PALMDALE ROAD RETAIL
PRELIMINARY
HYDROLOGY REPORT

APN: 3103-561-11 & 12

Prepared for:

Rich Development, LLC
600 North Tustin Avenue, Suite 150
Santa Ana, CA 92705

Prepared by:

David Evans and Associates
18484 Outer Highway 18 North, Suite 225
Apple Valley, CA 92307
Tel: (760) 524-9100
Attn: Bret Thorpe

REGISTERED PROFESSIONAL ENGINEER
BRET JENSEN THORPE
No. 82754
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CIVIL
STATE OF CALIFORNIA

Prepared Under the Supervision of:

Bret Thorpe, P.E. R.C.E. 82754

November 21, 2022
Job No: RDEV0000-0005

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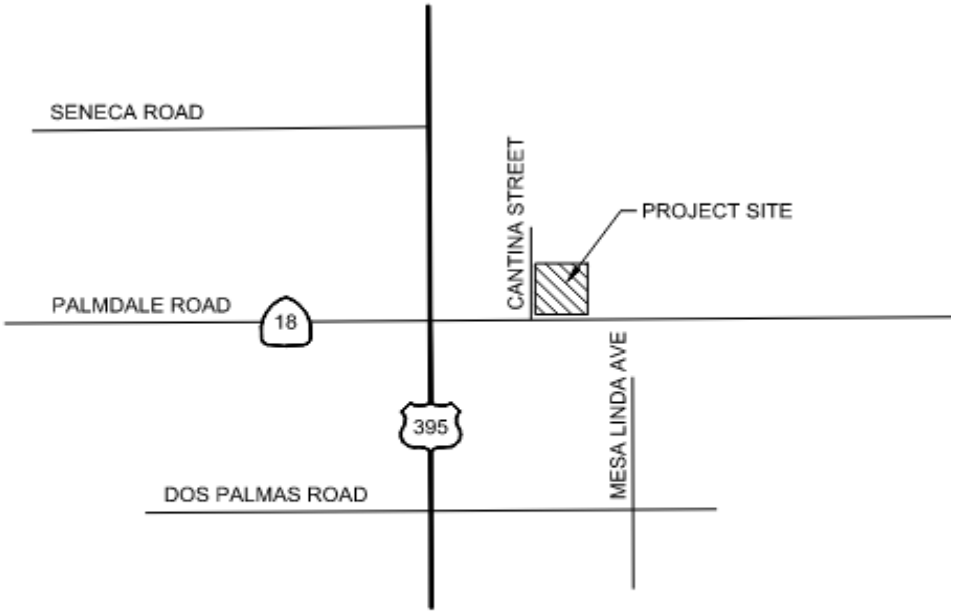
Section 1 - Introduction:

1.1. Location

The Project Owner is Rich Development 600 North Tustin Avenue, Suite 150
Santa Ana, CA 92705. Phone No. (714) 835-3311. Hydrology Study prepared by David Evans and Associates 18484 Outer Highway 18 North, Suite 225, Apple Valley, CA 92307 Phone No. (760) 524-9100. The Project site is located within the City of Victorville north of Palmdale Road and east of Cantina Ave.

APN No. 3103-561-11 & 12
Latitude 34d 30m 26s, Longitude -117d 23m 39s.

Location map



VICINITY MAP
N.T.S.

1.2 Property Description:

1.2.1. Gross Land Acreage: 2.32 acres. There is one proposed car wash site and drive-thru Coffee Shop shown on the Developed Hydrology Exhibit in Appendix A.

1.2.2. The proposed Project site is within the City of Victorville, is vacant, and has an average slope of 1.5% with sparse native vegetation. The Project lies east of Cantina Ave. and north of Palmdale Road, adjacent and east of the existing Walmart Supercenter. The land north of the Project site is vacant and drains to the north away from the Project to an existing drainage course and eventually to the Victorville Master plan of drainage Line E-06. See the FEMA Map in Appendix B.

1.2.3. The Project consists of a carwash and drive-thru Coffee Shop, as well as associated parking and drive aisles. The site will be graded to the east and storm water will be picked up in some small retention basins and an underground detention basin system. Overflows will drain to an existing storm drain channel located on the east side of the Project site. The Project is a Regulated Project and will require a WQMP.

1.2.4. The Project site lies west of the Mojave River, the closest receiving water, and is approximately 6 miles away. The site lies within a Zone "X", areas outside the 0.2% annual chance floodplain as shown on the Flood Insurance Rate Map (FIRM) Panel 5795 of 9400, Map No. 06071C5795J, Map revised August 28, 2008. See copy of FEMA map in Appendix B, References.

Section 2 - Hydrologic Analysis:

2.1. Conditions, Resources and Methods

2.1.1. The existing project site is currently vacant and has the typical sparse desert vegetation.

The proposed development for the site consists of a car wash and a restaurant along with parking, landscaping, and drive aisles making the site 90% impervious.

Soil classification is Hydrologic Soils Group "A" soils in the vicinity of the project. The soil classification boundary limit is based on the Web Soil Survey from the USDA Natural Resources Conservation Service included in Appendix 'B' of this report.

NOAA 14 was used for the 10 year and 100-year rainfall estimates. The ten year, 24-hour is 2.62 inches. The 100 year, 24-hour is 4.65 inches. See Section 2.2. Table of Results for the 10-year and 100-year discharges and time of concentration.

2.1.2. As stated above, the NOAA Atlas 14 was used for the rainfall values and Soils was based on the Web Soil Survey from the USDA Natural Resources Conservation Service.

Topography Maps and the San Bernardino County Hydrology Manual were also used to determine watershed conditions.

2.2. Table of Results

On-Site Existing condition

Sub Area	Area (acres)	Q10 (cfs)	Q100 (cfs)	Tc (min)
E	2.32	2.55	5.74	14.05

Developed condition

Area ID	Node	Area (acres)	Q10 (cfs)	Q100 (cfs)	Tc (minutes)	Comments
A	101-102	1.09	2.14	3.7	10.35	1- small retention basin and one depressed landscape areas prior to Pipe flow to ug basin
B	101-103	0.4	1.22	2.1	5.99	Two depressed landscape area and Pipe flow to ug basin
C	105-106	0.25	0.69	1.2	6.58	Pipe flow to ug basin
D1	105a-107	0.11	0.40	0.69	4.23	Pipe flow to ug basin
D2	108-109	0.02	0.07	0.12	4.3	Pipe flow to ug basin
D3	109-110	0.35	1.14	1.98	4.78	Pipe flow to ug basin
Confluence total		**2.22**	**5.1**	**8.8**	4.78	All flows to basin
D	112-113	0.1	--	--	--	Area D -- This area produces Q100=0.07 cfs. The area is considered self-treating and self-retaining.

Summary of Volumes and Q's for the 10 & 100-year, 24-hour storm events
Pre vs Post

	Q100 (cfs)	Q100, 24 hour (CF)	Q10 (cfs)	Q10, 24 hour (Ac ft)
Existing	5.61	0.7541	2.71	0.2026
Developed	8.27	0.7938	4.78	0.4250
Difference	**2.66**	**0.0397 1,729 cf**	**2.07**	**0.2224 9,688 cf**

Basin Routing				
	Q10 (cfs) in*	**Q10 (cfs) out**	**Q100 (cfs) in***	**Q100 (cfs) out**
Areas A, B C & D	4.9	2.40	8.3	5.6

Summary

The largest difference of predevelopment vs post development volume is the Q10, 24-hour, at 9,688 cubic feet, as can been seen in the table above. However, the required hydromodification for volume per form 4.2-3 in the WQMP is 8,762 cf. A copy of form 4.2-3 from the Projects WQMP can be found in Appendix B references. The Design Capture Volume is 5,641 cubic feet. The HCOC volume is larger than the DCV and prevails for the design of the underground stormwater retention vault.

With the use of site design and the underground detention basin, the retaining and infiltrating of 9,396 cf, exceeds the required detention/retention requirements of 8,762 cf. Also, Q peak is mitigated to equal or below the existing Qs for the site with the use of the underground detention basin. See the above basin routing table. Time of concentration is also mitigated to below the existing with the use of the underground detention basin, as well as site design practices. Catch basin inserts will be incorporated into the design to provide a pre-treatment for trash, sediment, and oils prior to flowing into the underground detention basin.

There is a small area of 0.1 acre that drains northeast to the existing channel and existing drainage easement to the east that is within the boundary of the site. That area will be landscaped so it will remain 100% pervious. With the improvement of landscaping this area will not have an increase in storm drainage and will likely be less than the existing as the soil will be amended and will result in increased natural infiltration. The area is also considered self-treating. None of the developed area to the west drains into this landscaped area.

2.3. Drainage Maps

See Appendix A for the pre and post drainage maps.

Section 3 Proposed Drainage Design Concept:

3.1. City of Victorville Drainage management guidelines
The City's guidelines are to analyze the 10 year and 100-year storm events for 1 hour (rational method) and 24-hour durations (unit hydrograph). Then demonstrate the project will not exceed 90% of the pre-development runoff. See section 2.2 Table of Results, and the following summary.

3.2. Stormwater Storage Provisions
The Project site proposes to use one proprietary Stormtech underground infiltration/retention systems for Areas A-C and proprietary flow-based catch basin inserts. In addition, localized on-lot infiltration is proposed in area A resulting in 3,044 cf of infiltrating/storage volume .
The site proposes the following as to stormwater storage/retention and localized on-lot infiltration BMP treatment.

Drainage Area	Required DCV* (CF)	Minimum detention/infiltration (CF)	Provided detention/infiltration system (cf) or flow base treatment (cfs)
A-C	5,641*	8,762*	9,396 cf

*Values from the WQMP report, forms 4.2-1 and 4.2-3.

The total volume of retention and infiltration provided is 9,396 cubic feet for the drainage areas A-D, as well as flow-based LID BMPS for Areas A-D as can been seen in the Project's WQMP.

3.3 Drainage Structures
There will be six onsite catch basins to collect the storm water and convey the storm flows to underground infiltration and retention/detention systems. Overflows will be conveyed to the existing channel on the west side of the development.

A catch basin will be added to Palmdale Road and piped into the existing channel at the west end of the Palmdale Road improvements to convey the storm flows from the street into the existing channel.

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Section 4 - References:

Bonadiman Civil Design Software, Version 7.0 & 7.1 was used for the 10-year & 100-year Hydrological Analysis.

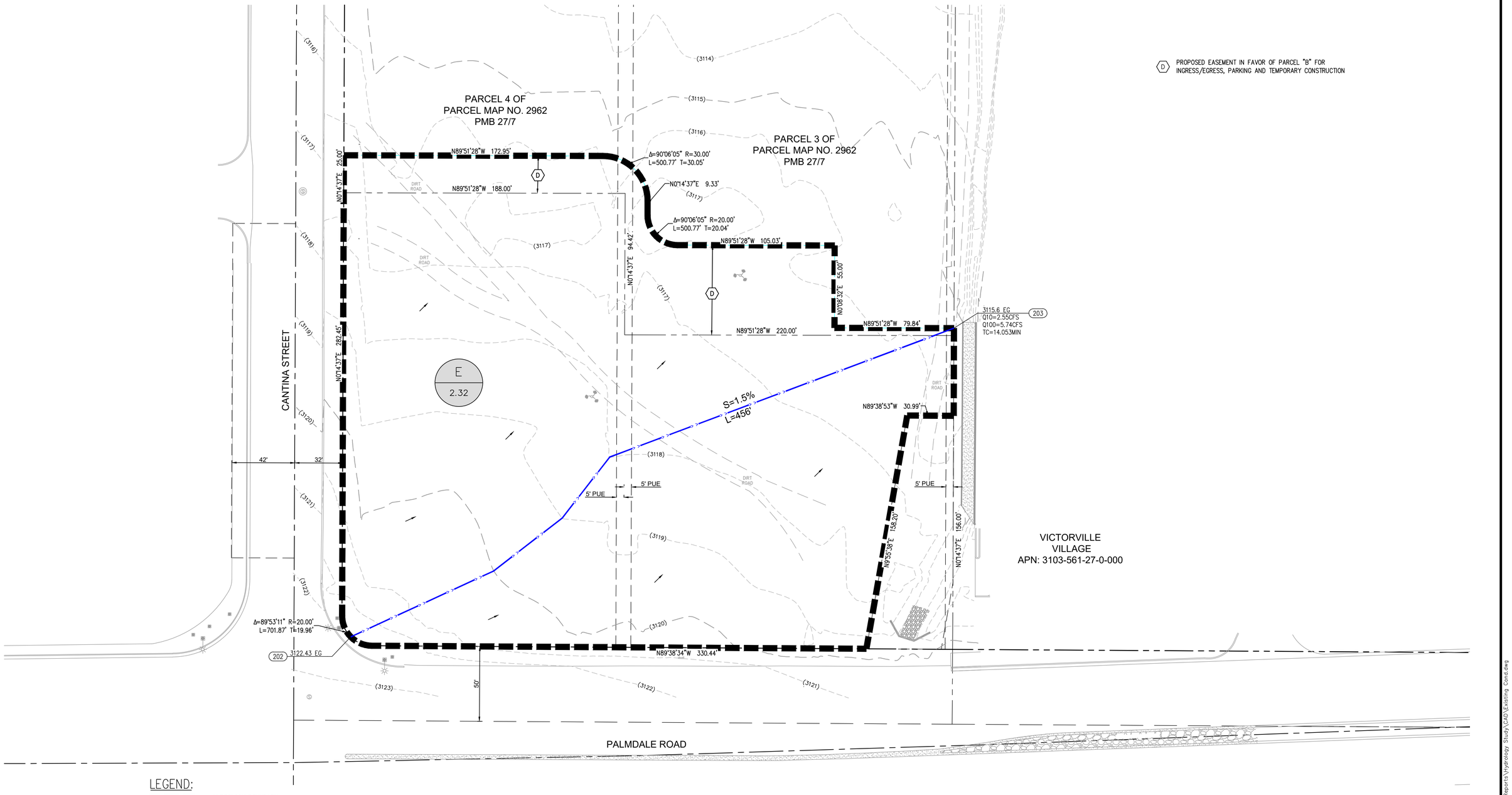
- 10-year AMC II Unit hydrograph Method (developed and undeveloped)
- 10-year AMC II Unit Hydrograph Method (developed and undeveloped)
- Soil Type A
- Manning's Values Used
- Existing Surface n=0.035
- Proposed Surface n=0.015
- Unit Hydrograph n=0.020
- Project is in the City of Victorville, CA

Drainage boundaries were derived using field topography, as shown on the existing condition hydrology map, provided in Appendix A of this report. See Appendix B, reference documents, for San Bernardino County Hydrology Manual and City of Victorville technical references.

APPENDIX 'A'

- Hydrology Maps
  - Undeveloped Hydrology Map
  - Developed Hydrology Map

PALMDALE ROAD RETAIL DEVELOPMENT
EXISTING CONDITION



D PROPOSED EASEMENT IN FAVOR OF PARCEL "B" FOR INGRESS/EGRESS, PARKING AND TEMPORARY CONSTRUCTION

LEGEND:

- HYDROLOGY BOUNDARY
- FLOWLINE
- A / 7.96 — DRAINAGE AREA ID / TOTAL ACREAGE
- FLOW DIRECTION
- FS ELEVATION / INV ELEVATION (NODE #) — CONCENTRATION/NODE ID
- (XXXX) — EXISTING CONTOUR

N

scale 1" = 30' (30 0 30 60 feet)

CITY OF VICTROVILLE

DAVID EVANS AND ASSOCIATES INC.
18484 Outer HWY 18 N, Suite 225
Apple Valley, California 92307
Phone: 760.524.9100

Existing Condition Hydrology Map

Drawing Name: P:\RIVER\20200265\06FINFO\06-76\Reports\Hydrology Study\CAD\Existing Cond.dwg
Last Opened: Nov 21, 2022 - 5:33pm By: jfs

- (A) EASEMENT FOR PUBLIC UTILITIES GRANTED TO CITY OF VICTORVILLE RECORDING NO: BOOK 8860, PAGE 417 OFFICIAL RECORDS
- (B) EASEMENT FOR PUBLIC UTILITIES GRANTED TO STATE OF CALIFORNIA RECORDING DATE: FEBRUARY 18, 1992. RECORDING NO: 92-56171 OFFICIAL RECORDS
- (C) EASEMENT FOR HIGHWAY AND ROAD PURPOSES GRANTED TO CITY OF VICTORVILLE RECORDING NO: BOOK 8860, PAGE 405 OFFICIAL RECORDS.
- (D) PROPOSED EASEMENT IN FAVOR OF PARCEL "B" FOR INGRESS/EGRESS, PARKING AND TEMPORARY CONSTRUCTION

PARCEL "A"
DOC#2022-0198686

PARCEL "B"
DOC#2022-0198686

AUTOMATED CARWASH 3,600 SF
FF= 20.01
PAD= 19.48

COFFEE 1,000 SF
FF= 18.80
PAD= 18.55

STORMTECH UNDERGROUND DETENTION BASIN
VOLUME = 5530 CF

PR. WATER QUALITY BASIN
RETENTION VOL=2,830CF

PR. DEPRESSED LANDSCAPE AREA FOR WATER QUALITY TREATMENT RETENTION VOL=214 CF

PR. DEPRESSED LANDSCAPE AREA FOR WATER QUALITY TREATMENT RETENTION VOL=522CF

PR. DEPRESSED LANDSCAPE AREA FOR WATER QUALITY TREATMENT RETENTION VOL=822CF

A 1.09 | B 0.40 | C 0.25 | D1 0.11 | D2 0.02 | D3 0.35 | E 0.1

CANTINA STREET

PALMDALE ROAD

EX. 18"HDPE PER P-1007

EX. CB PER P-1007

EX. CONCRETE CHANNEL

EX. HEADWALL

PR. 3' MAX. HEIGHT RETAINING WALL

PR. 6' HEIGHT FENCE

GRADING LIMITS

PR. OVERFLOW

PR. F/L

EX.P/L

DO NOT ENTER

ONE WAY

DIRT ROAD

EX.R/W

PR.R/W

EX.ROAD MEDIAN

Δ=90°00'00" R=9.50' L=73.84' T=9.50'

Δ=89°54'20" R=9.51' L=73.84' T=9.50'

Δ=90°06'05" R=30.00' L=500.77' T=30.05'

Δ=90°06'05" R=20.00' L=500.77' T=20.04'

Δ=57°42'56" R=9.50' L=592.49' T=5.24'

R=42.00' L=65.88'

R=20.00' L=31.38'

L=539'

L=215'

L=148'

L=98'

N89°51'28"W 172.95'

N89°51'28"W 188.00'

N89°51'28"W 105.03'

N89°51'28"W 79.84'

N89°51'28"W 220.00'

N0°14'37"E 9.33'

N0°14'37"E 94.42'

N0°14'37"E 25.00'

N0°14'37"E 43.89'

N0°14'37"E 282.45'

N0°14'37"E 219.91'

N0°14'37"E 53.53'

N0°08'32"E 55.00'

N89°38'53"W 30.99'

N89°38'53"W 43.38'

N89°35'38"E 139.91'

N0°14'37"E 156.00'

N89°38'34"W 253.74'

N89°38'34"W 330.44'

N89°38'34"W

101 19.01 FS — PR. 3' MAX. HEIGHT RETAINING WALL
102 (16.0) FS — Q10=2.14CFS Q100=3.70CFS
103 17.31 FS — 10.75 INV — Q10=1.22CFS Q100=2.09CFS
104 16.97 FS — 9.29INV — Q10=3.98 CFS Q100=6.8CFS Tc=4.851MIN
105 20.00 FS
105A 19.22 FS
106 16.99 FS — 10.68 INV — Q10=0.69CFS Q100=1.2CFS
107 17.81 FS — 12.08 INV — Q10=0.40CFS Q100=0.69CFS
108 17.81 FS — 11.58 INV — Q10=0.07CFS Q100=0.12CFS
109 21.35 FS
110 16.00 FS — 12.50INV — Q10=1.15CFS Q100=1.99CFS
111 16.37 FS — 12.43INV
112 20.62 FS
113 15.64 FS

Q10=2.4CFS Q100=5.6CFS UG BASIN OUTFLOW

L=203'

SECTION A–A:
HORIZ: 1"=10'
VERT: 1"=2'

PR. DRIVE AISLE — PR. 6" CURB — 2' — 1' DEEP AMENDED SOIL LAYER OR GRAVEL

SECTION B–B:
HORIZ: 1"=10'
VERT: 1"=2'

PR. DRIVE AISLE — PR. 6" CURB — 1' DEEP AMENDED SOIL LAYER OR GRAVEL

SECTION C–C:
HORIZ: 1"=10'
VERT: 1"=2'

PR. DRIVE AISLE — PR. 6" CURB — 1' DEEP AMENDED SOIL LAYER OR GRAVEL

SECTION D–D:
HORIZ: 1"=10'
VERT: 1"=2'

LEGEND:

- HYDROLOGY BOUNDARY
- FLOWLINE
- A / 7.96 — DRAINAGE AREA ID / TOTAL ACREAGE
- FLOW DIRECTION
- CATCH BASIN INLET
- NODE # — CONCENTRATION/NODE ID
- XXXX — PROPOSED CONTOUR
- FS ELEV.(XXXX) / INV ELEVATION — EXISTING CONTOUR
- PROPOSED LANDSCAPE AREA
- PROPOSED UNDERGROUND DETENTION AREA (SEE APPENDIX B FOR CROSS SECTION AND DETAILS)
- PROPOSED WQMP TREATMENT AREA
- PROPOSED STORM DRAIN PIPE
- PROPOSED STORM DRAIN PIPE FLOW DIRECTION

VICTORVILLE VILLAGE
APN: 3103-561-27-0-000

Summary Table
Developed Condition

Area ID	Node	Area (acres)	Q10 (cfs)	Q100 (cfs)	Tc (minutes)	Comments
A	101-102	1.09	2.14	3.7	10.35	1- small retention basin and one depressed landscape areas prior to Pipe flow to ug basin
B	101-103	0.4	1.22	2.09	8.2	2 depressed landscape areas and Pipe flow to ug basin
C	105-106	0.25	0.7	1.18	4.66	1- depressed landscape area prior to Pipe flow to ug basin
D1	105a-107	0.11	0.4	0.69	4.23	Pipe flow to ug basin
D2	108-109	0.02	0.07	0.8	4.31	Pipe flow to ug basin
D3	109-110	0.35	1.14	2.79	4.775	Pipe flow to ug basin
Confluence total		**2.22**	**5.13**	**8.79**	4.775	All flows to ug basin
D	112-113	0.1	--	--	--	Area D -- This area produces Q100=0.07 cfs. The area is considered self-treating and self-

scale 1"= 20' feet (20 0 20 40)

CONTOUR INTERVALS = 1'

NOT FOR CONSTRUCTION

DATE: 06/2022

IN THE CITY OF VICTORVILLE
PALMDALE ROAD RETAIL DEVELOPMENT

DEVELOPED CONDITION HYDROLOGY MAP

FILE NO.

DRAWING NO. SH. 1 OF 1

DAVID EVANS AND ASSOCIATES INC.
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Phone: 760.524.9100
SSchubert@deainc.com

Plot Date: 11/22/2022 10:57 PM
Save Date: 11/21/2022 5:53 PM
By: Jose Aguilar
By: Jla File: P:\RIR\DEV\000000\0600\INFO\0670\Reports\Hydrology Study\CAD\Developed Cond_ new.dwg

APPENDIX 'B'

Reference Documents

San Bernardino County Hydrology Manual Reference Material
- NOAA 14 Point Precipitation Estimates
- Hydrologic Soils Group Map
- Figure C-3 Curve Numbers
- AMC Map
- Stormtech underground retention vault worksheet
- Victorville Masterplan of Drainage overall Map
- Form 4.2-3 from the WQMP report

FEMA Firm Map 06071C5975J

NOAA Atlas 14, Volume 6, Version 2
Location name: Victorville, California, USA*
Latitude: 34.5072°, Longitude: -117.3943°
Elevation: 3118.2 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.081 (0.067-0.099)	0.115 (0.095-0.141)	0.162 (0.133-0.198)	0.200 (0.163-0.247)	0.252 (0.199-0.323)	0.293 (0.227-0.383)	0.335 (0.253-0.449)	0.379 (0.278-0.522)	0.440 (0.310-0.631)	0.487 (0.332-0.723)
10-min	0.116 (0.096-0.142)	0.165 (0.137-0.203)	0.232 (0.191-0.284)	0.286 (0.233-0.354)	0.361 (0.285-0.462)	0.420 (0.325-0.549)	0.481 (0.363-0.644)	0.544 (0.399-0.748)	0.631 (0.444-0.904)	0.698 (0.475-1.04)
15-min	0.140 (0.116-0.171)	0.200 (0.165-0.245)	0.280 (0.230-0.344)	0.346 (0.282-0.428)	0.437 (0.345-0.559)	0.508 (0.393-0.664)	0.581 (0.439-0.778)	0.658 (0.483-0.905)	0.763 (0.537-1.09)	0.845 (0.575-1.25)
30-min	0.204 (0.169-0.250)	0.292 (0.241-0.357)	0.408 (0.336-0.501)	0.504 (0.412-0.624)	0.637 (0.503-0.815)	0.741 (0.573-0.968)	0.848 (0.640-1.14)	0.959 (0.704-1.32)	1.11 (0.783-1.60)	1.23 (0.838-1.83)
60-min	0.264 (0.218-0.322)	0.377 (0.311-0.461)	0.527 (0.434-0.647)	0.651 (0.531-0.806)	0.823 (0.650-1.05)	0.956 (0.740-1.25)	1.10 (0.826-1.47)	1.24 (0.909-1.70)	1.44 (1.01-2.06)	1.59 (1.08-2.36)
2-hr	0.369 (0.305-0.451)	0.500 (0.413-0.612)	0.680 (0.560-0.835)	0.832 (0.679-1.03)	1.05 (0.826-1.34)	1.22 (0.942-1.59)	1.40 (1.06-1.87)	1.59 (1.17-2.19)	1.86 (1.31-2.66)	2.07 (1.41-3.07)
3-hr	0.457 (0.377-0.558)	0.609 (0.503-0.746)	0.821 (0.675-1.01)	1.00 (0.817-1.24)	1.26 (0.995-1.61)	1.47 (1.14-1.92)	1.69 (1.27-2.26)	1.93 (1.41-2.65)	2.26 (1.59-3.25)	2.53 (1.72-3.76)
6-hr	0.620 (0.512-0.758)	0.821 (0.677-1.00)	1.10 (0.907-1.35)	1.35 (1.10-1.66)	1.70 (1.34-2.17)	1.99 (1.54-2.59)	2.30 (1.73-3.07)	2.63 (1.93-3.62)	3.12 (2.19-4.47)	3.51 (2.39-5.22)
12-hr	0.772 (0.638-0.944)	1.06 (0.873-1.29)	1.46 (1.20-1.79)	1.80 (1.47-2.23)	2.30 (1.82-2.94)	2.71 (2.09-3.54)	3.15 (2.37-4.21)	3.62 (2.66-4.98)	4.30 (3.03-6.17)	4.87 (3.31-7.22)
24-hr	1.04 (0.921-1.20)	1.48 (1.31-1.70)	2.09 (1.85-2.42)	2.62 (2.29-3.05)	3.37 (2.86-4.06)	3.99 (3.31-4.91)	4.65 (3.77-5.86)	5.37 (4.23-6.95)	6.40 (4.84-8.64)	7.25 (5.29-10.1)
2-day	1.13 (0.997-1.29)	1.60 (1.42-1.85)	2.27 (2.00-2.62)	2.85 (2.49-3.32)	3.68 (3.12-4.43)	4.36 (3.62-5.36)	5.10 (4.13-6.42)	5.90 (4.65-7.64)	7.05 (5.33-9.52)	8.01 (5.85-11.2)
3-day	1.20 (1.07-1.39)	1.71 (1.51-1.97)	2.42 (2.14-2.80)	3.03 (2.66-3.53)	3.92 (3.32-4.72)	4.65 (3.86-5.72)	5.44 (4.40-6.85)	6.30 (4.96-8.15)	7.54 (5.70-10.2)	8.57 (6.26-12.0)
4-day	1.29 (1.14-1.48)	1.83 (1.62-2.10)	2.58 (2.28-2.98)	3.24 (2.83-3.77)	4.18 (3.54-5.03)	4.96 (4.11-6.09)	5.79 (4.69-7.29)	6.70 (5.28-8.68)	8.02 (6.06-10.8)	9.11 (6.66-12.7)
7-day	1.38 (1.23-1.59)	1.95 (1.72-2.24)	2.74 (2.42-3.17)	3.43 (3.00-3.99)	4.41 (3.74-5.31)	5.22 (4.33-6.41)	6.07 (4.92-7.65)	6.99 (5.51-9.06)	8.32 (6.29-11.2)	9.41 (6.87-13.1)
10-day	1.47 (1.30-1.69)	2.06 (1.83-2.38)	2.90 (2.56-3.35)	3.62 (3.17-4.21)	4.65 (3.94-5.60)	5.49 (4.56-6.75)	6.38 (5.17-8.04)	7.34 (5.78-9.50)	8.71 (6.58-11.8)	9.82 (7.17-13.7)
20-day	1.74 (1.54-2.00)	2.45 (2.17-2.82)	3.44 (3.04-3.98)	4.30 (3.77-5.01)	5.55 (4.70-6.68)	6.56 (5.44-8.06)	7.63 (6.18-9.61)	8.78 (6.91-11.4)	10.4 (7.86-14.0)	11.7 (8.55-16.3)
30-day	2.01 (1.78-2.31)	2.81 (2.49-3.24)	3.96 (3.50-4.57)	4.96 (4.34-5.77)	6.41 (5.43-7.72)	7.59 (6.30-9.33)	8.84 (7.16-11.1)	10.2 (8.01-13.2)	12.1 (9.11-16.3)	13.6 (9.90-18.9)
45-day	2.35 (2.08-2.70)	3.26 (2.89-3.76)	4.58 (4.04-5.29)	5.73 (5.02-6.68)	7.43 (6.30-8.95)	8.83 (7.33-10.9)	10.3 (8.35-13.0)	11.9 (9.36-15.4)	14.1 (10.7-19.1)	15.9 (11.6-22.2)
60-day	2.62 (2.32-3.02)	3.60 (3.19-4.15)	5.04 (4.45-5.82)	6.31 (5.53-7.35)	8.18 (6.94-9.85)	9.74 (8.08-12.0)	11.4 (9.23-14.4)	13.2 (10.4-17.0)	15.7 (11.8-21.1)	17.7 (12.9-24.7)

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

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

Please refer to NOAA Atlas 14 document for more information.

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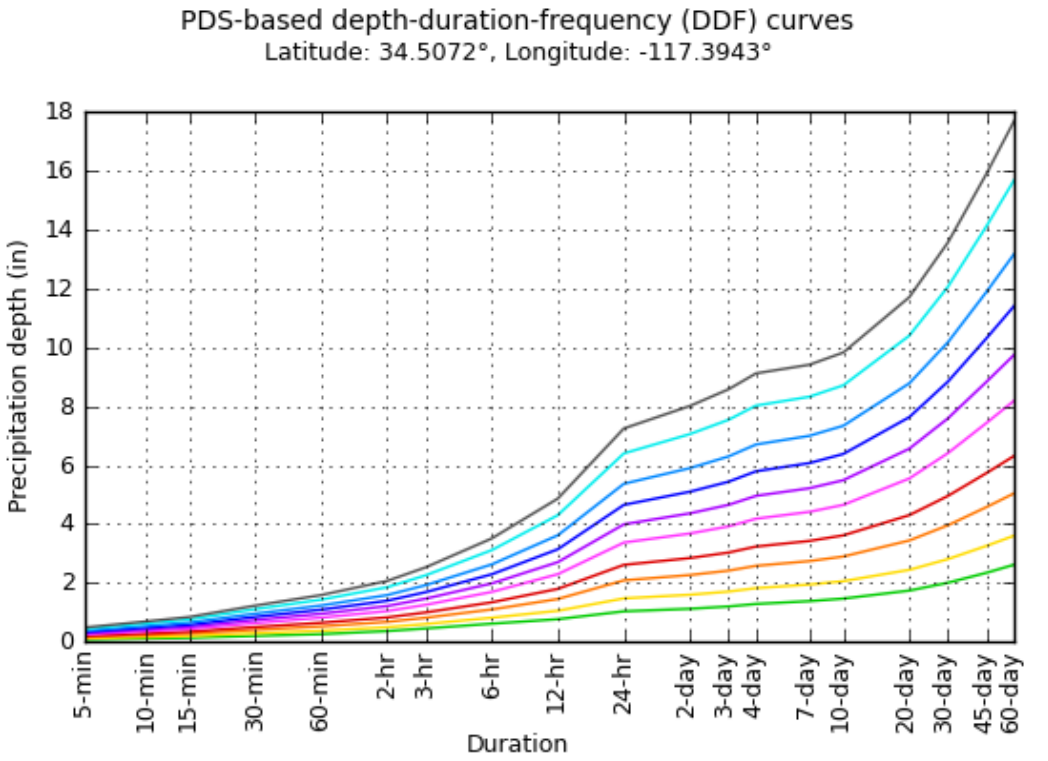
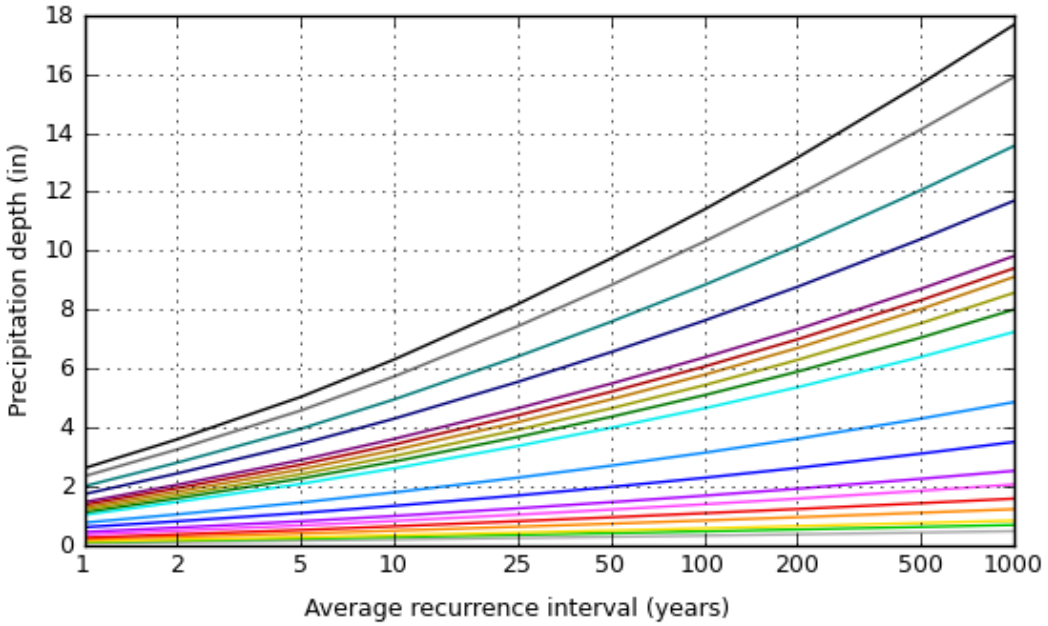
PF graphical





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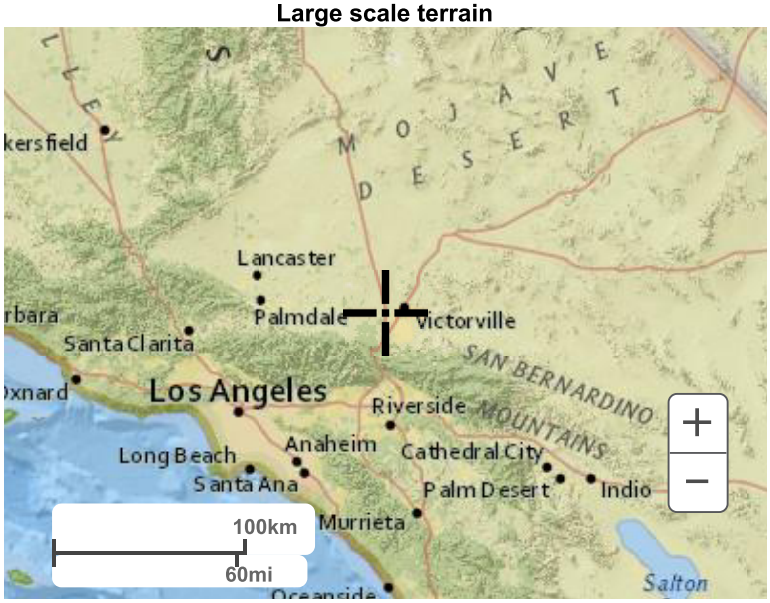
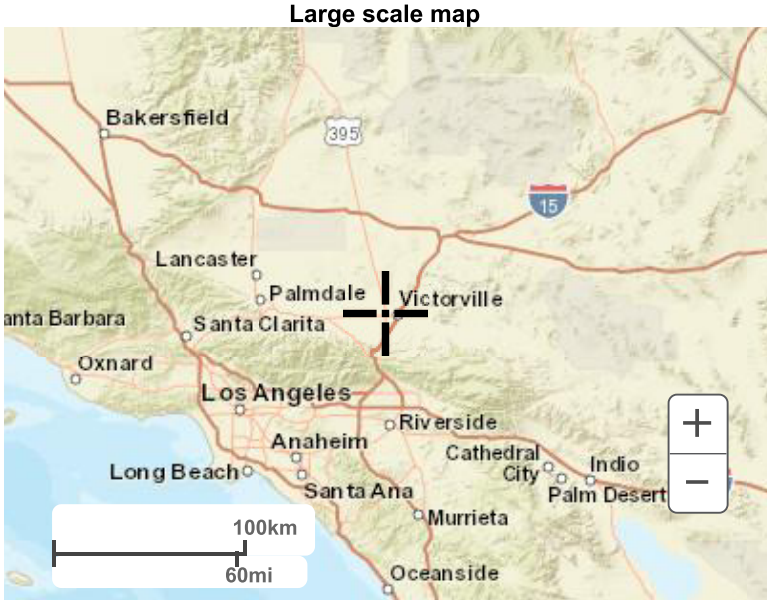
Maps & aerials

Small scale terrain

Large scale terrain



Large scale map



Large scale aerial

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United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for San Bernardino County, California, Mojave River Area

February 9, 2022

Preface

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

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

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

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

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

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

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Contents

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

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

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

Soil Map

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

Custom Soil Resource Report
Soil Map (Cantina and Palmdale road)

Map Scale: 1:1,120 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

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

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: San Bernardino County, California, Mojave River Area
Survey Area Data: Version 13, Sep 13, 2021

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

Date(s) aerial images were photographed: Mar 27, 2021—May 24, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Cantina and Palmdale road)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
112	CAJON SAND, 0 TO 2 PERCENT SLOPES	4.4	100.0%
Totals for Area of Interest		**4.4**	**100.0%**

Map Unit Descriptions (Cantina and Palmdale road)

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

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

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

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The

delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

San Bernardino County, California, Mojave River Area

112—CAJON SAND, 0 TO 2 PERCENT SLOPES

Map Unit Setting

National map unit symbol: hkrj
Elevation: 1,800 to 3,200 feet
Mean annual precipitation: 3 to 6 inches
Mean annual air temperature: 59 to 66 degrees F
Frost-free period: 180 to 290 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Cajon

Setting

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

Typical profile

H1 - 0 to 7 inches: sand
H2 - 7 to 25 inches: sand
H3 - 25 to 45 inches: gravelly sand
H4 - 45 to 60 inches: stratified sand to loamy fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: R030XF012CA - Sandy
Hydric soil rating: No

Minor Components

Manet

Percent of map unit: 5 percent

Landform: Playas
Hydric soil rating: Yes

Kimberlina
Percent of map unit: 5 percent

Helendale
Percent of map unit: 5 percent

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Curve (1) Numbers of Hydrologic Soil-Cover Complexes For Pervious Areas-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
NATURAL COVERS -					
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	71	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	25	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
URBAN COVERS -					
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
AGRICULTURAL COVERS -					
Fallow (Land plowed but not tilled or seeded)		77	86	91	94

SAN BERNARDINO COUNTY
HYDROLOGY MANUAL

CURVE NUMBERS FOR PERVIOUS AREAS

Figure C-3 (1 of 2)

Figure ADD-1
Antecedent Moisture Condition (AMC)

5-day Rainfall - NOAA Atlas 14
(50% of Total Rainfall Prior to Peak)*

*1/2 (11-day - 1-day) =
1/2 (([10-day] + (1/10 ([20-day] - [10-day]))) - [1-day])

5 0 5 10 15
Miles

N
W E
S

Growing Season
- AMC I
- AMC II
- AMC III

Project Site

STATE HWY 127
I-15
US HWY 395
I-40
STATE HWY 247
STATE HWY 62

Baxter Valley
Ridgecrest
Boron
Barstow
Adelanto
George AFB
George AFB
Victorville
Apple Valley
Mountain View Acres
Hesperia
Wrightwood
Crestline
Lake Arrowhead
Running Springs
Big Bear City
Big Bear Lake
Yucca Valley
Joshua Tree
Twentynine Palms
Morongo Valley
Claremont
Needles
Parker Dam
Big River

User Inputs

Chamber Model:	MC-7200
Outlet Control Structure:	Yes
Project Name:	
Engineer:	N/A
Project Location:	
Measurement Type:	Imperial
Required Storage Volume:	5280 cubic ft.
Stone Porosity:	40%
Stone Foundation Depth:	9 in.
Stone Above Chambers:	12 in.
Average Cover Over Chambers:	24 in.
Design Constraint Dimensions:	(25 ft. x 75 ft.)

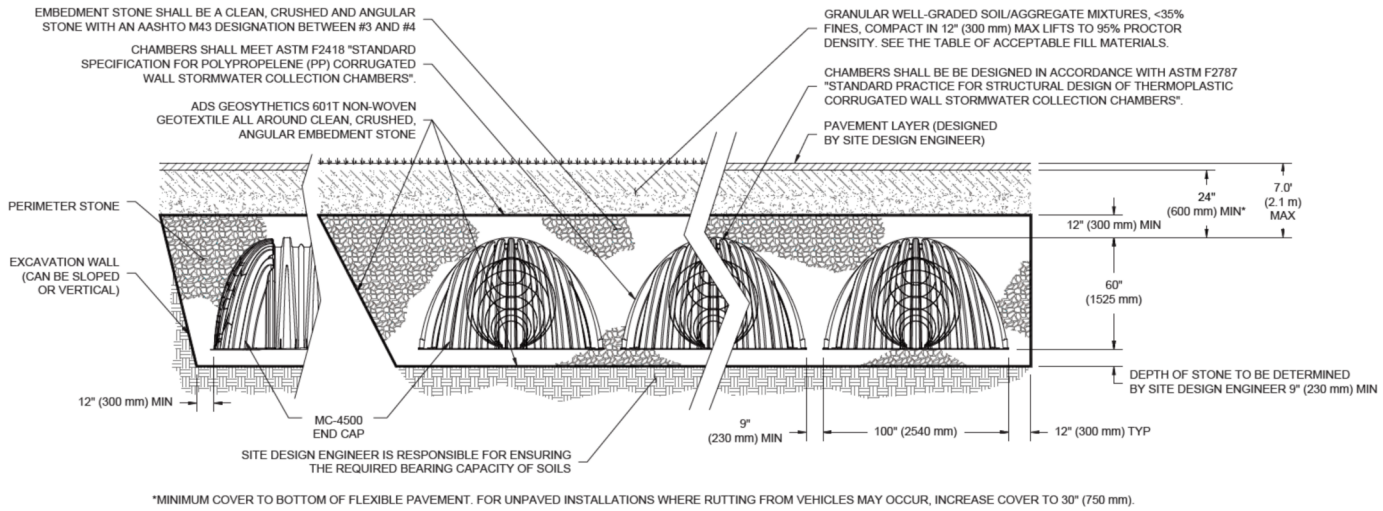
Results

System Volume and Bed Size

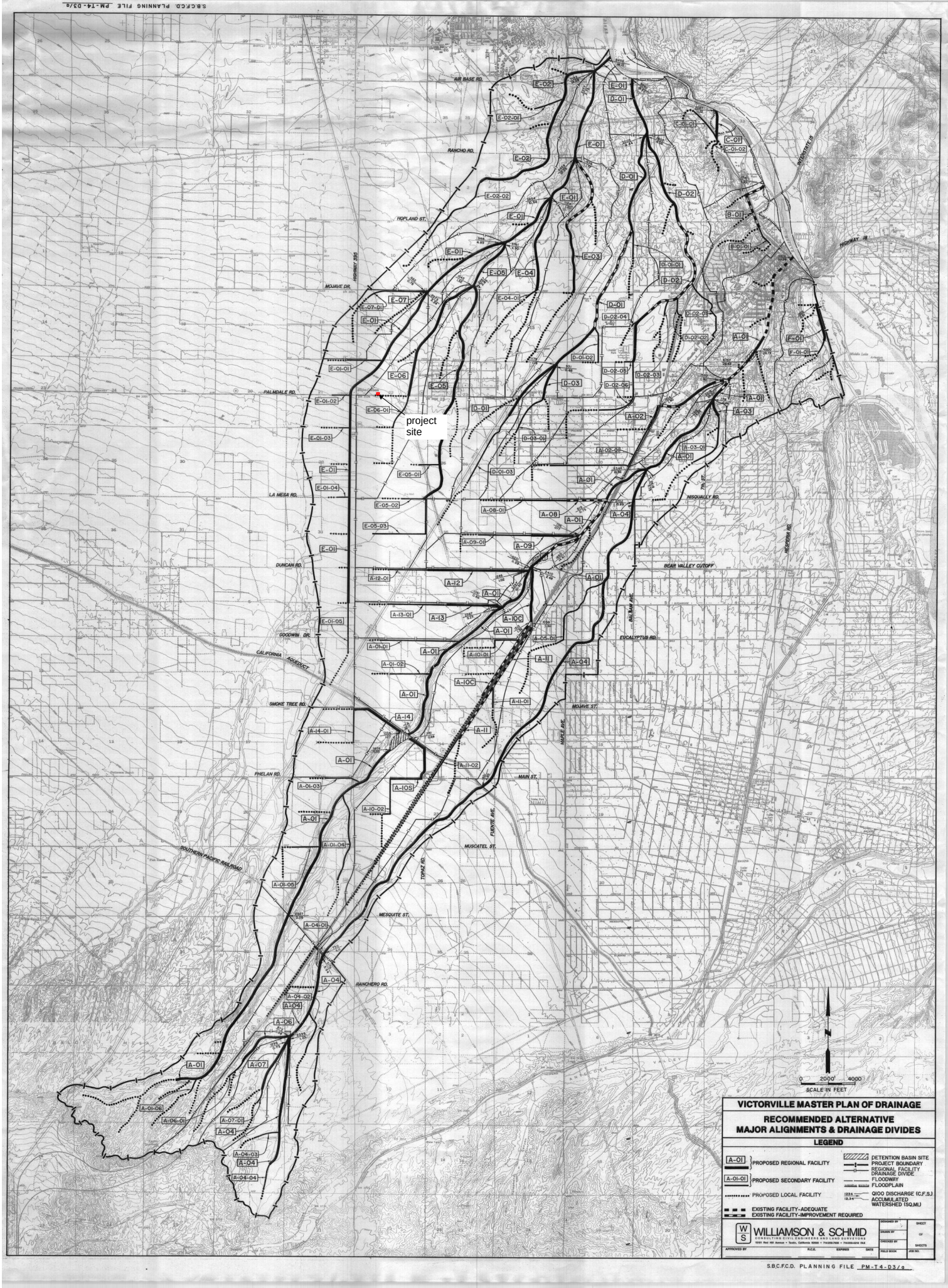
Installed Storage Volume:	5530.08 cubic ft.
Storage Volume Per Chamber:	175.90 cubic ft.
Number Of Chambers Required:	17
Number Of End Caps Required:	4
Chamber Rows:	2
Maximum Length:	70.56 ft.
Maximum Width:	20.02 ft.
Approx. Bed Size Required:	1348.56 square ft.

System Components

Amount Of Stone Required:	220.54 cubic yards
Volume Of Excavation (Not Including Fill):	337.14 cubic yards
Total Non-woven Geotextile Required:	522.65 square yards
Woven Geotextile Required (excluding Isolator Row):	21.23 square yards
Woven Geotextile Required (Isolator Row):	151.18 square yards
Total Woven Geotextile Required:	172.41 square yards



*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 30" (750 mm).



S.B.C.F.C.D. PLANNING FILE PM-T4-D3/g

Form 4.2-3 Hydromodification Assessment for Runoff Volume (DA 1)

Weighted Curve Number Determination for: Pre-developed DA	DMA A	DMA B	DMA C	DMA D	DMA E	DMA F	DMA G	DMA H
1a Land Cover type								
2a Hydrologic Soil Group (HSG)								
3a DMA Area, ft² *sum of areas of DMA should equal area of DA*								
4a Curve Number (CN) *use Items 1 and 2 to select the appropriate CN from Appendix C-2 of the TGD for WQMP*			See HCOC calcs in Appendix D					
Weighted Curve Number Determination for: Post-developed DA	DMA A	DMA B	DMA C	DMA D	DMA E	DMA F	DMA G	DMA H
1b Land Cover type								
2b Hydrologic Soil Group (HSG)								
3b DMA Area, ft² *sum of areas of DMA should equal area of DA*								
4b Curve Number (CN) *use Items 5 and 6 to select the appropriate CN from Appendix C-2 of the TGD for WQMP*								

5 Pre-Developed area-weighted CN:	**7** Pre-developed soil storage capacity, S (in): *S = (1000 / Item 5) - 10*	**9** Initial abstraction, I_a (in): *I_a = 0.2 * Item 7*
6 Post-Developed area-weighted CN:	**8** Post-developed soil storage capacity, S (in): *S = (1000 / Item 6) - 10*	**10** Initial abstraction, I_a (in): *I_a = 0.2 * Item 8*

11 Precipitation for 10 yr, 24 hr storm (in): 2.62
Go to: http://hdsc.nws.noaa.gov/hdsc/pfds/sa/sca_pfds.html

12 Pre-developed Volume (ft³): 8,825
*V_{pre} =(1 / 12) * (Item sum of Item 3) * [(Item 11 – Item 9)^2 / ((Item 11 – Item 9 + Item 7)*

13 Post-developed Volume (ft³): 18,513
*V_{pre} =(1 / 12) * (Item sum of Item 3) * [(Item 11 – Item 10)^2 / ((Item 11 – Item 10 + Item 8)*

14 Volume Reduction needed to meet hydromodification requirement, (ft³): 8,762
*Vhydro = (Item 13 * 0.95) – Item 12*

drainage classes 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 North. 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, N/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 digital orthophotography collected by the U.S. Department of Agriculture Farm Service Agency. This imagery was flown in 2005 and was produced with a 1-meter ground sample distance.

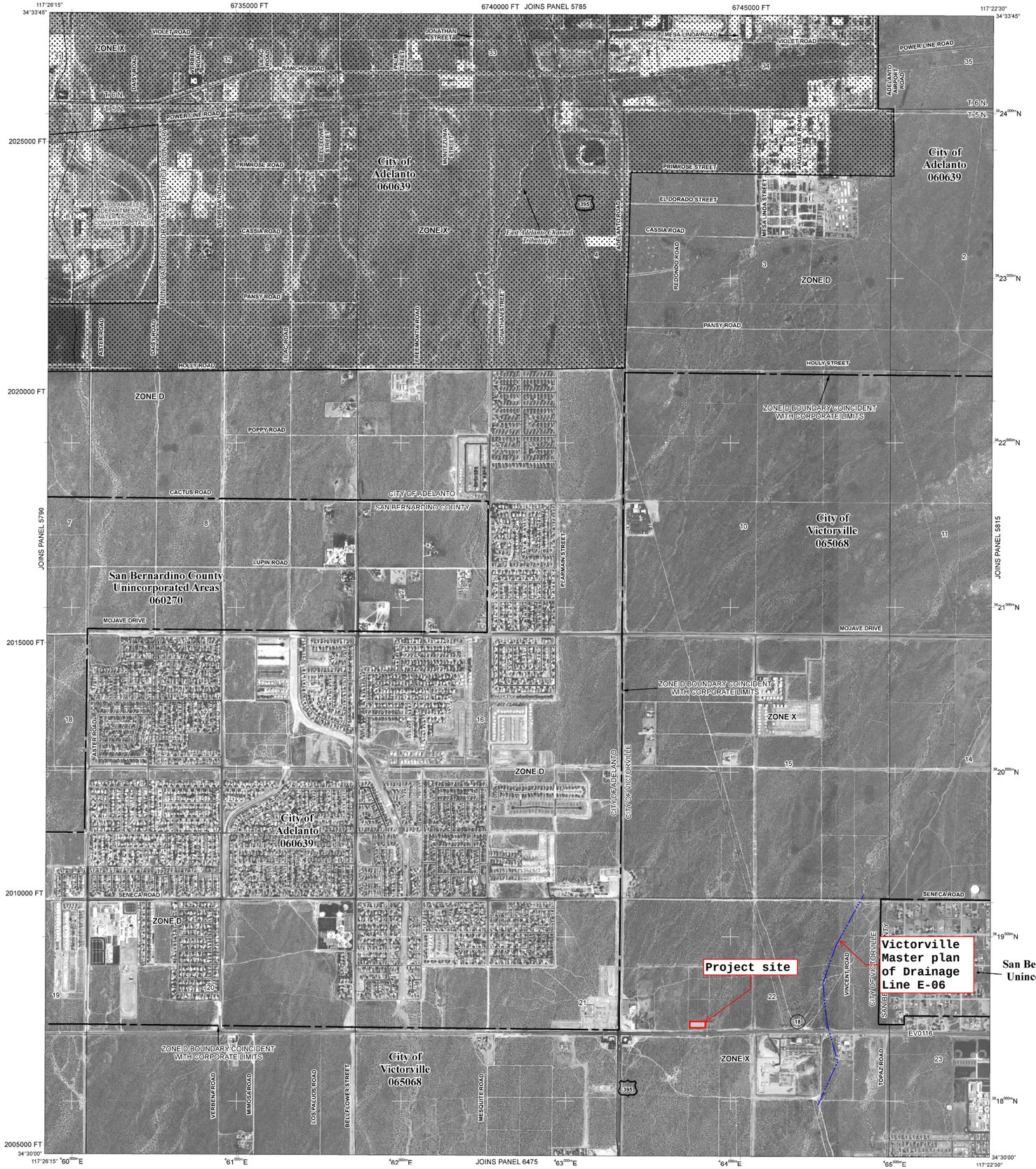
This map may reflect more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to confirm to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables 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.



The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

0.2% annual chance floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513 Base Flood Elevation line and value; elevation in feet*

(EL 987) Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

Cross section line

Transect line

87°07'45", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere

3776000mN 1000-meter Universal Transverse Mercator grid values, zone 11N

600000 FT 5000-foot grid ticks: California State Plane coordinate system, zone V (FIPSZONE 0405), Lambert Conformal Conic projection

DX5510 Bench mark (see explanation in Notes to Users section of this FIRM panel)

M1.5 River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
March 18, 1996

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
August 28, 2008 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 5795H

FIRM
FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA AND INCORPORATED AREAS
PANEL 5795 OF 9400

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ADELANTO, CITY OF	060639	5795	H
SAN BERNARDINO COUNTY	060270	5795	H
VICTORVILLE, CITY OF	065068	5795	H

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06071C5795H

MAP REVISED

Appendix C

Rational Method Analysis

Onsite Predevelopment, 10 Year and 100 Year events
Onsite Developed, 10 Year and 100 Year events

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 06/30/22

Palmdale and Cantina
City of Victorville
10-year
existing condition

Program License Serial Number 6385

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.651 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 201.000 to Point/Station 202.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 67.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.578(In/Hr)
Initial subarea data:
Initial area flow distance = 456.000(Ft.)
Top (of initial area) elevation = 3122.400(Ft.)
Bottom (of initial area) elevation = 3115.500(Ft.)
Difference in elevation = 6.900(Ft.)
Slope = 0.01513 s(%)= 1.51
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 14.053 min.
Rainfall intensity = 1.798(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.611
Subarea runoff = 2.547(CFS)

Total initial stream area = 2.320(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.578(In/Hr)
End of computations, Total Study Area = 2.32 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number = 67.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 06/30/22

Palmdale and Cantina
City of Victorville
100-year
Existing Condition

Program License Serial Number 6385

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.100 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 3

++

Process from Point/Station 201.000 to Point/Station 202.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 67.00
Adjusted SCS curve number for AMC 3 = 84.60
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.290(In/Hr)
Initial subarea data:
Initial area flow distance = 456.000(Ft.)
Top (of initial area) elevation = 3122.400(Ft.)
Bottom (of initial area) elevation = 3115.500(Ft.)
Difference in elevation = 6.900(Ft.)
Slope = 0.01513 s(%)= 1.51
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 14.053 min.
Rainfall intensity = 3.039(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.814

Subarea runoff = 5.739(CFS)
Total initial stream area = 2.320(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.290(In/Hr)
End of computations, Total Study Area = 2.32 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number = 67.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 08/04/22

PALMDALE AND CANTINA
NE Corner
10-year Developed

Program License Serial Number 6385

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.651 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 101.000 to Point/Station 102.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.098(In/Hr)
Initial subarea data:
Initial area flow distance = 539.000(Ft.)
Top (of initial area) elevation = 3119.010(Ft.)
Bottom (of initial area) elevation = 3114.980(Ft.)
Difference in elevation = 4.030(Ft.)
Slope = 0.00748 s(%)= 0.75
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.018 min.
Rainfall intensity = 2.279(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.861

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Subarea runoff =      2.140(CFS)
Total initial stream area =        1.090(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.098(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  3111.480(Ft.)
Downstream point/station elevation =  3109.290(Ft.)
Pipe length  =   123.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.140(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     2.140(CFS)
Normal flow depth in pipe =    7.14(In.)
Flow top width inside pipe =    7.29(In.)
Critical Depth =    7.91(In.)
Pipe flow velocity =      5.69(Ft/s)
Travel time through pipe =    0.36 min.
Time of concentration (TC) =    10.38 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      104.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      1.090(Ac.)
Runoff from this stream =      2.140(CFS)
Time of concentration =   10.38 min.
Rainfall intensity =     2.223(In/Hr)
Area averaged loss rate (Fm) =    0.0978(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      103.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Initial subarea data:
Initial area flow distance =   148.000(Ft.)
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Top (of initial area) elevation =  3119.010(Ft.)
Bottom (of initial area) elevation =  3117.310(Ft.)
Difference in elevation =     1.700(Ft.)
Slope =    0.01149  s(%)=       1.15
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.482 min.
Rainfall intensity =      3.476(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.875
Subarea runoff =      1.216(CFS)
Total initial stream area =        0.400(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.098(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  3110.680(Ft.)
Downstream point/station elevation =  3109.290(Ft.)
Pipe length  =   128.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.216(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.216(CFS)
Normal flow depth in pipe =    5.58(In.)
Flow top width inside pipe =    8.74(In.)
Critical Depth =    6.10(In.)
Pipe flow velocity =      4.23(Ft/s)
Travel time through pipe =    0.50 min.
Time of concentration (TC) =     5.99 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.400(Ac.)
Runoff from this stream =      1.216(CFS)
Time of concentration =    5.99 min.
Rainfall intensity =     3.268(In/Hr)
Area averaged loss rate (Fm) =    0.0978(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      106.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
COMMERCIAL subarea type
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Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Initial subarea data:
Initial area flow distance =   214.000(Ft.)
Top (of initial area) elevation =  3119.500(Ft.)
Bottom (of initial area) elevation =  3116.990(Ft.)
Difference in elevation =     2.510(Ft.)
Slope =    0.01173  s(%)=       1.17
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.327 min.
Rainfall intensity =      3.144(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff =      0.685(CFS)
Total initial stream area =        0.250(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.098(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  3110.750(Ft.)
Downstream point/station elevation =  3109.290(Ft.)
Pipe length  =    71.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.685(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.685(CFS)
Normal flow depth in pipe =    4.25(In.)
Flow top width inside pipe =    5.45(In.)
Critical Depth =    5.02(In.)
Pipe flow velocity =      4.60(Ft/s)
Travel time through pipe =    0.26 min.
Time of concentration (TC) =     6.58 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      104.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.250(Ac.)
Runoff from this stream =      0.685(CFS)
Time of concentration =    6.58 min.
Rainfall intensity =     3.057(In/Hr)
Area averaged loss rate (Fm) =    0.0978(In/Hr)
```

```
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105a.000 to Point/Station      107.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Initial subarea data:
Initial area flow distance =    98.000(Ft.)
Top (of initial area) elevation =  3119.600(Ft.)
Bottom (of initial area) elevation =  3117.810(Ft.)
Difference in elevation =     1.790(Ft.)
Slope =    0.01827  s(%)=       1.83
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.237 min.
Rainfall intensity =      4.163(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.879
Subarea runoff =      0.402(CFS)
Total initial stream area =        0.110(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.098(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  3112.080(Ft.)
Downstream point/station elevation =  3111.590(Ft.)
Pipe length  =    22.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.402(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.402(CFS)
Normal flow depth in pipe =    2.93(In.)
Flow top width inside pipe =    6.00(In.)
Critical Depth =    3.87(In.)
Pipe flow velocity =      4.22(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =     4.32 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      108.000
```

```
**** SUBAREA FLOW ADDITION ****
_____________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Time of concentration =     4.32 min.
Rainfall intensity =      4.104(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.879
Subarea runoff =      0.066(CFS) for    0.020(Ac.)
Total runoff =      0.469(CFS)
Effective area this stream =        0.13(Ac.)
Total Study Area (Main Stream No. 1) =        1.87(Ac.)
Area averaged Fm value =    0.098(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
_____________________________________________________________________________
Upstream point/station elevation =  3111.590(Ft.)
Downstream point/station elevation =  3109.290(Ft.)
Pipe length  =   113.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.469(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.469(CFS)
Normal flow depth in pipe =    3.30(In.)
Flow top width inside pipe =    5.97(In.)
Critical Depth =    4.19(In.)
Pipe flow velocity =      4.24(Ft/s)
Travel time through pipe =    0.44 min.
Time of concentration (TC) =     4.77 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      110.000
**** SUBAREA FLOW ADDITION ****
_____________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.098(In/Hr)
Time of concentration =     4.77 min.
```

```
Rainfall intensity =      3.832(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.877
Subarea runoff =      1.145(CFS) for    0.350(Ac.)
Total runoff =      1.613(CFS)
Effective area this stream =        0.48(Ac.)
Total Study Area (Main Stream No. 1) =        2.22(Ac.)
Area averaged Fm value =    0.098(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      111.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  3112.500(Ft.)
Downstream point/station elevation =  3112.430(Ft.)
Pipe length  =    16.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.613(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     1.613(CFS)
Normal flow depth in pipe =    7.29(In.)
Flow top width inside pipe =   11.72(In.)
Critical Depth =    6.48(In.)
Pipe flow velocity =      3.23(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =     4.85 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      111.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 4
Stream flow area =      0.480(Ac.)
Runoff from this stream =      1.613(CFS)
Time of concentration =    4.85 min.
Rainfall intensity =     3.786(In/Hr)
Area averaged loss rate (Fm) =    0.0978(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)


1      2.14     1.090     10.38    0.098      2.223
2      1.22     0.400      5.99    0.098      3.268
3      0.69     0.250      6.58    0.098      3.057
4      1.61     0.480      4.85    0.098      3.786
Qmax(1) =
```

```
           1.000 *    1.000 *     2.140) +
           0.671 *    1.000 *     1.216) +
           0.718 *    1.000 *     0.685) +
           0.576 *    1.000 *     1.613) + =       4.377
Qmax(2) =
           1.491 *    0.577 *     2.140) +
           1.000 *    1.000 *     1.216) +
           1.071 *    0.909 *     0.685) +
           0.859 *    1.000 *     1.613) + =       5.111
Qmax(3) =
           1.392 *    0.634 *     2.140) +
           0.934 *    1.000 *     1.216) +
           1.000 *    1.000 *     0.685) +
           0.802 *    1.000 *     1.613) + =       5.005
Qmax(4) =
           1.735 *    0.467 *     2.140) +
           1.164 *    0.810 *     1.216) +
           1.246 *    0.737 *     0.685) +
           1.000 *    1.000 *     1.613) + =       5.125

Total of 4 streams to confluence:
Flow rates before confluence point:
       2.140       1.216       0.685       1.613
Maximum flow rates at confluence using above data:
        4.377        5.111        5.005        5.125
Area of streams before confluence:
        1.090        0.400        0.250        0.480
Effective area values after confluence:
        2.220        1.736        1.822        1.498
Results of confluence:
Total flow rate =      5.125(CFS)
Time of concentration =     4.851 min.
Effective stream area after confluence =      1.498(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.098(In/Hr)
Study area total (this main stream) =       2.22(Ac.)
End of computations, Total Study Area =            2.22 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  32.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 08/04/22

PALMDALE AND CANTINA
NE Corner
100-year Developed

Program License Serial Number 6385

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.100 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 3

++

Process from Point/Station 101.000 to Point/Station 102.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.079(In/Hr)
Initial subarea data:
Initial area flow distance = 539.000(Ft.)
Top (of initial area) elevation = 3119.010(Ft.)
Bottom (of initial area) elevation = 3114.980(Ft.)
Difference in elevation = 4.030(Ft.)
Slope = 0.00748 s(%)= 0.75
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.018 min.
Rainfall intensity = 3.851(In/Hr) for a 100.0 year storm

```
Effective runoff coefficient used for area (Q=KCIA) is C = 0.882
Subarea runoff =      3.701(CFS)
Total initial stream area =        1.090(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.079(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  3111.480(Ft.)
Downstream point/station elevation =  3109.290(Ft.)
Pipe length  =   123.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.701(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     3.701(CFS)
Normal flow depth in pipe =    7.96(In.)
Flow top width inside pipe =   11.34(In.)
Critical Depth =    9.83(In.)
Pipe flow velocity =      6.69(Ft/s)
Travel time through pipe =    0.31 min.
Time of concentration (TC) =    10.32 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      104.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      1.090(Ac.)
Runoff from this stream =      3.701(CFS)
Time of concentration =   10.32 min.
Rainfall intensity =     3.771(In/Hr)
Area averaged loss rate (Fm) =    0.0785(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      103.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.079(In/Hr)
```

```
Initial subarea data:
Initial area flow distance =   148.000(Ft.)
Top (of initial area) elevation =  3119.010(Ft.)
Bottom (of initial area) elevation =  3117.310(Ft.)
Difference in elevation =     1.700(Ft.)
Slope =    0.01149  s(%)=       1.15
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.482 min.
Rainfall intensity =      5.873(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.888
Subarea runoff =      2.086(CFS)
Total initial stream area =        0.400(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.079(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  3110.680(Ft.)
Downstream point/station elevation =  3109.290(Ft.)
Pipe length  =   128.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.086(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     2.086(CFS)
Normal flow depth in pipe =    6.43(In.)
Flow top width inside pipe =   11.97(In.)
Critical Depth =    7.40(In.)
Pipe flow velocity =      4.86(Ft/s)
Travel time through pipe =    0.44 min.
Time of concentration (TC) =     5.92 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.400(Ac.)
Runoff from this stream =      2.086(CFS)
Time of concentration =    5.92 min.
Rainfall intensity =     5.565(In/Hr)
Area averaged loss rate (Fm) =    0.0785(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      106.000
**** INITIAL AREA EVALUATION ****
```

```
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.079(In/Hr)
Initial subarea data:
Initial area flow distance =   214.000(Ft.)
Top (of initial area) elevation =  3119.500(Ft.)
Bottom (of initial area) elevation =  3116.990(Ft.)
Difference in elevation =     2.510(Ft.)
Slope =    0.01173  s(%)=       1.17
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.327 min.
Rainfall intensity =      5.312(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.887
Subarea runoff =      1.178(CFS)
Total initial stream area =        0.250(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.079(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  3110.750(Ft.)
Downstream point/station elevation =  3109.290(Ft.)
Pipe length  =    71.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.178(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.178(CFS)
Normal flow depth in pipe =    4.48(In.)
Flow top width inside pipe =    9.00(In.)
Critical Depth =    5.99(In.)
Pipe flow velocity =      5.36(Ft/s)
Travel time through pipe =    0.22 min.
Time of concentration (TC) =     6.55 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      104.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 3
Stream flow area =      0.250(Ac.)
Runoff from this stream =      1.178(CFS)
```

```
Time of concentration =    6.55 min.
Rainfall intensity =     5.186(In/Hr)
Area averaged loss rate (Fm) =    0.0785(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105a.000 to Point/Station      107.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.079(In/Hr)
Initial subarea data:
Initial area flow distance =    98.000(Ft.)
Top (of initial area) elevation =  3119.600(Ft.)
Bottom (of initial area) elevation =  3117.810(Ft.)
Difference in elevation =     1.790(Ft.)
Slope =    0.01827  s(%)=       1.83
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    4.237 min.
Rainfall intensity =      7.034(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.890
Subarea runoff =      0.689(CFS)
Total initial stream area =        0.110(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.079(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  3112.080(Ft.)
Downstream point/station elevation =  3111.590(Ft.)
Pipe length  =    22.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.689(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.689(CFS)
Normal flow depth in pipe =    4.14(In.)
Flow top width inside pipe =    5.55(In.)
Critical Depth =    5.03(In.)
Pipe flow velocity =      4.76(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =     4.31 min.
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      108.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.079(In/Hr)
Time of concentration =     4.31 min.
Rainfall intensity =      6.945(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.890
Subarea runoff =      0.115(CFS) for    0.020(Ac.)
Total runoff =      0.803(CFS)
Effective area this stream =        0.13(Ac.)
Total Study Area (Main Stream No. 1) =        1.87(Ac.)
Area averaged Fm value =    0.079(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      104.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  3111.590(Ft.)
Downstream point/station elevation =  3109.290(Ft.)
Pipe length  =   113.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     0.803(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     0.803(CFS)
Normal flow depth in pipe =    3.62(In.)
Flow top width inside pipe =    8.83(In.)
Critical Depth =    4.91(In.)
Pipe flow velocity =      4.83(Ft/s)
Travel time through pipe =    0.39 min.
Time of concentration (TC) =     4.70 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      110.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
```

```
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.079(In/Hr)
Time of concentration =     4.70 min.
Rainfall intensity =      6.537(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.889
Subarea runoff =      1.987(CFS) for    0.350(Ac.)
Total runoff =      2.790(CFS)
Effective area this stream =        0.48(Ac.)
Total Study Area (Main Stream No. 1) =        2.22(Ac.)
Area averaged Fm value =    0.079(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      111.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  3112.500(Ft.)
Downstream point/station elevation =  3112.430(Ft.)
Pipe length  =    16.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.790(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     2.790(CFS)
Normal flow depth in pipe =    8.84(In.)
Flow top width inside pipe =   14.76(In.)
Critical Depth =    8.05(In.)
Pipe flow velocity =      3.71(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =     4.78 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      111.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 4
Stream flow area =      0.480(Ac.)
Runoff from this stream =      2.790(CFS)
Time of concentration =    4.78 min.
Rainfall intensity =     6.468(In/Hr)
Area averaged loss rate (Fm) =    0.0785(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)   (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1      3.70     1.090     10.32    0.079      3.771
2      2.09     0.400      5.92    0.079      5.565
3      1.18     0.250      6.55    0.079      5.186
4      2.79     0.480      4.78    0.079      6.468
Qmax(1) =
           1.000 *    1.000 *     3.701) +
           0.673 *    1.000 *     2.086) +
           0.723 *    1.000 *     1.178) +
           0.578 *    1.000 *     2.790) + =       7.568
Qmax(2) =
           1.486 *    0.573 *     3.701) +
           1.000 *    1.000 *     2.086) +
           1.074 *    0.904 *     1.178) +
           0.859 *    1.000 *     2.790) + =       8.779
Qmax(3) =
           1.383 *    0.634 *     3.701) +
           0.931 *    1.000 *     2.086) +
           1.000 *    1.000 *     1.178) +
           0.799 *    1.000 *     2.790) + =       8.597
Qmax(4) =
           1.731 *    0.463 *     3.701) +
           1.165 *    0.807 *     2.086) +
           1.251 *    0.729 *     1.178) +
           1.000 *    1.000 *     2.790) + =       8.787

Total of 4 streams to confluence:
Flow rates before confluence point:
       3.701       2.086       1.178       2.790
Maximum flow rates at confluence using above data:
        7.568        8.779        8.597        8.787
Area of streams before confluence:
        1.090        0.400        0.250        0.480
Effective area values after confluence:
        2.220        1.731        1.821        1.489
Results of confluence:
Total flow rate =      8.787(CFS)
Time of concentration =     4.775 min.
Effective stream area after confluence =      1.489(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.079(In/Hr)
Study area total (this main stream) =       2.22(Ac.)
End of computations, Total Study Area =            2.22 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  32.0
```

APPENDIX 'D'

Unit Hydrograph Method Analysis

Onsite existing 10- and 100-year, 24-hour Storm events

Onsite developed 10- and 100-year, 24-hour Storm events

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

Study date 06/30/22

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6385

Palmdale and Cantina, NE corner
10-year existing condition

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
2.32	1	0.65
Rainfall data for year 10		
2.32	6	1.35
Rainfall data for year 10		
2.32	24	2.62

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
78.0	78.0	2.32	1.000	0.404	1.000	0.404

Area-averaged adjusted loss rate Fm (In/Hr) = 0.404

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
2.32	1.000	78.0	78.0	2.82	0.331

Area-averaged catchment yield fraction, Y = 0.331
Area-averaged low loss fraction, Yb = 0.669
User entry of time of concentration = 0.234 (hours)
++
Watershed area = 2.32(Ac.)
Catchment Lag time = 0.187 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 44.5157
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.404(In/Hr)
Average low loss rate fraction (Yb) = 0.669 (decimal)
DESERT S-Graph Selected
Computed peak 5-minute rainfall = 0.308(In)
Computed peak 30-minute rainfall = 0.528(In)
Specified peak 1-hour rainfall = 0.650(In)
Computed peak 3-hour rainfall = 1.018(In)
Specified peak 6-hour rainfall = 1.350(In)
Specified peak 24-hour rainfall = 2.620(In)

Rainfall depth area reduction factors:
Using a total area of 2.32(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.308(In)
30-minute factor = 1.000 Adjusted rainfall = 0.528(In)
1-hour factor = 1.000 Adjusted rainfall = 0.650(In)
3-hour factor = 1.000 Adjusted rainfall = 1.017(In)
6-hour factor = 1.000 Adjusted rainfall = 1.350(In)
24-hour factor = 1.000 Adjusted rainfall = 2.620(In)

U n i t H y d r o g r a p h
++
Interval 'S' Graph Unit Hydrograph

Number	Mean values ((CFS))	
	(K = 28.06 (CFS))	
1	3.271	0.918
2	23.997	5.815
3	54.972	8.691
4	69.700	4.132
5	78.140	2.368
6	83.701	1.560
7	87.807	1.152
8	90.685	0.808
9	92.933	0.631
10	94.679	0.490
11	96.051	0.385
12	97.105	0.296
13	97.842	0.207
14	98.322	0.135
15	98.846	0.147
16	99.370	0.147
17	99.716	0.097
18	100.000	0.080

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3084	0.3084
2	0.3797	0.0713
3	0.4288	0.0491
4	0.4674	0.0387
5	0.4998	0.0324
6	0.5279	0.0281
7	0.5529	0.0250
8	0.5755	0.0226
9	0.5962	0.0207
10	0.6153	0.0191
11	0.6332	0.0178
12	0.6499	0.0167
13	0.6715	0.0216
14	0.6921	0.0206
15	0.7119	0.0198
16	0.7309	0.0190
17	0.7492	0.0183
18	0.7669	0.0177
19	0.7840	0.0171
20	0.8005	0.0166
21	0.8166	0.0161
22	0.8323	0.0156
23	0.8475	0.0152
24	0.8624	0.0148
25	0.8768	0.0145

26	0.8910	0.0141
27	0.9048	0.0138
28	0.9183	0.0135
29	0.9316	0.0132
30	0.9446	0.0130
31	0.9573	0.0127
32	0.9698	0.0125
33	0.9820	0.0123
34	0.9940	0.0120
35	1.0059	0.0118
36	1.0175	0.0116
37	1.0289	0.0114
38	1.0402	0.0113
39	1.0513	0.0111
40	1.0622	0.0109
41	1.0729	0.0108
42	1.0835	0.0106
43	1.0940	0.0105
44	1.1043	0.0103
45	1.1145	0.0102
46	1.1245	0.0100
47	1.1344	0.0099
48	1.1442	0.0098
49	1.1539	0.0097
50	1.1634	0.0095
51	1.1728	0.0094
52	1.1822	0.0093
53	1.1914	0.0092
54	1.2005	0.0091
55	1.2095	0.0090
56	1.2185	0.0089
57	1.2273	0.0088
58	1.2360	0.0087
59	1.2447	0.0086
60	1.2532	0.0086
61	1.2617	0.0085
62	1.2701	0.0084
63	1.2784	0.0083
64	1.2867	0.0082
65	1.2948	0.0082
66	1.3029	0.0081
67	1.3109	0.0080
68	1.3189	0.0079
69	1.3268	0.0079
70	1.3346	0.0078
71	1.3423	0.0077
72	1.3500	0.0077
73	1.3589	0.0089
74	1.3678	0.0089
75	1.3766	0.0088

76	1.3854	0.0087
77	1.3940	0.0087
78	1.4027	0.0086
79	1.4112	0.0086
80	1.4198	0.0085
81	1.4282	0.0085
82	1.4366	0.0084
83	1.4450	0.0084
84	1.4533	0.0083
85	1.4615	0.0082
86	1.4697	0.0082
87	1.4779	0.0081
88	1.4860	0.0081
89	1.4940	0.0081
90	1.5020	0.0080
91	1.5100	0.0080
92	1.5179	0.0079
93	1.5258	0.0079
94	1.5336	0.0078
95	1.5414	0.0078
96	1.5491	0.0077
97	1.5568	0.0077
98	1.5645	0.0077
99	1.5721	0.0076
100	1.5797	0.0076
101	1.5872	0.0075
102	1.5947	0.0075
103	1.6022	0.0075
104	1.6096	0.0074
105	1.6170	0.0074
106	1.6243	0.0073
107	1.6316	0.0073
108	1.6389	0.0073
109	1.6462	0.0072
110	1.6534	0.0072
111	1.6605	0.0072
112	1.6677	0.0071
113	1.6748	0.0071
114	1.6819	0.0071
115	1.6889	0.0070
116	1.6959	0.0070
117	1.7029	0.0070
118	1.7098	0.0069
119	1.7167	0.0069
120	1.7236	0.0069
121	1.7305	0.0069
122	1.7373	0.0068
123	1.7441	0.0068
124	1.7509	0.0068
125	1.7576	0.0067

126	1.7643	0.0067
127	1.7710	0.0067
128	1.7777	0.0067
129	1.7843	0.0066
130	1.7909	0.0066
131	1.7975	0.0066
132	1.8040	0.0065
133	1.8105	0.0065
134	1.8170	0.0065
135	1.8235	0.0065
136	1.8300	0.0064
137	1.8364	0.0064
138	1.8428	0.0064
139	1.8492	0.0064
140	1.8555	0.0064
141	1.8618	0.0063
142	1.8681	0.0063
143	1.8744	0.0063
144	1.8807	0.0063
145	1.8869	0.0062
146	1.8931	0.0062
147	1.8993	0.0062
148	1.9055	0.0062
149	1.9116	0.0061
150	1.9178	0.0061
151	1.9239	0.0061
152	1.9300	0.0061
153	1.9360	0.0061
154	1.9421	0.0060
155	1.9481	0.0060
156	1.9541	0.0060
157	1.9601	0.0060
158	1.9660	0.0060
159	1.9720	0.0059
160	1.9779	0.0059
161	1.9838	0.0059
162	1.9897	0.0059
163	1.9955	0.0059
164	2.0014	0.0058
165	2.0072	0.0058
166	2.0130	0.0058
167	2.0188	0.0058
168	2.0246	0.0058
169	2.0303	0.0058
170	2.0361	0.0057
171	2.0418	0.0057
172	2.0475	0.0057
173	2.0532	0.0057
174	2.0589	0.0057
175	2.0645	0.0057

176	2.0701	0.0056
177	2.0758	0.0056
178	2.0814	0.0056
179	2.0869	0.0056
180	2.0925	0.0056
181	2.0981	0.0056
182	2.1036	0.0055
183	2.1091	0.0055
184	2.1146	0.0055
185	2.1201	0.0055
186	2.1256	0.0055
187	2.1310	0.0055
188	2.1365	0.0054
189	2.1419	0.0054
190	2.1473	0.0054
191	2.1527	0.0054
192	2.1581	0.0054
193	2.1635	0.0054
194	2.1688	0.0054
195	2.1742	0.0053
196	2.1795	0.0053
197	2.1848	0.0053
198	2.1901	0.0053
199	2.1954	0.0053
200	2.2007	0.0053
201	2.2059	0.0053
202	2.2112	0.0052
203	2.2164	0.0052
204	2.2216	0.0052
205	2.2268	0.0052
206	2.2320	0.0052
207	2.2372	0.0052
208	2.2423	0.0052
209	2.2475	0.0051
210	2.2526	0.0051
211	2.2578	0.0051
212	2.2629	0.0051
213	2.2680	0.0051
214	2.2730	0.0051
215	2.2781	0.0051
216	2.2832	0.0051
217	2.2882	0.0050
218	2.2933	0.0050
219	2.2983	0.0050
220	2.3033	0.0050
221	2.3083	0.0050
222	2.3133	0.0050
223	2.3183	0.0050
224	2.3232	0.0050
225	2.3282	0.0050

226	2.3331	0.0049
227	2.3381	0.0049
228	2.3430	0.0049
229	2.3479	0.0049
230	2.3528	0.0049
231	2.3577	0.0049
232	2.3626	0.0049
233	2.3674	0.0049
234	2.3723	0.0049
235	2.3771	0.0048
236	2.3820	0.0048
237	2.3868	0.0048
238	2.3916	0.0048
239	2.3964	0.0048
240	2.4012	0.0048
241	2.4060	0.0048
242	2.4107	0.0048
243	2.4155	0.0048
244	2.4203	0.0047
245	2.4250	0.0047
246	2.4297	0.0047
247	2.4344	0.0047
248	2.4391	0.0047
249	2.4438	0.0047
250	2.4485	0.0047
251	2.4532	0.0047
252	2.4579	0.0047
253	2.4625	0.0047
254	2.4672	0.0047
255	2.4718	0.0046
256	2.4765	0.0046
257	2.4811	0.0046
258	2.4857	0.0046
259	2.4903	0.0046
260	2.4949	0.0046
261	2.4995	0.0046
262	2.5041	0.0046
263	2.5086	0.0046
264	2.5132	0.0046
265	2.5177	0.0045
266	2.5223	0.0045
267	2.5268	0.0045
268	2.5313	0.0045
269	2.5358	0.0045
270	2.5404	0.0045
271	2.5448	0.0045
272	2.5493	0.0045
273	2.5538	0.0045
274	2.5583	0.0045
275	2.5627	0.0045

276	2.5672	0.0045
277	2.5716	0.0044
278	2.5761	0.0044
279	2.5805	0.0044
280	2.5849	0.0044
281	2.5893	0.0044
282	2.5937	0.0044
283	2.5981	0.0044
284	2.6025	0.0044
285	2.6069	0.0044
286	2.6113	0.0044
287	2.6156	0.0044
288	2.6200	0.0044

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0044	0.0029	0.0014
2	0.0044	0.0029	0.0014
3	0.0044	0.0029	0.0014
4	0.0044	0.0029	0.0015
5	0.0044	0.0029	0.0015
6	0.0044	0.0030	0.0015
7	0.0044	0.0030	0.0015
8	0.0044	0.0030	0.0015
9	0.0045	0.0030	0.0015
10	0.0045	0.0030	0.0015
11	0.0045	0.0030	0.0015
12	0.0045	0.0030	0.0015
13	0.0045	0.0030	0.0015
14	0.0045	0.0030	0.0015
15	0.0045	0.0030	0.0015
16	0.0045	0.0030	0.0015
17	0.0046	0.0030	0.0015
18	0.0046	0.0031	0.0015
19	0.0046	0.0031	0.0015
20	0.0046	0.0031	0.0015
21	0.0046	0.0031	0.0015
22	0.0046	0.0031	0.0015
23	0.0046	0.0031	0.0015
24	0.0047	0.0031	0.0015
25	0.0047	0.0031	0.0015
26	0.0047	0.0031	0.0015
27	0.0047	0.0031	0.0016
28	0.0047	0.0032	0.0016
29	0.0047	0.0032	0.0016
30	0.0047	0.0032	0.0016
31	0.0048	0.0032	0.0016
32	0.0048	0.0032	0.0016

33	0.0048	0.0032	0.0016
34	0.0048	0.0032	0.0016
35	0.0048	0.0032	0.0016
36	0.0048	0.0032	0.0016
37	0.0049	0.0032	0.0016
38	0.0049	0.0033	0.0016
39	0.0049	0.0033	0.0016
40	0.0049	0.0033	0.0016
41	0.0049	0.0033	0.0016
42	0.0049	0.0033	0.0016
43	0.0050	0.0033	0.0016
44	0.0050	0.0033	0.0016
45	0.0050	0.0033	0.0017
46	0.0050	0.0033	0.0017
47	0.0050	0.0034	0.0017
48	0.0050	0.0034	0.0017
49	0.0051	0.0034	0.0017
50	0.0051	0.0034	0.0017
51	0.0051	0.0034	0.0017
52	0.0051	0.0034	0.0017
53	0.0051	0.0034	0.0017
54	0.0051	0.0034	0.0017
55	0.0052	0.0035	0.0017
56	0.0052	0.0035	0.0017
57	0.0052	0.0035	0.0017
58	0.0052	0.0035	0.0017
59	0.0053	0.0035	0.0017
60	0.0053	0.0035	0.0017
61	0.0053	0.0035	0.0018
62	0.0053	0.0036	0.0018
63	0.0053	0.0036	0.0018
64	0.0054	0.0036	0.0018
65	0.0054	0.0036	0.0018
66	0.0054	0.0036	0.0018
67	0.0054	0.0036	0.0018
68	0.0054	0.0036	0.0018
69	0.0055	0.0037	0.0018
70	0.0055	0.0037	0.0018
71	0.0055	0.0037	0.0018
72	0.0055	0.0037	0.0018
73	0.0056	0.0037	0.0018
74	0.0056	0.0037	0.0018
75	0.0056	0.0038	0.0019
76	0.0056	0.0038	0.0019
77	0.0057	0.0038	0.0019
78	0.0057	0.0038	0.0019
79	0.0057	0.0038	0.0019
80	0.0057	0.0038	0.0019
81	0.0058	0.0039	0.0019
82	0.0058	0.0039	0.0019

83	0.0058	0.0039	0.0019
84	0.0058	0.0039	0.0019
85	0.0059	0.0039	0.0019
86	0.0059	0.0040	0.0020
87	0.0059	0.0040	0.0020
88	0.0060	0.0040	0.0020
89	0.0060	0.0040	0.0020
90	0.0060	0.0040	0.0020
91	0.0061	0.0041	0.0020
92	0.0061	0.0041	0.0020
93	0.0061	0.0041	0.0020
94	0.0061	0.0041	0.0020
95	0.0062	0.0041	0.0020
96	0.0062	0.0042	0.0021
97	0.0063	0.0042	0.0021
98	0.0063	0.0042	0.0021
99	0.0063	0.0042	0.0021
100	0.0064	0.0043	0.0021
101	0.0064	0.0043	0.0021
102	0.0064	0.0043	0.0021
103	0.0065	0.0043	0.0021
104	0.0065	0.0043	0.0021
105	0.0065	0.0044	0.0022
106	0.0066	0.0044	0.0022
107	0.0066	0.0044	0.0022
108	0.0067	0.0045	0.0022
109	0.0067	0.0045	0.0022
110	0.0067	0.0045	0.0022
111	0.0068	0.0045	0.0022
112	0.0068	0.0046	0.0023
113	0.0069	0.0046	0.0023
114	0.0069	0.0046	0.0023
115	0.0070	0.0047	0.0023
116	0.0070	0.0047	0.0023
117	0.0071	0.0047	0.0023
118	0.0071	0.0048	0.0024
119	0.0072	0.0048	0.0024
120	0.0072	0.0048	0.0024
121	0.0073	0.0049	0.0024
122	0.0073	0.0049	0.0024
123	0.0074	0.0049	0.0024
124	0.0074	0.0050	0.0025
125	0.0075	0.0050	0.0025
126	0.0075	0.0050	0.0025
127	0.0076	0.0051	0.0025
128	0.0077	0.0051	0.0025
129	0.0077	0.0052	0.0026
130	0.0078	0.0052	0.0026
131	0.0079	0.0053	0.0026
132	0.0079	0.0053	0.0026

133	0.0080	0.0054	0.0026
134	0.0081	0.0054	0.0027
135	0.0081	0.0055	0.0027
136	0.0082	0.0055	0.0027
137	0.0083	0.0056	0.0027
138	0.0084	0.0056	0.0028
139	0.0085	0.0057	0.0028
140	0.0085	0.0057	0.0028
141	0.0086	0.0058	0.0029
142	0.0087	0.0058	0.0029
143	0.0088	0.0059	0.0029
144	0.0089	0.0059	0.0029
145	0.0077	0.0051	0.0025
146	0.0077	0.0052	0.0026
147	0.0079	0.0053	0.0026
148	0.0079	0.0053	0.0026
149	0.0081	0.0054	0.0027
150	0.0082	0.0055	0.0027
151	0.0083	0.0056	0.0028
152	0.0084	0.0056	0.0028
153	0.0086	0.0057	0.0028
154	0.0086	0.0058	0.0029
155	0.0088	0.0059	0.0029
156	0.0089	0.0060	0.0030
157	0.0091	0.0061	0.0030
158	0.0092	0.0062	0.0031
159	0.0094	0.0063	0.0031
160	0.0095	0.0064	0.0032
161	0.0098	0.0065	0.0032
162	0.0099	0.0066	0.0033
163	0.0102	0.0068	0.0034
164	0.0103	0.0069	0.0034
165	0.0106	0.0071	0.0035
166	0.0108	0.0072	0.0036
167	0.0111	0.0074	0.0037
168	0.0113	0.0075	0.0037
169	0.0116	0.0078	0.0038
170	0.0118	0.0079	0.0039
171	0.0123	0.0082	0.0041
172	0.0125	0.0084	0.0041
173	0.0130	0.0087	0.0043
174	0.0132	0.0089	0.0044
175	0.0138	0.0093	0.0046
176	0.0141	0.0095	0.0047
177	0.0148	0.0099	0.0049
178	0.0152	0.0102	0.0050
179	0.0161	0.0108	0.0053
180	0.0166	0.0111	0.0055
181	0.0177	0.0118	0.0058
182	0.0183	0.0122	0.0061

183	0.0198	0.0132	0.0065
184	0.0206	0.0138	0.0068
185	0.0167	0.0112	0.0055
186	0.0178	0.0119	0.0059
187	0.0207	0.0139	0.0068
188	0.0226	0.0151	0.0075
189	0.0281	0.0188	0.0093
190	0.0324	0.0217	0.0107
191	0.0491	0.0329	0.0162
192	0.0713	0.0336	0.0377
193	0.3084	0.0336	0.2748
194	0.0387	0.0259	0.0128
195	0.0250	0.0167	0.0083
196	0.0191	0.0128	0.0063
197	0.0216	0.0144	0.0071
198	0.0190	0.0127	0.0063
199	0.0171	0.0114	0.0057
200	0.0156	0.0105	0.0052
201	0.0145	0.0097	0.0048
202	0.0135	0.0091	0.0045
203	0.0127	0.0085	0.0042
204	0.0120	0.0081	0.0040
205	0.0114	0.0077	0.0038
206	0.0109	0.0073	0.0036
207	0.0105	0.0070	0.0035
208	0.0100	0.0067	0.0033
209	0.0097	0.0065	0.0032
210	0.0093	0.0062	0.0031
211	0.0090	0.0060	0.0030
212	0.0087	0.0058	0.0029
213	0.0085	0.0057	0.0028
214	0.0082	0.0055	0.0027
215	0.0080	0.0054	0.0027
216	0.0078	0.0052	0.0026
217	0.0089	0.0060	0.0030
218	0.0087	0.0059	0.0029
219	0.0086	0.0057	0.0028
220	0.0084	0.0056	0.0028
221	0.0082	0.0055	0.0027
222	0.0081	0.0054	0.0027
223	0.0080	0.0053	0.0026
224	0.0078	0.0052	0.0026
225	0.0077	0.0052	0.0025
226	0.0076	0.0051	0.0025
227	0.0075	0.0050	0.0025
228	0.0073	0.0049	0.0024
229	0.0072	0.0048	0.0024
230	0.0071	0.0048	0.0024
231	0.0070	0.0047	0.0023
232	0.0069	0.0046	0.0023

233	0.0069	0.0046	0.0023
234	0.0068	0.0045	0.0022
235	0.0067	0.0045	0.0022
236	0.0066	0.0044	0.0022
237	0.0065	0.0044	0.0022
238	0.0064	0.0043	0.0021
239	0.0064	0.0043	0.0021
240	0.0063	0.0042	0.0021
241	0.0062	0.0042	0.0021
242	0.0062	0.0041	0.0020
243	0.0061	0.0041	0.0020
244	0.0060	0.0040	0.0020
245	0.0060	0.0040	0.0020
246	0.0059	0.0040	0.0020
247	0.0059	0.0039	0.0019
248	0.0058	0.0039	0.0019
249	0.0058	0.0039	0.0019
250	0.0057	0.0038	0.0019
251	0.0057	0.0038	0.0019
252	0.0056	0.0037	0.0019
253	0.0056	0.0037	0.0018
254	0.0055	0.0037	0.0018
255	0.0055	0.0037	0.0018
256	0.0054	0.0036	0.0018
257	0.0054	0.0036	0.0018
258	0.0053	0.0036	0.0018
259	0.0053	0.0035	0.0017
260	0.0052	0.0035	0.0017
261	0.0052	0.0035	0.0017
262	0.0052	0.0035	0.0017
263	0.0051	0.0034	0.0017
264	0.0051	0.0034	0.0017
265	0.0050	0.0034	0.0017
266	0.0050	0.0034	0.0017
267	0.0050	0.0033	0.0016
268	0.0049	0.0033	0.0016
269	0.0049	0.0033	0.0016
270	0.0049	0.0033	0.0016
271	0.0048	0.0032	0.0016
272	0.0048	0.0032	0.0016
273	0.0048	0.0032	0.0016
274	0.0047	0.0032	0.0016
275	0.0047	0.0032	0.0016
276	0.0047	0.0031	0.0016
277	0.0047	0.0031	0.0015
278	0.0046	0.0031	0.0015
279	0.0046	0.0031	0.0015
280	0.0046	0.0031	0.0015
281	0.0045	0.0030	0.0015
282	0.0045	0.0030	0.0015

283	0.0045	0.0030	0.0015
284	0.0045	0.0030	0.0015
285	0.0044	0.0030	0.0015
286	0.0044	0.0030	0.0015
287	0.0044	0.0029	0.0015
288	0.0044	0.0029	0.0014

Total soil rain loss = 1.57(In)
Total effective rainfall = 1.05(In)
Peak flow rate in flood hydrograph = 2.71(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

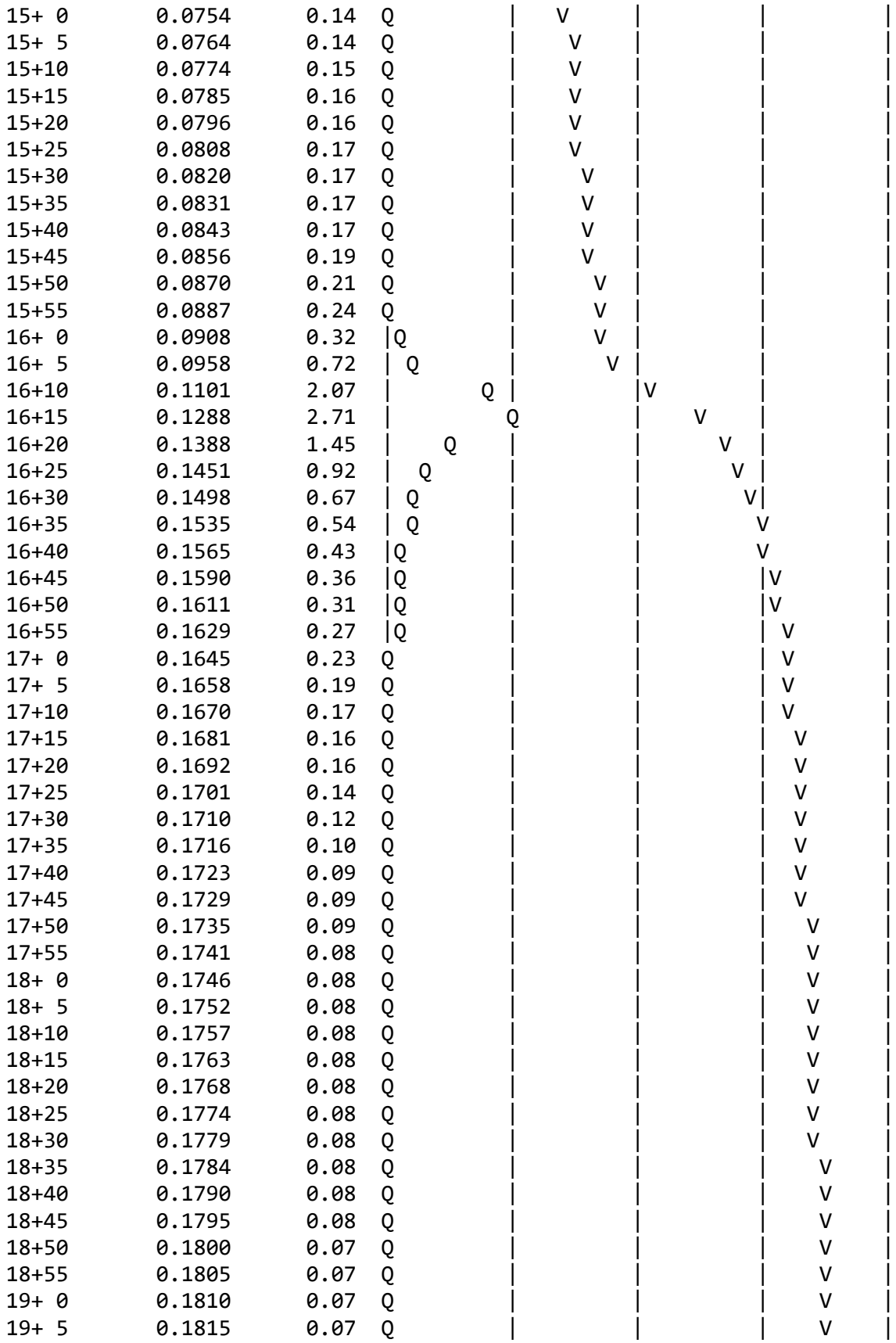
Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.00	Q				
0+10	0.0001	0.01	Q				
0+15	0.0002	0.02	Q				
0+20	0.0004	0.03	Q				
0+25	0.0006	0.03	Q				
0+30	0.0009	0.03	Q				
0+35	0.0011	0.04	Q				
0+40	0.0014	0.04	Q				
0+45	0.0016	0.04	Q				
0+50	0.0019	0.04	Q				
0+55	0.0022	0.04	Q				
1+ 0	0.0025	0.04	Q				
1+ 5	0.0027	0.04	Q				
1+10	0.0030	0.04	Q				
1+15	0.0033	0.04	Q				
1+20	0.0036	0.04	Q				
1+25	0.0039	0.04	Q				
1+30	0.0042	0.04	Q				
1+35	0.0045	0.04	Q				
1+40	0.0047	0.04	Q				
1+45	0.0050	0.04	Q				
1+50	0.0053	0.04	QV				
1+55	0.0056	0.04	QV				
2+ 0	0.0059	0.04	QV				
2+ 5	0.0062	0.04	QV				
2+10	0.0065	0.04	QV				
2+15	0.0068	0.04	QV				
2+20	0.0071	0.04	QV				
2+25	0.0074	0.04	QV				

2+30	0.0077	0.04	QV	|	|	|	|
2+35	0.0080	0.04	QV	|	|	|	|
2+40	0.0083	0.04	QV	|	|	|	|
2+45	0.0086	0.04	QV	|	|	|	|
2+50	0.0089	0.04	QV	|	|	|	|
2+55	0.0092	0.04	QV	|	|	|	|
3+ 0	0.0095	0.04	QV	|	|	|	|
3+ 5	0.0098	0.04	QV	|	|	|	|
3+10	0.0101	0.04	QV	|	|	|	|
3+15	0.0104	0.04	Q V	|	|	|	|
3+20	0.0108	0.04	Q V	|	|	|	|
3+25	0.0111	0.05	Q V	|	|	|	|
3+30	0.0114	0.05	Q V	|	|	|	|
3+35	0.0117	0.05	Q V	|	|	|	|
3+40	0.0120	0.05	Q V	|	|	|	|
3+45	0.0123	0.05	Q V	|	|	|	|
3+50	0.0126	0.05	Q V	|	|	|	|
3+55	0.0130	0.05	Q V	|	|	|	|
4+ 0	0.0133	0.05	Q V	|	|	|	|
4+ 5	0.0136	0.05	Q V	|	|	|	|
4+10	0.0139	0.05	Q V	|	|	|	|
4+15	0.0142	0.05	Q V	|	|	|	|
4+20	0.0146	0.05	Q V	|	|	|	|
4+25	0.0149	0.05	Q V	|	|	|	|
4+30	0.0152	0.05	Q V	|	|	|	|
4+35	0.0155	0.05	Q V	|	|	|	|
4+40	0.0159	0.05	Q V	|	|	|	|
4+45	0.0162	0.05	Q V	|	|	|	|
4+50	0.0165	0.05	Q V	|	|	|	|
4+55	0.0169	0.05	Q V	|	|	|	|
5+ 0	0.0172	0.05	Q V	|	|	|	|
5+ 5	0.0175	0.05	Q V	|	|	|	|
5+10	0.0179	0.05	Q V	|	|	|	|
5+15	0.0182	0.05	Q V	|	|	|	|
5+20	0.0185	0.05	Q V	|	|	|	|
5+25	0.0189	0.05	Q V	|	|	|	|
5+30	0.0192	0.05	Q V	|	|	|	|
5+35	0.0196	0.05	Q V	|	|	|	|
5+40	0.0199	0.05	Q V	|	|	|	|
5+45	0.0202	0.05	Q V	|	|	|	|
5+50	0.0206	0.05	Q V	|	|	|	|
5+55	0.0209	0.05	Q V	|	|	|	|
6+ 0	0.0213	0.05	Q V	|	|	|	|
6+ 5	0.0216	0.05	Q V	|	|	|	|
6+10	0.0220	0.05	Q V	|	|	|	|
6+15	0.0223	0.05	Q V	|	|	|	|
6+20	0.0227	0.05	Q V	|	|	|	|
6+25	0.0231	0.05	Q V	|	|	|	|
6+30	0.0234	0.05	Q V	|	|	|	|
6+35	0.0238	0.05	Q V	|	|	|	|

6+40	0.0241	0.05	Q	V	|	|	|	|
6+45	0.0245	0.05	Q	V	|	|	|	|
6+50	0.0249	0.05	Q	V	|	|	|	|
6+55	0.0252	0.05	Q	V	|	|	|	|
7+ 0	0.0256	0.05	Q	V	|	|	|	|
7+ 5	0.0260	0.05	Q	V	|	|	|	|
7+10	0.0263	0.05	Q	V	|	|	|	|
7+15	0.0267	0.05	Q	V	|	|	|	|
7+20	0.0271	0.05	Q	V	|	|	|	|
7+25	0.0275	0.05	Q	V	|	|	|	|
7+30	0.0278	0.06	Q	V	|	|	|	|
7+35	0.0282	0.06	Q	V	|	|	|	|
7+40	0.0286	0.06	Q	V	|	|	|	|
7+45	0.0290	0.06	Q	V	|	|	|	|
7+50	0.0294	0.06	Q	V	|	|	|	|
7+55	0.0298	0.06	Q	V	|	|	|	|
8+ 0	0.0302	0.06	Q	V	|	|	|	|
8+ 5	0.0306	0.06	Q	V	|	|	|	|
8+10	0.0309	0.06	Q	V	|	|	|	|
8+15	0.0313	0.06	Q	V	|	|	|	|
8+20	0.0317	0.06	Q	V	|	|	|	|
8+25	0.0321	0.06	Q	V	|	|	|	|
8+30	0.0325	0.06	Q	V	|	|	|	|
8+35	0.0330	0.06	Q	V	|	|	|	|
8+40	0.0334	0.06	Q	V	|	|	|	|
8+45	0.0338	0.06	Q	V	|	|	|	|
8+50	0.0342	0.06	Q	V	|	|	|	|
8+55	0.0346	0.06	Q	V	|	|	|	|
9+ 0	0.0350	0.06	Q	V	|	|	|	|
9+ 5	0.0354	0.06	Q	V	|	|	|	|
9+10	0.0359	0.06	Q	V	|	|	|	|
9+15	0.0363	0.06	Q	V	|	|	|	|
9+20	0.0367	0.06	Q	V	|	|	|	|
9+25	0.0371	0.06	Q	V	|	|	|	|
9+30	0.0376	0.06	Q	V	|	|	|	|
9+35	0.0380	0.06	Q	V	|	|	|	|
9+40	0.0385	0.06	Q	V	|	|	|	|
9+45	0.0389	0.06	Q	V	|	|	|	|
9+50	0.0393	0.06	Q	V	|	|	|	|
9+55	0.0398	0.07	Q	V	|	|	|	|
10+ 0	0.0402	0.07	Q	V	|	|	|	|
10+ 5	0.0407	0.07	Q	V	|	|	|	|
10+10	0.0412	0.07	Q	V	|	|	|	|
10+15	0.0416	0.07	Q	V	|	|	|	|
10+20	0.0421	0.07	Q	V	|	|	|	|
10+25	0.0425	0.07	Q	V	|	|	|	|
10+30	0.0430	0.07	Q	V	|	|	|	|
10+35	0.0435	0.07	Q	V	|	|	|	|
10+40	0.0440	0.07	Q	V	|	|	|	|
10+45	0.0444	0.07	Q	V	|	|	|	|

```
10+50       0.0449      0.07  Q       V |          |          |          |
10+55       0.0454      0.07  Q       V |          |          |          |
11+ 0       0.0459      0.07  Q        V|          |          |          |
11+ 5       0.0464      0.07  Q        V|          |          |          |
11+10       0.0469      0.07  Q        V|          |          |          |
11+15       0.0474      0.07  Q        V|          |          |          |
11+20       0.0479      0.07  Q        V|          |          |          |
11+25       0.0484      0.07  Q        V|          |          |          |
11+30       0.0490      0.08  Q        V|          |          |          |
11+35       0.0495      0.08  Q        V|          |          |          |
11+40       0.0500      0.08  Q        V|          |          |          |
11+45       0.0505      0.08  Q        V|          |          |          |
11+50       0.0511      0.08  Q         V          |          |          |
11+55       0.0516      0.08  Q         V          |          |          |
12+ 0       0.0522      0.08  Q         V          |          |          |
12+ 5       0.0527      0.08  Q         V          |          |          |
12+10       0.0533      0.08  Q         V          |          |          |
12+15       0.0538      0.08  Q         V          |          |          |
12+20       0.0543      0.07  Q         V          |          |          |
12+25       0.0548      0.07  Q         V          |          |          |
12+30       0.0553      0.07  Q         V          |          |          |
12+35       0.0559      0.08  Q         V          |          |          |
12+40       0.0564      0.08  Q         |V         |          |          |
12+45       0.0569      0.08  Q         |V         |          |          |
12+50       0.0574      0.08  Q         |V         |          |          |
12+55       0.0580      0.08  Q         |V         |          |          |
13+ 0       0.0585      0.08  Q         |V         |          |          |
13+ 5       0.0591      0.08  Q         |V         |          |          |
13+10       0.0596      0.08  Q         |V         |          |          |
13+15       0.0602      0.08  Q         |V         |          |          |
13+20       0.0608      0.08  Q         |V         |          |          |
13+25       0.0614      0.09  Q         | V        |          |          |
13+30       0.0620      0.09  Q         | V        |          |          |
13+35       0.0626      0.09  Q         | V        |          |          |
13+40       0.0632      0.09  Q         | V        |          |          |
13+45       0.0639      0.09  Q         | V        |          |          |
13+50       0.0645      0.09  Q         | V        |          |          |
13+55       0.0652      0.10  Q         | V        |          |          |
14+ 0       0.0658      0.10  Q         | V        |          |          |
14+ 5       0.0665      0.10  Q         |  V       |          |          |
14+10       0.0672      0.10  Q         |  V       |          |          |
14+15       0.0679      0.10  Q         |  V       |          |          |
14+20       0.0687      0.11  Q         |  V       |          |          |
14+25       0.0694      0.11  Q         |  V       |          |          |
14+30       0.0702      0.11  Q         |  V       |          |          |
14+35       0.0710      0.12  Q         |  V       |          |          |
14+40       0.0718      0.12  Q         |   V      |          |          |
14+45       0.0727      0.12  Q         |   V      |          |          |
14+50       0.0736      0.13  Q         |   V      |          |          |
14+55       0.0745      0.13  Q         |   V      |          |          |
```



19+10	0.1820	0.07	Q	|	|	|	V |
19+15	0.1824	0.07	Q	|	|	|	V |
19+20	0.1829	0.07	Q	|	|	|	V |
19+25	0.1834	0.07	Q	|	|	|	V |
19+30	0.1838	0.07	Q	|	|	|	V |
19+35	0.1843	0.06	Q	|	|	|	V |
19+40	0.1847	0.06	Q	|	|	|	V |
19+45	0.1851	0.06	Q	|	|	|	V |
19+50	0.1856	0.06	Q	|	|	|	V |
19+55	0.1860	0.06	Q	|	|	|	V |
20+ 0	0.1864	0.06	Q	|	|	|	V |
20+ 5	0.1868	0.06	Q	|	|	|	V |
20+10	0.1872	0.06	Q	|	|	|	V |
20+15	0.1876	0.06	Q	|	|	|	V |
20+20	0.1880	0.06	Q	|	|	|	V |
20+25	0.1884	0.06	Q	|	|	|	V |
20+30	0.1888	0.06	Q	|	|	|	V |
20+35	0.1892	0.06	Q	|	|	|	V |
20+40	0.1896	0.06	Q	|	|	|	V |
20+45	0.1900	0.06	Q	|	|	|	V |
20+50	0.1904	0.05	Q	|	|	|	V |
20+55	0.1907	0.05	Q	|	|	|	V |
21+ 0	0.1911	0.05	Q	|	|	|	V |
21+ 5	0.1915	0.05	Q	|	|	|	V |
21+10	0.1918	0.05	Q	|	|	|	V |
21+15	0.1922	0.05	Q	|	|	|	V |
21+20	0.1925	0.05	Q	|	|	|	V |
21+25	0.1929	0.05	Q	|	|	|	V |
21+30	0.1933	0.05	Q	|	|	|	V |
21+35	0.1936	0.05	Q	|	|	|	V |
21+40	0.1939	0.05	Q	|	|	|	V |
21+45	0.1943	0.05	Q	|	|	|	V |
21+50	0.1946	0.05	Q	|	|	|	V |
21+55	0.1950	0.05	Q	|	|	|	V |
22+ 0	0.1953	0.05	Q	|	|	|	V |
22+ 5	0.1956	0.05	Q	|	|	|	V |
22+10	0.1960	0.05	Q	|	|	|	V |
22+15	0.1963	0.05	Q	|	|	|	V |
22+20	0.1966	0.05	Q	|	|	|	V |
22+25	0.1969	0.05	Q	|	|	|	V |
22+30	0.1972	0.05	Q	|	|	|	V |
22+35	0.1976	0.05	Q	|	|	|	V |
22+40	0.1979	0.05	Q	|	|	|	V |
22+45	0.1982	0.05	Q	|	|	|	V |
22+50	0.1985	0.05	Q	|	|	|	V |
22+55	0.1988	0.04	Q	|	|	|	V|
23+ 0	0.1991	0.04	Q	|	|	|	V|
23+ 5	0.1994	0.04	Q	|	|	|	V|
23+10	0.1997	0.04	Q	|	|	|	V|
23+15	0.2000	0.04	Q	|	|	|	V|

```
   23+20       0.2003      0.04  Q         |         |         |         V|
   23+25       0.2006      0.04  Q         |         |         |         V|
   23+30       0.2009      0.04  Q         |         |         |         V|
   23+35       0.2012      0.04  Q         |         |         |         V|
   23+40       0.2015      0.04  Q         |         |         |         V|
   23+45       0.2018      0.04  Q         |         |         |         V|
   23+50       0.2021      0.04  Q         |         |         |         V|
   23+55       0.2024      0.04  Q         |         |         |         V|
   24+ 0       0.2026      0.04  Q         |         |         |         V|
-------------------------------------------------------------------------
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U n i t H y d r o g r a p h A n a l y s i s

Study date 06/30/22

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6385

Palmdale and Cantina, NE corner
Existing condition, 100-yr

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
2.32	1	1.10
Rainfall data for year 100		
2.32	6	2.30
Rainfall data for year 100		
2.32	24	4.65

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
78.0	92.8	2.32	1.000	0.140	1.000	0.140

Area-averaged adjusted loss rate Fm (In/Hr) = 0.140

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
2.32	1.000	78.0	92.8	0.78	0.824

Area-averaged catchment yield fraction, Y = 0.824
Area-averaged low loss fraction, Yb = 0.176
User entry of time of concentration = 0.234 (hours)
++
Watershed area = 2.32(Ac.)
Catchment Lag time = 0.187 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 44.5157
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.140(In/Hr)
Average low loss rate fraction (Yb) = 0.176 (decimal)
DESERT S-Graph Selected
Computed peak 5-minute rainfall = 0.522(In)
Computed peak 30-minute rainfall = 0.893(In)
Specified peak 1-hour rainfall = 1.100(In)
Computed peak 3-hour rainfall = 1.729(In)
Specified peak 6-hour rainfall = 2.300(In)
Specified peak 24-hour rainfall = 4.650(In)

Rainfall depth area reduction factors:
Using a total area of 2.32(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.522(In)
30-minute factor = 1.000 Adjusted rainfall = 0.893(In)
1-hour factor = 1.000 Adjusted rainfall = 1.100(In)
3-hour factor = 1.000 Adjusted rainfall = 1.729(In)
6-hour factor = 1.000 Adjusted rainfall = 2.300(In)
24-hour factor = 1.000 Adjusted rainfall = 4.650(In)

U n i t H y d r o g r a p h
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Interval 'S' Graph Unit Hydrograph

Number	Mean values ((CFS))	
	(K = 28.06 (CFS))	
1	3.271	0.918
2	23.997	5.815
3	54.972	8.691
4	69.700	4.132
5	78.140	2.368
6	83.701	1.560
7	87.807	1.152
8	90.685	0.808
9	92.933	0.631
10	94.679	0.490
11	96.051	0.385
12	97.105	0.296
13	97.842	0.207
14	98.322	0.135
15	98.846	0.147
16	99.370	0.147
17	99.716	0.097
18	100.000	0.080

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5219	0.5219
2	0.6425	0.1206
3	0.7257	0.0831
4	0.7911	0.0654
5	0.8458	0.0548
6	0.8934	0.0476
7	0.9357	0.0423
8	0.9739	0.0382
9	1.0089	0.0350
10	1.0413	0.0324
11	1.0715	0.0302
12	1.0999	0.0283
13	1.1367	0.0369
14	1.1720	0.0352
15	1.2057	0.0338
16	1.2382	0.0325
17	1.2695	0.0313
18	1.2997	0.0302
19	1.3290	0.0293
20	1.3573	0.0284
21	1.3849	0.0275
22	1.4117	0.0268
23	1.4378	0.0261
24	1.4632	0.0254
25	1.4880	0.0248

26	1.5122	0.0242
27	1.5359	0.0237
28	1.5590	0.0232
29	1.5817	0.0227
30	1.6040	0.0222
31	1.6258	0.0218
32	1.6472	0.0214
33	1.6682	0.0210
34	1.6888	0.0206
35	1.7091	0.0203
36	1.7290	0.0199
37	1.7486	0.0196
38	1.7679	0.0193
39	1.7869	0.0190
40	1.8057	0.0187
41	1.8241	0.0184
42	1.8423	0.0182
43	1.8602	0.0179
44	1.8779	0.0177
45	1.8954	0.0175
46	1.9126	0.0172
47	1.9296	0.0170
48	1.9464	0.0168
49	1.9630	0.0166
50	1.9794	0.0164
51	1.9956	0.0162
52	2.0116	0.0160
53	2.0274	0.0158
54	2.0431	0.0157
55	2.0586	0.0155
56	2.0739	0.0153
57	2.0891	0.0152
58	2.1041	0.0150
59	2.1190	0.0149
60	2.1337	0.0147
61	2.1482	0.0146
62	2.1627	0.0144
63	2.1770	0.0143
64	2.1911	0.0142
65	2.2052	0.0140
66	2.2191	0.0139
67	2.2328	0.0138
68	2.2465	0.0137
69	2.2600	0.0135
70	2.2735	0.0134
71	2.2868	0.0133
72	2.3000	0.0132
73	2.3161	0.0162
74	2.3322	0.0161
75	2.3482	0.0160

76	2.3640	0.0158
77	2.3797	0.0157
78	2.3954	0.0156
79	2.4109	0.0155
80	2.4264	0.0154
81	2.4417	0.0154
82	2.4570	0.0153
83	2.4722	0.0152
84	2.4873	0.0151
85	2.5022	0.0150
86	2.5172	0.0149
87	2.5320	0.0148
88	2.5467	0.0147
89	2.5614	0.0147
90	2.5759	0.0146
91	2.5904	0.0145
92	2.6049	0.0144
93	2.6192	0.0143
94	2.6335	0.0143
95	2.6476	0.0142
96	2.6618	0.0141
97	2.6758	0.0140
98	2.6898	0.0140
99	2.7037	0.0139
100	2.7175	0.0138
101	2.7313	0.0138
102	2.7450	0.0137
103	2.7586	0.0136
104	2.7722	0.0136
105	2.7857	0.0135
106	2.7991	0.0134
107	2.8125	0.0134
108	2.8258	0.0133
109	2.8391	0.0133
110	2.8523	0.0132
111	2.8654	0.0131
112	2.8785	0.0131
113	2.8915	0.0130
114	2.9045	0.0130
115	2.9174	0.0129
116	2.9302	0.0129
117	2.9430	0.0128
118	2.9558	0.0127
119	2.9685	0.0127
120	2.9811	0.0126
121	2.9937	0.0126
122	3.0063	0.0125
123	3.0187	0.0125
124	3.0312	0.0124
125	3.0436	0.0124

126	3.0559	0.0123
127	3.0682	0.0123
128	3.0804	0.0122
129	3.0926	0.0122
130	3.1048	0.0122
131	3.1169	0.0121
132	3.1290	0.0121
133	3.1410	0.0120
134	3.1529	0.0120
135	3.1649	0.0119
136	3.1767	0.0119
137	3.1886	0.0118
138	3.2004	0.0118
139	3.2121	0.0118
140	3.2239	0.0117
141	3.2355	0.0117
142	3.2472	0.0116
143	3.2588	0.0116
144	3.2703	0.0116
145	3.2818	0.0115
146	3.2933	0.0115
147	3.3047	0.0114
148	3.3161	0.0114
149	3.3275	0.0114
150	3.3388	0.0113
151	3.3501	0.0113
152	3.3613	0.0112
153	3.3725	0.0112
154	3.3837	0.0112
155	3.3949	0.0111
156	3.4060	0.0111
157	3.4170	0.0111
158	3.4281	0.0110
159	3.4391	0.0110
160	3.4500	0.0110
161	3.4610	0.0109
162	3.4719	0.0109
163	3.4827	0.0109
164	3.4936	0.0108
165	3.5044	0.0108
166	3.5151	0.0108
167	3.5259	0.0107
168	3.5366	0.0107
169	3.5473	0.0107
170	3.5579	0.0106
171	3.5685	0.0106
172	3.5791	0.0106
173	3.5896	0.0106
174	3.6002	0.0105
175	3.6107	0.0105

176	3.6211	0.0105
177	3.6316	0.0104
178	3.6420	0.0104
179	3.6523	0.0104
180	3.6627	0.0103
181	3.6730	0.0103
182	3.6833	0.0103
183	3.6936	0.0103
184	3.7038	0.0102
185	3.7140	0.0102
186	3.7242	0.0102
187	3.7343	0.0102
188	3.7445	0.0101
189	3.7546	0.0101
190	3.7646	0.0101
191	3.7747	0.0100
192	3.7847	0.0100
193	3.7947	0.0100
194	3.8047	0.0100
195	3.8146	0.0099
196	3.8245	0.0099
197	3.8344	0.0099
198	3.8443	0.0099
199	3.8542	0.0098
200	3.8640	0.0098
201	3.8738	0.0098
202	3.8836	0.0098
203	3.8933	0.0098
204	3.9030	0.0097
205	3.9127	0.0097
206	3.9224	0.0097
207	3.9321	0.0097
208	3.9417	0.0096
209	3.9513	0.0096
210	3.9609	0.0096
211	3.9705	0.0096
212	3.9800	0.0095
213	3.9895	0.0095
214	3.9990	0.0095
215	4.0085	0.0095
216	4.0180	0.0095
217	4.0274	0.0094
218	4.0368	0.0094
219	4.0462	0.0094
220	4.0556	0.0094
221	4.0649	0.0094
222	4.0743	0.0093
223	4.0836	0.0093
224	4.0929	0.0093
225	4.1021	0.0093

226	4.1114	0.0092
227	4.1206	0.0092
228	4.1298	0.0092
229	4.1390	0.0092
230	4.1482	0.0092
231	4.1573	0.0091
232	4.1665	0.0091
233	4.1756	0.0091
234	4.1847	0.0091
235	4.1937	0.0091
236	4.2028	0.0091
237	4.2118	0.0090
238	4.2208	0.0090
239	4.2298	0.0090
240	4.2388	0.0090
241	4.2478	0.0090
242	4.2567	0.0089
243	4.2656	0.0089
244	4.2745	0.0089
245	4.2834	0.0089
246	4.2923	0.0089
247	4.3011	0.0089
248	4.3100	0.0088
249	4.3188	0.0088
250	4.3276	0.0088
251	4.3364	0.0088
252	4.3451	0.0088
253	4.3539	0.0087
254	4.3626	0.0087
255	4.3713	0.0087
256	4.3800	0.0087
257	4.3887	0.0087
258	4.3974	0.0087
259	4.4060	0.0086
260	4.4146	0.0086
261	4.4233	0.0086
262	4.4319	0.0086
263	4.4404	0.0086
264	4.4490	0.0086
265	4.4576	0.0085
266	4.4661	0.0085
267	4.4746	0.0085
268	4.4831	0.0085
269	4.4916	0.0085
270	4.5001	0.0085
271	4.5085	0.0085
272	4.5170	0.0084
273	4.5254	0.0084
274	4.5338	0.0084
275	4.5422	0.0084

276	4.5506	0.0084
277	4.5589	0.0084
278	4.5673	0.0084
279	4.5756	0.0083
280	4.5839	0.0083
281	4.5922	0.0083
282	4.6005	0.0083
283	4.6088	0.0083
284	4.6171	0.0083
285	4.6253	0.0082
286	4.6336	0.0082
287	4.6418	0.0082
288	4.6500	0.0082

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0082	0.0014	0.0068
2	0.0082	0.0014	0.0068
3	0.0082	0.0014	0.0068
4	0.0083	0.0015	0.0068
5	0.0083	0.0015	0.0068
6	0.0083	0.0015	0.0068
7	0.0083	0.0015	0.0069
8	0.0084	0.0015	0.0069
9	0.0084	0.0015	0.0069
10	0.0084	0.0015	0.0069
11	0.0084	0.0015	0.0069
12	0.0084	0.0015	0.0070
13	0.0085	0.0015	0.0070
14	0.0085	0.0015	0.0070
15	0.0085	0.0015	0.0070
16	0.0085	0.0015	0.0070
17	0.0086	0.0015	0.0071
18	0.0086	0.0015	0.0071
19	0.0086	0.0015	0.0071
20	0.0086	0.0015	0.0071
21	0.0087	0.0015	0.0071
22	0.0087	0.0015	0.0072
23	0.0087	0.0015	0.0072
24	0.0087	0.0015	0.0072
25	0.0088	0.0015	0.0072
26	0.0088	0.0015	0.0072
27	0.0088	0.0015	0.0073
28	0.0088	0.0016	0.0073
29	0.0089	0.0016	0.0073
30	0.0089	0.0016	0.0073
31	0.0089	0.0016	0.0074
32	0.0089	0.0016	0.0074

33	0.0090	0.0016	0.0074
34	0.0090	0.0016	0.0074
35	0.0090	0.0016	0.0074
36	0.0091	0.0016	0.0075
37	0.0091	0.0016	0.0075
38	0.0091	0.0016	0.0075
39	0.0091	0.0016	0.0075
40	0.0092	0.0016	0.0076
41	0.0092	0.0016	0.0076
42	0.0092	0.0016	0.0076
43	0.0093	0.0016	0.0076
44	0.0093	0.0016	0.0077
45	0.0093	0.0016	0.0077
46	0.0094	0.0016	0.0077
47	0.0094	0.0016	0.0077
48	0.0094	0.0017	0.0078
49	0.0095	0.0017	0.0078
50	0.0095	0.0017	0.0078
51	0.0095	0.0017	0.0078
52	0.0095	0.0017	0.0079
53	0.0096	0.0017	0.0079
54	0.0096	0.0017	0.0079
55	0.0097	0.0017	0.0080
56	0.0097	0.0017	0.0080
57	0.0097	0.0017	0.0080
58	0.0098	0.0017	0.0080
59	0.0098	0.0017	0.0081
60	0.0098	0.0017	0.0081
61	0.0099	0.0017	0.0081
62	0.0099	0.0017	0.0082
63	0.0099	0.0017	0.0082
64	0.0100	0.0018	0.0082
65	0.0100	0.0018	0.0083
66	0.0100	0.0018	0.0083
67	0.0101	0.0018	0.0083
68	0.0101	0.0018	0.0083
69	0.0102	0.0018	0.0084
70	0.0102	0.0018	0.0084
71	0.0103	0.0018	0.0085
72	0.0103	0.0018	0.0085
73	0.0103	0.0018	0.0085
74	0.0104	0.0018	0.0086
75	0.0104	0.0018	0.0086
76	0.0105	0.0018	0.0086
77	0.0105	0.0018	0.0087
78	0.0106	0.0019	0.0087
79	0.0106	0.0019	0.0087
80	0.0106	0.0019	0.0088
81	0.0107	0.0019	0.0088
82	0.0107	0.0019	0.0089

83	0.0108	0.0019	0.0089
84	0.0108	0.0019	0.0089
85	0.0109	0.0019	0.0090
86	0.0109	0.0019	0.0090
87	0.0110	0.0019	0.0091
88	0.0110	0.0019	0.0091
89	0.0111	0.0020	0.0092
90	0.0111	0.0020	0.0092
91	0.0112	0.0020	0.0092
92	0.0112	0.0020	0.0093
93	0.0113	0.0020	0.0093
94	0.0114	0.0020	0.0094
95	0.0114	0.0020	0.0094
96	0.0115	0.0020	0.0095
97	0.0116	0.0020	0.0095
98	0.0116	0.0020	0.0096
99	0.0117	0.0021	0.0096
100	0.0117	0.0021	0.0097
101	0.0118	0.0021	0.0097
102	0.0118	0.0021	0.0098
103	0.0119	0.0021	0.0098
104	0.0120	0.0021	0.0099
105	0.0121	0.0021	0.0099
106	0.0121	0.0021	0.0100
107	0.0122	0.0021	0.0101
108	0.0122	0.0022	0.0101
109	0.0123	0.0022	0.0102
110	0.0124	0.0022	0.0102
111	0.0125	0.0022	0.0103
112	0.0125	0.0022	0.0103
113	0.0126	0.0022	0.0104
114	0.0127	0.0022	0.0105
115	0.0128	0.0022	0.0106
116	0.0129	0.0023	0.0106
117	0.0130	0.0023	0.0107
118	0.0130	0.0023	0.0107
119	0.0131	0.0023	0.0108
120	0.0132	0.0023	0.0109
121	0.0133	0.0023	0.0110
122	0.0134	0.0024	0.0110
123	0.0135	0.0024	0.0111
124	0.0136	0.0024	0.0112
125	0.0137	0.0024	0.0113
126	0.0138	0.0024	0.0113
127	0.0139	0.0024	0.0115
128	0.0140	0.0025	0.0115
129	0.0141	0.0025	0.0116
130	0.0142	0.0025	0.0117
131	0.0143	0.0025	0.0118
132	0.0144	0.0025	0.0119

133	0.0146	0.0026	0.0120
134	0.0147	0.0026	0.0121
135	0.0148	0.0026	0.0122
136	0.0149	0.0026	0.0123
137	0.0151	0.0026	0.0124
138	0.0152	0.0027	0.0125
139	0.0154	0.0027	0.0127
140	0.0154	0.0027	0.0127
141	0.0156	0.0027	0.0129
142	0.0157	0.0028	0.0130
143	0.0160	0.0028	0.0131
144	0.0161	0.0028	0.0132
145	0.0132	0.0023	0.0109
146	0.0133	0.0023	0.0110
147	0.0135	0.0024	0.0112
148	0.0137	0.0024	0.0113
149	0.0139	0.0024	0.0115
150	0.0140	0.0025	0.0116
151	0.0143	0.0025	0.0118
152	0.0144	0.0025	0.0119
153	0.0147	0.0026	0.0121
154	0.0149	0.0026	0.0122
155	0.0152	0.0027	0.0125
156	0.0153	0.0027	0.0126
157	0.0157	0.0028	0.0129
158	0.0158	0.0028	0.0131
159	0.0162	0.0028	0.0134
160	0.0164	0.0029	0.0135
161	0.0168	0.0030	0.0138
162	0.0170	0.0030	0.0140
163	0.0175	0.0031	0.0144
164	0.0177	0.0031	0.0146
165	0.0182	0.0032	0.0150
166	0.0184	0.0032	0.0152
167	0.0190	0.0033	0.0157
168	0.0193	0.0034	0.0159
169	0.0199	0.0035	0.0164
170	0.0203	0.0036	0.0167
171	0.0210	0.0037	0.0173
172	0.0214	0.0038	0.0176
173	0.0222	0.0039	0.0183
174	0.0227	0.0040	0.0187
175	0.0237	0.0042	0.0195
176	0.0242	0.0043	0.0200
177	0.0254	0.0045	0.0210
178	0.0261	0.0046	0.0215
179	0.0275	0.0048	0.0227
180	0.0284	0.0050	0.0234
181	0.0302	0.0053	0.0249
182	0.0313	0.0055	0.0258

183	0.0338	0.0059	0.0278
184	0.0352	0.0062	0.0290
185	0.0283	0.0050	0.0234
186	0.0302	0.0053	0.0249
187	0.0350	0.0062	0.0289
188	0.0382	0.0067	0.0315
189	0.0476	0.0084	0.0392
190	0.0548	0.0096	0.0451
191	0.0831	0.0117	0.0714
192	0.1206	0.0117	0.1090
193	0.5219	0.0117	0.5102
194	0.0654	0.0115	0.0539
195	0.0423	0.0074	0.0349
196	0.0324	0.0057	0.0267
197	0.0369	0.0065	0.0304
198	0.0325	0.0057	0.0268
199	0.0293	0.0051	0.0241
200	0.0268	0.0047	0.0221
201	0.0248	0.0044	0.0204
202	0.0232	0.0041	0.0191
203	0.0218	0.0038	0.0180
204	0.0206	0.0036	0.0170
205	0.0196	0.0034	0.0162
206	0.0187	0.0033	0.0154
207	0.0179	0.0032	0.0148
208	0.0172	0.0030	0.0142
209	0.0166	0.0029	0.0137
210	0.0160	0.0028	0.0132
211	0.0155	0.0027	0.0128
212	0.0150	0.0026	0.0124
213	0.0146	0.0026	0.0120
214	0.0142	0.0025	0.0117
215	0.0138	0.0024	0.0114
216	0.0134	0.0024	0.0111
217	0.0162	0.0028	0.0133
218	0.0158	0.0028	0.0131
219	0.0155	0.0027	0.0128
220	0.0153	0.0027	0.0126
221	0.0150	0.0026	0.0124
222	0.0147	0.0026	0.0121
223	0.0145	0.0025	0.0119
224	0.0143	0.0025	0.0118
225	0.0140	0.0025	0.0116
226	0.0138	0.0024	0.0114
227	0.0136	0.0024	0.0112
228	0.0134	0.0024	0.0111
229	0.0133	0.0023	0.0109
230	0.0131	0.0023	0.0108
231	0.0129	0.0023	0.0106
232	0.0127	0.0022	0.0105

233	0.0126	0.0022	0.0104
234	0.0124	0.0022	0.0103
235	0.0123	0.0022	0.0101
236	0.0122	0.0021	0.0100
237	0.0120	0.0021	0.0099
238	0.0119	0.0021	0.0098
239	0.0118	0.0021	0.0097
240	0.0116	0.0020	0.0096
241	0.0115	0.0020	0.0095
242	0.0114	0.0020	0.0094
243	0.0113	0.0020	0.0093
244	0.0112	0.0020	0.0092
245	0.0111	0.0019	0.0091
246	0.0110	0.0019	0.0090
247	0.0109	0.0019	0.0090
248	0.0108	0.0019	0.0089
249	0.0107	0.0019	0.0088
250	0.0106	0.0019	0.0087
251	0.0105	0.0018	0.0086
252	0.0104	0.0018	0.0086
253	0.0103	0.0018	0.0085
254	0.0102	0.0018	0.0084
255	0.0102	0.0018	0.0084
256	0.0101	0.0018	0.0083
257	0.0100	0.0018	0.0082
258	0.0099	0.0017	0.0082
259	0.0098	0.0017	0.0081
260	0.0098	0.0017	0.0081
261	0.0097	0.0017	0.0080
262	0.0096	0.0017	0.0079
263	0.0096	0.0017	0.0079
264	0.0095	0.0017	0.0078
265	0.0094	0.0017	0.0078
266	0.0094	0.0016	0.0077
267	0.0093	0.0016	0.0077
268	0.0092	0.0016	0.0076
269	0.0092	0.0016	0.0076
270	0.0091	0.0016	0.0075
271	0.0091	0.0016	0.0075
272	0.0090	0.0016	0.0074
273	0.0090	0.0016	0.0074
274	0.0089	0.0016	0.0073
275	0.0089	0.0016	0.0073
276	0.0088	0.0015	0.0073
277	0.0087	0.0015	0.0072
278	0.0087	0.0015	0.0072
279	0.0086	0.0015	0.0071
280	0.0086	0.0015	0.0071
281	0.0085	0.0015	0.0070
282	0.0085	0.0015	0.0070

283	0.0085	0.0015	0.0070
284	0.0084	0.0015	0.0069
285	0.0084	0.0015	0.0069
286	0.0083	0.0015	0.0069
287	0.0083	0.0015	0.0068
288	0.0082	0.0014	0.0068

Total soil rain loss = 0.72(In)
Total effective rainfall = 3.93(In)
Peak flow rate in flood hydrograph = 5.61(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	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.01	Q				
0+10	0.0004	0.05	Q				
0+15	0.0011	0.10	Q				
0+20	0.0020	0.13	Q				
0+25	0.0030	0.15	Q				
0+30	0.0041	0.16	Q				
0+35	0.0053	0.17	Q				
0+40	0.0065	0.17	Q				
0+45	0.0077	0.18	Q				
0+50	0.0090	0.18	Q				
0+55	0.0102	0.19	Q				
1+ 0	0.0115	0.19	Q				
1+ 5	0.0128	0.19	Q				
1+10	0.0142	0.19	Q				
1+15	0.0155	0.19	Q				
1+20	0.0168	0.19	Q				
1+25	0.0182	0.20	Q				
1+30	0.0195	0.20	QV				
1+35	0.0209	0.20	QV				
1+40	0.0223	0.20	QV				
1+45	0.0236	0.20	QV				
1+50	0.0250	0.20	QV				
1+55	0.0264	0.20	QV				
2+ 0	0.0277	0.20	QV				
2+ 5	0.0291	0.20	QV				
2+10	0.0305	0.20	QV				
2+15	0.0319	0.20	QV				
2+20	0.0333	0.20	QV				
2+25	0.0347	0.20	QV				

2+30	0.0361	0.20	QV	|	|	|	|
2+35	0.0375	0.20	QV	|	|	|	|
2+40	0.0389	0.20	Q V	|	|	|	|
2+45	0.0403	0.21	Q V	|	|	|	|
2+50	0.0418	0.21	Q V	|	|	|	|
2+55	0.0432	0.21	Q V	|	|	|	|
3+ 0	0.0446	0.21	Q V	|	|	|	|
3+ 5	0.0460	0.21	Q V	|	|	|	|
3+10	0.0475	0.21	Q V	|	|	|	|
3+15	0.0489	0.21	Q V	|	|	|	|
3+20	0.0504	0.21	Q V	|	|	|	|
3+25	0.0518	0.21	Q V	|	|	|	|
3+30	0.0533	0.21	Q V	|	|	|	|
3+35	0.0547	0.21	Q V	|	|	|	|
3+40	0.0562	0.21	Q V	|	|	|	|
3+45	0.0577	0.21	Q V	|	|	|	|
3+50	0.0591	0.21	Q V	|	|	|	|
3+55	0.0606	0.21	Q V	|	|	|	|
4+ 0	0.0621	0.22	Q V	|	|	|	|
4+ 5	0.0636	0.22	Q V	|	|	|	|
4+10	0.0651	0.22	Q V	|	|	|	|
4+15	0.0666	0.22	Q V	|	|	|	|
4+20	0.0681	0.22	Q V	|	|	|	|
4+25	0.0696	0.22	Q V	|	|	|	|
4+30	0.0711	0.22	Q V	|	|	|	|
4+35	0.0726	0.22	Q V	|	|	|	|
4+40	0.0741	0.22	Q V	|	|	|	|
4+45	0.0757	0.22	Q V	|	|	|	|
4+50	0.0772	0.22	Q V	|	|	|	|
4+55	0.0788	0.22	Q V	|	|	|	|
5+ 0	0.0803	0.22	Q V	|	|	|	|
5+ 5	0.0819	0.23	Q V	|	|	|	|
5+10	0.0834	0.23	Q V	|	|	|	|
5+15	0.0850	0.23	Q V	|	|	|	|
5+20	0.0865	0.23	Q V	|	|	|	|
5+25	0.0881	0.23	Q V	|	|	|	|
5+30	0.0897	0.23	Q V	|	|	|	|
5+35	0.0913	0.23	Q V	|	|	|	|
5+40	0.0929	0.23	Q V	|	|	|	|
5+45	0.0945	0.23	Q V	|	|	|	|
5+50	0.0961	0.23	Q V	|	|	|	|
5+55	0.0977	0.23	Q V	|	|	|	|
6+ 0	0.0993	0.24	Q V	|	|	|	|
6+ 5	0.1010	0.24	Q V	|	|	|	|
6+10	0.1026	0.24	Q V	|	|	|	|
6+15	0.1042	0.24	Q V	|	|	|	|
6+20	0.1059	0.24	Q V	|	|	|	|
6+25	0.1075	0.24	Q V	|	|	|	|
6+30	0.1092	0.24	Q V	|	|	|	|
6+35	0.1108	0.24	Q V	|	|	|	|

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 6+40       0.1125      0.24  Q    V    |          |          |          |
 6+45       0.1142      0.24  Q     V   |          |          |          |
 6+50       0.1159      0.24  Q     V   |          |          |          |
 6+55       0.1176      0.25  Q     V   |          |          |          |
 7+ 0       0.1193      0.25  Q     V   |          |          |          |
 7+ 5       0.1210      0.25  Q     V   |          |          |          |
 7+10       0.1227      0.25  Q     V   |          |          |          |
 7+15       0.1244      0.25  |Q    V   |          |          |          |
 7+20       0.1262      0.25  |Q    V   |          |          |          |
 7+25       0.1279      0.25  |Q    V   |          |          |          |
 7+30       0.1297      0.25  |Q    V   |          |          |          |
 7+35       0.1314      0.26  |Q    V   |          |          |          |
 7+40       0.1332      0.26  |Q     V  |          |          |          |
 7+45       0.1349      0.26  |Q     V  |          |          |          |
 7+50       0.1367      0.26  |Q     V  |          |          |          |
 7+55       0.1385      0.26  |Q     V  |          |          |          |
 8+ 0       0.1403      0.26  |Q     V  |          |          |          |
 8+ 5       0.1421      0.26  |Q     V  |          |          |          |
 8+10       0.1439      0.26  |Q     V  |          |          |          |
 8+15       0.1458      0.27  |Q     V  |          |          |          |
 8+20       0.1476      0.27  |Q     V  |          |          |          |
 8+25       0.1495      0.27  |Q     V  |          |          |          |
 8+30       0.1513      0.27  |Q     V  |          |          |          |
 8+35       0.1532      0.27  |Q      V |          |          |          |
 8+40       0.1550      0.27  |Q      V |          |          |          |
 8+45       0.1569      0.27  |Q      V |          |          |          |
 8+50       0.1588      0.28  |Q      V |          |          |          |
 8+55       0.1607      0.28  |Q      V |          |          |          |
 9+ 0       0.1627      0.28  |Q      V |          |          |          |
 9+ 5       0.1646      0.28  |Q      V |          |          |          |
 9+10       0.1665      0.28  |Q      V |          |          |          |
 9+15       0.1685      0.28  |Q      V |          |          |          |
 9+20       0.1704      0.28  |Q      V |          |          |          |
 9+25       0.1724      0.29  |Q       V|          |          |          |
 9+30       0.1744      0.29  |Q       V|          |          |          |
 9+35       0.1764      0.29  |Q       V|          |          |          |
 9+40       0.1784      0.29  |Q       V|          |          |          |
 9+45       0.1804      0.29  |Q       V|          |          |          |
 9+50       0.1824      0.30  |Q       V|          |          |          |
 9+55       0.1845      0.30  |Q       V|          |          |          |
10+ 0       0.1865      0.30  |Q       V|          |          |          |
10+ 5       0.1886      0.30  |Q       V|          |          |          |
10+10       0.1907      0.30  |Q        V          |          |          |
10+15       0.1928      0.31  |Q        V          |          |          |
10+20       0.1949      0.31  |Q        V          |          |          |
10+25       0.1971      0.31  |Q        V          |          |          |
10+30       0.1992      0.31  |Q        V          |          |          |
10+35       0.2014      0.31  |Q        V          |          |          |
10+40       0.2035      0.32  |Q        V          |          |          |
10+45       0.2057      0.32  |Q        V          |          |          |
```

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10+50       0.2079      0.32  |Q        V         |         |         |
10+55       0.2102      0.32  |Q        |V        |         |         |
11+ 0       0.2124      0.33  |Q        |V        |         |         |
11+ 5       0.2147      0.33  |Q        |V        |         |         |
11+10       0.2169      0.33  |Q        |V        |         |         |
11+15       0.2192      0.33  |Q        |V        |         |         |
11+20       0.2215      0.34  |Q        |V        |         |         |
11+25       0.2239      0.34  |Q        |V        |         |         |
11+30       0.2262      0.34  |Q        |V        |         |         |
11+35       0.2286      0.34  |Q        | V       |         |         |
11+40       0.2310      0.35  |Q        | V       |         |         |
11+45       0.2334      0.35  |Q        | V       |         |         |
11+50       0.2359      0.35  |Q        | V       |         |         |
11+55       0.2383      0.36  |Q        | V       |         |         |
12+ 0       0.2408      0.36  |Q        | V       |         |         |
12+ 5       0.2433      0.36  |Q        | V       |         |         |
12+10       0.2457      0.35  |Q        | V       |         |         |
12+15       0.2480      0.33  |Q        |  V      |         |         |
12+20       0.2502      0.33  |Q        |  V      |         |         |
12+25       0.2525      0.32  |Q        |  V      |         |         |
12+30       0.2547      0.32  |Q        |  V      |         |         |
12+35       0.2569      0.32  |Q        |  V      |         |         |
12+40       0.2592      0.33  |Q        |  V      |         |         |
12+45       0.2614      0.33  |Q        |  V      |         |         |
12+50       0.2637      0.33  |Q        |  V      |         |         |
12+55       0.2660      0.34  |Q        |   V     |         |         |
13+ 0       0.2684      0.34  |Q        |   V     |         |         |
13+ 5       0.2708      0.35  |Q        |   V     |         |         |
13+10       0.2732      0.35  |Q        |   V     |         |         |
13+15       0.2756      0.36  |Q        |   V     |         |         |
13+20       0.2781      0.36  |Q        |   V     |         |         |
13+25       0.2806      0.37  |Q        |   V     |         |         |
13+30       0.2832      0.37  |Q        |   V     |         |         |
13+35       0.2858      0.38  |Q        |    V    |         |         |
13+40       0.2885      0.39  |Q        |    V    |         |         |
13+45       0.2912      0.39  |Q        |    V    |         |         |
13+50       0.2939      0.40  |Q        |    V    |         |         |
13+55       0.2968      0.41  |Q        |    V    |         |         |
14+ 0       0.2996      0.42  |Q        |    V    |         |         |
14+ 5       0.3026      0.43  |Q        |    V    |         |         |
14+10       0.3056      0.44  |Q        |     V   |         |         |
14+15       0.3087      0.45  |Q        |     V   |         |         |
14+20       0.3118      0.46  |Q        |     V   |         |         |
14+25       0.3151      0.47  |Q        |     V   |         |         |
14+30       0.3184      0.48  |Q        |     V   |         |         |
14+35       0.3218      0.50  |Q        |     V   |         |         |
14+40       0.3253      0.51  | Q       |      V  |         |         |
14+45       0.3290      0.53  | Q       |      V  |         |         |
14+50       0.3327      0.54  | Q       |      V  |         |         |
14+55       0.3366      0.56  | Q       |      V  |         |         |
```

15+ 0	0.3406	0.58	Q		V		
15+ 5	0.3448	0.61	Q		V		
15+10	0.3492	0.63	Q		V		
15+15	0.3537	0.66	Q		V		
15+20	0.3585	0.70	Q		V		
15+25	0.3635	0.73	Q		V		
15+30	0.3685	0.72	Q		V		
15+35	0.3734	0.70	Q		V		
15+40	0.3784	0.73	Q		V		
15+45	0.3838	0.78	Q		V		
15+50	0.3898	0.87	Q		V		
15+55	0.3968	1.02	Q		V		
16+ 0	0.4058	1.30	Q		V		
16+ 5	0.4208	2.17	Q		V		
16+10	0.4521	4.55	Q		V		
16+15	0.4907	5.61	Q		V		
16+20	0.5137	3.33	Q		V		
16+25	0.5294	2.29	Q		V		
16+30	0.5416	1.77	Q		V		
16+35	0.5520	1.51	Q		V		
16+40	0.5607	1.27	Q		V		
16+45	0.5683	1.11	Q		V		
16+50	0.5750	0.97	Q		V		
16+55	0.5810	0.87	Q		V		
17+ 0	0.5863	0.77	Q		V		
17+ 5	0.5910	0.69	Q		V		
17+10	0.5953	0.62	Q		V		
17+15	0.5994	0.59	Q		V		
17+20	0.6032	0.56	Q		V		
17+25	0.6067	0.51	Q		V		
17+30	0.6100	0.47	Q		V		
17+35	0.6129	0.42	Q		V		
17+40	0.6156	0.40	Q		V		
17+45	0.6183	0.38	Q		V		
17+50	0.6208	0.37	Q		V		
17+55	0.6233	0.36	Q		V		
18+ 0	0.6257	0.35	Q		V		
18+ 5	0.6280	0.34	Q		V		
18+10	0.6303	0.34	Q		V		
18+15	0.6328	0.36	Q		V		
18+20	0.6353	0.36	Q		V		
18+25	0.6377	0.36	Q		V		
18+30	0.6401	0.35	Q		V		
18+35	0.6425	0.35	Q		V		
18+40	0.6449	0.34	Q		V		
18+45	0.6472	0.34	Q		V		
18+50	0.6495	0.33	Q		V		
18+55	0.6518	0.33	Q		V		
19+ 0	0.6541	0.33	Q		V		
19+ 5	0.6563	0.32	Q		V		

```
19+10       0.6584      0.32  |Q        |         |         |   V     |
19+15       0.6606      0.31  |Q        |         |         |   V     |
19+20       0.6627      0.31  |Q        |         |         |   V     |
19+25       0.6648      0.30  |Q        |         |         |    V    |
19+30       0.6669      0.30  |Q        |         |         |    V    |
19+35       0.6689      0.30  |Q        |         |         |    V    |
19+40       0.6710      0.29  |Q        |         |         |    V    |
19+45       0.6729      0.29  |Q        |         |         |    V    |
19+50       0.6749      0.29  |Q        |         |         |    V    |
19+55       0.6769      0.28  |Q        |         |         |    V    |
20+ 0       0.6788      0.28  |Q        |         |         |    V    |
20+ 5       0.6807      0.28  |Q        |         |         |    V    |
20+10       0.6826      0.27  |Q        |         |         |    V    |
20+15       0.6844      0.27  |Q        |         |         |     V   |
20+20       0.6863      0.27  |Q        |         |         |     V   |
20+25       0.6881      0.26  |Q        |         |         |     V   |
20+30       0.6899      0.26  |Q        |         |         |     V   |
20+35       0.6917      0.26  |Q        |         |         |     V   |
20+40       0.6935      0.26  |Q        |         |         |     V   |
20+45       0.6952      0.25  |Q        |         |         |     V   |
20+50       0.6970      0.25  |Q        |         |         |     V   |
20+55       0.6987      0.25  |Q        |         |         |     V   |
21+ 0       0.7004      0.25  Q         |         |         |     V   |
21+ 5       0.7021      0.25  Q         |         |         |      V  |
21+10       0.7038      0.24  Q         |         |         |      V  |
21+15       0.7054      0.24  Q         |         |         |      V  |
21+20       0.7071      0.24  Q         |         |         |      V  |
21+25       0.7087      0.24  Q         |         |         |      V  |
21+30       0.7103      0.24  Q         |         |         |      V  |
21+35       0.7119      0.23  Q         |         |         |      V  |
21+40       0.7135      0.23  Q         |         |         |      V  |
21+45       0.7151      0.23  Q         |         |         |      V  |
21+50       0.7167      0.23  Q         |         |         |      V  |
21+55       0.7183      0.23  Q         |         |         |      V  |
22+ 0       0.7198      0.23  Q         |         |         |      V  |
22+ 5       0.7213      0.22  Q         |         |         |       V |
22+10       0.7229      0.22  Q         |         |         |       V |
22+15       0.7244      0.22  Q         |         |         |       V |
22+20       0.7259      0.22  Q         |         |         |       V |
22+25       0.7274      0.22  Q         |         |         |       V |
22+30       0.7289      0.22  Q         |         |         |       V |
22+35       0.7304      0.21  Q         |         |         |       V |
22+40       0.7318      0.21  Q         |         |         |       V |
22+45       0.7333      0.21  Q         |         |         |       V |
22+50       0.7347      0.21  Q         |         |         |       V |
22+55       0.7362      0.21  Q         |         |         |       V |
23+ 0       0.7376      0.21  Q         |         |         |       V |
23+ 5       0.7390      0.21  Q         |         |         |       V |
23+10       0.7404      0.21  Q         |         |         |        V|
23+15       0.7418      0.20  Q         |         |         |        V|
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   23+20       0.7432      0.20  Q         |          |          |         V|
   23+25       0.7446      0.20  Q         |          |          |         V|
   23+30       0.7460      0.20  Q         |          |          |         V|
   23+35       0.7474      0.20  Q         |          |          |         V|
   23+40       0.7488      0.20  Q         |          |          |         V|
   23+45       0.7501      0.20  Q         |          |          |         V|
   23+50       0.7515      0.20  Q         |          |          |         V|
   23+55       0.7528      0.19  Q         |          |          |         V|
   24+ 0       0.7541      0.19  Q         |          |          |         V|
-----------------------------------------------------------------------------
```

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

Study date 06/30/22

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6385

Palmdale and Cantina, NE corner
developed, 10-year
Area A

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
2.32	1	0.65
Rainfall data for year 10		
2.32	6	1.35
Rainfall data for year 10		
2.32	24	2.62

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
32.0	32.0	2.32	1.000	0.978	0.100	0.098

Area-averaged adjusted loss rate Fm (In/Hr) = 0.098

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
0.23	0.100	32.0	32.0	13.10	0.000
2.09	0.900	98.0	98.0	0.20	0.912

Area-averaged catchment yield fraction, Y = 0.821
Area-averaged low loss fraction, Yb = 0.179
User entry of time of concentration = 0.080 (hours)
++
Watershed area = 2.32(Ac.)
Catchment Lag time = 0.064 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 130.2083
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.098(In/Hr)
Average low loss rate fraction (Yb) = 0.179 (decimal)
DESERT S-Graph Selected
Computed peak 5-minute rainfall = 0.308(In)
Computed peak 30-minute rainfall = 0.528(In)
Specified peak 1-hour rainfall = 0.650(In)
Computed peak 3-hour rainfall = 1.018(In)
Specified peak 6-hour rainfall = 1.350(In)
Specified peak 24-hour rainfall = 2.620(In)

Rainfall depth area reduction factors:
Using a total area of 2.32(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.308(In)
30-minute factor = 1.000 Adjusted rainfall = 0.528(In)
1-hour factor = 1.000 Adjusted rainfall = 0.650(In)
3-hour factor = 1.000 Adjusted rainfall = 1.017(In)
6-hour factor = 1.000 Adjusted rainfall = 1.350(In)
24-hour factor = 1.000 Adjusted rainfall = 2.620(In)

U n i t H y d r o g r a p h
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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 28.06 (CFS))	
1	26.489	7.432
2	76.395	14.002
3	89.977	3.811
4	95.624	1.584
5	98.153	0.710
6	100.000	0.518

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3084	0.3084
2	0.3797	0.0713
3	0.4288	0.0491
4	0.4674	0.0387
5	0.4998	0.0324
6	0.5279	0.0281
7	0.5529	0.0250
8	0.5755	0.0226
9	0.5962	0.0207
10	0.6153	0.0191
11	0.6332	0.0178
12	0.6499	0.0167
13	0.6715	0.0216
14	0.6921	0.0206
15	0.7119	0.0198
16	0.7309	0.0190
17	0.7492	0.0183
18	0.7669	0.0177
19	0.7840	0.0171
20	0.8005	0.0166
21	0.8166	0.0161
22	0.8323	0.0156
23	0.8475	0.0152
24	0.8624	0.0148
25	0.8768	0.0145
26	0.8910	0.0141
27	0.9048	0.0138
28	0.9183	0.0135
29	0.9316	0.0132
30	0.9446	0.0130
31	0.9573	0.0127
32	0.9698	0.0125
33	0.9820	0.0123
34	0.9940	0.0120
35	1.0059	0.0118
36	1.0175	0.0116

37	1.0289	0.0114
38	1.0402	0.0113
39	1.0513	0.0111
40	1.0622	0.0109
41	1.0729	0.0108
42	1.0835	0.0106
43	1.0940	0.0105
44	1.1043	0.0103
45	1.1145	0.0102
46	1.1245	0.0100
47	1.1344	0.0099
48	1.1442	0.0098
49	1.1539	0.0097
50	1.1634	0.0095
51	1.1728	0.0094
52	1.1822	0.0093
53	1.1914	0.0092
54	1.2005	0.0091
55	1.2095	0.0090
56	1.2185	0.0089
57	1.2273	0.0088
58	1.2360	0.0087
59	1.2447	0.0086
60	1.2532	0.0086
61	1.2617	0.0085
62	1.2701	0.0084
63	1.2784	0.0083
64	1.2867	0.0082
65	1.2948	0.0082
66	1.3029	0.0081
67	1.3109	0.0080
68	1.3189	0.0079
69	1.3268	0.0079
70	1.3346	0.0078
71	1.3423	0.0077
72	1.3500	0.0077
73	1.3589	0.0089
74	1.3678	0.0089
75	1.3766	0.0088
76	1.3854	0.0087
77	1.3940	0.0087
78	1.4027	0.0086
79	1.4112	0.0086
80	1.4198	0.0085
81	1.4282	0.0085
82	1.4366	0.0084
83	1.4450	0.0084
84	1.4533	0.0083
85	1.4615	0.0082
86	1.4697	0.0082

87	1.4779	0.0081
88	1.4860	0.0081
89	1.4940	0.0081
90	1.5020	0.0080
91	1.5100	0.0080
92	1.5179	0.0079
93	1.5258	0.0079
94	1.5336	0.0078
95	1.5414	0.0078
96	1.5491	0.0077
97	1.5568	0.0077
98	1.5645	0.0077
99	1.5721	0.0076
100	1.5797	0.0076
101	1.5872	0.0075
102	1.5947	0.0075
103	1.6022	0.0075
104	1.6096	0.0074
105	1.6170	0.0074
106	1.6243	0.0073
107	1.6316	0.0073
108	1.6389	0.0073
109	1.6462	0.0072
110	1.6534	0.0072
111	1.6605	0.0072
112	1.6677	0.0071
113	1.6748	0.0071
114	1.6819	0.0071
115	1.6889	0.0070
116	1.6959	0.0070
117	1.7029	0.0070
118	1.7098	0.0069
119	1.7167	0.0069
120	1.7236	0.0069
121	1.7305	0.0069
122	1.7373	0.0068
123	1.7441	0.0068
124	1.7509	0.0068
125	1.7576	0.0067
126	1.7643	0.0067
127	1.7710	0.0067
128	1.7777	0.0067
129	1.7843	0.0066
130	1.7909	0.0066
131	1.7975	0.0066
132	1.8040	0.0065
133	1.8105	0.0065
134	1.8170	0.0065
135	1.8235	0.0065
136	1.8300	0.0064

137	1.8364	0.0064
138	1.8428	0.0064
139	1.8492	0.0064
140	1.8555	0.0064
141	1.8618	0.0063
142	1.8681	0.0063
143	1.8744	0.0063
144	1.8807	0.0063
145	1.8869	0.0062
146	1.8931	0.0062
147	1.8993	0.0062
148	1.9055	0.0062
149	1.9116	0.0061
150	1.9178	0.0061
151	1.9239	0.0061
152	1.9300	0.0061
153	1.9360	0.0061
154	1.9421	0.0060
155	1.9481	0.0060
156	1.9541	0.0060
157	1.9601	0.0060
158	1.9660	0.0060
159	1.9720	0.0059
160	1.9779	0.0059
161	1.9838	0.0059
162	1.9897	0.0059
163	1.9955	0.0059
164	2.0014	0.0058
165	2.0072	0.0058
166	2.0130	0.0058
167	2.0188	0.0058
168	2.0246	0.0058
169	2.0303	0.0058
170	2.0361	0.0057
171	2.0418	0.0057
172	2.0475	0.0057
173	2.0532	0.0057
174	2.0589	0.0057
175	2.0645	0.0057
176	2.0701	0.0056
177	2.0758	0.0056
178	2.0814	0.0056
179	2.0869	0.0056
180	2.0925	0.0056
181	2.0981	0.0056
182	2.1036	0.0055
183	2.1091	0.0055
184	2.1146	0.0055
185	2.1201	0.0055
186	2.1256	0.0055

187	2.1310	0.0055
188	2.1365	0.0054
189	2.1419	0.0054
190	2.1473	0.0054
191	2.1527	0.0054
192	2.1581	0.0054
193	2.1635	0.0054
194	2.1688	0.0054
195	2.1742	0.0053
196	2.1795	0.0053
197	2.1848	0.0053
198	2.1901	0.0053
199	2.1954	0.0053
200	2.2007	0.0053
201	2.2059	0.0053
202	2.2112	0.0052
203	2.2164	0.0052
204	2.2216	0.0052
205	2.2268	0.0052
206	2.2320	0.0052
207	2.2372	0.0052
208	2.2423	0.0052
209	2.2475	0.0051
210	2.2526	0.0051
211	2.2578	0.0051
212	2.2629	0.0051
213	2.2680	0.0051
214	2.2730	0.0051
215	2.2781	0.0051
216	2.2832	0.0051
217	2.2882	0.0050
218	2.2933	0.0050
219	2.2983	0.0050
220	2.3033	0.0050
221	2.3083	0.0050
222	2.3133	0.0050
223	2.3183	0.0050
224	2.3232	0.0050
225	2.3282	0.0050
226	2.3331	0.0049
227	2.3381	0.0049
228	2.3430	0.0049
229	2.3479	0.0049
230	2.3528	0.0049
231	2.3577	0.0049
232	2.3626	0.0049
233	2.3674	0.0049
234	2.3723	0.0049
235	2.3771	0.0048
236	2.3820	0.0048

237	2.3868	0.0048
238	2.3916	0.0048
239	2.3964	0.0048
240	2.4012	0.0048
241	2.4060	0.0048
242	2.4107	0.0048
243	2.4155	0.0048
244	2.4203	0.0047
245	2.4250	0.0047
246	2.4297	0.0047
247	2.4344	0.0047
248	2.4391	0.0047
249	2.4438	0.0047
250	2.4485	0.0047
251	2.4532	0.0047
252	2.4579	0.0047
253	2.4625	0.0047
254	2.4672	0.0047
255	2.4718	0.0046
256	2.4765	0.0046
257	2.4811	0.0046
258	2.4857	0.0046
259	2.4903	0.0046
260	2.4949	0.0046
261	2.4995	0.0046
262	2.5041	0.0046
263	2.5086	0.0046
264	2.5132	0.0046
265	2.5177	0.0045
266	2.5223	0.0045
267	2.5268	0.0045
268	2.5313	0.0045
269	2.5358	0.0045
270	2.5404	0.0045
271	2.5448	0.0045
272	2.5493	0.0045
273	2.5538	0.0045
274	2.5583	0.0045
275	2.5627	0.0045
276	2.5672	0.0045
277	2.5716	0.0044
278	2.5761	0.0044
279	2.5805	0.0044
280	2.5849	0.0044
281	2.5893	0.0044
282	2.5937	0.0044
283	2.5981	0.0044
284	2.6025	0.0044
285	2.6069	0.0044
286	2.6113	0.0044

287	2.6156	0.0044	
288	2.6200	0.0044	

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0044	0.0008	0.0036
2	0.0044	0.0008	0.0036
3	0.0044	0.0008	0.0036
4	0.0044	0.0008	0.0036
5	0.0044	0.0008	0.0036
6	0.0044	0.0008	0.0036
7	0.0044	0.0008	0.0036
8	0.0044	0.0008	0.0036
9	0.0045	0.0008	0.0037
10	0.0045	0.0008	0.0037
11	0.0045	0.0008	0.0037
12	0.0045	0.0008	0.0037
13	0.0045	0.0008	0.0037
14	0.0045	0.0008	0.0037
15	0.0045	0.0008	0.0037
16	0.0045	0.0008	0.0037
17	0.0046	0.0008	0.0037
18	0.0046	0.0008	0.0037
19	0.0046	0.0008	0.0038
20	0.0046	0.0008	0.0038
21	0.0046	0.0008	0.0038
22	0.0046	0.0008	0.0038
23	0.0046	0.0008	0.0038
24	0.0047	0.0008	0.0038
25	0.0047	0.0008	0.0038
26	0.0047	0.0008	0.0038
27	0.0047	0.0008	0.0039
28	0.0047	0.0008	0.0039
29	0.0047	0.0008	0.0039
30	0.0047	0.0008	0.0039
31	0.0048	0.0009	0.0039
32	0.0048	0.0009	0.0039
33	0.0048	0.0009	0.0039
34	0.0048	0.0009	0.0039
35	0.0048	0.0009	0.0040
36	0.0048	0.0009	0.0040
37	0.0049	0.0009	0.0040
38	0.0049	0.0009	0.0040
39	0.0049	0.0009	0.0040
40	0.0049	0.0009	0.0040
41	0.0049	0.0009	0.0040
42	0.0049	0.0009	0.0040
43	0.0050	0.0009	0.0041

44	0.0050	0.0009	0.0041
45	0.0050	0.0009	0.0041
46	0.0050	0.0009	0.0041
47	0.0050	0.0009	0.0041
48	0.0050	0.0009	0.0041
49	0.0051	0.0009	0.0042
50	0.0051	0.0009	0.0042
51	0.0051	0.0009	0.0042
52	0.0051	0.0009	0.0042
53	0.0051	0.0009	0.0042
54	0.0051	0.0009	0.0042
55	0.0052	0.0009	0.0042
56	0.0052	0.0009	0.0043
57	0.0052	0.0009	0.0043
58	0.0052	0.0009	0.0043
59	0.0053	0.0009	0.0043
60	0.0053	0.0009	0.0043
61	0.0053	0.0009	0.0043
62	0.0053	0.0010	0.0044
63	0.0053	0.0010	0.0044
64	0.0054	0.0010	0.0044
65	0.0054	0.0010	0.0044
66	0.0054	0.0010	0.0044
67	0.0054	0.0010	0.0045
68	0.0054	0.0010	0.0045
69	0.0055	0.0010	0.0045
70	0.0055	0.0010	0.0045
71	0.0055	0.0010	0.0045
72	0.0055	0.0010	0.0045
73	0.0056	0.0010	0.0046
74	0.0056	0.0010	0.0046
75	0.0056	0.0010	0.0046
76	0.0056	0.0010	0.0046
77	0.0057	0.0010	0.0047
78	0.0057	0.0010	0.0047
79	0.0057	0.0010	0.0047
80	0.0057	0.0010	0.0047
81	0.0058	0.0010	0.0047
82	0.0058	0.0010	0.0048
83	0.0058	0.0010	0.0048
84	0.0058	0.0010	0.0048
85	0.0059	0.0011	0.0048
86	0.0059	0.0011	0.0048
87	0.0059	0.0011	0.0049
88	0.0060	0.0011	0.0049
89	0.0060	0.0011	0.0049
90	0.0060	0.0011	0.0049
91	0.0061	0.0011	0.0050
92	0.0061	0.0011	0.0050
93	0.0061	0.0011	0.0050

94	0.0061	0.0011	0.0050
95	0.0062	0.0011	0.0051
96	0.0062	0.0011	0.0051
97	0.0063	0.0011	0.0051
98	0.0063	0.0011	0.0052
99	0.0063	0.0011	0.0052
100	0.0064	0.0011	0.0052
101	0.0064	0.0011	0.0053
102	0.0064	0.0011	0.0053
103	0.0065	0.0012	0.0053
104	0.0065	0.0012	0.0053
105	0.0065	0.0012	0.0054
106	0.0066	0.0012	0.0054
107	0.0066	0.0012	0.0054
108	0.0067	0.0012	0.0055
109	0.0067	0.0012	0.0055
110	0.0067	0.0012	0.0055
111	0.0068	0.0012	0.0056
112	0.0068	0.0012	0.0056
113	0.0069	0.0012	0.0057
114	0.0069	0.0012	0.0057
115	0.0070	0.0012	0.0057
116	0.0070	0.0013	0.0058
117	0.0071	0.0013	0.0058
118	0.0071	0.0013	0.0058
119	0.0072	0.0013	0.0059
120	0.0072	0.0013	0.0059
121	0.0073	0.0013	0.0060
122	0.0073	0.0013	0.0060
123	0.0074	0.0013	0.0061
124	0.0074	0.0013	0.0061
125	0.0075	0.0013	0.0062
126	0.0075	0.0013	0.0062
127	0.0076	0.0014	0.0063
128	0.0077	0.0014	0.0063
129	0.0077	0.0014	0.0064
130	0.0078	0.0014	0.0064
131	0.0079	0.0014	0.0065
132	0.0079	0.0014	0.0065
133	0.0080	0.0014	0.0066
134	0.0081	0.0014	0.0066
135	0.0081	0.0015	0.0067
136	0.0082	0.0015	0.0067
137	0.0083	0.0015	0.0068
138	0.0084	0.0015	0.0069
139	0.0085	0.0015	0.0069
140	0.0085	0.0015	0.0070
141	0.0086	0.0015	0.0071
142	0.0087	0.0016	0.0071
143	0.0088	0.0016	0.0072

144	0.0089	0.0016	0.0073
145	0.0077	0.0014	0.0063
146	0.0077	0.0014	0.0064
147	0.0079	0.0014	0.0065
148	0.0079	0.0014	0.0065
149	0.0081	0.0014	0.0066
150	0.0082	0.0015	0.0067
151	0.0083	0.0015	0.0068
152	0.0084	0.0015	0.0069
153	0.0086	0.0015	0.0070
154	0.0086	0.0015	0.0071
155	0.0088	0.0016	0.0072
156	0.0089	0.0016	0.0073
157	0.0091	0.0016	0.0075
158	0.0092	0.0017	0.0076
159	0.0094	0.0017	0.0077
160	0.0095	0.0017	0.0078
161	0.0098	0.0018	0.0080
162	0.0099	0.0018	0.0081
163	0.0102	0.0018	0.0083
164	0.0103	0.0018	0.0085
165	0.0106	0.0019	0.0087
166	0.0108	0.0019	0.0088
167	0.0111	0.0020	0.0091
168	0.0113	0.0020	0.0092
169	0.0116	0.0021	0.0095
170	0.0118	0.0021	0.0097
171	0.0123	0.0022	0.0101
172	0.0125	0.0022	0.0102
173	0.0130	0.0023	0.0107
174	0.0132	0.0024	0.0109
175	0.0138	0.0025	0.0114
176	0.0141	0.0025	0.0116
177	0.0148	0.0027	0.0122
178	0.0152	0.0027	0.0125
179	0.0161	0.0029	0.0132
180	0.0166	0.0030	0.0136
181	0.0177	0.0032	0.0145
182	0.0183	0.0033	0.0150
183	0.0198	0.0035	0.0162
184	0.0206	0.0037	0.0169
185	0.0167	0.0030	0.0137
186	0.0178	0.0032	0.0147
187	0.0207	0.0037	0.0170
188	0.0226	0.0040	0.0186
189	0.0281	0.0050	0.0231
190	0.0324	0.0058	0.0266
191	0.0491	0.0081	0.0410
192	0.0713	0.0081	0.0631
193	0.3084	0.0081	0.3002

194	0.0387	0.0069	0.0317
195	0.0250	0.0045	0.0205
196	0.0191	0.0034	0.0157
197	0.0216	0.0039	0.0177
198	0.0190	0.0034	0.0156
199	0.0171	0.0031	0.0140
200	0.0156	0.0028	0.0128
201	0.0145	0.0026	0.0119
202	0.0135	0.0024	0.0111
203	0.0127	0.0023	0.0104
204	0.0120	0.0022	0.0099
205	0.0114	0.0020	0.0094
206	0.0109	0.0020	0.0090
207	0.0105	0.0019	0.0086
208	0.0100	0.0018	0.0082
209	0.0097	0.0017	0.0079
210	0.0093	0.0017	0.0077
211	0.0090	0.0016	0.0074
212	0.0087	0.0016	0.0072
213	0.0085	0.0015	0.0070
214	0.0082	0.0015	0.0068
215	0.0080	0.0014	0.0066
216	0.0078	0.0014	0.0064
217	0.0089	0.0016	0.0073
218	0.0087	0.0016	0.0072
219	0.0086	0.0015	0.0070
220	0.0084	0.0015	0.0069
221	0.0082	0.0015	0.0068
222	0.0081	0.0014	0.0067
223	0.0080	0.0014	0.0065
224	0.0078	0.0014	0.0064
225	0.0077	0.0014	0.0063
226	0.0076	0.0014	0.0062
227	0.0075	0.0013	0.0061
228	0.0073	0.0013	0.0060
229	0.0072	0.0013	0.0059
230	0.0071	0.0013	0.0059
231	0.0070	0.0013	0.0058
232	0.0069	0.0012	0.0057
233	0.0069	0.0012	0.0056
234	0.0068	0.0012	0.0056
235	0.0067	0.0012	0.0055
236	0.0066	0.0012	0.0054
237	0.0065	0.0012	0.0054
238	0.0064	0.0012	0.0053
239	0.0064	0.0011	0.0052
240	0.0063	0.0011	0.0052
241	0.0062	0.0011	0.0051
242	0.0062	0.0011	0.0051
243	0.0061	0.0011	0.0050

244	0.0060	0.0011	0.0050
245	0.0060	0.0011	0.0049
246	0.0059	0.0011	0.0049
247	0.0059	0.0010	0.0048
248	0.0058	0.0010	0.0048
249	0.0058	0.0010	0.0047
250	0.0057	0.0010	0.0047
251	0.0057	0.0010	0.0046
252	0.0056	0.0010	0.0046
253	0.0056	0.0010	0.0046
254	0.0055	0.0010	0.0045
255	0.0055	0.0010	0.0045
256	0.0054	0.0010	0.0044
257	0.0054	0.0010	0.0044
258	0.0053	0.0010	0.0044
259	0.0053	0.0009	0.0043
260	0.0052	0.0009	0.0043
261	0.0052	0.0009	0.0043
262	0.0052	0.0009	0.0042
263	0.0051	0.0009	0.0042
264	0.0051	0.0009	0.0042
265	0.0050	0.0009	0.0041
266	0.0050	0.0009	0.0041
267	0.0050	0.0009	0.0041
268	0.0049	0.0009	0.0041
269	0.0049	0.0009	0.0040
270	0.0049	0.0009	0.0040
271	0.0048	0.0009	0.0040
272	0.0048	0.0009	0.0040
273	0.0048	0.0009	0.0039
274	0.0047	0.0009	0.0039
275	0.0047	0.0008	0.0039
276	0.0047	0.0008	0.0039
277	0.0047	0.0008	0.0038
278	0.0046	0.0008	0.0038
279	0.0046	0.0008	0.0038
280	0.0046	0.0008	0.0038
281	0.0045	0.0008	0.0037
282	0.0045	0.0008	0.0037
283	0.0045	0.0008	0.0037
284	0.0045	0.0008	0.0037
285	0.0044	0.0008	0.0036
286	0.0044	0.0008	0.0036
287	0.0044	0.0008	0.0036
288	0.0044	0.0008	0.0036

Total soil rain loss = 0.42(In)
Total effective rainfall = 2.20(In)
Peak flow rate in flood hydrograph = 4.78(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

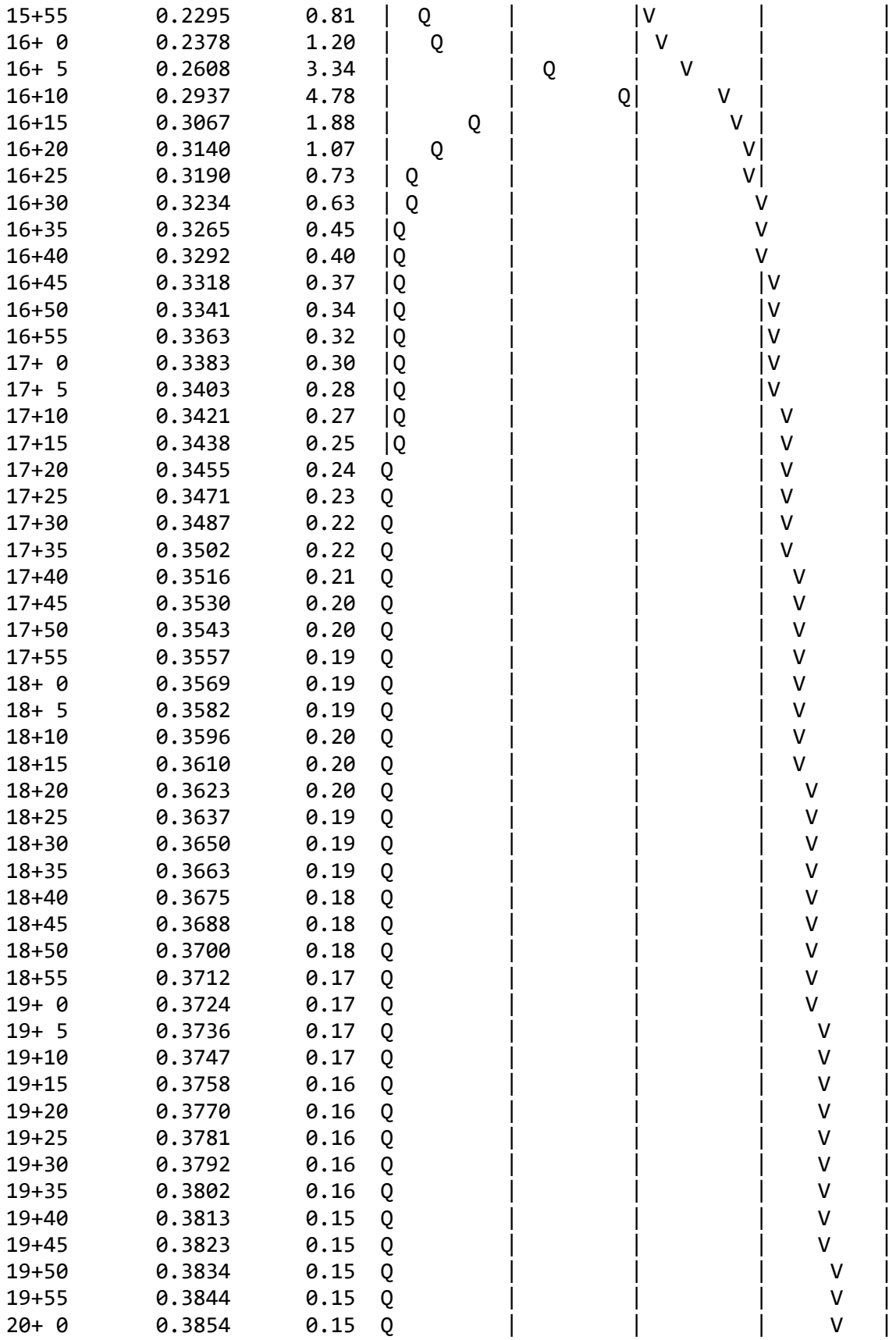
Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0002	0.03	Q				
0+10	0.0007	0.08	Q				
0+15	0.0013	0.09	Q				
0+20	0.0020	0.10	Q				
0+25	0.0027	0.10	Q				
0+30	0.0034	0.10	Q				
0+35	0.0041	0.10	Q				
0+40	0.0048	0.10	Q				
0+45	0.0055	0.10	Q				
0+50	0.0062	0.10	Q				
0+55	0.0069	0.10	Q				
1+ 0	0.0076	0.10	Q				
1+ 5	0.0083	0.10	Q				
1+10	0.0090	0.10	Q				
1+15	0.0098	0.10	Q				
1+20	0.0105	0.10	Q				
1+25	0.0112	0.10	QV				
1+30	0.0119	0.10	QV				
1+35	0.0126	0.11	QV				
1+40	0.0134	0.11	QV				
1+45	0.0141	0.11	QV				
1+50	0.0148	0.11	QV				
1+55	0.0156	0.11	QV				
2+ 0	0.0163	0.11	QV				
2+ 5	0.0170	0.11	QV				
2+10	0.0178	0.11	QV				
2+15	0.0185	0.11	QV				
2+20	0.0193	0.11	QV				
2+25	0.0200	0.11	QV				
2+30	0.0208	0.11	QV				
2+35	0.0215	0.11	Q V				
2+40	0.0223	0.11	Q V				
2+45	0.0230	0.11	Q V				
2+50	0.0238	0.11	Q V				
2+55	0.0245	0.11	Q V				
3+ 0	0.0253	0.11	Q V				
3+ 5	0.0261	0.11	Q V				
3+10	0.0268	0.11	Q V				
3+15	0.0276	0.11	Q V				
3+20	0.0284	0.11	Q V				

3+25	0.0292	0.11	Q V	|	|	|	|
3+30	0.0299	0.11	Q V	|	|	|	|
3+35	0.0307	0.11	Q V	|	|	|	|
3+40	0.0315	0.11	Q V	|	|	|	|
3+45	0.0323	0.11	Q V	|	|	|	|
3+50	0.0331	0.11	Q V	|	|	|	|
3+55	0.0339	0.12	Q V	|	|	|	|
4+ 0	0.0347	0.12	Q V	|	|	|	|
4+ 5	0.0355	0.12	Q V	|	|	|	|
4+10	0.0363	0.12	Q V	|	|	|	|
4+15	0.0371	0.12	Q V	|	|	|	|
4+20	0.0379	0.12	Q V	|	|	|	|
4+25	0.0387	0.12	Q V	|	|	|	|
4+30	0.0395	0.12	Q V	|	|	|	|
4+35	0.0403	0.12	Q V	|	|	|	|
4+40	0.0412	0.12	Q V	|	|	|	|
4+45	0.0420	0.12	Q V	|	|	|	|
4+50	0.0428	0.12	Q V	|	|	|	|
4+55	0.0436	0.12	Q V	|	|	|	|
5+ 0	0.0445	0.12	Q V	|	|	|	|
5+ 5	0.0453	0.12	Q V	|	|	|	|
5+10	0.0461	0.12	Q V	|	|	|	|
5+15	0.0470	0.12	Q V	|	|	|	|
5+20	0.0478	0.12	Q V	|	|	|	|
5+25	0.0487	0.12	Q V	|	|	|	|
5+30	0.0495	0.12	Q V	|	|	|	|
5+35	0.0504	0.12	Q V	|	|	|	|
5+40	0.0513	0.12	Q V	|	|	|	|
5+45	0.0521	0.13	Q V	|	|	|	|
5+50	0.0530	0.13	Q V	|	|	|	|
5+55	0.0539	0.13	Q V	|	|	|	|
6+ 0	0.0547	0.13	Q V	|	|	|	|
6+ 5	0.0556	0.13	Q V	|	|	|	|
6+10	0.0565	0.13	Q V	|	|	|	|
6+15	0.0574	0.13	Q V	|	|	|	|
6+20	0.0583	0.13	Q V	|	|	|	|
6+25	0.0592	0.13	Q V	|	|	|	|
6+30	0.0601	0.13	Q V	|	|	|	|
6+35	0.0610	0.13	Q V	|	|	|	|
6+40	0.0619	0.13	Q V	|	|	|	|
6+45	0.0628	0.13	Q V	|	|	|	|
6+50	0.0637	0.13	Q V	|	|	|	|
6+55	0.0646	0.13	Q V	|	|	|	|
7+ 0	0.0655	0.13	Q V	|	|	|	|
7+ 5	0.0665	0.13	Q V	|	|	|	|
7+10	0.0674	0.14	Q V	|	|	|	|
7+15	0.0683	0.14	Q V	|	|	|	|
7+20	0.0693	0.14	Q V	|	|	|	|
7+25	0.0702	0.14	Q V	|	|	|	|
7+30	0.0712	0.14	Q V	|	|	|	|

7+35	0.0721	0.14	Q	V	|	|	|	|
7+40	0.0731	0.14	Q	V	|	|	|	|
7+45	0.0741	0.14	Q	V	|	|	|	|
7+50	0.0750	0.14	Q	V	|	|	|	|
7+55	0.0760	0.14	Q	V	|	|	|	|
8+ 0	0.0770	0.14	Q	V	|	|	|	|
8+ 5	0.0780	0.14	Q	V	|	|	|	|
8+10	0.0790	0.14	Q	V	|	|	|	|
8+15	0.0800	0.14	Q	V	|	|	|	|
8+20	0.0810	0.15	Q	V	|	|	|	|
8+25	0.0820	0.15	Q	V	|	|	|	|
8+30	0.0830	0.15	Q	V	|	|	|	|
8+35	0.0840	0.15	Q	V	|	|	|	|
8+40	0.0850	0.15	Q	V	|	|	|	|
8+45	0.0861	0.15	Q	V	|	|	|	|
8+50	0.0871	0.15	Q	V	|	|	|	|
8+55	0.0881	0.15	Q	V	|	|	|	|
9+ 0	0.0892	0.15	Q	V	|	|	|	|
9+ 5	0.0902	0.15	Q	V	|	|	|	|
9+10	0.0913	0.15	Q	V	|	|	|	|
9+15	0.0924	0.16	Q	V	|	|	|	|
9+20	0.0934	0.16	Q	V	|	|	|	|
9+25	0.0945	0.16	Q	V	|	|	|	|
9+30	0.0956	0.16	Q	V	|	|	|	|
9+35	0.0967	0.16	Q	V|		|	|	|
9+40	0.0978	0.16	Q	V|		|	|	|
9+45	0.0989	0.16	Q	V|		|	|	|
9+50	0.1001	0.16	Q	V|		|	|	|
9+55	0.1012	0.16	Q	V|		|	|	|
10+ 0	0.1023	0.16	Q	V|		|	|	|
10+ 5	0.1035	0.17	Q	V|		|	|	|
10+10	0.1046	0.17	Q	V|		|	|	|
10+15	0.1058	0.17	Q	V|		|	|	|
10+20	0.1069	0.17	Q	V		|	|	|
10+25	0.1081	0.17	Q	V		|	|	|
10+30	0.1093	0.17	Q	V		|	|	|
10+35	0.1105	0.17	Q	V		|	|	|
10+40	0.1117	0.18	Q	V		|	|	|
10+45	0.1129	0.18	Q	V		|	|	|
10+50	0.1141	0.18	Q	V		|	|	|
10+55	0.1154	0.18	Q	V		|	|	|
11+ 0	0.1166	0.18	Q	V		|	|	|
11+ 5	0.1179	0.18	Q	|	V	|	|	|
11+10	0.1192	0.18	Q	|	V	|	|	|
11+15	0.1204	0.19	Q	|	V	|	|	|
11+20	0.1217	0.19	Q	|	V	|	|	|
11+25	0.1230	0.19	Q	|	V	|	|	|
11+30	0.1243	0.19	Q	|	V	|	|	|
11+35	0.1257	0.19	Q	|	V	|	|	|
11+40	0.1270	0.19	Q	|	V	|	|	|

```
11+45       0.1284      0.20  Q         | V       |         |         |
11+50       0.1297      0.20  Q         | V       |         |         |
11+55       0.1311      0.20  Q         | V       |         |         |
12+ 0       0.1325      0.20  Q         | V       |         |         |
12+ 5       0.1338      0.20  Q         | V       |         |         |
12+10       0.1351      0.18  Q         | V       |         |         |
12+15       0.1364      0.18  Q         | V       |         |         |
12+20       0.1376      0.18  Q         | V       |         |         |
12+25       0.1389      0.18  Q         |  V      |         |         |
12+30       0.1402      0.19  Q         |  V      |         |         |
12+35       0.1415      0.19  Q         |  V      |         |         |
12+40       0.1428      0.19  Q         |  V      |         |         |
12+45       0.1441      0.19  Q         |  V      |         |         |
12+50       0.1455      0.20  Q         |  V      |         |         |
12+55       0.1468      0.20  Q         |  V      |         |         |
13+ 0       0.1482      0.20  Q         |  V      |         |         |
13+ 5       0.1496      0.21  Q         |   V     |         |         |
13+10       0.1511      0.21  Q         |   V     |         |         |
13+15       0.1525      0.21  Q         |   V     |         |         |
13+20       0.1540      0.22  Q         |   V     |         |         |
13+25       0.1555      0.22  Q         |   V     |         |         |
13+30       0.1571      0.22  Q         |   V     |         |         |
13+35       0.1587      0.23  Q         |   V     |         |         |
13+40       0.1603      0.23  Q         |    V    |         |         |
13+45       0.1619      0.24  Q         |    V    |         |         |
13+50       0.1636      0.24  Q         |    V    |         |         |
13+55       0.1653      0.25  Q         |    V    |         |         |
14+ 0       0.1670      0.25  |Q        |    V    |         |         |
14+ 5       0.1688      0.26  |Q        |    V    |         |         |
14+10       0.1707      0.27  |Q        |     V   |         |         |
14+15       0.1725      0.27  |Q        |     V   |         |         |
14+20       0.1745      0.28  |Q        |     V   |         |         |
14+25       0.1764      0.29  |Q        |     V   |         |         |
14+30       0.1785      0.30  |Q        |     V   |         |         |
14+35       0.1806      0.31  |Q        |     V   |         |         |
14+40       0.1828      0.32  |Q        |      V  |         |         |
14+45       0.1850      0.33  |Q        |      V  |         |         |
14+50       0.1874      0.34  |Q        |      V  |         |         |
14+55       0.1898      0.35  |Q        |      V  |         |         |
15+ 0       0.1923      0.37  |Q        |       V |         |         |
15+ 5       0.1950      0.38  |Q        |       V |         |         |
15+10       0.1977      0.40  |Q        |       V |         |         |
15+15       0.2006      0.42  |Q        |       V |         |         |
15+20       0.2037      0.45  |Q        |        V|         |         |
15+25       0.2068      0.44  |Q        |        V|         |         |
15+30       0.2096      0.41  |Q        |        V|         |         |
15+35       0.2126      0.43  |Q        |        V|         |         |
15+40       0.2158      0.47  |Q        |         V         |         |
15+45       0.2195      0.54  | Q       |         V         |         |
15+50       0.2239      0.64  | Q       |         |V        |         |
```


15+55 0.2295 0.81
16+ 0 0.2378 1.20
16+ 5 0.2608 3.34
16+10 0.2937 4.78
16+15 0.3067 1.88
16+20 0.3140 1.07
16+25 0.3190 0.73
16+30 0.3234 0.63
16+35 0.3265 0.45
16+40 0.3292 0.40
16+45 0.3318 0.37
16+50 0.3341 0.34
16+55 0.3363 0.32
17+ 0 0.3383 0.30
17+ 5 0.3403 0.28
17+10 0.3421 0.27
17+15 0.3438 0.25
17+20 0.3455 0.24
17+25 0.3471 0.23
17+30 0.3487 0.22
17+35 0.3502 0.22
17+40 0.3516 0.21
17+45 0.3530 0.20
17+50 0.3543 0.20
17+55 0.3557 0.19
18+ 0 0.3569 0.19
18+ 5 0.3582 0.19
18+10 0.3596 0.20
18+15 0.3610 0.20
18+20 0.3623 0.20
18+25 0.3637 0.19
18+30 0.3650 0.19
18+35 0.3663 0.19
18+40 0.3675 0.18
18+45 0.3688 0.18
18+50 0.3700 0.18
18+55 0.3712 0.17
19+ 0 0.3724 0.17
19+ 5 0.3736 0.17
19+10 0.3747 0.17
19+15 0.3758 0.16
19+20 0.3770 0.16
19+25 0.3781 0.16
19+30 0.3792 0.16
19+35 0.3802 0.16
19+40 0.3813 0.15
19+45 0.3823 0.15
19+50 0.3834 0.15
19+55 0.3844 0.15
20+ 0 0.3854 0.15

```
  20+ 5       0.3864      0.15  Q         |          |          |     V    |
  20+10       0.3874      0.14  Q         |          |          |     V    |
  20+15       0.3884      0.14  Q         |          |          |     V    |
  20+20       0.3894      0.14  Q         |          |          |     V    |
  20+25       0.3903      0.14  Q         |          |          |     V    |
  20+30       0.3913      0.14  Q         |          |          |     V    |
  20+35       0.3922      0.14  Q         |          |          |     V    |
  20+40       0.3932      0.14  Q         |          |          |     V    |
  20+45       0.3941      0.13  Q         |          |          |      V   |
  20+50       0.3950      0.13  Q         |          |          |      V   |
  20+55       0.3959      0.13  Q         |          |          |      V   |
  21+ 0       0.3968      0.13  Q         |          |          |      V   |
  21+ 5       0.3977      0.13  Q         |          |          |      V   |
  21+10       0.3986      0.13  Q         |          |          |      V   |
  21+15       0.3994      0.13  Q         |          |          |      V   |
  21+20       0.4003      0.13  Q         |          |          |      V   |
  21+25       0.4012      0.12  Q         |          |          |      V   |
  21+30       0.4020      0.12  Q         |          |          |      V   |
  21+35       0.4029      0.12  Q         |          |          |      V   |
  21+40       0.4037      0.12  Q         |          |          |      V   |
  21+45       0.4045      0.12  Q         |          |          |       V  |
  21+50       0.4054      0.12  Q         |          |          |       V  |
  21+55       0.4062      0.12  Q         |          |          |       V  |
  22+ 0       0.4070      0.12  Q         |          |          |       V  |
  22+ 5       0.4078      0.12  Q         |          |          |       V  |
  22+10       0.4086      0.12  Q         |          |          |       V  |
  22+15       0.4094      0.12  Q         |          |          |       V  |
  22+20       0.4102      0.11  Q         |          |          |       V  |
  22+25       0.4110      0.11  Q         |          |          |       V  |
  22+30       0.4118      0.11  Q         |          |          |       V  |
  22+35       0.4125      0.11  Q         |          |          |       V  |
  22+40       0.4133      0.11  Q         |          |          |       V  |
  22+45       0.4141      0.11  Q         |          |          |       V  |
  22+50       0.4148      0.11  Q         |          |          |       V  |
  22+55       0.4156      0.11  Q         |          |          |        V |
  23+ 0       0.4163      0.11  Q         |          |          |        V |
  23+ 5       0.4171      0.11  Q         |          |          |        V |
  23+10       0.4178      0.11  Q         |          |          |        V |
  23+15       0.4185      0.11  Q         |          |          |        V |
  23+20       0.4193      0.11  Q         |          |          |        V |
  23+25       0.4200      0.11  Q         |          |          |        V |
  23+30       0.4207      0.10  Q         |          |          |        V |
  23+35       0.4214      0.10  Q         |          |          |        V |
  23+40       0.4222      0.10  Q         |          |          |        V |
  23+45       0.4229      0.10  Q         |          |          |        V |
  23+50       0.4236      0.10  Q         |          |          |        V |
  23+55       0.4243      0.10  Q         |          |          |        V |
  24+ 0       0.4250      0.10  Q         |          |          |        V |
-------------------------------------------------------------------------
```

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

Study date 06/30/22

++

San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6385

Palmdale and Cantina, NE corner
developed, 100-yr

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
2.32	1	1.10
Rainfall data for year 100		
2.32	6	2.30
Rainfall data for year 100		
2.32	24	4.65

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
32.0	52.0	2.32	1.000	0.785	0.100	0.079

Area-averaged adjusted loss rate Fm (In/Hr) = 0.079

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
0.23	0.100	32.0	52.0	9.23	0.140
2.09	0.900	98.0	98.0	0.20	0.949

Area-averaged catchment yield fraction, Y = 0.868
Area-averaged low loss fraction, Yb = 0.132
User entry of time of concentration = 0.080 (hours)
++
Watershed area = 2.32(Ac.)
Catchment Lag time = 0.064 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 130.2083
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.079(In/Hr)
Average low loss rate fraction (Yb) = 0.132 (decimal)
DESERT S-Graph Selected
Computed peak 5-minute rainfall = 0.522(In)
Computed peak 30-minute rainfall = 0.893(In)
Specified peak 1-hour rainfall = 1.100(In)
Computed peak 3-hour rainfall = 1.729(In)
Specified peak 6-hour rainfall = 2.300(In)
Specified peak 24-hour rainfall = 4.650(In)

Rainfall depth area reduction factors:
Using a total area of 2.32(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.522(In)
30-minute factor = 1.000 Adjusted rainfall = 0.893(In)
1-hour factor = 1.000 Adjusted rainfall = 1.100(In)
3-hour factor = 1.000 Adjusted rainfall = 1.729(In)
6-hour factor = 1.000 Adjusted rainfall = 2.300(In)
24-hour factor = 1.000 Adjusted rainfall = 4.650(In)

U n i t H y d r o g r a p h
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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 28.06 (CFS))	
1	26.489	7.432
2	76.395	14.002
3	89.977	3.811
4	95.624	1.584
5	98.153	0.710
6	100.000	0.518

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5219	0.5219
2	0.6425	0.1206
3	0.7257	0.0831
4	0.7911	0.0654
5	0.8458	0.0548
6	0.8934	0.0476
7	0.9357	0.0423
8	0.9739	0.0382
9	1.0089	0.0350
10	1.0413	0.0324
11	1.0715	0.0302
12	1.0999	0.0283
13	1.1367	0.0369
14	1.1720	0.0352
15	1.2057	0.0338
16	1.2382	0.0325
17	1.2695	0.0313
18	1.2997	0.0302
19	1.3290	0.0293
20	1.3573	0.0284
21	1.3849	0.0275
22	1.4117	0.0268
23	1.4378	0.0261
24	1.4632	0.0254
25	1.4880	0.0248
26	1.5122	0.0242
27	1.5359	0.0237
28	1.5590	0.0232
29	1.5817	0.0227
30	1.6040	0.0222
31	1.6258	0.0218
32	1.6472	0.0214
33	1.6682	0.0210
34	1.6888	0.0206
35	1.7091	0.0203
36	1.7290	0.0199

37	1.7486	0.0196
38	1.7679	0.0193
39	1.7869	0.0190
40	1.8057	0.0187
41	1.8241	0.0184
42	1.8423	0.0182
43	1.8602	0.0179
44	1.8779	0.0177
45	1.8954	0.0175
46	1.9126	0.0172
47	1.9296	0.0170
48	1.9464	0.0168
49	1.9630	0.0166
50	1.9794	0.0164
51	1.9956	0.0162
52	2.0116	0.0160
53	2.0274	0.0158
54	2.0431	0.0157
55	2.0586	0.0155
56	2.0739	0.0153
57	2.0891	0.0152
58	2.1041	0.0150
59	2.1190	0.0149
60	2.1337	0.0147
61	2.1482	0.0146
62	2.1627	0.0144
63	2.1770	0.0143
64	2.1911	0.0142
65	2.2052	0.0140
66	2.2191	0.0139
67	2.2328	0.0138
68	2.2465	0.0137
69	2.2600	0.0135
70	2.2735	0.0134
71	2.2868	0.0133
72	2.3000	0.0132
73	2.3161	0.0162
74	2.3322	0.0161
75	2.3482	0.0160
76	2.3640	0.0158
77	2.3797	0.0157
78	2.3954	0.0156
79	2.4109	0.0155
80	2.4264	0.0154
81	2.4417	0.0154
82	2.4570	0.0153
83	2.4722	0.0152
84	2.4873	0.0151
85	2.5022	0.0150
86	2.5172	0.0149

87	2.5320	0.0148
88	2.5467	0.0147
89	2.5614	0.0147
90	2.5759	0.0146
91	2.5904	0.0145
92	2.6049	0.0144
93	2.6192	0.0143
94	2.6335	0.0143
95	2.6476	0.0142
96	2.6618	0.0141
97	2.6758	0.0140
98	2.6898	0.0140
99	2.7037	0.0139
100	2.7175	0.0138
101	2.7313	0.0138
102	2.7450	0.0137
103	2.7586	0.0136
104	2.7722	0.0136
105	2.7857	0.0135
106	2.7991	0.0134
107	2.8125	0.0134
108	2.8258	0.0133
109	2.8391	0.0133
110	2.8523	0.0132
111	2.8654	0.0131
112	2.8785	0.0131
113	2.8915	0.0130
114	2.9045	0.0130
115	2.9174	0.0129
116	2.9302	0.0129
117	2.9430	0.0128
118	2.9558	0.0127
119	2.9685	0.0127
120	2.9811	0.0126
121	2.9937	0.0126
122	3.0063	0.0125
123	3.0187	0.0125
124	3.0312	0.0124
125	3.0436	0.0124
126	3.0559	0.0123
127	3.0682	0.0123
128	3.0804	0.0122
129	3.0926	0.0122
130	3.1048	0.0122
131	3.1169	0.0121
132	3.1290	0.0121
133	3.1410	0.0120
134	3.1529	0.0120
135	3.1649	0.0119
136	3.1767	0.0119

137	3.1886	0.0118
138	3.2004	0.0118
139	3.2121	0.0118
140	3.2239	0.0117
141	3.2355	0.0117
142	3.2472	0.0116
143	3.2588	0.0116
144	3.2703	0.0116
145	3.2818	0.0115
146	3.2933	0.0115
147	3.3047	0.0114
148	3.3161	0.0114
149	3.3275	0.0114
150	3.3388	0.0113
151	3.3501	0.0113
152	3.3613	0.0112
153	3.3725	0.0112
154	3.3837	0.0112
155	3.3949	0.0111
156	3.4060	0.0111
157	3.4170	0.0111
158	3.4281	0.0110
159	3.4391	0.0110
160	3.4500	0.0110
161	3.4610	0.0109
162	3.4719	0.0109
163	3.4827	0.0109
164	3.4936	0.0108
165	3.5044	0.0108
166	3.5151	0.0108
167	3.5259	0.0107
168	3.5366	0.0107
169	3.5473	0.0107
170	3.5579	0.0106
171	3.5685	0.0106
172	3.5791	0.0106
173	3.5896	0.0106
174	3.6002	0.0105
175	3.6107	0.0105
176	3.6211	0.0105
177	3.6316	0.0104
178	3.6420	0.0104
179	3.6523	0.0104
180	3.6627	0.0103
181	3.6730	0.0103
182	3.6833	0.0103
183	3.6936	0.0103
184	3.7038	0.0102
185	3.7140	0.0102
186	3.7242	0.0102

187	3.7343	0.0102
188	3.7445	0.0101
189	3.7546	0.0101
190	3.7646	0.0101
191	3.7747	0.0100
192	3.7847	0.0100
193	3.7947	0.0100
194	3.8047	0.0100
195	3.8146	0.0099
196	3.8245	0.0099
197	3.8344	0.0099
198	3.8443	0.0099
199	3.8542	0.0098
200	3.8640	0.0098
201	3.8738	0.0098
202	3.8836	0.0098
203	3.8933	0.0098
204	3.9030	0.0097
205	3.9127	0.0097
206	3.9224	0.0097
207	3.9321	0.0097
208	3.9417	0.0096
209	3.9513	0.0096
210	3.9609	0.0096
211	3.9705	0.0096
212	3.9800	0.0095
213	3.9895	0.0095
214	3.9990	0.0095
215	4.0085	0.0095
216	4.0180	0.0095
217	4.0274	0.0094
218	4.0368	0.0094
219	4.0462	0.0094
220	4.0556	0.0094
221	4.0649	0.0094
222	4.0743	0.0093
223	4.0836	0.0093
224	4.0929	0.0093
225	4.1021	0.0093
226	4.1114	0.0092
227	4.1206	0.0092
228	4.1298	0.0092
229	4.1390	0.0092
230	4.1482	0.0092
231	4.1573	0.0091
232	4.1665	0.0091
233	4.1756	0.0091
234	4.1847	0.0091
235	4.1937	0.0091
236	4.2028	0.0091

237	4.2118	0.0090
238	4.2208	0.0090
239	4.2298	0.0090
240	4.2388	0.0090
241	4.2478	0.0090
242	4.2567	0.0089
243	4.2656	0.0089
244	4.2745	0.0089
245	4.2834	0.0089
246	4.2923	0.0089
247	4.3011	0.0089
248	4.3100	0.0088
249	4.3188	0.0088
250	4.3276	0.0088
251	4.3364	0.0088
252	4.3451	0.0088
253	4.3539	0.0087
254	4.3626	0.0087
255	4.3713	0.0087
256	4.3800	0.0087
257	4.3887	0.0087
258	4.3974	0.0087
259	4.4060	0.0086
260	4.4146	0.0086
261	4.4233	0.0086
262	4.4319	0.0086
263	4.4404	0.0086
264	4.4490	0.0086
265	4.4576	0.0085
266	4.4661	0.0085
267	4.4746	0.0085
268	4.4831	0.0085
269	4.4916	0.0085
270	4.5001	0.0085
271	4.5085	0.0085
272	4.5170	0.0084
273	4.5254	0.0084
274	4.5338	0.0084
275	4.5422	0.0084
276	4.5506	0.0084
277	4.5589	0.0084
278	4.5673	0.0084
279	4.5756	0.0083
280	4.5839	0.0083
281	4.5922	0.0083
282	4.6005	0.0083
283	4.6088	0.0083
284	4.6171	0.0083
285	4.6253	0.0082
286	4.6336	0.0082

287	4.6418	0.0082	
288	4.6500	0.0082	

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0082	0.0011	0.0071
2	0.0082	0.0011	0.0071
3	0.0082	0.0011	0.0072
4	0.0083	0.0011	0.0072
5	0.0083	0.0011	0.0072
6	0.0083	0.0011	0.0072
7	0.0083	0.0011	0.0072
8	0.0084	0.0011	0.0073
9	0.0084	0.0011	0.0073
10	0.0084	0.0011	0.0073
11	0.0084	0.0011	0.0073
12	0.0084	0.0011	0.0073
13	0.0085	0.0011	0.0074
14	0.0085	0.0011	0.0074
15	0.0085	0.0011	0.0074
16	0.0085	0.0011	0.0074
17	0.0086	0.0011	0.0074
18	0.0086	0.0011	0.0075
19	0.0086	0.0011	0.0075
20	0.0086	0.0011	0.0075
21	0.0087	0.0011	0.0075
22	0.0087	0.0011	0.0075
23	0.0087	0.0011	0.0076
24	0.0087	0.0011	0.0076
25	0.0088	0.0012	0.0076
26	0.0088	0.0012	0.0076
27	0.0088	0.0012	0.0077
28	0.0088	0.0012	0.0077
29	0.0089	0.0012	0.0077
30	0.0089	0.0012	0.0077
31	0.0089	0.0012	0.0077
32	0.0089	0.0012	0.0078
33	0.0090	0.0012	0.0078
34	0.0090	0.0012	0.0078
35	0.0090	0.0012	0.0078
36	0.0091	0.0012	0.0079
37	0.0091	0.0012	0.0079
38	0.0091	0.0012	0.0079
39	0.0091	0.0012	0.0079
40	0.0092	0.0012	0.0080
41	0.0092	0.0012	0.0080
42	0.0092	0.0012	0.0080
43	0.0093	0.0012	0.0080

44	0.0093	0.0012	0.0081
45	0.0093	0.0012	0.0081
46	0.0094	0.0012	0.0081
47	0.0094	0.0012	0.0082
48	0.0094	0.0012	0.0082
49	0.0095	0.0012	0.0082
50	0.0095	0.0012	0.0082
51	0.0095	0.0013	0.0083
52	0.0095	0.0013	0.0083
53	0.0096	0.0013	0.0083
54	0.0096	0.0013	0.0083
55	0.0097	0.0013	0.0084
56	0.0097	0.0013	0.0084
57	0.0097	0.0013	0.0084
58	0.0098	0.0013	0.0085
59	0.0098	0.0013	0.0085
60	0.0098	0.0013	0.0085
61	0.0099	0.0013	0.0086
62	0.0099	0.0013	0.0086
63	0.0099	0.0013	0.0086
64	0.0100	0.0013	0.0087
65	0.0100	0.0013	0.0087
66	0.0100	0.0013	0.0087
67	0.0101	0.0013	0.0088
68	0.0101	0.0013	0.0088
69	0.0102	0.0013	0.0088
70	0.0102	0.0013	0.0089
71	0.0103	0.0014	0.0089
72	0.0103	0.0014	0.0089
73	0.0103	0.0014	0.0090
74	0.0104	0.0014	0.0090
75	0.0104	0.0014	0.0091
76	0.0105	0.0014	0.0091
77	0.0105	0.0014	0.0091
78	0.0106	0.0014	0.0092
79	0.0106	0.0014	0.0092
80	0.0106	0.0014	0.0092
81	0.0107	0.0014	0.0093
82	0.0107	0.0014	0.0093
83	0.0108	0.0014	0.0094
84	0.0108	0.0014	0.0094
85	0.0109	0.0014	0.0095
86	0.0109	0.0014	0.0095
87	0.0110	0.0014	0.0096
88	0.0110	0.0015	0.0096
89	0.0111	0.0015	0.0096
90	0.0111	0.0015	0.0097
91	0.0112	0.0015	0.0097
92	0.0112	0.0015	0.0098
93	0.0113	0.0015	0.0098

94	0.0114	0.0015	0.0099
95	0.0114	0.0015	0.0099
96	0.0115	0.0015	0.0100
97	0.0116	0.0015	0.0100
98	0.0116	0.0015	0.0101
99	0.0117	0.0015	0.0101
100	0.0117	0.0015	0.0102
101	0.0118	0.0016	0.0102
102	0.0118	0.0016	0.0103
103	0.0119	0.0016	0.0104
104	0.0120	0.0016	0.0104
105	0.0121	0.0016	0.0105
106	0.0121	0.0016	0.0105
107	0.0122	0.0016	0.0106
108	0.0122	0.0016	0.0106
109	0.0123	0.0016	0.0107
110	0.0124	0.0016	0.0108
111	0.0125	0.0016	0.0108
112	0.0125	0.0017	0.0109
113	0.0126	0.0017	0.0110
114	0.0127	0.0017	0.0110
115	0.0128	0.0017	0.0111
116	0.0129	0.0017	0.0112
117	0.0130	0.0017	0.0113
118	0.0130	0.0017	0.0113
119	0.0131	0.0017	0.0114
120	0.0132	0.0017	0.0115
121	0.0133	0.0018	0.0116
122	0.0134	0.0018	0.0116
123	0.0135	0.0018	0.0117
124	0.0136	0.0018	0.0118
125	0.0137	0.0018	0.0119
126	0.0138	0.0018	0.0120
127	0.0139	0.0018	0.0121
128	0.0140	0.0018	0.0121
129	0.0141	0.0019	0.0123
130	0.0142	0.0019	0.0123
131	0.0143	0.0019	0.0125
132	0.0144	0.0019	0.0125
133	0.0146	0.0019	0.0127
134	0.0147	0.0019	0.0127
135	0.0148	0.0020	0.0129
136	0.0149	0.0020	0.0129
137	0.0151	0.0020	0.0131
138	0.0152	0.0020	0.0132
139	0.0154	0.0020	0.0133
140	0.0154	0.0020	0.0134
141	0.0156	0.0021	0.0136
142	0.0157	0.0021	0.0137
143	0.0160	0.0021	0.0139

144	0.0161	0.0021	0.0139
145	0.0132	0.0017	0.0115
146	0.0133	0.0018	0.0116
147	0.0135	0.0018	0.0118
148	0.0137	0.0018	0.0119
149	0.0139	0.0018	0.0121
150	0.0140	0.0018	0.0122
151	0.0143	0.0019	0.0124
152	0.0144	0.0019	0.0125
153	0.0147	0.0019	0.0128
154	0.0149	0.0020	0.0129
155	0.0152	0.0020	0.0132
156	0.0153	0.0020	0.0133
157	0.0157	0.0021	0.0136
158	0.0158	0.0021	0.0138
159	0.0162	0.0021	0.0141
160	0.0164	0.0022	0.0142
161	0.0168	0.0022	0.0146
162	0.0170	0.0022	0.0148
163	0.0175	0.0023	0.0152
164	0.0177	0.0023	0.0154
165	0.0182	0.0024	0.0158
166	0.0184	0.0024	0.0160
167	0.0190	0.0025	0.0165
168	0.0193	0.0025	0.0168
169	0.0199	0.0026	0.0173
170	0.0203	0.0027	0.0176
171	0.0210	0.0028	0.0182
172	0.0214	0.0028	0.0186
173	0.0222	0.0029	0.0193
174	0.0227	0.0030	0.0197
175	0.0237	0.0031	0.0206
176	0.0242	0.0032	0.0210
177	0.0254	0.0033	0.0221
178	0.0261	0.0034	0.0226
179	0.0275	0.0036	0.0239
180	0.0284	0.0037	0.0246
181	0.0302	0.0040	0.0263
182	0.0313	0.0041	0.0272
183	0.0338	0.0044	0.0293
184	0.0352	0.0046	0.0306
185	0.0283	0.0037	0.0246
186	0.0302	0.0040	0.0262
187	0.0350	0.0046	0.0304
188	0.0382	0.0050	0.0332
189	0.0476	0.0063	0.0413
190	0.0548	0.0065	0.0482
191	0.0831	0.0065	0.0766
192	0.1206	0.0065	0.1141
193	0.5219	0.0065	0.5154

194	0.0654	0.0065	0.0589
195	0.0423	0.0056	0.0367
196	0.0324	0.0043	0.0281
197	0.0369	0.0049	0.0320
198	0.0325	0.0043	0.0282
199	0.0293	0.0039	0.0254
200	0.0268	0.0035	0.0233
201	0.0248	0.0033	0.0215
202	0.0232	0.0031	0.0201
203	0.0218	0.0029	0.0189
204	0.0206	0.0027	0.0179
205	0.0196	0.0026	0.0170
206	0.0187	0.0025	0.0163
207	0.0179	0.0024	0.0156
208	0.0172	0.0023	0.0150
209	0.0166	0.0022	0.0144
210	0.0160	0.0021	0.0139
211	0.0155	0.0020	0.0135
212	0.0150	0.0020	0.0130
213	0.0146	0.0019	0.0127
214	0.0142	0.0019	0.0123
215	0.0138	0.0018	0.0120
216	0.0134	0.0018	0.0117
217	0.0162	0.0021	0.0140
218	0.0158	0.0021	0.0138
219	0.0155	0.0020	0.0135
220	0.0153	0.0020	0.0133
221	0.0150	0.0020	0.0130
222	0.0147	0.0019	0.0128
223	0.0145	0.0019	0.0126
224	0.0143	0.0019	0.0124
225	0.0140	0.0018	0.0122
226	0.0138	0.0018	0.0120
227	0.0136	0.0018	0.0118
228	0.0134	0.0018	0.0117
229	0.0133	0.0017	0.0115
230	0.0131	0.0017	0.0114
231	0.0129	0.0017	0.0112
232	0.0127	0.0017	0.0111
233	0.0126	0.0017	0.0109
234	0.0124	0.0016	0.0108
235	0.0123	0.0016	0.0107
236	0.0122	0.0016	0.0106
237	0.0120	0.0016	0.0104
238	0.0119	0.0016	0.0103
239	0.0118	0.0015	0.0102
240	0.0116	0.0015	0.0101
241	0.0115	0.0015	0.0100
242	0.0114	0.0015	0.0099
243	0.0113	0.0015	0.0098

244	0.0112	0.0015	0.0097
245	0.0111	0.0015	0.0096
246	0.0110	0.0014	0.0095
247	0.0109	0.0014	0.0094
248	0.0108	0.0014	0.0094
249	0.0107	0.0014	0.0093
250	0.0106	0.0014	0.0092
251	0.0105	0.0014	0.0091
252	0.0104	0.0014	0.0090
253	0.0103	0.0014	0.0090
254	0.0102	0.0013	0.0089
255	0.0102	0.0013	0.0088
256	0.0101	0.0013	0.0087
257	0.0100	0.0013	0.0087
258	0.0099	0.0013	0.0086
259	0.0098	0.0013	0.0086
260	0.0098	0.0013	0.0085
261	0.0097	0.0013	0.0084
262	0.0096	0.0013	0.0084
263	0.0096	0.0013	0.0083
264	0.0095	0.0013	0.0082
265	0.0094	0.0012	0.0082
266	0.0094	0.0012	0.0081
267	0.0093	0.0012	0.0081
268	0.0092	0.0012	0.0080
269	0.0092	0.0012	0.0080
270	0.0091	0.0012	0.0079
271	0.0091	0.0012	0.0079
272	0.0090	0.0012	0.0078
273	0.0090	0.0012	0.0078
274	0.0089	0.0012	0.0077
275	0.0089	0.0012	0.0077
276	0.0088	0.0012	0.0076
277	0.0087	0.0012	0.0076
278	0.0087	0.0011	0.0076
279	0.0086	0.0011	0.0075
280	0.0086	0.0011	0.0075
281	0.0085	0.0011	0.0074
282	0.0085	0.0011	0.0074
283	0.0085	0.0011	0.0073
284	0.0084	0.0011	0.0073
285	0.0084	0.0011	0.0073
286	0.0083	0.0011	0.0072
287	0.0083	0.0011	0.0072
288	0.0082	0.0011	0.0071

Total soil rain loss = 0.53(In)
Total effective rainfall = 4.12(In)
Peak flow rate in flood hydrograph = 8.27(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	2.5	5.0	7.5	10.0
0+ 5	0.0004	0.05	Q				
0+10	0.0014	0.15	Q				
0+15	0.0027	0.18	Q				
0+20	0.0040	0.19	Q				
0+25	0.0053	0.20	Q				
0+30	0.0067	0.20	Q				
0+35	0.0081	0.20	Q				
0+40	0.0095	0.20	Q				
0+45	0.0109	0.20	Q				
0+50	0.0123	0.20	Q				
0+55	0.0137	0.20	Q				
1+ 0	0.0152	0.21	Q				
1+ 5	0.0166	0.21	Q				
1+10	0.0180	0.21	Q				
1+15	0.0194	0.21	Q				
1+20	0.0208	0.21	QV				
1+25	0.0223	0.21	QV				
1+30	0.0237	0.21	QV				
1+35	0.0251	0.21	QV				
1+40	0.0266	0.21	QV				
1+45	0.0280	0.21	QV				
1+50	0.0295	0.21	QV				
1+55	0.0310	0.21	QV				
2+ 0	0.0324	0.21	QV				
2+ 5	0.0339	0.21	QV				
2+10	0.0353	0.21	QV				
2+15	0.0368	0.21	QV				
2+20	0.0383	0.21	QV				
2+25	0.0398	0.22	Q V				
2+30	0.0413	0.22	Q V				
2+35	0.0428	0.22	Q V				
2+40	0.0443	0.22	Q V				
2+45	0.0458	0.22	Q V				
2+50	0.0473	0.22	Q V				
2+55	0.0488	0.22	Q V				
3+ 0	0.0503	0.22	Q V				
3+ 5	0.0518	0.22	Q V				
3+10	0.0533	0.22	Q V				
3+15	0.0549	0.22	Q V				
3+20	0.0564	0.22	Q V				

```
3+25       0.0579      0.22  Q V       |          |          |          |
3+30       0.0595      0.22  Q V       |          |          |          |
3+35       0.0610      0.22  Q  V      |          |          |          |
3+40       0.0626      0.23  Q  V      |          |          |          |
3+45       0.0641      0.23  Q  V      |          |          |          |
3+50       0.0657      0.23  Q  V      |          |          |          |
3+55       0.0673      0.23  Q  V      |          |          |          |
4+ 0       0.0688      0.23  Q  V      |          |          |          |
4+ 5       0.0704      0.23  Q  V      |          |          |          |
4+10       0.0720      0.23  Q  V      |          |          |          |
4+15       0.0736      0.23  Q  V      |          |          |          |
4+20       0.0752      0.23  Q  V      |          |          |          |
4+25       0.0768      0.23  Q  V      |          |          |          |
4+30       0.0784      0.23  Q  V      |          |          |          |
4+35       0.0800      0.23  Q   V     |          |          |          |
4+40       0.0816      0.24  Q   V     |          |          |          |
4+45       0.0833      0.24  Q   V     |          |          |          |
4+50       0.0849      0.24  Q   V     |          |          |          |
4+55       0.0865      0.24  Q   V     |          |          |          |
5+ 0       0.0882      0.24  Q   V     |          |          |          |
5+ 5       0.0898      0.24  Q   V     |          |          |          |
5+10       0.0915      0.24  Q   V     |          |          |          |
5+15       0.0931      0.24  Q   V     |          |          |          |
5+20       0.0948      0.24  Q   V     |          |          |          |
5+25       0.0965      0.24  Q   V     |          |          |          |
5+30       0.0981      0.24  Q   V     |          |          |          |
5+35       0.0998      0.24  Q    V    |          |          |          |
5+40       0.1015      0.25  Q    V    |          |          |          |
5+45       0.1032      0.25  Q    V    |          |          |          |
5+50       0.1049      0.25  Q    V    |          |          |          |
5+55       0.1066      0.25  Q    V    |          |          |          |
6+ 0       0.1084      0.25  Q    V    |          |          |          |
6+ 5       0.1101      0.25  |Q   V    |          |          |          |
6+10       0.1118      0.25  |Q   V    |          |          |          |
6+15       0.1136      0.25  |Q   V    |          |          |          |
6+20       0.1153      0.25  |Q   V    |          |          |          |
6+25       0.1171      0.25  |Q   V    |          |          |          |
6+30       0.1188      0.26  |Q   V    |          |          |          |
6+35       0.1206      0.26  |Q    V   |          |          |          |
6+40       0.1224      0.26  |Q    V   |          |          |          |
6+45       0.1242      0.26  |Q    V   |          |          |          |
6+50       0.1260      0.26  |Q    V   |          |          |          |
6+55       0.1278      0.26  |Q    V   |          |          |          |
7+ 0       0.1296      0.26  |Q    V   |          |          |          |
7+ 5       0.1314      0.26  |Q    V   |          |          |          |
7+10       0.1332      0.27  |Q    V   |          |          |          |
7+15       0.1351      0.27  |Q    V   |          |          |          |
7+20       0.1369      0.27  |Q    V   |          |          |          |
7+25       0.1388      0.27  |Q    V   |          |          |          |
7+30       0.1406      0.27  |Q     V  |          |          |          |
```

```
 7+35       0.1425      0.27  |Q     V  |          |          |          |
 7+40       0.1444      0.27  |Q     V  |          |          |          |
 7+45       0.1462      0.27  |Q     V  |          |          |          |
 7+50       0.1481      0.28  |Q     V  |          |          |          |
 7+55       0.1501      0.28  |Q     V  |          |          |          |
 8+ 0       0.1520      0.28  |Q     V  |          |          |          |
 8+ 5       0.1539      0.28  |Q     V  |          |          |          |
 8+10       0.1558      0.28  |Q     V  |          |          |          |
 8+15       0.1578      0.28  |Q     V  |          |          |          |
 8+20       0.1597      0.28  |Q      V |          |          |          |
 8+25       0.1617      0.29  |Q      V |          |          |          |
 8+30       0.1637      0.29  |Q      V |          |          |          |
 8+35       0.1657      0.29  |Q      V |          |          |          |
 8+40       0.1677      0.29  |Q      V |          |          |          |
 8+45       0.1697      0.29  |Q      V |          |          |          |
 8+50       0.1717      0.29  |Q      V |          |          |          |
 8+55       0.1737      0.29  |Q      V |          |          |          |
 9+ 0       0.1758      0.30  |Q      V |          |          |          |
 9+ 5       0.1778      0.30  |Q      V |          |          |          |
 9+10       0.1799      0.30  |Q       V|          |          |          |
 9+15       0.1820      0.30  |Q       V|          |          |          |
 9+20       0.1841      0.30  |Q       V|          |          |          |
 9+25       0.1862      0.31  |Q       V|          |          |          |
 9+30       0.1883      0.31  |Q       V|          |          |          |
 9+35       0.1904      0.31  |Q       V|          |          |          |
 9+40       0.1925      0.31  |Q       V|          |          |          |
 9+45       0.1947      0.31  |Q       V|          |          |          |
 9+50       0.1969      0.32  |Q       V|          |          |          |
 9+55       0.1991      0.32  |Q        V          |          |          |
10+ 0       0.2013      0.32  |Q        V          |          |          |
10+ 5       0.2035      0.32  |Q        V          |          |          |
10+10       0.2057      0.32  |Q        V          |          |          |
10+15       0.2080      0.33  |Q        V          |          |          |
10+20       0.2102      0.33  |Q        V          |          |          |
10+25       0.2125      0.33  |Q        V          |          |          |
10+30       0.2148      0.33  |Q        V          |          |          |
10+35       0.2171      0.34  |Q        V          |          |          |
10+40       0.2194      0.34  |Q         |V         |          |          |
10+45       0.2218      0.34  |Q         |V         |          |          |
10+50       0.2241      0.34  |Q         |V         |          |          |
10+55       0.2265      0.35  |Q         |V         |          |          |
11+ 0       0.2289      0.35  |Q         |V         |          |          |
11+ 5       0.2313      0.35  |Q         |V         |          |          |
11+10       0.2338      0.35  |Q         |V         |          |          |
11+15       0.2362      0.36  |Q         |V         |          |          |
11+20       0.2387      0.36  |Q         | V        |          |          |
11+25       0.2412      0.36  |Q         | V        |          |          |
11+30       0.2437      0.37  |Q         | V        |          |          |
11+35       0.2463      0.37  |Q         | V        |          |          |
11+40       0.2489      0.37  |Q         | V        |          |          |
```

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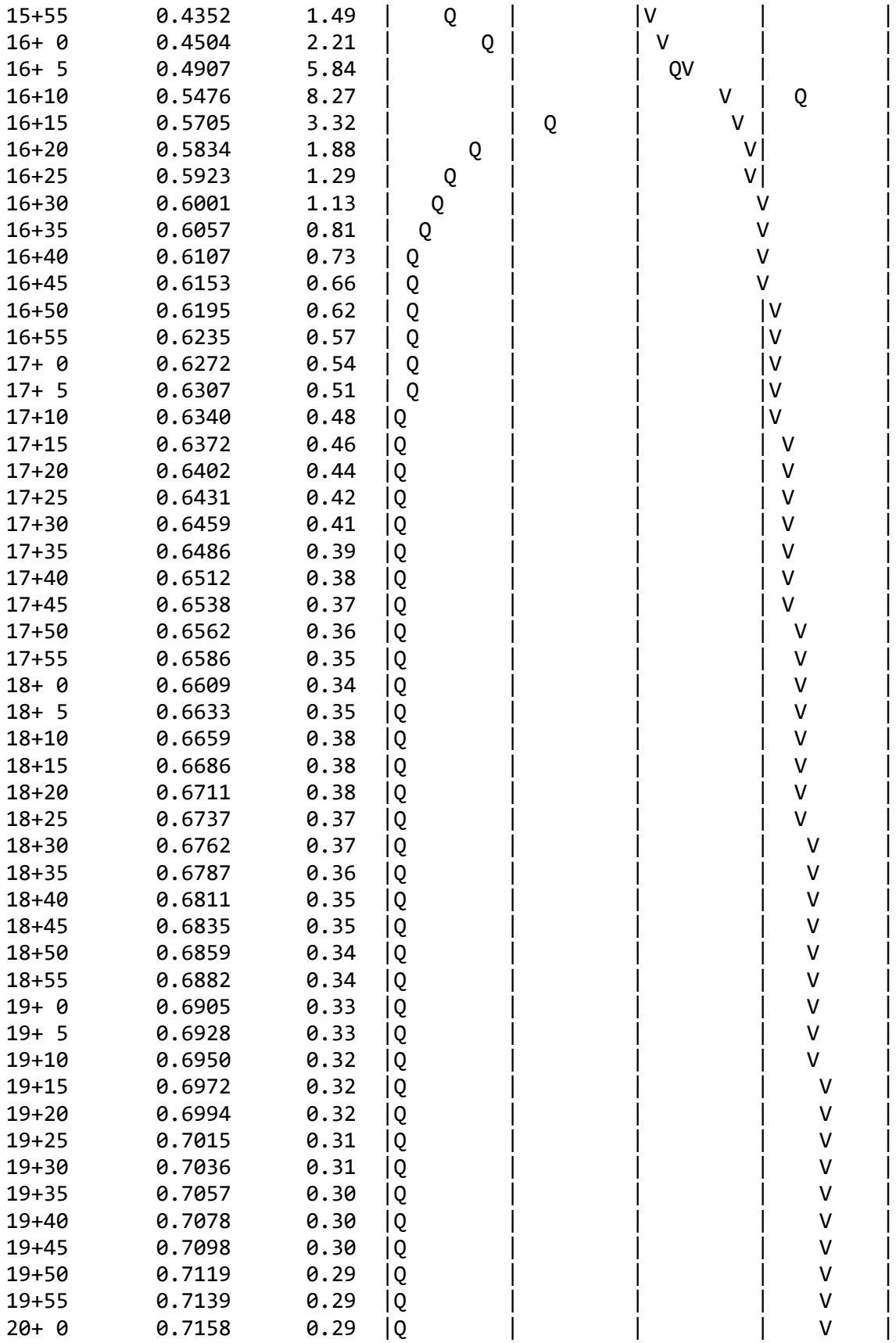
11+45       0.2515      0.38  |Q        | V       |         |         |
11+50       0.2541      0.38  |Q        | V       |         |         |
11+55       0.2567      0.38  |Q        | V       |         |         |
12+ 0       0.2594      0.39  |Q        |  V      |         |         |
12+ 5       0.2619      0.37  |Q        |  V      |         |         |
12+10       0.2643      0.34  |Q        |  V      |         |         |
12+15       0.2666      0.33  |Q        |  V      |         |         |
12+20       0.2688      0.33  |Q        |  V      |         |         |
12+25       0.2711      0.33  |Q        |  V      |         |         |
12+30       0.2735      0.34  |Q        |  V      |         |         |
12+35       0.2758      0.34  |Q        |  V      |         |         |
12+40       0.2782      0.35  |Q        |  V      |         |         |
12+45       0.2806      0.35  |Q        |   V     |         |         |
12+50       0.2831      0.36  |Q        |   V     |         |         |
12+55       0.2856      0.36  |Q        |   V     |         |         |
13+ 0       0.2881      0.37  |Q        |   V     |         |         |
13+ 5       0.2907      0.37  |Q        |   V     |         |         |
13+10       0.2933      0.38  |Q        |   V     |         |         |
13+15       0.2960      0.39  |Q        |   V     |         |         |
13+20       0.2987      0.39  |Q        |    V    |         |         |
13+25       0.3014      0.40  |Q        |    V    |         |         |
13+30       0.3042      0.41  |Q        |    V    |         |         |
13+35       0.3071      0.41  |Q        |    V    |         |         |
13+40       0.3100      0.42  |Q        |    V    |         |         |
13+45       0.3130      0.43  |Q        |    V    |         |         |
13+50       0.3160      0.44  |Q        |    V    |         |         |
13+55       0.3191      0.45  |Q        |     V   |         |         |
14+ 0       0.3223      0.46  |Q        |     V   |         |         |
14+ 5       0.3255      0.47  |Q        |     V   |         |         |
14+10       0.3289      0.48  |Q        |     V   |         |         |
14+15       0.3323      0.49  |Q        |     V   |         |         |
14+20       0.3358      0.51  | Q       |     V   |         |         |
14+25       0.3394      0.52  | Q       |      V  |         |         |
14+30       0.3431      0.54  | Q       |      V  |         |         |
14+35       0.3469      0.55  | Q       |      V  |         |         |
14+40       0.3508      0.57  | Q       |      V  |         |         |
14+45       0.3549      0.59  | Q       |      V  |         |         |
14+50       0.3591      0.61  | Q       |       V |         |         |
14+55       0.3635      0.64  | Q       |       V |         |         |
15+ 0       0.3681      0.66  | Q       |       V |         |         |
15+ 5       0.3729      0.69  | Q       |       V |         |         |
15+10       0.3779      0.73  | Q       |        V|         |         |
15+15       0.3832      0.77  |  Q      |        V|         |         |
15+20       0.3888      0.81  |  Q      |        V|         |         |
15+25       0.3942      0.80  |  Q      |        V|         |         |
15+30       0.3993      0.74  | Q       |         V         |         |
15+35       0.4046      0.77  |  Q      |         V         |         |
15+40       0.4105      0.85  |  Q      |         V         |         |
15+45       0.4171      0.96  |  Q      |         V         |         |
15+50       0.4250      1.14  |   Q     |         |V        |         |
```



```
   20+ 5       0.7178      0.28  |Q        |         |         |     V   |
   20+10       0.7197      0.28  |Q        |         |         |     V   |
   20+15       0.7216      0.28  |Q        |         |         |     V   |
   20+20       0.7235      0.28  |Q        |         |         |     V   |
   20+25       0.7254      0.27  |Q        |         |         |     V   |
   20+30       0.7273      0.27  |Q        |         |         |     V   |
   20+35       0.7291      0.27  |Q        |         |         |     V   |
   20+40       0.7309      0.27  |Q        |         |         |     V   |
   20+45       0.7328      0.26  |Q        |         |         |     V   |
   20+50       0.7345      0.26  |Q        |         |         |     V   |
   20+55       0.7363      0.26  |Q        |         |         |      V  |
   21+ 0       0.7381      0.26  |Q        |         |         |      V  |
   21+ 5       0.7398      0.25  |Q        |         |         |      V  |
   21+10       0.7416      0.25  |Q        |         |         |      V  |
   21+15       0.7433      0.25  Q         |         |         |      V  |
   21+20       0.7450      0.25  Q         |         |         |      V  |
   21+25       0.7467      0.25  Q         |         |         |      V  |
   21+30       0.7484      0.24  Q         |         |         |      V  |
   21+35       0.7500      0.24  Q         |         |         |      V  |
   21+40       0.7517      0.24  Q         |         |         |      V  |
   21+45       0.7533      0.24  Q         |         |         |      V  |
   21+50       0.7550      0.24  Q         |         |         |      V  |
   21+55       0.7566      0.23  Q         |         |         |       V |
   22+ 0       0.7582      0.23  Q         |         |         |       V |
   22+ 5       0.7598      0.23  Q         |         |         |       V |
   22+10       0.7614      0.23  Q         |         |         |       V |
   22+15       0.7629      0.23  Q         |         |         |       V |
   22+20       0.7645      0.23  Q         |         |         |       V |
   22+25       0.7661      0.23  Q         |         |         |       V |
   22+30       0.7676      0.22  Q         |         |         |       V |
   22+35       0.7691      0.22  Q         |         |         |       V |
   22+40       0.7707      0.22  Q         |         |         |       V |
   22+45       0.7722      0.22  Q         |         |         |       V |
   22+50       0.7737      0.22  Q         |         |         |       V |
   22+55       0.7752      0.22  Q         |         |         |       V |
   23+ 0       0.7767      0.22  Q         |         |         |        V|
   23+ 5       0.7781      0.21  Q         |         |         |        V|
   23+10       0.7796      0.21  Q         |         |         |        V|
   23+15       0.7811      0.21  Q         |         |         |        V|
   23+20       0.7825      0.21  Q         |         |         |        V|
   23+25       0.7840      0.21  Q         |         |         |        V|
   23+30       0.7854      0.21  Q         |         |         |        V|
   23+35       0.7868      0.21  Q         |         |         |        V|
   23+40       0.7882      0.21  Q         |         |         |        V|
   23+45       0.7897      0.21  Q         |         |         |        V|
   23+50       0.7911      0.20  Q         |         |         |        V|
   23+55       0.7925      0.20  Q         |         |         |        V|
   24+ 0       0.7938      0.20  Q         |         |         |        V|
-------------------------------------------------------------------------
```

APPENDIX 'E'

Basin Routing

Outlet Pipe Sizing—10 and 100 year storm event
Basin Routing—10 and 100 year storm events

Worksheet for Circular Pipe - 10yr

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.010
Channel Slope	0.007 ft/ft
Diameter	10.0 in
Discharge	2.40 cfs

Results	
Normal Depth	8.3 in
Flow Area	0.5 ft²
Wetted Perimeter	1.9 ft
Hydraulic Radius	3.0 in
Top Width	0.63 ft
Critical Depth	8.3 in
Percent Full	82.6 %
Critical Slope	0.007 ft/ft
Velocity	4.98 ft/s
Velocity Head	0.39 ft
Specific Energy	1.07 ft
Froude Number	1.005
Maximum Discharge	2.56 cfs
Discharge Full	2.38 cfs
Slope Full	0.007 ft/ft
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	82.6 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	8.3 in
Critical Depth	8.3 in
Channel Slope	0.007 ft/ft
Critical Slope	0.007 ft/ft

Worksheet for Circular Pipe 100yr out

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.010
Channel Slope	0.007 ft/ft
Diameter	12.0 in
Discharge	3.20 cfs

Results	
Normal Depth	8.3 in
Flow Area	0.6 ft²
Wetted Perimeter	2.0 ft
Hydraulic Radius	3.5 in
Top Width	0.92 ft
Critical Depth	9.2 in
Percent Full	69.3 %
Critical Slope	0.005 ft/ft
Velocity	5.51 ft/s
Velocity Head	0.47 ft
Specific Energy	1.17 ft
Froude Number	1.226
Maximum Discharge	4.17 cfs
Discharge Full	3.87 cfs
Slope Full	0.005 ft/ft
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	69.3 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	8.3 in
Critical Depth	9.2 in
Channel Slope	0.007 ft/ft
Critical Slope	0.005 ft/ft

FLOOD HYDROGRAPH ROUTING PROGRAM

Study date: 07/01/22

Palmdale and Cantina, NE corner
10-year basin routing

Program License Serial Number 6385

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

From study/file name: rdev05dev10yr.rte
**********HYDROGRAPH DATA**********
Number of intervals = 293
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 4.776 (CFS)
Total volume = 0.426 (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 101.000 to Point/Station 105.000
**** RETARDING BASIN ROUTING ****
_____

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 293
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

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

Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.500	0.046	0.001	0.046	0.046
2.500	0.077	0.001	0.077	0.077
3.500	0.108	2.400	0.100	0.116
4.000	0.124	2.400	0.116	0.132
4.500	0.125	2.400	0.117	0.133
5.000	0.127	2.400	0.119	0.135

Hydrograph Detention Basin Routing

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

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 1.2 2.39 3.58 4.78	Depth (Ft.)
0.083	0.03	0.00	0.000	O | | | |	0.00
0.167	0.08	0.00	0.000	O | | | |	0.01
0.250	0.09	0.00	0.001	O | | | |	0.03
0.333	0.10	0.00	0.002	O | | | |	0.05
0.417	0.10	0.00	0.002	O | | | |	0.08
0.500	0.10	0.00	0.003	O | | | |	0.10
0.583	0.10	0.00	0.004	O | | | |	0.12
0.667	0.10	0.00	0.004	O | | | |	0.14
0.750	0.10	0.00	0.005	O | | | |	0.17
0.833	0.10	0.00	0.006	O | | | |	0.19
0.917	0.10	0.00	0.007	O | | | |	0.21
1.000	0.10	0.00	0.007	O | | | |	0.24
1.083	0.10	0.00	0.008	O | | | |	0.26
1.167	0.10	0.00	0.009	O | | | |	0.28
1.250	0.10	0.00	0.009	O | | | |	0.31
1.333	0.10	0.00	0.010	O | | | |	0.33
1.417	0.10	0.00	0.011	O | | | |	0.35
1.500	0.10	0.00	0.012	O | | | |	0.38
1.583	0.11	0.00	0.012	O | | | |	0.40
1.667	0.11	0.00	0.013	O | | | |	0.42
1.750	0.11	0.00	0.014	O | | | |	0.45
1.833	0.11	0.00	0.014	O | | | |	0.47
1.917	0.11	0.00	0.015	O | | | |	0.49
2.000	0.11	0.00	0.016	O | | | |	0.52
2.083	0.11	0.00	0.017	O | | | |	0.54
2.167	0.11	0.00	0.017	O | | | |	0.57
2.250	0.11	0.00	0.018	O | | | |	0.59
2.333	0.11	0.00	0.019	O | | | |	0.61

2.417	0.11	0.00	0.020	O	|	|	|	|	0.64
2.500	0.11	0.00	0.020	O	|	|	|	|	0.66
2.583	0.11	0.00	0.021	O	|	|	|	|	0.69
2.667	0.11	0.00	0.022	O	|	|	|	|	0.71
2.750	0.11	0.00	0.023	O	|	|	|	|	0.74
2.833	0.11	0.00	0.023	O	|	|	|	|	0.76
2.917	0.11	0.00	0.024	O	|	|	|	|	0.79
3.000	0.11	0.00	0.025	O	|	|	|	|	0.81
3.083	0.11	0.00	0.026	O	|	|	|	|	0.84
3.167	0.11	0.00	0.026	O	|	|	|	|	0.86
3.250	0.11	0.00	0.027	O	|	|	|	|	0.89
3.333	0.11	0.00	0.028	O	|	|	|	|	0.91
3.417	0.11	0.00	0.029	O	|	|	|	|	0.94
3.500	0.11	0.00	0.029	O	|	|	|	|	0.96
3.583	0.11	0.00	0.030	O	|	|	|	|	0.99
3.667	0.11	0.00	0.031	O	|	|	|	|	1.01
3.750	0.11	0.00	0.032	O	|	|	|	|	1.04
3.833	0.11	0.00	0.033	O	|	|	|	|	1.06
3.917	0.12	0.00	0.033	O	|	|	|	|	1.09
4.000	0.12	0.00	0.034	O	|	|	|	|	1.11
4.083	0.12	0.00	0.035	O	|	|	|	|	1.14
4.167	0.12	0.00	0.036	O	|	|	|	|	1.17
4.250	0.12	0.00	0.037	O	|	|	|	|	1.19
4.333	0.12	0.00	0.037	O	|	|	|	|	1.22
4.417	0.12	0.00	0.038	O	|	|	|	|	1.24
4.500	0.12	0.00	0.039	O	|	|	|	|	1.27
4.583	0.12	0.00	0.040	O	|	|	|	|	1.30
4.667	0.12	0.00	0.041	O	|	|	|	|	1.32
4.750	0.12	0.00	0.041	O	|	|	|	|	1.35
4.833	0.12	0.00	0.042	O	|	|	|	|	1.38
4.917	0.12	0.00	0.043	O	|	|	|	|	1.40
5.000	0.12	0.00	0.044	O	|	|	|	|	1.43
5.083	0.12	0.00	0.045	O	|	|	|	|	1.46
5.167	0.12	0.00	0.046	O	|	|	|	|	1.48
5.250	0.12	0.00	0.046	O	|	|	|	|	1.51
5.333	0.12	0.00	0.047	O	|	|	|	|	1.54
5.417	0.12	0.00	0.048	O	|	|	|	|	1.57
5.500	0.12	0.00	0.049	O	|	|	|	|	1.59
5.583	0.12	0.00	0.050	O	|	|	|	|	1.62
5.667	0.12	0.00	0.051	O	|	|	|	|	1.65
5.750	0.13	0.00	0.051	O	|	|	|	|	1.68
5.833	0.13	0.00	0.052	O	|	|	|	|	1.70
5.917	0.13	0.00	0.053	O	|	|	|	|	1.73
6.000	0.13	0.00	0.054	O	|	|	|	|	1.76
6.083	0.13	0.00	0.055	O	|	|	|	|	1.79
6.167	0.13	0.00	0.056	O	|	|	|	|	1.82
6.250	0.13	0.00	0.057	O	|	|	|	|	1.84
6.333	0.13	0.00	0.058	O	|	|	|	|	1.87
6.417	0.13	0.00	0.058	O	|	|	|	|	1.90
6.500	0.13	0.00	0.059	O	|	|	|	|	1.93

6.583	0.13	0.00	0.060	O				1.96
6.667	0.13	0.00	0.061	O				1.99
6.750	0.13	0.00	0.062	O				2.02
6.833	0.13	0.00	0.063	O				2.05
6.917	0.13	0.00	0.064	O				2.07
7.000	0.13	0.00	0.065	O				2.10
7.083	0.13	0.00	0.066	O				2.13
7.167	0.14	0.00	0.067	O				2.16
7.250	0.14	0.00	0.067	O				2.19
7.333	0.14	0.00	0.068	O				2.22
7.417	0.14	0.00	0.069	O				2.25
7.500	0.14	0.00	0.070	O				2.28
7.583	0.14	0.00	0.071	O				2.31
7.667	0.14	0.00	0.072	O				2.35
7.750	0.14	0.00	0.073	O				2.38
7.833	0.14	0.00	0.074	O				2.41
7.917	0.14	0.00	0.075	O				2.44
8.000	0.14	0.00	0.076	O				2.47
8.083	0.14	0.00	0.077	O				2.50
8.167	0.14	0.06	0.078	O				2.53
8.250	0.14	0.10	0.078	O				2.54
8.333	0.15	0.12	0.078	O				2.55
8.417	0.15	0.13	0.079	O				2.55
8.500	0.15	0.14	0.079	O				2.56
8.583	0.15	0.14	0.079	O				2.56
8.667	0.15	0.14	0.079	O				2.56
8.750	0.15	0.15	0.079	OI				2.56
8.833	0.15	0.15	0.079	OI				2.56
8.917	0.15	0.15	0.079	|O				2.56
9.000	0.15	0.15	0.079	|O				2.56
9.083	0.15	0.15	0.079	|O				2.56
9.167	0.15	0.15	0.079	|O				2.56
9.250	0.16	0.15	0.079	|O				2.56
9.333	0.16	0.15	0.079	|O				2.56
9.417	0.16	0.16	0.079	|O				2.56
9.500	0.16	0.16	0.079	|O				2.56
9.583	0.16	0.16	0.079	|O				2.57
9.667	0.16	0.16	0.079	|O				2.57
9.750	0.16	0.16	0.079	|O				2.57
9.833	0.16	0.16	0.079	|O				2.57
9.917	0.16	0.16	0.079	|O				2.57
10.000	0.16	0.16	0.079	|O				2.57
10.083	0.17	0.16	0.079	|O				2.57
10.167	0.17	0.17	0.079	|O				2.57
10.250	0.17	0.17	0.079	|O				2.57
10.333	0.17	0.17	0.079	|O				2.57
10.417	0.17	0.17	0.079	|O				2.57
10.500	0.17	0.17	0.079	|O				2.57
10.583	0.17	0.17	0.079	|O				2.57
10.667	0.18	0.17	0.079	|O				2.57

10.750	0.18	0.17	0.079	O				2.57
10.833	0.18	0.18	0.079	O				2.57
10.917	0.18	0.18	0.079	O				2.57
11.000	0.18	0.18	0.079	O				2.57
11.083	0.18	0.18	0.079	O				2.57
11.167	0.18	0.18	0.079	O				2.58
11.250	0.19	0.18	0.079	O				2.58
11.333	0.19	0.18	0.079	O				2.58
11.417	0.19	0.19	0.079	O				2.58
11.500	0.19	0.19	0.079	O				2.58
11.583	0.19	0.19	0.079	O				2.58
11.667	0.19	0.19	0.079	O				2.58
11.750	0.20	0.19	0.079	O				2.58
11.833	0.20	0.19	0.080	O				2.58
11.917	0.20	0.20	0.080	O				2.58
12.000	0.20	0.20	0.080	O				2.58
12.083	0.20	0.20	0.080	O				2.58
12.167	0.18	0.20	0.080	O				2.58
12.250	0.18	0.19	0.079	O				2.58
12.333	0.18	0.19	0.079	O				2.58
12.417	0.18	0.18	0.079	O				2.58
12.500	0.19	0.18	0.079	O				2.58
12.583	0.19	0.19	0.079	O				2.58
12.667	0.19	0.19	0.079	O				2.58
12.750	0.19	0.19	0.079	O				2.58
12.833	0.20	0.19	0.079	O				2.58
12.917	0.20	0.19	0.079	O				2.58
13.000	0.20	0.20	0.080	O				2.58
13.083	0.21	0.20	0.080	O				2.58
13.167	0.21	0.20	0.080	O				2.58
13.250	0.21	0.21	0.080	O				2.59
13.333	0.22	0.21	0.080	O				2.59
13.417	0.22	0.21	0.080	O				2.59
13.500	0.22	0.22	0.080	O				2.59
13.583	0.23	0.22	0.080	O				2.59
13.667	0.23	0.23	0.080	O				2.59
13.750	0.24	0.23	0.080	O				2.60
13.833	0.24	0.23	0.080	O				2.60
13.917	0.25	0.24	0.080	O				2.60
14.000	0.25	0.24	0.080	O				2.60
14.083	0.26	0.25	0.080	O				2.60
14.167	0.27	0.26	0.080	O				2.61
14.250	0.27	0.26	0.080	O				2.61
14.333	0.28	0.27	0.080	O				2.61
14.417	0.29	0.27	0.081	O				2.61
14.500	0.30	0.28	0.081	O				2.62
14.583	0.31	0.29	0.081	OI				2.62
14.667	0.32	0.30	0.081	O				2.62
14.750	0.33	0.31	0.081	O				2.63
14.833	0.34	0.32	0.081	O				2.63

14.917	0.35	0.33	0.081	O				2.64
15.000	0.37	0.34	0.081	O				2.64
15.083	0.38	0.36	0.082	O				2.65
15.167	0.40	0.37	0.082	O				2.65
15.250	0.42	0.39	0.082	O				2.66
15.333	0.45	0.41	0.082	OI				2.67
15.417	0.44	0.42	0.082	O				2.68
15.500	0.41	0.43	0.082	O				2.68
15.583	0.43	0.42	0.082	O				2.68
15.667	0.47	0.44	0.083	OI				2.68
15.750	0.54	0.46	0.083	O				2.69
15.833	0.64	0.52	0.084	OI				2.71
15.917	0.81	0.60	0.085	OI				2.75
16.000	1.20	0.77	0.087	O	I			2.82
16.083	3.34	1.40	0.095		O		I	3.08
16.167	4.78	2.40	0.110			O		I 3.56
16.250	1.88	2.40	0.116		I	O		3.76
16.333	1.07	2.40	0.110		I	O		3.56
16.417	0.73	1.89	0.101	I	O			3.29
16.500	0.63	1.38	0.095	I	O			3.08
16.583	0.45	1.03	0.090	I O				2.93
16.667	0.40	0.77	0.087	I O				2.82
16.750	0.37	0.61	0.085	I O				2.75
16.833	0.34	0.50	0.083	IO				2.71
16.917	0.32	0.43	0.083	O				2.68
17.000	0.30	0.38	0.082	IO				2.66
17.083	0.28	0.34	0.081	IO				2.64
17.167	0.27	0.31	0.081	IO				2.63
17.250	0.25	0.29	0.081	O				2.62
17.333	0.24	0.27	0.081	O				2.61
17.417	0.23	0.26	0.080	O				2.61
17.500	0.22	0.25	0.080	O				2.60
17.583	0.22	0.23	0.080	O				2.60
17.667	0.21	0.23	0.080	O				2.59
17.750	0.20	0.22	0.080	O				2.59
17.833	0.20	0.21	0.080	O				2.59
17.917	0.19	0.20	0.080	O				2.58
18.000	0.19	0.20	0.080	O				2.58
18.083	0.19	0.19	0.079	O				2.58
18.167	0.20	0.19	0.079	O				2.58
18.250	0.20	0.20	0.080	O				2.58
18.333	0.20	0.20	0.080	O				2.58
18.417	0.19	0.20	0.080	O				2.58
18.500	0.19	0.19	0.079	O				2.58
18.583	0.19	0.19	0.079	O				2.58
18.667	0.18	0.19	0.079	O				2.58
18.750	0.18	0.19	0.079	O				2.58
18.833	0.18	0.18	0.079	O				2.58
18.917	0.17	0.18	0.079	O				2.57
19.000	0.17	0.18	0.079	O				2.57

19.083	0.17	0.17	0.079	|O	|	|	|	2.57
19.167	0.17	0.17	0.079	|O	|	|	|	2.57
19.250	0.16	0.17	0.079	|O	|	|	|	2.57
19.333	0.16	0.17	0.079	|O	|	|	|	2.57
19.417	0.16	0.16	0.079	|O	|	|	|	2.57
19.500	0.16	0.16	0.079	|O	|	|	|	2.57
19.583	0.16	0.16	0.079	|O	|	|	|	2.57
19.667	0.15	0.16	0.079	|O	|	|	|	2.57
19.750	0.15	0.16	0.079	|O	|	|	|	2.56
19.833	0.15	0.15	0.079	|O	|	|	|	2.56
19.917	0.15	0.15	0.079	IO	|	|	|	2.56
20.000	0.15	0.15	0.079	IO	|	|	|	2.56
20.083	0.15	0.15	0.079	O	|	|	|	2.56
20.167	0.14	0.15	0.079	O	|	|	|	2.56
20.250	0.14	0.15	0.079	O	|	|	|	2.56
20.333	0.14	0.14	0.079	O	|	|	|	2.56
20.417	0.14	0.14	0.079	O	|	|	|	2.56
20.500	0.14	0.14	0.079	O	|	|	|	2.56
20.583	0.14	0.14	0.079	O	|	|	|	2.56
20.667	0.14	0.14	0.079	O	|	|	|	2.56
20.750	0.13	0.14	0.079	O	|	|	|	2.56
20.833	0.13	0.14	0.079	O	|	|	|	2.56
20.917	0.13	0.13	0.079	O	|	|	|	2.56
21.000	0.13	0.13	0.079	O	|	|	|	2.55
21.083	0.13	0.13	0.079	O	|	|	|	2.55
21.167	0.13	0.13	0.079	O	|	|	|	2.55
21.250	0.13	0.13	0.079	O	|	|	|	2.55
21.333	0.13	0.13	0.079	O	|	|	|	2.55
21.417	0.12	0.13	0.079	O	|	|	|	2.55
21.500	0.12	0.13	0.079	O	|	|	|	2.55
21.583	0.12	0.12	0.079	O	|	|	|	2.55
21.667	0.12	0.12	0.079	O	|	|	|	2.55
21.750	0.12	0.12	0.079	O	|	|	|	2.55
21.833	0.12	0.12	0.079	O	|	|	|	2.55
21.917	0.12	0.12	0.079	O	|	|	|	2.55
22.000	0.12	0.12	0.079	O	|	|	|	2.55
22.083	0.12	0.12	0.079	O	|	|	|	2.55
22.167	0.12	0.12	0.079	O	|	|	|	2.55
22.250	0.12	0.12	0.079	O	|	|	|	2.55
22.333	0.11	0.12	0.078	O	|	|	|	2.55
22.417	0.11	0.12	0.078	O	|	|	|	2.55
22.500	0.11	0.11	0.078	O	|	|	|	2.55
22.583	0.11	0.11	0.078	O	|	|	|	2.55
22.667	0.11	0.11	0.078	O	|	|	|	2.55
22.750	0.11	0.11	0.078	O	|	|	|	2.55
22.833	0.11	0.11	0.078	O	|	|	|	2.55
22.917	0.11	0.11	0.078	O	|	|	|	2.55
23.000	0.11	0.11	0.078	O	|	|	|	2.55
23.083	0.11	0.11	0.078	O	|	|	|	2.55
23.167	0.11	0.11	0.078	O	|	|	|	2.54

23.250	0.11	0.11	0.078	O	|	|	|	2.54
23.333	0.11	0.11	0.078	O	|	|	|	2.54
23.417	0.11	0.11	0.078	O	|	|	|	2.54
23.500	0.10	0.11	0.078	O	|	|	|	2.54
23.583	0.10	0.11	0.078	O	|	|	|	2.54
23.667	0.10	0.10	0.078	O	|	|	|	2.54
23.750	0.10	0.10	0.078	O	|	|	|	2.54
23.833	0.10	0.10	0.078	O	|	|	|	2.54
23.917	0.10	0.10	0.078	O	|	|	|	2.54
24.000	0.10	0.10	0.078	O	|	|	|	2.54
24.083	0.07	0.10	0.078	O	|	|	|	2.54
24.167	0.02	0.08	0.078	O	|	|	|	2.53
24.250	0.01	0.05	0.078	O	|	|	|	2.52
24.333	0.00	0.03	0.077	O	|	|	|	2.51
24.417	0.00	0.02	0.077	O	|	|	|	2.51
24.500	0.00	0.01	0.077	O	|	|	|	2.50
24.583	0.00	0.01	0.077	O	|	|	|	2.50
24.667	0.00	0.00	0.077	O	|	|	|	2.50
24.750	0.00	0.00	0.077	O	|	|	|	2.50
24.833	0.00	0.00	0.077	O	|	|	|	2.50
24.917	0.00	0.00	0.077	O	|	|	|	2.50

Remaining water in basin = 0.08 (Ac.Ft)

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

Number of intervals = 299
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 2.400 (CFS)
Total volume = 0.349 (Ac.Ft)

Status of hydrographs being held in storage

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

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FLOOD HYDROGRAPH ROUTING PROGRAM

Study date: 07/01/22

Palmdale and Cantina, NE corner
100-year basin routing

Program License Serial Number 6385

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

From study/file name: rdev05dev100yr.rte
**********HYDROGRAPH DATA**********
Number of intervals = 293
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 8.266 (CFS)
Total volume = 0.795 (Ac.Ft)

Status of hydrographs being held in storage

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

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Process from Point/Station 101.000 to Point/Station 105.000
**** RETARDING BASIN ROUTING ****
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User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 293
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

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

Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.500	0.046	0.001	0.046	0.046
2.500	0.077	0.001	0.077	0.077
3.500	0.108	5.600	0.089	0.127
4.000	0.124	5.600	0.105	0.143
4.500	0.125	5.600	0.106	0.144
5.000	0.127	5.600	0.108	0.146

Hydrograph Detention Basin Routing

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

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 2.1 4.13 6.20 8.27	Depth (Ft.)
0.083	0.05	0.00	0.000	O | | | |	0.01
0.167	0.15	0.00	0.001	O | | | |	0.03
0.250	0.18	0.00	0.002	O | | | |	0.07
0.333	0.19	0.00	0.003	O | | | |	0.11
0.417	0.20	0.00	0.005	O | | | |	0.15
0.500	0.20	0.00	0.006	O | | | |	0.20
0.583	0.20	0.00	0.007	O | | | |	0.24
0.667	0.20	0.00	0.009	O | | | |	0.29
0.750	0.20	0.00	0.010	O | | | |	0.33
0.833	0.20	0.00	0.012	O | | | |	0.38
0.917	0.20	0.00	0.013	O | | | |	0.42
1.000	0.21	0.00	0.014	O | | | |	0.47
1.083	0.21	0.00	0.016	O | | | |	0.52
1.167	0.21	0.00	0.017	O | | | |	0.56
1.250	0.21	0.00	0.019	O | | | |	0.61
1.333	0.21	0.00	0.020	O | | | |	0.66
1.417	0.21	0.00	0.022	O | | | |	0.70
1.500	0.21	0.00	0.023	O | | | |	0.75
1.583	0.21	0.00	0.024	O | | | |	0.80
1.667	0.21	0.00	0.026	O | | | |	0.84
1.750	0.21	0.00	0.027	O | | | |	0.89
1.833	0.21	0.00	0.029	O | | | |	0.94
1.917	0.21	0.00	0.030	O | | | |	0.98
2.000	0.21	0.00	0.032	O | | | |	1.03
2.083	0.21	0.00	0.033	O | | | |	1.08
2.167	0.21	0.00	0.035	O | | | |	1.13
2.250	0.21	0.00	0.036	O | | | |	1.17
2.333	0.21	0.00	0.037	O | | | |	1.22

2.417	0.22	0.00	0.039	O	|	|	|	1.27
2.500	0.22	0.00	0.040	O	|	|	|	1.32
2.583	0.22	0.00	0.042	O	|	|	|	1.37
2.667	0.22	0.00	0.043	O	|	|	|	1.42
2.750	0.22	0.00	0.045	O	|	|	|	1.46
2.833	0.22	0.00	0.046	O	|	|	|	1.51
2.917	0.22	0.00	0.048	O	|	|	|	1.56
3.000	0.22	0.00	0.049	O	|	|	|	1.61
3.083	0.22	0.00	0.051	O	|	|	|	1.66
3.167	0.22	0.00	0.052	O	|	|	|	1.71
3.250	0.22	0.00	0.054	O	|	|	|	1.76
3.333	0.22	0.00	0.055	O	|	|	|	1.81
3.417	0.22	0.00	0.057	O	|	|	|	1.85
3.500	0.22	0.00	0.059	O	|	|	|	1.90
3.583	0.22	0.00	0.060	O	|	|	|	1.95
3.667	0.23	0.00	0.062	O	|	|	|	2.00
3.750	0.23	0.00	0.063	O	|	|	|	2.05
3.833	0.23	0.00	0.065	O	|	|	|	2.10
3.917	0.23	0.00	0.066	O	|	|	|	2.15
4.000	0.23	0.00	0.068	O	|	|	|	2.20
4.083	0.23	0.00	0.069	O	|	|	|	2.26
4.167	0.23	0.00	0.071	O	|	|	|	2.31
4.250	0.23	0.00	0.073	O	|	|	|	2.36
4.333	0.23	0.00	0.074	O	|	|	|	2.41
4.417	0.23	0.00	0.076	O	|	|	|	2.46
4.500	0.23	0.04	0.077	O	|	|	|	2.51
4.583	0.23	0.19	0.078	O	|	|	|	2.53
4.667	0.24	0.22	0.078	O	|	|	|	2.54
4.750	0.24	0.23	0.078	O	|	|	|	2.54
4.833	0.24	0.24	0.078	O	|	|	|	2.54
4.917	0.24	0.24	0.078	O	|	|	|	2.54
5.000	0.24	0.24	0.078	O	|	|	|	2.54
5.083	0.24	0.24	0.078	O	|	|	|	2.54
5.167	0.24	0.24	0.078	O	|	|	|	2.54
5.250	0.24	0.24	0.078	O	|	|	|	2.54
5.333	0.24	0.24	0.078	O	|	|	|	2.54
5.417	0.24	0.24	0.078	O	|	|	|	2.54
5.500	0.24	0.24	0.078	O	|	|	|	2.54
5.583	0.24	0.24	0.078	O	|	|	|	2.54
5.667	0.25	0.25	0.078	O	|	|	|	2.54
5.750	0.25	0.25	0.078	O	|	|	|	2.54
5.833	0.25	0.25	0.078	O	|	|	|	2.54
5.917	0.25	0.25	0.078	O	|	|	|	2.54
6.000	0.25	0.25	0.078	O	|	|	|	2.54
6.083	0.25	0.25	0.078	O	|	|	|	2.54
6.167	0.25	0.25	0.078	O	|	|	|	2.54
6.250	0.25	0.25	0.078	O	|	|	|	2.54
6.333	0.25	0.25	0.078	O	|	|	|	2.55
6.417	0.25	0.25	0.078	O	|	|	|	2.55
6.500	0.26	0.26	0.078	O	|	|	|	2.55

6.583	0.26	0.26	0.078	O				2.55
6.667	0.26	0.26	0.078	O				2.55
6.750	0.26	0.26	0.078	|O				2.55
6.833	0.26	0.26	0.078	|O				2.55
6.917	0.26	0.26	0.078	|O				2.55
7.000	0.26	0.26	0.078	|O				2.55
7.083	0.26	0.26	0.078	|O				2.55
7.167	0.27	0.26	0.078	|O				2.55
7.250	0.27	0.27	0.078	|O				2.55
7.333	0.27	0.27	0.078	|O				2.55
7.417	0.27	0.27	0.078	|O				2.55
7.500	0.27	0.27	0.078	|O				2.55
7.583	0.27	0.27	0.078	|O				2.55
7.667	0.27	0.27	0.078	|O				2.55
7.750	0.27	0.27	0.079	|O				2.55
7.833	0.28	0.27	0.079	|O				2.55
7.917	0.28	0.28	0.079	|O				2.55
8.000	0.28	0.28	0.079	|O				2.55
8.083	0.28	0.28	0.079	|O				2.55
8.167	0.28	0.28	0.079	|O				2.55
8.250	0.28	0.28	0.079	|O				2.55
8.333	0.28	0.28	0.079	|O				2.55
8.417	0.29	0.28	0.079	|O				2.55
8.500	0.29	0.29	0.079	|O				2.55
8.583	0.29	0.29	0.079	|O				2.55
8.667	0.29	0.29	0.079	|O				2.55
8.750	0.29	0.29	0.079	|O				2.55
8.833	0.29	0.29	0.079	|O				2.55
8.917	0.29	0.29	0.079	|O				2.55
9.000	0.30	0.30	0.079	|O				2.55
9.083	0.30	0.30	0.079	|O				2.55
9.167	0.30	0.30	0.079	|O				2.55
9.250	0.30	0.30	0.079	|O				2.55
9.333	0.30	0.30	0.079	|O				2.55
9.417	0.31	0.30	0.079	|O				2.55
9.500	0.31	0.31	0.079	|O				2.55
9.583	0.31	0.31	0.079	|O				2.55
9.667	0.31	0.31	0.079	|O				2.56
9.750	0.31	0.31	0.079	|O				2.56
9.833	0.32	0.31	0.079	|O				2.56
9.917	0.32	0.32	0.079	|O				2.56
10.000	0.32	0.32	0.079	|O				2.56
10.083	0.32	0.32	0.079	|O				2.56
10.167	0.32	0.32	0.079	|O				2.56
10.250	0.33	0.32	0.079	|O				2.56
10.333	0.33	0.33	0.079	|O				2.56
10.417	0.33	0.33	0.079	|O				2.56
10.500	0.33	0.33	0.079	|O				2.56
10.583	0.34	0.33	0.079	|O				2.56
10.667	0.34	0.34	0.079	|O				2.56

10.750	0.34	0.34	0.079	O				2.56
10.833	0.34	0.34	0.079	O				2.56
10.917	0.35	0.34	0.079	O				2.56
11.000	0.35	0.35	0.079	O				2.56
11.083	0.35	0.35	0.079	O				2.56
11.167	0.35	0.35	0.079	O				2.56
11.250	0.36	0.35	0.079	O				2.56
11.333	0.36	0.36	0.079	O				2.56
11.417	0.36	0.36	0.079	O				2.56
11.500	0.37	0.36	0.079	O				2.56
11.583	0.37	0.37	0.079	O				2.57
11.667	0.37	0.37	0.079	O				2.57
11.750	0.38	0.37	0.079	O				2.57
11.833	0.38	0.38	0.079	O				2.57
11.917	0.38	0.38	0.079	O				2.57
12.000	0.39	0.38	0.079	O				2.57
12.083	0.37	0.38	0.079	O				2.57
12.167	0.34	0.36	0.079	O				2.56
12.250	0.33	0.34	0.079	O				2.56
12.333	0.33	0.33	0.079	O				2.56
12.417	0.33	0.33	0.079	O				2.56
12.500	0.34	0.34	0.079	O				2.56
12.583	0.34	0.34	0.079	O				2.56
12.667	0.35	0.34	0.079	O				2.56
12.750	0.35	0.35	0.079	O				2.56
12.833	0.36	0.35	0.079	O				2.56
12.917	0.36	0.36	0.079	O				2.56
13.000	0.37	0.36	0.079	O				2.56
13.083	0.37	0.37	0.079	O				2.57
13.167	0.38	0.38	0.079	O				2.57
13.250	0.39	0.38	0.079	O				2.57
13.333	0.39	0.39	0.079	O				2.57
13.417	0.40	0.39	0.079	O				2.57
13.500	0.41	0.40	0.079	O				2.57
13.583	0.41	0.41	0.079	O				2.57
13.667	0.42	0.42	0.079	O				2.57
13.750	0.43	0.42	0.079	O				2.58
13.833	0.44	0.43	0.079	O				2.58
13.917	0.45	0.44	0.079	O				2.58
14.000	0.46	0.45	0.079	O				2.58
14.083	0.47	0.46	0.080	O				2.58
14.167	0.48	0.47	0.080	O				2.58
14.250	0.49	0.49	0.080	O				2.59
14.333	0.51	0.50	0.080	O				2.59
14.417	0.52	0.51	0.080	OI				2.59
14.500	0.54	0.53	0.080	O				2.59
14.583	0.55	0.54	0.080	O				2.60
14.667	0.57	0.56	0.080	O				2.60
14.750	0.59	0.58	0.080	O				2.60
14.833	0.61	0.60	0.080	O				2.61

14.917	0.64	0.62	0.080	O					2.61
15.000	0.66	0.64	0.081	O					2.61
15.083	0.69	0.67	0.081	O					2.62
15.167	0.73	0.70	0.081	O					2.63
15.250	0.77	0.74	0.081	O					2.63
15.333	0.81	0.78	0.081	O					2.64
15.417	0.80	0.80	0.081	O					2.64
15.500	0.74	0.77	0.081	O					2.64
15.583	0.77	0.76	0.081	O					2.64
15.667	0.85	0.80	0.081	O					2.64
15.750	0.96	0.88	0.082	O					2.66
15.833	1.14	1.01	0.083	OI					2.68
15.917	1.49	1.25	0.084	OI					2.72
16.000	2.21	1.71	0.086	O I					2.80
16.083	5.84	3.49	0.096		O		I		3.12
16.167	8.27	5.60	0.114			O		I	3.67
16.250	3.32	5.60	0.115		I	O			3.72
16.333	1.88	4.07	0.100	I		O			3.23
16.417	1.29	2.17	0.089	I O					2.89
16.500	1.13	1.43	0.085	IO					2.76
16.583	0.81	1.08	0.083	IO					2.69
16.667	0.73	0.84	0.082	IO					2.65
16.750	0.66	0.73	0.081	O					2.63
16.833	0.62	0.66	0.081	O					2.62
16.917	0.57	0.61	0.080	O					2.61
17.000	0.54	0.57	0.080	O					2.60
17.083	0.51	0.53	0.080	IO					2.60
17.167	0.48	0.50	0.080	O					2.59
17.250	0.46	0.48	0.080	O					2.59
17.333	0.44	0.46	0.080	O					2.58
17.417	0.42	0.44	0.079	O					2.58
17.500	0.41	0.42	0.079	O					2.57
17.583	0.39	0.40	0.079	O					2.57
17.667	0.38	0.39	0.079	O					2.57
17.750	0.37	0.38	0.079	O					2.57
17.833	0.36	0.37	0.079	O					2.57
17.917	0.35	0.36	0.079	O					2.56
18.000	0.34	0.35	0.079	O					2.56
18.083	0.35	0.34	0.079	O					2.56
18.167	0.38	0.36	0.079	O					2.56
18.250	0.38	0.37	0.079	O					2.57
18.333	0.38	0.38	0.079	O					2.57
18.417	0.37	0.37	0.079	O					2.57
18.500	0.37	0.37	0.079	O					2.57
18.583	0.36	0.36	0.079	O					2.56
18.667	0.35	0.36	0.079	O					2.56
18.750	0.35	0.35	0.079	O					2.56
18.833	0.34	0.35	0.079	O					2.56
18.917	0.34	0.34	0.079	O					2.56
19.000	0.33	0.34	0.079	O					2.56

19.083	0.33	0.33	0.079	|O	|	|	|	2.56
19.167	0.32	0.33	0.079	|O	|	|	|	2.56
19.250	0.32	0.32	0.079	|O	|	|	|	2.56
19.333	0.32	0.32	0.079	|O	|	|	|	2.56
19.417	0.31	0.31	0.079	|O	|	|	|	2.56
19.500	0.31	0.31	0.079	|O	|	|	|	2.56
19.583	0.30	0.31	0.079	|O	|	|	|	2.55
19.667	0.30	0.30	0.079	|O	|	|	|	2.55
19.750	0.30	0.30	0.079	|O	|	|	|	2.55
19.833	0.29	0.30	0.079	|O	|	|	|	2.55
19.917	0.29	0.29	0.079	|O	|	|	|	2.55
20.000	0.29	0.29	0.079	|O	|	|	|	2.55
20.083	0.28	0.29	0.079	|O	|	|	|	2.55
20.167	0.28	0.28	0.079	|O	|	|	|	2.55
20.250	0.28	0.28	0.079	|O	|	|	|	2.55
20.333	0.28	0.28	0.079	|O	|	|	|	2.55
20.417	0.27	0.27	0.079	|O	|	|	|	2.55
20.500	0.27	0.27	0.079	|O	|	|	|	2.55
20.583	0.27	0.27	0.078	|O	|	|	|	2.55
20.667	0.27	0.27	0.078	|O	|	|	|	2.55
20.750	0.26	0.26	0.078	|O	|	|	|	2.55
20.833	0.26	0.26	0.078	|O	|	|	|	2.55
20.917	0.26	0.26	0.078	IO	|	|	|	2.55
21.000	0.26	0.26	0.078	O	|	|	|	2.55
21.083	0.25	0.26	0.078	O	|	|	|	2.55
21.167	0.25	0.25	0.078	O	|	|	|	2.55
21.250	0.25	0.25	0.078	O	|	|	|	2.54
21.333	0.25	0.25	0.078	O	|	|	|	2.54
21.417	0.25	0.25	0.078	O	|	|	|	2.54
21.500	0.24	0.25	0.078	O	|	|	|	2.54
21.583	0.24	0.24	0.078	O	|	|	|	2.54
21.667	0.24	0.24	0.078	O	|	|	|	2.54
21.750	0.24	0.24	0.078	O	|	|	|	2.54
21.833	0.24	0.24	0.078	O	|	|	|	2.54
21.917	0.23	0.24	0.078	O	|	|	|	2.54
22.000	0.23	0.23	0.078	O	|	|	|	2.54
22.083	0.23	0.23	0.078	O	|	|	|	2.54
22.167	0.23	0.23	0.078	O	|	|	|	2.54
22.250	0.23	0.23	0.078	O	|	|	|	2.54
22.333	0.23	0.23	0.078	O	|	|	|	2.54
22.417	0.23	0.23	0.078	O	|	|	|	2.54
22.500	0.22	0.23	0.078	O	|	|	|	2.54
22.583	0.22	0.22	0.078	O	|	|	|	2.54
22.667	0.22	0.22	0.078	O	|	|	|	2.54
22.750	0.22	0.22	0.078	O	|	|	|	2.54
22.833	0.22	0.22	0.078	O	|	|	|	2.54
22.917	0.22	0.22	0.078	O	|	|	|	2.54
23.000	0.22	0.22	0.078	O	|	|	|	2.54
23.083	0.21	0.22	0.078	O	|	|	|	2.54
23.167	0.21	0.21	0.078	O	|	|	|	2.54

23.250	0.21	0.21	0.078	O	|	|	|	|	2.54
23.333	0.21	0.21	0.078	O	|	|	|	|	2.54
23.417	0.21	0.21	0.078	O	|	|	|	|	2.54
23.500	0.21	0.21	0.078	O	|	|	|	|	2.54
23.583	0.21	0.21	0.078	O	|	|	|	|	2.54
23.667	0.21	0.21	0.078	O	|	|	|	|	2.54
23.750	0.21	0.21	0.078	O	|	|	|	|	2.54
23.833	0.20	0.20	0.078	O	|	|	|	|	2.54
23.917	0.20	0.20	0.078	O	|	|	|	|	2.54
24.000	0.20	0.20	0.078	O	|	|	|	|	2.54
24.083	0.15	0.18	0.078	O	|	|	|	|	2.53
24.167	0.05	0.12	0.078	O	|	|	|	|	2.52
24.250	0.02	0.05	0.077	O	|	|	|	|	2.51
24.333	0.01	0.02	0.077	O	|	|	|	|	2.50
24.417	0.00	0.01	0.077	O	|	|	|	|	2.50
24.500	0.00	0.00	0.077	O	|	|	|	|	2.50
24.583	0.00	0.00	0.077	O	|	|	|	|	2.50

Remaining water in basin = 0.08 (Ac.Ft)

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

Number of intervals = 295
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 5.600 (CFS)
Total volume = 0.718 (Ac.Ft)

Status of hydrographs being held in storage

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

****

APPENDIX 'F'

Catch Basin Calculations

Worksheet for Grate Inlet In Sag - Area A

Project Description	
Solve For	Spread

Input Data	
Discharge	3.70 cfs
Gutter Width	10.00 ft
Gutter Cross Slope	0.024 ft/ft
Road Cross Slope	0.005 ft/ft
Grate Width	3.00 ft
Grate Length	3.0 ft
Local Depression	4.0 in
Local Depression Width	24.0 in
Grate Type	P-50 mm (P-1 -7/8")
Clogging	50.0 %

Results	
Spread	24.3 ft
Depth	3.7 in
Gutter Depression	2.3 in
Total Depression	6.3 in
Open Grate Area	4.1 ft²
Active Grate Weir Length	6.0 ft

grate area B

Project Description	
Solve For	Spread

Input Data	
Discharge	2.10 cfs
Gutter Width	10.00 ft
Gutter Cross Slope	0.010 ft/ft
Road Cross Slope	0.005 ft/ft
Grate Width	2.00 ft
Grate Length	3.0 ft
Local Depression	4.0 in
Local Depression Width	24.0 in
Grate Type	P-50 mm (P-1 -7/8")
Clogging	50.0 %

Results	
Spread	32.4 ft
Depth	2.5 in
Gutter Depression	0.6 in
Total Depression	4.6 in
Open Grate Area	2.7 ft²
Active Grate Weir Length	5.0 ft

grate in area C

Project Description	
Solve For	Spread

Input Data	
Discharge	1.20 cfs
Gutter Width	10.00 ft
Gutter Cross Slope	0.010 ft/ft
Road Cross Slope	0.005 ft/ft
Grate Width	3.00 ft
Grate Length	3.0 ft
Local Depression	4.0 in
Local Depression Width	24.0 in
Grate Type	P-50 mm (P-1 -7/8")
Clogging	50.0 %

Results	
Spread	9.0 ft
Depth	1.1 in
Gutter Depression	0.6 in
Total Depression	4.6 in
Open Grate Area	4.1 ft²
Active Grate Weir Length	6.0 ft

gate in area D

Project Description	
Solve For	Spread

Input Data	
Discharge	0.70 cfs
Gutter Width	10.00 ft
Gutter Cross Slope	0.040 ft/ft
Road Cross Slope	0.010 ft/ft
Grate Width	1.00 ft
Grate Length	1.0 ft
Local Depression	2.0 in
Local Depression Width	24.0 in
Grate Type	P-50 mm (P-1 -7/8")
Clogging	50.0 %

Results	
Spread	4.1 ft
Depth	2.0 in
Gutter Depression	3.6 in
Total Depression	5.6 in
Open Grate Area	0.5 ft²
Active Grate Weir Length	2.0 ft

APPENDIX 'G'

Conceptual Utility plan

ABBREVIATIONS

BO	BLOW-OFF	FUT	FUTURE	ST.	STREET
BFP	BACK FLOW PREVENTER	GB	GRADE BREAK	SWR	SEWER
C/L	CENTERLINE	GI	GREASE INTERCEPTOR	TG	TOP OF GRATE
C&G	CURB AND GUTTER	GUY	GUY ANCHOR	TYP	TYPICAL
CB	CATCH BASIN	HP	HIGH POINT	WTR	WATER
CO	CURB OPENING	INV	INVERT		
EG	EXISTING GROUND	LF	LINEAR FEET		
EL.	ELEVATION	LP	LOW POINT		
ELEC.	ELECTRIC	P/L	PROPERTY LINE		
EX.	EXISTING	PE	PAD ELEVATION		
FDC	FIRE DEPARTMENT CONNECTION	PIV	POST INDICATOR VALVE		
FF	FINISH FLOOR	PP	POWER POLE		
FG	FINISH GRADE	PS	PIPE SLOPE		
FL	FLOW LINE	PR.	PROPOSED		
FH	FIRE HYDRANT	R/W	RIGHT OF WAY		
FS	FINISH SURFACE	RPDA	REDUCED PRESSURE DETECTOR ASSEMBLY		

UTILITY LEGEND

- PROPOSED FIRE WATER SERVICE
- PROPOSED DOMESTIC WATER SERVICE/MAIN
- PROPOSED SEWER SERVICE/MAIN
- PROPOSED STORM DRAIN
- PROPOSED SEWER PIPE FLOW DIRECTION
- PROPOSED STORM DRAIN PIPE FLOW DIRECTION
- PROPOSED LIGHT STANDARD
- PROPOSED CHARGE STATION

N

scale 1"= 20' (20 0 20 40 feet)

(A) EASEMENT FOR PUBLIC UTILITIES GRANTED TO CITY OF VICTORVILLE RECORDING NO: BOOK 8860, PAGE 417 OFFICIAL RECORDS

(B) EASEMENT FOR PUBLIC UTILITIES GRANTED TO STATE OF CALIFORNIA RECORDING DATE: FEBRUARY 18, 1992. RECORDING NO: 92-56171 OFFICIAL RECORDS

(C) EASEMENT FOR HIGHWAY AND ROAD PURPOSES GRANTED TO CITY OF VICTORVILLE RECORDING NO: BOOK 8860, PAGE 405 OFFICIAL RECORDS.

PARCEL "A"
DOC#2022-0198686

PARCEL "B"
DOC#2022-0198686

CANTINA STREET

PALMDALE ROAD

AUTOMATED CARWASH
3,600 SF
FF= 20.01
PAD= 19.48

COFFEE
1,000 SF
FF= 18.60
PAD= 18.55

UNDERGROUND RETENTION AREA
8.75 BOTT. EL.

VICTORVILLE VILLAGE
APN: 3103-561-27-0-000

EX. CONCRETE CHANNEL

EX. 8"SWR

EX. 18"HDPE PER P-1007

CONNECT PR. 8" SWR TO EX. 60" MH

CONNECT PR. 12" WTR TO EX. 16" WTR

EX. 16"WTR

EX. CB PER P-1007

EX. HEADWALL

PR. OVERFLOW S=0.0050

EX.ROAD MEDIAN

EX.P/L

NOT FOR CONSTRUCTION

DATE: 06/2022

IN THE CITY OF VICTORVILLE
PALMDALE ROAD RETAIL DEVELOPMENT

CONCEPTUAL UTILITY PLAN

FILE NO.

DRAWING NO. SH. 1 OF 1

DAVID EVANS AND ASSOCIATES INC.
18484 Outer Highway 18 N Suite 225
Apple Valley California 92307
Phone: 760.524.9100
SSchubert@deainc.com

By: Jose Aguilar
By: JA
File: P:\RIRDEV\000\000\0400\CAD\SHEETS\EC\01_Conceptual Plan\CONCEPT UTILITY PLAN.dwg
Plot Date: 7/27/2022 1:31 PM
Save Date: 7/27/2022 1:28 PM