

Hydrology Study & Drainage Analysis

Hydrology Study & Drainage Analysis

Reclamation Plan 2006-01A2
County of Riverside, CA

APN(s)
389-200-35, 36, 37

Prepared For:

Nichols Road Partners, LLC.
P.O. Box 77850
Corona, CA 92877
Phone: (951) 277-3900
Fax: (951) 277-1341

Prepared By:



Joseph E. Bonadiman & Associates, Inc.
234 North Arrowhead Avenue
San Bernardino, CA 92408
Phone: (909) 885-3806
Insert Fax: (909) 535-2701
www.bonadiman.com

June 2015

Revised:
May 2016



A handwritten signature in black ink, appearing to read 'J. T. Stanton', written over the bottom of the professional seal.

Table of Contents

Table of Contents	No.
Table of Contents	1
Exhibits	2
Attachments	3
A. Introduction	4
1.1 Purpose & Scope	4
1.2 Project Overview	4
1.3 Existing Conditions Off-Site Areas	5
1.4 Existing Conditions On-Site Area	6
1.5 References	7
B. Methodology	8
1.1 General Methodology	8
1.2 Sources of Topography	8
1.3 FEMA Floodplain Identification & Considerations	8
1.4 Watershed Precipitation	8
1.5 Watershed Losses	9
C. Historical Conditions Hydrology Calculations	10
1.1. Historical Conditions Unit Hydrograph Method Calculations	10
D. Existing Conditions Hydrology Calculations	11
1.2. Existing Conditions Unit Hydrograph Method Calculations	11
E. Reclamation Conditions Hydrology Calculations	12
1.1. Reclamation Conditions Unit Hydrograph Method Calculations	12
F. Sedimentation Basins	13
1.1 Sedimentation Basin Analysis	13
G. Summary & Conclusion	15
1.1 Summary	15
1.2 Conclusion	16

Exhibits

Exhibit	No.
Project Watershed – Aerial Orthophoto	A
Project Watershed – USGS Quadrangle	B
FEMA Floodplain Maps	C
Riverside County Hydrology Manual Isohyetal Maps	D
Watershed Hydrologic Soil Groups & Land Use/Cover	E
Watershed Hydrologic Soil Groups	E.1
Watershed Land Use/Cover	E.2
Historical Hydrologic Conditions Study Map	F
Existing Hydrologic Conditions Study Map	G
Reclamation Hydrologic Conditions Study Map	H

Attachments

Attachments	No.
Historical Conditions Hydrograph Calculations (20-Year, 1,3,6, & 24-Hour)	1
Historical Conditions Hydrograph Calculations (100-Year, 1,3,6, & 24-Hour)	2
Existing Conditions Hydrograph Calculations (20-Year, 1,3,6, & 24-Hour)	3
Existing Conditions Hydrograph Calculations (100-Year, 1,3,6, & 24-Hour)	4
Reclamation Conditions Unit Hydrograph Calculations (20-Year, 1, 3, 6, & 24-Hour)	5
Reclamation Conditions Unit Hydrograph Calculations (100-Year, 1, 3, 6, & 24-Hour)	6
Reclamation Conditions Combined Hydrographs Calculations Areas "B" & "C"	7
California Stormwater Quality Association (CSQA), Sedimentation Basin Requirements	8
CD of Complete Report (PDF Format) & All Study Calculations Files	

A. Introduction

1.1 Purpose & Scope

The following Hydrology Study & Drainage Analysis has been prepared to determine existing and proposed peak flow rate, on-site and off-site tributary, runoff volumes, and hydraulics for the proposed Reclamation Plan 2006-01A2, in the City of Lake Elsinore in the County of Riverside, CA. This report has been prepared to satisfy the City of Lake Elsinore hydrology requirements per the Riverside County Flood Control Hydrology/Hydraulics requirements for developments of this type.

The scope of this Study is as follows:

- Identification of the tributary watershed to the project site.
- Identification of existing conditions tributary drainage areas and calculation of total peak flow rates and run-on/run-off volumes impacting the project site.
- Calculation of historic conditions tributary and peak flow rates, runoff volumes.
- Calculation of existing conditions tributary and on-site 100-year peak flow rates, runoff volumes, hydraulics, flood impacts, and sedimentation impacts.
- Calculation of final conditions (Reclamation Plan) on-site 100-year peak flow rates, runoff volumes, hydraulics, flood impacts/mitigation, and sedimentation impacts/mitigation.
- Identification of proposed on-site hydrologic conditions & site/drainage plan.
- Identification of floodplain(s) impacting the site.
- Summary of Findings & Conclusion

1.2 Project Overview

The subject property consists of approximately 200 acres with a proposed project site of approximately 140 acres. The remaining 60 acres will remain in its native condition. The project site is located directly east of Interstate 15, North and South of Nichols Road in the City of Lake Elsinore, CA. The site is located within the “Lake Elsinore”, “Alberhill”, “Lake Mathews” & “Steele Park” 7.5-minute quadrangles.

The project site is located within Sections 24 and 25 of Township 5 South, Range 5 West, and includes Assessor parcel numbers 389-200-35, 389-200-36 & 389-200-37.

The study watershed lies within the Lee Lake Hydrologic Subarea of the Lake Mathews Hydrologic Area of the Santa Ana River Hydrologic Unit.

The proposed project entails amendments to existing Reclamation Plan 2006-01 permits for extraction of mineral resources, the new Reclamation Plan 2006-01A2 will entail increasing the disturbance limits as well as an extension of time.

1.3 Existing Conditions Off-Site Areas

The project site is located east of Interstate 15, north and south of Nichols Road. The subject property is bounded to the west by Interstate 15, to the north and east by undeveloped land and to the south by residential development and a park. The mining limits only include a portion of the parcels. The area outside of the mining limits will remain in there native condition. The hills north and east of the mining limits result in small tributaries of run-on to the mining site.

Stovepipe Creek bisects a portion of the southern parcels and will remain in its natural condition. All disturbances will be set back as to not affect the banks of the creek or its natural flow path. The creek enters the property along the eastly property line via two 24" corrugate metal pips (Photo 3) and exits the property along the western property line via a 6'x14' concrete box culvert that cross-es under Interstate 15 (Photo 6). 24" CMP's also exists to eliminate small ponding areas along the western property lines and appear to be installed as parts of the construction of Interstate 15. The capacities of the 24" CMP's have been ignored for the purposes of site drainage due to there small size.



Photo 1 – East along Nichols Road



Photo 2 - South along I-15



Photo 3 – East PL along Stovepipe Creek



Photo 4 - East PL along Nichols Road



Photo 5 – Along I-15 at Stovepipe Creek



Photo 6 - 6'x14' Box Culvert at I-15 & Stovepipe Creek



Photo 7 – 24" CMP along I-15 north of Stovepipe Creek



Photo 8 - 24" CMP along I-15 south of Nichols Road



Photo 9 – two 48" RCP along I-15 North of Nichols Road.



Photo 10 - 48" RCP along I-15 North of Nichols Road

1.4 Exiting Conditions On-Site Area

The existing on-site project is hilly and slopes significantly to the southwest. A large majority of the project site is bare dirt and is actively being mined. In its present condition the site flows to the southwesterly corner of the project near the northeastern corner of the intersection of Nichols Road and Interstate 15 and into an on-site retention basin.

In its natural condition the northern portion of the property flow to the southwest and exits the property via two 48" reinforced concrete pipes with a head wall, a smaller flow exits via a 48" reinforced concrete pipes with a flared inlet. 24" CMP's also exists to eliminate small ponding areas, along Interstate 15. It should be noted that the current mining activities have diverted all run-off to an on-site retention pond. In its current condition there is not significant run-off from the site for small storm events.



Photo 11 – Hills North of active site, near Easterly entrance.



Photo 12 - View to SW, near Easterly entrance Creek



Photo 13 – Hills North of active site, near Westerly corner of site.



Photo 14 - View to SW, near Westerly corner of site.

1.5 References

The following documents have been made part of this study by reference:

- 1.) Riverside County Hydrology Manual, Riverside County Flood Control & Water Conservation District (RCFCWCD) – April 1978.
- 2.) Soils Survey CA678 (Orange County & Part of Riverside County, CA), NRCS – Current (Web).
- 3.) Soils Survey CA679 (Western Riverside County, CA), NRCS – Current (Web).
- 4.) Flood Insurance Rate Map (FIRM) No. 06065C2026G & 06065C2028G, FEMA – Effective Date August 28, 2008.
- 5.) Reclamation Plan 2006-01A2, Provided by Nichols Road Partners, LLC. – Dated April 14, 2015.

B. Methodology

1.1 General Methodology

The general methodology, requirements, and recommendations outlined in the Riverside County Flood Control & Water Conservation District (RCFCWCD) Hydrology Manual (April 1978) were used as the basis for the hydrology calculations found in this report.

Unit Hydrograph Method calculations were performed for the 100-year, 1, 3, 6, and 24-hour events using the CivilDesign® UNRIV program for drainage areas larger than one square mile and/or for areas for which determination of both peak flow rates and runoff volumes were required. For all drainage areas, the 1-hour duration hydrographs resulted in the highest peak flow rates, and the 24-hour duration hydrograph yielded the highest runoff volumes.

1.2 Sources of Topography

Mapping of existing condition on-site and some tributary areas were established by 2-foot contour aerial topographic survey dated January 2015, prepared by Inland Aerial Surveys Inc. For areas outside of the mapping limits of the aerial topographic survey, USGS contours were used. This data was used for delineations of drainage subarea, point elevations and for generation of 3D surfaces used in this report. For the developed conditions on-site areas, proposed grades provided by Nichols Road Partners, LLC were used.

1.3 FEMA Floodplain Identification & Considerations

Per FEMA Map No. 06065C2026G & 06065C2028G (Effective Date - August 28, 2008), the majority of the site is located in an unshaded “Zone X”, identified by FEMA as an area determined to be outside the 0.2% (500-Year) annual chance of flood. A portion of the site located along Stovepipe Canyon Creek is located in a shaded “Zone A” and is identified by FEMA as an area determined to be within a “Special Flood Hazard Area subject to inundation by the 1% annual chance flood” with on base flood elevation determined.

For the purposes of this report it was assumed that no activities would take place within the area shown on FEMA Map No. 06065C2028G as being within the shaded “Zone A”. All activities would be setback as to not disturb the existing banks of the creek.

Refer to Exhibit “C” for surrounding area FIRM map used in this report.

1.4 Watershed Precipitation

Precipitation values for this report were generated by interpolating the isohyetal values found in the RCFVWCD Hydrology Manual to determine a mean value for each drainage subarea. See Tables 1, on the following page, for the precipitation values used for the existing and proposed conditions drainage areas analyzed in this report.

Table 1 – Precipitation Values (Unit Hydrograph Calculations)

STORM	PRECIPITATION
2-YEAR, 1-HOUR	0.58
100-YEAR, 1-HOUR	1.47
2-YEAR, 3-HOUR	1.05
100-YEAR, 3-HOUR	2.51
2-YEAR, 6-HOUR	1.45
100-YEAR, 6-HOUR	3.51
2-YEAR, 24-HOUR	2.70
100-YEAR, 24-HOUR	6.65

Refer to Exhibit “D” for the Riverside County Hydrology Manual isohyetal maps used in this report.

1.5 Watershed Losses

Soil type classification for all drainage areas were derived from existing NRCS hydrologic soils group data, pursuant to RCFCWCD methods.

Type “D” soil is shown for the majority of the watershed area. Type “A” soil is shown for the bed of Stovepipe Creek. Small portion of Type “B” & “C” soil are also present. A detailed soils map can be found in Exhibit “D”.

The existing conditions study area is mostly undeveloped, consisting of a poor cover, annual grasses. A portion of the off-site tributary consists of large lot single family rural residential which mostly consist of native cover. The proposed mining area was assumed to be Barren. Per the Riverside County Hydrology Manual, Plate D-5.5., the SCS Curve Number (AMC II) and percent impervious used within this report are summarized in the table below.

Table 2 – Soil Loss Rates

COVER TYPE	SOIL TYPE	QUALITY OF COVER	RUNOFF INDEX (AMC II)	IMPERVIOUS (%)
BARREN	A	~	78	0
	B		86	
	C		91	
	D		93	
GRASS ANNUAL OR PERENNIAL	A	POOR	67	0
	B		78	
	C		86	
	D		89	

Refer to Exhibits “D” for the runoff index number, percent impervious, hydrologic soils groups and land cover classification/quality used in this report.

C. Historical Conditions Hydrology Calculations

1.1. Historical Conditions Unit Hydrograph Method Calculations

Input values for the existing conditions unit hydrograph method calculations prepared for this report are tabulated as follows:

Table 3 – Historical Conditions Unit Hydrograph Method Input Values

DRAINAGE AREA	FLOW PATH LENGTH (FT)	FLOW PATH TO CENTROID (FT)	CHANGE IN ELEVATION (FT)	MANNING'S NUMBER	WATERSHED AREA (AC)	SOIL TYPE	AREA (AC)	IMPERVIOUS FRACTION	RUNOFF INDEX (RI)
A	4,106.19	1,823.16	798.2	0.035	213.98	A	22.43	0	67
						B	22.12		78
						C	3.32		86
						D	166.11		89
B	16,296.72	8,849.03	777.0	0.035	837.34	A	81.06	0.05	67
						B	1.78		78
						C	101.91		86
						D	652.59		89

Output for the existing conditions unit hydrograph method calculations are tabulated as follows:

Table 4 – Historical Conditions Unit Hydrograph Method Output Calculations – 20 Year

DRAINAGE AREA	1-HOUR		3-HOUR		6-HOUR		24-HOUR	
	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)
A	390.14	16.41	292.14	24.39	265.03	28.53	110.92	40.98
B	103.35	64.32	150.12	97.75	165.93	117.03	188.54	168.69

Table 5 – Historical Conditions Unit Hydrograph Method Output Calculations – 100 Year

DRAINAGE AREA	1-HOUR		3-HOUR		6-HOUR		24-HOUR	
	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)
A	553.66	24.72	418.06	40.38	383.55	53.89	176.59	86.49
B	153.82	95.73	240.36	157.85	285.67	212.15	337.07	347.82

Refer to Attachment No. 1 & 2 for printouts of the Historical Conditions Unit Hydrograph calculations.
Refer to Exhibit "F" for the Historical Conditions Hydrology Study Map.

D. Existing Conditions Hydrology Calculations

1.2. Existing Conditions Unit Hydrograph Method Calculations

Input values for the existing conditions unit hydrograph method calculations prepared for this report are tabulated as follows:

Table 6 – Existing Conditions Unit Hydrograph Method Input Values

DRAINAGE AREA	FLOW PATH LENGTH (FT)	FLOW PATH TO CENTROID (FT)	CHANGE IN ELEVATION (FT)	MANNING'S NUMBER	WATERSHED AREA (AC)	SOIL TYPE	AREA (AC)	IMPERVIOUS FRACTION	RUNOFF INDEX (RI)
A	4,276.23	1,768.91	798.2	0.035	213.98	A B C D	22.43 22.12 3.32 166.11	0	67 78 86 89
B	SEE HISTORICAL CONDITION								

Output for the existing conditions unit hydrograph method calculations are tabulated as follows:

Table 7 – Existing Conditions Unit Hydrograph Method Output Calculations – 20 Year

DRAINAGE AREA	1-HOUR		3-HOUR		6-HOUR		24-HOUR	
	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)
A	387.86	16.42	291.54	24.42	264.72	28.58	110.20	41.05
B	SEE HISTORICAL CONDITION							

Table 8 – Existing Conditions Unit Hydrograph Method Output Calculations – 100 Year

DRAINAGE AREA	1-HOUR		3-HOUR		6-HOUR		24-HOUR	
	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)
A	550.49	24.72	380.48	40.40	383.04	53.91	104.86	86.57
B	SEE HISTORICAL CONDITION							

Refer to Attachment No. 3 & 4 for printouts of the existing conditions unit hydrograph calculations.
Refer to Exhibit "G" for the Existing Conditions Hydrology Study Map.

E. Reclamation Conditions Hydrology Calculations

1.1. Reclamation Conditions Unit Hydrograph Method Calculations

Input values for the reclamation conditions unit hydrograph method calculations prepared for this report are tabulated as follows:

Table 9 – Reclamation Conditions Unit Hydrograph Method Input Values

DRAINAGE AREA	FLOW PATH LENGTH (FT)	FLOW PATH TO CENTROID (FT)	CHANGE IN ELEVATION (FT)	MANNING'S NUMBER	WATERSHED AREA (AC)	SOIL TYPE	AREA (AC)	IMPERVIOUS FRACTION	RUNOFF INDEX (RI)
A	6,061.21	2,995.65	310.83	0.035	209.55	A	23.34	0	67
						B	17.19		78
						C	~		86
						D	169.02		89
B	16,296.72	8,849.03	777.0	0.035	803.24	A	81.06	0.05	67
						B	0.49		78
						C	88.36		86
						D	633.33		89
C	2,796.49	1,408.17	70.99	0.035	39.49	A	1.14	0	67
						B	6.20		78
						C	18.10		86
						D	14.05		89

Output for the existing conditions unit hydrograph method calculations are tabulated as follows:

Table 10 – Reclamation Conditions Unit Hydrograph Method Output Calculations – 20 Year

DRAINAGE AREA	1-HOUR		3-HOUR		6-HOUR		24-HOUR	
	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)
A	325.96	16.10	262.26	23.97	243.12	28.08	106.58	40.35
B	99.13	61.69	143.91	93.70	159.02	112.12	180.66	161.60
C	66.29	3.03	52.13	4.48	47.70	5.22	20.23	7.50

Table 11 – Reclamation Conditions Unit Hydrograph Method Output Calculations – 100 Year

DRAINAGE AREA	1-HOUR		3-HOUR		6-HOUR		24-HOUR	
	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)	Q (CFS)	VOLUME (AC-FT)
A	466.38	24.22	377.82	39.59	353.71	52.86	170.15	84.97
B	147.58	91.84	230.52	151.38	273.93	203.42	323.17	333.29
C	94.64	4.57	74.97	7.46	69.35	9.96	32.42	16.00

Refer to Attachment No. 5 & 6 for printouts of the Reclamation Conditions Unit Hydrograph calculations.
Refer to Exhibit "H" for the Reclamation Conditions Hydrology Study Map.

F. Sedimentation Basins

1.1 Sedimentation Basin Analysis

Due to the rocky nature of the northern portion of the site the potential for sedimentation is considered to be low. However, sedimentation basins are proposed to provide sediment control. Sediment basins shall be constructed and maintained in accordance with the California Stormwater Quality Association (CSQA), Sedimentation Basin requirements to provide 3,600 cf of storage per acre. Depth vs. volume for sedimentation basins shown on Exhibit “H” are tabulated as follows:

Table 12 – Northern Sediment Basins System Depth vs. Volume

BASIN AREA	AREA (AC)	ELEVATION (FT)	DEPTH (FT)	TOTAL VOLUME (CF)	REQUIERED VOLUME (CF)
A	209.55	1284.5	0	0	754,380
		1286.5	2	12,209	
		1288.5	4	49,225	
		1290.5	6	111,632	
		1292.5	8	200,013	
		1294.5	10	314,953	
		1296.5	12	456,704	
		1298.5	14	624,651	
		1300	15.5	767,423	

Table 13 – Southern Sediment Basins System Depth vs. Volume

BASIN AREA	AREA (AC)	ELEVATION (FT)	DEPTH (FT)	TOTAL VOLUME (CF)	REQUIERED VOLUME (CF)
C	39.49	1275	0	0	142,164
		1277	2	6,608	
		1279	4	26,791	
		1281	6	61,076	
		1283	8	109,992	
		1285	10	174,069	
		1286	11	211,950	

All basins shall be design based on the following design criteria:

- When feasible no more than 50% of the basins volume shall be above natural grade.
- For above grade basins the top width of the levee shall be a minimum of 15'
- 3:1 maximum slope on wet side and 2:1 maximum slope on dry side.
- A spillway shall be design to pass the fully developed 1000 year peak flow rate ($Q_{1000} = 1.35 Q_{100}$).
- A minimum of 1-foot of freeboard above the 1000-year HWL or 2-feet of freeboard above the 100 –year HWL, whichever is more stringent.
- Access to the basin shall be gated and locked.

G. Summary & Conclusion

1.1 Summary

Areas “B” & “C” have been combined in the table below to allow for comparison of the computed data. A summary of the results of the unit hydrograph calculations are tabulated below:

Table 14 –Unit Hydrograph Calculations Summary-20 Year

AREA	STORM EVENT	HISTORICAL CONDITIONS PEAK Q (CFS)	EXISTING CONDITIONS PEAK Q (CFS) **	FINAL CONDITIONS PEAK Q (CFS)	INCREASE (CFS)	EXISTING CONDITIONS VOLUME (AF)	RECLAMATION CONDITIONS VOLUME (AF)	INCREASE (AF)
A	1	390.14	387.86	325.96	-64.18	16.41	16.10	-0.31
	3	292.14	291.54	262.26	-29.88	24.39	23.47	-0.92
	6	265.03	264.72	243.12	-21.91	28.53	28.08	-0.45
	24	110.92	110.20	106.58	-4.34	40.98	40.35	-0.63
B vs. B & C	1	103.35	~	99.13*	-4.22	64.32	64.72*	0.40
	3	150.12		143.91*	-22.02	97.75	98.18*	0.43
	6	165.93		159.02*	-6.91	117.03	117.34*	0.31
	24	188.54		181.04*	-7.50	168.69	169.08*	0.39

* Above listed values are results of combined Hydrograph routing for Areas “B” & “C”.

** Existing Condition values are shown for reference only and are not reflected in the increase on flow or volumes.

Table 15 –Unit Hydrograph Calculations Summary-100 Year

AREA	STORM EVENT	HISTORICAL CONDITIONS PEAK Q (CFS)	EXISTING CONDITIONS PEAK Q (CFS) **	FINAL CONDITIONS PEAK Q (CFS)	INCREASE (CFS)*	EXISTING CONDITIONS VOLUME (AF)	RECLAMATION CONDITIONS VOLUME (AF)	INCREASE (AF)*
A	1	553.66	550.49	466.38	-87.28	24.72	24.22	-0.50
	3	418.06	380.48	377.82	-40.24	40.38	39.59	-0.79
	6	383.55	383.04	353.71	-29.84	53.89	52.86	-1.03
	24	176.59	104.86	170.15	-6.44	86.49	84.97	-1.52
B vs. B & C	1	153.82	~	147.58*	-6.24	95.73	96.41*	0.68
	3	240.36		230.52*	-9.84	157.85	158.85*	1.00
	6	285.67		273.93*	-11.74	212.15	213.38*	1.23
	24	337.07		325.98*	-11.09	347.82	349.28*	1.46

* Above listed values are results of combined Hydrograph routing for Areas “B” & “C”.

** Existing Condition values are shown for reference only and are not reflected in the increase on flow or volumes.

As indicated above, a decrease in runoff flow rates is expected as a result of the reclamation. This decrease in flow rate is a result of longer flow path lengths which in turn reduce peak flow rates. However, a slight increase in runoff volume is expected from areas B & C due to a shift in drainage area as a result of the proposed reclamation.

1.2 Conclusion

As shown on the calculations above, the final design of the site will result in decrease in peak flows for all storm events in accordance with the requirements of the Riverside County Flood Control & Water Conservation District (RCFCWCD) Hydrology Manual (April 1978). This decrease in flow rate is a result of longer flow path lengths which in turn reduce peak flow rates.

Reclamation of the site will require final stabilization of the surface soils with native plant material of other means to prevent erosion in accordance with State requirements. The site shall be design to accommodate stormwater sedimentation basins as shown on Exhibit "H" and shall be design to provide the minimum required capacities as shown on Table s 12 & 13. At least one sedimentation basin shall be located on the northern portion of the site and at least one sedimentation basin located on the southern portion of the site. Basins shall be located at the lowest elevation possible as to provide mitigation for the largest tributary possible. As the basins are for control of sedimentation only and are not required to reduce peak flow rates, additional volume for storm buffering is not required. Spillways capable of passing the 1000-year flow rates shall also be incorporated in the basins design. If basin infiltration rates do not allow for percolation of the basin volume within 72 hours an outflow pipe may be required and shall be design in accordance with California Stormwater Quality Association (CASQA), Sedimentation Basin requirements (see Attachment 8). It is recommended that the basin side slope be design at 3:1 or less. Where feasible paved slope interceptor drain with down drains shall be provided along the top of cut slopes where the drainage path is greater than 40 feet towards the cut slope in accordance with local requirements.

It should be noted the daily operation of the site is subject to the State Water Resource Board, Industrial General Permit requirements. For more information see the current Storm Water Pollution Prevention Plan (SWPPP) and monitoring plan.

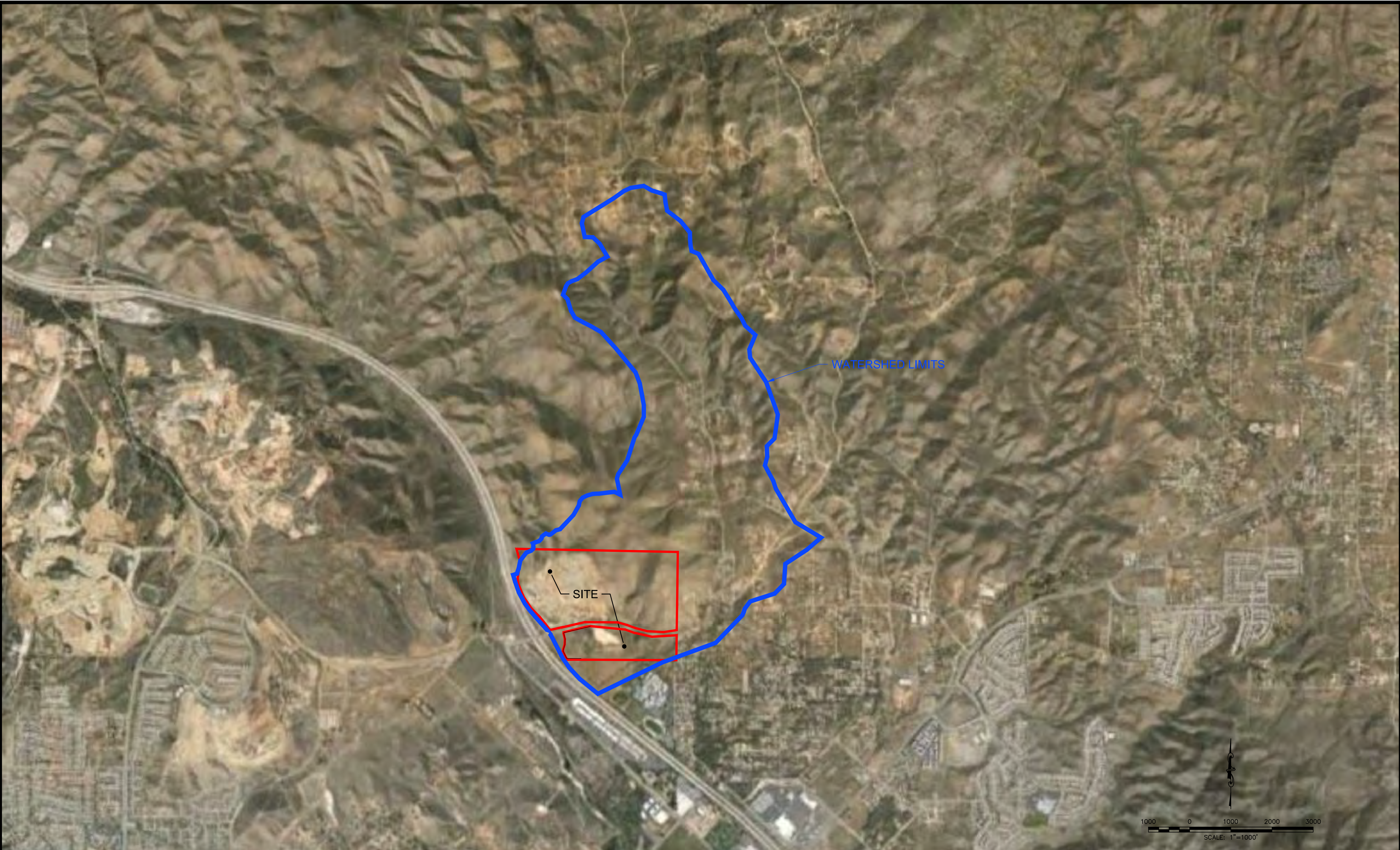
With the above mitigation measure the reclamation of the Nichols Road Partners, LLC. Reclamation Plan 2006-01A2 will not have a negative impact on down stream properties or facilities.

Refer to Attachment No. 8 for a CD of this complete document (PDF) and all study calculations input/output files.

(END)

EXHIBIT “A”

Project Watershed
Aerial Orthophoto



AERIAL ORTHOPHOTO EXHIBIT
NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA

PREPARED BY:



TEL. (909) 885-3006
341 NICHOLOSS RD. SUITE 100
LAKE ELSINORE, CA 92530
FAX (909) 381-1721
www.bonadiman.com



CIVIL DESIGN
Engineering and Planning, Inc.

PREPARED FOR:

NICHOLS ROAD PARTNERS, LLC.
P.O. Box 77850
Corona CA 92877

BY	MARK	REVISION DESCRIPTION	DATE	

PREPARED FOR:

NICHOLS ROAD PARTNERS, LLC.
JOB NO: 154159
PREPARED BY: SG
CHECKED BY: JTS

NOTE: JOSEPH E. BONADIMAN & ASSOCIATES, INC. DOES NOT WARRANTY THE
ACCURACY OF THE G.I.S. DATA PRESENTED IN THIS EXHIBIT. THIS EXHIBIT MAY
CONTAIN INFORMATION COPYRIGHTED TO THE COUNTY OF RIVERSIDE, CA.

AERIAL ORTHOPHOTO EXHIBIT
NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA

DISREGARD PRINTS BEARING
EARLIER REVISION DATES

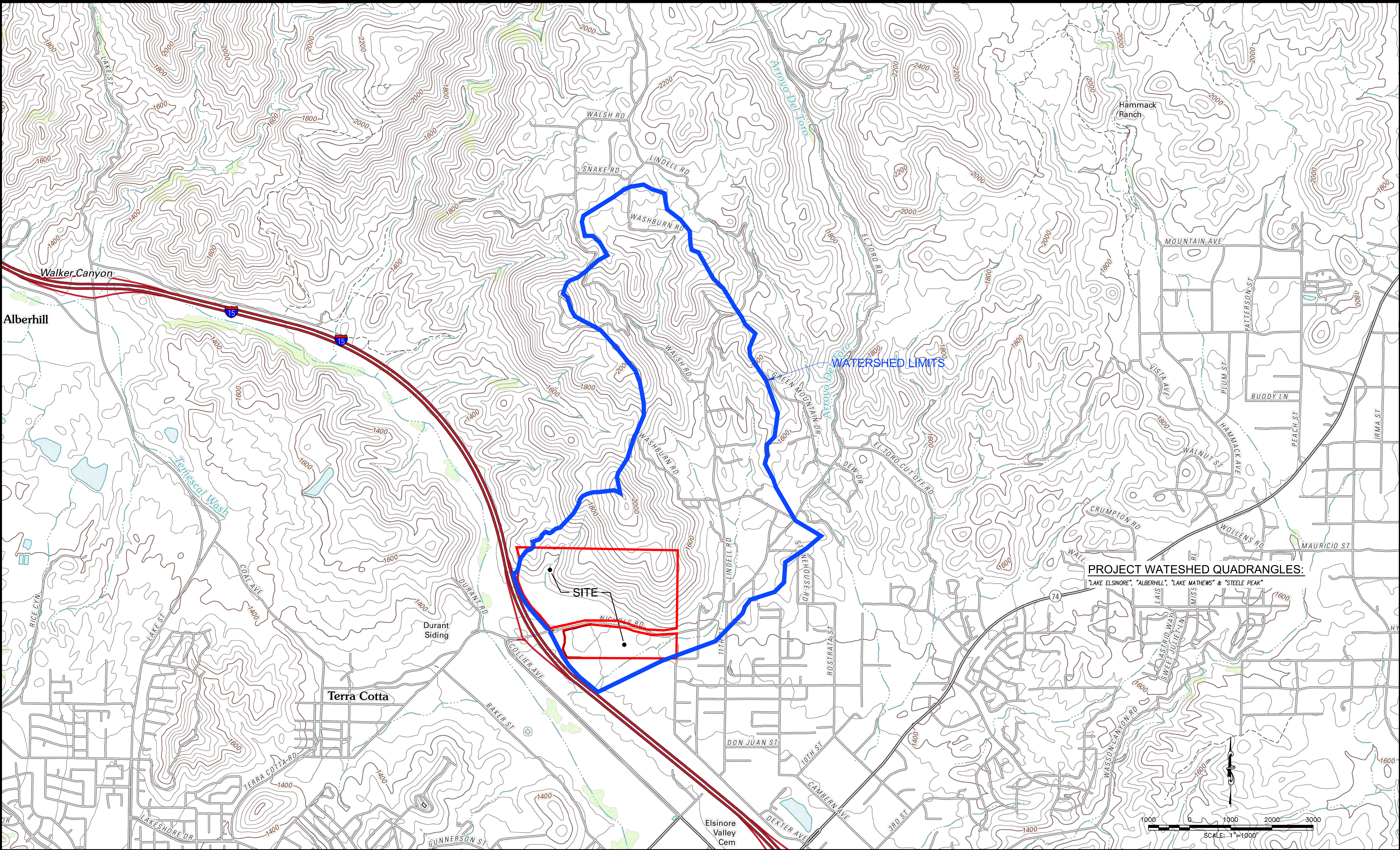
05-11-15

A

SHEET 1 OF 1

EXHIBIT “B”

Project Watershed
USGS Quadrangle



PROJECT WATSHED QUADRANGLES:
"LAKE ELSINORE", "ALBERHILL", "LAKE MATHEWS" & "STEELE PEAK"

USGS QUADRANGLE EXHIBIT
NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA

PREPARED BY:



TEL. (909) 885-3006
311 NORTH BROADWAY
SUITE 200
LAKE ELSINORE, CA 92530
FAX (909) 381-1721
www.bonadiman.com



CIVILDESIGN
Sustainable Engineering & Design

PREPARED FOR:

NICHOLS ROAD PARTNERS, LLC.
P.O. Box 77850
Corona CA 92877

PREPARED FOR:

NICHOLS ROAD PARTNERS, LLC.
JOB NO: 154159
PREPARED BY: SG
CHECKED BY: JTS

NOTE: JOSEPH E. BONADIMAN & ASSOCIATES, INC. DOES NOT WARRANT THE
ACCURACY OF THE G.I.S. DATA PRESENTED IN THIS EXHIBIT. THIS EXHIBIT MAY
CONTAIN INFORMATION COPYRIGHTED TO THE COUNTY OF RIVERSIDE, CA.

USGS QUADRANGLE EXHIBIT
NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA

DISREGARD PRINTS BEARING
EARLIER REVISION DATES

05-11-15

B

SHEET 1 OF 1

EXHIBIT “C”

FEMA Floodplain Maps

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11. The horizontal datum was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NGS12
National Geodetic Survey
SSMC-3 #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov>.

Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1994 or later.

This map may reflect more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels, community map repository addresses, and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at <http://msc.fema.gov>.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov>.

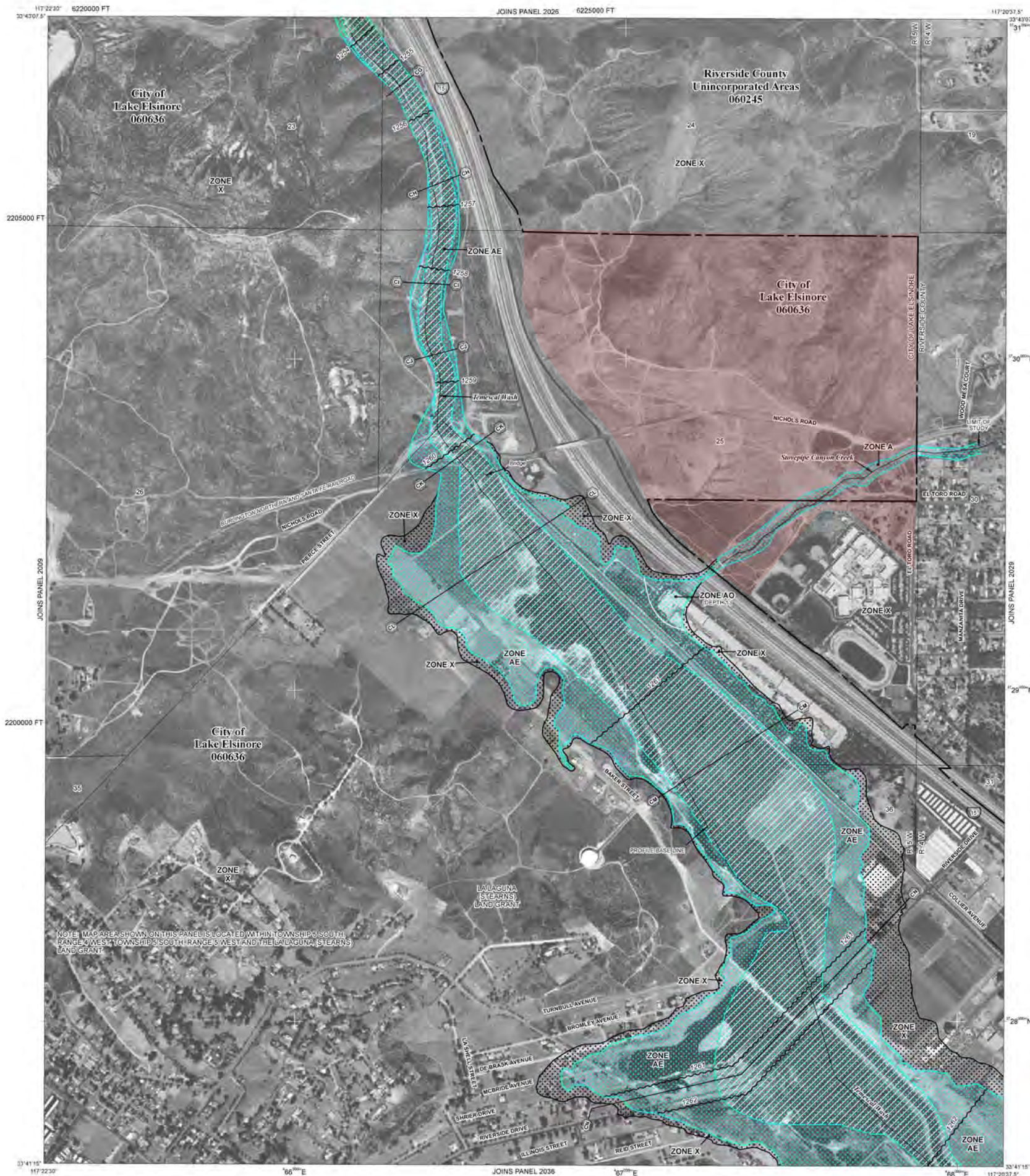
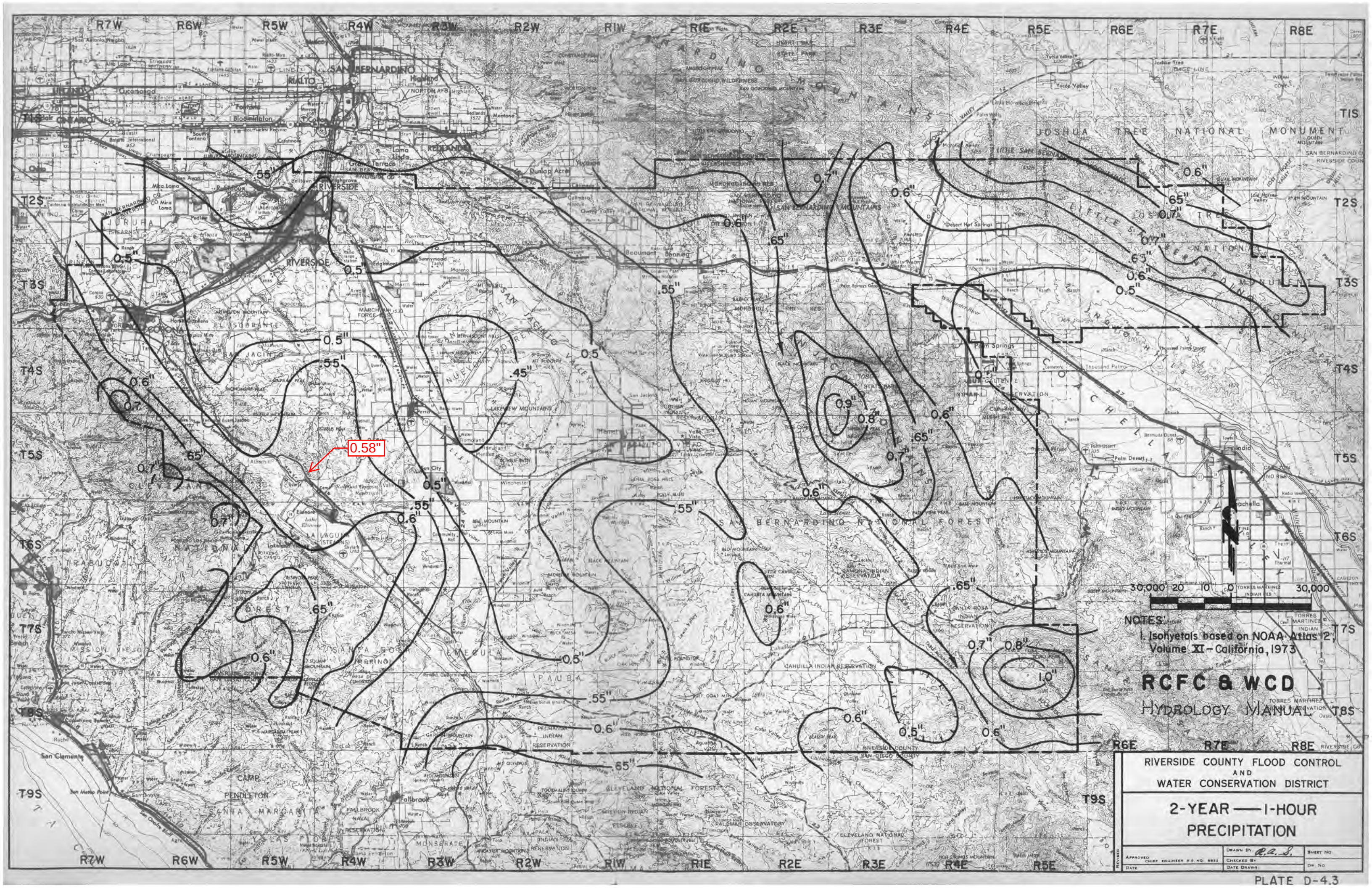


EXHIBIT “D”

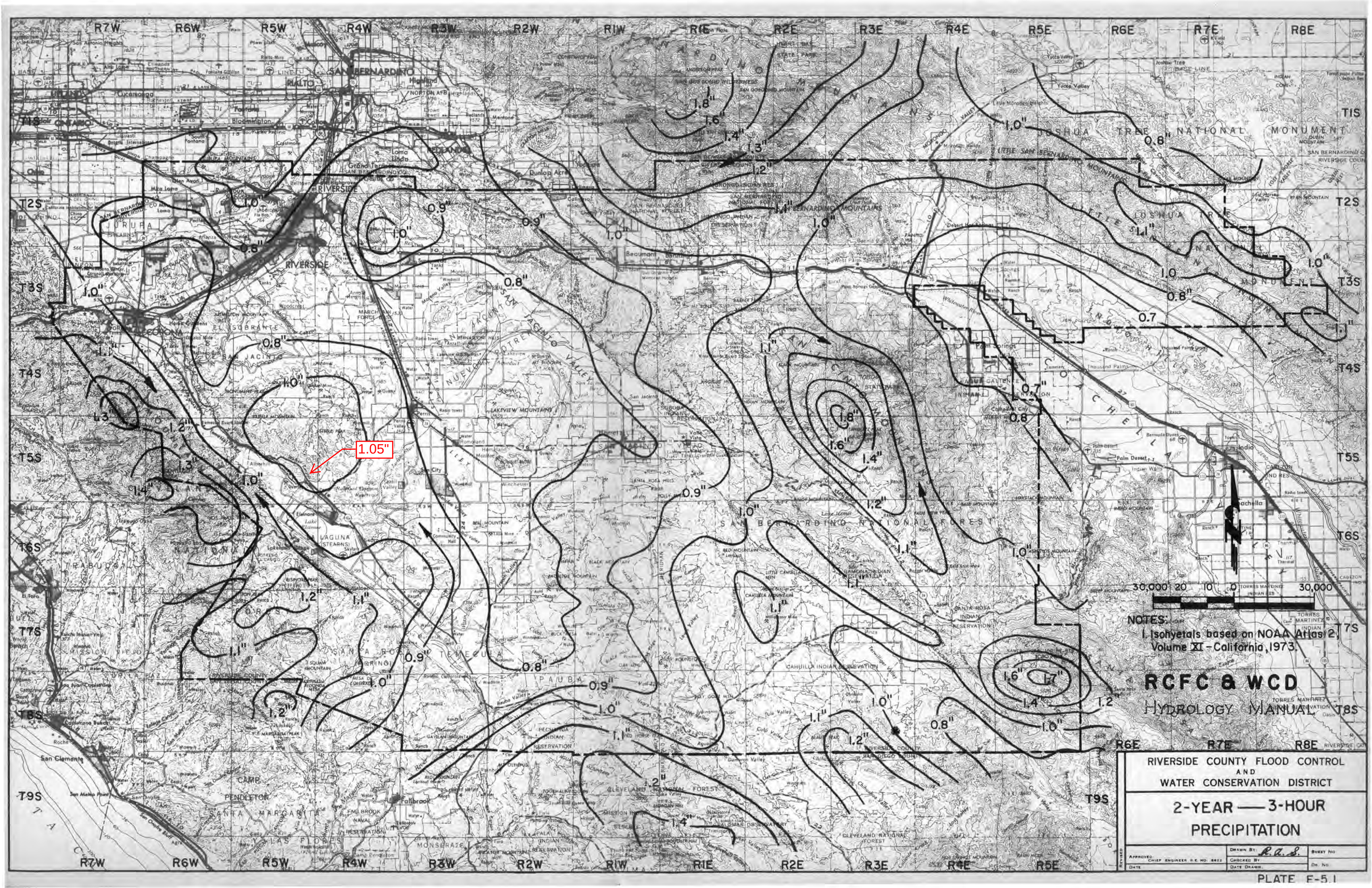
Riverside County
Hydrology Manual
Isohyetal Maps



NOTES:
1. Isohyets based on NOAA Atlas 12,
Volume XI - California, 1973

RCFC & WCD
HYDROLOGY MANUAL

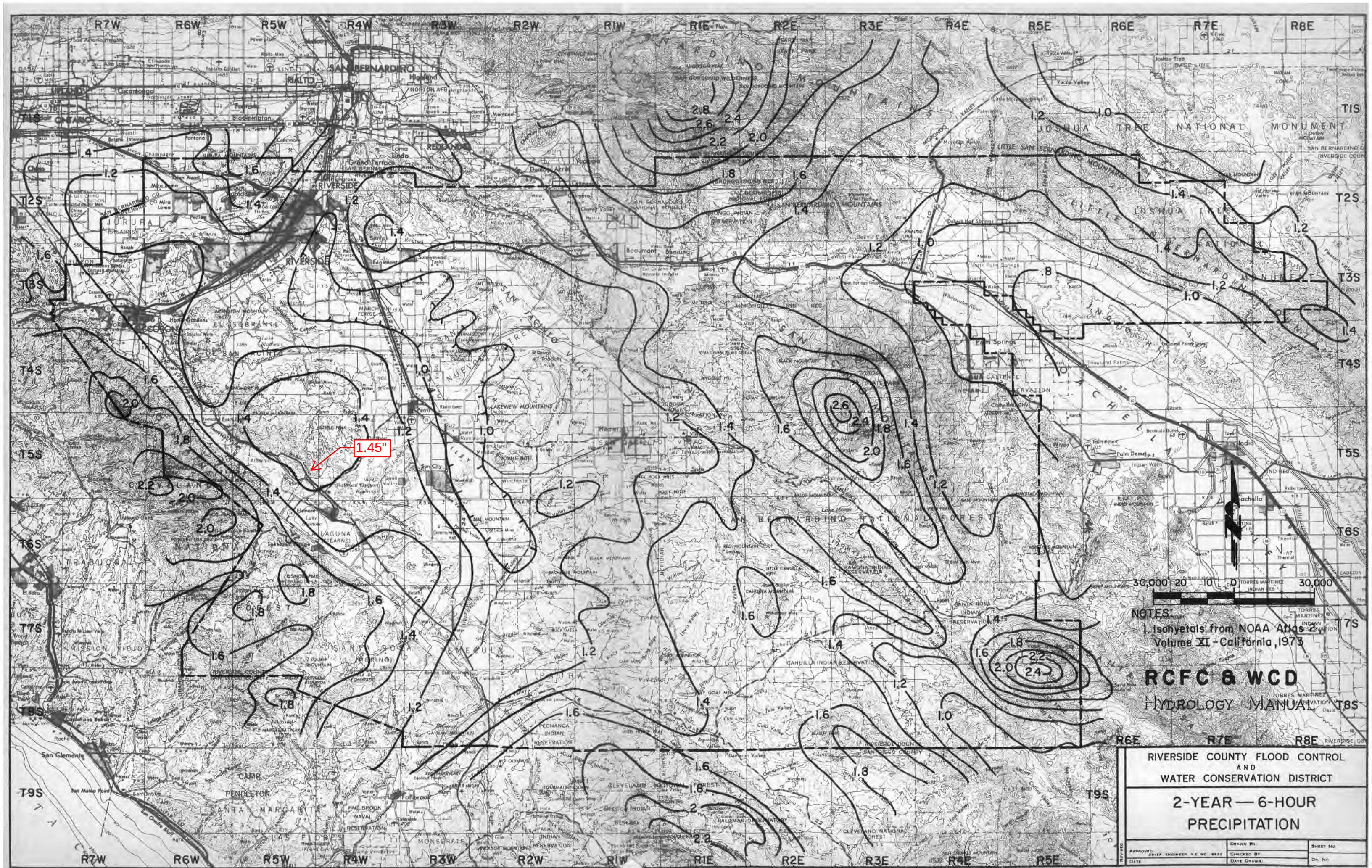
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT		
2-YEAR — 1-HOUR PRECIPITATION		
APPROVED CHIEF ENGINEER P.E. NO. 8822	DRAWN BY C.E.S.	SHEET NO.
DATE	CHECKED BY	DATE



NOTES:
1 Isohyets based on NOAA Atlas 2,
Volume XI - California, 1973.

RCFC & WCD
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT		
2-YEAR — 3-HOUR PRECIPITATION		
APPROVED DATE	CHIEF ENGINEER R.C. NO. 8822 DATE DRAWN	DRAWN BY: <i>R.A.S.</i> CHECKED BY: DATE DRAWN
		SHEET NO. Dr. No.



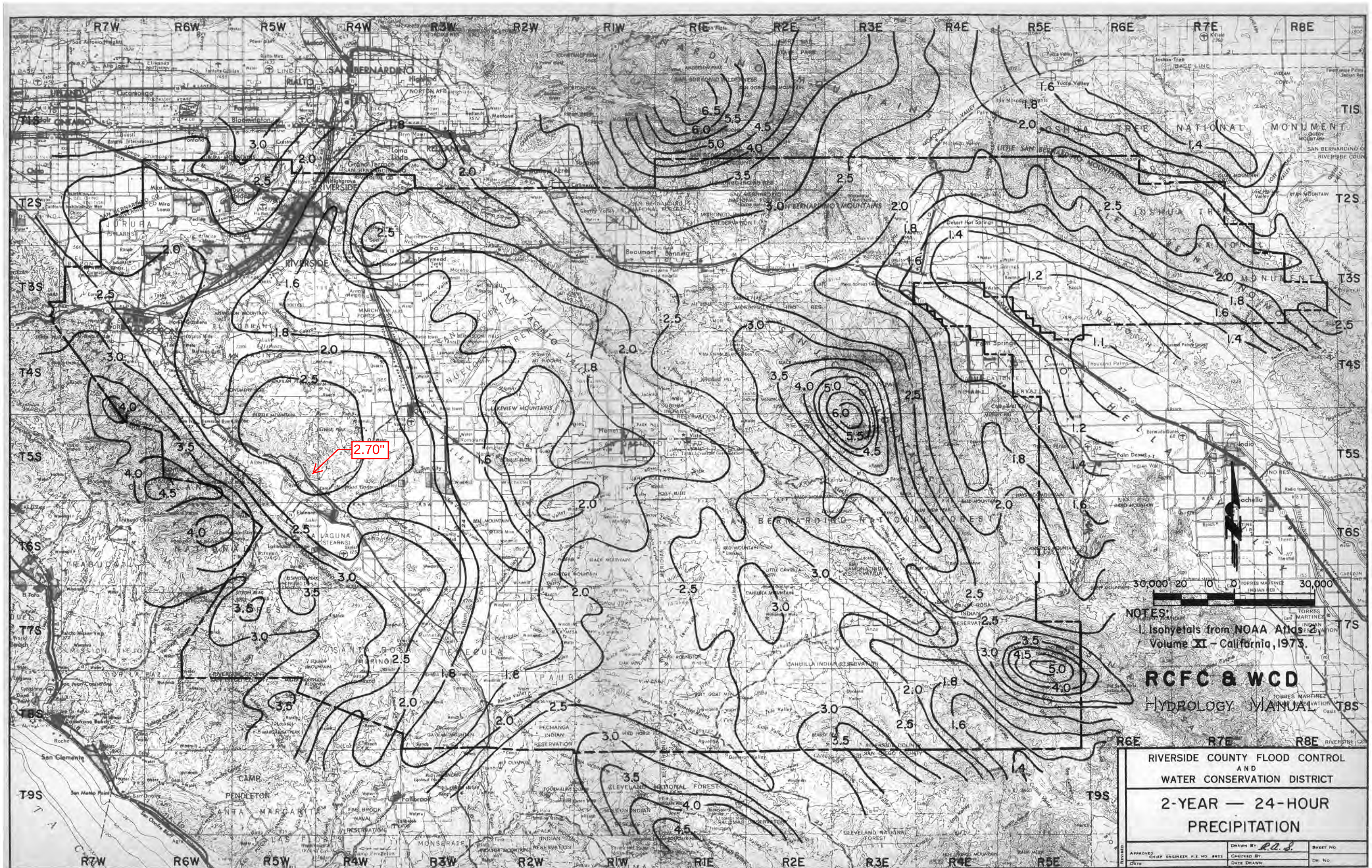
NOTES:
1. Isohyets from NOAA Atlas 2,
Volume XI - California, 1973

RCFC & WCD HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

2-YEAR — 6-HOUR PRECIPITATION

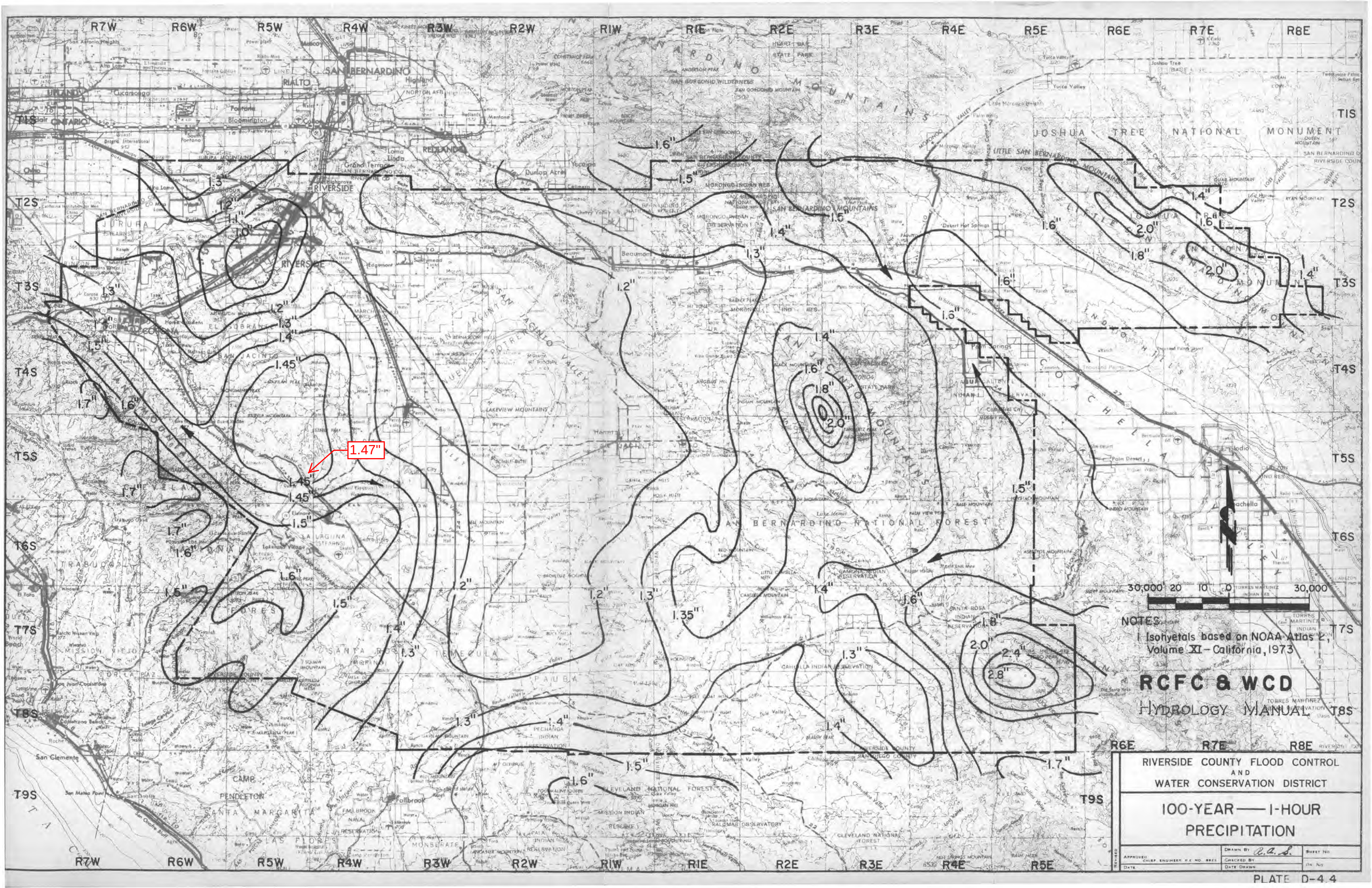
APPROVED	DRAWN BY	SHEET NO.
DATE	CHECKED BY	DATE
DATE	DATE	DATE



NOTES:
1. Isohyets from NOAA Atlas 2,
Volume XI - California, 1973.

RCFC & WCD
HYDROLOGY MANUAL

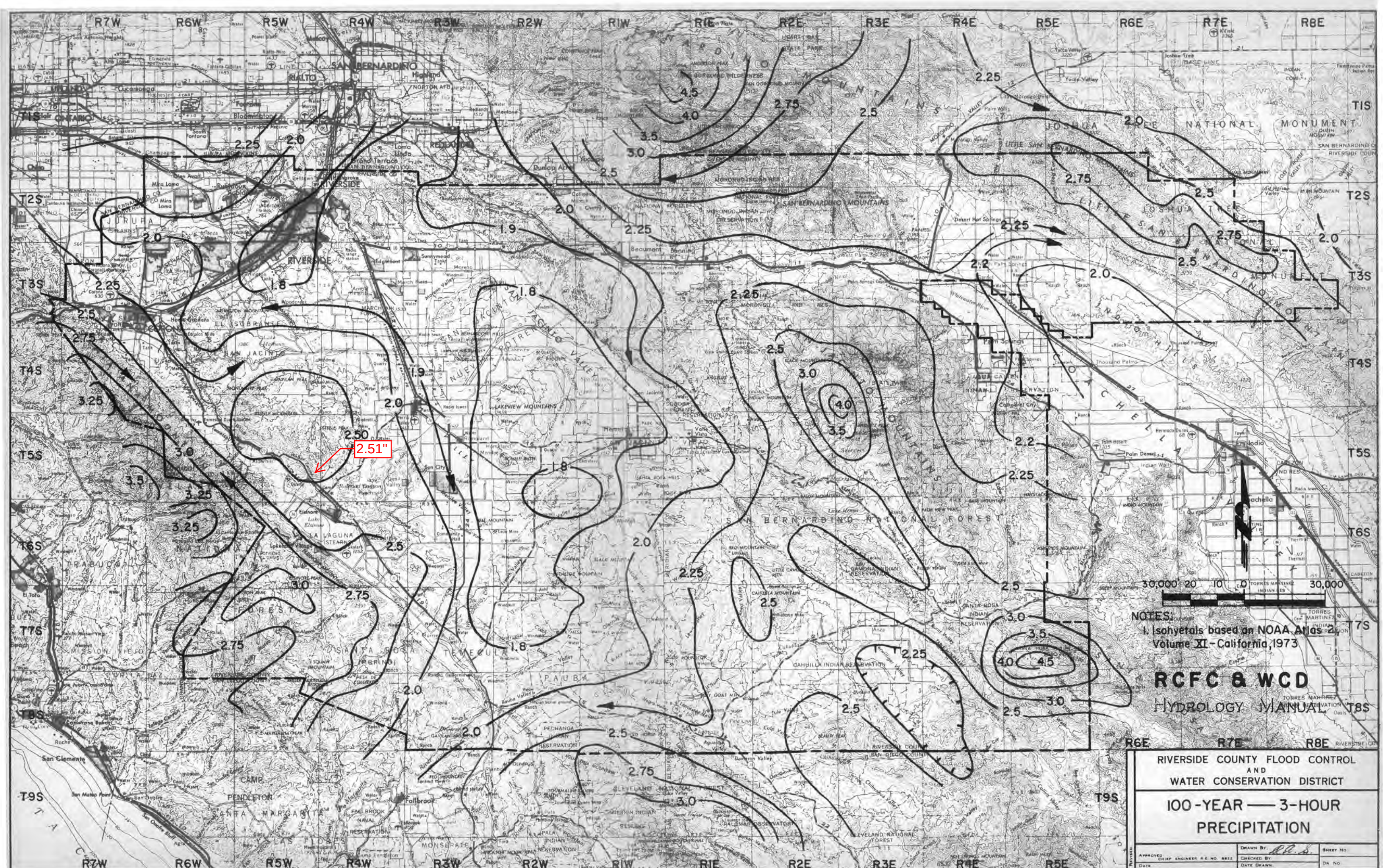
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT			
2-YEAR — 24-HOUR PRECIPITATION			
APPROVED DATE	CHIEF ENGINEER R.E. NO. 8833	DRAWN BY DATE	SHEET NO. DR. NO.



NOTES:
Isohyets based on NOAA Atlas 2,
Volume XI - California, 1973

RCFC & WCD
HYDROLOGY MANUAL

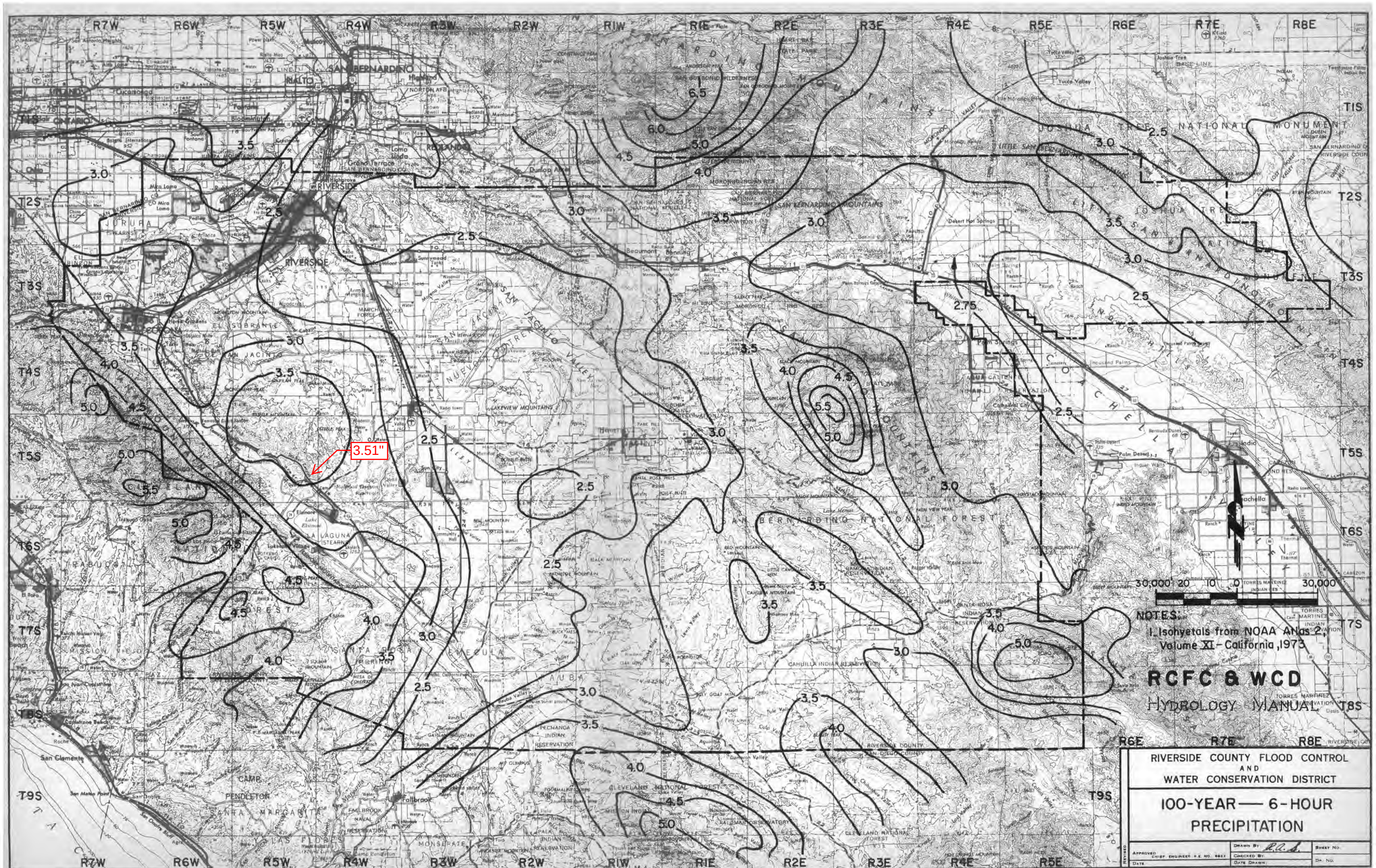
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT		
100-YEAR — 1-HOUR PRECIPITATION		
APPROVED CHIEF ENGINEER R.E. NO. 8821	DRAWN BY C.A.S.	SHEET NO.
DATE	CHECKED BY	DATE



NOTES:
1. Isohyets based on NOAA Atlas 2,
Volume XI-California, 1973

RCFC & WCD
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT			
100-YEAR — 3-HOUR PRECIPITATION			
APPROVED DATE	CHIEF ENGINEER R.E. NO. 8822	DRAWN BY CHECKED BY DATE	SHEET NO. DR. NO.



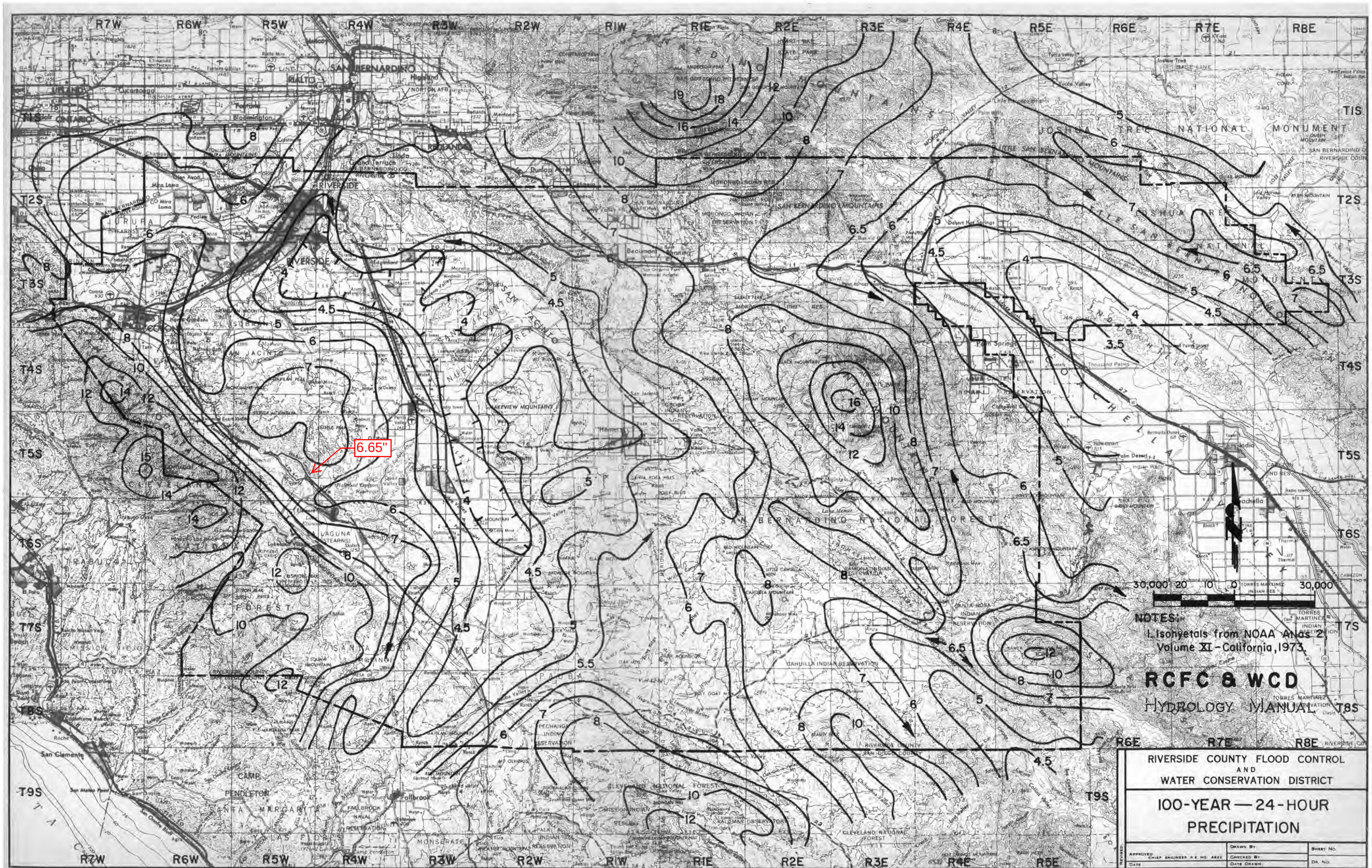
NOTES:
1. Isohyets from NOAA Atlas 2,
Volume XI - California, 1973

RCFC & WCD
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

**100-YEAR — 6-HOUR
PRECIPITATION**

APPROVED DATE	CHIEF ENGINEER R.E. NO. 8822	DRAWN BY DATE	DR. NO.
		DR. NO.	



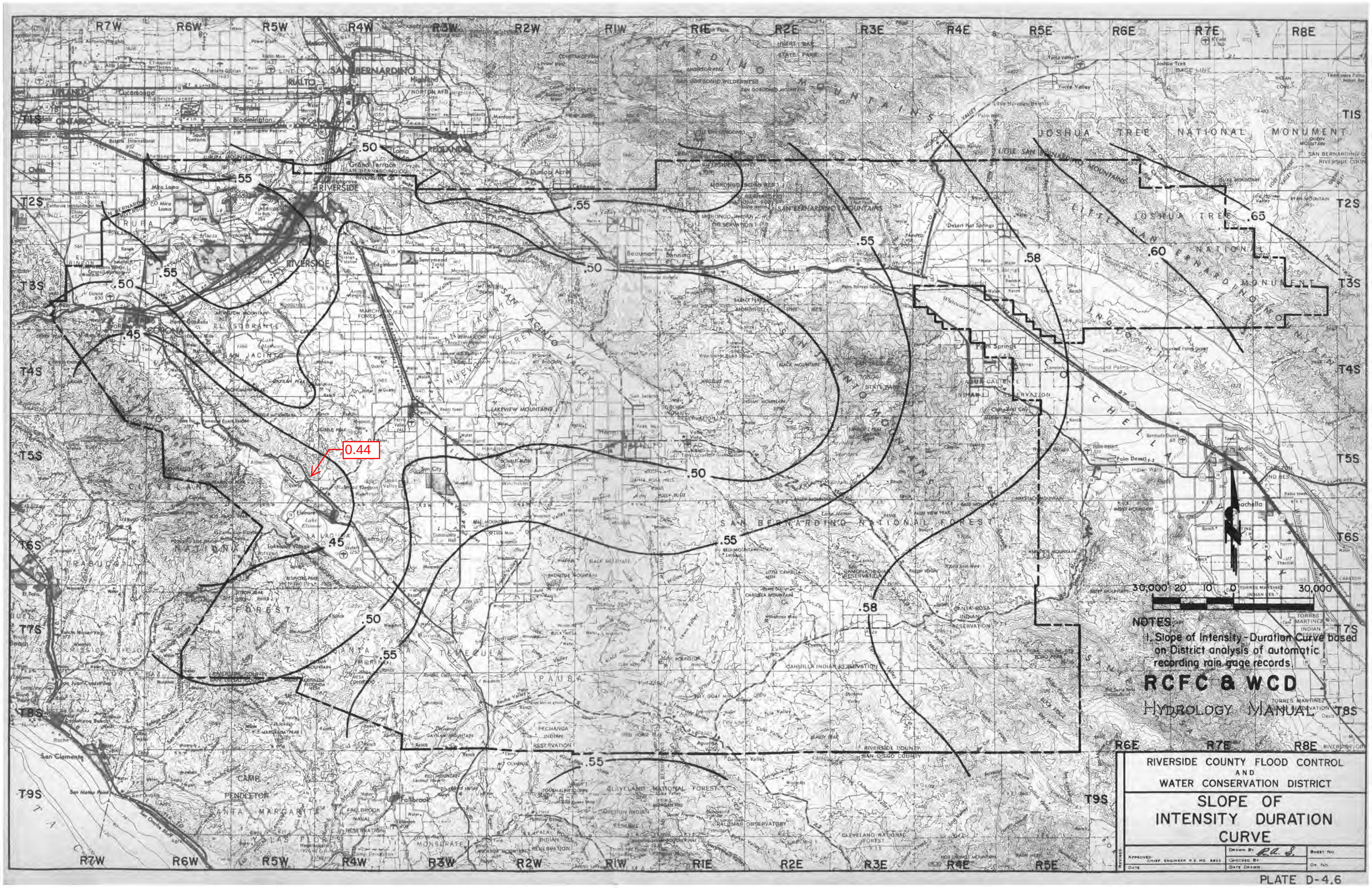
NOTES:
1. Isohyets from NOAA Atlas 2,
Volume XI - California, 1973.

RCFC & WCD
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

**100-YEAR — 24-HOUR
PRECIPITATION**

APPROVED: CHIEF ENGINEER P.E. NO. 4822	DRAWN BY:	SHEET NO.
DATE:	CHECKED BY:	Dt. No.
	DATE DRAWN:	



NOTES
1. Slope of Intensity-Duration Curve based on District analysis of automatic recording rain gage records.

RCFC & WCD
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
**SLOPE OF
INTENSITY DURATION
CURVE**

APPROVED	CHIEF ENGINEER R.E. NO. 4825	DRAWN BY	DATE	CHECKED BY	DATE	DRAWN	SHEET NO.	DR. NO.

EXHIBIT “E”

Runoff Index Numbers,
Impervious Cover
& NRCS Soils Maps

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group			
		A	B	C	D
<u>NATURAL COVERS -</u>					
Barren (Rockland, eroded and graded land)		78	86	91	93
Chaparral, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85
	Fair	40	63	75	81
	Good	31	57	71	78
Chaparral, Narrowleaf (Chamise and redshank)	Poor	71	82	88	91
	Fair	55	72	81	86
Grass, Annual or Perennial	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass)	Poor	63	77	85	88
	Fair	51	70	80	84
	Good	30	58	72	78
Open Brush (Soft wood shrubs - buckwheat, sage, etc.)	Poor	62	76	84	88
	Fair	46	66	77	83
	Good	41	63	75	81
Woodland (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent)	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	28	55	70	77
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
<u>URBAN COVERS -</u>					
Residential or Commercial Landscaping (Lawn, shrubs, etc.)	Good	32	56	69	75
Turf (Irrigated and mowed grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
<u>AGRICULTURAL COVERS -</u>					
Fallow (Land plowed but not tilled or seeded)		76	85	90	92

RCFC & WCD
HYDROLOGY MANUAL

RUNOFF INDEX NUMBERS
FOR
PERVIOUS AREA

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group			
		A	B	C	D
<u>AGRICULTURAL COVERS</u> (cont.) -					
Legumes, Close Seeded (Alfalfa, sweetclover, timothy, etc.)	Poor	66	77	85	89
	Good	58	72	81	85
Orchards, Deciduous (Apples, apricots, pears, walnuts, etc.)		See Note 4			
Orchards, Evergreen (Citrus, avocados, etc.)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
Pasture, Dryland (Annual grasses)	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Pasture, Irrigated (Legumes and perennial grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
Row Crops (Field crops - tomatoes, sugar beets, etc.)	Poor	72	81	88	91
	Good	67	78	85	89
Small Grain (Wheat, oats, barley, etc.)	Poor	65	76	84	88
	Good	63	75	83	87
Vineyard		See Note 4			

Notes:

1. All runoff index (RI) numbers are for Antecedent Moisture Condition (AMC) II.
2. Quality of cover definitions:
 Poor-Heavily grazed or regularly burned areas. Less than 50 percent of the ground surface is protected by plant cover or brush and tree canopy.
 Fair-Moderate cover with 50 percent to 75 percent of the ground surface protected.
 Good-Heavy or dense cover with more than 75 percent of the ground surface protected.
3. See Plate C-2 for a detailed description of cover types.
4. Use runoff index numbers based on ground cover type. See discussion under "Cover Type Descriptions" on Plate C-2.
5. Reference Bibliography item 17.

RCFC & WCD
HYDROLOGY MANUAL

**RUNOFF INDEX NUMBERS
FOR
PERVIOUS AREA**

COVER TYPE DESCRIPTIONS

NATURAL COVERS -

Barren - Areas with 15 percent or less of the ground surface covered by plants or litter. It includes rockland, eroded land, and shaped or graded land. Barren land does not include fallow land.

Chaparral, Broadleaf - Areas on which the principal vegetation consists of evergreen shrubs with broad, hard, stiff leaves such as manzonita, ceanothus and scrub oak. The brush cover is usually dense or moderately dense.

Chaparral, Narrowleaf - Land on which the principal vegetation consists of diffusely branched evergreen shrubs with fine needle-like leaves such as chamise and redshank. The shrubs are usually widely spaced and low in growth. If the narrowleaf chaparral shrubs are dense and high; the land should be included with broadleaf chaparral cover.

Grass, Annual - Land on which the principal vegetation consists of annual grasses and weeds such as annual bromes, wild barley, soft chess, ryegrass and filaree.

Grass, Perennial - Areas on which the principal vegetation consists of perennial grass, either native or introduced, and which grows under normal dryland conditions. Examples are Stipa or needle grass, Harding grass and wheat grass. It does not include irrigated and meadow grasses.

Meadow - Land areas with seasonally high water table, often called cienegas. Principal vegetation consists of sod-forming grasses interspersed with other plants.

Open Brush - Principal vegetation consists of soft wood shrubs, usually grayish in color. Examples include California buckwheat, California sagebrush, black sage, white sage and purple sage. It also includes vegetation on desert facing slopes where broadleaf chaparral predominate in an open shrub cover.

Woodland - Areas on which coniferous or broadleaf trees predominate. The crown or canopy density, the amount of ground surface shaded at high noon, is at least 50 percent. Open areas may have a cover of annual or perennial grasses or of brush. Plant cover under the trees is usually sparse because of leaf or needle litter accumulation.

Woodland, Grass - Areas with an open cover of broadleaf or coniferous trees usually live oak and pines, with the intervening ground space occupied by annual grasses or weeds. The trees may occur singly or in small clumps. Canopy density, the amount of ground surface shaded at high noon, is from 20 to 50 percent.

URBAN COVERS -

Residential or Commercial Landscaping - The pervious portions of commercial establishments, single and multiple family dwellings, trailer parks and schools where the predominant land cover is lawn, shrubbery and trees.

RCFC & WCD
HYDROLOGY MANUAL

COVER TYPE
DESCRIPTIONS

COVER TYPE DESCRIPTIONS

URBAN COVERS (cont.) -

Turf - Golf courses, parks, cemeteries, and similar lands where the predominant cover is irrigated mowed close-grown turf grass. Parks in which trees are dense may be classified as woodland.

AGRICULTURAL COVER -

Fallow - Fallow land is land plowed but not yet seeded or tilled. It is more effective than barren land in reducing storm runoff.

Legumes, Close Seeded - Alfalfa, sweetclover, timothy, etc. and combinations, either planted in close rows or broadcast.

Orchards, Deciduous - Land planted to such deciduous trees as apples, apricots, pears, walnuts and almonds. The ground cover during the rainy season alters the hydrologic response to storm rainfall. Ground cover may be annual grass or perennial grass with or without legumes. Occasionally legumes are used alone. Use runoff index numbers which apply to the land use or the kind and condition of cover during storm periods. If orchards are kept bare by disking, or through the use of herbicides, fallow applies.

Orchards, Evergreen - Land planted to evergreen trees which include citrus and avocado orchards and coniferous plantings. The effectiveness of this kind of land use is in part determined by the tree, the litter and the ground cover. In these groves the ground cover may be legumes alone or annual or perennial grasses with or without legumes. The ground cover may be entirely litter if the tree canopy is sufficiently dense to produce a substantial quantity of fallen leaves or needles. As with deciduous orchards, management practices affect the runoff potential of evergreen orchards.

Pasture, Dryland - Equivalent to annual grass. Land on which the principal vegetation consists of annual grasses and weeds such as annual bromes, wild barley, soft chess, ryegrass and filaree.

Pasture, Irrigated - Irrigated land planted to perennial grasses and legumes for production of forage and which is cultivated only to establish or renew the stand of plants.

Row Crops - Lettuce, tomatoes, sugar beets, tulips or any field crop planted in rows far enough apart that most of the soil surface is exposed to rainfall impact throughout the growing season. At plowing, planting and harvest times it is equivalent to fallow.

Small Grain - Wheat, oats, barley, flax, etc. planted in rows close enough that the soil surface is not exposed except during planting and shortly thereafter.

Vineyards - As with orchards, ground cover and land condition must be considered in estimating runoff potential. Use runoff index numbers which apply to the kind and condition of cover. For example either annual grass or fallow may apply.

Reference: Bibliography item No. 17.

RCFC & WCD
HYDROLOGY MANUAL

COVER TYPE
DESCRIPTIONS

ACTUAL IMPERVIOUS COVER

Land Use (1)	Range-Percent	Recommended Value For Average Conditions-Percent(2)
Natural or Agriculture	0 - 10	0
Single Family Residential: (3)		
40,000 S. F. (1 Acre) Lots	10 - 25	20
20,000 S. F. ($\frac{1}{2}$ Acre) Lots	30 - 45	40
7,200 - 10,000 S. F. Lots	45 - 55	50
Multiple Family Residential:		
Condominiums	45 - 70	65
Apartments	65 - 90	80
Mobile Home Park	60 - 85	75
Commercial, Downtown Business or Industrial	80 -100	90

Notes:

1. Land use should be based on ultimate development of the watershed. Long range master plans for the County and incorporated cities should be reviewed to insure reasonable land use assumptions.
2. Recommended values are based on average conditions which may not apply to a particular study area. The percentage impervious may vary greatly even on comparable sized lots due to differences in dwelling size, improvements, etc. Landscape practices should also be considered as it is common in some areas to use ornamental gravels underlain by impervious plastic materials in place of lawns and shrubs. A field investigation of a study area should always be made, and a review of aerial photos, where available may assist in estimating the percentage of impervious cover in developed areas.
3. For typical horse ranch subdivisions increase impervious area 5 percent over the values recommended in the table above.

RCFC & WCD
HYDROLOGY MANUAL

**IMPERVIOUS COVER
FOR
DEVELOPED AREAS**

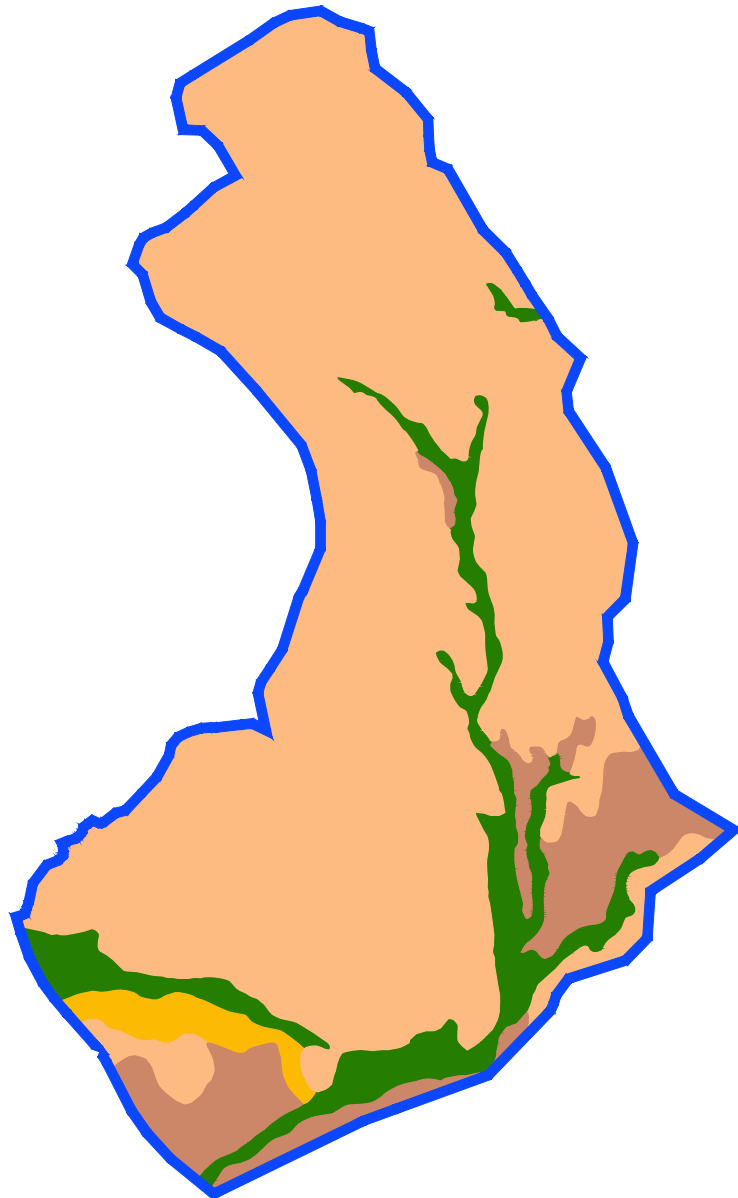
EXHIBIT "E.1"

WATERSHED HYDROLOGIC SOIL GROUPS

(SOURCE: NRCS WEB SOIL SURVEY)

HYDROLOGIC SOILS GROUPS

-  A
-  B
-  C
-  D



PREPARED BY:

BONADIMAN
JAMES A. BONADIMAN & ASSOCIATES, INC.
ENGINEERING - E.I.T. - SURVEYING - PLANNING

TEL: (951) 965-3000
WWW.BONADIMAN.COM



CIVILDESIGN
SUSTAINABLE DESIGN. BY DESIGN.

USGS QUADRANGLE EXHIBIT
NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA

DISREGARD PRINTS BEARING
EARLIER REVISION DATES →

03-27-15

E.1

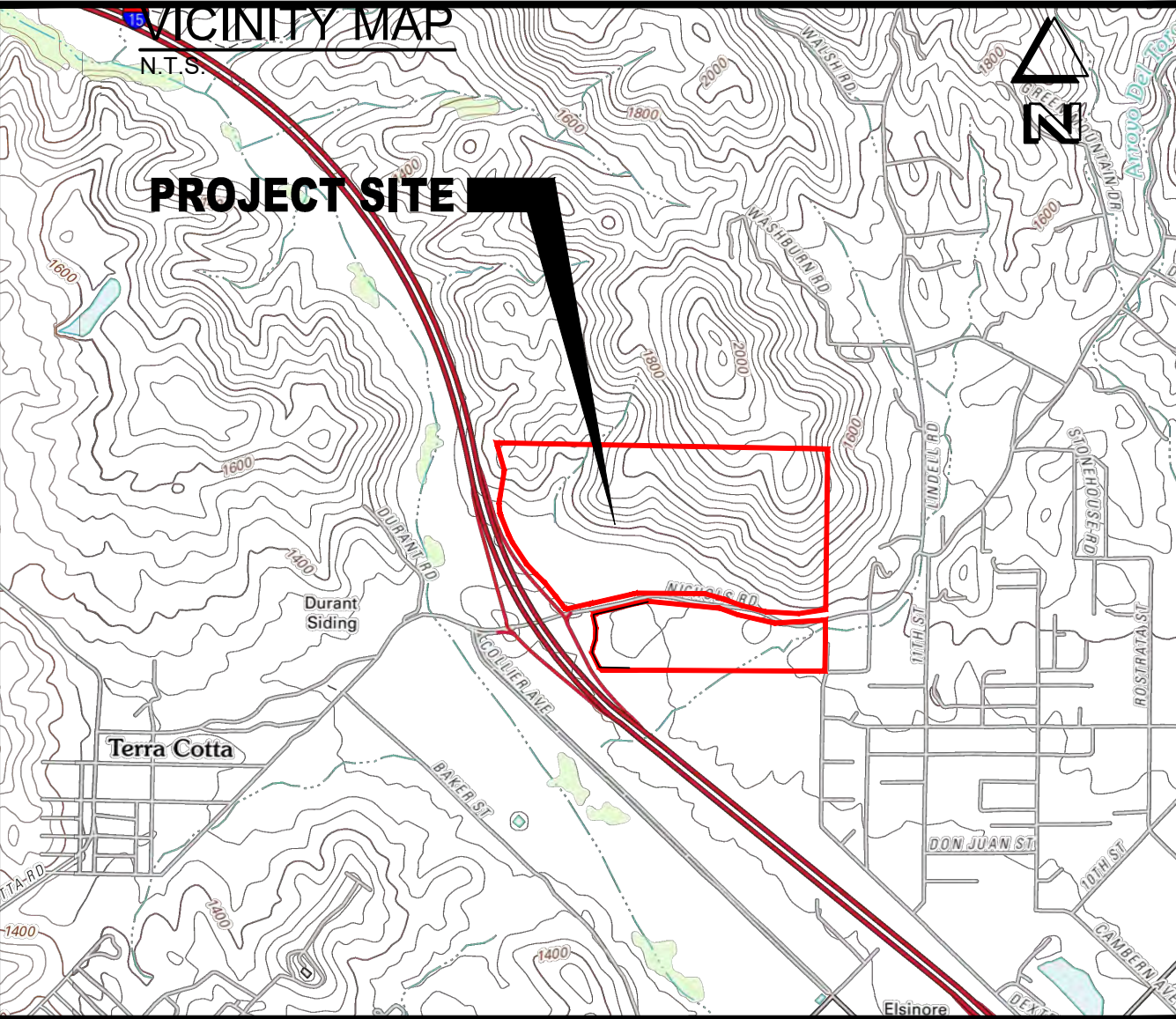
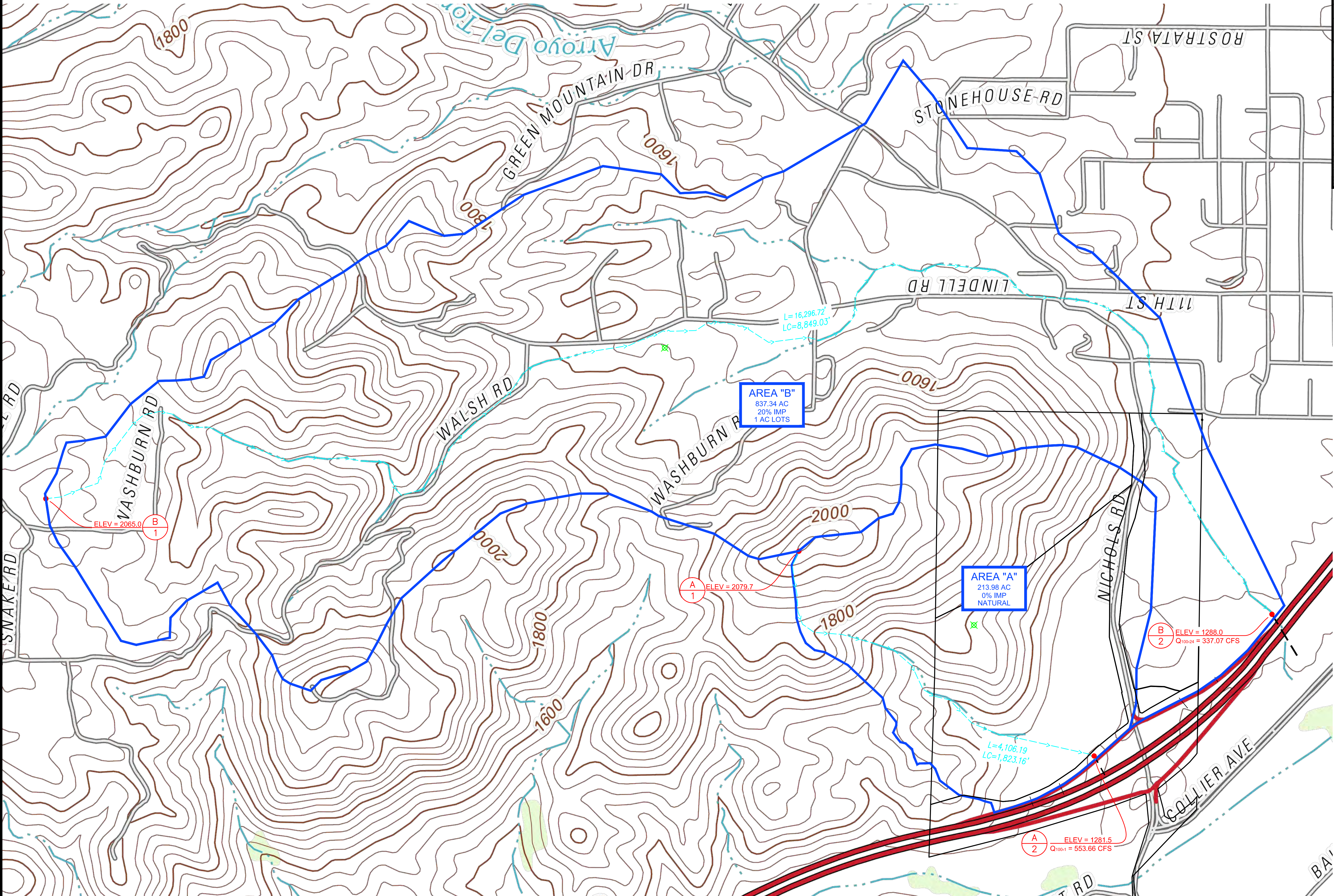
SHEET 1 OF 1

EXHIBIT “F”

Historical Hydrologic Conditions Study Map

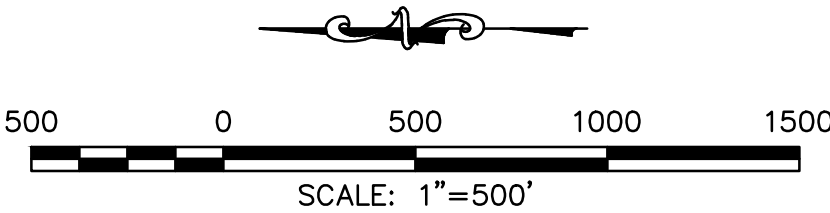
EXHIBIT "F"
HISTORICAL CONDITION EXHIBIT

NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA



MAP LEGEND

- AREA "A"
1.00 AC
20% IMP
1 AC LOTS
- DRAINAGE AREA, SIZE, % IMPERVIOUS, & CLOSEST APPROXIMATED CLASSIFICATION
- Node Location, Elevation, & Total Peak Q₁₀₀₋₂₄
- Node 1: ELEV = 100.00, Q₁₀₀₋₂₄ = 1.0 CFS
- Node 2: ELEV = 1288.0, Q₁₀₀₋₂₄ = 337.07 CFS
- Node 3: ELEV = 1281.5, Q₁₀₀₋₂₄ = 553.66 CFS
- DRAINAGE AREA LIMITS
- FLOW PATHS
- DRAINAGE AREA CENTROIDS



HISTORICAL CONDITION EXHIBIT
NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA

PREPARED BY:

BONADIMAN TEL. (909) 885-3006
JOSEPH E. BONADIMAN & ASSOCIATES, INC.
ENGINEERS - SURVEYORS - PLANNERS
FAX (909) 381-1721
www.bonadiman.com

CIVIL DESIGN
Sustainable Engineering Solutions

PREPARED FOR:	NICHOLS ROAD PARTNERS, LLC.
JOB NO:	154159
PREPARED BY:	JTS
CHECKED BY:	JTS
NOTE:	JOSEPH E. BONADIMAN & ASSOCIATES, INC. DOES NOT WARRANT THE ACCURACY OF THE G.I.S. DATA PRESENTED IN THIS EXHIBIT. THIS EXHIBIT MAY CONTAIN INFORMATION COPYRIGHTED TO THE COUNTY OF RIVERSIDE, CA.
BY	MARK
REVISION DESCRIPTION	
DATE	

HISTORICAL CONDITION EXHIBIT
NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA

DISREGARD PRINTS BEARING EARLIER REVISION DATES

05-11-15

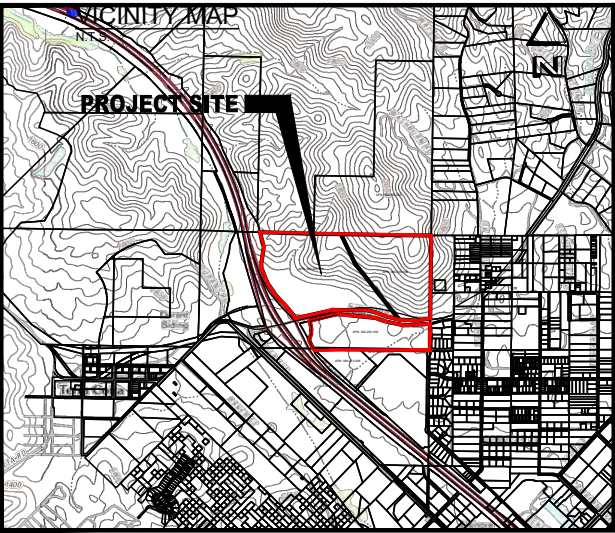
F

SHEET 1 OF 1

EXHIBIT “G”

Existing Hydrologic Conditions Study Map

EXHIBIT "G"
EXISTING CONDITION EXHIBIT
NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA



MAP LEGEND

AREA "A"
1.00 AC
20% IMP
1 AC LOTS

DRAINAGE AREA,
SIZE, % IMPERVIOUS,
& CLOSEST APPROXIMATED
CLASSIFICATION

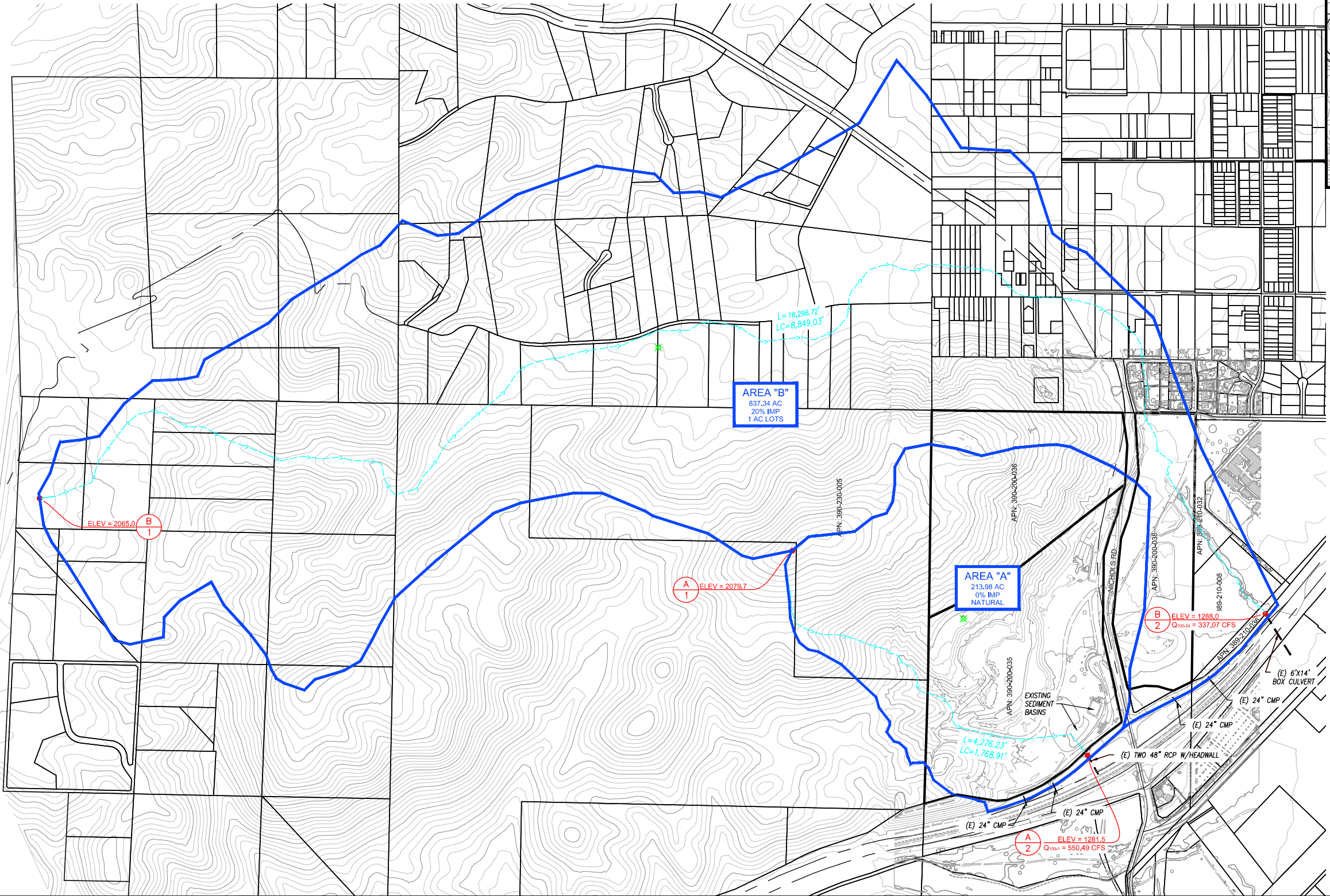
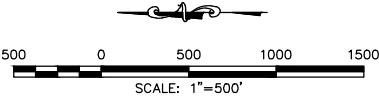
AREA "A"
1
ELEV = 100.00
Q_{100-yr} = 1.0 CFS

NODE LOCATION,
ELEVATION, & TOTAL
PEAK Q_{100-yr}

DRAINAGE AREA LIMITS

FLOW PATHS

✕ DRAINAGE AREA CENTROIDS



EXISTING CONDITION EXHIBIT
NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA

PREPARED BY:
BONADIMAN
TEL: (951) 905-3000
WWW.BONADIMAN.COM

PREPARED FOR:
NICHOLS ROAD PARTNERS, LLC.
P.O. Box 77850
Corona CA 92877

CIVILDESIGN
SOLUTIONS FOR ENGINEERS & ARCHITECTS

PREPARED FOR:	NICHOLS ROAD PARTNERS, LLC.
JOB NO.:	154159
PREPARED BY:	JTS
CHECKED BY:	JTS
NOTE: JOSEPH E. BONADIMAN & ASSOCIATES, INC. DOES NOT WARRANT THE ACCURACY OF THE GIS DATA PRESENTED IN THIS EXHIBIT. THIS EXHIBIT MAY CONTAIN INFORMATION COPYRIGHTED TO THE COUNTY OF RIVERSIDE, CA.	
BY	MARK
REVISION	DESCRIPTION
DATE	

EXISTING CONDITION EXHIBIT
NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA

DISREGARD PRINTS BEARING
EARLIER REVISION DATES

05-11-15

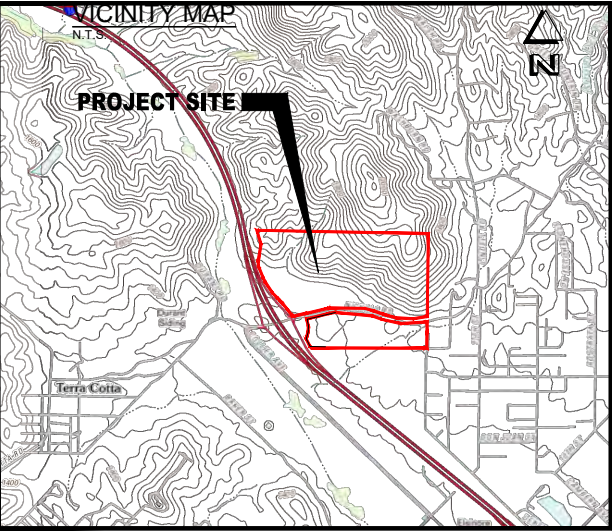
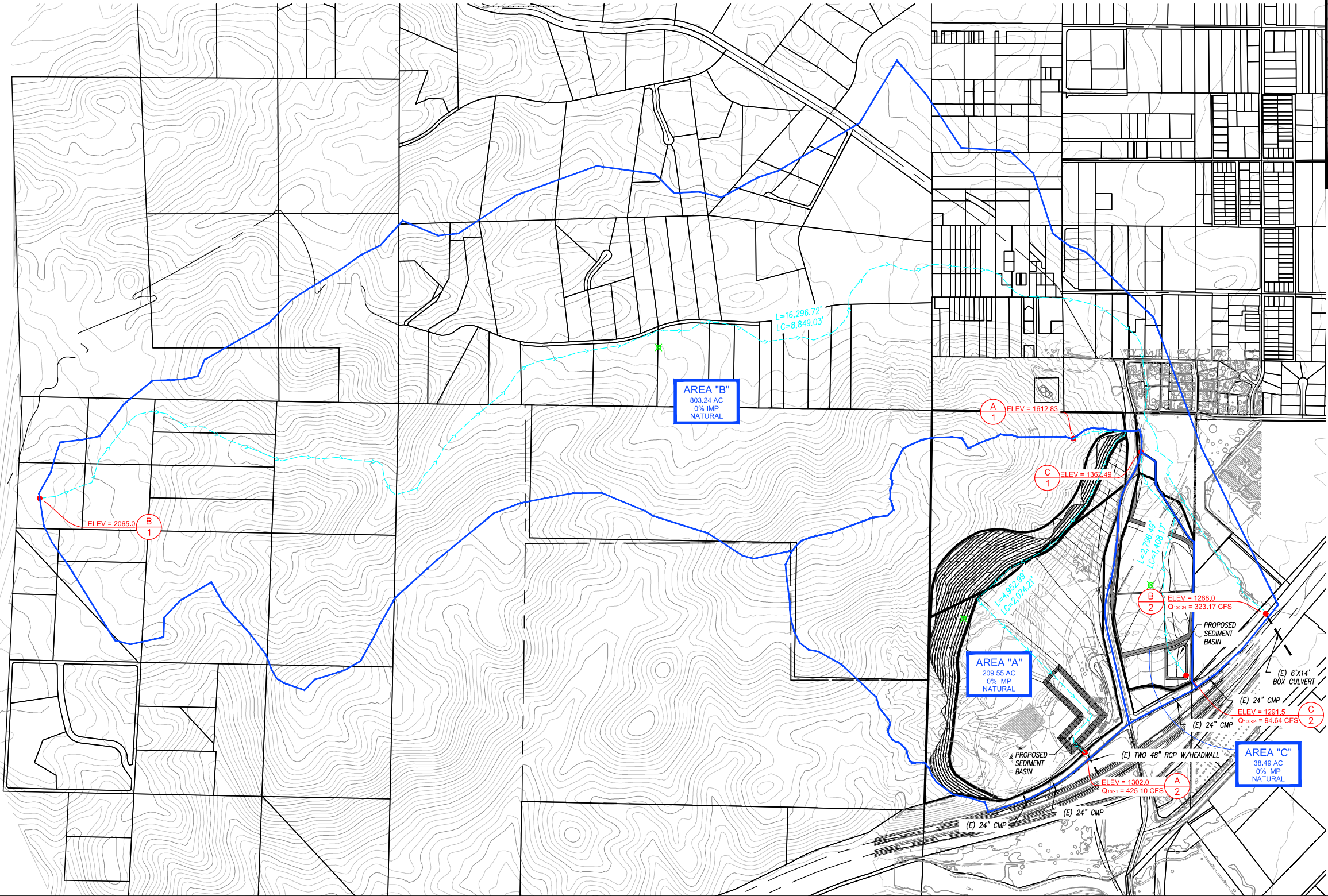
G

SHEET 1 OF 1

EXHIBIT “H”

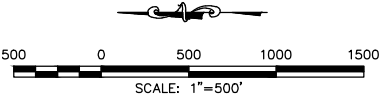
Reclamation Hydrologic Conditions Study Map

EXHIBIT "H"
RECLAMATION CONDITION EXHIBIT
NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA



MAP LEGEND

- AREA "A"**
1.00 AC
20% IMP
1 AC LOTS
- DRAINAGE AREA, SIZE, % IMPERVIOUS, & CLOSEST APPROXIMATED CLASSIFICATION
- AREA "B"**
803.24 AC
0% IMP
NATURAL
- AREA "C"**
38.49 AC
0% IMP
NATURAL
- AREA "A"**
209.55 AC
0% IMP
NATURAL
- Node Location, Elevation, & Total Peak Q₁₀₀₋₂₄**
ELEV = 100.00
Q₁₀₀₋₂₄ = 1.0 CFS
- Drainage Area Limits**
- Flow Paths**
- Drainage Area Centroids**



RECLAMATION CONDITION EXHIBIT
NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA

PREPARED BY:
BONADIMAN
TEL: (951) 955-3000
P.O. Box 77850
Corona CA 92877

CIVILDESIGN
SOLUTIONS FOR ENGINEERS, ARCHITECTS, AND PLANNERS

PREPARED FOR:
NICHOLS ROAD PARTNERS, LLC.
P.O. Box 77850
Corona CA 92877

BY	MARK	REVISION	DESCRIPTION	DATE

PREPARED FOR: NICHOLS ROAD PARTNERS, LLC.
JOB NO: 154159
PREPARED BY: JTS
CHECKED BY: JTS
NOTE: JOSEPH E. BONADIMAN & ASSOCIATES, INC. DOES NOT WARRANT THE ACCURACY OF THE GIS DATA PRESENTED IN THIS EXHIBIT. THIS EXHIBIT MAY CONTAIN INFORMATION COPYRIGHTED TO THE COUNTY OF RIVERSIDE, CA.

RECLAMATION CONDITION EXHIBIT
NICHOLS ROAD PARTNERS, LLC.
IN THE CITY OF LAKE ELSINORE, COUNTY OF RIVERSIDE, CA
DISREGARD PRINTS BEARING EARLIER REVISION DATES
05-24-16

H
SHEET 1 OF 1

ATTACHMENT 1

Historical Conditions
Hydrograph Calculations
(20-Year, 1,3,6, & 24-Hour)

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 05/08/15 File: 154149HISTHYDA120.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR

HISTORICAL CONDITIONS AREA "A"

20-YEAR, 1-HOUR STORM

BY: JTS DATE: 05-08-15

Drainage Area = 213.98(Ac.) = 0.334 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 213.98(Ac.) = 0.334 Sq.Mi.
Length along longest watercourse = 4106.19(Ft.)
Length along longest watercourse measured to centroid = 1823.16(Ft.)
Length along longest watercourse = 0.778 Mi.
Length along longest watercourse measured to centroid = 0.345 Mi.
Difference in elevation = 798.20(Ft.)
Slope along watercourse = 1026.3763 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.137 Hr.
Lag time = 8.19 Min.
25% of lag time = 2.05 Min.
40% of lag time = 3.28 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]
213.98	0.58	124.11

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
213.98	1.47	314.55

STORM EVENT (YEAR) = **20.00**

Area Averaged 2-Year Rainfall = 0.580(In)

Area Averaged 100-Year Rainfall = 1.470(In)

Point rain (area averaged) = 1.104(In)
Areal adjustment factor = 99.81 %
Adjusted average point rain = 1.102(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.430	67.00	0.000
22.120	78.00	0.000
3.320	86.00	0.000
166.110	89.00	0.000
Total Area Entered = 213.98(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	67.0	0.394	0.000	0.394	0.105	0.041
78.0	78.0	0.268	0.000	0.268	0.103	0.028
86.0	86.0	0.176	0.000	0.176	0.016	0.003
89.0	89.0	0.141	0.000	0.141	0.776	0.110
Sum (F) =						0.181

Area averaged mean soil loss (F) (In/Hr) = 0.181

Minimum soil loss rate ((In/Hr)) = 0.091

(for 24 hour storm duration)

Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm = 0.4800

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

Unit Hydrograph Data

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	61.048	8.455
2	0.167	122.095	34.696
3	0.250	183.143	26.238
4	0.333	244.191	10.125
5	0.417	305.238	6.035
6	0.500	366.286	4.062
7	0.583	427.334	2.875
8	0.667	488.382	2.041
9	0.750	549.429	1.680
10	0.833	610.477	1.228
11	0.917	671.525	0.923
12	1.000	732.572	0.662
13	1.083	793.620	0.610
14	1.167	854.668	0.369
Sum =		100.000	Sum= 215.652

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	Pattern	Storm Rain	Loss rate(In./Hr)	Effective
	(Hr.)	Percent	(In/Hr)	Max Low	(In/Hr)
1	0.08	4.40	0.582	0.181 (0.524)	0.400
2	0.17	4.50	0.595	0.181 (0.535)	0.413

3	0.25	5.40	0.714	0.181	(0.643)	0.532
4	0.33	5.40	0.714	0.181	(0.643)	0.532
5	0.42	5.70	0.754	0.181	(0.678)	0.572
6	0.50	6.40	0.846	0.181	(0.761)	0.665
7	0.58	7.90	1.044	0.181	(0.940)	0.863
8	0.67	9.10	1.203	0.181	(1.083)	1.022
9	0.75	12.80	1.692	0.181	(1.523)	1.511
10	0.83	25.60	3.384	0.181	(3.046)	3.203
11	0.92	7.90	1.044	0.181	(0.940)	0.863
12	1.00	4.90	0.648	0.181	(0.583)	0.466

(Loss Rate Not Used)

Sum = 100.0

Sum = 11.0

Flood volume = Effective rainfall 0.92(In)
times area 214.0(Ac.)/[(In)/(Ft.)) = 16.4(Ac.Ft)
Total soil loss = 0.18(In)
Total soil loss = 3.236(Ac.Ft)
Total rainfall = 1.10(In)
Flood volume = 714770.4 Cubic Feet
Total soil loss = 140977.0 Cubic Feet

Peak flow rate of this hydrograph = 390.139(CFS)

+++++

1 - H O U R S T O R M Run 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	100.0	200.0	300.0	400.0
0+ 5	0.0503	7.30	Q				
0+10	0.3086	37.50	V Q				
0+15	0.7446	63.32	V Q				
0+20	1.3074	81.72	V Q				
0+25	1.9595	94.68	V Q				
0+30	2.6868	105.61	V Q				
0+35	3.5308	122.55	V Q				
0+40	4.5590	149.28	V Q				
0+45	5.8406	186.10	V Q				
0+50	7.7007	270.08	V Q				
0+55	10.3876	390.14	V Q				
1+ 0	12.5893	319.68	V Q				
1+ 5	13.9412	196.30	V Q				
1+10	14.7466	116.94	V Q				
1+15	15.2368	71.18	V Q				
1+20	15.5771	49.41	V Q				
1+25	15.8221	35.57	V Q				
1+30	16.0074	26.90	V Q				
1+35	16.1438	19.80	V Q				
1+40	16.2440	14.55	V Q				
1+45	16.3152	10.33	V Q				
1+50	16.3674	7.58	V Q				
1+55	16.3974	4.35	V Q				
2+ 0	16.4063	1.30	V Q				
2+ 5	16.4089	0.37	V Q				

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 05/08/15 File: 154149HISTHYDA320.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR

HISTORICAL CONDITIONS AREA "A"

20-YEAR, 3-HOUR STORM

BY: JTS DATE: 05-08-15

Drainage Area = 213.98(Ac.) = 0.334 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 213.98(Ac.) = 0.334 Sq. Mi.
Length along longest watercourse = 4106.19(Ft.)
Length along longest watercourse measured to centroid = 1823.16(Ft.)
Length along longest watercourse = 0.778 Mi.
Length along longest watercourse measured to centroid = 0.345 Mi.
Difference in elevation = 798.20(Ft.)
Slope along watercourse = 1026.3763 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.137 Hr.
Lag time = 8.19 Min.
25% of lag time = 2.05 Min.
40% of lag time = 3.28 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]
213.98	1.05	224.68

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
213.98	2.51	537.09

STORM EVENT (YEAR) = 20.00
 Area Averaged 2-Year Rainfall = 1.050(In)
 Area Averaged 100-Year Rainfall = 2.510(In)

Point rain (area averaged) = 1.909(In)
 Areal adjustment factor = 99.91 %
 Adjusted average point rain = 1.908(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.430	67.00	0.000
22.120	78.00	0.000
3.320	86.00	0.000
166.110	89.00	0.000
Total Area Entered = 213.98(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.)	(In/Hr)	(Dec.)	(In/Hr)
67.0	67.0	0.394	0.000	0.394	0.105	0.041
78.0	78.0	0.268	0.000	0.268	0.103	0.028
86.0	86.0	0.176	0.000	0.176	0.016	0.003
89.0	89.0	0.141	0.000	0.141	0.776	0.110
Sum (F) =						0.181

Area averaged mean soil loss (F) (In/Hr) = 0.181
 Minimum soil loss rate ((In/Hr)) = 0.091
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

Unit Hydrograph
 VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	61.048	8.455
2	0.167	122.095	34.696
3	0.250	183.143	26.238
4	0.333	244.191	10.125
5	0.417	305.238	6.035
6	0.500	366.286	4.062
7	0.583	427.334	2.875
8	0.667	488.382	2.041
9	0.750	549.429	1.680
10	0.833	610.477	1.228
11	0.917	671.525	0.923
12	1.000	732.572	0.662
13	1.083	793.620	0.610
14	1.167	854.668	0.369
Sum =		100.000	Sum= 215.652

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	0.298	0.181	(0.268)	0.116
2	0.17	1.30	0.298	0.181	(0.268)	0.116
3	0.25	1.10	0.252	0.181	(0.227)	0.070
4	0.33	1.50	0.343	0.181	(0.309)	0.162
5	0.42	1.50	0.343	0.181	(0.309)	0.162
6	0.50	1.80	0.412	0.181	(0.371)	0.231
7	0.58	1.50	0.343	0.181	(0.309)	0.162
8	0.67	1.80	0.412	0.181	(0.371)	0.231
9	0.75	1.80	0.412	0.181	(0.371)	0.231
10	0.83	1.50	0.343	0.181	(0.309)	0.162
11	0.92	1.60	0.366	0.181	(0.330)	0.185
12	1.00	1.80	0.412	0.181	(0.371)	0.231
13	1.08	2.20	0.504	0.181	(0.453)	0.322
14	1.17	2.20	0.504	0.181	(0.453)	0.322
15	1.25	2.20	0.504	0.181	(0.453)	0.322
16	1.33	2.00	0.458	0.181	(0.412)	0.276
17	1.42	2.60	0.595	0.181	(0.536)	0.414
18	1.50	2.70	0.618	0.181	(0.556)	0.437
19	1.58	2.40	0.549	0.181	(0.494)	0.368
20	1.67	2.70	0.618	0.181	(0.556)	0.437
21	1.75	3.30	0.755	0.181	(0.680)	0.574
22	1.83	3.10	0.710	0.181	(0.639)	0.528
23	1.92	2.90	0.664	0.181	(0.597)	0.482
24	2.00	3.00	0.687	0.181	(0.618)	0.505
25	2.08	3.10	0.710	0.181	(0.639)	0.528
26	2.17	4.20	0.961	0.181	(0.865)	0.780
27	2.25	5.00	1.145	0.181	(1.030)	0.963
28	2.33	3.50	0.801	0.181	(0.721)	0.620
29	2.42	6.80	1.557	0.181	(1.401)	1.375
30	2.50	7.30	1.671	0.181	(1.504)	1.490
31	2.58	8.20	1.877	0.181	(1.689)	1.696
32	2.67	5.90	1.351	0.181	(1.215)	1.169
33	2.75	2.00	0.458	0.181	(0.412)	0.276
34	2.83	1.80	0.412	0.181	(0.371)	0.231
35	2.92	1.80	0.412	0.181	(0.371)	0.231
36	3.00	0.60	0.137	(0.181)	0.124	0.014

(Loss Rate Not Used)

Sum = 100.0

Sum = 16.4

Flood volume = Effective rainfall 1.37(In)
times area 214.0(Ac.)/[(In)/(Ft.)] = 24.4(Ac.Ft)
Total soil loss = 0.54(In)
Total soil loss = 9.623(Ac.Ft)
Total rainfall = 1.91(In)
Flood volume = 1062505.6 Cubic Feet
Total soil loss = 419184.2 Cubic Feet

Peak flow rate of this hydrograph = 292.145(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	75.0	150.0	225.0	300.0
0+ 5	0.0146	2.12	Q					
0+10	0.0890	10.81	VQ					
0+15	0.2030	16.54	V Q					
0+20	0.3223	17.32	V Q					
0+25	0.4813	23.10	V Q					
0+30	0.6849	29.55	V Q					
0+35	0.9298	35.56	V Q					
0+40	1.1837	36.87	V Q					
0+45	1.4630	40.56	V Q					
0+50	1.7609	43.26	V Q					
0+55	2.0379	40.21	V Q					
1+ 0	2.3132	39.97	V Q					
1+ 5	2.6275	45.65	V Q					
1+10	3.0082	55.28	V Q					
1+15	3.4316	61.47	V Q					
1+20	3.8674	63.29	V Q					
1+25	4.3083	64.02	VQ					
1+30	4.8124	73.19	V Q					
1+35	5.3714	81.16	V Q					
1+40	5.9327	81.50	VQ					
1+45	6.5360	87.60	VQ					
1+50	7.2311	100.93	V Q					
1+55	7.9620	106.12	VQ					
2+ 0	8.6824	104.61	QV					
2+ 5	9.4107	105.74	QV					
2+10	10.1924	113.51	QV					
2+15	11.1405	137.67	Q					
2+20	12.2448	160.34	VQ					
2+25	13.3812	165.01	VQ					
2+30	14.8414	212.01	V					
2+35	16.6626	264.44	V					
2+40	18.6746	292.14	V					
2+45	20.4646	259.90	VQ					
2+50	21.6679	174.72	V					
2+55	22.4766	117.42	V					
3+ 0	23.0973	90.13	V					
3+ 5	23.5160	60.79	V					
3+10	23.7850	39.06	V					
3+15	23.9764	27.79	V					
3+20	24.1148	20.09	V					
3+25	24.2145	14.47	V					
3+30	24.2866	10.47	V					
3+35	24.3358	7.15	V					
3+40	24.3662	4.40	V					
3+45	24.3808	2.12	V					
3+50	24.3868	0.88	V					
3+55	24.3903	0.51	V					
4+ 0	24.3917	0.20	V					
4+ 5	24.3918	0.01	V					

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 05/08/15 File: 154149HISTHYDA620.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR

HISTORICAL CONDITIONS AREA "A"

20-YEAR, 6-HOUR STORM

BY: JTS DATE: 05-08-15

Drainage Area = 213.98(Ac.) = 0.334 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 213.98(Ac.)= 0.334 Sq. Mi.
Length along longest watercourse = 4106.19(Ft.)
Length along longest watercourse measured to centroid = 1823.16(Ft.)
Length along longest watercourse = 0.778 Mi.
Length along longest watercourse measured to centroid = 0.345 Mi.
Difference in elevation = 798.20(Ft.)
Slope along watercourse = 1026.3763 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.137 Hr.
Lag time = 8.19 Min.
25% of lag time = 2.05 Min.
40% of lag time = 3.28 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]
213.98	1.45	310.27

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
213.98	3.51	751.07

STORM EVENT (YEAR) = 20.00
 Area Averaged 2-Year Rainfall = 1.450(In)
 Area Averaged 100-Year Rainfall = 3.510(In)

Point rain (area averaged) = 2.662(In)
 Areal adjustment factor = 99.93 %
 Adjusted average point rain = 2.661(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.430	67.00	0.000
22.120	78.00	0.000
3.320	86.00	0.000
166.110	89.00	0.000
Total Area Entered = 213.98(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	67.0	0.394	0.000	0.394	0.105	0.041
78.0	78.0	0.268	0.000	0.268	0.103	0.028
86.0	86.0	0.176	0.000	0.176	0.016	0.003
89.0	89.0	0.141	0.000	0.141	0.776	0.110
Sum (F) =						0.181

Area averaged mean soil loss (F) (In/Hr) = 0.181
 Minimum soil loss rate ((In/Hr)) = 0.091
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

Unit Hydrograph
 VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	61.048	8.455
2	0.167	122.095	34.696
3	0.250	183.143	26.238
4	0.333	244.191	10.125
5	0.417	305.238	6.035
6	0.500	366.286	4.062
7	0.583	427.334	2.875
8	0.667	488.382	2.041
9	0.750	549.429	1.680
10	0.833	610.477	1.228
11	0.917	671.525	0.923
12	1.000	732.572	0.662
13	1.083	793.620	0.610
14	1.167	854.668	0.369
Sum =		100.000	Sum= 215.652

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	0.160	(0.181)	0.144	0.016
2	0.17	0.60	0.192	(0.181)	0.172	0.019
3	0.25	0.60	0.192	(0.181)	0.172	0.019
4	0.33	0.60	0.192	(0.181)	0.172	0.019
5	0.42	0.60	0.192	(0.181)	0.172	0.019
6	0.50	0.70	0.223	0.181	(0.201)	0.042
7	0.58	0.70	0.223	0.181	(0.201)	0.042
8	0.67	0.70	0.223	0.181	(0.201)	0.042
9	0.75	0.70	0.223	0.181	(0.201)	0.042
10	0.83	0.70	0.223	0.181	(0.201)	0.042
11	0.92	0.70	0.223	0.181	(0.201)	0.042
12	1.00	0.80	0.255	0.181	(0.230)	0.074
13	1.08	0.80	0.255	0.181	(0.230)	0.074
14	1.17	0.80	0.255	0.181	(0.230)	0.074
15	1.25	0.80	0.255	0.181	(0.230)	0.074
16	1.33	0.80	0.255	0.181	(0.230)	0.074
17	1.42	0.80	0.255	0.181	(0.230)	0.074
18	1.50	0.80	0.255	0.181	(0.230)	0.074
19	1.58	0.80	0.255	0.181	(0.230)	0.074
20	1.67	0.80	0.255	0.181	(0.230)	0.074
21	1.75	0.80	0.255	0.181	(0.230)	0.074
22	1.83	0.80	0.255	0.181	(0.230)	0.074
23	1.92	0.80	0.255	0.181	(0.230)	0.074
24	2.00	0.90	0.287	0.181	(0.259)	0.106
25	2.08	0.80	0.255	0.181	(0.230)	0.074
26	2.17	0.90	0.287	0.181	(0.259)	0.106
27	2.25	0.90	0.287	0.181	(0.259)	0.106
28	2.33	0.90	0.287	0.181	(0.259)	0.106
29	2.42	0.90	0.287	0.181	(0.259)	0.106
30	2.50	0.90	0.287	0.181	(0.259)	0.106
31	2.58	0.90	0.287	0.181	(0.259)	0.106
32	2.67	0.90	0.287	0.181	(0.259)	0.106
33	2.75	1.00	0.319	0.181	(0.287)	0.138
34	2.83	1.00	0.319	0.181	(0.287)	0.138
35	2.92	1.00	0.319	0.181	(0.287)	0.138
36	3.00	1.00	0.319	0.181	(0.287)	0.138
37	3.08	1.00	0.319	0.181	(0.287)	0.138
38	3.17	1.10	0.351	0.181	(0.316)	0.170
39	3.25	1.10	0.351	0.181	(0.316)	0.170
40	3.33	1.10	0.351	0.181	(0.316)	0.170
41	3.42	1.20	0.383	0.181	(0.345)	0.202
42	3.50	1.30	0.415	0.181	(0.374)	0.234
43	3.58	1.40	0.447	0.181	(0.402)	0.265
44	3.67	1.40	0.447	0.181	(0.402)	0.265
45	3.75	1.50	0.479	0.181	(0.431)	0.297
46	3.83	1.50	0.479	0.181	(0.431)	0.297
47	3.92	1.60	0.511	0.181	(0.460)	0.329
48	4.00	1.60	0.511	0.181	(0.460)	0.329
49	4.08	1.70	0.543	0.181	(0.488)	0.361
50	4.17	1.80	0.575	0.181	(0.517)	0.393
51	4.25	1.90	0.607	0.181	(0.546)	0.425
52	4.33	2.00	0.639	0.181	(0.575)	0.457
53	4.42	2.10	0.670	0.181	(0.603)	0.489

54	4.50	2.10	0.670	0.181	(0.603)	0.489
55	4.58	2.20	0.702	0.181	(0.632)	0.521
56	4.67	2.30	0.734	0.181	(0.661)	0.553
57	4.75	2.40	0.766	0.181	(0.690)	0.585
58	4.83	2.40	0.766	0.181	(0.690)	0.585
59	4.92	2.50	0.798	0.181	(0.718)	0.617
60	5.00	2.60	0.830	0.181	(0.747)	0.649
61	5.08	3.10	0.990	0.181	(0.891)	0.808
62	5.17	3.60	1.149	0.181	(1.034)	0.968
63	5.25	3.90	1.245	0.181	(1.121)	1.064
64	5.33	4.20	1.341	0.181	(1.207)	1.159
65	5.42	4.70	1.501	0.181	(1.350)	1.319
66	5.50	5.60	1.788	0.181	(1.609)	1.606
67	5.58	1.90	0.607	0.181	(0.546)	0.425
68	5.67	0.90	0.287	0.181	(0.259)	0.106
69	5.75	0.60	0.192	(0.181)	0.172	0.019
70	5.83	0.50	0.160	(0.181)	0.144	0.016
71	5.92	0.30	0.096	(0.181)	0.086	0.010
72	6.00	0.20	0.064	(0.181)	0.057	0.006

(Loss Rate Not Used)

Sum = 100.0 Sum = 19.2

Flood volume = Effective rainfall 1.60(In)
times area 214.0(Ac.)/[(In)/(Ft.)) = 28.5(Ac.Ft)
Total soil loss = 1.06(In)
Total soil loss = 18.912(Ac.Ft)
Total rainfall = 2.66(In)
Flood volume = 1242742.8 Cubic Feet
Total soil loss = 823825.5 Cubic Feet

Peak flow rate of this hydrograph = 265.032(CFS)

+++++

6 - 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	75.0	150.0	225.0	300.0
0+ 5	0.0020	0.29	Q				
0+10	0.0126	1.54	Q				
0+15	0.0311	2.69	Q				
0+20	0.0533	3.22	Q				
0+25	0.0774	3.49	Q				
0+30	0.1056	4.09	Q				
0+35	0.1464	5.93	Q				
0+40	0.1967	7.31	Q				
0+45	0.2510	7.88	VQ				
0+50	0.3077	8.23	VQ				
0+55	0.3661	8.47	VQ				
1+ 0	0.4296	9.23	VQ				
1+ 5	0.5105	11.74	VQ				
1+10	0.6045	13.65	VQ				
1+15	0.7038	14.41	VQ				
1+20	0.8062	14.87	Q				
1+25	0.9108	15.18	VQ				

1+30	1.0169	15.41	VQ					
1+35	1.1241	15.57	VQ					
1+40	1.2322	15.69	VQ					
1+45	1.3408	15.77	VQ					
1+50	1.4499	15.84	Q					
1+55	1.5592	15.88	Q					
2+ 0	1.6729	16.51	Q					
2+ 5	1.7992	18.34	Q					
2+10	1.9255	18.34	Q					
2+15	2.0606	19.62	Q					
2+20	2.2062	21.14	QV					
2+25	2.3557	21.71	QV					
2+30	2.5075	22.04	QV					
2+35	2.6608	22.26	QV					
2+40	2.8153	22.43	QV					
2+45	2.9746	23.13	QV					
2+50	3.1510	25.61	QV					
2+55	3.3403	27.49	QV					
3+ 0	3.5348	28.24	QV					
3+ 5	3.7324	28.69	Q V					
3+10	3.9360	29.57	Q V					
3+15	4.1576	32.18	QV					
3+20	4.3927	34.13	Q V					
3+25	4.6373	35.52	Q V					
3+30	4.9059	39.00	QV					
3+35	5.2097	44.12	Q V					
3+40	5.5490	49.26	QV					
3+45	5.9136	52.94	QV					
3+50	6.3053	56.87	QV					
3+55	6.7201	60.24	QV					
4+ 0	7.1609	64.01	Q V					
4+ 5	7.6245	67.31	Q V					
4+10	8.1179	71.64	Q V					
4+15	8.6505	77.33	Q V					
4+20	9.2250	83.42	QV					
4+25	9.8433	89.78	Q V					
4+30	10.5024	95.71	Q V					
4+35	11.1907	99.93	Q V					
4+40	11.9124	104.79	Q V					
4+45	12.6757	110.83	Q V					
4+50	13.4788	116.61	Q V					
4+55	14.3105	120.76	Q V					
5+ 0	15.1755	125.60	Q					
5+ 5	16.0981	133.96	Q					
5+10	17.1463	152.20	Q					
5+15	18.3632	176.68	Q					
5+20	19.7356	199.27	Q					
5+25	21.2587	221.15	Q					
5+30	22.9797	249.90	Q					
5+35	24.8050	265.03	Q					
5+40	26.1454	194.62	Q					
5+45	26.9274	113.55	Q					
5+50	27.4124	70.42	Q					
5+55	27.7423	47.90	Q					
6+ 0	27.9798	34.48	Q					
6+ 5	28.1533	25.19	Q					
6+10	28.2810	18.54	Q					

6+15	28.3722	13.24	Q				V
6+20	28.4364	9.32	Q				V
6+25	28.4800	6.34	Q				V
6+30	28.5087	4.17	Q				V
6+35	28.5234	2.13	Q				V
6+40	28.5275	0.59	Q				V
6+45	28.5286	0.17	Q				V
6+50	28.5291	0.06	Q				V
6+55	28.5293	0.03	Q				V
7+ 0	28.5294	0.02	Q				V
7+ 5	28.5294	0.01	Q				V

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2

Study date 05/08/15 File: 154149HISTHYDA2420.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR

HISTORICAL CONDITIONS AREA "A"

20-YEAR, 24-HOUR STORM

BY: JTS DATE: 05-08-15

Drainage Area = 213.98(Ac.) = 0.334 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 213.98(Ac.)= 0.334 Sq. Mi.
Length along longest watercourse = 4106.19(Ft.)
Length along longest watercourse measured to centroid = 1823.16(Ft.)
Length along longest watercourse = 0.778 Mi.
Length along longest watercourse measured to centroid = 0.345 Mi.
Difference in elevation = 798.20(Ft.)
Slope along watercourse = 1026.3763 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.137 Hr.
Lag time = 8.19 Min.
25% of lag time = 2.05 Min.
40% of lag time = 3.28 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]
213.98	2.70	577.75

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
213.98	6.65	1422.97

STORM EVENT (YEAR) = 20.00
 Area Averaged 2-Year Rainfall = 2.700(In)
 Area Averaged 100-Year Rainfall = 6.650(In)

Point rain (area averaged) = 5.025(In)
 Areal adjustment factor = 99.96 %
 Adjusted average point rain = 5.023(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.430	67.00	0.000
22.120	78.00	0.000
3.320	86.00	0.000
166.110	89.00	0.000
Total Area Entered = 213.98(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	67.0	0.394	0.000	0.394	0.105	0.041
78.0	78.0	0.268	0.000	0.268	0.103	0.028
86.0	86.0	0.176	0.000	0.176	0.016	0.003
89.0	89.0	0.141	0.000	0.141	0.776	0.110
Sum (F) =						0.181

Area averaged mean soil loss (F) (In/Hr) = 0.181
 Minimum soil loss rate ((In/Hr)) = 0.091
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

Unit Hydrograph
 VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	61.048	8.455
2	0.167	122.095	34.696
3	0.250	183.143	26.238
4	0.333	244.191	10.125
5	0.417	305.238	6.035
6	0.500	366.286	4.062
7	0.583	427.334	2.875
8	0.667	488.382	2.041
9	0.750	549.429	1.680
10	0.833	610.477	1.228
11	0.917	671.525	0.923
12	1.000	732.572	0.662
13	1.083	793.620	0.610
14	1.167	854.668	0.369
Sum =		100.000	Sum= 215.652

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	0.040	(0.322)	0.036	0.004
2	0.17	0.07	0.040	(0.320)	0.036	0.004
3	0.25	0.07	0.040	(0.319)	0.036	0.004
4	0.33	0.10	0.060	(0.318)	0.054	0.006
5	0.42	0.10	0.060	(0.317)	0.054	0.006
6	0.50	0.10	0.060	(0.316)	0.054	0.006
7	0.58	0.10	0.060	(0.314)	0.054	0.006
8	0.67	0.10	0.060	(0.313)	0.054	0.006
9	0.75	0.10	0.060	(0.312)	0.054	0.006
10	0.83	0.13	0.080	(0.311)	0.072	0.008
11	0.92	0.13	0.080	(0.309)	0.072	0.008
12	1.00	0.13	0.080	(0.308)	0.072	0.008
13	1.08	0.10	0.060	(0.307)	0.054	0.006
14	1.17	0.10	0.060	(0.306)	0.054	0.006
15	1.25	0.10	0.060	(0.305)	0.054	0.006
16	1.33	0.10	0.060	(0.303)	0.054	0.006
17	1.42	0.10	0.060	(0.302)	0.054	0.006
18	1.50	0.10	0.060	(0.301)	0.054	0.006
19	1.58	0.10	0.060	(0.300)	0.054	0.006
20	1.67	0.10	0.060	(0.299)	0.054	0.006
21	1.75	0.10	0.060	(0.297)	0.054	0.006
22	1.83	0.13	0.080	(0.296)	0.072	0.008
23	1.92	0.13	0.080	(0.295)	0.072	0.008
24	2.00	0.13	0.080	(0.294)	0.072	0.008
25	2.08	0.13	0.080	(0.293)	0.072	0.008
26	2.17	0.13	0.080	(0.291)	0.072	0.008
27	2.25	0.13	0.080	(0.290)	0.072	0.008
28	2.33	0.13	0.080	(0.289)	0.072	0.008
29	2.42	0.13	0.080	(0.288)	0.072	0.008
30	2.50	0.13	0.080	(0.287)	0.072	0.008
31	2.58	0.17	0.100	(0.285)	0.090	0.010
32	2.67	0.17	0.100	(0.284)	0.090	0.010
33	2.75	0.17	0.100	(0.283)	0.090	0.010
34	2.83	0.17	0.100	(0.282)	0.090	0.010
35	2.92	0.17	0.100	(0.281)	0.090	0.010
36	3.00	0.17	0.100	(0.280)	0.090	0.010
37	3.08	0.17	0.100	(0.278)	0.090	0.010
38	3.17	0.17	0.100	(0.277)	0.090	0.010
39	3.25	0.17	0.100	(0.276)	0.090	0.010
40	3.33	0.17	0.100	(0.275)	0.090	0.010
41	3.42	0.17	0.100	(0.274)	0.090	0.010
42	3.50	0.17	0.100	(0.273)	0.090	0.010
43	3.58	0.17	0.100	(0.272)	0.090	0.010
44	3.67	0.17	0.100	(0.270)	0.090	0.010
45	3.75	0.17	0.100	(0.269)	0.090	0.010
46	3.83	0.20	0.121	(0.268)	0.108	0.012
47	3.92	0.20	0.121	(0.267)	0.108	0.012
48	4.00	0.20	0.121	(0.266)	0.108	0.012
49	4.08	0.20	0.121	(0.265)	0.108	0.012
50	4.17	0.20	0.121	(0.264)	0.108	0.012
51	4.25	0.20	0.121	(0.263)	0.108	0.012
52	4.33	0.23	0.141	(0.261)	0.127	0.014
53	4.42	0.23	0.141	(0.260)	0.127	0.014

54	4.50	0.23	0.141	(0.259)	0.127	0.014
55	4.58	0.23	0.141	(0.258)	0.127	0.014
56	4.67	0.23	0.141	(0.257)	0.127	0.014
57	4.75	0.23	0.141	(0.256)	0.127	0.014
58	4.83	0.27	0.161	(0.255)	0.145	0.016
59	4.92	0.27	0.161	(0.254)	0.145	0.016
60	5.00	0.27	0.161	(0.253)	0.145	0.016
61	5.08	0.20	0.121	(0.251)	0.108	0.012
62	5.17	0.20	0.121	(0.250)	0.108	0.012
63	5.25	0.20	0.121	(0.249)	0.108	0.012
64	5.33	0.23	0.141	(0.248)	0.127	0.014
65	5.42	0.23	0.141	(0.247)	0.127	0.014
66	5.50	0.23	0.141	(0.246)	0.127	0.014
67	5.58	0.27	0.161	(0.245)	0.145	0.016
68	5.67	0.27	0.161	(0.244)	0.145	0.016
69	5.75	0.27	0.161	(0.243)	0.145	0.016
70	5.83	0.27	0.161	(0.242)	0.145	0.016
71	5.92	0.27	0.161	(0.241)	0.145	0.016
72	6.00	0.27	0.161	(0.240)	0.145	0.016
73	6.08	0.30	0.181	(0.239)	0.163	0.018
74	6.17	0.30	0.181	(0.237)	0.163	0.018
75	6.25	0.30	0.181	(0.236)	0.163	0.018
76	6.33	0.30	0.181	(0.235)	0.163	0.018
77	6.42	0.30	0.181	(0.234)	0.163	0.018
78	6.50	0.30	0.181	(0.233)	0.163	0.018
79	6.58	0.33	0.201	(0.232)	0.181	0.020
80	6.67	0.33	0.201	(0.231)	0.181	0.020
81	6.75	0.33	0.201	(0.230)	0.181	0.020
82	6.83	0.33	0.201	(0.229)	0.181	0.020
83	6.92	0.33	0.201	(0.228)	0.181	0.020
84	7.00	0.33	0.201	(0.227)	0.181	0.020
85	7.08	0.33	0.201	(0.226)	0.181	0.020
86	7.17	0.33	0.201	(0.225)	0.181	0.020
87	7.25	0.33	0.201	(0.224)	0.181	0.020
88	7.33	0.37	0.221	(0.223)	0.199	0.022
89	7.42	0.37	0.221	(0.222)	0.199	0.022
90	7.50	0.37	0.221	(0.221)	0.199	0.022
91	7.58	0.40	0.241	(0.220)	0.217	0.024
92	7.67	0.40	0.241	(0.219)	0.217	0.024
93	7.75	0.40	0.241	(0.218)	0.217	0.024
94	7.83	0.43	0.261	0.217	(0.235)	0.044
95	7.92	0.43	0.261	0.216	(0.235)	0.045
96	8.00	0.43	0.261	0.215	(0.235)	0.046
97	8.08	0.50	0.301	0.214	(0.271)	0.088
98	8.17	0.50	0.301	0.213	(0.271)	0.089
99	8.25	0.50	0.301	0.212	(0.271)	0.090
100	8.33	0.50	0.301	0.211	(0.271)	0.091
101	8.42	0.50	0.301	0.210	(0.271)	0.092
102	8.50	0.50	0.301	0.209	(0.271)	0.093
103	8.58	0.53	0.321	0.208	(0.289)	0.114
104	8.67	0.53	0.321	0.207	(0.289)	0.115
105	8.75	0.53	0.321	0.206	(0.289)	0.116
106	8.83	0.57	0.342	0.205	(0.307)	0.137
107	8.92	0.57	0.342	0.204	(0.307)	0.138
108	9.00	0.57	0.342	0.203	(0.307)	0.139
109	9.08	0.63	0.382	0.202	(0.344)	0.180
110	9.17	0.63	0.382	0.201	(0.344)	0.181

111	9.25	0.63	0.382	0.200	(0.344)	0.182
112	9.33	0.67	0.402	0.199	(0.362)	0.203
113	9.42	0.67	0.402	0.198	(0.362)	0.204
114	9.50	0.67	0.402	0.197	(0.362)	0.205
115	9.58	0.70	0.422	0.196	(0.380)	0.226
116	9.67	0.70	0.422	0.195	(0.380)	0.227
117	9.75	0.70	0.422	0.194	(0.380)	0.227
118	9.83	0.73	0.442	0.194	(0.398)	0.248
119	9.92	0.73	0.442	0.193	(0.398)	0.249
120	10.00	0.73	0.442	0.192	(0.398)	0.250
121	10.08	0.50	0.301	0.191	(0.271)	0.111
122	10.17	0.50	0.301	0.190	(0.271)	0.112
123	10.25	0.50	0.301	0.189	(0.271)	0.112
124	10.33	0.50	0.301	0.188	(0.271)	0.113
125	10.42	0.50	0.301	0.187	(0.271)	0.114
126	10.50	0.50	0.301	0.186	(0.271)	0.115
127	10.58	0.67	0.402	0.185	(0.362)	0.217
128	10.67	0.67	0.402	0.184	(0.362)	0.217
129	10.75	0.67	0.402	0.183	(0.362)	0.218
130	10.83	0.67	0.402	0.183	(0.362)	0.219
131	10.92	0.67	0.402	0.182	(0.362)	0.220
132	11.00	0.67	0.402	0.181	(0.362)	0.221
133	11.08	0.63	0.382	0.180	(0.344)	0.202
134	11.17	0.63	0.382	0.179	(0.344)	0.203
135	11.25	0.63	0.382	0.178	(0.344)	0.204
136	11.33	0.63	0.382	0.177	(0.344)	0.205
137	11.42	0.63	0.382	0.176	(0.344)	0.205
138	11.50	0.63	0.382	0.175	(0.344)	0.206
139	11.58	0.57	0.342	0.175	(0.307)	0.167
140	11.67	0.57	0.342	0.174	(0.307)	0.168
141	11.75	0.57	0.342	0.173	(0.307)	0.169
142	11.83	0.60	0.362	0.172	(0.325)	0.190
143	11.92	0.60	0.362	0.171	(0.325)	0.191
144	12.00	0.60	0.362	0.170	(0.325)	0.191
145	12.08	0.83	0.502	0.169	(0.452)	0.333
146	12.17	0.83	0.502	0.169	(0.452)	0.334
147	12.25	0.83	0.502	0.168	(0.452)	0.335
148	12.33	0.87	0.522	0.167	(0.470)	0.355
149	12.42	0.87	0.522	0.166	(0.470)	0.356
150	12.50	0.87	0.522	0.165	(0.470)	0.357
151	12.58	0.93	0.563	0.164	(0.506)	0.398
152	12.67	0.93	0.563	0.164	(0.506)	0.399
153	12.75	0.93	0.563	0.163	(0.506)	0.400
154	12.83	0.97	0.583	0.162	(0.524)	0.421
155	12.92	0.97	0.583	0.161	(0.524)	0.422
156	13.00	0.97	0.583	0.160	(0.524)	0.422
157	13.08	1.13	0.683	0.159	(0.615)	0.524
158	13.17	1.13	0.683	0.159	(0.615)	0.524
159	13.25	1.13	0.683	0.158	(0.615)	0.525
160	13.33	1.13	0.683	0.157	(0.615)	0.526
161	13.42	1.13	0.683	0.156	(0.615)	0.527
162	13.50	1.13	0.683	0.155	(0.615)	0.528
163	13.58	0.77	0.462	0.155	(0.416)	0.307
164	13.67	0.77	0.462	0.154	(0.416)	0.308
165	13.75	0.77	0.462	0.153	(0.416)	0.309
166	13.83	0.77	0.462	0.152	(0.416)	0.310
167	13.92	0.77	0.462	0.152	(0.416)	0.311

168	14.00	0.77	0.462	0.151	(0.416)	0.311
169	14.08	0.90	0.542	0.150	(0.488)	0.392
170	14.17	0.90	0.542	0.149	(0.488)	0.393
171	14.25	0.90	0.542	0.148	(0.488)	0.394
172	14.33	0.87	0.522	0.148	(0.470)	0.375
173	14.42	0.87	0.522	0.147	(0.470)	0.375
174	14.50	0.87	0.522	0.146	(0.470)	0.376
175	14.58	0.87	0.522	0.145	(0.470)	0.377
176	14.67	0.87	0.522	0.145	(0.470)	0.378
177	14.75	0.87	0.522	0.144	(0.470)	0.378
178	14.83	0.83	0.502	0.143	(0.452)	0.359
179	14.92	0.83	0.502	0.142	(0.452)	0.360
180	15.00	0.83	0.502	0.142	(0.452)	0.361
181	15.08	0.80	0.482	0.141	(0.434)	0.341
182	15.17	0.80	0.482	0.140	(0.434)	0.342
183	15.25	0.80	0.482	0.140	(0.434)	0.343
184	15.33	0.77	0.462	0.139	(0.416)	0.323
185	15.42	0.77	0.462	0.138	(0.416)	0.324
186	15.50	0.77	0.462	0.137	(0.416)	0.325
187	15.58	0.63	0.382	0.137	(0.344)	0.245
188	15.67	0.63	0.382	0.136	(0.344)	0.246
189	15.75	0.63	0.382	0.135	(0.344)	0.246
190	15.83	0.63	0.382	0.135	(0.344)	0.247
191	15.92	0.63	0.382	0.134	(0.344)	0.248
192	16.00	0.63	0.382	0.133	(0.344)	0.248
193	16.08	0.13	0.080	(0.133)	0.072	0.008
194	16.17	0.13	0.080	(0.132)	0.072	0.008
195	16.25	0.13	0.080	(0.131)	0.072	0.008
196	16.33	0.13	0.080	(0.131)	0.072	0.008
197	16.42	0.13	0.080	(0.130)	0.072	0.008
198	16.50	0.13	0.080	(0.129)	0.072	0.008
199	16.58	0.10	0.060	(0.129)	0.054	0.006
200	16.67	0.10	0.060	(0.128)	0.054	0.006
201	16.75	0.10	0.060	(0.127)	0.054	0.006
202	16.83	0.10	0.060	(0.127)	0.054	0.006
203	16.92	0.10	0.060	(0.126)	0.054	0.006
204	17.00	0.10	0.060	(0.125)	0.054	0.006
205	17.08	0.17	0.100	(0.125)	0.090	0.010
206	17.17	0.17	0.100	(0.124)	0.090	0.010
207	17.25	0.17	0.100	(0.123)	0.090	0.010
208	17.33	0.17	0.100	(0.123)	0.090	0.010
209	17.42	0.17	0.100	(0.122)	0.090	0.010
210	17.50	0.17	0.100	(0.122)	0.090	0.010
211	17.58	0.17	0.100	(0.121)	0.090	0.010
212	17.67	0.17	0.100	(0.120)	0.090	0.010
213	17.75	0.17	0.100	(0.120)	0.090	0.010
214	17.83	0.13	0.080	(0.119)	0.072	0.008
215	17.92	0.13	0.080	(0.119)	0.072	0.008
216	18.00	0.13	0.080	(0.118)	0.072	0.008
217	18.08	0.13	0.080	(0.117)	0.072	0.008
218	18.17	0.13	0.080	(0.117)	0.072	0.008
219	18.25	0.13	0.080	(0.116)	0.072	0.008
220	18.33	0.13	0.080	(0.116)	0.072	0.008
221	18.42	0.13	0.080	(0.115)	0.072	0.008
222	18.50	0.13	0.080	(0.115)	0.072	0.008
223	18.58	0.10	0.060	(0.114)	0.054	0.006
224	18.67	0.10	0.060	(0.114)	0.054	0.006

225	18.75	0.10	0.060	(0.113)	0.054	0.006
226	18.83	0.07	0.040	(0.112)	0.036	0.004
227	18.92	0.07	0.040	(0.112)	0.036	0.004
228	19.00	0.07	0.040	(0.111)	0.036	0.004
229	19.08	0.10	0.060	(0.111)	0.054	0.006
230	19.17	0.10	0.060	(0.110)	0.054	0.006
231	19.25	0.10	0.060	(0.110)	0.054	0.006
232	19.33	0.13	0.080	(0.109)	0.072	0.008
233	19.42	0.13	0.080	(0.109)	0.072	0.008
234	19.50	0.13	0.080	(0.108)	0.072	0.008
235	19.58	0.10	0.060	(0.108)	0.054	0.006
236	19.67	0.10	0.060	(0.107)	0.054	0.006
237	19.75	0.10	0.060	(0.107)	0.054	0.006
238	19.83	0.07	0.040	(0.106)	0.036	0.004
239	19.92	0.07	0.040	(0.106)	0.036	0.004
240	20.00	0.07	0.040	(0.105)	0.036	0.004
241	20.08	0.10	0.060	(0.105)	0.054	0.006
242	20.17	0.10	0.060	(0.104)	0.054	0.006
243	20.25	0.10	0.060	(0.104)	0.054	0.006
244	20.33	0.10	0.060	(0.104)	0.054	0.006
245	20.42	0.10	0.060	(0.103)	0.054	0.006
246	20.50	0.10	0.060	(0.103)	0.054	0.006
247	20.58	0.10	0.060	(0.102)	0.054	0.006
248	20.67	0.10	0.060	(0.102)	0.054	0.006
249	20.75	0.10	0.060	(0.101)	0.054	0.006
250	20.83	0.07	0.040	(0.101)	0.036	0.004
251	20.92	0.07	0.040	(0.101)	0.036	0.004
252	21.00	0.07	0.040	(0.100)	0.036	0.004
253	21.08	0.10	0.060	(0.100)	0.054	0.006
254	21.17	0.10	0.060	(0.099)	0.054	0.006
255	21.25	0.10	0.060	(0.099)	0.054	0.006
256	21.33	0.07	0.040	(0.099)	0.036	0.004
257	21.42	0.07	0.040	(0.098)	0.036	0.004
258	21.50	0.07	0.040	(0.098)	0.036	0.004
259	21.58	0.10	0.060	(0.098)	0.054	0.006
260	21.67	0.10	0.060	(0.097)	0.054	0.006
261	21.75	0.10	0.060	(0.097)	0.054	0.006
262	21.83	0.07	0.040	(0.096)	0.036	0.004
263	21.92	0.07	0.040	(0.096)	0.036	0.004
264	22.00	0.07	0.040	(0.096)	0.036	0.004
265	22.08	0.10	0.060	(0.096)	0.054	0.006
266	22.17	0.10	0.060	(0.095)	0.054	0.006
267	22.25	0.10	0.060	(0.095)	0.054	0.006
268	22.33	0.07	0.040	(0.095)	0.036	0.004
269	22.42	0.07	0.040	(0.094)	0.036	0.004
270	22.50	0.07	0.040	(0.094)	0.036	0.004
271	22.58	0.07	0.040	(0.094)	0.036	0.004
272	22.67	0.07	0.040	(0.094)	0.036	0.004
273	22.75	0.07	0.040	(0.093)	0.036	0.004
274	22.83	0.07	0.040	(0.093)	0.036	0.004
275	22.92	0.07	0.040	(0.093)	0.036	0.004
276	23.00	0.07	0.040	(0.093)	0.036	0.004
277	23.08	0.07	0.040	(0.092)	0.036	0.004
278	23.17	0.07	0.040	(0.092)	0.036	0.004
279	23.25	0.07	0.040	(0.092)	0.036	0.004
280	23.33	0.07	0.040	(0.092)	0.036	0.004
281	23.42	0.07	0.040	(0.092)	0.036	0.004

282	23.50	0.07	0.040	(0.091)	0.036	0.004
283	23.58	0.07	0.040	(0.091)	0.036	0.004
284	23.67	0.07	0.040	(0.091)	0.036	0.004
285	23.75	0.07	0.040	(0.091)	0.036	0.004
286	23.83	0.07	0.040	(0.091)	0.036	0.004
287	23.92	0.07	0.040	(0.091)	0.036	0.004
288	24.00	0.07	0.040	(0.091)	0.036	0.004

(Loss Rate Not Used)

Sum = 100.0

Sum = 27.6

Flood volume = Effective rainfall 2.30(In)
times area 214.0(Ac.)/[(In)/(Ft.)] = 41.0(Ac.Ft)
Total soil loss = 2.72(In)
Total soil loss = 48.586(Ac.Ft)
Total rainfall = 5.02(In)
Flood volume = 1785088.4 Cubic Feet
Total soil loss = 2116388.0 Cubic Feet

Peak flow rate of this hydrograph = 110.920(CFS)

+++++

24 - H O U R S T O R M
Run 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	50.0	100.0	150.0	200.0
0+ 5	0.0005	0.07	Q				
0+10	0.0031	0.37	Q				
0+15	0.0072	0.60	Q				
0+20	0.0122	0.73	Q				
0+25	0.0186	0.93	Q				
0+30	0.0260	1.08	Q				
0+35	0.0339	1.15	Q				
0+40	0.0421	1.19	Q				
0+45	0.0506	1.22	Q				
0+50	0.0594	1.28	Q				
0+55	0.0694	1.45	Q				
1+ 0	0.0802	1.58	Q				
1+ 5	0.0912	1.59	Q				
1+10	0.1014	1.48	Q				
1+15	0.1109	1.38	Q				
1+20	0.1202	1.36	Q				
1+25	0.1295	1.34	Q				
1+30	0.1386	1.33	Q				
1+35	0.1477	1.32	Q				
1+40	0.1568	1.32	Q				
1+45	0.1658	1.31	Q				
1+50	0.1751	1.35	Q				
1+55	0.1854	1.49	Q				
2+ 0	0.1965	1.61	Q				
2+ 5	0.2078	1.65	Q				
2+10	0.2193	1.67	Q				
2+15	0.2310	1.69	Q				
2+20	0.2427	1.70	Q				
2+25	0.2544	1.71	Q				

2+30	0.2663	1.72	Q
2+35	0.2784	1.76	Q
2+40	0.2916	1.91	Q
2+45	0.3056	2.03	Q
2+50	0.3199	2.08	Q
2+55	0.3344	2.10	Q
3+ 0	0.3490	2.12	Q
3+ 5	0.3637	2.13	Q
3+10	0.3784	2.14	Q
3+15	0.3933	2.15	Q
3+20	0.4081	2.16	Q
3+25	0.4230	2.16	Q
3+30	0.4379	2.16	Q
3+35	0.4528	2.17	Q
3+40	0.4677	2.17	Q
3+45	0.4827	2.17	Q
3+50	0.4978	2.20	Q
3+55	0.5141	2.35	Q
4+ 0	0.5311	2.47	Q
4+ 5	0.5484	2.51	Q
4+10	0.5658	2.54	Q
4+15	0.5834	2.56	Q
4+20	0.6014	2.61	Q
4+25	0.6204	2.76	Q
4+30	0.6403	2.89	Q
4+35	0.6605	2.93	Q
4+40	0.6809	2.96	Q
4+45	0.7015	2.99	Q
4+50	0.7224	3.04	Q
4+55	0.7444	3.20	Q
5+ 0	0.7673	3.32	Q
5+ 5	0.7900	3.29	Q
5+10	0.8108	3.02	Q
5+15	0.8302	2.82	Q
5+20	0.8493	2.78	Q
5+25	0.8692	2.89	Q
5+30	0.8897	2.98	Q
5+35	0.9107	3.04	Q
5+40	0.9327	3.20	Q
5+45	0.9555	3.32	Q
5+50	0.9787	3.37	Q
5+55	1.0021	3.40	Q
6+ 0	1.0256	3.41	QV
6+ 5	1.0495	3.46	QV
6+10	1.0745	3.62	QV
6+15	1.1003	3.75	QV
6+20	1.1264	3.80	QV
6+25	1.1528	3.83	QV
6+30	1.1794	3.85	QV
6+35	1.2062	3.90	QV
6+40	1.2342	4.06	QV
6+45	1.2631	4.19	QV
6+50	1.2922	4.24	QV
6+55	1.3216	4.27	QV
7+ 0	1.3511	4.29	QV
7+ 5	1.3807	4.30	QV
7+10	1.4104	4.31	QV

7+15	1.4402	4.32	QV				
7+20	1.4702	4.36	QV				
7+25	1.5013	4.51	QV				
7+30	1.5332	4.63	QV				
7+35	1.5657	4.71	QV				
7+40	1.5994	4.89	QV				
7+45	1.6340	5.02	Q				
7+50	1.6715	5.45	Q				
7+55	1.7199	7.02	Q				
8+ 0	1.7770	8.29	Q				
8+ 5	1.8433	9.63	Q				
8+10	1.9334	13.09	VQ				
8+15	2.0418	15.74	V Q				
8+20	2.1585	16.94	VQ				
8+25	2.2807	17.76	VQ				
8+30	2.4074	18.39	VQ				
8+35	2.5400	19.26	VQ				
8+40	2.6860	21.19	V Q				
8+45	2.8424	22.71	V Q				
8+50	3.0067	23.86	V Q				
8+55	3.1853	25.93	V Q				
9+ 0	3.3748	27.51	V Q				
9+ 5	3.5750	29.07	V Q				
9+10	3.8000	32.67	V Q				
9+15	4.0438	35.40	V Q				
9+20	4.2989	37.03	V Q				
9+25	4.5702	39.39	V Q				
9+30	4.8538	41.19	V Q				
9+35	5.1468	42.53	V Q				
9+40	5.4548	44.73	V Q				
9+45	5.7746	46.43	V Q				
9+50	6.1030	47.69	V Q				
9+55	6.4463	49.85	V Q				
10+ 0	6.8010	51.49	V Q				
10+ 5	7.1439	49.80	V Q				
10+10	7.4187	39.89	Q				
10+15	7.6418	32.41	QV				
10+20	7.8467	29.74	Q V				
10+25	8.0412	28.25	Q V				
10+30	8.2294	27.32	Q V				
10+35	8.4260	28.56	Q V				
10+40	8.6720	35.71	QV				
10+45	8.9551	41.11	Q				
10+50	9.2523	43.16	QV				
10+55	9.5581	44.40	QV				
11+ 0	9.8699	45.27	Q				
11+ 5	10.1835	45.53	Q				
11+10	10.4903	44.55	Q V				
11+15	10.7932	43.97	Q V				
11+20	11.0961	43.99	Q V				
11+25	11.4000	44.12	Q V				
11+30	11.7049	44.28	Q V				
11+35	12.0062	43.74	Q V				
11+40	12.2880	40.91	Q V				
11+45	12.5549	38.76	Q V				
11+50	12.8192	38.38	Q V				
11+55	13.0913	39.51	Q V				

12+ 0	13.3699	40.45		Q	V				
12+ 5	13.6685	43.36		Q	V				
12+10	14.0414	54.14		Q	V				
12+15	14.4706	62.32			Q V				
12+20	14.9249	65.96			QV				
12+25	15.4035	69.49			Q V				
12+30	15.8997	72.06			QV				
12+35	16.4113	74.28			Q V				
12+40	16.9509	78.36			QV				
12+45	17.5124	81.53			QV				
12+50	18.0873	83.48			QV				
12+55	18.6801	86.07			QV				
13+ 0	19.2862	88.01			QV				
13+ 5	19.9125	90.94			QV				
13+10	20.5959	99.23			QV				
13+15	21.3221	105.44			VQ				
13+20	22.0664	108.07			Q				
13+25	22.8221	109.74			QV				
13+30	23.5861	110.92			QV				
13+35	24.3284	107.79			Q V				
13+40	24.9615	91.93			Q	V			
13+45	25.5124	79.98			Q	V			
13+50	26.0332	75.62			Q	V			
13+55	26.5368	73.13			Q	V			
14+ 0	27.0293	71.50			Q	V			
14+ 5	27.5244	71.90			Q	V			
14+10	28.0560	77.19			Q	V			
14+15	28.6146	81.10			Q	V			
14+20	29.1798	82.07			Q	V			
14+25	29.7400	81.34			Q	V			
14+30	30.2962	80.75			Q	V			
14+35	30.8519	80.69			Q	V			
14+40	31.4081	80.77			Q	V			
14+45	31.9662	81.04			Q	V			
14+50	32.5236	80.93			Q	V			
14+55	33.0722	79.65			Q	V			
15+ 0	33.6143	78.72			Q	V			
15+ 5	34.1523	78.12			Q	V			
15+10	34.6795	76.54			Q	V			
15+15	35.1985	75.36			Q	V			
15+20	35.7119	74.55			Q	V			
15+25	36.2136	72.84			Q	V			
15+30	36.7067	71.61			Q	V			
15+35	37.1866	69.68			Q	V			
15+40	37.6235	63.43			Q	V			
15+45	38.0281	58.75			Q	V			
15+50	38.4203	56.94			Q	V			
15+55	38.8053	55.90			Q	V			
16+ 0	39.1858	55.25			Q	V			
16+ 5	39.5330	50.42			Q	V			
16+10	39.7541	32.10		Q					
16+15	39.8795	18.21	Q						
16+20	39.9673	12.75	Q						
16+25	40.0325	9.47	Q						
16+30	40.0825	7.26	Q						
16+35	40.1213	5.64	Q						
16+40	40.1514	4.37	Q						

16+45	40.1748	3.39	Q				V
16+50	40.1935	2.72	Q				V
16+55	40.2087	2.21	Q				V
17+ 0	40.2215	1.85	Q				V
17+ 5	40.2325	1.60	Q				V
17+10	40.2442	1.70	Q				V
17+15	40.2574	1.92	Q				V
17+20	40.2712	2.00	Q				V
17+25	40.2853	2.05	Q				V
17+30	40.2996	2.08	Q				V
17+35	40.3141	2.10	Q				V
17+40	40.3287	2.12	Q				V
17+45	40.3434	2.13	Q				V
17+50	40.3579	2.11	Q				V
17+55	40.3715	1.97	Q				V
18+ 0	40.3843	1.86	Q				V
18+ 5	40.3968	1.82	Q				V
18+10	40.4092	1.80	Q				V
18+15	40.4214	1.78	Q				V
18+20	40.4336	1.77	Q				V
18+25	40.4457	1.76	Q				V
18+30	40.4578	1.75	Q				V
18+35	40.4695	1.71	Q				V
18+40	40.4802	1.55	Q				V
18+45	40.4901	1.44	Q				V
18+50	40.4995	1.35	Q				V
18+55	40.5076	1.18	Q				V
19+ 0	40.5147	1.04	Q				V
19+ 5	40.5218	1.03	Q				V
19+10	40.5297	1.14	Q				V
19+15	40.5381	1.23	Q				V
19+20	40.5470	1.29	Q				V
19+25	40.5571	1.46	Q				V
19+30	40.5679	1.58	Q				V
19+35	40.5789	1.59	Q				V
19+40	40.5890	1.47	Q				V
19+45	40.5984	1.38	Q				V
19+50	40.6075	1.31	Q				V
19+55	40.6153	1.15	Q				V
20+ 0	40.6224	1.02	Q				V
20+ 5	40.6294	1.01	Q				V
20+10	40.6372	1.13	Q				V
20+15	40.6456	1.23	Q				V
20+20	40.6543	1.25	Q				V
20+25	40.6630	1.27	Q				V
20+30	40.6718	1.28	Q				V
20+35	40.6806	1.28	Q				V
20+40	40.6894	1.28	Q				V
20+45	40.6983	1.29	Q				V
20+50	40.7070	1.25	Q				V
20+55	40.7146	1.11	Q				V
21+ 0	40.7214	1.00	Q				V
21+ 5	40.7282	0.99	Q				V
21+10	40.7359	1.12	Q				V
21+15	40.7443	1.21	Q				V
21+20	40.7526	1.21	Q				V
21+25	40.7600	1.07	Q				V

21+30	40.7667	0.97	Q				V
21+35	40.7734	0.97	Q				V
21+40	40.7810	1.10	Q				V
21+45	40.7892	1.20	Q				V
21+50	40.7975	1.20	Q				V
21+55	40.8048	1.07	Q				V
22+ 0	40.8115	0.97	Q				V
22+ 5	40.8182	0.97	Q				V
22+10	40.8257	1.10	Q				V
22+15	40.8340	1.20	Q				V
22+20	40.8423	1.20	Q				V
22+25	40.8496	1.07	Q				V
22+30	40.8563	0.97	Q				V
22+35	40.8627	0.93	Q				V
22+40	40.8690	0.91	Q				V
22+45	40.8752	0.90	Q				V
22+50	40.8813	0.89	Q				V
22+55	40.8874	0.88	Q				V
23+ 0	40.8935	0.88	Q				V
23+ 5	40.8995	0.88	Q				V
23+10	40.9055	0.87	Q				V
23+15	40.9115	0.87	Q				V
23+20	40.9175	0.87	Q				V
23+25	40.9235	0.87	Q				V
23+30	40.9294	0.87	Q				V
23+35	40.9354	0.87	Q				V
23+40	40.9414	0.87	Q				V
23+45	40.9473	0.87	Q				V
23+50	40.9533	0.87	Q				V
23+55	40.9593	0.87	Q				V
24+ 0	40.9653	0.87	Q				V
24+ 5	40.9707	0.79	Q				V
24+10	40.9741	0.49	Q				V
24+15	40.9759	0.27	Q				V
24+20	40.9772	0.18	Q				V
24+25	40.9780	0.13	Q				V
24+30	40.9787	0.09	Q				V
24+35	40.9791	0.07	Q				V
24+40	40.9794	0.05	Q				V
24+45	40.9797	0.03	Q				V
24+50	40.9798	0.02	Q				V
24+55	40.9799	0.01	Q				V
25+ 0	40.9800	0.01	Q				V
25+ 5	40.9800	0.00	Q				V

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 05/08/15 File: 154149HISTHYDB120.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR

HISTORICAL CONDITIONS AREA "B"

20-YEAR, 1-HOUR STORM

BY: JTS DATE: 05-08-15

Drainage Area = 837.34(Ac.) = 1.308 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 837.34(Ac.)= 1.308 Sq. Mi.
Length along longest watercourse = 16296.72(Ft.)
Length along longest watercourse measured to centroid = 8849.03(Ft.)
Length along longest watercourse = 3.087 Mi.
Length along longest watercourse measured to centroid = 1.676 Mi.
Difference in elevation = 777.00(Ft.)
Slope along watercourse = 251.7415 Ft./Mi.
Average Manning's 'N' = 0.350
Lag time = 5.487 Hr.
Lag time = 329.20 Min.
25% of lag time = 82.30 Min.
40% of lag time = 131.68 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]
837.34	0.58	485.66

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
837.34	1.47	1230.89

STORM EVENT (YEAR) = 20.00
 Area Averaged 2-Year Rainfall = 0.580(In)
 Area Averaged 100-Year Rainfall = 1.470(In)

Point rain (area averaged) = 1.104(In)
 Areal adjustment factor = 99.24 %
 Adjusted average point rain = 1.095(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
81.060	67.00	0.050
1.780	78.00	0.050
101.910	86.00	0.050
652.590	89.00	0.050
Total Area Entered = 837.34(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	67.0	0.394	0.050	0.377	0.097	0.036
78.0	78.0	0.268	0.050	0.256	0.002	0.001
86.0	86.0	0.176	0.050	0.168	0.122	0.020
89.0	89.0	0.141	0.050	0.135	0.779	0.105
Sum (F) =						0.163

Area averaged mean soil loss (F) (In/Hr) = 0.163
 Minimum soil loss rate ((In/Hr)) = 0.081
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.4800

Unit Hydrograph
 VALLEY S-Curve

WARNING: End of hydrograph not reached with this
 Unit time interval vs lag time
 Unit-Hydrograph terminated after 450 intervals
 Unit Hydrograph Data

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	1.519	0.132
2	0.167	3.038	0.263
3	0.250	4.556	0.263
4	0.333	6.075	0.263
5	0.417	7.594	0.263
6	0.500	9.113	0.263
7	0.583	10.632	0.263
8	0.667	12.151	0.263
9	0.750	13.669	0.263
10	0.833	15.188	0.264
11	0.917	16.707	0.326
12	1.000	18.226	0.365
13	1.083	19.745	0.365
14	1.167	21.263	0.365

15	1.250	22.782	0.365	3.076
16	1.333	24.301	0.365	3.076
17	1.417	25.820	0.391	3.300
18	1.500	27.339	0.527	4.451
19	1.583	28.857	0.547	4.614
20	1.667	30.376	0.547	4.614
21	1.750	31.895	0.547	4.614
22	1.833	33.414	0.547	4.614
23	1.917	34.933	0.547	4.614
24	2.000	36.452	0.616	5.199
25	2.083	37.970	0.699	5.895
26	2.167	39.489	0.699	5.896
27	2.250	41.008	0.699	5.896
28	2.333	42.527	0.699	5.896
29	2.417	44.046	0.699	5.896
30	2.500	45.564	0.699	5.896
31	2.583	47.083	0.699	5.896
32	2.667	48.602	0.699	5.896
33	2.750	50.121	0.699	5.903
34	2.833	51.640	0.850	7.176
35	2.917	53.158	0.962	8.117
36	3.000	54.677	0.962	8.117
37	3.083	56.196	0.962	8.117
38	3.167	57.715	0.962	8.117
39	3.250	59.234	0.962	8.117
40	3.333	60.753	0.962	8.117
41	3.417	62.271	0.962	8.117
42	3.500	63.790	0.962	8.117
43	3.583	65.309	0.964	8.135
44	3.667	66.828	1.031	8.701
45	3.750	68.347	1.063	8.972
46	3.833	69.865	1.063	8.972
47	3.917	71.384	1.063	8.972
48	4.000	72.903	1.063	8.972
49	4.083	74.422	1.063	8.972
50	4.167	75.941	1.069	9.021
51	4.250	77.459	1.091	9.210
52	4.333	78.978	1.094	9.228
53	4.417	80.497	1.094	9.228
54	4.500	82.016	1.094	9.228
55	4.583	83.535	1.094	9.228
56	4.667	85.054	1.094	9.228
57	4.750	86.572	1.094	9.228
58	4.833	88.091	1.094	9.228
59	4.917	89.610	1.094	9.228
60	5.000	91.129	1.094	9.228
61	5.083	92.648	1.094	9.228
62	5.167	94.166	1.094	9.228
63	5.250	95.685	1.094	9.228
64	5.333	97.204	1.094	9.228
65	5.417	98.723	1.094	9.228
66	5.500	100.242	1.090	9.197
67	5.583	101.760	0.904	7.626
68	5.667	103.279	0.800	6.750
69	5.750	104.798	0.800	6.750
70	5.833	106.317	0.800	6.750
71	5.917	107.836	0.800	6.750

72	6.000	109.355	0.800	6.750
73	6.083	110.873	0.800	6.750
74	6.167	112.392	0.800	6.750
75	6.250	113.911	0.800	6.750
76	6.333	115.430	0.793	6.690
77	6.417	116.949	0.668	5.639
78	6.500	118.467	0.623	5.255
79	6.583	119.986	0.623	5.255
80	6.667	121.505	0.623	5.255
81	6.750	123.024	0.623	5.255
82	6.833	124.543	0.623	5.255
83	6.917	126.061	0.589	4.973
84	7.000	127.580	0.492	4.154
85	7.083	129.099	0.486	4.101
86	7.167	130.618	0.486	4.101
87	7.250	132.137	0.486	4.101
88	7.333	133.656	0.486	4.101
89	7.417	135.174	0.486	4.101
90	7.500	136.693	0.486	4.101
91	7.583	138.212	0.486	4.101
92	7.667	139.731	0.486	4.101
93	7.750	141.250	0.460	3.885
94	7.833	142.768	0.411	3.471
95	7.917	144.287	0.410	3.461
96	8.000	145.806	0.410	3.461
97	8.083	147.325	0.410	3.461
98	8.167	148.844	0.410	3.461
99	8.250	150.362	0.407	3.437
100	8.333	151.881	0.342	2.884
101	8.417	153.400	0.314	2.649
102	8.500	154.919	0.314	2.649
103	8.583	156.438	0.314	2.649
104	8.667	157.957	0.314	2.649
105	8.750	159.475	0.314	2.649
106	8.833	160.994	0.314	2.649
107	8.917	162.513	0.314	2.649
108	9.000	164.032	0.314	2.649
109	9.083	165.551	0.310	2.618
110	9.167	167.069	0.270	2.274
111	9.250	168.588	0.258	2.179
112	9.333	170.107	0.258	2.179
113	9.417	171.626	0.258	2.179
114	9.500	173.145	0.258	2.179
115	9.583	174.663	0.258	2.179
116	9.667	176.182	0.248	2.093
117	9.750	177.701	0.226	1.904
118	9.833	179.220	0.225	1.897
119	9.917	180.739	0.225	1.897
120	10.000	182.258	0.225	1.897
121	10.083	183.776	0.225	1.897
122	10.167	185.295	0.225	1.897
123	10.250	186.814	0.225	1.897
124	10.333	188.333	0.225	1.897
125	10.417	189.852	0.225	1.897
126	10.500	191.370	0.225	1.897
127	10.583	192.889	0.225	1.897
128	10.667	194.408	0.225	1.897

129	10.750	195.927	0.225	1.897
130	10.833	197.446	0.225	1.897
131	10.917	198.964	0.225	1.897
132	11.000	200.483	0.223	1.879
133	11.083	202.002	0.192	1.621
134	11.167	203.521	0.182	1.538
135	11.250	205.040	0.182	1.538
136	11.333	206.559	0.182	1.538
137	11.417	208.077	0.182	1.538
138	11.500	209.596	0.182	1.538
139	11.583	211.115	0.182	1.538
140	11.667	212.634	0.182	1.538
141	11.750	214.153	0.182	1.538
142	11.833	215.671	0.182	1.538
143	11.917	217.190	0.182	1.538
144	12.000	218.709	0.182	1.538
145	12.083	220.228	0.182	1.538
146	12.167	221.747	0.182	1.538
147	12.250	223.265	0.182	1.538
148	12.333	224.784	0.182	1.538
149	12.417	226.303	0.171	1.444
150	12.500	227.822	0.152	1.284
151	12.583	229.341	0.152	1.282
152	12.667	230.860	0.152	1.282
153	12.750	232.378	0.152	1.282
154	12.833	233.897	0.152	1.282
155	12.917	235.416	0.152	1.282
156	13.000	236.935	0.152	1.282
157	13.083	238.454	0.152	1.282
158	13.167	239.972	0.152	1.282
159	13.250	241.491	0.152	1.282
160	13.333	243.010	0.152	1.282
161	13.417	244.529	0.152	1.282
162	13.500	246.048	0.152	1.282
163	13.583	247.566	0.152	1.282
164	13.667	249.085	0.152	1.282
165	13.750	250.604	0.150	1.270
166	13.833	252.123	0.137	1.156
167	13.917	253.642	0.134	1.128
168	14.000	255.161	0.134	1.128
169	14.083	256.679	0.134	1.128
170	14.167	258.198	0.134	1.128
171	14.250	259.717	0.134	1.128
172	14.333	261.236	0.134	1.128
173	14.417	262.755	0.134	1.128
174	14.500	264.273	0.134	1.128
175	14.583	265.792	0.134	1.128
176	14.667	267.311	0.134	1.128
177	14.750	268.830	0.134	1.128
178	14.833	270.349	0.134	1.128
179	14.917	271.867	0.134	1.128
180	15.000	273.386	0.134	1.128
181	15.083	274.905	0.134	1.128
182	15.167	276.424	0.123	1.038
183	15.250	277.943	0.109	0.923
184	15.333	279.462	0.109	0.923
185	15.417	280.980	0.109	0.923

186	15.500	282.499	0.109	0.923
187	15.583	284.018	0.109	0.923
188	15.667	285.537	0.109	0.923
189	15.750	287.056	0.109	0.923
190	15.833	288.574	0.109	0.923
191	15.917	290.093	0.109	0.923
192	16.000	291.612	0.109	0.923
193	16.083	293.131	0.109	0.923
194	16.167	294.650	0.109	0.923
195	16.250	296.168	0.109	0.923
196	16.333	297.687	0.109	0.923
197	16.417	299.206	0.109	0.923
198	16.500	300.725	0.107	0.905
199	16.583	302.244	0.094	0.790
200	16.667	303.763	0.091	0.769
201	16.750	305.281	0.091	0.769
202	16.833	306.800	0.091	0.769
203	16.917	308.319	0.091	0.769
204	17.000	309.838	0.091	0.769
205	17.083	311.357	0.091	0.769
206	17.167	312.875	0.091	0.769
207	17.250	314.394	0.091	0.769
208	17.333	315.913	0.091	0.769
209	17.417	317.432	0.091	0.769
210	17.500	318.951	0.091	0.769
211	17.583	320.469	0.091	0.769
212	17.667	321.988	0.091	0.769
213	17.750	323.507	0.091	0.769
214	17.833	325.026	0.091	0.769
215	17.917	326.545	0.091	0.769
216	18.000	328.064	0.091	0.769
217	18.083	329.582	0.091	0.769
218	18.167	331.101	0.091	0.769
219	18.250	332.620	0.091	0.769
220	18.333	334.139	0.091	0.769
221	18.417	335.658	0.091	0.769
222	18.500	337.176	0.091	0.769
223	18.583	338.695	0.091	0.769
224	18.667	340.214	0.091	0.769
225	18.750	341.733	0.091	0.769
226	18.833	343.252	0.091	0.769
227	18.917	344.770	0.091	0.769
228	19.000	346.289	0.091	0.769
229	19.083	347.808	0.091	0.769
230	19.167	349.327	0.091	0.769
231	19.250	350.846	0.087	0.737
232	19.333	352.365	0.069	0.584
233	19.417	353.883	0.067	0.564
234	19.500	355.402	0.067	0.564
235	19.583	356.921	0.067	0.564
236	19.667	358.440	0.067	0.564
237	19.750	359.959	0.067	0.564
238	19.833	361.477	0.067	0.564
239	19.917	362.996	0.067	0.564
240	20.000	364.515	0.067	0.564
241	20.083	366.034	0.067	0.564
242	20.167	367.553	0.067	0.564

243	20.250	369.071	0.067	0.564
244	20.333	370.590	0.067	0.564
245	20.417	372.109	0.067	0.564
246	20.500	373.628	0.067	0.564
247	20.583	375.147	0.067	0.564
248	20.667	376.666	0.067	0.564
249	20.750	378.184	0.067	0.564
250	20.833	379.703	0.067	0.564
251	20.917	381.222	0.067	0.564
252	21.000	382.741	0.067	0.564
253	21.083	384.260	0.067	0.564
254	21.167	385.778	0.067	0.564
255	21.250	387.297	0.067	0.564
256	21.333	388.816	0.067	0.564
257	21.417	390.335	0.067	0.564
258	21.500	391.854	0.067	0.564
259	21.583	393.372	0.067	0.564
260	21.667	394.891	0.067	0.564
261	21.750	396.410	0.067	0.564
262	21.833	397.929	0.067	0.564
263	21.917	399.448	0.067	0.564
264	22.000	400.967	0.063	0.533
265	22.083	402.485	0.050	0.420
266	22.167	404.004	0.049	0.410
267	22.250	405.523	0.049	0.410
268	22.333	407.042	0.049	0.410
269	22.417	408.561	0.049	0.410
270	22.500	410.079	0.049	0.410
271	22.583	411.598	0.049	0.410
272	22.667	413.117	0.049	0.410
273	22.750	414.636	0.049	0.410
274	22.833	416.155	0.049	0.410
275	22.917	417.673	0.049	0.410
276	23.000	419.192	0.049	0.410
277	23.083	420.711	0.049	0.410
278	23.167	422.230	0.049	0.410
279	23.250	423.749	0.049	0.410
280	23.333	425.268	0.049	0.410
281	23.417	426.786	0.049	0.410
282	23.500	428.305	0.049	0.410
283	23.583	429.824	0.049	0.410
284	23.667	431.343	0.049	0.410
285	23.750	432.862	0.049	0.410
286	23.833	434.380	0.049	0.410
287	23.917	435.899	0.049	0.410
288	24.000	437.418	0.049	0.410
289	24.083	438.937	0.049	0.410
290	24.167	440.456	0.049	0.410
291	24.250	441.974	0.049	0.410
292	24.333	443.493	0.049	0.410
293	24.417	445.012	0.049	0.410
294	24.500	446.531	0.049	0.410
295	24.583	448.050	0.049	0.410
296	24.667	449.569	0.049	0.410
297	24.750	451.087	0.048	0.404
298	24.833	452.606	0.046	0.386
299	24.917	454.125	0.046	0.385

300	25.000	455.644	0.046	0.385
301	25.083	457.163	0.046	0.385
302	25.167	458.681	0.046	0.385
303	25.250	460.200	0.046	0.385
304	25.333	461.719	0.046	0.385
305	25.417	463.238	0.046	0.385
306	25.500	464.757	0.046	0.385
307	25.583	466.275	0.046	0.385
308	25.667	467.794	0.046	0.385
309	25.750	469.313	0.046	0.385
310	25.833	470.832	0.046	0.385
311	25.917	472.351	0.046	0.385
312	26.000	473.870	0.046	0.385
313	26.083	475.388	0.046	0.385
314	26.167	476.907	0.046	0.385
315	26.250	478.426	0.046	0.385
316	26.333	479.945	0.046	0.385
317	26.417	481.464	0.046	0.385
318	26.500	482.982	0.046	0.385
319	26.583	484.501	0.046	0.385
320	26.667	486.020	0.046	0.385
321	26.750	487.539	0.046	0.385
322	26.833	489.058	0.046	0.385
323	26.917	490.576	0.046	0.385
324	27.000	492.095	0.046	0.385
325	27.083	493.614	0.046	0.385
326	27.167	495.133	0.046	0.385
327	27.250	496.652	0.046	0.385
328	27.333	498.171	0.046	0.385
329	27.417	499.689	0.046	0.385
330	27.500	501.208	0.042	0.352
331	27.583	502.727	0.034	0.284
332	27.667	504.246	0.033	0.282
333	27.750	505.765	0.033	0.282
334	27.833	507.283	0.033	0.282
335	27.917	508.802	0.033	0.282
336	28.000	510.321	0.033	0.282
337	28.083	511.840	0.033	0.282
338	28.167	513.359	0.033	0.282
339	28.250	514.878	0.033	0.282
340	28.333	516.396	0.033	0.282
341	28.417	517.915	0.033	0.282
342	28.500	519.434	0.033	0.282
343	28.583	520.953	0.033	0.282
344	28.667	522.472	0.033	0.282
345	28.750	523.990	0.033	0.282
346	28.833	525.509	0.033	0.282
347	28.917	527.028	0.033	0.282
348	29.000	528.547	0.033	0.282
349	29.083	530.066	0.033	0.282
350	29.167	531.584	0.033	0.282
351	29.250	533.103	0.033	0.282
352	29.333	534.622	0.033	0.282
353	29.417	536.141	0.033	0.282
354	29.500	537.660	0.033	0.282
355	29.583	539.179	0.033	0.282
356	29.667	540.697	0.033	0.282

357	29.750	542.216	0.033	0.282
358	29.833	543.735	0.033	0.282
359	29.917	545.254	0.033	0.282
360	30.000	546.773	0.033	0.282
361	30.083	548.291	0.033	0.282
362	30.167	549.810	0.033	0.282
363	30.250	551.329	0.031	0.262
364	30.333	552.848	0.027	0.231
365	30.417	554.367	0.027	0.231
366	30.500	555.885	0.027	0.231
367	30.583	557.404	0.027	0.231
368	30.667	558.923	0.027	0.231
369	30.750	560.442	0.027	0.231
370	30.833	561.961	0.027	0.231
371	30.917	563.480	0.027	0.231
372	31.000	564.998	0.027	0.231
373	31.083	566.517	0.027	0.231
374	31.167	568.036	0.027	0.231
375	31.250	569.555	0.027	0.231
376	31.333	571.074	0.027	0.231
377	31.417	572.592	0.027	0.231
378	31.500	574.111	0.027	0.231
379	31.583	575.630	0.027	0.231
380	31.667	577.149	0.027	0.231
381	31.750	578.668	0.027	0.231
382	31.833	580.186	0.027	0.231
383	31.917	581.705	0.027	0.231
384	32.000	583.224	0.027	0.231
385	32.083	584.743	0.027	0.231
386	32.167	586.262	0.027	0.231
387	32.250	587.781	0.027	0.231
388	32.333	589.299	0.027	0.231
389	32.417	590.818	0.027	0.231
390	32.500	592.337	0.027	0.231
391	32.583	593.856	0.027	0.231
392	32.667	595.375	0.027	0.231
393	32.750	596.893	0.027	0.231
394	32.833	598.412	0.027	0.231
395	32.917	599.931	0.027	0.231
396	33.000	601.450	0.025	0.207
397	33.083	602.969	0.021	0.179
398	33.167	604.487	0.021	0.179
399	33.250	606.006	0.021	0.179
400	33.333	607.525	0.021	0.179
401	33.417	609.044	0.021	0.179
402	33.500	610.563	0.021	0.179
403	33.583	612.082	0.021	0.179
404	33.667	613.600	0.021	0.179
405	33.750	615.119	0.021	0.179
406	33.833	616.638	0.021	0.179
407	33.917	618.157	0.021	0.179
408	34.000	619.676	0.021	0.179
409	34.083	621.194	0.021	0.179
410	34.167	622.713	0.021	0.179
411	34.250	624.232	0.021	0.179
412	34.333	625.751	0.021	0.179
413	34.417	627.270	0.021	0.179

414	34.500	628.788	0.021	0.179
415	34.583	630.307	0.021	0.179
416	34.667	631.826	0.021	0.179
417	34.750	633.345	0.021	0.179
418	34.833	634.864	0.021	0.179
419	34.917	636.383	0.021	0.179
420	35.000	637.901	0.021	0.179
421	35.083	639.420	0.021	0.179
422	35.167	640.939	0.021	0.179
423	35.250	642.458	0.021	0.179
424	35.333	643.977	0.021	0.179
425	35.417	645.495	0.021	0.179
426	35.500	647.014	0.021	0.179
427	35.583	648.533	0.021	0.179
428	35.667	650.052	0.021	0.179
429	35.750	651.571	0.018	0.152
430	35.833	653.089	0.015	0.128
431	35.917	654.608	0.015	0.128
432	36.000	656.127	0.015	0.128
433	36.083	657.646	0.015	0.128
434	36.167	659.165	0.015	0.128
435	36.250	660.684	0.015	0.128
436	36.333	662.202	0.015	0.128
437	36.417	663.721	0.015	0.128
438	36.500	665.240	0.015	0.128
439	36.583	666.759	0.015	0.128
440	36.667	668.278	0.015	0.128
441	36.750	669.796	0.015	0.128
442	36.833	671.315	0.015	0.128
443	36.917	672.834	0.015	0.128
444	37.000	674.353	0.015	0.128
445	37.083	675.872	0.015	0.128
446	37.167	677.390	0.015	0.128
447	37.250	678.909	0.015	0.128
448	37.333	680.428	0.015	0.128
449	37.417	681.947	0.015	0.128
Sum =			98.812	Sum= 833.855

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	4.40	0.578	0.163	(0.521)	0.416
2	0.17	4.50	0.592	0.163	(0.532)	0.429
3	0.25	5.40	0.710	0.163	(0.639)	0.547
4	0.33	5.40	0.710	0.163	(0.639)	0.547
5	0.42	5.70	0.749	0.163	(0.674)	0.587
6	0.50	6.40	0.841	0.163	(0.757)	0.679
7	0.58	7.90	1.039	0.163	(0.935)	0.876
8	0.67	9.10	1.196	0.163	(1.077)	1.034
9	0.75	12.80	1.683	0.163	(1.514)	1.520
10	0.83	25.60	3.365	0.163	(3.029)	3.203
11	0.92	7.90	1.039	0.163	(0.935)	0.876
12	1.00	4.90	0.644	0.163	(0.580)	0.481

Peak flow rate of this hydrograph = 103.352(CFS)

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

Time(h+m)	Volume	Ac.Ft	Q(CFS)	0	50.0	100.0	150.0	200.0
0+ 5	0.0032	0.46	Q					
0+10	0.0128	1.40	Q					
0+15	0.0299	2.49	Q					
0+20	0.0554	3.70	Q					
0+25	0.0896	4.96	Q					
0+30	0.1335	6.37	VQ					
0+35	0.1892	8.10	VQ					
0+40	0.2596	10.22	V Q					
0+45	0.3495	13.06	V Q					
0+50	0.4756	18.31	V Q					
0+55	0.6344	23.06	V Q					
1+ 0	0.8061	24.93	V Q					
1+ 5	0.9845	25.89	V Q					
1+10	1.1660	26.36	V Q					
1+15	1.3510	26.85	V Q					
1+20	1.5397	27.40	V Q					
1+25	1.7338	28.18	V Q					
1+30	1.9376	29.59	V Q					
1+35	2.1540	31.43	V Q					
1+40	2.3911	34.42	V Q					
1+45	2.6444	36.78	V Q					
1+50	2.9077	38.24	V Q					
1+55	3.1795	39.47	V Q					
2+ 0	3.4623	41.06	V Q					
2+ 5	3.7604	43.28	V Q					
2+10	4.0808	46.53	V Q					
2+15	4.4346	51.37	V Q					
2+20	4.8046	53.73	V Q					
2+25	5.1850	55.23	V Q					
2+30	5.5727	56.30	V Q					
2+35	5.9688	57.51	V Q					
2+40	6.3760	59.12	V Q					
2+45	6.8034	62.06	V Q					
2+50	7.2534	65.33	V Q					
2+55	7.7160	67.17	V Q					
3+ 0	8.1885	68.61	V Q					

3+ 5	8.6694	69.83	V	Q			
3+10	9.1591	71.10	V	Q			
3+15	9.6585	72.52	V	Q			
3+20	10.1701	74.28	V	Q			
3+25	10.6965	76.43	V	Q			
3+30	11.2431	79.37	V	Q			
3+35	11.8278	84.89	V	Q			
3+40	12.4426	89.27	V	Q			
3+45	13.0698	91.07	V	Q			
3+50	13.7032	91.96	V	Q			
3+55	14.3398	92.43	V	Q			
4+ 0	14.9797	92.92	V	Q			
4+ 5	15.6235	93.48	V	Q			
4+10	16.2723	94.20	V	Q			
4+15	16.9276	95.15	V	Q			
4+20	17.5920	96.46	V	Q			
4+25	18.2727	98.84	V	Q			
4+30	18.9638	100.36	V	Q			
4+35	19.6596	101.02	V	Q			
4+40	20.3575	101.33	V	Q			
4+45	21.0569	101.56	V	Q			
4+50	21.7584	101.85	V	Q			
4+55	22.4630	102.31	V	Q			
5+ 0	23.1723	102.99	V	Q			
5+ 5	23.8833	103.24	V	Q			
5+10	24.5950	103.34	V	Q			
5+15	25.3068	103.35	V	Q			
5+20	26.0186	103.35	V	Q			
5+25	26.7303	103.35	V	Q			
5+30	27.4420	103.34	V	Q			
5+35	28.1492	102.67	V	Q			
5+40	28.8490	101.62	V	Q			
5+45	29.5402	100.36	V	Q			
5+50	30.2221	99.01	VQ				
5+55	30.8941	97.58	Q				
6+ 0	31.5551	95.97	Q				
6+ 5	32.2023	93.97	Q	V			
6+10	32.8327	91.53	Q	V			
6+15	33.4397	88.14	Q	V			
6+20	34.0025	81.72	Q	V			
6+25	34.5332	77.06	Q	V			
6+30	35.0490	74.89	Q	V			
6+35	35.5565	73.70	Q	V			
6+40	36.0584	72.87	Q	V			
6+45	36.5543	72.01	Q	V			
6+50	37.0434	71.01	Q	V			
6+55	37.5231	69.65	Q	V			
7+ 0	37.9892	67.68	Q	V			
7+ 5	38.4366	64.96	Q	V			
7+10	38.8521	60.33	Q	V			
7+15	39.2481	57.51	Q	V			
7+20	39.6336	55.96	Q	V			
7+25	40.0120	54.94	Q	V			
7+30	40.3832	53.90	Q	V			
7+35	40.7453	52.58	Q	V			
7+40	41.0922	50.37	Q	V			
7+45	41.4182	47.33	Q	V			

7+50	41.7353	46.04	Q	V
7+55	42.0473	45.30	Q	V
8+ 0	42.3567	44.93	Q	V
8+ 5	42.6636	44.57	Q	V
8+10	42.9679	44.17	Q	V
8+15	43.2687	43.69	Q	V
8+20	43.5639	42.85	Q	V
8+25	43.8513	41.74	Q	V
8+30	44.1267	39.99	Q	V
8+35	44.3885	38.01	Q	V
8+40	44.6436	37.04	Q	V
8+45	44.8936	36.30	Q	V
8+50	45.1389	35.63	Q	V
8+55	45.3787	34.81	Q	V
9+ 0	45.6105	33.65	Q	V
9+ 5	45.8273	31.49	Q	V
9+10	46.0345	30.08	Q	V
9+15	46.2370	29.41	Q	V
9+20	46.4371	29.05	Q	V
9+25	46.6353	28.79	Q	V
9+30	46.8317	28.51	Q	V
9+35	47.0259	28.20	Q	V
9+40	47.2171	27.76	Q	V
9+45	47.4042	27.16	Q	V
9+50	47.5854	26.31	Q	V
9+55	47.7568	24.88	Q	V
10+ 0	47.9228	24.10	Q	V
10+ 5	48.0859	23.68	Q	V
10+10	48.2472	23.43	Q	V
10+15	48.4068	23.17	Q	V
10+20	48.5641	22.84	Q	V
10+25	48.7174	22.27	Q	V
10+30	48.8660	21.57	Q	V
10+35	49.0130	21.35	Q	V
10+40	49.1594	21.25	Q	V
10+45	49.3057	21.24	Q	V
10+50	49.4520	21.24	Q	V
10+55	49.5983	21.24	Q	V
11+ 0	49.7446	21.24	Q	V
11+ 5	49.8900	21.12	Q	V
11+10	50.0344	20.97	Q	V
11+15	50.1775	20.78	Q	V
11+20	50.3193	20.58	Q	V
11+25	50.4596	20.37	Q	V
11+30	50.5983	20.13	Q	V
11+35	50.7349	19.83	Q	V
11+40	50.8690	19.47	Q	V
11+45	50.9993	18.93	Q	V
11+50	51.1231	17.96	Q	V
11+55	51.2433	17.46	Q	V
12+ 0	51.3622	17.27	Q	V
12+ 5	51.4809	17.23	Q	V
12+10	51.5995	17.23	Q	V
12+15	51.7181	17.23	Q	V
12+20	51.8368	17.23	Q	V
12+25	51.9551	17.19	Q	V
12+30	52.0727	17.08	Q	V

12+35	52.1895	16.96	Q			V	
12+40	52.3054	16.82	Q			V	
12+45	52.4202	16.67	Q			V	
12+50	52.5339	16.51	Q			V	
12+55	52.6464	16.32	Q			V	
13+ 0	52.7571	16.08	Q			V	
13+ 5	52.8657	15.77	Q			V	
13+10	52.9706	15.23	Q			V	
13+15	53.0714	14.63	Q			V	
13+20	53.1708	14.43	Q			V	
13+25	53.2696	14.36	Q			V	
13+30	53.3685	14.35	Q			V	
13+35	53.4674	14.35	Q			V	
13+40	53.5662	14.35	Q			V	
13+45	53.6650	14.35	Q			V	
13+50	53.7635	14.30	Q			V	
13+55	53.8615	14.23	Q			V	
14+ 0	53.9589	14.15	Q			V	
14+ 5	54.0558	14.06	Q			V	
14+10	54.1520	13.97	Q			V	
14+15	54.2476	13.87	Q			V	
14+20	54.3422	13.74	Q			V	
14+25	54.4357	13.58	Q			V	
14+30	54.5275	13.34	Q			V	
14+35	54.6165	12.92	Q			V	
14+40	54.7042	12.72	Q			V	
14+45	54.7912	12.65	Q			V	
14+50	54.8782	12.63	Q			V	
14+55	54.9652	12.63	Q			V	
15+ 0	55.0522	12.63	Q			V	
15+ 5	55.1392	12.63	Q			V	
15+10	55.2260	12.59	Q			V	
15+15	55.3121	12.51	Q			V	
15+20	55.3976	12.41	Q			V	
15+25	55.4823	12.30	Q			V	
15+30	55.5662	12.18	Q			V	
15+35	55.6492	12.05	Q			V	
15+40	55.7311	11.90	Q			V	
15+45	55.8117	11.70	Q			V	
15+50	55.8905	11.45	Q			V	
15+55	55.9662	10.98	Q			V	
16+ 0	56.0387	10.54	Q			V	
16+ 5	56.1103	10.39	Q			V	
16+10	56.1815	10.34	Q			V	
16+15	56.2526	10.34	Q			V	
16+20	56.3238	10.34	Q			V	
16+25	56.3950	10.34	Q			V	
16+30	56.4661	10.33	Q			V	
16+35	56.5369	10.27	Q			V	
16+40	56.6072	10.20	Q			V	
16+45	56.6769	10.12	Q			V	
16+50	56.7460	10.04	Q			V	
16+55	56.8145	9.95	Q			V	
17+ 0	56.8823	9.84	Q			V	
17+ 5	56.9491	9.71	Q			V	
17+10	57.0149	9.54	Q			V	
17+15	57.0788	9.29	Q			V	

17+20	57.1400	8.87	Q				V
17+25	57.1999	8.70	Q				V
17+30	57.2592	8.62	Q				V
17+35	57.3186	8.61	Q				V
17+40	57.3779	8.61	Q				V
17+45	57.4372	8.61	Q				V
17+50	57.4965	8.61	Q				V
17+55	57.5558	8.61	Q				V
18+ 0	57.6151	8.61	Q				V
18+ 5	57.6745	8.61	Q				V
18+10	57.7338	8.61	Q				V
18+15	57.7931	8.61	Q				V
18+20	57.8524	8.61	Q				V
18+25	57.9117	8.61	Q				V
18+30	57.9710	8.61	Q				V
18+35	58.0303	8.61	Q				V
18+40	58.0897	8.61	Q				V
18+45	58.1490	8.61	Q				V
18+50	58.2083	8.61	Q				V
18+55	58.2676	8.61	Q				V
19+ 0	58.3269	8.61	Q				V
19+ 5	58.3862	8.61	Q				V
19+10	58.4456	8.61	Q				V
19+15	58.5048	8.60	Q				V
19+20	58.5635	8.52	Q				V
19+25	58.6215	8.43	Q				V
19+30	58.6788	8.32	Q				V
19+35	58.7354	8.21	Q				V
19+40	58.7910	8.08	Q				V
19+45	58.8457	7.94	Q				V
19+50	58.8992	7.76	Q				V
19+55	58.9511	7.54	Q				V
20+ 0	59.0005	7.18	Q				V
20+ 5	59.0462	6.63	Q				V
20+10	59.0904	6.42	Q				V
20+15	59.1340	6.33	Q				V
20+20	59.1775	6.32	Q				V
20+25	59.2210	6.32	Q				V
20+30	59.2645	6.32	Q				V
20+35	59.3080	6.32	Q				V
20+40	59.3514	6.32	Q				V
20+45	59.3949	6.32	Q				V
20+50	59.4384	6.32	Q				V
20+55	59.4819	6.32	Q				V
21+ 0	59.5254	6.32	Q				V
21+ 5	59.5689	6.32	Q				V
21+10	59.6124	6.32	Q				V
21+15	59.6559	6.32	Q				V
21+20	59.6994	6.32	Q				V
21+25	59.7429	6.32	Q				V
21+30	59.7864	6.32	Q				V
21+35	59.8299	6.32	Q				V
21+40	59.8734	6.32	Q				V
21+45	59.9169	6.32	Q				V
21+50	59.9604	6.32	Q				V
21+55	60.0039	6.32	Q				V
22+ 0	60.0473	6.30	Q				V

22+ 5	60.0903	6.24	Q				V
22+10	60.1328	6.17	Q				V
22+15	60.1748	6.09	Q				V
22+20	60.2161	6.00	Q				V
22+25	60.2569	5.91	Q				V
22+30	60.2968	5.80	Q				V
22+35	60.3358	5.66	Q				V
22+40	60.3737	5.49	Q				V
22+45	60.4095	5.21	Q				V
22+50	60.4427	4.81	Q				V
22+55	60.4748	4.66	Q				V
23+ 0	60.5064	4.60	Q				V
23+ 5	60.5381	4.59	Q				V
23+10	60.5697	4.59	Q				V
23+15	60.6013	4.59	Q				V
23+20	60.6330	4.59	Q				V
23+25	60.6646	4.59	Q				V
23+30	60.6962	4.59	Q				V
23+35	60.7279	4.59	Q				V
23+40	60.7595	4.59	Q				V
23+45	60.7911	4.59	Q				V
23+50	60.8228	4.59	Q				V
23+55	60.8544	4.59	Q				V
24+ 0	60.8860	4.59	Q				V
24+ 5	60.9177	4.59	Q				V
24+10	60.9493	4.59	Q				V
24+15	60.9810	4.59	Q				V
24+20	61.0126	4.59	Q				V
24+25	61.0442	4.59	Q				V
24+30	61.0759	4.59	Q				V
24+35	61.1075	4.59	Q				V
24+40	61.1391	4.59	Q				V
24+45	61.1707	4.59	Q				V
24+50	61.2023	4.58	Q				V
24+55	61.2338	4.57	Q				V
25+ 0	61.2651	4.55	Q				V
25+ 5	61.2964	4.54	Q				V
25+10	61.3276	4.52	Q				V
25+15	61.3586	4.51	Q				V
25+20	61.3895	4.48	Q				V
25+25	61.4201	4.45	Q				V
25+30	61.4505	4.40	Q				V
25+35	61.4803	4.34	Q				V
25+40	61.5101	4.32	Q				V
25+45	61.5397	4.31	Q				V
25+50	61.5694	4.31	Q				V
25+55	61.5990	4.31	Q				V
26+ 0	61.6287	4.31	Q				V
26+ 5	61.6584	4.31	Q				V
26+10	61.6880	4.31	Q				V
26+15	61.7177	4.31	Q				V
26+20	61.7473	4.31	Q				V
26+25	61.7770	4.31	Q				V
26+30	61.8067	4.31	Q				V
26+35	61.8363	4.31	Q				V
26+40	61.8660	4.31	Q				V
26+45	61.8956	4.31	Q				V

26+50	61.9253	4.31	Q				V
26+55	61.9549	4.31	Q				V
27+ 0	61.9846	4.31	Q				V
27+ 5	62.0143	4.31	Q				V
27+10	62.0439	4.31	Q				V
27+15	62.0736	4.31	Q				V
27+20	62.1032	4.31	Q				V
27+25	62.1329	4.31	Q				V
27+30	62.1625	4.29	Q				V
27+35	62.1917	4.25	Q				V
27+40	62.2207	4.20	Q				V
27+45	62.2492	4.15	Q				V
27+50	62.2774	4.09	Q				V
27+55	62.3051	4.03	Q				V
28+ 0	62.3323	3.95	Q				V
28+ 5	62.3589	3.86	Q				V
28+10	62.3846	3.73	Q				V
28+15	62.4089	3.53	Q				V
28+20	62.4315	3.28	Q				V
28+25	62.4534	3.19	Q				V
28+30	62.4752	3.16	Q				V
28+35	62.4970	3.16	Q				V
28+40	62.5187	3.16	Q				V
28+45	62.5405	3.16	Q				V
28+50	62.5622	3.16	Q				V
28+55	62.5840	3.16	Q				V
29+ 0	62.6057	3.16	Q				V
29+ 5	62.6274	3.16	Q				V
29+10	62.6492	3.16	Q				V
29+15	62.6709	3.16	Q				V
29+20	62.6927	3.16	Q				V
29+25	62.7144	3.16	Q				V
29+30	62.7362	3.16	Q				V
29+35	62.7579	3.16	Q				V
29+40	62.7797	3.16	Q				V
29+45	62.8014	3.16	Q				V
29+50	62.8232	3.16	Q				V
29+55	62.8449	3.16	Q				V
30+ 0	62.8667	3.16	Q				V
30+ 5	62.8884	3.16	Q				V
30+10	62.9102	3.16	Q				V
30+15	62.9319	3.15	Q				V
30+20	62.9534	3.13	Q				V
30+25	62.9748	3.10	Q				V
30+30	62.9960	3.08	Q				V
30+35	63.0170	3.05	Q				V
30+40	63.0377	3.02	Q				V
30+45	63.0582	2.98	Q				V
30+50	63.0784	2.93	Q				V
30+55	63.0982	2.87	Q				V
31+ 0	63.1171	2.76	Q				V
31+ 5	63.1353	2.64	Q				V
31+10	63.1532	2.60	Q				V
31+15	63.1710	2.58	Q				V
31+20	63.1888	2.58	Q				V
31+25	63.2066	2.58	Q				V
31+30	63.2244	2.58	Q				V

31+35	63.2422	2.58	Q				V
31+40	63.2600	2.58	Q				V
31+45	63.2778	2.58	Q				V
31+50	63.2956	2.58	Q				V
31+55	63.3133	2.58	Q				V
32+ 0	63.3311	2.58	Q				V
32+ 5	63.3489	2.58	Q				V
32+10	63.3667	2.58	Q				V
32+15	63.3845	2.58	Q				V
32+20	63.4023	2.58	Q				V
32+25	63.4201	2.58	Q				V
32+30	63.4379	2.58	Q				V
32+35	63.4557	2.58	Q				V
32+40	63.4735	2.58	Q				V
32+45	63.4913	2.58	Q				V
32+50	63.5091	2.58	Q				V
32+55	63.5269	2.58	Q				V
33+ 0	63.5446	2.57	Q				V
33+ 5	63.5622	2.55	Q				V
33+10	63.5796	2.53	Q				V
33+15	63.5968	2.50	Q				V
33+20	63.6138	2.47	Q				V
33+25	63.6306	2.44	Q				V
33+30	63.6471	2.40	Q				V
33+35	63.6633	2.35	Q				V
33+40	63.6791	2.29	Q				V
33+45	63.6940	2.17	Q				V
33+50	63.7082	2.06	Q				V
33+55	63.7221	2.02	Q				V
34+ 0	63.7360	2.01	Q				V
34+ 5	63.7498	2.01	Q				V
34+10	63.7636	2.01	Q				V
34+15	63.7775	2.01	Q				V
34+20	63.7913	2.01	Q				V
34+25	63.8052	2.01	Q				V
34+30	63.8190	2.01	Q				V
34+35	63.8329	2.01	Q				V
34+40	63.8467	2.01	Q				V
34+45	63.8605	2.01	Q				V
34+50	63.8744	2.01	Q				V
34+55	63.8882	2.01	Q				V
35+ 0	63.9021	2.01	Q				V
35+ 5	63.9159	2.01	Q				V
35+10	63.9297	2.01	Q				V
35+15	63.9436	2.01	Q				V
35+20	63.9574	2.01	Q				V
35+25	63.9713	2.01	Q				V
35+30	63.9851	2.01	Q				V
35+35	63.9989	2.01	Q				V
35+40	64.0128	2.01	Q				V
35+45	64.0265	2.00	Q				V
35+50	64.0402	1.98	Q				V
35+55	64.0536	1.95	Q				V
36+ 0	64.0668	1.92	Q				V
36+ 5	64.0799	1.89	Q				V
36+10	64.0927	1.86	Q				V
36+15	64.1052	1.82	Q				V

36+20	64.1174	1.77	Q				V
36+25	64.1292	1.71	Q				V
36+30	64.1401	1.58	Q				V
36+35	64.1503	1.48	Q				V
36+40	64.1603	1.45	Q				V
36+45	64.1701	1.44	Q				V
36+50	64.1800	1.44	Q				V
36+55	64.1899	1.44	Q				V
37+ 0	64.1998	1.44	Q				V
37+ 5	64.2097	1.44	Q				V
37+10	64.2196	1.44	Q				V
37+15	64.2295	1.44	Q				V
37+20	64.2393	1.44	Q				V
37+25	64.2492	1.44	Q				V
37+30	64.2587	1.38	Q				V
37+35	64.2679	1.33	Q				V
37+40	64.2765	1.26	Q				V
37+45	64.2847	1.19	Q				V
37+50	64.2924	1.11	Q				V
37+55	64.2994	1.02	Q				V
38+ 0	64.3057	0.91	Q				V
38+ 5	64.3111	0.78	Q				V
38+10	64.3151	0.58	Q				V
38+15	64.3163	0.17	Q				V
38+20	64.3167	0.06	Q				V

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 05/08/15 File: 154149HISTHYDB320.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR

HISTORICAL CONDITIONS AREA "B"

20-YEAR, 3-HOUR STORM

BY: JTS DATE: 05-08-15

Drainage Area = 837.34(Ac.) = 1.308 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 837.34(Ac.)= 1.308 Sq. Mi.
Length along longest watercourse = 16296.72(Ft.)
Length along longest watercourse measured to centroid = 8849.03(Ft.)
Length along longest watercourse = 3.087 Mi.
Length along longest watercourse measured to centroid = 1.676 Mi.
Difference in elevation = 777.00(Ft.)
Slope along watercourse = 251.7415 Ft./Mi.
Average Manning's 'N' = 0.350
Lag time = 5.487 Hr.
Lag time = 329.20 Min.
25% of lag time = 82.30 Min.
40% of lag time = 131.68 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]
837.34	1.05	879.21

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
837.34	2.51	2101.72

STORM EVENT (YEAR) = 20.00
Area Averaged 2-Year Rainfall = 1.050(In)
Area Averaged 100-Year Rainfall = 2.510(In)

Point rain (area averaged) = 1.909(In)
Areal adjustment factor = 99.63 %
Adjusted average point rain = 1.902(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
81.060	67.00	0.050
1.780	78.00	0.050
101.910	86.00	0.050
652.590	89.00	0.050
Total Area Entered = 837.34(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.)	(In/Hr)	(Dec.)	(In/Hr)
67.0	67.0	0.394	0.050	0.377	0.097	0.036
78.0	78.0	0.268	0.050	0.256	0.002	0.001
86.0	86.0	0.176	0.050	0.168	0.122	0.020
89.0	89.0	0.141	0.050	0.135	0.779	0.105
Sum (F) =						0.163

Area averaged mean soil loss (F) (In/Hr) = 0.163
Minimum soil loss rate ((In/Hr)) = 0.081
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Unit Hydrograph
VALLEY S-Curve

WARNING: End of hydrograph not reached with this
Unit time interval vs lag time
Unit-Hydrograph terminated after 450 intervals
Unit Hydrograph Data

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	1.519	0.132
2	0.167	3.038	0.263
3	0.250	4.556	0.263
4	0.333	6.075	0.263
5	0.417	7.594	0.263
6	0.500	9.113	0.263
7	0.583	10.632	0.263
8	0.667	12.151	0.263
9	0.750	13.669	0.263
10	0.833	15.188	0.264
11	0.917	16.707	0.326
12	1.000	18.226	0.365
13	1.083	19.745	0.365
14	1.167	21.263	0.365
15	1.250	22.782	0.365
16	1.333	24.301	0.365

17	1.417	25.820	0.391	3.300
18	1.500	27.339	0.527	4.451
19	1.583	28.857	0.547	4.614
20	1.667	30.376	0.547	4.614
21	1.750	31.895	0.547	4.614
22	1.833	33.414	0.547	4.614
23	1.917	34.933	0.547	4.614
24	2.000	36.452	0.616	5.199
25	2.083	37.970	0.699	5.895
26	2.167	39.489	0.699	5.896
27	2.250	41.008	0.699	5.896
28	2.333	42.527	0.699	5.896
29	2.417	44.046	0.699	5.896
30	2.500	45.564	0.699	5.896
31	2.583	47.083	0.699	5.896
32	2.667	48.602	0.699	5.896
33	2.750	50.121	0.699	5.903
34	2.833	51.640	0.850	7.176
35	2.917	53.158	0.962	8.117
36	3.000	54.677	0.962	8.117
37	3.083	56.196	0.962	8.117
38	3.167	57.715	0.962	8.117
39	3.250	59.234	0.962	8.117
40	3.333	60.753	0.962	8.117
41	3.417	62.271	0.962	8.117
42	3.500	63.790	0.962	8.117
43	3.583	65.309	0.964	8.135
44	3.667	66.828	1.031	8.701
45	3.750	68.347	1.063	8.972
46	3.833	69.865	1.063	8.972
47	3.917	71.384	1.063	8.972
48	4.000	72.903	1.063	8.972
49	4.083	74.422	1.063	8.972
50	4.167	75.941	1.069	9.021
51	4.250	77.459	1.091	9.210
52	4.333	78.978	1.094	9.228
53	4.417	80.497	1.094	9.228
54	4.500	82.016	1.094	9.228
55	4.583	83.535	1.094	9.228
56	4.667	85.054	1.094	9.228
57	4.750	86.572	1.094	9.228
58	4.833	88.091	1.094	9.228
59	4.917	89.610	1.094	9.228
60	5.000	91.129	1.094	9.228
61	5.083	92.648	1.094	9.228
62	5.167	94.166	1.094	9.228
63	5.250	95.685	1.094	9.228
64	5.333	97.204	1.094	9.228
65	5.417	98.723	1.094	9.228
66	5.500	100.242	1.090	9.197
67	5.583	101.760	0.904	7.626
68	5.667	103.279	0.800	6.750
69	5.750	104.798	0.800	6.750
70	5.833	106.317	0.800	6.750
71	5.917	107.836	0.800	6.750
72	6.000	109.355	0.800	6.750
73	6.083	110.873	0.800	6.750

74	6.167	112.392	0.800	6.750
75	6.250	113.911	0.800	6.750
76	6.333	115.430	0.793	6.690
77	6.417	116.949	0.668	5.639
78	6.500	118.467	0.623	5.255
79	6.583	119.986	0.623	5.255
80	6.667	121.505	0.623	5.255
81	6.750	123.024	0.623	5.255
82	6.833	124.543	0.623	5.255
83	6.917	126.061	0.589	4.973
84	7.000	127.580	0.492	4.154
85	7.083	129.099	0.486	4.101
86	7.167	130.618	0.486	4.101
87	7.250	132.137	0.486	4.101
88	7.333	133.656	0.486	4.101
89	7.417	135.174	0.486	4.101
90	7.500	136.693	0.486	4.101
91	7.583	138.212	0.486	4.101
92	7.667	139.731	0.486	4.101
93	7.750	141.250	0.460	3.885
94	7.833	142.768	0.411	3.471
95	7.917	144.287	0.410	3.461
96	8.000	145.806	0.410	3.461
97	8.083	147.325	0.410	3.461
98	8.167	148.844	0.410	3.461
99	8.250	150.362	0.407	3.437
100	8.333	151.881	0.342	2.884
101	8.417	153.400	0.314	2.649
102	8.500	154.919	0.314	2.649
103	8.583	156.438	0.314	2.649
104	8.667	157.957	0.314	2.649
105	8.750	159.475	0.314	2.649
106	8.833	160.994	0.314	2.649
107	8.917	162.513	0.314	2.649
108	9.000	164.032	0.314	2.649
109	9.083	165.551	0.310	2.618
110	9.167	167.069	0.270	2.274
111	9.250	168.588	0.258	2.179
112	9.333	170.107	0.258	2.179
113	9.417	171.626	0.258	2.179
114	9.500	173.145	0.258	2.179
115	9.583	174.663	0.258	2.179
116	9.667	176.182	0.248	2.093
117	9.750	177.701	0.226	1.904
118	9.833	179.220	0.225	1.897
119	9.917	180.739	0.225	1.897
120	10.000	182.258	0.225	1.897
121	10.083	183.776	0.225	1.897
122	10.167	185.295	0.225	1.897
123	10.250	186.814	0.225	1.897
124	10.333	188.333	0.225	1.897
125	10.417	189.852	0.225	1.897
126	10.500	191.370	0.225	1.897
127	10.583	192.889	0.225	1.897
128	10.667	194.408	0.225	1.897
129	10.750	195.927	0.225	1.897
130	10.833	197.446	0.225	1.897

131	10.917	198.964	0.225	1.897
132	11.000	200.483	0.223	1.879
133	11.083	202.002	0.192	1.621
134	11.167	203.521	0.182	1.538
135	11.250	205.040	0.182	1.538
136	11.333	206.559	0.182	1.538
137	11.417	208.077	0.182	1.538
138	11.500	209.596	0.182	1.538
139	11.583	211.115	0.182	1.538
140	11.667	212.634	0.182	1.538
141	11.750	214.153	0.182	1.538
142	11.833	215.671	0.182	1.538
143	11.917	217.190	0.182	1.538
144	12.000	218.709	0.182	1.538
145	12.083	220.228	0.182	1.538
146	12.167	221.747	0.182	1.538
147	12.250	223.265	0.182	1.538
148	12.333	224.784	0.182	1.538
149	12.417	226.303	0.171	1.444
150	12.500	227.822	0.152	1.284
151	12.583	229.341	0.152	1.282
152	12.667	230.860	0.152	1.282
153	12.750	232.378	0.152	1.282
154	12.833	233.897	0.152	1.282
155	12.917	235.416	0.152	1.282
156	13.000	236.935	0.152	1.282
157	13.083	238.454	0.152	1.282
158	13.167	239.972	0.152	1.282
159	13.250	241.491	0.152	1.282
160	13.333	243.010	0.152	1.282
161	13.417	244.529	0.152	1.282
162	13.500	246.048	0.152	1.282
163	13.583	247.566	0.152	1.282
164	13.667	249.085	0.152	1.282
165	13.750	250.604	0.150	1.270
166	13.833	252.123	0.137	1.156
167	13.917	253.642	0.134	1.128
168	14.000	255.161	0.134	1.128
169	14.083	256.679	0.134	1.128
170	14.167	258.198	0.134	1.128
171	14.250	259.717	0.134	1.128
172	14.333	261.236	0.134	1.128
173	14.417	262.755	0.134	1.128
174	14.500	264.273	0.134	1.128
175	14.583	265.792	0.134	1.128
176	14.667	267.311	0.134	1.128
177	14.750	268.830	0.134	1.128
178	14.833	270.349	0.134	1.128
179	14.917	271.867	0.134	1.128
180	15.000	273.386	0.134	1.128
181	15.083	274.905	0.134	1.128
182	15.167	276.424	0.123	1.038
183	15.250	277.943	0.109	0.923
184	15.333	279.462	0.109	0.923
185	15.417	280.980	0.109	0.923
186	15.500	282.499	0.109	0.923
187	15.583	284.018	0.109	0.923

188	15.667	285.537	0.109	0.923
189	15.750	287.056	0.109	0.923
190	15.833	288.574	0.109	0.923
191	15.917	290.093	0.109	0.923
192	16.000	291.612	0.109	0.923
193	16.083	293.131	0.109	0.923
194	16.167	294.650	0.109	0.923
195	16.250	296.168	0.109	0.923
196	16.333	297.687	0.109	0.923
197	16.417	299.206	0.109	0.923
198	16.500	300.725	0.107	0.905
199	16.583	302.244	0.094	0.790
200	16.667	303.763	0.091	0.769
201	16.750	305.281	0.091	0.769
202	16.833	306.800	0.091	0.769
203	16.917	308.319	0.091	0.769
204	17.000	309.838	0.091	0.769
205	17.083	311.357	0.091	0.769
206	17.167	312.875	0.091	0.769
207	17.250	314.394	0.091	0.769
208	17.333	315.913	0.091	0.769
209	17.417	317.432	0.091	0.769
210	17.500	318.951	0.091	0.769
211	17.583	320.469	0.091	0.769
212	17.667	321.988	0.091	0.769
213	17.750	323.507	0.091	0.769
214	17.833	325.026	0.091	0.769
215	17.917	326.545	0.091	0.769
216	18.000	328.064	0.091	0.769
217	18.083	329.582	0.091	0.769
218	18.167	331.101	0.091	0.769
219	18.250	332.620	0.091	0.769
220	18.333	334.139	0.091	0.769
221	18.417	335.658	0.091	0.769
222	18.500	337.176	0.091	0.769
223	18.583	338.695	0.091	0.769
224	18.667	340.214	0.091	0.769
225	18.750	341.733	0.091	0.769
226	18.833	343.252	0.091	0.769
227	18.917	344.770	0.091	0.769
228	19.000	346.289	0.091	0.769
229	19.083	347.808	0.091	0.769
230	19.167	349.327	0.091	0.769
231	19.250	350.846	0.087	0.737
232	19.333	352.365	0.069	0.584
233	19.417	353.883	0.067	0.564
234	19.500	355.402	0.067	0.564
235	19.583	356.921	0.067	0.564
236	19.667	358.440	0.067	0.564
237	19.750	359.959	0.067	0.564
238	19.833	361.477	0.067	0.564
239	19.917	362.996	0.067	0.564
240	20.000	364.515	0.067	0.564
241	20.083	366.034	0.067	0.564
242	20.167	367.553	0.067	0.564
243	20.250	369.071	0.067	0.564
244	20.333	370.590	0.067	0.564

245	20.417	372.109	0.067	0.564
246	20.500	373.628	0.067	0.564
247	20.583	375.147	0.067	0.564
248	20.667	376.666	0.067	0.564
249	20.750	378.184	0.067	0.564
250	20.833	379.703	0.067	0.564
251	20.917	381.222	0.067	0.564
252	21.000	382.741	0.067	0.564
253	21.083	384.260	0.067	0.564
254	21.167	385.778	0.067	0.564
255	21.250	387.297	0.067	0.564
256	21.333	388.816	0.067	0.564
257	21.417	390.335	0.067	0.564
258	21.500	391.854	0.067	0.564
259	21.583	393.372	0.067	0.564
260	21.667	394.891	0.067	0.564
261	21.750	396.410	0.067	0.564
262	21.833	397.929	0.067	0.564
263	21.917	399.448	0.067	0.564
264	22.000	400.967	0.063	0.533
265	22.083	402.485	0.050	0.420
266	22.167	404.004	0.049	0.410
267	22.250	405.523	0.049	0.410
268	22.333	407.042	0.049	0.410
269	22.417	408.561	0.049	0.410
270	22.500	410.079	0.049	0.410
271	22.583	411.598	0.049	0.410
272	22.667	413.117	0.049	0.410
273	22.750	414.636	0.049	0.410
274	22.833	416.155	0.049	0.410
275	22.917	417.673	0.049	0.410
276	23.000	419.192	0.049	0.410
277	23.083	420.711	0.049	0.410
278	23.167	422.230	0.049	0.410
279	23.250	423.749	0.049	0.410
280	23.333	425.268	0.049	0.410
281	23.417	426.786	0.049	0.410
282	23.500	428.305	0.049	0.410
283	23.583	429.824	0.049	0.410
284	23.667	431.343	0.049	0.410
285	23.750	432.862	0.049	0.410
286	23.833	434.380	0.049	0.410
287	23.917	435.899	0.049	0.410
288	24.000	437.418	0.049	0.410
289	24.083	438.937	0.049	0.410
290	24.167	440.456	0.049	0.410
291	24.250	441.974	0.049	0.410
292	24.333	443.493	0.049	0.410
293	24.417	445.012	0.049	0.410
294	24.500	446.531	0.049	0.410
295	24.583	448.050	0.049	0.410
296	24.667	449.569	0.049	0.410
297	24.750	451.087	0.048	0.404
298	24.833	452.606	0.046	0.386
299	24.917	454.125	0.046	0.385
300	25.000	455.644	0.046	0.385
301	25.083	457.163	0.046	0.385

302	25.167	458.681	0.046	0.385
303	25.250	460.200	0.046	0.385
304	25.333	461.719	0.046	0.385
305	25.417	463.238	0.046	0.385
306	25.500	464.757	0.046	0.385
307	25.583	466.275	0.046	0.385
308	25.667	467.794	0.046	0.385
309	25.750	469.313	0.046	0.385
310	25.833	470.832	0.046	0.385
311	25.917	472.351	0.046	0.385
312	26.000	473.870	0.046	0.385
313	26.083	475.388	0.046	0.385
314	26.167	476.907	0.046	0.385
315	26.250	478.426	0.046	0.385
316	26.333	479.945	0.046	0.385
317	26.417	481.464	0.046	0.385
318	26.500	482.982	0.046	0.385
319	26.583	484.501	0.046	0.385
320	26.667	486.020	0.046	0.385
321	26.750	487.539	0.046	0.385
322	26.833	489.058	0.046	0.385
323	26.917	490.576	0.046	0.385
324	27.000	492.095	0.046	0.385
325	27.083	493.614	0.046	0.385
326	27.167	495.133	0.046	0.385
327	27.250	496.652	0.046	0.385
328	27.333	498.171	0.046	0.385
329	27.417	499.689	0.046	0.385
330	27.500	501.208	0.042	0.352
331	27.583	502.727	0.034	0.284
332	27.667	504.246	0.033	0.282
333	27.750	505.765	0.033	0.282
334	27.833	507.283	0.033	0.282
335	27.917	508.802	0.033	0.282
336	28.000	510.321	0.033	0.282
337	28.083	511.840	0.033	0.282
338	28.167	513.359	0.033	0.282
339	28.250	514.878	0.033	0.282
340	28.333	516.396	0.033	0.282
341	28.417	517.915	0.033	0.282
342	28.500	519.434	0.033	0.282
343	28.583	520.953	0.033	0.282
344	28.667	522.472	0.033	0.282
345	28.750	523.990	0.033	0.282
346	28.833	525.509	0.033	0.282
347	28.917	527.028	0.033	0.282
348	29.000	528.547	0.033	0.282
349	29.083	530.066	0.033	0.282
350	29.167	531.584	0.033	0.282
351	29.250	533.103	0.033	0.282
352	29.333	534.622	0.033	0.282
353	29.417	536.141	0.033	0.282
354	29.500	537.660	0.033	0.282
355	29.583	539.179	0.033	0.282
356	29.667	540.697	0.033	0.282
357	29.750	542.216	0.033	0.282
358	29.833	543.735	0.033	0.282

359	29.917	545.254	0.033	0.282
360	30.000	546.773	0.033	0.282
361	30.083	548.291	0.033	0.282
362	30.167	549.810	0.033	0.282
363	30.250	551.329	0.031	0.262
364	30.333	552.848	0.027	0.231
365	30.417	554.367	0.027	0.231
366	30.500	555.885	0.027	0.231
367	30.583	557.404	0.027	0.231
368	30.667	558.923	0.027	0.231
369	30.750	560.442	0.027	0.231
370	30.833	561.961	0.027	0.231
371	30.917	563.480	0.027	0.231
372	31.000	564.998	0.027	0.231
373	31.083	566.517	0.027	0.231
374	31.167	568.036	0.027	0.231
375	31.250	569.555	0.027	0.231
376	31.333	571.074	0.027	0.231
377	31.417	572.592	0.027	0.231
378	31.500	574.111	0.027	0.231
379	31.583	575.630	0.027	0.231
380	31.667	577.149	0.027	0.231
381	31.750	578.668	0.027	0.231
382	31.833	580.186	0.027	0.231
383	31.917	581.705	0.027	0.231
384	32.000	583.224	0.027	0.231
385	32.083	584.743	0.027	0.231
386	32.167	586.262	0.027	0.231
387	32.250	587.781	0.027	0.231
388	32.333	589.299	0.027	0.231
389	32.417	590.818	0.027	0.231
390	32.500	592.337	0.027	0.231
391	32.583	593.856	0.027	0.231
392	32.667	595.375	0.027	0.231
393	32.750	596.893	0.027	0.231
394	32.833	598.412	0.027	0.231
395	32.917	599.931	0.027	0.231
396	33.000	601.450	0.025	0.207
397	33.083	602.969	0.021	0.179
398	33.167	604.487	0.021	0.179
399	33.250	606.006	0.021	0.179
400	33.333	607.525	0.021	0.179
401	33.417	609.044	0.021	0.179
402	33.500	610.563	0.021	0.179
403	33.583	612.082	0.021	0.179
404	33.667	613.600	0.021	0.179
405	33.750	615.119	0.021	0.179
406	33.833	616.638	0.021	0.179
407	33.917	618.157	0.021	0.179
408	34.000	619.676	0.021	0.179
409	34.083	621.194	0.021	0.179
410	34.167	622.713	0.021	0.179
411	34.250	624.232	0.021	0.179
412	34.333	625.751	0.021	0.179
413	34.417	627.270	0.021	0.179
414	34.500	628.788	0.021	0.179
415	34.583	630.307	0.021	0.179

416	34.667	631.826	0.021	0.179
417	34.750	633.345	0.021	0.179
418	34.833	634.864	0.021	0.179
419	34.917	636.383	0.021	0.179
420	35.000	637.901	0.021	0.179
421	35.083	639.420	0.021	0.179
422	35.167	640.939	0.021	0.179
423	35.250	642.458	0.021	0.179
424	35.333	643.977	0.021	0.179
425	35.417	645.495	0.021	0.179
426	35.500	647.014	0.021	0.179
427	35.583	648.533	0.021	0.179
428	35.667	650.052	0.021	0.179
429	35.750	651.571	0.018	0.152
430	35.833	653.089	0.015	0.128
431	35.917	654.608	0.015	0.128
432	36.000	656.127	0.015	0.128
433	36.083	657.646	0.015	0.128
434	36.167	659.165	0.015	0.128
435	36.250	660.684	0.015	0.128
436	36.333	662.202	0.015	0.128
437	36.417	663.721	0.015	0.128
438	36.500	665.240	0.015	0.128
439	36.583	666.759	0.015	0.128
440	36.667	668.278	0.015	0.128
441	36.750	669.796	0.015	0.128
442	36.833	671.315	0.015	0.128
443	36.917	672.834	0.015	0.128
444	37.000	674.353	0.015	0.128
445	37.083	675.872	0.015	0.128
446	37.167	677.390	0.015	0.128
447	37.250	678.909	0.015	0.128
448	37.333	680.428	0.015	0.128
449	37.417	681.947	0.015	0.128
Sum =			98.812	Sum= 833.855

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	0.297	0.163	(0.267)	0.134
2	0.17	1.30	0.297	0.163	(0.267)	0.134
3	0.25	1.10	0.251	0.163	(0.226)	0.088
4	0.33	1.50	0.342	0.163	(0.308)	0.180
5	0.42	1.50	0.342	0.163	(0.308)	0.180
6	0.50	1.80	0.411	0.163	(0.370)	0.248
7	0.58	1.50	0.342	0.163	(0.308)	0.180
8	0.67	1.80	0.411	0.163	(0.370)	0.248
9	0.75	1.80	0.411	0.163	(0.370)	0.248
10	0.83	1.50	0.342	0.163	(0.308)	0.180
11	0.92	1.60	0.365	0.163	(0.329)	0.203
12	1.00	1.80	0.411	0.163	(0.370)	0.248
13	1.08	2.20	0.502	0.163	(0.452)	0.340
14	1.17	2.20	0.502	0.163	(0.452)	0.340

15	1.25	2.20	0.502	0.163	(0.452)	0.340
16	1.33	2.00	0.457	0.163	(0.411)	0.294
17	1.42	2.60	0.594	0.163	(0.534)	0.431
18	1.50	2.70	0.616	0.163	(0.555)	0.454
19	1.58	2.40	0.548	0.163	(0.493)	0.385
20	1.67	2.70	0.616	0.163	(0.555)	0.454
21	1.75	3.30	0.753	0.163	(0.678)	0.591
22	1.83	3.10	0.708	0.163	(0.637)	0.545
23	1.92	2.90	0.662	0.163	(0.596)	0.499
24	2.00	3.00	0.685	0.163	(0.616)	0.522
25	2.08	3.10	0.708	0.163	(0.637)	0.545
26	2.17	4.20	0.959	0.163	(0.863)	0.796
27	2.25	5.00	1.141	0.163	(1.027)	0.979
28	2.33	3.50	0.799	0.163	(0.719)	0.636
29	2.42	6.80	1.552	0.163	(1.397)	1.390
30	2.50	7.30	1.666	0.163	(1.500)	1.504
31	2.58	8.20	1.872	0.163	(1.685)	1.709
32	2.67	5.90	1.347	0.163	(1.212)	1.184
33	2.75	2.00	0.457	0.163	(0.411)	0.294
34	2.83	1.80	0.411	0.163	(0.370)	0.248
35	2.92	1.80	0.411	0.163	(0.370)	0.248
36	3.00	0.60	0.137	(0.163)	0.123	0.014

(Loss Rate Not Used)

Sum = 100.0

Sum = 17.0

Flood volume = Effective rainfall 1.42(In)
times area 837.3(Ac.)/[(In)/(Ft.)] = 98.9(Ac.Ft)
Total soil loss = 0.48(In)
Total soil loss = 33.821(Ac.Ft)
Total rainfall = 1.90(In)
Flood volume = 4309031.7 Cubic Feet
Total soil loss = 1473243.9 Cubic Feet

Peak flow rate of this hydrograph = 150.118(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	50.0	100.0	150.0	200.0
0+ 5	0.0010	0.15	Q				
0+10	0.0041	0.45	Q				
0+15	0.0089	0.69	Q				
0+20	0.0157	0.99	Q				
0+25	0.0253	1.39	Q				
0+30	0.0382	1.87	Q				
0+35	0.0543	2.34	Q				
0+40	0.0737	2.82	Q				
0+45	0.0969	3.37	Q				
0+50	0.1234	3.85	Q				
0+55	0.1534	4.34	Q				
1+ 0	0.1875	4.96	Q				
1+ 5	0.2268	5.70	VQ				
1+10	0.2721	6.58	VQ				

1+15	0.3237	7.49	VQ				
1+20	0.3814	8.38	VQ				
1+25	0.4461	9.40	VQ				
1+30	0.5202	10.75	V Q				
1+35	0.6035	12.09	V Q				
1+40	0.6956	13.37	V Q				
1+45	0.7985	14.95	V Q				
1+50	0.9136	16.71	V Q				
1+55	1.0409	18.48	V Q				
2+ 0	1.1806	20.29	V Q				
2+ 5	1.3343	22.31	V Q				
2+10	1.5036	24.58	V Q				
2+15	1.6918	27.33	V Q				
2+20	1.8988	30.06	V Q				
2+25	2.1284	33.33	V Q				
2+30	2.3880	37.70	V Q				
2+35	2.6808	42.52	V Q				
2+40	3.0048	47.05	V Q				
2+45	3.3485	49.90	V Q				
2+50	3.7067	52.00	V Q				
2+55	4.0805	54.28	V Q				
3+ 0	4.4689	56.40	V Q				
3+ 5	4.8729	58.66	V Q				
3+10	5.2932	61.03	V Q				
3+15	5.7320	63.70	V Q				
3+20	6.1910	66.66	V Q				
3+25	6.6725	69.90	V Q				
3+30	7.1757	73.07	V Q				
3+35	7.6980	75.84	V Q				
3+40	8.2395	78.63	V Q				
3+45	8.8001	81.40	V Q				
3+50	9.3853	84.96	V Q				
3+55	9.9971	88.85	V Q				
4+ 0	10.6371	92.92	V Q				
4+ 5	11.3007	96.36	V Q				
4+10	11.9831	99.08	V Q				
4+15	12.6838	101.74	V Q				
4+20	13.4034	104.49	V Q				
4+25	14.1441	107.54	V Q				
4+30	14.9085	110.99	V Q				
4+35	15.6962	114.38	V Q				
4+40	16.5009	116.85	V Q				
4+45	17.3183	118.68	V Q				
4+50	18.1485	120.55	V Q				
4+55	18.9928	122.59	V Q				
5+ 0	19.8535	124.98	V Q				
5+ 5	20.7293	127.16	V Q				
5+10	21.6243	129.95	V Q				
5+15	22.5447	133.65	V Q				
5+20	23.4937	137.80	V Q				
5+25	24.4682	141.48	V Q				
5+30	25.4564	143.49	V Q				
5+35	26.4511	144.42	V Q				
5+40	27.4512	145.22	V Q				
5+45	28.4562	145.93	V Q				
5+50	29.4650	146.48	V Q				
5+55	30.4762	146.83	V Q				

6+ 0	31.4914	147.40		V		Q
6+ 5	32.5126	148.28		V		Q
6+10	33.5405	149.25		V		Q
6+15	34.5731	149.93		V		Q
6+20	35.6070	150.12		V		Q
6+25	36.6396	149.94		V		Q
6+30	37.6698	149.58		V		Q
6+35	38.6965	149.08		V		Q
6+40	39.7186	148.41		V		Q
6+45	40.7358	147.70		V		Q
6+50	41.7472	146.86		V		Q
6+55	42.7504	145.66		V		Q
7+ 0	43.7431	144.13		V		Q
7+ 5	44.7255	142.66		V		Q
7+10	45.6978	141.17		V		Q
7+15	46.6573	139.32		V		Q
7+20	47.6032	137.35		V		Q
7+25	48.5353	135.33		V		Q
7+30	49.4534	133.32		V		Q
7+35	50.3570	131.19		V		Q
7+40	51.2433	128.70		V		Q
7+45	52.1084	125.60		V		Q
7+50	52.9535	122.71		V		Q
7+55	53.7725	118.93		VQ		
8+ 0	54.5588	114.17		Q		
8+ 5	55.3081	108.79		QV		
8+10	56.0249	104.08		Q	V	
8+15	56.7224	101.28		Q	V	
8+20	57.4053	99.15		Q	V	
8+25	58.0730	96.95		Q	V	
8+30	58.7266	94.91		Q	V	
8+35	59.3652	92.72		Q	V	
8+40	59.9894	90.64		Q	V	
8+45	60.5945	87.86		Q	V	
8+50	61.1777	84.68		Q	V	
8+55	61.7371	81.22		Q	V	
9+ 0	62.2757	78.20		Q	V	
9+ 5	62.7996	76.07		Q	V	
9+10	63.3104	74.17		Q	V	
9+15	63.8085	72.32		Q	V	
9+20	64.2909	70.05		Q	V	
9+25	64.7563	67.58		Q	V	
9+30	65.2043	65.04		Q	V	
9+35	65.6395	63.20		Q	V	
9+40	66.0670	62.07		Q	V	
9+45	66.4867	60.94		Q	V	
9+50	66.8987	59.83		Q	V	
9+55	67.3036	58.78		Q	V	
10+ 0	67.7005	57.64		Q	V	
10+ 5	68.0892	56.44		Q	V	
10+10	68.4673	54.90		Q	V	
10+15	68.8341	53.26		Q	V	
10+20	69.1895	51.61		Q	V	
10+25	69.5355	50.23		Q	V	
10+30	69.8733	49.06		Q	V	
10+35	70.2040	48.01		Q	V	
10+40	70.5255	46.68		Q	V	

10+45	70.8366	45.17	Q	V
10+50	71.1360	43.48	Q	V
10+55	71.4258	42.07	Q	V
11+ 0	71.7101	41.28	Q	V
11+ 5	71.9901	40.67	Q	V
11+10	72.2659	40.04	Q	V
11+15	72.5377	39.46	Q	V
11+20	72.8051	38.83	Q	V
11+25	73.0685	38.25	Q	V
11+30	73.3263	37.43	Q	V
11+35	73.5778	36.52	Q	V
11+40	73.8224	35.52	Q	V
11+45	74.0612	34.67	Q	V
11+50	74.2964	34.14	Q	V
11+55	74.5285	33.70	Q	V
12+ 0	74.7575	33.26	Q	V
12+ 5	74.9829	32.72	Q	V
12+10	75.2044	32.16	Q	V
12+15	75.4220	31.60	Q	V
12+20	75.6370	31.23	Q	V
12+25	75.8504	30.99	Q	V
12+30	76.0620	30.72	Q	V
12+35	76.2720	30.50	Q	V
12+40	76.4807	30.30	Q	V
12+45	76.6877	30.05	Q	V
12+50	76.8930	29.80	Q	V
12+55	77.0966	29.56	Q	V
13+ 0	77.2985	29.32	Q	V
13+ 5	77.4987	29.06	Q	V
13+10	77.6966	28.74	Q	V
13+15	77.8919	28.36	Q	V
13+20	78.0849	28.03	Q	V
13+25	78.2745	27.52	Q	V
13+30	78.4597	26.90	Q	V
13+35	78.6403	26.23	Q	V
13+40	78.8173	25.69	Q	V
13+45	78.9923	25.42	Q	V
13+50	79.1659	25.20	Q	V
13+55	79.3380	24.98	Q	V
14+ 0	79.5090	24.84	Q	V
14+ 5	79.6790	24.68	Q	V
14+10	79.8478	24.51	Q	V
14+15	80.0154	24.34	Q	V
14+20	80.1819	24.18	Q	V
14+25	80.3472	24.00	Q	V
14+30	80.5111	23.80	Q	V
14+35	80.6734	23.55	Q	V
14+40	80.8338	23.30	Q	V
14+45	80.9924	23.03	Q	V
14+50	81.1482	22.61	Q	V
14+55	81.3008	22.16	Q	V
15+ 0	81.4504	21.72	Q	V
15+ 5	81.5981	21.45	Q	V
15+10	81.7448	21.30	Q	V
15+15	81.8904	21.14	Q	V
15+20	82.0351	21.01	Q	V
15+25	82.1791	20.91	Q	V

15+30	82.3223	20.79	Q			V
15+35	82.4646	20.66	Q			V
15+40	82.6061	20.54	Q			V
15+45	82.7467	20.42	Q			V
15+50	82.8864	20.28	Q			V
15+55	83.0249	20.12	Q			V
16+ 0	83.1623	19.94	Q			V
16+ 5	83.2984	19.78	Q			V
16+10	83.4329	19.52	Q			V
16+15	83.5653	19.22	Q			V
16+20	83.6954	18.90	Q			V
16+25	83.8239	18.65	Q			V
16+30	83.9513	18.50	Q			V
16+35	84.0778	18.36	Q			V
16+40	84.2032	18.22	Q			V
16+45	84.3279	18.11	Q			V
16+50	84.4517	17.97	Q			V
16+55	84.5745	17.83	Q			V
17+ 0	84.6963	17.68	Q			V
17+ 5	84.8171	17.55	Q			V
17+10	84.9370	17.40	Q			V
17+15	85.0557	17.23	Q			V
17+20	85.1729	17.02	Q			V
17+25	85.2887	16.82	Q			V
17+30	85.4030	16.58	Q			V
17+35	85.5148	16.24	Q			V
17+40	85.6240	15.86	Q			V
17+45	85.7308	15.50	Q			V
17+50	85.8361	15.29	Q			V
17+55	85.9406	15.17	Q			V
18+ 0	86.0443	15.05	Q			V
18+ 5	86.1473	14.96	Q			V
18+10	86.2499	14.89	Q			V
18+15	86.3518	14.80	Q			V
18+20	86.4532	14.72	Q			V
18+25	86.5540	14.64	Q			V
18+30	86.6543	14.56	Q			V
18+35	86.7540	14.47	Q			V
18+40	86.8528	14.35	Q			V
18+45	86.9507	14.21	Q			V
18+50	87.0477	14.09	Q			V
18+55	87.1434	13.89	Q			V
19+ 0	87.2375	13.66	Q			V
19+ 5	87.3298	13.41	Q			V
19+10	87.4210	13.23	Q			V
19+15	87.5117	13.17	Q			V
19+20	87.6019	13.10	Q			V
19+25	87.6917	13.04	Q			V
19+30	87.7813	13.01	Q			V
19+35	87.8707	12.98	Q			V
19+40	87.9598	12.94	Q			V
19+45	88.0486	12.89	Q			V
19+50	88.1371	12.85	Q			V
19+55	88.2252	12.80	Q			V
20+ 0	88.3131	12.75	Q			V
20+ 5	88.4006	12.71	Q			V
20+10	88.4879	12.67	Q			V

20+15	88.5748	12.62	Q				V
20+20	88.6612	12.55	Q				V
20+25	88.7471	12.48	Q				V
20+30	88.8326	12.41	Q				V
20+35	88.9177	12.35	Q				V
20+40	89.0021	12.26	Q				V
20+45	89.0859	12.17	Q				V
20+50	89.1691	12.09	Q				V
20+55	89.2517	11.99	Q				V
21+ 0	89.3335	11.87	Q				V
21+ 5	89.4145	11.76	Q				V
21+10	89.4948	11.66	Q				V
21+15	89.5743	11.55	Q				V
21+20	89.6531	11.43	Q				V
21+25	89.7307	11.27	Q				V
21+30	89.8070	11.08	Q				V
21+35	89.8822	10.92	Q				V
21+40	89.9555	10.65	Q				V
21+45	90.0267	10.33	Q				V
21+50	90.0956	10.00	Q				V
21+55	90.1629	9.78	Q				V
22+ 0	90.2297	9.70	Q				V
22+ 5	90.2960	9.63	Q				V
22+10	90.3619	9.56	Q				V
22+15	90.4276	9.54	Q				V
22+20	90.4931	9.51	Q				V
22+25	90.5584	9.48	Q				V
22+30	90.6234	9.45	Q				V
22+35	90.6883	9.42	Q				V
22+40	90.7529	9.38	Q				V
22+45	90.8172	9.34	Q				V
22+50	90.8814	9.31	Q				V
22+55	90.9453	9.28	Q				V
23+ 0	91.0090	9.24	Q				V
23+ 5	91.0722	9.19	Q				V
23+10	91.1352	9.14	Q				V
23+15	91.1978	9.09	Q				V
23+20	91.2600	9.04	Q				V
23+25	91.3218	8.97	Q				V
23+30	91.3831	8.90	Q				V
23+35	91.4440	8.84	Q				V
23+40	91.5044	8.77	Q				V
23+45	91.5642	8.68	Q				V
23+50	91.6234	8.60	Q				V
23+55	91.6820	8.52	Q				V
24+ 0	91.7402	8.44	Q				V
24+ 5	91.7976	8.35	Q				V
24+10	91.8543	8.22	Q				V
24+15	91.9099	8.08	Q				V
24+20	91.9647	7.96	Q				V
24+25	92.0181	7.75	Q				V
24+30	92.0698	7.51	Q				V
24+35	92.1199	7.27	Q				V
24+40	92.1688	7.11	Q				V
24+45	92.2174	7.05	Q				V
24+50	92.2657	7.01	Q				V
24+55	92.3138	6.98	Q				V

25+ 0	92.3618	6.97	Q				V
25+ 5	92.4098	6.97	Q				V
25+10	92.4577	6.96	Q				V
25+15	92.5056	6.96	Q				V
25+20	92.5535	6.95	Q				V
25+25	92.6013	6.94	Q				V
25+30	92.6491	6.94	Q				V
25+35	92.6968	6.93	Q				V
25+40	92.7445	6.93	Q				V
25+45	92.7922	6.92	Q				V
25+50	92.8398	6.91	Q				V
25+55	92.8873	6.90	Q				V
26+ 0	92.9348	6.89	Q				V
26+ 5	92.9823	6.89	Q				V
26+10	93.0296	6.88	Q				V
26+15	93.0769	6.86	Q				V
26+20	93.1241	6.85	Q				V
26+25	93.1712	6.84	Q				V
26+30	93.2182	6.83	Q				V
26+35	93.2651	6.81	Q				V
26+40	93.3120	6.80	Q				V
26+45	93.3587	6.79	Q				V
26+50	93.4053	6.77	Q				V
26+55	93.4518	6.75	Q				V
27+ 0	93.4982	6.73	Q				V
27+ 5	93.5443	6.71	Q				V
27+10	93.5903	6.67	Q				V
27+15	93.6359	6.63	Q				V
27+20	93.6813	6.59	Q				V
27+25	93.7265	6.56	Q				V
27+30	93.7716	6.55	Q				V
27+35	93.8166	6.53	Q				V
27+40	93.8615	6.52	Q				V
27+45	93.9063	6.50	Q				V
27+50	93.9509	6.48	Q				V
27+55	93.9955	6.46	Q				V
28+ 0	94.0398	6.44	Q				V
28+ 5	94.0840	6.42	Q				V
28+10	94.1281	6.39	Q				V
28+15	94.1719	6.37	Q				V
28+20	94.2157	6.35	Q				V
28+25	94.2593	6.33	Q				V
28+30	94.3027	6.30	Q				V
28+35	94.3458	6.27	Q				V
28+40	94.3887	6.23	Q				V
28+45	94.4314	6.20	Q				V
28+50	94.4739	6.16	Q				V
28+55	94.5160	6.12	Q				V
29+ 0	94.5579	6.07	Q				V
29+ 5	94.5994	6.03	Q				V
29+10	94.6406	5.98	Q				V
29+15	94.6814	5.92	Q				V
29+20	94.7218	5.87	Q				V
29+25	94.7619	5.82	Q				V
29+30	94.8016	5.76	Q				V
29+35	94.8408	5.70	Q				V
29+40	94.8794	5.61	Q				V

29+45	94.9175	5.52	Q				V
29+50	94.9549	5.43	Q				V
29+55	94.9913	5.29	Q				V
30+ 0	95.0266	5.13	Q				V
30+ 5	95.0608	4.97	Q				V
30+10	95.0944	4.87	Q				V
30+15	95.1277	4.84	Q				V
30+20	95.1609	4.81	Q				V
30+25	95.1938	4.79	Q				V
30+30	95.2267	4.78	Q				V
30+35	95.2596	4.77	Q				V
30+40	95.2923	4.76	Q				V
30+45	95.3250	4.75	Q				V
30+50	95.3576	4.74	Q				V
30+55	95.3902	4.72	Q				V
31+ 0	95.4226	4.71	Q				V
31+ 5	95.4550	4.70	Q				V
31+10	95.4873	4.69	Q				V
31+15	95.5195	4.68	Q				V
31+20	95.5516	4.66	Q				V
31+25	95.5836	4.64	Q				V
31+30	95.6154	4.62	Q				V
31+35	95.6471	4.61	Q				V
31+40	95.6787	4.58	Q				V
31+45	95.7101	4.56	Q				V
31+50	95.7414	4.54	Q				V
31+55	95.7725	4.52	Q				V
32+ 0	95.8034	4.49	Q				V
32+ 5	95.8341	4.46	Q				V
32+10	95.8647	4.43	Q				V
32+15	95.8950	4.41	Q				V
32+20	95.9251	4.37	Q				V
32+25	95.9549	4.33	Q				V
32+30	95.9845	4.29	Q				V
32+35	96.0136	4.24	Q				V
32+40	96.0423	4.16	Q				V
32+45	96.0704	4.08	Q				V
32+50	96.0980	4.01	Q				V
32+55	96.1253	3.96	Q				V
33+ 0	96.1525	3.95	Q				V
33+ 5	96.1795	3.93	Q				V
33+10	96.2065	3.91	Q				V
33+15	96.2334	3.90	Q				V
33+20	96.2602	3.90	Q				V
33+25	96.2869	3.88	Q				V
33+30	96.3136	3.87	Q				V
33+35	96.3402	3.86	Q				V
33+40	96.3667	3.85	Q				V
33+45	96.3932	3.84	Q				V
33+50	96.4195	3.83	Q				V
33+55	96.4458	3.82	Q				V
34+ 0	96.4720	3.80	Q				V
34+ 5	96.4981	3.78	Q				V
34+10	96.5240	3.77	Q				V
34+15	96.5498	3.75	Q				V
34+20	96.5756	3.73	Q				V
34+25	96.6011	3.71	Q				V

34+30	96.6265	3.69	Q				V
34+35	96.6518	3.67	Q				V
34+40	96.6768	3.64	Q				V
34+45	96.7017	3.61	Q				V
34+50	96.7264	3.58	Q				V
34+55	96.7509	3.56	Q				V
35+ 0	96.7752	3.53	Q				V
35+ 5	96.7993	3.50	Q				V
35+10	96.8231	3.45	Q				V
35+15	96.8466	3.41	Q				V
35+20	96.8697	3.36	Q				V
35+25	96.8923	3.29	Q				V
35+30	96.9144	3.20	Q				V
35+35	96.9360	3.13	Q				V
35+40	96.9572	3.09	Q				V
35+45	96.9784	3.07	Q				V
35+50	96.9994	3.05	Q				V
35+55	97.0203	3.04	Q				V
36+ 0	97.0412	3.03	Q				V
36+ 5	97.0620	3.02	Q				V
36+10	97.0827	3.01	Q				V
36+15	97.1034	3.00	Q				V
36+20	97.1240	2.99	Q				V
36+25	97.1445	2.98	Q				V
36+30	97.1649	2.97	Q				V
36+35	97.1853	2.96	Q				V
36+40	97.2055	2.94	Q				V
36+45	97.2257	2.93	Q				V
36+50	97.2457	2.91	Q				V
36+55	97.2657	2.89	Q				V
37+ 0	97.2855	2.88	Q				V
37+ 5	97.3052	2.86	Q				V
37+10	97.3247	2.84	Q				V
37+15	97.3441	2.81	Q				V
37+20	97.3633	2.79	Q				V
37+25	97.3824	2.77	Q				V
37+30	97.4011	2.72	Q				V
37+35	97.4195	2.68	Q				V
37+40	97.4377	2.64	Q				V
37+45	97.4555	2.59	Q				V
37+50	97.4729	2.53	Q				V
37+55	97.4898	2.45	Q				V
38+ 0	97.5063	2.39	Q				V
38+ 5	97.5221	2.30	Q				V
38+10	97.5373	2.20	Q				V
38+15	97.5517	2.09	Q				V
38+20	97.5654	1.99	Q				V
38+25	97.5786	1.92	Q				V
38+30	97.5915	1.87	Q				V
38+35	97.6039	1.81	Q				V
38+40	97.6161	1.76	Q				V
38+45	97.6279	1.72	Q				V
38+50	97.6394	1.67	Q				V
38+55	97.6505	1.61	Q				V
39+ 0	97.6612	1.56	Q				V
39+ 5	97.6715	1.50	Q				V
39+10	97.6814	1.43	Q				V

39+15	97.6907	1.36	Q				V
39+20	97.6996	1.29	Q				V
39+25	97.7080	1.22	Q				V
39+30	97.7160	1.15	Q				V
39+35	97.7232	1.05	Q				V
39+40	97.7296	0.93	Q				V
39+45	97.7354	0.85	Q				V
39+50	97.7400	0.67	Q				V
39+55	97.7433	0.47	Q				V
40+ 0	97.7450	0.25	Q				V
40+ 5	97.7457	0.10	Q				V
40+10	97.7462	0.07	Q				V
40+15	97.7464	0.03	Q				V
40+20	97.7464	0.00	Q				V

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2

Study date 05/08/15 File: 154149HISTHYDB620.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR

HISTORICAL CONDITIONS AREA "B"

20-YEAR, 6-HOUR STORM

BY: JTS DATE: 05-08-15

Drainage Area = 837.34(Ac.) = 1.308 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 837.34(Ac.)= 1.308 Sq. Mi.
Length along longest watercourse = 16296.72(Ft.)
Length along longest watercourse measured to centroid = 8849.03(Ft.)
Length along longest watercourse = 3.087 Mi.
Length along longest watercourse measured to centroid = 1.676 Mi.
Difference in elevation = 777.00(Ft.)
Slope along watercourse = 251.7415 Ft./Mi.
Average Manning's 'N' = 0.350
Lag time = 5.487 Hr.
Lag time = 329.20 Min.
25% of lag time = 82.30 Min.
40% of lag time = 131.68 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]
837.34	1.45	1214.14

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
837.34	3.51	2939.06

STORM EVENT (YEAR) = 20.00
 Area Averaged 2-Year Rainfall = 1.450(In)
 Area Averaged 100-Year Rainfall = 3.510(In)

Point rain (area averaged) = 2.662(In)
 Areal adjustment factor = 99.71 %
 Adjusted average point rain = 2.655(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
81.060	67.00	0.050
1.780	78.00	0.050
101.910	86.00	0.050
652.590	89.00	0.050
Total Area Entered = 837.34(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.)	(In/Hr)	(Dec.)	(In/Hr)
67.0	67.0	0.394	0.050	0.377	0.097	0.036
78.0	78.0	0.268	0.050	0.256	0.002	0.001
86.0	86.0	0.176	0.050	0.168	0.122	0.020
89.0	89.0	0.141	0.050	0.135	0.779	0.105
Sum (F) =						0.163

Area averaged mean soil loss (F) (In/Hr) = 0.163
 Minimum soil loss rate ((In/Hr)) = 0.081
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

Unit Hydrograph
 VALLEY S-Curve

WARNING: End of hydrograph not reached with this
 Unit time interval vs lag time
 Unit-Hydrograph terminated after 450 intervals
 Unit Hydrograph Data

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	1.519	0.132
2	0.167	3.038	0.263
3	0.250	4.556	0.263
4	0.333	6.075	0.263
5	0.417	7.594	0.263
6	0.500	9.113	0.263
7	0.583	10.632	0.263
8	0.667	12.151	0.263
9	0.750	13.669	0.263
10	0.833	15.188	0.264
11	0.917	16.707	0.326
12	1.000	18.226	0.365
13	1.083	19.745	0.365
14	1.167	21.263	0.365
15	1.250	22.782	0.365
16	1.333	24.301	0.365

17	1.417	25.820	0.391	3.300
18	1.500	27.339	0.527	4.451
19	1.583	28.857	0.547	4.614
20	1.667	30.376	0.547	4.614
21	1.750	31.895	0.547	4.614
22	1.833	33.414	0.547	4.614
23	1.917	34.933	0.547	4.614
24	2.000	36.452	0.616	5.199
25	2.083	37.970	0.699	5.895
26	2.167	39.489	0.699	5.896
27	2.250	41.008	0.699	5.896
28	2.333	42.527	0.699	5.896
29	2.417	44.046	0.699	5.896
30	2.500	45.564	0.699	5.896
31	2.583	47.083	0.699	5.896
32	2.667	48.602	0.699	5.896
33	2.750	50.121	0.699	5.903
34	2.833	51.640	0.850	7.176
35	2.917	53.158	0.962	8.117
36	3.000	54.677	0.962	8.117
37	3.083	56.196	0.962	8.117
38	3.167	57.715	0.962	8.117
39	3.250	59.234	0.962	8.117
40	3.333	60.753	0.962	8.117
41	3.417	62.271	0.962	8.117
42	3.500	63.790	0.962	8.117
43	3.583	65.309	0.964	8.135
44	3.667	66.828	1.031	8.701
45	3.750	68.347	1.063	8.972
46	3.833	69.865	1.063	8.972
47	3.917	71.384	1.063	8.972
48	4.000	72.903	1.063	8.972
49	4.083	74.422	1.063	8.972
50	4.167	75.941	1.069	9.021
51	4.250	77.459	1.091	9.210
52	4.333	78.978	1.094	9.228
53	4.417	80.497	1.094	9.228
54	4.500	82.016	1.094	9.228
55	4.583	83.535	1.094	9.228
56	4.667	85.054	1.094	9.228
57	4.750	86.572	1.094	9.228
58	4.833	88.091	1.094	9.228
59	4.917	89.610	1.094	9.228
60	5.000	91.129	1.094	9.228
61	5.083	92.648	1.094	9.228
62	5.167	94.166	1.094	9.228
63	5.250	95.685	1.094	9.228
64	5.333	97.204	1.094	9.228
65	5.417	98.723	1.094	9.228
66	5.500	100.242	1.090	9.197
67	5.583	101.760	0.904	7.626
68	5.667	103.279	0.800	6.750
69	5.750	104.798	0.800	6.750
70	5.833	106.317	0.800	6.750
71	5.917	107.836	0.800	6.750
72	6.000	109.355	0.800	6.750
73	6.083	110.873	0.800	6.750

74	6.167	112.392	0.800	6.750
75	6.250	113.911	0.800	6.750
76	6.333	115.430	0.793	6.690
77	6.417	116.949	0.668	5.639
78	6.500	118.467	0.623	5.255
79	6.583	119.986	0.623	5.255
80	6.667	121.505	0.623	5.255
81	6.750	123.024	0.623	5.255
82	6.833	124.543	0.623	5.255
83	6.917	126.061	0.589	4.973
84	7.000	127.580	0.492	4.154
85	7.083	129.099	0.486	4.101
86	7.167	130.618	0.486	4.101
87	7.250	132.137	0.486	4.101
88	7.333	133.656	0.486	4.101
89	7.417	135.174	0.486	4.101
90	7.500	136.693	0.486	4.101
91	7.583	138.212	0.486	4.101
92	7.667	139.731	0.486	4.101
93	7.750	141.250	0.460	3.885
94	7.833	142.768	0.411	3.471
95	7.917	144.287	0.410	3.461
96	8.000	145.806	0.410	3.461
97	8.083	147.325	0.410	3.461
98	8.167	148.844	0.410	3.461
99	8.250	150.362	0.407	3.437
100	8.333	151.881	0.342	2.884
101	8.417	153.400	0.314	2.649
102	8.500	154.919	0.314	2.649
103	8.583	156.438	0.314	2.649
104	8.667	157.957	0.314	2.649
105	8.750	159.475	0.314	2.649
106	8.833	160.994	0.314	2.649
107	8.917	162.513	0.314	2.649
108	9.000	164.032	0.314	2.649
109	9.083	165.551	0.310	2.618
110	9.167	167.069	0.270	2.274
111	9.250	168.588	0.258	2.179
112	9.333	170.107	0.258	2.179
113	9.417	171.626	0.258	2.179
114	9.500	173.145	0.258	2.179
115	9.583	174.663	0.258	2.179
116	9.667	176.182	0.248	2.093
117	9.750	177.701	0.226	1.904
118	9.833	179.220	0.225	1.897
119	9.917	180.739	0.225	1.897
120	10.000	182.258	0.225	1.897
121	10.083	183.776	0.225	1.897
122	10.167	185.295	0.225	1.897
123	10.250	186.814	0.225	1.897
124	10.333	188.333	0.225	1.897
125	10.417	189.852	0.225	1.897
126	10.500	191.370	0.225	1.897
127	10.583	192.889	0.225	1.897
128	10.667	194.408	0.225	1.897
129	10.750	195.927	0.225	1.897
130	10.833	197.446	0.225	1.897

131	10.917	198.964	0.225	1.897
132	11.000	200.483	0.223	1.879
133	11.083	202.002	0.192	1.621
134	11.167	203.521	0.182	1.538
135	11.250	205.040	0.182	1.538
136	11.333	206.559	0.182	1.538
137	11.417	208.077	0.182	1.538
138	11.500	209.596	0.182	1.538
139	11.583	211.115	0.182	1.538
140	11.667	212.634	0.182	1.538
141	11.750	214.153	0.182	1.538
142	11.833	215.671	0.182	1.538
143	11.917	217.190	0.182	1.538
144	12.000	218.709	0.182	1.538
145	12.083	220.228	0.182	1.538
146	12.167	221.747	0.182	1.538
147	12.250	223.265	0.182	1.538
148	12.333	224.784	0.182	1.538
149	12.417	226.303	0.171	1.444
150	12.500	227.822	0.152	1.284
151	12.583	229.341	0.152	1.282
152	12.667	230.860	0.152	1.282
153	12.750	232.378	0.152	1.282
154	12.833	233.897	0.152	1.282
155	12.917	235.416	0.152	1.282
156	13.000	236.935	0.152	1.282
157	13.083	238.454	0.152	1.282
158	13.167	239.972	0.152	1.282
159	13.250	241.491	0.152	1.282
160	13.333	243.010	0.152	1.282
161	13.417	244.529	0.152	1.282
162	13.500	246.048	0.152	1.282
163	13.583	247.566	0.152	1.282
164	13.667	249.085	0.152	1.282
165	13.750	250.604	0.150	1.270
166	13.833	252.123	0.137	1.156
167	13.917	253.642	0.134	1.128
168	14.000	255.161	0.134	1.128
169	14.083	256.679	0.134	1.128
170	14.167	258.198	0.134	1.128
171	14.250	259.717	0.134	1.128
172	14.333	261.236	0.134	1.128
173	14.417	262.755	0.134	1.128
174	14.500	264.273	0.134	1.128
175	14.583	265.792	0.134	1.128
176	14.667	267.311	0.134	1.128
177	14.750	268.830	0.134	1.128
178	14.833	270.349	0.134	1.128
179	14.917	271.867	0.134	1.128
180	15.000	273.386	0.134	1.128
181	15.083	274.905	0.134	1.128
182	15.167	276.424	0.123	1.038
183	15.250	277.943	0.109	0.923
184	15.333	279.462	0.109	0.923
185	15.417	280.980	0.109	0.923
186	15.500	282.499	0.109	0.923
187	15.583	284.018	0.109	0.923

188	15.667	285.537	0.109	0.923
189	15.750	287.056	0.109	0.923
190	15.833	288.574	0.109	0.923
191	15.917	290.093	0.109	0.923
192	16.000	291.612	0.109	0.923
193	16.083	293.131	0.109	0.923
194	16.167	294.650	0.109	0.923
195	16.250	296.168	0.109	0.923
196	16.333	297.687	0.109	0.923
197	16.417	299.206	0.109	0.923
198	16.500	300.725	0.107	0.905
199	16.583	302.244	0.094	0.790
200	16.667	303.763	0.091	0.769
201	16.750	305.281	0.091	0.769
202	16.833	306.800	0.091	0.769
203	16.917	308.319	0.091	0.769
204	17.000	309.838	0.091	0.769
205	17.083	311.357	0.091	0.769
206	17.167	312.875	0.091	0.769
207	17.250	314.394	0.091	0.769
208	17.333	315.913	0.091	0.769
209	17.417	317.432	0.091	0.769
210	17.500	318.951	0.091	0.769
211	17.583	320.469	0.091	0.769
212	17.667	321.988	0.091	0.769
213	17.750	323.507	0.091	0.769
214	17.833	325.026	0.091	0.769
215	17.917	326.545	0.091	0.769
216	18.000	328.064	0.091	0.769
217	18.083	329.582	0.091	0.769
218	18.167	331.101	0.091	0.769
219	18.250	332.620	0.091	0.769
220	18.333	334.139	0.091	0.769
221	18.417	335.658	0.091	0.769
222	18.500	337.176	0.091	0.769
223	18.583	338.695	0.091	0.769
224	18.667	340.214	0.091	0.769
225	18.750	341.733	0.091	0.769
226	18.833	343.252	0.091	0.769
227	18.917	344.770	0.091	0.769
228	19.000	346.289	0.091	0.769
229	19.083	347.808	0.091	0.769
230	19.167	349.327	0.091	0.769
231	19.250	350.846	0.087	0.737
232	19.333	352.365	0.069	0.584
233	19.417	353.883	0.067	0.564
234	19.500	355.402	0.067	0.564
235	19.583	356.921	0.067	0.564
236	19.667	358.440	0.067	0.564
237	19.750	359.959	0.067	0.564
238	19.833	361.477	0.067	0.564
239	19.917	362.996	0.067	0.564
240	20.000	364.515	0.067	0.564
241	20.083	366.034	0.067	0.564
242	20.167	367.553	0.067	0.564
243	20.250	369.071	0.067	0.564
244	20.333	370.590	0.067	0.564

245	20.417	372.109	0.067	0.564
246	20.500	373.628	0.067	0.564
247	20.583	375.147	0.067	0.564
248	20.667	376.666	0.067	0.564
249	20.750	378.184	0.067	0.564
250	20.833	379.703	0.067	0.564
251	20.917	381.222	0.067	0.564
252	21.000	382.741	0.067	0.564
253	21.083	384.260	0.067	0.564
254	21.167	385.778	0.067	0.564
255	21.250	387.297	0.067	0.564
256	21.333	388.816	0.067	0.564
257	21.417	390.335	0.067	0.564
258	21.500	391.854	0.067	0.564
259	21.583	393.372	0.067	0.564
260	21.667	394.891	0.067	0.564
261	21.750	396.410	0.067	0.564
262	21.833	397.929	0.067	0.564
263	21.917	399.448	0.067	0.564
264	22.000	400.967	0.063	0.533
265	22.083	402.485	0.050	0.420
266	22.167	404.004	0.049	0.410
267	22.250	405.523	0.049	0.410
268	22.333	407.042	0.049	0.410
269	22.417	408.561	0.049	0.410
270	22.500	410.079	0.049	0.410
271	22.583	411.598	0.049	0.410
272	22.667	413.117	0.049	0.410
273	22.750	414.636	0.049	0.410
274	22.833	416.155	0.049	0.410
275	22.917	417.673	0.049	0.410
276	23.000	419.192	0.049	0.410
277	23.083	420.711	0.049	0.410
278	23.167	422.230	0.049	0.410
279	23.250	423.749	0.049	0.410
280	23.333	425.268	0.049	0.410
281	23.417	426.786	0.049	0.410
282	23.500	428.305	0.049	0.410
283	23.583	429.824	0.049	0.410
284	23.667	431.343	0.049	0.410
285	23.750	432.862	0.049	0.410
286	23.833	434.380	0.049	0.410
287	23.917	435.899	0.049	0.410
288	24.000	437.418	0.049	0.410
289	24.083	438.937	0.049	0.410
290	24.167	440.456	0.049	0.410
291	24.250	441.974	0.049	0.410
292	24.333	443.493	0.049	0.410
293	24.417	445.012	0.049	0.410
294	24.500	446.531	0.049	0.410
295	24.583	448.050	0.049	0.410
296	24.667	449.569	0.049	0.410
297	24.750	451.087	0.048	0.404
298	24.833	452.606	0.046	0.386
299	24.917	454.125	0.046	0.385
300	25.000	455.644	0.046	0.385
301	25.083	457.163	0.046	0.385

302	25.167	458.681	0.046	0.385
303	25.250	460.200	0.046	0.385
304	25.333	461.719	0.046	0.385
305	25.417	463.238	0.046	0.385
306	25.500	464.757	0.046	0.385
307	25.583	466.275	0.046	0.385
308	25.667	467.794	0.046	0.385
309	25.750	469.313	0.046	0.385
310	25.833	470.832	0.046	0.385
311	25.917	472.351	0.046	0.385
312	26.000	473.870	0.046	0.385
313	26.083	475.388	0.046	0.385
314	26.167	476.907	0.046	0.385
315	26.250	478.426	0.046	0.385
316	26.333	479.945	0.046	0.385
317	26.417	481.464	0.046	0.385
318	26.500	482.982	0.046	0.385
319	26.583	484.501	0.046	0.385
320	26.667	486.020	0.046	0.385
321	26.750	487.539	0.046	0.385
322	26.833	489.058	0.046	0.385
323	26.917	490.576	0.046	0.385
324	27.000	492.095	0.046	0.385
325	27.083	493.614	0.046	0.385
326	27.167	495.133	0.046	0.385
327	27.250	496.652	0.046	0.385
328	27.333	498.171	0.046	0.385
329	27.417	499.689	0.046	0.385
330	27.500	501.208	0.042	0.352
331	27.583	502.727	0.034	0.284
332	27.667	504.246	0.033	0.282
333	27.750	505.765	0.033	0.282
334	27.833	507.283	0.033	0.282
335	27.917	508.802	0.033	0.282
336	28.000	510.321	0.033	0.282
337	28.083	511.840	0.033	0.282
338	28.167	513.359	0.033	0.282
339	28.250	514.878	0.033	0.282
340	28.333	516.396	0.033	0.282
341	28.417	517.915	0.033	0.282
342	28.500	519.434	0.033	0.282
343	28.583	520.953	0.033	0.282
344	28.667	522.472	0.033	0.282
345	28.750	523.990	0.033	0.282
346	28.833	525.509	0.033	0.282
347	28.917	527.028	0.033	0.282
348	29.000	528.547	0.033	0.282
349	29.083	530.066	0.033	0.282
350	29.167	531.584	0.033	0.282
351	29.250	533.103	0.033	0.282
352	29.333	534.622	0.033	0.282
353	29.417	536.141	0.033	0.282
354	29.500	537.660	0.033	0.282
355	29.583	539.179	0.033	0.282
356	29.667	540.697	0.033	0.282
357	29.750	542.216	0.033	0.282
358	29.833	543.735	0.033	0.282

359	29.917	545.254	0.033	0.282
360	30.000	546.773	0.033	0.282
361	30.083	548.291	0.033	0.282
362	30.167	549.810	0.033	0.282
363	30.250	551.329	0.031	0.262
364	30.333	552.848	0.027	0.231
365	30.417	554.367	0.027	0.231
366	30.500	555.885	0.027	0.231
367	30.583	557.404	0.027	0.231
368	30.667	558.923	0.027	0.231
369	30.750	560.442	0.027	0.231
370	30.833	561.961	0.027	0.231
371	30.917	563.480	0.027	0.231
372	31.000	564.998	0.027	0.231
373	31.083	566.517	0.027	0.231
374	31.167	568.036	0.027	0.231
375	31.250	569.555	0.027	0.231
376	31.333	571.074	0.027	0.231
377	31.417	572.592	0.027	0.231
378	31.500	574.111	0.027	0.231
379	31.583	575.630	0.027	0.231
380	31.667	577.149	0.027	0.231
381	31.750	578.668	0.027	0.231
382	31.833	580.186	0.027	0.231
383	31.917	581.705	0.027	0.231
384	32.000	583.224	0.027	0.231
385	32.083	584.743	0.027	0.231
386	32.167	586.262	0.027	0.231
387	32.250	587.781	0.027	0.231
388	32.333	589.299	0.027	0.231
389	32.417	590.818	0.027	0.231
390	32.500	592.337	0.027	0.231
391	32.583	593.856	0.027	0.231
392	32.667	595.375	0.027	0.231
393	32.750	596.893	0.027	0.231
394	32.833	598.412	0.027	0.231
395	32.917	599.931	0.027	0.231
396	33.000	601.450	0.025	0.207
397	33.083	602.969	0.021	0.179
398	33.167	604.487	0.021	0.179
399	33.250	606.006	0.021	0.179
400	33.333	607.525	0.021	0.179
401	33.417	609.044	0.021	0.179
402	33.500	610.563	0.021	0.179
403	33.583	612.082	0.021	0.179
404	33.667	613.600	0.021	0.179
405	33.750	615.119	0.021	0.179
406	33.833	616.638	0.021	0.179
407	33.917	618.157	0.021	0.179
408	34.000	619.676	0.021	0.179
409	34.083	621.194	0.021	0.179
410	34.167	622.713	0.021	0.179
411	34.250	624.232	0.021	0.179
412	34.333	625.751	0.021	0.179
413	34.417	627.270	0.021	0.179
414	34.500	628.788	0.021	0.179
415	34.583	630.307	0.021	0.179

416	34.667	631.826	0.021	0.179
417	34.750	633.345	0.021	0.179
418	34.833	634.864	0.021	0.179
419	34.917	636.383	0.021	0.179
420	35.000	637.901	0.021	0.179
421	35.083	639.420	0.021	0.179
422	35.167	640.939	0.021	0.179
423	35.250	642.458	0.021	0.179
424	35.333	643.977	0.021	0.179
425	35.417	645.495	0.021	0.179
426	35.500	647.014	0.021	0.179
427	35.583	648.533	0.021	0.179
428	35.667	650.052	0.021	0.179
429	35.750	651.571	0.018	0.152
430	35.833	653.089	0.015	0.128
431	35.917	654.608	0.015	0.128
432	36.000	656.127	0.015	0.128
433	36.083	657.646	0.015	0.128
434	36.167	659.165	0.015	0.128
435	36.250	660.684	0.015	0.128
436	36.333	662.202	0.015	0.128
437	36.417	663.721	0.015	0.128
438	36.500	665.240	0.015	0.128
439	36.583	666.759	0.015	0.128
440	36.667	668.278	0.015	0.128
441	36.750	669.796	0.015	0.128
442	36.833	671.315	0.015	0.128
443	36.917	672.834	0.015	0.128
444	37.000	674.353	0.015	0.128
445	37.083	675.872	0.015	0.128
446	37.167	677.390	0.015	0.128
447	37.250	678.909	0.015	0.128
448	37.333	680.428	0.015	0.128
449	37.417	681.947	0.015	0.128
Sum =			98.812	Sum= 833.855

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	0.159	(0.163)	0.143	0.016
2	0.17	0.60	0.191	0.163	(0.172)	0.028
3	0.25	0.60	0.191	0.163	(0.172)	0.028
4	0.33	0.60	0.191	0.163	(0.172)	0.028
5	0.42	0.60	0.191	0.163	(0.172)	0.028
6	0.50	0.70	0.223	0.163	(0.201)	0.060
7	0.58	0.70	0.223	0.163	(0.201)	0.060
8	0.67	0.70	0.223	0.163	(0.201)	0.060
9	0.75	0.70	0.223	0.163	(0.201)	0.060
10	0.83	0.70	0.223	0.163	(0.201)	0.060
11	0.92	0.70	0.223	0.163	(0.201)	0.060
12	1.00	0.80	0.255	0.163	(0.229)	0.092
13	1.08	0.80	0.255	0.163	(0.229)	0.092
14	1.17	0.80	0.255	0.163	(0.229)	0.092

15	1.25	0.80	0.255	0.163	(0.229)	0.092
16	1.33	0.80	0.255	0.163	(0.229)	0.092
17	1.42	0.80	0.255	0.163	(0.229)	0.092
18	1.50	0.80	0.255	0.163	(0.229)	0.092
19	1.58	0.80	0.255	0.163	(0.229)	0.092
20	1.67	0.80	0.255	0.163	(0.229)	0.092
21	1.75	0.80	0.255	0.163	(0.229)	0.092
22	1.83	0.80	0.255	0.163	(0.229)	0.092
23	1.92	0.80	0.255	0.163	(0.229)	0.092
24	2.00	0.90	0.287	0.163	(0.258)	0.124
25	2.08	0.80	0.255	0.163	(0.229)	0.092
26	2.17	0.90	0.287	0.163	(0.258)	0.124
27	2.25	0.90	0.287	0.163	(0.258)	0.124
28	2.33	0.90	0.287	0.163	(0.258)	0.124
29	2.42	0.90	0.287	0.163	(0.258)	0.124
30	2.50	0.90	0.287	0.163	(0.258)	0.124
31	2.58	0.90	0.287	0.163	(0.258)	0.124
32	2.67	0.90	0.287	0.163	(0.258)	0.124
33	2.75	1.00	0.319	0.163	(0.287)	0.156
34	2.83	1.00	0.319	0.163	(0.287)	0.156
35	2.92	1.00	0.319	0.163	(0.287)	0.156
36	3.00	1.00	0.319	0.163	(0.287)	0.156
37	3.08	1.00	0.319	0.163	(0.287)	0.156
38	3.17	1.10	0.350	0.163	(0.315)	0.188
39	3.25	1.10	0.350	0.163	(0.315)	0.188
40	3.33	1.10	0.350	0.163	(0.315)	0.188
41	3.42	1.20	0.382	0.163	(0.344)	0.220
42	3.50	1.30	0.414	0.163	(0.373)	0.251
43	3.58	1.40	0.446	0.163	(0.401)	0.283
44	3.67	1.40	0.446	0.163	(0.401)	0.283
45	3.75	1.50	0.478	0.163	(0.430)	0.315
46	3.83	1.50	0.478	0.163	(0.430)	0.315
47	3.92	1.60	0.510	0.163	(0.459)	0.347
48	4.00	1.60	0.510	0.163	(0.459)	0.347
49	4.08	1.70	0.542	0.163	(0.487)	0.379
50	4.17	1.80	0.573	0.163	(0.516)	0.411
51	4.25	1.90	0.605	0.163	(0.545)	0.443
52	4.33	2.00	0.637	0.163	(0.573)	0.475
53	4.42	2.10	0.669	0.163	(0.602)	0.506
54	4.50	2.10	0.669	0.163	(0.602)	0.506
55	4.58	2.20	0.701	0.163	(0.631)	0.538
56	4.67	2.30	0.733	0.163	(0.659)	0.570
57	4.75	2.40	0.765	0.163	(0.688)	0.602
58	4.83	2.40	0.765	0.163	(0.688)	0.602
59	4.92	2.50	0.796	0.163	(0.717)	0.634
60	5.00	2.60	0.828	0.163	(0.745)	0.666
61	5.08	3.10	0.988	0.163	(0.889)	0.825
62	5.17	3.60	1.147	0.163	(1.032)	0.984
63	5.25	3.90	1.242	0.163	(1.118)	1.080
64	5.33	4.20	1.338	0.163	(1.204)	1.175
65	5.42	4.70	1.497	0.163	(1.348)	1.335
66	5.50	5.60	1.784	0.163	(1.606)	1.621
67	5.58	1.90	0.605	0.163	(0.545)	0.443
68	5.67	0.90	0.287	0.163	(0.258)	0.124
69	5.75	0.60	0.191	0.163	(0.172)	0.028
70	5.83	0.50	0.159	(0.163)	0.143	0.016
71	5.92	0.30	0.096	(0.163)	0.086	0.010

0+ 5	0.0001	0.02	Q				
0+10	0.0006	0.07	Q				
0+15	0.0015	0.13	Q				
0+20	0.0028	0.19	Q				
0+25	0.0046	0.26	Q				
0+30	0.0070	0.36	Q				
0+35	0.0104	0.49	Q				
0+40	0.0147	0.62	Q				
0+45	0.0199	0.76	Q				
0+50	0.0261	0.89	Q				
0+55	0.0332	1.04	Q				
1+ 0	0.0416	1.22	Q				
1+ 5	0.0517	1.45	Q				
1+10	0.0632	1.68	Q				
1+15	0.0764	1.91	Q				
1+20	0.0913	2.16	Q				
1+25	0.1080	2.42	Q				
1+30	0.1266	2.70	Q				
1+35	0.1472	3.00	Q				
1+40	0.1699	3.30	Q				
1+45	0.1947	3.60	Q				
1+50	0.2217	3.92	Q				
1+55	0.2513	4.30	Q				
2+ 0	0.2838	4.72	Q				
2+ 5	0.3193	5.16	VQ				
2+10	0.3579	5.61	VQ				
2+15	0.3999	6.09	VQ				
2+20	0.4452	6.58	VQ				
2+25	0.4943	7.13	VQ				
2+30	0.5473	7.70	VQ				
2+35	0.6043	8.27	VQ				
2+40	0.6652	8.85	VQ				
2+45	0.7304	9.46	VQ				
2+50	0.8002	10.14	V Q				
2+55	0.8750	10.87	V Q				

3+ 0	0.9551	11.63	V Q				
3+ 5	1.0406	12.41	V Q				
3+10	1.1316	13.22	V Q				
3+15	1.2288	14.11	V Q				
3+20	1.3323	15.03	V Q				
3+25	1.4426	16.02	V Q				
3+30	1.5601	17.06	V Q				
3+35	1.6856	18.21	V Q				
3+40	1.8194	19.43	V Q				
3+45	1.9622	20.73	V Q				
3+50	2.1144	22.11	V Q				
3+55	2.2765	23.53	V Q				
4+ 0	2.4487	25.01	V Q				
4+ 5	2.6317	26.57	V Q				
4+10	2.8263	28.25	V Q				
4+15	3.0332	30.04	V Q				
4+20	3.2531	31.93	V Q				
4+25	3.4866	33.91	V Q				
4+30	3.7342	35.95	V Q				
4+35	3.9966	38.10	V Q				
4+40	4.2746	40.36	V Q				
4+45	4.5693	42.79	V Q				
4+50	4.8812	45.29	V Q				
4+55	5.2112	47.91	V Q				
5+ 0	5.5603	50.70	V Q				
5+ 5	5.9305	53.75	V Q				
5+10	6.3249	57.26	V Q				
5+15	6.7456	61.09	V Q				
5+20	7.1945	65.19	V Q				
5+25	7.6742	69.65	V Q				
5+30	8.1891	74.76	V Q				
5+35	8.7331	79.00	V Q				
5+40	9.2952	81.60	V Q				
5+45	9.8726	83.84	V Q				
5+50	10.4652	86.05	V Q				
5+55	11.0741	88.41	V Q				
6+ 0	11.7003	90.94	V Q				
6+ 5	12.3451	93.62	V Q				
6+10	13.0097	96.50	V Q				
6+15	13.6959	99.63	V Q				
6+20	14.4061	103.12	V Q				
6+25	15.1376	106.21	V Q				
6+30	15.8880	108.97	V Q				
6+35	16.6583	111.84	V Q				
6+40	17.4496	114.91	V Q				
6+45	18.2637	118.20	V Q				
6+50	19.1025	121.79	V Q				
6+55	19.9673	125.57	V Q				
7+ 0	20.8499	128.15	V Q				
7+ 5	21.7482	130.44	V Q				
7+10	22.6631	132.84	V Q				
7+15	23.5953	135.36	V Q				
7+20	24.5461	138.05	V Q				
7+25	25.5176	141.06	V Q				
7+30	26.5066	143.61	V Q				
7+35	27.5067	145.22	V Q				
7+40	28.5163	146.60	V Q				

7+45	29.5354	147.97	V		Q
7+50	30.5656	149.58	V		Q
7+55	31.6093	151.54	V		Q
8+ 0	32.6685	153.79	V		Q
8+ 5	33.7447	156.27	V		Q
8+10	34.8401	159.05	V		Q
8+15	35.9579	162.31	V		Q
8+20	37.0895	164.30	V		Q
8+25	38.2245	164.80	V		Q
8+30	39.3600	164.88	V		Q
8+35	40.4956	164.88	V		Q
8+40	41.6313	164.91	V		Q
8+45	42.7677	165.00	V		Q
8+50	43.9053	165.18	V		Q
8+55	45.0442	165.37	V		Q
9+ 0	46.1848	165.62	V		Q
9+ 5	47.3276	165.93	V		Q
9+10	48.4681	165.60	V		Q
9+15	49.6027	164.74	V		Q
9+20	50.7304	163.74	V		Q
9+25	51.8507	162.68	V		Q
9+30	52.9635	161.57	V		Q
9+35	54.0684	160.43	V		Q
9+40	55.1645	159.16	V		Q
9+45	56.2494	157.53	V		Q
9+50	57.3216	155.69	V		Q
9+55	58.3801	153.69	V		Q
10+ 0	59.4244	151.63	V		Q
10+ 5	60.4536	149.44	V		Q
10+10	61.4670	147.15	V		Q
10+15	62.4637	144.72	V		Q
10+20	63.4433	142.23	V		Q
10+25	64.4046	139.59	V		Q
10+30	65.3465	136.77	V		Q
10+35	66.2667	133.61	V		Q
10+40	67.1618	129.97	V		Q
10+45	68.0295	125.99	V		Q
10+50	68.8678	121.72	V		Q
10+55	69.6738	117.04	Q		
11+ 0	70.4432	111.71	Q		
11+ 5	71.1862	107.88	Q		
11+10	71.9130	105.52	Q		
11+15	72.6257	103.49	Q		
11+20	73.3245	101.46	Q		
11+25	74.0079	99.23	Q		
11+30	74.6739	96.71	Q		
11+35	75.3211	93.98	Q		
11+40	75.9482	91.05	Q		
11+45	76.5532	87.86	Q		
11+50	77.1336	84.27	Q		
11+55	77.6965	81.73	Q		
12+ 0	78.2459	79.77	Q		
12+ 5	78.7819	77.82	Q		
12+10	79.3038	75.79	Q		
12+15	79.8107	73.61	Q		
12+20	80.3009	71.17	Q		
12+25	80.7745	68.78	Q		

12+30	81.2385	67.37		Q	V
12+35	81.6949	66.27		Q	V
12+40	82.1440	65.20		Q	V
12+45	82.5854	64.09		Q	V
12+50	83.0182	62.85		Q	V
12+55	83.4416	61.48		Q	V
13+ 0	83.8550	60.02		Q	V
13+ 5	84.2576	58.46		Q	V
13+10	84.6482	56.73		Q	V
13+15	85.0276	55.08		Q	V
13+20	85.3985	53.86		Q	V
13+25	85.7612	52.66		Q	V
13+30	86.1152	51.39		Q	V
13+35	86.4598	50.04		Q	V
13+40	86.7943	48.56	Q		V
13+45	87.1172	46.89	Q		V
13+50	87.4324	45.78	Q		V
13+55	87.7431	45.11	Q		V
14+ 0	88.0499	44.55	Q		V
14+ 5	88.3528	43.99	Q		V
14+10	88.6515	43.36	Q		V
14+15	88.9452	42.65	Q		V
14+20	89.2337	41.88	Q		V
14+25	89.5164	41.05	Q		V
14+30	89.7928	40.13	Q		V
14+35	90.0621	39.11	Q		V
14+40	90.3270	38.46	Q		V
14+45	90.5885	37.97	Q		V
14+50	90.8468	37.50	Q		V
14+55	91.1017	37.01	Q		V
15+ 0	91.3530	36.49	Q		V
15+ 5	91.6003	35.91	Q		V
15+10	91.8438	35.35	Q		V
15+15	92.0850	35.03	Q		V
15+20	92.3245	34.77	Q		V
15+25	92.5623	34.53	Q		V
15+30	92.7983	34.28	Q		V
15+35	93.0326	34.01	Q		V
15+40	93.2649	33.73	Q		V
15+45	93.4952	33.44	Q		V
15+50	93.7233	33.13	Q		V
15+55	93.9493	32.81	Q		V
16+ 0	94.1729	32.47	Q		V
16+ 5	94.3938	32.07	Q		V
16+10	94.6115	31.61	Q		V
16+15	94.8257	31.11	Q		V
16+20	95.0362	30.56	Q		V
16+25	95.2425	29.96	Q		V
16+30	95.4442	29.28	Q		V
16+35	95.6431	28.88	Q		V
16+40	95.8404	28.64	Q		V
16+45	96.0363	28.45	Q		V
16+50	96.2310	28.27	Q		V
16+55	96.4244	28.08	Q		V
17+ 0	96.6165	27.88	Q		V
17+ 5	96.8070	27.67	Q		V
17+10	96.9961	27.45	Q		V

17+15	97.1836	27.23	Q			V
17+20	97.3694	26.98	Q			V
17+25	97.5534	26.72	Q			V
17+30	97.7353	26.40	Q			V
17+35	97.9147	26.06	Q			V
17+40	98.0916	25.68	Q			V
17+45	98.2656	25.27	Q			V
17+50	98.4364	24.80	Q			V
17+55	98.6043	24.39	Q			V
18+ 0	98.7709	24.19	Q			V
18+ 5	98.9365	24.04	Q			V
18+10	99.1012	23.91	Q			V
18+15	99.2650	23.78	Q			V
18+20	99.4278	23.65	Q			V
18+25	99.5897	23.50	Q			V
18+30	99.7505	23.35	Q			V
18+35	99.9103	23.20	Q			V
18+40	100.0689	23.03	Q			V
18+45	100.2262	22.85	Q			V
18+50	100.3821	22.64	Q			V
18+55	100.5365	22.41	Q			V
19+ 0	100.6891	22.16	Q			V
19+ 5	100.8398	21.89	Q			V
19+10	100.9885	21.59	Q			V
19+15	101.1349	21.26	Q			V
19+20	101.2799	21.05	Q			V
19+25	101.4238	20.90	Q			V
19+30	101.5667	20.76	Q			V
19+35	101.7088	20.62	Q			V
19+40	101.8498	20.48	Q			V
19+45	101.9898	20.32	Q			V
19+50	102.1286	20.16	Q			V
19+55	102.2663	19.99	Q			V
20+ 0	102.4028	19.82	Q			V
20+ 5	102.5380	19.63	Q			V
20+10	102.6717	19.42	Q			V
20+15	102.8037	19.17	Q			V
20+20	102.9338	18.89	Q			V
20+25	103.0618	18.59	Q			V
20+30	103.1876	18.26	Q			V
20+35	103.3108	17.88	Q			V
20+40	103.4318	17.58	Q			V
20+45	103.5518	17.43	Q			V
20+50	103.6711	17.32	Q			V
20+55	103.7896	17.22	Q			V
21+ 0	103.9075	17.12	Q			V
21+ 5	104.0247	17.01	Q			V
21+10	104.1411	16.90	Q			V
21+15	104.2567	16.79	Q			V
21+20	104.3716	16.67	Q			V
21+25	104.4856	16.55	Q			V
21+30	104.5987	16.42	Q			V
21+35	104.7107	16.27	Q			V
21+40	104.8216	16.10	Q			V
21+45	104.9311	15.90	Q			V
21+50	105.0392	15.70	Q			V
21+55	105.1457	15.46	Q			V

22+ 0	105.2505	15.21	Q				V
22+ 5	105.3544	15.09	Q				V
22+10	105.4579	15.03	Q				V
22+15	105.5610	14.98	Q				V
22+20	105.6640	14.94	Q				V
22+25	105.7666	14.90	Q				V
22+30	105.8689	14.85	Q				V
22+35	105.9708	14.80	Q				V
22+40	106.0724	14.75	Q				V
22+45	106.1735	14.69	Q				V
22+50	106.2742	14.62	Q				V
22+55	106.3744	14.55	Q				V
23+ 0	106.4741	14.47	Q				V
23+ 5	106.5732	14.39	Q				V
23+10	106.6717	14.31	Q				V
23+15	106.7696	14.22	Q				V
23+20	106.8669	14.13	Q				V
23+25	106.9636	14.03	Q				V
23+30	107.0595	13.92	Q				V
23+35	107.1546	13.81	Q				V
23+40	107.2489	13.69	Q				V
23+45	107.3424	13.58	Q				V
23+50	107.4350	13.45	Q				V
23+55	107.5268	13.32	Q				V
24+ 0	107.6175	13.18	Q				V
24+ 5	107.7073	13.04	Q				V
24+10	107.7961	12.89	Q				V
24+15	107.8837	12.73	Q				V
24+20	107.9701	12.54	Q				V
24+25	108.0549	12.32	Q				V
24+30	108.1381	12.08	Q				V
24+35	108.2194	11.81	Q				V
24+40	108.2987	11.51	Q				V
24+45	108.3758	11.20	Q				V
24+50	108.4521	11.07	Q				V
24+55	108.5279	11.02	Q				V
25+ 0	108.6036	10.98	Q				V
25+ 5	108.6790	10.96	Q				V
25+10	108.7543	10.92	Q				V
25+15	108.8293	10.89	Q				V
25+20	108.9041	10.86	Q				V
25+25	108.9786	10.82	Q				V
25+30	109.0529	10.78	Q				V
25+35	109.1269	10.74	Q				V
25+40	109.2005	10.69	Q				V
25+45	109.2738	10.64	Q				V
25+50	109.3467	10.59	Q				V
25+55	109.4193	10.53	Q				V
26+ 0	109.4914	10.48	Q				V
26+ 5	109.5632	10.42	Q				V
26+10	109.6345	10.35	Q				V
26+15	109.7053	10.28	Q				V
26+20	109.7755	10.20	Q				V
26+25	109.8453	10.12	Q				V
26+30	109.9144	10.04	Q				V
26+35	109.9830	9.96	Q				V
26+40	110.0509	9.87	Q				V

26+45	110.1182	9.77	Q				V
26+50	110.1848	9.67	Q				V
26+55	110.2508	9.57	Q				V
27+ 0	110.3159	9.46	Q				V
27+ 5	110.3802	9.33	Q				V
27+10	110.4433	9.17	Q				V
27+15	110.5053	9.00	Q				V
27+20	110.5660	8.81	Q				V
27+25	110.6252	8.60	Q				V
27+30	110.6830	8.38	Q				V
27+35	110.7402	8.31	Q				V
27+40	110.7972	8.28	Q				V
27+45	110.8542	8.27	Q				V
27+50	110.9110	8.26	Q				V
27+55	110.9678	8.25	Q				V
28+ 0	111.0246	8.24	Q				V
28+ 5	111.0812	8.23	Q				V
28+10	111.1378	8.21	Q				V
28+15	111.1943	8.20	Q				V
28+20	111.2507	8.19	Q				V
28+25	111.3069	8.17	Q				V
28+30	111.3631	8.16	Q				V
28+35	111.4192	8.14	Q				V
28+40	111.4751	8.12	Q				V
28+45	111.5309	8.10	Q				V
28+50	111.5865	8.08	Q				V
28+55	111.6420	8.06	Q				V
29+ 0	111.6974	8.04	Q				V
29+ 5	111.7526	8.02	Q				V
29+10	111.8077	8.00	Q				V
29+15	111.8626	7.97	Q				V
29+20	111.9174	7.95	Q				V
29+25	111.9719	7.92	Q				V
29+30	112.0263	7.90	Q				V
29+35	112.0805	7.87	Q				V
29+40	112.1346	7.84	Q				V
29+45	112.1884	7.81	Q				V
29+50	112.2419	7.78	Q				V
29+55	112.2952	7.74	Q				V
30+ 0	112.3482	7.70	Q				V
30+ 5	112.4009	7.65	Q				V
30+10	112.4533	7.60	Q				V
30+15	112.5053	7.55	Q				V
30+20	112.5572	7.53	Q				V
30+25	112.6089	7.51	Q				V
30+30	112.6604	7.49	Q				V
30+35	112.7119	7.47	Q				V
30+40	112.7632	7.45	Q				V
30+45	112.8143	7.43	Q				V
30+50	112.8653	7.40	Q				V
30+55	112.9161	7.38	Q				V
31+ 0	112.9666	7.35	Q				V
31+ 5	113.0170	7.31	Q				V
31+10	113.0671	7.28	Q				V
31+15	113.1170	7.24	Q				V
31+20	113.1666	7.20	Q				V
31+25	113.2160	7.16	Q				V

31+30	113.2650	7.12	Q				V
31+35	113.3138	7.08	Q				V
31+40	113.3622	7.03	Q				V
31+45	113.4103	6.98	Q				V
31+50	113.4579	6.92	Q				V
31+55	113.5052	6.87	Q				V
32+ 0	113.5521	6.81	Q				V
32+ 5	113.5986	6.75	Q				V
32+10	113.6447	6.68	Q				V
32+15	113.6902	6.62	Q				V
32+20	113.7353	6.55	Q				V
32+25	113.7800	6.48	Q				V
32+30	113.8240	6.40	Q				V
32+35	113.8674	6.30	Q				V
32+40	113.9100	6.19	Q				V
32+45	113.9519	6.07	Q				V
32+50	113.9928	5.94	Q				V
32+55	114.0326	5.79	Q				V
33+ 0	114.0715	5.65	Q				V
33+ 5	114.1101	5.60	Q				V
33+10	114.1486	5.58	Q				V
33+15	114.1869	5.57	Q				V
33+20	114.2252	5.56	Q				V
33+25	114.2634	5.55	Q				V
33+30	114.3016	5.53	Q				V
33+35	114.3396	5.52	Q				V
33+40	114.3775	5.51	Q				V
33+45	114.4153	5.49	Q				V
33+50	114.4530	5.47	Q				V
33+55	114.4905	5.45	Q				V
34+ 0	114.5280	5.43	Q				V
34+ 5	114.5652	5.41	Q				V
34+10	114.6023	5.39	Q				V
34+15	114.6393	5.36	Q				V
34+20	114.6760	5.34	Q				V
34+25	114.7126	5.31	Q				V
34+30	114.7490	5.29	Q				V
34+35	114.7852	5.26	Q				V
34+40	114.8212	5.23	Q				V
34+45	114.8570	5.19	Q				V
34+50	114.8925	5.16	Q				V
34+55	114.9278	5.13	Q				V
35+ 0	114.9629	5.09	Q				V
35+ 5	114.9977	5.05	Q				V
35+10	115.0322	5.01	Q				V
35+15	115.0664	4.97	Q				V
35+20	115.1003	4.92	Q				V
35+25	115.1337	4.86	Q				V
35+30	115.1668	4.79	Q				V
35+35	115.1993	4.73	Q				V
35+40	115.2313	4.64	Q				V
35+45	115.2628	4.58	Q				V
35+50	115.2941	4.55	Q				V
35+55	115.3254	4.54	Q				V
36+ 0	115.3565	4.52	Q				V
36+ 5	115.3876	4.51	Q				V
36+10	115.4186	4.50	Q				V

36+15	115.4495	4.49	Q				V
36+20	115.4804	4.48	Q				V
36+25	115.5111	4.46	Q				V
36+30	115.5417	4.44	Q				V
36+35	115.5722	4.43	Q				V
36+40	115.6025	4.41	Q				V
36+45	115.6327	4.39	Q				V
36+50	115.6628	4.36	Q				V
36+55	115.6927	4.34	Q				V
37+ 0	115.7224	4.32	Q				V
37+ 5	115.7520	4.29	Q				V
37+10	115.7814	4.27	Q				V
37+15	115.8105	4.24	Q				V
37+20	115.8395	4.21	Q				V
37+25	115.8683	4.18	Q				V
37+30	115.8968	4.14	Q				V
37+35	115.9251	4.11	Q				V
37+40	115.9532	4.07	Q				V
37+45	115.9809	4.03	Q				V
37+50	116.0084	3.99	Q				V
37+55	116.0355	3.94	Q				V
38+ 0	116.0623	3.89	Q				V
38+ 5	116.0886	3.83	Q				V
38+10	116.1145	3.76	Q				V
38+15	116.1400	3.69	Q				V
38+20	116.1648	3.61	Q				V
38+25	116.1890	3.52	Q				V
38+30	116.2128	3.44	Q				V
38+35	116.2362	3.41	Q				V
38+40	116.2595	3.38	Q				V
38+45	116.2827	3.36	Q				V
38+50	116.3057	3.34	Q				V
38+55	116.3285	3.32	Q				V
39+ 0	116.3512	3.30	Q				V
39+ 5	116.3738	3.27	Q				V
39+10	116.3962	3.25	Q				V
39+15	116.4184	3.22	Q				V
39+20	116.4404	3.20	Q				V
39+25	116.4622	3.17	Q				V
39+30	116.4838	3.14	Q				V
39+35	116.5052	3.11	Q				V
39+40	116.5264	3.07	Q				V
39+45	116.5473	3.04	Q				V
39+50	116.5680	3.00	Q				V
39+55	116.5884	2.96	Q				V
40+ 0	116.6085	2.92	Q				V
40+ 5	116.6284	2.88	Q				V
40+10	116.6479	2.84	Q				V
40+15	116.6672	2.79	Q				V
40+20	116.6860	2.74	Q				V
40+25	116.7046	2.69	Q				V
40+30	116.7228	2.64	Q				V
40+35	116.7406	2.59	Q				V
40+40	116.7580	2.53	Q				V
40+45	116.7750	2.47	Q				V
40+50	116.7914	2.39	Q				V
40+55	116.8073	2.30	Q				V

41+ 0	116.8225	2.21	Q				V
41+ 5	116.8371	2.11	Q				V
41+10	116.8508	1.99	Q				V
41+15	116.8639	1.90	Q				V
41+20	116.8766	1.84	Q				V
41+25	116.8889	1.79	Q				V
41+30	116.9009	1.75	Q				V
41+35	116.9126	1.69	Q				V
41+40	116.9239	1.63	Q				V
41+45	116.9347	1.57	Q				V
41+50	116.9451	1.51	Q				V
41+55	116.9550	1.44	Q				V
42+ 0	116.9645	1.37	Q				V
42+ 5	116.9735	1.30	Q				V
42+10	116.9819	1.22	Q				V
42+15	116.9898	1.15	Q				V
42+20	116.9971	1.07	Q				V
42+25	117.0039	0.98	Q				V
42+30	117.0099	0.87	Q				V
42+35	117.0151	0.75	Q				V
42+40	117.0193	0.61	Q				V
42+45	117.0224	0.46	Q				V
42+50	117.0244	0.29	Q				V
42+55	117.0250	0.08	Q				V
43+ 0	117.0251	0.02	Q				V
43+ 5	117.0252	0.01	Q				V
43+10	117.0252	0.00	Q				V
43+15	117.0252	0.00	Q				V
43+20	117.0252	0.00	Q				V

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 05/08/15 File: 154149HISTHYDB2420.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR

HISTORICAL CONDITIONS AREA "B"

20-YEAR, 24-HOUR STORM

BY: JTS DATE: 05-08-15

Drainage Area = 837.34(Ac.) = 1.308 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 837.34(Ac.)= 1.308 Sq. Mi.
Length along longest watercourse = 16296.72(Ft.)
Length along longest watercourse measured to centroid = 8849.03(Ft.)
Length along longest watercourse = 3.087 Mi.
Length along longest watercourse measured to centroid = 1.676 Mi.
Difference in elevation = 777.00(Ft.)
Slope along watercourse = 251.7415 Ft./Mi.
Average Manning's 'N' = 0.350
Lag time = 5.487 Hr.
Lag time = 329.20 Min.
25% of lag time = 82.30 Min.
40% of lag time = 131.68 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]
837.34	2.70	2260.82

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
837.34	6.65	5568.31

STORM EVENT (YEAR) = 20.00
 Area Averaged 2-Year Rainfall = 2.700(In)
 Area Averaged 100-Year Rainfall = 6.650(In)

Point rain (area averaged) = 5.025(In)
 Areal adjustment factor = 99.84 %
 Adjusted average point rain = 5.017(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
81.060	67.00	0.050
1.780	78.00	0.050
101.910	86.00	0.050
652.590	89.00	0.050
Total Area Entered = 837.34(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.)	(In/Hr)	(Dec.)	(In/Hr)
67.0	67.0	0.394	0.050	0.377	0.097	0.036
78.0	78.0	0.268	0.050	0.256	0.002	0.001
86.0	86.0	0.176	0.050	0.168	0.122	0.020
89.0	89.0	0.141	0.050	0.135	0.779	0.105
Sum (F) =						0.163

Area averaged mean soil loss (F) (In/Hr) = 0.163
 Minimum soil loss rate ((In/Hr)) = 0.081
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

Unit Hydrograph
 VALLEY S-Curve

WARNING: End of hydrograph not reached with this
 Unit time interval vs lag time
 Unit-Hydrograph terminated after 450 intervals
 Unit Hydrograph Data

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	1.519	0.132
2	0.167	3.038	0.263
3	0.250	4.556	0.263
4	0.333	6.075	0.263
5	0.417	7.594	0.263
6	0.500	9.113	0.263
7	0.583	10.632	0.263
8	0.667	12.151	0.263
9	0.750	13.669	0.263
10	0.833	15.188	0.264
11	0.917	16.707	0.326
12	1.000	18.226	0.365
13	1.083	19.745	0.365
14	1.167	21.263	0.365
15	1.250	22.782	0.365
16	1.333	24.301	0.365

17	1.417	25.820	0.391	3.300
18	1.500	27.339	0.527	4.451
19	1.583	28.857	0.547	4.614
20	1.667	30.376	0.547	4.614
21	1.750	31.895	0.547	4.614
22	1.833	33.414	0.547	4.614
23	1.917	34.933	0.547	4.614
24	2.000	36.452	0.616	5.199
25	2.083	37.970	0.699	5.895
26	2.167	39.489	0.699	5.896
27	2.250	41.008	0.699	5.896
28	2.333	42.527	0.699	5.896
29	2.417	44.046	0.699	5.896
30	2.500	45.564	0.699	5.896
31	2.583	47.083	0.699	5.896
32	2.667	48.602	0.699	5.896
33	2.750	50.121	0.699	5.903
34	2.833	51.640	0.850	7.176
35	2.917	53.158	0.962	8.117
36	3.000	54.677	0.962	8.117
37	3.083	56.196	0.962	8.117
38	3.167	57.715	0.962	8.117
39	3.250	59.234	0.962	8.117
40	3.333	60.753	0.962	8.117
41	3.417	62.271	0.962	8.117
42	3.500	63.790	0.962	8.117
43	3.583	65.309	0.964	8.135
44	3.667	66.828	1.031	8.701
45	3.750	68.347	1.063	8.972
46	3.833	69.865	1.063	8.972
47	3.917	71.384	1.063	8.972
48	4.000	72.903	1.063	8.972
49	4.083	74.422	1.063	8.972
50	4.167	75.941	1.069	9.021
51	4.250	77.459	1.091	9.210
52	4.333	78.978	1.094	9.228
53	4.417	80.497	1.094	9.228
54	4.500	82.016	1.094	9.228
55	4.583	83.535	1.094	9.228
56	4.667	85.054	1.094	9.228
57	4.750	86.572	1.094	9.228
58	4.833	88.091	1.094	9.228
59	4.917	89.610	1.094	9.228
60	5.000	91.129	1.094	9.228
61	5.083	92.648	1.094	9.228
62	5.167	94.166	1.094	9.228
63	5.250	95.685	1.094	9.228
64	5.333	97.204	1.094	9.228
65	5.417	98.723	1.094	9.228
66	5.500	100.242	1.090	9.197
67	5.583	101.760	0.904	7.626
68	5.667	103.279	0.800	6.750
69	5.750	104.798	0.800	6.750
70	5.833	106.317	0.800	6.750
71	5.917	107.836	0.800	6.750
72	6.000	109.355	0.800	6.750
73	6.083	110.873	0.800	6.750

74	6.167	112.392	0.800	6.750
75	6.250	113.911	0.800	6.750
76	6.333	115.430	0.793	6.690
77	6.417	116.949	0.668	5.639
78	6.500	118.467	0.623	5.255
79	6.583	119.986	0.623	5.255
80	6.667	121.505	0.623	5.255
81	6.750	123.024	0.623	5.255
82	6.833	124.543	0.623	5.255
83	6.917	126.061	0.589	4.973
84	7.000	127.580	0.492	4.154
85	7.083	129.099	0.486	4.101
86	7.167	130.618	0.486	4.101
87	7.250	132.137	0.486	4.101
88	7.333	133.656	0.486	4.101
89	7.417	135.174	0.486	4.101
90	7.500	136.693	0.486	4.101
91	7.583	138.212	0.486	4.101
92	7.667	139.731	0.486	4.101
93	7.750	141.250	0.460	3.885
94	7.833	142.768	0.411	3.471
95	7.917	144.287	0.410	3.461
96	8.000	145.806	0.410	3.461
97	8.083	147.325	0.410	3.461
98	8.167	148.844	0.410	3.461
99	8.250	150.362	0.407	3.437
100	8.333	151.881	0.342	2.884
101	8.417	153.400	0.314	2.649
102	8.500	154.919	0.314	2.649
103	8.583	156.438	0.314	2.649
104	8.667	157.957	0.314	2.649
105	8.750	159.475	0.314	2.649
106	8.833	160.994	0.314	2.649
107	8.917	162.513	0.314	2.649
108	9.000	164.032	0.314	2.649
109	9.083	165.551	0.310	2.618
110	9.167	167.069	0.270	2.274
111	9.250	168.588	0.258	2.179
112	9.333	170.107	0.258	2.179
113	9.417	171.626	0.258	2.179
114	9.500	173.145	0.258	2.179
115	9.583	174.663	0.258	2.179
116	9.667	176.182	0.248	2.093
117	9.750	177.701	0.226	1.904
118	9.833	179.220	0.225	1.897
119	9.917	180.739	0.225	1.897
120	10.000	182.258	0.225	1.897
121	10.083	183.776	0.225	1.897
122	10.167	185.295	0.225	1.897
123	10.250	186.814	0.225	1.897
124	10.333	188.333	0.225	1.897
125	10.417	189.852	0.225	1.897
126	10.500	191.370	0.225	1.897
127	10.583	192.889	0.225	1.897
128	10.667	194.408	0.225	1.897
129	10.750	195.927	0.225	1.897
130	10.833	197.446	0.225	1.897

131	10.917	198.964	0.225	1.897
132	11.000	200.483	0.223	1.879
133	11.083	202.002	0.192	1.621
134	11.167	203.521	0.182	1.538
135	11.250	205.040	0.182	1.538
136	11.333	206.559	0.182	1.538
137	11.417	208.077	0.182	1.538
138	11.500	209.596	0.182	1.538
139	11.583	211.115	0.182	1.538
140	11.667	212.634	0.182	1.538
141	11.750	214.153	0.182	1.538
142	11.833	215.671	0.182	1.538
143	11.917	217.190	0.182	1.538
144	12.000	218.709	0.182	1.538
145	12.083	220.228	0.182	1.538
146	12.167	221.747	0.182	1.538
147	12.250	223.265	0.182	1.538
148	12.333	224.784	0.182	1.538
149	12.417	226.303	0.171	1.444
150	12.500	227.822	0.152	1.284
151	12.583	229.341	0.152	1.282
152	12.667	230.860	0.152	1.282
153	12.750	232.378	0.152	1.282
154	12.833	233.897	0.152	1.282
155	12.917	235.416	0.152	1.282
156	13.000	236.935	0.152	1.282
157	13.083	238.454	0.152	1.282
158	13.167	239.972	0.152	1.282
159	13.250	241.491	0.152	1.282
160	13.333	243.010	0.152	1.282
161	13.417	244.529	0.152	1.282
162	13.500	246.048	0.152	1.282
163	13.583	247.566	0.152	1.282
164	13.667	249.085	0.152	1.282
165	13.750	250.604	0.150	1.270
166	13.833	252.123	0.137	1.156
167	13.917	253.642	0.134	1.128
168	14.000	255.161	0.134	1.128
169	14.083	256.679	0.134	1.128
170	14.167	258.198	0.134	1.128
171	14.250	259.717	0.134	1.128
172	14.333	261.236	0.134	1.128
173	14.417	262.755	0.134	1.128
174	14.500	264.273	0.134	1.128
175	14.583	265.792	0.134	1.128
176	14.667	267.311	0.134	1.128
177	14.750	268.830	0.134	1.128
178	14.833	270.349	0.134	1.128
179	14.917	271.867	0.134	1.128
180	15.000	273.386	0.134	1.128
181	15.083	274.905	0.134	1.128
182	15.167	276.424	0.123	1.038
183	15.250	277.943	0.109	0.923
184	15.333	279.462	0.109	0.923
185	15.417	280.980	0.109	0.923
186	15.500	282.499	0.109	0.923
187	15.583	284.018	0.109	0.923

188	15.667	285.537	0.109	0.923
189	15.750	287.056	0.109	0.923
190	15.833	288.574	0.109	0.923
191	15.917	290.093	0.109	0.923
192	16.000	291.612	0.109	0.923
193	16.083	293.131	0.109	0.923
194	16.167	294.650	0.109	0.923
195	16.250	296.168	0.109	0.923
196	16.333	297.687	0.109	0.923
197	16.417	299.206	0.109	0.923
198	16.500	300.725	0.107	0.905
199	16.583	302.244	0.094	0.790
200	16.667	303.763	0.091	0.769
201	16.750	305.281	0.091	0.769
202	16.833	306.800	0.091	0.769
203	16.917	308.319	0.091	0.769
204	17.000	309.838	0.091	0.769
205	17.083	311.357	0.091	0.769
206	17.167	312.875	0.091	0.769
207	17.250	314.394	0.091	0.769
208	17.333	315.913	0.091	0.769
209	17.417	317.432	0.091	0.769
210	17.500	318.951	0.091	0.769
211	17.583	320.469	0.091	0.769
212	17.667	321.988	0.091	0.769
213	17.750	323.507	0.091	0.769
214	17.833	325.026	0.091	0.769
215	17.917	326.545	0.091	0.769
216	18.000	328.064	0.091	0.769
217	18.083	329.582	0.091	0.769
218	18.167	331.101	0.091	0.769
219	18.250	332.620	0.091	0.769
220	18.333	334.139	0.091	0.769
221	18.417	335.658	0.091	0.769
222	18.500	337.176	0.091	0.769
223	18.583	338.695	0.091	0.769
224	18.667	340.214	0.091	0.769
225	18.750	341.733	0.091	0.769
226	18.833	343.252	0.091	0.769
227	18.917	344.770	0.091	0.769
228	19.000	346.289	0.091	0.769
229	19.083	347.808	0.091	0.769
230	19.167	349.327	0.091	0.769
231	19.250	350.846	0.087	0.737
232	19.333	352.365	0.069	0.584
233	19.417	353.883	0.067	0.564
234	19.500	355.402	0.067	0.564
235	19.583	356.921	0.067	0.564
236	19.667	358.440	0.067	0.564
237	19.750	359.959	0.067	0.564
238	19.833	361.477	0.067	0.564
239	19.917	362.996	0.067	0.564
240	20.000	364.515	0.067	0.564
241	20.083	366.034	0.067	0.564
242	20.167	367.553	0.067	0.564
243	20.250	369.071	0.067	0.564
244	20.333	370.590	0.067	0.564

245	20.417	372.109	0.067	0.564
246	20.500	373.628	0.067	0.564
247	20.583	375.147	0.067	0.564
248	20.667	376.666	0.067	0.564
249	20.750	378.184	0.067	0.564
250	20.833	379.703	0.067	0.564
251	20.917	381.222	0.067	0.564
252	21.000	382.741	0.067	0.564
253	21.083	384.260	0.067	0.564
254	21.167	385.778	0.067	0.564
255	21.250	387.297	0.067	0.564
256	21.333	388.816	0.067	0.564
257	21.417	390.335	0.067	0.564
258	21.500	391.854	0.067	0.564
259	21.583	393.372	0.067	0.564
260	21.667	394.891	0.067	0.564
261	21.750	396.410	0.067	0.564
262	21.833	397.929	0.067	0.564
263	21.917	399.448	0.067	0.564
264	22.000	400.967	0.063	0.533
265	22.083	402.485	0.050	0.420
266	22.167	404.004	0.049	0.410
267	22.250	405.523	0.049	0.410
268	22.333	407.042	0.049	0.410
269	22.417	408.561	0.049	0.410
270	22.500	410.079	0.049	0.410
271	22.583	411.598	0.049	0.410
272	22.667	413.117	0.049	0.410
273	22.750	414.636	0.049	0.410
274	22.833	416.155	0.049	0.410
275	22.917	417.673	0.049	0.410
276	23.000	419.192	0.049	0.410
277	23.083	420.711	0.049	0.410
278	23.167	422.230	0.049	0.410
279	23.250	423.749	0.049	0.410
280	23.333	425.268	0.049	0.410
281	23.417	426.786	0.049	0.410
282	23.500	428.305	0.049	0.410
283	23.583	429.824	0.049	0.410
284	23.667	431.343	0.049	0.410
285	23.750	432.862	0.049	0.410
286	23.833	434.380	0.049	0.410
287	23.917	435.899	0.049	0.410
288	24.000	437.418	0.049	0.410
289	24.083	438.937	0.049	0.410
290	24.167	440.456	0.049	0.410
291	24.250	441.974	0.049	0.410
292	24.333	443.493	0.049	0.410
293	24.417	445.012	0.049	0.410
294	24.500	446.531	0.049	0.410
295	24.583	448.050	0.049	0.410
296	24.667	449.569	0.049	0.410
297	24.750	451.087	0.048	0.404
298	24.833	452.606	0.046	0.386
299	24.917	454.125	0.046	0.385
300	25.000	455.644	0.046	0.385
301	25.083	457.163	0.046	0.385

302	25.167	458.681	0.046	0.385
303	25.250	460.200	0.046	0.385
304	25.333	461.719	0.046	0.385
305	25.417	463.238	0.046	0.385
306	25.500	464.757	0.046	0.385
307	25.583	466.275	0.046	0.385
308	25.667	467.794	0.046	0.385
309	25.750	469.313	0.046	0.385
310	25.833	470.832	0.046	0.385
311	25.917	472.351	0.046	0.385
312	26.000	473.870	0.046	0.385
313	26.083	475.388	0.046	0.385
314	26.167	476.907	0.046	0.385
315	26.250	478.426	0.046	0.385
316	26.333	479.945	0.046	0.385
317	26.417	481.464	0.046	0.385
318	26.500	482.982	0.046	0.385
319	26.583	484.501	0.046	0.385
320	26.667	486.020	0.046	0.385
321	26.750	487.539	0.046	0.385
322	26.833	489.058	0.046	0.385
323	26.917	490.576	0.046	0.385
324	27.000	492.095	0.046	0.385
325	27.083	493.614	0.046	0.385
326	27.167	495.133	0.046	0.385
327	27.250	496.652	0.046	0.385
328	27.333	498.171	0.046	0.385
329	27.417	499.689	0.046	0.385
330	27.500	501.208	0.042	0.352
331	27.583	502.727	0.034	0.284
332	27.667	504.246	0.033	0.282
333	27.750	505.765	0.033	0.282
334	27.833	507.283	0.033	0.282
335	27.917	508.802	0.033	0.282
336	28.000	510.321	0.033	0.282
337	28.083	511.840	0.033	0.282
338	28.167	513.359	0.033	0.282
339	28.250	514.878	0.033	0.282
340	28.333	516.396	0.033	0.282
341	28.417	517.915	0.033	0.282
342	28.500	519.434	0.033	0.282
343	28.583	520.953	0.033	0.282
344	28.667	522.472	0.033	0.282
345	28.750	523.990	0.033	0.282
346	28.833	525.509	0.033	0.282
347	28.917	527.028	0.033	0.282
348	29.000	528.547	0.033	0.282
349	29.083	530.066	0.033	0.282
350	29.167	531.584	0.033	0.282
351	29.250	533.103	0.033	0.282
352	29.333	534.622	0.033	0.282
353	29.417	536.141	0.033	0.282
354	29.500	537.660	0.033	0.282
355	29.583	539.179	0.033	0.282
356	29.667	540.697	0.033	0.282
357	29.750	542.216	0.033	0.282
358	29.833	543.735	0.033	0.282

359	29.917	545.254	0.033	0.282
360	30.000	546.773	0.033	0.282
361	30.083	548.291	0.033	0.282
362	30.167	549.810	0.033	0.282
363	30.250	551.329	0.031	0.262
364	30.333	552.848	0.027	0.231
365	30.417	554.367	0.027	0.231
366	30.500	555.885	0.027	0.231
367	30.583	557.404	0.027	0.231
368	30.667	558.923	0.027	0.231
369	30.750	560.442	0.027	0.231
370	30.833	561.961	0.027	0.231
371	30.917	563.480	0.027	0.231
372	31.000	564.998	0.027	0.231
373	31.083	566.517	0.027	0.231
374	31.167	568.036	0.027	0.231
375	31.250	569.555	0.027	0.231
376	31.333	571.074	0.027	0.231
377	31.417	572.592	0.027	0.231
378	31.500	574.111	0.027	0.231
379	31.583	575.630	0.027	0.231
380	31.667	577.149	0.027	0.231
381	31.750	578.668	0.027	0.231
382	31.833	580.186	0.027	0.231
383	31.917	581.705	0.027	0.231
384	32.000	583.224	0.027	0.231
385	32.083	584.743	0.027	0.231
386	32.167	586.262	0.027	0.231
387	32.250	587.781	0.027	0.231
388	32.333	589.299	0.027	0.231
389	32.417	590.818	0.027	0.231
390	32.500	592.337	0.027	0.231
391	32.583	593.856	0.027	0.231
392	32.667	595.375	0.027	0.231
393	32.750	596.893	0.027	0.231
394	32.833	598.412	0.027	0.231
395	32.917	599.931	0.027	0.231
396	33.000	601.450	0.025	0.207
397	33.083	602.969	0.021	0.179
398	33.167	604.487	0.021	0.179
399	33.250	606.006	0.021	0.179
400	33.333	607.525	0.021	0.179
401	33.417	609.044	0.021	0.179
402	33.500	610.563	0.021	0.179
403	33.583	612.082	0.021	0.179
404	33.667	613.600	0.021	0.179
405	33.750	615.119	0.021	0.179
406	33.833	616.638	0.021	0.179
407	33.917	618.157	0.021	0.179
408	34.000	619.676	0.021	0.179
409	34.083	621.194	0.021	0.179
410	34.167	622.713	0.021	0.179
411	34.250	624.232	0.021	0.179
412	34.333	625.751	0.021	0.179
413	34.417	627.270	0.021	0.179
414	34.500	628.788	0.021	0.179
415	34.583	630.307	0.021	0.179

416	34.667	631.826	0.021	0.179
417	34.750	633.345	0.021	0.179
418	34.833	634.864	0.021	0.179
419	34.917	636.383	0.021	0.179
420	35.000	637.901	0.021	0.179
421	35.083	639.420	0.021	0.179
422	35.167	640.939	0.021	0.179
423	35.250	642.458	0.021	0.179
424	35.333	643.977	0.021	0.179
425	35.417	645.495	0.021	0.179
426	35.500	647.014	0.021	0.179
427	35.583	648.533	0.021	0.179
428	35.667	650.052	0.021	0.179
429	35.750	651.571	0.018	0.152
430	35.833	653.089	0.015	0.128
431	35.917	654.608	0.015	0.128
432	36.000	656.127	0.015	0.128
433	36.083	657.646	0.015	0.128
434	36.167	659.165	0.015	0.128
435	36.250	660.684	0.015	0.128
436	36.333	662.202	0.015	0.128
437	36.417	663.721	0.015	0.128
438	36.500	665.240	0.015	0.128
439	36.583	666.759	0.015	0.128
440	36.667	668.278	0.015	0.128
441	36.750	669.796	0.015	0.128
442	36.833	671.315	0.015	0.128
443	36.917	672.834	0.015	0.128
444	37.000	674.353	0.015	0.128
445	37.083	675.872	0.015	0.128
446	37.167	677.390	0.015	0.128
447	37.250	678.909	0.015	0.128
448	37.333	680.428	0.015	0.128
449	37.417	681.947	0.015	0.128
Sum =			98.812	Sum= 833.855

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	0.040	(0.288)	0.036	0.004
2	0.17	0.07	0.040	(0.287)	0.036	0.004
3	0.25	0.07	0.040	(0.286)	0.036	0.004
4	0.33	0.10	0.060	(0.285)	0.054	0.006
5	0.42	0.10	0.060	(0.284)	0.054	0.006
6	0.50	0.10	0.060	(0.283)	0.054	0.006
7	0.58	0.10	0.060	(0.282)	0.054	0.006
8	0.67	0.10	0.060	(0.281)	0.054	0.006
9	0.75	0.10	0.060	(0.279)	0.054	0.006
10	0.83	0.13	0.080	(0.278)	0.072	0.008
11	0.92	0.13	0.080	(0.277)	0.072	0.008
12	1.00	0.13	0.080	(0.276)	0.072	0.008
13	1.08	0.10	0.060	(0.275)	0.054	0.006
14	1.17	0.10	0.060	(0.274)	0.054	0.006

15	1.25	0.10	0.060	(0.273)	0.054	0.006
16	1.33	0.10	0.060	(0.272)	0.054	0.006
17	1.42	0.10	0.060	(0.271)	0.054	0.006
18	1.50	0.10	0.060	(0.270)	0.054	0.006
19	1.58	0.10	0.060	(0.269)	0.054	0.006
20	1.67	0.10	0.060	(0.268)	0.054	0.006
21	1.75	0.10	0.060	(0.266)	0.054	0.006
22	1.83	0.13	0.080	(0.265)	0.072	0.008
23	1.92	0.13	0.080	(0.264)	0.072	0.008
24	2.00	0.13	0.080	(0.263)	0.072	0.008
25	2.08	0.13	0.080	(0.262)	0.072	0.008
26	2.17	0.13	0.080	(0.261)	0.072	0.008
27	2.25	0.13	0.080	(0.260)	0.072	0.008
28	2.33	0.13	0.080	(0.259)	0.072	0.008
29	2.42	0.13	0.080	(0.258)	0.072	0.008
30	2.50	0.13	0.080	(0.257)	0.072	0.008
31	2.58	0.17	0.100	(0.256)	0.090	0.010
32	2.67	0.17	0.100	(0.255)	0.090	0.010
33	2.75	0.17	0.100	(0.254)	0.090	0.010
34	2.83	0.17	0.100	(0.253)	0.090	0.010
35	2.92	0.17	0.100	(0.252)	0.090	0.010
36	3.00	0.17	0.100	(0.251)	0.090	0.010
37	3.08	0.17	0.100	(0.250)	0.090	0.010
38	3.17	0.17	0.100	(0.249)	0.090	0.010
39	3.25	0.17	0.100	(0.248)	0.090	0.010
40	3.33	0.17	0.100	(0.246)	0.090	0.010
41	3.42	0.17	0.100	(0.245)	0.090	0.010
42	3.50	0.17	0.100	(0.244)	0.090	0.010
43	3.58	0.17	0.100	(0.243)	0.090	0.010
44	3.67	0.17	0.100	(0.242)	0.090	0.010
45	3.75	0.17	0.100	(0.241)	0.090	0.010
46	3.83	0.20	0.120	(0.240)	0.108	0.012
47	3.92	0.20	0.120	(0.239)	0.108	0.012
48	4.00	0.20	0.120	(0.238)	0.108	0.012
49	4.08	0.20	0.120	(0.237)	0.108	0.012
50	4.17	0.20	0.120	(0.236)	0.108	0.012
51	4.25	0.20	0.120	(0.235)	0.108	0.012
52	4.33	0.23	0.140	(0.234)	0.126	0.014
53	4.42	0.23	0.140	(0.233)	0.126	0.014
54	4.50	0.23	0.140	(0.232)	0.126	0.014
55	4.58	0.23	0.140	(0.231)	0.126	0.014
56	4.67	0.23	0.140	(0.230)	0.126	0.014
57	4.75	0.23	0.140	(0.229)	0.126	0.014
58	4.83	0.27	0.161	(0.228)	0.144	0.016
59	4.92	0.27	0.161	(0.227)	0.144	0.016
60	5.00	0.27	0.161	(0.226)	0.144	0.016
61	5.08	0.20	0.120	(0.225)	0.108	0.012
62	5.17	0.20	0.120	(0.224)	0.108	0.012
63	5.25	0.20	0.120	(0.223)	0.108	0.012
64	5.33	0.23	0.140	(0.222)	0.126	0.014
65	5.42	0.23	0.140	(0.221)	0.126	0.014
66	5.50	0.23	0.140	(0.220)	0.126	0.014
67	5.58	0.27	0.161	(0.220)	0.144	0.016
68	5.67	0.27	0.161	(0.219)	0.144	0.016
69	5.75	0.27	0.161	(0.218)	0.144	0.016
70	5.83	0.27	0.161	(0.217)	0.144	0.016
71	5.92	0.27	0.161	(0.216)	0.144	0.016

72	6.00	0.27	0.161	(0.215)	0.144	0.016
73	6.08	0.30	0.181	(0.214)	0.163	0.018
74	6.17	0.30	0.181	(0.213)	0.163	0.018
75	6.25	0.30	0.181	(0.212)	0.163	0.018
76	6.33	0.30	0.181	(0.211)	0.163	0.018
77	6.42	0.30	0.181	(0.210)	0.163	0.018
78	6.50	0.30	0.181	(0.209)	0.163	0.018
79	6.58	0.33	0.201	(0.208)	0.181	0.020
80	6.67	0.33	0.201	(0.207)	0.181	0.020
81	6.75	0.33	0.201	(0.206)	0.181	0.020
82	6.83	0.33	0.201	(0.205)	0.181	0.020
83	6.92	0.33	0.201	(0.204)	0.181	0.020
84	7.00	0.33	0.201	(0.203)	0.181	0.020
85	7.08	0.33	0.201	(0.202)	0.181	0.020
86	7.17	0.33	0.201	(0.202)	0.181	0.020
87	7.25	0.33	0.201	(0.201)	0.181	0.020
88	7.33	0.37	0.221	(0.200)	0.199	0.022
89	7.42	0.37	0.221	(0.199)	0.199	0.022
90	7.50	0.37	0.221	0.198	(0.199)	0.023
91	7.58	0.40	0.241	0.197	(0.217)	0.044
92	7.67	0.40	0.241	0.196	(0.217)	0.045
93	7.75	0.40	0.241	0.195	(0.217)	0.046
94	7.83	0.43	0.261	0.194	(0.235)	0.067
95	7.92	0.43	0.261	0.193	(0.235)	0.067
96	8.00	0.43	0.261	0.192	(0.235)	0.068
97	8.08	0.50	0.301	0.192	(0.271)	0.109
98	8.17	0.50	0.301	0.191	(0.271)	0.110
99	8.25	0.50	0.301	0.190	(0.271)	0.111
100	8.33	0.50	0.301	0.189	(0.271)	0.112
101	8.42	0.50	0.301	0.188	(0.271)	0.113
102	8.50	0.50	0.301	0.187	(0.271)	0.114
103	8.58	0.53	0.321	0.186	(0.289)	0.135
104	8.67	0.53	0.321	0.185	(0.289)	0.136
105	8.75	0.53	0.321	0.185	(0.289)	0.137
106	8.83	0.57	0.341	0.184	(0.307)	0.157
107	8.92	0.57	0.341	0.183	(0.307)	0.158
108	9.00	0.57	0.341	0.182	(0.307)	0.159
109	9.08	0.63	0.381	0.181	(0.343)	0.200
110	9.17	0.63	0.381	0.180	(0.343)	0.201
111	9.25	0.63	0.381	0.179	(0.343)	0.202
112	9.33	0.67	0.401	0.179	(0.361)	0.223
113	9.42	0.67	0.401	0.178	(0.361)	0.224
114	9.50	0.67	0.401	0.177	(0.361)	0.225
115	9.58	0.70	0.421	0.176	(0.379)	0.245
116	9.67	0.70	0.421	0.175	(0.379)	0.246
117	9.75	0.70	0.421	0.174	(0.379)	0.247
118	9.83	0.73	0.441	0.173	(0.397)	0.268
119	9.92	0.73	0.441	0.173	(0.397)	0.269
120	10.00	0.73	0.441	0.172	(0.397)	0.270
121	10.08	0.50	0.301	0.171	(0.271)	0.130
122	10.17	0.50	0.301	0.170	(0.271)	0.131
123	10.25	0.50	0.301	0.169	(0.271)	0.132
124	10.33	0.50	0.301	0.168	(0.271)	0.133
125	10.42	0.50	0.301	0.168	(0.271)	0.133
126	10.50	0.50	0.301	0.167	(0.271)	0.134
127	10.58	0.67	0.401	0.166	(0.361)	0.235
128	10.67	0.67	0.401	0.165	(0.361)	0.236

129	10.75	0.67	0.401	0.164	(0.361)	0.237
130	10.83	0.67	0.401	0.164	(0.361)	0.238
131	10.92	0.67	0.401	0.163	(0.361)	0.239
132	11.00	0.67	0.401	0.162	(0.361)	0.239
133	11.08	0.63	0.381	0.161	(0.343)	0.220
134	11.17	0.63	0.381	0.160	(0.343)	0.221
135	11.25	0.63	0.381	0.160	(0.343)	0.222
136	11.33	0.63	0.381	0.159	(0.343)	0.222
137	11.42	0.63	0.381	0.158	(0.343)	0.223
138	11.50	0.63	0.381	0.157	(0.343)	0.224
139	11.58	0.57	0.341	0.156	(0.307)	0.185
140	11.67	0.57	0.341	0.156	(0.307)	0.185
141	11.75	0.57	0.341	0.155	(0.307)	0.186
142	11.83	0.60	0.361	0.154	(0.325)	0.207
143	11.92	0.60	0.361	0.153	(0.325)	0.208
144	12.00	0.60	0.361	0.153	(0.325)	0.209
145	12.08	0.83	0.502	0.152	(0.452)	0.350
146	12.17	0.83	0.502	0.151	(0.452)	0.351
147	12.25	0.83	0.502	0.150	(0.452)	0.351
148	12.33	0.87	0.522	0.150	(0.470)	0.372
149	12.42	0.87	0.522	0.149	(0.470)	0.373
150	12.50	0.87	0.522	0.148	(0.470)	0.374
151	12.58	0.93	0.562	0.147	(0.506)	0.415
152	12.67	0.93	0.562	0.147	(0.506)	0.415
153	12.75	0.93	0.562	0.146	(0.506)	0.416
154	12.83	0.97	0.582	0.145	(0.524)	0.437
155	12.92	0.97	0.582	0.144	(0.524)	0.438
156	13.00	0.97	0.582	0.144	(0.524)	0.438
157	13.08	1.13	0.682	0.143	(0.614)	0.539
158	13.17	1.13	0.682	0.142	(0.614)	0.540
159	13.25	1.13	0.682	0.141	(0.614)	0.541
160	13.33	1.13	0.682	0.141	(0.614)	0.542
161	13.42	1.13	0.682	0.140	(0.614)	0.542
162	13.50	1.13	0.682	0.139	(0.614)	0.543
163	13.58	0.77	0.462	0.139	(0.415)	0.323
164	13.67	0.77	0.462	0.138	(0.415)	0.324
165	13.75	0.77	0.462	0.137	(0.415)	0.324
166	13.83	0.77	0.462	0.137	(0.415)	0.325
167	13.92	0.77	0.462	0.136	(0.415)	0.326
168	14.00	0.77	0.462	0.135	(0.415)	0.326
169	14.08	0.90	0.542	0.134	(0.488)	0.407
170	14.17	0.90	0.542	0.134	(0.488)	0.408
171	14.25	0.90	0.542	0.133	(0.488)	0.409
172	14.33	0.87	0.522	0.132	(0.470)	0.389
173	14.42	0.87	0.522	0.132	(0.470)	0.390
174	14.50	0.87	0.522	0.131	(0.470)	0.391
175	14.58	0.87	0.522	0.130	(0.470)	0.391
176	14.67	0.87	0.522	0.130	(0.470)	0.392
177	14.75	0.87	0.522	0.129	(0.470)	0.393
178	14.83	0.83	0.502	0.128	(0.452)	0.373
179	14.92	0.83	0.502	0.128	(0.452)	0.374
180	15.00	0.83	0.502	0.127	(0.452)	0.375
181	15.08	0.80	0.482	0.126	(0.433)	0.355
182	15.17	0.80	0.482	0.126	(0.433)	0.356
183	15.25	0.80	0.482	0.125	(0.433)	0.357
184	15.33	0.77	0.462	0.124	(0.415)	0.337
185	15.42	0.77	0.462	0.124	(0.415)	0.338

186	15.50	0.77	0.462	0.123	(0.415)	0.338
187	15.58	0.63	0.381	0.123	(0.343)	0.259
188	15.67	0.63	0.381	0.122	(0.343)	0.259
189	15.75	0.63	0.381	0.121	(0.343)	0.260
190	15.83	0.63	0.381	0.121	(0.343)	0.261
191	15.92	0.63	0.381	0.120	(0.343)	0.261
192	16.00	0.63	0.381	0.119	(0.343)	0.262
193	16.08	0.13	0.080	(0.119)	0.072	0.008
194	16.17	0.13	0.080	(0.118)	0.072	0.008
195	16.25	0.13	0.080	(0.118)	0.072	0.008
196	16.33	0.13	0.080	(0.117)	0.072	0.008
197	16.42	0.13	0.080	(0.116)	0.072	0.008
198	16.50	0.13	0.080	(0.116)	0.072	0.008
199	16.58	0.10	0.060	(0.115)	0.054	0.006
200	16.67	0.10	0.060	(0.115)	0.054	0.006
201	16.75	0.10	0.060	(0.114)	0.054	0.006
202	16.83	0.10	0.060	(0.114)	0.054	0.006
203	16.92	0.10	0.060	(0.113)	0.054	0.006
204	17.00	0.10	0.060	(0.112)	0.054	0.006
205	17.08	0.17	0.100	(0.112)	0.090	0.010
206	17.17	0.17	0.100	(0.111)	0.090	0.010
207	17.25	0.17	0.100	(0.111)	0.090	0.010
208	17.33	0.17	0.100	(0.110)	0.090	0.010
209	17.42	0.17	0.100	(0.110)	0.090	0.010
210	17.50	0.17	0.100	(0.109)	0.090	0.010
211	17.58	0.17	0.100	(0.108)	0.090	0.010
212	17.67	0.17	0.100	(0.108)	0.090	0.010
213	17.75	0.17	0.100	(0.107)	0.090	0.010
214	17.83	0.13	0.080	(0.107)	0.072	0.008
215	17.92	0.13	0.080	(0.106)	0.072	0.008
216	18.00	0.13	0.080	(0.106)	0.072	0.008
217	18.08	0.13	0.080	(0.105)	0.072	0.008
218	18.17	0.13	0.080	(0.105)	0.072	0.008
219	18.25	0.13	0.080	(0.104)	0.072	0.008
220	18.33	0.13	0.080	(0.104)	0.072	0.008
221	18.42	0.13	0.080	(0.103)	0.072	0.008
222	18.50	0.13	0.080	(0.103)	0.072	0.008
223	18.58	0.10	0.060	(0.102)	0.054	0.006
224	18.67	0.10	0.060	(0.102)	0.054	0.006
225	18.75	0.10	0.060	(0.101)	0.054	0.006
226	18.83	0.07	0.040	(0.101)	0.036	0.004
227	18.92	0.07	0.040	(0.100)	0.036	0.004
228	19.00	0.07	0.040	(0.100)	0.036	0.004
229	19.08	0.10	0.060	(0.099)	0.054	0.006
230	19.17	0.10	0.060	(0.099)	0.054	0.006
231	19.25	0.10	0.060	(0.098)	0.054	0.006
232	19.33	0.13	0.080	(0.098)	0.072	0.008
233	19.42	0.13	0.080	(0.098)	0.072	0.008
234	19.50	0.13	0.080	(0.097)	0.072	0.008
235	19.58	0.10	0.060	(0.097)	0.054	0.006
236	19.67	0.10	0.060	(0.096)	0.054	0.006
237	19.75	0.10	0.060	(0.096)	0.054	0.006
238	19.83	0.07	0.040	(0.095)	0.036	0.004
239	19.92	0.07	0.040	(0.095)	0.036	0.004
240	20.00	0.07	0.040	(0.094)	0.036	0.004
241	20.08	0.10	0.060	(0.094)	0.054	0.006
242	20.17	0.10	0.060	(0.094)	0.054	0.006

243	20.25	0.10	0.060	(0.093)	0.054	0.006
244	20.33	0.10	0.060	(0.093)	0.054	0.006
245	20.42	0.10	0.060	(0.092)	0.054	0.006
246	20.50	0.10	0.060	(0.092)	0.054	0.006
247	20.58	0.10	0.060	(0.092)	0.054	0.006
248	20.67	0.10	0.060	(0.091)	0.054	0.006
249	20.75	0.10	0.060	(0.091)	0.054	0.006
250	20.83	0.07	0.040	(0.091)	0.036	0.004
251	20.92	0.07	0.040	(0.090)	0.036	0.004
252	21.00	0.07	0.040	(0.090)	0.036	0.004
253	21.08	0.10	0.060	(0.089)	0.054	0.006
254	21.17	0.10	0.060	(0.089)	0.054	0.006
255	21.25	0.10	0.060	(0.089)	0.054	0.006
256	21.33	0.07	0.040	(0.088)	0.036	0.004
257	21.42	0.07	0.040	(0.088)	0.036	0.004
258	21.50	0.07	0.040	(0.088)	0.036	0.004
259	21.58	0.10	0.060	(0.087)	0.054	0.006
260	21.67	0.10	0.060	(0.087)	0.054	0.006
261	21.75	0.10	0.060	(0.087)	0.054	0.006
262	21.83	0.07	0.040	(0.086)	0.036	0.004
263	21.92	0.07	0.040	(0.086)	0.036	0.004
264	22.00	0.07	0.040	(0.086)	0.036	0.004
265	22.08	0.10	0.060	(0.086)	0.054	0.006
266	22.17	0.10	0.060	(0.085)	0.054	0.006
267	22.25	0.10	0.060	(0.085)	0.054	0.006
268	22.33	0.07	0.040	(0.085)	0.036	0.004
269	22.42	0.07	0.040	(0.085)	0.036	0.004
270	22.50	0.07	0.040	(0.084)	0.036	0.004
271	22.58	0.07	0.040	(0.084)	0.036	0.004
272	22.67	0.07	0.040	(0.084)	0.036	0.004
273	22.75	0.07	0.040	(0.084)	0.036	0.004
274	22.83	0.07	0.040	(0.083)	0.036	0.004
275	22.92	0.07	0.040	(0.083)	0.036	0.004
276	23.00	0.07	0.040	(0.083)	0.036	0.004
277	23.08	0.07	0.040	(0.083)	0.036	0.004
278	23.17	0.07	0.040	(0.083)	0.036	0.004
279	23.25	0.07	0.040	(0.082)	0.036	0.004
280	23.33	0.07	0.040	(0.082)	0.036	0.004
281	23.42	0.07	0.040	(0.082)	0.036	0.004
282	23.50	0.07	0.040	(0.082)	0.036	0.004
283	23.58	0.07	0.040	(0.082)	0.036	0.004
284	23.67	0.07	0.040	(0.082)	0.036	0.004
285	23.75	0.07	0.040	(0.082)	0.036	0.004
286	23.83	0.07	0.040	(0.081)	0.036	0.004
287	23.92	0.07	0.040	(0.081)	0.036	0.004
288	24.00	0.07	0.040	(0.081)	0.036	0.004

(Loss Rate Not Used)

Sum = 100.0

Sum = 29.4

Flood volume = Effective rainfall 2.45(In)
times area 837.3(Ac.)/[(In)/(Ft.)] = 170.7(Ac.Ft)
Total soil loss = 2.57(In)
Total soil loss = 179.344(Ac.Ft)
Total rainfall = 5.02(In)
Flood volume = 7436302.4 Cubic Feet
Total soil loss = 7812240.1 Cubic Feet

Peak flow rate of this hydrograph = 188.545(CFS)

 ++++++

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	50.0	100.0	150.0	200.0
0+ 5	0.0000		0.00	Q				
0+10	0.0001		0.01	Q				
0+15	0.0003		0.02	Q				
0+20	0.0005		0.03	Q				
0+25	0.0008		0.05	Q				
0+30	0.0012		0.06	Q				
0+35	0.0018		0.07	Q				
0+40	0.0023		0.09	Q				
0+45	0.0030		0.10	Q				
0+50	0.0038		0.12	Q				
0+55	0.0048		0.14	Q				
1+ 0	0.0059		0.16	Q				
1+ 5	0.0071		0.18	Q				
1+10	0.0084		0.19	Q				
1+15	0.0099		0.21	Q				
1+20	0.0115		0.23	Q				
1+25	0.0132		0.25	Q				
1+30	0.0151		0.27	Q				
1+35	0.0171		0.30	Q				
1+40	0.0194		0.33	Q				
1+45	0.0218		0.35	Q				
1+50	0.0245		0.39	Q				
1+55	0.0274		0.42	Q				
2+ 0	0.0305		0.45	Q				
2+ 5	0.0339		0.49	Q				
2+10	0.0375		0.53	Q				
2+15	0.0415		0.57	Q				
2+20	0.0457		0.61	Q				
2+25	0.0502		0.66	Q				
2+30	0.0550		0.70	Q				
2+35	0.0601		0.74	Q				
2+40	0.0655		0.78	Q				
2+45	0.0712		0.83	Q				
2+50	0.0773		0.89	Q				
2+55	0.0838		0.94	Q				
3+ 0	0.0907		1.00	Q				
3+ 5	0.0980		1.06	Q				
3+10	0.1057		1.12	Q				
3+15	0.1138		1.18	Q				
3+20	0.1224		1.24	Q				
3+25	0.1314		1.31	Q				
3+30	0.1408		1.37	Q				
3+35	0.1507		1.44	Q				
3+40	0.1611		1.51	Q				
3+45	0.1720		1.58	Q				
3+50	0.1834		1.66	Q				
3+55	0.1953		1.73	Q				

4+ 0	0.2078	1.81	Q
4+ 5	0.2208	1.89	Q
4+10	0.2344	1.97	Q
4+15	0.2485	2.05	Q
4+20	0.2632	2.13	Q
4+25	0.2785	2.22	Q
4+30	0.2944	2.31	Q
4+35	0.3110	2.40	Q
4+40	0.3282	2.50	Q
4+45	0.3460	2.59	Q
4+50	0.3645	2.69	Q
4+55	0.3837	2.79	Q
5+ 0	0.4036	2.89	Q
5+ 5	0.4241	2.98	Q
5+10	0.4452	3.07	Q
5+15	0.4671	3.17	Q
5+20	0.4895	3.27	Q
5+25	0.5128	3.37	Q
5+30	0.5367	3.48	Q
5+35	0.5613	3.58	Q
5+40	0.5867	3.68	Q
5+45	0.6127	3.78	Q
5+50	0.6395	3.89	Q
5+55	0.6670	3.99	Q
6+ 0	0.6951	4.09	Q
6+ 5	0.7240	4.19	Q
6+10	0.7536	4.30	Q
6+15	0.7839	4.41	Q
6+20	0.8150	4.52	Q
6+25	0.8468	4.62	Q
6+30	0.8793	4.72	Q
6+35	0.9125	4.82	Q
6+40	0.9465	4.93	Q
6+45	0.9813	5.05	VQ
6+50	1.0168	5.16	VQ
6+55	1.0531	5.27	VQ
7+ 0	1.0902	5.39	VQ
7+ 5	1.1281	5.50	VQ
7+10	1.1667	5.61	VQ
7+15	1.2061	5.72	VQ
7+20	1.2463	5.83	VQ
7+25	1.2872	5.95	VQ
7+30	1.3290	6.07	VQ
7+35	1.3719	6.22	VQ
7+40	1.4159	6.39	VQ
7+45	1.4612	6.57	VQ
7+50	1.5077	6.76	VQ
7+55	1.5558	6.98	VQ
8+ 0	1.6054	7.20	VQ
8+ 5	1.6569	7.47	VQ
8+10	1.7105	7.79	VQ
8+15	1.7663	8.11	VQ
8+20	1.8244	8.43	VQ
8+25	1.8847	8.76	VQ
8+30	1.9474	9.11	VQ
8+35	2.0127	9.48	VQ
8+40	2.0808	9.88	VQ

8+45	2.1517	10.30	V Q				
8+50	2.2257	10.74	V Q				
8+55	2.3030	11.23	V Q				
9+ 0	2.3841	11.77	V Q				
9+ 5	2.4692	12.35	V Q				
9+10	2.5587	12.99	V Q				
9+15	2.6527	13.66	V Q				
9+20	2.7516	14.36	V Q				
9+25	2.8556	15.10	V Q				
9+30	2.9652	15.91	V Q				
9+35	3.0806	16.77	V Q				
9+40	3.2023	17.66	V Q				
9+45	3.3303	18.59	V Q				
9+50	3.4649	19.54	V Q				
9+55	3.6064	20.55	V Q				
10+ 0	3.7554	21.63	V Q				
10+ 5	3.9109	22.58	V Q				
10+10	4.0721	23.40	V Q				
10+15	4.2391	24.26	V Q				
10+20	4.4123	25.14	V Q				
10+25	4.5919	26.08	V Q				
10+30	4.7784	27.08	V Q				
10+35	4.9729	28.25	V Q				
10+40	5.1766	29.58	V Q				
10+45	5.3898	30.95	V Q				
10+50	5.6129	32.40	V Q				
10+55	5.8458	33.81	V Q				
11+ 0	6.0885	35.24	V Q				
11+ 5	6.3411	36.68	V Q				
11+10	6.6036	38.11	V Q				
11+15	6.8763	39.59	V Q				
11+20	7.1595	41.12	V Q				
11+25	7.4537	42.72	V Q				
11+30	7.7582	44.21	V Q				
11+35	8.0727	45.67	V Q				
11+40	8.3974	47.14	V Q				
11+45	8.7324	48.64	V Q				
11+50	9.0784	50.23	V Q				
11+55	9.4358	51.91	V Q				
12+ 0	9.8051	53.62	V Q				
12+ 5	10.1869	55.44	V Q				
12+10	10.5826	57.45	V Q				
12+15	10.9922	59.48	V Q				
12+20	11.4162	61.56	V Q				
12+25	11.8548	63.68	V Q				
12+30	12.3081	65.83	V Q				
12+35	12.7773	68.12	V Q				
12+40	13.2629	70.52	V Q				
12+45	13.7653	72.94	V Q				
12+50	14.2833	75.21	V Q				
12+55	14.8167	77.46	V Q				
13+ 0	15.3656	79.70	V Q				
13+ 5	15.9304	82.01	V Q				
13+10	16.5119	84.44	V Q				
13+15	17.1106	86.92	V Q				
13+20	17.7270	89.50	V Q				
13+25	18.3622	92.24	V Q				

13+30	19.0174	95.13	V		Q		
13+35	19.6904	97.72	V		Q		
13+40	20.3788	99.96	V		Q		
13+45	21.0827	102.21	V		Q		
13+50	21.8021	104.45	V		Q		
13+55	22.5371	106.72	V		Q		
14+ 0	23.2888	109.15	V		Q		
14+ 5	24.0584	111.74	V		Q		
14+10	24.8466	114.45	V		Q		
14+15	25.6536	117.18	V		Q		
14+20	26.4788	119.82	V		Q		
14+25	27.3207	122.24	V		Q		
14+30	28.1795	124.70	V		Q		
14+35	29.0553	127.16	V		Q		
14+40	29.9478	129.60	V		Q		
14+45	30.8573	132.05	V		Q		
14+50	31.7845	134.64	V		Q		
14+55	32.7300	137.28	V		Q		
15+ 0	33.6923	139.72	V		Q		
15+ 5	34.6713	142.16	V		Q		
15+10	35.6666	144.52	V		Q		
15+15	36.6779	146.85	V		Q		
15+20	37.7052	149.16	V		Q		
15+25	38.7483	151.46	V		Q		
15+30	39.8068	153.69	V		Q		
15+35	40.8807	155.94	V		Q		
15+40	41.9707	158.27	V		Q		
15+45	43.0766	160.57	V		Q		
15+50	44.1989	162.96	V		Q		
15+55	45.3381	165.42	V		Q		
16+ 0	46.4943	167.87	V		Q		
16+ 5	47.6646	169.94	V		Q		
16+10	48.8466	171.61	V		Q		
16+15	50.0398	173.25	V		Q		
16+20	51.2421	174.57	V		Q		
16+25	52.4527	175.78	V		Q		
16+30	53.6716	176.98	V		Q		
16+35	54.8988	178.20	V		Q		
16+40	56.1348	179.47	V		Q		
16+45	57.3794	180.71	V		Q		
16+50	58.6329	182.00	V		Q		
16+55	59.8942	183.14	V		Q		
17+ 0	61.1626	184.17	V		Q		
17+ 5	62.4379	185.18	V		Q		
17+10	63.7195	186.08	V		Q		
17+15	65.0067	186.91	V		Q		
17+20	66.2992	187.66	V		Q		
17+25	67.5961	188.32	V		Q		
17+30	68.8946	188.54	V		Q		
17+35	70.1922	188.40	V		Q		
17+40	71.4878	188.13	V		Q		
17+45	72.7816	187.86	V		Q		
17+50	74.0734	187.57	V		Q		
17+55	75.3631	187.26	V		Q		
18+ 0	76.6497	186.82	V		Q		
18+ 5	77.9315	186.11	V		Q		
18+10	79.2076	185.29	V		Q		

18+15	80.4780	184.46	V		Q
18+20	81.7418	183.51	V		Q
18+25	82.9976	182.34	V		Q
18+30	84.2451	181.13	V		Q
18+35	85.4831	179.76	V		Q
18+40	86.7106	178.23	V		Q
18+45	87.9273	176.66	V		Q
18+50	89.1305	174.71	V		Q
18+55	90.3177	172.38	V		Q
19+ 0	91.4878	169.91	V		Q
19+ 5	92.6432	167.76	V		Q
19+10	93.7850	165.78	V		Q
19+15	94.9128	163.76	V		Q
19+20	96.0268	161.75	V		Q
19+25	97.1262	159.63	V		Q
19+30	98.2102	157.41	V		Q
19+35	99.2779	155.03	V		Q
19+40	100.3275	152.39	V		Q
19+45	101.3580	149.64	V		Q
19+50	102.3696	146.88	V		Q
19+55	103.3638	144.35	V		Q
20+ 0	104.3404	141.80	V		Q
20+ 5	105.2991	139.21	V		Q
20+10	106.2399	136.60	V		Q
20+15	107.1620	133.90	VQ		
20+20	108.0650	131.11	VQ		
20+25	108.9484	128.27	Q		
20+30	109.8132	125.57	QV		
20+35	110.6595	122.88	Q V		
20+40	111.4875	120.23	Q V		
20+45	112.2972	117.57	Q V		
20+50	113.0882	114.86	Q V		
20+55	113.8603	112.11	Q V		
21+ 0	114.6131	109.30	Q V		
21+ 5	115.3474	106.63	Q V		
21+10	116.0637	104.01	Q V		
21+15	116.7623	101.44	Q V		
21+20	117.4435	98.90	Q V		
21+25	118.1069	96.34	Q V		
21+30	118.7527	93.77	Q V		
21+35	119.3834	91.57	Q V		
21+40	120.0003	89.57	Q V		
21+45	120.6032	87.55	Q V		
21+50	121.1929	85.61	Q V		
21+55	121.7700	83.80	Q V		
22+ 0	122.3349	82.03	Q V		
22+ 5	122.8877	80.27	Q V		
22+10	123.4282	78.48	Q V		
22+15	123.9563	76.68	Q V		
22+20	124.4717	74.83	Q V		
22+25	124.9763	73.26	Q V		
22+30	125.4713	71.88	Q V		
22+35	125.9571	70.53	Q V		
22+40	126.4339	69.24	Q V		
22+45	126.9018	67.94	Q V		
22+50	127.3608	66.64	Q V		
22+55	127.8112	65.41	Q V		

23+ 0	128.2545	64.36		Q	V
23+ 5	128.6905	63.31		Q	V
23+10	129.1191	62.23		Q	V
23+15	129.5406	61.20		Q	V
23+20	129.9552	60.20		Q	V
23+25	130.3629	59.21		Q	V
23+30	130.7639	58.22		Q	V
23+35	131.1580	57.23		Q	V
23+40	131.5453	56.23		Q	V
23+45	131.9258	55.26		Q	V
23+50	132.3009	54.45		Q	V
23+55	132.6706	53.68		Q	V
24+ 0	133.0349	52.91		Q	V
24+ 5	133.3938	52.10		Q	V
24+10	133.7470	51.29		Q	V
24+15	134.0946	50.47		Q	V
24+20	134.4375	49.79		Q	V
24+25	134.7760	49.15		Q	V
24+30	135.1100	48.50		Q	V
24+35	135.4399	47.89		Q	V
24+40	135.7658	47.33		Q	V
24+45	136.0879	46.77		Q	V
24+50	136.4061	46.21		Q	V
24+55	136.7204	45.64		Q	V
25+ 0	137.0308	45.06		Q	V
25+ 5	137.3371	44.47		Q	V
25+10	137.6400	43.98		Q	V
25+15	137.9399	43.55		Q	V
25+20	138.2368	43.12		Q	V
25+25	138.5307	42.67		Q	V
25+30	138.8214	42.21		Q	V
25+35	139.1089	41.74		Q	V
25+40	139.3931	41.27		Q	V
25+45	139.6744	40.84		Q	V
25+50	139.9526	40.40		Q	V
25+55	140.2279	39.97		Q	V
26+ 0	140.5005	39.58		Q	V
26+ 5	140.7703	39.18		Q	V
26+10	141.0375	38.79		Q	V
26+15	141.3019	38.40		Q	V
26+20	141.5636	38.00		Q	V
26+25	141.8226	37.60		Q	V
26+30	142.0788	37.20		Q	V
26+35	142.3324	36.82		Q	V
26+40	142.5834	36.45		Q	V
26+45	142.8320	36.09		Q	V
26+50	143.0779	35.71		Q	V
26+55	143.3213	35.33		Q	V
27+ 0	143.5619	34.94		Q	V
27+ 5	143.8002	34.60		Q	V
27+10	144.0362	34.27		Q	V
27+15	144.2699	33.93		Q	V
27+20	144.5013	33.60		Q	V
27+25	144.7306	33.29		Q	V
27+30	144.9576	32.97		Q	V
27+35	145.1825	32.65		Q	V
27+40	145.4051	32.32		Q	V

27+45	145.6255	32.00	Q			V
27+50	145.8435	31.66	Q			V
27+55	146.0593	31.33	Q			V
28+ 0	146.2729	31.01	Q			V
28+ 5	146.4842	30.69	Q			V
28+10	146.6933	30.36	Q			V
28+15	146.9000	30.02	Q			V
28+20	147.1043	29.67	Q			V
28+25	147.3063	29.33	Q			V
28+30	147.5063	29.04	Q			V
28+35	147.7041	28.72	Q			V
28+40	147.8999	28.43	Q			V
28+45	148.0939	28.16	Q			V
28+50	148.2860	27.89	Q			V
28+55	148.4762	27.62	Q			V
29+ 0	148.6645	27.34	Q			V
29+ 5	148.8509	27.07	Q			V
29+10	149.0353	26.78	Q			V
29+15	149.2178	26.49	Q			V
29+20	149.3984	26.22	Q			V
29+25	149.5772	25.96	Q			V
29+30	149.7542	25.71	Q			V
29+35	149.9294	25.44	Q			V
29+40	150.1028	25.18	Q			V
29+45	150.2744	24.91	Q			V
29+50	150.4441	24.65	Q			V
29+55	150.6122	24.40	Q			V
30+ 0	150.7785	24.16	Q			V
30+ 5	150.9434	23.93	Q			V
30+10	151.1067	23.71	Q			V
30+15	151.2685	23.50	Q			V
30+20	151.4288	23.28	Q			V
30+25	151.5877	23.07	Q			V
30+30	151.7452	22.86	Q			V
30+35	151.9011	22.65	Q			V
30+40	152.0557	22.43	Q			V
30+45	152.2087	22.23	Q			V
30+50	152.3605	22.03	Q			V
30+55	152.5109	21.84	Q			V
31+ 0	152.6599	21.64	Q			V
31+ 5	152.8076	21.44	Q			V
31+10	152.9540	21.26	Q			V
31+15	153.0993	21.10	Q			V
31+20	153.2434	20.92	Q			V
31+25	153.3862	20.74	Q			V
31+30	153.5278	20.56	Q			V
31+35	153.6681	20.37	Q			V
31+40	153.8071	20.18	Q			V
31+45	153.9448	19.99	Q			V
31+50	154.0812	19.80	Q			V
31+55	154.2162	19.61	Q			V
32+ 0	154.3500	19.42	Q			V
32+ 5	154.4826	19.25	Q			V
32+10	154.6140	19.09	Q			V
32+15	154.7443	18.92	Q			V
32+20	154.8734	18.74	Q			V
32+25	155.0012	18.55	Q			V

32+30	155.1277	18.37	Q				V
32+35	155.2531	18.21	Q				V
32+40	155.3774	18.04	Q				V
32+45	155.5006	17.89	Q				V
32+50	155.6229	17.77	Q				V
32+55	155.7445	17.65	Q				V
33+ 0	155.8652	17.53	Q				V
33+ 5	155.9852	17.42	Q				V
33+10	156.1043	17.30	Q				V
33+15	156.2226	17.18	Q				V
33+20	156.3401	17.05	Q				V
33+25	156.4566	16.92	Q				V
33+30	156.5723	16.79	Q				V
33+35	156.6871	16.67	Q				V
33+40	156.8010	16.55	Q				V
33+45	156.9141	16.42	Q				V
33+50	157.0264	16.30	Q				V
33+55	157.1377	16.17	Q				V
34+ 0	157.2482	16.04	Q				V
34+ 5	157.3577	15.90	Q				V
34+10	157.4661	15.75	Q				V
34+15	157.5736	15.60	Q				V
34+20	157.6801	15.46	Q				V
34+25	157.7855	15.31	Q				V
34+30	157.8900	15.16	Q				V
34+35	157.9934	15.02	Q				V
34+40	158.0958	14.87	Q				V
34+45	158.1971	14.72	Q				V
34+50	158.2976	14.59	Q				V
34+55	158.3971	14.45	Q				V
35+ 0	158.4957	14.32	Q				V
35+ 5	158.5933	14.17	Q				V
35+10	158.6898	14.02	Q				V
35+15	158.7853	13.87	Q				V
35+20	158.8802	13.77	Q				V
35+25	158.9743	13.66	Q				V
35+30	159.0677	13.57	Q				V
35+35	159.1606	13.49	Q				V
35+40	159.2530	13.42	Q				V
35+45	159.3449	13.34	Q				V
35+50	159.4362	13.27	Q				V
35+55	159.5271	13.19	Q				V
36+ 0	159.6174	13.12	Q				V
36+ 5	159.7071	13.03	Q				V
36+10	159.7962	12.94	Q				V
36+15	159.8847	12.85	Q				V
36+20	159.9726	12.76	Q				V
36+25	160.0599	12.67	Q				V
36+30	160.1466	12.58	Q				V
36+35	160.2326	12.49	Q				V
36+40	160.3180	12.40	Q				V
36+45	160.4027	12.30	Q				V
36+50	160.4868	12.21	Q				V
36+55	160.5702	12.11	Q				V
37+ 0	160.6530	12.02	Q				V
37+ 5	160.7351	11.92	Q				V
37+10	160.8165	11.83	Q				V

37+15	160.8973	11.73	Q				V
37+20	160.9774	11.63	Q				V
37+25	161.0569	11.54	Q				V
37+30	161.1357	11.45	Q				V
37+35	161.2140	11.37	Q				V
37+40	161.2919	11.30	Q				V
37+45	161.3692	11.23	Q				V
37+50	161.4460	11.15	Q				V
37+55	161.5223	11.08	Q				V
38+ 0	161.5982	11.01	Q				V
38+ 5	161.6737	10.96	Q				V
38+10	161.7488	10.91	Q				V
38+15	161.8236	10.87	Q				V
38+20	161.8982	10.82	Q				V
38+25	161.9724	10.78	Q				V
38+30	162.0463	10.73	Q				V
38+35	162.1199	10.69	Q				V
38+40	162.1932	10.65	Q				V
38+45	162.2663	10.60	Q				V
38+50	162.3390	10.56	Q				V
38+55	162.4113	10.51	Q				V
39+ 0	162.4834	10.46	Q				V
39+ 5	162.5552	10.42	Q				V
39+10	162.6266	10.38	Q				V
39+15	162.6978	10.33	Q				V
39+20	162.7687	10.29	Q				V
39+25	162.8392	10.24	Q				V
39+30	162.9093	10.19	Q				V
39+35	162.9791	10.12	Q				V
39+40	163.0483	10.06	Q				V
39+45	163.1172	10.00	Q				V
39+50	163.1856	9.93	Q				V
39+55	163.2535	9.86	Q				V
40+ 0	163.3210	9.80	Q				V
40+ 5	163.3880	9.73	Q				V
40+10	163.4545	9.66	Q				V
40+15	163.5205	9.59	Q				V
40+20	163.5861	9.52	Q				V
40+25	163.6512	9.46	Q				V
40+30	163.7159	9.39	Q				V
40+35	163.7801	9.32	Q				V
40+40	163.8437	9.24	Q				V
40+45	163.9068	9.16	Q				V
40+50	163.9694	9.09	Q				V
40+55	164.0315	9.01	Q				V
41+ 0	164.0931	8.94	Q				V
41+ 5	164.1543	8.89	Q				V
41+10	164.2151	8.83	Q				V
41+15	164.2756	8.78	Q				V
41+20	164.3357	8.72	Q				V
41+25	164.3954	8.67	Q				V
41+30	164.4547	8.61	Q				V
41+35	164.5135	8.54	Q				V
41+40	164.5719	8.48	Q				V
41+45	164.6299	8.42	Q				V
41+50	164.6874	8.35	Q				V
41+55	164.7445	8.29	Q				V

42+ 0	164.8012	8.23	Q				V
42+ 5	164.8574	8.16	Q				V
42+10	164.9131	8.10	Q				V
42+15	164.9684	8.03	Q				V
42+20	165.0232	7.95	Q				V
42+25	165.0775	7.88	Q				V
42+30	165.1312	7.81	Q				V
42+35	165.1845	7.74	Q				V
42+40	165.2373	7.66	Q				V
42+45	165.2896	7.59	Q				V
42+50	165.3413	7.51	Q				V
42+55	165.3926	7.44	Q				V
43+ 0	165.4433	7.37	Q				V
43+ 5	165.4937	7.31	Q				V
43+10	165.5436	7.25	Q				V
43+15	165.5931	7.19	Q				V
43+20	165.6421	7.12	Q				V
43+25	165.6907	7.05	Q				V
43+30	165.7388	6.99	Q				V
43+35	165.7867	6.94	Q				V
43+40	165.8342	6.90	Q				V
43+45	165.8813	6.85	Q				V
43+50	165.9283	6.81	Q				V
43+55	165.9749	6.77	Q				V
44+ 0	166.0213	6.74	Q				V
44+ 5	166.0674	6.70	Q				V
44+10	166.1133	6.66	Q				V
44+15	166.1589	6.62	Q				V
44+20	166.2042	6.58	Q				V
44+25	166.2492	6.53	Q				V
44+30	166.2939	6.49	Q				V
44+35	166.3383	6.45	Q				V
44+40	166.3824	6.41	Q				V
44+45	166.4262	6.36	Q				V
44+50	166.4697	6.32	Q				V
44+55	166.5129	6.27	Q				V
45+ 0	166.5557	6.22	Q				V
45+ 5	166.5982	6.16	Q				V
45+10	166.6402	6.11	Q				V
45+15	166.6818	6.05	Q				V
45+20	166.7231	5.99	Q				V
45+25	166.7639	5.93	Q				V
45+30	166.8042	5.86	Q				V
45+35	166.8441	5.79	Q				V
45+40	166.8835	5.72	Q				V
45+45	166.9225	5.66	Q				V
45+50	166.9611	5.60	Q				V
45+55	166.9992	5.54	Q				V
46+ 0	167.0369	5.48	Q				V
46+ 5	167.0742	5.41	Q				V
46+10	167.1110	5.35	Q				V
46+15	167.1474	5.28	Q				V
46+20	167.1833	5.22	Q				V
46+25	167.2188	5.16	Q				V
46+30	167.2539	5.09	Q				V
46+35	167.2886	5.04	Q				V
46+40	167.3229	4.98	Q				V

46+45	167.3569	4.92	Q				V
46+50	167.3904	4.87	Q				V
46+55	167.4235	4.81	Q				V
47+ 0	167.4562	4.75	Q				V
47+ 5	167.4884	4.68	Q				V
47+10	167.5202	4.62	Q				V
47+15	167.5516	4.55	Q				V
47+20	167.5824	4.48	Q				V
47+25	167.6129	4.42	Q				V
47+30	167.6430	4.37	Q				V
47+35	167.6728	4.32	Q				V
47+40	167.7022	4.27	Q				V
47+45	167.7313	4.22	Q				V
47+50	167.7599	4.17	Q				V
47+55	167.7883	4.11	Q				V
48+ 0	167.8161	4.04	Q				V
48+ 5	167.8434	3.97	Q				V
48+10	167.8703	3.90	Q				V
48+15	167.8967	3.83	Q				V
48+20	167.9227	3.76	Q				V
48+25	167.9481	3.69	Q				V
48+30	167.9731	3.63	Q				V
48+35	167.9976	3.56	Q				V
48+40	168.0217	3.50	Q				V
48+45	168.0453	3.43	Q				V
48+50	168.0684	3.36	Q				V
48+55	168.0911	3.29	Q				V
49+ 0	168.1133	3.23	Q				V
49+ 5	168.1352	3.17	Q				V
49+10	168.1567	3.12	Q				V
49+15	168.1778	3.07	Q				V
49+20	168.1987	3.03	Q				V
49+25	168.2192	2.98	Q				V
49+30	168.2393	2.92	Q				V
49+35	168.2590	2.86	Q				V
49+40	168.2783	2.79	Q				V
49+45	168.2971	2.73	Q				V
49+50	168.3154	2.66	Q				V
49+55	168.3332	2.59	Q				V
50+ 0	168.3505	2.51	Q				V
50+ 5	168.3673	2.44	Q				V
50+10	168.3835	2.36	Q				V
50+15	168.3993	2.29	Q				V
50+20	168.4145	2.21	Q				V
50+25	168.4292	2.13	Q				V
50+30	168.4432	2.04	Q				V
50+35	168.4567	1.95	Q				V
50+40	168.4695	1.86	Q				V
50+45	168.4817	1.77	Q				V
50+50	168.4933	1.68	Q				V
50+55	168.5043	1.59	Q				V
51+ 0	168.5149	1.53	Q				V
51+ 5	168.5250	1.47	Q				V
51+10	168.5348	1.41	Q				V
51+15	168.5441	1.36	Q				V
51+20	168.5531	1.30	Q				V
51+25	168.5616	1.24	Q				V

51+30	168.5697	1.18	Q				V
51+35	168.5774	1.11	Q				V
51+40	168.5846	1.05	Q				V
51+45	168.5914	0.99	Q				V
51+50	168.5978	0.94	Q				V
51+55	168.6039	0.89	Q				V
52+ 0	168.6097	0.83	Q				V
52+ 5	168.6151	0.78	Q				V
52+10	168.6201	0.73	Q				V
52+15	168.6248	0.68	Q				V
52+20	168.6292	0.63	Q				V
52+25	168.6332	0.59	Q				V
52+30	168.6370	0.54	Q				V
52+35	168.6404	0.49	Q				V
52+40	168.6434	0.45	Q				V
52+45	168.6462	0.40	Q				V
52+50	168.6487	0.36	Q				V
52+55	168.6508	0.31	Q				V
53+ 0	168.6527	0.28	Q				V
53+ 5	168.6544	0.25	Q				V
53+10	168.6559	0.21	Q				V
53+15	168.6571	0.18	Q				V
53+20	168.6581	0.14	Q				V
53+25	168.6588	0.11	Q				V
53+30	168.6595	0.11	Q				V
53+35	168.6602	0.10	Q				V
53+40	168.6609	0.10	Q				V
53+45	168.6616	0.10	Q				V
53+50	168.6623	0.10	Q				V
53+55	168.6629	0.10	Q				V
54+ 0	168.6636	0.09	Q				V
54+ 5	168.6642	0.09	Q				V
54+10	168.6649	0.09	Q				V
54+15	168.6655	0.09	Q				V
54+20	168.6661	0.09	Q				V
54+25	168.6667	0.09	Q				V
54+30	168.6672	0.08	Q				V
54+35	168.6678	0.08	Q				V
54+40	168.6684	0.08	Q				V
54+45	168.6689	0.08	Q				V
54+50	168.6695	0.08	Q				V
54+55	168.6700	0.08	Q				V
55+ 0	168.6705	0.07	Q				V
55+ 5	168.6710	0.07	Q				V
55+10	168.6715	0.07	Q				V
55+15	168.6719	0.07	Q				V
55+20	168.6724	0.07	Q				V
55+25	168.6728	0.06	Q				V
55+30	168.6733	0.06	Q				V
55+35	168.6737	0.06	Q				V
55+40	168.6741	0.06	Q				V
55+45	168.6745	0.06	Q				V
55+50	168.6749	0.06	Q				V
55+55	168.6753	0.06	Q				V
56+ 0	168.6757	0.05	Q				V
56+ 5	168.6760	0.05	Q				V
56+10	168.6764	0.05	Q				V

56+15	168.6768	0.05	Q				V
56+20	168.6771	0.05	Q				V
56+25	168.6774	0.05	Q				V
56+30	168.6778	0.05	Q				V
56+35	168.6781	0.05	Q				V
56+40	168.6784	0.05	Q				V
56+45	168.6787	0.04	Q				V
56+50	168.6790	0.04	Q				V
56+55	168.6793	0.04	Q				V
57+ 0	168.6796	0.04	Q				V
57+ 5	168.6798	0.04	Q				V
57+10	168.6801	0.04	Q				V
57+15	168.6803	0.04	Q				V
57+20	168.6806	0.04	Q				V
57+25	168.6808	0.04	Q				V
57+30	168.6811	0.03	Q				V
57+35	168.6813	0.03	Q				V
57+40	168.6815	0.03	Q				V
57+45	168.6817	0.03	Q				V
57+50	168.6819	0.03	Q				V
57+55	168.6821	0.03	Q				V
58+ 0	168.6823	0.03	Q				V
58+ 5	168.6825	0.03	Q				V
58+10	168.6827	0.03	Q				V
58+15	168.6829	0.03	Q				V
58+20	168.6830	0.02	Q				V
58+25	168.6832	0.02	Q				V
58+30	168.6834	0.02	Q				V
58+35	168.6835	0.02	Q				V
58+40	168.6837	0.02	Q				V
58+45	168.6838	0.02	Q				V
58+50	168.6839	0.02	Q				V
58+55	168.6841	0.02	Q				V
59+ 0	168.6842	0.02	Q				V
59+ 5	168.6843	0.02	Q				V
59+10	168.6844	0.02	Q				V
59+15	168.6845	0.02	Q				V
59+20	168.6846	0.01	Q				V
59+25	168.6847	0.01	Q				V
59+30	168.6848	0.01	Q				V
59+35	168.6849	0.01	Q				V
59+40	168.6850	0.01	Q				V
59+45	168.6850	0.01	Q				V
59+50	168.6851	0.01	Q				V
59+55	168.6852	0.01	Q				V
60+ 0	168.6852	0.01	Q				V
60+ 5	168.6853	0.01	Q				V
60+10	168.6853	0.01	Q				V
60+15	168.6854	0.01	Q				V
60+20	168.6854	0.01	Q				V
60+25	168.6855	0.01	Q				V
60+30	168.6855	0.01	Q				V
60+35	168.6856	0.01	Q				V
60+40	168.6856	0.00	Q				V
60+45	168.6856	0.00	Q				V
60+50	168.6856	0.00	Q				V
60+55	168.6857	0.00	Q				V

61+ 0	168.6857	0.00	Q				V
61+ 5	168.6857	0.00	Q				V
61+10	168.6857	0.00	Q				V
61+15	168.6857	0.00	Q				V
61+20	168.6857	0.00	Q				V

ATTACHMENT 2

Historical Conditions
Hydrograph Calculations
(100-Year, 1,3,6, & 24-Hour)

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 05/08/15 File: 154149HISTHYDA1100.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR

HISTORICAL CONDITIONS AREA "A"

100-YEAR, 1-HOUR STORM

BY: JTS DATE: 05-08-15

Drainage Area = 213.98(Ac.) = 0.334 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 213.98(Ac.) = 0.334 Sq. Mi.
Length along longest watercourse = 4106.19(Ft.)
Length along longest watercourse measured to centroid = 1823.16(Ft.)
Length along longest watercourse = 0.778 Mi.
Length along longest watercourse measured to centroid = 0.345 Mi.
Difference in elevation = 798.20(Ft.)
Slope along watercourse = 1026.3763 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.137 Hr.
Lag time = 8.19 Min.
25% of lag time = 2.05 Min.
40% of lag time = 3.28 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]
213.98	0.58	124.11

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
213.98	1.47	314.55

STORM EVENT (YEAR) = **100.00**

Area Averaged 2-Year Rainfall = 0.580(In)

Area Averaged 100-Year Rainfall = 1.470(In)

Point rain (area averaged) = 1.470(In)
Areal adjustment factor = 99.81 %
Adjusted average point rain = 1.467(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.430	67.00	0.000
22.120	78.00	0.000
3.320	86.00	0.000
166.110	89.00	0.000
Total Area Entered = 213.98(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	83.2	0.208	0.000	0.208	0.105	0.022
78.0	89.8	0.132	0.000	0.132	0.103	0.014
86.0	94.4	0.073	0.000	0.073	0.016	0.001
89.0	95.6	0.057	0.000	0.057	0.776	0.044
Sum (F) =						0.081

Area averaged mean soil loss (F) (In/Hr) = 0.081

Minimum soil loss rate ((In/Hr)) = 0.040

(for 24 hour storm duration)

Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm = 0.4800

Unit Hydrograph
VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	61.048	8.455
2	0.167	122.095	34.696
3	0.250	183.143	26.238
4	0.333	244.191	10.125
5	0.417	305.238	6.035
6	0.500	366.286	4.062
7	0.583	427.334	2.875
8	0.667	488.382	2.041
9	0.750	549.429	1.680
10	0.833	610.477	1.228
11	0.917	671.525	0.923
12	1.000	732.572	0.662
13	1.083	793.620	0.610
14	1.167	854.668	0.369
Sum =		100.000	Sum= 215.652

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	Pattern	Storm Rain	Loss rate(In./Hr)	Effective
(Hr.)	Percent	(In/Hr)	Max Low	(In/Hr)
1 0.08	4.40	0.775	0.081 (0.697)	0.694

2	0.17	4.50	0.792	0.081	(0.713)	0.711
3	0.25	5.40	0.951	0.081	(0.856)	0.870
4	0.33	5.40	0.951	0.081	(0.856)	0.870
5	0.42	5.70	1.004	0.081	(0.903)	0.923
6	0.50	6.40	1.127	0.081	(1.014)	1.046
7	0.58	7.90	1.391	0.081	(1.252)	1.310
8	0.67	9.10	1.602	0.081	(1.442)	1.521
9	0.75	12.80	2.254	0.081	(2.028)	2.173
10	0.83	25.60	4.507	0.081	(4.056)	4.426
11	0.92	7.90	1.391	0.081	(1.252)	1.310
12	1.00	4.90	0.863	0.081	(0.776)	0.782

(Loss Rate Not Used)

Sum = 100.0

Sum = 16.6

Flood volume = Effective rainfall 1.39(In)
times area 214.0(Ac.)/[(In)/(Ft.)) = 24.7(Ac.Ft)
Total soil loss = 0.08(In)
Total soil loss = 1.444(Ac.Ft)
Total rainfall = 1.47(In)
Flood volume = 1076718.7 Cubic Feet
Total soil loss = 62885.7 Cubic Feet

Peak flow rate of this hydrograph = 553.663(CFS)

+++++

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	150.0	300.0	450.0	600.0
0+ 5	0.0872	12.65	Q					
0+10	0.5342	64.91	V Q					
0+15	1.2806	108.39	V Q					
0+20	2.2200	136.40	V Q					
0+25	3.2927	155.75	V Q					
0+30	4.4754	171.72	V Q					
0+35	5.8203	195.28	V Q					
0+40	7.4152	231.59	V Q					
0+45	9.3518	281.19	V Q					
0+50	12.0616	393.46	V Q					
0+55	15.8747	553.66	V Q					
1+ 0	19.0432	460.06	V Q					
1+ 5	21.0613	293.04	V Q					
1+10	22.2696	175.45	V Q					
1+15	22.9956	105.41	V Q					
1+20	23.4978	72.91	V Q					
1+25	23.8585	52.39	V Q					
1+30	24.1301	39.43	V Q					
1+35	24.3297	28.98	V Q					
1+40	24.4762	21.27	V Q					
1+45	24.5800	15.07	V Q					
1+50	24.6557	10.99	V Q					
1+55	24.6995	6.37	V Q					
2+ 0	24.7138	2.07	V Q					
2+ 5	24.7181	0.62	V Q					

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 05/08/15 File: 154149HISTHYDA3100.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR

HISTORICAL CONDITIONS AREA "A"

100-YEAR, 3-HOUR STORM

BY: JTS DATE: 05-08-15

Drainage Area = 213.98(Ac.) = 0.334 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 213.98(Ac.)=0.334 Sq. Mi.
Length along longest watercourse = 4106.19(Ft.)
Length along longest watercourse measured to centroid = 1823.16(Ft.)
Length along longest watercourse = 0.778 Mi.
Length along longest watercourse measured to centroid = 0.345 Mi.
Difference in elevation = 798.20(Ft.)
Slope along watercourse = 1026.3763 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.137 Hr.
Lag time = 8.19 Min.
25% of lag time = 2.05 Min.
40% of lag time = 3.28 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]
213.98	1.05	224.68

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
213.98	2.51	537.09

STORM EVENT (YEAR) = 100.00
 Area Averaged 2-Year Rainfall = 1.050(In)
 Area Averaged 100-Year Rainfall = 2.510(In)

Point rain (area averaged) = 2.510(In)
 Areal adjustment factor = 99.91 %
 Adjusted average point rain = 2.508(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.430	67.00	0.000
22.120	78.00	0.000
3.320	86.00	0.000
166.110	89.00	0.000
Total Area Entered = 213.98(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	83.2	0.208	0.000	0.208	0.105	0.022
78.0	89.8	0.132	0.000	0.132	0.103	0.014
86.0	94.4	0.073	0.000	0.073	0.016	0.001
89.0	95.6	0.057	0.000	0.057	0.776	0.044
Sum (F) =						0.081

Area averaged mean soil loss (F) (In/Hr) = 0.081
 Minimum soil loss rate ((In/Hr)) = 0.040
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

Unit Hydrograph
 VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	61.048	8.455
2	0.167	122.095	34.696
3	0.250	183.143	26.238
4	0.333	244.191	10.125
5	0.417	305.238	6.035
6	0.500	366.286	4.062
7	0.583	427.334	2.875
8	0.667	488.382	2.041
9	0.750	549.429	1.680
10	0.833	610.477	1.228
11	0.917	671.525	0.923
12	1.000	732.572	0.662
13	1.083	793.620	0.610
14	1.167	854.668	0.369
Sum =		100.000	Sum= 215.652

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	0.391	0.081	(0.352)	0.310
2	0.17	1.30	0.391	0.081	(0.352)	0.310
3	0.25	1.10	0.331	0.081	(0.298)	0.250
4	0.33	1.50	0.451	0.081	(0.406)	0.370
5	0.42	1.50	0.451	0.081	(0.406)	0.370
6	0.50	1.80	0.542	0.081	(0.487)	0.461
7	0.58	1.50	0.451	0.081	(0.406)	0.370
8	0.67	1.80	0.542	0.081	(0.487)	0.461
9	0.75	1.80	0.542	0.081	(0.487)	0.461
10	0.83	1.50	0.451	0.081	(0.406)	0.370
11	0.92	1.60	0.481	0.081	(0.433)	0.401
12	1.00	1.80	0.542	0.081	(0.487)	0.461
13	1.08	2.20	0.662	0.081	(0.596)	0.581
14	1.17	2.20	0.662	0.081	(0.596)	0.581
15	1.25	2.20	0.662	0.081	(0.596)	0.581
16	1.33	2.00	0.602	0.081	(0.542)	0.521
17	1.42	2.60	0.782	0.081	(0.704)	0.701
18	1.50	2.70	0.812	0.081	(0.731)	0.732
19	1.58	2.40	0.722	0.081	(0.650)	0.641
20	1.67	2.70	0.812	0.081	(0.731)	0.732
21	1.75	3.30	0.993	0.081	(0.894)	0.912
22	1.83	3.10	0.933	0.081	(0.840)	0.852
23	1.92	2.90	0.873	0.081	(0.785)	0.792
24	2.00	3.00	0.903	0.081	(0.812)	0.822
25	2.08	3.10	0.933	0.081	(0.840)	0.852
26	2.17	4.20	1.264	0.081	(1.137)	1.183
27	2.25	5.00	1.505	0.081	(1.354)	1.424
28	2.33	3.50	1.053	0.081	(0.948)	0.972
29	2.42	6.80	2.046	0.081	(1.842)	1.965
30	2.50	7.30	2.197	0.081	(1.977)	2.116
31	2.58	8.20	2.468	0.081	(2.221)	2.387
32	2.67	5.90	1.775	0.081	(1.598)	1.694
33	2.75	2.00	0.602	0.081	(0.542)	0.521
34	2.83	1.80	0.542	0.081	(0.487)	0.461
35	2.92	1.80	0.542	0.081	(0.487)	0.461
36	3.00	0.60	0.181	0.081	(0.162)	0.100

(Loss Rate Not Used)

Sum = 100.0

Sum = 27.2

Flood volume = Effective rainfall 2.26(In)
times area 214.0(Ac.)/[(In)/(Ft.)] = 40.4(Ac.Ft)

Total soil loss = 0.24(In)

Total soil loss = 4.331(Ac.Ft)

Total rainfall = 2.51(In)

Flood volume = 1759153.6 Cubic Feet

Total soil loss = 188657.2 Cubic Feet

Peak flow rate of this hydrograph = 418.061(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	125.0	250.0	375.0	500.0
0+ 5	0.0390	5.66	Q					
0+10	0.2379	28.88	V Q					
0+15	0.5502	45.35	V Q					
0+20	0.8933	49.82	V Q					
0+25	1.3028	59.46	V Q					
0+30	1.7803	69.33	V Q					
0+35	2.3189	78.21	V Q					
0+40	2.8741	80.61	V Q					
0+45	3.4666	86.04	V Q					
0+50	4.0865	90.01	V Q					
0+55	4.6810	86.32	V Q					
1+ 0	5.2748	86.22	VQ					
1+ 5	5.9214	93.89	V Q					
1+10	6.6562	106.68	V Q					
1+15	7.4469	114.81	V Q					
1+20	8.2541	117.21	VQ					
1+25	9.0679	118.17	VQ					
1+30	9.9648	130.23	VQ					
1+35	10.9339	140.70	VQ					
1+40	11.9060	141.15	Q					
1+45	12.9334	149.17	QV					
1+50	14.0814	166.69	Q					
1+55	15.2764	173.52	Q V					
2+ 0	16.4577	171.52	Q					
2+ 5	17.6493	173.02	Q					
2+10	18.9112	183.23	Q					
2+15	20.3919	214.99	Q					
2+20	22.0777	244.79	Q					
2+25	23.8059	250.94	Q					
2+30	25.9596	312.72	Q					
2+35	28.5880	381.65	Q					
2+40	31.4673	418.06	Q					
2+45	34.0546	375.68	Q					
2+50	35.8707	263.70	Q					
2+55	37.1680	188.38	Q					
3+ 0	38.2087	151.11	Q					
3+ 5	38.9343	105.36	Q					
3+10	39.3914	66.37	Q					
3+15	39.7033	45.28	Q					
3+20	39.9263	32.39	Q					
3+25	40.0866	23.28	Q					
3+30	40.2025	16.83	Q					
3+35	40.2825	11.61	Q					
3+40	40.3333	7.38	Q					
3+45	40.3600	3.87	Q					
3+50	40.3729	1.88	Q					
3+55	40.3806	1.12	Q					
4+ 0	40.3841	0.50	Q					
4+ 5	40.3846	0.08	Q					

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 05/08/15 File: 154149HISTHYDA6100.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR

HISTORICAL CONDITIONS AREA "A"

100-YEAR, 6-HOUR STORM

BY: JTS DATE: 05-08-15

Drainage Area = 213.98(Ac.) = 0.334 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 213.98(Ac.)= 0.334 Sq. Mi.
Length along longest watercourse = 4106.19(Ft.)
Length along longest watercourse measured to centroid = 1823.16(Ft.)
Length along longest watercourse = 0.778 Mi.
Length along longest watercourse measured to centroid = 0.345 Mi.
Difference in elevation = 798.20(Ft.)
Slope along watercourse = 1026.3763 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.137 Hr.
Lag time = 8.19 Min.
25% of lag time = 2.05 Min.
40% of lag time = 3.28 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]
213.98	1.45	310.27

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
213.98	3.51	751.07

STORM EVENT (YEAR) = 100.00
 Area Averaged 2-Year Rainfall = 1.450(In)
 Area Averaged 100-Year Rainfall = 3.510(In)

Point rain (area averaged) = 3.510(In)
 Areal adjustment factor = 99.93 %
 Adjusted average point rain = 3.507(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.430	67.00	0.000
22.120	78.00	0.000
3.320	86.00	0.000
166.110	89.00	0.000
Total Area Entered = 213.98(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	83.2	0.208	0.000	0.208	0.105	0.022
78.0	89.8	0.132	0.000	0.132	0.103	0.014
86.0	94.4	0.073	0.000	0.073	0.016	0.001
89.0	95.6	0.057	0.000	0.057	0.776	0.044
Sum (F) =						0.081

Area averaged mean soil loss (F) (In/Hr) = 0.081
 Minimum soil loss rate ((In/Hr)) = 0.040
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

Unit Hydrograph
 VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	61.048	8.455
2	0.167	122.095	34.696
3	0.250	183.143	26.238
4	0.333	244.191	10.125
5	0.417	305.238	6.035
6	0.500	366.286	4.062
7	0.583	427.334	2.875
8	0.667	488.382	2.041
9	0.750	549.429	1.680
10	0.833	610.477	1.228
11	0.917	671.525	0.923
12	1.000	732.572	0.662
13	1.083	793.620	0.610
14	1.167	854.668	0.369
Sum =		100.000	Sum= 215.652

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	0.210	0.081	(0.189)	0.129
2	0.17	0.60	0.253	0.081	(0.227)	0.172
3	0.25	0.60	0.253	0.081	(0.227)	0.172
4	0.33	0.60	0.253	0.081	(0.227)	0.172
5	0.42	0.60	0.253	0.081	(0.227)	0.172
6	0.50	0.70	0.295	0.081	(0.265)	0.214
7	0.58	0.70	0.295	0.081	(0.265)	0.214
8	0.67	0.70	0.295	0.081	(0.265)	0.214
9	0.75	0.70	0.295	0.081	(0.265)	0.214
10	0.83	0.70	0.295	0.081	(0.265)	0.214
11	0.92	0.70	0.295	0.081	(0.265)	0.214
12	1.00	0.80	0.337	0.081	(0.303)	0.256
13	1.08	0.80	0.337	0.081	(0.303)	0.256
14	1.17	0.80	0.337	0.081	(0.303)	0.256
15	1.25	0.80	0.337	0.081	(0.303)	0.256
16	1.33	0.80	0.337	0.081	(0.303)	0.256
17	1.42	0.80	0.337	0.081	(0.303)	0.256
18	1.50	0.80	0.337	0.081	(0.303)	0.256
19	1.58	0.80	0.337	0.081	(0.303)	0.256
20	1.67	0.80	0.337	0.081	(0.303)	0.256
21	1.75	0.80	0.337	0.081	(0.303)	0.256
22	1.83	0.80	0.337	0.081	(0.303)	0.256
23	1.92	0.80	0.337	0.081	(0.303)	0.256
24	2.00	0.90	0.379	0.081	(0.341)	0.298
25	2.08	0.80	0.337	0.081	(0.303)	0.256
26	2.17	0.90	0.379	0.081	(0.341)	0.298
27	2.25	0.90	0.379	0.081	(0.341)	0.298
28	2.33	0.90	0.379	0.081	(0.341)	0.298
29	2.42	0.90	0.379	0.081	(0.341)	0.298
30	2.50	0.90	0.379	0.081	(0.341)	0.298
31	2.58	0.90	0.379	0.081	(0.341)	0.298
32	2.67	0.90	0.379	0.081	(0.341)	0.298
33	2.75	1.00	0.421	0.081	(0.379)	0.340
34	2.83	1.00	0.421	0.081	(0.379)	0.340
35	2.92	1.00	0.421	0.081	(0.379)	0.340
36	3.00	1.00	0.421	0.081	(0.379)	0.340
37	3.08	1.00	0.421	0.081	(0.379)	0.340
38	3.17	1.10	0.463	0.081	(0.417)	0.382
39	3.25	1.10	0.463	0.081	(0.417)	0.382
40	3.33	1.10	0.463	0.081	(0.417)	0.382
41	3.42	1.20	0.505	0.081	(0.455)	0.424
42	3.50	1.30	0.547	0.081	(0.492)	0.466
43	3.58	1.40	0.589	0.081	(0.530)	0.508
44	3.67	1.40	0.589	0.081	(0.530)	0.508
45	3.75	1.50	0.631	0.081	(0.568)	0.550
46	3.83	1.50	0.631	0.081	(0.568)	0.550
47	3.92	1.60	0.673	0.081	(0.606)	0.592
48	4.00	1.60	0.673	0.081	(0.606)	0.592
49	4.08	1.70	0.716	0.081	(0.644)	0.635
50	4.17	1.80	0.758	0.081	(0.682)	0.677
51	4.25	1.90	0.800	0.081	(0.720)	0.719
52	4.33	2.00	0.842	0.081	(0.758)	0.761
53	4.42	2.10	0.884	0.081	(0.795)	0.803

54	4.50	2.10	0.884	0.081	(0.795)	0.803
55	4.58	2.20	0.926	0.081	(0.833)	0.845
56	4.67	2.30	0.968	0.081	(0.871)	0.887
57	4.75	2.40	1.010	0.081	(0.909)	0.929
58	4.83	2.40	1.010	0.081	(0.909)	0.929
59	4.92	2.50	1.052	0.081	(0.947)	0.971
60	5.00	2.60	1.094	0.081	(0.985)	1.013
61	5.08	3.10	1.305	0.081	(1.174)	1.224
62	5.17	3.60	1.515	0.081	(1.364)	1.434
63	5.25	3.90	1.641	0.081	(1.477)	1.561
64	5.33	4.20	1.768	0.081	(1.591)	1.687
65	5.42	4.70	1.978	0.081	(1.780)	1.897
66	5.50	5.60	2.357	0.081	(2.121)	2.276
67	5.58	1.90	0.800	0.081	(0.720)	0.719
68	5.67	0.90	0.379	0.081	(0.341)	0.298
69	5.75	0.60	0.253	0.081	(0.227)	0.172
70	5.83	0.50	0.210	0.081	(0.189)	0.129
71	5.92	0.30	0.126	0.081	(0.114)	0.045
72	6.00	0.20	0.084	(0.081)	0.076	0.008

(Loss Rate Not Used)

Sum = 100.0

Sum = 36.3

Flood volume = Effective rainfall 3.02(In)

times area 214.0(Ac.)/[(In)/(Ft.)] = 53.9(Ac.Ft)

Total soil loss = 0.49(In)

Total soil loss = 8.654(Ac.Ft)

Total rainfall = 3.51(In)

Flood volume = 2347400.1 Cubic Feet

Total soil loss = 376977.8 Cubic Feet

Peak flow rate of this hydrograph = 383.551(CFS)

+++++

6 - 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	100.0	200.0	300.0	400.0
0+ 5	0.0163	2.36	Q				
0+10	0.1046	12.82	VQ				
0+15	0.2651	23.30	V Q				
0+20	0.4615	28.52	V Q				
0+25	0.6758	31.12	V Q				
0+30	0.9070	33.57	V Q				
0+35	1.1680	37.90	V Q				
0+40	1.4511	41.11	V Q				
0+45	1.7451	42.68	V Q				
0+50	2.0463	43.73	V Q				
0+55	2.3525	44.47	V Q				
1+ 0	2.6677	45.76	V Q				
1+ 5	3.0074	49.33	V Q				
1+10	3.3657	52.02	V Q				
1+15	3.7313	53.09	V Q				
1+20	4.1013	53.72	V Q				
1+25	4.4742	54.15	V Q				

1+30	4.8493	54.47	V Q				
1+35	5.2260	54.68	V Q				
1+40	5.6036	54.84	VQ				
1+45	5.9821	54.95	VQ				
1+50	6.3611	55.03	VQ				
1+55	6.7405	55.09	Q				
2+ 0	7.1256	55.92	Q				
2+ 5	7.5273	58.33	Q				
2+10	7.9291	58.33	Q				
2+15	8.3424	60.02	Q				
2+20	8.7696	62.03	Q				
2+25	9.2020	62.77	Q				
2+30	9.6373	63.21	QV				
2+35	10.0747	63.50	QV				
2+40	10.5136	63.73	QV				
2+45	10.9588	64.65	Q V				
2+50	11.4266	67.92	Q V				
2+55	11.9114	70.39	QV				
3+ 0	12.4030	71.39	Q V				
3+ 5	12.8988	71.98	Q V				
3+10	13.4024	73.14	Q V				
3+15	13.9299	76.58	Q V				
3+20	14.4750	79.15	Q V				
3+25	15.0327	80.99	Q V				
3+30	15.6220	85.57	Q V				
3+35	16.2579	92.32	Q V				
3+40	16.9403	99.10	Q V				
3+45	17.6563	103.95	Q V				
3+50	18.4078	109.13	Q V				
3+55	19.1900	113.57	Q V				
4+ 0	20.0063	118.54	Q V				
4+ 5	20.8527	122.89	Q V				
4+10	21.7385	128.61	Q V				
4+15	22.6758	136.10	Q V				
4+20	23.6684	144.13	Q V				
4+25	24.7187	152.51	Q V				
4+30	25.8229	160.33	Q V				
4+35	26.9655	165.90	Q V				
4+40	28.1522	172.31	Q V				
4+45	29.3937	180.26	Q V				
4+50	30.6877	187.89	Q V				
4+55	32.0194	193.36	Q V				
5+ 0	33.3950	199.74	Q V				
5+ 5	34.8464	210.75	Q V				
5+10	36.4636	234.81	Q V				
5+15	38.3030	267.08	Q V				
5+20	40.3475	296.86	Q V				
5+25	42.5907	325.71	Q V				
5+30	45.0948	363.60	Q V				
5+35	47.7363	383.55	Q V				
5+40	49.7386	290.73	Q				
5+45	51.0033	183.64	Q				
5+50	51.8654	125.18	Q				
5+55	52.4894	90.60	Q				
6+ 0	52.9318	64.24	Q				
6+ 5	53.2367	44.27	Q				
6+10	53.4530	31.40	Q				

6+15	53.6066	22.31	Q				V
6+20	53.7151	15.76	Q				V
6+25	53.7899	10.86	Q				V
6+30	53.8402	7.30	Q				V
6+35	53.8683	4.07	Q				V
6+40	53.8794	1.62	Q				V
6+45	53.8846	0.76	Q				V
6+50	53.8873	0.39	Q				V
6+55	53.8885	0.17	Q				V
7+ 0	53.8888	0.05	Q				V
7+ 5	53.8889	0.01	Q				V

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 05/08/15 File: 154149HISTHYDA24100.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR

HISTORICAL CONDITIONS AREA "A"

100-YEAR, 24-HOUR STORM

BY: JTS DATE: 05-08-15

Drainage Area = 213.98(Ac.) = 0.334 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 213.98(Ac.)= 0.334 Sq. Mi.
Length along longest watercourse = 4106.19(Ft.)
Length along longest watercourse measured to centroid = 1823.16(Ft.)
Length along longest watercourse = 0.778 Mi.
Length along longest watercourse measured to centroid = 0.345 Mi.
Difference in elevation = 798.20(Ft.)
Slope along watercourse = 1026.3763 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.137 Hr.
Lag time = 8.19 Min.
25% of lag time = 2.05 Min.
40% of lag time = 3.28 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]
213.98	2.70	577.75

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
213.98	6.65	1422.97

STORM EVENT (YEAR) = 100.00
 Area Averaged 2-Year Rainfall = 2.700(In)
 Area Averaged 100-Year Rainfall = 6.650(In)

Point rain (area averaged) = 6.650(In)
 Areal adjustment factor = 99.96 %
 Adjusted average point rain = 6.647(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.430	67.00	0.000
22.120	78.00	0.000
3.320	86.00	0.000
166.110	89.00	0.000
Total Area Entered = 213.98(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	83.2	0.208	0.000	0.208	0.105	0.022
78.0	89.8	0.132	0.000	0.132	0.103	0.014
86.0	94.4	0.073	0.000	0.073	0.016	0.001
89.0	95.6	0.057	0.000	0.057	0.776	0.044
Sum (F) =						0.081

Area averaged mean soil loss (F) (In/Hr) = 0.081
 Minimum soil loss rate ((In/Hr)) = 0.040
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

Unit Hydrograph
 VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	61.048	8.455
2	0.167	122.095	34.696
3	0.250	183.143	26.238
4	0.333	244.191	10.125
5	0.417	305.238	6.035
6	0.500	366.286	4.062
7	0.583	427.334	2.875
8	0.667	488.382	2.041
9	0.750	549.429	1.680
10	0.833	610.477	1.228
11	0.917	671.525	0.923
12	1.000	732.572	0.662
13	1.083	793.620	0.610
14	1.167	854.668	0.369
Sum =		100.000	Sum= 215.652

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	0.053	(0.144)	0.048	0.005
2	0.17	0.07	0.053	(0.143)	0.048	0.005
3	0.25	0.07	0.053	(0.142)	0.048	0.005
4	0.33	0.10	0.080	(0.142)	0.072	0.008
5	0.42	0.10	0.080	(0.141)	0.072	0.008
6	0.50	0.10	0.080	(0.141)	0.072	0.008
7	0.58	0.10	0.080	(0.140)	0.072	0.008
8	0.67	0.10	0.080	(0.140)	0.072	0.008
9	0.75	0.10	0.080	(0.139)	0.072	0.008
10	0.83	0.13	0.106	(0.139)	0.096	0.011
11	0.92	0.13	0.106	(0.138)	0.096	0.011
12	1.00	0.13	0.106	(0.137)	0.096	0.011
13	1.08	0.10	0.080	(0.137)	0.072	0.008
14	1.17	0.10	0.080	(0.136)	0.072	0.008
15	1.25	0.10	0.080	(0.136)	0.072	0.008
16	1.33	0.10	0.080	(0.135)	0.072	0.008
17	1.42	0.10	0.080	(0.135)	0.072	0.008
18	1.50	0.10	0.080	(0.134)	0.072	0.008
19	1.58	0.10	0.080	(0.134)	0.072	0.008
20	1.67	0.10	0.080	(0.133)	0.072	0.008
21	1.75	0.10	0.080	(0.133)	0.072	0.008
22	1.83	0.13	0.106	(0.132)	0.096	0.011
23	1.92	0.13	0.106	(0.132)	0.096	0.011
24	2.00	0.13	0.106	(0.131)	0.096	0.011
25	2.08	0.13	0.106	(0.130)	0.096	0.011
26	2.17	0.13	0.106	(0.130)	0.096	0.011
27	2.25	0.13	0.106	(0.129)	0.096	0.011
28	2.33	0.13	0.106	(0.129)	0.096	0.011
29	2.42	0.13	0.106	(0.128)	0.096	0.011
30	2.50	0.13	0.106	(0.128)	0.096	0.011
31	2.58	0.17	0.133	(0.127)	0.120	0.013
32	2.67	0.17	0.133	(0.127)	0.120	0.013
33	2.75	0.17	0.133	(0.126)	0.120	0.013
34	2.83	0.17	0.133	(0.126)	0.120	0.013
35	2.92	0.17	0.133	(0.125)	0.120	0.013
36	3.00	0.17	0.133	(0.125)	0.120	0.013
37	3.08	0.17	0.133	(0.124)	0.120	0.013
38	3.17	0.17	0.133	(0.124)	0.120	0.013
39	3.25	0.17	0.133	(0.123)	0.120	0.013
40	3.33	0.17	0.133	(0.123)	0.120	0.013
41	3.42	0.17	0.133	(0.122)	0.120	0.013
42	3.50	0.17	0.133	(0.122)	0.120	0.013
43	3.58	0.17	0.133	(0.121)	0.120	0.013
44	3.67	0.17	0.133	(0.121)	0.120	0.013
45	3.75	0.17	0.133	(0.120)	0.120	0.013
46	3.83	0.20	0.160	0.120	(0.144)	0.040
47	3.92	0.20	0.160	0.119	(0.144)	0.040
48	4.00	0.20	0.160	0.119	(0.144)	0.041
49	4.08	0.20	0.160	0.118	(0.144)	0.041
50	4.17	0.20	0.160	0.118	(0.144)	0.042
51	4.25	0.20	0.160	0.117	(0.144)	0.042
52	4.33	0.23	0.186	0.117	(0.168)	0.070
53	4.42	0.23	0.186	0.116	(0.168)	0.070

54	4.50	0.23	0.186	0.116	(0.168)	0.071
55	4.58	0.23	0.186	0.115	(0.168)	0.071
56	4.67	0.23	0.186	0.115	(0.168)	0.071
57	4.75	0.23	0.186	0.114	(0.168)	0.072
58	4.83	0.27	0.213	0.114	(0.191)	0.099
59	4.92	0.27	0.213	0.113	(0.191)	0.100
60	5.00	0.27	0.213	0.113	(0.191)	0.100
61	5.08	0.20	0.160	0.112	(0.144)	0.047
62	5.17	0.20	0.160	0.112	(0.144)	0.048
63	5.25	0.20	0.160	0.111	(0.144)	0.048
64	5.33	0.23	0.186	0.111	(0.168)	0.075
65	5.42	0.23	0.186	0.110	(0.168)	0.076
66	5.50	0.23	0.186	0.110	(0.168)	0.076
67	5.58	0.27	0.213	0.109	(0.191)	0.103
68	5.67	0.27	0.213	0.109	(0.191)	0.104
69	5.75	0.27	0.213	0.108	(0.191)	0.104
70	5.83	0.27	0.213	0.108	(0.191)	0.105
71	5.92	0.27	0.213	0.107	(0.191)	0.105
72	6.00	0.27	0.213	0.107	(0.191)	0.106
73	6.08	0.30	0.239	0.106	(0.215)	0.133
74	6.17	0.30	0.239	0.106	(0.215)	0.133
75	6.25	0.30	0.239	0.105	(0.215)	0.134
76	6.33	0.30	0.239	0.105	(0.215)	0.134
77	6.42	0.30	0.239	0.105	(0.215)	0.135
78	6.50	0.30	0.239	0.104	(0.215)	0.135
79	6.58	0.33	0.266	0.104	(0.239)	0.162
80	6.67	0.33	0.266	0.103	(0.239)	0.163
81	6.75	0.33	0.266	0.103	(0.239)	0.163
82	6.83	0.33	0.266	0.102	(0.239)	0.164
83	6.92	0.33	0.266	0.102	(0.239)	0.164
84	7.00	0.33	0.266	0.101	(0.239)	0.165
85	7.08	0.33	0.266	0.101	(0.239)	0.165
86	7.17	0.33	0.266	0.100	(0.239)	0.166
87	7.25	0.33	0.266	0.100	(0.239)	0.166
88	7.33	0.37	0.292	0.099	(0.263)	0.193
89	7.42	0.37	0.292	0.099	(0.263)	0.194
90	7.50	0.37	0.292	0.099	(0.263)	0.194
91	7.58	0.40	0.319	0.098	(0.287)	0.221
92	7.67	0.40	0.319	0.098	(0.287)	0.221
93	7.75	0.40	0.319	0.097	(0.287)	0.222
94	7.83	0.43	0.346	0.097	(0.311)	0.249
95	7.92	0.43	0.346	0.096	(0.311)	0.249
96	8.00	0.43	0.346	0.096	(0.311)	0.250
97	8.08	0.50	0.399	0.095	(0.359)	0.303
98	8.17	0.50	0.399	0.095	(0.359)	0.304
99	8.25	0.50	0.399	0.094	(0.359)	0.304
100	8.33	0.50	0.399	0.094	(0.359)	0.305
101	8.42	0.50	0.399	0.094	(0.359)	0.305
102	8.50	0.50	0.399	0.093	(0.359)	0.306
103	8.58	0.53	0.425	0.093	(0.383)	0.333
104	8.67	0.53	0.425	0.092	(0.383)	0.333
105	8.75	0.53	0.425	0.092	(0.383)	0.334
106	8.83	0.57	0.452	0.091	(0.407)	0.361
107	8.92	0.57	0.452	0.091	(0.407)	0.361
108	9.00	0.57	0.452	0.091	(0.407)	0.361
109	9.08	0.63	0.505	0.090	(0.455)	0.415
110	9.17	0.63	0.505	0.090	(0.455)	0.415

111	9.25	0.63	0.505	0.089	(0.455)	0.416
112	9.33	0.67	0.532	0.089	(0.479)	0.443
113	9.42	0.67	0.532	0.088	(0.479)	0.443
114	9.50	0.67	0.532	0.088	(0.479)	0.444
115	9.58	0.70	0.558	0.088	(0.503)	0.471
116	9.67	0.70	0.558	0.087	(0.503)	0.471
117	9.75	0.70	0.558	0.087	(0.503)	0.472
118	9.83	0.73	0.585	0.086	(0.526)	0.499
119	9.92	0.73	0.585	0.086	(0.526)	0.499
120	10.00	0.73	0.585	0.085	(0.526)	0.499
121	10.08	0.50	0.399	0.085	(0.359)	0.314
122	10.17	0.50	0.399	0.085	(0.359)	0.314
123	10.25	0.50	0.399	0.084	(0.359)	0.315
124	10.33	0.50	0.399	0.084	(0.359)	0.315
125	10.42	0.50	0.399	0.083	(0.359)	0.315
126	10.50	0.50	0.399	0.083	(0.359)	0.316
127	10.58	0.67	0.532	0.083	(0.479)	0.449
128	10.67	0.67	0.532	0.082	(0.479)	0.450
129	10.75	0.67	0.532	0.082	(0.479)	0.450
130	10.83	0.67	0.532	0.081	(0.479)	0.450
131	10.92	0.67	0.532	0.081	(0.479)	0.451
132	11.00	0.67	0.532	0.081	(0.479)	0.451
133	11.08	0.63	0.505	0.080	(0.455)	0.425
134	11.17	0.63	0.505	0.080	(0.455)	0.425
135	11.25	0.63	0.505	0.079	(0.455)	0.426
136	11.33	0.63	0.505	0.079	(0.455)	0.426
137	11.42	0.63	0.505	0.079	(0.455)	0.427
138	11.50	0.63	0.505	0.078	(0.455)	0.427
139	11.58	0.57	0.452	0.078	(0.407)	0.374
140	11.67	0.57	0.452	0.077	(0.407)	0.375
141	11.75	0.57	0.452	0.077	(0.407)	0.375
142	11.83	0.60	0.479	0.077	(0.431)	0.402
143	11.92	0.60	0.479	0.076	(0.431)	0.402
144	12.00	0.60	0.479	0.076	(0.431)	0.403
145	12.08	0.83	0.665	0.076	(0.598)	0.589
146	12.17	0.83	0.665	0.075	(0.598)	0.590
147	12.25	0.83	0.665	0.075	(0.598)	0.590
148	12.33	0.87	0.691	0.074	(0.622)	0.617
149	12.42	0.87	0.691	0.074	(0.622)	0.617
150	12.50	0.87	0.691	0.074	(0.622)	0.618
151	12.58	0.93	0.744	0.073	(0.670)	0.671
152	12.67	0.93	0.744	0.073	(0.670)	0.672
153	12.75	0.93	0.744	0.073	(0.670)	0.672
154	12.83	0.97	0.771	0.072	(0.694)	0.699
155	12.92	0.97	0.771	0.072	(0.694)	0.699
156	13.00	0.97	0.771	0.071	(0.694)	0.700
157	13.08	1.13	0.904	0.071	(0.814)	0.833
158	13.17	1.13	0.904	0.071	(0.814)	0.833
159	13.25	1.13	0.904	0.070	(0.814)	0.834
160	13.33	1.13	0.904	0.070	(0.814)	0.834
161	13.42	1.13	0.904	0.070	(0.814)	0.834
162	13.50	1.13	0.904	0.069	(0.814)	0.835
163	13.58	0.77	0.612	0.069	(0.550)	0.543
164	13.67	0.77	0.612	0.069	(0.550)	0.543
165	13.75	0.77	0.612	0.068	(0.550)	0.543
166	13.83	0.77	0.612	0.068	(0.550)	0.544
167	13.92	0.77	0.612	0.068	(0.550)	0.544

168	14.00	0.77	0.612	0.067	(0.550)	0.544
169	14.08	0.90	0.718	0.067	(0.646)	0.651
170	14.17	0.90	0.718	0.067	(0.646)	0.651
171	14.25	0.90	0.718	0.066	(0.646)	0.652
172	14.33	0.87	0.691	0.066	(0.622)	0.625
173	14.42	0.87	0.691	0.066	(0.622)	0.626
174	14.50	0.87	0.691	0.065	(0.622)	0.626
175	14.58	0.87	0.691	0.065	(0.622)	0.626
176	14.67	0.87	0.691	0.065	(0.622)	0.627
177	14.75	0.87	0.691	0.064	(0.622)	0.627
178	14.83	0.83	0.665	0.064	(0.598)	0.601
179	14.92	0.83	0.665	0.064	(0.598)	0.601
180	15.00	0.83	0.665	0.063	(0.598)	0.601
181	15.08	0.80	0.638	0.063	(0.574)	0.575
182	15.17	0.80	0.638	0.063	(0.574)	0.576
183	15.25	0.80	0.638	0.062	(0.574)	0.576
184	15.33	0.77	0.612	0.062	(0.550)	0.550
185	15.42	0.77	0.612	0.062	(0.550)	0.550
186	15.50	0.77	0.612	0.061	(0.550)	0.550
187	15.58	0.63	0.505	0.061	(0.455)	0.444
188	15.67	0.63	0.505	0.061	(0.455)	0.445
189	15.75	0.63	0.505	0.060	(0.455)	0.445
190	15.83	0.63	0.505	0.060	(0.455)	0.445
191	15.92	0.63	0.505	0.060	(0.455)	0.445
192	16.00	0.63	0.505	0.059	(0.455)	0.446
193	16.08	0.13	0.106	0.059	(0.096)	0.047
194	16.17	0.13	0.106	0.059	(0.096)	0.048
195	16.25	0.13	0.106	0.059	(0.096)	0.048
196	16.33	0.13	0.106	0.058	(0.096)	0.048
197	16.42	0.13	0.106	0.058	(0.096)	0.048
198	16.50	0.13	0.106	0.058	(0.096)	0.049
199	16.58	0.10	0.080	0.057	(0.072)	0.022
200	16.67	0.10	0.080	0.057	(0.072)	0.023
201	16.75	0.10	0.080	0.057	(0.072)	0.023
202	16.83	0.10	0.080	0.056	(0.072)	0.023
203	16.92	0.10	0.080	0.056	(0.072)	0.024
204	17.00	0.10	0.080	0.056	(0.072)	0.024
205	17.08	0.17	0.133	0.056	(0.120)	0.077
206	17.17	0.17	0.133	0.055	(0.120)	0.078
207	17.25	0.17	0.133	0.055	(0.120)	0.078
208	17.33	0.17	0.133	0.055	(0.120)	0.078
209	17.42	0.17	0.133	0.055	(0.120)	0.078
210	17.50	0.17	0.133	0.054	(0.120)	0.079
211	17.58	0.17	0.133	0.054	(0.120)	0.079
212	17.67	0.17	0.133	0.054	(0.120)	0.079
213	17.75	0.17	0.133	0.053	(0.120)	0.079
214	17.83	0.13	0.106	0.053	(0.096)	0.053
215	17.92	0.13	0.106	0.053	(0.096)	0.053
216	18.00	0.13	0.106	0.053	(0.096)	0.054
217	18.08	0.13	0.106	0.052	(0.096)	0.054
218	18.17	0.13	0.106	0.052	(0.096)	0.054
219	18.25	0.13	0.106	0.052	(0.096)	0.054
220	18.33	0.13	0.106	0.052	(0.096)	0.055
221	18.42	0.13	0.106	0.051	(0.096)	0.055
222	18.50	0.13	0.106	0.051	(0.096)	0.055
223	18.58	0.10	0.080	0.051	(0.072)	0.029
224	18.67	0.10	0.080	0.051	(0.072)	0.029

225	18.75	0.10	0.080	0.050	(0.072)	0.029
226	18.83	0.07	0.053	(0.050)	0.048	0.005
227	18.92	0.07	0.053	(0.050)	0.048	0.005
228	19.00	0.07	0.053	(0.050)	0.048	0.005
229	19.08	0.10	0.080	0.049	(0.072)	0.030
230	19.17	0.10	0.080	0.049	(0.072)	0.031
231	19.25	0.10	0.080	0.049	(0.072)	0.031
232	19.33	0.13	0.106	0.049	(0.096)	0.058
233	19.42	0.13	0.106	0.049	(0.096)	0.058
234	19.50	0.13	0.106	0.048	(0.096)	0.058
235	19.58	0.10	0.080	0.048	(0.072)	0.032
236	19.67	0.10	0.080	0.048	(0.072)	0.032
237	19.75	0.10	0.080	0.048	(0.072)	0.032
238	19.83	0.07	0.053	0.047	(0.048)	0.006
239	19.92	0.07	0.053	0.047	(0.048)	0.006
240	20.00	0.07	0.053	0.047	(0.048)	0.006
241	20.08	0.10	0.080	0.047	(0.072)	0.033
242	20.17	0.10	0.080	0.047	(0.072)	0.033
243	20.25	0.10	0.080	0.046	(0.072)	0.033
244	20.33	0.10	0.080	0.046	(0.072)	0.034
245	20.42	0.10	0.080	0.046	(0.072)	0.034
246	20.50	0.10	0.080	0.046	(0.072)	0.034
247	20.58	0.10	0.080	0.046	(0.072)	0.034
248	20.67	0.10	0.080	0.045	(0.072)	0.034
249	20.75	0.10	0.080	0.045	(0.072)	0.035
250	20.83	0.07	0.053	0.045	(0.048)	0.008
251	20.92	0.07	0.053	0.045	(0.048)	0.008
252	21.00	0.07	0.053	0.045	(0.048)	0.008
253	21.08	0.10	0.080	0.045	(0.072)	0.035
254	21.17	0.10	0.080	0.044	(0.072)	0.035
255	21.25	0.10	0.080	0.044	(0.072)	0.036
256	21.33	0.07	0.053	0.044	(0.048)	0.009
257	21.42	0.07	0.053	0.044	(0.048)	0.009
258	21.50	0.07	0.053	0.044	(0.048)	0.010
259	21.58	0.10	0.080	0.044	(0.072)	0.036
260	21.67	0.10	0.080	0.043	(0.072)	0.036
261	21.75	0.10	0.080	0.043	(0.072)	0.037
262	21.83	0.07	0.053	0.043	(0.048)	0.010
263	21.92	0.07	0.053	0.043	(0.048)	0.010
264	22.00	0.07	0.053	0.043	(0.048)	0.010
265	22.08	0.10	0.080	0.043	(0.072)	0.037
266	22.17	0.10	0.080	0.042	(0.072)	0.037
267	22.25	0.10	0.080	0.042	(0.072)	0.037
268	22.33	0.07	0.053	0.042	(0.048)	0.011
269	22.42	0.07	0.053	0.042	(0.048)	0.011
270	22.50	0.07	0.053	0.042	(0.048)	0.011
271	22.58	0.07	0.053	0.042	(0.048)	0.011
272	22.67	0.07	0.053	0.042	(0.048)	0.011
273	22.75	0.07	0.053	0.042	(0.048)	0.012
274	22.83	0.07	0.053	0.041	(0.048)	0.012
275	22.92	0.07	0.053	0.041	(0.048)	0.012
276	23.00	0.07	0.053	0.041	(0.048)	0.012
277	23.08	0.07	0.053	0.041	(0.048)	0.012
278	23.17	0.07	0.053	0.041	(0.048)	0.012
279	23.25	0.07	0.053	0.041	(0.048)	0.012
280	23.33	0.07	0.053	0.041	(0.048)	0.012
281	23.42	0.07	0.053	0.041	(0.048)	0.012

282	23.50	0.07	0.053	0.041	(0.048)	0.012
283	23.58	0.07	0.053	0.041	(0.048)	0.012
284	23.67	0.07	0.053	0.041	(0.048)	0.013
285	23.75	0.07	0.053	0.041	(0.048)	0.013
286	23.83	0.07	0.053	0.041	(0.048)	0.013
287	23.92	0.07	0.053	0.041	(0.048)	0.013
288	24.00	0.07	0.053	0.040	(0.048)	0.013

(Loss Rate Not Used)

Sum = 100.0

Sum = 58.2

Flood volume = Effective rainfall 4.85(In)
times area 214.0(Ac.)/[(In)/(Ft.)] = 86.5(Ac.Ft)
Total soil loss = 1.80(In)
Total soil loss = 32.038(Ac.Ft)
Total rainfall = 6.65(In)
Flood volume = 3767627.5 Cubic Feet
Total soil loss = 1395583.9 Cubic Feet

Peak flow rate of this hydrograph = 176.593(CFS)

+++++

24 - H O U R S T O R M
Run 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	50.0	100.0	150.0	200.0
0+ 5	0.0007	0.10	Q				
0+10	0.0041	0.50	Q				
0+15	0.0096	0.80	Q				
0+20	0.0162	0.96	Q				
0+25	0.0246	1.23	Q				
0+30	0.0345	1.43	Q				
0+35	0.0449	1.52	Q				
0+40	0.0558	1.58	Q				
0+45	0.0669	1.62	Q				
0+50	0.0786	1.70	Q				
0+55	0.0918	1.92	Q				
1+ 0	0.1062	2.09	Q				
1+ 5	0.1207	2.11	Q				
1+10	0.1342	1.95	Q				
1+15	0.1468	1.83	Q				
1+20	0.1591	1.79	Q				
1+25	0.1713	1.77	Q				
1+30	0.1835	1.76	Q				
1+35	0.1955	1.75	Q				
1+40	0.2075	1.74	Q				
1+45	0.2195	1.74	Q				
1+50	0.2317	1.78	Q				
1+55	0.2454	1.98	Q				
2+ 0	0.2600	2.12	Q				
2+ 5	0.2750	2.18	Q				
2+10	0.2902	2.21	Q				
2+15	0.3056	2.24	Q				
2+20	0.3211	2.25	Q				
2+25	0.3367	2.26	Q				

2+30	0.3524	2.27	Q				
2+35	0.3684	2.33	Q				
2+40	0.3859	2.53	Q				
2+45	0.4044	2.69	Q				
2+50	0.4233	2.75	Q				
2+55	0.4425	2.79	Q				
3+ 0	0.4618	2.81	Q				
3+ 5	0.4813	2.83	Q				
3+10	0.5008	2.84	Q				
3+15	0.5204	2.85	Q				
3+20	0.5401	2.85	Q				
3+25	0.5598	2.86	Q				
3+30	0.5795	2.86	Q				
3+35	0.5992	2.87	Q				
3+40	0.6190	2.87	Q				
3+45	0.6388	2.87	Q				
3+50	0.6618	3.35	Q				
3+55	0.6987	5.36	VQ				
4+ 0	0.7463	6.91	VQ				
4+ 5	0.7984	7.57	VQ				
4+10	0.8535	8.00	VQ				
4+15	0.9109	8.33	VQ				
4+20	0.9733	9.07	VQ				
4+25	1.0510	11.28	V Q				
4+30	1.1404	12.98	V Q				
4+35	1.2351	13.74	V Q				
4+40	1.3331	14.24	V Q				
4+45	1.4338	14.62	V Q				
4+50	1.5399	15.41	V Q				
4+55	1.6615	17.64	V Q				
5+ 0	1.7947	19.35	V Q				
5+ 5	1.9266	19.14	V Q				
5+10	2.0344	15.66	V Q				
5+15	2.1242	13.03	V Q				
5+20	2.2114	12.66	VQ				
5+25	2.3092	14.20	VQ				
5+30	2.4155	15.44	V Q				
5+35	2.5281	16.35	V Q				
5+40	2.6563	18.61	V Q				
5+45	2.7961	20.30	V Q				
5+50	2.9410	21.04	V Q				
5+55	3.0893	21.52	V Q				
6+ 0	3.2400	21.88	V Q				
6+ 5	3.3958	22.64	V Q				
6+10	3.5670	24.86	V Q				
6+15	3.7502	26.60	V Q				
6+20	3.9388	27.39	V Q				
6+25	4.1310	27.91	V Q				
6+30	4.3258	28.28	V Q				
6+35	4.5260	29.07	V Q				
6+40	4.7416	31.30	V Q				
6+45	4.9689	33.00	V Q				
6+50	5.2013	33.75	V Q				
6+55	5.4372	34.25	V Q				
7+ 0	5.6757	34.62	V Q				
7+ 5	5.9162	34.92	V Q				
7+10	6.1584	35.16	V Q				

7+15	6.4019	35.36	V	Q				
7+20	6.6499	36.01	V	Q				
7+25	6.9127	38.15	V	Q				
7+30	7.1867	39.80	V	Q				
7+35	7.4691	41.00	V	Q				
7+40	7.7683	43.45	V	Q				
7+45	8.0802	45.29	V	Q				
7+50	8.4013	46.62	V	Q				
7+55	8.7399	49.17	V	Q				
8+ 0	9.0918	51.10	V	Q				
8+ 5	9.4567	52.98	V	Q				
8+10	9.8532	57.57	V	Q				
8+15	10.2737	61.05	V	Q				
8+20	10.7046	62.58	V	Q				
8+25	11.1423	63.56	V	Q				
8+30	11.5848	64.25	V	Q				
8+35	12.0343	65.27	V	Q				
8+40	12.5003	67.66	V	Q				
8+45	12.9789	69.49	V	Q				
8+50	13.4667	70.83	V	Q				
8+55	13.9721	73.39	V	Q				
9+ 0	14.4907	75.29	V	Q				
9+ 5	15.0222	77.17	V	Q				
9+10	15.5852	81.75	V	Q				
9+15	16.1719	85.18	V	Q				
9+20	16.7721	87.16	V	Q				
9+25	17.3927	90.10	V	Q				
9+30	18.0284	92.30	V	Q				
9+35	18.6750	93.89	V	Q				
9+40	19.3405	96.63	V	Q				
9+45	20.0202	98.69	V	Q				
9+50	20.7102	100.19	V	Q				
9+55	21.4186	102.86	V	Q				
10+ 0	22.1408	104.86	V	Q				
10+ 5	22.8463	102.44	V	Q				
10+10	23.4604	89.16	V	Q				
10+15	24.0050	79.08	V	Q				
10+20	24.5241	75.37	V	Q				
10+25	25.0284	73.23	V	Q				
10+30	25.5230	71.82	V	Q				
10+35	26.0277	73.28	V	Q				
10+40	26.5964	82.58	V	Q				
10+45	27.2132	89.55	V	Q				
10+50	27.8474	92.09	V	Q				
10+55	28.4917	93.56	V	Q				
11+ 0	29.1428	94.54	V	Q				
11+ 5	29.7952	94.72	V	Q				
11+10	30.4375	93.26	V	Q				
11+15	31.0733	92.32	V	Q				
11+20	31.7081	92.18	V	Q				
11+25	32.3429	92.18	V	Q				
11+30	32.9781	92.22	V	Q				
11+35	33.6072	91.35	V	Q				
11+40	34.2093	87.44	V	Q				
11+45	34.7907	84.41	Q					
11+50	35.3675	83.75	Q					
11+55	35.9535	85.08	VQ					

12+ 0	36.5469	86.16			VQ			
12+ 5	37.1657	89.86			Q			
12+10	37.8817	103.96			V	Q		
12+15	38.6712	114.62			V		Q	
12+20	39.4926	119.28			V		Q	
12+25	40.3452	123.79			V		Q	
12+30	41.2200	127.03			V		Q	
12+35	42.1140	129.81			V		Q	
12+40	43.0441	135.05			V		Q	
12+45	44.0020	139.09			V		Q	
12+50	44.9766	141.51			V		Q	
12+55	45.9737	144.78			V		Q	
13+ 0	46.9874	147.19			V		Q	
13+ 5	48.0268	150.92			V		Q	
13+10	49.1406	161.73			V		Q	
13+15	50.3101	169.80			V		Q	
13+20	51.5024	173.13			V		Q	
13+25	52.7089	175.18			V		Q	
13+30	53.9251	176.59			V		Q	
13+35	55.1117	172.30			V		Q	
13+40	56.1528	151.16			V		Q	
13+45	57.0839	135.20				VQ		
13+50	57.9742	129.27				QV		
13+55	58.8408	125.83				Q	V	
14+ 0	59.6915	123.53				Q	V	
14+ 5	60.5449	123.90				Q	V	
14+10	61.4454	130.76					Q	V
14+15	62.3806	135.79					QV	
14+20	63.3237	136.93					Q	V
14+25	64.2590	135.82					Q	V
14+30	65.1881	134.90					Q	V
14+35	66.1155	134.67					Q	V
14+40	67.0427	134.63					Q	V
14+45	67.9715	134.85					Q	V
14+50	68.8982	134.56					Q	V
14+55	69.8123	132.73					Q	V
15+ 0	70.7169	131.35					Q	V
15+ 5	71.6152	130.43					Q	V
15+10	72.4981	128.19					Q	V
15+15	73.3692	126.49					Q	V
15+20	74.2321	125.29					Q	V
15+25	75.0784	122.89					Q	V
15+30	75.9125	121.12					Q	V
15+35	76.7282	118.43					Q	V
15+40	77.4859	110.02					Q	V
15+45	78.2001	103.70					Q	V
15+50	78.8969	101.18					Q	V
15+55	79.5833	99.67					Q	V
16+ 0	80.2628	98.67					Q	V
16+ 5	80.8874	90.69					Q	V
16+10	81.3031	60.36		Q				V
16+15	81.5609	37.42						V
16+20	81.7569	28.46						V
16+25	81.9159	23.10						V
16+30	82.0503	19.51						V
16+35	82.1638	16.48						V
16+40	82.2513	12.71						V

16+45	82.3190	9.82	Q				V
16+50	82.3758	8.25	Q				V
16+55	82.4252	7.17	Q				V
17+ 0	82.4695	6.43	Q				V
17+ 5	82.5161	6.77	Q				V
17+10	82.5876	10.38	Q				V
17+15	82.6796	13.36	Q				V
17+20	82.7795	14.51	Q				V
17+25	82.8842	15.21	Q				V
17+30	82.9923	15.69	Q				V
17+35	83.1028	16.05	Q				V
17+40	83.2152	16.32	Q				V
17+45	83.3294	16.57	Q				V
17+50	83.4415	16.29	Q				V
17+55	83.5411	14.46	Q				V
18+ 0	83.6313	13.09	Q				V
18+ 5	83.7183	12.63	Q				V
18+10	83.8036	12.39	Q				V
18+15	83.8877	12.21	Q				V
18+20	83.9710	12.10	Q				V
18+25	84.0539	12.04	Q				V
18+30	84.1366	12.00	Q				V
18+35	84.2158	11.50	Q				V
18+40	84.2812	9.51	Q				V
18+45	84.3365	8.02	Q				V
18+50	84.3847	7.01	Q				V
18+55	84.4183	4.87	Q				V
19+ 0	84.4410	3.30	Q				V
19+ 5	84.4622	3.07	Q				V
19+10	84.4933	4.53	Q				V
19+15	84.5323	5.66	Q				V
19+20	84.5772	6.51	Q				V
19+25	84.6372	8.71	Q				V
19+30	84.7085	10.35	Q				V
19+35	84.7811	10.55	Q				V
19+40	84.8431	8.99	Q				V
19+45	84.8970	7.82	Q				V
19+50	84.9452	7.00	Q				V
19+55	84.9786	4.86	Q				V
20+ 0	85.0014	3.30	Q				V
20+ 5	85.0233	3.19	Q				V
20+10	85.0566	4.83	Q				V
20+15	85.0985	6.09	Q				V
20+20	85.1434	6.52	Q				V
20+25	85.1900	6.76	Q				V
20+30	85.2375	6.90	Q				V
20+35	85.2857	7.00	Q				V
20+40	85.3345	7.09	Q				V
20+45	85.3840	7.19	Q				V
20+50	85.4307	6.78	Q				V
20+55	85.4642	4.86	Q				V
21+ 0	85.4878	3.43	Q				V
21+ 5	85.5113	3.41	Q				V
21+10	85.5466	5.12	Q				V
21+15	85.5909	6.43	Q				V
21+20	85.6349	6.40	Q				V
21+25	85.6671	4.67	Q				V

21+30	85.6901	3.34	Q				V
21+35	85.7134	3.38	Q				V
21+40	85.7486	5.12	Q				V
21+45	85.7933	6.49	Q				V
21+50	85.8379	6.49	Q				V
21+55	85.8709	4.79	Q				V
22+ 0	85.8950	3.49	Q				V
22+ 5	85.9195	3.56	Q				V
22+10	85.9561	5.32	Q				V
22+15	86.0021	6.68	Q				V
22+20	86.0481	6.68	Q				V
22+25	86.0824	4.98	Q				V
22+30	86.1077	3.68	Q				V
22+35	86.1301	3.25	Q				V
22+40	86.1509	3.02	Q				V
22+45	86.1706	2.87	Q				V
22+50	86.1897	2.77	Q				V
22+55	86.2083	2.71	Q				V
23+ 0	86.2267	2.67	Q				V
23+ 5	86.2450	2.66	Q				V
23+10	86.2633	2.65	Q				V
23+15	86.2814	2.63	Q				V
23+20	86.2994	2.62	Q				V
23+25	86.3174	2.62	Q				V
23+30	86.3356	2.63	Q				V
23+35	86.3538	2.65	Q				V
23+40	86.3722	2.67	Q				V
23+45	86.3907	2.68	Q				V
23+50	86.4092	2.69	Q				V
23+55	86.4279	2.71	Q				V
24+ 0	86.4466	2.72	Q				V
24+ 5	86.4638	2.49	Q				V
24+10	86.4744	1.55	Q				V
24+15	86.4801	0.83	Q				V
24+20	86.4840	0.56	Q				V
24+25	86.4867	0.39	Q				V
24+30	86.4886	0.28	Q				V
24+35	86.4900	0.20	Q				V
24+40	86.4911	0.15	Q				V
24+45	86.4918	0.10	Q				V
24+50	86.4923	0.07	Q				V
24+55	86.4926	0.04	Q				V
25+ 0	86.4928	0.03	Q				V
25+ 5	86.4928	0.01	Q				V

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 05/08/15 File: 154149HISTHYDB1100.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR

HISTORICAL CONDITIONS AREA "B"

100-YEAR, 1-HOUR STORM

BY: JTS DATE: 05-08-15

Drainage Area = 837.34(Ac.) = 1.308 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 837.34(Ac.)= 1.308 Sq. Mi.
Length along longest watercourse = 16296.72(Ft.)
Length along longest watercourse measured to centroid = 8849.03(Ft.)
Length along longest watercourse = 3.087 Mi.
Length along longest watercourse measured to centroid = 1.676 Mi.
Difference in elevation = 777.00(Ft.)
Slope along watercourse = 251.7415 Ft./Mi.
Average Manning's 'N' = 0.350
Lag time = 5.487 Hr.
Lag time = 329.20 Min.
25% of lag time = 82.30 Min.
40% of lag time = 131.68 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]
837.34	0.58	485.66

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
837.34	1.47	1230.89

STORM EVENT (YEAR) = 100.00
 Area Averaged 2-Year Rainfall = 0.580(In)
 Area Averaged 100-Year Rainfall = 1.470(In)

Point rain (area averaged) = 1.470(In)
 Areal adjustment factor = 99.24 %
 Adjusted average point rain = 1.459(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
81.060	67.00	0.050
1.780	78.00	0.050
101.910	86.00	0.050
652.590	89.00	0.050
Total Area Entered = 837.34(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	83.2	0.208	0.050	0.198	0.097	0.019
78.0	89.8	0.132	0.050	0.126	0.002	0.000
86.0	94.4	0.073	0.050	0.070	0.122	0.008
89.0	95.6	0.057	0.050	0.055	0.779	0.043
Sum (F) =						0.070

Area averaged mean soil loss (F) (In/Hr) = 0.070
 Minimum soil loss rate ((In/Hr)) = 0.035
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.4800

Unit Hydrograph
 VALLEY S-Curve

WARNING: End of hydrograph not reached with this
 Unit time interval vs lag time
 Unit-Hydrograph terminated after 450 intervals
 Unit Hydrograph Data

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	1.519	0.132
2	0.167	3.038	0.263
3	0.250	4.556	0.263
4	0.333	6.075	0.263
5	0.417	7.594	0.263
6	0.500	9.113	0.263
7	0.583	10.632	0.263
8	0.667	12.151	0.263
9	0.750	13.669	0.263
10	0.833	15.188	0.264
11	0.917	16.707	0.326
12	1.000	18.226	0.365
13	1.083	19.745	0.365
14	1.167	21.263	0.365

15	1.250	22.782	0.365	3.076
16	1.333	24.301	0.365	3.076
17	1.417	25.820	0.391	3.300
18	1.500	27.339	0.527	4.451
19	1.583	28.857	0.547	4.614
20	1.667	30.376	0.547	4.614
21	1.750	31.895	0.547	4.614
22	1.833	33.414	0.547	4.614
23	1.917	34.933	0.547	4.614
24	2.000	36.452	0.616	5.199
25	2.083	37.970	0.699	5.895
26	2.167	39.489	0.699	5.896
27	2.250	41.008	0.699	5.896
28	2.333	42.527	0.699	5.896
29	2.417	44.046	0.699	5.896
30	2.500	45.564	0.699	5.896
31	2.583	47.083	0.699	5.896
32	2.667	48.602	0.699	5.896
33	2.750	50.121	0.699	5.903
34	2.833	51.640	0.850	7.176
35	2.917	53.158	0.962	8.117
36	3.000	54.677	0.962	8.117
37	3.083	56.196	0.962	8.117
38	3.167	57.715	0.962	8.117
39	3.250	59.234	0.962	8.117
40	3.333	60.753	0.962	8.117
41	3.417	62.271	0.962	8.117
42	3.500	63.790	0.962	8.117
43	3.583	65.309	0.964	8.135
44	3.667	66.828	1.031	8.701
45	3.750	68.347	1.063	8.972
46	3.833	69.865	1.063	8.972
47	3.917	71.384	1.063	8.972
48	4.000	72.903	1.063	8.972
49	4.083	74.422	1.063	8.972
50	4.167	75.941	1.069	9.021
51	4.250	77.459	1.091	9.210
52	4.333	78.978	1.094	9.228
53	4.417	80.497	1.094	9.228
54	4.500	82.016	1.094	9.228
55	4.583	83.535	1.094	9.228
56	4.667	85.054	1.094	9.228
57	4.750	86.572	1.094	9.228
58	4.833	88.091	1.094	9.228
59	4.917	89.610	1.094	9.228
60	5.000	91.129	1.094	9.228
61	5.083	92.648	1.094	9.228
62	5.167	94.166	1.094	9.228
63	5.250	95.685	1.094	9.228
64	5.333	97.204	1.094	9.228
65	5.417	98.723	1.094	9.228
66	5.500	100.242	1.090	9.197
67	5.583	101.760	0.904	7.626
68	5.667	103.279	0.800	6.750
69	5.750	104.798	0.800	6.750
70	5.833	106.317	0.800	6.750
71	5.917	107.836	0.800	6.750

72	6.000	109.355	0.800	6.750
73	6.083	110.873	0.800	6.750
74	6.167	112.392	0.800	6.750
75	6.250	113.911	0.800	6.750
76	6.333	115.430	0.793	6.690
77	6.417	116.949	0.668	5.639
78	6.500	118.467	0.623	5.255
79	6.583	119.986	0.623	5.255
80	6.667	121.505	0.623	5.255
81	6.750	123.024	0.623	5.255
82	6.833	124.543	0.623	5.255
83	6.917	126.061	0.589	4.973
84	7.000	127.580	0.492	4.154
85	7.083	129.099	0.486	4.101
86	7.167	130.618	0.486	4.101
87	7.250	132.137	0.486	4.101
88	7.333	133.656	0.486	4.101
89	7.417	135.174	0.486	4.101
90	7.500	136.693	0.486	4.101
91	7.583	138.212	0.486	4.101
92	7.667	139.731	0.486	4.101
93	7.750	141.250	0.460	3.885
94	7.833	142.768	0.411	3.471
95	7.917	144.287	0.410	3.461
96	8.000	145.806	0.410	3.461
97	8.083	147.325	0.410	3.461
98	8.167	148.844	0.410	3.461
99	8.250	150.362	0.407	3.437
100	8.333	151.881	0.342	2.884
101	8.417	153.400	0.314	2.649
102	8.500	154.919	0.314	2.649
103	8.583	156.438	0.314	2.649
104	8.667	157.957	0.314	2.649
105	8.750	159.475	0.314	2.649
106	8.833	160.994	0.314	2.649
107	8.917	162.513	0.314	2.649
108	9.000	164.032	0.314	2.649
109	9.083	165.551	0.310	2.618
110	9.167	167.069	0.270	2.274
111	9.250	168.588	0.258	2.179
112	9.333	170.107	0.258	2.179
113	9.417	171.626	0.258	2.179
114	9.500	173.145	0.258	2.179
115	9.583	174.663	0.258	2.179
116	9.667	176.182	0.248	2.093
117	9.750	177.701	0.226	1.904
118	9.833	179.220	0.225	1.897
119	9.917	180.739	0.225	1.897
120	10.000	182.258	0.225	1.897
121	10.083	183.776	0.225	1.897
122	10.167	185.295	0.225	1.897
123	10.250	186.814	0.225	1.897
124	10.333	188.333	0.225	1.897
125	10.417	189.852	0.225	1.897
126	10.500	191.370	0.225	1.897
127	10.583	192.889	0.225	1.897
128	10.667	194.408	0.225	1.897

129	10.750	195.927	0.225	1.897
130	10.833	197.446	0.225	1.897
131	10.917	198.964	0.225	1.897
132	11.000	200.483	0.223	1.879
133	11.083	202.002	0.192	1.621
134	11.167	203.521	0.182	1.538
135	11.250	205.040	0.182	1.538
136	11.333	206.559	0.182	1.538
137	11.417	208.077	0.182	1.538
138	11.500	209.596	0.182	1.538
139	11.583	211.115	0.182	1.538
140	11.667	212.634	0.182	1.538
141	11.750	214.153	0.182	1.538
142	11.833	215.671	0.182	1.538
143	11.917	217.190	0.182	1.538
144	12.000	218.709	0.182	1.538
145	12.083	220.228	0.182	1.538
146	12.167	221.747	0.182	1.538
147	12.250	223.265	0.182	1.538
148	12.333	224.784	0.182	1.538
149	12.417	226.303	0.171	1.444
150	12.500	227.822	0.152	1.284
151	12.583	229.341	0.152	1.282
152	12.667	230.860	0.152	1.282
153	12.750	232.378	0.152	1.282
154	12.833	233.897	0.152	1.282
155	12.917	235.416	0.152	1.282
156	13.000	236.935	0.152	1.282
157	13.083	238.454	0.152	1.282
158	13.167	239.972	0.152	1.282
159	13.250	241.491	0.152	1.282
160	13.333	243.010	0.152	1.282
161	13.417	244.529	0.152	1.282
162	13.500	246.048	0.152	1.282
163	13.583	247.566	0.152	1.282
164	13.667	249.085	0.152	1.282
165	13.750	250.604	0.150	1.270
166	13.833	252.123	0.137	1.156
167	13.917	253.642	0.134	1.128
168	14.000	255.161	0.134	1.128
169	14.083	256.679	0.134	1.128
170	14.167	258.198	0.134	1.128
171	14.250	259.717	0.134	1.128
172	14.333	261.236	0.134	1.128
173	14.417	262.755	0.134	1.128
174	14.500	264.273	0.134	1.128
175	14.583	265.792	0.134	1.128
176	14.667	267.311	0.134	1.128
177	14.750	268.830	0.134	1.128
178	14.833	270.349	0.134	1.128
179	14.917	271.867	0.134	1.128
180	15.000	273.386	0.134	1.128
181	15.083	274.905	0.134	1.128
182	15.167	276.424	0.123	1.038
183	15.250	277.943	0.109	0.923
184	15.333	279.462	0.109	0.923
185	15.417	280.980	0.109	0.923

186	15.500	282.499	0.109	0.923
187	15.583	284.018	0.109	0.923
188	15.667	285.537	0.109	0.923
189	15.750	287.056	0.109	0.923
190	15.833	288.574	0.109	0.923
191	15.917	290.093	0.109	0.923
192	16.000	291.612	0.109	0.923
193	16.083	293.131	0.109	0.923
194	16.167	294.650	0.109	0.923
195	16.250	296.168	0.109	0.923
196	16.333	297.687	0.109	0.923
197	16.417	299.206	0.109	0.923
198	16.500	300.725	0.107	0.905
199	16.583	302.244	0.094	0.790
200	16.667	303.763	0.091	0.769
201	16.750	305.281	0.091	0.769
202	16.833	306.800	0.091	0.769
203	16.917	308.319	0.091	0.769
204	17.000	309.838	0.091	0.769
205	17.083	311.357	0.091	0.769
206	17.167	312.875	0.091	0.769
207	17.250	314.394	0.091	0.769
208	17.333	315.913	0.091	0.769
209	17.417	317.432	0.091	0.769
210	17.500	318.951	0.091	0.769
211	17.583	320.469	0.091	0.769
212	17.667	321.988	0.091	0.769
213	17.750	323.507	0.091	0.769
214	17.833	325.026	0.091	0.769
215	17.917	326.545	0.091	0.769
216	18.000	328.064	0.091	0.769
217	18.083	329.582	0.091	0.769
218	18.167	331.101	0.091	0.769
219	18.250	332.620	0.091	0.769
220	18.333	334.139	0.091	0.769
221	18.417	335.658	0.091	0.769
222	18.500	337.176	0.091	0.769
223	18.583	338.695	0.091	0.769
224	18.667	340.214	0.091	0.769
225	18.750	341.733	0.091	0.769
226	18.833	343.252	0.091	0.769
227	18.917	344.770	0.091	0.769
228	19.000	346.289	0.091	0.769
229	19.083	347.808	0.091	0.769
230	19.167	349.327	0.091	0.769
231	19.250	350.846	0.087	0.737
232	19.333	352.365	0.069	0.584
233	19.417	353.883	0.067	0.564
234	19.500	355.402	0.067	0.564
235	19.583	356.921	0.067	0.564
236	19.667	358.440	0.067	0.564
237	19.750	359.959	0.067	0.564
238	19.833	361.477	0.067	0.564
239	19.917	362.996	0.067	0.564
240	20.000	364.515	0.067	0.564
241	20.083	366.034	0.067	0.564
242	20.167	367.553	0.067	0.564

243	20.250	369.071	0.067	0.564
244	20.333	370.590	0.067	0.564
245	20.417	372.109	0.067	0.564
246	20.500	373.628	0.067	0.564
247	20.583	375.147	0.067	0.564
248	20.667	376.666	0.067	0.564
249	20.750	378.184	0.067	0.564
250	20.833	379.703	0.067	0.564
251	20.917	381.222	0.067	0.564
252	21.000	382.741	0.067	0.564
253	21.083	384.260	0.067	0.564
254	21.167	385.778	0.067	0.564
255	21.250	387.297	0.067	0.564
256	21.333	388.816	0.067	0.564
257	21.417	390.335	0.067	0.564
258	21.500	391.854	0.067	0.564
259	21.583	393.372	0.067	0.564
260	21.667	394.891	0.067	0.564
261	21.750	396.410	0.067	0.564
262	21.833	397.929	0.067	0.564
263	21.917	399.448	0.067	0.564
264	22.000	400.967	0.063	0.533
265	22.083	402.485	0.050	0.420
266	22.167	404.004	0.049	0.410
267	22.250	405.523	0.049	0.410
268	22.333	407.042	0.049	0.410
269	22.417	408.561	0.049	0.410
270	22.500	410.079	0.049	0.410
271	22.583	411.598	0.049	0.410
272	22.667	413.117	0.049	0.410
273	22.750	414.636	0.049	0.410
274	22.833	416.155	0.049	0.410
275	22.917	417.673	0.049	0.410
276	23.000	419.192	0.049	0.410
277	23.083	420.711	0.049	0.410
278	23.167	422.230	0.049	0.410
279	23.250	423.749	0.049	0.410
280	23.333	425.268	0.049	0.410
281	23.417	426.786	0.049	0.410
282	23.500	428.305	0.049	0.410
283	23.583	429.824	0.049	0.410
284	23.667	431.343	0.049	0.410
285	23.750	432.862	0.049	0.410
286	23.833	434.380	0.049	0.410
287	23.917	435.899	0.049	0.410
288	24.000	437.418	0.049	0.410
289	24.083	438.937	0.049	0.410
290	24.167	440.456	0.049	0.410
291	24.250	441.974	0.049	0.410
292	24.333	443.493	0.049	0.410
293	24.417	445.012	0.049	0.410
294	24.500	446.531	0.049	0.410
295	24.583	448.050	0.049	0.410
296	24.667	449.569	0.049	0.410
297	24.750	451.087	0.048	0.404
298	24.833	452.606	0.046	0.386
299	24.917	454.125	0.046	0.385

300	25.000	455.644	0.046	0.385
301	25.083	457.163	0.046	0.385
302	25.167	458.681	0.046	0.385
303	25.250	460.200	0.046	0.385
304	25.333	461.719	0.046	0.385
305	25.417	463.238	0.046	0.385
306	25.500	464.757	0.046	0.385
307	25.583	466.275	0.046	0.385
308	25.667	467.794	0.046	0.385
309	25.750	469.313	0.046	0.385
310	25.833	470.832	0.046	0.385
311	25.917	472.351	0.046	0.385
312	26.000	473.870	0.046	0.385
313	26.083	475.388	0.046	0.385
314	26.167	476.907	0.046	0.385
315	26.250	478.426	0.046	0.385
316	26.333	479.945	0.046	0.385
317	26.417	481.464	0.046	0.385
318	26.500	482.982	0.046	0.385
319	26.583	484.501	0.046	0.385
320	26.667	486.020	0.046	0.385
321	26.750	487.539	0.046	0.385
322	26.833	489.058	0.046	0.385
323	26.917	490.576	0.046	0.385
324	27.000	492.095	0.046	0.385
325	27.083	493.614	0.046	0.385
326	27.167	495.133	0.046	0.385
327	27.250	496.652	0.046	0.385
328	27.333	498.171	0.046	0.385
329	27.417	499.689	0.046	0.385
330	27.500	501.208	0.042	0.352
331	27.583	502.727	0.034	0.284
332	27.667	504.246	0.033	0.282
333	27.750	505.765	0.033	0.282
334	27.833	507.283	0.033	0.282
335	27.917	508.802	0.033	0.282
336	28.000	510.321	0.033	0.282
337	28.083	511.840	0.033	0.282
338	28.167	513.359	0.033	0.282
339	28.250	514.878	0.033	0.282
340	28.333	516.396	0.033	0.282
341	28.417	517.915	0.033	0.282
342	28.500	519.434	0.033	0.282
343	28.583	520.953	0.033	0.282
344	28.667	522.472	0.033	0.282
345	28.750	523.990	0.033	0.282
346	28.833	525.509	0.033	0.282
347	28.917	527.028	0.033	0.282
348	29.000	528.547	0.033	0.282
349	29.083	530.066	0.033	0.282
350	29.167	531.584	0.033	0.282
351	29.250	533.103	0.033	0.282
352	29.333	534.622	0.033	0.282
353	29.417	536.141	0.033	0.282
354	29.500	537.660	0.033	0.282
355	29.583	539.179	0.033	0.282
356	29.667	540.697	0.033	0.282

357	29.750	542.216	0.033	0.282
358	29.833	543.735	0.033	0.282
359	29.917	545.254	0.033	0.282
360	30.000	546.773	0.033	0.282
361	30.083	548.291	0.033	0.282
362	30.167	549.810	0.033	0.282
363	30.250	551.329	0.031	0.262
364	30.333	552.848	0.027	0.231
365	30.417	554.367	0.027	0.231
366	30.500	555.885	0.027	0.231
367	30.583	557.404	0.027	0.231
368	30.667	558.923	0.027	0.231
369	30.750	560.442	0.027	0.231
370	30.833	561.961	0.027	0.231
371	30.917	563.480	0.027	0.231
372	31.000	564.998	0.027	0.231
373	31.083	566.517	0.027	0.231
374	31.167	568.036	0.027	0.231
375	31.250	569.555	0.027	0.231
376	31.333	571.074	0.027	0.231
377	31.417	572.592	0.027	0.231
378	31.500	574.111	0.027	0.231
379	31.583	575.630	0.027	0.231
380	31.667	577.149	0.027	0.231
381	31.750	578.668	0.027	0.231
382	31.833	580.186	0.027	0.231
383	31.917	581.705	0.027	0.231
384	32.000	583.224	0.027	0.231
385	32.083	584.743	0.027	0.231
386	32.167	586.262	0.027	0.231
387	32.250	587.781	0.027	0.231
388	32.333	589.299	0.027	0.231
389	32.417	590.818	0.027	0.231
390	32.500	592.337	0.027	0.231
391	32.583	593.856	0.027	0.231
392	32.667	595.375	0.027	0.231
393	32.750	596.893	0.027	0.231
394	32.833	598.412	0.027	0.231
395	32.917	599.931	0.027	0.231
396	33.000	601.450	0.025	0.207
397	33.083	602.969	0.021	0.179
398	33.167	604.487	0.021	0.179
399	33.250	606.006	0.021	0.179
400	33.333	607.525	0.021	0.179
401	33.417	609.044	0.021	0.179
402	33.500	610.563	0.021	0.179
403	33.583	612.082	0.021	0.179
404	33.667	613.600	0.021	0.179
405	33.750	615.119	0.021	0.179
406	33.833	616.638	0.021	0.179
407	33.917	618.157	0.021	0.179
408	34.000	619.676	0.021	0.179
409	34.083	621.194	0.021	0.179
410	34.167	622.713	0.021	0.179
411	34.250	624.232	0.021	0.179
412	34.333	625.751	0.021	0.179
413	34.417	627.270	0.021	0.179

414	34.500	628.788	0.021	0.179
415	34.583	630.307	0.021	0.179
416	34.667	631.826	0.021	0.179
417	34.750	633.345	0.021	0.179
418	34.833	634.864	0.021	0.179
419	34.917	636.383	0.021	0.179
420	35.000	637.901	0.021	0.179
421	35.083	639.420	0.021	0.179
422	35.167	640.939	0.021	0.179
423	35.250	642.458	0.021	0.179
424	35.333	643.977	0.021	0.179
425	35.417	645.495	0.021	0.179
426	35.500	647.014	0.021	0.179
427	35.583	648.533	0.021	0.179
428	35.667	650.052	0.021	0.179
429	35.750	651.571	0.018	0.152
430	35.833	653.089	0.015	0.128
431	35.917	654.608	0.015	0.128
432	36.000	656.127	0.015	0.128
433	36.083	657.646	0.015	0.128
434	36.167	659.165	0.015	0.128
435	36.250	660.684	0.015	0.128
436	36.333	662.202	0.015	0.128
437	36.417	663.721	0.015	0.128
438	36.500	665.240	0.015	0.128
439	36.583	666.759	0.015	0.128
440	36.667	668.278	0.015	0.128
441	36.750	669.796	0.015	0.128
442	36.833	671.315	0.015	0.128
443	36.917	672.834	0.015	0.128
444	37.000	674.353	0.015	0.128
445	37.083	675.872	0.015	0.128
446	37.167	677.390	0.015	0.128
447	37.250	678.909	0.015	0.128
448	37.333	680.428	0.015	0.128
449	37.417	681.947	0.015	0.128
Sum =			98.812	Sum= 833.855

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	4.40	0.770	0.070	(0.693)	0.700
2	0.17	4.50	0.788	0.070	(0.709)	0.717
3	0.25	5.40	0.945	0.070	(0.851)	0.875
4	0.33	5.40	0.945	0.070	(0.851)	0.875
5	0.42	5.70	0.998	0.070	(0.898)	0.927
6	0.50	6.40	1.120	0.070	(1.008)	1.050
7	0.58	7.90	1.383	0.070	(1.245)	1.312
8	0.67	9.10	1.593	0.070	(1.434)	1.523
9	0.75	12.80	2.241	0.070	(2.017)	2.170
10	0.83	25.60	4.482	0.070	(4.033)	4.411
11	0.92	7.90	1.383	0.070	(1.245)	1.312
12	1.00	4.90	0.858	0.070	(0.772)	0.787

Peak flow rate of this hydrograph = 153.824(CFS)

Time(h+m)	Volume	Ac.Ft	Q(CFS)	0	50.0	100.0	150.0	200.0
0+ 5	0.0054	0.78	Q					
0+10	0.0216	2.35	Q					
0+15	0.0499	4.12	Q					
0+20	0.0917	6.07	VQ					
0+25	0.1473	8.07	VQ					
0+30	0.2180	10.27	V Q					
0+35	0.3068	12.89	V Q					
0+40	0.4173	16.04	V Q					
0+45	0.5561	20.15	V Q					
0+50	0.7452	27.47	V Q					
0+55	0.9807	34.20	V Q					
1+ 0	1.2365	37.14	V Q					
1+ 5	1.5031	38.71	V Q					
1+10	1.7749	39.46	V Q					
1+15	2.0520	40.23	V Q					
1+20	2.3350	41.09	V Q					
1+25	2.6262	42.29	V Q					
1+30	2.9326	44.49	V Q					
1+35	3.2583	47.29	V Q					
1+40	3.6138	51.62	V Q					
1+45	3.9934	55.11	V Q					
1+50	4.3887	57.40	V Q					
1+55	4.7972	59.31	V Q					
2+ 0	5.2224	61.75	V Q					
2+ 5	5.6708	65.11	V Q					
2+10	6.1520	69.86	V Q					
2+15	6.6802	76.71	V Q					
2+20	7.2330	80.27	V Q					
2+25	7.8022	82.65	V Q					
2+30	8.3826	84.28	V Q					
2+35	8.9755	86.08	V Q					
2+40	9.5844	88.41	V Q					
2+45	10.2215	92.51	V Q					
2+50	10.8913	97.25	V Q					
2+55	11.5814	100.21	V Q					
3+ 0	12.2877	102.55	V Q					

3+ 5	13.0074	104.50	V		Q	
3+10	13.7409	106.51	V		Q	
3+15	14.4898	108.73	V		Q	
3+20	15.2570	111.40	V		Q	
3+25	16.0462	114.59	V		Q	
3+30	16.8646	118.82	V		Q	
3+35	17.7359	126.51	V		Q	
3+40	18.6501	132.75	V		Q	
3+45	19.5840	135.60	V		Q	
3+50	20.5278	137.05	V		Q	
3+55	21.4768	137.79	V		Q	
4+ 0	22.4312	138.58	V		Q	
4+ 5	23.3916	139.44	V		Q	
4+10	24.3594	140.53	V		Q	
4+15	25.3371	141.96	V		Q	
4+20	26.3279	143.87	V		Q	
4+25	27.3417	147.20	V		Q	
4+30	28.3704	149.38	V		Q	
4+35	29.4064	150.42	V		Q	
4+40	30.4458	150.92	V		Q	
4+45	31.4875	151.26	V		Q	
4+50	32.5321	151.68	V		Q	
4+55	33.5812	152.33	V		Q	
5+ 0	34.6368	153.27	V		Q	
5+ 5	35.6949	153.64	V		Q	
5+10	36.7542	153.81	V		Q	
5+15	37.8136	153.82	V		Q	
5+20	38.8730	153.82	V		Q	
5+25	39.9324	153.82	V		Q	
5+30	40.9916	153.80	V		Q	
5+35	42.0431	152.68	V		Q	
5+40	43.0825	150.91	V		Q	
5+45	44.1078	148.88	V		Q	
5+50	45.1182	146.71	V		Q	
5+55	46.1131	144.45	V		Q	
6+ 0	47.0907	141.95	V		Q	
6+ 5	48.0475	138.92	V		Q	
6+10	48.9793	135.31	V		Q	
6+15	49.8776	130.43	V		Q	
6+20	50.7144	121.51	V		Q	
6+25	51.5049	114.78	VQ			
6+30	52.2715	111.31	VQ			
6+35	53.0248	109.37	QV			
6+40	53.7690	108.06	QV			
6+45	54.5038	106.69	QV			
6+50	55.2279	105.15	Q	V		
6+55	55.9378	103.08	Q	V		
7+ 0	56.6270	100.06	Q	V		
7+ 5	57.2886	96.06	Q	V		
7+10	57.9050	89.51	Q	V		
7+15	58.4929	85.36	Q	V		
7+20	59.0640	82.92	Q	V		
7+25	59.6242	81.34	Q	V		
7+30	60.1737	79.78	Q	V		
7+35	60.7099	77.85	Q	V		
7+40	61.2247	74.75	Q	V		
7+45	61.7102	70.50	Q	V		

7+50	62.1821	68.52		Q	V
7+55	62.6457	67.32		Q	V
8+ 0	63.1052	66.72		Q	V
8+ 5	63.5607	66.14		Q	V
8+10	64.0120	65.52		Q	V
8+15	64.4581	64.78		Q	V
8+20	64.8954	63.49		Q	V
8+25	65.3210	61.79		Q	V
8+30	65.7290	59.25		Q	V
8+35	66.1174	56.40		Q	V
8+40	66.4955	54.90		Q	V
8+45	66.8656	53.73		Q	V
8+50	67.2286	52.71		Q	V
8+55	67.5834	51.51		Q	V
9+ 0	67.9267	49.85		Q	V
9+ 5	68.2493	46.84		Q	V
9+10	68.5579	44.80		Q	V
9+15	68.8589	43.71		Q	V
9+20	69.1560	43.13		Q	V
9+25	69.4502	42.72		Q	V
9+30	69.7414	42.28		Q	V
9+35	70.0293	41.79		Q	V
9+40	70.3126	41.14		Q	V
9+45	70.5896	40.23		Q	V
9+50	70.8581	38.98		Q	V
9+55	71.1127	36.97		Q	V
10+ 0	71.3594	35.82		Q	V
10+ 5	71.6016	35.16		Q	V
10+10	71.8410	34.76		Q	V
10+15	72.0777	34.38		Q	V
10+20	72.3112	33.89		Q	V
10+25	72.5391	33.09		Q	V
10+30	72.7604	32.13		Q	V
10+35	72.9793	31.78		Q	V
10+40	73.1971	31.62		Q	V
10+45	73.4148	31.62		Q	V
10+50	73.6326	31.62		Q	V
10+55	73.8504	31.62		Q	V
11+ 0	74.0680	31.61		Q	V
11+ 5	74.2844	31.41		Q	V
11+10	74.4989	31.15		Q	V
11+15	74.7114	30.85		Q	V
11+20	74.9217	30.54		Q	V
11+25	75.1298	30.21		Q	V
11+30	75.3353	29.84		Q	V
11+35	75.5376	29.38		Q	V
11+40	75.7363	28.84		Q	V
11+45	75.9296	28.08		Q	V
11+50	76.1138	26.74		Q	V
11+55	76.2929	26.02		Q	V
12+ 0	76.4700	25.70		Q	V
12+ 5	76.6465	25.64		Q	V
12+10	76.8231	25.64		Q	V
12+15	76.9996	25.64		Q	V
12+20	77.1762	25.64		Q	V
12+25	77.3523	25.57		Q	V
12+30	77.5272	25.39		Q	V

12+35	77.7007	25.19	Q			V	
12+40	77.8727	24.97	Q			V	
12+45	78.0431	24.74	Q			V	
12+50	78.2117	24.49	Q			V	
12+55	78.3784	24.20	Q			V	
13+ 0	78.5426	23.84	Q			V	
13+ 5	78.7037	23.39	Q			V	
13+10	78.8595	22.62	Q			V	
13+15	79.0095	21.79	Q			V	
13+20	79.1576	21.50	Q			V	
13+25	79.3047	21.37	Q			V	
13+30	79.4519	21.36	Q			V	
13+35	79.5990	21.36	Q			V	
13+40	79.7461	21.36	Q			V	
13+45	79.8932	21.36	Q			V	
13+50	80.0397	21.27	Q			V	
13+55	80.1854	21.16	Q			V	
14+ 0	80.3302	21.03	Q			V	
14+ 5	80.4741	20.89	Q			V	
14+10	80.6170	20.75	Q			V	
14+15	80.7587	20.59	Q			V	
14+20	80.8992	20.39	Q			V	
14+25	81.0380	20.15	Q			V	
14+30	81.1744	19.81	Q			V	
14+35	81.3068	19.23	Q			V	
14+40	81.4373	18.95	Q			V	
14+45	81.5670	18.82	Q			V	
14+50	81.6964	18.80	Q			V	
14+55	81.8259	18.80	Q			V	
15+ 0	81.9554	18.80	Q			V	
15+ 5	82.0849	18.80	Q			V	
15+10	82.2139	18.74	Q			V	
15+15	82.3420	18.59	Q			V	
15+20	82.4689	18.43	Q			V	
15+25	82.5946	18.25	Q			V	
15+30	82.7191	18.07	Q			V	
15+35	82.8421	17.87	Q			V	
15+40	82.9635	17.63	Q			V	
15+45	83.0829	17.34	Q			V	
15+50	83.1998	16.97	Q			V	
15+55	83.3122	16.32	Q			V	
16+ 0	83.4203	15.70	Q			V	
16+ 5	83.5269	15.47	Q			V	
16+10	83.6328	15.38	Q			V	
16+15	83.7387	15.38	Q			V	
16+20	83.8447	15.38	Q			V	
16+25	83.9506	15.38	Q			V	
16+30	84.0565	15.37	Q			V	
16+35	84.1617	15.28	Q			V	
16+40	84.2661	15.16	Q			V	
16+45	84.3697	15.03	Q			V	
16+50	84.4723	14.90	Q			V	
16+55	84.5739	14.75	Q			V	
17+ 0	84.6744	14.59	Q			V	
17+ 5	84.7735	14.39	Q			V	
17+10	84.8709	14.15	Q			V	
17+15	84.9659	13.79	Q			V	

17+20	85.0568	13.21	Q				V
17+25	85.1461	12.95	Q				V
17+30	85.2345	12.84	Q				V
17+35	85.3227	12.82	Q				V
17+40	85.4110	12.82	Q				V
17+45	85.4993	12.82	Q				V
17+50	85.5876	12.82	Q				V
17+55	85.6759	12.82	Q				V
18+ 0	85.7642	12.82	Q				V
18+ 5	85.8524	12.82	Q				V
18+10	85.9407	12.82	Q				V
18+15	86.0290	12.82	Q				V
18+20	86.1173	12.82	Q				V
18+25	86.2056	12.82	Q				V
18+30	86.2939	12.82	Q				V
18+35	86.3821	12.82	Q				V
18+40	86.4704	12.82	Q				V
18+45	86.5587	12.82	Q				V
18+50	86.6470	12.82	Q				V
18+55	86.7353	12.82	Q				V
19+ 0	86.8236	12.82	Q				V
19+ 5	86.9118	12.82	Q				V
19+10	87.0001	12.82	Q				V
19+15	87.0882	12.80	Q				V
19+20	87.1755	12.67	Q				V
19+25	87.2617	12.51	Q				V
19+30	87.3466	12.34	Q				V
19+35	87.4304	12.16	Q				V
19+40	87.5128	11.96	Q				V
19+45	87.5936	11.74	Q				V
19+50	87.6726	11.47	Q				V
19+55	87.7494	11.14	Q				V
20+ 0	87.8227	10.64	Q				V
20+ 5	87.8907	9.88	Q				V
20+10	87.9566	9.56	Q				V
20+15	88.0214	9.42	Q				V
20+20	88.0862	9.40	Q				V
20+25	88.1509	9.40	Q				V
20+30	88.2156	9.40	Q				V
20+35	88.2804	9.40	Q				V
20+40	88.3451	9.40	Q				V
20+45	88.4099	9.40	Q				V
20+50	88.4746	9.40	Q				V
20+55	88.5393	9.40	Q				V
21+ 0	88.6041	9.40	Q				V
21+ 5	88.6688	9.40	Q				V
21+10	88.7336	9.40	Q				V
21+15	88.7983	9.40	Q				V
21+20	88.8630	9.40	Q				V
21+25	88.9278	9.40	Q				V
21+30	88.9925	9.40	Q				V
21+35	89.0573	9.40	Q				V
21+40	89.1220	9.40	Q				V
21+45	89.1867	9.40	Q				V
21+50	89.2515	9.40	Q				V
21+55	89.3162	9.40	Q				V
22+ 0	89.3808	9.38	Q				V

22+ 5	89.4447	9.28	Q				V
22+10	89.5078	9.16	Q				V
22+15	89.5700	9.03	Q				V
22+20	89.6312	8.89	Q				V
22+25	89.6915	8.75	Q				V
22+30	89.7506	8.58	Q				V
22+35	89.8082	8.37	Q				V
22+40	89.8642	8.12	Q				V
22+45	89.9174	7.72	Q				V
22+50	89.9667	7.16	Q				V
22+55	90.0145	6.95	Q				V
23+ 0	90.0617	6.84	Q				V
23+ 5	90.1088	6.84	Q				V
23+10	90.1558	6.84	Q				V
23+15	90.2029	6.84	Q				V
23+20	90.2500	6.84	Q				V
23+25	90.2971	6.84	Q				V
23+30	90.3442	6.84	Q				V
23+35	90.3913	6.84	Q				V
23+40	90.4383	6.84	Q				V
23+45	90.4854	6.84	Q				V
23+50	90.5325	6.84	Q				V
23+55	90.5796	6.84	Q				V
24+ 0	90.6267	6.84	Q				V
24+ 5	90.6738	6.84	Q				V
24+10	90.7208	6.84	Q				V
24+15	90.7679	6.84	Q				V
24+20	90.8150	6.84	Q				V
24+25	90.8621	6.84	Q				V
24+30	90.9092	6.84	Q				V
24+35	90.9563	6.84	Q				V
24+40	91.0034	6.84	Q				V
24+45	91.0504	6.83	Q				V
24+50	91.0973	6.81	Q				V
24+55	91.1441	6.80	Q				V
25+ 0	91.1908	6.77	Q				V
25+ 5	91.2373	6.75	Q				V
25+10	91.2836	6.73	Q				V
25+15	91.3297	6.70	Q				V
25+20	91.3756	6.66	Q				V
25+25	91.4212	6.62	Q				V
25+30	91.4663	6.55	Q				V
25+35	91.5108	6.46	Q				V
25+40	91.5550	6.43	Q				V
25+45	91.5992	6.41	Q				V
25+50	91.6433	6.41	Q				V
25+55	91.6875	6.41	Q				V
26+ 0	91.7316	6.41	Q				V
26+ 5	91.7757	6.41	Q				V
26+10	91.8199	6.41	Q				V
26+15	91.8640	6.41	Q				V
26+20	91.9082	6.41	Q				V
26+25	91.9523	6.41	Q				V
26+30	91.9965	6.41	Q				V
26+35	92.0406	6.41	Q				V
26+40	92.0847	6.41	Q				V
26+45	92.1289	6.41	Q				V

26+50	92.1730	6.41	Q				V
26+55	92.2172	6.41	Q				V
27+ 0	92.2613	6.41	Q				V
27+ 5	92.3054	6.41	Q				V
27+10	92.3496	6.41	Q				V
27+15	92.3937	6.41	Q				V
27+20	92.4379	6.41	Q				V
27+25	92.4820	6.41	Q				V
27+30	92.5260	6.39	Q				V
27+35	92.5695	6.32	Q				V
27+40	92.6125	6.24	Q				V
27+45	92.6548	6.15	Q				V
27+50	92.6965	6.06	Q				V
27+55	92.7375	5.96	Q				V
28+ 0	92.7778	5.84	Q				V
28+ 5	92.8170	5.70	Q				V
28+10	92.8551	5.52	Q				V
28+15	92.8911	5.23	Q				V
28+20	92.9247	4.88	Q				V
28+25	92.9575	4.76	Q				V
28+30	92.9899	4.70	Q				V
28+35	93.0222	4.70	Q				V
28+40	93.0546	4.70	Q				V
28+45	93.0870	4.70	Q				V
28+50	93.1193	4.70	Q				V
28+55	93.1517	4.70	Q				V
29+ 0	93.1841	4.70	Q				V
29+ 5	93.2164	4.70	Q				V
29+10	93.2488	4.70	Q				V
29+15	93.2812	4.70	Q				V
29+20	93.3136	4.70	Q				V
29+25	93.3459	4.70	Q				V
29+30	93.3783	4.70	Q				V
29+35	93.4107	4.70	Q				V
29+40	93.4430	4.70	Q				V
29+45	93.4754	4.70	Q				V
29+50	93.5078	4.70	Q				V
29+55	93.5401	4.70	Q				V
30+ 0	93.5725	4.70	Q				V
30+ 5	93.6049	4.70	Q				V
30+10	93.6373	4.70	Q				V
30+15	93.6695	4.69	Q				V
30+20	93.7016	4.65	Q				V
30+25	93.7333	4.61	Q				V
30+30	93.7648	4.57	Q				V
30+35	93.7959	4.52	Q				V
30+40	93.8267	4.47	Q				V
30+45	93.8571	4.41	Q				V
30+50	93.8869	4.34	Q				V
30+55	93.9162	4.25	Q				V
31+ 0	93.9444	4.09	Q				V
31+ 5	93.9715	3.93	Q				V
31+10	93.9981	3.87	Q				V
31+15	94.0246	3.85	Q				V
31+20	94.0511	3.85	Q				V
31+25	94.0776	3.85	Q				V
31+30	94.1041	3.85	Q				V

31+35	94.1305	3.85	Q				V
31+40	94.1570	3.85	Q				V
31+45	94.1835	3.85	Q				V
31+50	94.2100	3.85	Q				V
31+55	94.2365	3.85	Q				V
32+ 0	94.2630	3.85	Q				V
32+ 5	94.2895	3.85	Q				V
32+10	94.3159	3.85	Q				V
32+15	94.3424	3.85	Q				V
32+20	94.3689	3.85	Q				V
32+25	94.3954	3.85	Q				V
32+30	94.4219	3.85	Q				V
32+35	94.4484	3.85	Q				V
32+40	94.4749	3.85	Q				V
32+45	94.5013	3.85	Q				V
32+50	94.5278	3.85	Q				V
32+55	94.5543	3.85	Q				V
33+ 0	94.5807	3.83	Q				V
33+ 5	94.6068	3.79	Q				V
33+10	94.6326	3.75	Q				V
33+15	94.6582	3.71	Q				V
33+20	94.6834	3.66	Q				V
33+25	94.7083	3.61	Q				V
33+30	94.7327	3.55	Q				V
33+35	94.7567	3.48	Q				V
33+40	94.7800	3.39	Q				V
33+45	94.8022	3.22	Q				V
33+50	94.8233	3.07	Q				V
33+55	94.8441	3.01	Q				V
34+ 0	94.8647	2.99	Q				V
34+ 5	94.8853	2.99	Q				V
34+10	94.9059	2.99	Q				V
34+15	94.9265	2.99	Q				V
34+20	94.9471	2.99	Q				V
34+25	94.9677	2.99	Q				V
34+30	94.9883	2.99	Q				V
34+35	95.0089	2.99	Q				V
34+40	95.0295	2.99	Q				V
34+45	95.0501	2.99	Q				V
34+50	95.0707	2.99	Q				V
34+55	95.0913	2.99	Q				V
35+ 0	95.1119	2.99	Q				V
35+ 5	95.1325	2.99	Q				V
35+10	95.1531	2.99	Q				V
35+15	95.1737	2.99	Q				V
35+20	95.1943	2.99	Q				V
35+25	95.2149	2.99	Q				V
35+30	95.2355	2.99	Q				V
35+35	95.2561	2.99	Q				V
35+40	95.2767	2.99	Q				V
35+45	95.2971	2.97	Q				V
35+50	95.3173	2.94	Q				V
35+55	95.3373	2.89	Q				V
36+ 0	95.3569	2.85	Q				V
36+ 5	95.3762	2.80	Q				V
36+10	95.3952	2.75	Q				V
36+15	95.4137	2.69	Q				V

36+20	95.4317	2.62	Q				V
36+25	95.4491	2.52	Q				V
36+30	95.4653	2.35	Q				V
36+35	95.4805	2.21	Q				V
36+40	95.4953	2.16	Q				V
36+45	95.5100	2.14	Q				V
36+50	95.5248	2.14	Q				V
36+55	95.5395	2.14	Q				V
37+ 0	95.5542	2.14	Q				V
37+ 5	95.5689	2.14	Q				V
37+10	95.5836	2.14	Q				V
37+15	95.5983	2.14	Q				V
37+20	95.6130	2.14	Q				V
37+25	95.6278	2.14	Q				V
37+30	95.6419	2.05	Q				V
37+35	95.6553	1.95	Q				V
37+40	95.6680	1.84	Q				V
37+45	95.6799	1.73	Q				V
37+50	95.6910	1.61	Q				V
37+55	95.7012	1.48	Q				V
38+ 0	95.7102	1.31	Q				V
38+ 5	95.7179	1.11	Q				V
38+10	95.7236	0.83	Q				V
38+15	95.7255	0.27	Q				V
38+20	95.7262	0.10	Q				V

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 05/08/15 File: 154149HISTHYDB3100.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR

HISTORICAL CONDITIONS AREA "B"

100-YEAR, 3-HOUR STORM

BY: JTS DATE: 05-08-15

Drainage Area = 837.34(Ac.) = 1.308 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 837.34(Ac.)= 1.308 Sq. Mi.
Length along longest watercourse = 16296.72(Ft.)
Length along longest watercourse measured to centroid = 8849.03(Ft.)
Length along longest watercourse = 3.087 Mi.
Length along longest watercourse measured to centroid = 1.676 Mi.
Difference in elevation = 777.00(Ft.)
Slope along watercourse = 251.7415 Ft./Mi.
Average Manning's 'N' = 0.350
Lag time = 5.487 Hr.
Lag time = 329.20 Min.
25% of lag time = 82.30 Min.
40% of lag time = 131.68 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]
837.34	1.05	879.21

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
837.34	2.51	2101.72

STORM EVENT (YEAR) = 100.00
 Area Averaged 2-Year Rainfall = 1.050(In)
 Area Averaged 100-Year Rainfall = 2.510(In)

Point rain (area averaged) = 2.510(In)
 Areal adjustment factor = 99.63 %
 Adjusted average point rain = 2.501(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
81.060	67.00	0.050
1.780	78.00	0.050
101.910	86.00	0.050
652.590	89.00	0.050
Total Area Entered = 837.34(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.)	(In/Hr)	(Dec.)	(In/Hr)
67.0	83.2	0.208	0.050	0.198	0.097	0.019
78.0	89.8	0.132	0.050	0.126	0.002	0.000
86.0	94.4	0.073	0.050	0.070	0.122	0.008
89.0	95.6	0.057	0.050	0.055	0.779	0.043
Sum (F) =						0.070

Area averaged mean soil loss (F) (In/Hr) = 0.070
 Minimum soil loss rate ((In/Hr)) = 0.035
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

Unit Hydrograph
 VALLEY S-Curve

WARNING: End of hydrograph not reached with this
 Unit time interval vs lag time
 Unit-Hydrograph terminated after 450 intervals
 Unit Hydrograph Data

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	1.519	0.132
2	0.167	3.038	0.263
3	0.250	4.556	0.263
4	0.333	6.075	0.263
5	0.417	7.594	0.263
6	0.500	9.113	0.263
7	0.583	10.632	0.263
8	0.667	12.151	0.263
9	0.750	13.669	0.263
10	0.833	15.188	0.264
11	0.917	16.707	0.326
12	1.000	18.226	0.365
13	1.083	19.745	0.365
14	1.167	21.263	0.365
15	1.250	22.782	0.365
16	1.333	24.301	0.365

17	1.417	25.820	0.391	3.300
18	1.500	27.339	0.527	4.451
19	1.583	28.857	0.547	4.614
20	1.667	30.376	0.547	4.614
21	1.750	31.895	0.547	4.614
22	1.833	33.414	0.547	4.614
23	1.917	34.933	0.547	4.614
24	2.000	36.452	0.616	5.199
25	2.083	37.970	0.699	5.895
26	2.167	39.489	0.699	5.896
27	2.250	41.008	0.699	5.896
28	2.333	42.527	0.699	5.896
29	2.417	44.046	0.699	5.896
30	2.500	45.564	0.699	5.896
31	2.583	47.083	0.699	5.896
32	2.667	48.602	0.699	5.896
33	2.750	50.121	0.699	5.903
34	2.833	51.640	0.850	7.176
35	2.917	53.158	0.962	8.117
36	3.000	54.677	0.962	8.117
37	3.083	56.196	0.962	8.117
38	3.167	57.715	0.962	8.117
39	3.250	59.234	0.962	8.117
40	3.333	60.753	0.962	8.117
41	3.417	62.271	0.962	8.117
42	3.500	63.790	0.962	8.117
43	3.583	65.309	0.964	8.135
44	3.667	66.828	1.031	8.701
45	3.750	68.347	1.063	8.972
46	3.833	69.865	1.063	8.972
47	3.917	71.384	1.063	8.972
48	4.000	72.903	1.063	8.972
49	4.083	74.422	1.063	8.972
50	4.167	75.941	1.069	9.021
51	4.250	77.459	1.091	9.210
52	4.333	78.978	1.094	9.228
53	4.417	80.497	1.094	9.228
54	4.500	82.016	1.094	9.228
55	4.583	83.535	1.094	9.228
56	4.667	85.054	1.094	9.228
57	4.750	86.572	1.094	9.228
58	4.833	88.091	1.094	9.228
59	4.917	89.610	1.094	9.228
60	5.000	91.129	1.094	9.228
61	5.083	92.648	1.094	9.228
62	5.167	94.166	1.094	9.228
63	5.250	95.685	1.094	9.228
64	5.333	97.204	1.094	9.228
65	5.417	98.723	1.094	9.228
66	5.500	100.242	1.090	9.197
67	5.583	101.760	0.904	7.626
68	5.667	103.279	0.800	6.750
69	5.750	104.798	0.800	6.750
70	5.833	106.317	0.800	6.750
71	5.917	107.836	0.800	6.750
72	6.000	109.355	0.800	6.750
73	6.083	110.873	0.800	6.750

74	6.167	112.392	0.800	6.750
75	6.250	113.911	0.800	6.750
76	6.333	115.430	0.793	6.690
77	6.417	116.949	0.668	5.639
78	6.500	118.467	0.623	5.255
79	6.583	119.986	0.623	5.255
80	6.667	121.505	0.623	5.255
81	6.750	123.024	0.623	5.255
82	6.833	124.543	0.623	5.255
83	6.917	126.061	0.589	4.973
84	7.000	127.580	0.492	4.154
85	7.083	129.099	0.486	4.101
86	7.167	130.618	0.486	4.101
87	7.250	132.137	0.486	4.101
88	7.333	133.656	0.486	4.101
89	7.417	135.174	0.486	4.101
90	7.500	136.693	0.486	4.101
91	7.583	138.212	0.486	4.101
92	7.667	139.731	0.486	4.101
93	7.750	141.250	0.460	3.885
94	7.833	142.768	0.411	3.471
95	7.917	144.287	0.410	3.461
96	8.000	145.806	0.410	3.461
97	8.083	147.325	0.410	3.461
98	8.167	148.844	0.410	3.461
99	8.250	150.362	0.407	3.437
100	8.333	151.881	0.342	2.884
101	8.417	153.400	0.314	2.649
102	8.500	154.919	0.314	2.649
103	8.583	156.438	0.314	2.649
104	8.667	157.957	0.314	2.649
105	8.750	159.475	0.314	2.649
106	8.833	160.994	0.314	2.649
107	8.917	162.513	0.314	2.649
108	9.000	164.032	0.314	2.649
109	9.083	165.551	0.310	2.618
110	9.167	167.069	0.270	2.274
111	9.250	168.588	0.258	2.179
112	9.333	170.107	0.258	2.179
113	9.417	171.626	0.258	2.179
114	9.500	173.145	0.258	2.179
115	9.583	174.663	0.258	2.179
116	9.667	176.182	0.248	2.093
117	9.750	177.701	0.226	1.904
118	9.833	179.220	0.225	1.897
119	9.917	180.739	0.225	1.897
120	10.000	182.258	0.225	1.897
121	10.083	183.776	0.225	1.897
122	10.167	185.295	0.225	1.897
123	10.250	186.814	0.225	1.897
124	10.333	188.333	0.225	1.897
125	10.417	189.852	0.225	1.897
126	10.500	191.370	0.225	1.897
127	10.583	192.889	0.225	1.897
128	10.667	194.408	0.225	1.897
129	10.750	195.927	0.225	1.897
130	10.833	197.446	0.225	1.897

131	10.917	198.964	0.225	1.897
132	11.000	200.483	0.223	1.879
133	11.083	202.002	0.192	1.621
134	11.167	203.521	0.182	1.538
135	11.250	205.040	0.182	1.538
136	11.333	206.559	0.182	1.538
137	11.417	208.077	0.182	1.538
138	11.500	209.596	0.182	1.538
139	11.583	211.115	0.182	1.538
140	11.667	212.634	0.182	1.538
141	11.750	214.153	0.182	1.538
142	11.833	215.671	0.182	1.538
143	11.917	217.190	0.182	1.538
144	12.000	218.709	0.182	1.538
145	12.083	220.228	0.182	1.538
146	12.167	221.747	0.182	1.538
147	12.250	223.265	0.182	1.538
148	12.333	224.784	0.182	1.538
149	12.417	226.303	0.171	1.444
150	12.500	227.822	0.152	1.284
151	12.583	229.341	0.152	1.282
152	12.667	230.860	0.152	1.282
153	12.750	232.378	0.152	1.282
154	12.833	233.897	0.152	1.282
155	12.917	235.416	0.152	1.282
156	13.000	236.935	0.152	1.282
157	13.083	238.454	0.152	1.282
158	13.167	239.972	0.152	1.282
159	13.250	241.491	0.152	1.282
160	13.333	243.010	0.152	1.282
161	13.417	244.529	0.152	1.282
162	13.500	246.048	0.152	1.282
163	13.583	247.566	0.152	1.282
164	13.667	249.085	0.152	1.282
165	13.750	250.604	0.150	1.270
166	13.833	252.123	0.137	1.156
167	13.917	253.642	0.134	1.128
168	14.000	255.161	0.134	1.128
169	14.083	256.679	0.134	1.128
170	14.167	258.198	0.134	1.128
171	14.250	259.717	0.134	1.128
172	14.333	261.236	0.134	1.128
173	14.417	262.755	0.134	1.128
174	14.500	264.273	0.134	1.128
175	14.583	265.792	0.134	1.128
176	14.667	267.311	0.134	1.128
177	14.750	268.830	0.134	1.128
178	14.833	270.349	0.134	1.128
179	14.917	271.867	0.134	1.128
180	15.000	273.386	0.134	1.128
181	15.083	274.905	0.134	1.128
182	15.167	276.424	0.123	1.038
183	15.250	277.943	0.109	0.923
184	15.333	279.462	0.109	0.923
185	15.417	280.980	0.109	0.923
186	15.500	282.499	0.109	0.923
187	15.583	284.018	0.109	0.923

188	15.667	285.537	0.109	0.923
189	15.750	287.056	0.109	0.923
190	15.833	288.574	0.109	0.923
191	15.917	290.093	0.109	0.923
192	16.000	291.612	0.109	0.923
193	16.083	293.131	0.109	0.923
194	16.167	294.650	0.109	0.923
195	16.250	296.168	0.109	0.923
196	16.333	297.687	0.109	0.923
197	16.417	299.206	0.109	0.923
198	16.500	300.725	0.107	0.905
199	16.583	302.244	0.094	0.790
200	16.667	303.763	0.091	0.769
201	16.750	305.281	0.091	0.769
202	16.833	306.800	0.091	0.769
203	16.917	308.319	0.091	0.769
204	17.000	309.838	0.091	0.769
205	17.083	311.357	0.091	0.769
206	17.167	312.875	0.091	0.769
207	17.250	314.394	0.091	0.769
208	17.333	315.913	0.091	0.769
209	17.417	317.432	0.091	0.769
210	17.500	318.951	0.091	0.769
211	17.583	320.469	0.091	0.769
212	17.667	321.988	0.091	0.769
213	17.750	323.507	0.091	0.769
214	17.833	325.026	0.091	0.769
215	17.917	326.545	0.091	0.769
216	18.000	328.064	0.091	0.769
217	18.083	329.582	0.091	0.769
218	18.167	331.101	0.091	0.769
219	18.250	332.620	0.091	0.769
220	18.333	334.139	0.091	0.769
221	18.417	335.658	0.091	0.769
222	18.500	337.176	0.091	0.769
223	18.583	338.695	0.091	0.769
224	18.667	340.214	0.091	0.769
225	18.750	341.733	0.091	0.769
226	18.833	343.252	0.091	0.769
227	18.917	344.770	0.091	0.769
228	19.000	346.289	0.091	0.769
229	19.083	347.808	0.091	0.769
230	19.167	349.327	0.091	0.769
231	19.250	350.846	0.087	0.737
232	19.333	352.365	0.069	0.584
233	19.417	353.883	0.067	0.564
234	19.500	355.402	0.067	0.564
235	19.583	356.921	0.067	0.564
236	19.667	358.440	0.067	0.564
237	19.750	359.959	0.067	0.564
238	19.833	361.477	0.067	0.564
239	19.917	362.996	0.067	0.564
240	20.000	364.515	0.067	0.564
241	20.083	366.034	0.067	0.564
242	20.167	367.553	0.067	0.564
243	20.250	369.071	0.067	0.564
244	20.333	370.590	0.067	0.564

245	20.417	372.109	0.067	0.564
246	20.500	373.628	0.067	0.564
247	20.583	375.147	0.067	0.564
248	20.667	376.666	0.067	0.564
249	20.750	378.184	0.067	0.564
250	20.833	379.703	0.067	0.564
251	20.917	381.222	0.067	0.564
252	21.000	382.741	0.067	0.564
253	21.083	384.260	0.067	0.564
254	21.167	385.778	0.067	0.564
255	21.250	387.297	0.067	0.564
256	21.333	388.816	0.067	0.564
257	21.417	390.335	0.067	0.564
258	21.500	391.854	0.067	0.564
259	21.583	393.372	0.067	0.564
260	21.667	394.891	0.067	0.564
261	21.750	396.410	0.067	0.564
262	21.833	397.929	0.067	0.564
263	21.917	399.448	0.067	0.564
264	22.000	400.967	0.063	0.533
265	22.083	402.485	0.050	0.420
266	22.167	404.004	0.049	0.410
267	22.250	405.523	0.049	0.410
268	22.333	407.042	0.049	0.410
269	22.417	408.561	0.049	0.410
270	22.500	410.079	0.049	0.410
271	22.583	411.598	0.049	0.410
272	22.667	413.117	0.049	0.410
273	22.750	414.636	0.049	0.410
274	22.833	416.155	0.049	0.410
275	22.917	417.673	0.049	0.410
276	23.000	419.192	0.049	0.410
277	23.083	420.711	0.049	0.410
278	23.167	422.230	0.049	0.410
279	23.250	423.749	0.049	0.410
280	23.333	425.268	0.049	0.410
281	23.417	426.786	0.049	0.410
282	23.500	428.305	0.049	0.410
283	23.583	429.824	0.049	0.410
284	23.667	431.343	0.049	0.410
285	23.750	432.862	0.049	0.410
286	23.833	434.380	0.049	0.410
287	23.917	435.899	0.049	0.410
288	24.000	437.418	0.049	0.410
289	24.083	438.937	0.049	0.410
290	24.167	440.456	0.049	0.410
291	24.250	441.974	0.049	0.410
292	24.333	443.493	0.049	0.410
293	24.417	445.012	0.049	0.410
294	24.500	446.531	0.049	0.410
295	24.583	448.050	0.049	0.410
296	24.667	449.569	0.049	0.410
297	24.750	451.087	0.048	0.404
298	24.833	452.606	0.046	0.386
299	24.917	454.125	0.046	0.385
300	25.000	455.644	0.046	0.385
301	25.083	457.163	0.046	0.385

302	25.167	458.681	0.046	0.385
303	25.250	460.200	0.046	0.385
304	25.333	461.719	0.046	0.385
305	25.417	463.238	0.046	0.385
306	25.500	464.757	0.046	0.385
307	25.583	466.275	0.046	0.385
308	25.667	467.794	0.046	0.385
309	25.750	469.313	0.046	0.385
310	25.833	470.832	0.046	0.385
311	25.917	472.351	0.046	0.385
312	26.000	473.870	0.046	0.385
313	26.083	475.388	0.046	0.385
314	26.167	476.907	0.046	0.385
315	26.250	478.426	0.046	0.385
316	26.333	479.945	0.046	0.385
317	26.417	481.464	0.046	0.385
318	26.500	482.982	0.046	0.385
319	26.583	484.501	0.046	0.385
320	26.667	486.020	0.046	0.385
321	26.750	487.539	0.046	0.385
322	26.833	489.058	0.046	0.385
323	26.917	490.576	0.046	0.385
324	27.000	492.095	0.046	0.385
325	27.083	493.614	0.046	0.385
326	27.167	495.133	0.046	0.385
327	27.250	496.652	0.046	0.385
328	27.333	498.171	0.046	0.385
329	27.417	499.689	0.046	0.385
330	27.500	501.208	0.042	0.352
331	27.583	502.727	0.034	0.284
332	27.667	504.246	0.033	0.282
333	27.750	505.765	0.033	0.282
334	27.833	507.283	0.033	0.282
335	27.917	508.802	0.033	0.282
336	28.000	510.321	0.033	0.282
337	28.083	511.840	0.033	0.282
338	28.167	513.359	0.033	0.282
339	28.250	514.878	0.033	0.282
340	28.333	516.396	0.033	0.282
341	28.417	517.915	0.033	0.282
342	28.500	519.434	0.033	0.282
343	28.583	520.953	0.033	0.282
344	28.667	522.472	0.033	0.282
345	28.750	523.990	0.033	0.282
346	28.833	525.509	0.033	0.282
347	28.917	527.028	0.033	0.282
348	29.000	528.547	0.033	0.282
349	29.083	530.066	0.033	0.282
350	29.167	531.584	0.033	0.282
351	29.250	533.103	0.033	0.282
352	29.333	534.622	0.033	0.282
353	29.417	536.141	0.033	0.282
354	29.500	537.660	0.033	0.282
355	29.583	539.179	0.033	0.282
356	29.667	540.697	0.033	0.282
357	29.750	542.216	0.033	0.282
358	29.833	543.735	0.033	0.282

359	29.917	545.254	0.033	0.282
360	30.000	546.773	0.033	0.282
361	30.083	548.291	0.033	0.282
362	30.167	549.810	0.033	0.282
363	30.250	551.329	0.031	0.262
364	30.333	552.848	0.027	0.231
365	30.417	554.367	0.027	0.231
366	30.500	555.885	0.027	0.231
367	30.583	557.404	0.027	0.231
368	30.667	558.923	0.027	0.231
369	30.750	560.442	0.027	0.231
370	30.833	561.961	0.027	0.231
371	30.917	563.480	0.027	0.231
372	31.000	564.998	0.027	0.231
373	31.083	566.517	0.027	0.231
374	31.167	568.036	0.027	0.231
375	31.250	569.555	0.027	0.231
376	31.333	571.074	0.027	0.231
377	31.417	572.592	0.027	0.231
378	31.500	574.111	0.027	0.231
379	31.583	575.630	0.027	0.231
380	31.667	577.149	0.027	0.231
381	31.750	578.668	0.027	0.231
382	31.833	580.186	0.027	0.231
383	31.917	581.705	0.027	0.231
384	32.000	583.224	0.027	0.231
385	32.083	584.743	0.027	0.231
386	32.167	586.262	0.027	0.231
387	32.250	587.781	0.027	0.231
388	32.333	589.299	0.027	0.231
389	32.417	590.818	0.027	0.231
390	32.500	592.337	0.027	0.231
391	32.583	593.856	0.027	0.231
392	32.667	595.375	0.027	0.231
393	32.750	596.893	0.027	0.231
394	32.833	598.412	0.027	0.231
395	32.917	599.931	0.027	0.231
396	33.000	601.450	0.025	0.207
397	33.083	602.969	0.021	0.179
398	33.167	604.487	0.021	0.179
399	33.250	606.006	0.021	0.179
400	33.333	607.525	0.021	0.179
401	33.417	609.044	0.021	0.179
402	33.500	610.563	0.021	0.179
403	33.583	612.082	0.021	0.179
404	33.667	613.600	0.021	0.179
405	33.750	615.119	0.021	0.179
406	33.833	616.638	0.021	0.179
407	33.917	618.157	0.021	0.179
408	34.000	619.676	0.021	0.179
409	34.083	621.194	0.021	0.179
410	34.167	622.713	0.021	0.179
411	34.250	624.232	0.021	0.179
412	34.333	625.751	0.021	0.179
413	34.417	627.270	0.021	0.179
414	34.500	628.788	0.021	0.179
415	34.583	630.307	0.021	0.179

416	34.667	631.826	0.021	0.179
417	34.750	633.345	0.021	0.179
418	34.833	634.864	0.021	0.179
419	34.917	636.383	0.021	0.179
420	35.000	637.901	0.021	0.179
421	35.083	639.420	0.021	0.179
422	35.167	640.939	0.021	0.179
423	35.250	642.458	0.021	0.179
424	35.333	643.977	0.021	0.179
425	35.417	645.495	0.021	0.179
426	35.500	647.014	0.021	0.179
427	35.583	648.533	0.021	0.179
428	35.667	650.052	0.021	0.179
429	35.750	651.571	0.018	0.152
430	35.833	653.089	0.015	0.128
431	35.917	654.608	0.015	0.128
432	36.000	656.127	0.015	0.128
433	36.083	657.646	0.015	0.128
434	36.167	659.165	0.015	0.128
435	36.250	660.684	0.015	0.128
436	36.333	662.202	0.015	0.128
437	36.417	663.721	0.015	0.128
438	36.500	665.240	0.015	0.128
439	36.583	666.759	0.015	0.128
440	36.667	668.278	0.015	0.128
441	36.750	669.796	0.015	0.128
442	36.833	671.315	0.015	0.128
443	36.917	672.834	0.015	0.128
444	37.000	674.353	0.015	0.128
445	37.083	675.872	0.015	0.128
446	37.167	677.390	0.015	0.128
447	37.250	678.909	0.015	0.128
448	37.333	680.428	0.015	0.128
449	37.417	681.947	0.015	0.128
Sum =			98.812	Sum= 833.855

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	0.390	0.070	(0.351)	0.320
2	0.17	1.30	0.390	0.070	(0.351)	0.320
3	0.25	1.10	0.330	0.070	(0.297)	0.260
4	0.33	1.50	0.450	0.070	(0.405)	0.380
5	0.42	1.50	0.450	0.070	(0.405)	0.380
6	0.50	1.80	0.540	0.070	(0.486)	0.470
7	0.58	1.50	0.450	0.070	(0.405)	0.380
8	0.67	1.80	0.540	0.070	(0.486)	0.470
9	0.75	1.80	0.540	0.070	(0.486)	0.470
10	0.83	1.50	0.450	0.070	(0.405)	0.380
11	0.92	1.60	0.480	0.070	(0.432)	0.410
12	1.00	1.80	0.540	0.070	(0.486)	0.470
13	1.08	2.20	0.660	0.070	(0.594)	0.590
14	1.17	2.20	0.660	0.070	(0.594)	0.590

15	1.25	2.20	0.660	0.070	(0.594)	0.590
16	1.33	2.00	0.600	0.070	(0.540)	0.530
17	1.42	2.60	0.780	0.070	(0.702)	0.710
18	1.50	2.70	0.810	0.070	(0.729)	0.740
19	1.58	2.40	0.720	0.070	(0.648)	0.650
20	1.67	2.70	0.810	0.070	(0.729)	0.740
21	1.75	3.30	0.990	0.070	(0.891)	0.920
22	1.83	3.10	0.930	0.070	(0.837)	0.860
23	1.92	2.90	0.870	0.070	(0.783)	0.800
24	2.00	3.00	0.900	0.070	(0.810)	0.830
25	2.08	3.10	0.930	0.070	(0.837)	0.860
26	2.17	4.20	1.260	0.070	(1.134)	1.190
27	2.25	5.00	1.500	0.070	(1.350)	1.430
28	2.33	3.50	1.050	0.070	(0.945)	0.980
29	2.42	6.80	2.041	0.070	(1.837)	1.970
30	2.50	7.30	2.191	0.070	(1.972)	2.120
31	2.58	8.20	2.461	0.070	(2.215)	2.390
32	2.67	5.90	1.771	0.070	(1.594)	1.700
33	2.75	2.00	0.600	0.070	(0.540)	0.530
34	2.83	1.80	0.540	0.070	(0.486)	0.470
35	2.92	1.80	0.540	0.070	(0.486)	0.470
36	3.00	0.60	0.180	0.070	(0.162)	0.110

(Loss Rate Not Used)

Sum = 100.0

Sum = 27.5

Flood volume = Effective rainfall 2.29(In)
times area 837.3(Ac.)/[(In)/(Ft.)] = 159.7(Ac.Ft)

Total soil loss = 0.21(In)

Total soil loss = 14.756(Ac.Ft)

Total rainfall = 2.50(In)

Flood volume = 6958546.4 Cubic Feet

Total soil loss = 642760.9 Cubic Feet

Peak flow rate of this hydrograph = 240.358(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	75.0	150.0	225.0	300.0
0+ 5	0.0024	0.36	Q				
0+10	0.0098	1.07	Q				
0+15	0.0216	1.71	Q				
0+20	0.0382	2.42	Q				
0+25	0.0607	3.26	Q				
0+30	0.0897	4.21	Q				
0+35	0.1252	5.15	Q				
0+40	0.1671	6.10	Q				
0+45	0.2163	7.14	Q				
0+50	0.2720	8.09	VQ				
0+55	0.3349	9.13	VQ				
1+ 0	0.4064	10.38	VQ				
1+ 5	0.4877	11.80	VQ				
1+10	0.5799	13.40	VQ				

1+15	0.6835	15.03	V Q				
1+20	0.7981	16.65	V Q				
1+25	0.9252	18.45	V Q				
1+30	1.0690	20.88	V Q				
1+35	1.2294	23.30	V Q				
1+40	1.4060	25.63	V Q				
1+45	1.6015	28.38	V Q				
1+50	1.8174	31.35	V Q				
1+55	2.0539	34.35	V Q				
2+ 0	2.3119	37.47	V Q				
2+ 5	2.5941	40.97	V Q				
2+10	2.9026	44.80	V Q				
2+15	3.2419	49.26	V Q				
2+20	3.6116	53.69	V Q				
2+25	4.0168	58.83	V Q				
2+30	4.4674	65.42	V Q				
2+35	4.9674	72.61	V Q				
2+40	5.5143	79.40	V Q				
2+45	6.0928	84.00	V Q				
2+50	6.6975	87.80	V Q				
2+55	7.3308	91.95	V Q				
3+ 0	7.9909	95.85	V Q				
3+ 5	8.6780	99.76	V Q				
3+10	9.3924	103.73	V Q				
3+15	10.1368	108.09	V Q				
3+20	10.9137	112.81	V Q				
3+25	11.7259	117.93	V Q				
3+30	12.5725	122.93	V Q				
3+35	13.4501	127.42	V Q				
3+40	14.3594	132.03	V Q				
3+45	15.3004	136.63	V Q				
3+50	16.2801	142.25	V Q				
3+55	17.3010	148.23	V Q				
4+ 0	18.3646	154.43	V Q				
4+ 5	19.4652	159.81	V Q				
4+10	20.5963	164.24	V Q				
4+15	21.7575	168.61	V Q				
4+20	22.9496	173.10	V Q				
4+25	24.1748	177.90	V Q				
4+30	25.4359	183.10	V Q				
4+35	26.7322	188.22	V Q				
4+40	28.0554	192.14	V Q				
4+45	29.3998	195.21	V Q				
4+50	30.7656	198.32	V Q				
4+55	32.1543	201.63	V Q				
5+ 0	33.5683	205.32	V Q				
5+ 5	35.0053	208.66	V Q				
5+10	36.4710	212.81	V Q				
5+15	37.9734	218.14	V Q				
5+20	39.5167	224.09	V Q				
5+25	41.0966	229.41	V Q				
5+30	42.6980	232.52	V Q				
5+35	44.3095	233.99	V Q				
5+40	45.9290	235.16	V Q				
5+45	47.5554	236.15	V Q				
5+50	49.1859	236.76	V Q				
5+55	50.8183	237.02	V Q				

6+ 0	52.4545	237.58	V	Q
6+ 5	54.0974	238.54	V	Q
6+10	55.7477	239.62	V	Q
6+15	57.4027	240.32	V	Q
6+20	59.0581	240.36	V	Q
6+25	60.7094	239.77	V	Q
6+30	62.3546	238.88	V	Q
6+35	63.9923	237.79	V	Q
6+40	65.6203	236.39	V	Q
6+45	67.2383	234.93	V	Q
6+50	68.8450	233.29	V	Q
6+55	70.4369	231.14	V	Q
7+ 0	72.0102	228.44	V	Q
7+ 5	73.5653	225.80	V	Q
7+10	75.1019	223.13	V	Q
7+15	76.6169	219.97	V	Q
7+20	78.1089	216.64	V	Q
7+25	79.5776	213.25	V	Q
7+30	81.0230	209.87	V	Q
7+35	82.4441	206.34	V	Q
7+40	83.8375	202.33	V	Q
7+45	85.1977	197.49	V	Q
7+50	86.5259	192.86	V	Q
7+55	87.8142	187.06	V	Q
8+ 0	89.0537	179.98	V	Q
8+ 5	90.2389	172.08	V	Q
8+10	91.3757	165.07	V	Q
8+15	92.4815	160.56	V	Q
8+20	93.5616	156.84	V	Q
8+25	94.6154	153.01	V	Q
8+30	95.6448	149.47	V	Q
8+35	96.6497	145.92	V	Q
8+40	97.6318	142.60	V	Q
8+45	98.5847	138.36	V	Q
8+50	99.5047	133.59	V	Q
8+55	100.3894	128.45	V	Q
9+ 0	101.2426	123.89	V	Q
9+ 5	102.0725	120.50	V	Q
9+10	102.8808	117.36	V	Q
9+15	103.6678	114.27	V	Q
9+20	104.4302	110.69	V	Q
9+25	105.1669	106.98	V	Q
9+30	105.8776	103.19	V	Q
9+35	106.5686	100.33	V	Q
9+40	107.2463	98.40	V	Q
9+45	107.9104	96.43	V	Q
9+50	108.5613	94.51	V	Q
9+55	109.1999	92.73	V	Q
10+ 0	109.8260	90.90	V	Q
10+ 5	110.4390	89.01	V	Q
10+10	111.0359	86.67	V	Q
10+15	111.6157	84.19	V	Q
10+20	112.1785	81.71	V	Q
10+25	112.7266	79.58	V	Q
10+30	113.2619	77.72	V	Q
10+35	113.7855	76.04	V	Q
10+40	114.2950	73.98	V	Q

10+45	114.7890	71.73	Q	V
10+50	115.2662	69.29	Q	V
10+55	115.7290	67.20	Q	V
11+ 0	116.1832	65.94	Q	V
11+ 5	116.6299	64.87	Q	V
11+10	117.0691	63.77	Q	V
11+15	117.5014	62.77	Q	V
11+20	117.9268	61.76	Q	V
11+25	118.3458	60.84	Q	V
11+30	118.7562	59.60	Q	V
11+35	119.1573	58.24	Q	V
11+40	119.5482	56.76	Q	V
11+45	119.9304	55.50	Q	V
11+50	120.3067	54.64	Q	V
11+55	120.6780	53.90	Q	V
12+ 0	121.0441	53.16	Q	V
12+ 5	121.4044	52.32	Q	V
12+10	121.7589	51.47	Q	V
12+15	122.1077	50.65	Q	V
12+20	122.4525	50.07	Q	V
12+25	122.7945	49.64	Q	V
12+30	123.1331	49.17	Q	V
12+35	123.4688	48.75	Q	V
12+40	123.8020	48.38	Q	V
12+45	124.1324	47.97	Q	V
12+50	124.4599	47.55	Q	V
12+55	124.7847	47.15	Q	V
13+ 0	125.1066	46.75	Q	V
13+ 5	125.4256	46.32	Q	V
13+10	125.7410	45.80	Q	V
13+15	126.0524	45.21	Q	V
13+20	126.3602	44.70	Q	V
13+25	126.6628	43.94	Q	V
13+30	126.9592	43.03	Q	V
13+35	127.2488	42.06	Q	V
13+40	127.5330	41.26	Q	V
13+45	127.8141	40.82	Q	V
13+50	128.0925	40.42	Q	V
13+55	128.3682	40.03	Q	V
14+ 0	128.6420	39.75	Q	V
14+ 5	128.9138	39.47	Q	V
14+10	129.1837	39.19	Q	V
14+15	129.4516	38.90	Q	V
14+20	129.7177	38.63	Q	V
14+25	129.9818	38.35	Q	V
14+30	130.2436	38.02	Q	V
14+35	130.5028	37.64	Q	V
14+40	130.7594	37.25	Q	V
14+45	131.0130	36.83	Q	V
14+50	131.2625	36.23	Q	V
14+55	131.5074	35.57	Q	V
15+ 0	131.7480	34.93	Q	V
15+ 5	131.9857	34.52	Q	V
15+10	132.2216	34.25	Q	V
15+15	132.4554	33.95	Q	V
15+20	132.6875	33.70	Q	V
15+25	132.9183	33.51	Q	V

15+30	133.1476	33.29	Q			V
15+35	133.3753	33.07	Q			V
15+40	133.6016	32.86	Q			V
15+45	133.8265	32.65	Q			V
15+50	134.0497	32.41	Q			V
15+55	134.2711	32.15	Q			V
16+ 0	134.4905	31.86	Q			V
16+ 5	134.7081	31.60	Q			V
16+10	134.9231	31.21	Q			V
16+15	135.1350	30.76	Q			V
16+20	135.3436	30.29	Q			V
16+25	135.5496	29.91	Q			V
16+30	135.7539	29.67	Q			V
16+35	135.9564	29.40	Q			V
16+40	136.1571	29.14	Q			V
16+45	136.3563	28.93	Q			V
16+50	136.5540	28.70	Q			V
16+55	136.7500	28.46	Q			V
17+ 0	136.9444	28.22	Q			V
17+ 5	137.1372	27.99	Q			V
17+10	137.3283	27.75	Q			V
17+15	137.5175	27.47	Q			V
17+20	137.7044	27.15	Q			V
17+25	137.8892	26.83	Q			V
17+30	138.0715	26.47	Q			V
17+35	138.2502	25.96	Q			V
17+40	138.4252	25.41	Q			V
17+45	138.5967	24.89	Q			V
17+50	138.7658	24.56	Q			V
17+55	138.9336	24.35	Q			V
18+ 0	139.0998	24.14	Q			V
18+ 5	139.2650	23.98	Q			V
18+10	139.4292	23.85	Q			V
18+15	139.5925	23.71	Q			V
18+20	139.7549	23.58	Q			V
18+25	139.9165	23.46	Q			V
18+30	140.0771	23.33	Q			V
18+35	140.2369	23.19	Q			V
18+40	140.3953	23.01	Q			V
18+45	140.5524	22.80	Q			V
18+50	140.7082	22.63	Q			V
18+55	140.8621	22.34	Q			V
19+ 0	141.0137	22.01	Q			V
19+ 5	141.1628	21.66	Q			V
19+10	141.3103	21.41	Q			V
19+15	141.4569	21.29	Q			V
19+20	141.6026	21.16	Q			V
19+25	141.7475	21.03	Q			V
19+30	141.8917	20.95	Q			V
19+35	142.0355	20.87	Q			V
19+40	142.1787	20.79	Q			V
19+45	142.3212	20.70	Q			V
19+50	142.4632	20.62	Q			V
19+55	142.6045	20.52	Q			V
20+ 0	142.7452	20.43	Q			V
20+ 5	142.8853	20.35	Q			V
20+10	143.0249	20.26	Q			V

20+15	143.1637	20.16	Q				V
20+20	143.3018	20.04	Q				V
20+25	143.4390	19.92	Q				V
20+30	143.5754	19.80	Q				V
20+35	143.7110	19.69	Q				V
20+40	143.8456	19.55	Q				V
20+45	143.9792	19.40	Q				V
20+50	144.1118	19.26	Q				V
20+55	144.2434	19.10	Q				V
21+ 0	144.3737	18.92	Q				V
21+ 5	144.5028	18.74	Q				V
21+10	144.6307	18.58	Q				V
21+15	144.7575	18.41	Q				V
21+20	144.8830	18.22	Q				V
21+25	145.0068	17.98	Q				V
21+30	145.1287	17.70	Q				V
21+35	145.2490	17.46	Q				V
21+40	145.3665	17.07	Q				V
21+45	145.4811	16.63	Q				V
21+50	145.5924	16.17	Q				V
21+55	145.7015	15.84	Q				V
22+ 0	145.8097	15.70	Q				V
22+ 5	145.9168	15.56	Q				V
22+10	146.0230	15.43	Q				V
22+15	146.1288	15.36	Q				V
22+20	146.2341	15.30	Q				V
22+25	146.3391	15.23	Q				V
22+30	146.4435	15.17	Q				V
22+35	146.5475	15.10	Q				V
22+40	146.6511	15.03	Q				V
22+45	146.7541	14.96	Q				V
22+50	146.8568	14.90	Q				V
22+55	146.9590	14.84	Q				V
23+ 0	147.0606	14.76	Q				V
23+ 5	147.1617	14.67	Q				V
23+10	147.2621	14.58	Q				V
23+15	147.3619	14.49	Q				V
23+20	147.4612	14.41	Q				V
23+25	147.5596	14.30	Q				V
23+30	147.6573	14.19	Q				V
23+35	147.7543	14.08	Q				V
23+40	147.8505	13.96	Q				V
23+45	147.9457	13.83	Q				V
23+50	148.0401	13.70	Q				V
23+55	148.1335	13.57	Q				V
24+ 0	148.2261	13.44	Q				V
24+ 5	148.3177	13.30	Q				V
24+10	148.4080	13.11	Q				V
24+15	148.4969	12.91	Q				V
24+20	148.5846	12.72	Q				V
24+25	148.6701	12.43	Q				V
24+30	148.7534	12.09	Q				V
24+35	148.8343	11.75	Q				V
24+40	148.9137	11.52	Q				V
24+45	148.9923	11.42	Q				V
24+50	149.0705	11.34	Q				V
24+55	149.1481	11.27	Q				V

25+ 0	149.2256	11.25	Q				V
25+ 5	149.3030	11.24	Q				V
25+10	149.3803	11.23	Q				V
25+15	149.4575	11.22	Q				V
25+20	149.5347	11.21	Q				V
25+25	149.6118	11.19	Q				V
25+30	149.6888	11.18	Q				V
25+35	149.7658	11.17	Q				V
25+40	149.8427	11.16	Q				V
25+45	149.9194	11.15	Q				V
25+50	149.9961	11.13	Q				V
25+55	150.0727	11.12	Q				V
26+ 0	150.1492	11.10	Q				V
26+ 5	150.2256	11.09	Q				V
26+10	150.3018	11.07	Q				V
26+15	150.3779	11.05	Q				V
26+20	150.4539	11.04	Q				V
26+25	150.5298	11.02	Q				V
26+30	150.6055	10.99	Q				V
26+35	150.6811	10.97	Q				V
26+40	150.7565	10.95	Q				V
26+45	150.8317	10.93	Q				V
26+50	150.9068	10.90	Q				V
26+55	150.9817	10.87	Q				V
27+ 0	151.0564	10.84	Q				V
27+ 5	151.1308	10.81	Q				V
27+10	151.2049	10.76	Q				V
27+15	151.2786	10.70	Q				V
27+20	151.3519	10.64	Q				V
27+25	151.4249	10.61	Q				V
27+30	151.4978	10.58	Q				V
27+35	151.5704	10.54	Q				V
27+40	151.6427	10.50	Q				V
27+45	151.7148	10.46	Q				V
27+50	151.7866	10.43	Q				V
27+55	151.8581	10.38	Q				V
28+ 0	151.9293	10.34	Q				V
28+ 5	152.0002	10.30	Q				V
28+10	152.0708	10.25	Q				V
28+15	152.1411	10.20	Q				V
28+20	152.2111	10.16	Q				V
28+25	152.2808	10.12	Q				V
28+30	152.3501	10.07	Q				V
28+35	152.4190	10.01	Q				V
28+40	152.4875	9.95	Q				V
28+45	152.5556	9.89	Q				V
28+50	152.6233	9.83	Q				V
28+55	152.6905	9.75	Q				V
29+ 0	152.7572	9.68	Q				V
29+ 5	152.8234	9.61	Q				V
29+10	152.8890	9.53	Q				V
29+15	152.9540	9.44	Q				V
29+20	153.0184	9.35	Q				V
29+25	153.0823	9.27	Q				V
29+30	153.1455	9.18	Q				V
29+35	153.2081	9.08	Q				V
29+40	153.2698	8.95	Q				V

29+45	153.3305	8.82	Q				V
29+50	153.3904	8.69	Q				V
29+55	153.4488	8.48	Q				V
30+ 0	153.5057	8.26	Q				V
30+ 5	153.5610	8.04	Q				V
30+10	153.6154	7.90	Q				V
30+15	153.6694	7.84	Q				V
30+20	153.7229	7.77	Q				V
30+25	153.7761	7.72	Q				V
30+30	153.8291	7.70	Q				V
30+35	153.8820	7.68	Q				V
30+40	153.9347	7.66	Q				V
30+45	153.9873	7.63	Q				V
30+50	154.0397	7.61	Q				V
30+55	154.0920	7.59	Q				V
31+ 0	154.1441	7.57	Q				V
31+ 5	154.1961	7.55	Q				V
31+10	154.2479	7.52	Q				V
31+15	154.2995	7.50	Q				V
31+20	154.3510	7.47	Q				V
31+25	154.4022	7.44	Q				V
31+30	154.4532	7.41	Q				V
31+35	154.5040	7.38	Q				V
31+40	154.5546	7.34	Q				V
31+45	154.6049	7.30	Q				V
31+50	154.6549	7.27	Q				V
31+55	154.7047	7.23	Q				V
32+ 0	154.7542	7.18	Q				V
32+ 5	154.8033	7.14	Q				V
32+10	154.8522	7.10	Q				V
32+15	154.9008	7.05	Q				V
32+20	154.9490	7.00	Q				V
32+25	154.9968	6.94	Q				V
32+30	155.0442	6.87	Q				V
32+35	155.0910	6.80	Q				V
32+40	155.1372	6.70	Q				V
32+45	155.1825	6.59	Q				V
32+50	155.2271	6.48	Q				V
32+55	155.2713	6.41	Q				V
33+ 0	155.3152	6.38	Q				V
33+ 5	155.3589	6.34	Q				V
33+10	155.4023	6.31	Q				V
33+15	155.4456	6.29	Q				V
33+20	155.4887	6.27	Q				V
33+25	155.5318	6.25	Q				V
33+30	155.5746	6.22	Q				V
33+35	155.6173	6.20	Q				V
33+40	155.6599	6.18	Q				V
33+45	155.7023	6.16	Q				V
33+50	155.7445	6.14	Q				V
33+55	155.7866	6.11	Q				V
34+ 0	155.8285	6.09	Q				V
34+ 5	155.8702	6.06	Q				V
34+10	155.9117	6.03	Q				V
34+15	155.9530	6.00	Q				V
34+20	155.9941	5.97	Q				V
34+25	156.0350	5.93	Q				V

34+30	156.0755	5.89	Q				V
34+35	156.1159	5.86	Q				V
34+40	156.1559	5.81	Q				V
34+45	156.1957	5.77	Q				V
34+50	156.2351	5.73	Q				V
34+55	156.2742	5.68	Q				V
35+ 0	156.3131	5.64	Q				V
35+ 5	156.3516	5.59	Q				V
35+10	156.3896	5.52	Q				V
35+15	156.4272	5.46	Q				V
35+20	156.4643	5.39	Q				V
35+25	156.5007	5.28	Q				V
35+30	156.5363	5.17	Q				V
35+35	156.5711	5.06	Q				V
35+40	156.6056	5.00	Q				V
35+45	156.6398	4.97	Q				V
35+50	156.6737	4.93	Q				V
35+55	156.7074	4.90	Q				V
36+ 0	156.7410	4.88	Q				V
36+ 5	156.7744	4.86	Q				V
36+10	156.8077	4.83	Q				V
36+15	156.8409	4.81	Q				V
36+20	156.8739	4.79	Q				V
36+25	156.9067	4.77	Q				V
36+30	156.9394	4.74	Q				V
36+35	156.9719	4.72	Q				V
36+40	157.0043	4.70	Q				V
36+45	157.0365	4.67	Q				V
36+50	157.0685	4.64	Q				V
36+55	157.1003	4.61	Q				V
37+ 0	157.1318	4.59	Q				V
37+ 5	157.1632	4.55	Q				V
37+10	157.1943	4.52	Q				V
37+15	157.2252	4.48	Q				V
37+20	157.2558	4.44	Q				V
37+25	157.2861	4.40	Q				V
37+30	157.3158	4.32	Q				V
37+35	157.3450	4.23	Q				V
37+40	157.3736	4.16	Q				V
37+45	157.4016	4.06	Q				V
37+50	157.4289	3.96	Q				V
37+55	157.4553	3.84	Q				V
38+ 0	157.4809	3.73	Q				V
38+ 5	157.5056	3.59	Q				V
38+10	157.5292	3.42	Q				V
38+15	157.5517	3.26	Q				V
38+20	157.5730	3.10	Q				V
38+25	157.5936	2.99	Q				V
38+30	157.6134	2.88	Q				V
38+35	157.6326	2.79	Q				V
38+40	157.6512	2.70	Q				V
38+45	157.6693	2.62	Q				V
38+50	157.6867	2.53	Q				V
38+55	157.7035	2.44	Q				V
39+ 0	157.7197	2.36	Q				V
39+ 5	157.7353	2.26	Q				V
39+10	157.7501	2.14	Q				V

39+15	157.7640	2.03	Q				V
39+20	157.7773	1.93	Q				V
39+25	157.7899	1.82	Q				V
39+30	157.8017	1.71	Q				V
39+35	157.8124	1.56	Q				V
39+40	157.8219	1.38	Q				V
39+45	157.8305	1.25	Q				V
39+50	157.8374	1.00	Q				V
39+55	157.8424	0.73	Q				V
40+ 0	157.8453	0.42	Q				V
40+ 5	157.8467	0.20	Q				V
40+10	157.8476	0.13	Q				V
40+15	157.8482	0.07	Q				V
40+20	157.8483	0.01	Q				V

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 05/08/15 File: 154149HISTHYDB6100.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR

HISTORICAL CONDITIONS AREA "B"

100-YEAR, 6-HOUR STORM

BY: JTS DATE: 05-08-15

Drainage Area = 837.34(Ac.) = 1.308 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 837.34(Ac.)= 1.308 Sq. Mi.
Length along longest watercourse = 16296.72(Ft.)
Length along longest watercourse measured to centroid = 8849.03(Ft.)
Length along longest watercourse = 3.087 Mi.
Length along longest watercourse measured to centroid = 1.676 Mi.
Difference in elevation = 777.00(Ft.)
Slope along watercourse = 251.7415 Ft./Mi.
Average Manning's 'N' = 0.350
Lag time = 5.487 Hr.
Lag time = 329.20 Min.
25% of lag time = 82.30 Min.
40% of lag time = 131.68 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]
837.34	1.45	1214.14

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
837.34	3.51	2939.06

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.450(In)
Area Averaged 100-Year Rainfall = 3.510(In)

Point rain (area averaged) = 3.510(In)
Areal adjustment factor = 99.71 %
Adjusted average point rain = 3.500(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
81.060	67.00	0.050
1.780	78.00	0.050
101.910	86.00	0.050
652.590	89.00	0.050
Total Area Entered = 837.34(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.)	(In/Hr)	(Dec.)	(In/Hr)
67.0	83.2	0.208	0.050	0.198	0.097	0.019
78.0	89.8	0.132	0.050	0.126	0.002	0.000
86.0	94.4	0.073	0.050	0.070	0.122	0.008
89.0	95.6	0.057	0.050	0.055	0.779	0.043
Sum (F) =						0.070

Area averaged mean soil loss (F) (In/Hr) = 0.070
Minimum soil loss rate ((In/Hr)) = 0.035
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Unit Hydrograph
VALLEY S-Curve

WARNING: End of hydrograph not reached with this
Unit time interval vs lag time
Unit-Hydrograph terminated after 450 intervals
Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	1.519	0.132
2	0.167	3.038	0.263
3	0.250	4.556	0.263
4	0.333	6.075	0.263
5	0.417	7.594	0.263
6	0.500	9.113	0.263
7	0.583	10.632	0.263
8	0.667	12.151	0.263
9	0.750	13.669	0.263
10	0.833	15.188	0.264
11	0.917	16.707	0.326
12	1.000	18.226	0.365
13	1.083	19.745	0.365
14	1.167	21.263	0.365
15	1.250	22.782	0.365
16	1.333	24.301	0.365

17	1.417	25.820	0.391	3.300
18	1.500	27.339	0.527	4.451
19	1.583	28.857	0.547	4.614
20	1.667	30.376	0.547	4.614
21	1.750	31.895	0.547	4.614
22	1.833	33.414	0.547	4.614
23	1.917	34.933	0.547	4.614
24	2.000	36.452	0.616	5.199
25	2.083	37.970	0.699	5.895
26	2.167	39.489	0.699	5.896
27	2.250	41.008	0.699	5.896
28	2.333	42.527	0.699	5.896
29	2.417	44.046	0.699	5.896
30	2.500	45.564	0.699	5.896
31	2.583	47.083	0.699	5.896
32	2.667	48.602	0.699	5.896
33	2.750	50.121	0.699	5.903
34	2.833	51.640	0.850	7.176
35	2.917	53.158	0.962	8.117
36	3.000	54.677	0.962	8.117
37	3.083	56.196	0.962	8.117
38	3.167	57.715	0.962	8.117
39	3.250	59.234	0.962	8.117
40	3.333	60.753	0.962	8.117
41	3.417	62.271	0.962	8.117
42	3.500	63.790	0.962	8.117
43	3.583	65.309	0.964	8.135
44	3.667	66.828	1.031	8.701
45	3.750	68.347	1.063	8.972
46	3.833	69.865	1.063	8.972
47	3.917	71.384	1.063	8.972
48	4.000	72.903	1.063	8.972
49	4.083	74.422	1.063	8.972
50	4.167	75.941	1.069	9.021
51	4.250	77.459	1.091	9.210
52	4.333	78.978	1.094	9.228
53	4.417	80.497	1.094	9.228
54	4.500	82.016	1.094	9.228
55	4.583	83.535	1.094	9.228
56	4.667	85.054	1.094	9.228
57	4.750	86.572	1.094	9.228
58	4.833	88.091	1.094	9.228
59	4.917	89.610	1.094	9.228
60	5.000	91.129	1.094	9.228
61	5.083	92.648	1.094	9.228
62	5.167	94.166	1.094	9.228
63	5.250	95.685	1.094	9.228
64	5.333	97.204	1.094	9.228
65	5.417	98.723	1.094	9.228
66	5.500	100.242	1.090	9.197
67	5.583	101.760	0.904	7.626
68	5.667	103.279	0.800	6.750
69	5.750	104.798	0.800	6.750
70	5.833	106.317	0.800	6.750
71	5.917	107.836	0.800	6.750
72	6.000	109.355	0.800	6.750
73	6.083	110.873	0.800	6.750

74	6.167	112.392	0.800	6.750
75	6.250	113.911	0.800	6.750
76	6.333	115.430	0.793	6.690
77	6.417	116.949	0.668	5.639
78	6.500	118.467	0.623	5.255
79	6.583	119.986	0.623	5.255
80	6.667	121.505	0.623	5.255
81	6.750	123.024	0.623	5.255
82	6.833	124.543	0.623	5.255
83	6.917	126.061	0.589	4.973
84	7.000	127.580	0.492	4.154
85	7.083	129.099	0.486	4.101
86	7.167	130.618	0.486	4.101
87	7.250	132.137	0.486	4.101
88	7.333	133.656	0.486	4.101
89	7.417	135.174	0.486	4.101
90	7.500	136.693	0.486	4.101
91	7.583	138.212	0.486	4.101
92	7.667	139.731	0.486	4.101
93	7.750	141.250	0.460	3.885
94	7.833	142.768	0.411	3.471
95	7.917	144.287	0.410	3.461
96	8.000	145.806	0.410	3.461
97	8.083	147.325	0.410	3.461
98	8.167	148.844	0.410	3.461
99	8.250	150.362	0.407	3.437
100	8.333	151.881	0.342	2.884
101	8.417	153.400	0.314	2.649
102	8.500	154.919	0.314	2.649
103	8.583	156.438	0.314	2.649
104	8.667	157.957	0.314	2.649
105	8.750	159.475	0.314	2.649
106	8.833	160.994	0.314	2.649
107	8.917	162.513	0.314	2.649
108	9.000	164.032	0.314	2.649
109	9.083	165.551	0.310	2.618
110	9.167	167.069	0.270	2.274
111	9.250	168.588	0.258	2.179
112	9.333	170.107	0.258	2.179
113	9.417	171.626	0.258	2.179
114	9.500	173.145	0.258	2.179
115	9.583	174.663	0.258	2.179
116	9.667	176.182	0.248	2.093
117	9.750	177.701	0.226	1.904
118	9.833	179.220	0.225	1.897
119	9.917	180.739	0.225	1.897
120	10.000	182.258	0.225	1.897
121	10.083	183.776	0.225	1.897
122	10.167	185.295	0.225	1.897
123	10.250	186.814	0.225	1.897
124	10.333	188.333	0.225	1.897
125	10.417	189.852	0.225	1.897
126	10.500	191.370	0.225	1.897
127	10.583	192.889	0.225	1.897
128	10.667	194.408	0.225	1.897
129	10.750	195.927	0.225	1.897
130	10.833	197.446	0.225	1.897

131	10.917	198.964	0.225	1.897
132	11.000	200.483	0.223	1.879
133	11.083	202.002	0.192	1.621
134	11.167	203.521	0.182	1.538
135	11.250	205.040	0.182	1.538
136	11.333	206.559	0.182	1.538
137	11.417	208.077	0.182	1.538
138	11.500	209.596	0.182	1.538
139	11.583	211.115	0.182	1.538
140	11.667	212.634	0.182	1.538
141	11.750	214.153	0.182	1.538
142	11.833	215.671	0.182	1.538
143	11.917	217.190	0.182	1.538
144	12.000	218.709	0.182	1.538
145	12.083	220.228	0.182	1.538
146	12.167	221.747	0.182	1.538
147	12.250	223.265	0.182	1.538
148	12.333	224.784	0.182	1.538
149	12.417	226.303	0.171	1.444
150	12.500	227.822	0.152	1.284
151	12.583	229.341	0.152	1.282
152	12.667	230.860	0.152	1.282
153	12.750	232.378	0.152	1.282
154	12.833	233.897	0.152	1.282
155	12.917	235.416	0.152	1.282
156	13.000	236.935	0.152	1.282
157	13.083	238.454	0.152	1.282
158	13.167	239.972	0.152	1.282
159	13.250	241.491	0.152	1.282
160	13.333	243.010	0.152	1.282
161	13.417	244.529	0.152	1.282
162	13.500	246.048	0.152	1.282
163	13.583	247.566	0.152	1.282
164	13.667	249.085	0.152	1.282
165	13.750	250.604	0.150	1.270
166	13.833	252.123	0.137	1.156
167	13.917	253.642	0.134	1.128
168	14.000	255.161	0.134	1.128
169	14.083	256.679	0.134	1.128
170	14.167	258.198	0.134	1.128
171	14.250	259.717	0.134	1.128
172	14.333	261.236	0.134	1.128
173	14.417	262.755	0.134	1.128
174	14.500	264.273	0.134	1.128
175	14.583	265.792	0.134	1.128
176	14.667	267.311	0.134	1.128
177	14.750	268.830	0.134	1.128
178	14.833	270.349	0.134	1.128
179	14.917	271.867	0.134	1.128
180	15.000	273.386	0.134	1.128
181	15.083	274.905	0.134	1.128
182	15.167	276.424	0.123	1.038
183	15.250	277.943	0.109	0.923
184	15.333	279.462	0.109	0.923
185	15.417	280.980	0.109	0.923
186	15.500	282.499	0.109	0.923
187	15.583	284.018	0.109	0.923

188	15.667	285.537	0.109	0.923
189	15.750	287.056	0.109	0.923
190	15.833	288.574	0.109	0.923
191	15.917	290.093	0.109	0.923
192	16.000	291.612	0.109	0.923
193	16.083	293.131	0.109	0.923
194	16.167	294.650	0.109	0.923
195	16.250	296.168	0.109	0.923
196	16.333	297.687	0.109	0.923
197	16.417	299.206	0.109	0.923
198	16.500	300.725	0.107	0.905
199	16.583	302.244	0.094	0.790
200	16.667	303.763	0.091	0.769
201	16.750	305.281	0.091	0.769
202	16.833	306.800	0.091	0.769
203	16.917	308.319	0.091	0.769
204	17.000	309.838	0.091	0.769
205	17.083	311.357	0.091	0.769
206	17.167	312.875	0.091	0.769
207	17.250	314.394	0.091	0.769
208	17.333	315.913	0.091	0.769
209	17.417	317.432	0.091	0.769
210	17.500	318.951	0.091	0.769
211	17.583	320.469	0.091	0.769
212	17.667	321.988	0.091	0.769
213	17.750	323.507	0.091	0.769
214	17.833	325.026	0.091	0.769
215	17.917	326.545	0.091	0.769
216	18.000	328.064	0.091	0.769
217	18.083	329.582	0.091	0.769
218	18.167	331.101	0.091	0.769
219	18.250	332.620	0.091	0.769
220	18.333	334.139	0.091	0.769
221	18.417	335.658	0.091	0.769
222	18.500	337.176	0.091	0.769
223	18.583	338.695	0.091	0.769
224	18.667	340.214	0.091	0.769
225	18.750	341.733	0.091	0.769
226	18.833	343.252	0.091	0.769
227	18.917	344.770	0.091	0.769
228	19.000	346.289	0.091	0.769
229	19.083	347.808	0.091	0.769
230	19.167	349.327	0.091	0.769
231	19.250	350.846	0.087	0.737
232	19.333	352.365	0.069	0.584
233	19.417	353.883	0.067	0.564
234	19.500	355.402	0.067	0.564
235	19.583	356.921	0.067	0.564
236	19.667	358.440	0.067	0.564
237	19.750	359.959	0.067	0.564
238	19.833	361.477	0.067	0.564
239	19.917	362.996	0.067	0.564
240	20.000	364.515	0.067	0.564
241	20.083	366.034	0.067	0.564
242	20.167	367.553	0.067	0.564
243	20.250	369.071	0.067	0.564
244	20.333	370.590	0.067	0.564

245	20.417	372.109	0.067	0.564
246	20.500	373.628	0.067	0.564
247	20.583	375.147	0.067	0.564
248	20.667	376.666	0.067	0.564
249	20.750	378.184	0.067	0.564
250	20.833	379.703	0.067	0.564
251	20.917	381.222	0.067	0.564
252	21.000	382.741	0.067	0.564
253	21.083	384.260	0.067	0.564
254	21.167	385.778	0.067	0.564
255	21.250	387.297	0.067	0.564
256	21.333	388.816	0.067	0.564
257	21.417	390.335	0.067	0.564
258	21.500	391.854	0.067	0.564
259	21.583	393.372	0.067	0.564
260	21.667	394.891	0.067	0.564
261	21.750	396.410	0.067	0.564
262	21.833	397.929	0.067	0.564
263	21.917	399.448	0.067	0.564
264	22.000	400.967	0.063	0.533
265	22.083	402.485	0.050	0.420
266	22.167	404.004	0.049	0.410
267	22.250	405.523	0.049	0.410
268	22.333	407.042	0.049	0.410
269	22.417	408.561	0.049	0.410
270	22.500	410.079	0.049	0.410
271	22.583	411.598	0.049	0.410
272	22.667	413.117	0.049	0.410
273	22.750	414.636	0.049	0.410
274	22.833	416.155	0.049	0.410
275	22.917	417.673	0.049	0.410
276	23.000	419.192	0.049	0.410
277	23.083	420.711	0.049	0.410
278	23.167	422.230	0.049	0.410
279	23.250	423.749	0.049	0.410
280	23.333	425.268	0.049	0.410
281	23.417	426.786	0.049	0.410
282	23.500	428.305	0.049	0.410
283	23.583	429.824	0.049	0.410
284	23.667	431.343	0.049	0.410
285	23.750	432.862	0.049	0.410
286	23.833	434.380	0.049	0.410
287	23.917	435.899	0.049	0.410
288	24.000	437.418	0.049	0.410
289	24.083	438.937	0.049	0.410
290	24.167	440.456	0.049	0.410
291	24.250	441.974	0.049	0.410
292	24.333	443.493	0.049	0.410
293	24.417	445.012	0.049	0.410
294	24.500	446.531	0.049	0.410
295	24.583	448.050	0.049	0.410
296	24.667	449.569	0.049	0.410
297	24.750	451.087	0.048	0.404
298	24.833	452.606	0.046	0.386
299	24.917	454.125	0.046	0.385
300	25.000	455.644	0.046	0.385
301	25.083	457.163	0.046	0.385

302	25.167	458.681	0.046	0.385
303	25.250	460.200	0.046	0.385
304	25.333	461.719	0.046	0.385
305	25.417	463.238	0.046	0.385
306	25.500	464.757	0.046	0.385
307	25.583	466.275	0.046	0.385
308	25.667	467.794	0.046	0.385
309	25.750	469.313	0.046	0.385
310	25.833	470.832	0.046	0.385
311	25.917	472.351	0.046	0.385
312	26.000	473.870	0.046	0.385
313	26.083	475.388	0.046	0.385
314	26.167	476.907	0.046	0.385
315	26.250	478.426	0.046	0.385
316	26.333	479.945	0.046	0.385
317	26.417	481.464	0.046	0.385
318	26.500	482.982	0.046	0.385
319	26.583	484.501	0.046	0.385
320	26.667	486.020	0.046	0.385
321	26.750	487.539	0.046	0.385
322	26.833	489.058	0.046	0.385
323	26.917	490.576	0.046	0.385
324	27.000	492.095	0.046	0.385
325	27.083	493.614	0.046	0.385
326	27.167	495.133	0.046	0.385
327	27.250	496.652	0.046	0.385
328	27.333	498.171	0.046	0.385
329	27.417	499.689	0.046	0.385
330	27.500	501.208	0.042	0.352
331	27.583	502.727	0.034	0.284
332	27.667	504.246	0.033	0.282
333	27.750	505.765	0.033	0.282
334	27.833	507.283	0.033	0.282
335	27.917	508.802	0.033	0.282
336	28.000	510.321	0.033	0.282
337	28.083	511.840	0.033	0.282
338	28.167	513.359	0.033	0.282
339	28.250	514.878	0.033	0.282
340	28.333	516.396	0.033	0.282
341	28.417	517.915	0.033	0.282
342	28.500	519.434	0.033	0.282
343	28.583	520.953	0.033	0.282
344	28.667	522.472	0.033	0.282
345	28.750	523.990	0.033	0.282
346	28.833	525.509	0.033	0.282
347	28.917	527.028	0.033	0.282
348	29.000	528.547	0.033	0.282
349	29.083	530.066	0.033	0.282
350	29.167	531.584	0.033	0.282
351	29.250	533.103	0.033	0.282
352	29.333	534.622	0.033	0.282
353	29.417	536.141	0.033	0.282
354	29.500	537.660	0.033	0.282
355	29.583	539.179	0.033	0.282
356	29.667	540.697	0.033	0.282
357	29.750	542.216	0.033	0.282
358	29.833	543.735	0.033	0.282

359	29.917	545.254	0.033	0.282
360	30.000	546.773	0.033	0.282
361	30.083	548.291	0.033	0.282
362	30.167	549.810	0.033	0.282
363	30.250	551.329	0.031	0.262
364	30.333	552.848	0.027	0.231
365	30.417	554.367	0.027	0.231
366	30.500	555.885	0.027	0.231
367	30.583	557.404	0.027	0.231
368	30.667	558.923	0.027	0.231
369	30.750	560.442	0.027	0.231
370	30.833	561.961	0.027	0.231
371	30.917	563.480	0.027	0.231
372	31.000	564.998	0.027	0.231
373	31.083	566.517	0.027	0.231
374	31.167	568.036	0.027	0.231
375	31.250	569.555	0.027	0.231
376	31.333	571.074	0.027	0.231
377	31.417	572.592	0.027	0.231
378	31.500	574.111	0.027	0.231
379	31.583	575.630	0.027	0.231
380	31.667	577.149	0.027	0.231
381	31.750	578.668	0.027	0.231
382	31.833	580.186	0.027	0.231
383	31.917	581.705	0.027	0.231
384	32.000	583.224	0.027	0.231
385	32.083	584.743	0.027	0.231
386	32.167	586.262	0.027	0.231
387	32.250	587.781	0.027	0.231
388	32.333	589.299	0.027	0.231
389	32.417	590.818	0.027	0.231
390	32.500	592.337	0.027	0.231
391	32.583	593.856	0.027	0.231
392	32.667	595.375	0.027	0.231
393	32.750	596.893	0.027	0.231
394	32.833	598.412	0.027	0.231
395	32.917	599.931	0.027	0.231
396	33.000	601.450	0.025	0.207
397	33.083	602.969	0.021	0.179
398	33.167	604.487	0.021	0.179
399	33.250	606.006	0.021	0.179
400	33.333	607.525	0.021	0.179
401	33.417	609.044	0.021	0.179
402	33.500	610.563	0.021	0.179
403	33.583	612.082	0.021	0.179
404	33.667	613.600	0.021	0.179
405	33.750	615.119	0.021	0.179
406	33.833	616.638	0.021	0.179
407	33.917	618.157	0.021	0.179
408	34.000	619.676	0.021	0.179
409	34.083	621.194	0.021	0.179
410	34.167	622.713	0.021	0.179
411	34.250	624.232	0.021	0.179
412	34.333	625.751	0.021	0.179
413	34.417	627.270	0.021	0.179
414	34.500	628.788	0.021	0.179
415	34.583	630.307	0.021	0.179

416	34.667	631.826	0.021	0.179
417	34.750	633.345	0.021	0.179
418	34.833	634.864	0.021	0.179
419	34.917	636.383	0.021	0.179
420	35.000	637.901	0.021	0.179
421	35.083	639.420	0.021	0.179
422	35.167	640.939	0.021	0.179
423	35.250	642.458	0.021	0.179
424	35.333	643.977	0.021	0.179
425	35.417	645.495	0.021	0.179
426	35.500	647.014	0.021	0.179
427	35.583	648.533	0.021	0.179
428	35.667	650.052	0.021	0.179
429	35.750	651.571	0.018	0.152
430	35.833	653.089	0.015	0.128
431	35.917	654.608	0.015	0.128
432	36.000	656.127	0.015	0.128
433	36.083	657.646	0.015	0.128
434	36.167	659.165	0.015	0.128
435	36.250	660.684	0.015	0.128
436	36.333	662.202	0.015	0.128
437	36.417	663.721	0.015	0.128
438	36.500	665.240	0.015	0.128
439	36.583	666.759	0.015	0.128
440	36.667	668.278	0.015	0.128
441	36.750	669.796	0.015	0.128
442	36.833	671.315	0.015	0.128
443	36.917	672.834	0.015	0.128
444	37.000	674.353	0.015	0.128
445	37.083	675.872	0.015	0.128
446	37.167	677.390	0.015	0.128
447	37.250	678.909	0.015	0.128
448	37.333	680.428	0.015	0.128
449	37.417	681.947	0.015	0.128
Sum =			98.812	Sum= 833.855

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	0.210	0.070	(0.189)	0.140
2	0.17	0.60	0.252	0.070	(0.227)	0.182
3	0.25	0.60	0.252	0.070	(0.227)	0.182
4	0.33	0.60	0.252	0.070	(0.227)	0.182
5	0.42	0.60	0.252	0.070	(0.227)	0.182
6	0.50	0.70	0.294	0.070	(0.265)	0.224
7	0.58	0.70	0.294	0.070	(0.265)	0.224
8	0.67	0.70	0.294	0.070	(0.265)	0.224
9	0.75	0.70	0.294	0.070	(0.265)	0.224
10	0.83	0.70	0.294	0.070	(0.265)	0.224
11	0.92	0.70	0.294	0.070	(0.265)	0.224
12	1.00	0.80	0.336	0.070	(0.302)	0.266
13	1.08	0.80	0.336	0.070	(0.302)	0.266
14	1.17	0.80	0.336	0.070	(0.302)	0.266

15	1.25	0.80	0.336	0.070	(0.302)	0.266
16	1.33	0.80	0.336	0.070	(0.302)	0.266
17	1.42	0.80	0.336	0.070	(0.302)	0.266
18	1.50	0.80	0.336	0.070	(0.302)	0.266
19	1.58	0.80	0.336	0.070	(0.302)	0.266
20	1.67	0.80	0.336	0.070	(0.302)	0.266
21	1.75	0.80	0.336	0.070	(0.302)	0.266
22	1.83	0.80	0.336	0.070	(0.302)	0.266
23	1.92	0.80	0.336	0.070	(0.302)	0.266
24	2.00	0.90	0.378	0.070	(0.340)	0.308
25	2.08	0.80	0.336	0.070	(0.302)	0.266
26	2.17	0.90	0.378	0.070	(0.340)	0.308
27	2.25	0.90	0.378	0.070	(0.340)	0.308
28	2.33	0.90	0.378	0.070	(0.340)	0.308
29	2.42	0.90	0.378	0.070	(0.340)	0.308
30	2.50	0.90	0.378	0.070	(0.340)	0.308
31	2.58	0.90	0.378	0.070	(0.340)	0.308
32	2.67	0.90	0.378	0.070	(0.340)	0.308
33	2.75	1.00	0.420	0.070	(0.378)	0.349
34	2.83	1.00	0.420	0.070	(0.378)	0.349
35	2.92	1.00	0.420	0.070	(0.378)	0.349
36	3.00	1.00	0.420	0.070	(0.378)	0.349
37	3.08	1.00	0.420	0.070	(0.378)	0.349
38	3.17	1.10	0.462	0.070	(0.416)	0.391
39	3.25	1.10	0.462	0.070	(0.416)	0.391
40	3.33	1.10	0.462	0.070	(0.416)	0.391
41	3.42	1.20	0.504	0.070	(0.454)	0.433
42	3.50	1.30	0.546	0.070	(0.491)	0.475
43	3.58	1.40	0.588	0.070	(0.529)	0.517
44	3.67	1.40	0.588	0.070	(0.529)	0.517
45	3.75	1.50	0.630	0.070	(0.567)	0.559
46	3.83	1.50	0.630	0.070	(0.567)	0.559
47	3.92	1.60	0.672	0.070	(0.605)	0.601
48	4.00	1.60	0.672	0.070	(0.605)	0.601
49	4.08	1.70	0.714	0.070	(0.643)	0.643
50	4.17	1.80	0.756	0.070	(0.680)	0.685
51	4.25	1.90	0.798	0.070	(0.718)	0.727
52	4.33	2.00	0.840	0.070	(0.756)	0.769
53	4.42	2.10	0.882	0.070	(0.794)	0.811
54	4.50	2.10	0.882	0.070	(0.794)	0.811
55	4.58	2.20	0.924	0.070	(0.832)	0.853
56	4.67	2.30	0.966	0.070	(0.869)	0.895
57	4.75	2.40	1.008	0.070	(0.907)	0.937
58	4.83	2.40	1.008	0.070	(0.907)	0.937
59	4.92	2.50	1.050	0.070	(0.945)	0.979
60	5.00	2.60	1.092	0.070	(0.983)	1.021
61	5.08	3.10	1.302	0.070	(1.172)	1.231
62	5.17	3.60	1.512	0.070	(1.361)	1.441
63	5.25	3.90	1.638	0.070	(1.474)	1.567
64	5.33	4.20	1.764	0.070	(1.588)	1.693
65	5.42	4.70	1.974	0.070	(1.777)	1.903
66	5.50	5.60	2.352	0.070	(2.117)	2.281
67	5.58	1.90	0.798	0.070	(0.718)	0.727
68	5.67	0.90	0.378	0.070	(0.340)	0.308
69	5.75	0.60	0.252	0.070	(0.227)	0.182
70	5.83	0.50	0.210	0.070	(0.189)	0.140
71	5.92	0.30	0.126	0.070	(0.113)	0.056

(Loss Rate Not Used)

Sum = 36.9

Peak flow rate of this hydrograph = 285.673(CFS)

6 - 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

0+ 5	0.0011	0.16	Q				
0+10	0.0046	0.51	Q				
0+15	0.0109	0.92	Q				
0+20	0.0200	1.32	Q				
0+25	0.0318	1.72	Q				
0+30	0.0468	2.17	Q				
0+35	0.0652	2.67	Q				
0+40	0.0870	3.17	Q				
0+45	0.1122	3.66	Q				
0+50	0.1409	4.16	Q				
0+55	0.1734	4.73	Q				
1+ 0	0.2107	5.42	Q				
1+ 5	0.2532	6.16	Q				
1+10	0.3007	6.91	Q				
1+15	0.3534	7.65	VQ				
1+20	0.4114	8.42	VQ				
1+25	0.4750	9.23	VQ				
1+30	0.5453	10.21	VQ				
1+35	0.6230	11.27	VQ				
1+40	0.7079	12.33	VQ				
1+45	0.8001	13.39	VQ				
1+50	0.8998	14.48	VQ				
1+55	1.0075	15.64	V Q				
2+ 0	1.1241	16.93	V Q				
2+ 5	1.2503	18.34	V Q				
2+10	1.3865	19.78	V Q				
2+15	1.5330	21.26	V Q				
2+20	1.6897	22.76	V Q				
2+25	1.8573	24.33	V Q				
2+30	2.0359	25.94	V Q				
2+35	2.2256	27.54	V Q				
2+40	2.4263	29.15	V Q				
2+45	2.6385	30.80	V Q				
2+50	2.8637	32.70	V Q				
2+55	3.1034	34.80	V Q				

3+ 0	3.3580	36.98	V	Q					
3+ 5	3.6278	39.17	V	Q					
3+10	3.9130	41.41	V	Q					
3+15	4.2143	43.75	V	Q					
3+20	4.5321	46.14	V	Q					
3+25	4.8669	48.61	V	Q					
3+30	5.2192	51.15	V	Q					
3+35	5.5900	53.84	V	Q					
3+40	5.9804	56.69	V	Q					
3+45	6.3915	59.69	V	Q					
3+50	6.8239	62.79	V	Q					
3+55	7.2782	65.96	V	Q					
4+ 0	7.7549	69.21	V	Q					
4+ 5	8.2545	72.55	V	Q					
4+10	8.7784	76.07	V	Q					
4+15	9.3276	79.75	V	Q					
4+20	9.9031	83.56	V	Q					
4+25	10.5058	87.51	V	Q					
4+30	11.1361	91.53	V	Q					
4+35	11.7951	95.68	V	Q					
4+40	12.4839	100.00	V	Q					
4+45	13.2037	104.53	V	Q					
4+50	13.9555	109.16	V	Q					
4+55	14.7402	113.94	V	Q					
5+ 0	15.5593	118.94	V	Q					
5+ 5	16.4154	124.30	V	Q					
5+10	17.3124	130.25	V	Q					
5+15	18.2533	136.62	V	Q					
5+20	19.2407	143.36	V	Q					
5+25	20.2777	150.57	V	Q					
5+30	21.3702	158.63	V	Q					
5+35	22.5090	165.36	V	Q					
5+40	23.6783	169.79	V	Q					
5+45	24.8747	173.71	V	Q					
5+50	26.0976	177.57	V	Q					
5+55	27.3476	181.51	V	Q					
6+ 0	28.6255	185.54	V	Q					
6+ 5	29.9322	189.74	V	Q					
6+10	31.2696	194.19	V	Q					
6+15	32.6399	198.96	V	Q					
6+20	34.0464	204.21	V	Q					
6+25	35.4844	208.81	V	Q					
6+30	36.9506	212.89	V	Q					
6+35	38.4459	217.11	V	Q					
6+40	39.9719	221.58	V	Q					
6+45	41.5304	226.30	V	Q					
6+50	43.1238	231.36	V	Q					
6+55	44.7534	236.62	V	Q					
7+ 0	46.4077	240.20	V	Q					
7+ 5	48.0838	243.37	V	Q					
7+10	49.7826	246.67	V	Q					
7+15	51.5050	250.09	V	Q					
7+20	53.2518	253.64	V	Q					
7+25	55.0255	257.54	V	Q					
7+30	56.8218	260.83	V	Q					
7+35	58.6323	262.88	V	Q					
7+40	60.4547	264.62	V	Q					

7+45	62.2889	266.32	V		Q
7+50	64.1361	268.21	V		Q
7+55	65.9988	270.47	V		Q
8+ 0	67.8797	273.09	V		Q
8+ 5	69.7805	276.01	V		Q
8+10	71.7043	279.33	V		Q
8+15	73.6552	283.27	V		Q
8+20	75.6212	285.47	V		Q
8+25	77.5887	285.67	V		Q
8+30	79.5536	285.31	V		Q
8+35	81.5151	284.81	V		Q
8+40	83.4726	284.22	V		Q
8+45	85.4258	283.61	V		Q
8+50	87.3753	283.06	V		Q
8+55	89.3210	282.52	V		Q
9+ 0	91.2636	282.07	V		Q
9+ 5	93.2036	281.68	V		Q
9+10	95.1348	280.42	V		Q
9+15	97.0523	278.43	V		Q
9+20	98.9549	276.25	V		Q
9+25	100.8418	273.98	V		Q
9+30	102.7123	271.60	V		Q
9+35	104.5658	269.13	V		Q
9+40	106.4010	266.47	V		Q
9+45	108.2144	263.31	V		Q
9+50	110.0041	259.86	V		Q
9+55	111.7686	256.20	V		Q
10+ 0	113.5073	252.46	V		Q
10+ 5	115.2190	248.54	V		Q
10+10	116.9026	244.46	V		Q
10+15	118.5569	240.20	V		Q
10+20	120.1812	235.85	V		Q
10+25	121.7743	231.32	V		Q
10+30	123.3346	226.55	V		Q
10+35	124.8589	221.32	V		Q
10+40	126.3428	215.48	V		Q
10+45	127.7834	209.17	V		Q
10+50	129.1779	202.48	V		Q
10+55	130.5227	195.26	V		Q
11+ 0	131.8118	187.18	Q		
11+ 5	133.0587	181.04	QV		
11+10	134.2765	176.83	Q V		
11+15	135.4682	173.04	Q V		
11+20	136.6342	169.30	Q V		
11+25	137.7735	165.43	Q V		
11+30	138.8845	161.31	Q V		
11+35	139.9655	156.96	Q V		
11+40	141.0147	152.35	Q V		
11+45	142.0298	147.39	Q V		
11+50	143.0072	141.91	Q V		
11+55	143.9563	137.82	Q V		
12+ 0	144.8824	134.47	Q V		
12+ 5	145.7857	131.16	Q V		
12+10	146.6656	127.76	Q V		
12+15	147.5214	124.26	Q V		
12+20	148.3512	120.49	Q V		
12+25	149.1555	116.79	Q V		

12+30	149.9431	114.37			Q		V	
12+35	150.7168	112.34			Q		V	
12+40	151.4769	110.37			Q		V	
12+45	152.2233	108.38			Q		V	
12+50	152.9553	106.29			Q		V	
12+55	153.6721	104.08			Q		V	
13+ 0	154.3728	101.74			Q		V	
13+ 5	155.0566	99.28			Q		V	
13+10	155.7218	96.59			Q		V	
13+15	156.3693	94.01			Q		V	
13+20	157.0029	92.01			Q		V	
13+25	157.6229	90.01			Q		V	
13+30	158.2285	87.94			Q		V	
13+35	158.8193	85.79			Q		V	
13+40	159.3944	83.50			Q		V	
13+45	159.9521	80.97			Q		V	
13+50	160.4974	79.18			Q		V	
13+55	161.0344	77.97			Q		V	
14+ 0	161.5639	76.89			Q		V	
14+ 5	162.0862	75.84			Q		V	
14+10	162.6010	74.74			Q		V	
14+15	163.1077	73.57			Q		V	
14+20	163.6058	72.34			Q		V	
14+25	164.0949	71.02			Q		V	
14+30	164.5742	69.59			Q		V	
14+35	165.0427	68.03			Q		V	
14+40	165.5037	66.94		Q			V	
14+45	165.9588	66.08		Q			V	
14+50	166.4082	65.25		Q			V	
14+55	166.8517	64.40		Q			V	
15+ 0	167.2893	63.53		Q			V	
15+ 5	167.7204	62.60		Q			V	
15+10	168.1454	61.71		Q			V	
15+15	168.5662	61.11		Q			V	
15+20	168.9835	60.59		Q			V	
15+25	169.3973	60.08		Q			V	
15+30	169.8076	59.58		Q			V	
15+35	170.2146	59.09		Q			V	
15+40	170.6180	58.58		Q			V	
15+45	171.0178	58.05		Q			V	
15+50	171.4138	57.51		Q			V	
15+55	171.8060	56.94		Q			V	
16+ 0	172.1940	56.35		Q			V	
16+ 5	172.5775	55.69		Q			V	
16+10	172.9559	54.94		Q			V	
16+15	173.3287	54.13		Q			V	
16+20	173.6956	53.28		Q			V	
16+25	174.0561	52.34		Q			V	
16+30	174.4095	51.31		Q			V	
16+35	174.7581	50.62		Q			V	
16+40	175.1034	50.15		Q			V	
16+45	175.4459	49.73		Q			V	
16+50	175.7857	49.34		Q			V	
16+55	176.1229	48.96		Q			V	
17+ 0	176.4574	48.58		Q			V	
17+ 5	176.7893	48.19		Q			V	
17+10	177.1185	47.79		Q			V	

17+15	177.4448	47.38	Q			V
17+20	177.7681	46.95	Q			V
17+25	178.0883	46.49	Q			V
17+30	178.4048	45.97	Q			V
17+35	178.7175	45.39	Q			V
17+40	179.0259	44.79	Q			V
17+45	179.3299	44.13	Q			V
17+50	179.6288	43.40	Q			V
17+55	179.9232	42.75	Q			V
18+ 0	180.2151	42.38	Q			V
18+ 5	180.5048	42.08	Q			V
18+10	180.7927	41.80	Q			V
18+15	181.0787	41.53	Q			V
18+20	181.3629	41.27	Q			V
18+25	181.6453	41.00	Q			V
18+30	181.9258	40.73	Q			V
18+35	182.2044	40.45	Q			V
18+40	182.4810	40.15	Q			V
18+45	182.7553	39.84	Q			V
18+50	183.0274	39.50	Q			V
18+55	183.2968	39.12	Q			V
19+ 0	183.5634	38.71	Q			V
19+ 5	183.8271	38.28	Q			V
19+10	184.0875	37.82	Q			V
19+15	184.3444	37.30	Q			V
19+20	184.5987	36.93	Q			V
19+25	184.8509	36.62	Q			V
19+30	185.1012	36.34	Q			V
19+35	185.3496	36.06	Q			V
19+40	185.5960	35.78	Q			V
19+45	185.8405	35.50	Q			V
19+50	186.0829	35.20	Q			V
19+55	186.3232	34.90	Q			V
20+ 0	186.5614	34.58	Q			V
20+ 5	186.7973	34.25	Q			V
20+10	187.0307	33.90	Q			V
20+15	187.2614	33.49	Q			V
20+20	187.4889	33.04	Q			V
20+25	187.7131	32.56	Q			V
20+30	187.9338	32.04	Q			V
20+35	188.1505	31.47	Q			V
20+40	188.3639	30.98	Q			V
20+45	188.5753	30.70	Q			V
20+50	188.7852	30.48	Q			V
20+55	188.9936	30.26	Q			V
21+ 0	189.2007	30.06	Q			V
21+ 5	189.4064	29.87	Q			V
21+10	189.6107	29.67	Q			V
21+15	189.8137	29.47	Q			V
21+20	190.0153	29.27	Q			V
21+25	190.2154	29.06	Q			V
21+30	190.4139	28.83	Q			V
21+35	190.6108	28.58	Q			V
21+40	190.8056	28.30	Q			V
21+45	190.9984	27.99	Q			V
21+50	191.1890	27.67	Q			V
21+55	191.3771	27.31	Q			V

22+ 0	191.5625	26.92	Q				V
22+ 5	191.7463	26.69	Q				V
22+10	191.9290	26.53	Q				V
22+15	192.1109	26.41	Q				V
22+20	192.2919	26.28	Q				V
22+25	192.4721	26.17	Q				V
22+30	192.6515	26.05	Q				V
22+35	192.8301	25.93	Q				V
22+40	193.0078	25.81	Q				V
22+45	193.1847	25.68	Q				V
22+50	193.3605	25.54	Q				V
22+55	193.5354	25.39	Q				V
23+ 0	193.7092	25.24	Q				V
23+ 5	193.8820	25.08	Q				V
23+10	194.0536	24.92	Q				V
23+15	194.2240	24.75	Q				V
23+20	194.3933	24.58	Q				V
23+25	194.5613	24.40	Q				V
23+30	194.7280	24.21	Q				V
23+35	194.8934	24.01	Q				V
23+40	195.0573	23.80	Q				V
23+45	195.2198	23.59	Q				V
23+50	195.3808	23.38	Q				V
23+55	195.5402	23.15	Q				V
24+ 0	195.6980	22.91	Q				V
24+ 5	195.8542	22.68	Q				V
24+10	196.0086	22.43	Q				V
24+15	196.1613	22.16	Q				V
24+20	196.3118	21.86	Q				V
24+25	196.4600	21.52	Q				V
24+30	196.6057	21.15	Q				V
24+35	196.7486	20.75	Q				V
24+40	196.8884	20.30	Q				V
24+45	197.0250	19.84	Q				V
24+50	197.1601	19.61	Q				V
24+55	197.2943	19.49	Q				V
25+ 0	197.4279	19.39	Q				V
25+ 5	197.5608	19.30	Q				V
25+10	197.6932	19.23	Q				V
25+15	197.8252	19.16	Q				V
25+20	197.9566	19.09	Q				V
25+25	198.0876	19.02	Q				V
25+30	198.2180	18.94	Q				V
25+35	198.3479	18.85	Q				V
25+40	198.4771	18.77	Q				V
25+45	198.6057	18.67	Q				V
25+50	198.7337	18.58	Q				V
25+55	198.8609	18.48	Q				V
26+ 0	198.9875	18.38	Q				V
26+ 5	199.1134	18.27	Q				V
26+10	199.2384	18.16	Q				V
26+15	199.3627	18.04	Q				V
26+20	199.4860	17.91	Q				V
26+25	199.6085	17.78	Q				V
26+30	199.7301	17.65	Q				V
26+35	199.8506	17.51	Q				V
26+40	199.9702	17.36	Q				V

26+45	200.0888	17.21	Q				V
26+50	200.2063	17.06	Q				V
26+55	200.3227	16.90	Q				V
27+ 0	200.4379	16.73	Q				V
27+ 5	200.5517	16.53	Q				V
27+10	200.6640	16.30	Q				V
27+15	200.7745	16.04	Q				V
27+20	200.8831	15.77	Q				V
27+25	200.9896	15.46	Q				V
27+30	201.0939	15.15	Q				V
27+35	201.1972	15.01	Q				V
27+40	201.3001	14.93	Q				V
27+45	201.4026	14.88	Q				V
27+50	201.5047	14.83	Q				V
27+55	201.6066	14.79	Q				V
28+ 0	201.7082	14.76	Q				V
28+ 5	201.8096	14.72	Q				V
28+10	201.9108	14.69	Q				V
28+15	202.0117	14.66	Q				V
28+20	202.1124	14.62	Q				V
28+25	202.2128	14.58	Q				V
28+30	202.3130	14.54	Q				V
28+35	202.4128	14.50	Q				V
28+40	202.5124	14.46	Q				V
28+45	202.6116	14.41	Q				V
28+50	202.7106	14.37	Q				V
28+55	202.8092	14.32	Q				V
29+ 0	202.9076	14.28	Q				V
29+ 5	203.0056	14.23	Q				V
29+10	203.1032	14.18	Q				V
29+15	203.2006	14.13	Q				V
29+20	203.2976	14.08	Q				V
29+25	203.3942	14.03	Q				V
29+30	203.4905	13.98	Q				V
29+35	203.5864	13.93	Q				V
29+40	203.6819	13.87	Q				V
29+45	203.7770	13.81	Q				V
29+50	203.8717	13.75	Q				V
29+55	203.9659	13.68	Q				V
30+ 0	204.0596	13.60	Q				V
30+ 5	204.1527	13.53	Q				V
30+10	204.2453	13.44	Q				V
30+15	204.3373	13.36	Q				V
30+20	204.4289	13.30	Q				V
30+25	204.5201	13.24	Q				V
30+30	204.6109	13.19	Q				V
30+35	204.7014	13.14	Q				V
30+40	204.7916	13.09	Q				V
30+45	204.8814	13.04	Q				V
30+50	204.9709	12.99	Q				V
30+55	205.0599	12.93	Q				V
31+ 0	205.1485	12.87	Q				V
31+ 5	205.2367	12.80	Q				V
31+10	205.3245	12.74	Q				V
31+15	205.4117	12.67	Q				V
31+20	205.4984	12.59	Q				V
31+25	205.5846	12.52	Q				V

31+30	205.6703	12.44	Q				V
31+35	205.7555	12.36	Q				V
31+40	205.8400	12.28	Q				V
31+45	205.9239	12.19	Q				V
31+50	206.0072	12.09	Q				V
31+55	206.0898	12.00	Q				V
32+ 0	206.1718	11.90	Q				V
32+ 5	206.2530	11.80	Q				V
32+10	206.3335	11.69	Q				V
32+15	206.4132	11.58	Q				V
32+20	206.4922	11.46	Q				V
32+25	206.5703	11.35	Q				V
32+30	206.6476	11.22	Q				V
32+35	206.7239	11.07	Q				V
32+40	206.7990	10.90	Q				V
32+45	206.8728	10.72	Q				V
32+50	206.9453	10.53	Q				V
32+55	207.0163	10.30	Q				V
33+ 0	207.0858	10.10	Q				V
33+ 5	207.1548	10.01	Q				V
33+10	207.2233	9.95	Q				V
33+15	207.2916	9.91	Q				V
33+20	207.3596	9.87	Q				V
33+25	207.4273	9.83	Q				V
33+30	207.4948	9.80	Q				V
33+35	207.5621	9.77	Q				V
33+40	207.6291	9.74	Q				V
33+45	207.6959	9.70	Q				V
33+50	207.7625	9.66	Q				V
33+55	207.8287	9.62	Q				V
34+ 0	207.8947	9.58	Q				V
34+ 5	207.9603	9.54	Q				V
34+10	208.0257	9.49	Q				V
34+15	208.0908	9.45	Q				V
34+20	208.1555	9.40	Q				V
34+25	208.2199	9.35	Q				V
34+30	208.2839	9.30	Q				V
34+35	208.3476	9.24	Q				V
34+40	208.4108	9.19	Q				V
34+45	208.4737	9.13	Q				V
34+50	208.5362	9.07	Q				V
34+55	208.5983	9.01	Q				V
35+ 0	208.6599	8.95	Q				V
35+ 5	208.7211	8.89	Q				V
35+10	208.7818	8.82	Q				V
35+15	208.8421	8.75	Q				V
35+20	208.9017	8.66	Q				V
35+25	208.9608	8.57	Q				V
35+30	209.0191	8.47	Q				V
35+35	209.0767	8.37	Q				V
35+40	209.1335	8.24	Q				V
35+45	209.1896	8.14	Q				V
35+50	209.2452	8.08	Q				V
35+55	209.3006	8.04	Q				V
36+ 0	209.3557	8.00	Q				V
36+ 5	209.4106	7.97	Q				V
36+10	209.4653	7.94	Q				V

36+15	209.5197	7.91	Q				V
36+20	209.5739	7.87	Q				V
36+25	209.6279	7.84	Q				V
36+30	209.6816	7.80	Q				V
36+35	209.7351	7.76	Q				V
36+40	209.7883	7.72	Q				V
36+45	209.8412	7.68	Q				V
36+50	209.8938	7.64	Q				V
36+55	209.9461	7.59	Q				V
37+ 0	209.9981	7.55	Q				V
37+ 5	210.0497	7.50	Q				V
37+10	210.1010	7.45	Q				V
37+15	210.1520	7.40	Q				V
37+20	210.2026	7.34	Q				V
37+25	210.2528	7.29	Q				V
37+30	210.3025	7.22	Q				V
37+35	210.3516	7.13	Q				V
37+40	210.4001	7.05	Q				V
37+45	210.4481	6.96	Q				V
37+50	210.4954	6.88	Q				V
37+55	210.5421	6.78	Q				V
38+ 0	210.5881	6.68	Q				V
38+ 5	210.6333	6.57	Q				V
38+10	210.6777	6.44	Q				V
38+15	210.7212	6.32	Q				V
38+20	210.7638	6.18	Q				V
38+25	210.8053	6.02	Q				V
38+30	210.8458	5.89	Q				V
38+35	210.8859	5.81	Q				V
38+40	210.9254	5.75	Q				V
38+45	210.9646	5.69	Q				V
38+50	211.0033	5.63	Q				V
38+55	211.0417	5.57	Q				V
39+ 0	211.0797	5.52	Q				V
39+ 5	211.1173	5.46	Q				V
39+10	211.1545	5.40	Q				V
39+15	211.1913	5.34	Q				V
39+20	211.2277	5.28	Q				V
39+25	211.2637	5.22	Q				V
39+30	211.2992	5.15	Q				V
39+35	211.3342	5.08	Q				V
39+40	211.3687	5.01	Q				V
39+45	211.4027	4.94	Q				V
39+50	211.4363	4.87	Q				V
39+55	211.4693	4.79	Q				V
40+ 0	211.5018	4.72	Q				V
40+ 5	211.5337	4.64	Q				V
40+10	211.5650	4.55	Q				V
40+15	211.5958	4.46	Q				V
40+20	211.6259	4.37	Q				V
40+25	211.6553	4.28	Q				V
40+30	211.6842	4.19	Q				V
40+35	211.7123	4.09	Q				V
40+40	211.7398	3.99	Q				V
40+45	211.7665	3.88	Q				V
40+50	211.7923	3.75	Q				V
40+55	211.8172	3.61	Q				V

41+ 0	211.8411	3.46	Q				V
41+ 5	211.8638	3.31	Q				V
41+10	211.8854	3.13	Q				V
41+15	211.9059	2.98	Q				V
41+20	211.9257	2.88	Q				V
41+25	211.9449	2.79	Q				V
41+30	211.9635	2.70	Q				V
41+35	211.9814	2.60	Q				V
41+40	211.9987	2.51	Q				V
41+45	212.0153	2.41	Q				V
41+50	212.0312	2.31	Q				V
41+55	212.0463	2.20	Q				V
42+ 0	212.0607	2.09	Q				V
42+ 5	212.0743	1.98	Q				V
42+10	212.0871	1.86	Q				V
42+15	212.0991	1.74	Q				V
42+20	212.1102	1.61	Q				V
42+25	212.1204	1.48	Q				V
42+30	212.1295	1.32	Q				V
42+35	212.1373	1.14	Q				V
42+40	212.1438	0.94	Q				V
42+45	212.1487	0.72	Q				V
42+50	212.1520	0.48	Q				V
42+55	212.1533	0.18	Q				V
43+ 0	212.1539	0.09	Q				V
43+ 5	212.1542	0.05	Q				V
43+10	212.1544	0.03	Q				V
43+15	212.1545	0.01	Q				V
43+20	212.1545	0.00	Q				V

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 05/08/15 File: 154149HISTHYDB24100.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR

HISTORICAL CONDITIONS AREA "B"

100-YEAR, 24-HOUR STORM

BY: JTS DATE: 05-08-15

Drainage Area = 837.34(Ac.) = 1.308 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 837.34(Ac.)= 1.308 Sq. Mi.
Length along longest watercourse = 16296.72(Ft.)
Length along longest watercourse measured to centroid = 8849.03(Ft.)
Length along longest watercourse = 3.087 Mi.
Length along longest watercourse measured to centroid = 1.676 Mi.
Difference in elevation = 777.00(Ft.)
Slope along watercourse = 251.7415 Ft./Mi.
Average Manning's 'N' = 0.350
Lag time = 5.487 Hr.
Lag time = 329.20 Min.
25% of lag time = 82.30 Min.
40% of lag time = 131.68 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]
837.34	2.70	2260.82

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
837.34	6.65	5568.31

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 2.700(In)
Area Averaged 100-Year Rainfall = 6.650(In)

Point rain (area averaged) = 6.650(In)
Areal adjustment factor = 99.84 %
Adjusted average point rain = 6.639(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
81.060	67.00	0.050
1.780	78.00	0.050
101.910	86.00	0.050
652.590	89.00	0.050
Total Area Entered = 837.34(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.)	(In/Hr)	(Dec.)	(In/Hr)
67.0	83.2	0.208	0.050	0.198	0.097	0.019
78.0	89.8	0.132	0.050	0.126	0.002	0.000
86.0	94.4	0.073	0.050	0.070	0.122	0.008
89.0	95.6	0.057	0.050	0.055	0.779	0.043
Sum (F) =						0.070

Area averaged mean soil loss (F) (In/Hr) = 0.070
Minimum soil loss rate ((In/Hr)) = 0.035
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Unit Hydrograph
VALLEY S-Curve

WARNING: End of hydrograph not reached with this
Unit time interval vs lag time
Unit-Hydrograph terminated after 450 intervals
Unit Hydrograph Data

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	1.519	0.132
2	0.167	3.038	0.263
3	0.250	4.556	0.263
4	0.333	6.075	0.263
5	0.417	7.594	0.263
6	0.500	9.113	0.263
7	0.583	10.632	0.263
8	0.667	12.151	0.263
9	0.750	13.669	0.263
10	0.833	15.188	0.264
11	0.917	16.707	0.326
12	1.000	18.226	0.365
13	1.083	19.745	0.365
14	1.167	21.263	0.365
15	1.250	22.782	0.365
16	1.333	24.301	0.365

17	1.417	25.820	0.391	3.300
18	1.500	27.339	0.527	4.451
19	1.583	28.857	0.547	4.614
20	1.667	30.376	0.547	4.614
21	1.750	31.895	0.547	4.614
22	1.833	33.414	0.547	4.614
23	1.917	34.933	0.547	4.614
24	2.000	36.452	0.616	5.199
25	2.083	37.970	0.699	5.895
26	2.167	39.489	0.699	5.896
27	2.250	41.008	0.699	5.896
28	2.333	42.527	0.699	5.896
29	2.417	44.046	0.699	5.896
30	2.500	45.564	0.699	5.896
31	2.583	47.083	0.699	5.896
32	2.667	48.602	0.699	5.896
33	2.750	50.121	0.699	5.903
34	2.833	51.640	0.850	7.176
35	2.917	53.158	0.962	8.117
36	3.000	54.677	0.962	8.117
37	3.083	56.196	0.962	8.117
38	3.167	57.715	0.962	8.117
39	3.250	59.234	0.962	8.117
40	3.333	60.753	0.962	8.117
41	3.417	62.271	0.962	8.117
42	3.500	63.790	0.962	8.117
43	3.583	65.309	0.964	8.135
44	3.667	66.828	1.031	8.701
45	3.750	68.347	1.063	8.972
46	3.833	69.865	1.063	8.972
47	3.917	71.384	1.063	8.972
48	4.000	72.903	1.063	8.972
49	4.083	74.422	1.063	8.972
50	4.167	75.941	1.069	9.021
51	4.250	77.459	1.091	9.210
52	4.333	78.978	1.094	9.228
53	4.417	80.497	1.094	9.228
54	4.500	82.016	1.094	9.228
55	4.583	83.535	1.094	9.228
56	4.667	85.054	1.094	9.228
57	4.750	86.572	1.094	9.228
58	4.833	88.091	1.094	9.228
59	4.917	89.610	1.094	9.228
60	5.000	91.129	1.094	9.228
61	5.083	92.648	1.094	9.228
62	5.167	94.166	1.094	9.228
63	5.250	95.685	1.094	9.228
64	5.333	97.204	1.094	9.228
65	5.417	98.723	1.094	9.228
66	5.500	100.242	1.090	9.197
67	5.583	101.760	0.904	7.626
68	5.667	103.279	0.800	6.750
69	5.750	104.798	0.800	6.750
70	5.833	106.317	0.800	6.750
71	5.917	107.836	0.800	6.750
72	6.000	109.355	0.800	6.750
73	6.083	110.873	0.800	6.750

74	6.167	112.392	0.800	6.750
75	6.250	113.911	0.800	6.750
76	6.333	115.430	0.793	6.690
77	6.417	116.949	0.668	5.639
78	6.500	118.467	0.623	5.255
79	6.583	119.986	0.623	5.255
80	6.667	121.505	0.623	5.255
81	6.750	123.024	0.623	5.255
82	6.833	124.543	0.623	5.255
83	6.917	126.061	0.589	4.973
84	7.000	127.580	0.492	4.154
85	7.083	129.099	0.486	4.101
86	7.167	130.618	0.486	4.101
87	7.250	132.137	0.486	4.101
88	7.333	133.656	0.486	4.101
89	7.417	135.174	0.486	4.101
90	7.500	136.693	0.486	4.101
91	7.583	138.212	0.486	4.101
92	7.667	139.731	0.486	4.101
93	7.750	141.250	0.460	3.885
94	7.833	142.768	0.411	3.471
95	7.917	144.287	0.410	3.461
96	8.000	145.806	0.410	3.461
97	8.083	147.325	0.410	3.461
98	8.167	148.844	0.410	3.461
99	8.250	150.362	0.407	3.437
100	8.333	151.881	0.342	2.884
101	8.417	153.400	0.314	2.649
102	8.500	154.919	0.314	2.649
103	8.583	156.438	0.314	2.649
104	8.667	157.957	0.314	2.649
105	8.750	159.475	0.314	2.649
106	8.833	160.994	0.314	2.649
107	8.917	162.513	0.314	2.649
108	9.000	164.032	0.314	2.649
109	9.083	165.551	0.310	2.618
110	9.167	167.069	0.270	2.274
111	9.250	168.588	0.258	2.179
112	9.333	170.107	0.258	2.179
113	9.417	171.626	0.258	2.179
114	9.500	173.145	0.258	2.179
115	9.583	174.663	0.258	2.179
116	9.667	176.182	0.248	2.093
117	9.750	177.701	0.226	1.904
118	9.833	179.220	0.225	1.897
119	9.917	180.739	0.225	1.897
120	10.000	182.258	0.225	1.897
121	10.083	183.776	0.225	1.897
122	10.167	185.295	0.225	1.897
123	10.250	186.814	0.225	1.897
124	10.333	188.333	0.225	1.897
125	10.417	189.852	0.225	1.897
126	10.500	191.370	0.225	1.897
127	10.583	192.889	0.225	1.897
128	10.667	194.408	0.225	1.897
129	10.750	195.927	0.225	1.897
130	10.833	197.446	0.225	1.897

131	10.917	198.964	0.225	1.897
132	11.000	200.483	0.223	1.879
133	11.083	202.002	0.192	1.621
134	11.167	203.521	0.182	1.538
135	11.250	205.040	0.182	1.538
136	11.333	206.559	0.182	1.538
137	11.417	208.077	0.182	1.538
138	11.500	209.596	0.182	1.538
139	11.583	211.115	0.182	1.538
140	11.667	212.634	0.182	1.538
141	11.750	214.153	0.182	1.538
142	11.833	215.671	0.182	1.538
143	11.917	217.190	0.182	1.538
144	12.000	218.709	0.182	1.538
145	12.083	220.228	0.182	1.538
146	12.167	221.747	0.182	1.538
147	12.250	223.265	0.182	1.538
148	12.333	224.784	0.182	1.538
149	12.417	226.303	0.171	1.444
150	12.500	227.822	0.152	1.284
151	12.583	229.341	0.152	1.282
152	12.667	230.860	0.152	1.282
153	12.750	232.378	0.152	1.282
154	12.833	233.897	0.152	1.282
155	12.917	235.416	0.152	1.282
156	13.000	236.935	0.152	1.282
157	13.083	238.454	0.152	1.282
158	13.167	239.972	0.152	1.282
159	13.250	241.491	0.152	1.282
160	13.333	243.010	0.152	1.282
161	13.417	244.529	0.152	1.282
162	13.500	246.048	0.152	1.282
163	13.583	247.566	0.152	1.282
164	13.667	249.085	0.152	1.282
165	13.750	250.604	0.150	1.270
166	13.833	252.123	0.137	1.156
167	13.917	253.642	0.134	1.128
168	14.000	255.161	0.134	1.128
169	14.083	256.679	0.134	1.128
170	14.167	258.198	0.134	1.128
171	14.250	259.717	0.134	1.128
172	14.333	261.236	0.134	1.128
173	14.417	262.755	0.134	1.128
174	14.500	264.273	0.134	1.128
175	14.583	265.792	0.134	1.128
176	14.667	267.311	0.134	1.128
177	14.750	268.830	0.134	1.128
178	14.833	270.349	0.134	1.128
179	14.917	271.867	0.134	1.128
180	15.000	273.386	0.134	1.128
181	15.083	274.905	0.134	1.128
182	15.167	276.424	0.123	1.038
183	15.250	277.943	0.109	0.923
184	15.333	279.462	0.109	0.923
185	15.417	280.980	0.109	0.923
186	15.500	282.499	0.109	0.923
187	15.583	284.018	0.109	0.923

188	15.667	285.537	0.109	0.923
189	15.750	287.056	0.109	0.923
190	15.833	288.574	0.109	0.923
191	15.917	290.093	0.109	0.923
192	16.000	291.612	0.109	0.923
193	16.083	293.131	0.109	0.923
194	16.167	294.650	0.109	0.923
195	16.250	296.168	0.109	0.923
196	16.333	297.687	0.109	0.923
197	16.417	299.206	0.109	0.923
198	16.500	300.725	0.107	0.905
199	16.583	302.244	0.094	0.790
200	16.667	303.763	0.091	0.769
201	16.750	305.281	0.091	0.769
202	16.833	306.800	0.091	0.769
203	16.917	308.319	0.091	0.769
204	17.000	309.838	0.091	0.769
205	17.083	311.357	0.091	0.769
206	17.167	312.875	0.091	0.769
207	17.250	314.394	0.091	0.769
208	17.333	315.913	0.091	0.769
209	17.417	317.432	0.091	0.769
210	17.500	318.951	0.091	0.769
211	17.583	320.469	0.091	0.769
212	17.667	321.988	0.091	0.769
213	17.750	323.507	0.091	0.769
214	17.833	325.026	0.091	0.769
215	17.917	326.545	0.091	0.769
216	18.000	328.064	0.091	0.769
217	18.083	329.582	0.091	0.769
218	18.167	331.101	0.091	0.769
219	18.250	332.620	0.091	0.769
220	18.333	334.139	0.091	0.769
221	18.417	335.658	0.091	0.769
222	18.500	337.176	0.091	0.769
223	18.583	338.695	0.091	0.769
224	18.667	340.214	0.091	0.769
225	18.750	341.733	0.091	0.769
226	18.833	343.252	0.091	0.769
227	18.917	344.770	0.091	0.769
228	19.000	346.289	0.091	0.769
229	19.083	347.808	0.091	0.769
230	19.167	349.327	0.091	0.769
231	19.250	350.846	0.087	0.737
232	19.333	352.365	0.069	0.584
233	19.417	353.883	0.067	0.564
234	19.500	355.402	0.067	0.564
235	19.583	356.921	0.067	0.564
236	19.667	358.440	0.067	0.564
237	19.750	359.959	0.067	0.564
238	19.833	361.477	0.067	0.564
239	19.917	362.996	0.067	0.564
240	20.000	364.515	0.067	0.564
241	20.083	366.034	0.067	0.564
242	20.167	367.553	0.067	0.564
243	20.250	369.071	0.067	0.564
244	20.333	370.590	0.067	0.564

245	20.417	372.109	0.067	0.564
246	20.500	373.628	0.067	0.564
247	20.583	375.147	0.067	0.564
248	20.667	376.666	0.067	0.564
249	20.750	378.184	0.067	0.564
250	20.833	379.703	0.067	0.564
251	20.917	381.222	0.067	0.564
252	21.000	382.741	0.067	0.564
253	21.083	384.260	0.067	0.564
254	21.167	385.778	0.067	0.564
255	21.250	387.297	0.067	0.564
256	21.333	388.816	0.067	0.564
257	21.417	390.335	0.067	0.564
258	21.500	391.854	0.067	0.564
259	21.583	393.372	0.067	0.564
260	21.667	394.891	0.067	0.564
261	21.750	396.410	0.067	0.564
262	21.833	397.929	0.067	0.564
263	21.917	399.448	0.067	0.564
264	22.000	400.967	0.063	0.533
265	22.083	402.485	0.050	0.420
266	22.167	404.004	0.049	0.410
267	22.250	405.523	0.049	0.410
268	22.333	407.042	0.049	0.410
269	22.417	408.561	0.049	0.410
270	22.500	410.079	0.049	0.410
271	22.583	411.598	0.049	0.410
272	22.667	413.117	0.049	0.410
273	22.750	414.636	0.049	0.410
274	22.833	416.155	0.049	0.410
275	22.917	417.673	0.049	0.410
276	23.000	419.192	0.049	0.410
277	23.083	420.711	0.049	0.410
278	23.167	422.230	0.049	0.410
279	23.250	423.749	0.049	0.410
280	23.333	425.268	0.049	0.410
281	23.417	426.786	0.049	0.410
282	23.500	428.305	0.049	0.410
283	23.583	429.824	0.049	0.410
284	23.667	431.343	0.049	0.410
285	23.750	432.862	0.049	0.410
286	23.833	434.380	0.049	0.410
287	23.917	435.899	0.049	0.410
288	24.000	437.418	0.049	0.410
289	24.083	438.937	0.049	0.410
290	24.167	440.456	0.049	0.410
291	24.250	441.974	0.049	0.410
292	24.333	443.493	0.049	0.410
293	24.417	445.012	0.049	0.410
294	24.500	446.531	0.049	0.410
295	24.583	448.050	0.049	0.410
296	24.667	449.569	0.049	0.410
297	24.750	451.087	0.048	0.404
298	24.833	452.606	0.046	0.386
299	24.917	454.125	0.046	0.385
300	25.000	455.644	0.046	0.385
301	25.083	457.163	0.046	0.385

302	25.167	458.681	0.046	0.385
303	25.250	460.200	0.046	0.385
304	25.333	461.719	0.046	0.385
305	25.417	463.238	0.046	0.385
306	25.500	464.757	0.046	0.385
307	25.583	466.275	0.046	0.385
308	25.667	467.794	0.046	0.385
309	25.750	469.313	0.046	0.385
310	25.833	470.832	0.046	0.385
311	25.917	472.351	0.046	0.385
312	26.000	473.870	0.046	0.385
313	26.083	475.388	0.046	0.385
314	26.167	476.907	0.046	0.385
315	26.250	478.426	0.046	0.385
316	26.333	479.945	0.046	0.385
317	26.417	481.464	0.046	0.385
318	26.500	482.982	0.046	0.385
319	26.583	484.501	0.046	0.385
320	26.667	486.020	0.046	0.385
321	26.750	487.539	0.046	0.385
322	26.833	489.058	0.046	0.385
323	26.917	490.576	0.046	0.385
324	27.000	492.095	0.046	0.385
325	27.083	493.614	0.046	0.385
326	27.167	495.133	0.046	0.385
327	27.250	496.652	0.046	0.385
328	27.333	498.171	0.046	0.385
329	27.417	499.689	0.046	0.385
330	27.500	501.208	0.042	0.352
331	27.583	502.727	0.034	0.284
332	27.667	504.246	0.033	0.282
333	27.750	505.765	0.033	0.282
334	27.833	507.283	0.033	0.282
335	27.917	508.802	0.033	0.282
336	28.000	510.321	0.033	0.282
337	28.083	511.840	0.033	0.282
338	28.167	513.359	0.033	0.282
339	28.250	514.878	0.033	0.282
340	28.333	516.396	0.033	0.282
341	28.417	517.915	0.033	0.282
342	28.500	519.434	0.033	0.282
343	28.583	520.953	0.033	0.282
344	28.667	522.472	0.033	0.282
345	28.750	523.990	0.033	0.282
346	28.833	525.509	0.033	0.282
347	28.917	527.028	0.033	0.282
348	29.000	528.547	0.033	0.282
349	29.083	530.066	0.033	0.282
350	29.167	531.584	0.033	0.282
351	29.250	533.103	0.033	0.282
352	29.333	534.622	0.033	0.282
353	29.417	536.141	0.033	0.282
354	29.500	537.660	0.033	0.282
355	29.583	539.179	0.033	0.282
356	29.667	540.697	0.033	0.282
357	29.750	542.216	0.033	0.282
358	29.833	543.735	0.033	0.282

359	29.917	545.254	0.033	0.282
360	30.000	546.773	0.033	0.282
361	30.083	548.291	0.033	0.282
362	30.167	549.810	0.033	0.282
363	30.250	551.329	0.031	0.262
364	30.333	552.848	0.027	0.231
365	30.417	554.367	0.027	0.231
366	30.500	555.885	0.027	0.231
367	30.583	557.404	0.027	0.231
368	30.667	558.923	0.027	0.231
369	30.750	560.442	0.027	0.231
370	30.833	561.961	0.027	0.231
371	30.917	563.480	0.027	0.231
372	31.000	564.998	0.027	0.231
373	31.083	566.517	0.027	0.231
374	31.167	568.036	0.027	0.231
375	31.250	569.555	0.027	0.231
376	31.333	571.074	0.027	0.231
377	31.417	572.592	0.027	0.231
378	31.500	574.111	0.027	0.231
379	31.583	575.630	0.027	0.231
380	31.667	577.149	0.027	0.231
381	31.750	578.668	0.027	0.231
382	31.833	580.186	0.027	0.231
383	31.917	581.705	0.027	0.231
384	32.000	583.224	0.027	0.231
385	32.083	584.743	0.027	0.231
386	32.167	586.262	0.027	0.231
387	32.250	587.781	0.027	0.231
388	32.333	589.299	0.027	0.231
389	32.417	590.818	0.027	0.231
390	32.500	592.337	0.027	0.231
391	32.583	593.856	0.027	0.231
392	32.667	595.375	0.027	0.231
393	32.750	596.893	0.027	0.231
394	32.833	598.412	0.027	0.231
395	32.917	599.931	0.027	0.231
396	33.000	601.450	0.025	0.207
397	33.083	602.969	0.021	0.179
398	33.167	604.487	0.021	0.179
399	33.250	606.006	0.021	0.179
400	33.333	607.525	0.021	0.179
401	33.417	609.044	0.021	0.179
402	33.500	610.563	0.021	0.179
403	33.583	612.082	0.021	0.179
404	33.667	613.600	0.021	0.179
405	33.750	615.119	0.021	0.179
406	33.833	616.638	0.021	0.179
407	33.917	618.157	0.021	0.179
408	34.000	619.676	0.021	0.179
409	34.083	621.194	0.021	0.179
410	34.167	622.713	0.021	0.179
411	34.250	624.232	0.021	0.179
412	34.333	625.751	0.021	0.179
413	34.417	627.270	0.021	0.179
414	34.500	628.788	0.021	0.179
415	34.583	630.307	0.021	0.179

416	34.667	631.826	0.021	0.179
417	34.750	633.345	0.021	0.179
418	34.833	634.864	0.021	0.179
419	34.917	636.383	0.021	0.179
420	35.000	637.901	0.021	0.179
421	35.083	639.420	0.021	0.179
422	35.167	640.939	0.021	0.179
423	35.250	642.458	0.021	0.179
424	35.333	643.977	0.021	0.179
425	35.417	645.495	0.021	0.179
426	35.500	647.014	0.021	0.179
427	35.583	648.533	0.021	0.179
428	35.667	650.052	0.021	0.179
429	35.750	651.571	0.018	0.152
430	35.833	653.089	0.015	0.128
431	35.917	654.608	0.015	0.128
432	36.000	656.127	0.015	0.128
433	36.083	657.646	0.015	0.128
434	36.167	659.165	0.015	0.128
435	36.250	660.684	0.015	0.128
436	36.333	662.202	0.015	0.128
437	36.417	663.721	0.015	0.128
438	36.500	665.240	0.015	0.128
439	36.583	666.759	0.015	0.128
440	36.667	668.278	0.015	0.128
441	36.750	669.796	0.015	0.128
442	36.833	671.315	0.015	0.128
443	36.917	672.834	0.015	0.128
444	37.000	674.353	0.015	0.128
445	37.083	675.872	0.015	0.128
446	37.167	677.390	0.015	0.128
447	37.250	678.909	0.015	0.128
448	37.333	680.428	0.015	0.128
449	37.417	681.947	0.015	0.128
Sum =			98.812	Sum= 833.855

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	0.053	(0.125)	0.048	0.005
2	0.17	0.07	0.053	(0.124)	0.048	0.005
3	0.25	0.07	0.053	(0.124)	0.048	0.005
4	0.33	0.10	0.080	(0.124)	0.072	0.008
5	0.42	0.10	0.080	(0.123)	0.072	0.008
6	0.50	0.10	0.080	(0.123)	0.072	0.008
7	0.58	0.10	0.080	(0.122)	0.072	0.008
8	0.67	0.10	0.080	(0.122)	0.072	0.008
9	0.75	0.10	0.080	(0.121)	0.072	0.008
10	0.83	0.13	0.106	(0.121)	0.096	0.011
11	0.92	0.13	0.106	(0.120)	0.096	0.011
12	1.00	0.13	0.106	(0.120)	0.096	0.011
13	1.08	0.10	0.080	(0.119)	0.072	0.008
14	1.17	0.10	0.080	(0.119)	0.072	0.008

15	1.25	0.10	0.080	(0.118)	0.072	0.008
16	1.33	0.10	0.080	(0.118)	0.072	0.008
17	1.42	0.10	0.080	(0.117)	0.072	0.008
18	1.50	0.10	0.080	(0.117)	0.072	0.008
19	1.58	0.10	0.080	(0.116)	0.072	0.008
20	1.67	0.10	0.080	(0.116)	0.072	0.008
21	1.75	0.10	0.080	(0.115)	0.072	0.008
22	1.83	0.13	0.106	(0.115)	0.096	0.011
23	1.92	0.13	0.106	(0.115)	0.096	0.011
24	2.00	0.13	0.106	(0.114)	0.096	0.011
25	2.08	0.13	0.106	(0.114)	0.096	0.011
26	2.17	0.13	0.106	(0.113)	0.096	0.011
27	2.25	0.13	0.106	(0.113)	0.096	0.011
28	2.33	0.13	0.106	(0.112)	0.096	0.011
29	2.42	0.13	0.106	(0.112)	0.096	0.011
30	2.50	0.13	0.106	(0.111)	0.096	0.011
31	2.58	0.17	0.133	0.111 (0.120)		0.022
32	2.67	0.17	0.133	0.110 (0.120)		0.022
33	2.75	0.17	0.133	0.110 (0.120)		0.023
34	2.83	0.17	0.133	0.110 (0.120)		0.023
35	2.92	0.17	0.133	0.109 (0.120)		0.024
36	3.00	0.17	0.133	0.109 (0.120)		0.024
37	3.08	0.17	0.133	0.108 (0.120)		0.025
38	3.17	0.17	0.133	0.108 (0.120)		0.025
39	3.25	0.17	0.133	0.107 (0.120)		0.026
40	3.33	0.17	0.133	0.107 (0.120)		0.026
41	3.42	0.17	0.133	0.106 (0.120)		0.026
42	3.50	0.17	0.133	0.106 (0.120)		0.027
43	3.58	0.17	0.133	0.105 (0.120)		0.027
44	3.67	0.17	0.133	0.105 (0.120)		0.028
45	3.75	0.17	0.133	0.105 (0.120)		0.028
46	3.83	0.20	0.159	0.104 (0.143)		0.055
47	3.92	0.20	0.159	0.104 (0.143)		0.056
48	4.00	0.20	0.159	0.103 (0.143)		0.056
49	4.08	0.20	0.159	0.103 (0.143)		0.057
50	4.17	0.20	0.159	0.102 (0.143)		0.057
51	4.25	0.20	0.159	0.102 (0.143)		0.057
52	4.33	0.23	0.186	0.102 (0.167)		0.084
53	4.42	0.23	0.186	0.101 (0.167)		0.085
54	4.50	0.23	0.186	0.101 (0.167)		0.085
55	4.58	0.23	0.186	0.100 (0.167)		0.086
56	4.67	0.23	0.186	0.100 (0.167)		0.086
57	4.75	0.23	0.186	0.099 (0.167)		0.087
58	4.83	0.27	0.212	0.099 (0.191)		0.114
59	4.92	0.27	0.212	0.099 (0.191)		0.114
60	5.00	0.27	0.212	0.098 (0.191)		0.114
61	5.08	0.20	0.159	0.098 (0.143)		0.062
62	5.17	0.20	0.159	0.097 (0.143)		0.062
63	5.25	0.20	0.159	0.097 (0.143)		0.063
64	5.33	0.23	0.186	0.096 (0.167)		0.090
65	5.42	0.23	0.186	0.096 (0.167)		0.090
66	5.50	0.23	0.186	0.096 (0.167)		0.090
67	5.58	0.27	0.212	0.095 (0.191)		0.117
68	5.67	0.27	0.212	0.095 (0.191)		0.118
69	5.75	0.27	0.212	0.094 (0.191)		0.118
70	5.83	0.27	0.212	0.094 (0.191)		0.119
71	5.92	0.27	0.212	0.093 (0.191)		0.119

72	6.00	0.27	0.212	0.093	(0.191)	0.119
73	6.08	0.30	0.239	0.093	(0.215)	0.146
74	6.17	0.30	0.239	0.092	(0.215)	0.147
75	6.25	0.30	0.239	0.092	(0.215)	0.147
76	6.33	0.30	0.239	0.091	(0.215)	0.148
77	6.42	0.30	0.239	0.091	(0.215)	0.148
78	6.50	0.30	0.239	0.091	(0.215)	0.148
79	6.58	0.33	0.266	0.090	(0.239)	0.175
80	6.67	0.33	0.266	0.090	(0.239)	0.176
81	6.75	0.33	0.266	0.089	(0.239)	0.176
82	6.83	0.33	0.266	0.089	(0.239)	0.177
83	6.92	0.33	0.266	0.089	(0.239)	0.177
84	7.00	0.33	0.266	0.088	(0.239)	0.177
85	7.08	0.33	0.266	0.088	(0.239)	0.178
86	7.17	0.33	0.266	0.087	(0.239)	0.178
87	7.25	0.33	0.266	0.087	(0.239)	0.179
88	7.33	0.37	0.292	0.087	(0.263)	0.206
89	7.42	0.37	0.292	0.086	(0.263)	0.206
90	7.50	0.37	0.292	0.086	(0.263)	0.206
91	7.58	0.40	0.319	0.085	(0.287)	0.233
92	7.67	0.40	0.319	0.085	(0.287)	0.234
93	7.75	0.40	0.319	0.085	(0.287)	0.234
94	7.83	0.43	0.345	0.084	(0.311)	0.261
95	7.92	0.43	0.345	0.084	(0.311)	0.261
96	8.00	0.43	0.345	0.083	(0.311)	0.262
97	8.08	0.50	0.398	0.083	(0.359)	0.315
98	8.17	0.50	0.398	0.083	(0.359)	0.316
99	8.25	0.50	0.398	0.082	(0.359)	0.316
100	8.33	0.50	0.398	0.082	(0.359)	0.316
101	8.42	0.50	0.398	0.081	(0.359)	0.317
102	8.50	0.50	0.398	0.081	(0.359)	0.317
103	8.58	0.53	0.425	0.081	(0.382)	0.344
104	8.67	0.53	0.425	0.080	(0.382)	0.345
105	8.75	0.53	0.425	0.080	(0.382)	0.345
106	8.83	0.57	0.451	0.080	(0.406)	0.372
107	8.92	0.57	0.451	0.079	(0.406)	0.372
108	9.00	0.57	0.451	0.079	(0.406)	0.373
109	9.08	0.63	0.505	0.078	(0.454)	0.426
110	9.17	0.63	0.505	0.078	(0.454)	0.426
111	9.25	0.63	0.505	0.078	(0.454)	0.427
112	9.33	0.67	0.531	0.077	(0.478)	0.454
113	9.42	0.67	0.531	0.077	(0.478)	0.454
114	9.50	0.67	0.531	0.077	(0.478)	0.455
115	9.58	0.70	0.558	0.076	(0.502)	0.481
116	9.67	0.70	0.558	0.076	(0.502)	0.482
117	9.75	0.70	0.558	0.076	(0.502)	0.482
118	9.83	0.73	0.584	0.075	(0.526)	0.509
119	9.92	0.73	0.584	0.075	(0.526)	0.509
120	10.00	0.73	0.584	0.074	(0.526)	0.510
121	10.08	0.50	0.398	0.074	(0.359)	0.324
122	10.17	0.50	0.398	0.074	(0.359)	0.325
123	10.25	0.50	0.398	0.073	(0.359)	0.325
124	10.33	0.50	0.398	0.073	(0.359)	0.325
125	10.42	0.50	0.398	0.073	(0.359)	0.326
126	10.50	0.50	0.398	0.072	(0.359)	0.326
127	10.58	0.67	0.531	0.072	(0.478)	0.459
128	10.67	0.67	0.531	0.072	(0.478)	0.460

129	10.75	0.67	0.531	0.071	(0.478)	0.460
130	10.83	0.67	0.531	0.071	(0.478)	0.460
131	10.92	0.67	0.531	0.071	(0.478)	0.461
132	11.00	0.67	0.531	0.070	(0.478)	0.461
133	11.08	0.63	0.505	0.070	(0.454)	0.435
134	11.17	0.63	0.505	0.070	(0.454)	0.435
135	11.25	0.63	0.505	0.069	(0.454)	0.435
136	11.33	0.63	0.505	0.069	(0.454)	0.436
137	11.42	0.63	0.505	0.068	(0.454)	0.436
138	11.50	0.63	0.505	0.068	(0.454)	0.436
139	11.58	0.57	0.451	0.068	(0.406)	0.384
140	11.67	0.57	0.451	0.067	(0.406)	0.384
141	11.75	0.57	0.451	0.067	(0.406)	0.384
142	11.83	0.60	0.478	0.067	(0.430)	0.411
143	11.92	0.60	0.478	0.066	(0.430)	0.412
144	12.00	0.60	0.478	0.066	(0.430)	0.412
145	12.08	0.83	0.664	0.066	(0.598)	0.598
146	12.17	0.83	0.664	0.065	(0.598)	0.598
147	12.25	0.83	0.664	0.065	(0.598)	0.599
148	12.33	0.87	0.690	0.065	(0.621)	0.626
149	12.42	0.87	0.690	0.064	(0.621)	0.626
150	12.50	0.87	0.690	0.064	(0.621)	0.626
151	12.58	0.93	0.744	0.064	(0.669)	0.680
152	12.67	0.93	0.744	0.064	(0.669)	0.680
153	12.75	0.93	0.744	0.063	(0.669)	0.680
154	12.83	0.97	0.770	0.063	(0.693)	0.707
155	12.92	0.97	0.770	0.063	(0.693)	0.708
156	13.00	0.97	0.770	0.062	(0.693)	0.708
157	13.08	1.13	0.903	0.062	(0.813)	0.841
158	13.17	1.13	0.903	0.062	(0.813)	0.841
159	13.25	1.13	0.903	0.061	(0.813)	0.842
160	13.33	1.13	0.903	0.061	(0.813)	0.842
161	13.42	1.13	0.903	0.061	(0.813)	0.842
162	13.50	1.13	0.903	0.060	(0.813)	0.843
163	13.58	0.77	0.611	0.060	(0.550)	0.551
164	13.67	0.77	0.611	0.060	(0.550)	0.551
165	13.75	0.77	0.611	0.059	(0.550)	0.551
166	13.83	0.77	0.611	0.059	(0.550)	0.552
167	13.92	0.77	0.611	0.059	(0.550)	0.552
168	14.00	0.77	0.611	0.059	(0.550)	0.552
169	14.08	0.90	0.717	0.058	(0.645)	0.659
170	14.17	0.90	0.717	0.058	(0.645)	0.659
171	14.25	0.90	0.717	0.058	(0.645)	0.659
172	14.33	0.87	0.690	0.057	(0.621)	0.633
173	14.42	0.87	0.690	0.057	(0.621)	0.633
174	14.50	0.87	0.690	0.057	(0.621)	0.634
175	14.58	0.87	0.690	0.056	(0.621)	0.634
176	14.67	0.87	0.690	0.056	(0.621)	0.634
177	14.75	0.87	0.690	0.056	(0.621)	0.635
178	14.83	0.83	0.664	0.056	(0.598)	0.608
179	14.92	0.83	0.664	0.055	(0.598)	0.609
180	15.00	0.83	0.664	0.055	(0.598)	0.609
181	15.08	0.80	0.637	0.055	(0.574)	0.583
182	15.17	0.80	0.637	0.054	(0.574)	0.583
183	15.25	0.80	0.637	0.054	(0.574)	0.583
184	15.33	0.77	0.611	0.054	(0.550)	0.557
185	15.42	0.77	0.611	0.054	(0.550)	0.557

186	15.50	0.77	0.611	0.053	(0.550)	0.557
187	15.58	0.63	0.505	0.053	(0.454)	0.451
188	15.67	0.63	0.505	0.053	(0.454)	0.452
189	15.75	0.63	0.505	0.053	(0.454)	0.452
190	15.83	0.63	0.505	0.052	(0.454)	0.452
191	15.92	0.63	0.505	0.052	(0.454)	0.453
192	16.00	0.63	0.505	0.052	(0.454)	0.453
193	16.08	0.13	0.106	0.051	(0.096)	0.055
194	16.17	0.13	0.106	0.051	(0.096)	0.055
195	16.25	0.13	0.106	0.051	(0.096)	0.055
196	16.33	0.13	0.106	0.051	(0.096)	0.056
197	16.42	0.13	0.106	0.050	(0.096)	0.056
198	16.50	0.13	0.106	0.050	(0.096)	0.056
199	16.58	0.10	0.080	0.050	(0.072)	0.030
200	16.67	0.10	0.080	0.050	(0.072)	0.030
201	16.75	0.10	0.080	0.049	(0.072)	0.030
202	16.83	0.10	0.080	0.049	(0.072)	0.030
203	16.92	0.10	0.080	0.049	(0.072)	0.031
204	17.00	0.10	0.080	0.049	(0.072)	0.031
205	17.08	0.17	0.133	0.048	(0.120)	0.084
206	17.17	0.17	0.133	0.048	(0.120)	0.085
207	17.25	0.17	0.133	0.048	(0.120)	0.085
208	17.33	0.17	0.133	0.048	(0.120)	0.085
209	17.42	0.17	0.133	0.047	(0.120)	0.085
210	17.50	0.17	0.133	0.047	(0.120)	0.086
211	17.58	0.17	0.133	0.047	(0.120)	0.086
212	17.67	0.17	0.133	0.047	(0.120)	0.086
213	17.75	0.17	0.133	0.047	(0.120)	0.086
214	17.83	0.13	0.106	0.046	(0.096)	0.060
215	17.92	0.13	0.106	0.046	(0.096)	0.060
216	18.00	0.13	0.106	0.046	(0.096)	0.060
217	18.08	0.13	0.106	0.046	(0.096)	0.061
218	18.17	0.13	0.106	0.045	(0.096)	0.061
219	18.25	0.13	0.106	0.045	(0.096)	0.061
220	18.33	0.13	0.106	0.045	(0.096)	0.061
221	18.42	0.13	0.106	0.045	(0.096)	0.061
222	18.50	0.13	0.106	0.045	(0.096)	0.062
223	18.58	0.10	0.080	0.044	(0.072)	0.035
224	18.67	0.10	0.080	0.044	(0.072)	0.036
225	18.75	0.10	0.080	0.044	(0.072)	0.036
226	18.83	0.07	0.053	0.044	(0.048)	0.009
227	18.92	0.07	0.053	0.043	(0.048)	0.010
228	19.00	0.07	0.053	0.043	(0.048)	0.010
229	19.08	0.10	0.080	0.043	(0.072)	0.037
230	19.17	0.10	0.080	0.043	(0.072)	0.037
231	19.25	0.10	0.080	0.043	(0.072)	0.037
232	19.33	0.13	0.106	0.042	(0.096)	0.064
233	19.42	0.13	0.106	0.042	(0.096)	0.064
234	19.50	0.13	0.106	0.042	(0.096)	0.064
235	19.58	0.10	0.080	0.042	(0.072)	0.038
236	19.67	0.10	0.080	0.042	(0.072)	0.038
237	19.75	0.10	0.080	0.041	(0.072)	0.038
238	19.83	0.07	0.053	0.041	(0.048)	0.012
239	19.92	0.07	0.053	0.041	(0.048)	0.012
240	20.00	0.07	0.053	0.041	(0.048)	0.012
241	20.08	0.10	0.080	0.041	(0.072)	0.039
242	20.17	0.10	0.080	0.041	(0.072)	0.039

243	20.25	0.10	0.080	0.040	(0.072)	0.039
244	20.33	0.10	0.080	0.040	(0.072)	0.039
245	20.42	0.10	0.080	0.040	(0.072)	0.040
246	20.50	0.10	0.080	0.040	(0.072)	0.040
247	20.58	0.10	0.080	0.040	(0.072)	0.040
248	20.67	0.10	0.080	0.040	(0.072)	0.040
249	20.75	0.10	0.080	0.039	(0.072)	0.040
250	20.83	0.07	0.053	0.039	(0.048)	0.014
251	20.92	0.07	0.053	0.039	(0.048)	0.014
252	21.00	0.07	0.053	0.039	(0.048)	0.014
253	21.08	0.10	0.080	0.039	(0.072)	0.041
254	21.17	0.10	0.080	0.039	(0.072)	0.041
255	21.25	0.10	0.080	0.038	(0.072)	0.041
256	21.33	0.07	0.053	0.038	(0.048)	0.015
257	21.42	0.07	0.053	0.038	(0.048)	0.015
258	21.50	0.07	0.053	0.038	(0.048)	0.015
259	21.58	0.10	0.080	0.038	(0.072)	0.042
260	21.67	0.10	0.080	0.038	(0.072)	0.042
261	21.75	0.10	0.080	0.038	(0.072)	0.042
262	21.83	0.07	0.053	0.037	(0.048)	0.016
263	21.92	0.07	0.053	0.037	(0.048)	0.016
264	22.00	0.07	0.053	0.037	(0.048)	0.016
265	22.08	0.10	0.080	0.037	(0.072)	0.043
266	22.17	0.10	0.080	0.037	(0.072)	0.043
267	22.25	0.10	0.080	0.037	(0.072)	0.043
268	22.33	0.07	0.053	0.037	(0.048)	0.016
269	22.42	0.07	0.053	0.037	(0.048)	0.016
270	22.50	0.07	0.053	0.037	(0.048)	0.017
271	22.58	0.07	0.053	0.036	(0.048)	0.017
272	22.67	0.07	0.053	0.036	(0.048)	0.017
273	22.75	0.07	0.053	0.036	(0.048)	0.017
274	22.83	0.07	0.053	0.036	(0.048)	0.017
275	22.92	0.07	0.053	0.036	(0.048)	0.017
276	23.00	0.07	0.053	0.036	(0.048)	0.017
277	23.08	0.07	0.053	0.036	(0.048)	0.017
278	23.17	0.07	0.053	0.036	(0.048)	0.017
279	23.25	0.07	0.053	0.036	(0.048)	0.017
280	23.33	0.07	0.053	0.036	(0.048)	0.017
281	23.42	0.07	0.053	0.036	(0.048)	0.018
282	23.50	0.07	0.053	0.035	(0.048)	0.018
283	23.58	0.07	0.053	0.035	(0.048)	0.018
284	23.67	0.07	0.053	0.035	(0.048)	0.018
285	23.75	0.07	0.053	0.035	(0.048)	0.018
286	23.83	0.07	0.053	0.035	(0.048)	0.018
287	23.92	0.07	0.053	0.035	(0.048)	0.018
288	24.00	0.07	0.053	0.035	(0.048)	0.018

(Loss Rate Not Used)

Sum = 100.0

Sum = 60.5

Flood volume = Effective rainfall 5.04(In)
times area 837.3(Ac.)/[(In)/(Ft.)] = 352.0(Ac.Ft)
Total soil loss = 1.59(In)
Total soil loss = 111.260(Ac.Ft)
Total rainfall = 6.64(In)
Flood volume = 15333409.5 Cubic Feet
Total soil loss = 4846502.6 Cubic Feet

Peak flow rate of this hydrograph = 337.074(CFS)

 ++++++

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	100.0	200.0	300.0	400.0
0+ 5	0.0000		0.01	Q				
0+10	0.0002		0.02	Q				
0+15	0.0004		0.03	Q				
0+20	0.0007		0.04	Q				
0+25	0.0011		0.06	Q				
0+30	0.0016		0.08	Q				
0+35	0.0023		0.10	Q				
0+40	0.0031		0.12	Q				
0+45	0.0040		0.13	Q				
0+50	0.0051		0.15	Q				
0+55	0.0063		0.18	Q				
1+ 0	0.0078		0.21	Q				
1+ 5	0.0094		0.23	Q				
1+10	0.0111		0.26	Q				
1+15	0.0131		0.28	Q				
1+20	0.0152		0.31	Q				
1+25	0.0175		0.33	Q				
1+30	0.0200		0.36	Q				
1+35	0.0227		0.40	Q				
1+40	0.0257		0.43	Q				
1+45	0.0289		0.47	Q				
1+50	0.0324		0.51	Q				
1+55	0.0362		0.56	Q				
2+ 0	0.0404		0.60	Q				
2+ 5	0.0449		0.65	Q				
2+10	0.0497		0.70	Q				
2+15	0.0549		0.76	Q				
2+20	0.0605		0.81	Q				
2+25	0.0665		0.87	Q				
2+30	0.0728		0.92	Q				
2+35	0.0796		0.99	Q				
2+40	0.0870		1.07	Q				
2+45	0.0949		1.15	Q				
2+50	0.1034		1.24	Q				
2+55	0.1127		1.34	Q				
3+ 0	0.1226		1.44	Q				
3+ 5	0.1332		1.54	Q				
3+10	0.1446		1.65	Q				
3+15	0.1567		1.76	Q				
3+20	0.1695		1.87	Q				
3+25	0.1832		1.98	Q				
3+30	0.1977		2.11	Q				
3+35	0.2131		2.23	Q				
3+40	0.2294		2.37	Q				
3+45	0.2467		2.51	Q				
3+50	0.2651		2.67	Q				
3+55	0.2849		2.88	Q				

4+ 0	0.3062	3.09	Q
4+ 5	0.3290	3.31	Q
4+10	0.3533	3.53	Q
4+15	0.3792	3.76	Q
4+20	0.4068	4.01	Q
4+25	0.4365	4.30	Q
4+30	0.4682	4.60	Q
4+35	0.5020	4.92	Q
4+40	0.5381	5.25	Q
4+45	0.5766	5.59	Q
4+50	0.6177	5.96	Q
4+55	0.6615	6.37	Q
5+ 0	0.7082	6.78	Q
5+ 5	0.7573	7.13	Q
5+10	0.8085	7.44	Q
5+15	0.8622	7.80	Q
5+20	0.9188	8.21	Q
5+25	0.9784	8.66	Q
5+30	1.0412	9.12	Q
5+35	1.1073	9.60	Q
5+40	1.1771	10.13	VQ
5+45	1.2509	10.72	VQ
5+50	1.3289	11.33	VQ
5+55	1.4109	11.91	VQ
6+ 0	1.4969	12.48	VQ
6+ 5	1.5870	13.08	VQ
6+10	1.6817	13.75	VQ
6+15	1.7813	14.47	VQ
6+20	1.8862	15.22	VQ
6+25	1.9961	15.96	VQ
6+30	2.1108	16.66	VQ
6+35	2.2308	17.41	VQ
6+40	2.3563	18.24	VQ
6+45	2.4879	19.11	VQ
6+50	2.6257	20.01	V Q
6+55	2.7699	20.93	V Q
7+ 0	2.9204	21.86	V Q
7+ 5	3.0774	22.79	V Q
7+10	3.2410	23.75	V Q
7+15	3.4113	24.73	V Q
7+20	3.5886	25.75	V Q
7+25	3.7735	26.84	V Q
7+30	3.9664	28.00	V Q
7+35	4.1678	29.25	V Q
7+40	4.3783	30.56	V Q
7+45	4.5978	31.87	V Q
7+50	4.8260	33.14	V Q
7+55	5.0631	34.42	V Q
8+ 0	5.3094	35.76	V Q
8+ 5	5.5656	37.20	V Q
8+10	5.8323	38.73	V Q
8+15	6.1097	40.27	V Q
8+20	6.3979	41.85	V Q
8+25	6.6973	43.48	V Q
8+30	7.0083	45.15	V Q
8+35	7.3311	46.87	V Q
8+40	7.6658	48.61	V Q

8+45	8.0127	50.37	V	Q					
8+50	8.3723	52.21	V	Q					
8+55	8.7451	54.14	V	Q					
9+ 0	9.1317	56.13	V	Q					
9+ 5	9.5324	58.18	V	Q					
9+10	9.9477	60.31	V	Q					
9+15	10.3781	62.48	V	Q					
9+20	10.8237	64.71	V	Q					
9+25	11.2850	66.98	V	Q					
9+30	11.7626	69.34	V	Q					
9+35	12.2568	71.76	V	Q					
9+40	12.7681	74.24	V	Q					
9+45	13.2967	76.75	V	Q					
9+50	13.8426	79.27	V	Q					
9+55	14.4062	81.84	V	Q					
10+ 0	14.9881	84.48	V	Q					
10+ 5	15.5871	86.99	V	Q					
10+10	16.2023	89.33	V	Q					
10+15	16.8339	91.70	V	Q					
10+20	17.4818	94.07	V	Q					
10+25	18.1462	96.47	V	Q					
10+30	18.8277	98.96	V	Q					
10+35	19.5284	101.74	V	Q					
10+40	20.2496	104.72	V	Q					
10+45	20.9916	107.73	V	Q					
10+50	21.7546	110.79	V	Q					
10+55	22.5383	113.79	V	Q					
11+ 0	23.3427	116.80	V	Q					
11+ 5	24.1677	119.78	V	Q					
11+10	25.0126	122.69	V	Q					
11+15	25.8778	125.62	V	Q					
11+20	26.7636	128.62	V	Q					
11+25	27.6709	131.74	V	Q					
11+30	28.5987	134.72	V	Q					
11+35	29.5466	137.62	V	Q					
11+40	30.5139	140.46	V	Q					
11+45	31.5008	143.29	V	Q					
11+50	32.5080	146.24	V	Q					
11+55	33.5360	149.28	V	Q					
12+ 0	34.5855	152.38	V	Q					
12+ 5	35.6567	155.55	V	Q					
12+10	36.7513	158.93	V	Q					
12+15	37.8691	162.31	V	Q					
12+20	39.0106	165.74	V	Q					
12+25	40.1757	169.18	V	Q					
12+30	41.3646	172.62	V	Q					
12+35	42.5781	176.21	V	Q					
12+40	43.8172	179.92	V	Q					
12+45	45.0822	183.67	V	Q					
12+50	46.3714	187.19	V	Q					
12+55	47.6841	190.60	V	Q					
13+ 0	49.0199	193.97	V	Q					
13+ 5	50.3794	197.39	V	Q					
13+10	51.7634	200.96	V	Q					
13+15	53.1724	204.59	V	Q					
13+20	54.6074	208.36	V	Q					
13+25	56.0697	212.32	V	Q					

13+30	57.5605	216.46	V		Q	
13+35	59.0767	220.16	V		Q	
13+40	60.6151	223.37	V		Q	
13+45	62.1756	226.58	V		Q	
13+50	63.7578	229.74	V		Q	
13+55	65.3619	232.92	V		Q	
14+ 0	66.9893	236.29	V		Q	
14+ 5	68.6414	239.89	V		Q	
14+10	70.3193	243.63	V		Q	
14+15	72.0230	247.38	V		Q	
14+20	73.7515	250.98	V		Q	
14+25	75.5028	254.28	V		Q	
14+30	77.2769	257.61	V		Q	
14+35	79.0741	260.95	V		Q	
14+40	80.8940	264.24	V		Q	
14+45	82.7366	267.56	V		Q	
14+50	84.6033	271.03	V		Q	
14+55	86.4942	274.57	V		Q	
15+ 0	88.4075	277.81	V		Q	
15+ 5	90.3431	281.05	V		Q	
15+10	92.3002	284.17	V		Q	
15+15	94.2784	287.23	V		Q	
15+20	96.2775	290.27	V		Q	
15+25	98.2974	293.28	V		Q	
15+30	100.3374	296.21	V		Q	
15+35	102.3975	299.13	V		Q	
15+40	104.4785	302.15	V		Q	
15+45	106.5799	305.12	V		Q	
15+50	108.7025	308.21	V		Q	
15+55	110.8470	311.37	V		Q	
16+ 0	113.0132	314.54	V		Q	
16+ 5	115.1973	317.13	V		Q	
16+10	117.3952	319.14	V		Q	
16+15	119.6066	321.09	V		Q	
16+20	121.8284	322.60	V		Q	
16+25	124.0595	323.97	V		Q	
16+30	126.3000	325.32	V		Q	
16+35	128.5497	326.65	V		Q	
16+40	130.8089	328.04	V		Q	
16+45	133.0774	329.38	V		Q	
16+50	135.3555	330.79	V		Q	
16+55	137.6417	331.96	V		Q	
17+ 0	139.9347	332.95	V		Q	
17+ 5	142.2349	333.99	V		Q	
17+10	144.5415	334.91	V		Q	
17+15	146.8538	335.75	V		Q	
17+20	149.1711	336.48	V		Q	
17+25	151.4926	337.07	V		Q	
17+30	153.8137	337.03	V		Q	
17+35	156.1310	336.47	V		Q	
17+40	158.4433	335.75	V		Q	
17+45	160.7506	335.02	V		Q	
17+50	163.0525	334.24	V		Q	
17+55	165.3489	333.44	V		Q	
18+ 0	167.6383	332.41	V		Q	
18+ 5	169.9177	330.97	V		Q	
18+10	172.1863	329.41	V		Q	

18+15	174.4440	327.82			V		Q
18+20	176.6897	326.08			V		Q
18+25	178.9215	324.05			V		Q
18+30	181.1393	322.02			V		Q
18+35	183.3412	319.73			V		Q
18+40	185.5259	317.21			V		Q
18+45	187.6927	314.62			V		Q
18+50	189.8375	311.43			V		Q
18+55	191.9565	307.67			V		Q
19+ 0	194.0483	303.74			V		Q
19+ 5	196.1166	300.31			V		Q
19+10	198.1628	297.12			V		Q
19+15	200.1866	293.85			V		Q
19+20	202.1880	290.60			V		Q
19+25	204.1659	287.19			V	Q	
19+30	206.1194	283.64			V	Q	
19+35	208.0469	279.87			V	Q	
19+40	209.9455	275.69			V	Q	
19+45	211.8141	271.31			V	Q	
19+50	213.6526	266.95			V	Q	
19+55	215.4633	262.92			V	Q	
20+ 0	217.2460	258.85			VQ		
20+ 5	219.0005	254.76			Q		
20+10	220.7268	250.66			Q		
20+15	222.4239	246.41			QV		
20+20	224.0909	242.06			QV		
20+25	225.7275	237.63			Q	V	
20+30	227.3348	233.39			Q	V	
20+35	228.9128	229.13			Q	V	
20+40	230.4618	224.92			Q	V	
20+45	231.9819	220.72			Q	V	
20+50	233.4724	216.41			Q	V	
20+55	234.9328	212.05			Q	V	
21+ 0	236.3626	207.60			Q	V	
21+ 5	237.7632	203.38			Q	V	
21+10	239.1354	199.25			Q	V	
21+15	240.4797	195.19			Q	V	
21+20	241.7961	191.13			Q	V	
21+25	243.0839	186.99			Q	V	
21+30	244.3432	182.85			Q	V	
21+35	245.5780	179.30			Q	V	
21+40	246.7906	176.06			Q	V	
21+45	247.9805	172.77			Q	V	
21+50	249.1484	169.58			Q	V	
21+55	250.2955	166.56			Q	V	
22+ 0	251.4224	163.62			Q	V	
22+ 5	252.5299	160.82			Q	V	
22+10	253.6182	158.01			Q	V	
22+15	254.6866	155.14			Q	V	
22+20	255.7346	152.17			Q	V	
22+25	256.7648	149.59			Q	V	
22+30	257.7793	147.30			Q	V	
22+35	258.7775	144.94			Q	V	
22+40	259.7597	142.61			Q	V	
22+45	260.7254	140.22			Q	V	
22+50	261.6748	137.85		Q		V	
22+55	262.6090	135.65		Q		V	

23+ 0	263.5306	133.82		Q	V
23+ 5	264.4397	132.00		Q	V
23+10	265.3359	130.12		Q	V
23+15	266.2190	128.24		Q	V
23+20	267.0898	126.43		Q	V
23+25	267.9479	124.60		Q	V
23+30	268.7937	122.81		Q	V
23+35	269.6271	121.02		Q	V
23+40	270.4480	119.19		Q	V
23+45	271.2565	117.39		Q	V
23+50	272.0542	115.83		Q	V
23+55	272.8415	114.32		Q	V
24+ 0	273.6183	112.79		Q	V
24+ 5	274.3843	111.22		Q	V
24+10	275.1394	109.65		Q	V
24+15	275.8838	108.08		Q	V
24+20	276.6193	106.79		Q	V
24+25	277.3467	105.62		Q	V
24+30	278.0657	104.41		Q	V
24+35	278.7765	103.20		Q	V
24+40	279.4790	102.01		Q	V
24+45	280.1736	100.85		Q	V
24+50	280.8600	99.67		Q	V
24+55	281.5383	98.49		Q	V
25+ 0	282.2085	97.30		Q	V
25+ 5	282.8703	96.10		Q	V
25+10	283.5252	95.09		Q	V
25+15	284.1738	94.17		Q	V
25+20	284.8161	93.27		Q	V
25+25	285.4520	92.33		Q	V
25+30	286.0812	91.35		Q	V
25+35	286.7032	90.32		Q	V
25+40	287.3182	89.30		Q	V
25+45	287.9267	88.36		Q	V
25+50	288.5286	87.39		Q	V
25+55	289.1240	86.45		Q	V
26+ 0	289.7130	85.52		Q	V
26+ 5	290.2956	84.60		Q	V
26+10	290.8720	83.68		Q	V
26+15	291.4420	82.77		Q	V
26+20	292.0060	81.90		Q	V
26+25	292.5640	81.02		Q	V
26+30	293.1159	80.13		Q	V
26+35	293.6618	79.26		Q	V
26+40	294.2016	78.38		Q	V
26+45	294.7355	77.52		Q	V
26+50	295.2634	76.66		Q	V
26+55	295.7855	75.80		Q	V
27+ 0	296.3014	74.92		Q	V
27+ 5	296.8117	74.08		Q	V
27+10	297.3163	73.28		Q	V
27+15	297.8154	72.47		Q	V
27+20	298.3093	71.72		Q	V
27+25	298.7980	70.96		Q	V
27+30	299.2815	70.20		Q	V
27+35	299.7596	69.41		Q	V
27+40	300.2322	68.62		Q	V

27+45	300.6994	67.85	Q			V
27+50	301.1616	67.10	Q			V
27+55	301.6187	66.37	Q			V
28+ 0	302.0705	65.61	Q			V
28+ 5	302.5172	64.86	Q			V
28+10	302.9588	64.12	Q			V
28+15	303.3954	63.40	Q			V
28+20	303.8268	62.64	Q			V
28+25	304.2529	61.87	Q			V
28+30	304.6740	61.14	Q			V
28+35	305.0899	60.39	Q			V
28+40	305.5011	59.70	Q			V
28+45	305.9079	59.07	Q			V
28+50	306.3104	58.44	Q			V
28+55	306.7085	57.80	Q			V
29+ 0	307.1021	57.15	Q			V
29+ 5	307.4913	56.51	Q			V
29+10	307.8761	55.87	Q			V
29+15	308.2565	55.24	Q			V
29+20	308.6327	54.62	Q			V
29+25	309.0045	53.99	Q			V
29+30	309.3721	53.37	Q			V
29+35	309.7357	52.79	Q			V
29+40	310.0954	52.23	Q			V
29+45	310.4511	51.65	Q			V
29+50	310.8029	51.08	Q			V
29+55	311.1509	50.53	Q			V
30+ 0	311.4952	49.98	Q			V
30+ 5	311.8360	49.48	Q			V
30+10	312.1733	48.99	Q			V
30+15	312.5074	48.50	Q			V
30+20	312.8379	47.99	Q			V
30+25	313.1651	47.51	Q			V
30+30	313.4891	47.05	Q			V
30+35	313.8100	46.59	Q			V
30+40	314.1277	46.13	Q			V
30+45	314.4423	45.68	Q			V
30+50	314.7538	45.23	Q			V
30+55	315.0624	44.81	Q			V
31+ 0	315.3683	44.41	Q			V
31+ 5	315.6713	43.99	Q			V
31+10	315.9715	43.60	Q			V
31+15	316.2693	43.24	Q			V
31+20	316.5644	42.85	Q			V
31+25	316.8568	42.46	Q			V
31+30	317.1466	42.08	Q			V
31+35	317.4337	41.69	Q			V
31+40	317.7182	41.30	Q			V
31+45	317.9999	40.91	Q			V
31+50	318.2790	40.52	Q			V
31+55	318.5554	40.13	Q			V
32+ 0	318.8292	39.77	Q			V
32+ 5	319.1007	39.42	Q			V
32+10	319.3698	39.07	Q			V
32+15	319.6364	38.71	Q			V
32+20	319.9005	38.35	Q			V
32+25	320.1622	38.00	Q			V

32+30	320.4214	37.64	Q				V
32+35	320.6784	37.31	Q				V
32+40	320.9331	36.99	Q				V
32+45	321.1857	36.67	Q				V
32+50	321.4364	36.40	Q				V
32+55	321.6853	36.14	Q				V
33+ 0	321.9324	35.88	Q				V
33+ 5	322.1777	35.62	Q				V
33+10	322.4212	35.36	Q				V
33+15	322.6629	35.10	Q				V
33+20	322.9028	34.84	Q				V
33+25	323.1410	34.57	Q				V
33+30	323.3772	34.30	Q				V
33+35	323.6116	34.04	Q				V
33+40	323.8443	33.78	Q				V
33+45	324.0752	33.53	Q				V
33+50	324.3044	33.27	Q				V
33+55	324.5318	33.02	Q				V
34+ 0	324.7573	32.75	Q				V
34+ 5	324.9809	32.46	Q				V
34+10	325.2025	32.18	Q				V
34+15	325.4221	31.89	Q				V
34+20	325.6398	31.60	Q				V
34+25	325.8555	31.32	Q				V
34+30	326.0691	31.02	Q				V
34+35	326.2807	30.72	Q				V
34+40	326.4902	30.43	Q				V
34+45	326.6979	30.15	Q				V
34+50	326.9036	29.88	Q				V
34+55	327.1075	29.61	Q				V
35+ 0	327.3096	29.34	Q				V
35+ 5	327.5097	29.06	Q				V
35+10	327.7080	28.78	Q				V
35+15	327.9044	28.51	Q				V
35+20	328.0993	28.30	Q				V
35+25	328.2928	28.10	Q				V
35+30	328.4850	27.90	Q				V
35+35	328.6760	27.73	Q				V
35+40	328.8658	27.57	Q				V
35+45	329.0545	27.40	Q				V
35+50	329.2420	27.23	Q				V
35+55	329.4284	27.06	Q				V
36+ 0	329.6135	26.89	Q				V
36+ 5	329.7975	26.71	Q				V
36+10	329.9802	26.53	Q				V
36+15	330.1616	26.34	Q				V
36+20	330.3418	26.16	Q				V
36+25	330.5206	25.97	Q				V
36+30	330.6982	25.79	Q				V
36+35	330.8745	25.60	Q				V
36+40	331.0495	25.40	Q				V
36+45	331.2231	25.21	Q				V
36+50	331.3953	25.00	Q				V
36+55	331.5661	24.80	Q				V
37+ 0	331.7356	24.61	Q				V
37+ 5	331.9037	24.41	Q				V
37+10	332.0705	24.22	Q				V

37+15	332.2359	24.02	Q				V
37+20	332.4000	23.82	Q				V
37+25	332.5627	23.63	Q				V
37+30	332.7242	23.45	Q				V
37+35	332.8846	23.28	Q				V
37+40	333.0438	23.12	Q				V
37+45	333.2019	22.96	Q				V
37+50	333.3590	22.80	Q				V
37+55	333.5149	22.64	Q				V
38+ 0	333.6699	22.50	Q				V
38+ 5	333.8240	22.38	Q				V
38+10	333.9774	22.28	Q				V
38+15	334.1301	22.17	Q				V
38+20	334.2821	22.06	Q				V
38+25	334.4333	21.96	Q				V
38+30	334.5837	21.85	Q				V
38+35	334.7335	21.74	Q				V
38+40	334.8824	21.63	Q				V
38+45	335.0306	21.52	Q				V
38+50	335.1780	21.41	Q				V
38+55	335.3247	21.30	Q				V
39+ 0	335.4707	21.19	Q				V
39+ 5	335.6159	21.09	Q				V
39+10	335.7604	20.98	Q				V
39+15	335.9042	20.88	Q				V
39+20	336.0472	20.76	Q				V
39+25	336.1894	20.65	Q				V
39+30	336.3308	20.53	Q				V
39+35	336.4712	20.39	Q				V
39+40	336.6107	20.25	Q				V
39+45	336.7492	20.11	Q				V
39+50	336.8868	19.98	Q				V
39+55	337.0234	19.84	Q				V
40+ 0	337.1591	19.70	Q				V
40+ 5	337.2938	19.56	Q				V
40+10	337.4275	19.41	Q				V
40+15	337.5602	19.27	Q				V
40+20	337.6920	19.14	Q				V
40+25	337.8228	19.00	Q				V
40+30	337.9527	18.85	Q				V
40+35	338.0815	18.71	Q				V
40+40	338.2094	18.56	Q				V
40+45	338.3362	18.42	Q				V
40+50	338.4621	18.28	Q				V
40+55	338.5870	18.14	Q				V
41+ 0	338.7110	18.00	Q				V
41+ 5	338.8342	17.89	Q				V
41+10	338.9566	17.77	Q				V
41+15	339.0781	17.65	Q				V
41+20	339.1988	17.52	Q				V
41+25	339.3186	17.40	Q				V
41+30	339.4375	17.27	Q				V
41+35	339.5556	17.13	Q				V
41+40	339.6727	17.00	Q				V
41+45	339.7888	16.87	Q				V
41+50	339.9041	16.74	Q				V
41+55	340.0185	16.61	Q				V

42+ 0	340.1320	16.48	Q				V
42+ 5	340.2445	16.34	Q				V
42+10	340.3561	16.20	Q				V
42+15	340.4667	16.05	Q				V
42+20	340.5762	15.90	Q				V
42+25	340.6847	15.75	Q				V
42+30	340.7922	15.61	Q				V
42+35	340.8986	15.46	Q				V
42+40	341.0041	15.32	Q				V
42+45	341.1086	15.17	Q				V
42+50	341.2120	15.02	Q				V
42+55	341.3145	14.87	Q				V
43+ 0	341.4159	14.73	Q				V
43+ 5	341.5164	14.59	Q				V
43+10	341.6160	14.46	Q				V
43+15	341.7146	14.32	Q				V
43+20	341.8123	14.18	Q				V
43+25	341.9090	14.04	Q				V
43+30	342.0048	13.91	Q				V
43+35	342.0998	13.80	Q				V
43+40	342.1941	13.69	Q				V
43+45	342.2877	13.58	Q				V
43+50	342.3805	13.49	Q				V
43+55	342.4728	13.39	Q				V
44+ 0	342.5643	13.29	Q				V
44+ 5	342.6551	13.19	Q				V
44+10	342.7453	13.09	Q				V
44+15	342.8347	12.99	Q				V
44+20	342.9234	12.88	Q				V
44+25	343.0115	12.78	Q				V
44+30	343.0988	12.68	Q				V
44+35	343.1853	12.57	Q				V
44+40	343.2712	12.46	Q				V
44+45	343.3562	12.35	Q				V
44+50	343.4405	12.24	Q				V
44+55	343.5240	12.12	Q				V
45+ 0	343.6067	12.00	Q				V
45+ 5	343.6885	11.87	Q				V
45+10	343.7694	11.75	Q				V
45+15	343.8494	11.62	Q				V
45+20	343.9285	11.48	Q				V
45+25	344.0067	11.35	Q				V
45+30	344.0839	11.22	Q				V
45+35	344.1602	11.08	Q				V
45+40	344.2355	10.94	Q				V
45+45	344.3099	10.80	Q				V
45+50	344.3835	10.68	Q				V
45+55	344.4561	10.55	Q				V
46+ 0	344.5279	10.42	Q				V
46+ 5	344.5987	10.29	Q				V
46+10	344.6687	10.16	Q				V
46+15	344.7377	10.03	Q				V
46+20	344.8059	9.91	Q				V
46+25	344.8733	9.79	Q				V
46+30	344.9399	9.67	Q				V
46+35	345.0057	9.55	Q				V
46+40	345.0707	9.44	Q				V

46+45	345.1349	9.32	Q				V
46+50	345.1983	9.20	Q				V
46+55	345.2609	9.09	Q				V
47+ 0	345.3226	8.96	Q				V
47+ 5	345.3835	8.84	Q				V
47+10	345.4435	8.71	Q				V
47+15	345.5026	8.59	Q				V
47+20	345.5609	8.47	Q				V
47+25	345.6184	8.34	Q				V
47+30	345.6751	8.24	Q				V
47+35	345.7312	8.14	Q				V
47+40	345.7865	8.03	Q				V
47+45	345.8411	7.92	Q				V
47+50	345.8949	7.81	Q				V
47+55	345.9479	7.70	Q				V
48+ 0	346.0000	7.57	Q				V
48+ 5	346.0513	7.44	Q				V
48+10	346.1016	7.31	Q				V
48+15	346.1511	7.18	Q				V
48+20	346.1997	7.06	Q				V
48+25	346.2474	6.93	Q				V
48+30	346.2943	6.80	Q				V
48+35	346.3403	6.68	Q				V
48+40	346.3855	6.56	Q				V
48+45	346.4298	6.43	Q				V
48+50	346.4732	6.31	Q				V
48+55	346.5158	6.18	Q				V
49+ 0	346.5576	6.07	Q				V
49+ 5	346.5987	5.97	Q				V
49+10	346.6392	5.87	Q				V
49+15	346.6789	5.78	Q				V
49+20	346.7181	5.69	Q				V
49+25	346.7567	5.60	Q				V
49+30	346.7945	5.49	Q				V
49+35	346.8315	5.38	Q				V
49+40	346.8678	5.26	Q				V
49+45	346.9032	5.14	Q				V
49+50	346.9377	5.02	Q				V
49+55	346.9715	4.90	Q				V
50+ 0	347.0044	4.78	Q				V
50+ 5	347.0364	4.65	Q				V
50+10	347.0676	4.52	Q				V
50+15	347.0978	4.39	Q				V
50+20	347.1272	4.26	Q				V
50+25	347.1556	4.13	Q				V
50+30	347.1831	3.98	Q				V
50+35	347.2095	3.84	Q				V
50+40	347.2349	3.69	Q				V
50+45	347.2593	3.54	Q				V
50+50	347.2827	3.40	Q				V
50+55	347.3051	3.25	Q				V
51+ 0	347.3267	3.15	Q				V
51+ 5	347.3477	3.04	Q				V
51+10	347.3679	2.94	Q				V
51+15	347.3874	2.83	Q				V
51+20	347.4062	2.73	Q				V
51+25	347.4243	2.63	Q				V

51+30	347.4417	2.52	Q				V
51+35	347.4583	2.41	Q				V
51+40	347.4741	2.30	Q				V
51+45	347.4892	2.20	Q				V
51+50	347.5038	2.11	Q				V
51+55	347.5178	2.03	Q				V
52+ 0	347.5311	1.94	Q				V
52+ 5	347.5439	1.85	Q				V
52+10	347.5561	1.77	Q				V
52+15	347.5677	1.68	Q				V
52+20	347.5787	1.60	Q				V
52+25	347.5891	1.51	Q				V
52+30	347.5990	1.43	Q				V
52+35	347.6083	1.35	Q				V
52+40	347.6171	1.27	Q				V
52+45	347.6253	1.20	Q				V
52+50	347.6330	1.12	Q				V
52+55	347.6402	1.04	Q				V
53+ 0	347.6469	0.98	Q				V
53+ 5	347.6532	0.91	Q				V
53+10	347.6591	0.85	Q				V
53+15	347.6645	0.78	Q				V
53+20	347.6694	0.72	Q				V
53+25	347.6739	0.65	Q				V
53+30	347.6783	0.64	Q				V
53+35	347.6826	0.63	Q				V
53+40	347.6868	0.61	Q				V
53+45	347.6909	0.60	Q				V
53+50	347.6950	0.59	Q				V
53+55	347.6990	0.58	Q				V
54+ 0	347.7029	0.57	Q				V
54+ 5	347.7067	0.56	Q				V
54+10	347.7105	0.55	Q				V
54+15	347.7142	0.54	Q				V
54+20	347.7178	0.53	Q				V
54+25	347.7214	0.52	Q				V
54+30	347.7250	0.51	Q				V
54+35	347.7284	0.50	Q				V
54+40	347.7317	0.48	Q				V
54+45	347.7350	0.47	Q				V
54+50	347.7381	0.46	Q				V
54+55	347.7412	0.44	Q				V
55+ 0	347.7441	0.43	Q				V
55+ 5	347.7470	0.41	Q				V
55+10	347.7497	0.40	Q				V
55+15	347.7523	0.38	Q				V
55+20	347.7549	0.37	Q				V
55+25	347.7574	0.36	Q				V
55+30	347.7598	0.35	Q				V
55+35	347.7622	0.34	Q				V
55+40	347.7645	0.33	Q				V
55+45	347.7667	0.32	Q				V
55+50	347.7689	0.31	Q				V
55+55	347.7710	0.30	Q				V
56+ 0	347.7730	0.30	Q				V
56+ 5	347.7750	0.29	Q				V
56+10	347.7769	0.28	Q				V

56+15	347.7788	0.28	Q				V
56+20	347.7807	0.27	Q				V
56+25	347.7825	0.27	Q				V
56+30	347.7843	0.26	Q				V
56+35	347.7861	0.25	Q				V
56+40	347.7878	0.25	Q				V
56+45	347.7894	0.24	Q				V
56+50	347.7910	0.23	Q				V
56+55	347.7925	0.21	Q				V
57+ 0	347.7939	0.21	Q				V
57+ 5	347.7953	0.20	Q				V
57+10	347.7966	0.20	Q				V
57+15	347.7980	0.19	Q				V
57+20	347.7993	0.19	Q				V
57+25	347.8006	0.19	Q				V
57+30	347.8018	0.18	Q				V
57+35	347.8030	0.17	Q				V
57+40	347.8042	0.17	Q				V
57+45	347.8053	0.16	Q				V
57+50	347.8063	0.15	Q				V
57+55	347.8074	0.15	Q				V
58+ 0	347.8083	0.14	Q				V
58+ 5	347.8092	0.13	Q				V
58+10	347.8101	0.13	Q				V
58+15	347.8110	0.13	Q				V
58+20	347.8118	0.12	Q				V
58+25	347.8127	0.12	Q				V
58+30	347.8135	0.11	Q				V
58+35	347.8142	0.11	Q				V
58+40	347.8149	0.10	Q				V
58+45	347.8156	0.10	Q				V
58+50	347.8163	0.10	Q				V
58+55	347.8169	0.09	Q				V
59+ 0	347.8175	0.09	Q				V
59+ 5	347.8181	0.08	Q				V
59+10	347.8186	0.07	Q				V
59+15	347.8191	0.07	Q				V
59+20	347.8196	0.07	Q				V
59+25	347.8200	0.07	Q				V
59+30	347.8204	0.06	Q				V
59+35	347.8208	0.05	Q				V
59+40	347.8211	0.05	Q				V
59+45	347.8214	0.04	Q				V
59+50	347.8217	0.04	Q				V
59+55	347.8220	0.04	Q				V
60+ 0	347.8222	0.04	Q				V
60+ 5	347.8225	0.04	Q				V
60+10	347.8227	0.03	Q				V
60+15	347.8229	0.03	Q				V
60+20	347.8231	0.03	Q				V
60+25	347.8233	0.03	Q				V
60+30	347.8235	0.02	Q				V
60+35	347.8237	0.02	Q				V
60+40	347.8238	0.02	Q				V
60+45	347.8239	0.02	Q				V
60+50	347.8240	0.02	Q				V
60+55	347.8241	0.01	Q				V

61+ 0	347.8242	0.01	Q				V
61+ 5	347.8243	0.01	Q				V
61+10	347.8243	0.01	Q				V
61+15	347.8244	0.00	Q				V
61+20	347.8244	0.00	Q				V

ATTACHMENT 3

Existing Conditions
Hydrograph Calculations
(20-Year, 1,3,6, & 24-Hour)

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 05/08/15 File: 154149EXHYDA120.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR

EXISTING CONDITIONS AREA "A"

20-YEAR, 1-HOUR STORM

BY: JTS DATE: 05-08-15

Drainage Area = 213.98(Ac.) = 0.334 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 213.98(Ac.)= 0.334 Sq. Mi.
Length along longest watercourse = 4276.23(Ft.)
Length along longest watercourse measured to centroid = 1768.91(Ft.)
Length along longest watercourse = 0.810 Mi.
Length along longest watercourse measured to centroid = 0.335 Mi.
Difference in elevation = 798.20(Ft.)
Slope along watercourse = 985.5635 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.138 Hr.
Lag time = 8.29 Min.
25% of lag time = 2.07 Min.
40% of lag time = 3.31 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]
213.98	0.58	124.11

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
213.98	1.47	314.55

STORM EVENT (YEAR) = 20.00
 Area Averaged 2-Year Rainfall = 0.580(In)
 Area Averaged 100-Year Rainfall = 1.470(In)

Point rain (area averaged) = 1.104(In)
 Areal adjustment factor = 99.81 %
 Adjusted average point rain = 1.102(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.430	67.00	0.000
22.120	78.00	0.000
3.320	89.00	0.000
166.110	89.00	0.000
Total Area Entered = 213.98(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	67.0	0.394	0.000	0.394	0.105	0.041
78.0	78.0	0.268	0.000	0.268	0.103	0.028
89.0	89.0	0.141	0.000	0.141	0.016	0.002
89.0	89.0	0.141	0.000	0.141	0.776	0.110
Sum (F) =						0.181

Area averaged mean soil loss (F) (In/Hr) = 0.181
 Minimum soil loss rate ((In/Hr)) = 0.090
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.4800

Unit Hydrograph
 VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	60.341	8.293
2	0.167	120.681	34.206
3	0.250	181.022	26.473
4	0.333	241.363	10.243
5	0.417	301.703	6.078
6	0.500	362.044	4.101
7	0.583	422.385	2.914
8	0.667	482.725	2.056
9	0.750	543.066	1.700
10	0.833	603.406	1.252
11	0.917	663.747	0.948
12	1.000	724.088	0.675
13	1.083	784.428	0.603
14	1.167	844.769	0.457
Sum =		100.000	Sum= 215.652

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	4.40	0.582	0.181	(0.524)	0.401
2	0.17	4.50	0.595	0.181	(0.535)	0.414
3	0.25	5.40	0.714	0.181	(0.643)	0.533
4	0.33	5.40	0.714	0.181	(0.643)	0.533
5	0.42	5.70	0.754	0.181	(0.678)	0.573
6	0.50	6.40	0.846	0.181	(0.761)	0.665
7	0.58	7.90	1.044	0.181	(0.940)	0.863
8	0.67	9.10	1.203	0.181	(1.083)	1.022
9	0.75	12.80	1.692	0.181	(1.523)	1.511
10	0.83	25.60	3.384	0.181	(3.046)	3.203
11	0.92	7.90	1.044	0.181	(0.940)	0.863
12	1.00	4.90	0.648	0.181	(0.583)	0.467

(Loss Rate Not Used)

Sum = 100.0

Sum = 11.0

Flood volume = Effective rainfall 0.92(In)
times area 214.0(Ac.)/[(In)/(Ft.)) = 16.4(Ac.Ft)
Total soil loss = 0.18(In)
Total soil loss = 3.227(Ac.Ft)
Total rainfall = 1.10(In)
Flood volume = 715182.6 Cubic Feet
Total soil loss = 140564.9 Cubic Feet

Peak flow rate of this hydrograph = 387.856(CFS)

+++++

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	100.0	200.0	300.0	400.0
0+ 5	0.0494	7.17	Q				
0+10	0.3041	36.98	V Q				
0+15	0.7378	62.98	V Q				
0+20	1.2982	81.37	V Q				
0+25	1.9485	94.42	V Q				
0+30	2.6741	105.35	V Q				
0+35	3.5157	122.20	V Q				
0+40	4.5401	148.75	V Q				
0+45	5.8168	185.38	V Q				
0+50	7.6655	268.43	V Q				
0+55	10.3366	387.86	V Q				
1+ 0	12.5477	321.05	V Q				
1+ 5	13.9084	197.57	V Q				
1+10	14.7222	118.17	V Q				
1+15	15.2184	72.03	V Q				
1+20	15.5634	50.11	V Q				
1+25	15.8120	36.08	V Q				
1+30	16.0005	27.38	V Q				

1+35	16.1400	20.25	Q				V
1+40	16.2432	14.98	Q				V
1+45	16.3167	10.67	Q				V
1+50	16.3709	7.87	Q				V
1+55	16.4051	4.97	Q				V
2+ 0	16.4152	1.46	Q				V
2+ 5	16.4183	0.46	Q				V

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 05/08/15 File: 154149EXHYDA320.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR

EXISTING CONDITIONS AREA "A"

20-YEAR, 3-HOUR STORM

BY: JTS DATE: 05-08-15

Drainage Area = 213.98(Ac.) = 0.334 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 213.98(Ac.)= 0.334 Sq. Mi.
Length along longest watercourse = 4276.23(Ft.)
Length along longest watercourse measured to centroid = 1768.91(Ft.)
Length along longest watercourse = 0.810 Mi.
Length along longest watercourse measured to centroid = 0.335 Mi.
Difference in elevation = 798.20(Ft.)
Slope along watercourse = 985.5635 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.138 Hr.
Lag time = 8.29 Min.
25% of lag time = 2.07 Min.
40% of lag time = 3.31 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]
213.98	1.05	224.68

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
213.98	2.51	537.09

STORM EVENT (YEAR) = 20.00
 Area Averaged 2-Year Rainfall = 1.050(In)
 Area Averaged 100-Year Rainfall = 2.510(In)

Point rain (area averaged) = 1.909(In)
 Areal adjustment factor = 99.91 %
 Adjusted average point rain = 1.908(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.430	67.00	0.000
22.120	78.00	0.000
3.320	89.00	0.000
166.110	89.00	0.000
Total Area Entered = 213.98(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	67.0	0.394	0.000	0.394	0.105	0.041
78.0	78.0	0.268	0.000	0.268	0.103	0.028
89.0	89.0	0.141	0.000	0.141	0.016	0.002
89.0	89.0	0.141	0.000	0.141	0.776	0.110
Sum (F) =						0.181

Area averaged mean soil loss (F) (In/Hr) = 0.181
 Minimum soil loss rate ((In/Hr)) = 0.090
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

Unit Hydrograph
 VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	60.341	8.293
2	0.167	120.681	34.206
3	0.250	181.022	26.473
4	0.333	241.363	10.243
5	0.417	301.703	6.078
6	0.500	362.044	4.101
7	0.583	422.385	2.914
8	0.667	482.725	2.056
9	0.750	543.066	1.700
10	0.833	603.406	1.252
11	0.917	663.747	0.948
12	1.000	724.088	0.675
13	1.083	784.428	0.603
14	1.167	844.769	0.457
Sum =		100.000	Sum= 215.652

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	0.298	0.181	(0.268)	0.117
2	0.17	1.30	0.298	0.181	(0.268)	0.117
3	0.25	1.10	0.252	0.181	(0.227)	0.071
4	0.33	1.50	0.343	0.181	(0.309)	0.162
5	0.42	1.50	0.343	0.181	(0.309)	0.162
6	0.50	1.80	0.412	0.181	(0.371)	0.231
7	0.58	1.50	0.343	0.181	(0.309)	0.162
8	0.67	1.80	0.412	0.181	(0.371)	0.231
9	0.75	1.80	0.412	0.181	(0.371)	0.231
10	0.83	1.50	0.343	0.181	(0.309)	0.162
11	0.92	1.60	0.366	0.181	(0.330)	0.185
12	1.00	1.80	0.412	0.181	(0.371)	0.231
13	1.08	2.20	0.504	0.181	(0.453)	0.323
14	1.17	2.20	0.504	0.181	(0.453)	0.323
15	1.25	2.20	0.504	0.181	(0.453)	0.323
16	1.33	2.00	0.458	0.181	(0.412)	0.277
17	1.42	2.60	0.595	0.181	(0.536)	0.414
18	1.50	2.70	0.618	0.181	(0.556)	0.437
19	1.58	2.40	0.549	0.181	(0.494)	0.368
20	1.67	2.70	0.618	0.181	(0.556)	0.437
21	1.75	3.30	0.755	0.181	(0.680)	0.574
22	1.83	3.10	0.710	0.181	(0.639)	0.529
23	1.92	2.90	0.664	0.181	(0.597)	0.483
24	2.00	3.00	0.687	0.181	(0.618)	0.506
25	2.08	3.10	0.710	0.181	(0.639)	0.529
26	2.17	4.20	0.961	0.181	(0.865)	0.780
27	2.25	5.00	1.145	0.181	(1.030)	0.964
28	2.33	3.50	0.801	0.181	(0.721)	0.620
29	2.42	6.80	1.557	0.181	(1.401)	1.376
30	2.50	7.30	1.671	0.181	(1.504)	1.490
31	2.58	8.20	1.877	0.181	(1.689)	1.696
32	2.67	5.90	1.351	0.181	(1.215)	1.170
33	2.75	2.00	0.458	0.181	(0.412)	0.277
34	2.83	1.80	0.412	0.181	(0.371)	0.231
35	2.92	1.80	0.412	0.181	(0.371)	0.231
36	3.00	0.60	0.137	(0.181)	0.124	0.014

(Loss Rate Not Used)

Sum = 100.0

Sum = 16.4

Flood volume = Effective rainfall 1.37(In)
times area 214.0(Ac.)/[(In)/(Ft.)] = 24.4(Ac.Ft)
Total soil loss = 0.54(In)
Total soil loss = 9.596(Ac.Ft)
Total rainfall = 1.91(In)
Flood volume = 1063707.7 Cubic Feet
Total soil loss = 417982.0 Cubic Feet

Peak flow rate of this hydrograph = 291.538(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	75.0	150.0	225.0	300.0
0+ 5	0.0144	2.09	Q					
0+10	0.0880	10.69	VQ					
0+15	0.2019	16.53	V Q					
0+20	0.3215	17.37	V Q					
0+25	0.4802	23.04	V Q					
0+30	0.6835	29.52	V Q					
0+35	0.9282	35.52	V Q					
0+40	1.1824	36.91	V Q					
0+45	1.4615	40.53	V Q					
0+50	1.7597	43.29	V Q					
0+55	2.0374	40.33	V Q					
1+ 0	2.3131	40.03	V Q					
1+ 5	2.6273	45.62	V Q					
1+10	3.0076	55.21	V Q					
1+15	3.4308	61.46	V Q					
1+20	3.8669	63.32	V Q					
1+25	4.3082	64.08	VQ					
1+30	4.8115	73.08	V Q					
1+35	5.3703	81.13	V Q					
1+40	5.9320	81.55	VQ					
1+45	6.5348	87.53	VQ					
1+50	7.2288	100.77	V Q					
1+55	7.9596	106.11	VQ					
2+ 0	8.6803	104.66	QV					
2+ 5	9.4087	105.75	QV					
2+10	10.1899	113.43	QV					
2+15	11.1354	137.30	Q					
2+20	12.2376	160.03	VQ					
2+25	13.3736	164.95	Q					
2+30	14.8271	211.04	V					
2+35	16.6427	263.63	V					
2+40	18.6505	291.54	V					
2+45	20.4437	260.37	VQ					
2+50	21.6560	176.03	V					
2+55	22.4707	118.29	V					
3+ 0	23.0961	90.81	V					
3+ 5	23.5203	61.59	V					
3+10	23.7933	39.64	V					
3+15	23.9882	28.30	V					
3+20	24.1300	20.59	V					
3+25	24.2320	14.82	V					
3+30	24.3069	10.87	V					
3+35	24.3584	7.48	V					
3+40	24.3911	4.75	V					
3+45	24.4073	2.36	V					
3+50	24.4138	0.94	V					
3+55	24.4176	0.55	V					
4+ 0	24.4193	0.25	V					
4+ 5	24.4194	0.01	V					

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2

Study date 05/08/15 File: 154149EXHYDA620.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR

EXISTING CONDITIONS AREA "A"

20-YEAR, 6-HOUR STORM

BY: JTS DATE: 05-08-15

Drainage Area = 213.98(Ac.) = 0.334 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 213.98(Ac.)= 0.334 Sq. Mi.
Length along longest watercourse = 4276.23(Ft.)
Length along longest watercourse measured to centroid = 1768.91(Ft.)
Length along longest watercourse = 0.810 Mi.
Length along longest watercourse measured to centroid = 0.335 Mi.
Difference in elevation = 798.20(Ft.)
Slope along watercourse = 985.5635 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.138 Hr.
Lag time = 8.29 Min.
25% of lag time = 2.07 Min.
40% of lag time = 3.31 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]
213.98	1.45	310.27

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
213.98	3.51	751.07

STORM EVENT (YEAR) = 20.00
 Area Averaged 2-Year Rainfall = 1.450(In)
 Area Averaged 100-Year Rainfall = 3.510(In)

Point rain (area averaged) = 2.662(In)
 Areal adjustment factor = 99.93 %
 Adjusted average point rain = 2.661(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.430	67.00	0.000
22.120	78.00	0.000
3.320	89.00	0.000
166.110	89.00	0.000
Total Area Entered = 213.98(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	67.0	0.394	0.000	0.394	0.105	0.041
78.0	78.0	0.268	0.000	0.268	0.103	0.028
89.0	89.0	0.141	0.000	0.141	0.016	0.002
89.0	89.0	0.141	0.000	0.141	0.776	0.110
Sum (F) =						0.181

Area averaged mean soil loss (F) (In/Hr) = 0.181
 Minimum soil loss rate ((In/Hr)) = 0.090
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

Unit Hydrograph
 VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	60.341	8.293
2	0.167	120.681	34.206
3	0.250	181.022	26.473
4	0.333	241.363	10.243
5	0.417	301.703	6.078
6	0.500	362.044	4.101
7	0.583	422.385	2.914
8	0.667	482.725	2.056
9	0.750	543.066	1.700
10	0.833	603.406	1.252
11	0.917	663.747	0.948
12	1.000	724.088	0.675
13	1.083	784.428	0.603
14	1.167	844.769	0.457
Sum =		100.000	Sum= 215.652

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	0.160	(0.181)	0.144	0.016
2	0.17	0.60	0.192	(0.181)	0.172	0.019
3	0.25	0.60	0.192	(0.181)	0.172	0.019
4	0.33	0.60	0.192	(0.181)	0.172	0.019
5	0.42	0.60	0.192	(0.181)	0.172	0.019
6	0.50	0.70	0.223	0.181	(0.201)	0.043
7	0.58	0.70	0.223	0.181	(0.201)	0.043
8	0.67	0.70	0.223	0.181	(0.201)	0.043
9	0.75	0.70	0.223	0.181	(0.201)	0.043
10	0.83	0.70	0.223	0.181	(0.201)	0.043
11	0.92	0.70	0.223	0.181	(0.201)	0.043
12	1.00	0.80	0.255	0.181	(0.230)	0.074
13	1.08	0.80	0.255	0.181	(0.230)	0.074
14	1.17	0.80	0.255	0.181	(0.230)	0.074
15	1.25	0.80	0.255	0.181	(0.230)	0.074
16	1.33	0.80	0.255	0.181	(0.230)	0.074
17	1.42	0.80	0.255	0.181	(0.230)	0.074
18	1.50	0.80	0.255	0.181	(0.230)	0.074
19	1.58	0.80	0.255	0.181	(0.230)	0.074
20	1.67	0.80	0.255	0.181	(0.230)	0.074
21	1.75	0.80	0.255	0.181	(0.230)	0.074
22	1.83	0.80	0.255	0.181	(0.230)	0.074
23	1.92	0.80	0.255	0.181	(0.230)	0.074
24	2.00	0.90	0.287	0.181	(0.259)	0.106
25	2.08	0.80	0.255	0.181	(0.230)	0.074
26	2.17	0.90	0.287	0.181	(0.259)	0.106
27	2.25	0.90	0.287	0.181	(0.259)	0.106
28	2.33	0.90	0.287	0.181	(0.259)	0.106
29	2.42	0.90	0.287	0.181	(0.259)	0.106
30	2.50	0.90	0.287	0.181	(0.259)	0.106
31	2.58	0.90	0.287	0.181	(0.259)	0.106
32	2.67	0.90	0.287	0.181	(0.259)	0.106
33	2.75	1.00	0.319	0.181	(0.287)	0.138
34	2.83	1.00	0.319	0.181	(0.287)	0.138
35	2.92	1.00	0.319	0.181	(0.287)	0.138
36	3.00	1.00	0.319	0.181	(0.287)	0.138
37	3.08	1.00	0.319	0.181	(0.287)	0.138
38	3.17	1.10	0.351	0.181	(0.316)	0.170
39	3.25	1.10	0.351	0.181	(0.316)	0.170
40	3.33	1.10	0.351	0.181	(0.316)	0.170
41	3.42	1.20	0.383	0.181	(0.345)	0.202
42	3.50	1.30	0.415	0.181	(0.374)	0.234
43	3.58	1.40	0.447	0.181	(0.402)	0.266
44	3.67	1.40	0.447	0.181	(0.402)	0.266
45	3.75	1.50	0.479	0.181	(0.431)	0.298
46	3.83	1.50	0.479	0.181	(0.431)	0.298
47	3.92	1.60	0.511	0.181	(0.460)	0.330
48	4.00	1.60	0.511	0.181	(0.460)	0.330
49	4.08	1.70	0.543	0.181	(0.488)	0.362
50	4.17	1.80	0.575	0.181	(0.517)	0.394
51	4.25	1.90	0.607	0.181	(0.546)	0.426
52	4.33	2.00	0.639	0.181	(0.575)	0.458
53	4.42	2.10	0.670	0.181	(0.603)	0.489

54	4.50	2.10	0.670	0.181	(0.603)	0.489
55	4.58	2.20	0.702	0.181	(0.632)	0.521
56	4.67	2.30	0.734	0.181	(0.661)	0.553
57	4.75	2.40	0.766	0.181	(0.690)	0.585
58	4.83	2.40	0.766	0.181	(0.690)	0.585
59	4.92	2.50	0.798	0.181	(0.718)	0.617
60	5.00	2.60	0.830	0.181	(0.747)	0.649
61	5.08	3.10	0.990	0.181	(0.891)	0.809
62	5.17	3.60	1.149	0.181	(1.034)	0.968
63	5.25	3.90	1.245	0.181	(1.121)	1.064
64	5.33	4.20	1.341	0.181	(1.207)	1.160
65	5.42	4.70	1.501	0.181	(1.350)	1.320
66	5.50	5.60	1.788	0.181	(1.609)	1.607
67	5.58	1.90	0.607	0.181	(0.546)	0.426
68	5.67	0.90	0.287	0.181	(0.259)	0.106
69	5.75	0.60	0.192	(0.181)	0.172	0.019
70	5.83	0.50	0.160	(0.181)	0.144	0.016
71	5.92	0.30	0.096	(0.181)	0.086	0.010
72	6.00	0.20	0.064	(0.181)	0.057	0.006

(Loss Rate Not Used)

Sum = 100.0

Sum = 19.2

Flood volume = Effective rainfall 1.60(In)
times area 214.0(Ac.)/[(In)/(Ft.))] = 28.6(Ac.Ft)
Total soil loss = 1.06(In)
Total soil loss = 18.863(Ac.Ft)
Total rainfall = 2.66(In)
Flood volume = 1244906.6 Cubic Feet
Total soil loss = 821661.6 Cubic Feet

Peak flow rate of this hydrograph = 264.720(CFS)

+++++

6 - 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	75.0	150.0	225.0	300.0
0+ 5	0.0020	0.29	Q				
0+10	0.0124	1.52	Q				
0+15	0.0308	2.67	Q				
0+20	0.0529	3.20	Q				
0+25	0.0769	3.48	Q				
0+30	0.1050	4.08	Q				
0+35	0.1459	5.94	Q				
0+40	0.1966	7.36	Q				
0+45	0.2514	7.95	VQ				
0+50	0.3086	8.31	VQ				
0+55	0.3676	8.56	VQ				
1+ 0	0.4317	9.31	VQ				
1+ 5	0.5129	11.79	VQ				
1+10	0.6074	13.72	VQ				
1+15	0.7073	14.50	VQ				
1+20	0.8103	14.96	Q				
1+25	0.9155	15.28	VQ				

1+30	1.0224	15.51	VQ						
1+35	1.1303	15.67	VQ						
1+40	1.2391	15.79	VQ						
1+45	1.3484	15.88	VQ						
1+50	1.4582	15.94	Q						
1+55	1.5683	15.99	Q						
2+ 0	1.6827	16.60	Q						
2+ 5	1.8095	18.42	Q						
2+10	1.9367	18.46	Q						
2+15	2.0723	19.70	Q						
2+20	2.2185	21.23	QV						
2+25	2.3687	21.80	QV						
2+30	2.5212	22.14	QV						
2+35	2.6752	22.36	QV						
2+40	2.8304	22.54	Q						
2+45	2.9903	23.22	QV						
2+50	3.1671	25.67	QV						
2+55	3.3570	27.56	QV						
3+ 0	3.5521	28.33	QV						
3+ 5	3.7503	28.79	Q V						
3+10	3.9545	29.65	Q V						
3+15	4.1765	32.24	QV						
3+20	4.4121	34.20	Q V						
3+25	4.6572	35.60	Q V						
3+30	4.9260	39.03	QV						
3+35	5.2299	44.13	Q V						
3+40	5.5692	49.26	QV						
3+45	5.9340	52.96	QV						
3+50	6.3257	56.87	QV						
3+55	6.7407	60.26	QV						
4+ 0	7.1815	64.01	Q V						
4+ 5	7.6452	67.33	Q V						
4+10	8.1385	71.63	Q V						
4+15	8.6709	77.30	Q V						
4+20	9.2452	83.38	QV						
4+25	9.8631	89.73	Q V						
4+30	10.5220	95.66	Q V						
4+35	11.2101	99.92	Q V						
4+40	11.9316	104.76	Q V						
4+45	12.6946	110.78	Q V						
4+50	13.4974	116.57	Q V						
4+55	14.3290	120.74	Q V						
5+ 0	15.1938	125.57	Q						
5+ 5	16.1157	133.86	Q						
5+10	17.1620	151.92	Q						
5+15	18.3762	176.31	Q						
5+20	19.7460	198.90	Q						
5+25	21.2663	220.74	Q						
5+30	22.9834	249.33	Q						
5+35	24.8066	264.72	Q						
5+40	26.1558	195.90	Q						
5+45	26.9459	114.72	Q						
5+50	27.4365	71.25	Q						
5+55	27.7708	48.54	Q						
6+ 0	28.0120	35.02	Q						
6+ 5	28.1885	25.62	Q						
6+10	28.3190	18.95	Q						

6+15	28.4129	13.63	Q				V
6+20	28.4795	9.66	Q				V
6+25	28.5250	6.62	Q				V
6+30	28.5555	4.43	Q				V
6+35	28.5723	2.44	Q				V
6+40	28.5769	0.67	Q				V
6+45	28.5782	0.19	Q				V
6+50	28.5787	0.07	Q				V
6+55	28.5790	0.04	Q				V
7+ 0	28.5791	0.02	Q				V
7+ 5	28.5791	0.01	Q				V

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 05/08/15 File: 154149EXHYDA2420.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR

EXISTING CONDITIONS AREA "A"

20-YEAR, 24-HOUR STORM

BY: JTS DATE: 05-08-15

Drainage Area = 213.98(Ac.) = 0.334 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 213.98(Ac.)= 0.334 Sq. Mi.
Length along longest watercourse = 4276.23(Ft.)
Length along longest watercourse measured to centroid = 1768.91(Ft.)
Length along longest watercourse = 0.810 Mi.
Length along longest watercourse measured to centroid = 0.335 Mi.
Difference in elevation = 798.20(Ft.)
Slope along watercourse = 985.5635 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.138 Hr.
Lag time = 8.29 Min.
25% of lag time = 2.07 Min.
40% of lag time = 3.31 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]
213.98	2.70	577.75

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
213.98	6.65	1422.97

STORM EVENT (YEAR) = 20.00
 Area Averaged 2-Year Rainfall = 2.700(In)
 Area Averaged 100-Year Rainfall = 6.650(In)

Point rain (area averaged) = 5.025(In)
 Areal adjustment factor = 99.96 %
 Adjusted average point rain = 5.023(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.430	67.00	0.000
22.120	78.00	0.000
3.320	89.00	0.000
166.110	89.00	0.000
Total Area Entered = 213.98(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	67.0	0.394	0.000	0.394	0.105	0.041
78.0	78.0	0.268	0.000	0.268	0.103	0.028
89.0	89.0	0.141	0.000	0.141	0.016	0.002
89.0	89.0	0.141	0.000	0.141	0.776	0.110
Sum (F) =						0.181

Area averaged mean soil loss (F) (In/Hr) = 0.181
 Minimum soil loss rate ((In/Hr)) = 0.090
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

Unit Hydrograph
 VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	60.341	8.293
2	0.167	120.681	34.206
3	0.250	181.022	26.473
4	0.333	241.363	10.243
5	0.417	301.703	6.078
6	0.500	362.044	4.101
7	0.583	422.385	2.914
8	0.667	482.725	2.056
9	0.750	543.066	1.700
10	0.833	603.406	1.252
11	0.917	663.747	0.948
12	1.000	724.088	0.675
13	1.083	784.428	0.603
14	1.167	844.769	0.457
Sum =		100.000	Sum= 215.652

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	0.040	(0.321)	0.036	0.004
2	0.17	0.07	0.040	(0.320)	0.036	0.004
3	0.25	0.07	0.040	(0.318)	0.036	0.004
4	0.33	0.10	0.060	(0.317)	0.054	0.006
5	0.42	0.10	0.060	(0.316)	0.054	0.006
6	0.50	0.10	0.060	(0.315)	0.054	0.006
7	0.58	0.10	0.060	(0.313)	0.054	0.006
8	0.67	0.10	0.060	(0.312)	0.054	0.006
9	0.75	0.10	0.060	(0.311)	0.054	0.006
10	0.83	0.13	0.080	(0.310)	0.072	0.008
11	0.92	0.13	0.080	(0.309)	0.072	0.008
12	1.00	0.13	0.080	(0.307)	0.072	0.008
13	1.08	0.10	0.060	(0.306)	0.054	0.006
14	1.17	0.10	0.060	(0.305)	0.054	0.006
15	1.25	0.10	0.060	(0.304)	0.054	0.006
16	1.33	0.10	0.060	(0.302)	0.054	0.006
17	1.42	0.10	0.060	(0.301)	0.054	0.006
18	1.50	0.10	0.060	(0.300)	0.054	0.006
19	1.58	0.10	0.060	(0.299)	0.054	0.006
20	1.67	0.10	0.060	(0.298)	0.054	0.006
21	1.75	0.10	0.060	(0.296)	0.054	0.006
22	1.83	0.13	0.080	(0.295)	0.072	0.008
23	1.92	0.13	0.080	(0.294)	0.072	0.008
24	2.00	0.13	0.080	(0.293)	0.072	0.008
25	2.08	0.13	0.080	(0.292)	0.072	0.008
26	2.17	0.13	0.080	(0.291)	0.072	0.008
27	2.25	0.13	0.080	(0.289)	0.072	0.008
28	2.33	0.13	0.080	(0.288)	0.072	0.008
29	2.42	0.13	0.080	(0.287)	0.072	0.008
30	2.50	0.13	0.080	(0.286)	0.072	0.008
31	2.58	0.17	0.100	(0.285)	0.090	0.010
32	2.67	0.17	0.100	(0.283)	0.090	0.010
33	2.75	0.17	0.100	(0.282)	0.090	0.010
34	2.83	0.17	0.100	(0.281)	0.090	0.010
35	2.92	0.17	0.100	(0.280)	0.090	0.010
36	3.00	0.17	0.100	(0.279)	0.090	0.010
37	3.08	0.17	0.100	(0.278)	0.090	0.010
38	3.17	0.17	0.100	(0.277)	0.090	0.010
39	3.25	0.17	0.100	(0.275)	0.090	0.010
40	3.33	0.17	0.100	(0.274)	0.090	0.010
41	3.42	0.17	0.100	(0.273)	0.090	0.010
42	3.50	0.17	0.100	(0.272)	0.090	0.010
43	3.58	0.17	0.100	(0.271)	0.090	0.010
44	3.67	0.17	0.100	(0.270)	0.090	0.010
45	3.75	0.17	0.100	(0.269)	0.090	0.010
46	3.83	0.20	0.121	(0.267)	0.108	0.012
47	3.92	0.20	0.121	(0.266)	0.108	0.012
48	4.00	0.20	0.121	(0.265)	0.108	0.012
49	4.08	0.20	0.121	(0.264)	0.108	0.012
50	4.17	0.20	0.121	(0.263)	0.108	0.012
51	4.25	0.20	0.121	(0.262)	0.108	0.012
52	4.33	0.23	0.141	(0.261)	0.127	0.014
53	4.42	0.23	0.141	(0.260)	0.127	0.014

54	4.50	0.23	0.141	(0.258)	0.127	0.014
55	4.58	0.23	0.141	(0.257)	0.127	0.014
56	4.67	0.23	0.141	(0.256)	0.127	0.014
57	4.75	0.23	0.141	(0.255)	0.127	0.014
58	4.83	0.27	0.161	(0.254)	0.145	0.016
59	4.92	0.27	0.161	(0.253)	0.145	0.016
60	5.00	0.27	0.161	(0.252)	0.145	0.016
61	5.08	0.20	0.121	(0.251)	0.108	0.012
62	5.17	0.20	0.121	(0.250)	0.108	0.012
63	5.25	0.20	0.121	(0.249)	0.108	0.012
64	5.33	0.23	0.141	(0.247)	0.127	0.014
65	5.42	0.23	0.141	(0.246)	0.127	0.014
66	5.50	0.23	0.141	(0.245)	0.127	0.014
67	5.58	0.27	0.161	(0.244)	0.145	0.016
68	5.67	0.27	0.161	(0.243)	0.145	0.016
69	5.75	0.27	0.161	(0.242)	0.145	0.016
70	5.83	0.27	0.161	(0.241)	0.145	0.016
71	5.92	0.27	0.161	(0.240)	0.145	0.016
72	6.00	0.27	0.161	(0.239)	0.145	0.016
73	6.08	0.30	0.181	(0.238)	0.163	0.018
74	6.17	0.30	0.181	(0.237)	0.163	0.018
75	6.25	0.30	0.181	(0.236)	0.163	0.018
76	6.33	0.30	0.181	(0.235)	0.163	0.018
77	6.42	0.30	0.181	(0.234)	0.163	0.018
78	6.50	0.30	0.181	(0.233)	0.163	0.018
79	6.58	0.33	0.201	(0.232)	0.181	0.020
80	6.67	0.33	0.201	(0.230)	0.181	0.020
81	6.75	0.33	0.201	(0.229)	0.181	0.020
82	6.83	0.33	0.201	(0.228)	0.181	0.020
83	6.92	0.33	0.201	(0.227)	0.181	0.020
84	7.00	0.33	0.201	(0.226)	0.181	0.020
85	7.08	0.33	0.201	(0.225)	0.181	0.020
86	7.17	0.33	0.201	(0.224)	0.181	0.020
87	7.25	0.33	0.201	(0.223)	0.181	0.020
88	7.33	0.37	0.221	(0.222)	0.199	0.022
89	7.42	0.37	0.221	(0.221)	0.199	0.022
90	7.50	0.37	0.221	(0.220)	0.199	0.022
91	7.58	0.40	0.241	(0.219)	0.217	0.024
92	7.67	0.40	0.241	(0.218)	0.217	0.024
93	7.75	0.40	0.241	(0.217)	0.217	0.024
94	7.83	0.43	0.261	0.216 (0.235)		0.045
95	7.92	0.43	0.261	0.215 (0.235)		0.046
96	8.00	0.43	0.261	0.214 (0.235)		0.047
97	8.08	0.50	0.301	0.213 (0.271)		0.088
98	8.17	0.50	0.301	0.212 (0.271)		0.089
99	8.25	0.50	0.301	0.211 (0.271)		0.090
100	8.33	0.50	0.301	0.210 (0.271)		0.091
101	8.42	0.50	0.301	0.209 (0.271)		0.092
102	8.50	0.50	0.301	0.208 (0.271)		0.093
103	8.58	0.53	0.321	0.207 (0.289)		0.114
104	8.67	0.53	0.321	0.206 (0.289)		0.115
105	8.75	0.53	0.321	0.205 (0.289)		0.116
106	8.83	0.57	0.342	0.204 (0.307)		0.137
107	8.92	0.57	0.342	0.203 (0.307)		0.138
108	9.00	0.57	0.342	0.202 (0.307)		0.139
109	9.08	0.63	0.382	0.201 (0.344)		0.180
110	9.17	0.63	0.382	0.201 (0.344)		0.181

111	9.25	0.63	0.382	0.200	(0.344)	0.182
112	9.33	0.67	0.402	0.199	(0.362)	0.203
113	9.42	0.67	0.402	0.198	(0.362)	0.204
114	9.50	0.67	0.402	0.197	(0.362)	0.205
115	9.58	0.70	0.422	0.196	(0.380)	0.226
116	9.67	0.70	0.422	0.195	(0.380)	0.227
117	9.75	0.70	0.422	0.194	(0.380)	0.228
118	9.83	0.73	0.442	0.193	(0.398)	0.249
119	9.92	0.73	0.442	0.192	(0.398)	0.250
120	10.00	0.73	0.442	0.191	(0.398)	0.251
121	10.08	0.50	0.301	0.190	(0.271)	0.111
122	10.17	0.50	0.301	0.189	(0.271)	0.112
123	10.25	0.50	0.301	0.188	(0.271)	0.113
124	10.33	0.50	0.301	0.187	(0.271)	0.114
125	10.42	0.50	0.301	0.187	(0.271)	0.115
126	10.50	0.50	0.301	0.186	(0.271)	0.116
127	10.58	0.67	0.402	0.185	(0.362)	0.217
128	10.67	0.67	0.402	0.184	(0.362)	0.218
129	10.75	0.67	0.402	0.183	(0.362)	0.219
130	10.83	0.67	0.402	0.182	(0.362)	0.220
131	10.92	0.67	0.402	0.181	(0.362)	0.221
132	11.00	0.67	0.402	0.180	(0.362)	0.222
133	11.08	0.63	0.382	0.179	(0.344)	0.202
134	11.17	0.63	0.382	0.178	(0.344)	0.203
135	11.25	0.63	0.382	0.178	(0.344)	0.204
136	11.33	0.63	0.382	0.177	(0.344)	0.205
137	11.42	0.63	0.382	0.176	(0.344)	0.206
138	11.50	0.63	0.382	0.175	(0.344)	0.207
139	11.58	0.57	0.342	0.174	(0.307)	0.167
140	11.67	0.57	0.342	0.173	(0.307)	0.168
141	11.75	0.57	0.342	0.172	(0.307)	0.169
142	11.83	0.60	0.362	0.171	(0.325)	0.190
143	11.92	0.60	0.362	0.171	(0.325)	0.191
144	12.00	0.60	0.362	0.170	(0.325)	0.192
145	12.08	0.83	0.502	0.169	(0.452)	0.333
146	12.17	0.83	0.502	0.168	(0.452)	0.334
147	12.25	0.83	0.502	0.167	(0.452)	0.335
148	12.33	0.87	0.522	0.166	(0.470)	0.356
149	12.42	0.87	0.522	0.166	(0.470)	0.357
150	12.50	0.87	0.522	0.165	(0.470)	0.358
151	12.58	0.93	0.563	0.164	(0.506)	0.399
152	12.67	0.93	0.563	0.163	(0.506)	0.399
153	12.75	0.93	0.563	0.162	(0.506)	0.400
154	12.83	0.97	0.583	0.161	(0.524)	0.421
155	12.92	0.97	0.583	0.161	(0.524)	0.422
156	13.00	0.97	0.583	0.160	(0.524)	0.423
157	13.08	1.13	0.683	0.159	(0.615)	0.524
158	13.17	1.13	0.683	0.158	(0.615)	0.525
159	13.25	1.13	0.683	0.157	(0.615)	0.526
160	13.33	1.13	0.683	0.157	(0.615)	0.527
161	13.42	1.13	0.683	0.156	(0.615)	0.527
162	13.50	1.13	0.683	0.155	(0.615)	0.528
163	13.58	0.77	0.462	0.154	(0.416)	0.308
164	13.67	0.77	0.462	0.153	(0.416)	0.309
165	13.75	0.77	0.462	0.153	(0.416)	0.309
166	13.83	0.77	0.462	0.152	(0.416)	0.310
167	13.92	0.77	0.462	0.151	(0.416)	0.311

168	14.00	0.77	0.462	0.150	(0.416)	0.312
169	14.08	0.90	0.542	0.150	(0.488)	0.393
170	14.17	0.90	0.542	0.149	(0.488)	0.394
171	14.25	0.90	0.542	0.148	(0.488)	0.394
172	14.33	0.87	0.522	0.147	(0.470)	0.375
173	14.42	0.87	0.522	0.147	(0.470)	0.376
174	14.50	0.87	0.522	0.146	(0.470)	0.377
175	14.58	0.87	0.522	0.145	(0.470)	0.377
176	14.67	0.87	0.522	0.144	(0.470)	0.378
177	14.75	0.87	0.522	0.144	(0.470)	0.379
178	14.83	0.83	0.502	0.143	(0.452)	0.359
179	14.92	0.83	0.502	0.142	(0.452)	0.360
180	15.00	0.83	0.502	0.141	(0.452)	0.361
181	15.08	0.80	0.482	0.141	(0.434)	0.342
182	15.17	0.80	0.482	0.140	(0.434)	0.342
183	15.25	0.80	0.482	0.139	(0.434)	0.343
184	15.33	0.77	0.462	0.138	(0.416)	0.324
185	15.42	0.77	0.462	0.138	(0.416)	0.324
186	15.50	0.77	0.462	0.137	(0.416)	0.325
187	15.58	0.63	0.382	0.136	(0.344)	0.245
188	15.67	0.63	0.382	0.136	(0.344)	0.246
189	15.75	0.63	0.382	0.135	(0.344)	0.247
190	15.83	0.63	0.382	0.134	(0.344)	0.247
191	15.92	0.63	0.382	0.134	(0.344)	0.248
192	16.00	0.63	0.382	0.133	(0.344)	0.249
193	16.08	0.13	0.080	(0.132)	0.072	0.008
194	16.17	0.13	0.080	(0.132)	0.072	0.008
195	16.25	0.13	0.080	(0.131)	0.072	0.008
196	16.33	0.13	0.080	(0.130)	0.072	0.008
197	16.42	0.13	0.080	(0.130)	0.072	0.008
198	16.50	0.13	0.080	(0.129)	0.072	0.008
199	16.58	0.10	0.060	(0.128)	0.054	0.006
200	16.67	0.10	0.060	(0.128)	0.054	0.006
201	16.75	0.10	0.060	(0.127)	0.054	0.006
202	16.83	0.10	0.060	(0.126)	0.054	0.006
203	16.92	0.10	0.060	(0.126)	0.054	0.006
204	17.00	0.10	0.060	(0.125)	0.054	0.006
205	17.08	0.17	0.100	(0.124)	0.090	0.010
206	17.17	0.17	0.100	(0.124)	0.090	0.010
207	17.25	0.17	0.100	(0.123)	0.090	0.010
208	17.33	0.17	0.100	(0.123)	0.090	0.010
209	17.42	0.17	0.100	(0.122)	0.090	0.010
210	17.50	0.17	0.100	(0.121)	0.090	0.010
211	17.58	0.17	0.100	(0.121)	0.090	0.010
212	17.67	0.17	0.100	(0.120)	0.090	0.010
213	17.75	0.17	0.100	(0.119)	0.090	0.010
214	17.83	0.13	0.080	(0.119)	0.072	0.008
215	17.92	0.13	0.080	(0.118)	0.072	0.008
216	18.00	0.13	0.080	(0.118)	0.072	0.008
217	18.08	0.13	0.080	(0.117)	0.072	0.008
218	18.17	0.13	0.080	(0.117)	0.072	0.008
219	18.25	0.13	0.080	(0.116)	0.072	0.008
220	18.33	0.13	0.080	(0.115)	0.072	0.008
221	18.42	0.13	0.080	(0.115)	0.072	0.008
222	18.50	0.13	0.080	(0.114)	0.072	0.008
223	18.58	0.10	0.060	(0.114)	0.054	0.006
224	18.67	0.10	0.060	(0.113)	0.054	0.006

225	18.75	0.10	0.060	(0.113)	0.054	0.006
226	18.83	0.07	0.040	(0.112)	0.036	0.004
227	18.92	0.07	0.040	(0.112)	0.036	0.004
228	19.00	0.07	0.040	(0.111)	0.036	0.004
229	19.08	0.10	0.060	(0.111)	0.054	0.006
230	19.17	0.10	0.060	(0.110)	0.054	0.006
231	19.25	0.10	0.060	(0.109)	0.054	0.006
232	19.33	0.13	0.080	(0.109)	0.072	0.008
233	19.42	0.13	0.080	(0.108)	0.072	0.008
234	19.50	0.13	0.080	(0.108)	0.072	0.008
235	19.58	0.10	0.060	(0.107)	0.054	0.006
236	19.67	0.10	0.060	(0.107)	0.054	0.006
237	19.75	0.10	0.060	(0.107)	0.054	0.006
238	19.83	0.07	0.040	(0.106)	0.036	0.004
239	19.92	0.07	0.040	(0.106)	0.036	0.004
240	20.00	0.07	0.040	(0.105)	0.036	0.004
241	20.08	0.10	0.060	(0.105)	0.054	0.006
242	20.17	0.10	0.060	(0.104)	0.054	0.006
243	20.25	0.10	0.060	(0.104)	0.054	0.006
244	20.33	0.10	0.060	(0.103)	0.054	0.006
245	20.42	0.10	0.060	(0.103)	0.054	0.006
246	20.50	0.10	0.060	(0.102)	0.054	0.006
247	20.58	0.10	0.060	(0.102)	0.054	0.006
248	20.67	0.10	0.060	(0.102)	0.054	0.006
249	20.75	0.10	0.060	(0.101)	0.054	0.006
250	20.83	0.07	0.040	(0.101)	0.036	0.004
251	20.92	0.07	0.040	(0.100)	0.036	0.004
252	21.00	0.07	0.040	(0.100)	0.036	0.004
253	21.08	0.10	0.060	(0.099)	0.054	0.006
254	21.17	0.10	0.060	(0.099)	0.054	0.006
255	21.25	0.10	0.060	(0.099)	0.054	0.006
256	21.33	0.07	0.040	(0.098)	0.036	0.004
257	21.42	0.07	0.040	(0.098)	0.036	0.004
258	21.50	0.07	0.040	(0.098)	0.036	0.004
259	21.58	0.10	0.060	(0.097)	0.054	0.006
260	21.67	0.10	0.060	(0.097)	0.054	0.006
261	21.75	0.10	0.060	(0.097)	0.054	0.006
262	21.83	0.07	0.040	(0.096)	0.036	0.004
263	21.92	0.07	0.040	(0.096)	0.036	0.004
264	22.00	0.07	0.040	(0.096)	0.036	0.004
265	22.08	0.10	0.060	(0.095)	0.054	0.006
266	22.17	0.10	0.060	(0.095)	0.054	0.006
267	22.25	0.10	0.060	(0.095)	0.054	0.006
268	22.33	0.07	0.040	(0.094)	0.036	0.004
269	22.42	0.07	0.040	(0.094)	0.036	0.004
270	22.50	0.07	0.040	(0.094)	0.036	0.004
271	22.58	0.07	0.040	(0.093)	0.036	0.004
272	22.67	0.07	0.040	(0.093)	0.036	0.004
273	22.75	0.07	0.040	(0.093)	0.036	0.004
274	22.83	0.07	0.040	(0.093)	0.036	0.004
275	22.92	0.07	0.040	(0.092)	0.036	0.004
276	23.00	0.07	0.040	(0.092)	0.036	0.004
277	23.08	0.07	0.040	(0.092)	0.036	0.004
278	23.17	0.07	0.040	(0.092)	0.036	0.004
279	23.25	0.07	0.040	(0.092)	0.036	0.004
280	23.33	0.07	0.040	(0.091)	0.036	0.004
281	23.42	0.07	0.040	(0.091)	0.036	0.004

282	23.50	0.07	0.040	(0.091)	0.036	0.004
283	23.58	0.07	0.040	(0.091)	0.036	0.004
284	23.67	0.07	0.040	(0.091)	0.036	0.004
285	23.75	0.07	0.040	(0.091)	0.036	0.004
286	23.83	0.07	0.040	(0.091)	0.036	0.004
287	23.92	0.07	0.040	(0.091)	0.036	0.004
288	24.00	0.07	0.040	(0.090)	0.036	0.004

(Loss Rate Not Used)

Sum = 100.0

Sum = 27.6

Flood volume = Effective rainfall 2.30(In)
times area 214.0(Ac.)/[(In)/(Ft.)] = 41.1(Ac.Ft)
Total soil loss = 2.72(In)
Total soil loss = 48.511(Ac.Ft)
Total rainfall = 5.02(In)
Flood volume = 1788319.3 Cubic Feet
Total soil loss = 2113157.0 Cubic Feet

Peak flow rate of this hydrograph = 110.954(CFS)

+++++

24 - H O U R S T O R M
Run off 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	50.0	100.0	150.0	200.0
0+ 5	0.0005	0.07	Q				
0+10	0.0030	0.37	Q				
0+15	0.0072	0.60	Q				
0+20	0.0121	0.72	Q				
0+25	0.0185	0.92	Q				
0+30	0.0259	1.07	Q				
0+35	0.0338	1.14	Q				
0+40	0.0419	1.19	Q				
0+45	0.0503	1.22	Q				
0+50	0.0592	1.28	Q				
0+55	0.0691	1.45	Q				
1+ 0	0.0800	1.57	Q				
1+ 5	0.0909	1.59	Q				
1+10	0.1011	1.48	Q				
1+15	0.1106	1.38	Q				
1+20	0.1200	1.36	Q				
1+25	0.1292	1.34	Q				
1+30	0.1384	1.33	Q				
1+35	0.1475	1.32	Q				
1+40	0.1565	1.32	Q				
1+45	0.1656	1.31	Q				
1+50	0.1748	1.35	Q				
1+55	0.1851	1.49	Q				
2+ 0	0.1962	1.60	Q				
2+ 5	0.2075	1.65	Q				
2+10	0.2190	1.67	Q				
2+15	0.2306	1.69	Q				
2+20	0.2423	1.70	Q				
2+25	0.2541	1.71	Q				

2+30	0.2659	1.72	Q
2+35	0.2781	1.76	Q
2+40	0.2912	1.91	Q
2+45	0.3052	2.03	Q
2+50	0.3195	2.08	Q
2+55	0.3340	2.10	Q
3+ 0	0.3486	2.12	Q
3+ 5	0.3633	2.13	Q
3+10	0.3780	2.14	Q
3+15	0.3928	2.15	Q
3+20	0.4077	2.16	Q
3+25	0.4226	2.16	Q
3+30	0.4375	2.16	Q
3+35	0.4524	2.17	Q
3+40	0.4673	2.17	Q
3+45	0.4822	2.17	Q
3+50	0.4974	2.20	Q
3+55	0.5136	2.35	Q
4+ 0	0.5306	2.47	Q
4+ 5	0.5479	2.51	Q
4+10	0.5654	2.54	Q
4+15	0.5830	2.56	Q
4+20	0.6009	2.60	Q
4+25	0.6199	2.76	Q
4+30	0.6398	2.88	Q
4+35	0.6599	2.93	Q
4+40	0.6804	2.96	Q
4+45	0.7009	2.98	Q
4+50	0.7218	3.04	Q
4+55	0.7438	3.19	Q
5+ 0	0.7666	3.32	Q
5+ 5	0.7893	3.29	Q
5+10	0.8102	3.03	Q
5+15	0.8296	2.82	Q
5+20	0.8488	2.78	Q
5+25	0.8687	2.89	Q
5+30	0.8891	2.97	Q
5+35	0.9101	3.04	Q
5+40	0.9321	3.20	Q
5+45	0.9549	3.32	Q
5+50	0.9781	3.37	Q
5+55	1.0015	3.39	Q
6+ 0	1.0250	3.41	Q
6+ 5	1.0488	3.46	QV
6+10	1.0738	3.62	QV
6+15	1.0996	3.75	QV
6+20	1.1257	3.80	QV
6+25	1.1521	3.83	QV
6+30	1.1786	3.85	QV
6+35	1.2055	3.90	QV
6+40	1.2335	4.06	QV
6+45	1.2623	4.18	QV
6+50	1.2914	4.23	QV
6+55	1.3208	4.26	QV
7+ 0	1.3503	4.28	QV
7+ 5	1.3799	4.30	QV
7+10	1.4096	4.31	QV

7+15	1.4393	4.32	QV				
7+20	1.4694	4.36	QV				
7+25	1.5004	4.51	QV				
7+30	1.5323	4.63	QV				
7+35	1.5648	4.71	QV				
7+40	1.5984	4.89	QV				
7+45	1.6330	5.02	Q				
7+50	1.6706	5.45	Q				
7+55	1.7191	7.05	Q				
8+ 0	1.7767	8.36	Q				
8+ 5	1.8436	9.71	Q				
8+10	1.9340	13.13	VQ				
8+15	2.0429	15.81	V Q				
8+20	2.1601	17.02	VQ				
8+25	2.2830	17.85	VQ				
8+30	2.4103	18.48	VQ				
8+35	2.5436	19.36	VQ				
8+40	2.6901	21.27	V Q				
8+45	2.8472	22.80	V Q				
8+50	3.0121	23.95	V Q				
8+55	3.1912	26.01	V Q				
9+ 0	3.3813	27.60	V Q				
9+ 5	3.5821	29.15	V Q				
9+10	3.8074	32.72	V Q				
9+15	4.0517	35.47	V Q				
9+20	4.3072	37.11	V Q				
9+25	4.5790	39.45	V Q				
9+30	4.8631	41.26	V Q				
9+35	5.1566	42.61	V Q				
9+40	5.4651	44.80	V Q				
9+45	5.7853	46.50	V Q				
9+50	6.1143	47.77	V Q				
9+55	6.4580	49.91	V Q				
10+ 0	6.8132	51.57	V Q				
10+ 5	7.1571	49.93	V Q				
10+10	7.4338	40.18	VQ				
10+15	7.6585	32.63	QV				
10+20	7.8646	29.93	Q V				
10+25	8.0604	28.43	Q V				
10+30	8.2498	27.49	Q V				
10+35	8.4473	28.68	Q V				
10+40	8.6933	35.73	QV				
10+45	8.9769	41.17	Q				
10+50	9.2746	43.23	QV				
10+55	9.5810	44.48	QV				
11+ 0	9.8933	45.36	Q				
11+ 5	10.2077	45.64	Q				
11+10	10.5152	44.66	Q V				
11+15	10.8187	44.07	Q V				
11+20	11.1223	44.09	Q V				
11+25	11.4269	44.22	Q V				
11+30	11.7325	44.38	Q V				
11+35	12.0345	43.85	Q V				
11+40	12.3174	41.08	Q V				
11+45	12.5854	38.90	Q V				
11+50	12.8506	38.51	Q V				
11+55	13.1233	39.61	Q V				

12+ 0	13.4027	40.56		Q	V			
12+ 5	13.7017	43.42		Q	V			
12+10	14.0740	54.05		Q	V			
12+15	14.5030	62.30			Q V			
12+20	14.9574	65.97			QV			
12+25	15.4359	69.48			Q V			
12+30	15.9323	72.07			QV			
12+35	16.4440	74.30			Q V			
12+40	16.9835	78.34			QV			
12+45	17.5450	81.53			QV			
12+50	18.1201	83.49			QV			
12+55	18.7129	86.08			QV			
13+ 0	19.3192	88.04			QV			
13+ 5	19.9455	90.94			QV			
13+10	20.6284	99.16			QV			
13+15	21.3545	105.42			VQ			
13+20	22.0988	108.08			Q			
13+25	22.8547	109.76			QV			
13+30	23.6189	110.95			QV			
13+35	24.3620	107.91			Q V			
13+40	24.9977	92.30			Q	V		
13+45	25.5503	80.24			Q	V		
13+50	26.0725	75.82			Q	V		
13+55	26.5775	73.32			Q	V		
14+ 0	27.0712	71.68			Q	V		
14+ 5	27.5672	72.03			Q	V		
14+10	28.0992	77.24			Q	V		
14+15	28.6583	81.19			Q	V		
14+20	29.2243	82.17			Q	V		
14+25	29.7853	81.46			Q	V		
14+30	30.3422	80.86			Q	V		
14+35	30.8986	80.80			Q	V		
14+40	31.4554	80.84			Q	V		
14+45	32.0140	81.11			Q	V		
14+50	32.5719	81.01			Q	V		
14+55	33.1212	79.76			Q	V		
15+ 0	33.6640	78.81			Q	V		
15+ 5	34.2027	78.22			Q	V		
15+10	34.7307	76.67			Q	V		
15+15	35.2505	75.47			Q	V		
15+20	35.7648	74.67			Q	V		
15+25	36.2673	72.97			Q	V		
15+30	36.7613	71.73			Q	V		
15+35	37.2421	69.82			Q	V		
15+40	37.6805	63.64			Q	V		
15+45	38.0863	58.93			Q	V		
15+50	38.4795	57.09			Q	V		
15+55	38.8654	56.04			Q	V		
16+ 0	39.2468	55.38			Q	V		
16+ 5	39.5954	50.62			Q	V		
16+10	39.8193	32.51		Q				
16+15	39.9466	18.48		Q				
16+20	40.0358	12.95		Q				
16+25	40.1021	9.63		Q				
16+30	40.1530	7.39		Q				
16+35	40.1926	5.75		Q				
16+40	40.2233	4.46	Q					

16+45	40.2472	3.47	Q				V
16+50	40.2664	2.78	Q				V
16+55	40.2820	2.26	Q				V
17+ 0	40.2950	1.90	Q				V
17+ 5	40.3064	1.64	Q				V
17+10	40.3180	1.69	Q				V
17+15	40.3312	1.92	Q				V
17+20	40.3450	2.00	Q				V
17+25	40.3591	2.05	Q				V
17+30	40.3734	2.08	Q				V
17+35	40.3879	2.10	Q				V
17+40	40.4025	2.12	Q				V
17+45	40.4172	2.13	Q				V
17+50	40.4317	2.11	Q				V
17+55	40.4453	1.97	Q				V
18+ 0	40.4581	1.86	Q				V
18+ 5	40.4706	1.82	Q				V
18+10	40.4830	1.80	Q				V
18+15	40.4952	1.78	Q				V
18+20	40.5074	1.77	Q				V
18+25	40.5195	1.76	Q				V
18+30	40.5316	1.75	Q				V
18+35	40.5433	1.71	Q				V
18+40	40.5541	1.56	Q				V
18+45	40.5640	1.44	Q				V
18+50	40.5733	1.36	Q				V
18+55	40.5815	1.18	Q				V
19+ 0	40.5887	1.05	Q				V
19+ 5	40.5957	1.03	Q				V
19+10	40.6036	1.14	Q				V
19+15	40.6121	1.23	Q				V
19+20	40.6209	1.29	Q				V
19+25	40.6310	1.45	Q				V
19+30	40.6418	1.58	Q				V
19+35	40.6527	1.59	Q				V
19+40	40.6629	1.47	Q				V
19+45	40.6723	1.38	Q				V
19+50	40.6814	1.31	Q				V
19+55	40.6893	1.15	Q				V
20+ 0	40.6963	1.03	Q				V
20+ 5	40.7033	1.01	Q				V
20+10	40.7111	1.13	Q				V
20+15	40.7195	1.22	Q				V
20+20	40.7282	1.25	Q				V
20+25	40.7369	1.27	Q				V
20+30	40.7457	1.28	Q				V
20+35	40.7545	1.28	Q				V
20+40	40.7634	1.28	Q				V
20+45	40.7722	1.29	Q				V
20+50	40.7809	1.25	Q				V
20+55	40.7885	1.11	Q				V
21+ 0	40.7954	1.00	Q				V
21+ 5	40.8022	0.99	Q				V
21+10	40.8099	1.11	Q				V
21+15	40.8182	1.21	Q				V
21+20	40.8265	1.21	Q				V
21+25	40.8340	1.08	Q				V

21+30	40.8407	0.97	Q				V
21+35	40.8474	0.97	Q				V
21+40	40.8549	1.10	Q				V
21+45	40.8632	1.20	Q				V
21+50	40.8714	1.20	Q				V
21+55	40.8788	1.07	Q				V
22+ 0	40.8855	0.97	Q				V
22+ 5	40.8921	0.97	Q				V
22+10	40.8997	1.10	Q				V
22+15	40.9080	1.20	Q				V
22+20	40.9162	1.20	Q				V
22+25	40.9236	1.07	Q				V
22+30	40.9302	0.97	Q				V
22+35	40.9367	0.93	Q				V
22+40	40.9430	0.91	Q				V
22+45	40.9492	0.90	Q				V
22+50	40.9553	0.89	Q				V
22+55	40.9614	0.88	Q				V
23+ 0	40.9674	0.88	Q				V
23+ 5	40.9735	0.88	Q				V
23+10	40.9795	0.87	Q				V
23+15	40.9855	0.87	Q				V
23+20	40.9915	0.87	Q				V
23+25	40.9975	0.87	Q				V
23+30	41.0034	0.87	Q				V
23+35	41.0094	0.87	Q				V
23+40	41.0154	0.87	Q				V
23+45	41.0213	0.87	Q				V
23+50	41.0273	0.87	Q				V
23+55	41.0333	0.87	Q				V
24+ 0	41.0393	0.87	Q				V
24+ 5	41.0447	0.80	Q				V
24+10	41.0482	0.50	Q				V
24+15	41.0500	0.27	Q				V
24+20	41.0513	0.18	Q				V
24+25	41.0521	0.13	Q				V
24+30	41.0528	0.09	Q				V
24+35	41.0532	0.07	Q				V
24+40	41.0536	0.05	Q				V
24+45	41.0538	0.03	Q				V
24+50	41.0540	0.02	Q				V
24+55	41.0541	0.02	Q				V
25+ 0	41.0541	0.01	Q				V
25+ 5	41.0542	0.00	Q				V

ATTACHMENT 4

Existing Conditions
Hydrograph Calculations
(100-Year, 1,3,6, & 24-Hour)

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 05/08/15 File: 154149EXHYDA1100.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR

EXISTING CONDITIONS AREA "A"

100-YEAR, 1-HOUR STORM

BY: JTS DATE: 05-08-15

Drainage Area = 213.98(Ac.) = 0.334 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 213.98(Ac.)= 0.334 Sq. Mi.
Length along longest watercourse = 4276.23(Ft.)
Length along longest watercourse measured to centroid = 1768.91(Ft.)
Length along longest watercourse = 0.810 Mi.
Length along longest watercourse measured to centroid = 0.335 Mi.
Difference in elevation = 798.20(Ft.)
Slope along watercourse = 985.5635 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.138 Hr.
Lag time = 8.29 Min.
25% of lag time = 2.07 Min.
40% of lag time = 3.31 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]
213.98	0.58	124.11

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
213.98	1.47	314.55

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.580(In)
Area Averaged 100-Year Rainfall = 1.470(In)

Point rain (area averaged) = 1.470(In)
Areal adjustment factor = 99.81 %
Adjusted average point rain = 1.467(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.430	67.00	0.000
22.120	78.00	0.000
3.320	89.00	0.000
166.110	89.00	0.000
Total Area Entered = 213.98(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	83.2	0.208	0.000	0.208	0.105	0.022
78.0	89.8	0.132	0.000	0.132	0.103	0.014
89.0	95.6	0.057	0.000	0.057	0.016	0.001
89.0	95.6	0.057	0.000	0.057	0.776	0.044
Sum (F) =						0.081

Area averaged mean soil loss (F) (In/Hr) = 0.081
Minimum soil loss rate ((In/Hr)) = 0.040
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.4800

Unit Hydrograph
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	60.341	8.293
2	0.167	120.681	34.206
3	0.250	181.022	26.473
4	0.333	241.363	10.243
5	0.417	301.703	6.078
6	0.500	362.044	4.101
7	0.583	422.385	2.914
8	0.667	482.725	2.056
9	0.750	543.066	1.700
10	0.833	603.406	1.252
11	0.917	663.747	0.948
12	1.000	724.088	0.675
13	1.083	784.428	0.603
14	1.167	844.769	0.457
Sum = 100.000		Sum=	215.652

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	4.40	0.775	0.081	(0.697)	0.694
2	0.17	4.50	0.792	0.081	(0.713)	0.712
3	0.25	5.40	0.951	0.081	(0.856)	0.870
4	0.33	5.40	0.951	0.081	(0.856)	0.870
5	0.42	5.70	1.004	0.081	(0.903)	0.923
6	0.50	6.40	1.127	0.081	(1.014)	1.046
7	0.58	7.90	1.391	0.081	(1.252)	1.310
8	0.67	9.10	1.602	0.081	(1.442)	1.521
9	0.75	12.80	2.254	0.081	(2.028)	2.173
10	0.83	25.60	4.507	0.081	(4.056)	4.426
11	0.92	7.90	1.391	0.081	(1.252)	1.310
12	1.00	4.90	0.863	0.081	(0.776)	0.782

(Loss Rate Not Used)

Sum = 100.0

Sum = 16.6

Flood volume = Effective rainfall 1.39(In)
times area 214.0(Ac.)/[(In)/(Ft.)] = 24.7(Ac.Ft)
Total soil loss = 0.08(In)
Total soil loss = 1.439(Ac.Ft)
Total rainfall = 1.47(In)
Flood volume = 1076906.7 Cubic Feet
Total soil loss = 62697.7 Cubic Feet

Peak flow rate of this hydrograph = 550.492(CFS)

+++++

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	150.0	300.0	450.0	600.0
0+ 5	0.0855	12.42	Q				
0+10	0.5259	63.95	V Q				
0+15	1.2678	107.72	V Q				
0+20	2.2027	135.76	V Q				
0+25	3.2719	155.24	V Q				
0+30	4.4510	171.22	V Q				
0+35	5.7916	194.65	V Q				
0+40	7.3806	230.72	V Q				
0+45	9.3096	280.09	V Q				
0+50	12.0032	391.12	V Q				
0+55	15.7945	550.49	V Q				
1+ 0	18.9746	461.76	V Q				
1+ 5	21.0040	294.66	V Q				
1+10	22.2247	177.26	V Q				
1+15	22.9593	106.66	V Q				
1+20	23.4684	73.92	V Q				
1+25	23.8343	53.14	V Q				
1+30	24.1107	40.13	V Q				

1+35	24.3148	29.63	Q				V
1+40	24.4656	21.90	Q				V
1+45	24.5728	15.57	Q				V
1+50	24.6515	11.42	Q				V
1+55	24.7011	7.21	Q				V
2+ 0	24.7171	2.31	Q				V
2+ 5	24.7224	0.77	Q				V

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 05/08/15 File: 154149EXHYDA3100.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR

EXISTING CONDITIONS AREA "A"

100-YEAR, 3-HOUR STORM

BY: JTS DATE: 05-08-15

Drainage Area = 213.98(Ac.) = 0.334 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 213.98(Ac.)= 0.334 Sq. Mi.
Length along longest watercourse = 4276.23(Ft.)
Length along longest watercourse measured to centroid = 1768.91(Ft.)
Length along longest watercourse = 0.810 Mi.
Length along longest watercourse measured to centroid = 0.335 Mi.
Difference in elevation = 798.20(Ft.)
Slope along watercourse = 985.5635 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.138 Hr.
Lag time = 8.29 Min.
25% of lag time = 2.07 Min.
40% of lag time = 3.31 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]
213.98	1.05	224.68

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
213.98	2.51	537.09

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.050(In)
Area Averaged 100-Year Rainfall = 2.510(In)

Point rain (area averaged) = 2.510(In)
Areal adjustment factor = 99.91 %
Adjusted average point rain = 2.508(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.430	67.00	0.000
22.120	78.00	0.000
3.320	89.00	0.000
166.110	89.00	0.000
Total Area Entered = 213.98(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	83.2	0.208	0.000	0.208	0.105	0.022
78.0	89.8	0.132	0.000	0.132	0.103	0.014
89.0	95.6	0.057	0.000	0.057	0.016	0.001
89.0	95.6	0.057	0.000	0.057	0.776	0.044
Sum (F) =						0.081

Area averaged mean soil loss (F) (In/Hr) = 0.081
Minimum soil loss rate ((In/Hr)) = 0.040
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Unit Hydrograph
VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	60.341	8.293
2	0.167	120.681	34.206
3	0.250	181.022	26.473
4	0.333	241.363	10.243
5	0.417	301.703	6.078
6	0.500	362.044	4.101
7	0.583	422.385	2.914
8	0.667	482.725	2.056
9	0.750	543.066	1.700
10	0.833	603.406	1.252
11	0.917	663.747	0.948
12	1.000	724.088	0.675
13	1.083	784.428	0.603
14	1.167	844.769	0.457
Sum =		100.000	Sum= 215.652

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	0.391	0.081	(0.352)	0.310
2	0.17	1.30	0.391	0.081	(0.352)	0.310
3	0.25	1.10	0.331	0.081	(0.298)	0.250
4	0.33	1.50	0.451	0.081	(0.406)	0.371
5	0.42	1.50	0.451	0.081	(0.406)	0.371
6	0.50	1.80	0.542	0.081	(0.487)	0.461
7	0.58	1.50	0.451	0.081	(0.406)	0.371
8	0.67	1.80	0.542	0.081	(0.487)	0.461
9	0.75	1.80	0.542	0.081	(0.487)	0.461
10	0.83	1.50	0.451	0.081	(0.406)	0.371
11	0.92	1.60	0.481	0.081	(0.433)	0.401
12	1.00	1.80	0.542	0.081	(0.487)	0.461
13	1.08	2.20	0.662	0.081	(0.596)	0.581
14	1.17	2.20	0.662	0.081	(0.596)	0.581
15	1.25	2.20	0.662	0.081	(0.596)	0.581
16	1.33	2.00	0.602	0.081	(0.542)	0.521
17	1.42	2.60	0.782	0.081	(0.704)	0.702
18	1.50	2.70	0.812	0.081	(0.731)	0.732
19	1.58	2.40	0.722	0.081	(0.650)	0.641
20	1.67	2.70	0.812	0.081	(0.731)	0.732
21	1.75	3.30	0.993	0.081	(0.894)	0.912
22	1.83	3.10	0.933	0.081	(0.840)	0.852
23	1.92	2.90	0.873	0.081	(0.785)	0.792
24	2.00	3.00	0.903	0.081	(0.812)	0.822
25	2.08	3.10	0.933	0.081	(0.840)	0.852
26	2.17	4.20	1.264	0.081	(1.137)	1.183
27	2.25	5.00	1.505	0.081	(1.354)	1.424
28	2.33	3.50	1.053	0.081	(0.948)	0.972
29	2.42	6.80	2.046	0.081	(1.842)	1.966
30	2.50	7.30	2.197	0.081	(1.977)	2.116
31	2.58	8.20	2.468	0.081	(2.221)	2.387
32	2.67	5.90	1.775	0.081	(1.598)	1.695
33	2.75	2.00	0.602	0.081	(0.542)	0.521
34	2.83	1.80	0.542	0.081	(0.487)	0.461
35	2.92	1.80	0.542	0.081	(0.487)	0.461
36	3.00	0.60	0.181	0.081	(0.162)	0.100

(Loss Rate Not Used)

Sum = 100.0

Sum = 27.2

Flood volume = Effective rainfall 2.27(In)
times area 214.0(Ac.)/[(In)/(Ft.)] = 40.4(Ac.Ft)

Total soil loss = 0.24(In)

Total soil loss = 4.318(Ac.Ft)

Total rainfall = 2.51(In)

Flood volume = 1759717.6 Cubic Feet

Total soil loss = 188093.2 Cubic Feet

Peak flow rate of this hydrograph = 417.166(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	125.0	250.0	375.0	500.0
0+ 5	0.0383	5.56	Q					
0+10	0.2343	28.47	V Q					
0+15	0.5451	45.13	V Q					
0+20	0.8874	49.70	V Q					
0+25	1.2952	59.22	V Q					
0+30	1.7713	69.13	V Q					
0+35	2.3085	78.00	V Q					
0+40	2.8631	80.53	V Q					
0+45	3.4544	85.86	V Q					
0+50	4.0736	89.91	V Q					
0+55	4.6683	86.35	V Q					
1+ 0	5.2618	86.17	VQ					
1+ 5	5.9073	93.73	V Q					
1+10	6.6407	106.50	V Q					
1+15	7.4307	114.71	V Q					
1+20	8.2375	117.15	VQ					
1+25	9.0512	118.15	VQ					
1+30	9.9464	129.99	VQ					
1+35	10.9146	140.57	VQ					
1+40	11.8865	141.12	Q					
1+45	12.9125	148.98	QV					
1+50	14.0584	166.38	Q					
1+55	15.2526	173.40	Q V					
2+ 0	16.4337	171.49	Q					
2+ 5	17.6247	172.93	Q					
2+10	18.8853	183.03	Q					
2+15	20.3618	214.40	Q					
2+20	22.0442	244.28	Q					
2+25	23.7712	250.76	Q					
2+30	25.9155	311.35	Q					
2+35	28.5358	380.48	Q					
2+40	31.4089	417.17	Q					
2+45	33.9998	376.20	Q					
2+50	35.8270	265.31	Q					
2+55	37.1315	189.41	Q					
3+ 0	38.1779	151.94	Q					
3+ 5	38.9114	106.50	Q					
3+10	39.3750	67.31	Q					
3+15	39.6921	46.05	Q					
3+20	39.9203	33.12	Q					
3+25	40.0842	23.80	Q					
3+30	40.2041	17.41	Q					
3+35	40.2875	12.11	Q					
3+40	40.3417	7.88	Q					
3+45	40.3709	4.23	Q					
3+50	40.3846	1.99	Q					
3+55	40.3929	1.20	Q					
4+ 0	40.3969	0.58	Q					
4+ 5	40.3976	0.10	Q					

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 05/08/15 File: 154149EXHYDA6100.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR

EXISTING CONDITIONS AREA "A"

100-YEAR, 6-HOUR STORM

BY: JTS DATE: 05-08-15

Drainage Area = 213.98(Ac.) = 0.334 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 213.98(Ac.)= 0.334 Sq. Mi.
Length along longest watercourse = 4276.23(Ft.)
Length along longest watercourse measured to centroid = 1768.91(Ft.)
Length along longest watercourse = 0.810 Mi.
Length along longest watercourse measured to centroid = 0.335 Mi.
Difference in elevation = 798.20(Ft.)
Slope along watercourse = 985.5635 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.138 Hr.
Lag time = 8.29 Min.
25% of lag time = 2.07 Min.
40% of lag time = 3.31 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]
213.98	1.45	310.27

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
213.98	3.51	751.07

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.450(In)
Area Averaged 100-Year Rainfall = 3.510(In)

Point rain (area averaged) = 3.510(In)
Areal adjustment factor = 99.93 %
Adjusted average point rain = 3.507(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.430	67.00	0.000
22.120	78.00	0.000
3.320	89.00	0.000
166.110	89.00	0.000
Total Area Entered = 213.98(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	83.2	0.208	0.000	0.208	0.105	0.022
78.0	89.8	0.132	0.000	0.132	0.103	0.014
89.0	95.6	0.057	0.000	0.057	0.016	0.001
89.0	95.6	0.057	0.000	0.057	0.776	0.044
Sum (F) =						0.081

Area averaged mean soil loss (F) (In/Hr) = 0.081
Minimum soil loss rate ((In/Hr)) = 0.040
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Unit Hydrograph
VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	60.341	8.293
2	0.167	120.681	34.206
3	0.250	181.022	26.473
4	0.333	241.363	10.243
5	0.417	301.703	6.078
6	0.500	362.044	4.101
7	0.583	422.385	2.914
8	0.667	482.725	2.056
9	0.750	543.066	1.700
10	0.833	603.406	1.252
11	0.917	663.747	0.948
12	1.000	724.088	0.675
13	1.083	784.428	0.603
14	1.167	844.769	0.457
Sum =		100.000	Sum= 215.652

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	0.210	0.081	(0.189)	0.130
2	0.17	0.60	0.253	0.081	(0.227)	0.172
3	0.25	0.60	0.253	0.081	(0.227)	0.172
4	0.33	0.60	0.253	0.081	(0.227)	0.172
5	0.42	0.60	0.253	0.081	(0.227)	0.172
6	0.50	0.70	0.295	0.081	(0.265)	0.214
7	0.58	0.70	0.295	0.081	(0.265)	0.214
8	0.67	0.70	0.295	0.081	(0.265)	0.214
9	0.75	0.70	0.295	0.081	(0.265)	0.214
10	0.83	0.70	0.295	0.081	(0.265)	0.214
11	0.92	0.70	0.295	0.081	(0.265)	0.214
12	1.00	0.80	0.337	0.081	(0.303)	0.256
13	1.08	0.80	0.337	0.081	(0.303)	0.256
14	1.17	0.80	0.337	0.081	(0.303)	0.256
15	1.25	0.80	0.337	0.081	(0.303)	0.256
16	1.33	0.80	0.337	0.081	(0.303)	0.256
17	1.42	0.80	0.337	0.081	(0.303)	0.256
18	1.50	0.80	0.337	0.081	(0.303)	0.256
19	1.58	0.80	0.337	0.081	(0.303)	0.256
20	1.67	0.80	0.337	0.081	(0.303)	0.256
21	1.75	0.80	0.337	0.081	(0.303)	0.256
22	1.83	0.80	0.337	0.081	(0.303)	0.256
23	1.92	0.80	0.337	0.081	(0.303)	0.256
24	2.00	0.90	0.379	0.081	(0.341)	0.298
25	2.08	0.80	0.337	0.081	(0.303)	0.256
26	2.17	0.90	0.379	0.081	(0.341)	0.298
27	2.25	0.90	0.379	0.081	(0.341)	0.298
28	2.33	0.90	0.379	0.081	(0.341)	0.298
29	2.42	0.90	0.379	0.081	(0.341)	0.298
30	2.50	0.90	0.379	0.081	(0.341)	0.298
31	2.58	0.90	0.379	0.081	(0.341)	0.298
32	2.67	0.90	0.379	0.081	(0.341)	0.298
33	2.75	1.00	0.421	0.081	(0.379)	0.340
34	2.83	1.00	0.421	0.081	(0.379)	0.340
35	2.92	1.00	0.421	0.081	(0.379)	0.340
36	3.00	1.00	0.421	0.081	(0.379)	0.340
37	3.08	1.00	0.421	0.081	(0.379)	0.340
38	3.17	1.10	0.463	0.081	(0.417)	0.382
39	3.25	1.10	0.463	0.081	(0.417)	0.382
40	3.33	1.10	0.463	0.081	(0.417)	0.382
41	3.42	1.20	0.505	0.081	(0.455)	0.424
42	3.50	1.30	0.547	0.081	(0.492)	0.466
43	3.58	1.40	0.589	0.081	(0.530)	0.509
44	3.67	1.40	0.589	0.081	(0.530)	0.509
45	3.75	1.50	0.631	0.081	(0.568)	0.551
46	3.83	1.50	0.631	0.081	(0.568)	0.551
47	3.92	1.60	0.673	0.081	(0.606)	0.593
48	4.00	1.60	0.673	0.081	(0.606)	0.593
49	4.08	1.70	0.716	0.081	(0.644)	0.635
50	4.17	1.80	0.758	0.081	(0.682)	0.677
51	4.25	1.90	0.800	0.081	(0.720)	0.719
52	4.33	2.00	0.842	0.081	(0.758)	0.761
53	4.42	2.10	0.884	0.081	(0.795)	0.803

54	4.50	2.10	0.884	0.081	(0.795)	0.803
55	4.58	2.20	0.926	0.081	(0.833)	0.845
56	4.67	2.30	0.968	0.081	(0.871)	0.887
57	4.75	2.40	1.010	0.081	(0.909)	0.929
58	4.83	2.40	1.010	0.081	(0.909)	0.929
59	4.92	2.50	1.052	0.081	(0.947)	0.972
60	5.00	2.60	1.094	0.081	(0.985)	1.014
61	5.08	3.10	1.305	0.081	(1.174)	1.224
62	5.17	3.60	1.515	0.081	(1.364)	1.434
63	5.25	3.90	1.641	0.081	(1.477)	1.561
64	5.33	4.20	1.768	0.081	(1.591)	1.687
65	5.42	4.70	1.978	0.081	(1.780)	1.897
66	5.50	5.60	2.357	0.081	(2.121)	2.276
67	5.58	1.90	0.800	0.081	(0.720)	0.719
68	5.67	0.90	0.379	0.081	(0.341)	0.298
69	5.75	0.60	0.253	0.081	(0.227)	0.172
70	5.83	0.50	0.210	0.081	(0.189)	0.130
71	5.92	0.30	0.126	0.081	(0.114)	0.046
72	6.00	0.20	0.084	(0.081)	0.076	0.008

(Loss Rate Not Used)

Sum = 100.0

Sum = 36.3

Flood volume = Effective rainfall 3.02(In)
times area 214.0(Ac.)/[(In)/(Ft.)) = 53.9(Ac.Ft)
Total soil loss = 0.48(In)
Total soil loss = 8.629(Ac.Ft)
Total rainfall = 3.51(In)
Flood volume = 2348512.5 Cubic Feet
Total soil loss = 375865.5 Cubic Feet

Peak flow rate of this hydrograph = 383.042(CFS)

+++++

6 - 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	100.0	200.0	300.0	400.0
0+ 5	0.0160	2.32	Q				
0+10	0.1031	12.65	VQ				
0+15	0.2626	23.16	V Q				
0+20	0.4585	28.44	V Q				
0+25	0.6724	31.07	V Q				
0+30	0.9033	33.52	V Q				
0+35	1.1637	37.81	V Q				
0+40	1.4465	41.06	V Q				
0+45	1.7402	42.65	V Q				
0+50	2.0413	43.71	V Q				
0+55	2.3475	44.46	V Q				
1+ 0	2.6626	45.75	V Q				
1+ 5	3.0019	49.28	V Q				
1+10	3.3602	52.02	V Q				
1+15	3.7259	53.10	V Q				
1+20	4.0960	53.74	V Q				
1+25	4.4691	54.17	V Q				

1+30	4.8444	54.49	V Q					
1+35	5.2213	54.72	V Q					
1+40	5.5992	54.88	VQ					
1+45	5.9780	54.99	VQ					
1+50	6.3573	55.08	VQ					
1+55	6.7370	55.14	VQ					
2+ 0	7.1223	55.95	Q					
2+ 5	7.5241	58.34	Q					
2+10	7.9262	58.39	Q					
2+15	8.3396	60.02	Q					
2+20	8.7670	62.05	Q					
2+25	9.1995	62.80	Q					
2+30	9.6350	63.24	QV					
2+35	10.0726	63.54	QV					
2+40	10.5118	63.77	QV					
2+45	10.9572	64.67	Q V					
2+50	11.4249	67.90	Q V					
2+55	11.9097	70.40	QV					
3+ 0	12.4015	71.41	Q V					
3+ 5	12.8974	72.01	Q V					
3+10	13.4011	73.14	Q V					
3+15	13.9284	76.56	Q V					
3+20	14.4735	79.15	Q V					
3+25	15.0312	80.99	Q V					
3+30	15.6202	85.51	Q V					
3+35	16.2554	92.23	Q V					
3+40	16.9372	99.00	Q V					
3+45	17.6526	103.88	Q V					
3+50	18.4036	109.04	Q V					
3+55	19.1852	113.50	Q V					
4+ 0	20.0010	118.44	Q V					
4+ 5	20.8468	122.82	Q V					
4+10	21.7317	128.49	Q V					
4+15	22.6682	135.97	Q V					
4+20	23.6598	143.98	Q V					
4+25	24.7090	152.35	Q V					
4+30	25.8121	160.17	Q V					
4+35	26.9539	165.78	Q V					
4+40	28.1396	172.17	Q V					
4+45	29.3799	180.10	Q V					
4+50	30.6729	187.74	Q V					
4+55	32.0037	193.24	Q V					
5+ 0	33.3783	199.59	Q V					
5+ 5	34.8282	210.53	Q V					
5+10	36.4422	234.34	Q V					
5+15	38.2775	266.48	Q V					
5+20	40.3179	296.27	Q V					
5+25	42.5566	325.07	Q V					
5+30	45.0549	362.75	Q V					
5+35	47.6930	383.04	Q V					
5+40	49.7062	292.32	Q					
5+45	50.9809	185.09	Q					
5+50	51.8506	126.27	Q					
5+55	52.4810	91.54	Q					
6+ 0	52.9295	65.12	Q					
6+ 5	53.2394	44.99	Q					
6+10	53.4601	32.05	Q					

6+15	53.6178	22.91	Q				V
6+20	53.7300	16.28	Q				V
6+25	53.8078	11.29	Q				V
6+30	53.8607	7.69	Q				V
6+35	53.8919	4.52	Q				V
6+40	53.9040	1.77	Q				V
6+45	53.9097	0.82	Q				V
6+50	53.9126	0.42	Q				V
6+55	53.9140	0.20	Q				V
7+ 0	53.9144	0.06	Q				V
7+ 5	53.9144	0.01	Q				V

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 05/08/15 File: 154149EXHYDA24100.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR

EXISTING CONDITIONS AREA "A"

100-YEAR, 24-HOUR STORM

BY: JTS DATE: 05-08-15

Drainage Area = 213.98(Ac.) = 0.334 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 213.98(Ac.)= 0.334 Sq. Mi.
Length along longest watercourse = 4276.23(Ft.)
Length along longest watercourse measured to centroid = 1768.91(Ft.)
Length along longest watercourse = 0.810 Mi.
Length along longest watercourse measured to centroid = 0.335 Mi.
Difference in elevation = 798.20(Ft.)
Slope along watercourse = 985.5635 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.138 Hr.
Lag time = 8.29 Min.
25% of lag time = 2.07 Min.
40% of lag time = 3.31 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]
213.98	2.70	577.75

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
213.98	6.65	1422.97

STORM EVENT (YEAR) = 100.00
 Area Averaged 2-Year Rainfall = 2.700(In)
 Area Averaged 100-Year Rainfall = 6.650(In)

Point rain (area averaged) = 6.650(In)
 Areal adjustment factor = 99.96 %
 Adjusted average point rain = 6.647(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
22.430	67.00	0.000
22.120	78.00	0.000
3.320	89.00	0.000
166.110	89.00	0.000
Total Area Entered = 213.98(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	83.2	0.208	0.000	0.208	0.105	0.022
78.0	89.8	0.132	0.000	0.132	0.103	0.014
89.0	95.6	0.057	0.000	0.057	0.016	0.001
89.0	95.6	0.057	0.000	0.057	0.776	0.044
Sum (F) =						0.081

Area averaged mean soil loss (F) (In/Hr) = 0.081
 Minimum soil loss rate ((In/Hr)) = 0.040
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

Unit Hydrograph
 VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	60.341	8.293
2	0.167	120.681	34.206
3	0.250	181.022	26.473
4	0.333	241.363	10.243
5	0.417	301.703	6.078
6	0.500	362.044	4.101
7	0.583	422.385	2.914
8	0.667	482.725	2.056
9	0.750	543.066	1.700
10	0.833	603.406	1.252
11	0.917	663.747	0.948
12	1.000	724.088	0.675
13	1.083	784.428	0.603
14	1.167	844.769	0.457
Sum =		100.000	Sum= 215.652

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	0.053	(0.143)	0.048	0.005
2	0.17	0.07	0.053	(0.143)	0.048	0.005
3	0.25	0.07	0.053	(0.142)	0.048	0.005
4	0.33	0.10	0.080	(0.141)	0.072	0.008
5	0.42	0.10	0.080	(0.141)	0.072	0.008
6	0.50	0.10	0.080	(0.140)	0.072	0.008
7	0.58	0.10	0.080	(0.140)	0.072	0.008
8	0.67	0.10	0.080	(0.139)	0.072	0.008
9	0.75	0.10	0.080	(0.139)	0.072	0.008
10	0.83	0.13	0.106	(0.138)	0.096	0.011
11	0.92	0.13	0.106	(0.138)	0.096	0.011
12	1.00	0.13	0.106	(0.137)	0.096	0.011
13	1.08	0.10	0.080	(0.137)	0.072	0.008
14	1.17	0.10	0.080	(0.136)	0.072	0.008
15	1.25	0.10	0.080	(0.135)	0.072	0.008
16	1.33	0.10	0.080	(0.135)	0.072	0.008
17	1.42	0.10	0.080	(0.134)	0.072	0.008
18	1.50	0.10	0.080	(0.134)	0.072	0.008
19	1.58	0.10	0.080	(0.133)	0.072	0.008
20	1.67	0.10	0.080	(0.133)	0.072	0.008
21	1.75	0.10	0.080	(0.132)	0.072	0.008
22	1.83	0.13	0.106	(0.132)	0.096	0.011
23	1.92	0.13	0.106	(0.131)	0.096	0.011
24	2.00	0.13	0.106	(0.131)	0.096	0.011
25	2.08	0.13	0.106	(0.130)	0.096	0.011
26	2.17	0.13	0.106	(0.130)	0.096	0.011
27	2.25	0.13	0.106	(0.129)	0.096	0.011
28	2.33	0.13	0.106	(0.129)	0.096	0.011
29	2.42	0.13	0.106	(0.128)	0.096	0.011
30	2.50	0.13	0.106	(0.127)	0.096	0.011
31	2.58	0.17	0.133	(0.127)	0.120	0.013
32	2.67	0.17	0.133	(0.126)	0.120	0.013
33	2.75	0.17	0.133	(0.126)	0.120	0.013
34	2.83	0.17	0.133	(0.125)	0.120	0.013
35	2.92	0.17	0.133	(0.125)	0.120	0.013
36	3.00	0.17	0.133	(0.124)	0.120	0.013
37	3.08	0.17	0.133	(0.124)	0.120	0.013
38	3.17	0.17	0.133	(0.123)	0.120	0.013
39	3.25	0.17	0.133	(0.123)	0.120	0.013
40	3.33	0.17	0.133	(0.122)	0.120	0.013
41	3.42	0.17	0.133	(0.122)	0.120	0.013
42	3.50	0.17	0.133	(0.121)	0.120	0.013
43	3.58	0.17	0.133	(0.121)	0.120	0.013
44	3.67	0.17	0.133	(0.120)	0.120	0.013
45	3.75	0.17	0.133	(0.120)	0.120	0.013
46	3.83	0.20	0.160	0.119	(0.144)	0.040
47	3.92	0.20	0.160	0.119	(0.144)	0.041
48	4.00	0.20	0.160	0.118	(0.144)	0.041
49	4.08	0.20	0.160	0.118	(0.144)	0.042
50	4.17	0.20	0.160	0.117	(0.144)	0.042
51	4.25	0.20	0.160	0.117	(0.144)	0.043
52	4.33	0.23	0.186	0.116	(0.168)	0.070
53	4.42	0.23	0.186	0.116	(0.168)	0.070

54	4.50	0.23	0.186	0.115	(0.168)	0.071
55	4.58	0.23	0.186	0.115	(0.168)	0.071
56	4.67	0.23	0.186	0.114	(0.168)	0.072
57	4.75	0.23	0.186	0.114	(0.168)	0.072
58	4.83	0.27	0.213	0.113	(0.191)	0.099
59	4.92	0.27	0.213	0.113	(0.191)	0.100
60	5.00	0.27	0.213	0.112	(0.191)	0.100
61	5.08	0.20	0.160	0.112	(0.144)	0.048
62	5.17	0.20	0.160	0.111	(0.144)	0.048
63	5.25	0.20	0.160	0.111	(0.144)	0.049
64	5.33	0.23	0.186	0.110	(0.168)	0.076
65	5.42	0.23	0.186	0.110	(0.168)	0.076
66	5.50	0.23	0.186	0.109	(0.168)	0.077
67	5.58	0.27	0.213	0.109	(0.191)	0.104
68	5.67	0.27	0.213	0.108	(0.191)	0.104
69	5.75	0.27	0.213	0.108	(0.191)	0.105
70	5.83	0.27	0.213	0.107	(0.191)	0.105
71	5.92	0.27	0.213	0.107	(0.191)	0.106
72	6.00	0.27	0.213	0.107	(0.191)	0.106
73	6.08	0.30	0.239	0.106	(0.215)	0.133
74	6.17	0.30	0.239	0.106	(0.215)	0.134
75	6.25	0.30	0.239	0.105	(0.215)	0.134
76	6.33	0.30	0.239	0.105	(0.215)	0.135
77	6.42	0.30	0.239	0.104	(0.215)	0.135
78	6.50	0.30	0.239	0.104	(0.215)	0.136
79	6.58	0.33	0.266	0.103	(0.239)	0.163
80	6.67	0.33	0.266	0.103	(0.239)	0.163
81	6.75	0.33	0.266	0.102	(0.239)	0.164
82	6.83	0.33	0.266	0.102	(0.239)	0.164
83	6.92	0.33	0.266	0.101	(0.239)	0.164
84	7.00	0.33	0.266	0.101	(0.239)	0.165
85	7.08	0.33	0.266	0.100	(0.239)	0.165
86	7.17	0.33	0.266	0.100	(0.239)	0.166
87	7.25	0.33	0.266	0.100	(0.239)	0.166
88	7.33	0.37	0.292	0.099	(0.263)	0.193
89	7.42	0.37	0.292	0.099	(0.263)	0.194
90	7.50	0.37	0.292	0.098	(0.263)	0.194
91	7.58	0.40	0.319	0.098	(0.287)	0.221
92	7.67	0.40	0.319	0.097	(0.287)	0.222
93	7.75	0.40	0.319	0.097	(0.287)	0.222
94	7.83	0.43	0.346	0.096	(0.311)	0.249
95	7.92	0.43	0.346	0.096	(0.311)	0.250
96	8.00	0.43	0.346	0.096	(0.311)	0.250
97	8.08	0.50	0.399	0.095	(0.359)	0.304
98	8.17	0.50	0.399	0.095	(0.359)	0.304
99	8.25	0.50	0.399	0.094	(0.359)	0.305
100	8.33	0.50	0.399	0.094	(0.359)	0.305
101	8.42	0.50	0.399	0.093	(0.359)	0.306
102	8.50	0.50	0.399	0.093	(0.359)	0.306
103	8.58	0.53	0.425	0.092	(0.383)	0.333
104	8.67	0.53	0.425	0.092	(0.383)	0.333
105	8.75	0.53	0.425	0.092	(0.383)	0.334
106	8.83	0.57	0.452	0.091	(0.407)	0.361
107	8.92	0.57	0.452	0.091	(0.407)	0.361
108	9.00	0.57	0.452	0.090	(0.407)	0.362
109	9.08	0.63	0.505	0.090	(0.455)	0.415
110	9.17	0.63	0.505	0.089	(0.455)	0.416

111	9.25	0.63	0.505	0.089	(0.455)	0.416
112	9.33	0.67	0.532	0.089	(0.479)	0.443
113	9.42	0.67	0.532	0.088	(0.479)	0.444
114	9.50	0.67	0.532	0.088	(0.479)	0.444
115	9.58	0.70	0.558	0.087	(0.503)	0.471
116	9.67	0.70	0.558	0.087	(0.503)	0.471
117	9.75	0.70	0.558	0.086	(0.503)	0.472
118	9.83	0.73	0.585	0.086	(0.526)	0.499
119	9.92	0.73	0.585	0.086	(0.526)	0.499
120	10.00	0.73	0.585	0.085	(0.526)	0.500
121	10.08	0.50	0.399	0.085	(0.359)	0.314
122	10.17	0.50	0.399	0.084	(0.359)	0.314
123	10.25	0.50	0.399	0.084	(0.359)	0.315
124	10.33	0.50	0.399	0.084	(0.359)	0.315
125	10.42	0.50	0.399	0.083	(0.359)	0.316
126	10.50	0.50	0.399	0.083	(0.359)	0.316
127	10.58	0.67	0.532	0.082	(0.479)	0.449
128	10.67	0.67	0.532	0.082	(0.479)	0.450
129	10.75	0.67	0.532	0.082	(0.479)	0.450
130	10.83	0.67	0.532	0.081	(0.479)	0.451
131	10.92	0.67	0.532	0.081	(0.479)	0.451
132	11.00	0.67	0.532	0.080	(0.479)	0.451
133	11.08	0.63	0.505	0.080	(0.455)	0.425
134	11.17	0.63	0.505	0.080	(0.455)	0.426
135	11.25	0.63	0.505	0.079	(0.455)	0.426
136	11.33	0.63	0.505	0.079	(0.455)	0.426
137	11.42	0.63	0.505	0.078	(0.455)	0.427
138	11.50	0.63	0.505	0.078	(0.455)	0.427
139	11.58	0.57	0.452	0.078	(0.407)	0.374
140	11.67	0.57	0.452	0.077	(0.407)	0.375
141	11.75	0.57	0.452	0.077	(0.407)	0.375
142	11.83	0.60	0.479	0.076	(0.431)	0.402
143	11.92	0.60	0.479	0.076	(0.431)	0.402
144	12.00	0.60	0.479	0.076	(0.431)	0.403
145	12.08	0.83	0.665	0.075	(0.598)	0.589
146	12.17	0.83	0.665	0.075	(0.598)	0.590
147	12.25	0.83	0.665	0.075	(0.598)	0.590
148	12.33	0.87	0.691	0.074	(0.622)	0.617
149	12.42	0.87	0.691	0.074	(0.622)	0.617
150	12.50	0.87	0.691	0.073	(0.622)	0.618
151	12.58	0.93	0.744	0.073	(0.670)	0.671
152	12.67	0.93	0.744	0.073	(0.670)	0.672
153	12.75	0.93	0.744	0.072	(0.670)	0.672
154	12.83	0.97	0.771	0.072	(0.694)	0.699
155	12.92	0.97	0.771	0.072	(0.694)	0.699
156	13.00	0.97	0.771	0.071	(0.694)	0.700
157	13.08	1.13	0.904	0.071	(0.814)	0.833
158	13.17	1.13	0.904	0.071	(0.814)	0.833
159	13.25	1.13	0.904	0.070	(0.814)	0.834
160	13.33	1.13	0.904	0.070	(0.814)	0.834
161	13.42	1.13	0.904	0.069	(0.814)	0.835
162	13.50	1.13	0.904	0.069	(0.814)	0.835
163	13.58	0.77	0.612	0.069	(0.550)	0.543
164	13.67	0.77	0.612	0.068	(0.550)	0.543
165	13.75	0.77	0.612	0.068	(0.550)	0.543
166	13.83	0.77	0.612	0.068	(0.550)	0.544
167	13.92	0.77	0.612	0.067	(0.550)	0.544

168	14.00	0.77	0.612	0.067	(0.550)	0.544
169	14.08	0.90	0.718	0.067	(0.646)	0.651
170	14.17	0.90	0.718	0.066	(0.646)	0.652
171	14.25	0.90	0.718	0.066	(0.646)	0.652
172	14.33	0.87	0.691	0.066	(0.622)	0.626
173	14.42	0.87	0.691	0.065	(0.622)	0.626
174	14.50	0.87	0.691	0.065	(0.622)	0.626
175	14.58	0.87	0.691	0.065	(0.622)	0.627
176	14.67	0.87	0.691	0.064	(0.622)	0.627
177	14.75	0.87	0.691	0.064	(0.622)	0.627
178	14.83	0.83	0.665	0.064	(0.598)	0.601
179	14.92	0.83	0.665	0.063	(0.598)	0.601
180	15.00	0.83	0.665	0.063	(0.598)	0.602
181	15.08	0.80	0.638	0.063	(0.574)	0.575
182	15.17	0.80	0.638	0.062	(0.574)	0.576
183	15.25	0.80	0.638	0.062	(0.574)	0.576
184	15.33	0.77	0.612	0.062	(0.550)	0.550
185	15.42	0.77	0.612	0.061	(0.550)	0.550
186	15.50	0.77	0.612	0.061	(0.550)	0.550
187	15.58	0.63	0.505	0.061	(0.455)	0.444
188	15.67	0.63	0.505	0.061	(0.455)	0.445
189	15.75	0.63	0.505	0.060	(0.455)	0.445
190	15.83	0.63	0.505	0.060	(0.455)	0.445
191	15.92	0.63	0.505	0.060	(0.455)	0.446
192	16.00	0.63	0.505	0.059	(0.455)	0.446
193	16.08	0.13	0.106	0.059	(0.096)	0.047
194	16.17	0.13	0.106	0.059	(0.096)	0.048
195	16.25	0.13	0.106	0.058	(0.096)	0.048
196	16.33	0.13	0.106	0.058	(0.096)	0.048
197	16.42	0.13	0.106	0.058	(0.096)	0.049
198	16.50	0.13	0.106	0.057	(0.096)	0.049
199	16.58	0.10	0.080	0.057	(0.072)	0.023
200	16.67	0.10	0.080	0.057	(0.072)	0.023
201	16.75	0.10	0.080	0.057	(0.072)	0.023
202	16.83	0.10	0.080	0.056	(0.072)	0.023
203	16.92	0.10	0.080	0.056	(0.072)	0.024
204	17.00	0.10	0.080	0.056	(0.072)	0.024
205	17.08	0.17	0.133	0.055	(0.120)	0.077
206	17.17	0.17	0.133	0.055	(0.120)	0.078
207	17.25	0.17	0.133	0.055	(0.120)	0.078
208	17.33	0.17	0.133	0.055	(0.120)	0.078
209	17.42	0.17	0.133	0.054	(0.120)	0.079
210	17.50	0.17	0.133	0.054	(0.120)	0.079
211	17.58	0.17	0.133	0.054	(0.120)	0.079
212	17.67	0.17	0.133	0.054	(0.120)	0.079
213	17.75	0.17	0.133	0.053	(0.120)	0.080
214	17.83	0.13	0.106	0.053	(0.096)	0.053
215	17.92	0.13	0.106	0.053	(0.096)	0.054
216	18.00	0.13	0.106	0.053	(0.096)	0.054
217	18.08	0.13	0.106	0.052	(0.096)	0.054
218	18.17	0.13	0.106	0.052	(0.096)	0.054
219	18.25	0.13	0.106	0.052	(0.096)	0.055
220	18.33	0.13	0.106	0.051	(0.096)	0.055
221	18.42	0.13	0.106	0.051	(0.096)	0.055
222	18.50	0.13	0.106	0.051	(0.096)	0.055
223	18.58	0.10	0.080	0.051	(0.072)	0.029
224	18.67	0.10	0.080	0.050	(0.072)	0.029

225	18.75	0.10	0.080	0.050	(0.072)	0.030
226	18.83	0.07	0.053	(0.050)	0.048	0.005
227	18.92	0.07	0.053	(0.050)	0.048	0.005
228	19.00	0.07	0.053	(0.050)	0.048	0.005
229	19.08	0.10	0.080	0.049	(0.072)	0.030
230	19.17	0.10	0.080	0.049	(0.072)	0.031
231	19.25	0.10	0.080	0.049	(0.072)	0.031
232	19.33	0.13	0.106	0.049	(0.096)	0.058
233	19.42	0.13	0.106	0.048	(0.096)	0.058
234	19.50	0.13	0.106	0.048	(0.096)	0.058
235	19.58	0.10	0.080	0.048	(0.072)	0.032
236	19.67	0.10	0.080	0.048	(0.072)	0.032
237	19.75	0.10	0.080	0.048	(0.072)	0.032
238	19.83	0.07	0.053	0.047	(0.048)	0.006
239	19.92	0.07	0.053	0.047	(0.048)	0.006
240	20.00	0.07	0.053	0.047	(0.048)	0.006
241	20.08	0.10	0.080	0.047	(0.072)	0.033
242	20.17	0.10	0.080	0.046	(0.072)	0.033
243	20.25	0.10	0.080	0.046	(0.072)	0.034
244	20.33	0.10	0.080	0.046	(0.072)	0.034
245	20.42	0.10	0.080	0.046	(0.072)	0.034
246	20.50	0.10	0.080	0.046	(0.072)	0.034
247	20.58	0.10	0.080	0.045	(0.072)	0.034
248	20.67	0.10	0.080	0.045	(0.072)	0.034
249	20.75	0.10	0.080	0.045	(0.072)	0.035
250	20.83	0.07	0.053	0.045	(0.048)	0.008
251	20.92	0.07	0.053	0.045	(0.048)	0.008
252	21.00	0.07	0.053	0.045	(0.048)	0.009
253	21.08	0.10	0.080	0.044	(0.072)	0.035
254	21.17	0.10	0.080	0.044	(0.072)	0.036
255	21.25	0.10	0.080	0.044	(0.072)	0.036
256	21.33	0.07	0.053	0.044	(0.048)	0.009
257	21.42	0.07	0.053	0.044	(0.048)	0.009
258	21.50	0.07	0.053	0.044	(0.048)	0.010
259	21.58	0.10	0.080	0.043	(0.072)	0.036
260	21.67	0.10	0.080	0.043	(0.072)	0.037
261	21.75	0.10	0.080	0.043	(0.072)	0.037
262	21.83	0.07	0.053	0.043	(0.048)	0.010
263	21.92	0.07	0.053	0.043	(0.048)	0.010
264	22.00	0.07	0.053	0.043	(0.048)	0.011
265	22.08	0.10	0.080	0.042	(0.072)	0.037
266	22.17	0.10	0.080	0.042	(0.072)	0.037
267	22.25	0.10	0.080	0.042	(0.072)	0.038
268	22.33	0.07	0.053	0.042	(0.048)	0.011
269	22.42	0.07	0.053	0.042	(0.048)	0.011
270	22.50	0.07	0.053	0.042	(0.048)	0.011
271	22.58	0.07	0.053	0.042	(0.048)	0.011
272	22.67	0.07	0.053	0.042	(0.048)	0.012
273	22.75	0.07	0.053	0.041	(0.048)	0.012
274	22.83	0.07	0.053	0.041	(0.048)	0.012
275	22.92	0.07	0.053	0.041	(0.048)	0.012
276	23.00	0.07	0.053	0.041	(0.048)	0.012
277	23.08	0.07	0.053	0.041	(0.048)	0.012
278	23.17	0.07	0.053	0.041	(0.048)	0.012
279	23.25	0.07	0.053	0.041	(0.048)	0.012
280	23.33	0.07	0.053	0.041	(0.048)	0.012
281	23.42	0.07	0.053	0.041	(0.048)	0.012

282	23.50	0.07	0.053	0.041	(0.048)	0.013
283	23.58	0.07	0.053	0.041	(0.048)	0.013
284	23.67	0.07	0.053	0.041	(0.048)	0.013
285	23.75	0.07	0.053	0.040	(0.048)	0.013
286	23.83	0.07	0.053	0.040	(0.048)	0.013
287	23.92	0.07	0.053	0.040	(0.048)	0.013
288	24.00	0.07	0.053	0.040	(0.048)	0.013

(Loss Rate Not Used)

Sum = 100.0

Sum = 58.3

Flood volume = Effective rainfall 4.85(In)
times area 214.0(Ac.)/[(In)/(Ft.)] = 86.6(Ac.Ft)
Total soil loss = 1.79(In)
Total soil loss = 31.962(Ac.Ft)
Total rainfall = 6.65(In)
Flood volume = 3770966.3 Cubic Feet
Total soil loss = 1392245.2 Cubic Feet

Peak flow rate of this hydrograph = 176.556(CFS)

+++++

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	50.0	100.0	150.0	200.0
0+ 5	0.0007	0.10	Q				
0+10	0.0040	0.49	Q				
0+15	0.0095	0.79	Q				
0+20	0.0161	0.96	Q				
0+25	0.0245	1.22	Q				
0+30	0.0343	1.42	Q				
0+35	0.0447	1.51	Q				
0+40	0.0555	1.57	Q				
0+45	0.0666	1.62	Q				
0+50	0.0783	1.69	Q				
0+55	0.0915	1.91	Q				
1+ 0	0.1058	2.08	Q				
1+ 5	0.1203	2.11	Q				
1+10	0.1338	1.96	Q				
1+15	0.1464	1.83	Q				
1+20	0.1588	1.79	Q				
1+25	0.1710	1.77	Q				
1+30	0.1831	1.76	Q				
1+35	0.1951	1.75	Q				
1+40	0.2072	1.74	Q				
1+45	0.2191	1.74	Q				
1+50	0.2314	1.78	Q				
1+55	0.2450	1.97	Q				
2+ 0	0.2596	2.12	Q				
2+ 5	0.2746	2.18	Q				
2+10	0.2898	2.21	Q				
2+15	0.3052	2.23	Q				
2+20	0.3207	2.25	Q				
2+25	0.3363	2.26	Q				

2+30	0.3519	2.27	Q				
2+35	0.3680	2.33	Q				
2+40	0.3854	2.53	Q				
2+45	0.4039	2.68	Q				
2+50	0.4228	2.75	Q				
2+55	0.4420	2.78	Q				
3+ 0	0.4613	2.81	Q				
3+ 5	0.4808	2.82	Q				
3+10	0.5003	2.84	Q				
3+15	0.5199	2.85	Q				
3+20	0.5395	2.85	Q				
3+25	0.5592	2.86	Q				
3+30	0.5789	2.86	Q				
3+35	0.5987	2.87	Q				
3+40	0.6184	2.87	Q				
3+45	0.6382	2.87	Q				
3+50	0.6613	3.35	Q				
3+55	0.6981	5.35	VQ				
4+ 0	0.7459	6.94	VQ				
4+ 5	0.7983	7.61	VQ				
4+10	0.8537	8.05	VQ				
4+15	0.9114	8.38	VQ				
4+20	0.9742	9.12	VQ				
4+25	1.0521	11.30	V Q				
4+30	1.1418	13.02	V Q				
4+35	1.2367	13.78	V Q				
4+40	1.3351	14.29	V Q				
4+45	1.4362	14.67	V Q				
4+50	1.5426	15.46	V Q				
4+55	1.6643	17.67	V Q				
5+ 0	1.7978	19.39	V Q				
5+ 5	1.9301	19.20	V Q				
5+10	2.0388	15.79	V Q				
5+15	2.1293	13.13	V Q				
5+20	2.2170	12.74	VQ				
5+25	2.3151	14.25	VQ				
5+30	2.4219	15.50	V Q				
5+35	2.5349	16.41	V Q				
5+40	2.6633	18.64	V Q				
5+45	2.8034	20.34	V Q				
5+50	2.9486	21.09	V Q				
5+55	3.0972	21.58	V Q				
6+ 0	3.2483	21.94	V Q				
6+ 5	3.4046	22.69	V Q				
6+10	3.5758	24.87	V Q				
6+15	3.7592	26.63	V Q				
6+20	3.9481	27.42	V Q				
6+25	4.1406	27.95	V Q				
6+30	4.3357	28.33	V Q				
6+35	4.5362	29.11	V Q				
6+40	4.7519	31.32	V Q				
6+45	4.9794	33.03	V Q				
6+50	5.2121	33.79	V Q				
6+55	5.4483	34.30	V Q				
7+ 0	5.6871	34.67	V Q				
7+ 5	5.9279	34.97	V Q				
7+10	6.1705	35.21	V Q				

7+15	6.4143	35.41	V	Q				
7+20	6.6627	36.06	V	Q				
7+25	6.9256	38.17	V	Q				
7+30	7.1999	39.83	V	Q				
7+35	7.4824	41.03	V	Q				
7+40	7.7817	43.46	V	Q				
7+45	8.0938	45.31	V	Q				
7+50	8.4150	46.64	V	Q				
7+55	8.7536	49.17	V	Q				
8+ 0	9.1056	51.11	V	Q				
8+ 5	9.4706	52.99	V	Q				
8+10	9.8668	57.53	V	Q				
8+15	10.2871	61.03	V	Q				
8+20	10.7181	62.58	V	Q				
8+25	11.1559	63.57	V	Q				
8+30	11.5986	64.27	V	Q				
8+35	12.0482	65.28	V	Q				
8+40	12.5141	67.66	V	Q				
8+45	12.9928	69.50	V	Q				
8+50	13.4807	70.84	V	Q				
8+55	13.9860	73.38	V	Q				
9+ 0	14.5047	75.30	V	Q				
9+ 5	15.0362	77.17	V	Q				
9+10	15.5989	81.71	V	Q				
9+15	16.1855	85.17	V	Q				
9+20	16.7857	87.15	V	Q				
9+25	17.4061	90.08	V	Q				
9+30	18.0417	92.30	V	Q				
9+35	18.6883	93.89	V	Q				
9+40	19.3537	96.61	V	Q				
9+45	20.0334	98.69	V	Q				
9+50	20.7234	100.19	V	Q				
9+55	21.4316	102.84	V	Q				
10+ 0	22.1538	104.86	V	Q				
10+ 5	22.8598	102.52	V	Q				
10+10	23.4758	89.44	V	Q				
10+15	24.0218	79.27	V	Q				
10+20	24.5419	75.52	V	Q				
10+25	25.0472	73.37	V	Q				
10+30	25.5427	71.94	V	Q				
10+35	26.0478	73.35	V	Q				
10+40	26.6160	82.50	V	Q				
10+45	27.2327	89.54	V	Q				
10+50	27.8669	92.10	V	Q				
10+55	28.5114	93.57	V	Q				
11+ 0	29.1626	94.56	V	Q				
11+ 5	29.8153	94.77	V	Q				
11+10	30.4578	93.30	V	Q				
11+15	31.0938	92.35	V	Q				
11+20	31.7289	92.21	V	Q				
11+25	32.3640	92.22	V	Q				
11+30	32.9994	92.26	V	Q				
11+35	33.6288	91.40	V	Q				
11+40	34.2319	87.57	V	Q				
11+45	34.8140	84.52		Q				
11+50	35.3914	83.83		Q				
11+55	35.9776	85.12		VQ				

12+ 0	36.5714	86.22			VQ			
12+ 5	37.1902	89.85			Q			
12+10	37.9047	103.75			V	Q		
12+15	38.6933	114.51			V		Q	
12+20	39.5143	119.20			V		Q	
12+25	40.3662	123.69			V		Q	
12+30	41.2406	126.96			V		Q	
12+35	42.1342	129.75			V		Q	
12+40	43.0635	134.93			V		Q	
12+45	44.0208	139.01			V		Q	
12+50	44.9950	141.44			V		Q	
12+55	45.9916	144.71			V		Q	
13+ 0	47.0050	147.14			V		Q	
13+ 5	48.0438	150.84			V		Q	
13+10	49.1564	161.55			V		Q	
13+15	50.3251	169.69			V		Q	
13+20	51.5169	173.05			V		Q	
13+25	52.7231	175.13			V		Q	
13+30	53.9390	176.56			V		Q	
13+35	55.1262	172.38			V		Q	
13+40	56.1700	151.56			V		Q	
13+45	57.1029	135.46				VQ		
13+50	57.9945	129.47				QV		
13+55	58.8623	126.00				Q	V	
14+ 0	59.7142	123.68				Q	V	
14+ 5	60.5681	124.00				Q	V	
14+10	61.4686	130.75					Q	V
14+15	62.4041	135.83					QV	
14+20	63.3475	136.99					Q	V
14+25	64.2835	135.90					Q	V
14+30	65.2130	134.96					Q	V
14+35	66.1409	134.74					Q	V
14+40	67.0682	134.64					Q	V
14+45	67.9971	134.87					Q	V
14+50	68.9240	134.59					Q	V
14+55	69.8386	132.80					Q	V
15+ 0	70.7436	131.41					Q	V
15+ 5	71.6422	130.48					Q	V
15+10	72.5257	128.29					Q	V
15+15	73.3974	126.57					Q	V
15+20	74.2608	125.37					Q	V
15+25	75.1078	122.99					Q	V
15+30	75.9426	121.20					Q	V
15+35	76.7590	118.54					Q	V
15+40	77.5182	110.24					Q	V
15+45	78.2335	103.86					Q	V
15+50	78.9312	101.30					Q	V
15+55	79.6183	99.78					Q	V
16+ 0	80.2985	98.77					Q	V
16+ 5	80.9247	90.92					Q	V
16+10	81.3448	61.00		Q				V
16+15	81.6055	37.86						V
16+20	81.8038	28.78						V
16+25	81.9648	23.37						V
16+30	82.1008	19.76						V
16+35	82.2158	16.70						V
16+40	82.3048	12.92						V

16+45	82.3737	10.01	Q				V
16+50	82.4316	8.40	Q				V
16+55	82.4819	7.30	Q				V
17+ 0	82.5270	6.55	Q				V
17+ 5	82.5743	6.87	Q				V
17+10	82.6456	10.35	Q				V
17+15	82.7375	13.35	Q				V
17+20	82.8375	14.51	Q				V
17+25	82.9423	15.22	Q				V
17+30	83.0505	15.71	Q				V
17+35	83.1611	16.07	Q				V
17+40	83.2736	16.34	Q				V
17+45	83.3879	16.59	Q				V
17+50	83.5003	16.32	Q				V
17+55	83.6002	14.52	Q				V
18+ 0	83.6907	13.14	Q				V
18+ 5	83.7780	12.67	Q				V
18+10	83.8636	12.43	Q				V
18+15	83.9480	12.26	Q				V
18+20	84.0317	12.14	Q				V
18+25	84.1149	12.08	Q				V
18+30	84.1978	12.04	Q				V
18+35	84.2773	11.54	Q				V
18+40	84.3433	9.58	Q				V
18+45	84.3989	8.08	Q				V
18+50	84.4476	7.07	Q				V
18+55	84.4816	4.94	Q				V
19+ 0	84.5046	3.34	Q				V
19+ 5	84.5260	3.10	Q				V
19+10	84.5572	4.53	Q				V
19+15	84.5963	5.68	Q				V
19+20	84.6413	6.53	Q				V
19+25	84.7012	8.70	Q				V
19+30	84.7725	10.36	Q				V
19+35	84.8454	10.57	Q				V
19+40	84.9076	9.04	Q				V
19+45	84.9618	7.86	Q				V
19+50	85.0103	7.05	Q				V
19+55	85.0442	4.93	Q				V
20+ 0	85.0673	3.35	Q				V
20+ 5	85.0895	3.22	Q				V
20+10	85.1228	4.84	Q				V
20+15	85.1649	6.11	Q				V
20+20	85.2100	6.54	Q				V
20+25	85.2567	6.79	Q				V
20+30	85.3044	6.93	Q				V
20+35	85.3528	7.03	Q				V
20+40	85.4018	7.11	Q				V
20+45	85.4515	7.21	Q				V
20+50	85.4984	6.81	Q				V
20+55	85.5323	4.92	Q				V
21+ 0	85.5563	3.48	Q				V
21+ 5	85.5800	3.44	Q				V
21+10	85.6153	5.12	Q				V
21+15	85.6597	6.44	Q				V
21+20	85.7039	6.43	Q				V
21+25	85.7365	4.73	Q				V

21+30	85.7599	3.39	Q				V
21+35	85.7833	3.41	Q				V
21+40	85.8186	5.12	Q				V
21+45	85.8634	6.50	Q				V
21+50	85.9082	6.51	Q				V
21+55	85.9416	4.84	Q				V
22+ 0	85.9659	3.53	Q				V
22+ 5	85.9906	3.58	Q				V
22+10	86.0272	5.32	Q				V
22+15	86.0733	6.69	Q				V
22+20	86.1195	6.70	Q				V
22+25	86.1541	5.03	Q				V
22+30	86.1797	3.72	Q				V
22+35	86.2024	3.29	Q				V
22+40	86.2234	3.06	Q				V
22+45	86.2434	2.90	Q				V
22+50	86.2627	2.80	Q				V
22+55	86.2815	2.74	Q				V
23+ 0	86.3001	2.70	Q				V
23+ 5	86.3186	2.69	Q				V
23+10	86.3371	2.68	Q				V
23+15	86.3554	2.66	Q				V
23+20	86.3737	2.65	Q				V
23+25	86.3919	2.64	Q				V
23+30	86.4102	2.66	Q				V
23+35	86.4286	2.68	Q				V
23+40	86.4472	2.69	Q				V
23+45	86.4658	2.71	Q				V
23+50	86.4845	2.72	Q				V
23+55	86.5034	2.73	Q				V
24+ 0	86.5223	2.74	Q				V
24+ 5	86.5396	2.52	Q				V
24+10	86.5505	1.58	Q				V
24+15	86.5564	0.85	Q				V
24+20	86.5603	0.57	Q				V
24+25	86.5631	0.40	Q				V
24+30	86.5651	0.29	Q				V
24+35	86.5665	0.21	Q				V
24+40	86.5676	0.16	Q				V
24+45	86.5683	0.11	Q				V
24+50	86.5689	0.07	Q				V
24+55	86.5692	0.05	Q				V
25+ 0	86.5694	0.03	Q				V
25+ 5	86.5695	0.01	Q				V

ATTACHMENT 5

Reclamation Conditions
Hydrograph Calculations
(20-Year, 1,3,6, & 24-Hour)

154149RECHYDA120.out

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 06/22/15 File: 154149rechyda120.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR
RECLAMATION CONDITIONS AREA "A"

20-YEAR, 1-HOUR STORM
BY:JTS DATE: 06-22-15

Drainage Area = 209.55(Ac.) = 0.327 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 209.55(Ac.) = 0.327 Sq. Mi.
Length along longest watercourse = 4952.99(Ft.)
Length along longest watercourse measured to centroid = 2074.21(Ft.)
Length along longest watercourse = 0.938 Mi.
Length along longest watercourse measured to centroid = 0.393 Mi.
Difference in elevation = 310.84(Ft.)
Slope along watercourse = 331.3625 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.191 Hr.
Lag time = 11.45 Min.
25% of lag time = 2.86 Min.
40% of lag time = 4.58 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]
209.55	0.58	121.54

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
209.55	1.47	308.04

STORM EVENT (YEAR) = 20.00
Area Averaged 2-Year Rainfall = 0.580(In)
Area Averaged 100-Year Rainfall = 1.470(In)

Point rain (area averaged) = 1.104(In)
Page 1

154149RECHYDA120.out

Areal adjustment factor = 99.81 %
Adjusted average point rain = 1.102(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
23.340	67.00	0.000
17.190	78.00	0.000
169.020	89.00	0.000
Total Area Entered = 209.55(Ac.)		

RI	RI	Infil. Rate (In/Hr)	Impervious (Dec.)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
AMC2	AMC-2					
67.0	67.0	0.394	0.000	0.394	0.111	0.044
78.0	78.0	0.268	0.000	0.268	0.082	0.022
89.0	89.0	0.141	0.000	0.141	0.807	0.114
Sum (F) =						0.180

Area averaged mean soil loss (F) (In/Hr) = 0.180

Minimum soil loss rate ((In/Hr)) = 0.090

(for 24 hour storm duration)

Soil loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm = 0.4800

Unit Hydrograph
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	43.666	4.976
2	0.167	87.332	20.835
3	0.250	130.999	28.282
4	0.333	174.665	15.645
5	0.417	218.331	7.636
6	0.500	261.997	5.113
7	0.583	305.663	3.814
8	0.667	349.329	2.849
9	0.750	392.996	2.281
10	0.833	436.662	1.737
11	0.917	480.328	1.383
12	1.000	523.994	1.261
13	1.083	567.660	0.982
14	1.167	611.327	0.811
15	1.250	654.993	0.658
16	1.333	698.659	0.505
17	1.417	742.325	0.437
18	1.500	785.991	0.437
19	1.583	829.657	0.358
Sum =		100.000	Sum= 211.187

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) Max Low	Effective (In/Hr)
1	0.08	4.40	0.582	0.180 (0.524)	0.402
2	0.17	4.50	0.595	0.180 (0.535)	0.415

3	0.25	5.40	0.714	0.180	(0.643)	0.534
4	0.33	5.40	0.714	0.180	(0.643)	0.534
5	0.42	5.70	0.754	0.180	(0.678)	0.574
6	0.50	6.40	0.846	0.180	(0.762)	0.666
7	0.58	7.90	1.044	0.180	(0.940)	0.865
8	0.67	9.10	1.203	0.180	(1.083)	1.023
9	0.75	12.80	1.692	0.180	(1.523)	1.512
10	0.83	25.60	3.385	0.180	(3.046)	3.205
11	0.92	7.90	1.044	0.180	(0.940)	0.865
12	1.00	4.90	0.648	0.180	(0.583)	0.468

Flood volume = Effective rainfall 0.92(In)
times area 209.6(Ac.)/[(In)/(Ft.)] = 16.1(Ac.Ft)
Total soil loss = 0.18(In)
Total soil loss = 3.142(Ac.Ft)
Total rainfall = 1.10(In)
Flood volume = 701196.4 Cubic Feet
Total soil loss = 136868.3 Cubic Feet

```

+++++
              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))

```

Page 3

154149RECHYDA320.out

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 06/22/15 File: 154149rechyda320.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR
RECLAMATION CONDITIONS AREA "A"

20-YEAR, 3-HOUR STORM
BY:JTS DATE: 06-22-15

Drainage Area = 209.55(Ac.) = 0.327 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 209.55(Ac.) =
0.327 Sq. Mi.
Length along longest watercourse = 4952.99(Ft.)
Length along longest watercourse measured to centroid = 2074.21(Ft.)
Length along longest watercourse = 0.938 Mi.
Length along longest watercourse measured to centroid = 0.393 Mi.
Difference in elevation = 310.84(Ft.)
Slope along watercourse = 331.3625 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.191 Hr.
Lag time = 11.45 Min.
25% of lag time = 2.86 Min.
40% of lag time = 4.58 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]
209.55	1.05	220.03

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
209.55	2.51	525.97

STORM EVENT (YEAR) = 20.00
Area Averaged 2-Year Rainfall = 1.050(In)
Area Averaged 100-Year Rainfall = 2.510(In)

Point rain (area averaged) = 1.909(In)
 Areal adjustment factor = 99.91 %
 Adjusted average point rain = 1.908(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
23.340	67.00	0.000
17.190	78.00	0.000
169.020	89.00	0.000
Total Area Entered = 209.55(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	67.0	0.394	0.000	0.394	0.111	0.044
78.0	78.0	0.268	0.000	0.268	0.082	0.022
89.0	89.0	0.141	0.000	0.141	0.807	0.114
Sum (F) =						0.180

Area averaged mean soil loss (F) (In/Hr) = 0.180
 Minimum soil loss rate ((In/Hr)) = 0.090
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

Unit Hydrograph
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	43.666	4.976
2	0.167	87.332	20.835
3	0.250	130.999	28.282
4	0.333	174.665	15.645
5	0.417	218.331	7.636
6	0.500	261.997	5.113
7	0.583	305.663	3.814
8	0.667	349.329	2.849
9	0.750	392.996	2.281
10	0.833	436.662	1.737
11	0.917	480.328	1.383
12	1.000	523.994	1.261
13	1.083	567.660	0.982
14	1.167	611.327	0.811
15	1.250	654.993	0.658
16	1.333	698.659	0.505
17	1.417	742.325	0.437
18	1.500	785.991	0.437
19	1.583	829.657	0.358
Sum =		100.000	Sum= 211.187

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) Max Low	Effective (In/Hr)
1	0.08	1.30	0.298	0.180 (0.268)	0.118
2	0.17	1.30	0.298	0.180 (0.268)	0.118

154149RECHYDA320.out

3	0.25	1.10	0.252	0.180	(0.227)	0.072
4	0.33	1.50	0.343	0.180	(0.309)	0.163
5	0.42	1.50	0.343	0.180	(0.309)	0.163
6	0.50	1.80	0.412	0.180	(0.371)	0.232
7	0.58	1.50	0.343	0.180	(0.309)	0.163
8	0.67	1.80	0.412	0.180	(0.371)	0.232
9	0.75	1.80	0.412	0.180	(0.371)	0.232
10	0.83	1.50	0.343	0.180	(0.309)	0.163
11	0.92	1.60	0.366	0.180	(0.330)	0.186
12	1.00	1.80	0.412	0.180	(0.371)	0.232
13	1.08	2.20	0.504	0.180	(0.453)	0.324
14	1.17	2.20	0.504	0.180	(0.453)	0.324
15	1.25	2.20	0.504	0.180	(0.453)	0.324
16	1.33	2.00	0.458	0.180	(0.412)	0.278
17	1.42	2.60	0.595	0.180	(0.536)	0.415
18	1.50	2.70	0.618	0.180	(0.556)	0.438
19	1.58	2.40	0.549	0.180	(0.494)	0.369
20	1.67	2.70	0.618	0.180	(0.556)	0.438
21	1.75	3.30	0.755	0.180	(0.680)	0.575
22	1.83	3.10	0.710	0.180	(0.639)	0.530
23	1.92	2.90	0.664	0.180	(0.597)	0.484
24	2.00	3.00	0.687	0.180	(0.618)	0.507
25	2.08	3.10	0.710	0.180	(0.639)	0.530
26	2.17	4.20	0.961	0.180	(0.865)	0.781
27	2.25	5.00	1.145	0.180	(1.030)	0.965
28	2.33	3.50	0.801	0.180	(0.721)	0.621
29	2.42	6.80	1.557	0.180	(1.401)	1.377
30	2.50	7.30	1.671	0.180	(1.504)	1.491
31	2.58	8.20	1.877	0.180	(1.689)	1.697
32	2.67	5.90	1.351	0.180	(1.216)	1.171
33	2.75	2.00	0.458	0.180	(0.412)	0.278
34	2.83	1.80	0.412	0.180	(0.371)	0.232
35	2.92	1.80	0.412	0.180	(0.371)	0.232
36	3.00	0.60	0.137	(0.180)	0.124	0.014

(Loss Rate Not Used)

Sum = 100.0 Sum = 16.5

Flood volume = Effective rainfall 1.37(In)
times area 209.6(Ac.)/[(In)/(Ft.)] = 24.0(Ac.Ft)

Total soil loss = 0.54(In)

Total soil loss = 9.344(Ac.Ft)

Total rainfall = 1.91(In)

Flood volume = 1044007.8 Cubic Feet

Total soil loss = 407034.9 Cubic Feet

Peak flow rate of this hydrograph = 262.264(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	75.0	150.0	225.0	300.0
0+ 5	0.0085	1.24	Q				
0+10	0.0527	6.42	Q				
0+15	0.1420	12.97	VQ				
0+20	0.2508	15.80	V Q				
0+25	0.3817	19.00	V Q				
0+30	0.5535	24.95	V Q				
0+35	0.7634	30.48	V Q				
0+40	0.9974	33.98	V Q				

154149RECHYDA320.out

0+45	1.2478	36.36	V	Q					
0+50	1.5196	39.47	V	Q					
0+55	1.7901	39.26	V	Q					
1+ 0	2.0528	38.16	V	Q					
1+ 5	2.3372	41.28	V	Q					
1+10	2.6713	48.51	V	Q					
1+15	3.0554	55.77	V	Q					
1+20	3.4636	59.27	V	Q					
1+25	3.8828	60.88	V	Q					
1+30	4.3370	65.94	V	Q					
1+35	4.8473	74.09	V	Q					
1+40	5.3830	77.78	V	Q					
1+45	5.9426	81.26	V	Q					
1+50	6.5672	90.69	V	Q					
1+55	7.2492	99.03	V	Q					
2+ 0	7.9417	100.55		Q					
2+ 5	8.6361	100.83		Q					
2+10	9.3657	105.94		Q					
2+15	10.2026	121.52		Q					
2+20	11.1850	142.64		Q					
2+25	12.2582	155.83		Q					
2+30	13.5026	180.68		Q					
2+35	15.0727	227.98		Q					
2+40	16.8789	262.26		Q					
2+45	18.6531	257.62		Q					
2+50	20.0515	203.04		Q					
2+55	21.0222	140.94		Q					
3+ 0	21.7487	105.48		Q					
3+ 5	22.3008	80.17		Q					
3+10	22.6907	56.62		Q					
3+15	22.9753	41.31		Q					
3+20	23.1962	32.08		Q					
3+25	23.3712	25.40		Q					
3+30	23.5126	20.53		Q					
3+35	23.6272	16.65		Q					
3+40	23.7186	13.27		Q					
3+45	23.7906	10.46		Q					
3+50	23.8469	8.17		Q					
3+55	23.8919	6.54		Q					
4+ 0	23.9251	4.82		Q					
4+ 5	23.9473	3.22		Q					
4+10	23.9585	1.62		Q					
4+15	23.9630	0.65		Q					
4+20	23.9658	0.40		Q					
4+25	23.9670	0.19		Q					
4+30	23.9671	0.01		Q					

154149RECHYDA620.out

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 06/22/15 File: 154149rechyda620.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR
RECLAMATION CONDITIONS AREA "A"

20-YEAR, 6-HOUR STORM
BY:JTS DATE: 06-22-15

Drainage Area = 209.55(Ac.) = 0.327 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 209.55(Ac.) =
0.327 Sq. Mi.
Length along longest watercourse = 4952.99(Ft.)
Length along longest watercourse measured to centroid = 2074.21(Ft.)
Length along longest watercourse = 0.938 Mi.
Length along longest watercourse measured to centroid = 0.393 Mi.
Difference in elevation = 310.84(Ft.)
Slope along watercourse = 331.3625 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.191 Hr.
Lag time = 11.45 Min.
25% of lag time = 2.86 Min.
40% of lag time = 4.58 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]
209.55	1.45	303.85

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
209.55	3.51	735.52

STORM EVENT (YEAR) = 20.00
Area Averaged 2-Year Rainfall = 1.450(In)
Area Averaged 100-Year Rainfall = 3.510(In)

Point rain (area averaged) = 2.662(In)
 Areal adjustment factor = 99.93 %
 Adjusted average point rain = 2.661(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
23.340	67.00	0.000
17.190	78.00	0.000
169.020	89.00	0.000
Total Area Entered = 209.55(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	67.0	0.394	0.000	0.394	0.111	0.044
78.0	78.0	0.268	0.000	0.268	0.082	0.022
89.0	89.0	0.141	0.000	0.141	0.807	0.114
Sum (F) =						0.180

Area averaged mean soil loss (F) (In/Hr) = 0.180

Minimum soil loss rate ((In/Hr)) = 0.090

(for 24 hour storm duration)

Soil low loss rate (decimal) = 0.900

Unit Hydrograph
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	43.666	4.976
2	0.167	87.332	20.835
3	0.250	130.999	28.282
4	0.333	174.665	15.645
5	0.417	218.331	7.636
6	0.500	261.997	5.113
7	0.583	305.663	3.814
8	0.667	349.329	2.849
9	0.750	392.996	2.281
10	0.833	436.662	1.737
11	0.917	480.328	1.383
12	1.000	523.994	1.261
13	1.083	567.660	0.982
14	1.167	611.327	0.811
15	1.250	654.993	0.658
16	1.333	698.659	0.505
17	1.417	742.325	0.437
18	1.500	785.991	0.437
19	1.583	829.657	0.358
Sum =		100.000	Sum= 211.187

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) Max Low	Effective (In/Hr)
1	0.08	0.50	0.160	(0.180)	0.144
2	0.17	0.60	0.192	(0.180)	0.172

154149RECHYDA620.out

3	0.25	0.60	0.192	(0.180)	0.172	0.019
4	0.33	0.60	0.192	(0.180)	0.172	0.019
5	0.42	0.60	0.192	(0.180)	0.172	0.019
6	0.50	0.70	0.223	0.180	(0.201)	0.044
7	0.58	0.70	0.223	0.180	(0.201)	0.044
8	0.67	0.70	0.223	0.180	(0.201)	0.044
9	0.75	0.70	0.223	0.180	(0.201)	0.044
10	0.83	0.70	0.223	0.180	(0.201)	0.044
11	0.92	0.70	0.223	0.180	(0.201)	0.044
12	1.00	0.80	0.255	0.180	(0.230)	0.075
13	1.08	0.80	0.255	0.180	(0.230)	0.075
14	1.17	0.80	0.255	0.180	(0.230)	0.075
15	1.25	0.80	0.255	0.180	(0.230)	0.075
16	1.33	0.80	0.255	0.180	(0.230)	0.075
17	1.42	0.80	0.255	0.180	(0.230)	0.075
18	1.50	0.80	0.255	0.180	(0.230)	0.075
19	1.58	0.80	0.255	0.180	(0.230)	0.075
20	1.67	0.80	0.255	0.180	(0.230)	0.075
21	1.75	0.80	0.255	0.180	(0.230)	0.075
22	1.83	0.80	0.255	0.180	(0.230)	0.075
23	1.92	0.80	0.255	0.180	(0.230)	0.075
24	2.00	0.90	0.287	0.180	(0.259)	0.107
25	2.08	0.80	0.255	0.180	(0.230)	0.075
26	2.17	0.90	0.287	0.180	(0.259)	0.107
27	2.25	0.90	0.287	0.180	(0.259)	0.107
28	2.33	0.90	0.287	0.180	(0.259)	0.107
29	2.42	0.90	0.287	0.180	(0.259)	0.107
30	2.50	0.90	0.287	0.180	(0.259)	0.107
31	2.58	0.90	0.287	0.180	(0.259)	0.107
32	2.67	0.90	0.287	0.180	(0.259)	0.107
33	2.75	1.00	0.319	0.180	(0.287)	0.139
34	2.83	1.00	0.319	0.180	(0.287)	0.139
35	2.92	1.00	0.319	0.180	(0.287)	0.139
36	3.00	1.00	0.319	0.180	(0.287)	0.139
37	3.08	1.00	0.319	0.180	(0.287)	0.139
38	3.17	1.10	0.351	0.180	(0.316)	0.171
39	3.25	1.10	0.351	0.180	(0.316)	0.171
40	3.33	1.10	0.351	0.180	(0.316)	0.171
41	3.42	1.20	0.383	0.180	(0.345)	0.203
42	3.50	1.30	0.415	0.180	(0.374)	0.235
43	3.58	1.40	0.447	0.180	(0.402)	0.267
44	3.67	1.40	0.447	0.180	(0.402)	0.267
45	3.75	1.50	0.479	0.180	(0.431)	0.299
46	3.83	1.50	0.479	0.180	(0.431)	0.299
47	3.92	1.60	0.511	0.180	(0.460)	0.331
48	4.00	1.60	0.511	0.180	(0.460)	0.331
49	4.08	1.70	0.543	0.180	(0.488)	0.363
50	4.17	1.80	0.575	0.180	(0.517)	0.395
51	4.25	1.90	0.607	0.180	(0.546)	0.427
52	4.33	2.00	0.639	0.180	(0.575)	0.459
53	4.42	2.10	0.670	0.180	(0.603)	0.491
54	4.50	2.10	0.670	0.180	(0.603)	0.491
55	4.58	2.20	0.702	0.180	(0.632)	0.522
56	4.67	2.30	0.734	0.180	(0.661)	0.554
57	4.75	2.40	0.766	0.180	(0.690)	0.586
58	4.83	2.40	0.766	0.180	(0.690)	0.586
59	4.92	2.50	0.798	0.180	(0.718)	0.618
60	5.00	2.60	0.830	0.180	(0.747)	0.650
61	5.08	3.10	0.990	0.180	(0.891)	0.810
62	5.17	3.60	1.149	0.180	(1.034)	0.969
63	5.25	3.90	1.245	0.180	(1.121)	1.065
64	5.33	4.20	1.341	0.180	(1.207)	1.161
65	5.42	4.70	1.501	0.180	(1.351)	1.321

154149RECHYDA620.out

66	5.50	5.60	1.788	0.180	(1.609)	1.608
67	5.58	1.90	0.607	0.180	(0.546)	0.427
68	5.67	0.90	0.287	0.180	(0.259)	0.107
69	5.75	0.60	0.192	(0.180)	0.172	0.019
70	5.83	0.50	0.160	(0.180)	0.144	0.016
71	5.92	0.30	0.096	(0.180)	0.086	0.010
72	6.00	0.20	0.064	(0.180)	0.057	0.006

(Loss Rate Not Used)

Sum = 100.0

Sum = 19.3

Flood volume = Effective rainfall 1.61(In)
times area 209.6(Ac.)/[(In)/(Ft.)] = 28.1(Ac.Ft)
Total soil loss = 1.05(In)
Total soil loss = 18.377(Ac.Ft)
Total rainfall = 2.66(In)
Flood volume = 1223292.1 Cubic Feet
Total soil loss = 800523.1 Cubic Feet

Peak flow rate of this hydrograph = 243.124(CFS)

+++++

6 - 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	75.0	150.0	225.0	300.0
0+ 5	0.0012		0.17	Q				
0+10	0.0074		0.90	Q				
0+15	0.0211		2.00	Q				
0+20	0.0399		2.72	Q				
0+25	0.0611		3.08	Q				
0+30	0.0856		3.56	Q				
0+35	0.1186		4.80	Q				
0+40	0.1626		6.38	Q				
0+45	0.2127		7.28	Q				
0+50	0.2661		7.75	VQ				
0+55	0.3217		8.07	VQ				
1+ 0	0.3813		8.65	VQ				
1+ 5	0.4519		10.25	VQ				
1+10	0.5366		12.31	VQ				
1+15	0.6295		13.48	VQ				
1+20	0.7265		14.09	Q				
1+25	0.8265		14.52	Q				
1+30	0.9287		14.84	Q				
1+35	1.0326		15.09	VQ				
1+40	1.1379		15.28	VQ				
1+45	1.2441		15.43	VQ				
1+50	1.3511		15.54	VQ				
1+55	1.4589		15.65	Q				
2+ 0	1.5696		16.07	Q				
2+ 5	1.6880		17.19	Q				
2+10	1.8125		18.08	Q				
2+15	1.9410		18.66	Q				
2+20	2.0792		20.06	Q				
2+25	2.2236		20.97	QV				
2+30	2.3712		21.43	QV				
2+35	2.5207		21.71	QV				
2+40	2.6717		21.93	QV				
2+45	2.8261		22.42	Q V				
2+50	2.9910		23.95	QV				
2+55	3.1699		25.97	QV				

3+ 0	3.3565	27.10	QV					
3+ 5	3.5472	27.69	Q V					
3+10	3.7429	28.42	Q V					
3+15	3.9505	30.13	QV					
3+20	4.1727	32.27	QV					
3+25	4.4058	33.85	Q V					
3+30	4.6555	36.25	Q V					
3+35	4.9333	40.34	Q V					
3+40	5.2437	45.08	QV					
3+45	5.5822	49.15	QV					
3+50	5.9450	52.68	QV					
3+55	6.3321	56.20	Q V					
4+ 0	6.7424	59.58	Q V					
4+ 5	7.1767	63.06	Q V					
4+10	7.6365	66.76	Q V					
4+15	8.1298	71.63	Q V					
4+20	8.6615	77.21	Q V					
4+25	9.2340	83.12	Q V					
4+30	9.8461	88.89	Q V					
4+35	10.4918	93.75	Q V					
4+40	11.1682	98.21	Q V					
4+45	11.8817	103.59	Q V					
4+50	12.6342	109.26	Q V					
4+55	13.4198	114.08	Q V					
5+ 0	14.2361	118.52	Q V					
5+ 5	15.0987	125.25	Q V					
5+10	16.0504	138.19	Q V					
5+15	17.1409	158.34	Q V					
5+20	18.3807	180.01	Q V					
5+25	19.7629	200.71	Q V					
5+30	21.3117	224.88	QV					
5+35	22.9861	243.12	Q V					
5+40	24.4712	215.63	Q					
5+45	25.4776	146.13	Q					
5+50	26.1216	93.51	Q					
5+55	26.5705	65.18	Q					
6+ 0	26.9082	49.04	Q					
6+ 5	27.1701	38.02	Q					
6+10	27.3759	29.89	Q					
6+15	27.5377	23.50	Q					
6+20	27.6673	18.81	Q					
6+25	27.7728	15.32	Q					
6+30	27.8568	12.19	Q					
6+35	27.9235	9.69	Q					
6+40	27.9756	7.55	Q					
6+45	28.0150	5.72	Q					
6+50	28.0446	4.30	Q					
6+55	28.0658	3.08	Q					
7+ 0	28.0781	1.78	Q					
7+ 5	28.0814	0.48	Q					
7+10	28.0823	0.13	Q					
7+15	28.0826	0.04	Q					
7+20	28.0828	0.03	Q					
7+25	28.0829	0.01	Q					
7+30	28.0829	0.00	Q					

154149RECHYDA2420.out

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 06/22/15 File: 154149rechyda2420.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR
RECLAMATION CONDITIONS AREA "A"
20-YEAR, 24-HOUR STORM
BY:JTS DATE: 06-22-15

Drainage Area = 209.55(Ac.) = 0.327 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 209.55(Ac.) =
0.327 Sq. Mi.
Length along longest watercourse = 4952.99(Ft.)
Length along longest watercourse measured to centroid = 2074.21(Ft.)
Length along longest watercourse = 0.938 Mi.
Length along longest watercourse measured to centroid = 0.393 Mi.
Difference in elevation = 310.84(Ft.)
Slope along watercourse = 331.3625 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.191 Hr.
Lag time = 11.45 Min.
25% of lag time = 2.86 Min.
40% of lag time = 4.58 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]
209.55	2.70	565.79

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
209.55	6.65	1393.51

STORM EVENT (YEAR) = 20.00
Area Averaged 2-Year Rainfall = 2.700(In)
Area Averaged 100-Year Rainfall = 6.650(In)

Point rain (area averaged) = 5.025(In)
 Areal adjustment factor = 99.96 %
 Adjusted average point rain = 5.023(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
23.340	67.00	0.000
17.190	78.00	0.000
169.020	89.00	0.000
Total Area Entered = 209.55(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	67.0	0.394	0.000	0.394	0.111	0.044
78.0	78.0	0.268	0.000	0.268	0.082	0.022
89.0	89.0	0.141	0.000	0.141	0.807	0.114
Sum (F) =						0.180

Area averaged mean soil loss (F) (In/Hr) = 0.180
 Minimum soil loss rate ((In/Hr)) = 0.090
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

Unit Hydrograph
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	43.666	4.976
2	0.167	87.332	20.835
3	0.250	130.999	28.282
4	0.333	174.665	15.645
5	0.417	218.331	7.636
6	0.500	261.997	5.113
7	0.583	305.663	3.814
8	0.667	349.329	2.849
9	0.750	392.996	2.281
10	0.833	436.662	1.737
11	0.917	480.328	1.383
12	1.000	523.994	1.261
13	1.083	567.660	0.982
14	1.167	611.327	0.811
15	1.250	654.993	0.658
16	1.333	698.659	0.505
17	1.417	742.325	0.437
18	1.500	785.991	0.437
19	1.583	829.657	0.358
Sum =		100.000	Sum= 211.187

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) Max Low	Effective (In/Hr)
1	0.08	0.07	0.040	(0.319)	0.036
2	0.17	0.07	0.040	(0.318)	0.036

154149RECHYDA2420.out

3	0.25	0.07	0.040	(0.317)	0.036	0.004
4	0.33	0.10	0.060	(0.315)	0.054	0.006
5	0.42	0.10	0.060	(0.314)	0.054	0.006
6	0.50	0.10	0.060	(0.313)	0.054	0.006
7	0.58	0.10	0.060	(0.312)	0.054	0.006
8	0.67	0.10	0.060	(0.310)	0.054	0.006
9	0.75	0.10	0.060	(0.309)	0.054	0.006
10	0.83	0.13	0.080	(0.308)	0.072	0.008
11	0.92	0.13	0.080	(0.307)	0.072	0.008
12	1.00	0.13	0.080	(0.306)	0.072	0.008
13	1.08	0.10	0.060	(0.304)	0.054	0.006
14	1.17	0.10	0.060	(0.303)	0.054	0.006
15	1.25	0.10	0.060	(0.302)	0.054	0.006
16	1.33	0.10	0.060	(0.301)	0.054	0.006
17	1.42	0.10	0.060	(0.300)	0.054	0.006
18	1.50	0.10	0.060	(0.298)	0.054	0.006
19	1.58	0.10	0.060	(0.297)	0.054	0.006
20	1.67	0.10	0.060	(0.296)	0.054	0.006
21	1.75	0.10	0.060	(0.295)	0.054	0.006
22	1.83	0.13	0.080	(0.294)	0.072	0.008
23	1.92	0.13	0.080	(0.292)	0.072	0.008
24	2.00	0.13	0.080	(0.291)	0.072	0.008
25	2.08	0.13	0.080	(0.290)	0.072	0.008
26	2.17	0.13	0.080	(0.289)	0.072	0.008
27	2.25	0.13	0.080	(0.288)	0.072	0.008
28	2.33	0.13	0.080	(0.287)	0.072	0.008
29	2.42	0.13	0.080	(0.285)	0.072	0.008
30	2.50	0.13	0.080	(0.284)	0.072	0.008
31	2.58	0.17	0.100	(0.283)	0.090	0.010
32	2.67	0.17	0.100	(0.282)	0.090	0.010
33	2.75	0.17	0.100	(0.281)	0.090	0.010
34	2.83	0.17	0.100	(0.280)	0.090	0.010
35	2.92	0.17	0.100	(0.278)	0.090	0.010
36	3.00	0.17	0.100	(0.277)	0.090	0.010
37	3.08	0.17	0.100	(0.276)	0.090	0.010
38	3.17	0.17	0.100	(0.275)	0.090	0.010
39	3.25	0.17	0.100	(0.274)	0.090	0.010
40	3.33	0.17	0.100	(0.273)	0.090	0.010
41	3.42	0.17	0.100	(0.272)	0.090	0.010
42	3.50	0.17	0.100	(0.270)	0.090	0.010
43	3.58	0.17	0.100	(0.269)	0.090	0.010
44	3.67	0.17	0.100	(0.268)	0.090	0.010
45	3.75	0.17	0.100	(0.267)	0.090	0.010
46	3.83	0.20	0.121	(0.266)	0.108	0.012
47	3.92	0.20	0.121	(0.265)	0.108	0.012
48	4.00	0.20	0.121	(0.264)	0.108	0.012
49	4.08	0.20	0.121	(0.263)	0.108	0.012
50	4.17	0.20	0.121	(0.261)	0.108	0.012
51	4.25	0.20	0.121	(0.260)	0.108	0.012
52	4.33	0.23	0.141	(0.259)	0.127	0.014
53	4.42	0.23	0.141	(0.258)	0.127	0.014
54	4.50	0.23	0.141	(0.257)	0.127	0.014
55	4.58	0.23	0.141	(0.256)	0.127	0.014
56	4.67	0.23	0.141	(0.255)	0.127	0.014
57	4.75	0.23	0.141	(0.254)	0.127	0.014
58	4.83	0.27	0.161	(0.253)	0.145	0.016
59	4.92	0.27	0.161	(0.251)	0.145	0.016
60	5.00	0.27	0.161	(0.250)	0.145	0.016
61	5.08	0.20	0.121	(0.249)	0.108	0.012
62	5.17	0.20	0.121	(0.248)	0.108	0.012
63	5.25	0.20	0.121	(0.247)	0.108	0.012
64	5.33	0.23	0.141	(0.246)	0.127	0.014
65	5.42	0.23	0.141	(0.245)	0.127	0.014

154149RECHYDA2420.out

66	5.50	0.23	0.141	(0.244)	0.127	0.014
67	5.58	0.27	0.161	(0.243)	0.145	0.016
68	5.67	0.27	0.161	(0.242)	0.145	0.016
69	5.75	0.27	0.161	(0.241)	0.145	0.016
70	5.83	0.27	0.161	(0.240)	0.145	0.016
71	5.92	0.27	0.161	(0.239)	0.145	0.016
72	6.00	0.27	0.161	(0.238)	0.145	0.016
73	6.08	0.30	0.181	(0.236)	0.163	0.018
74	6.17	0.30	0.181	(0.235)	0.163	0.018
75	6.25	0.30	0.181	(0.234)	0.163	0.018
76	6.33	0.30	0.181	(0.233)	0.163	0.018
77	6.42	0.30	0.181	(0.232)	0.163	0.018
78	6.50	0.30	0.181	(0.231)	0.163	0.018
79	6.58	0.33	0.201	(0.230)	0.181	0.020
80	6.67	0.33	0.201	(0.229)	0.181	0.020
81	6.75	0.33	0.201	(0.228)	0.181	0.020
82	6.83	0.33	0.201	(0.227)	0.181	0.020
83	6.92	0.33	0.201	(0.226)	0.181	0.020
84	7.00	0.33	0.201	(0.225)	0.181	0.020
85	7.08	0.33	0.201	(0.224)	0.181	0.020
86	7.17	0.33	0.201	(0.223)	0.181	0.020
87	7.25	0.33	0.201	(0.222)	0.181	0.020
88	7.33	0.37	0.221	(0.221)	0.199	0.022
89	7.42	0.37	0.221	(0.220)	0.199	0.022
90	7.50	0.37	0.221	(0.219)	0.199	0.022
91	7.58	0.40	0.241	(0.218)	0.217	0.024
92	7.67	0.40	0.241	0.217	(0.217)	0.024
93	7.75	0.40	0.241	0.216	(0.217)	0.025
94	7.83	0.43	0.261	0.215	(0.235)	0.046
95	7.92	0.43	0.261	0.214	(0.235)	0.047
96	8.00	0.43	0.261	0.213	(0.235)	0.048
97	8.08	0.50	0.301	0.212	(0.271)	0.089
98	8.17	0.50	0.301	0.211	(0.271)	0.090
99	8.25	0.50	0.301	0.210	(0.271)	0.091
100	8.33	0.50	0.301	0.209	(0.271)	0.092
101	8.42	0.50	0.301	0.208	(0.271)	0.093
102	8.50	0.50	0.301	0.207	(0.271)	0.094
103	8.58	0.53	0.321	0.206	(0.289)	0.115
104	8.67	0.53	0.321	0.205	(0.289)	0.116
105	8.75	0.53	0.321	0.204	(0.289)	0.117
106	8.83	0.57	0.342	0.203	(0.307)	0.138
107	8.92	0.57	0.342	0.202	(0.307)	0.139
108	9.00	0.57	0.342	0.201	(0.307)	0.140
109	9.08	0.63	0.382	0.200	(0.344)	0.181
110	9.17	0.63	0.382	0.199	(0.344)	0.182
111	9.25	0.63	0.382	0.198	(0.344)	0.183
112	9.33	0.67	0.402	0.197	(0.362)	0.204
113	9.42	0.67	0.402	0.197	(0.362)	0.205
114	9.50	0.67	0.402	0.196	(0.362)	0.206
115	9.58	0.70	0.422	0.195	(0.380)	0.227
116	9.67	0.70	0.422	0.194	(0.380)	0.228
117	9.75	0.70	0.422	0.193	(0.380)	0.229
118	9.83	0.73	0.442	0.192	(0.398)	0.250
119	9.92	0.73	0.442	0.191	(0.398)	0.251
120	10.00	0.73	0.442	0.190	(0.398)	0.252
121	10.08	0.50	0.301	0.189	(0.271)	0.112
122	10.17	0.50	0.301	0.188	(0.271)	0.113
123	10.25	0.50	0.301	0.187	(0.271)	0.114
124	10.33	0.50	0.301	0.186	(0.271)	0.115
125	10.42	0.50	0.301	0.185	(0.271)	0.116
126	10.50	0.50	0.301	0.185	(0.271)	0.117
127	10.58	0.67	0.402	0.184	(0.362)	0.218
128	10.67	0.67	0.402	0.183	(0.362)	0.219

154149RECHYDA2420.out

129	10.75	0.67	0.402	0.182	(0.362)	0.220
130	10.83	0.67	0.402	0.181	(0.362)	0.221
131	10.92	0.67	0.402	0.180	(0.362)	0.222
132	11.00	0.67	0.402	0.179	(0.362)	0.223
133	11.08	0.63	0.382	0.178	(0.344)	0.203
134	11.17	0.63	0.382	0.177	(0.344)	0.204
135	11.25	0.63	0.382	0.177	(0.344)	0.205
136	11.33	0.63	0.382	0.176	(0.344)	0.206
137	11.42	0.63	0.382	0.175	(0.344)	0.207
138	11.50	0.63	0.382	0.174	(0.344)	0.208
139	11.58	0.57	0.342	0.173	(0.307)	0.168
140	11.67	0.57	0.342	0.172	(0.307)	0.169
141	11.75	0.57	0.342	0.171	(0.307)	0.170
142	11.83	0.60	0.362	0.171	(0.325)	0.191
143	11.92	0.60	0.362	0.170	(0.325)	0.192
144	12.00	0.60	0.362	0.169	(0.325)	0.193
145	12.08	0.83	0.502	0.168	(0.452)	0.334
146	12.17	0.83	0.502	0.167	(0.452)	0.335
147	12.25	0.83	0.502	0.166	(0.452)	0.336
148	12.33	0.87	0.522	0.165	(0.470)	0.357
149	12.42	0.87	0.522	0.165	(0.470)	0.358
150	12.50	0.87	0.522	0.164	(0.470)	0.359
151	12.58	0.93	0.563	0.163	(0.506)	0.400
152	12.67	0.93	0.563	0.162	(0.506)	0.400
153	12.75	0.93	0.563	0.161	(0.506)	0.401
154	12.83	0.97	0.583	0.161	(0.524)	0.422
155	12.92	0.97	0.583	0.160	(0.524)	0.423
156	13.00	0.97	0.583	0.159	(0.524)	0.424
157	13.08	1.13	0.683	0.158	(0.615)	0.525
158	13.17	1.13	0.683	0.157	(0.615)	0.526
159	13.25	1.13	0.683	0.156	(0.615)	0.527
160	13.33	1.13	0.683	0.156	(0.615)	0.527
161	13.42	1.13	0.683	0.155	(0.615)	0.528
162	13.50	1.13	0.683	0.154	(0.615)	0.529
163	13.58	0.77	0.462	0.153	(0.416)	0.309
164	13.67	0.77	0.462	0.153	(0.416)	0.310
165	13.75	0.77	0.462	0.152	(0.416)	0.310
166	13.83	0.77	0.462	0.151	(0.416)	0.311
167	13.92	0.77	0.462	0.150	(0.416)	0.312
168	14.00	0.77	0.462	0.149	(0.416)	0.313
169	14.08	0.90	0.542	0.149	(0.488)	0.394
170	14.17	0.90	0.542	0.148	(0.488)	0.395
171	14.25	0.90	0.542	0.147	(0.488)	0.395
172	14.33	0.87	0.522	0.146	(0.470)	0.376
173	14.42	0.87	0.522	0.146	(0.470)	0.377
174	14.50	0.87	0.522	0.145	(0.470)	0.377
175	14.58	0.87	0.522	0.144	(0.470)	0.378
176	14.67	0.87	0.522	0.143	(0.470)	0.379
177	14.75	0.87	0.522	0.143	(0.470)	0.380
178	14.83	0.83	0.502	0.142	(0.452)	0.360
179	14.92	0.83	0.502	0.141	(0.452)	0.361
180	15.00	0.83	0.502	0.141	(0.452)	0.362
181	15.08	0.80	0.482	0.140	(0.434)	0.342
182	15.17	0.80	0.482	0.139	(0.434)	0.343
183	15.25	0.80	0.482	0.138	(0.434)	0.344
184	15.33	0.77	0.462	0.138	(0.416)	0.324
185	15.42	0.77	0.462	0.137	(0.416)	0.325
186	15.50	0.77	0.462	0.136	(0.416)	0.326
187	15.58	0.63	0.382	0.136	(0.344)	0.246
188	15.67	0.63	0.382	0.135	(0.344)	0.247
189	15.75	0.63	0.382	0.134	(0.344)	0.248
190	15.83	0.63	0.382	0.133	(0.344)	0.248
191	15.92	0.63	0.382	0.133	(0.344)	0.249

154149RECHYDA2420.out

192	16.00	0.63	0.382	0.132	(0.344)	0.250
193	16.08	0.13	0.080	(0.131)	0.072	0.008
194	16.17	0.13	0.080	(0.131)	0.072	0.008
195	16.25	0.13	0.080	(0.130)	0.072	0.008
196	16.33	0.13	0.080	(0.129)	0.072	0.008
197	16.42	0.13	0.080	(0.129)	0.072	0.008
198	16.50	0.13	0.080	(0.128)	0.072	0.008
199	16.58	0.10	0.060	(0.127)	0.054	0.006
200	16.67	0.10	0.060	(0.127)	0.054	0.006
201	16.75	0.10	0.060	(0.126)	0.054	0.006
202	16.83	0.10	0.060	(0.126)	0.054	0.006
203	16.92	0.10	0.060	(0.125)	0.054	0.006
204	17.00	0.10	0.060	(0.124)	0.054	0.006
205	17.08	0.17	0.100	(0.124)	0.090	0.010
206	17.17	0.17	0.100	(0.123)	0.090	0.010
207	17.25	0.17	0.100	(0.122)	0.090	0.010
208	17.33	0.17	0.100	(0.122)	0.090	0.010
209	17.42	0.17	0.100	(0.121)	0.090	0.010
210	17.50	0.17	0.100	(0.121)	0.090	0.010
211	17.58	0.17	0.100	(0.120)	0.090	0.010
212	17.67	0.17	0.100	(0.119)	0.090	0.010
213	17.75	0.17	0.100	(0.119)	0.090	0.010
214	17.83	0.13	0.080	(0.118)	0.072	0.008
215	17.92	0.13	0.080	(0.118)	0.072	0.008
216	18.00	0.13	0.080	(0.117)	0.072	0.008
217	18.08	0.13	0.080	(0.116)	0.072	0.008
218	18.17	0.13	0.080	(0.116)	0.072	0.008
219	18.25	0.13	0.080	(0.115)	0.072	0.008
220	18.33	0.13	0.080	(0.115)	0.072	0.008
221	18.42	0.13	0.080	(0.114)	0.072	0.008
222	18.50	0.13	0.080	(0.114)	0.072	0.008
223	18.58	0.10	0.060	(0.113)	0.054	0.006
224	18.67	0.10	0.060	(0.113)	0.054	0.006
225	18.75	0.10	0.060	(0.112)	0.054	0.006
226	18.83	0.07	0.040	(0.111)	0.036	0.004
227	18.92	0.07	0.040	(0.111)	0.036	0.004
228	19.00	0.07	0.040	(0.110)	0.036	0.004
229	19.08	0.10	0.060	(0.110)	0.054	0.006
230	19.17	0.10	0.060	(0.109)	0.054	0.006
231	19.25	0.10	0.060	(0.109)	0.054	0.006
232	19.33	0.13	0.080	(0.108)	0.072	0.008
233	19.42	0.13	0.080	(0.108)	0.072	0.008
234	19.50	0.13	0.080	(0.107)	0.072	0.008
235	19.58	0.10	0.060	(0.107)	0.054	0.006
236	19.67	0.10	0.060	(0.106)	0.054	0.006
237	19.75	0.10	0.060	(0.106)	0.054	0.006
238	19.83	0.07	0.040	(0.105)	0.036	0.004
239	19.92	0.07	0.040	(0.105)	0.036	0.004
240	20.00	0.07	0.040	(0.104)	0.036	0.004
241	20.08	0.10	0.060	(0.104)	0.054	0.006
242	20.17	0.10	0.060	(0.104)	0.054	0.006
243	20.25	0.10	0.060	(0.103)	0.054	0.006
244	20.33	0.10	0.060	(0.103)	0.054	0.006
245	20.42	0.10	0.060	(0.102)	0.054	0.006
246	20.50	0.10	0.060	(0.102)	0.054	0.006
247	20.58	0.10	0.060	(0.101)	0.054	0.006
248	20.67	0.10	0.060	(0.101)	0.054	0.006
249	20.75	0.10	0.060	(0.101)	0.054	0.006
250	20.83	0.07	0.040	(0.100)	0.036	0.004
251	20.92	0.07	0.040	(0.100)	0.036	0.004
252	21.00	0.07	0.040	(0.099)	0.036	0.004
253	21.08	0.10	0.060	(0.099)	0.054	0.006
254	21.17	0.10	0.060	(0.099)	0.054	0.006

154149RECHYDA2420.out

255	21.25	0.10	0.060	(0.098)	0.054	0.006
256	21.33	0.07	0.040	(0.098)	0.036	0.004
257	21.42	0.07	0.040	(0.097)	0.036	0.004
258	21.50	0.07	0.040	(0.097)	0.036	0.004
259	21.58	0.10	0.060	(0.097)	0.054	0.006
260	21.67	0.10	0.060	(0.096)	0.054	0.006
261	21.75	0.10	0.060	(0.096)	0.054	0.006
262	21.83	0.07	0.040	(0.096)	0.036	0.004
263	21.92	0.07	0.040	(0.095)	0.036	0.004
264	22.00	0.07	0.040	(0.095)	0.036	0.004
265	22.08	0.10	0.060	(0.095)	0.054	0.006
266	22.17	0.10	0.060	(0.094)	0.054	0.006
267	22.25	0.10	0.060	(0.094)	0.054	0.006
268	22.33	0.07	0.040	(0.094)	0.036	0.004
269	22.42	0.07	0.040	(0.094)	0.036	0.004
270	22.50	0.07	0.040	(0.093)	0.036	0.004
271	22.58	0.07	0.040	(0.093)	0.036	0.004
272	22.67	0.07	0.040	(0.093)	0.036	0.004
273	22.75	0.07	0.040	(0.092)	0.036	0.004
274	22.83	0.07	0.040	(0.092)	0.036	0.004
275	22.92	0.07	0.040	(0.092)	0.036	0.004
276	23.00	0.07	0.040	(0.092)	0.036	0.004
277	23.08	0.07	0.040	(0.092)	0.036	0.004
278	23.17	0.07	0.040	(0.091)	0.036	0.004
279	23.25	0.07	0.040	(0.091)	0.036	0.004
280	23.33	0.07	0.040	(0.091)	0.036	0.004
281	23.42	0.07	0.040	(0.091)	0.036	0.004
282	23.50	0.07	0.040	(0.091)	0.036	0.004
283	23.58	0.07	0.040	(0.090)	0.036	0.004
284	23.67	0.07	0.040	(0.090)	0.036	0.004
285	23.75	0.07	0.040	(0.090)	0.036	0.004
286	23.83	0.07	0.040	(0.090)	0.036	0.004
287	23.92	0.07	0.040	(0.090)	0.036	0.004
288	24.00	0.07	0.040	(0.090)	0.036	0.004

(Loss Rate Not Used)

Sum = 100.0 Sum = 27.7

Flood volume = Effective rainfall 2.31(In)
times area 209.6(Ac.)/[((In)/(Ft.))] = 40.3(Ac.Ft)

Total soil loss = 2.71(In)

Total soil loss = 47.364(Ac.Ft)

Total rainfall = 5.02(In)

Flood volume = 1757557.0 Cubic Feet

Total soil loss = 2063180.6 Cubic Feet

Peak flow rate of this hydrograph = 106.577(CFS)

+++++

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

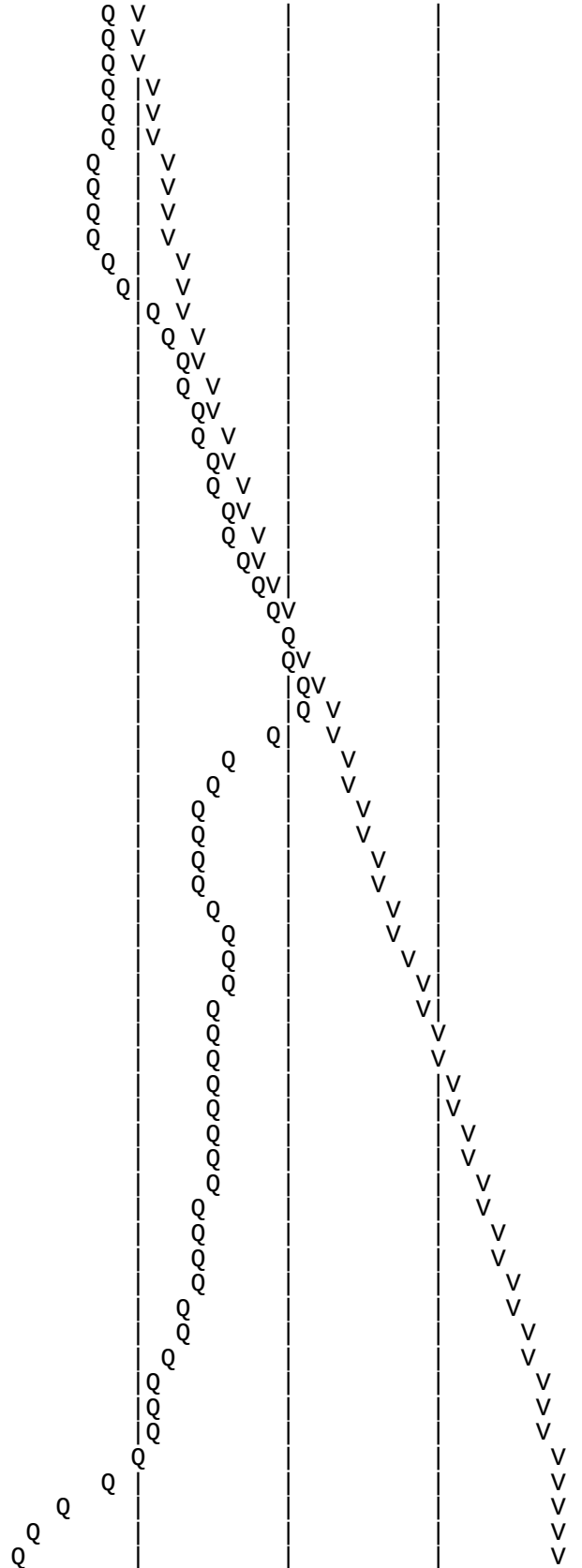
Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	50.0	100.0	150.0	200.0
0+ 5	0.0003	0.04	Q				
0+10	0.0018	0.22	Q				
0+15	0.0050	0.46	Q				
0+20	0.0092	0.61	Q				
0+25	0.0145	0.77	Q				
0+30	0.0209	0.93	Q				
0+35	0.0280	1.03	Q				
0+40	0.0354	1.09	Q				

0+45	0.0432	1.13	Q
0+50	0.0513	1.18	Q
0+55	0.0602	1.29	Q
1+ 0	0.0701	1.43	Q
1+ 5	0.0803	1.49	Q
1+10	0.0903	1.45	Q
1+15	0.0997	1.36	Q
1+20	0.1088	1.32	Q
1+25	0.1178	1.31	Q
1+30	0.1267	1.30	Q
1+35	0.1357	1.30	Q
1+40	0.1446	1.29	Q
1+45	0.1535	1.29	Q
1+50	0.1625	1.31	Q
1+55	0.1721	1.40	Q
2+ 0	0.1825	1.51	Q
2+ 5	0.1934	1.58	Q
2+10	0.2045	1.61	Q
2+15	0.2157	1.63	Q
2+20	0.2270	1.65	Q
2+25	0.2384	1.66	Q
2+30	0.2499	1.66	Q
2+35	0.2615	1.69	Q
2+40	0.2738	1.78	Q
2+45	0.2870	1.91	Q
2+50	0.3006	1.98	Q
2+55	0.3145	2.02	Q
3+ 0	0.3286	2.04	Q
3+ 5	0.3427	2.06	Q
3+10	0.3570	2.07	Q
3+15	0.3714	2.08	Q
3+20	0.3858	2.09	Q
3+25	0.4003	2.10	Q
3+30	0.4147	2.10	Q
3+35	0.4293	2.11	Q
3+40	0.4438	2.11	Q
3+45	0.4584	2.12	Q
3+50	0.4731	2.14	Q
3+55	0.4885	2.23	Q
4+ 0	0.5047	2.35	Q
4+ 5	0.5213	2.42	Q
4+10	0.5382	2.45	Q
4+15	0.5552	2.47	Q
4+20	0.5725	2.51	Q
4+25	0.5905	2.61	Q
4+30	0.6094	2.74	Q
4+35	0.6287	2.81	Q
4+40	0.6484	2.85	Q
4+45	0.6682	2.88	Q
4+50	0.6883	2.92	Q
4+55	0.7092	3.03	Q
5+ 0	0.7309	3.16	Q
5+ 5	0.7529	3.19	Q
5+10	0.7739	3.05	Q
5+15	0.7935	2.84	Q
5+20	0.8125	2.75	Q
5+25	0.8317	2.79	Q
5+30	0.8516	2.88	Q
5+35	0.8719	2.95	Q
5+40	0.8929	3.05	Q
5+45	0.9148	3.18	Q
5+50	0.9372	3.25	Q
5+55	0.9598	3.29	Q

6+ 0	0.9827	3.31	Q
6+ 5	1.0057	3.35	Q
6+10	1.0295	3.45	QV
6+15	1.0542	3.58	QV
6+20	1.0794	3.66	QV
6+25	1.1049	3.70	QV
6+30	1.1305	3.72	QV
6+35	1.1565	3.76	QV
6+40	1.1831	3.87	QV
6+45	1.2107	4.01	QV
6+50	1.2388	4.08	QV
6+55	1.2672	4.12	QV
7+ 0	1.2958	4.15	QV
7+ 5	1.3246	4.17	QV
7+10	1.3534	4.19	QV
7+15	1.3823	4.20	QV
7+20	1.4115	4.23	QV
7+25	1.4413	4.33	QV
7+30	1.4720	4.46	QV
7+35	1.5033	4.55	QV
7+40	1.5355	4.67	QV
7+45	1.5688	4.83	QV
7+50	1.6045	5.19	Q
7+55	1.6474	6.23	Q
8+ 0	1.6999	7.61	Q
8+ 5	1.7611	8.89	Q
8+10	1.8381	11.17	VQ
8+15	1.9344	13.99	VQ
8+20	2.0424	15.68	VQ
8+25	2.1570	16.65	VQ
8+30	2.2767	17.38	VQ
8+35	2.4020	18.19	VQ
8+40	2.5368	19.58	VQ
8+45	2.6830	21.23	V Q
8+50	2.8379	22.50	V Q
8+55	3.0037	24.06	V Q
9+ 0	3.1815	25.82	V Q
9+ 5	3.3700	27.38	V Q
9+10	3.5758	29.88	V Q
9+15	3.8022	32.87	V Q
9+20	4.0426	34.91	V Q
9+25	4.2964	36.86	V Q
9+30	4.5642	38.88	V Q
9+35	4.8426	40.43	V Q
9+40	5.1331	42.17	V Q
9+45	5.4365	44.06	V Q
9+50	5.7499	45.51	V Q
9+55	6.0750	47.20	V Q
10+ 0	6.4130	49.07	V Q
10+ 5	6.7491	48.81	V Q
10+10	7.0480	43.40	V Q
10+15	7.2934	35.63	Q
10+20	7.5105	31.52	QV
10+25	7.7149	29.69	Q V
10+30	7.9118	28.58	Q V
10+35	8.1106	28.86	Q V
10+40	8.3361	32.74	Q V
10+45	8.6002	38.36	QV
10+50	8.8856	41.43	Q
10+55	9.1809	42.89	QV
11+ 0	9.4828	43.83	QV
11+ 5	9.7883	44.36	QV
11+10	10.0917	44.05	Q V

11+15	10.3902	43.34
11+20	10.6870	43.10
11+25	10.9840	43.12
11+30	11.2818	43.23
11+35	11.5775	42.93
11+40	11.8626	41.40
11+45	12.1327	39.22
11+50	12.3967	38.32
11+55	12.6637	38.78
12+ 0	12.9376	39.76
12+ 5	13.2254	41.80
12+10	13.5575	48.22
12+15	13.9486	56.80
12+20	14.3744	61.83
12+25	14.8231	65.14
12+30	15.2915	68.01
12+35	15.7762	70.38
12+40	16.2824	73.49
12+45	16.8124	76.96
12+50	17.3589	79.35
12+55	17.9208	81.59
13+ 0	18.4983	83.86
13+ 5	19.0935	86.43
13+10	19.7265	91.91
13+15	20.4067	98.76
13+20	21.1144	102.77
13+25	21.8373	104.96
13+30	22.5713	106.58
13+35	23.2980	105.52
13+40	23.9640	96.70
13+45	24.5444	84.28
13+50	25.0789	77.61
13+55	25.5925	74.57
14+ 0	26.0930	72.68
14+ 5	26.5901	72.17
14+10	27.1047	74.73
14+15	27.6473	78.79
14+20	28.2032	80.71
14+25	28.7591	80.73
14+30	29.3105	80.06
14+35	29.8602	79.82
14+40	30.4095	79.76
14+45	30.9589	79.78
14+50	31.5073	79.62
14+55	32.0500	78.80
15+ 0	32.5849	77.67
15+ 5	33.1144	76.88
15+10	33.6371	75.90
15+15	34.1515	74.69
15+20	34.6602	73.85
15+25	35.1610	72.72
15+30	35.6527	71.40
15+35	36.1337	69.84
15+40	36.5878	65.93
15+45	37.0072	60.89
15+50	37.4072	58.09
15+55	37.7979	56.73
16+ 0	38.1824	55.83
16+ 5	38.5450	52.64
16+10	38.8309	41.52
16+15	39.0145	26.66
16+20	39.1409	18.35
16+25	39.2387	14.20



16+30	39.3168	11.35	Q	V
16+35	39.3802	9.20	Q	V
16+40	39.4320	7.52	Q	V
16+45	39.4741	6.11	Q	V
16+50	39.5090	5.07	Q	V
16+55	39.5384	4.27	Q	V
17+ 0	39.5627	3.53	Q	V
17+ 5	39.5834	3.00	Q	V
17+10	39.6023	2.76	Q	V
17+15	39.6206	2.65	Q	V
17+20	39.6380	2.52	Q	V
17+25	39.6542	2.36	Q	V
17+30	39.6692	2.17	Q	V
17+35	39.6831	2.02	Q	V
17+40	39.6972	2.04	Q	V
17+45	39.7113	2.06	Q	V
17+50	39.7254	2.05	Q	V
17+55	39.7390	1.97	Q	V
18+ 0	39.7518	1.86	Q	V
18+ 5	39.7642	1.80	Q	V
18+10	39.7764	1.77	Q	V
18+15	39.7885	1.76	Q	V
18+20	39.8006	1.75	Q	V
18+25	39.8125	1.74	Q	V
18+30	39.8244	1.73	Q	V
18+35	39.8362	1.71	Q	V
18+40	39.8473	1.61	Q	V
18+45	39.8575	1.49	Q	V
18+50	39.8671	1.39	Q	V
18+55	39.8759	1.27	Q	V
19+ 0	39.8836	1.13	Q	V
19+ 5	39.8910	1.06	Q	V
19+10	39.8986	1.10	Q	V
19+15	39.9068	1.19	Q	V
19+20	39.9154	1.25	Q	V
19+25	39.9247	1.36	Q	V
19+30	39.9349	1.48	Q	V
19+35	39.9455	1.53	Q	V
19+40	39.9557	1.48	Q	V
19+45	39.9652	1.38	Q	V
19+50	39.9743	1.31	Q	V
19+55	39.9826	1.20	Q	V
20+ 0	39.9899	1.07	Q	V
20+ 5	39.9970	1.02	Q	V
20+10	40.0043	1.07	Q	V
20+15	40.0124	1.17	Q	V
20+20	40.0207	1.21	Q	V
20+25	40.0292	1.23	Q	V
20+30	40.0378	1.24	Q	V
20+35	40.0464	1.25	Q	V
20+40	40.0551	1.26	Q	V
20+45	40.0638	1.26	Q	V
20+50	40.0723	1.24	Q	V
20+55	40.0803	1.15	Q	V
21+ 0	40.0874	1.04	Q	V
21+ 5	40.0942	0.99	Q	V
21+10	40.1014	1.05	Q	V
21+15	40.1093	1.15	Q	V
21+20	40.1174	1.18	Q	V
21+25	40.1251	1.11	Q	V
21+30	40.1320	1.00	Q	V
21+35	40.1387	0.97	Q	V
21+40	40.1458	1.03	Q	V

21+45	40.1536	1.13	Q				V
21+50	40.1616	1.17	Q				V
21+55	40.1692	1.10	Q				V
22+ 0	40.1761	1.00	Q				V
22+ 5	40.1827	0.96	Q				V
22+10	40.1898	1.02	Q				V
22+15	40.1975	1.13	Q				V
22+20	40.2055	1.16	Q				V
22+25	40.2131	1.10	Q				V
22+30	40.2199	0.99	Q				V
22+35	40.2264	0.94	Q				V
22+40	40.2327	0.92	Q				V
22+45	40.2389	0.90	Q				V
22+50	40.2450	0.89	Q				V
22+55	40.2511	0.88	Q				V
23+ 0	40.2571	0.87	Q				V
23+ 5	40.2631	0.87	Q				V
23+10	40.2690	0.87	Q				V
23+15	40.2750	0.86	Q				V
23+20	40.2809	0.86	Q				V
23+25	40.2868	0.86	Q				V
23+30	40.2926	0.85	Q				V
23+35	40.2985	0.85	Q				V
23+40	40.3044	0.85	Q				V
23+45	40.3103	0.85	Q				V
23+50	40.3161	0.85	Q				V
23+55	40.3219	0.85	Q				V
24+ 0	40.3278	0.85	Q				V
24+ 5	40.3333	0.81	Q				V
24+10	40.3377	0.63	Q				V
24+15	40.3404	0.39	Q				V
24+20	40.3421	0.26	Q				V
24+25	40.3435	0.19	Q				V
24+30	40.3445	0.15	Q				V
24+35	40.3453	0.12	Q				V
24+40	40.3459	0.09	Q				V
24+45	40.3464	0.07	Q				V
24+50	40.3468	0.06	Q				V
24+55	40.3471	0.05	Q				V
25+ 0	40.3474	0.04	Q				V
25+ 5	40.3476	0.03	Q				V
25+10	40.3477	0.02	Q				V
25+15	40.3478	0.01	Q				V
25+20	40.3479	0.01	Q				V
25+25	40.3479	0.01	Q				V
25+30	40.3480	0.00	Q				V

ATTACHMENT 6

Reclamation Conditions
Hydrograph Calculations
(100-Year, 1,3,6, & 24-Hour)

154149RECHYDA1100.out

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 06/22/15 File: 154149rechyda1100.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR
RECLAMATION CONDITIONS AREA "A"

100-YEAR, 1-HOUR STORM
BY:JTS DATE: 06-22-15

Drainage Area = 209.55(Ac.) = 0.327 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 209.55(Ac.) =
0.327 Sq. Mi.
Length along longest watercourse = 4952.99(Ft.)
Length along longest watercourse measured to centroid = 2074.21(Ft.)
Length along longest watercourse = 0.938 Mi.
Length along longest watercourse measured to centroid = 0.393 Mi.
Difference in elevation = 310.84(Ft.)
Slope along watercourse = 331.3625 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.191 Hr.
Lag time = 11.45 Min.
25% of lag time = 2.86 Min.
40% of lag time = 4.58 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]
209.55	0.58	121.54

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
209.55	1.47	308.04

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.580(In)
Area Averaged 100-Year Rainfall = 1.470(In)

Point rain (area averaged) = 1.470(In)
 Areal adjustment factor = 99.81 %
 Adjusted average point rain = 1.467(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
23.340	67.00	0.000
17.190	78.00	0.000
169.020	89.00	0.000
Total Area Entered = 209.55(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	83.2	0.208	0.000	0.208	0.111	0.023
78.0	89.8	0.132	0.000	0.132	0.082	0.011
89.0	95.6	0.057	0.000	0.057	0.807	0.046
Sum (F) =						0.080

Area averaged mean soil loss (F) (In/Hr) = 0.080

Minimum soil loss rate ((In/Hr)) = 0.040

(for 24 hour storm duration)

Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm = 0.4800

Unit Hydrograph
 VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	43.666	4.976
2	0.167	87.332	20.835
3	0.250	130.999	28.282
4	0.333	174.665	15.645
5	0.417	218.331	7.636
6	0.500	261.997	5.113
7	0.583	305.663	3.814
8	0.667	349.329	2.849
9	0.750	392.996	2.281
10	0.833	436.662	1.737
11	0.917	480.328	1.383
12	1.000	523.994	1.261
13	1.083	567.660	0.982
14	1.167	611.327	0.811
15	1.250	654.993	0.658
16	1.333	698.659	0.505
17	1.417	742.325	0.437
18	1.500	785.991	0.437
19	1.583	829.657	0.358
Sum =		100.000	Sum= 211.187

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	Pattern	Storm Rain	Loss rate(In./Hr)	Effective
(Hr.)	Percent	(In/Hr)	Max Low	(In/Hr)

154149RECHYDA1100.out

1	0.08	4.40	0.775	0.080	(0.697)	0.695
2	0.17	4.50	0.792	0.080	(0.713)	0.712
3	0.25	5.40	0.951	0.080	(0.856)	0.871
4	0.33	5.40	0.951	0.080	(0.856)	0.871
5	0.42	5.70	1.004	0.080	(0.903)	0.923
6	0.50	6.40	1.127	0.080	(1.014)	1.047
7	0.58	7.90	1.391	0.080	(1.252)	1.311
8	0.67	9.10	1.602	0.080	(1.442)	1.522
9	0.75	12.80	2.254	0.080	(2.028)	2.174
10	0.83	25.60	4.507	0.080	(4.057)	4.427
11	0.92	7.90	1.391	0.080	(1.252)	1.311
12	1.00	4.90	0.863	0.080	(0.776)	0.783

(Loss Rate Not Used)

Sum = 100.0 Sum = 16.6

Flood volume = Effective rainfall 1.39(In)
times area 209.6(Ac.)/[(In)/(Ft.)] = 24.2(Ac.Ft)
Total soil loss = 0.08(In)
Total soil loss = 1.399(Ac.Ft)
Total rainfall = 1.47(In)
Flood volume = 1055125.4 Cubic Feet
Total soil loss = 60930.8 Cubic Feet

Peak flow rate of this hydrograph = 466.382(CFS)

+++++

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	125.0	250.0	375.0	500.0
0+ 5	0.0503	7.30	Q				
0+10	0.3125	38.07	V Q				
0+15	0.8773	82.01	V Q				
0+20	1.6556	113.00	V Q				
0+25	2.5841	134.82	V Q				
0+30	3.6272	151.46	V Q				
0+35	4.8060	171.17	V Q				
0+40	6.1846	200.16	V Q				
0+45	7.8495	241.75	V Q				
0+50	10.0646	321.63	V Q				
0+55	13.1146	442.86	V Q				
1+ 0	16.3266	466.38	V Q				
1+ 5	18.6754	341.04	V Q				
1+10	20.1984	221.14	V Q				
1+15	21.1674	140.70	V Q				
1+20	21.8440	98.25	V Q				
1+25	22.3562	74.37	V Q				
1+30	22.7601	58.65	V Q				
1+35	23.0797	46.40	V Q				
1+40	23.3366	37.30	V Q				
1+45	23.5492	30.87	V Q				
1+50	23.7192	24.68	V Q				
1+55	23.8564	19.91	V Q				
2+ 0	23.9648	15.75	V Q				
2+ 5	24.0495	12.29	V Q				
2+10	24.1165	9.73	V Q				
2+15	24.1701	7.78	V Q				
2+20	24.2065	5.28	V Q				
2+25	24.2183	1.71	V Q				
2+30	24.2223	0.59	V Q				

154149RECHYDA3100.out

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 06/22/15 File: 154149rechyda3100.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR
RECLAMATION CONDITIONS AREA "A"
100-YEAR, 3-HOUR STORM
BY:JTS DATE: 06-22-15

Drainage Area = 209.55(Ac.) = 0.327 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 209.55(Ac.) =
0.327 Sq. Mi.
Length along longest watercourse = 4952.99(Ft.)
Length along longest watercourse measured to centroid = 2074.21(Ft.)
Length along longest watercourse = 0.938 Mi.
Length along longest watercourse measured to centroid = 0.393 Mi.
Difference in elevation = 310.84(Ft.)
Slope along watercourse = 331.3625 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.191 Hr.
Lag time = 11.45 Min.
25% of lag time = 2.86 Min.
40% of lag time = 4.58 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]
209.55	1.05	220.03

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
209.55	2.51	525.97

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.050(In)
Area Averaged 100-Year Rainfall = 2.510(In)

Point rain (area averaged) = 2.510(In)
 Areal adjustment factor = 99.91 %
 Adjusted average point rain = 2.508(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
23.340	67.00	0.000
17.190	78.00	0.000
169.020	89.00	0.000
Total Area Entered = 209.55(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	83.2	0.208	0.000	0.208	0.111	0.023
78.0	89.8	0.132	0.000	0.132	0.082	0.011
89.0	95.6	0.057	0.000	0.057	0.807	0.046
Sum (F) =						0.080

Area averaged mean soil loss (F) (In/Hr) = 0.080
 Minimum soil loss rate ((In/Hr)) = 0.040
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

Unit Hydrograph
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	43.666	4.976
2	0.167	87.332	20.835
3	0.250	130.999	28.282
4	0.333	174.665	15.645
5	0.417	218.331	7.636
6	0.500	261.997	5.113
7	0.583	305.663	3.814
8	0.667	349.329	2.849
9	0.750	392.996	2.281
10	0.833	436.662	1.737
11	0.917	480.328	1.383
12	1.000	523.994	1.261
13	1.083	567.660	0.982
14	1.167	611.327	0.811
15	1.250	654.993	0.658
16	1.333	698.659	0.505
17	1.417	742.325	0.437
18	1.500	785.991	0.437
19	1.583	829.657	0.358
Sum =		100.000	Sum= 211.187

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) Max Low	Effective (In/Hr)
1	0.08	1.30	0.391	0.080 (0.352)	0.311
2	0.17	1.30	0.391	0.080 (0.352)	0.311

154149RECHYDA3100.out

3	0.25	1.10	0.331	0.080	(0.298)	0.251
4	0.33	1.50	0.451	0.080	(0.406)	0.371
5	0.42	1.50	0.451	0.080	(0.406)	0.371
6	0.50	1.80	0.542	0.080	(0.487)	0.462
7	0.58	1.50	0.451	0.080	(0.406)	0.371
8	0.67	1.80	0.542	0.080	(0.487)	0.462
9	0.75	1.80	0.542	0.080	(0.487)	0.462
10	0.83	1.50	0.451	0.080	(0.406)	0.371
11	0.92	1.60	0.481	0.080	(0.433)	0.401
12	1.00	1.80	0.542	0.080	(0.487)	0.462
13	1.08	2.20	0.662	0.080	(0.596)	0.582
14	1.17	2.20	0.662	0.080	(0.596)	0.582
15	1.25	2.20	0.662	0.080	(0.596)	0.582
16	1.33	2.00	0.602	0.080	(0.542)	0.522
17	1.42	2.60	0.782	0.080	(0.704)	0.702
18	1.50	2.70	0.812	0.080	(0.731)	0.732
19	1.58	2.40	0.722	0.080	(0.650)	0.642
20	1.67	2.70	0.812	0.080	(0.731)	0.732
21	1.75	3.30	0.993	0.080	(0.894)	0.913
22	1.83	3.10	0.933	0.080	(0.840)	0.853
23	1.92	2.90	0.873	0.080	(0.785)	0.793
24	2.00	3.00	0.903	0.080	(0.812)	0.823
25	2.08	3.10	0.933	0.080	(0.840)	0.853
26	2.17	4.20	1.264	0.080	(1.137)	1.184
27	2.25	5.00	1.505	0.080	(1.354)	1.425
28	2.33	3.50	1.053	0.080	(0.948)	0.973
29	2.42	6.80	2.046	0.080	(1.842)	1.966
30	2.50	7.30	2.197	0.080	(1.977)	2.117
31	2.58	8.20	2.468	0.080	(2.221)	2.387
32	2.67	5.90	1.775	0.080	(1.598)	1.695
33	2.75	2.00	0.602	0.080	(0.542)	0.522
34	2.83	1.80	0.542	0.080	(0.487)	0.462
35	2.92	1.80	0.542	0.080	(0.487)	0.462
36	3.00	0.60	0.181	0.080	(0.162)	0.100

(Loss Rate Not Used)

Sum = 100.0 Sum = 27.2

Flood volume = Effective rainfall 2.27(In)
times area 209.6(Ac.)/[(In)/(Ft.)] = 39.6(Ac.Ft)

Total soil loss = 0.24(In)

Total soil loss = 4.196(Ac.Ft)

Total rainfall = 2.51(In)

Flood volume = 1724730.0 Cubic Feet

Total soil loss = 182792.5 Cubic Feet

Peak flow rate of this hydrograph = 377.823(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	100.0	200.0	300.0	400.0
0+ 5	0.0225	3.27	Q				
0+10	0.1394	16.97	VQ				
0+15	0.3799	34.92	V Q				
0+20	0.6817	43.82	V Q				
0+25	1.0299	50.55	V Q				
0+30	1.4435	60.06	V Q				
0+35	1.9159	68.60	V Q				
0+40	2.4265	74.14	V Q				

154149RECHYDA3100.out

0+45	2.9638	78.01	V	Q					
0+50	3.5332	82.68	V	Q					
0+55	4.1040	82.87	V	Q					
1+ 0	4.6675	81.83	V	Q					
1+ 5	5.2616	86.26	V	Q					
1+10	5.9230	96.04	V	Q					
1+15	6.6517	105.80	V	Q					
1+20	7.4131	110.56	V	Q					
1+25	8.1901	112.82	V	Q					
1+30	9.0139	119.62	V	Q					
1+35	9.9124	130.46	V	Q					
1+40	10.8443	135.30	V	Q					
1+45	11.8076	139.88	V	Q					
1+50	12.8563	152.27	V	Q					
1+55	13.9805	163.24	V	Q					
2+ 0	15.1186	165.24	V	Q					
2+ 5	16.2590	165.60	V	Q					
2+10	17.4458	172.32	V	Q					
2+15	18.7737	192.81	V	Q					
2+20	20.2927	220.56	V	Q					
2+25	21.9312	237.91	V	Q					
2+30	23.7947	270.58	V	Q					
2+35	26.0863	332.75	V	Q					
2+40	28.6884	377.82	V	Q					
2+45	31.2485	371.72	V	Q					
2+50	33.3144	299.97	V	Q					
2+55	34.8181	218.34	V	Q					
3+ 0	35.9954	170.94	V	Q					
3+ 5	36.9151	133.54	V	Q					
3+10	37.5661	94.53	V	Q					
3+15	38.0278	67.04	V	Q					
3+20	38.3789	50.98	V	Q					
3+25	38.6549	40.07	V	Q					
3+30	38.8765	32.18	V	Q					
3+35	39.0554	25.97	V	Q					
3+40	39.1978	20.68	V	Q					
3+45	39.3101	16.31	V	Q					
3+50	39.3982	12.79	V	Q					
3+55	39.4684	10.20	V	Q					
4+ 0	39.5205	7.57	V	Q					
4+ 5	39.5560	5.16	V	Q					
4+10	39.5755	2.82	V	Q					
4+15	39.5848	1.35	V	Q					
4+20	39.5908	0.87	V	Q					
4+25	39.5938	0.44	V	Q					
4+30	39.5944	0.08	V	Q					

154149RECHYDA6100.out

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 06/22/15 File: 154149rechyda6100.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR
RECLAMATION CONDITIONS AREA "A"

100-YEAR, 6-HOUR STORM
BY:JTS DATE: 06-22-15

Drainage Area = 209.55(Ac.) = 0.327 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 209.55(Ac.) =
0.327 Sq. Mi.
Length along longest watercourse = 4952.99(Ft.)
Length along longest watercourse measured to centroid = 2074.21(Ft.)
Length along longest watercourse = 0.938 Mi.
Length along longest watercourse measured to centroid = 0.393 Mi.
Difference in elevation = 310.84(Ft.)
Slope along watercourse = 331.3625 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.191 Hr.
Lag time = 11.45 Min.
25% of lag time = 2.86 Min.
40% of lag time = 4.58 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]
209.55	1.45	303.85

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
209.55	3.51	735.52

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.450(In)
Area Averaged 100-Year Rainfall = 3.510(In)

Point rain (area averaged) = 3.510(In)
 Areal adjustment factor = 99.93 %
 Adjusted average point rain = 3.507(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
23.340	67.00	0.000
17.190	78.00	0.000
169.020	89.00	0.000
Total Area Entered = 209.55(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	83.2	0.208	0.000	0.208	0.111	0.023
78.0	89.8	0.132	0.000	0.132	0.082	0.011
89.0	95.6	0.057	0.000	0.057	0.807	0.046
Sum (F) =						0.080

Area averaged mean soil loss (F) (In/Hr) = 0.080
 Minimum soil loss rate ((In/Hr)) = 0.040
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

Unit Hydrograph
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	43.666	4.976
2	0.167	87.332	20.835
3	0.250	130.999	28.282
4	0.333	174.665	15.645
5	0.417	218.331	7.636
6	0.500	261.997	5.113
7	0.583	305.663	3.814
8	0.667	349.329	2.849
9	0.750	392.996	2.281
10	0.833	436.662	1.737
11	0.917	480.328	1.383
12	1.000	523.994	1.261
13	1.083	567.660	0.982
14	1.167	611.327	0.811
15	1.250	654.993	0.658
16	1.333	698.659	0.505
17	1.417	742.325	0.437
18	1.500	785.991	0.437
19	1.583	829.657	0.358
Sum =		100.000	Sum= 211.187

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) Max Low	Effective (In/Hr)
1	0.08	0.210	0.080 (0.189)	0.130
2	0.17	0.253	0.080 (0.227)	0.172

154149RECHYDA6100.out

3	0.25	0.60	0.253	0.080	(0.227)	0.172
4	0.33	0.60	0.253	0.080	(0.227)	0.172
5	0.42	0.60	0.253	0.080	(0.227)	0.172
6	0.50	0.70	0.295	0.080	(0.265)	0.215
7	0.58	0.70	0.295	0.080	(0.265)	0.215
8	0.67	0.70	0.295	0.080	(0.265)	0.215
9	0.75	0.70	0.295	0.080	(0.265)	0.215
10	0.83	0.70	0.295	0.080	(0.265)	0.215
11	0.92	0.70	0.295	0.080	(0.265)	0.215
12	1.00	0.80	0.337	0.080	(0.303)	0.257
13	1.08	0.80	0.337	0.080	(0.303)	0.257
14	1.17	0.80	0.337	0.080	(0.303)	0.257
15	1.25	0.80	0.337	0.080	(0.303)	0.257
16	1.33	0.80	0.337	0.080	(0.303)	0.257
17	1.42	0.80	0.337	0.080	(0.303)	0.257
18	1.50	0.80	0.337	0.080	(0.303)	0.257
19	1.58	0.80	0.337	0.080	(0.303)	0.257
20	1.67	0.80	0.337	0.080	(0.303)	0.257
21	1.75	0.80	0.337	0.080	(0.303)	0.257
22	1.83	0.80	0.337	0.080	(0.303)	0.257
23	1.92	0.80	0.337	0.080	(0.303)	0.257
24	2.00	0.90	0.379	0.080	(0.341)	0.299
25	2.08	0.80	0.337	0.080	(0.303)	0.257
26	2.17	0.90	0.379	0.080	(0.341)	0.299
27	2.25	0.90	0.379	0.080	(0.341)	0.299
28	2.33	0.90	0.379	0.080	(0.341)	0.299
29	2.42	0.90	0.379	0.080	(0.341)	0.299
30	2.50	0.90	0.379	0.080	(0.341)	0.299
31	2.58	0.90	0.379	0.080	(0.341)	0.299
32	2.67	0.90	0.379	0.080	(0.341)	0.299
33	2.75	1.00	0.421	0.080	(0.379)	0.341
34	2.83	1.00	0.421	0.080	(0.379)	0.341
35	2.92	1.00	0.421	0.080	(0.379)	0.341
36	3.00	1.00	0.421	0.080	(0.379)	0.341
37	3.08	1.00	0.421	0.080	(0.379)	0.341
38	3.17	1.10	0.463	0.080	(0.417)	0.383
39	3.25	1.10	0.463	0.080	(0.417)	0.383
40	3.33	1.10	0.463	0.080	(0.417)	0.383
41	3.42	1.20	0.505	0.080	(0.455)	0.425
42	3.50	1.30	0.547	0.080	(0.492)	0.467
43	3.58	1.40	0.589	0.080	(0.530)	0.509
44	3.67	1.40	0.589	0.080	(0.530)	0.509
45	3.75	1.50	0.631	0.080	(0.568)	0.551
46	3.83	1.50	0.631	0.080	(0.568)	0.551
47	3.92	1.60	0.673	0.080	(0.606)	0.593
48	4.00	1.60	0.673	0.080	(0.606)	0.593
49	4.08	1.70	0.716	0.080	(0.644)	0.635
50	4.17	1.80	0.758	0.080	(0.682)	0.678
51	4.25	1.90	0.800	0.080	(0.720)	0.720
52	4.33	2.00	0.842	0.080	(0.758)	0.762
53	4.42	2.10	0.884	0.080	(0.795)	0.804
54	4.50	2.10	0.884	0.080	(0.795)	0.804
55	4.58	2.20	0.926	0.080	(0.833)	0.846
56	4.67	2.30	0.968	0.080	(0.871)	0.888
57	4.75	2.40	1.010	0.080	(0.909)	0.930
58	4.83	2.40	1.010	0.080	(0.909)	0.930
59	4.92	2.50	1.052	0.080	(0.947)	0.972
60	5.00	2.60	1.094	0.080	(0.985)	1.014
61	5.08	3.10	1.305	0.080	(1.174)	1.225
62	5.17	3.60	1.515	0.080	(1.364)	1.435
63	5.25	3.90	1.641	0.080	(1.477)	1.561
64	5.33	4.20	1.768	0.080	(1.591)	1.688
65	5.42	4.70	1.978	0.080	(1.780)	1.898

154149RECHYDA6100.out

66	5.50	5.60	2.357	0.080	(2.121)	2.277
67	5.58	1.90	0.800	0.080	(0.720)	0.720
68	5.67	0.90	0.379	0.080	(0.341)	0.299
69	5.75	0.60	0.253	0.080	(0.227)	0.172
70	5.83	0.50	0.210	0.080	(0.189)	0.130
71	5.92	0.30	0.126	0.080	(0.114)	0.046
72	6.00	0.20	0.084	(0.080)	0.076	0.008

(Loss Rate Not Used)

Sum = 100.0

Sum = 36.3

Flood volume = Effective rainfall 3.03(In)
times area 209.6(Ac.)/[(In)/(Ft.)] = 52.9(Ac.Ft)
Total soil loss = 0.48(In)
Total soil loss = 8.386(Ac.Ft)
Total rainfall = 3.51(In)
Flood volume = 2302706.3 Cubic Feet
Total soil loss = 365309.9 Cubic Feet

Peak flow rate of this hydrograph = 353.709(CFS)

+++++

6 - 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	100.0	200.0	300.0	400.0
0+ 5	0.0094	1.37	Q					
0+10	0.0614	7.55	Q					
0+15	0.1799	17.19	VQ					
0+20	0.3453	24.02	V Q					
0+25	0.5347	27.51	V Q					
0+30	0.7416	30.04	V Q					
0+35	0.9717	33.40	V Q					
0+40	1.2268	37.04	V Q					
0+45	1.4975	39.31	V Q					
0+50	1.7776	40.67	V Q					
0+55	2.0646	41.66	V Q					
1+ 0	2.3601	42.91	V Q					
1+ 5	2.6728	45.40	V Q					
1+10	3.0064	48.43	V Q					
1+15	3.3523	50.23	V Q					
1+20	3.7051	51.23	V Q					
1+25	4.0630	51.96	V Q					
1+30	4.4249	52.55	V Q					
1+35	4.7900	53.01	V Q					
1+40	5.1571	53.31	V Q					
1+45	5.5256	53.50	VQ					
1+50	5.8952	53.67	VQ					
1+55	6.2659	53.82	VQ					
2+ 0	6.6404	54.38	Q					
2+ 5	7.0251	55.86	Q					
2+10	7.4178	57.03	Q					
2+15	7.8159	57.80	Q					
2+20	8.2267	59.64	QV					
2+25	8.6457	60.85	Q					
2+30	9.0689	61.44	Q					
2+35	9.4946	61.81	QV					
2+40	9.9223	62.10	QV					
2+45	10.3544	62.75	QV					
2+50	10.8005	64.77	Q V					
2+55	11.2649	67.43	Q V					

3+ 0	11.7395	68.92	Q	V				
3+ 5	12.2195	69.70	Q	V				
3+10	12.7062	70.67	Q	V				
3+15	13.2084	72.92	Q	V				
3+20	13.7300	75.74	Q	V				
3+25	14.2660	77.82	Q	V				
3+30	14.8237	80.98	Q	V				
3+35	15.4186	86.38	Q	V				
3+40	16.0565	92.62	Q	V				
3+45	16.7313	97.99	Q	V				
3+50	17.4382	102.64	Q	V				
3+55	18.1771	107.29	Q	V				
4+ 0	18.9467	111.74	Q	V				
4+ 5	19.7478	116.33	Q	V				
4+10	20.5826	121.21	Q	V				
4+15	21.4615	127.62	Q	V				
4+20	22.3911	134.98	Q	V				
4+25	23.3744	142.77	Q	V				
4+30	24.4101	150.38	Q	V				
4+35	25.4898	156.79	Q	V				
4+40	26.6102	162.67	Q	V				
4+45	27.7794	169.77	Q	V				
4+50	29.0000	177.24	Q	V				
4+55	30.2644	183.59	Q	V				
5+ 0	31.5691	189.45	Q	V				
5+ 5	32.9349	198.31	Q	V				
5+10	34.4182	215.37	Q	V				
5+15	36.0844	241.93	Q	V				
5+20	37.9474	270.51	Q	V				
5+25	39.9983	297.79	Q	V				
5+30	42.2687	329.66	Q	V				
5+35	44.7047	353.71	Q	V				
5+40	46.8911	317.47	Q	V				
5+45	48.4457	225.73	Q	V				
5+50	49.5169	155.53	Q	V				
5+55	50.3097	115.12	Q	V				
6+ 0	50.9128	87.57	Q	V				
6+ 5	51.3648	65.63	Q	V				
6+10	51.7069	49.68	Q	V				
6+15	51.9716	38.43	Q	V				
6+20	52.1819	30.53	Q	V				
6+25	52.3519	24.68	Q	V				
6+30	52.4869	19.61	Q	V				
6+35	52.5942	15.58	Q	V				
6+40	52.6781	12.18	Q	V				
6+45	52.7422	9.30	Q	V				
6+50	52.7906	7.03	Q	V				
6+55	52.8257	5.10	Q	V				
7+ 0	52.8473	3.13	Q	V				
7+ 5	52.8555	1.20	Q	V				
7+10	52.8594	0.57	Q	V				
7+15	52.8615	0.30	Q	V				
7+20	52.8625	0.15	Q	V				
7+25	52.8628	0.04	Q	V				
7+30	52.8629	0.01	Q	V				

154149RECHYDA24100.out

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 06/22/15 File: 154149rechyda24100.out

+++++

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

Program License Serial Number 6320

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

English Units used in output format

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR
RECLAMATION CONDITIONS AREA "A"
100-YEAR, 24-HOUR STORM
BY:JTS DATE: 06-22-15

Drainage Area = 209.55(Ac.) = 0.327 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 209.55(Ac.) =
0.327 Sq. Mi.
Length along longest watercourse = 4952.99(Ft.)
Length along longest watercourse measured to centroid = 2074.21(Ft.)
Length along longest watercourse = 0.938 Mi.
Length along longest watercourse measured to centroid = 0.393 Mi.
Difference in elevation = 310.84(Ft.)
Slope along watercourse = 331.3625 Ft./Mi.
Average Manning's 'N' = 0.035
Lag time = 0.191 Hr.
Lag time = 11.45 Min.
25% of lag time = 2.86 Min.
40% of lag time = 4.58 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]
209.55	2.70	565.79

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
209.55	6.65	1393.51

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 2.700(In)
Area Averaged 100-Year Rainfall = 6.650(In)

Point rain (area averaged) = 6.650(In)
 Areal adjustment factor = 99.96 %
 Adjusted average point rain = 6.647(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
23.340	67.00	0.000
17.190	78.00	0.000
169.020	89.00	0.000
Total Area Entered = 209.55(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	83.2	0.208	0.000	0.208	0.111	0.023
78.0	89.8	0.132	0.000	0.132	0.082	0.011
89.0	95.6	0.057	0.000	0.057	0.807	0.046
Sum (F) =						0.080

Area averaged mean soil loss (F) (In/Hr) = 0.080
 Minimum soil loss rate ((In/Hr)) = 0.040
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

Unit Hydrograph
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	43.666	4.976
2	0.167	87.332	20.835
3	0.250	130.999	28.282
4	0.333	174.665	15.645
5	0.417	218.331	7.636
6	0.500	261.997	5.113
7	0.583	305.663	3.814
8	0.667	349.329	2.849
9	0.750	392.996	2.281
10	0.833	436.662	1.737
11	0.917	480.328	1.383
12	1.000	523.994	1.261
13	1.083	567.660	0.982
14	1.167	611.327	0.811
15	1.250	654.993	0.658
16	1.333	698.659	0.505
17	1.417	742.325	0.437
18	1.500	785.991	0.437
19	1.583	829.657	0.358
Sum =		100.000	Sum= 211.187

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) Max Low	Effective (In/Hr)
1	0.08	0.07	0.053	(0.142)	0.048
2	0.17	0.07	0.053	(0.141)	0.048

154149RECHYDA24100.out

3	0.25	0.07	0.053	(0.141)	0.048	0.005
4	0.33	0.10	0.080	(0.140)	0.072	0.008
5	0.42	0.10	0.080	(0.140)	0.072	0.008
6	0.50	0.10	0.080	(0.139)	0.072	0.008
7	0.58	0.10	0.080	(0.139)	0.072	0.008
8	0.67	0.10	0.080	(0.138)	0.072	0.008
9	0.75	0.10	0.080	(0.138)	0.072	0.008
10	0.83	0.13	0.106	(0.137)	0.096	0.011
11	0.92	0.13	0.106	(0.137)	0.096	0.011
12	1.00	0.13	0.106	(0.136)	0.096	0.011
13	1.08	0.10	0.080	(0.135)	0.072	0.008
14	1.17	0.10	0.080	(0.135)	0.072	0.008
15	1.25	0.10	0.080	(0.134)	0.072	0.008
16	1.33	0.10	0.080	(0.134)	0.072	0.008
17	1.42	0.10	0.080	(0.133)	0.072	0.008
18	1.50	0.10	0.080	(0.133)	0.072	0.008
19	1.58	0.10	0.080	(0.132)	0.072	0.008
20	1.67	0.10	0.080	(0.132)	0.072	0.008
21	1.75	0.10	0.080	(0.131)	0.072	0.008
22	1.83	0.13	0.106	(0.131)	0.096	0.011
23	1.92	0.13	0.106	(0.130)	0.096	0.011
24	2.00	0.13	0.106	(0.130)	0.096	0.011
25	2.08	0.13	0.106	(0.129)	0.096	0.011
26	2.17	0.13	0.106	(0.129)	0.096	0.011
27	2.25	0.13	0.106	(0.128)	0.096	0.011
28	2.33	0.13	0.106	(0.128)	0.096	0.011
29	2.42	0.13	0.106	(0.127)	0.096	0.011
30	2.50	0.13	0.106	(0.127)	0.096	0.011
31	2.58	0.17	0.133	(0.126)	0.120	0.013
32	2.67	0.17	0.133	(0.125)	0.120	0.013
33	2.75	0.17	0.133	(0.125)	0.120	0.013
34	2.83	0.17	0.133	(0.124)	0.120	0.013
35	2.92	0.17	0.133	(0.124)	0.120	0.013
36	3.00	0.17	0.133	(0.123)	0.120	0.013
37	3.08	0.17	0.133	(0.123)	0.120	0.013
38	3.17	0.17	0.133	(0.122)	0.120	0.013
39	3.25	0.17	0.133	(0.122)	0.120	0.013
40	3.33	0.17	0.133	(0.121)	0.120	0.013
41	3.42	0.17	0.133	(0.121)	0.120	0.013
42	3.50	0.17	0.133	(0.120)	0.120	0.013
43	3.58	0.17	0.133	(0.120)	0.120	0.013
44	3.67	0.17	0.133	0.119 (0.120)		0.014
45	3.75	0.17	0.133	0.119 (0.120)		0.014
46	3.83	0.20	0.160	0.118 (0.144)		0.041
47	3.92	0.20	0.160	0.118 (0.144)		0.042
48	4.00	0.20	0.160	0.117 (0.144)		0.042
49	4.08	0.20	0.160	0.117 (0.144)		0.043
50	4.17	0.20	0.160	0.116 (0.144)		0.043
51	4.25	0.20	0.160	0.116 (0.144)		0.044
52	4.33	0.23	0.186	0.115 (0.168)		0.071
53	4.42	0.23	0.186	0.115 (0.168)		0.071
54	4.50	0.23	0.186	0.114 (0.168)		0.072
55	4.58	0.23	0.186	0.114 (0.168)		0.072
56	4.67	0.23	0.186	0.113 (0.168)		0.073
57	4.75	0.23	0.186	0.113 (0.168)		0.073
58	4.83	0.27	0.213	0.112 (0.191)		0.100
59	4.92	0.27	0.213	0.112 (0.191)		0.101
60	5.00	0.27	0.213	0.111 (0.191)		0.101
61	5.08	0.20	0.160	0.111 (0.144)		0.049
62	5.17	0.20	0.160	0.110 (0.144)		0.049
63	5.25	0.20	0.160	0.110 (0.144)		0.050
64	5.33	0.23	0.186	0.110 (0.168)		0.077
65	5.42	0.23	0.186	0.109 (0.168)		0.077

154149RECHYDA24100.out

66	5.50	0.23	0.186	0.109	(0.168)	0.078
67	5.58	0.27	0.213	0.108	(0.191)	0.105
68	5.67	0.27	0.213	0.108	(0.191)	0.105
69	5.75	0.27	0.213	0.107	(0.191)	0.106
70	5.83	0.27	0.213	0.107	(0.191)	0.106
71	5.92	0.27	0.213	0.106	(0.191)	0.107
72	6.00	0.27	0.213	0.106	(0.191)	0.107
73	6.08	0.30	0.239	0.105	(0.215)	0.134
74	6.17	0.30	0.239	0.105	(0.215)	0.135
75	6.25	0.30	0.239	0.104	(0.215)	0.135
76	6.33	0.30	0.239	0.104	(0.215)	0.135
77	6.42	0.30	0.239	0.103	(0.215)	0.136
78	6.50	0.30	0.239	0.103	(0.215)	0.136
79	6.58	0.33	0.266	0.102	(0.239)	0.163
80	6.67	0.33	0.266	0.102	(0.239)	0.164
81	6.75	0.33	0.266	0.102	(0.239)	0.164
82	6.83	0.33	0.266	0.101	(0.239)	0.165
83	6.92	0.33	0.266	0.101	(0.239)	0.165
84	7.00	0.33	0.266	0.100	(0.239)	0.166
85	7.08	0.33	0.266	0.100	(0.239)	0.166
86	7.17	0.33	0.266	0.099	(0.239)	0.167
87	7.25	0.33	0.266	0.099	(0.239)	0.167
88	7.33	0.37	0.292	0.098	(0.263)	0.194
89	7.42	0.37	0.292	0.098	(0.263)	0.195
90	7.50	0.37	0.292	0.097	(0.263)	0.195
91	7.58	0.40	0.319	0.097	(0.287)	0.222
92	7.67	0.40	0.319	0.097	(0.287)	0.222
93	7.75	0.40	0.319	0.096	(0.287)	0.223
94	7.83	0.43	0.346	0.096	(0.311)	0.250
95	7.92	0.43	0.346	0.095	(0.311)	0.250
96	8.00	0.43	0.346	0.095	(0.311)	0.251
97	8.08	0.50	0.399	0.094	(0.359)	0.304
98	8.17	0.50	0.399	0.094	(0.359)	0.305
99	8.25	0.50	0.399	0.093	(0.359)	0.305
100	8.33	0.50	0.399	0.093	(0.359)	0.306
101	8.42	0.50	0.399	0.093	(0.359)	0.306
102	8.50	0.50	0.399	0.092	(0.359)	0.307
103	8.58	0.53	0.425	0.092	(0.383)	0.334
104	8.67	0.53	0.425	0.091	(0.383)	0.334
105	8.75	0.53	0.425	0.091	(0.383)	0.335
106	8.83	0.57	0.452	0.090	(0.407)	0.362
107	8.92	0.57	0.452	0.090	(0.407)	0.362
108	9.00	0.57	0.452	0.090	(0.407)	0.362
109	9.08	0.63	0.505	0.089	(0.455)	0.416
110	9.17	0.63	0.505	0.089	(0.455)	0.416
111	9.25	0.63	0.505	0.088	(0.455)	0.417
112	9.33	0.67	0.532	0.088	(0.479)	0.444
113	9.42	0.67	0.532	0.087	(0.479)	0.444
114	9.50	0.67	0.532	0.087	(0.479)	0.445
115	9.58	0.70	0.558	0.087	(0.503)	0.472
116	9.67	0.70	0.558	0.086	(0.503)	0.472
117	9.75	0.70	0.558	0.086	(0.503)	0.473
118	9.83	0.73	0.585	0.085	(0.526)	0.500
119	9.92	0.73	0.585	0.085	(0.526)	0.500
120	10.00	0.73	0.585	0.085	(0.526)	0.500
121	10.08	0.50	0.399	0.084	(0.359)	0.315
122	10.17	0.50	0.399	0.084	(0.359)	0.315
123	10.25	0.50	0.399	0.083	(0.359)	0.315
124	10.33	0.50	0.399	0.083	(0.359)	0.316
125	10.42	0.50	0.399	0.083	(0.359)	0.316
126	10.50	0.50	0.399	0.082	(0.359)	0.317
127	10.58	0.67	0.532	0.082	(0.479)	0.450
128	10.67	0.67	0.532	0.081	(0.479)	0.450

154149RECHYDA24100.out

129	10.75	0.67	0.532	0.081	(0.479)	0.451
130	10.83	0.67	0.532	0.081	(0.479)	0.451
131	10.92	0.67	0.532	0.080	(0.479)	0.452
132	11.00	0.67	0.532	0.080	(0.479)	0.452
133	11.08	0.63	0.505	0.079	(0.455)	0.426
134	11.17	0.63	0.505	0.079	(0.455)	0.426
135	11.25	0.63	0.505	0.079	(0.455)	0.427
136	11.33	0.63	0.505	0.078	(0.455)	0.427
137	11.42	0.63	0.505	0.078	(0.455)	0.427
138	11.50	0.63	0.505	0.077	(0.455)	0.428
139	11.58	0.57	0.452	0.077	(0.407)	0.375
140	11.67	0.57	0.452	0.077	(0.407)	0.375
141	11.75	0.57	0.452	0.076	(0.407)	0.376
142	11.83	0.60	0.479	0.076	(0.431)	0.403
143	11.92	0.60	0.479	0.076	(0.431)	0.403
144	12.00	0.60	0.479	0.075	(0.431)	0.403
145	12.08	0.83	0.665	0.075	(0.598)	0.590
146	12.17	0.83	0.665	0.074	(0.598)	0.590
147	12.25	0.83	0.665	0.074	(0.598)	0.591
148	12.33	0.87	0.691	0.074	(0.622)	0.618
149	12.42	0.87	0.691	0.073	(0.622)	0.618
150	12.50	0.87	0.691	0.073	(0.622)	0.618
151	12.58	0.93	0.744	0.073	(0.670)	0.672
152	12.67	0.93	0.744	0.072	(0.670)	0.672
153	12.75	0.93	0.744	0.072	(0.670)	0.673
154	12.83	0.97	0.771	0.071	(0.694)	0.700
155	12.92	0.97	0.771	0.071	(0.694)	0.700
156	13.00	0.97	0.771	0.071	(0.694)	0.700
157	13.08	1.13	0.904	0.070	(0.814)	0.834
158	13.17	1.13	0.904	0.070	(0.814)	0.834
159	13.25	1.13	0.904	0.070	(0.814)	0.834
160	13.33	1.13	0.904	0.069	(0.814)	0.835
161	13.42	1.13	0.904	0.069	(0.814)	0.835
162	13.50	1.13	0.904	0.069	(0.814)	0.835
163	13.58	0.77	0.612	0.068	(0.550)	0.543
164	13.67	0.77	0.612	0.068	(0.550)	0.544
165	13.75	0.77	0.612	0.068	(0.550)	0.544
166	13.83	0.77	0.612	0.067	(0.550)	0.544
167	13.92	0.77	0.612	0.067	(0.550)	0.545
168	14.00	0.77	0.612	0.067	(0.550)	0.545
169	14.08	0.90	0.718	0.066	(0.646)	0.652
170	14.17	0.90	0.718	0.066	(0.646)	0.652
171	14.25	0.90	0.718	0.066	(0.646)	0.652
172	14.33	0.87	0.691	0.065	(0.622)	0.626
173	14.42	0.87	0.691	0.065	(0.622)	0.626
174	14.50	0.87	0.691	0.065	(0.622)	0.627
175	14.58	0.87	0.691	0.064	(0.622)	0.627
176	14.67	0.87	0.691	0.064	(0.622)	0.627
177	14.75	0.87	0.691	0.064	(0.622)	0.628
178	14.83	0.83	0.665	0.063	(0.598)	0.602
179	14.92	0.83	0.665	0.063	(0.598)	0.602
180	15.00	0.83	0.665	0.063	(0.598)	0.602
181	15.08	0.80	0.638	0.062	(0.574)	0.576
182	15.17	0.80	0.638	0.062	(0.574)	0.576
183	15.25	0.80	0.638	0.062	(0.574)	0.577
184	15.33	0.77	0.612	0.061	(0.550)	0.550
185	15.42	0.77	0.612	0.061	(0.550)	0.551
186	15.50	0.77	0.612	0.061	(0.550)	0.551
187	15.58	0.63	0.505	0.060	(0.455)	0.445
188	15.67	0.63	0.505	0.060	(0.455)	0.445
189	15.75	0.63	0.505	0.060	(0.455)	0.445
190	15.83	0.63	0.505	0.059	(0.455)	0.446
191	15.92	0.63	0.505	0.059	(0.455)	0.446

154149RECHYDA24100.out

192	16.00	0.63	0.505	0.059	(0.455)	0.446
193	16.08	0.13	0.106	0.059	(0.096)	0.048
194	16.17	0.13	0.106	0.058	(0.096)	0.048
195	16.25	0.13	0.106	0.058	(0.096)	0.048
196	16.33	0.13	0.106	0.058	(0.096)	0.049
197	16.42	0.13	0.106	0.057	(0.096)	0.049
198	16.50	0.13	0.106	0.057	(0.096)	0.049
199	16.58	0.10	0.080	0.057	(0.072)	0.023
200	16.67	0.10	0.080	0.056	(0.072)	0.023
201	16.75	0.10	0.080	0.056	(0.072)	0.024
202	16.83	0.10	0.080	0.056	(0.072)	0.024
203	16.92	0.10	0.080	0.056	(0.072)	0.024
204	17.00	0.10	0.080	0.055	(0.072)	0.024
205	17.08	0.17	0.133	0.055	(0.120)	0.078
206	17.17	0.17	0.133	0.055	(0.120)	0.078
207	17.25	0.17	0.133	0.054	(0.120)	0.078
208	17.33	0.17	0.133	0.054	(0.120)	0.079
209	17.42	0.17	0.133	0.054	(0.120)	0.079
210	17.50	0.17	0.133	0.054	(0.120)	0.079
211	17.58	0.17	0.133	0.053	(0.120)	0.080
212	17.67	0.17	0.133	0.053	(0.120)	0.080
213	17.75	0.17	0.133	0.053	(0.120)	0.080
214	17.83	0.13	0.106	0.053	(0.096)	0.054
215	17.92	0.13	0.106	0.052	(0.096)	0.054
216	18.00	0.13	0.106	0.052	(0.096)	0.054
217	18.08	0.13	0.106	0.052	(0.096)	0.055
218	18.17	0.13	0.106	0.052	(0.096)	0.055
219	18.25	0.13	0.106	0.051	(0.096)	0.055
220	18.33	0.13	0.106	0.051	(0.096)	0.055
221	18.42	0.13	0.106	0.051	(0.096)	0.056
222	18.50	0.13	0.106	0.051	(0.096)	0.056
223	18.58	0.10	0.080	0.050	(0.072)	0.029
224	18.67	0.10	0.080	0.050	(0.072)	0.030
225	18.75	0.10	0.080	0.050	(0.072)	0.030
226	18.83	0.07	0.053	(0.050)	0.048	0.005
227	18.92	0.07	0.053	(0.049)	0.048	0.005
228	19.00	0.07	0.053	(0.049)	0.048	0.005
229	19.08	0.10	0.080	0.049	(0.072)	0.031
230	19.17	0.10	0.080	0.049	(0.072)	0.031
231	19.25	0.10	0.080	0.048	(0.072)	0.031
232	19.33	0.13	0.106	0.048	(0.096)	0.058
233	19.42	0.13	0.106	0.048	(0.096)	0.058
234	19.50	0.13	0.106	0.048	(0.096)	0.059
235	19.58	0.10	0.080	0.048	(0.072)	0.032
236	19.67	0.10	0.080	0.047	(0.072)	0.032
237	19.75	0.10	0.080	0.047	(0.072)	0.033
238	19.83	0.07	0.053	0.047	(0.048)	0.006
239	19.92	0.07	0.053	0.047	(0.048)	0.006
240	20.00	0.07	0.053	0.047	(0.048)	0.007
241	20.08	0.10	0.080	0.046	(0.072)	0.033
242	20.17	0.10	0.080	0.046	(0.072)	0.034
243	20.25	0.10	0.080	0.046	(0.072)	0.034
244	20.33	0.10	0.080	0.046	(0.072)	0.034
245	20.42	0.10	0.080	0.046	(0.072)	0.034
246	20.50	0.10	0.080	0.045	(0.072)	0.034
247	20.58	0.10	0.080	0.045	(0.072)	0.035
248	20.67	0.10	0.080	0.045	(0.072)	0.035
249	20.75	0.10	0.080	0.045	(0.072)	0.035
250	20.83	0.07	0.053	0.045	(0.048)	0.009
251	20.92	0.07	0.053	0.044	(0.048)	0.009
252	21.00	0.07	0.053	0.044	(0.048)	0.009
253	21.08	0.10	0.080	0.044	(0.072)	0.036
254	21.17	0.10	0.080	0.044	(0.072)	0.036

154149RECHYDA24100.out

255	21.25	0.10	0.080	0.044	(0.072)	0.036
256	21.33	0.07	0.053	0.044	(0.048)	0.010
257	21.42	0.07	0.053	0.043	(0.048)	0.010
258	21.50	0.07	0.053	0.043	(0.048)	0.010
259	21.58	0.10	0.080	0.043	(0.072)	0.037
260	21.67	0.10	0.080	0.043	(0.072)	0.037
261	21.75	0.10	0.080	0.043	(0.072)	0.037
262	21.83	0.07	0.053	0.043	(0.048)	0.011
263	21.92	0.07	0.053	0.042	(0.048)	0.011
264	22.00	0.07	0.053	0.042	(0.048)	0.011
265	22.08	0.10	0.080	0.042	(0.072)	0.038
266	22.17	0.10	0.080	0.042	(0.072)	0.038
267	22.25	0.10	0.080	0.042	(0.072)	0.038
268	22.33	0.07	0.053	0.042	(0.048)	0.011
269	22.42	0.07	0.053	0.042	(0.048)	0.012
270	22.50	0.07	0.053	0.042	(0.048)	0.012
271	22.58	0.07	0.053	0.041	(0.048)	0.012
272	22.67	0.07	0.053	0.041	(0.048)	0.012
273	22.75	0.07	0.053	0.041	(0.048)	0.012
274	22.83	0.07	0.053	0.041	(0.048)	0.012
275	22.92	0.07	0.053	0.041	(0.048)	0.012
276	23.00	0.07	0.053	0.041	(0.048)	0.012
277	23.08	0.07	0.053	0.041	(0.048)	0.012
278	23.17	0.07	0.053	0.041	(0.048)	0.013
279	23.25	0.07	0.053	0.041	(0.048)	0.013
280	23.33	0.07	0.053	0.040	(0.048)	0.013
281	23.42	0.07	0.053	0.040	(0.048)	0.013
282	23.50	0.07	0.053	0.040	(0.048)	0.013
283	23.58	0.07	0.053	0.040	(0.048)	0.013
284	23.67	0.07	0.053	0.040	(0.048)	0.013
285	23.75	0.07	0.053	0.040	(0.048)	0.013
286	23.83	0.07	0.053	0.040	(0.048)	0.013
287	23.92	0.07	0.053	0.040	(0.048)	0.013
288	24.00	0.07	0.053	0.040	(0.048)	0.013

(Loss Rate Not Used)

Sum = 100.0 Sum = 58.4

Flood volume = Effective rainfall 4.87(In)
times area 209.6(Ac.)/[((In)/(Ft.))] = 85.0(Ac.Ft)

Total soil loss = 1.78(In)

Total soil loss = 31.107(Ac.Ft)

Total rainfall = 6.65(In)

Flood volume = 3701333.3 Cubic Feet

Total soil loss = 1355028.7 Cubic Feet

Peak flow rate of this hydrograph = 170.153(CFS)

+++++

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	50.0	100.0	150.0	200.0
0+ 5	0.0004	0.06	Q				
0+10	0.0024	0.29	Q				
0+15	0.0066	0.61	Q				
0+20	0.0122	0.81	Q				
0+25	0.0191	1.01	Q				
0+30	0.0276	1.23	Q				
0+35	0.0370	1.36	Q				
0+40	0.0469	1.44	Q				

0+45	0.0572	1.49	Q
0+50	0.0679	1.56	Q
0+55	0.0797	1.71	Q
1+ 0	0.0927	1.89	Q
1+ 5	0.1063	1.97	Q
1+10	0.1195	1.92	Q
1+15	0.1319	1.80	Q
1+20	0.1440	1.75	Q
1+25	0.1559	1.73	Q
1+30	0.1677	1.72	Q
1+35	0.1795	1.72	Q
1+40	0.1913	1.71	Q
1+45	0.2031	1.71	Q
1+50	0.2150	1.73	Q
1+55	0.2278	1.85	Q
2+ 0	0.2416	2.00	Q
2+ 5	0.2559	2.09	Q
2+10	0.2706	2.13	Q
2+15	0.2855	2.16	Q
2+20	0.3005	2.18	Q
2+25	0.3155	2.19	Q
2+30	0.3307	2.20	Q
2+35	0.3461	2.24	Q
2+40	0.3624	2.36	Q
2+45	0.3798	2.53	Q
2+50	0.3978	2.62	Q
2+55	0.4162	2.67	Q
3+ 0	0.4348	2.70	Q
3+ 5	0.4536	2.73	Q
3+10	0.4725	2.74	Q
3+15	0.4915	2.76	Q
3+20	0.5106	2.77	Q
3+25	0.5297	2.78	Q
3+30	0.5489	2.79	Q
3+35	0.5681	2.79	Q
3+40	0.5874	2.80	Q
3+45	0.6068	2.82	Q
3+50	0.6285	3.15	Q
3+55	0.6587	4.39	Q
4+ 0	0.7004	6.06	VQ
4+ 5	0.7488	7.02	VQ
4+10	0.8007	7.54	VQ
4+15	0.8553	7.92	VQ
4+20	0.9139	8.51	VQ
4+25	0.9823	9.94	VQ
4+30	1.0633	11.75	V Q
4+35	1.1516	12.83	V Q
4+40	1.2442	13.44	V Q
4+45	1.3399	13.90	V Q
4+50	1.4401	14.55	V Q
4+55	1.5504	16.02	V Q
5+ 0	1.6736	17.88	V Q
5+ 5	1.8005	18.43	V Q
5+10	1.9157	16.72	V Q
5+15	2.0123	14.03	V Q
5+20	2.1014	12.94	V Q
5+25	2.1948	13.56	VQ
5+30	2.2971	14.84	VQ
5+35	2.4059	15.80	V Q
5+40	2.5249	17.29	V Q
5+45	2.6565	19.10	V Q
5+50	2.7954	20.18	V Q
5+55	2.9384	20.76	V Q

11+15	29.9688	90.69	V	Q			
11+20	30.5900	90.20	V	Q			
11+25	31.2104	90.07	V	Q			
11+30	31.8305	90.05	V	Q			
11+35	32.4469	89.49	V	Q			
11+40	33.0481	87.30	V	Q			
11+45	33.6284	84.26	V	Q			
11+50	34.1994	82.91	V	Q			
11+55	34.7734	83.35	V	Q			
12+ 0	35.3554	84.49	V	Q			
12+ 5	35.9547	87.03	V	Q			
12+10	36.6115	95.36	V	Q			
12+15	37.3454	106.56	V	Q			
12+20	38.1241	113.06	V	Q			
12+25	38.9319	117.30	V	Q			
12+30	39.7648	120.94	V	Q			
12+35	40.6182	123.92	V	Q			
12+40	41.4989	127.88	V	Q			
12+45	42.4102	132.31	V	Q			
12+50	43.3422	135.32	V	Q			
12+55	44.2935	138.13	V	Q			
13+ 0	45.2644	140.98	V	Q			
13+ 5	46.2578	144.24	V	Q			
13+10	47.3001	151.34	V	Q			
13+15	48.4038	160.26	V	Q			
13+20	49.5429	165.41	V	Q			
13+25	50.7011	168.16	V	Q			
13+30	51.8729	170.15	V	Q			
13+35	53.0341	168.60	V	Q			
13+40	54.1139	156.79	V	Q			
13+45	55.0795	140.20	V	Q			
13+50	55.9833	131.22	V	Q			
13+55	56.8583	127.06	V	Q			
14+ 0	57.7152	124.42	V	Q			
14+ 5	58.5664	123.60	V	Q			
14+10	59.4400	126.84	V	Q			
14+15	60.3495	132.07	V	Q			
14+20	61.2756	134.47	V	Q			
14+25	62.2009	134.35	V	Q			
14+30	63.1191	133.33	V	Q			
14+35	64.0342	132.87	V	Q			
14+40	64.9477	132.65	V	Q			
14+45	65.8605	132.54	V	Q			
14+50	66.7709	132.19	V	Q			
14+55	67.6730	130.97	V	Q			
15+ 0	68.5637	129.34	V	Q			
15+ 5	69.4463	128.15	V	Q			
15+10	70.3190	126.72	V	Q			
15+15	71.1799	124.99	V	Q			
15+20	72.0321	123.75	V	Q			
15+25	72.8731	122.11	V	Q			
15+30	73.7011	120.23	V	Q			
15+35	74.5141	118.04	V	Q			
15+40	75.2905	112.73	V	Q			
15+45	76.0200	105.93	V	Q			
15+50	76.7232	102.10	V	Q			
15+55	77.4130	100.16	V	Q			
16+ 0	78.0937	98.84	V	Q			
16+ 5	78.7389	93.68	V	Q			
16+10	79.2581	75.39	V	Q			
16+15	79.6092	50.98	V	Q			
16+20	79.8666	37.36	V	Q			
16+25	80.0774	30.61	V	Q			

16+30	80.2566	26.02	Q	V
16+35	80.4103	22.32	Q	V
16+40	80.5385	18.60	Q	V
16+45	80.6416	14.98	Q	V
16+50	80.7282	12.57	Q	V
16+55	80.8035	10.94	Q	V
17+ 0	80.8693	9.55	Q	V
17+ 5	80.9316	9.05	Q	V
17+10	81.0046	10.60	Q	V
17+15	81.0952	13.16	Q	V
17+20	81.1947	14.45	Q	V
17+25	81.2975	14.92	Q	V
17+30	81.4016	15.12	Q	V
17+35	81.5066	15.25	Q	V
17+40	81.6139	15.58	Q	V
17+45	81.7231	15.86	Q	V
17+50	81.8319	15.80	Q	V
17+55	81.9340	14.82	Q	V
18+ 0	82.0263	13.40	Q	V
18+ 5	82.1135	12.67	Q	V
18+10	82.1988	12.38	Q	V
18+15	82.2830	12.23	Q	V
18+20	82.3665	12.12	Q	V
18+25	82.4496	12.07	Q	V
18+30	82.5325	12.04	Q	V
18+35	82.6135	11.76	Q	V
18+40	82.6862	10.56	Q	V
18+45	82.7479	8.95	Q	V
18+50	82.8017	7.81	Q	V
18+55	82.8450	6.29	Q	V
19+ 0	82.8761	4.52	Q	V
19+ 5	82.9020	3.75	Q	V
19+10	82.9316	4.31	Q	V
19+15	82.9691	5.44	Q	V
19+20	83.0123	6.28	Q	V
19+25	83.0652	7.67	Q	V
19+30	83.1298	9.39	Q	V
19+35	83.1993	10.09	Q	V
19+40	83.2643	9.43	Q	V
19+45	83.3207	8.19	Q	V
19+50	83.3710	7.31	Q	V
19+55	83.4118	5.92	Q	V
20+ 0	83.4409	4.22	Q	V
20+ 5	83.4654	3.56	Q	V
20+10	83.4949	4.28	Q	V
20+15	83.5333	5.58	Q	V
20+20	83.5764	6.26	Q	V
20+25	83.6216	6.56	Q	V
20+30	83.6681	6.75	Q	V
20+35	83.7156	6.90	Q	V
20+40	83.7638	7.00	Q	V
20+45	83.8127	7.09	Q	V
20+50	83.8601	6.88	Q	V
20+55	83.8998	5.76	Q	V
21+ 0	83.9288	4.22	Q	V
21+ 5	83.9541	3.67	Q	V
21+10	83.9849	4.47	Q	V
21+15	84.0250	5.82	Q	V
21+20	84.0680	6.25	Q	V
21+25	84.1053	5.41	Q	V
21+30	84.1331	4.04	Q	V
21+35	84.1580	3.61	Q	V
21+40	84.1888	4.47	Q	V

154149RECHYDA24100.out

21+45	84.2292	5.87	Q				V
21+50	84.2728	6.33	Q				V
21+55	84.3106	5.49	Q				V
22+ 0	84.3391	4.13	Q				V
22+ 5	84.3646	3.70	Q				V
22+10	84.3961	4.58	Q				V
22+15	84.4373	5.98	Q				V
22+20	84.4817	6.45	Q				V
22+25	84.5205	5.63	Q				V
22+30	84.5501	4.29	Q				V
22+35	84.5749	3.60	Q				V
22+40	84.5976	3.30	Q				V
22+45	84.6190	3.11	Q				V
22+50	84.6395	2.97	Q				V
22+55	84.6595	2.90	Q				V
23+ 0	84.6791	2.85	Q				V
23+ 5	84.6985	2.82	Q				V
23+10	84.7177	2.79	Q				V
23+15	84.7367	2.75	Q				V
23+20	84.7554	2.72	Q				V
23+25	84.7742	2.72	Q				V
23+30	84.7930	2.73	Q				V
23+35	84.8118	2.74	Q				V
23+40	84.8306	2.73	Q				V
23+45	84.8494	2.72	Q				V
23+50	84.8681	2.71	Q				V
23+55	84.8869	2.73	Q				V
24+ 0	84.9057	2.74	Q				V
24+ 5	84.9237	2.61	Q				V
24+10	84.9377	2.04	Q				V
24+15	84.9464	1.26	Q				V
24+20	84.9521	0.83	Q				V
24+25	84.9564	0.62	Q				V
24+30	84.9597	0.48	Q				V
24+35	84.9623	0.38	Q				V
24+40	84.9643	0.30	Q				V
24+45	84.9660	0.24	Q				V
24+50	84.9672	0.19	Q				V
24+55	84.9683	0.15	Q				V
25+ 0	84.9691	0.12	Q				V
25+ 5	84.9697	0.09	Q				V
25+10	84.9701	0.07	Q				V
25+15	84.9705	0.05	Q				V
25+20	84.9707	0.03	Q				V
25+25	84.9709	0.02	Q				V
25+30	84.9709	0.01	Q				V

ATTACHMENT 7

Reclamation Conditions
Combined Hydrographs Calculations
Areas "B" & "C"

FLOOD HYDROGRAPH ROUTING PROGRAM
 Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
 Study date: 05/11/15

 154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR
 ROUTE AREA "BC"
 20-YEAR, 1-HOUR
 BY: JTS DATE: 05-08-15

Program License Serial Number 6320

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

From study/file name: 154149rechydb120.rte
 *****HYDROGRAPH DATA*****
 Number of intervals = 460
 Time interval = 5.0 (Min.)
 Maximum/Peak flow rate = 99.134 (CFS)
 Total volume = 61.692 (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 1.000 to Point/Station 2.000
 **** ADD/COMBINE/RECOVER HYDROGRAPHS ****

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

From study/file name: 154149rechydc120.rte
 ++++++

P R I N T O F 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)	Add q(CFS)	Tot. Q	0	24.8	49.6	74.4	99.1
0+ 5	1.0623	1.51	Q				
0+10	5.6336	6.98	Q				
0+15	10.6144	13.00	qQ				
0+20	14.0226	17.57	q Q				
0+25	16.5801	21.34	q Q				
0+30	18.6043	24.71	q Q				

[illegible]

5+20	0.0000	99.13	q					Q
5+25	0.0000	99.13	q					Q
5+30	0.0000	99.12	q					Q
5+35	0.0000	98.48	q					Q
5+40	0.0000	97.47	q					Q
5+45	0.0000	96.27	q					Q
5+50	0.0000	94.97	q					Q
5+55	0.0000	93.60	q					Q
6+ 0	0.0000	92.06	q					Q
6+ 5	0.0000	90.14	q					Q
6+10	0.0000	87.80	q					Q
6+15	0.0000	84.54	q					Q
6+20	0.0000	78.38	q				Q	
6+25	0.0000	73.91	q				Q	
6+30	0.0000	71.83	q				Q	
6+35	0.0000	70.69	q				Q	
6+40	0.0000	69.90	q				Q	
6+45	0.0000	69.07	q				Q	
6+50	0.0000	68.12	q				Q	
6+55	0.0000	66.81	q				Q	
7+ 0	0.0000	64.92	q				Q	
7+ 5	0.0000	62.31	q				Q	
7+10	0.0000	57.87	q				Q	
7+15	0.0000	55.16	q				Q	
7+20	0.0000	53.68	q				Q	
7+25	0.0000	52.70	q				Q	
7+30	0.0000	51.70	q				Q	
7+35	0.0000	50.43	q				Q	
7+40	0.0000	48.32	q				Q	
7+45	0.0000	45.40	q				Q	
7+50	0.0000	44.17	q				Q	
7+55	0.0000	43.45	q				Q	
8+ 0	0.0000	43.10	q				Q	
8+ 5	0.0000	42.75	q				Q	
8+10	0.0000	42.37	q				Q	
8+15	0.0000	41.90	q				Q	
8+20	0.0000	41.10	q				Q	
8+25	0.0000	40.04	q				Q	
8+30	0.0000	38.36	q				Q	
8+35	0.0000	36.46	q				Q	
8+40	0.0000	35.53	q				Q	
8+45	0.0000	34.82	q				Q	
8+50	0.0000	34.17	q				Q	
8+55	0.0000	33.39	q				Q	
9+ 0	0.0000	32.28	q				Q	
9+ 5	0.0000	30.20	q				Q	
9+10	0.0000	28.86	q				Q	
9+15	0.0000	28.21	q				Q	
9+20	0.0000	27.86	q				Q	
9+25	0.0000	27.61	q				Q	
9+30	0.0000	27.35	q				Q	
9+35	0.0000	27.05	q				Q	
9+40	0.0000	26.63	q				Q	
9+45	0.0000	26.05	q				Q	
9+50	0.0000	25.24	q				Q	
9+55	0.0000	23.87	q	Q				
10+ 0	0.0000	23.12	q	Q				

10+ 5	0.0000	22.72	q	Q			
10+10	0.0000	22.47	q	Q			
10+15	0.0000	22.22	q	Q			
10+20	0.0000	21.91	q	Q			
10+25	0.0000	21.36	q	Q			
10+30	0.0000	20.69	q	Q			
10+35	0.0000	20.47	q	Q			
10+40	0.0000	20.38	q	Q			
10+45	0.0000	20.38	q	Q			
10+50	0.0000	20.38	q	Q			
10+55	0.0000	20.38	q	Q			
11+ 0	0.0000	20.37	q	Q			
11+ 5	0.0000	20.26	q	Q			
11+10	0.0000	20.11	q	Q			
11+15	0.0000	19.93	q	Q			
11+20	0.0000	19.74	q	Q			
11+25	0.0000	19.54	q	Q			
11+30	0.0000	19.31	q	Q			
11+35	0.0000	19.02	q	Q			
11+40	0.0000	18.67	q	Q			
11+45	0.0000	18.16	q	Q			
11+50	0.0000	17.23	q	Q			
11+55	0.0000	16.75	q	Q			
12+ 0	0.0000	16.56	q	Q			
12+ 5	0.0000	16.52	q	Q			
12+10	0.0000	16.52	q	Q			
12+15	0.0000	16.52	q	Q			
12+20	0.0000	16.52	q	Q			
12+25	0.0000	16.48	q	Q			
12+30	0.0000	16.38	q	Q			
12+35	0.0000	16.27	q	Q			
12+40	0.0000	16.13	q	Q			
12+45	0.0000	15.99	q	Q			
12+50	0.0000	15.84	q	Q			
12+55	0.0000	15.66	q	Q			
13+ 0	0.0000	15.43	q	Q			
13+ 5	0.0000	15.13	q	Q			
13+10	0.0000	14.60	q	Q			
13+15	0.0000	14.03	q	Q			
13+20	0.0000	13.85	q	Q			
13+25	0.0000	13.77	q	Q			
13+30	0.0000	13.77	q	Q			
13+35	0.0000	13.77	q	Q			
13+40	0.0000	13.77	q	Q			
13+45	0.0000	13.76	q	Q			
13+50	0.0000	13.71	q	Q			
13+55	0.0000	13.65	q	Q			
14+ 0	0.0000	13.57	q	Q			
14+ 5	0.0000	13.49	q	Q			
14+10	0.0000	13.40	q	Q			
14+15	0.0000	13.30	q	Q			
14+20	0.0000	13.18	q	Q			
14+25	0.0000	13.02	q	Q			
14+30	0.0000	12.79	q	Q			
14+35	0.0000	12.39	q	Q			
14+40	0.0000	12.21	q	Q			
14+45	0.0000	12.13	q	Q			

14+50	0.0000	12.12	q	Q				
14+55	0.0000	12.12	q	Q				
15+ 0	0.0000	12.12	q	Q				
15+ 5	0.0000	12.12	q	Q				
15+10	0.0000	12.08	q	Q				
15+15	0.0000	12.00	q	Q				
15+20	0.0000	11.90	q	Q				
15+25	0.0000	11.80	q	Q				
15+30	0.0000	11.68	q	Q				
15+35	0.0000	11.56	q	Q				
15+40	0.0000	11.41	q	Q				
15+45	0.0000	11.22	q	Q				
15+50	0.0000	10.98	q	Q				
15+55	0.0000	10.53	q	Q				
16+ 0	0.0000	10.11	q	Q				
16+ 5	0.0000	9.97	q	Q				
16+10	0.0000	9.91	q	Q				
16+15	0.0000	9.91	q	Q				
16+20	0.0000	9.91	q	Q				
16+25	0.0000	9.91	q	Q				
16+30	0.0000	9.91	q	Q				
16+35	0.0000	9.85	q	Q				
16+40	0.0000	9.79	q	Q				
16+45	0.0000	9.71	q	Q				
16+50	0.0000	9.63	q	Q				
16+55	0.0000	9.54	q	Q				
17+ 0	0.0000	9.44	q	Q				
17+ 5	0.0000	9.31	q	Q				
17+10	0.0000	9.15	q	Q				
17+15	0.0000	8.91	q	Q				
17+20	0.0000	8.51	q	Q				
17+25	0.0000	8.34	q	Q				
17+30	0.0000	8.27	q	Q				
17+35	0.0000	8.26	q	Q				
17+40	0.0000	8.26	q	Q				
17+45	0.0000	8.26	q	Q				
17+50	0.0000	8.26	q	Q				
17+55	0.0000	8.26	q	Q				
18+ 0	0.0000	8.26	q	Q				
18+ 5	0.0000	8.26	q	Q				
18+10	0.0000	8.26	q	Q				
18+15	0.0000	8.26	q	Q				
18+20	0.0000	8.26	q	Q				
18+25	0.0000	8.26	q	Q				
18+30	0.0000	8.26	q	Q				
18+35	0.0000	8.26	q	Q				
18+40	0.0000	8.26	q	Q				
18+45	0.0000	8.26	q	Q				
18+50	0.0000	8.26	q	Q				
18+55	0.0000	8.26	q	Q				
19+ 0	0.0000	8.26	q	Q				
19+ 5	0.0000	8.26	q	Q				
19+10	0.0000	8.26	q	Q				
19+15	0.0000	8.25	q	Q				
19+20	0.0000	8.17	q	Q				
19+25	0.0000	8.09	q	Q				
19+30	0.0000	7.98	q	Q				

19+35	0.0000	7.87	q	Q
19+40	0.0000	7.75	q	Q
19+45	0.0000	7.62	q	Q
19+50	0.0000	7.44	q	Q
19+55	0.0000	7.23	q	Q
20+ 0	0.0000	6.89	q	Q
20+ 5	0.0000	6.36	q	Q
20+10	0.0000	6.16	q	Q
20+15	0.0000	6.07	q	Q
20+20	0.0000	6.06	q	Q
20+25	0.0000	6.06	q	Q
20+30	0.0000	6.06	q	Q
20+35	0.0000	6.06	q	Q
20+40	0.0000	6.06	q	Q
20+45	0.0000	6.06	q	Q
20+50	0.0000	6.06	q	Q
20+55	0.0000	6.06	q	Q
21+ 0	0.0000	6.06	q	Q
21+ 5	0.0000	6.06	q	Q
21+10	0.0000	6.06	q	Q
21+15	0.0000	6.06	q	Q
21+20	0.0000	6.06	q	Q
21+25	0.0000	6.06	q	Q
21+30	0.0000	6.06	q	Q
21+35	0.0000	6.06	q	Q
21+40	0.0000	6.06	q	Q
21+45	0.0000	6.06	q	Q
21+50	0.0000	6.06	q	Q
21+55	0.0000	6.06	q	Q
22+ 0	0.0000	6.05	q	Q
22+ 5	0.0000	5.99	q	Q
22+10	0.0000	5.92	q	Q
22+15	0.0000	5.84	q	Q
22+20	0.0000	5.76	q	Q
22+25	0.0000	5.67	q	Q
22+30	0.0000	5.57	q	Q
22+35	0.0000	5.43	q	Q
22+40	0.0000	5.27	q	Q
22+45	0.0000	5.00	q	Q
22+50	0.0000	4.61	qQ	
22+55	0.0000	4.47	qQ	
23+ 0	0.0000	4.41	qQ	
23+ 5	0.0000	4.41	qQ	
23+10	0.0000	4.41	qQ	
23+15	0.0000	4.41	qQ	
23+20	0.0000	4.41	qQ	
23+25	0.0000	4.41	qQ	
23+30	0.0000	4.41	qQ	
23+35	0.0000	4.41	qQ	
23+40	0.0000	4.41	qQ	
23+45	0.0000	4.41	qQ	
23+50	0.0000	4.41	qQ	
23+55	0.0000	4.41	qQ	
24+ 0	0.0000	4.41	qQ	
24+ 5	0.0000	4.41	qQ	
24+10	0.0000	4.41	qQ	
24+15	0.0000	4.41	qQ	

24+20	0.0000	4.41	qQ				
24+25	0.0000	4.41	qQ				
24+30	0.0000	4.41	qQ				
24+35	0.0000	4.41	qQ				
24+40	0.0000	4.41	qQ				
24+45	0.0000	4.40	qQ				
24+50	0.0000	4.39	qQ				
24+55	0.0000	4.38	qQ				
25+ 0	0.0000	4.37	qQ				
25+ 5	0.0000	4.36	qQ				
25+10	0.0000	4.34	qQ				
25+15	0.0000	4.32	qQ				
25+20	0.0000	4.30	qQ				
25+25	0.0000	4.27	qQ				
25+30	0.0000	4.22	qQ				
25+35	0.0000	4.16	qQ				
25+40	0.0000	4.14	qQ				
25+45	0.0000	4.13	qQ				
25+50	0.0000	4.13	qQ				
25+55	0.0000	4.13	qQ				
26+ 0	0.0000	4.13	qQ				
26+ 5	0.0000	4.13	qQ				
26+10	0.0000	4.13	qQ				
26+15	0.0000	4.13	qQ				
26+20	0.0000	4.13	qQ				
26+25	0.0000	4.13	qQ				
26+30	0.0000	4.13	qQ				
26+35	0.0000	4.13	qQ				
26+40	0.0000	4.13	qQ				
26+45	0.0000	4.13	qQ				
26+50	0.0000	4.13	qQ				
26+55	0.0000	4.13	qQ				
27+ 0	0.0000	4.13	qQ				
27+ 5	0.0000	4.13	qQ				
27+10	0.0000	4.13	qQ				
27+15	0.0000	4.13	qQ				
27+20	0.0000	4.13	qQ				
27+25	0.0000	4.13	qQ				
27+30	0.0000	4.12	qQ				
27+35	0.0000	4.08	qQ				
27+40	0.0000	4.03	qQ				
27+45	0.0000	3.98	qQ				
27+50	0.0000	3.92	qQ				
27+55	0.0000	3.86	qQ				
28+ 0	0.0000	3.79	qQ				
28+ 5	0.0000	3.70	qQ				
28+10	0.0000	3.58	qQ				
28+15	0.0000	3.38	qQ				
28+20	0.0000	3.14	qQ				
28+25	0.0000	3.06	qQ				
28+30	0.0000	3.03	qQ				
28+35	0.0000	3.03	qQ				
28+40	0.0000	3.03	qQ				
28+45	0.0000	3.03	qQ				
28+50	0.0000	3.03	qQ				
28+55	0.0000	3.03	qQ				
29+ 0	0.0000	3.03	qQ				

29+ 5	0.0000	3.03	qQ				
29+10	0.0000	3.03	qQ				
29+15	0.0000	3.03	qQ				
29+20	0.0000	3.03	qQ				
29+25	0.0000	3.03	qQ				
29+30	0.0000	3.03	qQ				
29+35	0.0000	3.03	qQ				
29+40	0.0000	3.03	qQ				
29+45	0.0000	3.03	qQ				
29+50	0.0000	3.03	qQ				
29+55	0.0000	3.03	qQ				
30+ 0	0.0000	3.03	qQ				
30+ 5	0.0000	3.03	qQ				
30+10	0.0000	3.03	qQ				
30+15	0.0000	3.02	qQ				
30+20	0.0000	3.00	qQ				
30+25	0.0000	2.98	qQ				
30+30	0.0000	2.95	qQ				
30+35	0.0000	2.92	qQ				
30+40	0.0000	2.89	qQ				
30+45	0.0000	2.86	qQ				
30+50	0.0000	2.81	qQ				
30+55	0.0000	2.75	qQ				
31+ 0	0.0000	2.64	qQ				
31+ 5	0.0000	2.53	qQ				
31+10	0.0000	2.49	qQ				
31+15	0.0000	2.48	qQ				
31+20	0.0000	2.48	Q				
31+25	0.0000	2.48	qQ				
31+30	0.0000	2.48	qQ				
31+35	0.0000	2.48	Q				
31+40	0.0000	2.48	Q				
31+45	0.0000	2.48	Q				
31+50	0.0000	2.48	Q				
31+55	0.0000	2.48	Q				
32+ 0	0.0000	2.48	qQ				
32+ 5	0.0000	2.48	qQ				
32+10	0.0000	2.48	Q				
32+15	0.0000	2.48	qQ				
32+20	0.0000	2.48	qQ				
32+25	0.0000	2.48	Q				
32+30	0.0000	2.48	qQ				
32+35	0.0000	2.48	qQ				
32+40	0.0000	2.48	qQ				
32+45	0.0000	2.48	qQ				
32+50	0.0000	2.48	Q				
32+55	0.0000	2.48	Q				
33+ 0	0.0000	2.47	Q				
33+ 5	0.0000	2.45	Q				
33+10	0.0000	2.42	Q				
33+15	0.0000	2.40	Q				
33+20	0.0000	2.37	Q				
33+25	0.0000	2.34	Q				
33+30	0.0000	2.30	Q				
33+35	0.0000	2.25	Q				
33+40	0.0000	2.19	Q				
33+45	0.0000	2.08	Q				

33+50	0.0000	1.97	Q
33+55	0.0000	1.94	Q
34+ 0	0.0000	1.93	Q
34+ 5	0.0000	1.93	Q
34+10	0.0000	1.93	Q
34+15	0.0000	1.93	Q
34+20	0.0000	1.93	Q
34+25	0.0000	1.93	Q
34+30	0.0000	1.93	Q
34+35	0.0000	1.93	Q
34+40	0.0000	1.93	Q
34+45	0.0000	1.93	Q
34+50	0.0000	1.93	Q
34+55	0.0000	1.93	Q
35+ 0	0.0000	1.93	Q
35+ 5	0.0000	1.93	Q
35+10	0.0000	1.93	Q
35+15	0.0000	1.93	Q
35+20	0.0000	1.93	Q
35+25	0.0000	1.93	Q
35+30	0.0000	1.93	Q
35+35	0.0000	1.93	Q
35+40	0.0000	1.93	Q
35+45	0.0000	1.92	Q
35+50	0.0000	1.90	Q
35+55	0.0000	1.87	Q
36+ 0	0.0000	1.84	Q
36+ 5	0.0000	1.82	Q
36+10	0.0000	1.79	Q
36+15	0.0000	1.75	Q
36+20	0.0000	1.70	Q
36+25	0.0000	1.64	Q
36+30	0.0000	1.52	Q
36+35	0.0000	1.42	Q
36+40	0.0000	1.39	Q
36+45	0.0000	1.38	Q
36+50	0.0000	1.38	Q
36+55	0.0000	1.38	Q
37+ 0	0.0000	1.38	Q
37+ 5	0.0000	1.38	Q
37+10	0.0000	1.38	Q
37+15	0.0000	1.38	Q
37+20	0.0000	1.38	Q
37+25	0.0000	1.38	Q
37+30	0.0000	1.33	Q
37+35	0.0000	1.27	Q
37+40	0.0000	1.21	Q
37+45	0.0000	1.14	Q
37+50	0.0000	1.07	Q
37+55	0.0000	0.98	Q
38+ 0	0.0000	0.88	Q
38+ 5	0.0000	0.75	Q
38+10	0.0000	0.56	Q
38+15	0.0000	0.17	Q
38+20	0.0000	0.06	Q

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

Number of intervals = 460
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 99.134 (CFS)
Total volume = 64.717 (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 - 2012
 Study date: 05/11/15

 154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR
 ROUTE AREA "BC"
 20-YEAR, 3-HOUR
 BY: JTS DATE: 05-08-15

Program License Serial Number 6320

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

From study/file name: 154149rechydb320.rte
 *****HYDROGRAPH DATA*****
 Number of intervals = 484
 Time interval = 5.0 (Min.)
 Maximum/Peak flow rate = 143.912 (CFS)
 Total volume = 93.702 (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 1.000 to Point/Station 2.000
 **** ADD/COMBINE/RECOVER HYDROGRAPHS ****

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

From study/file name: 154149rechydc320.rte
 ++++++

P R I N T O F 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)	Add q(CFS)	Tot. Q	0	36.0	72.0	107.9	143.9
0+ 5	0.3029	0.45	Q				
0+10	1.5964	2.02	Q				
0+15	2.7609	3.43	Q				
0+20	3.0258	3.98	qQ				
0+25	3.8464	5.18	Q				
0+30	5.0545	6.84	Q				

0+35	6.1194	8.36	qQ				
0+40	6.5642	9.26	qQ				
0+45	7.0831	10.31	qQ				
0+50	7.6739	11.36	qQ				
0+55	7.3347	11.49	qQ				
1+ 0	7.1622	11.91	q Q				
1+ 5	8.0272	13.49	qQ				
1+10	9.6414	15.94	q Q				
1+15	10.9376	18.11	q Q				
1+20	11.3932	19.42	q Q				
1+25	11.5687	20.57	q Q				
1+30	12.9139	23.21	q Q				
1+35	14.4999	26.08	q Q				
1+40	14.8186	27.62	q Q				
1+45	15.6614	29.99	q Q				
1+50	17.8756	33.88	q Q				
1+55	19.1735	36.88	q Q				
2+ 0	19.0717	38.51	q Q				
2+ 5	19.1720	40.54	q Q				
2+10	20.4093	43.96	q Q				
2+15	24.2160	50.41	q Q				
2+20	28.4662	57.27	q Q				
2+25	29.9895	61.92	q Q				
2+30	36.6528	72.78	q Q				
2+35	46.4517	87.20	q Q				
2+40	52.1300	97.22	q Q				
2+45	48.4953	96.32	q Q				
2+50	34.8246	84.67	q Q				
2+55	23.3860	75.41	q Q				
3+ 0	17.9094	71.96	q Q				
3+ 5	12.8076	69.02	q Q				
3+10	8.5235	67.01	q Q				
3+15	6.1434	67.20	q Q				
3+20	4.6798	68.56	q Q				
3+25	3.6019	70.60	q Q				
3+30	2.6945	72.72	q Q				
3+35	2.0295	74.71	q Q				
3+40	1.5346	76.90	q Q				
3+45	1.0740	79.09	q Q				
3+50	0.6775	82.11	q Q				
3+55	0.3261	85.48	q Q				
4+ 0	0.1362	89.20	q Q				
4+ 5	0.0806	92.44	q Q				
4+10	0.0324	95.00	q Q				
4+15	0.0018	97.52	q Q				
4+20	0.0000	100.16	q Q				
4+25	0.0000	103.08	q Q				
4+30	0.0000	106.38	q Q				
4+35	0.0000	109.63	q Q				
4+40	0.0000	112.01	q Q				
4+45	0.0000	113.76	q Q				
4+50	0.0000	115.55	q Q				
4+55	0.0000	117.51	q Q				
5+ 0	0.0000	119.80	q Q				
5+ 5	0.0000	121.88	q Q				
5+10	0.0000	124.57	q Q				
5+15	0.0000	128.11	q Q				

5+20	0.0000	132.10	q				Q
5+25	0.0000	135.63	q				Q
5+30	0.0000	137.55	q				Q
5+35	0.0000	138.45	q				Q
5+40	0.0000	139.21	q				Q
5+45	0.0000	139.89	q				Q
5+50	0.0000	140.42	q				Q
5+55	0.0000	140.75	q				Q
6+ 0	0.0000	141.30	q				Q
6+ 5	0.0000	142.15	q				Q
6+10	0.0000	143.08	q				Q
6+15	0.0000	143.73	q				Q
6+20	0.0000	143.91	q				Q
6+25	0.0000	143.74	q				Q
6+30	0.0000	143.40	q				Q
6+35	0.0000	142.92	q				Q
6+40	0.0000	142.27	q				Q
6+45	0.0000	141.60	q				Q
6+50	0.0000	140.79	q				Q
6+55	0.0000	139.65	q				Q
7+ 0	0.0000	138.18	q				Q
7+ 5	0.0000	136.77	q				Q
7+10	0.0000	135.34	q				Q
7+15	0.0000	133.57	q				Q
7+20	0.0000	131.68	q				Q
7+25	0.0000	129.75	q				Q
7+30	0.0000	127.82	q				Q
7+35	0.0000	125.78	q				Q
7+40	0.0000	123.39	q				Q
7+45	0.0000	120.42	q				Q
7+50	0.0000	117.64	q				Q
7+55	0.0000	114.02	q				Q
8+ 0	0.0000	109.46	q				Q
8+ 5	0.0000	104.30	q				Q
8+10	0.0000	99.79	q				Q
8+15	0.0000	97.10	q				Q
8+20	0.0000	95.06	q				Q
8+25	0.0000	92.95	q				Q
8+30	0.0000	90.99	q				Q
8+35	0.0000	88.89	q				Q
8+40	0.0000	86.90	q				Q
8+45	0.0000	84.24	q				Q
8+50	0.0000	81.19	q				Q
8+55	0.0000	77.87	q				Q
9+ 0	0.0000	74.97	q				Q
9+ 5	0.0000	72.93	q				Q
9+10	0.0000	71.11	q				Q
9+15	0.0000	69.33	q				Q
9+20	0.0000	67.16	q				Q
9+25	0.0000	64.79	q				Q
9+30	0.0000	62.35	q				Q
9+35	0.0000	60.59	q				Q
9+40	0.0000	59.51	q				Q
9+45	0.0000	58.42	q				Q
9+50	0.0000	57.36	q				Q
9+55	0.0000	56.36	q				Q
10+ 0	0.0000	55.26	q				Q

10+ 5	0.0000	54.11	q		Q			
10+10	0.0000	52.63	q		Q			
10+15	0.0000	51.06	q		Q			
10+20	0.0000	49.47	q		Q			
10+25	0.0000	48.16	q		Q			
10+30	0.0000	47.03	q		Q			
10+35	0.0000	46.03	q		Q			
10+40	0.0000	44.76	q		Q			
10+45	0.0000	43.30	q		Q			
10+50	0.0000	41.69	q		Q			
10+55	0.0000	40.33	q		Q			
11+ 0	0.0000	39.58	q		Q			
11+ 5	0.0000	38.99	q		Q			
11+10	0.0000	38.38	q		Q			
11+15	0.0000	37.83	q		Q			
11+20	0.0000	37.23	q		Q			
11+25	0.0000	36.67	q		Q			
11+30	0.0000	35.89	q	Q				
11+35	0.0000	35.01	q	Q				
11+40	0.0000	34.05	q	Q				
11+45	0.0000	33.24	q	Q				
11+50	0.0000	32.73	q	Q				
11+55	0.0000	32.31	q	Q				
12+ 0	0.0000	31.89	q	Q				
12+ 5	0.0000	31.37	q	Q				
12+10	0.0000	30.83	q	Q				
12+15	0.0000	30.29	q	Q				
12+20	0.0000	29.94	q	Q				
12+25	0.0000	29.70	q	Q				
12+30	0.0000	29.45	q	Q				
12+35	0.0000	29.24	q	Q				
12+40	0.0000	29.05	q	Q				
12+45	0.0000	28.81	q	Q				
12+50	0.0000	28.57	q	Q				
12+55	0.0000	28.34	q	Q				
13+ 0	0.0000	28.11	q	Q				
13+ 5	0.0000	27.86	q	Q				
13+10	0.0000	27.55	q	Q				
13+15	0.0000	27.19	q	Q				
13+20	0.0000	26.87	q	Q				
13+25	0.0000	26.38	q	Q				
13+30	0.0000	25.79	q	Q				
13+35	0.0000	25.14	q	Q				
13+40	0.0000	24.63	q	Q				
13+45	0.0000	24.37	q	Q				
13+50	0.0000	24.16	q	Q				
13+55	0.0000	23.95	q	Q				
14+ 0	0.0000	23.81	q	Q				
14+ 5	0.0000	23.66	q	Q				
14+10	0.0000	23.49	q	Q				
14+15	0.0000	23.33	q	Q				
14+20	0.0000	23.18	q	Q				
14+25	0.0000	23.01	q	Q				
14+30	0.0000	22.82	q	Q				
14+35	0.0000	22.58	q	Q				
14+40	0.0000	22.34	q	Q				
14+45	0.0000	22.08	q	Q				

14+50	0.0000	21.68	q	Q				
14+55	0.0000	21.24	q	Q				
15+ 0	0.0000	20.82	q	Q				
15+ 5	0.0000	20.56	q	Q				
15+10	0.0000	20.42	q	Q				
15+15	0.0000	20.27	q	Q				
15+20	0.0000	20.14	q	Q				
15+25	0.0000	20.05	q	Q				
15+30	0.0000	19.93	q	Q				
15+35	0.0000	19.81	q	Q				
15+40	0.0000	19.69	q	Q				
15+45	0.0000	19.57	q	Q				
15+50	0.0000	19.44	q	Q				
15+55	0.0000	19.29	q	Q				
16+ 0	0.0000	19.11	q	Q				
16+ 5	0.0000	18.96	q	Q				
16+10	0.0000	18.71	q	Q				
16+15	0.0000	18.43	q	Q				
16+20	0.0000	18.12	q	Q				
16+25	0.0000	17.88	q	Q				
16+30	0.0000	17.74	q	Q				
16+35	0.0000	17.60	q	Q				
16+40	0.0000	17.46	q	Q				
16+45	0.0000	17.36	q	Q				
16+50	0.0000	17.23	q	Q				
16+55	0.0000	17.09	q	Q				
17+ 0	0.0000	16.95	q	Q				
17+ 5	0.0000	16.82	q	Q				
17+10	0.0000	16.68	q	Q				
17+15	0.0000	16.52	q	Q				
17+20	0.0000	16.32	q	Q				
17+25	0.0000	16.13	q	Q				
17+30	0.0000	15.90	q	Q				
17+35	0.0000	15.57	q	Q				
17+40	0.0000	15.20	q	Q				
17+45	0.0000	14.86	q	Q				
17+50	0.0000	14.66	q	Q				
17+55	0.0000	14.55	q	Q				
18+ 0	0.0000	14.43	q	Q				
18+ 5	0.0000	14.34	q	Q				
18+10	0.0000	14.27	q	Q				
18+15	0.0000	14.19	q	Q				
18+20	0.0000	14.11	q	Q				
18+25	0.0000	14.03	q	Q				
18+30	0.0000	13.96	q	Q				
18+35	0.0000	13.87	q	Q				
18+40	0.0000	13.76	q	Q				
18+45	0.0000	13.62	q	Q				
18+50	0.0000	13.51	q	Q				
18+55	0.0000	13.32	q	Q				
19+ 0	0.0000	13.09	q	Q				
19+ 5	0.0000	12.86	q	Q				
19+10	0.0000	12.69	q	Q				
19+15	0.0000	12.62	q	Q				
19+20	0.0000	12.56	q	Q				
19+25	0.0000	12.50	q	Q				
19+30	0.0000	12.47	q	Q				

19+35	0.0000	12.44	q	Q				
19+40	0.0000	12.40	q	Q				
19+45	0.0000	12.36	q	Q				
19+50	0.0000	12.32	q	Q				
19+55	0.0000	12.27	q	Q				
20+ 0	0.0000	12.22	q	Q				
20+ 5	0.0000	12.19	q	Q				
20+10	0.0000	12.15	q	Q				
20+15	0.0000	12.10	q	Q				
20+20	0.0000	12.03	q	Q				
20+25	0.0000	11.96	q	Q				
20+30	0.0000	11.90	q	Q				
20+35	0.0000	11.84	q	Q				
20+40	0.0000	11.75	q	Q				
20+45	0.0000	11.67	q	Q				
20+50	0.0000	11.59	q	Q				
20+55	0.0000	11.50	q	Q				
21+ 0	0.0000	11.38	q	Q				
21+ 5	0.0000	11.28	q	Q				
21+10	0.0000	11.18	q	Q				
21+15	0.0000	11.07	q	Q				
21+20	0.0000	10.96	q	Q				
21+25	0.0000	10.80	q	Q				
21+30	0.0000	10.62	q	Q				
21+35	0.0000	10.47	q	Q				
21+40	0.0000	10.21	q	Q				
21+45	0.0000	9.91	q	Q				
21+50	0.0000	9.59	q	Q				
21+55	0.0000	9.37	q	Q				
22+ 0	0.0000	9.30	q	Q				
22+ 5	0.0000	9.23	q	Q				
22+10	0.0000	9.17	q	Q				
22+15	0.0000	9.14	q	Q				
22+20	0.0000	9.12	q	Q				
22+25	0.0000	9.09	q	Q				
22+30	0.0000	9.06	q	Q				
22+35	0.0000	9.03	q	Q				
22+40	0.0000	8.99	q	Q				
22+45	0.0000	8.96	q	Q				
22+50	0.0000	8.93	q	Q				
22+55	0.0000	8.90	q	Q				
23+ 0	0.0000	8.86	q	Q				
23+ 5	0.0000	8.81	q	Q				
23+10	0.0000	8.76	q	Q				
23+15	0.0000	8.71	q	Q				
23+20	0.0000	8.66	q	Q				
23+25	0.0000	8.60	q	Q				
23+30	0.0000	8.54	q	Q				
23+35	0.0000	8.48	q	Q				
23+40	0.0000	8.41	q	Q				
23+45	0.0000	8.32	q	Q				
23+50	0.0000	8.24	q	Q				
23+55	0.0000	8.17	q	Q				
24+ 0	0.0000	8.09	q	Q				
24+ 5	0.0000	8.00	q	Q				
24+10	0.0000	7.88	q	Q				
24+15	0.0000	7.75	q	Q				

24+20	0.0000	7.63	q Q
24+25	0.0000	7.43	q Q
24+30	0.0000	7.20	q Q
24+35	0.0000	6.97	qQ
24+40	0.0000	6.81	qQ
24+45	0.0000	6.76	qQ
24+50	0.0000	6.72	qQ
24+55	0.0000	6.69	qQ
25+ 0	0.0000	6.68	qQ
25+ 5	0.0000	6.68	qQ
25+10	0.0000	6.67	qQ
25+15	0.0000	6.67	qQ
25+20	0.0000	6.66	qQ
25+25	0.0000	6.66	qQ
25+30	0.0000	6.65	qQ
25+35	0.0000	6.65	qQ
25+40	0.0000	6.64	qQ
25+45	0.0000	6.63	qQ
25+50	0.0000	6.63	qQ
25+55	0.0000	6.62	qQ
26+ 0	0.0000	6.61	qQ
26+ 5	0.0000	6.60	qQ
26+10	0.0000	6.59	qQ
26+15	0.0000	6.58	qQ
26+20	0.0000	6.57	qQ
26+25	0.0000	6.56	qQ
26+30	0.0000	6.54	qQ
26+35	0.0000	6.53	qQ
26+40	0.0000	6.52	qQ
26+45	0.0000	6.51	qQ
26+50	0.0000	6.49	qQ
26+55	0.0000	6.47	qQ
27+ 0	0.0000	6.45	qQ
27+ 5	0.0000	6.43	qQ
27+10	0.0000	6.39	qQ
27+15	0.0000	6.36	qQ
27+20	0.0000	6.32	qQ
27+25	0.0000	6.29	qQ
27+30	0.0000	6.28	qQ
27+35	0.0000	6.26	qQ
27+40	0.0000	6.25	qQ
27+45	0.0000	6.23	qQ
27+50	0.0000	6.22	qQ
27+55	0.0000	6.20	qQ
28+ 0	0.0000	6.17	qQ
28+ 5	0.0000	6.15	qQ
28+10	0.0000	6.13	qQ
28+15	0.0000	6.11	qQ
28+20	0.0000	6.09	qQ
28+25	0.0000	6.07	qQ
28+30	0.0000	6.04	qQ
28+35	0.0000	6.01	qQ
28+40	0.0000	5.97	qQ
28+45	0.0000	5.94	qQ
28+50	0.0000	5.91	qQ
28+55	0.0000	5.87	qQ
29+ 0	0.0000	5.82	qQ

29+ 5	0.0000	5.78	qQ				
29+10	0.0000	5.73	qQ				
29+15	0.0000	5.68	qQ				
29+20	0.0000	5.63	qQ				
29+25	0.0000	5.58	qQ				
29+30	0.0000	5.52	qQ				
29+35	0.0000	5.46	qQ				
29+40	0.0000	5.38	qQ				
29+45	0.0000	5.29	qQ				
29+50	0.0000	5.21	qQ				
29+55	0.0000	5.07	qQ				
30+ 0	0.0000	4.91	qQ				
30+ 5	0.0000	4.76	qQ				
30+10	0.0000	4.67	qQ				
30+15	0.0000	4.64	qQ				
30+20	0.0000	4.61	qQ				
30+25	0.0000	4.59	qQ				
30+30	0.0000	4.58	qQ				
30+35	0.0000	4.57	qQ				
30+40	0.0000	4.56	qQ				
30+45	0.0000	4.55	qQ				
30+50	0.0000	4.54	qQ				
30+55	0.0000	4.53	qQ				
31+ 0	0.0000	4.52	qQ				
31+ 5	0.0000	4.51	qQ				
31+10	0.0000	4.50	qQ				
31+15	0.0000	4.48	qQ				
31+20	0.0000	4.47	qQ				
31+25	0.0000	4.45	qQ				
31+30	0.0000	4.43	qQ				
31+35	0.0000	4.42	qQ				
31+40	0.0000	4.40	qQ				
31+45	0.0000	4.37	qQ				
31+50	0.0000	4.35	qQ				
31+55	0.0000	4.33	qQ				
32+ 0	0.0000	4.30	qQ				
32+ 5	0.0000	4.27	qQ				
32+10	0.0000	4.25	qQ				
32+15	0.0000	4.22	qQ				
32+20	0.0000	4.19	qQ				
32+25	0.0000	4.15	qQ				
32+30	0.0000	4.11	qQ				
32+35	0.0000	4.06	qQ				
32+40	0.0000	3.99	qQ				
32+45	0.0000	3.91	qQ				
32+50	0.0000	3.84	qQ				
32+55	0.0000	3.80	qQ				
33+ 0	0.0000	3.78	qQ				
33+ 5	0.0000	3.76	qQ				
33+10	0.0000	3.75	qQ				
33+15	0.0000	3.74	qQ				
33+20	0.0000	3.73	qQ				
33+25	0.0000	3.72	qQ				
33+30	0.0000	3.71	qQ				
33+35	0.0000	3.70	qQ				
33+40	0.0000	3.69	qQ				
33+45	0.0000	3.68	qQ				

33+50	0.0000	3.67	qQ
33+55	0.0000	3.66	qQ
34+ 0	0.0000	3.65	qQ
34+ 5	0.0000	3.63	qQ
34+10	0.0000	3.61	qQ
34+15	0.0000	3.60	Q
34+20	0.0000	3.58	Q
34+25	0.0000	3.56	Q
34+30	0.0000	3.54	Q
34+35	0.0000	3.52	Q
34+40	0.0000	3.49	Q
34+45	0.0000	3.46	Q
34+50	0.0000	3.44	Q
34+55	0.0000	3.41	Q
35+ 0	0.0000	3.39	Q
35+ 5	0.0000	3.35	Q
35+10	0.0000	3.31	Q
35+15	0.0000	3.27	Q
35+20	0.0000	3.22	Q
35+25	0.0000	3.15	Q
35+30	0.0000	3.07	Q
35+35	0.0000	3.00	Q
35+40	0.0000	2.96	Q
35+45	0.0000	2.94	Q
35+50	0.0000	2.93	Q
35+55	0.0000	2.91	Q
36+ 0	0.0000	2.91	Q
36+ 5	0.0000	2.90	Q
36+10	0.0000	2.89	Q
36+15	0.0000	2.88	Q
36+20	0.0000	2.87	Q
36+25	0.0000	2.85	Q
36+30	0.0000	2.84	Q
36+35	0.0000	2.83	Q
36+40	0.0000	2.82	Q
36+45	0.0000	2.81	Q
36+50	0.0000	2.79	Q
36+55	0.0000	2.77	Q
37+ 0	0.0000	2.76	Q
37+ 5	0.0000	2.74	Q
37+10	0.0000	2.72	Q
37+15	0.0000	2.70	Q
37+20	0.0000	2.68	Q
37+25	0.0000	2.65	Q
37+30	0.0000	2.61	Q
37+35	0.0000	2.57	Q
37+40	0.0000	2.53	Q
37+45	0.0000	2.48	Q
37+50	0.0000	2.43	Q
37+55	0.0000	2.35	Q
38+ 0	0.0000	2.29	Q
38+ 5	0.0000	2.21	Q
38+10	0.0000	2.11	Q
38+15	0.0000	2.00	Q
38+20	0.0000	1.91	Q
38+25	0.0000	1.84	Q
38+30	0.0000	1.79	Q

38+35	0.0000	1.74	Q				
38+40	0.0000	1.69	Q				
38+45	0.0000	1.65	Q				
38+50	0.0000	1.60	Q				
38+55	0.0000	1.54	Q				
39+ 0	0.0000	1.50	Q				
39+ 5	0.0000	1.44	Q				
39+10	0.0000	1.37	Q				
39+15	0.0000	1.30	Q				
39+20	0.0000	1.24	Q				
39+25	0.0000	1.17	Q				
39+30	0.0000	1.11	Q				
39+35	0.0000	1.01	Q				
39+40	0.0000	0.89	Q				
39+45	0.0000	0.81	Q				
39+50	0.0000	0.64	Q				
39+55	0.0000	0.45	Q				
40+ 0	0.0000	0.24	Q				
40+ 5	0.0000	0.10	Q				
40+10	0.0000	0.06	Q				
40+15	0.0000	0.03	Q				
40+20	0.0000	0.00	Q				

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

Number of intervals = 484

Time interval = 5.0 (Min.)

Maximum/Peak flow rate = 143.912 (CFS)

Total volume = 98.182 (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 - 2012
Study date: 05/11/15

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR
ROUTE AREA "BC"
20-YEAR, 6-HOUR
BY: JTS DATE: 05-08-15

Program License Serial Number 6320

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

From study/file name: 154149rechydb620.rte
*****HYDROGRAPH DATA*****
Number of intervals = 520
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 159.021 (CFS)
Total volume = 112.119 (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 1.000 to Point/Station 2.000
**** ADD/COMBINE/RECOVER HYDROGRAPHS ****

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

From study/file name: 154149rechydc620.rte
++++++
P R I N T O F 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) Add q(CFS) Tot. Q 0 39.8 79.5 119.3 159.0

0+ 5 0.0426 0.06 Q | | | |
0+10 0.2329 0.30 Q | | | |
0+15 0.4502 0.57 Q | | | |
0+20 0.5626 0.75 Q | | | |
0+25 0.6195 0.86 Q | | | |
0+30 0.7108 1.05 Q | | | |

0+35	0.9680	1.43	Q				
0+40	1.2170	1.81	Q				
0+45	1.3281	2.05	Q				
0+50	1.3930	2.24	Q				
0+55	1.4391	2.42	Q				
1+ 0	1.5580	2.72	Q				
1+ 5	1.9468	3.33	Q				
1+10	2.3273	3.93	Q				
1+15	2.4962	4.32	qQ				
1+20	2.5916	4.65	qQ				
1+25	2.6573	4.96	qQ				
1+30	2.7046	5.28	qQ				
1+35	2.7398	5.60	qQ				
1+40	2.7667	5.91	qQ				
1+45	2.7888	6.22	qQ				
1+50	2.8037	6.54	qQ				
1+55	2.8154	6.91	qQ				
2+ 0	2.9095	7.41	qQ				
2+ 5	3.1948	8.11	q Q				
2+10	3.2848	8.63	q Q				
2+15	3.4433	9.25	q Q				
2+20	3.7359	10.01	q Q				
2+25	3.8630	10.66	q Q				
2+30	3.9300	11.28	q Q				
2+35	3.9771	11.87	qQ				
2+40	4.0105	12.45	q Q				
2+45	4.1234	13.15	q Q				
2+50	4.5050	14.18	q Q				
2+55	4.8833	15.25	q Q				
3+ 0	5.0477	16.15	q Q				
3+ 5	5.1407	16.98	q Q				
3+10	5.2925	17.91	q Q				
3+15	5.7020	19.17	q Q				
3+20	6.0973	20.45	q Q				
3+25	6.3617	21.66	q Q				
3+30	6.9134	23.20	q Q				
3+35	7.7967	25.19	q Q				
3+40	8.7280	27.29	q Q				
3+45	9.4504	29.26	q Q				
3+50	10.1372	31.26	q Q				
3+55	10.7932	33.28	q Q				
4+ 0	11.4586	35.36	q Q				
4+ 5	12.0957	37.48	q Q				
4+10	12.8368	39.84	q Q				
4+15	13.8362	42.55	q Q				
4+20	14.9408	45.46	q Q				
4+25	16.0911	48.51	q Q				
4+30	17.1880	51.56	q Q				
4+35	18.0301	54.46	q Q				
4+40	18.8940	57.49	q Q				
4+45	19.9755	60.90	q Q				
4+50	21.0486	64.37	q Q				
4+55	21.8764	67.70	q Q				
5+ 0	22.7294	71.23	q Q				
5+ 5	24.1479	75.58	q Q				
5+10	27.1027	81.89	q Q				
5+15	31.3655	89.82	q Q				

5+20	35.5358	97.93		q		Q		
5+25	39.5000	106.17		q		Q		
5+30	44.4697	116.03			q		Q	
5+35	47.7049	123.33			q		Q	
5+40	38.2745	116.40			q		Q	
5+45	23.4381	103.70		q				
5+50	14.7238	97.11		q				
5+55	10.2038	94.85		q				
6+ 0	7.5192	94.59		q				
6+ 5	5.6518	95.29		q				
6+10	4.2647	96.67		q				
6+15	3.2832	98.68	q					
6+20	2.4917	101.24	q					
6+25	1.8648	103.58	q					
6+30	1.3533	105.71	q					
6+35	0.9581	108.07	q					
6+40	0.6528	110.71	q					
6+45	0.3385	113.55	q					
6+50	0.0915	116.75	q					
6+55	0.0258	120.30	q					
7+ 0	0.0097	122.76	q					
7+ 5	0.0055	124.96	q					
7+10	0.0026	127.25	q					
7+15	0.0008	129.67	q					
7+20	0.0000	132.25	q					
7+25	0.0000	135.14	q					
7+30	0.0000	137.59	q					
7+35	0.0000	139.13	q					
7+40	0.0000	140.45	q					
7+45	0.0000	141.77	q					
7+50	0.0000	143.32	q					
7+55	0.0000	145.20	q					
8+ 0	0.0000	147.36	q					
8+ 5	0.0000	149.73	q					
8+10	0.0000	152.41	q					
8+15	0.0000	155.53	q					
8+20	0.0000	157.44	q					
8+25	0.0000	157.93	q					
8+30	0.0000	158.01	q					
8+35	0.0000	158.01	q					
8+40	0.0000	158.03	q					
8+45	0.0000	158.13	q					
8+50	0.0000	158.30	q					
8+55	0.0000	158.48	q					
9+ 0	0.0000	158.73	q					
9+ 5	0.0000	159.02	q					
9+10	0.0000	158.71	q					
9+15	0.0000	157.89	q					
9+20	0.0000	156.93	q					
9+25	0.0000	155.91	q					
9+30	0.0000	154.86	q					
9+35	0.0000	153.76	q					
9+40	0.0000	152.55	q					
9+45	0.0000	150.98	q					
9+50	0.0000	149.22	q					
9+55	0.0000	147.30	q					
10+ 0	0.0000	145.33	q					

10+ 5	0.0000	143.24	q
10+10	0.0000	141.04	q
10+15	0.0000	138.72	q
10+20	0.0000	136.32	q
10+25	0.0000	133.79	q
10+30	0.0000	131.09	q
10+35	0.0000	128.06	q
10+40	0.0000	124.58	q
10+45	0.0000	120.76	q
10+50	0.0000	116.66	q
10+55	0.0000	112.18	q
11+ 0	0.0000	107.07	q
11+ 5	0.0000	103.40	q
11+10	0.0000	101.14	q
11+15	0.0000	99.19	q
11+20	0.0000	97.25	q
11+25	0.0000	95.11	q
11+30	0.0000	92.69	q
11+35	0.0000	90.08	q
11+40	0.0000	87.27	q
11+45	0.0000	84.21	q
11+50	0.0000	80.77	q
11+55	0.0000	78.34	q
12+ 0	0.0000	76.45	q
12+ 5	0.0000	74.59	q
12+10	0.0000	72.64	q
12+15	0.0000	70.54	q
12+20	0.0000	68.21	q
12+25	0.0000	65.92	q
12+30	0.0000	64.57	q
12+35	0.0000	63.51	q
12+40	0.0000	62.49	q
12+45	0.0000	61.42	q
12+50	0.0000	60.23	q
12+55	0.0000	58.93	q
13+ 0	0.0000	57.52	q
13+ 5	0.0000	56.03	q
13+10	0.0000	54.37	q
13+15	0.0000	52.79	q
13+20	0.0000	51.62	q
13+25	0.0000	50.47	q
13+30	0.0000	49.25	q
13+35	0.0000	47.96	q
13+40	0.0000	46.54	q
13+45	0.0000	44.93	q
13+50	0.0000	43.87	q
13+55	0.0000	43.23	q
14+ 0	0.0000	42.69	q
14+ 5	0.0000	42.15	q
14+10	0.0000	41.56	q
14+15	0.0000	40.87	q
14+20	0.0000	40.14	q
14+25	0.0000	39.34	q
14+30	0.0000	38.46	q
14+35	0.0000	37.48	q
14+40	0.0000	36.85	q
14+45	0.0000	36.38	q

14+50	0.0000	35.94	q	Q			
14+55	0.0000	35.47	q	Q			
15+ 0	0.0000	34.97	q	Q			
15+ 5	0.0000	34.41	q	Q			
15+10	0.0000	33.88	q	Q			
15+15	0.0000	33.57	q	Q			
15+20	0.0000	33.32	q	Q			
15+25	0.0000	33.08	q	Q			
15+30	0.0000	32.85	q	Q			
15+35	0.0000	32.59	q	Q			
15+40	0.0000	32.32	q	Q			
15+45	0.0000	32.04	q	Q			
15+50	0.0000	31.75	q	Q			
15+55	0.0000	31.44	q	Q			
16+ 0	0.0000	31.11	q	Q			
16+ 5	0.0000	30.73	q	Q			
16+10	0.0000	30.29	q	Q			
16+15	0.0000	29.81	q	Q			
16+20	0.0000	29.29	q	Q			
16+25	0.0000	28.71	q	Q			
16+30	0.0000	28.06	q	Q			
16+35	0.0000	27.67	q	Q			
16+40	0.0000	27.45	q	Q			
16+45	0.0000	27.27	q	Q			
16+50	0.0000	27.09	q	Q			
16+55	0.0000	26.91	q	Q			
17+ 0	0.0000	26.72	q	Q			
17+ 5	0.0000	26.52	q	Q			
17+10	0.0000	26.31	q	Q			
17+15	0.0000	26.09	q	Q			
17+20	0.0000	25.86	q	Q			
17+25	0.0000	25.60	q	Q			
17+30	0.0000	25.30	q	Q			
17+35	0.0000	24.97	q	Q			
17+40	0.0000	24.61	q	Q			
17+45	0.0000	24.21	q	Q			
17+50	0.0000	23.76	q	Q			
17+55	0.0000	23.37	q	Q			
18+ 0	0.0000	23.18	q	Q			
18+ 5	0.0000	23.04	q	Q			
18+10	0.0000	22.92	q	Q			
18+15	0.0000	22.79	q	Q			
18+20	0.0000	22.66	q	Q			
18+25	0.0000	22.52	q	Q			
18+30	0.0000	22.38	q	Q			
18+35	0.0000	22.23	q	Q			
18+40	0.0000	22.07	q	Q			
18+45	0.0000	21.89	q	Q			
18+50	0.0000	21.70	q	Q			
18+55	0.0000	21.47	q	Q			
19+ 0	0.0000	21.23	q	Q			
19+ 5	0.0000	20.97	q	Q			
19+10	0.0000	20.69	q	Q			
19+15	0.0000	20.37	q	Q			
19+20	0.0000	20.17	q	Q			
19+25	0.0000	20.02	q	Q			
19+30	0.0000	19.89	q	Q			

19+35	0.0000	19.76	q	Q				
19+40	0.0000	19.62	q	Q				
19+45	0.0000	19.48	q	Q				
19+50	0.0000	19.32	q	Q				
19+55	0.0000	19.16	q	Q				
20+ 0	0.0000	18.99	q	Q				
20+ 5	0.0000	18.81	q	Q				
20+10	0.0000	18.61	q	Q				
20+15	0.0000	18.37	q	Q				
20+20	0.0000	18.10	q	Q				
20+25	0.0000	17.81	q	Q				
20+30	0.0000	17.50	q	Q				
20+35	0.0000	17.14	q	Q				
20+40	0.0000	16.84	q	Q				
20+45	0.0000	16.70	q	Q				
20+50	0.0000	16.59	q	Q				
20+55	0.0000	16.50	q	Q				
21+ 0	0.0000	16.40	q	Q				
21+ 5	0.0000	16.30	q	Q				
21+10	0.0000	16.20	q	Q				
21+15	0.0000	16.09	q	Q				
21+20	0.0000	15.98	q	Q				
21+25	0.0000	15.86	q	Q				
21+30	0.0000	15.74	q	Q				
21+35	0.0000	15.59	q	Q				
21+40	0.0000	15.42	q	Q				
21+45	0.0000	15.24	q	Q				
21+50	0.0000	15.04	q	Q				
21+55	0.0000	14.82	q	Q				
22+ 0	0.0000	14.57	q	Q				
22+ 5	0.0000	14.46	q	Q				
22+10	0.0000	14.40	q	Q				
22+15	0.0000	14.36	q	Q				
22+20	0.0000	14.32	q	Q				
22+25	0.0000	14.28	q	Q				
22+30	0.0000	14.23	q	Q				
22+35	0.0000	14.18	q	Q				
22+40	0.0000	14.13	q	Q				
22+45	0.0000	14.07	q	Q				
22+50	0.0000	14.01	q	Q				
22+55	0.0000	13.94	q	Q				
23+ 0	0.0000	13.87	q	Q				
23+ 5	0.0000	13.79	q	Q				
23+10	0.0000	13.71	q	Q				
23+15	0.0000	13.63	q	Q				
23+20	0.0000	13.54	q	Q				
23+25	0.0000	13.44	q	Q				
23+30	0.0000	13.34	q	Q				
23+35	0.0000	13.24	q	Q				
23+40	0.0000	13.12	q	Q				
23+45	0.0000	13.01	q	Q				
23+50	0.0000	12.89	q	Q				
23+55	0.0000	12.76	q	Q				
24+ 0	0.0000	12.63	q	Q				
24+ 5	0.0000	12.49	q	Q				
24+10	0.0000	12.35	q	Q				
24+15	0.0000	12.20	q	Q				

24+20	0.0000	12.01	q Q
24+25	0.0000	11.80	q Q
24+30	0.0000	11.57	q Q
24+35	0.0000	11.32	q Q
24+40	0.0000	11.03	q Q
24+45	0.0000	10.73	q Q
24+50	0.0000	10.61	q Q
24+55	0.0000	10.56	q Q
25+ 0	0.0000	10.53	q Q
25+ 5	0.0000	10.50	q Q
25+10	0.0000	10.47	q Q
25+15	0.0000	10.44	q Q
25+20	0.0000	10.41	q Q
25+25	0.0000	10.37	q Q
25+30	0.0000	10.33	q Q
25+35	0.0000	10.29	q Q
25+40	0.0000	10.25	q Q
25+45	0.0000	10.20	q Q
25+50	0.0000	10.15	q Q
25+55	0.0000	10.09	q Q
26+ 0	0.0000	10.04	q Q
26+ 5	0.0000	9.98	q Q
26+10	0.0000	9.92	q Q
26+15	0.0000	9.85	q Q
26+20	0.0000	9.78	q Q
26+25	0.0000	9.70	q Q
26+30	0.0000	9.62	q Q
26+35	0.0000	9.54	q Q
26+40	0.0000	9.45	q Q
26+45	0.0000	9.36	q Q
26+50	0.0000	9.27	q Q
26+55	0.0000	9.17	q Q
27+ 0	0.0000	9.07	q Q
27+ 5	0.0000	8.94	q Q
27+10	0.0000	8.79	q Q
27+15	0.0000	8.62	q Q
27+20	0.0000	8.44	q Q
27+25	0.0000	8.24	q Q
27+30	0.0000	8.03	q Q
27+35	0.0000	7.96	q Q
27+40	0.0000	7.93	qQ
27+45	0.0000	7.92	qQ
27+50	0.0000	7.91	qQ
27+55	0.0000	7.90	qQ
28+ 0	0.0000	7.89	qQ
28+ 5	0.0000	7.88	qQ
28+10	0.0000	7.87	qQ
28+15	0.0000	7.86	qQ
28+20	0.0000	7.84	qQ
28+25	0.0000	7.83	qQ
28+30	0.0000	7.81	qQ
28+35	0.0000	7.80	qQ
28+40	0.0000	7.78	qQ
28+45	0.0000	7.76	qQ
28+50	0.0000	7.74	qQ
28+55	0.0000	7.72	qQ
29+ 0	0.0000	7.70	qQ

29+ 5	0.0000	7.68	qQ				
29+10	0.0000	7.66	qQ				
29+15	0.0000	7.64	qQ				
29+20	0.0000	7.62	qQ				
29+25	0.0000	7.59	qQ				
29+30	0.0000	7.57	qQ				
29+35	0.0000	7.54	qQ				
29+40	0.0000	7.51	qQ				
29+45	0.0000	7.48	qQ				
29+50	0.0000	7.45	qQ				
29+55	0.0000	7.41	qQ				
30+ 0	0.0000	7.38	qQ				
30+ 5	0.0000	7.33	qQ				
30+10	0.0000	7.29	qQ				
30+15	0.0000	7.24	qQ				
30+20	0.0000	7.21	qQ				
30+25	0.0000	7.19	qQ				
30+30	0.0000	7.18	qQ				
30+35	0.0000	7.16	qQ				
30+40	0.0000	7.14	qQ				
30+45	0.0000	7.11	qQ				
30+50	0.0000	7.09	qQ				
30+55	0.0000	7.07	qQ				
31+ 0	0.0000	7.04	qQ				
31+ 5	0.0000	7.01	qQ				
31+10	0.0000	6.98	qQ				
31+15	0.0000	6.94	qQ				
31+20	0.0000	6.90	qQ				
31+25	0.0000	6.86	qQ				
31+30	0.0000	6.83	qQ				
31+35	0.0000	6.78	qQ				
31+40	0.0000	6.74	qQ				
31+45	0.0000	6.69	qQ				
31+50	0.0000	6.64	qQ				
31+55	0.0000	6.58	qQ				
32+ 0	0.0000	6.53	qQ				
32+ 5	0.0000	6.47	qQ				
32+10	0.0000	6.41	qQ				
32+15	0.0000	6.34	qQ				
32+20	0.0000	6.28	qQ				
32+25	0.0000	6.21	qQ				
32+30	0.0000	6.13	qQ				
32+35	0.0000	6.04	qQ				
32+40	0.0000	5.93	qQ				
32+45	0.0000	5.82	qQ				
32+50	0.0000	5.69	qQ				
32+55	0.0000	5.54	qQ				
33+ 0	0.0000	5.41	qQ				
33+ 5	0.0000	5.37	qQ				
33+10	0.0000	5.35	qQ				
33+15	0.0000	5.34	qQ				
33+20	0.0000	5.33	qQ				
33+25	0.0000	5.32	qQ				
33+30	0.0000	5.30	qQ				
33+35	0.0000	5.29	qQ				
33+40	0.0000	5.28	qQ				
33+45	0.0000	5.26	qQ				

33+50	0.0000	5.24	qQ				
33+55	0.0000	5.22	qQ				
34+ 0	0.0000	5.20	qQ				
34+ 5	0.0000	5.18	qQ				
34+10	0.0000	5.16	qQ				
34+15	0.0000	5.14	qQ				
34+20	0.0000	5.12	qQ				
34+25	0.0000	5.09	qQ				
34+30	0.0000	5.06	qQ				
34+35	0.0000	5.04	qQ				
34+40	0.0000	5.01	qQ				
34+45	0.0000	4.98	qQ				
34+50	0.0000	4.95	qQ				
34+55	0.0000	4.91	qQ				
35+ 0	0.0000	4.88	qQ				
35+ 5	0.0000	4.84	qQ				
35+10	0.0000	4.80	qQ				
35+15	0.0000	4.76	qQ				
35+20	0.0000	4.71	qQ				
35+25	0.0000	4.66	qQ				
35+30	0.0000	4.59	qQ				
35+35	0.0000	4.53	qQ				
35+40	0.0000	4.45	qQ				
35+45	0.0000	4.38	qQ				
35+50	0.0000	4.36	qQ				
35+55	0.0000	4.35	qQ				
36+ 0	0.0000	4.34	qQ				
36+ 5	0.0000	4.33	qQ				
36+10	0.0000	4.31	qQ				
36+15	0.0000	4.30	qQ				
36+20	0.0000	4.29	qQ				
36+25	0.0000	4.27	qQ				
36+30	0.0000	4.26	qQ				
36+35	0.0000	4.24	qQ				
36+40	0.0000	4.22	qQ				
36+45	0.0000	4.20	qQ				
36+50	0.0000	4.18	qQ				
36+55	0.0000	4.16	qQ				
37+ 0	0.0000	4.14	qQ				
37+ 5	0.0000	4.11	qQ				
37+10	0.0000	4.09	qQ				
37+15	0.0000	4.06	qQ				
37+20	0.0000	4.03	qQ				
37+25	0.0000	4.00	qQ				
37+30	0.0000	3.97	Q				
37+35	0.0000	3.94	Q				
37+40	0.0000	3.90	Q				
37+45	0.0000	3.86	Q				
37+50	0.0000	3.82	Q				
37+55	0.0000	3.78	Q				
38+ 0	0.0000	3.73	Q				
38+ 5	0.0000	3.67	Q				
38+10	0.0000	3.60	Q				
38+15	0.0000	3.54	Q				
38+20	0.0000	3.46	Q				
38+25	0.0000	3.37	Q				
38+30	0.0000	3.30	Q				

38+35	0.0000	3.26	Q
38+40	0.0000	3.24	Q
38+45	0.0000	3.22	Q
38+50	0.0000	3.20	Q
38+55	0.0000	3.18	Q
39+ 0	0.0000	3.16	Q
39+ 5	0.0000	3.14	Q
39+10	0.0000	3.12	Q
39+15	0.0000	3.09	Q
39+20	0.0000	3.07	Q
39+25	0.0000	3.04	Q
39+30	0.0000	3.01	Q
39+35	0.0000	2.98	Q
39+40	0.0000	2.95	Q
39+45	0.0000	2.91	Q
39+50	0.0000	2.88	Q
39+55	0.0000	2.84	Q
40+ 0	0.0000	2.80	Q
40+ 5	0.0000	2.76	Q
40+10	0.0000	2.72	Q
40+15	0.0000	2.68	Q
40+20	0.0000	2.63	Q
40+25	0.0000	2.58	Q
40+30	0.0000	2.53	Q
40+35	0.0000	2.48	Q
40+40	0.0000	2.42	Q
40+45	0.0000	2.36	Q
40+50	0.0000	2.29	Q
40+55	0.0000	2.21	Q
41+ 0	0.0000	2.12	Q
41+ 5	0.0000	2.02	Q
41+10	0.0000	1.91	Q
41+15	0.0000	1.82	Q
41+20	0.0000	1.77	Q
41+25	0.0000	1.72	Q
41+30	0.0000	1.67	Q
41+35	0.0000	1.62	Q
41+40	0.0000	1.57	Q
41+45	0.0000	1.51	Q
41+50	0.0000	1.45	Q
41+55	0.0000	1.38	Q
42+ 0	0.0000	1.32	Q
42+ 5	0.0000	1.25	Q
42+10	0.0000	1.17	Q
42+15	0.0000	1.10	Q
42+20	0.0000	1.02	Q
42+25	0.0000	0.94	Q
42+30	0.0000	0.84	Q
42+35	0.0000	0.72	Q
42+40	0.0000	0.59	Q
42+45	0.0000	0.44	Q
42+50	0.0000	0.28	Q
42+55	0.0000	0.08	Q
43+ 0	0.0000	0.02	Q
43+ 5	0.0000	0.01	Q
43+10	0.0000	0.00	Q
43+15	0.0000	0.00	Q

43+20 0.0000 0.00 Q | | | |

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

Number of intervals = 520

Time interval = 5.0 (Min.)

Maximum/Peak flow rate = 159.021 (CFS)

Total volume = 117.343 (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 - 2012
Study date: 05/11/15

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR
ROUTE AREA "BC"
20-YEAR, 24-HOUR
BY: JTS DATE: 05-08-15

Program License Serial Number 6320

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

From study/file name: 154149rechydb2420.rte
*****HYDROGRAPH DATA*****
Number of intervals = 736
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 180.662 (CFS)
Total volume = 161.599 (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 1.000 to Point/Station 2.000
**** ADD/COMBINE/RECOVER HYDROGRAPHS ****

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

From study/file name: 154149rechydc2420.rte
++++++

PRINT OF STORM
Runoff Hydrograph

Hydrograph in 5 Minute intervals (CFS)

Time(h+m) Add q(CFS) Tot. Q 0 45.3 90.5 135.8 181.0

0+ 5 0.0107 0.01 Q | | | | |
0+10 0.0565 0.07 Q | | | | |
0+15 0.1020 0.12 Q | | | | |
0+20 0.1265 0.16 Q | | | | |
0+25 0.1599 0.20 Q | | | | |
0+30 0.1899 0.25 Q | | | | |

0+35	0.2048	0.28	Q
0+40	0.2139	0.30	Q
0+45	0.2204	0.32	Q
0+50	0.2308	0.34	Q
0+55	0.2575	0.39	Q
1+ 0	0.2832	0.43	Q
1+ 5	0.2897	0.46	Q
1+10	0.2739	0.46	Q
1+15	0.2564	0.46	Q
1+20	0.2505	0.47	Q
1+25	0.2476	0.49	Q
1+30	0.2458	0.51	Q
1+35	0.2447	0.53	Q
1+40	0.2437	0.56	Q
1+45	0.2430	0.58	Q
1+50	0.2477	0.62	Q
1+55	0.2701	0.67	Q
2+ 0	0.2925	0.73	Q
2+ 5	0.3018	0.77	Q
2+10	0.3066	0.81	Q
2+15	0.3098	0.86	Q
2+20	0.3122	0.90	Q
2+25	0.3141	0.94	Q
2+30	0.3155	0.98	Q
2+35	0.3221	1.03	Q
2+40	0.3459	1.10	Q
2+45	0.3694	1.17	Q
2+50	0.3796	1.23	Q
2+55	0.3853	1.29	Q
3+ 0	0.3893	1.35	Q
3+ 5	0.3922	1.41	Q
3+10	0.3941	1.47	Q
3+15	0.3956	1.53	Q
3+20	0.3968	1.59	Q
3+25	0.3977	1.65	Q
3+30	0.3985	1.71	Q
3+35	0.3990	1.78	Q
3+40	0.3995	1.85	Q
3+45	0.3999	1.92	Q
3+50	0.4055	1.99	Q
3+55	0.4284	2.09	Q
4+ 0	0.4511	2.19	Q
4+ 5	0.4607	2.28	Q
4+10	0.4660	2.36	Q
4+15	0.4696	2.44	Q
4+20	0.4776	2.53	Q
4+25	0.5024	2.63	Q
4+30	0.5266	2.74	Q
4+35	0.5374	2.84	Q
4+40	0.5436	2.94	Q
4+45	0.5480	3.03	Q
4+50	0.5565	3.13	Q
4+55	0.5818	3.25	Q
5+ 0	0.6064	3.37	Q
5+ 5	0.6067	3.47	Q
5+10	0.5671	3.51	Q
5+15	0.5260	3.56	Q

5+20	0.5154	3.65	Q				
5+25	0.5301	3.76	Q				
5+30	0.5475	3.88	Q				
5+35	0.5587	3.99	Q				
5+40	0.5838	4.11	Q				
5+45	0.6081	4.24	Q				
5+50	0.6184	4.35	Q				
5+55	0.6242	4.45	Q				
6+ 0	0.6282	4.55	qQ				
6+ 5	0.6365	4.66	qQ				
6+10	0.6614	4.78	qQ				
6+15	0.6855	4.91	qQ				
6+20	0.6964	5.03	qQ				
6+25	0.7030	5.13	qQ				
6+30	0.7078	5.23	qQ				
6+35	0.7166	5.34	qQ				
6+40	0.7418	5.47	qQ				
6+45	0.7664	5.61	qQ				
6+50	0.7775	5.73	qQ				
6+55	0.7837	5.84	qQ				
7+ 0	0.7881	5.96	qQ				
7+ 5	0.7912	6.07	qQ				
7+10	0.7936	6.18	qQ				
7+15	0.7955	6.28	qQ				
7+20	0.8023	6.40	qQ				
7+25	0.8261	6.53	qQ				
7+30	0.8496	6.67	qQ				
7+35	0.8651	6.83	qQ				
7+40	0.8937	7.03	qQ				
7+45	0.9205	7.22	qQ				
7+50	0.9787	7.46	qQ				
7+55	1.1837	7.87	qQ				
8+ 0	1.3972	8.30	qQ				
8+ 5	1.6158	8.78	qQ				
8+10	2.1516	9.61	q Q				
8+15	2.6731	10.44	q Q				
8+20	2.9240	11.00	q Q				
8+25	3.0828	11.48	q Q				
8+30	3.2059	11.93	q Q				
8+35	3.3607	12.44	q Q				
8+40	3.6749	13.14	q Q				
8+45	3.9761	13.84	q Q				
8+50	4.1940	14.48	q Q				
8+55	4.5365	15.29	q Q				
9+ 0	4.8579	16.12	q Q				
9+ 5	5.1396	16.97	q Q				
9+10	5.7168	18.15	q Q				
9+15	6.2701	19.34	q Q				
9+20	6.5981	20.34	q Q				
9+25	6.9992	21.45	q Q				
9+30	7.3599	22.59	q Q				
9+35	7.6181	23.66	q Q				
9+40	7.9902	24.89	q Q				
9+45	8.3326	26.12	q Q				
9+50	8.5792	27.28	q Q				
9+55	8.9409	28.61	q Q				
10+ 0	9.2760	29.97	q Q				

10+ 5	9.0869	30.69	q	Q				
10+10	7.6126	30.00	q	Q				
10+15	6.1234	29.33	q	Q				
10+20	5.5386	29.59	q	Q				
10+25	5.2422	30.19	q	Q				
10+30	5.0504	30.95	q	Q				
10+35	5.1927	32.22	q	Q				
10+40	6.2515	34.55	q	Q				
10+45	7.3383	36.95	q	Q				
10+50	7.7767	38.77	q	Q				
10+55	8.0142	40.36	q	Q				
11+ 0	8.1852	41.90	q	Q				
11+ 5	8.2623	43.35	q	Q				
11+10	8.1366	44.60	q	Q				
11+15	7.9866	45.86	q	Q				
11+20	7.9698	47.31	q	Q				
11+25	8.0000	48.87	q	Q				
11+30	8.0361	50.33	q	Q				
11+35	7.9663	51.66	q	Q				
11+40	7.5462	52.65	q	Q				
11+45	7.1332	53.67	q	Q				
11+50	7.0308	55.09	q	Q				
11+55	7.1805	56.84	q	Q				
12+ 0	7.3629	58.66	q	Q				
12+ 5	7.8107	60.85	q	Q				
12+10	9.4563	64.42	q	Q				
12+15	11.0879	67.99	q	Q				
12+20	11.8462	70.75	q	Q				
12+25	12.4768	73.41	q	Q				
12+30	12.9928	75.98	q	Q				
12+35	13.4142	78.60	q	Q				
12+40	14.0947	81.57	q	Q				
12+45	14.7186	84.52	q	Q				
12+50	15.1103	87.09	q	Q				
12+55	15.5664	89.69	q	Q				
13+ 0	15.9703	92.24	q	Q				
13+ 5	16.4737	94.96	q	Q				
13+10	17.7815	98.60	q	Q				
13+15	19.0544	102.25	q	Q				
13+20	19.6413	105.31	q	Q				
13+25	19.9783	108.27	q	Q				
13+30	20.2260	111.29	q	Q				
13+35	19.8259	113.37	q	Q				
13+40	17.4562	113.15	q	Q				
13+45	15.0715	112.92	q	Q				
13+50	14.1206	114.12	q	Q				
13+55	13.6271	115.80	q	Q				
14+ 0	13.2995	117.80	q	Q				
14+ 5	13.2880	120.28	q	Q				
14+10	14.0427	123.62	q	Q				
14+15	14.8489	127.05	q	Q				
14+20	15.0879	129.82	q	Q				
14+25	14.9968	132.05	q	Q				
14+30	14.8645	134.27	q	Q				
14+35	14.8424	136.61	q	Q				
14+40	14.8509	138.96	q	Q				
14+45	14.8552	141.31	q	Q				

14+50	14.8263	143.77	q				Q	
14+55	14.6455	146.12	q				Q	
15+ 0	14.4631	148.28	q				Q	
15+ 5	14.3534	150.50	q				Q	
15+10	14.1097	152.52	q				Q	
15+15	13.8848	154.53	q				Q	
15+20	13.7433	156.61	q				Q	
15+25	13.4675	158.54	q				Q	
15+30	13.2141	160.43	q				Q	
15+35	12.8917	162.26	q				Q	
15+40	11.9240	163.53	q				Q	
15+45	10.9841	164.79	q				Q	
15+50	10.5848	166.69	q				Q	
15+55	10.3705	168.83	q				Q	
16+ 0	10.2271	171.05	q				Q	
16+ 5	9.4921	172.29	q				Q	
16+10	6.7029	171.11	q				Q	
16+15	3.9427	169.92	q				Q	
16+20	2.7536	170.00	q				Q	
16+25	2.0950	170.50	q				Q	
16+30	1.6329	171.19	q				Q	
16+35	1.2947	172.02	q				Q	
16+40	1.0263	172.97	q				Q	
16+45	0.8192	173.96	q				Q	
16+50	0.6544	175.03	q				Q	
16+55	0.5391	176.01	q				Q	
17+ 0	0.4485	176.90	q				Q	
17+ 5	0.3906	177.82	q				Q	
17+10	0.3836	178.68	q				Q	
17+15	0.3775	179.47	q				Q	
17+20	0.3646	180.18	q				Q	
17+25	0.3742	180.82	q				Q	
17+30	0.3807	181.04	q				Q	
17+35	0.3854	180.91	q				Q	
17+40	0.3888	180.66	q				Q	
17+45	0.3913	180.40	q				Q	
17+50	0.3881	180.12	q				Q	
17+55	0.3671	179.80	q				Q	
18+ 0	0.3458	179.37	q				Q	
18+ 5	0.3373	178.67	q				Q	
18+10	0.3329	177.89	q				Q	
18+15	0.3302	177.09	q				Q	
18+20	0.3281	176.18	q				Q	
18+25	0.3261	175.06	q				Q	
18+30	0.3247	173.90	q				Q	
18+35	0.3181	172.57	q				Q	
18+40	0.2943	171.09	q				Q	
18+45	0.2708	169.56	q				Q	
18+50	0.2553	167.67	q				Q	
18+55	0.2267	165.41	q				Q	
19+ 0	0.1999	163.02	q				Q	
19+ 5	0.1928	160.96	q				Q	
19+10	0.2085	159.07	q				Q	
19+15	0.2262	157.15	q				Q	
19+20	0.2373	155.24	q				Q	
19+25	0.2625	153.23	q				Q	
19+30	0.2868	151.13	q				Q	

19+35	0.2918	148.85	q				Q
19+40	0.2748	146.31	q				Q
19+45	0.2559	143.65	q				Q
19+50	0.2440	141.00	q				Q
19+55	0.2183	138.54	q				Q
20+ 0	0.1937	136.08	q				Q
20+ 5	0.1883	133.59	q				Q
20+10	0.2054	131.10	q				Q
20+15	0.2243	128.53	q				Q
20+20	0.2308	125.87	q				Q
20+25	0.2336	123.15	q				Q
20+30	0.2355	120.56	q				Q
20+35	0.2366	117.99	q				Q
20+40	0.2372	115.45	q				Q
20+45	0.2374	112.90	q				Q
20+50	0.2325	110.29	q				Q
20+55	0.2101	107.64	q				Q
21+ 0	0.1877	104.92	q				Q
21+ 5	0.1837	102.36	q				Q
21+10	0.2018	99.87	q				Q
21+15	0.2214	97.43	q				Q
21+20	0.2232	94.99	q				Q
21+25	0.2037	92.52	q				Q
21+30	0.1831	90.04	q				Q
21+35	0.1803	87.92	q				Q
21+40	0.1989	86.03	q				Q
21+45	0.2187	84.11	q				Q
21+50	0.2210	82.26	q				Q
21+55	0.2019	80.50	q				Q
22+ 0	0.1817	78.78	q				Q
22+ 5	0.1791	77.10	q				Q
22+10	0.1982	75.40	q				Q
22+15	0.2185	73.69	q				Q
22+20	0.2210	71.93	q				Q
22+25	0.2019	70.41	q				Q
22+30	0.1817	69.06	q				Q
22+35	0.1738	67.75	q				Q
22+40	0.1700	66.51	q				Q
22+45	0.1675	65.27	q				Q
22+50	0.1658	64.02	q				Q
22+55	0.1643	62.84	q				Q
23+ 0	0.1632	61.84	q				Q
23+ 5	0.1623	60.83	q				Q
23+10	0.1618	59.79	q				Q
23+15	0.1615	58.80	q				Q
23+20	0.1612	57.84	q				Q
23+25	0.1607	56.89	q				Q
23+30	0.1603	55.95	q				Q
23+35	0.1601	55.00	q				Q
23+40	0.1601	54.04	q				Q
23+45	0.1601	53.11	q				Q
23+50	0.1601	52.34	q				Q
23+55	0.1601	51.60	q				Q
24+ 0	0.1601	50.86	q				Q
24+ 5	0.1493	50.08	q				Q
24+10	0.1036	49.25	q				Q
24+15	0.0581	48.42	q				Q

24+20	0.0389	47.74	q	Q			
24+25	0.0284	47.13	q	Q			
24+30	0.0211	46.49	q	Q			
24+35	0.0159	45.91	q	Q			
24+40	0.0120	45.36	q	Q			
24+45	0.0091	44.82	q	Q			
24+50	0.0067	44.28	q	Q			
24+55	0.0048	43.74	q	Q			
25+ 0	0.0033	43.18	q	Q			
25+ 5	0.0022	42.62	q	Q			
25+10	0.0014	42.15	q	Q			
25+15	0.0005	41.73	q	Q			
25+20	0.0000	41.31	q	Q			
25+25	0.0000	40.89	q	Q			
25+30	0.0000	40.45	q	Q			
25+35	0.0000	39.99	q	Q			
25+40	0.0000	39.55	q	Q			
25+45	0.0000	39.13	q	Q			
25+50	0.0000	38.71	q	Q			
25+55	0.0000	38.30	q	Q			
26+ 0	0.0000	37.92	q	Q			
26+ 5	0.0000	37.54	q	Q			
26+10	0.0000	37.17	q	Q			
26+15	0.0000	36.79	q	Q			
26+20	0.0000	36.42	q	Q			
26+25	0.0000	36.03	q	Q			
26+30	0.0000	35.64	q	Q			
26+35	0.0000	35.28	q	Q			
26+40	0.0000	34.93	q	Q			
26+45	0.0000	34.58	q	Q			
26+50	0.0000	34.22	q	Q			
26+55	0.0000	33.85	q	Q			
27+ 0	0.0000	33.48	q	Q			
27+ 5	0.0000	33.16	q	Q			
27+10	0.0000	32.84	q	Q			
27+15	0.0000	32.51	q	Q			
27+20	0.0000	32.20	q	Q			
27+25	0.0000	31.89	q	Q			
27+30	0.0000	31.59	q	Q			
27+35	0.0000	31.28	q	Q			
27+40	0.0000	30.97	q	Q			
27+45	0.0000	30.66	q	Q			
27+50	0.0000	30.34	q	Q			
27+55	0.0000	30.02	q	Q			
28+ 0	0.0000	29.71	q	Q			
28+ 5	0.0000	29.40	q	Q			
28+10	0.0000	29.09	q	Q			
28+15	0.0000	28.76	q	Q			
28+20	0.0000	28.43	q	Q			
28+25	0.0000	28.11	q	Q			
28+30	0.0000	27.82	q	Q			
28+35	0.0000	27.52	q	Q			
28+40	0.0000	27.24	q	Q			
28+45	0.0000	26.98	q	Q			
28+50	0.0000	26.72	q	Q			
28+55	0.0000	26.46	q	Q			
29+ 0	0.0000	26.20	q	Q			

29+ 5	0.0000	25.93	q	Q				
29+10	0.0000	25.66	q	Q				
29+15	0.0000	25.38	q	Q				
29+20	0.0000	25.13	q	Q				
29+25	0.0000	24.88	q	Q				
29+30	0.0000	24.63	q	Q				
29+35	0.0000	24.38	q	Q				
29+40	0.0000	24.12	q	Q				
29+45	0.0000	23.87	q	Q				
29+50	0.0000	23.62	q	Q				
29+55	0.0000	23.38	q	Q				
30+ 0	0.0000	23.14	q	Q				
30+ 5	0.0000	22.93	q	Q				
30+10	0.0000	22.72	q	Q				
30+15	0.0000	22.51	q	Q				
30+20	0.0000	22.31	q	Q				
30+25	0.0000	22.11	q	Q				
30+30	0.0000	21.91	q	Q				
30+35	0.0000	21.70	q	Q				
30+40	0.0000	21.50	q	Q				
30+45	0.0000	21.30	q	Q				
30+50	0.0000	21.11	q	Q				
30+55	0.0000	20.92	q	Q				
31+ 0	0.0000	20.74	q	Q				
31+ 5	0.0000	20.54	q	Q				
31+10	0.0000	20.37	q	Q				
31+15	0.0000	20.22	q	Q				
31+20	0.0000	20.05	q	Q				
31+25	0.0000	19.87	q	Q				
31+30	0.0000	19.70	q	Q				
31+35	0.0000	19.52	q	Q				
31+40	0.0000	19.34	q	Q				
31+45	0.0000	19.16	q	Q				
31+50	0.0000	18.97	q	Q				
31+55	0.0000	18.79	q	Q				
32+ 0	0.0000	18.61	q	Q				
32+ 5	0.0000	18.45	q	Q				
32+10	0.0000	18.29	q	Q				
32+15	0.0000	18.13	q	Q				
32+20	0.0000	17.95	q	Q				
32+25	0.0000	17.78	q	Q				
32+30	0.0000	17.60	q	Q				
32+35	0.0000	17.44	q	Q				
32+40	0.0000	17.29	q	Q				
32+45	0.0000	17.14	q	Q				
32+50	0.0000	17.02	q	Q				
32+55	0.0000	16.91	q	Q				
33+ 0	0.0000	16.80	q	Q				
33+ 5	0.0000	16.69	q	Q				
33+10	0.0000	16.58	q	Q				
33+15	0.0000	16.46	q	Q				
33+20	0.0000	16.34	q	Q				
33+25	0.0000	16.21	q	Q				
33+30	0.0000	16.09	q	Q				
33+35	0.0000	15.97	q	Q				
33+40	0.0000	15.85	q	Q				
33+45	0.0000	15.74	q	Q				

33+50	0.0000	15.61	q	Q
33+55	0.0000	15.49	q	Q
34+ 0	0.0000	15.37	q	Q
34+ 5	0.0000	15.23	q	Q
34+10	0.0000	15.09	q	Q
34+15	0.0000	14.95	q	Q
34+20	0.0000	14.81	q	Q
34+25	0.0000	14.67	q	Q
34+30	0.0000	14.53	q	Q
34+35	0.0000	14.39	q	Q
34+40	0.0000	14.24	q	Q
34+45	0.0000	14.10	q	Q
34+50	0.0000	13.97	q	Q
34+55	0.0000	13.85	q	Q
35+ 0	0.0000	13.72	q	Q
35+ 5	0.0000	13.57	q	Q
35+10	0.0000	13.43	q	Q
35+15	0.0000	13.29	q	Q
35+20	0.0000	13.19	q	Q
35+25	0.0000	13.09	q	Q
35+30	0.0000	13.00	q	Q
35+35	0.0000	12.92	q	Q
35+40	0.0000	12.85	q	Q
35+45	0.0000	12.78	q	Q
35+50	0.0000	12.71	q	Q
35+55	0.0000	12.64	q	Q
36+ 0	0.0000	12.57	q	Q
36+ 5	0.0000	12.48	q	Q
36+10	0.0000	12.40	q	Q
36+15	0.0000	12.31	q	Q
36+20	0.0000	12.23	q	Q
36+25	0.0000	12.14	q	Q
36+30	0.0000	12.06	q	Q
36+35	0.0000	11.97	q	Q
36+40	0.0000	11.88	q	Q
36+45	0.0000	11.79	q	Q
36+50	0.0000	11.70	q	Q
36+55	0.0000	11.61	q	Q
37+ 0	0.0000	11.51	q	Q
37+ 5	0.0000	11.42	q	Q
37+10	0.0000	11.33	q	Q
37+15	0.0000	11.24	q	Q
37+20	0.0000	11.14	q	Q
37+25	0.0000	11.05	q	Q
37+30	0.0000	10.97	q	Q
37+35	0.0000	10.90	q	Q
37+40	0.0000	10.83	q	Q
37+45	0.0000	10.76	q	Q
37+50	0.0000	10.69	q	Q
37+55	0.0000	10.62	q	Q
38+ 0	0.0000	10.55	q	Q
38+ 5	0.0000	10.50	q	Q
38+10	0.0000	10.46	q	Q
38+15	0.0000	10.41	q	Q
38+20	0.0000	10.37	q	Q
38+25	0.0000	10.32	q	Q
38+30	0.0000	10.28	q	Q

38+35	0.0000	10.24	q Q				
38+40	0.0000	10.20	q Q				
38+45	0.0000	10.16	q Q				
38+50	0.0000	10.11	q Q				
38+55	0.0000	10.07	q Q				
39+ 0	0.0000	10.03	q Q				
39+ 5	0.0000	9.98	q Q				
39+10	0.0000	9.94	q Q				
39+15	0.0000	9.90	q Q				
39+20	0.0000	9.86	q Q				
39+25	0.0000	9.81	q Q				
39+30	0.0000	9.76	q Q				
39+35	0.0000	9.70	q Q				
39+40	0.0000	9.64	q Q				
39+45	0.0000	9.58	q Q				
39+50	0.0000	9.51	q Q				
39+55	0.0000	9.45	q Q				
40+ 0	0.0000	9.39	q Q				
40+ 5	0.0000	9.32	q Q				
40+10	0.0000	9.25	q Q				
40+15	0.0000	9.19	q Q				
40+20	0.0000	9.12	q Q				
40+25	0.0000	9.06	q Q				
40+30	0.0000	9.00	qQ				
40+35	0.0000	8.92	qQ				
40+40	0.0000	8.85	qQ				
40+45	0.0000	8.78	qQ				
40+50	0.0000	8.71	qQ				
40+55	0.0000	8.64	qQ				
41+ 0	0.0000	8.57	qQ				
41+ 5	0.0000	8.52	qQ				
41+10	0.0000	8.46	qQ				
41+15	0.0000	8.41	qQ				
41+20	0.0000	8.36	qQ				
41+25	0.0000	8.30	qQ				
41+30	0.0000	8.25	qQ				
41+35	0.0000	8.19	qQ				
41+40	0.0000	8.12	qQ				
41+45	0.0000	8.06	qQ				
41+50	0.0000	8.00	qQ				
41+55	0.0000	7.94	qQ				
42+ 0	0.0000	7.88	qQ				
42+ 5	0.0000	7.82	qQ				
42+10	0.0000	7.76	qQ				
42+15	0.0000	7.69	qQ				
42+20	0.0000	7.62	qQ				
42+25	0.0000	7.55	qQ				
42+30	0.0000	7.48	qQ				
42+35	0.0000	7.41	qQ				
42+40	0.0000	7.34	qQ				
42+45	0.0000	7.27	qQ				
42+50	0.0000	7.20	qQ				
42+55	0.0000	7.13	qQ				
43+ 0	0.0000	7.06	qQ				
43+ 5	0.0000	7.00	qQ				
43+10	0.0000	6.95	qQ				
43+15	0.0000	6.88	qQ				

43+20	0.0000	6.82	qQ				
43+25	0.0000	6.76	qQ				
43+30	0.0000	6.70	qQ				
43+35	0.0000	6.65	qQ				
43+40	0.0000	6.61	qQ				
43+45	0.0000	6.56	qQ				
43+50	0.0000	6.53	qQ				
43+55	0.0000	6.49	qQ				
44+ 0	0.0000	6.45	qQ				
44+ 5	0.0000	6.42	qQ				
44+10	0.0000	6.38	qQ				
44+15	0.0000	6.34	qQ				
44+20	0.0000	6.30	qQ				
44+25	0.0000	6.26	qQ				
44+30	0.0000	6.22	qQ				
44+35	0.0000	6.18	qQ				
44+40	0.0000	6.14	qQ				
44+45	0.0000	6.10	qQ				
44+50	0.0000	6.05	qQ				
44+55	0.0000	6.01	qQ				
45+ 0	0.0000	5.96	qQ				
45+ 5	0.0000	5.90	qQ				
45+10	0.0000	5.85	qQ				
45+15	0.0000	5.79	qQ				
45+20	0.0000	5.74	qQ				
45+25	0.0000	5.68	qQ				
45+30	0.0000	5.61	qQ				
45+35	0.0000	5.55	qQ				
45+40	0.0000	5.48	qQ				
45+45	0.0000	5.42	qQ				
45+50	0.0000	5.37	qQ				
45+55	0.0000	5.31	qQ				
46+ 0	0.0000	5.25	qQ				
46+ 5	0.0000	5.19	qQ				
46+10	0.0000	5.12	qQ				
46+15	0.0000	5.06	qQ				
46+20	0.0000	5.00	qQ				
46+25	0.0000	4.94	qQ				
46+30	0.0000	4.88	qQ				
46+35	0.0000	4.83	qQ				
46+40	0.0000	4.78	qQ				
46+45	0.0000	4.72	qQ				
46+50	0.0000	4.66	qQ				
46+55	0.0000	4.61	qQ				
47+ 0	0.0000	4.55	qQ				
47+ 5	0.0000	4.49	Q				
47+10	0.0000	4.42	Q				
47+15	0.0000	4.36	Q				
47+20	0.0000	4.30	Q				
47+25	0.0000	4.24	Q				
47+30	0.0000	4.19	Q				
47+35	0.0000	4.14	Q				
47+40	0.0000	4.10	Q				
47+45	0.0000	4.05	Q				
47+50	0.0000	3.99	Q				
47+55	0.0000	3.94	Q				
48+ 0	0.0000	3.87	Q				

48+ 5	0.0000	3.81	Q
48+10	0.0000	3.74	Q
48+15	0.0000	3.67	Q
48+20	0.0000	3.61	Q
48+25	0.0000	3.54	Q
48+30	0.0000	3.48	Q
48+35	0.0000	3.41	Q
48+40	0.0000	3.35	Q
48+45	0.0000	3.29	Q
48+50	0.0000	3.22	Q
48+55	0.0000	3.15	Q
49+ 0	0.0000	3.09	Q
49+ 5	0.0000	3.04	Q
49+10	0.0000	2.99	Q
49+15	0.0000	2.94	Q
49+20	0.0000	2.90	Q
49+25	0.0000	2.86	Q
49+30	0.0000	2.80	Q
49+35	0.0000	2.74	Q
49+40	0.0000	2.68	Q
49+45	0.0000	2.61	Q
49+50	0.0000	2.55	Q
49+55	0.0000	2.48	Q
50+ 0	0.0000	2.41	Q
50+ 5	0.0000	2.34	Q
50+10	0.0000	2.27	Q
50+15	0.0000	2.19	Q
50+20	0.0000	2.12	Q
50+25	0.0000	2.04	Q
50+30	0.0000	1.96	Q
50+35	0.0000	1.87	Q
50+40	0.0000	1.78	Q
50+45	0.0000	1.70	Q
50+50	0.0000	1.61	Q
50+55	0.0000	1.53	Q
51+ 0	0.0000	1.47	Q
51+ 5	0.0000	1.41	Q
51+10	0.0000	1.36	Q
51+15	0.0000	1.30	Q
51+20	0.0000	1.25	Q
51+25	0.0000	1.19	Q
51+30	0.0000	1.13	Q
51+35	0.0000	1.07	Q
51+40	0.0000	1.00	Q
51+45	0.0000	0.95	Q
51+50	0.0000	0.90	Q
51+55	0.0000	0.85	Q
52+ 0	0.0000	0.80	Q
52+ 5	0.0000	0.75	Q
52+10	0.0000	0.70	Q
52+15	0.0000	0.66	Q
52+20	0.0000	0.61	Q
52+25	0.0000	0.56	Q
52+30	0.0000	0.52	Q
52+35	0.0000	0.47	Q
52+40	0.0000	0.43	Q
52+45	0.0000	0.39	Q

52+50	0.0000	0.34	Q
52+55	0.0000	0.30	Q
53+ 0	0.0000	0.27	Q
53+ 5	0.0000	0.23	Q
53+10	0.0000	0.20	Q
53+15	0.0000	0.17	Q
53+20	0.0000	0.14	Q
53+25	0.0000	0.10	Q
53+30	0.0000	0.10	Q
53+35	0.0000	0.10	Q
53+40	0.0000	0.10	Q
53+45	0.0000	0.10	Q
53+50	0.0000	0.09	Q
53+55	0.0000	0.09	Q
54+ 0	0.0000	0.09	Q
54+ 5	0.0000	0.09	Q
54+10	0.0000	0.09	Q
54+15	0.0000	0.09	Q
54+20	0.0000	0.08	Q
54+25	0.0000	0.08	Q
54+30	0.0000	0.08	Q
54+35	0.0000	0.08	Q
54+40	0.0000	0.08	Q
54+45	0.0000	0.08	Q
54+50	0.0000	0.07	Q
54+55	0.0000	0.07	Q
55+ 0	0.0000	0.07	Q
55+ 5	0.0000	0.07	Q
55+10	0.0000	0.07	Q
55+15	0.0000	0.07	Q
55+20	0.0000	0.06	Q
55+25	0.0000	0.06	Q
55+30	0.0000	0.06	Q
55+35	0.0000	0.06	Q
55+40	0.0000	0.06	Q
55+45	0.0000	0.06	Q
55+50	0.0000	0.06	Q
55+55	0.0000	0.05	Q
56+ 0	0.0000	0.05	Q
56+ 5	0.0000	0.05	Q
56+10	0.0000	0.05	Q
56+15	0.0000	0.05	Q
56+20	0.0000	0.05	Q
56+25	0.0000	0.05	Q
56+30	0.0000	0.05	Q
56+35	0.0000	0.04	Q
56+40	0.0000	0.04	Q
56+45	0.0000	0.04	Q
56+50	0.0000	0.04	Q
56+55	0.0000	0.04	Q
57+ 0	0.0000	0.04	Q
57+ 5	0.0000	0.04	Q
57+10	0.0000	0.04	Q
57+15	0.0000	0.04	Q
57+20	0.0000	0.03	Q
57+25	0.0000	0.03	Q
57+30	0.0000	0.03	Q

57+35	0.0000	0.03	Q				
57+40	0.0000	0.03	Q				
57+45	0.0000	0.03	Q				
57+50	0.0000	0.03	Q				
57+55	0.0000	0.03	Q				
58+ 0	0.0000	0.03	Q				
58+ 5	0.0000	0.03	Q				
58+10	0.0000	0.03	Q				
58+15	0.0000	0.02	Q				
58+20	0.0000	0.02	Q				
58+25	0.0000	0.02	Q				
58+30	0.0000	0.02	Q				
58+35	0.0000	0.02	Q				
58+40	0.0000	0.02	Q				
58+45	0.0000	0.02	Q				
58+50	0.0000	0.02	Q				
58+55	0.0000	0.02	Q				
59+ 0	0.0000	0.02	Q				
59+ 5	0.0000	0.02	Q				
59+10	0.0000	0.02	Q				
59+15	0.0000	0.01	Q				
59+20	0.0000	0.01	Q				
59+25	0.0000	0.01	Q				
59+30	0.0000	0.01	Q				
59+35	0.0000	0.01	Q				
59+40	0.0000	0.01	Q				
59+45	0.0000	0.01	Q				
59+50	0.0000	0.01	Q				
59+55	0.0000	0.01	Q				
60+ 0	0.0000	0.01	Q				
60+ 5	0.0000	0.01	Q				
60+10	0.0000	0.01	Q				
60+15	0.0000	0.01	Q				
60+20	0.0000	0.01	Q				
60+25	0.0000	0.01	Q				
60+30	0.0000	0.01	Q				
60+35	0.0000	0.00	Q				
60+40	0.0000	0.00	Q				
60+45	0.0000	0.00	Q				
60+50	0.0000	0.00	Q				
60+55	0.0000	0.00	Q				
61+ 0	0.0000	0.00	Q				
61+ 5	0.0000	0.00	Q				
61+10	0.0000	0.00	Q				
61+15	0.0000	0.00	Q				
61+20	0.0000	0.00	Q				

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

Number of intervals = 736

Time interval = 5.0 (Min.)

Maximum/Peak flow rate = 181.043 (CFS)

Total volume = 169.097 (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 - 2012
 Study date: 05/11/15

 154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR
 ROUTE AREA "BC"
 100-YEAR, 1-HOUR
 BY: JTS DATE: 05-08-15

Program License Serial Number 6320

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

From study/file name: 154149RECHYDB1100.rte
 *****HYDROGRAPH DATA*****
 Number of intervals = 460
 Time interval = 5.0 (Min.)
 Maximum/Peak flow rate = 147.576 (CFS)
 Total volume = 91.838 (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 1.000 to Point/Station 2.000
 **** ADD/COMBINE/RECOVER HYDROGRAPHS ****

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

From study/file name: 154149RECHYDC1100.rte
 ++++++
 P R I N T O F 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)	Add q(CFS)	Tot. Q	0	36.9	73.8	110.7	147.6
0+ 5	1.8540	2.60	Q				
0+10	9.8180	12.07	qQ				
0+15	18.3175	22.27	q Q				
0+20	23.6429	29.46	qQ				
0+25	27.4784	35.22	q Q				
0+30	30.4726	40.32	q Q				

0+35	34.5333	46.90		q	Q				
0+40	40.7412	56.13		q	Q				
0+45	49.3287	68.66			q	Q			
0+50	67.4419	93.79				q		Q	
0+55	94.6446	127.45					q	Q	
1+ 0	87.9802	123.61					q	Q	
1+ 5	58.1515	95.29			q			Q	
1+10	36.2726	74.13		q		Q			
1+15	22.3600	60.96				Q			
1+20	15.6740	55.10		q		Q			
1+25	11.5993	52.17		q		Q			
1+30	8.7369	51.42		q		Q			
1+35	6.8674	52.23		q		Q			
1+40	5.2636	54.79		q		Q			
1+45	4.0612	56.94		q		Q			
1+50	3.0358	58.10	q			Q			
1+55	2.2578	59.16	q			Q			
2+ 0	1.7150	60.95	q			Q			
2+ 5	1.0182	63.48	q			Q			
2+10	0.3350	67.35	q			Q			
2+15	0.1014	73.69	q			Q			
2+20	0.0000	77.00	q			Q			
2+25	0.0000	79.29	q			Q			
2+30	0.0000	80.85	q			Q			
2+35	0.0000	82.58	q			Q			
2+40	0.0000	84.82	q			Q			
2+45	0.0000	88.75	q				Q		
2+50	0.0000	93.30	q				Q		
2+55	0.0000	96.14	q				Q		
3+ 0	0.0000	98.39	q				Q		
3+ 5	0.0000	100.25	q				Q		
3+10	0.0000	102.18	q				Q		
3+15	0.0000	104.31	q				Q		
3+20	0.0000	106.88	q				Q		
3+25	0.0000	109.94	q				Q		
3+30	0.0000	114.00	q				Q		
3+35	0.0000	121.37	q				Q		
3+40	0.0000	127.36	q				Q		
3+45	0.0000	130.09	q				Q		
3+50	0.0000	131.48	q				Q		
3+55	0.0000	132.20	q				Q		
4+ 0	0.0000	132.95	q				Q		
4+ 5	0.0000	133.78	q				Q		
4+10	0.0000	134.82	q				Q		
4+15	0.0000	136.19	q				Q		
4+20	0.0000	138.02	q				Q		
4+25	0.0000	141.22	q				Q		
4+30	0.0000	143.31	q				Q		
4+35	0.0000	144.31	q				Q		
4+40	0.0000	144.78	q				Q		
4+45	0.0000	145.11	q				Q		
4+50	0.0000	145.51	q				Q		
4+55	0.0000	146.14	q				Q		
5+ 0	0.0000	147.04	q				Q		
5+ 5	0.0000	147.40	q				Q		
5+10	0.0000	147.56	q				Q		
5+15	0.0000	147.58	q				Q		

5+20	0.0000	147.58	q					Q
5+25	0.0000	147.58	q					Q
5+30	0.0000	147.55	q					Q
5+35	0.0000	146.48	q					Q
5+40	0.0000	144.78	q					Q
5+45	0.0000	142.83	q					Q
5+50	0.0000	140.75	q					Q
5+55	0.0000	138.59	q					Q
6+ 0	0.0000	136.19	q					Q
6+ 5	0.0000	133.28	q					Q
6+10	0.0000	129.81	q					Q
6+15	0.0000	125.13	q					Q
6+20	0.0000	116.57	q				Q	
6+25	0.0000	110.11	q				Q	
6+30	0.0000	106.79	q				Q	
6+35	0.0000	104.93	q				Q	
6+40	0.0000	103.67	q				Q	
6+45	0.0000	102.36	q				Q	
6+50	0.0000	100.88	q				Q	
6+55	0.0000	98.89	q				Q	
7+ 0	0.0000	96.00	q				Q	
7+ 5	0.0000	92.16	q				Q	
7+10	0.0000	85.87	q				Q	
7+15	0.0000	81.89	q				Q	
7+20	0.0000	79.56	q				Q	
7+25	0.0000	78.04	q				Q	
7+30	0.0000	76.54	q				Q	
7+35	0.0000	74.69	q				Q	
7+40	0.0000	71.71	q				Q	
7+45	0.0000	67.63	q				Q	
7+50	0.0000	65.74	q				Q	
7+55	0.0000	64.58	q				Q	
8+ 0	0.0000	64.01	q				Q	
8+ 5	0.0000	63.46	q				Q	
8+10	0.0000	62.86	q				Q	
8+15	0.0000	62.15	q				Q	
8+20	0.0000	60.91	q				Q	
8+25	0.0000	59.28	q				Q	
8+30	0.0000	56.84	q				Q	
8+35	0.0000	54.11	q				Q	
8+40	0.0000	52.67	q				Q	
8+45	0.0000	51.55	q				Q	
8+50	0.0000	50.57	q				Q	
8+55	0.0000	49.42	q				Q	
9+ 0	0.0000	47.83	q				Q	
9+ 5	0.0000	44.94	q				Q	
9+10	0.0000	42.98	q				Q	
9+15	0.0000	41.94	q				Q	
9+20	0.0000	41.38	q				Q	
9+25	0.0000	40.98	q				Q	
9+30	0.0000	40.57	q				Q	
9+35	0.0000	40.10	q				Q	
9+40	0.0000	39.47	q				Q	
9+45	0.0000	38.59	q				Q	
9+50	0.0000	37.40	q				Q	
9+55	0.0000	35.47	q	Q				
10+ 0	0.0000	34.37	q	Q				

10+ 5	0.0000	33.73	q	Q			
10+10	0.0000	33.35	q	Q			
10+15	0.0000	32.98	q	Q			
10+20	0.0000	32.52	q	Q			
10+25	0.0000	31.75	q	Q			
10+30	0.0000	30.82	q	Q			
10+35	0.0000	30.49	q	Q			
10+40	0.0000	30.34	q	Q			
10+45	0.0000	30.33	q	Q			
10+50	0.0000	30.33	q	Q			
10+55	0.0000	30.33	q	Q			
11+ 0	0.0000	30.32	q	Q			
11+ 5	0.0000	30.14	q	Q			
11+10	0.0000	29.89	q	Q			
11+15	0.0000	29.60	q	Q			
11+20	0.0000	29.30	q	Q			
11+25	0.0000	28.98	q	Q			
11+30	0.0000	28.62	q	Q			
11+35	0.0000	28.19	q	Q			
11+40	0.0000	27.67	q	Q			
11+45	0.0000	26.94	q	Q			
11+50	0.0000	25.65	q	Q			
11+55	0.0000	24.96	q	Q			
12+ 0	0.0000	24.66	q	Q			
12+ 5	0.0000	24.60	q	Q			
12+10	0.0000	24.60	q	Q			
12+15	0.0000	24.60	q	Q			
12+20	0.0000	24.60	q	Q			
12+25	0.0000	24.53	q	Q			
12+30	0.0000	24.36	q	Q			
12+35	0.0000	24.17	q	Q			
12+40	0.0000	23.96	q	Q			
12+45	0.0000	23.74	q	Q			
12+50	0.0000	23.50	q	Q			
12+55	0.0000	23.21	q	Q			
13+ 0	0.0000	22.87	q	Q			
13+ 5	0.0000	22.44	q	Q			
13+10	0.0000	21.70	q	Q			
13+15	0.0000	20.91	q	Q			
13+20	0.0000	20.62	q	Q			
13+25	0.0000	20.50	q	Q			
13+30	0.0000	20.50	q	Q			
13+35	0.0000	20.50	q	Q			
13+40	0.0000	20.50	q	Q			
13+45	0.0000	20.49	q	Q			
13+50	0.0000	20.40	q	Q			
13+55	0.0000	20.30	q	Q			
14+ 0	0.0000	20.17	q	Q			
14+ 5	0.0000	20.04	q	Q			
14+10	0.0000	19.90	q	Q			
14+15	0.0000	19.75	q	Q			
14+20	0.0000	19.56	q	Q			
14+25	0.0000	19.33	q	Q			
14+30	0.0000	19.00	q	Q			
14+35	0.0000	18.45	q	Q			
14+40	0.0000	18.18	q	Q			
14+45	0.0000	18.06	q	Q			

14+50	0.0000	18.04	q	Q				
14+55	0.0000	18.04	q	Q				
15+ 0	0.0000	18.04	q	Q				
15+ 5	0.0000	18.04	q	Q				
15+10	0.0000	17.98	q	Q				
15+15	0.0000	17.84	q	Q				
15+20	0.0000	17.68	q	Q				
15+25	0.0000	17.51	q	Q				
15+30	0.0000	17.33	q	Q				
15+35	0.0000	17.14	q	Q				
15+40	0.0000	16.91	q	Q				
15+45	0.0000	16.64	q	Q				
15+50	0.0000	16.28	q	Q				
15+55	0.0000	15.66	q	Q				
16+ 0	0.0000	15.06	q	Q				
16+ 5	0.0000	14.84	q	Q				
16+10	0.0000	14.76	q	Q				
16+15	0.0000	14.76	q	Q				
16+20	0.0000	14.76	q	Q				
16+25	0.0000	14.76	q	Q				
16+30	0.0000	14.75	q	Q				
16+35	0.0000	14.66	q	Q				
16+40	0.0000	14.55	q	Q				
16+45	0.0000	14.42	q	Q				
16+50	0.0000	14.29	q	Q				
16+55	0.0000	14.15	q	Q				
17+ 0	0.0000	14.00	q	Q				
17+ 5	0.0000	13.81	q	Q				
17+10	0.0000	13.57	q	Q				
17+15	0.0000	13.23	q	Q				
17+20	0.0000	12.67	q	Q				
17+25	0.0000	12.43	q	Q				
17+30	0.0000	12.31	q	Q				
17+35	0.0000	12.30	q	Q				
17+40	0.0000	12.30	q	Q				
17+45	0.0000	12.30	q	Q				
17+50	0.0000	12.30	q	Q				
17+55	0.0000	12.30	q	Q				
18+ 0	0.0000	12.30	q	Q				
18+ 5	0.0000	12.30	q	Q				
18+10	0.0000	12.30	q	Q				
18+15	0.0000	12.30	q	Q				
18+20	0.0000	12.30	q	Q				
18+25	0.0000	12.30	q	Q				
18+30	0.0000	12.30	q	Q				
18+35	0.0000	12.30	q	Q				
18+40	0.0000	12.30	q	Q				
18+45	0.0000	12.30	q	Q				
18+50	0.0000	12.30	q	Q				
18+55	0.0000	12.30	q	Q				
19+ 0	0.0000	12.30	q	Q				
19+ 5	0.0000	12.30	q	Q				
19+10	0.0000	12.30	q	Q				
19+15	0.0000	12.28	q	Q				
19+20	0.0000	12.15	q	Q				
19+25	0.0000	12.01	q	Q				
19+30	0.0000	11.84	q	Q				

19+35	0.0000	11.66	q	Q
19+40	0.0000	11.48	q	Q
19+45	0.0000	11.27	q	Q
19+50	0.0000	11.01	q	Q
19+55	0.0000	10.69	q	Q
20+ 0	0.0000	10.21	q	Q
20+ 5	0.0000	9.48	q	Q
20+10	0.0000	9.17	q	Q
20+15	0.0000	9.03	q	Q
20+20	0.0000	9.02	q	Q
20+25	0.0000	9.02	q	Q
20+30	0.0000	9.02	q	Q
20+35	0.0000	9.02	q	Q
20+40	0.0000	9.02	q	Q
20+45	0.0000	9.02	q	Q
20+50	0.0000	9.02	q	Q
20+55	0.0000	9.02	q	Q
21+ 0	0.0000	9.02	q	Q
21+ 5	0.0000	9.02	q	Q
21+10	0.0000	9.02	q	Q
21+15	0.0000	9.02	q	Q
21+20	0.0000	9.02	q	Q
21+25	0.0000	9.02	q	Q
21+30	0.0000	9.02	q	Q
21+35	0.0000	9.02	q	Q
21+40	0.0000	9.02	q	Q
21+45	0.0000	9.02	q	Q
21+50	0.0000	9.02	q	Q
21+55	0.0000	9.02	q	Q
22+ 0	0.0000	9.00	q	Q
22+ 5	0.0000	8.90	q	Q
22+10	0.0000	8.79	q	Q
22+15	0.0000	8.66	q	Q
22+20	0.0000	8.53	q	Q
22+25	0.0000	8.39	q	Q
22+30	0.0000	8.23	q	Q
22+35	0.0000	8.03	q	Q
22+40	0.0000	7.79	q	Q
22+45	0.0000	7.41	q	Q
22+50	0.0000	6.87	qQ	
22+55	0.0000	6.66	qQ	
23+ 0	0.0000	6.57	qQ	
23+ 5	0.0000	6.56	qQ	
23+10	0.0000	6.56	qQ	
23+15	0.0000	6.56	qQ	
23+20	0.0000	6.56	qQ	
23+25	0.0000	6.56	qQ	
23+30	0.0000	6.56	qQ	
23+35	0.0000	6.56	qQ	
23+40	0.0000	6.56	qQ	
23+45	0.0000	6.56	qQ	
23+50	0.0000	6.56	qQ	
23+55	0.0000	6.56	qQ	
24+ 0	0.0000	6.56	qQ	
24+ 5	0.0000	6.56	qQ	
24+10	0.0000	6.56	qQ	
24+15	0.0000	6.56	qQ	

24+20	0.0000	6.56	qQ				
24+25	0.0000	6.56	qQ				
24+30	0.0000	6.56	qQ				
24+35	0.0000	6.56	qQ				
24+40	0.0000	6.56	qQ				
24+45	0.0000	6.55	qQ				
24+50	0.0000	6.54	qQ				
24+55	0.0000	6.52	qQ				
25+ 0	0.0000	6.50	qQ				
25+ 5	0.0000	6.48	qQ				
25+10	0.0000	6.45	qQ				
25+15	0.0000	6.43	qQ				
25+20	0.0000	6.39	qQ				
25+25	0.0000	6.35	qQ				
25+30	0.0000	6.28	qQ				
25+35	0.0000	6.20	qQ				
25+40	0.0000	6.16	qQ				
25+45	0.0000	6.15	qQ				
25+50	0.0000	6.15	qQ				
25+55	0.0000	6.15	qQ				
26+ 0	0.0000	6.15	qQ				
26+ 5	0.0000	6.15	qQ				
26+10	0.0000	6.15	qQ				
26+15	0.0000	6.15	qQ				
26+20	0.0000	6.15	qQ				
26+25	0.0000	6.15	qQ				
26+30	0.0000	6.15	qQ				
26+35	0.0000	6.15	qQ				
26+40	0.0000	6.15	qQ				
26+45	0.0000	6.15	qQ				
26+50	0.0000	6.15	qQ				
26+55	0.0000	6.15	qQ				
27+ 0	0.0000	6.15	qQ				
27+ 5	0.0000	6.15	qQ				
27+10	0.0000	6.15	qQ				
27+15	0.0000	6.15	qQ				
27+20	0.0000	6.15	qQ				
27+25	0.0000	6.15	qQ				
27+30	0.0000	6.13	qQ				
27+35	0.0000	6.06	qQ				
27+40	0.0000	5.98	qQ				
27+45	0.0000	5.90	qQ				
27+50	0.0000	5.81	qQ				
27+55	0.0000	5.72	qQ				
28+ 0	0.0000	5.60	qQ				
28+ 5	0.0000	5.47	qQ				
28+10	0.0000	5.30	qQ				
28+15	0.0000	5.02	qQ				
28+20	0.0000	4.68	qQ				
28+25	0.0000	4.56	qQ				
28+30	0.0000	4.51	qQ				
28+35	0.0000	4.51	qQ				
28+40	0.0000	4.51	qQ				
28+45	0.0000	4.51	qQ				
28+50	0.0000	4.51	qQ				
28+55	0.0000	4.51	qQ				
29+ 0	0.0000	4.51	qQ				

29+ 5	0.0000	4.51	qQ				
29+10	0.0000	4.51	qQ				
29+15	0.0000	4.51	qQ				
29+20	0.0000	4.51	qQ				
29+25	0.0000	4.51	qQ				
29+30	0.0000	4.51	qQ				
29+35	0.0000	4.51	qQ				
29+40	0.0000	4.51	qQ				
29+45	0.0000	4.51	qQ				
29+50	0.0000	4.51	qQ				
29+55	0.0000	4.51	qQ				
30+ 0	0.0000	4.51	qQ				
30+ 5	0.0000	4.51	qQ				
30+10	0.0000	4.51	qQ				
30+15	0.0000	4.50	qQ				
30+20	0.0000	4.46	qQ				
30+25	0.0000	4.42	qQ				
30+30	0.0000	4.38	qQ				
30+35	0.0000	4.34	qQ				
30+40	0.0000	4.29	qQ				
30+45	0.0000	4.23	qQ				
30+50	0.0000	4.16	qQ				
30+55	0.0000	4.08	qQ				
31+ 0	0.0000	3.93	qQ				
31+ 5	0.0000	3.77	qQ				
31+10	0.0000	3.71	qQ				
31+15	0.0000	3.69	qQ				
31+20	0.0000	3.69	Q				
31+25	0.0000	3.69	qQ				
31+30	0.0000	3.69	qQ				
31+35	0.0000	3.69	Q				
31+40	0.0000	3.69	Q				
31+45	0.0000	3.69	Q				
31+50	0.0000	3.69	Q				
31+55	0.0000	3.69	Q				
32+ 0	0.0000	3.69	qQ				
32+ 5	0.0000	3.69	qQ				
32+10	0.0000	3.69	Q				
32+15	0.0000	3.69	qQ				
32+20	0.0000	3.69	qQ				
32+25	0.0000	3.69	Q				
32+30	0.0000	3.69	qQ				
32+35	0.0000	3.69	Q				
32+40	0.0000	3.69	qQ				
32+45	0.0000	3.69	qQ				
32+50	0.0000	3.69	Q				
32+55	0.0000	3.69	Q				
33+ 0	0.0000	3.67	Q				
33+ 5	0.0000	3.64	Q				
33+10	0.0000	3.60	Q				
33+15	0.0000	3.56	Q				
33+20	0.0000	3.51	Q				
33+25	0.0000	3.46	Q				
33+30	0.0000	3.41	Q				
33+35	0.0000	3.34	Q				
33+40	0.0000	3.25	Q				
33+45	0.0000	3.09	Q				

33+50	0.0000	2.94	Q
33+55	0.0000	2.89	Q
34+ 0	0.0000	2.87	Q
34+ 5	0.0000	2.87	Q
34+10	0.0000	2.87	Q
34+15	0.0000	2.87	Q
34+20	0.0000	2.87	Q
34+25	0.0000	2.87	Q
34+30	0.0000	2.87	Q
34+35	0.0000	2.87	Q
34+40	0.0000	2.87	Q
34+45	0.0000	2.87	Q
34+50	0.0000	2.87	Q
34+55	0.0000	2.87	Q
35+ 0	0.0000	2.87	Q
35+ 5	0.0000	2.87	Q
35+10	0.0000	2.87	Q
35+15	0.0000	2.87	Q
35+20	0.0000	2.87	Q
35+25	0.0000	2.87	Q
35+30	0.0000	2.87	Q
35+35	0.0000	2.87	Q
35+40	0.0000	2.87	Q
35+45	0.0000	2.85	Q
35+50	0.0000	2.82	Q
35+55	0.0000	2.78	Q
36+ 0	0.0000	2.73	Q
36+ 5	0.0000	2.69	Q
36+10	0.0000	2.64	Q
36+15	0.0000	2.58	Q
36+20	0.0000	2.51	Q
36+25	0.0000	2.42	Q
36+30	0.0000	2.25	Q
36+35	0.0000	2.12	Q
36+40	0.0000	2.07	Q
36+45	0.0000	2.05	Q
36+50	0.0000	2.05	Q
36+55	0.0000	2.05	Q
37+ 0	0.0000	2.05	Q
37+ 5	0.0000	2.05	Q
37+10	0.0000	2.05	Q
37+15	0.0000	2.05	Q
37+20	0.0000	2.05	Q
37+25	0.0000	2.05	Q
37+30	0.0000	1.96	Q
37+35	0.0000	1.88	Q
37+40	0.0000	1.77	Q
37+45	0.0000	1.66	Q
37+50	0.0000	1.55	Q
37+55	0.0000	1.42	Q
38+ 0	0.0000	1.26	Q
38+ 5	0.0000	1.07	Q
38+10	0.0000	0.80	Q
38+15	0.0000	0.26	Q
38+20	0.0000	0.10	Q

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

Number of intervals = 460
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 147.576 (CFS)
Total volume = 96.408 (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 - 2012
Study date: 05/11/15

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR
ROUTE AREA "BC"
100-YEAR, 3-HOUR
BY: JTS DATE: 05-08-15

Program License Serial Number 6320

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

From study/file name: 154149RECHYDB3100.rte
*****HYDROGRAPH DATA*****
Number of intervals = 484
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 230.518 (CFS)
Total volume = 151.384 (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 1.000 to Point/Station 2.000
**** ADD/COMBINE/RECOVER HYDROGRAPHS ****

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

From study/file name: 154149RECHYDC3100.rte
++++++
P R I N T O F 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) Add q(CFS) Tot. Q 0 57.6 115.3 172.9 230.5

0+ 5 0.8292 1.17 Q | | | |
0+10 4.3700 5.39 Q | | | |
0+15 7.7318 9.37 |Q | | | |
0+20 8.8516 11.17 |Q | | | |
0+25 10.3517 13.48 |qQ | | | |
0+30 12.2326 16.27 | Q | | | |

0+35	13.8431	18.78	qQ				
0+40	14.5839	20.43	qQ				
0+45	15.3806	22.23	qQ				
0+50	16.2562	24.01	q Q				
0+55	15.8854	24.64	q Q				
1+ 0	15.7179	25.67	q Q				
1+ 5	16.9000	28.21	q Q				
1+10	19.0566	31.90	q Q				
1+15	20.7947	35.21	q Q				
1+20	21.4145	37.38	q Q				
1+25	21.6452	39.34	q Q				
1+30	23.4136	43.43	q Q				
1+35	25.4986	47.84	q Q				
1+40	25.9176	50.50	q Q				
1+45	27.0254	54.24	q Q				
1+50	29.9362	59.99	q Q				
1+55	31.6424	64.57	q Q				
2+ 0	31.5086	67.43	q Q				
2+ 5	31.6405	70.92	q Q				
2+10	33.2669	76.22	q Q				
2+15	38.2712	85.51	q Q				
2+20	43.8585	95.34	q Q				
2+25	45.8609	102.28	q Q				
2+30	54.6205	117.36	q Q				
2+35	67.5020	137.13	q Q				
2+40	74.9666	151.11	q Q				
2+45	70.1885	150.75	q Q				
2+50	52.2171	136.41	q Q				
2+55	37.1800	125.36	q Q				
3+ 0	29.7687	121.68	q Q				
3+ 5	21.9375	117.61	q Q				
3+10	14.4700	113.94	q Q				
3+15	10.0314	113.68	q Q				
3+20	7.5080	115.69	q Q				
3+25	5.7328	118.82	q Q				
3+30	4.2878	122.18	q Q				
3+35	3.2297	125.42	q Q				
3+40	2.4435	129.05	q Q				
3+45	1.7311	132.76	q Q				
3+50	1.1228	137.54	q Q				
3+55	0.5934	142.75	q Q				
4+ 0	0.2915	148.39	q Q				
4+ 5	0.1785	153.43	q Q				
4+10	0.0809	157.59	q Q				
4+15	0.0130	161.71	q Q				
4+20	0.0000	166.00	q Q				
4+25	0.0000	170.60	q Q				
4+30	0.0000	175.60	q Q				
4+35	0.0000	180.51	q Q				
4+40	0.0000	184.26	q Q				
4+45	0.0000	187.21	q Q				
4+50	0.0000	190.19	q Q				
4+55	0.0000	193.37	q Q				
5+ 0	0.0000	196.90	q Q				
5+ 5	0.0000	200.11	q Q				
5+10	0.0000	204.09	q Q				
5+15	0.0000	209.21	q Q				

5+20	0.0000	214.91	q				Q
5+25	0.0000	220.01	q				Q
5+30	0.0000	223.00	q				Q
5+35	0.0000	224.41	q				Q
5+40	0.0000	225.53	q				Q
5+45	0.0000	226.47	q				Q
5+50	0.0000	227.06	q				Q
5+55	0.0000	227.32	q				Q
6+ 0	0.0000	227.85	q				Q
6+ 5	0.0000	228.77	q				Q
6+10	0.0000	229.81	q				Q
6+15	0.0000	230.48	q				Q
6+20	0.0000	230.52	q				Q
6+25	0.0000	229.95	q				Q
6+30	0.0000	229.10	q				Q
6+35	0.0000	228.06	q				Q
6+40	0.0000	226.72	q				Q
6+45	0.0000	225.32	q				Q
6+50	0.0000	223.74	q				Q
6+55	0.0000	221.68	q				Q
7+ 0	0.0000	219.09	q				Q
7+ 5	0.0000	216.56	q				Q
7+10	0.0000	214.00	q				Q
7+15	0.0000	210.97	q				Q
7+20	0.0000	207.78	q				Q
7+25	0.0000	204.53	q				Q
7+30	0.0000	201.29	q				Q
7+35	0.0000	197.90	q				Q
7+40	0.0000	194.05	q				Q
7+45	0.0000	189.41	q				Q
7+50	0.0000	184.97	q				Q
7+55	0.0000	179.41	q				Q
8+ 0	0.0000	172.61	q				Q
8+ 5	0.0000	165.04	q				Q
8+10	0.0000	158.31	q				Q
8+15	0.0000	153.98	q				Q
8+20	0.0000	150.42	q				Q
8+25	0.0000	146.75	q				Q
8+30	0.0000	143.35	q				Q
8+35	0.0000	139.95	q				Q
8+40	0.0000	136.77	q				Q
8+45	0.0000	132.70	q				Q
8+50	0.0000	128.12	q				Q
8+55	0.0000	123.20	q				Q
9+ 0	0.0000	118.82	q				Q
9+ 5	0.0000	115.57	q				Q
9+10	0.0000	112.56	q				Q
9+15	0.0000	109.60	q				Q
9+20	0.0000	106.16	q				Q
9+25	0.0000	102.60	q				Q
9+30	0.0000	98.97	q				Q
9+35	0.0000	96.22	q				Q
9+40	0.0000	94.37	q				Q
9+45	0.0000	92.48	q				Q
9+50	0.0000	90.64	q				Q
9+55	0.0000	88.93	q				Q
10+ 0	0.0000	87.18	q				Q

10+ 5	0.0000	85.37	q		Q			
10+10	0.0000	83.12	q		Q			
10+15	0.0000	80.75	q		Q			
10+20	0.0000	78.36	q		Q			
10+25	0.0000	76.33	q		Q			
10+30	0.0000	74.54	q		Q			
10+35	0.0000	72.92	q		Q			
10+40	0.0000	70.95	q		Q			
10+45	0.0000	68.79	q		Q			
10+50	0.0000	66.45	q		Q			
10+55	0.0000	64.45	q		Q			
11+ 0	0.0000	63.24	q		Q			
11+ 5	0.0000	62.21	q		Q			
11+10	0.0000	61.16	q		Q			
11+15	0.0000	60.20	q		Q			
11+20	0.0000	59.23	q		Q			
11+25	0.0000	58.35	q		Q			
11+30	0.0000	57.16	q	Q				
11+35	0.0000	55.85	q	Q				
11+40	0.0000	54.44	q	Q				
11+45	0.0000	53.22	q	Q				
11+50	0.0000	52.40	q	Q				
11+55	0.0000	51.70	q	Q				
12+ 0	0.0000	50.99	q	Q				
12+ 5	0.0000	50.17	q	Q				
12+10	0.0000	49.37	q	Q				
12+15	0.0000	48.58	q	Q				
12+20	0.0000	48.02	q	Q				
12+25	0.0000	47.61	q	Q				
12+30	0.0000	47.16	q	Q				
12+35	0.0000	46.75	q	Q				
12+40	0.0000	46.40	q	Q				
12+45	0.0000	46.01	q	Q				
12+50	0.0000	45.61	q	Q				
12+55	0.0000	45.22	q	Q				
13+ 0	0.0000	44.83	q	Q				
13+ 5	0.0000	44.42	q	Q				
13+10	0.0000	43.92	q	Q				
13+15	0.0000	43.36	q	Q				
13+20	0.0000	42.87	q	Q				
13+25	0.0000	42.14	q	Q				
13+30	0.0000	41.27	q	Q				
13+35	0.0000	40.34	q	Q				
13+40	0.0000	39.58	q	Q				
13+45	0.0000	39.15	q	Q				
13+50	0.0000	38.77	q	Q				
13+55	0.0000	38.39	q	Q				
14+ 0	0.0000	38.12	q	Q				
14+ 5	0.0000	37.86	q	Q				
14+10	0.0000	37.58	q	Q				
14+15	0.0000	37.31	q	Q				
14+20	0.0000	37.05	q	Q				
14+25	0.0000	36.78	q	Q				
14+30	0.0000	36.47	q	Q				
14+35	0.0000	36.09	q	Q				
14+40	0.0000	35.72	q	Q				
14+45	0.0000	35.32	q	Q				

14+50	0.0000	34.74	q	Q				
14+55	0.0000	34.11	q	Q				
15+ 0	0.0000	33.50	q	Q				
15+ 5	0.0000	33.10	q	Q				
15+10	0.0000	32.85	q	Q				
15+15	0.0000	32.56	q	Q				
15+20	0.0000	32.32	q	Q				
15+25	0.0000	32.13	q	Q				
15+30	0.0000	31.93	q	Q				
15+35	0.0000	31.72	q	Q				
15+40	0.0000	31.51	q	Q				
15+45	0.0000	31.31	q	Q				
15+50	0.0000	31.09	q	Q				
15+55	0.0000	30.83	q	Q				
16+ 0	0.0000	30.56	q	Q				
16+ 5	0.0000	30.30	q	Q				
16+10	0.0000	29.93	q	Q				
16+15	0.0000	29.51	q	Q				
16+20	0.0000	29.05	q	Q				
16+25	0.0000	28.68	q	Q				
16+30	0.0000	28.45	q	Q				
16+35	0.0000	28.20	q	Q				
16+40	0.0000	27.95	q	Q				
16+45	0.0000	27.75	q	Q				
16+50	0.0000	27.53	q	Q				
16+55	0.0000	27.30	q	Q				
17+ 0	0.0000	27.07	q	Q				
17+ 5	0.0000	26.85	q	Q				
17+10	0.0000	26.61	q	Q				
17+15	0.0000	26.35	q	Q				
17+20	0.0000	26.03	q	Q				
17+25	0.0000	25.73	q	Q				
17+30	0.0000	25.38	q	Q				
17+35	0.0000	24.90	q	Q				
17+40	0.0000	24.37	q	Q				
17+45	0.0000	23.87	q	Q				
17+50	0.0000	23.56	q	Q				
17+55	0.0000	23.36	q	Q				
18+ 0	0.0000	23.16	q	Q				
18+ 5	0.0000	23.00	q	Q				
18+10	0.0000	22.87	q	Q				
18+15	0.0000	22.74	q	Q				
18+20	0.0000	22.61	q	Q				
18+25	0.0000	22.50	q	Q				
18+30	0.0000	22.37	q	Q				
18+35	0.0000	22.24	q	Q				
18+40	0.0000	22.07	q	Q				
18+45	0.0000	21.87	q	Q				
18+50	0.0000	21.70	q	Q				
18+55	0.0000	21.43	q	Q				
19+ 0	0.0000	21.11	q	Q				
19+ 5	0.0000	20.78	q	Q				
19+10	0.0000	20.53	q	Q				
19+15	0.0000	20.42	q	Q				
19+20	0.0000	20.29	q	Q				
19+25	0.0000	20.17	q	Q				
19+30	0.0000	20.09	q	Q				

19+35	0.0000	20.02	q	Q				
19+40	0.0000	19.94	q	Q				
19+45	0.0000	19.85	q	Q				
19+50	0.0000	19.77	q	Q				
19+55	0.0000	19.68	q	Q				
20+ 0	0.0000	19.59	q	Q				
20+ 5	0.0000	19.51	q	Q				
20+10	0.0000	19.43	q	Q				
20+15	0.0000	19.34	q	Q				
20+20	0.0000	19.22	q	Q				
20+25	0.0000	19.11	q	Q				
20+30	0.0000	18.99	q	Q				
20+35	0.0000	18.88	q	Q				
20+40	0.0000	18.75	q	Q				
20+45	0.0000	18.60	q	Q				
20+50	0.0000	18.47	q	Q				
20+55	0.0000	18.32	q	Q				
21+ 0	0.0000	18.15	q	Q				
21+ 5	0.0000	17.98	q	Q				
21+10	0.0000	17.82	q	Q				
21+15	0.0000	17.65	q	Q				
21+20	0.0000	17.48	q	Q				
21+25	0.0000	17.24	q	Q				
21+30	0.0000	16.98	q	Q				
21+35	0.0000	16.75	q	Q				
21+40	0.0000	16.37	q	Q				
21+45	0.0000	15.95	q	Q				
21+50	0.0000	15.51	q	Q				
21+55	0.0000	15.19	q	Q				
22+ 0	0.0000	15.06	q	Q				
22+ 5	0.0000	14.92	q	Q				
22+10	0.0000	14.79	q	Q				
22+15	0.0000	14.73	q	Q				
22+20	0.0000	14.67	q	Q				
22+25	0.0000	14.61	q	Q				
22+30	0.0000	14.55	q	Q				
22+35	0.0000	14.49	q	Q				
22+40	0.0000	14.42	q	Q				
22+45	0.0000	14.35	q	Q				
22+50	0.0000	14.29	q	Q				
22+55	0.0000	14.23	q	Q				
23+ 0	0.0000	14.16	q	Q				
23+ 5	0.0000	14.07	q	Q				
23+10	0.0000	13.99	q	Q				
23+15	0.0000	13.90	q	Q				
23+20	0.0000	13.82	q	Q				
23+25	0.0000	13.71	q	Q				
23+30	0.0000	13.61	q	Q				
23+35	0.0000	13.51	q	Q				
23+40	0.0000	13.39	q	Q				
23+45	0.0000	13.26	q	Q				
23+50	0.0000	13.14	q	Q				
23+55	0.0000	13.02	q	Q				
24+ 0	0.0000	12.89	q	Q				
24+ 5	0.0000	12.76	q	Q				
24+10	0.0000	12.58	q	Q				
24+15	0.0000	12.38	q	Q				

24+20	0.0000	12.20	q Q
24+25	0.0000	11.92	q Q
24+30	0.0000	11.60	q Q
24+35	0.0000	11.27	qQ
24+40	0.0000	11.05	qQ
24+45	0.0000	10.96	qQ
24+50	0.0000	10.88	qQ
24+55	0.0000	10.81	qQ
25+ 0	0.0000	10.79	qQ
25+ 5	0.0000	10.78	qQ
25+10	0.0000	10.77	qQ
25+15	0.0000	10.76	qQ
25+20	0.0000	10.75	qQ
25+25	0.0000	10.74	qQ
25+30	0.0000	10.72	qQ
25+35	0.0000	10.72	qQ
25+40	0.0000	10.70	qQ
25+45	0.0000	10.69	qQ
25+50	0.0000	10.68	qQ
25+55	0.0000	10.66	qQ
26+ 0	0.0000	10.65	qQ
26+ 5	0.0000	10.64	qQ
26+10	0.0000	10.62	qQ
26+15	0.0000	10.60	qQ
26+20	0.0000	10.58	qQ
26+25	0.0000	10.56	qQ
26+30	0.0000	10.54	qQ
26+35	0.0000	10.52	qQ
26+40	0.0000	10.50	qQ
26+45	0.0000	10.48	qQ
26+50	0.0000	10.46	qQ
26+55	0.0000	10.43	qQ
27+ 0	0.0000	10.40	qQ
27+ 5	0.0000	10.36	qQ
27+10	0.0000	10.32	qQ
27+15	0.0000	10.26	qQ
27+20	0.0000	10.21	qQ
27+25	0.0000	10.17	qQ
27+30	0.0000	10.15	qQ
27+35	0.0000	10.11	qQ
27+40	0.0000	10.07	qQ
27+45	0.0000	10.04	qQ
27+50	0.0000	10.00	qQ
27+55	0.0000	9.96	qQ
28+ 0	0.0000	9.92	qQ
28+ 5	0.0000	9.88	qQ
28+10	0.0000	9.83	qQ
28+15	0.0000	9.79	qQ
28+20	0.0000	9.75	qQ
28+25	0.0000	9.71	qQ
28+30	0.0000	9.66	qQ
28+35	0.0000	9.60	qQ
28+40	0.0000	9.54	qQ
28+45	0.0000	9.48	qQ
28+50	0.0000	9.43	qQ
28+55	0.0000	9.36	qQ
29+ 0	0.0000	9.29	qQ

29+ 5	0.0000	9.22	qQ				
29+10	0.0000	9.14	qQ				
29+15	0.0000	9.05	qQ				
29+20	0.0000	8.97	qQ				
29+25	0.0000	8.89	qQ				
29+30	0.0000	8.81	qQ				
29+35	0.0000	8.71	qQ				
29+40	0.0000	8.59	qQ				
29+45	0.0000	8.46	qQ				
29+50	0.0000	8.33	qQ				
29+55	0.0000	8.14	qQ				
30+ 0	0.0000	7.92	qQ				
30+ 5	0.0000	7.71	qQ				
30+10	0.0000	7.58	qQ				
30+15	0.0000	7.52	qQ				
30+20	0.0000	7.45	qQ				
30+25	0.0000	7.41	qQ				
30+30	0.0000	7.38	qQ				
30+35	0.0000	7.36	qQ				
30+40	0.0000	7.34	qQ				
30+45	0.0000	7.32	qQ				
30+50	0.0000	7.30	qQ				
30+55	0.0000	7.28	qQ				
31+ 0	0.0000	7.26	qQ				
31+ 5	0.0000	7.24	qQ				
31+10	0.0000	7.22	qQ				
31+15	0.0000	7.19	qQ				
31+20	0.0000	7.16	qQ				
31+25	0.0000	7.13	qQ				
31+30	0.0000	7.10	qQ				
31+35	0.0000	7.08	qQ				
31+40	0.0000	7.04	qQ				
31+45	0.0000	7.01	qQ				
31+50	0.0000	6.97	qQ				
31+55	0.0000	6.93	qQ				
32+ 0	0.0000	6.89	qQ				
32+ 5	0.0000	6.85	qQ				
32+10	0.0000	6.81	qQ				
32+15	0.0000	6.77	qQ				
32+20	0.0000	6.72	qQ				
32+25	0.0000	6.65	qQ				
32+30	0.0000	6.59	qQ				
32+35	0.0000	6.52	qQ				
32+40	0.0000	6.43	qQ				
32+45	0.0000	6.32	qQ				
32+50	0.0000	6.21	qQ				
32+55	0.0000	6.15	qQ				
33+ 0	0.0000	6.12	qQ				
33+ 5	0.0000	6.08	qQ				
33+10	0.0000	6.05	qQ				
33+15	0.0000	6.03	qQ				
33+20	0.0000	6.01	qQ				
33+25	0.0000	5.99	qQ				
33+30	0.0000	5.97	qQ				
33+35	0.0000	5.95	qQ				
33+40	0.0000	5.92	qQ				
33+45	0.0000	5.90	qQ				

33+50	0.0000	5.88	qQ
33+55	0.0000	5.86	qQ
34+ 0	0.0000	5.84	qQ
34+ 5	0.0000	5.81	qQ
34+10	0.0000	5.78	qQ
34+15	0.0000	5.75	Q
34+20	0.0000	5.72	Q
34+25	0.0000	5.69	Q
34+30	0.0000	5.65	Q
34+35	0.0000	5.62	Q
34+40	0.0000	5.58	Q
34+45	0.0000	5.53	Q
34+50	0.0000	5.49	Q
34+55	0.0000	5.45	Q
35+ 0	0.0000	5.41	Q
35+ 5	0.0000	5.36	Q
35+10	0.0000	5.30	Q
35+15	0.0000	5.24	Q
35+20	0.0000	5.17	Q
35+25	0.0000	5.07	Q
35+30	0.0000	4.96	Q
35+35	0.0000	4.85	Q
35+40	0.0000	4.80	Q
35+45	0.0000	4.76	Q
35+50	0.0000	4.72	Q
35+55	0.0000	4.69	Q
36+ 0	0.0000	4.68	Q
36+ 5	0.0000	4.66	Q
36+10	0.0000	4.64	Q
36+15	0.0000	4.62	Q
36+20	0.0000	4.59	Q
36+25	0.0000	4.57	Q
36+30	0.0000	4.55	Q
36+35	0.0000	4.53	Q
36+40	0.0000	4.51	Q
36+45	0.0000	4.48	Q
36+50	0.0000	4.45	Q
36+55	0.0000	4.43	Q
37+ 0	0.0000	4.40	Q
37+ 5	0.0000	4.37	Q
37+10	0.0000	4.33	Q
37+15	0.0000	4.30	Q
37+20	0.0000	4.26	Q
37+25	0.0000	4.22	Q
37+30	0.0000	4.14	Q
37+35	0.0000	4.06	Q
37+40	0.0000	3.99	Q
37+45	0.0000	3.90	Q
37+50	0.0000	3.80	Q
37+55	0.0000	3.68	Q
38+ 0	0.0000	3.57	Q
38+ 5	0.0000	3.44	Q
38+10	0.0000	3.28	Q
38+15	0.0000	3.12	Q
38+20	0.0000	2.97	Q
38+25	0.0000	2.86	Q
38+30	0.0000	2.77	Q

38+35	0.0000	2.67	Q				
38+40	0.0000	2.59	Q				
38+45	0.0000	2.52	Q				
38+50	0.0000	2.43	Q				
38+55	0.0000	2.34	Q				
39+ 0	0.0000	2.26	Q				
39+ 5	0.0000	2.17	Q				
39+10	0.0000	2.06	Q				
39+15	0.0000	1.95	Q				
39+20	0.0000	1.85	Q				
39+25	0.0000	1.75	Q				
39+30	0.0000	1.64	Q				
39+35	0.0000	1.50	Q				
39+40	0.0000	1.32	Q				
39+45	0.0000	1.20	Q				
39+50	0.0000	0.96	Q				
39+55	0.0000	0.70	Q				
40+ 0	0.0000	0.40	Q				
40+ 5	0.0000	0.19	Q				
40+10	0.0000	0.13	Q				
40+15	0.0000	0.07	Q				
40+20	0.0000	0.01	Q				

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

Number of intervals = 484

Time interval = 5.0 (Min.)

Maximum/Peak flow rate = 230.518 (CFS)

Total volume = 158.848 (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 - 2012
 Study date: 05/11/15

 154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR
 ROUTE AREA "BC"
 100-YEAR, 6-HOUR
 BY: JTS DATE: 05-08-15

Program License Serial Number 6320

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

From study/file name: 154149RECHYDB6100.rte
 *****HYDROGRAPH DATA*****
 Number of intervals = 520
 Time interval = 5.0 (Min.)
 Maximum/Peak flow rate = 273.932 (CFS)
 Total volume = 203.420 (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 1.000 to Point/Station 2.000
 **** ADD/COMBINE/RECOVER HYDROGRAPHS ****

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

From study/file name: 154149RECHYDC6100.rte
 ++++++

P R I N T O F 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)	Add q(CFS)	Tot. Q	0	68.5	137.0	205.4	273.9
0+ 5	0.3468	0.50	Q				
0+10	1.9402	2.43	Q				
0+15	3.8930	4.77	Q				
0+20	4.9909	6.25	Q				
0+25	5.5310	7.18	qQ				
0+30	5.9887	8.07	qQ				

0+35	6.7138	9.27	qQ				
0+40	7.3713	10.40	Q				
0+45	7.7051	11.21	Q				
0+50	7.9243	11.91	Q				
0+55	8.0868	12.62	Q				
1+ 0	8.3213	13.51	Q				
1+ 5	8.8930	14.80	qQ				
1+10	9.4394	16.06	qQ				
1+15	9.7026	17.03	qQ				
1+20	9.8577	17.92	qQ				
1+25	9.9548	18.80	qQ				
1+30	10.0214	19.81	qQ				
1+35	10.0711	20.87	q Q				
1+40	10.1098	21.92	q Q				
1+45	10.1410	22.97	q Q				
1+50	10.1606	24.04	q Q				
1+55	10.1760	25.16	q Q				
2+ 0	10.3000	26.52	q Q				
2+ 5	10.6762	28.24	q Q				
2+10	10.7949	29.74	q Q				
2+15	11.0038	31.38	q Q				
2+20	11.3896	33.20	q Q				
2+25	11.5570	34.87	q Q				
2+30	11.6454	36.50	q Q				
2+35	11.7075	38.10	q Q				
2+40	11.7515	39.68	q Q				
2+45	11.9004	41.41	q Q				
2+50	12.4035	43.74	q Q				
2+55	12.9021	46.25	q Q				
3+ 0	13.1189	48.55	q Q				
3+ 5	13.2415	50.78	q Q				
3+10	13.4416	53.12	q Q				
3+15	13.9815	55.91	q Q				
3+20	14.5025	58.72	q Q				
3+25	14.8511	61.43	q Q				
3+30	15.5784	64.59	q Q				
3+35	16.7429	68.34	q Q				
3+40	17.9707	72.29	q Q				
3+45	18.9231	76.12	q Q				
3+50	19.8284	80.00	q Q				
3+55	20.6932	83.91	q Q				
4+ 0	21.5705	87.90	q Q				
4+ 5	22.4103	91.94	q Q				
4+10	23.3873	96.29	q Q				
4+15	24.7048	101.13	q Q				
4+20	26.1611	106.25	q Q				
4+25	27.6775	111.55	q Q				
4+30	29.1236	116.84	q Q				
4+35	30.2337	121.94	q Q				
4+40	31.3726	127.22	q Q				
4+45	32.7983	132.98	q Q				
4+50	34.2130	138.84	q Q				
4+55	35.3043	144.51	q Q				
5+ 0	36.4289	150.43	q Q				
5+ 5	38.2988	157.44	q Q				
5+10	42.1942	167.04	q Q				
5+15	47.8139	178.78	q Q				

5+20	53.3117	190.74		q		Q	
5+25	58.5376	202.88		q		Q	
5+30	65.0893	217.16		q		Q	
5+35	69.3543	227.87		q		Q	
5+40	56.9221	219.69		q		Q	
5+45	37.3220	203.85		q		Q	
5+50	25.5575	195.78		q		Q	
5+55	18.7906	192.80		q		Q	
6+ 0	13.7970	191.67		q		Q	
6+ 5	9.8773	191.78		q		Q	
6+10	7.1839	193.36		q		Q	
6+15	5.4450	196.19		q		Q	
6+20	4.1135	199.90		q		Q	
6+25	3.0805	203.27		q		Q	
6+30	2.2535	206.36		q		Q	
6+35	1.6163	209.77		q		Q	
6+40	1.1206	213.56		q		Q	
6+45	0.6325	217.60		q		Q	
6+50	0.2498	222.07		q		Q	
6+55	0.1186	226.99		q		Q	
7+ 0	0.0619	230.36		q		Q	
7+ 5	0.0283	233.37		q		Q	
7+10	0.0077	236.51		q		Q	
7+15	0.0011	239.79		q		Q	
7+20	0.0000	243.19		q		Q	
7+25	0.0000	246.94		q		Q	
7+30	0.0000	250.09		q		Q	
7+35	0.0000	252.06		q		Q	
7+40	0.0000	253.73		q		Q	
7+45	0.0000	255.36		q		Q	
7+50	0.0000	257.17		q		Q	
7+55	0.0000	259.35		q		Q	
8+ 0	0.0000	261.86		q		Q	
8+ 5	0.0000	264.66		q		Q	
8+10	0.0000	267.84		q		Q	
8+15	0.0000	271.62		q		Q	
8+20	0.0000	273.74		q		Q	
8+25	0.0000	273.93		q		Q	
8+30	0.0000	273.59		q		Q	
8+35	0.0000	273.11		q		Q	
8+40	0.0000	272.54		q		Q	
8+45	0.0000	271.96		q		Q	
8+50	0.0000	271.43		q		Q	
8+55	0.0000	270.92		q		Q	
9+ 0	0.0000	270.48		q		Q	
9+ 5	0.0000	270.11		q		Q	
9+10	0.0000	268.90		q		Q	
9+15	0.0000	266.99		q		Q	
9+20	0.0000	264.91		q		Q	
9+25	0.0000	262.73		q		Q	
9+30	0.0000	260.45		q		Q	
9+35	0.0000	258.08		q		Q	
9+40	0.0000	255.53		q		Q	
9+45	0.0000	252.50		q		Q	
9+50	0.0000	249.20		q		Q	
9+55	0.0000	245.69		q		Q	
10+ 0	0.0000	242.10		q		Q	

10+ 5	0.0000	238.33	q				Q
10+10	0.0000	234.43	q				Q
10+15	0.0000	230.34	q				Q
10+20	0.0000	226.17	q				Q
10+25	0.0000	221.83	q				Q
10+30	0.0000	217.25	q				Q
10+35	0.0000	212.24	q				Q
10+40	0.0000	206.63	q				Q
10+45	0.0000	200.58	q				Q
10+50	0.0000	194.17	q				Q
10+55	0.0000	187.25	q				Q
11+ 0	0.0000	179.49	q				Q
11+ 5	0.0000	173.61	q				Q
11+10	0.0000	169.56	q				Q
11+15	0.0000	165.93	q				Q
11+20	0.0000	162.35	q				Q
11+25	0.0000	158.64	q				Q
11+30	0.0000	154.69	q				Q
11+35	0.0000	150.52	q				Q
11+40	0.0000	146.09	q				Q
11+45	0.0000	141.34	q				Q
11+50	0.0000	136.09	q				Q
11+55	0.0000	132.16	q				Q
12+ 0	0.0000	128.95	q				Q
12+ 5	0.0000	125.77	q				Q
12+10	0.0000	122.51	q				Q
12+15	0.0000	119.15	q				Q
12+20	0.0000	115.54	q				Q
12+25	0.0000	111.99	q				Q
12+30	0.0000	109.67	q				Q
12+35	0.0000	107.72	q				Q
12+40	0.0000	105.83	q				Q
12+45	0.0000	103.93	q				Q
12+50	0.0000	101.92	q				Q
12+55	0.0000	99.80	q				Q
13+ 0	0.0000	97.56	q				Q
13+ 5	0.0000	95.20	q				Q
13+10	0.0000	92.62	q				Q
13+15	0.0000	90.15	q				Q
13+20	0.0000	88.23	q				Q
13+25	0.0000	86.31	q				Q
13+30	0.0000	84.33	q				Q
13+35	0.0000	82.26	q				Q
13+40	0.0000	80.07	q				Q
13+45	0.0000	77.65	q				Q
13+50	0.0000	75.93	q				Q
13+55	0.0000	74.76	q				Q
14+ 0	0.0000	73.73	q				Q
14+ 5	0.0000	72.72	q				Q
14+10	0.0000	71.67	q				Q
14+15	0.0000	70.55	q				Q
14+20	0.0000	69.36	q				Q
14+25	0.0000	68.10	q				Q
14+30	0.0000	66.73	q				Q
14+35	0.0000	65.23	q				Q
14+40	0.0000	64.19	q				Q
14+45	0.0000	63.36	q				Q

14+50	0.0000	62.57	q	Q				
14+55	0.0000	61.75	q	Q				
15+ 0	0.0000	60.92	q	Q				
15+ 5	0.0000	60.03	q	Q				
15+10	0.0000	59.17	q	Q				
15+15	0.0000	58.59	q	Q				
15+20	0.0000	58.09	q	Q				
15+25	0.0000	57.61	q	Q				
15+30	0.0000	57.14	q	Q				
15+35	0.0000	56.66	q	Q				
15+40	0.0000	56.17	q	Q				
15+45	0.0000	55.66	q	Q				
15+50	0.0000	55.14	q	Q				
15+55	0.0000	54.60	q	Q				
16+ 0	0.0000	54.03	q	Q				
16+ 5	0.0000	53.40	q	Q				
16+10	0.0000	52.68	q	Q				
16+15	0.0000	51.91	q	Q				
16+20	0.0000	51.09	q	Q				
16+25	0.0000	50.19	q	Q				
16+30	0.0000	49.20	q	Q				
16+35	0.0000	48.53	q	Q				
16+40	0.0000	48.08	q	Q				
16+45	0.0000	47.69	q	Q				
16+50	0.0000	47.31	q	Q				
16+55	0.0000	46.94	q	Q				
17+ 0	0.0000	46.58	q	Q				
17+ 5	0.0000	46.21	q	Q				
17+10	0.0000	45.82	q	Q				
17+15	0.0000	45.43	q	Q				
17+20	0.0000	45.02	q	Q				
17+25	0.0000	44.58	q	Q				
17+30	0.0000	44.08	q	Q				
17+35	0.0000	43.53	q	Q				
17+40	0.0000	42.94	q	Q				
17+45	0.0000	42.32	q	Q				
17+50	0.0000	41.62	q	Q				
17+55	0.0000	40.99	q	Q				
18+ 0	0.0000	40.63	q	Q				
18+ 5	0.0000	40.35	q	Q				
18+10	0.0000	40.08	q	Q				
18+15	0.0000	39.82	q	Q				
18+20	0.0000	39.57	q	Q				
18+25	0.0000	39.32	q	Q				
18+30	0.0000	39.06	q	Q				
18+35	0.0000	38.79	q	Q				
18+40	0.0000	38.50	q	Q				
18+45	0.0000	38.20	q	Q				
18+50	0.0000	37.87	q	Q				
18+55	0.0000	37.51	q	Q				
19+ 0	0.0000	37.12	q	Q				
19+ 5	0.0000	36.71	q	Q				
19+10	0.0000	36.26	q	Q				
19+15	0.0000	35.77	q	Q				
19+20	0.0000	35.41	q	Q				
19+25	0.0000	35.12	q	Q				
19+30	0.0000	34.85	q	Q				

19+35	0.0000	34.58	q	Q				
19+40	0.0000	34.31	q	Q				
19+45	0.0000	34.04	q	Q				
19+50	0.0000	33.75	q	Q				
19+55	0.0000	33.46	q	Q				
20+ 0	0.0000	33.16	q	Q				
20+ 5	0.0000	32.84	q	Q				
20+10	0.0000	32.50	q	Q				
20+15	0.0000	32.11	q	Q				
20+20	0.0000	31.68	q	Q				
20+25	0.0000	31.22	q	Q				
20+30	0.0000	30.73	q	Q				
20+35	0.0000	30.17	q	Q				
20+40	0.0000	29.70	q	Q				
20+45	0.0000	29.44	q	Q				
20+50	0.0000	29.22	q	Q				
20+55	0.0000	29.02	q	Q				
21+ 0	0.0000	28.83	q	Q				
21+ 5	0.0000	28.64	q	Q				
21+10	0.0000	28.45	q	Q				
21+15	0.0000	28.26	q	Q				
21+20	0.0000	28.06	q	Q				
21+25	0.0000	27.86	q	Q				
21+30	0.0000	27.65	q	Q				
21+35	0.0000	27.40	q	Q				
21+40	0.0000	27.13	q	Q				
21+45	0.0000	26.84	q	Q				
21+50	0.0000	26.53	q	Q				
21+55	0.0000	26.19	q	Q				
22+ 0	0.0000	25.81	q	Q				
22+ 5	0.0000	25.59	q	Q				
22+10	0.0000	25.44	q	Q				
22+15	0.0000	25.32	q	Q				
22+20	0.0000	25.20	q	Q				
22+25	0.0000	25.09	q	Q				
22+30	0.0000	24.98	q	Q				
22+35	0.0000	24.87	q	Q				
22+40	0.0000	24.75	q	Q				
22+45	0.0000	24.62	q	Q				
22+50	0.0000	24.49	q	Q				
22+55	0.0000	24.35	q	Q				
23+ 0	0.0000	24.20	q	Q				
23+ 5	0.0000	24.05	q	Q				
23+10	0.0000	23.89	q	Q				
23+15	0.0000	23.73	q	Q				
23+20	0.0000	23.57	q	Q				
23+25	0.0000	23.39	q	Q				
23+30	0.0000	23.21	q	Q				
23+35	0.0000	23.02	q	Q				
23+40	0.0000	22.82	q	Q				
23+45	0.0000	22.62	q	Q				
23+50	0.0000	22.41	q	Q				
23+55	0.0000	22.20	q	Q				
24+ 0	0.0000	21.97	q	Q				
24+ 5	0.0000	21.74	q	Q				
24+10	0.0000	21.51	q	Q				
24+15	0.0000	21.25	q	Q				

24+20	0.0000	20.96	q Q
24+25	0.0000	20.63	q Q
24+30	0.0000	20.28	q Q
24+35	0.0000	19.90	q Q
24+40	0.0000	19.47	q Q
24+45	0.0000	19.02	q Q
24+50	0.0000	18.81	q Q
24+55	0.0000	18.69	q Q
25+ 0	0.0000	18.59	q Q
25+ 5	0.0000	18.51	q Q
25+10	0.0000	18.44	q Q
25+15	0.0000	18.37	q Q
25+20	0.0000	18.31	q Q
25+25	0.0000	18.24	q Q
25+30	0.0000	18.16	q Q
25+35	0.0000	18.08	q Q
25+40	0.0000	17.99	q Q
25+45	0.0000	17.91	q Q
25+50	0.0000	17.81	q Q
25+55	0.0000	17.72	q Q
26+ 0	0.0000	17.62	q Q
26+ 5	0.0000	17.52	q Q
26+10	0.0000	17.41	q Q
26+15	0.0000	17.30	q Q
26+20	0.0000	17.18	q Q
26+25	0.0000	17.05	q Q
26+30	0.0000	16.92	q Q
26+35	0.0000	16.79	q Q
26+40	0.0000	16.65	q Q
26+45	0.0000	16.51	q Q
26+50	0.0000	16.36	q Q
26+55	0.0000	16.21	q Q
27+ 0	0.0000	16.04	q Q
27+ 5	0.0000	15.85	q Q
27+10	0.0000	15.63	q Q
27+15	0.0000	15.38	q Q
27+20	0.0000	15.12	q Q
27+25	0.0000	14.82	q Q
27+30	0.0000	14.52	q Q
27+35	0.0000	14.39	q Q
27+40	0.0000	14.32	q Q
27+45	0.0000	14.27	q Q
27+50	0.0000	14.22	q Q
27+55	0.0000	14.18	q Q
28+ 0	0.0000	14.15	q Q
28+ 5	0.0000	14.12	q Q
28+10	0.0000	14.09	q Q
28+15	0.0000	14.05	q Q
28+20	0.0000	14.02	q Q
28+25	0.0000	13.98	q Q
28+30	0.0000	13.94	q Q
28+35	0.0000	13.90	q Q
28+40	0.0000	13.86	q Q
28+45	0.0000	13.82	q Q
28+50	0.0000	13.78	q Q
28+55	0.0000	13.73	q Q
29+ 0	0.0000	13.69	qQ

29+ 5	0.0000	13.64	qQ				
29+10	0.0000	13.60	qQ				
29+15	0.0000	13.55	qQ				
29+20	0.0000	13.50	qQ				
29+25	0.0000	13.46	qQ				
29+30	0.0000	13.40	qQ				
29+35	0.0000	13.35	qQ				
29+40	0.0000	13.30	qQ				
29+45	0.0000	13.24	qQ				
29+50	0.0000	13.18	qQ				
29+55	0.0000	13.11	qQ				
30+ 0	0.0000	13.04	qQ				
30+ 5	0.0000	12.97	qQ				
30+10	0.0000	12.89	qQ				
30+15	0.0000	12.81	qQ				
30+20	0.0000	12.75	qQ				
30+25	0.0000	12.70	qQ				
30+30	0.0000	12.65	qQ				
30+35	0.0000	12.60	qQ				
30+40	0.0000	12.55	qQ				
30+45	0.0000	12.50	qQ				
30+50	0.0000	12.45	qQ				
30+55	0.0000	12.40	qQ				
31+ 0	0.0000	12.34	qQ				
31+ 5	0.0000	12.28	qQ				
31+10	0.0000	12.21	qQ				
31+15	0.0000	12.15	qQ				
31+20	0.0000	12.08	qQ				
31+25	0.0000	12.00	qQ				
31+30	0.0000	11.93	qQ				
31+35	0.0000	11.85	qQ				
31+40	0.0000	11.77	qQ				
31+45	0.0000	11.69	qQ				
31+50	0.0000	11.60	qQ				
31+55	0.0000	11.50	qQ				
32+ 0	0.0000	11.41	qQ				
32+ 5	0.0000	11.31	qQ				
32+10	0.0000	11.21	qQ				
32+15	0.0000	11.10	qQ				
32+20	0.0000	10.99	qQ				
32+25	0.0000	10.88	qQ				
32+30	0.0000	10.76	qQ				
32+35	0.0000	10.62	qQ				
32+40	0.0000	10.46	qQ				
32+45	0.0000	10.28	qQ				
32+50	0.0000	10.09	qQ				
32+55	0.0000	9.88	qQ				
33+ 0	0.0000	9.68	qQ				
33+ 5	0.0000	9.60	qQ				
33+10	0.0000	9.54	qQ				
33+15	0.0000	9.50	qQ				
33+20	0.0000	9.46	qQ				
33+25	0.0000	9.43	qQ				
33+30	0.0000	9.40	qQ				
33+35	0.0000	9.37	qQ				
33+40	0.0000	9.33	qQ				
33+45	0.0000	9.30	qQ				

33+50	0.0000	9.26	qQ				
33+55	0.0000	9.22	qQ				
34+ 0	0.0000	9.18	qQ				
34+ 5	0.0000	9.14	qQ				
34+10	0.0000	9.10	qQ				
34+15	0.0000	9.06	qQ				
34+20	0.0000	9.01	qQ				
34+25	0.0000	8.96	qQ				
34+30	0.0000	8.91	qQ				
34+35	0.0000	8.86	qQ				
34+40	0.0000	8.81	qQ				
34+45	0.0000	8.76	qQ				
34+50	0.0000	8.70	qQ				
34+55	0.0000	8.64	qQ				
35+ 0	0.0000	8.58	qQ				
35+ 5	0.0000	8.52	qQ				
35+10	0.0000	8.46	qQ				
35+15	0.0000	8.39	qQ				
35+20	0.0000	8.31	qQ				
35+25	0.0000	8.22	qQ				
35+30	0.0000	8.12	qQ				
35+35	0.0000	8.02	qQ				
35+40	0.0000	7.91	qQ				
35+45	0.0000	7.80	qQ				
35+50	0.0000	7.75	qQ				
35+55	0.0000	7.71	qQ				
36+ 0	0.0000	7.67	qQ				
36+ 5	0.0000	7.64	qQ				
36+10	0.0000	7.61	qQ				
36+15	0.0000	7.58	qQ				
36+20	0.0000	7.55	qQ				
36+25	0.0000	7.52	qQ				
36+30	0.0000	7.48	qQ				
36+35	0.0000	7.44	qQ				
36+40	0.0000	7.41	qQ				
36+45	0.0000	7.37	qQ				
36+50	0.0000	7.32	qQ				
36+55	0.0000	7.28	qQ				
37+ 0	0.0000	7.24	qQ				
37+ 5	0.0000	7.19	qQ				
37+10	0.0000	7.14	qQ				
37+15	0.0000	7.09	qQ				
37+20	0.0000	7.04	qQ				
37+25	0.0000	6.99	qQ				
37+30	0.0000	6.92	qQ				
37+35	0.0000	6.84	Q				
37+40	0.0000	6.76	Q				
37+45	0.0000	6.68	Q				
37+50	0.0000	6.59	Q				
37+55	0.0000	6.50	Q				
38+ 0	0.0000	6.40	Q				
38+ 5	0.0000	6.30	Q				
38+10	0.0000	6.18	Q				
38+15	0.0000	6.06	Q				
38+20	0.0000	5.93	Q				
38+25	0.0000	5.78	Q				
38+30	0.0000	5.65	Q				

38+35	0.0000	5.57	Q
38+40	0.0000	5.51	Q
38+45	0.0000	5.45	Q
38+50	0.0000	5.40	Q
38+55	0.0000	5.34	Q
39+ 0	0.0000	5.29	Q
39+ 5	0.0000	5.24	Q
39+10	0.0000	5.18	Q
39+15	0.0000	5.13	Q
39+20	0.0000	5.07	Q
39+25	0.0000	5.00	Q
39+30	0.0000	4.94	Q
39+35	0.0000	4.88	Q
39+40	0.0000	4.81	Q
39+45	0.0000	4.74	Q
39+50	0.0000	4.67	Q
39+55	0.0000	4.60	Q
40+ 0	0.0000	4.52	Q
40+ 5	0.0000	4.45	Q
40+10	0.0000	4.36	Q
40+15	0.0000	4.28	Q
40+20	0.0000	4.19	Q
40+25	0.0000	4.10	Q
40+30	0.0000	4.02	Q
40+35	0.0000	3.92	Q
40+40	0.0000	3.82	Q
40+45	0.0000	3.72	Q
40+50	0.0000	3.60	Q
40+55	0.0000	3.47	Q
41+ 0	0.0000	3.32	Q
41+ 5	0.0000	3.17	Q
41+10	0.0000	3.00	Q
41+15	0.0000	2.86	Q
41+20	0.0000	2.76	Q
41+25	0.0000	2.67	Q
41+30	0.0000	2.59	Q
41+35	0.0000	2.50	Q
41+40	0.0000	2.41	Q
41+45	0.0000	2.31	Q
41+50	0.0000	2.21	Q
41+55	0.0000	2.11	Q
42+ 0	0.0000	2.01	Q
42+ 5	0.0000	1.90	Q
42+10	0.0000	1.78	Q
42+15	0.0000	1.67	Q
42+20	0.0000	1.55	Q
42+25	0.0000	1.42	Q
42+30	0.0000	1.27	Q
42+35	0.0000	1.09	Q
42+40	0.0000	0.90	Q
42+45	0.0000	0.69	Q
42+50	0.0000	0.46	Q
42+55	0.0000	0.18	Q
43+ 0	0.0000	0.09	Q
43+ 5	0.0000	0.05	Q
43+10	0.0000	0.03	Q
43+15	0.0000	0.01	Q

43+20 0.0000 0.00 Q | | | |

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

Number of intervals = 520

Time interval = 5.0 (Min.)

Maximum/Peak flow rate = 273.932 (CFS)

Total volume = 213.382 (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 - 2012
Study date: 05/11/15

154149 - NICHOLS ROAD - CITY OF LAKE ELSINOR
ROUTE AREA "BC"
100-YEAR, 24-HOUR
BY: JTS DATE: 05-08-15

Program License Serial Number 6320

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

From study/file name: 154149RECHYDB24100.rte
*****HYDROGRAPH DATA*****
Number of intervals = 736
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 323.168 (CFS)
Total volume = 333.285 (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 1.000 to Point/Station 2.000
**** ADD/COMBINE/RECOVER HYDROGRAPHS ****

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

From study/file name: 154149RECHYDC24100.rte
+++++
P R I N T O F 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) Add q(CFS) Tot. Q 0 81.5 163.0 244.5 326.0

0+ 5 0.0142 0.02 Q | | | |
0+10 0.0747 0.09 Q | | | |
0+15 0.1350 0.16 Q | | | |
0+20 0.1675 0.21 Q | | | |
0+25 0.2116 0.27 Q | | | |
0+30 0.2514 0.33 Q | | | |
0+35 0.2710 0.36 Q | | | |

0+40	0.2831	0.39	Q
0+45	0.2917	0.42	Q
0+50	0.3055	0.45	Q
0+55	0.3408	0.51	Q
1+ 0	0.3747	0.57	Q
1+ 5	0.3835	0.61	Q
1+10	0.3625	0.61	Q
1+15	0.3393	0.61	Q
1+20	0.3315	0.63	Q
1+25	0.3277	0.65	Q
1+30	0.3253	0.67	Q
1+35	0.3238	0.70	Q
1+40	0.3225	0.74	Q
1+45	0.3216	0.77	Q
1+50	0.3278	0.82	Q
1+55	0.3574	0.89	Q
2+ 0	0.3871	0.96	Q
2+ 5	0.3994	1.02	Q
2+10	0.4058	1.08	Q
2+15	0.4100	1.13	Q
2+20	0.4131	1.19	Q
2+25	0.4157	1.25	Q
2+30	0.4176	1.30	Q
2+35	0.4263	1.37	Q
2+40	0.4578	1.48	Q
2+45	0.4889	1.59	Q
2+50	0.5024	1.69	Q
2+55	0.5099	1.79	Q
3+ 0	0.5152	1.89	Q
3+ 5	0.5190	1.99	Q
3+10	0.5216	2.09	Q
3+15	0.5235	2.20	Q
3+20	0.5251	2.31	Q
3+25	0.5264	2.42	Q
3+30	0.5273	2.54	Q
3+35	0.5281	2.66	Q
3+40	0.5286	2.79	Q
3+45	0.5299	2.92	Q
3+50	0.6057	3.15	Q
3+55	0.9187	3.66	Q
4+ 0	1.2340	4.18	Q
4+ 5	1.3768	4.53	Q
4+10	1.4630	4.83	Q
4+15	1.5289	5.11	Q
4+20	1.6526	5.47	Q
4+25	1.9996	6.10	Q
4+30	2.3385	6.72	Q
4+35	2.5008	7.18	Q
4+40	2.6017	7.60	Q
4+45	2.6789	8.00	Q
4+50	2.8113	8.49	qQ
4+55	3.1650	9.23	qQ
5+ 0	3.5101	9.96	qQ
5+ 5	3.5344	10.32	qQ
5+10	3.0300	10.12	qQ
5+15	2.5049	9.93	qQ
5+20	2.3833	10.20	qQ

5+25	2.5981	10.84	qQ				
5+30	2.8467	11.53	qQ				
5+35	3.0142	12.15	qQ				
5+40	3.3665	13.01	qQ				
5+45	3.7071	13.91	qQ				
5+50	3.8625	14.65	qQ				
5+55	3.9576	15.30	qQ				
6+ 0	4.0296	15.92	qQ				
6+ 5	4.1590	16.62	q Q				
6+10	4.5074	17.60	q Q				
6+15	4.8448	18.63	q Q				
6+20	5.0073	19.51	q Q				
6+25	5.1135	20.32	q Q				
6+30	5.1957	21.07	q Q				
6+35	5.3307	21.93	q Q				
6+40	5.6835	23.06	q Q				
6+45	6.0277	24.24	q Q				
6+50	6.1928	25.26	q Q				
6+55	6.2930	26.24	q Q				
7+ 0	6.3693	27.21	q Q				
7+ 5	6.4297	28.16	q Q				
7+10	6.4794	29.13	q Q				
7+15	6.5221	30.10	q Q				
7+20	6.6309	31.19	q Q				
7+25	6.9642	32.57	q Q				
7+30	7.2933	34.01	q Q				
7+35	7.5166	35.43	q Q				
7+40	7.9125	37.07	q Q				
7+45	8.2854	38.70	q Q				
7+50	8.5393	40.17	q Q				
7+55	8.9549	41.80	q Q				
8+ 0	9.3410	43.47	q Q				
8+ 5	9.6784	45.19	q Q				
8+10	10.4091	47.39	q Q				
8+15	11.1060	49.56	q Q				
8+20	11.4358	51.40	q Q				
8+25	11.6358	53.16	q Q				
8+30	11.7838	54.91	q Q				
8+35	11.9686	56.74	q Q				
8+40	12.3582	58.80	q Q				
8+45	12.7299	60.86	q Q				
8+50	12.9884	62.88	q Q				
8+55	13.4082	65.15	q Q				
9+ 0	13.7999	67.45	q Q				
9+ 5	14.1387	69.75	q Q				
9+10	14.8678	72.52	q Q				
9+15	15.5656	75.31	q Q				
9+20	15.9651	77.83	q Q				
9+25	16.4616	80.51	q Q				
9+30	16.9047	83.22	q Q				
9+35	17.2123	85.85	q Q				
9+40	17.6706	88.68	q Q				
9+45	18.0898	91.51	q Q				
9+50	18.3824	94.22	q Q				
9+55	18.8273	97.12	q Q				
10+ 0	19.2372	100.07	q Q				
10+ 5	18.9534	102.19	q Q				

10+10	16.9690	102.45	q	Q		
10+15	14.9648	102.72	q	Q		
10+20	14.1577	104.19	q	Q		
10+25	13.7324	106.07	q	Q		
10+30	13.4456	108.16	q	Q		
10+35	13.6011	110.98	q	Q		
10+40	14.9695	115.21	q	Q		
10+45	16.3752	119.51	q	Q		
10+50	16.9229	122.99	q	Q		
10+55	17.2047	126.15	q	Q		
11+ 0	17.3987	129.23	q	Q		
11+ 5	17.4685	132.16	q	Q		
11+10	17.2701	134.75	q	Q		
11+15	17.0396	137.34	q	Q		
11+20	16.9856	140.15	q	Q		
11+25	16.9938	143.15	q	Q		
11+30	17.0100	146.03	q	Q		
11+35	16.8860	148.69	q	Q		
11+40	16.2987	150.82	q	Q		
11+45	15.7208	152.97	q	Q		
11+50	15.5542	155.63	q	Q		
11+55	15.7212	158.71	q	Q		
12+ 0	15.9316	161.89	q	Q		
12+ 5	16.4935	165.50	q	Q		
12+10	18.6406	170.89	q	Q		
12+15	20.7691	176.25	q	Q		
12+20	21.7423	180.52	q	Q		
12+25	22.5464	184.63	q	Q		
12+30	23.1991	188.58	q	Q		
12+35	23.7266	192.55	q	Q		
12+40	24.5971	196.98	q	Q		
12+45	25.3930	201.37	q	Q		
12+50	25.8815	205.24	q	Q		
12+55	26.4555	209.09	q	Q		
13+ 0	26.9604	212.82	q	Q		
13+ 5	27.5972	216.74	q	Q		
13+10	29.2986	221.87	q	Q		
13+15	30.9540	227.00	q	Q		
13+20	31.7017	231.37	q	Q		
13+25	32.1188	235.59	q	Q		
13+30	32.4178	239.86	q	Q		
13+35	31.8596	242.85	q	Q		
13+40	28.6949	242.77	q	Q		
13+45	25.5106	242.66	q	Q		
13+50	24.2239	244.41	q	Q		
13+55	23.5425	246.77	q	Q		
14+ 0	23.0809	249.55	q	Q		
14+ 5	23.0378	252.95	q	Q		
14+10	24.0086	257.51	q	Q		
14+15	25.0480	262.15	q	Q		
14+20	25.3366	265.90	q	Q		
14+25	25.1887	268.91	q	Q		
14+30	24.9862	271.91	q	Q		
14+35	24.9299	275.05	q	Q		
14+40	24.9140	278.20	q	Q		
14+45	24.8928	281.36	q	Q		
14+50	24.8277	284.63	q	Q		

14+55	24.5618	287.75	q					Q	
15+ 0	24.2938	290.60	q					Q	
15+ 5	24.1223	293.53	q					Q	
15+10	23.7735	296.17	q					Q	
15+15	23.4497	298.79	q					Q	
15+20	23.2364	301.50	q					Q	
15+25	22.8456	303.99	q					Q	
15+30	22.4844	306.44	q					Q	
15+35	22.0321	308.79	q					Q	
15+40	20.7261	310.38	q					Q	
15+45	19.4569	311.96	q					Q	
15+50	18.9032	314.37	q					Q	
15+55	18.5945	317.10	q					Q	
16+ 0	18.3799	319.92	q					Q	
16+ 5	17.1627	321.19	q					Q	
16+10	12.5120	318.46	q					Q	
16+15	7.9148	315.74	q					Q	
16+20	5.9468	315.23	q					Q	
16+25	4.8635	315.45	q					Q	
16+30	4.1081	315.99	q					Q	
16+35	3.4965	316.66	q					Q	
16+40	2.7974	317.29	q					Q	
16+45	2.2027	317.99	q					Q	
16+50	1.8295	318.96	q					Q	
16+55	1.5863	319.84	q					Q	
17+ 0	1.4031	320.61	q					Q	
17+ 5	1.4107	321.61	q					Q	
17+10	1.9166	323.01	q					Q	
17+15	2.4273	324.32	q					Q	
17+20	2.6245	325.23	q					Q	
17+25	2.7619	325.93	q					Q	
17+30	2.8595	325.98	q					Q	
17+35	2.9323	325.52	q					Q	
17+40	2.9888	324.89	q					Q	
17+45	3.0317	324.23	q					Q	
17+50	3.0006	323.45	q					Q	
17+55	2.7332	322.42	q					Q	
18+ 0	2.4620	321.16	q					Q	
18+ 5	2.3604	319.68	q					Q	
18+10	2.3128	318.13	q					Q	
18+15	2.2862	316.58	q					Q	
18+20	2.2687	314.89	q					Q	
18+25	2.2532	312.94	q					Q	
18+30	2.2444	310.98	q					Q	
18+35	2.1673	308.70	q					Q	
18+40	1.8620	305.98	q					Q	
18+45	1.5609	303.20	q					Q	
18+50	1.3707	299.95	q					Q	
18+55	1.0245	295.99	q					Q	
19+ 0	0.6982	291.90	q					Q	
19+ 5	0.6137	288.52	q					Q	
19+10	0.8151	285.66	q					Q	
19+15	1.0434	282.76	q					Q	
19+20	1.1940	279.79	q					Q	
19+25	1.5345	276.86	q					Q	
19+30	1.8625	273.79	q					Q	
19+35	1.9374	270.24	q					Q	

19+40	1.7196	266.01	q				Q
19+45	1.4783	261.57	q				Q
19+50	1.3287	257.24	q				Q
19+55	0.9971	253.04	q				Q
20+ 0	0.6790	248.82	q				Q
20+ 5	0.6168	244.83	q				Q
20+10	0.8506	241.13	q				Q
20+15	1.1082	237.32	q				Q
20+20	1.2030	233.24	q				Q
20+25	1.2481	229.03	q				Q
20+30	1.2813	225.00	q				Q
20+35	1.3036	220.93	q				Q
20+40	1.3191	216.91	q				Q
20+45	1.3302	212.89	q				Q
20+50	1.2724	208.71	q				Q
20+55	0.9838	204.24	q				Q
21+ 0	0.6941	199.68	q				Q
21+ 5	0.6493	195.58	q				Q
21+10	0.8957	191.87	q				Q
21+15	1.1615	188.24	q				Q
21+20	1.1933	184.38	q				Q
21+25	0.9410	180.15	q				Q
21+30	0.6759	175.92	q				Q
21+35	0.6449	172.48	q				Q
21+40	0.8982	169.63	q				Q
21+45	1.1668	166.74	q				Q
21+50	1.2034	163.72	q				Q
21+55	0.9571	160.58	q				Q
22+ 0	0.6955	157.49	q				Q
22+ 5	0.6677	154.77	q				Q
22+10	0.9260	152.34	q				Q
22+15	1.1995	149.86	q				Q
22+20	1.2388	147.05	q				Q
22+25	0.9917	144.33	q				Q
22+30	0.7293	141.87	q				Q
22+35	0.6299	139.51	q				Q
22+40	0.5846	137.23	q				Q
22+45	0.5560	134.91	q				Q
22+50	0.5384	132.62	q				Q
22+55	0.5240	130.49	q				Q
23+ 0	0.5138	128.73	q				Q
23+ 5	0.5058	126.98	q				Q
23+10	0.5032	125.17	q				Q
23+15	0.5030	123.36	q				Q
23+20	0.5029	121.63	q				Q
23+25	0.5008	119.87	q				Q
23+30	0.4986	118.16	q				Q
23+35	0.4983	116.43	q				Q
23+40	0.5013	114.69	q				Q
23+45	0.5041	112.96	q				Q
23+50	0.5066	111.46	q				Q
23+55	0.5089	110.02	q				Q
24+ 0	0.5108	108.55	q				Q
24+ 5	0.4779	107.02	q				Q
24+10	0.3315	105.36	q				Q
24+15	0.1854	103.72	q				Q
24+20	0.1241	102.42	q				Q

24+25	0.0906	101.26	q		Q			
24+30	0.0674	100.08	q		Q			
24+35	0.0508	98.90	q		Q			
24+40	0.0384	97.75	q		Q			
24+45	0.0293	96.63	q		Q			
24+50	0.0214	95.49	q		Q			
24+55	0.0155	94.36	q		Q			
25+ 0	0.0107	93.21	q		Q			
25+ 5	0.0072	92.05	q		Q			
25+10	0.0044	91.08	q		Q			
25+15	0.0017	90.20	q		Q			
25+20	0.0000	89.34	q		Q			
25+25	0.0000	88.43	q		Q			
25+30	0.0000	87.49	q		Q			
25+35	0.0000	86.51	q		Q			
25+40	0.0000	85.53	q		Q			
25+45	0.0000	84.62	q		Q			
25+50	0.0000	83.70	q		Q			
25+55	0.0000	82.80	q		Q			
26+ 0	0.0000	81.91	q		Q			
26+ 5	0.0000	81.02	q	Q				
26+10	0.0000	80.15	q	Q				
26+15	0.0000	79.27	q	Q				
26+20	0.0000	78.44	q	Q				
26+25	0.0000	77.59	q	Q				
26+30	0.0000	76.75	q	Q				
26+35	0.0000	75.91	q	Q				
26+40	0.0000	75.07	q	Q				
26+45	0.0000	74.24	q	Q				
26+50	0.0000	73.41	q	Q				
26+55	0.0000	72.59	q	Q				
27+ 0	0.0000	71.75	q	Q				
27+ 5	0.0000	70.95	q	Q				
27+10	0.0000	70.18	q	Q				
27+15	0.0000	69.40	q	Q				
27+20	0.0000	68.68	q	Q				
27+25	0.0000	67.96	q	Q				
27+30	0.0000	67.24	q	Q				
27+35	0.0000	66.48	q	Q				
27+40	0.0000	65.72	q	Q				
27+45	0.0000	64.98	q	Q				
27+50	0.0000	64.27	q	Q				
27+55	0.0000	63.56	q	Q				
28+ 0	0.0000	62.84	q	Q				
28+ 5	0.0000	62.12	q	Q				
28+10	0.0000	61.41	q	Q				
28+15	0.0000	60.72	q	Q				
28+20	0.0000	60.00	q	Q				
28+25	0.0000	59.26	q	Q				
28+30	0.0000	58.56	q	Q				
28+35	0.0000	57.84	q	Q				
28+40	0.0000	57.18	q	Q				
28+45	0.0000	56.58	q	Q				
28+50	0.0000	55.97	q	Q				
28+55	0.0000	55.36	q	Q				
29+ 0	0.0000	54.74	q	Q				
29+ 5	0.0000	54.13	q	Q				

29+10	0.0000	53.52	q	Q				
29+15	0.0000	52.91	q	Q				
29+20	0.0000	52.32	q	Q				
29+25	0.0000	51.72	q	Q				
29+30	0.0000	51.12	q	Q				
29+35	0.0000	50.57	q	Q				
29+40	0.0000	50.03	q	Q				
29+45	0.0000	49.48	q	Q				
29+50	0.0000	48.93	q	Q				
29+55	0.0000	48.40	q	Q				
30+ 0	0.0000	47.88	q	Q				
30+ 5	0.0000	47.40	q	Q				
30+10	0.0000	46.93	q	Q				
30+15	0.0000	46.46	q	Q				
30+20	0.0000	45.98	q	Q				
30+25	0.0000	45.52	q	Q				
30+30	0.0000	45.07	q	Q				
30+35	0.0000	44.63	q	Q				
30+40	0.0000	44.19	q	Q				
30+45	0.0000	43.76	q	Q				
30+50	0.0000	43.33	q	Q				
30+55	0.0000	42.93	q	Q				
31+ 0	0.0000	42.55	q	Q				
31+ 5	0.0000	42.15	q	Q				
31+10	0.0000	41.77	q	Q				
31+15	0.0000	41.42	q	Q				
31+20	0.0000	41.05	q	Q				
31+25	0.0000	40.68	q	Q				
31+30	0.0000	40.31	q	Q				
31+35	0.0000	39.94	q	Q				
31+40	0.0000	39.57	q	Q				
31+45	0.0000	39.19	q	Q				
31+50	0.0000	38.82	q	Q				
31+55	0.0000	38.45	q	Q				
32+ 0	0.0000	38.10	q	Q				
32+ 5	0.0000	37.76	q	Q				
32+10	0.0000	37.43	q	Q				
32+15	0.0000	37.09	q	Q				
32+20	0.0000	36.75	q	Q				
32+25	0.0000	36.40	q	Q				
32+30	0.0000	36.06	q	Q				
32+35	0.0000	35.75	q	Q				
32+40	0.0000	35.44	q	Q				
32+45	0.0000	35.13	q	Q				
32+50	0.0000	34.88	q	Q				
32+55	0.0000	34.63	q	Q				
33+ 0	0.0000	34.38	q	Q				
33+ 5	0.0000	34.12	q	Q				
33+10	0.0000	33.88	q	Q				
33+15	0.0000	33.63	q	Q				
33+20	0.0000	33.38	q	Q				
33+25	0.0000	33.12	q	Q				
33+30	0.0000	32.87	q	Q				
33+35	0.0000	32.61	q	Q				
33+40	0.0000	32.37	q	Q				
33+45	0.0000	32.13	q	Q				
33+50	0.0000	31.88	q	Q				

33+55	0.0000	31.63	q	Q				
34+ 0	0.0000	31.38	q	Q				
34+ 5	0.0000	31.10	q	Q				
34+10	0.0000	30.83	q	Q				
34+15	0.0000	30.55	q	Q				
34+20	0.0000	30.28	q	Q				
34+25	0.0000	30.00	q	Q				
34+30	0.0000	29.72	q	Q				
34+35	0.0000	29.44	q	Q				
34+40	0.0000	29.16	q	Q				
34+45	0.0000	28.88	q	Q				
34+50	0.0000	28.62	q	Q				
34+55	0.0000	28.37	q	Q				
35+ 0	0.0000	28.11	q	Q				
35+ 5	0.0000	27.84	q	Q				
35+10	0.0000	27.58	q	Q				
35+15	0.0000	27.32	q	Q				
35+20	0.0000	27.12	q	Q				
35+25	0.0000	26.92	q	Q				
35+30	0.0000	26.73	q	Q				
35+35	0.0000	26.57	q	Q				
35+40	0.0000	26.41	q	Q				
35+45	0.0000	26.25	q	Q				
35+50	0.0000	26.09	q	Q				
35+55	0.0000	25.92	q	Q				
36+ 0	0.0000	25.76	q	Q				
36+ 5	0.0000	25.59	q	Q				
36+10	0.0000	25.42	q	Q				
36+15	0.0000	25.24	q	Q				
36+20	0.0000	25.06	q	Q				
36+25	0.0000	24.88	q	Q				
36+30	0.0000	24.71	q	Q				
36+35	0.0000	24.53	q	Q				
36+40	0.0000	24.34	q	Q				
36+45	0.0000	24.15	q	Q				
36+50	0.0000	23.96	q	Q				
36+55	0.0000	23.76	q	Q				
37+ 0	0.0000	23.58	q	Q				
37+ 5	0.0000	23.39	q	Q				
37+10	0.0000	23.20	q	Q				
37+15	0.0000	23.01	q	Q				
37+20	0.0000	22.83	q	Q				
37+25	0.0000	22.64	q	Q				
37+30	0.0000	22.47	q	Q				
37+35	0.0000	22.31	q	Q				
37+40	0.0000	22.15	q	Q				
37+45	0.0000	22.00	q	Q				
37+50	0.0000	21.85	q	Q				
37+55	0.0000	21.70	q	Q				
38+ 0	0.0000	21.55	q	Q				
38+ 5	0.0000	21.45	q	Q				
38+10	0.0000	21.34	q	Q				
38+15	0.0000	21.24	q	Q				
38+20	0.0000	21.14	q	Q				
38+25	0.0000	21.04	q	Q				
38+30	0.0000	20.93	q	Q				
38+35	0.0000	20.83	q	Q				

38+40	0.0000	20.72	q Q				
38+45	0.0000	20.62	q Q				
38+50	0.0000	20.51	q Q				
38+55	0.0000	20.41	q Q				
39+ 0	0.0000	20.31	q Q				
39+ 5	0.0000	20.21	q Q				
39+10	0.0000	20.11	q Q				
39+15	0.0000	20.00	q Q				
39+20	0.0000	19.90	q Q				
39+25	0.0000	19.79	q Q				
39+30	0.0000	19.67	q Q				
39+35	0.0000	19.54	q Q				
39+40	0.0000	19.41	q Q				
39+45	0.0000	19.27	q Q				
39+50	0.0000	19.14	q Q				
39+55	0.0000	19.01	q Q				
40+ 0	0.0000	18.87	q Q				
40+ 5	0.0000	18.74	q Q				
40+10	0.0000	18.60	q Q				
40+15	0.0000	18.47	q Q				
40+20	0.0000	18.34	q Q				
40+25	0.0000	18.20	q Q				
40+30	0.0000	18.06	q Q				
40+35	0.0000	17.93	q Q				
40+40	0.0000	17.79	q Q				
40+45	0.0000	17.65	q Q				
40+50	0.0000	17.51	q Q				
40+55	0.0000	17.38	q Q				
41+ 0	0.0000	17.25	q Q				
41+ 5	0.0000	17.14	q Q				
41+10	0.0000	17.03	q Q				
41+15	0.0000	16.91	q Q				
41+20	0.0000	16.79	q Q				
41+25	0.0000	16.67	q Q				
41+30	0.0000	16.55	q Q				
41+35	0.0000	16.42	q Q				
41+40	0.0000	16.29	qQ				
41+45	0.0000	16.17	qQ				
41+50	0.0000	16.04	qQ				
41+55	0.0000	15.92	qQ				
42+ 0	0.0000	15.79	qQ				
42+ 5	0.0000	15.66	qQ				
42+10	0.0000	15.53	qQ				
42+15	0.0000	15.39	qQ				
42+20	0.0000	15.24	qQ				
42+25	0.0000	15.09	qQ				
42+30	0.0000	14.95	qQ				
42+35	0.0000	14.82	qQ				
42+40	0.0000	14.68	qQ				
42+45	0.0000	14.53	qQ				
42+50	0.0000	14.39	qQ				
42+55	0.0000	14.25	qQ				
43+ 0	0.0000	14.12	qQ				
43+ 5	0.0000	13.99	qQ				
43+10	0.0000	13.85	qQ				
43+15	0.0000	13.72	qQ				
43+20	0.0000	13.59	qQ				

43+25	0.0000	13.46	qQ				
43+30	0.0000	13.33	qQ				
43+35	0.0000	13.23	qQ				
43+40	0.0000	13.12	qQ				
43+45	0.0000	13.02	qQ				
43+50	0.0000	12.92	qQ				
43+55	0.0000	12.83	qQ				
44+ 0	0.0000	12.74	qQ				
44+ 5	0.0000	12.64	qQ				
44+10	0.0000	12.54	qQ				
44+15	0.0000	12.45	qQ				
44+20	0.0000	12.35	qQ				
44+25	0.0000	12.25	qQ				
44+30	0.0000	12.15	qQ				
44+35	0.0000	12.05	qQ				
44+40	0.0000	11.95	qQ				
44+45	0.0000	11.84	qQ				
44+50	0.0000	11.73	qQ				
44+55	0.0000	11.62	qQ				
45+ 0	0.0000	11.50	qQ				
45+ 5	0.0000	11.38	qQ				
45+10	0.0000	11.26	qQ				
45+15	0.0000	11.13	qQ				
45+20	0.0000	11.01	qQ				
45+25	0.0000	10.88	qQ				
45+30	0.0000	10.75	qQ				
45+35	0.0000	10.62	qQ				
45+40	0.0000	10.48	qQ				
45+45	0.0000	10.35	qQ				
45+50	0.0000	10.23	qQ				
45+55	0.0000	10.11	qQ				
46+ 0	0.0000	9.98	qQ				
46+ 5	0.0000	9.86	qQ				
46+10	0.0000	9.73	qQ				
46+15	0.0000	9.61	qQ				
46+20	0.0000	9.49	qQ				
46+25	0.0000	9.38	qQ				
46+30	0.0000	9.26	qQ				
46+35	0.0000	9.15	qQ				
46+40	0.0000	9.05	qQ				
46+45	0.0000	8.93	qQ				
46+50	0.0000	8.82	qQ				
46+55	0.0000	8.71	qQ				
47+ 0	0.0000	8.59	qQ				
47+ 5	0.0000	8.47	qQ				
47+10	0.0000	8.35	qQ				
47+15	0.0000	8.23	qQ				
47+20	0.0000	8.11	Q				
47+25	0.0000	7.99	Q				
47+30	0.0000	7.90	Q				
47+35	0.0000	7.80	Q				
47+40	0.0000	7.70	Q				
47+45	0.0000	7.59	Q				
47+50	0.0000	7.49	Q				
47+55	0.0000	7.38	Q				
48+ 0	0.0000	7.25	Q				
48+ 5	0.0000	7.13	Q				

48+10	0.0000	7.01	Q				
48+15	0.0000	6.88	Q				
48+20	0.0000	6.76	Q				
48+25	0.0000	6.64	Q				
48+30	0.0000	6.52	Q				
48+35	0.0000	6.40	Q				
48+40	0.0000	6.28	Q				
48+45	0.0000	6.16	Q				
48+50	0.0000	6.04	Q				
48+55	0.0000	5.92	Q				
49+ 0	0.0000	5.82	Q				
49+ 5	0.0000	5.72	Q				
49+10	0.0000	5.63	Q				
49+15	0.0000	5.53	Q				
49+20	0.0000	5.45	Q				
49+25	0.0000	5.37	Q				
49+30	0.0000	5.26	Q				
49+35	0.0000	5.15	Q				
49+40	0.0000	5.04	Q				
49+45	0.0000	4.93	Q				
49+50	0.0000	4.81	Q				
49+55	0.0000	4.70	Q				
50+ 0	0.0000	4.58	Q				
50+ 5	0.0000	4.46	Q				
50+10	0.0000	4.33	Q				
50+15	0.0000	4.21	Q				
50+20	0.0000	4.08	Q				
50+25	0.0000	3.96	Q				
50+30	0.0000	3.82	Q				
50+35	0.0000	3.67	Q				
50+40	0.0000	3.53	Q				
50+45	0.0000	3.39	Q				
50+50	0.0000	3.25	Q				
50+55	0.0000	3.11	Q				
51+ 0	0.0000	3.01	Q				
51+ 5	0.0000	2.91	Q				
51+10	0.0000	2.81	Q				
51+15	0.0000	2.71	Q				
51+20	0.0000	2.62	Q				
51+25	0.0000	2.52	Q				
51+30	0.0000	2.41	Q				
51+35	0.0000	2.31	Q				
51+40	0.0000	2.20	Q				
51+45	0.0000	2.11	Q				
51+50	0.0000	2.02	Q				
51+55	0.0000	1.94	Q				
52+ 0	0.0000	1.86	Q				
52+ 5	0.0000	1.77	Q				
52+10	0.0000	1.69	Q				
52+15	0.0000	1.61	Q				
52+20	0.0000	1.53	Q				
52+25	0.0000	1.45	Q				
52+30	0.0000	1.37	Q				
52+35	0.0000	1.29	Q				
52+40	0.0000	1.22	Q				
52+45	0.0000	1.15	Q				
52+50	0.0000	1.07	Q				

52+55	0.0000	1.00	Q				
53+ 0	0.0000	0.94	Q				
53+ 5	0.0000	0.87	Q				
53+10	0.0000	0.81	Q				
53+15	0.0000	0.75	Q				
53+20	0.0000	0.69	Q				
53+25	0.0000	0.62	Q				
53+30	0.0000	0.61	Q				
53+35	0.0000	0.60	Q				
53+40	0.0000	0.58	Q				
53+45	0.0000	0.57	Q				
53+50	0.0000	0.56	Q				
53+55	0.0000	0.55	Q				
54+ 0	0.0000	0.54	Q				
54+ 5	0.0000	0.53	Q				
54+10	0.0000	0.52	Q				
54+15	0.0000	0.51	Q				
54+20	0.0000	0.51	Q				
54+25	0.0000	0.50	Q				
54+30	0.0000	0.49	Q				
54+35	0.0000	0.48	Q				
54+40	0.0000	0.46	Q				
54+45	0.0000	0.45	Q				
54+50	0.0000	0.44	Q				
54+55	0.0000	0.42	Q				
55+ 0	0.0000	0.41	Q				
55+ 5	0.0000	0.39	Q				
55+10	0.0000	0.38	Q				
55+15	0.0000	0.37	Q				
55+20	0.0000	0.36	Q				
55+25	0.0000	0.35	Q				
55+30	0.0000	0.34	Q				
55+35	0.0000	0.33	Q				
55+40	0.0000	0.32	Q				
55+45	0.0000	0.31	Q				
55+50	0.0000	0.30	Q				
55+55	0.0000	0.29	Q				
56+ 0	0.0000	0.28	Q				
56+ 5	0.0000	0.27	Q				
56+10	0.0000	0.27	Q				
56+15	0.0000	0.26	Q				
56+20	0.0000	0.26	Q				
56+25	0.0000	0.26	Q				
56+30	0.0000	0.25	Q				
56+35	0.0000	0.24	Q				
56+40	0.0000	0.24	Q				
56+45	0.0000	0.23	Q				
56+50	0.0000	0.22	Q				
56+55	0.0000	0.20	Q				
57+ 0	0.0000	0.20	Q				
57+ 5	0.0000	0.19	Q				
57+10	0.0000	0.19	Q				
57+15	0.0000	0.18	Q				
57+20	0.0000	0.18	Q				
57+25	0.0000	0.18	Q				
57+30	0.0000	0.17	Q				
57+35	0.0000	0.17	Q				

57+40	0.0000	0.16	Q				
57+45	0.0000	0.15	Q				
57+50	0.0000	0.15	Q				
57+55	0.0000	0.14	Q				
58+ 0	0.0000	0.13	Q				
58+ 5	0.0000	0.13	Q				
58+10	0.0000	0.12	Q				
58+15	0.0000	0.12	Q				
58+20	0.0000	0.12	Q				
58+25	0.0000	0.11	Q				
58+30	0.0000	0.11	Q				
58+35	0.0000	0.10	Q				
58+40	0.0000	0.10	Q				
58+45	0.0000	0.09	Q				
58+50	0.0000	0.09	Q				
58+55	0.0000	0.09	Q				
59+ 0	0.0000	0.08	Q				
59+ 5	0.0000	0.08	Q				
59+10	0.0000	0.07	Q				
59+15	0.0000	0.07	Q				
59+20	0.0000	0.07	Q				
59+25	0.0000	0.06	Q				
59+30	0.0000	0.06	Q				
59+35	0.0000	0.05	Q				
59+40	0.0000	0.04	Q				
59+45	0.0000	0.04	Q				
59+50	0.0000	0.04	Q				
59+55	0.0000	0.04	Q				
60+ 0	0.0000	0.04	Q				
60+ 5	0.0000	0.03	Q				
60+10	0.0000	0.03	Q				
60+15	0.0000	0.03	Q				
60+20	0.0000	0.03	Q				
60+25	0.0000	0.03	Q				
60+30	0.0000	0.02	Q				
60+35	0.0000	0.02	Q				
60+40	0.0000	0.02	Q				
60+45	0.0000	0.02	Q				
60+50	0.0000	0.02	Q				
60+55	0.0000	0.01	Q				
61+ 0	0.0000	0.01	Q				
61+ 5	0.0000	0.01	Q				
61+10	0.0000	0.01	Q				
61+15	0.0000	0.00	Q				
61+20	0.0000	0.00	Q				

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

Number of intervals = 736

Time interval = 5.0 (Min.)

Maximum/Peak flow rate = 325.981 (CFS)

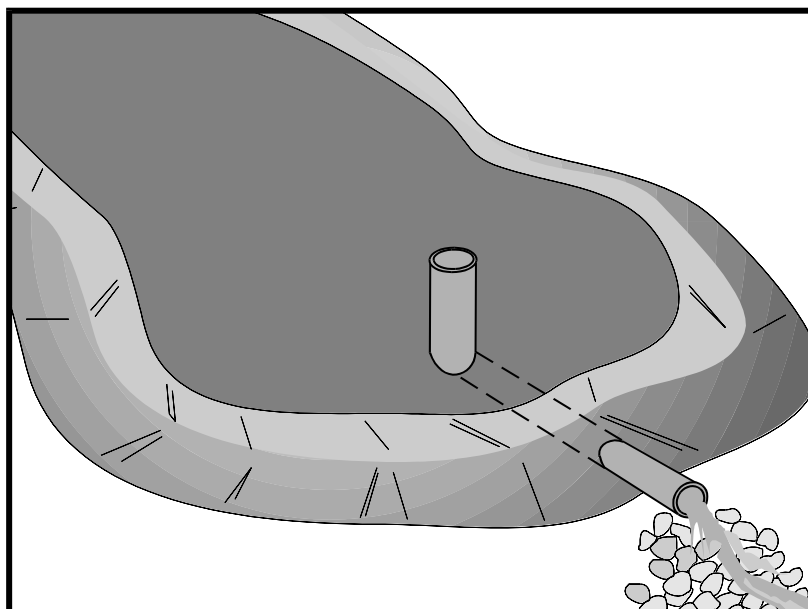
Total volume = 349.283 (Ac.Ft)

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

ATTACHMENT 8

California Stormwater Quality Association
(CSQA)
Sedimentation Basin Requirements



Description and Purpose

A sediment basin is a temporary basin formed by excavation or by constructing an embankment so that sediment-laden runoff is temporarily detained under quiescent conditions, allowing sediment to settle out before the runoff is released.

Sediment basin design guidance presented in this fact sheet is intended to provide options, methods, and techniques to optimize temporary sediment basin performance and basin sediment removal. Basin design guidance provided in this fact sheet is not intended to guarantee basin effluent compliance with numeric discharge limits (numeric action levels or numeric effluent limits for turbidity). Compliance with discharge limits requires a thoughtful approach to comprehensive BMP planning, implementation, and maintenance. Therefore, optimally designed and maintained sediment basins should be used in conjunction with a comprehensive system of BMPs that includes:

- Diverting runoff from undisturbed areas away from the basin
- Erosion control practices to minimize disturbed areas on-site and to provide temporary stabilization and interim sediment controls (e.g., stockpile perimeter control, check dams, perimeter controls around individual lots) to reduce the basin's influent sediment concentration.

At some sites, sediment basin design enhancements may be required to adequately remove sediment. Traditional

Categories

EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

- ☒ Primary Category
- ☒ Secondary Category

Targeted Constituents

Sediment	☒
Nutrients	
Trash	☒
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-3 Sediment Trap (for smaller areas)

If User/Subscriber modifies this fact sheet in any way, the CASQA name/logo and footer below must be removed from each page and not appear on the modified version.



(a.k.a. “physical”) enhancements such as alternative outlet configurations or flow deflection baffles increase detention time and other techniques such as outlet skimmers preferentially drain flows with lower sediment concentrations. These “physical” enhancement techniques are described in this fact sheet. To further enhance sediment removal particularly at sites with fine soils or turbidity sensitive receiving waters, some projects may need to consider implementing Active Treatment Systems (ATS) whereby coagulants and flocculants are used to enhance settling and removal of suspended sediments. Guidance on implementing ATS is provided in SE-11.

Suitable Applications

Sediment basins may be suitable for use on larger projects with sufficient space for constructing the basin. Sediment basins should be considered for use:

- Where sediment-laden water may enter the drainage system or watercourses
- On construction projects with disturbed areas during the rainy season
- At the outlet of disturbed watersheds between 5 acres and 75 acres and evaluated on a site by site basis
- Where post construction detention basins are required
- In association with dikes, temporary channels, and pipes used to convey runoff from disturbed areas

Limitations

Sediment basins must be installed only within the property limits and where failure of the structure will not result in loss of life, damage to homes or buildings, or interruption of use or service of public roads or utilities. In addition, sediment basins are attractive to children and can be very dangerous. Local ordinances regarding health and safety must be adhered to. If fencing of the basin is required, the type of fence and its location should be shown in the SWPPP and in the construction specifications.

- As a general guideline, sediment basins are suitable for drainage areas of 5 acres or more, but not appropriate for drainage areas greater than 75 acres. However, the tributary area should be evaluated on a site by site basis.
- Sediment basins may become an “attractive nuisance” and care must be taken to adhere to all safety practices. If safety is a concern, basin may require protective fencing.
- Sediment basins designed according to this fact sheet are only effective in removing sediment down to about the silt size fraction. Sediment-laden runoff with smaller size fractions (fine silt and clay) may not be adequately treated unless chemical (or other appropriate method) treatment is used in addition to the sediment basin.
- Basins with a height of 25 ft or more or an impounding capacity of 50 ac-ft or more must obtain approval from California Department of Water Resources Division of Safety of Dams (<http://www.water.ca.gov/damsafety/>).

- Water that stands in sediment basins longer than 96 hours may become a source of mosquitoes (and midges), particularly along perimeter edges, in shallow zones, in scour or below-grade pools, around inlet pipes, along low-flow channels, and among protected habitats created by emergent or floating vegetation (e.g. cattails, water hyacinth), algal mats, riprap, etc.
- Basins require large surface areas to permit settling of sediment. Size may be limited by the available area.

Implementation

General

A sediment basin is a controlled stormwater release structure formed by excavation or by construction of an embankment of compacted soil across a drainage way, or other suitable location. It is intended to trap sediment before it leaves the construction site. The basin is a temporary measure expected to be used during active construction in most cases and is to be maintained until the site area is permanently protected against erosion or a permanent detention basin is constructed.

Sediment basins are suitable for nearly all types of construction projects. Whenever possible, construct the sediment basins before clearing and grading work begins. Basins should be located at the stormwater outlet from the site but not in any natural or undisturbed stream. A typical application would include temporary dikes, pipes, and/or channels to convey runoff to the basin inlet.

Many development projects in California are required by local ordinances to provide a stormwater detention basin for post-construction flood control, desilting, or stormwater pollution control. A temporary sediment basin may be constructed by rough grading the post-construction control basins early in the project.

Sediment basins if properly designed and maintained can trap a significant amount of the sediment that flows into them. However, traditional basins do not remove all inflowing sediment. Therefore, they should be used in conjunction with erosion control practices such as temporary seeding, mulching, diversion dikes, etc., to reduce the amount of sediment flowing into the basin.

Planning

To improve the effectiveness of the basin, it should be located to intercept runoff from the largest possible amount of disturbed area. Locations best suited for a sediment basin are generally in lower elevation areas of the site (or basin tributary area) where site drainage would not require significant diversion or other means to direct water to the basin but outside jurisdictional waterways. However, as necessary, drainage into the basin can be improved by the use of earth dikes and drainage swales (see BMP EC-9). The basin should not be located where its failure would result in the loss of life or interruption of the use or service of public utilities or roads.

Construct before clearing and grading work begins when feasible.

- Do not locate the basin in a jurisdictional stream.

- Basin sites should be located where failure of the structure will not cause loss of life, damage to homes or buildings, or interruption of use or service of public roads or utilities.
- Basins with a height of 25 ft or more or an impounding capacity of 50 ac-ft must obtain approval from the Division of Dam Safety. Local dam safety requirements may be more stringent.
- Limit the contributing area to the sediment basin to only the runoff from the disturbed soil areas. Use temporary concentrated flow conveyance controls to divert runoff from undisturbed areas away from the sediment basin.
- The basin should be located: (1) by excavating a suitable area or where a low embankment can be constructed across a swale, (2) where post-construction (permanent) detention basins will be constructed, and (3) where the basins can be maintained on a year-round basis to provide access for maintenance, including sediment removal and sediment stockpiling in a protected area, and to maintain the basin to provide the required capacity.

Design

When designing a sediment basin, designers should evaluate the site constraints that could affect the efficiency of the BMP. Some of these constraints include: the relationship between basin capacity, anticipated sediment load, and freeboard, available footprint for the basin, maintenance frequency and access, and hydraulic capacity and efficiency of the temporary outlet infrastructure. Sediment basins should be designed to maximize sediment removal and to consider sediment load retained by the basin as it affects basin performance.

Three Basin Design Options (Part A) are presented below along with a Typical Sediment/Detention Basin Design Methodology (Part B). Regardless of the design option that is selected, designers also need to evaluate the sediment basin capacity with respect to sediment accumulation (See “*Step 3. Evaluate the Capacity of the Sediment Basin*”), and should incorporate approaches identified in “*Step 4. Other Design Considerations*” to enhance basin performance.

A) Basin Design Options:

Option 1:

Design sediment basin(s) using the standard equation:

$$A_s = \frac{1.2Q}{V_s} \quad (\text{Eq. 1})$$

Where:

A_s = Minimum surface area for trapping soil particles of a certain size

V_s = Settling velocity of the design particle size chosen ($V_s = 0.00028$ ft/s for a design particle size of 0.01 mm at 68°F)

1.2 = Factor of safety recommended by USEPA to account for the reduction in basin efficiency caused due to turbulence and other non ideal conditions.

$$Q = CIA \quad (\text{Eq.2})$$

Where

Q = Peak basin influent flow rate measured in cubic feet per second (ft³/s)

C = Runoff coefficient (unitless)

I = Peak rainfall intensity for the 10-year, 6-hour rain event (in/hr)

A = Area draining into the sediment basin in acres

The design particle size should be the smallest soil grain size determined by wet sieve analysis, or the fine silt sized (0.01 mm [or 0.0004 in.]) particle, and the Vs used should be 100 percent of the calculated settling velocity.

This sizing basin method is dependent on the outlet structure design or the total basin length with an appropriate outlet. If the designer chooses to utilize the outlet structure to control the flow duration in the basin, the basin length (distance between the inlet and the outlet) should be a minimum of twice the basin width; the depth should not be less than 3 ft nor greater than 5 ft for safety reasons and for maximum efficiency (2 ft of sediment storage, 2 ft of capacity). If the designer chooses to utilize the basin length (with appropriate basin outlet) to control the flow duration in the basin, the basin length (distance between the inlet and the outlet) should be a specifically designed to capture 100% of the design particle size; the depth should not be less than 3 ft nor greater than 5 ft for safety reasons and for maximum efficiency (2 ft of sediment storage, 2 ft of capacity).

Basin design guidance provided herein assumes standard water properties (e.g., estimated average water temperature, kinematic viscosity, etc.) as a basis of the design. Designers can use an alternative design (Option 3) with site specific water properties as long as the design is as protective as Option 1.

The design guidance uses the peak influent flow rate to size sediment basins. Designers can use an alternative design (Option 3) with site specific average flow rates as long as the design is as protective as Option 1.

The basin should be located on the site where it can be maintained on a year-round basis and should be maintained on a schedule to retain the 2 ft of capacity.

Option 2:

Design pursuant to local ordinance for sediment basin design and maintenance, provided that the design efficiency is as protective or more protective of water quality than Option 1.

Option 3:

The use of an equivalent surface area design or equation provided that the design efficiency is as protective or more protective of water quality than Option 1.

B) Typical Sediment/Detention Basin Design Methodology:

Design of a sediment basin requires the designer to have an understanding of the site constraints, knowledge of the local soil (e.g., particle size distribution of potentially contributing soils), drainage area of the basin, and local hydrology. Designers should not assume that a sediment basin for location A is applicable to location B. Therefore, designers can use this factsheet as guidance but will need to apply professional judgment and knowledge of the site to design an effective and efficient sediment basin. The following provides a general overview of typical design methodologies:

Step 1. Hydrologic Design

- Evaluate the site constraints and assess the drainage area for the sediment basin. Designers should consider on- and off-site flows as well as changes in the drainage area associated with site construction/disturbance. To minimize additional construction during the course of the project, the designer should consider identifying the maximum drainage area when calculating the basin dimensions.
- If a local hydrology manual is not available it is recommended to follow standard rational method procedures to estimate the flow rate. The references section of this factsheet provides a reference to standard hydrology textbooks that can provide standard methodologies. If local rainfall depths are not available, values can be obtained from standard precipitation frequency maps from NOAA (downloaded from <http://www.wrcc.dri.edu/pcpnfreq.html>).

Step 2. Hydraulic Design

- Calculate the surface area required for the sediment basin using Equation 1. In which the flow rate is estimated for a 10-yr 6-hr event using rational method procedure listed in local hydrology manual and V_s is estimated using Stokes Law presented in Equation 3.

$$V_s = 2.81d^2 \quad (\text{Eq.3})$$

Where

V_s = Settling velocity in feet per second at 68°F

d = diameter of sediment particle in millimeters (smallest soil grain size determined by wet sieve analysis or fine silt [0.01 mm [or 0.0004 in.]])

- In general the basin outlet design requires an iterative trial and error approach that considered the maximum water surface elevation, the elevation versus volume (stage-storage) relationship, the elevation versus basin outflow (a.k.a.-discharge) relationship, and the estimated inflow hydrograph. To adequately design the basins to settle sediment, the outlet configuration and associated outflow rates can be estimated by numerous methodologies. The following provides some guidance for design the basin outlet:
 - An outlet should have more than one orifice.
 - An outlet design typically utilizes multiple horizontal rows of orifices (approximately 3 or more) with at least 2 orifices per row (see Figures 1 and 2 at the end of this fact sheet).

- Orifices can vary in shape.
- Select the appropriate orifice diameter and number of perforations per row with the objective of minimizing the number of rows while maximizing the detention time.
- The diameter of each orifice is typically a maximum of 3-4 inches and a minimum of 0.25-0.5 inches.
- If a rectangular orifice is used, it is recommended to have minimum height of 0.5 inches and a maximum height of 6 inches.
- Rows are typically spaced at three times the diameter center to center vertically with a minimum distance of approximately 4 inches on center and a maximum distance of 1 foot on center.
- To estimate the outflow rate, each row is calculated separately based on the flow through a single orifice then multiplied by the number of orifices in the row. This step is repeated for each of the rows. Once all of the orifices are estimated, the total outflow rate versus elevation (stage-discharge curve) is developed to evaluate the detention time within the basin.
- Flow through a single orifice can be estimated using an Equation 4:

$$Q = BC' A(2gH)^{0.5} \quad (\text{Eq.4})$$

Where

Q = Outflow rate in ft³/s

C' = Orifice coefficient (unitless)

A = Area of the orifice (ft²)

g = acceleration due to gravity (ft³/s)

H = Head above the orifice (ft)

B = Anticipated Blockage or clogging factor (unitless), It is dependent on anticipated sediment and debris load, trash rack configuration etc, so the value is dependent on design engineers professional judgment and/or local requirements (B is never greater than 1 and a value of 0.5 is generally used)

- Care must be taken in the selection of orifice coefficient ("C'"); 0.60 is most often recommended and used. However, based on actual tests, Young and Graziano (1989), "Outlet Hydraulics of Extended Detention Facilities for Northern Virginia Planning District Commission", recommends the following:
 - C' = 0.66 for thin materials; where the thickness is equal to or less than the orifice diameter, or
 - C' = 0.80 when the material is thicker than the orifice diameter
- If different sizes of orifices are used along the riser then they have to be sized such that not more than 50 percent of the design storm event drains in one-third of the drawdown time (to provide adequate settling time for events smaller than the design storm event)

and the entire volume drains within 96 hours or as regulated by the local vector control agency. If a basin fails to drain within 96 hours, the basin must be pumped dry.

- Because basins are not maintained for infiltration, water loss by infiltration should be disregarded when designing the hydraulic capacity of the outlet structure.
- Floating Outlet Skimmer: The floating skimmer (see Figure 3 at the end of this fact sheet is an alternative outlet configuration (patented) that drains water from upper portion of the water column. This configuration has been used for temporary and permanent basins and can improve basin performance by eliminating bottom orifices which have the potential of discharging solids. Some design considerations for this alternative outlet device includes the addition of a sand filter or perforated under drain at the low point in the basin and near the floating skimmer. These secondary drains allow the basin to fully drain. More detailed guidelines for sizing the skimmer can be downloaded from <http://www.fairclothskimmer.com/>.
- Hold and Release Valve: An ideal sediment/detention basin would hold all flows to the design storm level for sufficient time to settle solids, and then slowly release the storm water. Implementing a reliable valve system for releasing detention basins is critical to eliminate the potential for flooding in such a system. Some variations of hold and release valves include manual valves, bladder devices or electrically operated valves. When a precipitation event is forecast, the valve would be close for the duration of the storm and appropriate settling time. When the settling duration is met (approximately 24 or 48 hours), the valve would be opened and allow the stormwater to be released at a rate that does not resuspend settled solids and in a non-erosive manner. If this type of system is used the valve should be designed to empty the entire basin within 96 hours or as stipulated by local vector control regulations.

Step 3. Evaluate the Capacity of the Sediment Basin

- Typically, sediment basins do not perform as designed when they are not properly maintained or the sediment yield to the basin is larger than expected. As part of a good sediment basin design, designers should consider maintenance cycles, estimated soil loss and/or sediment yield, and basin sediment storage volume. The two equations below can be used to quantify the amount of soil entering the basin.
- The Revised Universal Soil Loss Equation (RUSLE, Eq.5) can be used to estimate annual soil loss and the Modified Universal Soil Equation (MUSLE, Eq.6) can be used to estimate sediment yield from a single storm event.

$$A = R \times K \times LS \times C \times P \quad (\text{Eq.5})$$

$$Y = 95 \left(Q \times q_p \right)^{0.56} \times K \times LS \times C \times P \quad (\text{Eq.6})$$

Where:

A = annual soil loss, tons/acre-year

R = rainfall erosion index, in 100 ft.tons/acre.in/hr

K = soil erodibility factor, tons/acre per unit of R

LS = slope length and steepness factor (unitless)

C = vegetative cover factor (unitless)

P = erosion control practice factor (unitless)

Y = single storm sediment yield in tons

Q = runoff volume in acre-feet

q_p = peak flow in cfs

- Detailed descriptions and methodologies for estimating the soil loss can be obtained from standard hydrology text books (See References section).
- Determination of the appropriate equation should consider construction duration and local environmental factors (soils, hydrology, etc.). For example, if a basin is planned for a project duration of 1 year and the designer specifies one maintenance cycle, RUSLE could be used to estimate the soil loss and thereby the designer could indicate that the sediment storage volume would be half of the soil loss value estimated. As an example for use of MUSLE, a project may have a short construction duration thereby requiring fewer maintenance cycles and a reduced sediment storage volume. MUSLE would be used to estimate the anticipated soil loss based on a specific storm event to evaluate the sediment storage volume and appropriate maintenance frequency.
- The soil loss estimates are an essential step in the design and it is essential that the designer provide construction contractors with enough information to understand maintenance frequency and/or depths within the basin that would trigger maintenance. Providing maintenance methods, frequency and specification should be included in design bid documents such as the SWPPP Site Map.
- Once the designer has quantified the amount of soil entering the basin, the depth required for sediment storage can be determined by dividing the estimated sediment loss by the surface area of the basin.

Step 4. Other Design Considerations

- Consider designing the volume of the settling zone for the total storm volume associated with the 2-year event or other appropriate design storms specified by the local agency. This volume can be used as a guide for sizing the basin without iterative routing calculations. The depth of the settling zone can be estimated by dividing the estimated 2-yr storm volume by the surface area of the basin.
- The basin volume consists of two zones:
 - A sediment storage zone at least 1 ft deep.
 - A settling zone at least 2 ft deep.

- The basin depth must be no less than 3 ft (not including freeboard).
- Proper hydraulic design of the outlet is critical to achieving the desired performance of the basin. The outlet should be designed to drain the basin within 24 to 96 hours (also referred to as “drawdown time”). The 24-hour limit is specified to provide adequate settling time; the 96-hour limit is specified to mitigate vector control concerns.
- Confirmation of the basin performance can be evaluated by routing the design storm (10-yr 6-hr, or as directed by local regulations) through the basin based on the basin volume (stage-storage curve) and the outlet design (stage-discharge curve based on the orifice configuration or equivalent outlet design).
- Sediment basins, regardless of size and storage volume, should include features to accommodate overflow or bypass flows that exceed the design storm event.
 - Include an emergency spillway to accommodate flows not carried by the principal spillway. The spillway should consist of an open channel (earthen or vegetated) over undisturbed material (not fill) or constructed of a non-erodible riprap (or equivalent protection) on fill slopes.
 - The spillway control section, which is a level portion of the spillway channel at the highest elevation in the channel, should be a minimum of 20 ft in length.
- Rock, vegetation or appropriate erosion control should be used to protect the basin inlet, outlet, and slopes against erosion.
- The total depth of the sediment basin should include the depth required for sediment storage, depth required for settling zone and freeboard of at least 1 foot or as regulated by local flood control agency for a flood event specified by the local agency.
- The basin alignment should be designed such that the length of the basin is more than twice the width of the basin; the length should be determined by measuring the distance between the inlet and the outlet. If the site topography does not allow for this configuration baffles should be installed so that the ratio is satisfied. If a basin has more than one inflow point, any inflow point that conveys more than 30 percent of the total peak inflow rate has to meet the required length to width ratio.
- An alternative basin sizing method proposed by Fifield (2004) can be consulted to estimate an alternative length to width ratio and basin configuration. These methods can be considered as part of Option 3 which allows for alternative designs that are protective or more protective of water quality.
- Baffles (see Figure 4 at the end of this fact sheet) can be considered at project sites where the existing topography or site constraints limit the length to width ratio. Baffles should be constructed of earthen berms or other structural material within the basin to divert flow in the basin, thus increasing the effective flow length from the basin inlet to the outlet riser. Baffles also reduce the change of short circuiting and allows for settling throughout the basin.

- Baffles are typically constructed from the invert of the basin to the crest of the emergency spillway (i.e., design event flows are meant to flow around the baffles and flows greater than the design event would flow over the baffles to the emergency spillway).
- Use of other materials for construction of basin baffles (such as silt fence) may not be appropriate based on the material specifications and will require frequent maintenance (maintain after every storm event). Maintenance may not be feasible when required due to flooded conditions resulting from frequent (i.e., back to back) storm events. Use of alternative baffle materials should not deviate from the intended purpose of the material, as described by the manufacturer.
- Sediment basins are best used in conjunction with erosion controls.
- Basins with an impounding levee greater than 4.5 ft tall, measured from the lowest point to the impounding area to the highest point of the levee, and basins capable of impounding more than 35,000 ft³, should be designed by a Registered Civil Engineer. The design should include maintenance requirements, including sediment and vegetation removal, to ensure continuous function of the basin outlet and bypass structures.
- A forebay, constructed upstream of the basin, may be provided to remove debris and larger particles.
- The outflow from the sediment basin should be provided with velocity dissipation devices (see BMP EC-10) to prevent erosion and scouring of the embankment and channel.
- The principal outlet should consist of a corrugated metal, high density polyethylene (HDPE), or reinforced concrete riser pipe with dewatering holes and an anti-vortex device and trash rack attached to the top of the riser, to prevent floating debris from flowing out of the basin or obstructing the system. This principal structure should be designed to accommodate the inflow design storm.
- A rock pile or rock-filled gabions can serve as alternatives to the debris screen, although the designer should be aware of the potential for extra maintenance involved should the pore spaces in the rock pile clog.
- The outlet structure should be placed on a firm, smooth foundation with the base securely anchored with concrete or other means to prevent floatation.
- Attach riser pipe (watertight connection) to a horizontal pipe (barrel). Provide anti-seep collars on the barrel.
- Cleanout level should be clearly marked on the riser pipe.

Installation

- Securely anchor and install an anti-seep collar on the outlet pipe/riser and provide an emergency spillway for passing major floods (see local flood control agency).
- Areas under embankments must be cleared and stripped of vegetation.

- Chain link fencing should be provided around each sediment basin to prevent unauthorized entry to the basin or if safety is a concern.

Costs

The cost of a sediment basin is highly variable and is dependent of the site configuration. To decrease basin construction costs, designers should consider using existing site features such as berms or depressed area to site the sediment basin. Designers should also consider potential savings associated with designing the basin to minimize the number of maintenance cycles and siting the basin in a location where a permanent BMP (e.g., extended detention basin) is required for the project site.

Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level and as required by local requirements. It is recommended that at a minimum, basins be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Examine basin banks for seepage and structural soundness.
- Check inlet and outlet structures and spillway for any damage or obstructions. Repair damage and remove obstructions as needed.
- Check inlet and outlet area for erosion and stabilize if required.
- Check fencing for damage and repair as needed.
- Sediment that accumulates in the basin must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when sediment accumulation reaches one-half the designated sediment storage volume. Sediment removed during maintenance should be managed properly. The sediment should be appropriately evaluated and used or disposed of accordingly. Options include: incorporating sediment into earthwork on the site (only if there is no risk that sediment is contaminated); or off-site export/disposal at an appropriate location (e.g., sediment characterization and disposal to an appropriate landfill).
- Remove standing water from basin within 96 hours after accumulation.
- If the basin does not drain adequately (e.g., due to storms that are more frequent or larger than the design storm or other unforeseen site conditions), dewatering should be conducted in accordance with appropriate dewatering BMPs (see NS-2) and in accordance with local permits as applicable.
- To minimize vector production:
 - Remove accumulation of live and dead floating vegetation in basins during every inspection.
 - Remove excessive emergent and perimeter vegetation as needed or as advised by local or state vector control agencies.

References

A Current Assessment of Urban Best Management Practices: Techniques for Reducing Nonpoint Source Pollution in the Coastal Zones, Metropolitan Washington Council of Governments, March 1992.

Draft-Sedimentation and Erosion Control, an Inventory of Current Practices, USEPA. April 1990.

U.S. Environmental Protection Agency (USEPA). Erosion and Sediment Control, Surface Mining in the Eastern U.S., U.S. Environmental Protection Agency, Office of Water, Washington, DC, Washington, D.C., 1976.

Fifield, J.S. Designing for Effective Sediment and Erosion Control on Construction Sites. Forester Press, Santa Barbara, CA. 2004.

Goldman S.J., Jackson K. and Bursztynsky T.A. Erosion and Sediment Control Handbook. McGraw-Hill Book Company, 1986.

U.S. Environmental Protection Agency (USEPA). Guidance Specifying Management Measures for Nonpoint Pollution in Coastal Waters. EPA 840-B-9-002. U.S. Environmental Protection Agency, Office of Water, Washington, DC, 1993.

Guidelines for the Design and Construction of Small Embankment Dams, Division of Safety of Dams, California Department of Water Resources, March 1986.

Haan C.T., Barfield B.J. and Hayes J.C. Design Hydrology and Sedimentology for Small Catchments. Academic Press. 1994.

Inlet/Outlet Alternatives for Extended Detention Basins. State of California Department of Transportation (Caltrans), 2001.

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

McLean, J., 2000. Mosquitoes in Constructed Wetlands: A Management Bugaboo? In T.R. Schueler and H.K. Holland [eds.], The Practice of Watershed Protection. pp. 29-33. Center for Watershed Protection, Ellicott City, MD, 2000.

Metzger, M.E., D. F. Messer, C. L. Beitia, C. M. Myers, and V. L. Kramer. The Dark Side of Stormwater Runoff Management: Disease Vectors Associated with Structural BMPs, 2002.

National Management Measures to Control Nonpoint Source Pollution from Urban Areas, United States Environmental Protection Agency, 2002.

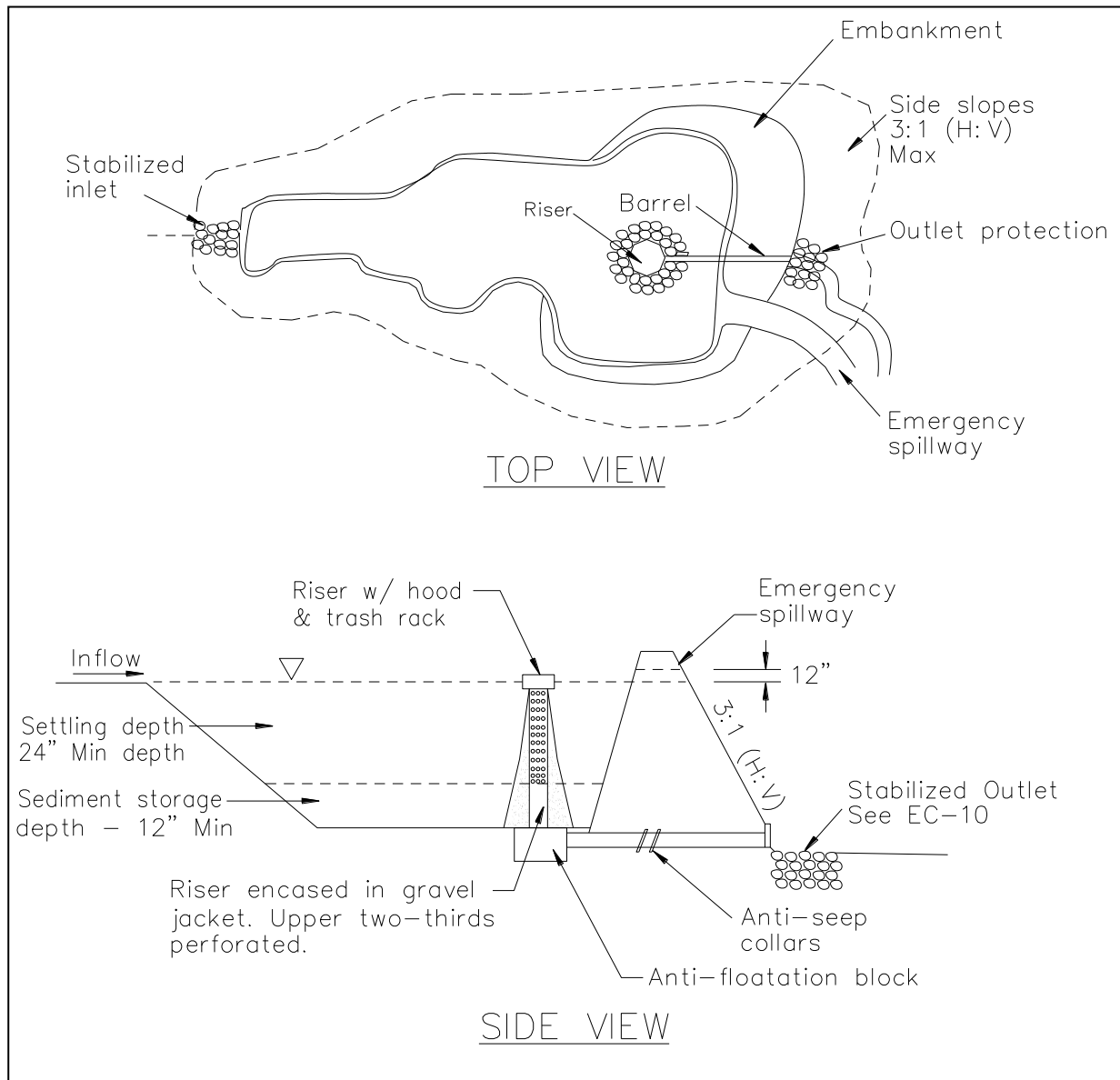
Proposed Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Water, Work Group-Working Paper, USEPA, April 1992.

Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Water Quality Management Plan for the Lake Tahoe Region, Volume II Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

Young, G.K. and Graziano, F., Outlet Hydraulics of Extended Detention Facilities for Northern Virginia Planning District Commission, 1989.



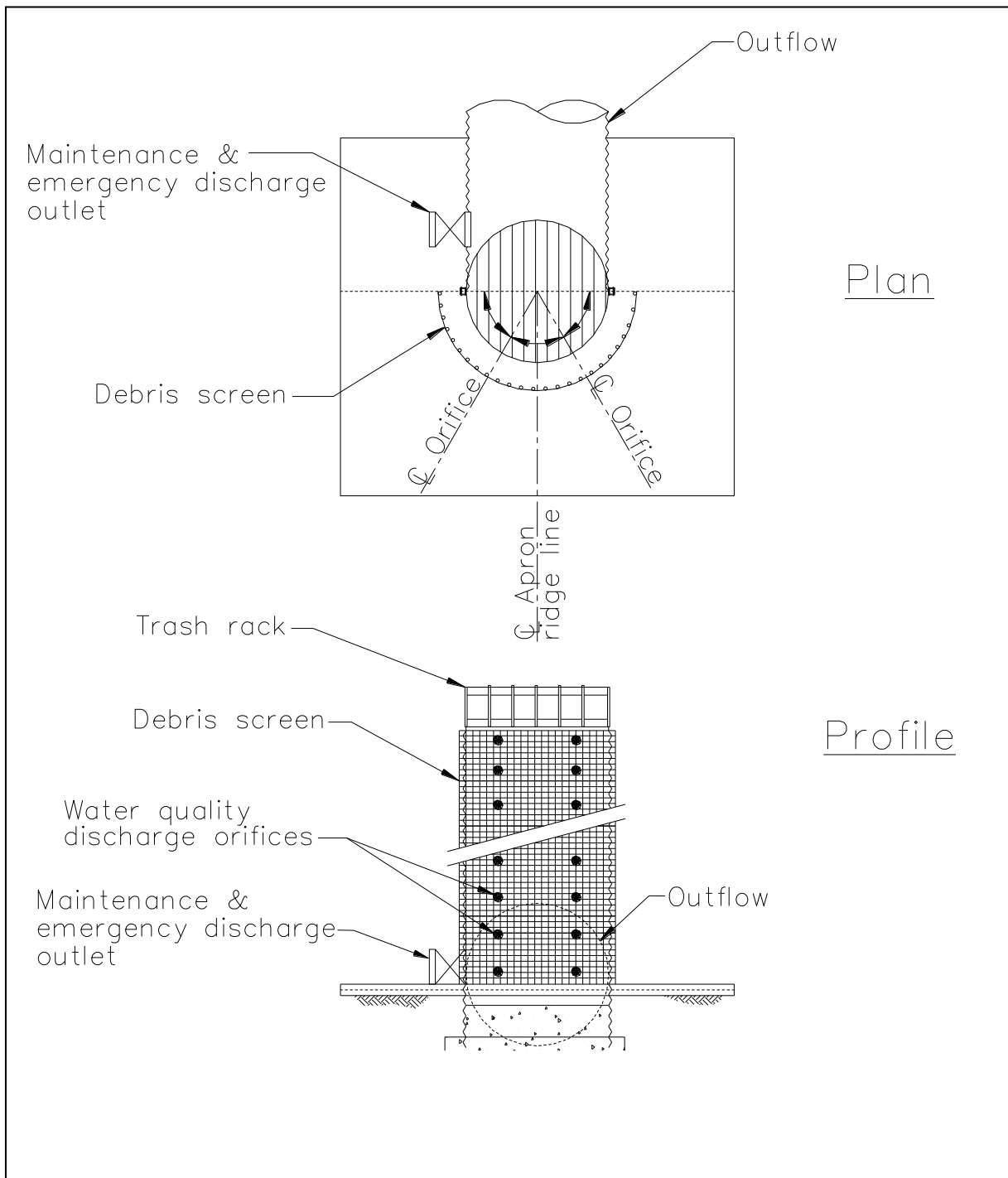


FIGURE 2: MULTIPLE ORIFICE OUTLET RISER
NOT TO SCALE

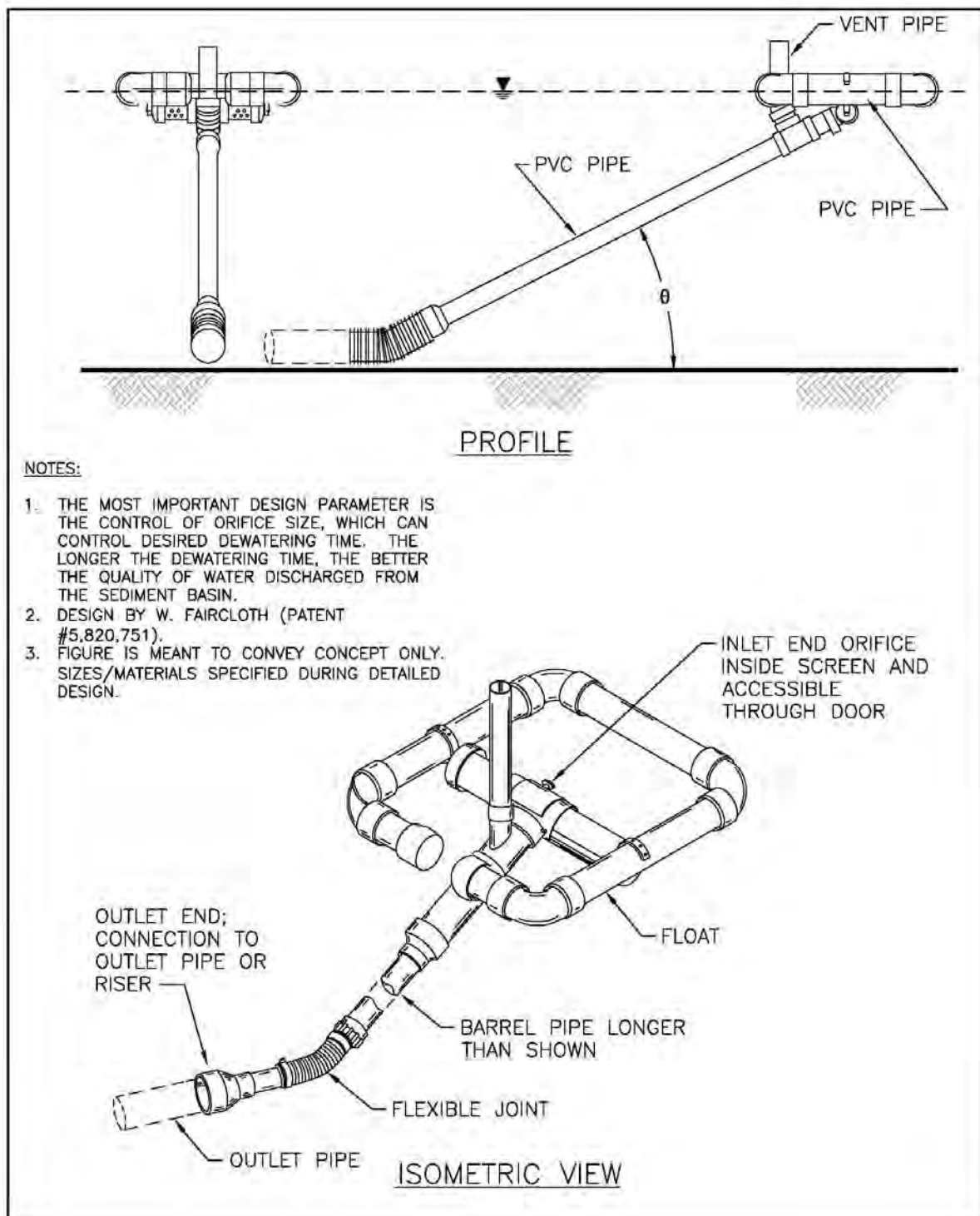


FIGURE 3: TYPICAL SKIMMER
NOT TO SCALE

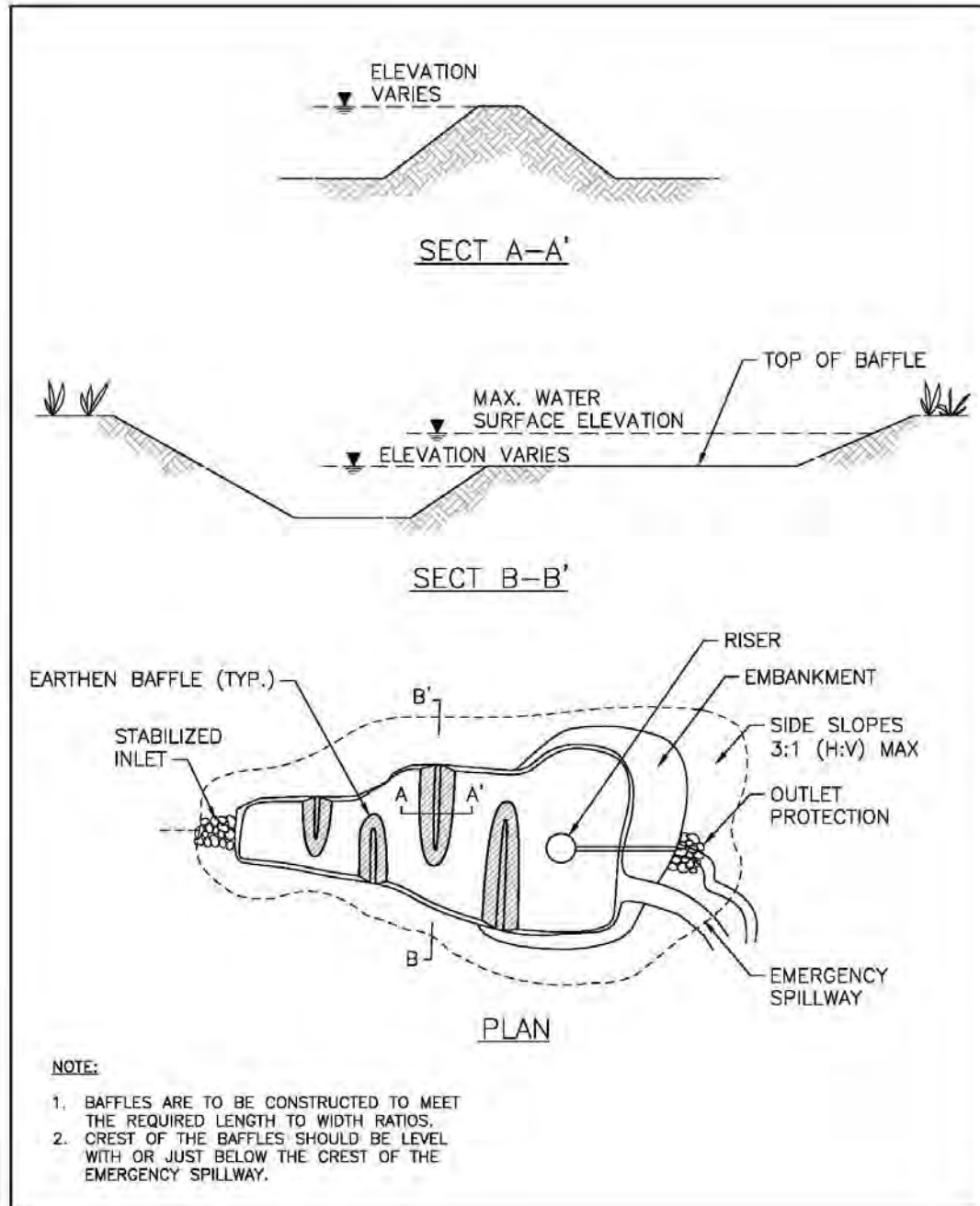


**FIGURE 4: TYPICAL TEMPORARY SEDIMENT BASIN
WITH BAFFLES
NOT TO SCALE**