	0.17	0.059	0					0.56
19.083	0.00	0.17	0.058	0					0.55
19.167	0.00	0.17	0.057	0					0.54
19.250	0.00	0.17	0.055	0					0.53
19.333	0.00	0.17	0.054	0					0.52
19.417	0.00	0.17	0.053	0					0.51
19.500	0.00	0.17	0.052	0					0.50
19.583	0.00	0.17	0.051	0					0.49
19.667	0.00	0.17	0.050	0					0.48
19.750	0.00	0.17	0.048	0					0.47
19.833	0.00	0.17	0.047	0					0.45
19.917	0.00	0.17	0.046	0					0.44
20.000	0.00	0.17	0.045	0					0.43
20.083	0.00	0.17	0.044	0					0.42
20.167	0.00	0.17	0.043	0					0.41
20.250	0.00	0.17	0.042	0					0.40
20.333	0.00	0.17	0.040	0					0.39
20.417	0.00	0.17	0.039	0					0.38
20.500	0.00	0.17	0.038	0					0.37

20.583	0.00	0.17	0.037	0				0.35
20.667	0.00	0.17	0.036	0				0.34
20.750	0.00	0.17	0.035	0				0.33
20.833	0.00	0.17	0.034	0				0.32
20.917	0.00	0.17	0.032	0				0.31
21.000	0.00	0.17	0.031	0				0.30
21.083	0.00	0.17	0.030	0				0.29
21.167	0.00	0.17	0.029	0				0.28
21.250	0.00	0.17	0.028	0				0.27
21.333	0.00	0.17	0.027	0				0.25
21.417	0.00	0.17	0.025	0				0.24
21.500	0.00	0.17	0.024	0				0.23
21.583	0.00	0.17	0.023	0				0.22
21.667	0.00	0.17	0.022	0				0.21
21.750	0.00	0.17	0.021	0				0.20
21.833	0.00	0.16	0.020	0				0.19
21.917	0.00	0.15	0.019	0				0.18
22.000	0.00	0.14	0.018	0				0.17
22.083	0.00	0.14	0.017	0				0.16
22.167	0.00	0.13	0.016	0				0.15
22.250	0.00	0.12	0.015	0				0.15
22.333	0.00	0.12	0.014	0				0.14
22.417	0.00	0.11	0.013	0				0.13
22.500	0.00	0.11	0.013	0				0.12
22.583	0.00	0.10	0.012	0				0.12
22.667	0.00	0.10	0.011	0				0.11
22.750	0.00	0.09	0.011	0				0.11
22.833	0.00	0.09	0.010	0				0.10
22.917	0.00	0.08	0.009	0				0.09
23.000	0.00	0.08	0.009	0				0.09
23.083	0.00	0.07	0.008	0				0.08
23.167	0.00	0.07	0.008	0				0.08
23.250	0.00	0.06	0.007	0				0.07
23.333	0.00	0.06	0.007	0				0.07
23.417	0.00	0.06	0.007	0				0.07
23.500	0.00	0.05	0.006	0				0.06
23.583	0.00	0.05	0.006	0				0.06
23.667	0.00	0.05	0.005	0				0.05
23.750	0.00	0.04	0.005	0				0.05
23.833	0.00	0.04	0.005	0				0.05
23.917	0.00	0.04	0.005	0				0.05
24.000	0.00	0.04	0.004	0				0.04
24.083	0.00	0.03	0.004	0				0.04
24.167	0.00	0.03	0.004	0				0.04
24.250	0.00	0.03	0.004	0				0.04
24.333	0.00	0.03	0.003	0				0.03
24.417	0.00	0.03	0.003	0				0.03
24.500	0.00	0.03	0.003	0				0.03
24.583	0.00	0.02	0.003	0				0.03
24.667	0.00	0.02	0.003	0				0.03
24.750	0.00	0.02	0.003	0				0.03
24.833	0.00	0.02	0.002	0				0.02
24.917	0.00	0.02	0.002	0				0.02
25.000	0.00	0.02	0.002	0				0.02
25.083	0.00	0.02	0.002	0				0.02
25.167	0.00	0.02	0.002	0				0.02
25.250	0.00	0.01	0.002	0				0.02
25.333	0.00	0.01	0.002	0				0.02
25.417	0.00	0.01	0.002	0				0.02
25.500	0.00	0.01	0.002	0				0.02
25.583	0.00	0.01	0.002	0				0.02
25.667	0.00	0.01	0.001	0				0.01
25.750	0.00	0.01	0.001	0				0.01
25.833	0.00	0.01	0.001	0				0.01
25.917	0.00	0.01	0.001	0				0.01
26.000	0.00	0.01	0.001	0				0.01

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26.083	0.00	0.01	0.001	0					0.01
26.167	0.00	0.01	0.001	0					0.01
26.250	0.00	0.01	0.001	0					0.01
26.333	0.00	0.01	0.001	0					0.01
26.417	0.00	0.01	0.001	0					0.01
26.500	0.00	0.01	0.001	0					0.01
26.583	0.00	0.01	0.001	0					0.01
26.667	0.00	0.01	0.001	0					0.01
26.750	0.00	0.01	0.001	0					0.01
26.833	0.00	0.01	0.001	0					0.01
26.917	0.00	0.00	0.001	0					0.01
27.000	0.00	0.00	0.001	0					0.01
27.083	0.00	0.00	0.001	0					0.01
27.167	0.00	0.00	0.001	0					0.01
27.250	0.00	0.00	0.001	0					0.01
27.333	0.00	0.00	0.001	0					0.01
27.417	0.00	0.00	0.001	0					0.01
27.500	0.00	0.00	0.000	0					0.00
27.583	0.00	0.00	0.000	0					0.00
27.667	0.00	0.00	0.000	0					0.00
27.750	0.00	0.00	0.000	0					0.00
27.833	0.00	0.00	0.000	0					0.00
27.917	0.00	0.00	0.000	0					0.00
28.000	0.00	0.00	0.000	0					0.00
28.083	0.00	0.00	0.000	0					0.00
28.167	0.00	0.00	0.000	0					0.00
28.250	0.00	0.00	0.000	0					0.00
28.333	0.00	0.00	0.000	0					0.00
28.417	0.00	0.00	0.000	0					0.00
28.500	0.00	0.00	0.000	0					0.00
28.583	0.00	0.00	0.000	0					0.00
28.667	0.00	0.00	0.000	0					0.00
28.750	0.00	0.00	0.000	0					0.00
28.833	0.00	0.00	0.000	0					0.00
28.917	0.00	0.00	0.000	0					0.00
29.000	0.00	0.00	0.000	0					0.00
29.083	0.00	0.00	0.000	0					0.00
29.167	0.00	0.00	0.000	0					0.00
29.250	0.00	0.00	0.000	0					0.00
29.333	0.00	0.00	0.000	0					0.00
29.417	0.00	0.00	0.000	0					0.00
29.500	0.00	0.00	0.000	0					0.00
29.583	0.00	0.00	0.000	0					0.00
29.667	0.00	0.00	0.000	0					0.00

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

Number of intervals = 356
 Time interval = 5.0 (Min.)
 Maximum/Peak flow rate = 10.505 (CFS)
 Total volume = 1.022 (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
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2005
Study date: 11/04/21

JN6303 ROUTING
100YR-6HR STORM

Program License Serial Number 5016

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

From study/file name: 6303UHD100Y6H6100.rte

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

Number of intervals = 76
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 10.515 (CFS)
Total volume = 1.336 (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

+++++
Process from Point/Station 0.000 to Point/Station 0.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 76
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-0*dt/2) (Ac.Ft)	(S+0*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.010	0.001	0.007	0.001	0.001
0.100	0.010	0.087	0.010	0.010
0.200	0.021	0.167	0.020	0.022
0.500	0.052	0.167	0.051	0.053
1.000	0.107	0.167	0.106	0.108
2.000	0.225	0.167	0.224	0.226
2.330	0.267	0.167	0.266	0.268
2.380	0.273	0.305	0.272	0.274
2.420	0.278	0.500	0.276	0.280

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2.670	0.310	2.543	0.301	0.319
2.700	0.315	3.489	0.303	0.327
2.850	0.335	4.577	0.319	0.351
3.000	0.355	5.463	0.336	0.374
3.050	0.362	5.843	0.342	0.382
3.190	0.381	7.396	0.356	0.406
3.330	0.401	9.381	0.369	0.433
3.500	0.424	11.905	0.383	0.465
4.100	0.512	16.890	0.454	0.570
4.700	0.604	20.543	0.533	0.675

 Hydrograph Detention Basin Routing

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

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	0	2.6	5.26	7.89	10.52	Depth (Ft.)
0.083	0.37	0.01	0.001	OI					0.01
0.167	0.86	0.04	0.005	O I					0.05
0.250	1.03	0.10	0.011	O I					0.11
0.333	1.09	0.14	0.018	O I					0.17
0.417	1.11	0.17	0.024	O I					0.23
0.500	1.19	0.17	0.031	O I					0.30
0.583	1.27	0.17	0.038	O I					0.37
0.667	1.29	0.17	0.046	O I					0.44
0.750	1.30	0.17	0.054	O I					0.52
0.833	1.30	0.17	0.062	O I					0.59
0.917	1.30	0.17	0.069	O I					0.66
1.000	1.37	0.17	0.077	O I					0.73
1.083	1.46	0.17	0.086	O I					0.81
1.167	1.47	0.17	0.095	O I					0.89
1.250	1.48	0.17	0.104	O I					0.97
1.333	1.49	0.17	0.113	O I					1.05
1.417	1.49	0.17	0.122	O I					1.13
1.500	1.49	0.17	0.131	O I					1.20
1.583	1.49	0.17	0.140	O I					1.28
1.667	1.49	0.17	0.149	O I					1.36
1.750	1.49	0.17	0.158	O I					1.44
1.833	1.49	0.17	0.168	O I					1.51
1.917	1.49	0.17	0.177	O I					1.59
2.000	1.56	0.17	0.186	O I					1.67
2.083	1.57	0.17	0.196	O I					1.75
2.167	1.58	0.17	0.205	O I					1.83
2.250	1.65	0.17	0.215	O I					1.92
2.333	1.66	0.17	0.225	O I					2.00
2.417	1.67	0.17	0.236	O I					2.08
2.500	1.67	0.17	0.246	O I					2.17
2.583	1.67	0.17	0.257	O I					2.25
2.667	1.67	0.17	0.267	O I					2.33
2.750	1.74	0.44	0.277	O I					2.41
2.833	1.83	0.90	0.284	O I					2.47
2.917	1.85	1.24	0.290	O I					2.51
3.000	1.85	1.46	0.293	OI					2.54
3.083	1.86	1.60	0.295	OI					2.55
3.167	1.93	1.71	0.297	O					2.57
3.250	2.01	1.80	0.298	OI					2.58
3.333	2.03	1.88	0.300	OI					2.59
3.417	2.11	1.95	0.301	OI					2.60
3.500	2.27	2.04	0.302	O					2.61
3.583	2.45	2.15	0.304	OI					2.62
3.667	2.56	2.28	0.306	OI					2.64
3.750	2.66	2.40	0.308	OI					2.65
3.833	2.75	2.51	0.309	OI					2.67
3.917	2.85	2.70	0.311	O					2.67
4.000	2.94	2.85	0.312	O					2.68

9.583	0.00	0.17	0.228	0	2.02
9.667	0.00	0.17	0.227	0	2.02
9.750	0.00	0.17	0.226	0	2.01
9.833	0.00	0.17	0.225	0	2.00
9.917	0.00	0.17	0.224	0	1.99
10.000	0.00	0.17	0.222	0	1.98
10.083	0.00	0.17	0.221	0	1.97
10.167	0.00	0.17	0.220	0	1.96
10.250	0.00	0.17	0.219	0	1.95
10.333	0.00	0.17	0.218	0	1.94
10.417	0.00	0.17	0.217	0	1.93
10.500	0.00	0.17	0.215	0	1.92
10.583	0.00	0.17	0.214	0	1.91
10.667	0.00	0.17	0.213	0	1.90
10.750	0.00	0.17	0.212	0	1.89
10.833	0.00	0.17	0.211	0	1.88
10.917	0.00	0.17	0.210	0	1.87
11.000	0.00	0.17	0.209	0	1.86
11.083	0.00	0.17	0.207	0	1.85
11.167	0.00	0.17	0.206	0	1.84
11.250	0.00	0.17	0.205	0	1.83
11.333	0.00	0.17	0.204	0	1.82
11.417	0.00	0.17	0.203	0	1.81
11.500	0.00	0.17	0.202	0	1.80
11.583	0.00	0.17	0.201	0	1.79
11.667	0.00	0.17	0.199	0	1.78
11.750	0.00	0.17	0.198	0	1.77
11.833	0.00	0.17	0.197	0	1.76
11.917	0.00	0.17	0.196	0	1.75
12.000	0.00	0.17	0.195	0	1.74
12.083	0.00	0.17	0.194	0	1.73
12.167	0.00	0.17	0.192	0	1.72
12.250	0.00	0.17	0.191	0	1.71
12.333	0.00	0.17	0.190	0	1.70
12.417	0.00	0.17	0.189	0	1.69
12.500	0.00	0.17	0.188	0	1.69
12.583	0.00	0.17	0.187	0	1.68
12.667	0.00	0.17	0.186	0	1.67
12.750	0.00	0.17	0.184	0	1.66
12.833	0.00	0.17	0.183	0	1.65
12.917	0.00	0.17	0.182	0	1.64
13.000	0.00	0.17	0.181	0	1.63
13.083	0.00	0.17	0.180	0	1.62
13.167	0.00	0.17	0.179	0	1.61
13.250	0.00	0.17	0.178	0	1.60
13.333	0.00	0.17	0.176	0	1.59
13.417	0.00	0.17	0.175	0	1.58
13.500	0.00	0.17	0.174	0	1.57
13.583	0.00	0.17	0.173	0	1.56
13.667	0.00	0.17	0.172	0	1.55
13.750	0.00	0.17	0.171	0	1.54
13.833	0.00	0.17	0.169	0	1.53
13.917	0.00	0.17	0.168	0	1.52
14.000	0.00	0.17	0.167	0	1.51
14.083	0.00	0.17	0.166	0	1.50
14.167	0.00	0.17	0.165	0	1.49
14.250	0.00	0.17	0.164	0	1.48
14.333	0.00	0.17	0.163	0	1.47
14.417	0.00	0.17	0.161	0	1.46
14.500	0.00	0.17	0.160	0	1.45
14.583	0.00	0.17	0.159	0	1.44
14.667	0.00	0.17	0.158	0	1.43
14.750	0.00	0.17	0.157	0	1.42
14.833	0.00	0.17	0.156	0	1.41
14.917	0.00	0.17	0.155	0	1.40
15.000	0.00	0.17	0.153	0	1.39

15.083	0.00	0.17	0.152	0				1.38
15.167	0.00	0.17	0.151	0				1.37
15.250	0.00	0.17	0.150	0				1.36
15.333	0.00	0.17	0.149	0				1.35
15.417	0.00	0.17	0.148	0				1.34
15.500	0.00	0.17	0.146	0				1.33
15.583	0.00	0.17	0.145	0				1.32
15.667	0.00	0.17	0.144	0				1.31
15.750	0.00	0.17	0.143	0				1.31
15.833	0.00	0.17	0.142	0				1.30
15.917	0.00	0.17	0.141	0				1.29
16.000	0.00	0.17	0.140	0				1.28
16.083	0.00	0.17	0.138	0				1.27
16.167	0.00	0.17	0.137	0				1.26
16.250	0.00	0.17	0.136	0				1.25
16.333	0.00	0.17	0.135	0				1.24
16.417	0.00	0.17	0.134	0				1.23
16.500	0.00	0.17	0.133	0				1.22
16.583	0.00	0.17	0.131	0				1.21
16.667	0.00	0.17	0.130	0				1.20
16.750	0.00	0.17	0.129	0				1.19
16.833	0.00	0.17	0.128	0				1.18
16.917	0.00	0.17	0.127	0				1.17
17.000	0.00	0.17	0.126	0				1.16
17.083	0.00	0.17	0.125	0				1.15
17.167	0.00	0.17	0.123	0				1.14
17.250	0.00	0.17	0.122	0				1.13
17.333	0.00	0.17	0.121	0				1.12
17.417	0.00	0.17	0.120	0				1.11
17.500	0.00	0.17	0.119	0				1.10
17.583	0.00	0.17	0.118	0				1.09
17.667	0.00	0.17	0.117	0				1.08
17.750	0.00	0.17	0.115	0				1.07
17.833	0.00	0.17	0.114	0				1.06
17.917	0.00	0.17	0.113	0				1.05
18.000	0.00	0.17	0.112	0				1.04
18.083	0.00	0.17	0.111	0				1.03
18.167	0.00	0.17	0.110	0				1.02
18.250	0.00	0.17	0.108	0				1.01
18.333	0.00	0.17	0.107	0				1.00
18.417	0.00	0.17	0.106	0				0.99
18.500	0.00	0.17	0.105	0				0.98
18.583	0.00	0.17	0.104	0				0.97
18.667	0.00	0.17	0.103	0				0.96
18.750	0.00	0.17	0.102	0				0.95
18.833	0.00	0.17	0.100	0				0.94
18.917	0.00	0.17	0.099	0				0.93
19.000	0.00	0.17	0.098	0				0.92
19.083	0.00	0.17	0.097	0				0.91
19.167	0.00	0.17	0.096	0				0.90
19.250	0.00	0.17	0.095	0				0.89
19.333	0.00	0.17	0.094	0				0.88
19.417	0.00	0.17	0.092	0				0.87
19.500	0.00	0.17	0.091	0				0.86
19.583	0.00	0.17	0.090	0				0.85
19.667	0.00	0.17	0.089	0				0.84
19.750	0.00	0.17	0.088	0				0.83
19.833	0.00	0.17	0.087	0				0.81
19.917	0.00	0.17	0.085	0				0.80
20.000	0.00	0.17	0.084	0				0.79
20.083	0.00	0.17	0.083	0				0.78
20.167	0.00	0.17	0.082	0				0.77
20.250	0.00	0.17	0.081	0				0.76
20.333	0.00	0.17	0.080	0				0.75
20.417	0.00	0.17	0.079	0				0.74
20.500	0.00	0.17	0.077	0				0.73

20.583	0.00	0.17	0.076	0				0.72
20.667	0.00	0.17	0.075	0				0.71
20.750	0.00	0.17	0.074	0				0.70
20.833	0.00	0.17	0.073	0				0.69
20.917	0.00	0.17	0.072	0				0.68
21.000	0.00	0.17	0.071	0				0.67
21.083	0.00	0.17	0.069	0				0.66
21.167	0.00	0.17	0.068	0				0.65
21.250	0.00	0.17	0.067	0				0.64
21.333	0.00	0.17	0.066	0				0.63
21.417	0.00	0.17	0.065	0				0.62
21.500	0.00	0.17	0.064	0				0.61
21.583	0.00	0.17	0.062	0				0.60
21.667	0.00	0.17	0.061	0				0.58
21.750	0.00	0.17	0.060	0				0.57
21.833	0.00	0.17	0.059	0				0.56
21.917	0.00	0.17	0.058	0				0.55
22.000	0.00	0.17	0.057	0				0.54
22.083	0.00	0.17	0.056	0				0.53
22.167	0.00	0.17	0.054	0				0.52
22.250	0.00	0.17	0.053	0				0.51
22.333	0.00	0.17	0.052	0				0.50
22.417	0.00	0.17	0.051	0				0.49
22.500	0.00	0.17	0.050	0				0.48
22.583	0.00	0.17	0.049	0				0.47
22.667	0.00	0.17	0.048	0				0.46
22.750	0.00	0.17	0.046	0				0.45
22.833	0.00	0.17	0.045	0				0.43
22.917	0.00	0.17	0.044	0				0.42
23.000	0.00	0.17	0.043	0				0.41
23.083	0.00	0.17	0.042	0				0.40
23.167	0.00	0.17	0.041	0				0.39
23.250	0.00	0.17	0.039	0				0.38
23.333	0.00	0.17	0.038	0				0.37
23.417	0.00	0.17	0.037	0				0.36
23.500	0.00	0.17	0.036	0				0.35
23.583	0.00	0.17	0.035	0				0.33
23.667	0.00	0.17	0.034	0				0.32
23.750	0.00	0.17	0.033	0				0.31
23.833	0.00	0.17	0.031	0				0.30
23.917	0.00	0.17	0.030	0				0.29
24.000	0.00	0.17	0.029	0				0.28
24.083	0.00	0.17	0.028	0				0.27
24.167	0.00	0.17	0.027	0				0.26
24.250	0.00	0.17	0.026	0				0.25
24.333	0.00	0.17	0.025	0				0.23
24.417	0.00	0.17	0.023	0				0.22
24.500	0.00	0.17	0.022	0				0.21
24.583	0.00	0.17	0.021	0				0.20
24.667	0.00	0.16	0.020	0				0.19
24.750	0.00	0.15	0.019	0				0.18
24.833	0.00	0.14	0.018	0				0.17
24.917	0.00	0.14	0.017	0				0.16
25.000	0.00	0.13	0.016	0				0.15
25.083	0.00	0.12	0.015	0				0.15
25.167	0.00	0.12	0.014	0				0.14
25.250	0.00	0.11	0.013	0				0.13
25.333	0.00	0.11	0.013	0				0.12
25.417	0.00	0.10	0.012	0				0.12
25.500	0.00	0.10	0.011	0				0.11
25.583	0.00	0.09	0.011	0				0.11
25.667	0.00	0.09	0.010	0				0.10
25.750	0.00	0.08	0.009	0				0.09
25.833	0.00	0.08	0.009	0				0.09
25.917	0.00	0.07	0.008	0				0.08
26.000	0.00	0.07	0.008	0				0.08

26.083	0.00	0.06	0.007	0				0.07
26.167	0.00	0.06	0.007	0				0.07
26.250	0.00	0.06	0.007	0				0.07
26.333	0.00	0.05	0.006	0				0.06
26.417	0.00	0.05	0.006	0				0.06
26.500	0.00	0.05	0.006	0				0.06
26.583	0.00	0.04	0.005	0				0.05
26.667	0.00	0.04	0.005	0				0.05
26.750	0.00	0.04	0.005	0				0.05
26.833	0.00	0.04	0.004	0				0.04
26.917	0.00	0.03	0.004	0				0.04
27.000	0.00	0.03	0.004	0				0.04
27.083	0.00	0.03	0.004	0				0.04
27.167	0.00	0.03	0.003	0				0.03
27.250	0.00	0.03	0.003	0				0.03
27.333	0.00	0.03	0.003	0				0.03
27.417	0.00	0.02	0.003	0				0.03
27.500	0.00	0.02	0.003	0				0.03
27.583	0.00	0.02	0.003	0				0.03
27.667	0.00	0.02	0.002	0				0.02
27.750	0.00	0.02	0.002	0				0.02
27.833	0.00	0.02	0.002	0				0.02
27.917	0.00	0.02	0.002	0				0.02
28.000	0.00	0.02	0.002	0				0.02
28.083	0.00	0.01	0.002	0				0.02
28.167	0.00	0.01	0.002	0				0.02
28.250	0.00	0.01	0.002	0				0.02
28.333	0.00	0.01	0.002	0				0.02
28.417	0.00	0.01	0.002	0				0.02
28.500	0.00	0.01	0.001	0				0.01
28.583	0.00	0.01	0.001	0				0.01
28.667	0.00	0.01	0.001	0				0.01
28.750	0.00	0.01	0.001	0				0.01
28.833	0.00	0.01	0.001	0				0.01
28.917	0.00	0.01	0.001	0				0.01
29.000	0.00	0.01	0.001	0				0.01
29.083	0.00	0.01	0.001	0				0.01
29.167	0.00	0.01	0.001	0				0.01
29.250	0.00	0.01	0.001	0				0.01
29.333	0.00	0.01	0.001	0				0.01
29.417	0.00	0.01	0.001	0				0.01
29.500	0.00	0.01	0.001	0				0.01
29.583	0.00	0.01	0.001	0				0.01
29.667	0.00	0.01	0.001	0				0.01
29.750	0.00	0.00	0.001	0				0.01
29.833	0.00	0.00	0.001	0				0.01
29.917	0.00	0.00	0.001	0				0.01
30.000	0.00	0.00	0.001	0				0.01
30.083	0.00	0.00	0.001	0				0.01
30.167	0.00	0.00	0.001	0				0.01
30.250	0.00	0.00	0.001	0				0.01
30.333	0.00	0.00	0.000	0				0.00
30.417	0.00	0.00	0.000	0				0.00
30.500	0.00	0.00	0.000	0				0.00
30.583	0.00	0.00	0.000	0				0.00
30.667	0.00	0.00	0.000	0				0.00
30.750	0.00	0.00	0.000	0				0.00
30.833	0.00	0.00	0.000	0				0.00
30.917	0.00	0.00	0.000	0				0.00
31.000	0.00	0.00	0.000	0				0.00
31.083	0.00	0.00	0.000	0				0.00
31.167	0.00	0.00	0.000	0				0.00
31.250	0.00	0.00	0.000	0				0.00
31.333	0.00	0.00	0.000	0				0.00
31.417	0.00	0.00	0.000	0				0.00
31.500	0.00	0.00	0.000	0				0.00

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31.583	0.00	0.00	0.000	0					0.00
31.667	0.00	0.00	0.000	0					0.00
31.750	0.00	0.00	0.000	0					0.00
31.833	0.00	0.00	0.000	0					0.00
31.917	0.00	0.00	0.000	0					0.00
32.000	0.00	0.00	0.000	0					0.00
32.083	0.00	0.00	0.000	0					0.00
32.167	0.00	0.00	0.000	0					0.00
32.250	0.00	0.00	0.000	0					0.00
32.333	0.00	0.00	0.000	0					0.00
32.417	0.00	0.00	0.000	0					0.00
32.500	0.00	0.00	0.000	0					0.00

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

Number of intervals = 390
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 9.032 (CFS)
Total volume = 1.336 (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: 11/04/21

JN6303 ROUTING
100YR-24HR STORM

Program License Serial Number 5016

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

From study/file name: 6303UHD100Y24H24100.rte

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

Number of intervals = 292
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 4.232 (CFS)
Total volume = 2.437 (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

+++++
Process from Point/Station 0.000 to Point/Station 0.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 292
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-0*dt/2) (Ac.Ft)	(S+0*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.010	0.001	0.007	0.001	0.001
0.100	0.010	0.087	0.010	0.010
0.200	0.021	0.167	0.020	0.022
0.500	0.052	0.167	0.051	0.053
1.000	0.107	0.167	0.106	0.108
2.000	0.225	0.167	0.224	0.226
2.330	0.267	0.167	0.266	0.268
2.380	0.273	0.305	0.272	0.274
2.420	0.278	0.500	0.276	0.280

2.670	0.310	2.543	0.301	0.319
2.700	0.315	3.489	0.303	0.327
2.850	0.335	4.577	0.319	0.351
3.000	0.355	5.463	0.336	0.374
3.050	0.362	5.843	0.342	0.382
3.190	0.381	7.396	0.356	0.406
3.330	0.401	9.381	0.369	0.433
3.500	0.424	11.905	0.383	0.465
4.100	0.512	16.890	0.454	0.570
4.700	0.604	20.543	0.533	0.675

 Hydrograph Detention Basin Routing

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

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	Depth (Ft.)
0.083	0.09	0.00	0.000	0.00
0.167	0.20	0.01	0.001	0.01
0.250	0.22	0.02	0.003	0.03
0.333	0.27	0.03	0.004	0.04
0.417	0.33	0.05	0.006	0.06
0.500	0.34	0.07	0.008	0.08
0.583	0.35	0.08	0.010	0.10
0.667	0.35	0.10	0.011	0.11
0.750	0.35	0.11	0.013	0.13
0.833	0.40	0.12	0.015	0.14
0.917	0.45	0.14	0.017	0.16
1.000	0.46	0.15	0.019	0.18
1.083	0.42	0.17	0.021	0.20
1.167	0.37	0.17	0.023	0.21
1.250	0.36	0.17	0.024	0.23
1.333	0.35	0.17	0.025	0.24
1.417	0.35	0.17	0.026	0.25
1.500	0.35	0.17	0.028	0.26
1.583	0.35	0.17	0.029	0.28
1.667	0.35	0.17	0.030	0.29
1.750	0.35	0.17	0.031	0.30
1.833	0.40	0.17	0.033	0.32
1.917	0.45	0.17	0.035	0.33
2.000	0.46	0.17	0.037	0.35
2.083	0.46	0.17	0.039	0.37
2.167	0.47	0.17	0.041	0.39
2.250	0.47	0.17	0.043	0.41
2.333	0.47	0.17	0.045	0.43
2.417	0.47	0.17	0.047	0.45
2.500	0.47	0.17	0.049	0.47
2.583	0.51	0.17	0.051	0.49
2.667	0.57	0.17	0.054	0.52
2.750	0.58	0.17	0.057	0.54
2.833	0.58	0.17	0.059	0.57
2.917	0.58	0.17	0.062	0.59
3.000	0.58	0.17	0.065	0.62
3.083	0.58	0.17	0.068	0.65
3.167	0.58	0.17	0.071	0.67
3.250	0.58	0.17	0.074	0.70
3.333	0.58	0.17	0.077	0.72
3.417	0.58	0.17	0.079	0.75
3.500	0.58	0.17	0.082	0.78
3.583	0.58	0.17	0.085	0.80
3.667	0.58	0.17	0.088	0.83
3.750	0.58	0.17	0.091	0.85
3.833	0.63	0.17	0.094	0.88
3.917	0.68	0.17	0.097	0.91
4.000	0.69	0.17	0.101	0.94

4.083	0.70	0.17	0.105	0	I				0.98
4.167	0.70	0.17	0.108	0	I				1.01
4.250	0.70	0.17	0.112	0	I				1.04
4.333	0.75	0.17	0.116	0	I				1.07
4.417	0.80	0.17	0.120	0	I				1.11
4.500	0.81	0.17	0.124	0	I				1.15
4.583	0.81	0.17	0.129	0	I				1.18
4.667	0.82	0.17	0.133	0	I				1.22
4.750	0.82	0.17	0.138	0	I				1.26
4.833	0.86	0.17	0.142	0	I				1.30
4.917	0.92	0.17	0.147	0	I				1.34
5.000	0.93	0.17	0.152	0	I				1.39
5.083	0.84	0.17	0.157	0	I				1.43
5.167	0.74	0.17	0.162	0	I				1.46
5.250	0.71	0.17	0.166	0	I				1.50
5.333	0.75	0.17	0.169	0	I				1.53
5.417	0.80	0.17	0.174	0	I				1.56
5.500	0.81	0.17	0.178	0	I				1.60
5.583	0.86	0.17	0.183	0	I				1.64
5.667	0.92	0.17	0.188	0	I				1.68
5.750	0.93	0.17	0.193	0	I				1.73
5.833	0.93	0.17	0.198	0	I				1.77
5.917	0.93	0.17	0.203	0	I				1.82
6.000	0.93	0.17	0.209	0	I				1.86
6.083	0.98	0.17	0.214	0	I				1.91
6.167	1.03	0.17	0.220	0	I				1.96
6.250	1.04	0.17	0.226	0	I				2.01
6.333	1.05	0.17	0.232	0	I				2.05
6.417	1.05	0.17	0.238	0	I				2.10
6.500	1.05	0.17	0.244	0	I				2.15
6.583	1.10	0.17	0.250	0	I				2.20
6.667	1.15	0.17	0.257	0	I				2.25
6.750	1.16	0.17	0.264	0	I				2.30
6.833	1.16	0.24	0.270	0	I				2.36
6.917	1.17	0.42	0.276	0	I				2.40
7.000	1.17	0.65	0.280	0	I				2.44
7.083	1.17	0.83	0.283	0	I				2.46
7.167	1.17	0.95	0.285	0	OI				2.48
7.250	1.17	1.03	0.286	0	OI				2.48
7.333	1.21	1.09	0.287	0	OI				2.49
7.417	1.27	1.14	0.288	0	OI				2.50
7.500	1.28	1.19	0.289	0	OI				2.50
7.583	1.33	1.23	0.289	0	OI				2.51
7.667	1.38	1.27	0.290	0	OI				2.51
7.750	1.39	1.32	0.291	0	OI				2.52
7.833	1.44	1.35	0.291	0	O				2.52
7.917	1.50	1.40	0.292	0	OI				2.53
8.000	1.51	1.43	0.293	0	OI				2.53
8.083	1.61	1.48	0.293	0	OI				2.54
8.167	1.71	1.54	0.294	0	OI				2.55
8.250	1.74	1.61	0.295	0	OI				2.56
8.333	1.75	1.66	0.296	0	OI				2.56
8.417	1.75	1.69	0.297	0	OI				2.57
8.500	1.75	1.71	0.297	0	OI				2.57
8.583	1.80	1.73	0.297	0	O				2.57
8.667	1.85	1.77	0.298	0	O				2.57
8.750	1.86	1.80	0.298	0	OI				2.58
8.833	1.91	1.83	0.299	0	OI				2.58
8.917	1.97	1.87	0.299	0	O				2.59
9.000	1.98	1.91	0.300	0	O				2.59
9.083	2.07	1.95	0.301	0	OI				2.60
9.167	2.18	2.01	0.302	0	OI				2.61
9.250	2.20	2.08	0.303	0	OI				2.61
9.333	2.26	2.13	0.304	0	OI				2.62
9.417	2.32	2.19	0.304	0	OI				2.63
9.500	2.33	2.24	0.305	0	OI				2.63

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9.583	2.38	2.28	0.306		0		2.64
9.667	2.43	2.32	0.307		OI		2.64
9.750	2.44	2.36	0.307		OI		2.65
9.833	2.49	2.40	0.308		0		2.65
9.917	2.55	2.45	0.308		OI		2.66
10.000	2.56	2.48	0.309		OI		2.66
10.083	2.24	2.45	0.309		I 0		2.66
10.167	1.88	2.31	0.306		I 0		2.64
10.250	1.80	2.14	0.304		I 0		2.62
10.333	1.77	2.01	0.302		I 0		2.61
10.417	1.75	1.92	0.300		IO		2.59
10.500	1.75	1.86	0.299		IO		2.59
10.583	1.98	1.86	0.299		0		2.59
10.667	2.24	1.95	0.301		0 I		2.60
10.750	2.30	2.07	0.303		0 I		2.61
10.833	2.32	2.15	0.304		OI		2.62
10.917	2.33	2.22	0.305		OI		2.63
11.000	2.33	2.26	0.306		0		2.64
11.083	2.29	2.28	0.306		0		2.64
11.167	2.24	2.27	0.306		IO		2.64
11.250	2.22	2.26	0.306		IO		2.63
11.333	2.22	2.24	0.305		0		2.63
11.417	2.22	2.23	0.305		0		2.63
11.500	2.22	2.23	0.305		0		2.63
11.583	2.12	2.21	0.305		0		2.63
11.667	2.02	2.16	0.304		IO		2.62
11.750	2.00	2.10	0.303		0		2.62
11.833	2.03	2.07	0.303		0		2.61
11.917	2.08	2.07	0.303		0		2.61
12.000	2.09	2.07	0.303		0		2.61
12.083	2.42	2.14	0.304		0 I		2.62
12.167	2.79	2.31	0.306		0 I		2.64
12.250	2.87	2.50	0.309		0 I		2.66
12.333	2.95	2.77	0.311		0 I		2.68
12.417	3.03	2.95	0.312		0		2.68
12.500	3.05	3.02	0.313		OI		2.69
12.583	3.17	3.09	0.313		0		2.69
12.667	3.30	3.20	0.313		0		2.69
12.750	3.33	3.29	0.314		OI		2.69
12.833	3.40	3.35	0.314		0		2.70
12.917	3.48	3.42	0.315		OI		2.70
13.000	3.49	3.47	0.315		0		2.70
13.083	3.78	3.53	0.316		0 I		2.71
13.167	4.11	3.66	0.318		0 I		2.72
13.250	4.18	3.82	0.321		0 I		2.75
13.333	4.21	3.94	0.323		0 I		2.76
13.417	4.23	4.03	0.325		OI		2.77
13.500	4.23	4.09	0.326		0 I		2.78
13.583	3.62	4.04	0.325		I 0		2.78
13.667	2.93	3.80	0.321		I 0		2.74
13.750	2.78	3.50	0.315		I 0		2.70
13.833	2.71	2.92	0.312		I 0		2.68
13.917	2.68	2.75	0.311		0		2.68
14.000	2.69	2.70	0.311		0		2.67
14.083	2.91	2.78	0.311		OI		2.68
14.167	3.17	2.99	0.312		OI		2.68
14.250	3.23	3.16	0.313		OI		2.69
14.333	3.20	3.20	0.313		0		2.69
14.417	3.15	3.18	0.313		IO		2.69
14.500	3.14	3.15	0.313		0		2.69
14.583	3.14	3.14	0.313		0		2.69
14.667	3.14	3.14	0.313		0		2.69
14.750	3.14	3.14	0.313		0		2.69
14.833	3.09	3.12	0.313		0		2.69
14.917	3.02	3.07	0.313		IO		2.69
15.000	3.01	3.03	0.313		0		2.69

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15.083	2.95	2.99	0.312				0	2.68
15.167	2.89	2.94	0.312				IO	2.68
15.250	2.88	2.90	0.312				0	2.68
15.333	2.82	2.86	0.312				0	2.68
15.417	2.76	2.80	0.311				IO	2.68
15.500	2.75	2.76	0.311				0	2.68
15.583	2.54	2.67	0.311				IO	2.67
15.667	2.30	2.51	0.309				IO	2.67
15.750	2.25	2.42	0.308				I 0	2.66
15.833	2.23	2.36	0.307				IO	2.65
15.917	2.22	2.31	0.306				IO	2.64
16.000	2.22	2.28	0.306				IO	2.64
16.083	1.53	2.13	0.304			I	0	2.62
16.167	0.74	1.77	0.298	I		0		2.58
16.250	0.57	1.37	0.292	I	0			2.53
16.333	0.50	1.07	0.287	I	0			2.49
16.417	0.47	0.86	0.284	I	0			2.46
16.500	0.47	0.72	0.281	I	0			2.45
16.583	0.42	0.62	0.280	IO				2.43
16.667	0.37	0.54	0.279	I	0			2.42
16.750	0.36	0.48	0.278	IO				2.42
16.833	0.35	0.45	0.277	IO				2.41
16.917	0.35	0.43	0.276	IO				2.41
17.000	0.35	0.41	0.276	IO				2.40
17.083	0.44	0.41	0.276	0				2.40
17.167	0.55	0.43	0.276	OI				2.41
17.250	0.57	0.46	0.277	OI				2.41
17.333	0.58	0.49	0.278	OI				2.42
17.417	0.58	0.51	0.278	OI				2.42
17.500	0.58	0.54	0.279	0				2.42
17.583	0.58	0.55	0.279	0				2.43
17.667	0.58	0.56	0.279	0				2.43
17.750	0.58	0.57	0.279	0				2.43
17.833	0.54	0.57	0.279	0				2.43
17.917	0.48	0.55	0.279	IO				2.43
18.000	0.47	0.52	0.278	0				2.42
18.083	0.47	0.50	0.278	0				2.42
18.167	0.47	0.49	0.278	0				2.42
18.250	0.47	0.49	0.278	0				2.42
18.333	0.47	0.48	0.278	0				2.42
18.417	0.47	0.48	0.277	0				2.42
18.500	0.47	0.48	0.277	0				2.42
18.583	0.42	0.47	0.277	0				2.41
18.667	0.37	0.45	0.277	IO				2.41
18.750	0.36	0.43	0.276	IO				2.41
18.833	0.31	0.41	0.276	IO				2.40
18.917	0.25	0.38	0.275	IO				2.39
19.000	0.24	0.35	0.274	IO				2.39
19.083	0.28	0.33	0.274	0				2.38
19.167	0.33	0.32	0.273	0				2.38
19.250	0.34	0.32	0.274	0				2.38
19.333	0.39	0.34	0.274	0				2.39
19.417	0.45	0.36	0.274	OI				2.39
19.500	0.46	0.38	0.275	OI				2.40
19.583	0.42	0.39	0.275	OI				2.40
19.667	0.37	0.39	0.275	0				2.40
19.750	0.36	0.39	0.275	0				2.40
19.833	0.31	0.37	0.275	0				2.39
19.917	0.25	0.35	0.274	IO				2.39
20.000	0.24	0.33	0.274	IO				2.38
20.083	0.28	0.31	0.273	0				2.38
20.167	0.33	0.31	0.273	0				2.38
20.250	0.34	0.32	0.273	0				2.38
20.333	0.35	0.32	0.273	0				2.38
20.417	0.35	0.33	0.274	0				2.38
20.500	0.35	0.33	0.274	0				2.39

20.583	0.35	0.34	0.274	0					2.39
20.667	0.35	0.34	0.274	0					2.39
20.750	0.35	0.34	0.274	0					2.39
20.833	0.30	0.34	0.274	0					2.39
20.917	0.25	0.32	0.274	IO					2.38
21.000	0.24	0.31	0.273	IO					2.38
21.083	0.28	0.30	0.273	0					2.38
21.167	0.33	0.30	0.273	0					2.38
21.250	0.34	0.31	0.273	0					2.38
21.333	0.30	0.31	0.273	0					2.38
21.417	0.25	0.30	0.273	IO					2.38
21.500	0.24	0.29	0.273	IO					2.38
21.583	0.28	0.29	0.272	0					2.37
21.667	0.33	0.29	0.272	0					2.38
21.750	0.34	0.30	0.273	0					2.38
21.833	0.30	0.30	0.273	0					2.38
21.917	0.25	0.30	0.273	IO					2.38
22.000	0.24	0.29	0.272	IO					2.37
22.083	0.28	0.29	0.272	0					2.37
22.167	0.33	0.29	0.272	0					2.37
22.250	0.34	0.30	0.273	0					2.38
22.333	0.30	0.30	0.273	0					2.38
22.417	0.25	0.30	0.273	IO					2.38
22.500	0.24	0.29	0.272	IO					2.37
22.583	0.24	0.28	0.272	IO					2.37
22.667	0.23	0.27	0.272	IO					2.37
22.750	0.23	0.27	0.271	IO					2.37
22.833	0.23	0.26	0.271	0					2.36
22.917	0.23	0.26	0.271	0					2.36
23.000	0.23	0.26	0.271	0					2.36
23.083	0.23	0.25	0.271	0					2.36
23.167	0.23	0.25	0.271	0					2.36
23.250	0.23	0.25	0.270	0					2.36
23.333	0.23	0.25	0.270	0					2.36
23.417	0.23	0.24	0.270	0					2.36
23.500	0.23	0.24	0.270	0					2.36
23.583	0.23	0.24	0.270	0					2.36
23.667	0.23	0.24	0.270	0					2.36
23.750	0.23	0.24	0.270	0					2.36
23.833	0.23	0.24	0.270	0					2.36
23.917	0.23	0.24	0.270	0					2.36
24.000	0.23	0.24	0.270	0					2.36
24.083	0.14	0.23	0.270	0					2.35
24.167	0.04	0.21	0.269	IO					2.35
24.250	0.01	0.18	0.268	IO					2.34
24.333	0.00	0.17	0.267	IO					2.33
24.417	0.00	0.17	0.265	IO					2.32
24.500	0.00	0.17	0.264	IO					2.31
24.583	0.00	0.17	0.263	IO					2.30
24.667	0.00	0.17	0.262	IO					2.29
24.750	0.00	0.17	0.261	IO					2.28
24.833	0.00	0.17	0.260	IO					2.27
24.917	0.00	0.17	0.258	IO					2.26
25.000	0.00	0.17	0.257	IO					2.25
25.083	0.00	0.17	0.256	IO					2.24
25.167	0.00	0.17	0.255	IO					2.24
25.250	0.00	0.17	0.254	IO					2.23
25.333	0.00	0.17	0.253	IO					2.22
25.417	0.00	0.17	0.252	IO					2.21
25.500	0.00	0.17	0.250	IO					2.20
25.583	0.00	0.17	0.249	IO					2.19
25.667	0.00	0.17	0.248	IO					2.18
25.750	0.00	0.17	0.247	IO					2.17
25.833	0.00	0.17	0.246	IO					2.16
25.917	0.00	0.17	0.245	IO					2.15
26.000	0.00	0.17	0.244	IO					2.15

26.083	0.00	0.17	0.242	IO				2.14
26.167	0.00	0.17	0.241	IO				2.13
26.250	0.00	0.17	0.240	IO				2.12
26.333	0.00	0.17	0.239	IO				2.11
26.417	0.00	0.17	0.238	IO				2.10
26.500	0.00	0.17	0.237	IO				2.09
26.583	0.00	0.17	0.235	IO				2.08
26.667	0.00	0.17	0.234	IO				2.07
26.750	0.00	0.17	0.233	IO				2.06
26.833	0.00	0.17	0.232	IO				2.06
26.917	0.00	0.17	0.231	IO				2.05
27.000	0.00	0.17	0.230	IO				2.04
27.083	0.00	0.17	0.229	IO				2.03
27.167	0.00	0.17	0.227	IO				2.02
27.250	0.00	0.17	0.226	IO				2.01
27.333	0.00	0.17	0.225	IO				2.00
27.417	0.00	0.17	0.224	IO				1.99
27.500	0.00	0.17	0.223	IO				1.98
27.583	0.00	0.17	0.222	IO				1.97
27.667	0.00	0.17	0.221	IO				1.96
27.750	0.00	0.17	0.219	IO				1.95
27.833	0.00	0.17	0.218	IO				1.94
27.917	0.00	0.17	0.217	IO				1.93
28.000	0.00	0.17	0.216	IO				1.92
28.083	0.00	0.17	0.215	IO				1.91
28.167	0.00	0.17	0.214	IO				1.90
28.250	0.00	0.17	0.212	IO				1.89
28.333	0.00	0.17	0.211	IO				1.88
28.417	0.00	0.17	0.210	IO				1.87
28.500	0.00	0.17	0.209	IO				1.86
28.583	0.00	0.17	0.208	IO				1.85
28.667	0.00	0.17	0.207	IO				1.85
28.750	0.00	0.17	0.206	IO				1.84
28.833	0.00	0.17	0.204	IO				1.83
28.917	0.00	0.17	0.203	IO				1.82
29.000	0.00	0.17	0.202	IO				1.81
29.083	0.00	0.17	0.201	IO				1.80
29.167	0.00	0.17	0.200	IO				1.79
29.250	0.00	0.17	0.199	IO				1.78
29.333	0.00	0.17	0.198	IO				1.77
29.417	0.00	0.17	0.196	IO				1.76
29.500	0.00	0.17	0.195	IO				1.75
29.583	0.00	0.17	0.194	IO				1.74
29.667	0.00	0.17	0.193	IO				1.73
29.750	0.00	0.17	0.192	IO				1.72
29.833	0.00	0.17	0.191	IO				1.71
29.917	0.00	0.17	0.189	IO				1.70
30.000	0.00	0.17	0.188	IO				1.69
30.083	0.00	0.17	0.187	IO				1.68
30.167	0.00	0.17	0.186	IO				1.67
30.250	0.00	0.17	0.185	IO				1.66
30.333	0.00	0.17	0.184	IO				1.65
30.417	0.00	0.17	0.183	IO				1.64
30.500	0.00	0.17	0.181	IO				1.63
30.583	0.00	0.17	0.180	IO				1.62
30.667	0.00	0.17	0.179	IO				1.61
30.750	0.00	0.17	0.178	IO				1.60
30.833	0.00	0.17	0.177	IO				1.59
30.917	0.00	0.17	0.176	IO				1.58
31.000	0.00	0.17	0.175	IO				1.57
31.083	0.00	0.17	0.173	IO				1.56
31.167	0.00	0.17	0.172	IO				1.55
31.250	0.00	0.17	0.171	IO				1.54
31.333	0.00	0.17	0.170	IO				1.53
31.417	0.00	0.17	0.169	IO				1.52
31.500	0.00	0.17	0.168	IO				1.51

31.583	0.00	0.17	0.166	IO				1.50
31.667	0.00	0.17	0.165	IO				1.49
31.750	0.00	0.17	0.164	IO				1.48
31.833	0.00	0.17	0.163	IO				1.47
31.917	0.00	0.17	0.162	IO				1.46
32.000	0.00	0.17	0.161	IO				1.46
32.083	0.00	0.17	0.160	IO				1.45
32.167	0.00	0.17	0.158	IO				1.44
32.250	0.00	0.17	0.157	IO				1.43
32.333	0.00	0.17	0.156	IO				1.42
32.417	0.00	0.17	0.155	IO				1.41
32.500	0.00	0.17	0.154	IO				1.40
32.583	0.00	0.17	0.153	IO				1.39
32.667	0.00	0.17	0.152	IO				1.38
32.750	0.00	0.17	0.150	IO				1.37
32.833	0.00	0.17	0.149	IO				1.36
32.917	0.00	0.17	0.148	IO				1.35
33.000	0.00	0.17	0.147	IO				1.34
33.083	0.00	0.17	0.146	IO				1.33
33.167	0.00	0.17	0.145	IO				1.32
33.250	0.00	0.17	0.143	IO				1.31
33.333	0.00	0.17	0.142	IO				1.30
33.417	0.00	0.17	0.141	IO				1.29
33.500	0.00	0.17	0.140	IO				1.28
33.583	0.00	0.17	0.139	IO				1.27
33.667	0.00	0.17	0.138	IO				1.26
33.750	0.00	0.17	0.137	IO				1.25
33.833	0.00	0.17	0.135	IO				1.24
33.917	0.00	0.17	0.134	IO				1.23
34.000	0.00	0.17	0.133	IO				1.22
34.083	0.00	0.17	0.132	IO				1.21
34.167	0.00	0.17	0.131	IO				1.20
34.250	0.00	0.17	0.130	IO				1.19
34.333	0.00	0.17	0.129	IO				1.18
34.417	0.00	0.17	0.127	IO				1.17
34.500	0.00	0.17	0.126	IO				1.16
34.583	0.00	0.17	0.125	IO				1.15
34.667	0.00	0.17	0.124	IO				1.14
34.750	0.00	0.17	0.123	IO				1.13
34.833	0.00	0.17	0.122	IO				1.12
34.917	0.00	0.17	0.120	IO				1.11
35.000	0.00	0.17	0.119	IO				1.10
35.083	0.00	0.17	0.118	IO				1.09
35.167	0.00	0.17	0.117	IO				1.08
35.250	0.00	0.17	0.116	IO				1.08
35.333	0.00	0.17	0.115	IO				1.07
35.417	0.00	0.17	0.114	IO				1.06
35.500	0.00	0.17	0.112	IO				1.05
35.583	0.00	0.17	0.111	IO				1.04
35.667	0.00	0.17	0.110	IO				1.03
35.750	0.00	0.17	0.109	IO				1.02
35.833	0.00	0.17	0.108	IO				1.01
35.917	0.00	0.17	0.107	IO				1.00
36.000	0.00	0.17	0.106	IO				0.99
36.083	0.00	0.17	0.104	IO				0.98
36.167	0.00	0.17	0.103	IO				0.97
36.250	0.00	0.17	0.102	IO				0.96
36.333	0.00	0.17	0.101	IO				0.94
36.417	0.00	0.17	0.100	IO				0.93
36.500	0.00	0.17	0.099	IO				0.92
36.583	0.00	0.17	0.097	IO				0.91
36.667	0.00	0.17	0.096	IO				0.90
36.750	0.00	0.17	0.095	IO				0.89
36.833	0.00	0.17	0.094	IO				0.88
36.917	0.00	0.17	0.093	IO				0.87
37.000	0.00	0.17	0.092	IO				0.86

37.083	0.00	0.17	0.091	IO				0.85
37.167	0.00	0.17	0.089	IO				0.84
37.250	0.00	0.17	0.088	IO				0.83
37.333	0.00	0.17	0.087	IO				0.82
37.417	0.00	0.17	0.086	IO				0.81
37.500	0.00	0.17	0.085	IO				0.80
37.583	0.00	0.17	0.084	IO				0.79
37.667	0.00	0.17	0.083	IO				0.78
37.750	0.00	0.17	0.081	IO				0.77
37.833	0.00	0.17	0.080	IO				0.76
37.917	0.00	0.17	0.079	IO				0.75
38.000	0.00	0.17	0.078	IO				0.74
38.083	0.00	0.17	0.077	IO				0.72
38.167	0.00	0.17	0.076	IO				0.71
38.250	0.00	0.17	0.074	IO				0.70
38.333	0.00	0.17	0.073	IO				0.69
38.417	0.00	0.17	0.072	IO				0.68
38.500	0.00	0.17	0.071	IO				0.67
38.583	0.00	0.17	0.070	IO				0.66
38.667	0.00	0.17	0.069	IO				0.65
38.750	0.00	0.17	0.068	IO				0.64
38.833	0.00	0.17	0.066	IO				0.63
38.917	0.00	0.17	0.065	IO				0.62
39.000	0.00	0.17	0.064	IO				0.61
39.083	0.00	0.17	0.063	IO				0.60
39.167	0.00	0.17	0.062	IO				0.59
39.250	0.00	0.17	0.061	IO				0.58
39.333	0.00	0.17	0.059	IO				0.57
39.417	0.00	0.17	0.058	IO				0.56
39.500	0.00	0.17	0.057	IO				0.55
39.583	0.00	0.17	0.056	IO				0.54
39.667	0.00	0.17	0.055	IO				0.53
39.750	0.00	0.17	0.054	IO				0.52
39.833	0.00	0.17	0.053	IO				0.51
39.917	0.00	0.17	0.051	IO				0.49
40.000	0.00	0.17	0.050	IO				0.48
40.083	0.00	0.17	0.049	IO				0.47
40.167	0.00	0.17	0.048	IO				0.46
40.250	0.00	0.17	0.047	IO				0.45
40.333	0.00	0.17	0.046	IO				0.44
40.417	0.00	0.17	0.045	IO				0.43
40.500	0.00	0.17	0.043	IO				0.42
40.583	0.00	0.17	0.042	IO				0.41
40.667	0.00	0.17	0.041	IO				0.39
40.750	0.00	0.17	0.040	IO				0.38
40.833	0.00	0.17	0.039	IO				0.37
40.917	0.00	0.17	0.038	IO				0.36
41.000	0.00	0.17	0.036	IO				0.35
41.083	0.00	0.17	0.035	IO				0.34
41.167	0.00	0.17	0.034	IO				0.33
41.250	0.00	0.17	0.033	IO				0.32
41.333	0.00	0.17	0.032	IO				0.31
41.417	0.00	0.17	0.031	IO				0.29
41.500	0.00	0.17	0.030	IO				0.28
41.583	0.00	0.17	0.028	IO				0.27
41.667	0.00	0.17	0.027	IO				0.26
41.750	0.00	0.17	0.026	IO				0.25
41.833	0.00	0.17	0.025	IO				0.24
41.917	0.00	0.17	0.024	IO				0.23
42.000	0.00	0.17	0.023	IO				0.22
42.083	0.00	0.17	0.022	IO				0.21
42.167	0.00	0.16	0.020	IO				0.19
42.250	0.00	0.15	0.019	IO				0.18
42.333	0.00	0.15	0.018	IO				0.18
42.417	0.00	0.14	0.017	IO				0.17
42.500	0.00	0.13	0.016	IO				0.16

42.583	0.00	0.13	0.015	0				0.15
42.667	0.00	0.12	0.015	0				0.14
42.750	0.00	0.11	0.014	0				0.13
42.833	0.00	0.11	0.013	0				0.13
42.917	0.00	0.10	0.012	0				0.12
43.000	0.00	0.10	0.012	0				0.11
43.083	0.00	0.09	0.011	0				0.11
43.167	0.00	0.09	0.010	0				0.10
43.250	0.00	0.08	0.010	0				0.10
43.333	0.00	0.08	0.009	0				0.09
43.417	0.00	0.07	0.009	0				0.09
43.500	0.00	0.07	0.008	0				0.08
43.583	0.00	0.07	0.008	0				0.08
43.667	0.00	0.06	0.007	0				0.07
43.750	0.00	0.06	0.007	0				0.07
43.833	0.00	0.05	0.006	0				0.06
43.917	0.00	0.05	0.006	0				0.06
44.000	0.00	0.05	0.006	0				0.06
44.083	0.00	0.05	0.005	0				0.05
44.167	0.00	0.04	0.005	0				0.05
44.250	0.00	0.04	0.005	0				0.05
44.333	0.00	0.04	0.004	0				0.04
44.417	0.00	0.04	0.004	0				0.04
44.500	0.00	0.03	0.004	0				0.04
44.583	0.00	0.03	0.004	0				0.04
44.667	0.00	0.03	0.004	0				0.04
44.750	0.00	0.03	0.003	0				0.03
44.833	0.00	0.03	0.003	0				0.03
44.917	0.00	0.02	0.003	0				0.03
45.000	0.00	0.02	0.003	0				0.03
45.083	0.00	0.02	0.003	0				0.03
45.167	0.00	0.02	0.003	0				0.03
45.250	0.00	0.02	0.002	0				0.02
45.333	0.00	0.02	0.002	0				0.02
45.417	0.00	0.02	0.002	0				0.02
45.500	0.00	0.02	0.002	0				0.02
45.583	0.00	0.02	0.002	0				0.02
45.667	0.00	0.01	0.002	0				0.02
45.750	0.00	0.01	0.002	0				0.02
45.833	0.00	0.01	0.002	0				0.02
45.917	0.00	0.01	0.002	0				0.02
46.000	0.00	0.01	0.001	0				0.01
46.083	0.00	0.01	0.001	0				0.01
46.167	0.00	0.01	0.001	0				0.01
46.250	0.00	0.01	0.001	0				0.01
46.333	0.00	0.01	0.001	0				0.01
46.417	0.00	0.01	0.001	0				0.01
46.500	0.00	0.01	0.001	0				0.01
46.583	0.00	0.01	0.001	0				0.01
46.667	0.00	0.01	0.001	0				0.01
46.750	0.00	0.01	0.001	0				0.01
46.833	0.00	0.01	0.001	0				0.01
46.917	0.00	0.01	0.001	0				0.01
47.000	0.00	0.01	0.001	0				0.01
47.083	0.00	0.01	0.001	0				0.01
47.167	0.00	0.01	0.001	0				0.01
47.250	0.00	0.00	0.001	0				0.01
47.333	0.00	0.00	0.001	0				0.01
47.417	0.00	0.00	0.001	0				0.01
47.500	0.00	0.00	0.001	0				0.01
47.583	0.00	0.00	0.001	0				0.01
47.667	0.00	0.00	0.001	0				0.01
47.750	0.00	0.00	0.001	0				0.01
47.833	0.00	0.00	0.001	0				0.01
47.917	0.00	0.00	0.000	0				0.00
48.000	0.00	0.00	0.000	0				0.00

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48.083	0.00	0.00	0.000	0					0.00
48.167	0.00	0.00	0.000	0					0.00
48.250	0.00	0.00	0.000	0					0.00
48.333	0.00	0.00	0.000	0					0.00
48.417	0.00	0.00	0.000	0					0.00
48.500	0.00	0.00	0.000	0					0.00
48.583	0.00	0.00	0.000	0					0.00
48.667	0.00	0.00	0.000	0					0.00
48.750	0.00	0.00	0.000	0					0.00
48.833	0.00	0.00	0.000	0					0.00
48.917	0.00	0.00	0.000	0					0.00
49.000	0.00	0.00	0.000	0					0.00
49.083	0.00	0.00	0.000	0					0.00
49.167	0.00	0.00	0.000	0					0.00
49.250	0.00	0.00	0.000	0					0.00
49.333	0.00	0.00	0.000	0					0.00
49.417	0.00	0.00	0.000	0					0.00
49.500	0.00	0.00	0.000	0					0.00
49.583	0.00	0.00	0.000	0					0.00
49.667	0.00	0.00	0.000	0					0.00
49.750	0.00	0.00	0.000	0					0.00
49.833	0.00	0.00	0.000	0					0.00
49.917	0.00	0.00	0.000	0					0.00
50.000	0.00	0.00	0.000	0					0.00
50.083	0.00	0.00	0.000	0					0.00

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

Number of intervals = 601
 Time interval = 5.0 (Min.)
 Maximum/Peak flow rate = 4.090 (CFS)
 Total volume = 2.437 (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
