Hydrology Report:

Yermo Solar Farm

County of San Bernardino, California

November 6, 2024

Prepared for:

Glacier Power and Gas, LLC
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1 INTRODUCTION

1.1 Project Overview

Glacier Power and Gas has requested Q3 Consulting (Q3) to prepare a hydrology and hydraulics study of the proposed solar farm located in the unincorporated community of Yermo, in San Bernardino County. The development will include installation of solar panels, access roads improvements, and a drainage system.

The project site encompasses 25 acres of solar farm development in Parcel B, with future expansion of 17 acres for Parcel A. The project is located south of Interstate 15, bounded to the north and west by the Union Pacific Rail, Calico Blvd to the south, and Minneola Road approximately one mile to the east.

The location of the study area, project location, and the pertinent existing drainage facilities are shown in Figures 1-1 and 1-2. The project coordinates are (Lat: 34°54'36.09"N; Long: 116°47'24.61"W).

The purpose of this hydrology and hydraulics report is to evaluate the hydrologic conditions for the proposed site development and identify preliminary storm drain facilities and sizes based on the results of the hydrologic analysis. The report will document the conformance of the proposed improvements with the guidelines in the San Bernardino County Hydrology Manual and other County requirements.

Figure 1-1: Vicinity Map

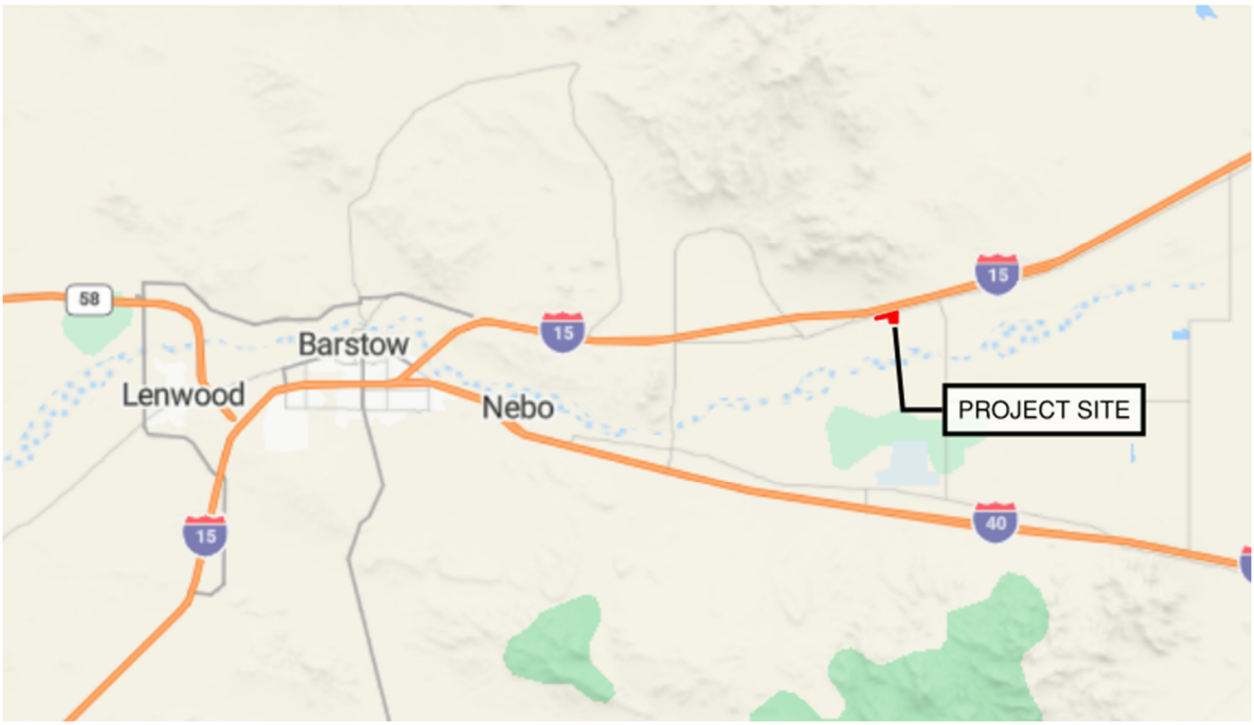
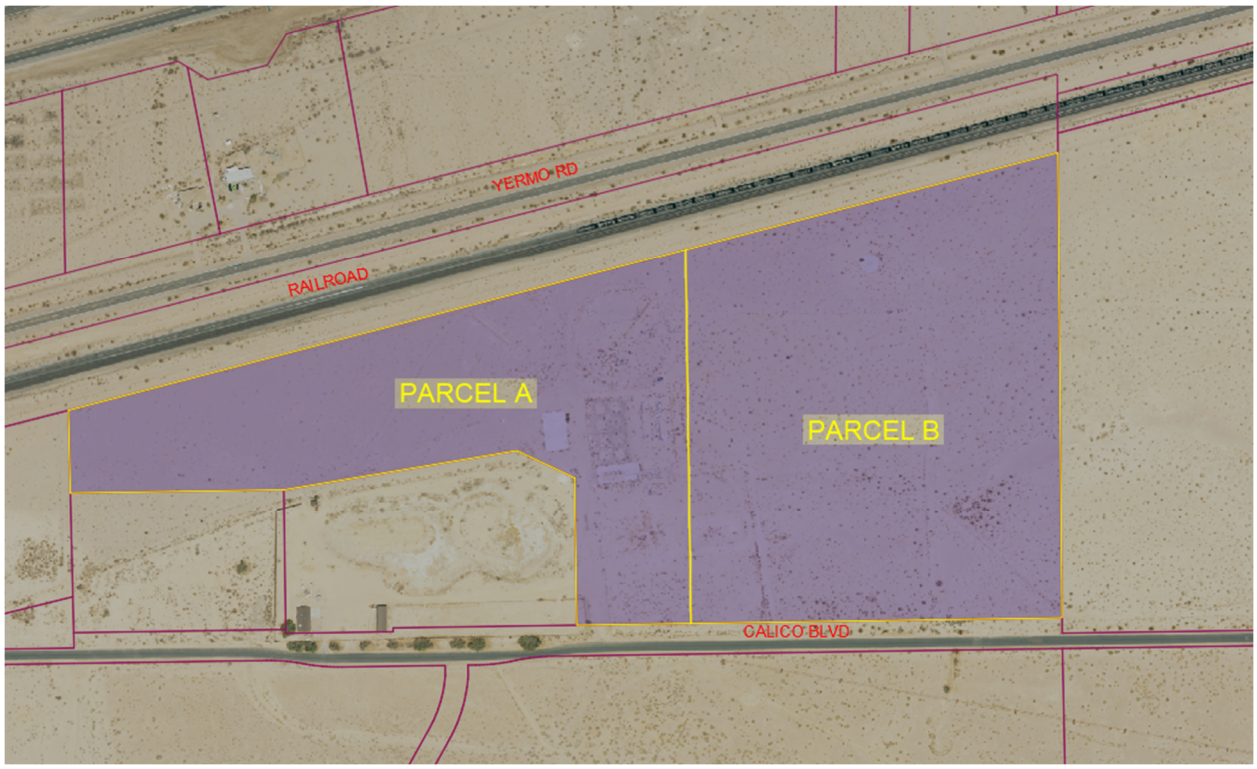


Figure 1-2: Project Location Map



1.2 Goals and Objectives

The purpose of this report is to evaluate the hydrology and hydraulics of the proposal land use plan and quantify any potential impacts and mitigation measures needed for the onsite storm drain system and stormwater basins.

The primary objectives of this study include the following:

- Research, collect, and review previous studies completed in the watershed and along the project.
- Establish the design criteria and requirements to be used for the hydrologic and hydraulic impact evaluation.
- Delineate the tributary drainage areas for the existing and project conditions for the onsite and offsite watersheds.
- Based on the existing drainage patterns, ground slope, land use and soil type and using the San Bernardino County Rational Method, perform hydrologic calculations of the drainage areas for the existing and project conditions.
- Based on the hydrology results, and physical site requirements, identify preliminary drainage facilities to collect and convey the computed design discharges.
- Document the results of the analysis.

1.3 Existing Site Conditions

The site's topography is predominately flat, sloping approximately 1.5% to the southeast. The site is undeveloped open space with desert brush. There is little impervious development on the existing site. There are two detention basins which capture some of the stormwater runoff, located in the middle of the south end of the parcels. The site receives little offsite runoff from the railroad with an existing swale capturing the flows from railroad and conveying the flow to the east and west along the north boundary of the project site. In existing condition, onsite runoff within parcel A and B sheet flows in the southeast direction overtopping Calico Road and continuing southeast into the Mojave river.

The project site is located on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) No. 06071C3975H. The project site is located in a Zone D, which is defined as an area in which flood hazards are undetermined, but possible. A copy of the FIRM is included in Appendix E.

1.4 Project Site Conditions

The project site is proposal as a solar power generating site. Parcel B will be transformed into four sections of solar panels with an access road along the perimeter. The site will be graded to slope 0.7% to the southwest along a proposed swale to the proposed detention basin in parcel A. There are no changes to the grading in Parcel A.

2 HYDROLOGY

2.1 Methodology

The hydrology was prepared in accordance with the San Bernardino County Hydrology Manual. The 10 and 100-year peak flow rates were calculated using the Rational and Unit Hydrograph Method in Advanced Engineering Software (AES). The rational method was used to estimate time of concentrations and peak flow rates generated from the existing 10 and 100-year storm event. The synthetic unit hydrograph method was used to determine the existing onsite and proposed hydrographs for the 24-hour duration of the 10-year, and 100-year storm events.

The hydrologic analysis was completed in accordance with the 1986 San Bernardino County Hydrology Manual and 2010 Hydrology Manual Addendum. The rational method has been used to calculate peak flows for both the existing and proposed site conditions.

The project site is designated as Antecedent Moisture Condition I per Figure ADD-1(Appendix C) based on the NOAA Atlas statistical data. AMC I is classified as lowest runoff potential.

2.2 Rainfall Data

The Hydrology Manual Addendum requires the use of NOAA Atlas 14 rainfall values when completing hydrologic analyses. Table 2-1 refers to the rainfall intensities used in the hydrology calculations. A copy of the rainfall statistics is included under Appendix D.

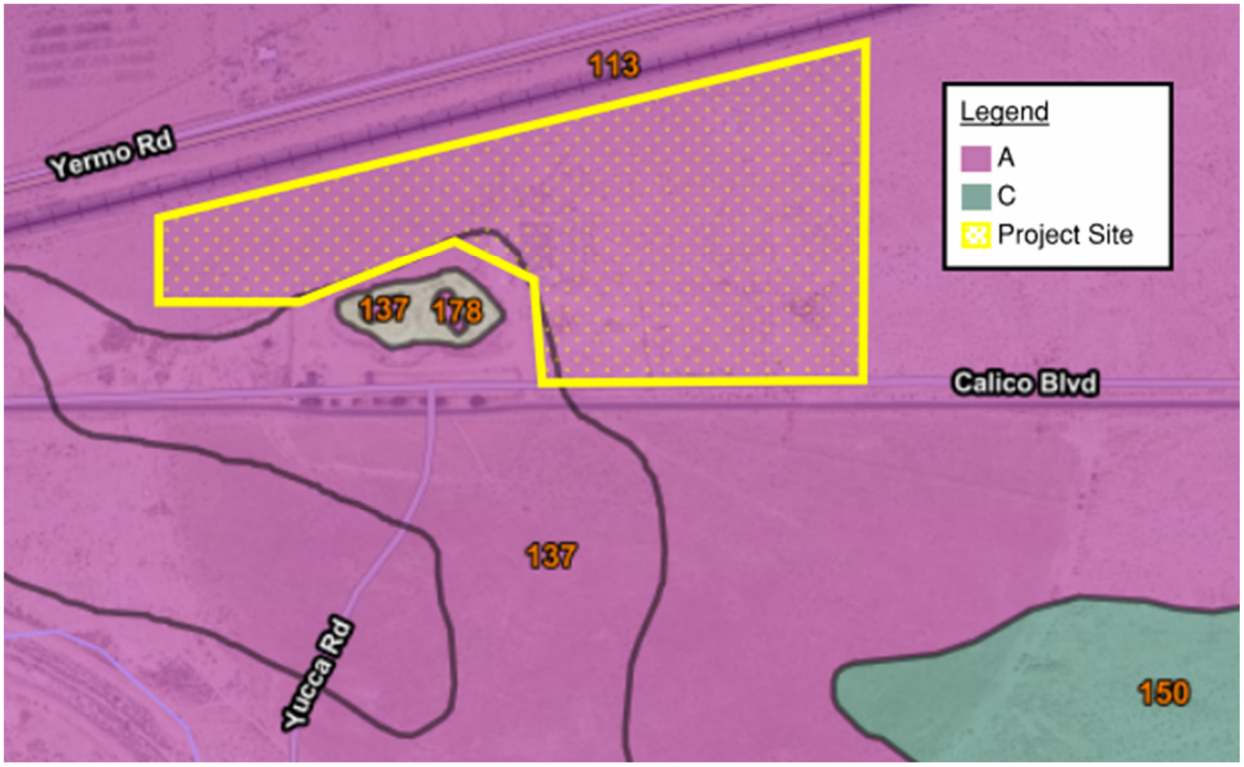
Table 2-1: NOAA Atlas 14 Rainfall Intensity

Duration (min)	10 Year (in/hr)	100 Year (in/hr)
5	2.88	5.24
10	2.06	3.76
15	1.66	3.03
30	1.14	2.08
60	0.77	1.40

2.3 Soil Type

The Hydrology Manual addendum requires the use of the USDA Web Soil Survey for soil type groupings. The Web Soil Survey indicates the project site is situated within an area of Cajon sand, which is identified as hydrologic soil type "A", as shown in Figure 2-1. The full report can be found in Appendix E.

Figure 2-1: Soil Map



Map units: 113 (Cajon sand), 137(Kimberlina loamy fine sand),150 (Mohave variant loamy sand), 178(water)

2.4 Land Use

As per the San Bernardino County Land Use General Plan Map E102A, the land zoning for the project site is RC (Resource Conservation) which provides sites for open space and recreational activities, single family homes on large parcels. For the hydrologic analysis, the development and cover type defined in San Bernardino County Hydrology Manual (SBCHM) most resembled Barren Natural Cover.

2.5 Solar Panel Runoff

According to a solar farm runoff assessment (Power China, 2020), the angle of the solar panels, ratio between "free" and panel area affects the runoff characteristics. If the panels are transversal to the slope direction as shown in Figure 2-2, there is no net increase in runoff. This is applicable to 10% of the site. If the panels are parallel as shown in Figure 2-3, the runoff coefficient would increase. 90% of the site is angled at roughly 45% in the slope direction which would result in half of the net increase in rainfall intensity of the parallel panel site. Equation 1 was used to calculate the increase in throughfall depending on the orientation of the panels and is used to calculate to increased runoff coefficient.

Figure 2-2: Panels Transversal to slope direction

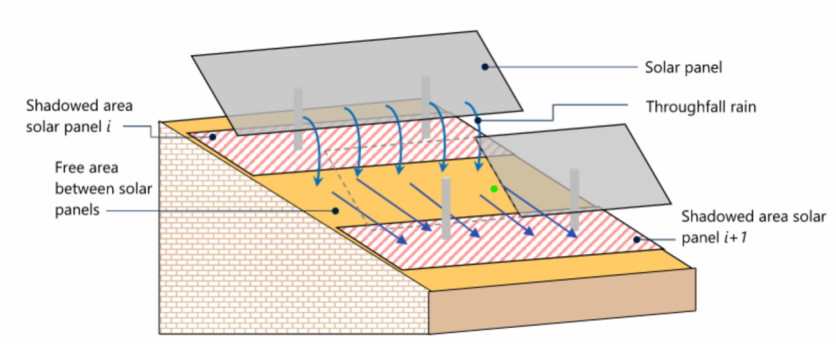
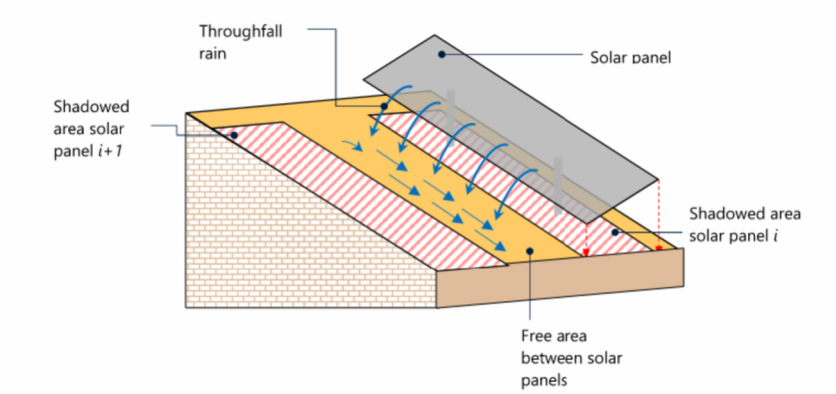


Figure 2-3: Panels parallel to slope direction



$$N_{inc} = N * f_o * (1+f_p) \quad (1)$$

N_{inc}- increase in throughfall (in)

N – total rainfall falling on the panels (in)

f_o – orientation factor, 0 for transversal panels, 1 for parallel panels, 0.5 for in between

f_p – proportion of panel area to panel free area

The panels are assumed to be tilted 45%, aligned in the north and south direction, and sized at 20 by 20 feet. The net increase in runoff was calculated and represented as increasing the curve number from 61 in the existing condition for Parcel B to 72 in the proposed condition for AMC 1 condition. The curve number is then used to find the new infiltration rate, fp, to perform the proposed hydrology rational method. The calculations for the revised curve number is shown in Appendix A.

2.6 Hydrology Results

Table 2-2 shows the peak flowrate and Table 2-3 shows the runoff volumes for the 100 and 100 year storm at the project site for existing and proposed conditions.

Table 2-2: Rational Method

Parcel	Total Area (ac)	Q_{10} (cfs)	Tc_{10} (min)	Q_{100} (cfs)	Tc_{100} (min)
Existing	40.7	18.19	28.7	60.59	24.95
Proposed	40.7	27.76	20.7	68.09	19.71

Table 2-3: Unit Hydrograph

Parcel	Total Area (ac)	V_{10} (ac-ft)	V_{100} (ac-ft)
Existing	40.7	0.87	2.87
Proposed	40.7	1.37	3.91

As per the Rational Method, the existing 10-year peak flow increased from 18.2 to 27.8 cfs, and the 100-year peak flow increased from 60.6 to 68.0 cfs. Similarly, the results from the Unit Hydrograph method showed an increase of 0.87 to 1.37 acre-feet for the 10-year storm, and a 2.87 to 3.91 acre-feet for the 100-year storms. The proposed runoff volumes will be contained in the detention basin which has a capacity of 5.08 acre-feet as shown in Table 2-4. Refer to Appendix A for Rational Method and Unit Hydrographs 10- and 100-year calculations.

Table 2-4: Basin Stage-Storage Relationship

Stage (ft)	Storage (ac-ft)
0	0.00
1	0.70
2	1.46
3	2.28
4	3.15
5	4.08
6	5.08

3 CONCLUSIONS

The analysis indicates an increase in peak flows and runoff volumes due to the proposed development, with a 53% increase in the 10-year peak flows and a 12% increase in the 100-year peak flows, as per the Rational Method. The Unit Hydrograph method shows a 56% increase in 10-year peak runoff volume and a 36% increase in 100-year runoff volumes. However, all runoff from the project site will be contained within the proposed detention basin, which has a sufficient capacity of 5.08 acre-feet. Therefore, there are no anticipated impacts associated with the site development in terms of stormwater runoff.

4 REFERENCES

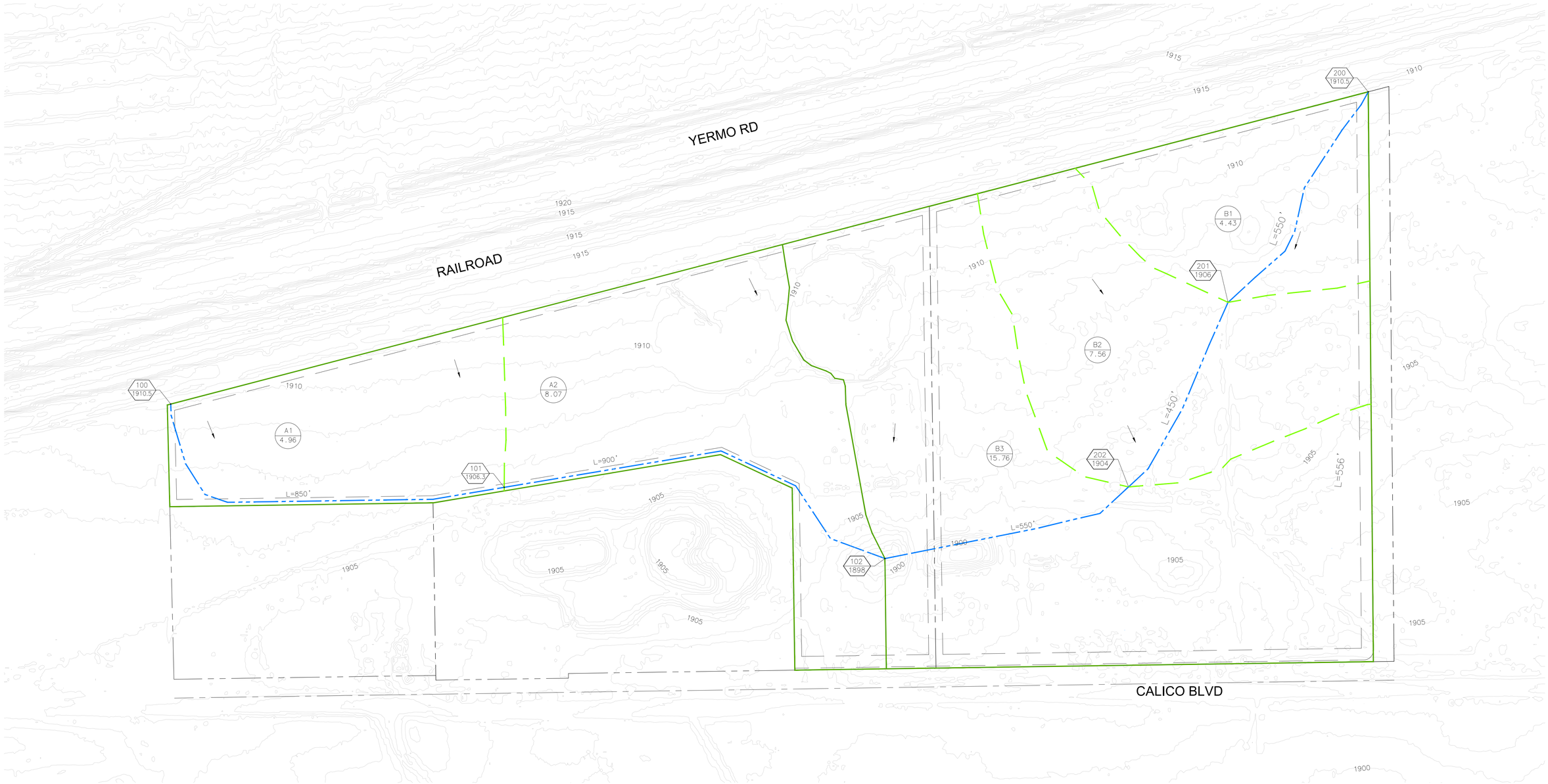
Power China, 2020, *Hydrological Assessment for 800.15 MW PV Solar IPP Al-Karsaa Qatar*, September.

NOAA, 2023, Precipitation Frequency Data Server, Updated April 7th.

San Bernardino County, 1986, *Hydrology Manual*, August.

San Bernardino County, 2008, *Zoning District Map E102A*. June.

USDA, 2024, *Custom Soil Resource Report for Western Riverside Area,* California, May.



LEGEND

DRAINAGE AREA BOUNDARY

SUBAREA DRAINAGE BOUNDARY

FLOW PATH

A / 0.35 — AREA ACREAGE

100 — NODE

NODE	Q_{10} (CFS)	T_{C10} (MIN)	Q_{100} (CFS)	T_{C100} (MIN)
101	3.27	22.55	8.42	22.55
102	18.19	28.70	60.59	24.95
201	3.59	17.13	8.71	17.13
202	7.20	24.28	20.55	22.03

N

100 50 0 100 200 300

SCALE: 1"=100'

HYDROLOGY INFORMATION

SUBAREA A: 13.0 ACRES
SUBAREA B: 27.7 ACRES

SOIL TYPE: A (NRCS WEB SOIL SURVEY)

IMPERVIOUS: 0% (PER CALCULATIONS)

CURVE NUMBER: 61 (SOIL GROUP A)

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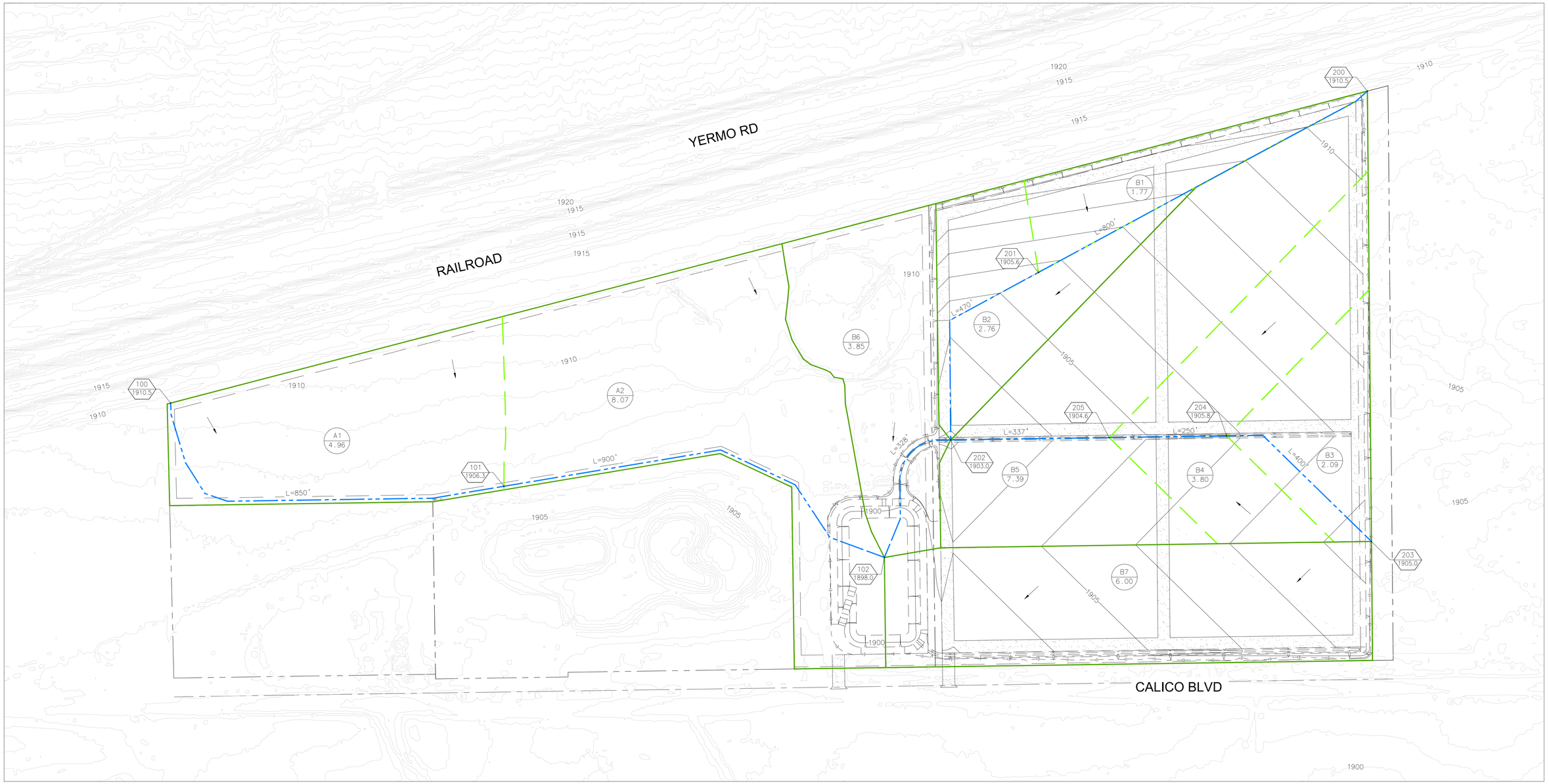
EXHIBIT A
YERMO SOLAR FARM PARCELS A AND B
HYDROLOGY MAP EXISTING CONDITION

FOR GLACIER POWER AND GAS

DATE: NOV 2024

SHEET 1

N:\40.146.000\DLV\PLANS\EXH\146-EX-HydrologyMap PLOTTED: 6/10/2024 4:51:22 PM



LEGEND

- DRAINAGE AREA BOUNDARY
- SUBAREA DRAINAGE BOUNDARY
- FLOW PATH
- A / 0.35 — AREA ACREAGE
- 100 — NODE

NODE	Q_{10} (CFS)	T_{C10} (MIN)	Q_{100} (CFS)	T_{C100} (MIN)
101	3.27	22.55	8.42	22.55
102	27.76	20.70	68.09	19.71
201	1.51	21.09	3.42	21.09
202	14.47	19.26	33.44	18.51
204	2.28	14.35	4.94	14.35
205	5.85	16.62	12.98	16.29

N

100 50 0 100 200 300

SCALE: 1"=100'

HYDROLOGY INFORMATION

DRAINAGE SUBAREA A: 13.0 ACRES
DRAINAGE SUBAREA B: 27.7 ACRES

SOIL TYPE: A (NRCS WEB SOIL SURVEY)

IMPERVIOUS: 0% (PER CALCULATIONS)

CURVE NUMBER: 61 (UNDEVELOPED), 72 (DEVELOPED)

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EXHIBIT B
YERMO SOLAR FARM PARCELS A AND B
HYDROLOGY MAP PROPOSED CONDITION

FOR GLACIER POWER AND GAS

DATE: NOV 2024

SHEET 1

N:\40.146.000\DLV\PLANS\EXH\146-PR-HydrologyMap PLOTTED: 6/10/2024 4:51:22 PM

APPENDIX

Appendix A

Hydrology Calculations

- **Existing and Proposed Rational Method AES Results for 10, 100-Year Storms**
- **Existing and Proposed Condition Unit Hydrographs for 10, 100-Year Storms**
- **Revised Curve Number**
- **Proposed Infiltration Rate**

```
****************************************************************************
              RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2015 Advanced Engineering Software (aes)
             Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                          Analysis prepared by:
```

```
 ************************* DESCRIPTION OF STUDY *************************
* YERMO SOLAR FARM EXISTING CONDITION RATIONAL METHOD
* 10 YEAR STORM - SUBAREA A AND B                                      *
* 10/22/2024                                                           *
 ************************************************************************

  FILE NAME: EYRMO10.DAT
  TIME/DATE OF STUDY: 10:51 10/24/2024
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS =  7
   1)    5.00;  2.880
   2)   10.00;  2.060
   3)   15.00;  1.660
   4)   30.00;  1.140
   5)   60.00;  0.770
   6)  120.00;  0.438
   7)  180.00;  0.325
  *ANTECEDENT MOISTURE CONDITION (AMC) I ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

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



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   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
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  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   850.00
  ELEVATION DATA: UPSTREAM(FEET) =   1910.50  DOWNSTREAM(FEET) =   1906.30

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   22.551
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.398
  SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL POOR COVER
  "BARREN"                   A        4.96      0.67     1.000    61   22.55
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      3.27
  TOTAL AREA(ACRES) =      4.96   PEAK FLOW RATE(CFS) =      3.27

****************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  51
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  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1906.30  DOWNSTREAM(FEET) =   1898.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   900.00   CHANNEL SLOPE =  0.0092
  CHANNEL BASE(FEET) =   15.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   5.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.116
  SUBAREA LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   A        8.07      0.67     1.000    61
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.93
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.59
  AVERAGE FLOW DEPTH(FEET) =   0.20   TRAVEL TIME(MIN.) =   9.43
  Tc(MIN.) =   31.98
  SUBAREA AREA(ACRES) =     8.07       SUBAREA RUNOFF(CFS) =    3.27
  EFFECTIVE AREA(ACRES) =     13.03     AREA-AVERAGED Fm(INCH/HR) =   0.67
  AREA-AVERAGED Fp(INCH/HR) =   0.67  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       13.0         PEAK FLOW RATE(CFS) =       5.27

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.21   FLOW VELOCITY(FEET/SEC.) =   1.64
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    102.00 =    1750.00 FEET.
```

```
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  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   31.98
  RAINFALL INTENSITY(INCH/HR) =   1.12
  AREA-AVERAGED Fm(INCH/HR) =  0.67
  AREA-AVERAGED Fp(INCH/HR) =  0.67
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =      13.03
  TOTAL STREAM AREA(ACRES) =      13.03
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       5.27

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----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   550.00
  ELEVATION DATA: UPSTREAM(FEET) =   1910.50  DOWNSTREAM(FEET) =   1906.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.129
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.586
  SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL POOR COVER
  "BARREN"                  A        4.34      0.67     1.000    61   17.13
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      3.59
  TOTAL AREA(ACRES) =      4.34   PEAK FLOW RATE(CFS) =      3.59

****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  51
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============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1906.00  DOWNSTREAM(FEET) =   1904.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   450.00   CHANNEL SLOPE =  0.0044
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   5.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.338
  SUBAREA LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                  A        7.56      0.67     1.000    61
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
```



```
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.92
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.05
  AVERAGE FLOW DEPTH(FEET) =   0.19   TRAVEL TIME(MIN.) =   7.16
  Tc(MIN.) =   24.28
  SUBAREA AREA(ACRES) =     7.56       SUBAREA RUNOFF(CFS) =    4.57
  EFFECTIVE AREA(ACRES) =     11.90     AREA-AVERAGED Fm(INCH/HR) =   0.67
  AREA-AVERAGED Fp(INCH/HR) =   0.67  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       11.9         PEAK FLOW RATE(CFS) =       7.20

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.21   FLOW VELOCITY(FEET/SEC.) =   1.13
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =    1000.00 FEET.

****************************************************************************
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============================================================================
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  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   5.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.185
  SUBAREA LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                  A       15.76      0.67     1.000    61
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.91
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.07
  AVERAGE FLOW DEPTH(FEET) =   0.26   TRAVEL TIME(MIN.) =   4.42
  Tc(MIN.) =   28.70
  SUBAREA AREA(ACRES) =    15.76       SUBAREA RUNOFF(CFS) =    7.36
  EFFECTIVE AREA(ACRES) =     27.66     AREA-AVERAGED Fm(INCH/HR) =   0.67
  AREA-AVERAGED Fp(INCH/HR) =   0.67  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       27.7         PEAK FLOW RATE(CFS) =      12.92

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.29   FLOW VELOCITY(FEET/SEC.) =   2.20
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    102.00 =    1550.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   28.70
  RAINFALL INTENSITY(INCH/HR) =   1.18
  AREA-AVERAGED Fm(INCH/HR) =  0.67
  AREA-AVERAGED Fp(INCH/HR) =  0.67
```

```
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =      27.66
  TOTAL STREAM AREA(ACRES) =      27.66
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      12.92

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1        5.27   31.98    1.116  0.67( 0.67) 1.00      13.0     100.00
      2       12.92   28.70    1.185  0.67( 0.67) 1.00      27.7     200.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       18.19   28.70    1.185  0.67( 0.67) 1.00      39.4     200.00
      2       16.46   31.98    1.116  0.67( 0.67) 1.00      40.7     100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      18.19    Tc(MIN.) =    28.70
  EFFECTIVE AREA(ACRES) =      39.36   AREA-AVERAGED Fm(INCH/HR) =  0.67
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =       40.7
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    102.00 =    1750.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       40.7  TC(MIN.) =     28.70
  EFFECTIVE AREA(ACRES) =     39.36  AREA-AVERAGED Fm(INCH/HR)=  0.67
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap = 1.000
  PEAK FLOW RATE(CFS)   =      18.19

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       18.19   28.70    1.185  0.67( 0.67) 1.00      39.4     200.00
      2       16.46   31.98    1.116  0.67( 0.67) 1.00      40.7     100.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

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

              F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
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                          Analysis prepared by:

 ************************* DESCRIPTION OF STUDY *************************
* YERMO SOLAR FARM EXISTING CONDITION UNIT HYDROGRAPH                    *
* 10 YEAR 24 HOUR STORM AT NODE 102                                      *
* 10/25/2024                                                             *
 ************************************************************************

  FILE NAME: EXUH10.DAT
  TIME/DATE OF STUDY: 13:14 10/28/2024


****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    102.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =      40.700 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.382 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         DESERT(UNDEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.666
         LOW LOSS FRACTION = 0.990
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.24
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.57
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  0.77
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  0.98
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.13
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  1.57

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.998
          30-MINUTE FACTOR = 0.998
           1-HOUR FACTOR = 0.998
```



```
           3-HOUR FACTOR = 1.000
           6-HOUR FACTOR = 1.000
          24-HOUR FACTOR = 1.000

         UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  21.815


============================================================================
                      UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
----------------------------------------------------------------------------
        1                 1.119                 5.508
        2                 5.210                20.135
        3                13.763                42.102
        4                32.106                90.288
        5                48.600                81.187
        6                59.279                52.564
        7                66.282                34.470
        8                71.635                26.344
        9                75.821                20.605
       10                79.245                16.854
       11                82.012                13.622
       12                84.356                11.536
       13                86.451                10.311
       14                88.247                 8.840
       15                89.679                 7.048
       16                90.935                 6.186
       17                92.077                 5.621
       18                93.096                 5.014
       19                94.009                 4.495
       20                94.763                 3.712
       21                95.493                 3.591
       22                96.095                 2.961
       23                96.661                 2.789
       24                97.128                 2.298
       25                97.520                 1.931
       26                97.859                 1.667
       27                98.081                 1.093
       28                98.304                 1.100
       29                98.561                 1.261
       30                98.823                 1.289
       31                99.084                 1.288
       32                99.346                 1.288
       33                99.607                 1.288
       34                99.869                 1.288
       35               100.000                 0.644


****************************************************************************
         UNIT              UNIT             UNIT              EFFECTIVE
```

PERIOD (NUMBER)	RAINFALL (INCHES)	SOIL-LOSS (INCHES)	RAINFALL (INCHES)
1	0.0013	0.0013	0.0000
2	0.0013	0.0013	0.0000
3	0.0013	0.0013	0.0000
4	0.0013	0.0013	0.0000
5	0.0013	0.0013	0.0000
6	0.0013	0.0013	0.0000
7	0.0013	0.0013	0.0000
8	0.0013	0.0013	0.0000
9	0.0013	0.0013	0.0000
10	0.0013	0.0013	0.0000
11	0.0013	0.0013	0.0000
12	0.0014	0.0013	0.0000
13	0.0014	0.0013	0.0000
14	0.0014	0.0014	0.0000
15	0.0014	0.0014	0.0000
16	0.0014	0.0014	0.0000
17	0.0014	0.0014	0.0000
18	0.0014	0.0014	0.0000
19	0.0014	0.0014	0.0000
20	0.0014	0.0014	0.0000
21	0.0014	0.0014	0.0000
22	0.0014	0.0014	0.0000
23	0.0014	0.0014	0.0000
24	0.0014	0.0014	0.0000
25	0.0014	0.0014	0.0000
26	0.0014	0.0014	0.0000
27	0.0014	0.0014	0.0000
28	0.0015	0.0014	0.0000
29	0.0015	0.0014	0.0000
30	0.0015	0.0015	0.0000
31	0.0015	0.0015	0.0000
32	0.0015	0.0015	0.0000
33	0.0015	0.0015	0.0000
34	0.0015	0.0015	0.0000
35	0.0015	0.0015	0.0000
36	0.0015	0.0015	0.0000
37	0.0015	0.0015	0.0000
38	0.0015	0.0015	0.0000
39	0.0015	0.0015	0.0000
40	0.0015	0.0015	0.0000
41	0.0015	0.0015	0.0000
42	0.0016	0.0015	0.0000
43	0.0016	0.0015	0.0000
44	0.0016	0.0016	0.0000
45	0.0016	0.0016	0.0000
46	0.0016	0.0016	0.0000
47	0.0016	0.0016	0.0000
48	0.0016	0.0016	0.0000
49	0.0016	0.0016	0.0000
50	0.0016	0.0016	0.0000
51	0.0016	0.0016	0.0000
52	0.0016	0.0016	0.0000
53	0.0016	0.0016	0.0000

54	0.0017	0.0016	0.0000
55	0.0017	0.0017	0.0000
56	0.0017	0.0017	0.0000
57	0.0017	0.0017	0.0000
58	0.0017	0.0017	0.0000
59	0.0017	0.0017	0.0000
60	0.0017	0.0017	0.0000
61	0.0017	0.0017	0.0000
62	0.0017	0.0017	0.0000
63	0.0017	0.0017	0.0000
64	0.0018	0.0017	0.0000
65	0.0018	0.0017	0.0000
66	0.0018	0.0018	0.0000
67	0.0018	0.0018	0.0000
68	0.0018	0.0018	0.0000
69	0.0018	0.0018	0.0000
70	0.0018	0.0018	0.0000
71	0.0018	0.0018	0.0000
72	0.0018	0.0018	0.0000
73	0.0019	0.0018	0.0000
74	0.0019	0.0018	0.0000
75	0.0019	0.0019	0.0000
76	0.0019	0.0019	0.0000
77	0.0019	0.0019	0.0000
78	0.0019	0.0019	0.0000
79	0.0019	0.0019	0.0000
80	0.0019	0.0019	0.0000
81	0.0020	0.0019	0.0000
82	0.0020	0.0019	0.0000
83	0.0020	0.0020	0.0000
84	0.0020	0.0020	0.0000
85	0.0020	0.0020	0.0000
86	0.0020	0.0020	0.0000
87	0.0020	0.0020	0.0000
88	0.0020	0.0020	0.0000
89	0.0021	0.0020	0.0000
90	0.0021	0.0021	0.0000
91	0.0021	0.0021	0.0000
92	0.0021	0.0021	0.0000
93	0.0021	0.0021	0.0000
94	0.0021	0.0021	0.0000
95	0.0022	0.0021	0.0000
96	0.0022	0.0022	0.0000
97	0.0022	0.0022	0.0000
98	0.0022	0.0022	0.0000
99	0.0022	0.0022	0.0000
100	0.0022	0.0022	0.0000
101	0.0023	0.0023	0.0000
102	0.0023	0.0023	0.0000
103	0.0023	0.0023	0.0000
104	0.0023	0.0023	0.0000
105	0.0024	0.0023	0.0000
106	0.0024	0.0023	0.0000
107	0.0024	0.0024	0.0000
108	0.0024	0.0024	0.0000
109	0.0024	0.0024	0.0000

110	0.0025	0.0024	0.0000
111	0.0025	0.0025	0.0000
112	0.0025	0.0025	0.0000
113	0.0025	0.0025	0.0000
114	0.0025	0.0025	0.0000
115	0.0026	0.0026	0.0000
116	0.0026	0.0026	0.0000
117	0.0026	0.0026	0.0000
118	0.0026	0.0026	0.0000
119	0.0027	0.0027	0.0000
120	0.0027	0.0027	0.0000
121	0.0027	0.0027	0.0000
122	0.0028	0.0027	0.0000
123	0.0028	0.0028	0.0000
124	0.0028	0.0028	0.0000
125	0.0029	0.0028	0.0000
126	0.0029	0.0029	0.0000
127	0.0029	0.0029	0.0000
128	0.0030	0.0029	0.0000
129	0.0030	0.0030	0.0000
130	0.0030	0.0030	0.0000
131	0.0031	0.0030	0.0000
132	0.0031	0.0031	0.0000
133	0.0032	0.0031	0.0000
134	0.0032	0.0031	0.0000
135	0.0032	0.0032	0.0000
136	0.0033	0.0032	0.0000
137	0.0033	0.0033	0.0000
138	0.0034	0.0033	0.0000
139	0.0034	0.0034	0.0000
140	0.0035	0.0034	0.0000
141	0.0035	0.0035	0.0000
142	0.0036	0.0035	0.0000
143	0.0036	0.0036	0.0000
144	0.0037	0.0036	0.0000
145	0.0033	0.0033	0.0000
146	0.0034	0.0033	0.0000
147	0.0034	0.0034	0.0000
148	0.0035	0.0034	0.0000
149	0.0036	0.0035	0.0000
150	0.0036	0.0036	0.0000
151	0.0037	0.0036	0.0000
152	0.0037	0.0037	0.0000
153	0.0038	0.0038	0.0000
154	0.0039	0.0038	0.0000
155	0.0040	0.0040	0.0000
156	0.0040	0.0040	0.0000
157	0.0042	0.0041	0.0000
158	0.0042	0.0042	0.0000
159	0.0044	0.0043	0.0000
160	0.0044	0.0044	0.0000
161	0.0046	0.0045	0.0000
162	0.0047	0.0046	0.0000
163	0.0048	0.0048	0.0000
164	0.0049	0.0049	0.0000
165	0.0051	0.0050	0.0001

166	0.0052	0.0051	0.0001
167	0.0054	0.0054	0.0001
168	0.0055	0.0055	0.0001
169	0.0060	0.0059	0.0001
170	0.0061	0.0061	0.0001
171	0.0064	0.0063	0.0001
172	0.0066	0.0065	0.0001
173	0.0069	0.0068	0.0001
174	0.0071	0.0070	0.0001
175	0.0075	0.0074	0.0001
176	0.0078	0.0077	0.0001
177	0.0083	0.0082	0.0001
178	0.0085	0.0085	0.0001
179	0.0092	0.0091	0.0001
180	0.0096	0.0095	0.0001
181	0.0104	0.0103	0.0001
182	0.0109	0.0108	0.0001
183	0.0121	0.0119	0.0001
184	0.0127	0.0126	0.0001
185	0.0283	0.0280	0.0003
186	0.0298	0.0295	0.0003
187	0.0336	0.0333	0.0003
188	0.0361	0.0358	0.0004
189	0.0481	0.0476	0.0005
190	0.0534	0.0529	0.0005
191	0.0726	0.0555	0.0171
192	0.0955	0.0555	0.0400
193	0.2396	0.0555	0.1841
194	0.0608	0.0555	0.0053
195	0.0392	0.0388	0.0004
196	0.0316	0.0312	0.0003
197	0.0135	0.0134	0.0001
198	0.0114	0.0113	0.0001
199	0.0100	0.0099	0.0001
200	0.0089	0.0088	0.0001
201	0.0080	0.0079	0.0001
202	0.0073	0.0072	0.0001
203	0.0067	0.0067	0.0001
204	0.0063	0.0062	0.0001
205	0.0056	0.0056	0.0001
206	0.0053	0.0052	0.0001
207	0.0050	0.0049	0.0000
208	0.0047	0.0047	0.0000
209	0.0045	0.0045	0.0000
210	0.0043	0.0043	0.0000
211	0.0041	0.0041	0.0000
212	0.0039	0.0039	0.0000
213	0.0038	0.0037	0.0000
214	0.0036	0.0036	0.0000
215	0.0035	0.0035	0.0000
216	0.0034	0.0034	0.0000
217	0.0037	0.0037	0.0000
218	0.0036	0.0036	0.0000
219	0.0035	0.0035	0.0000
220	0.0034	0.0034	0.0000
221	0.0033	0.0033	0.0000

222	0.0032	0.0032	0.0000
223	0.0031	0.0031	0.0000
224	0.0031	0.0030	0.0000
225	0.0030	0.0029	0.0000
226	0.0029	0.0029	0.0000
227	0.0028	0.0028	0.0000
228	0.0028	0.0028	0.0000
229	0.0027	0.0027	0.0000
230	0.0027	0.0026	0.0000
231	0.0026	0.0026	0.0000
232	0.0026	0.0025	0.0000
233	0.0025	0.0025	0.0000
234	0.0025	0.0024	0.0000
235	0.0024	0.0024	0.0000
236	0.0024	0.0024	0.0000
237	0.0023	0.0023	0.0000
238	0.0023	0.0023	0.0000
239	0.0023	0.0022	0.0000
240	0.0022	0.0022	0.0000
241	0.0022	0.0022	0.0000
242	0.0022	0.0021	0.0000
243	0.0021	0.0021	0.0000
244	0.0021	0.0021	0.0000
245	0.0021	0.0020	0.0000
246	0.0020	0.0020	0.0000
247	0.0020	0.0020	0.0000
248	0.0020	0.0020	0.0000
249	0.0019	0.0019	0.0000
250	0.0019	0.0019	0.0000
251	0.0019	0.0019	0.0000
252	0.0019	0.0019	0.0000
253	0.0018	0.0018	0.0000
254	0.0018	0.0018	0.0000
255	0.0018	0.0018	0.0000
256	0.0018	0.0018	0.0000
257	0.0018	0.0017	0.0000
258	0.0017	0.0017	0.0000
259	0.0017	0.0017	0.0000
260	0.0017	0.0017	0.0000
261	0.0017	0.0017	0.0000
262	0.0017	0.0016	0.0000
263	0.0016	0.0016	0.0000
264	0.0016	0.0016	0.0000
265	0.0016	0.0016	0.0000
266	0.0016	0.0016	0.0000
267	0.0016	0.0016	0.0000
268	0.0016	0.0015	0.0000
269	0.0015	0.0015	0.0000
270	0.0015	0.0015	0.0000
271	0.0015	0.0015	0.0000
272	0.0015	0.0015	0.0000
273	0.0015	0.0015	0.0000
274	0.0015	0.0015	0.0000
275	0.0015	0.0014	0.0000
276	0.0014	0.0014	0.0000
277	0.0014	0.0014	0.0000

278	0.0014	0.0014	0.0000
279	0.0014	0.0014	0.0000
280	0.0014	0.0014	0.0000
281	0.0014	0.0014	0.0000
282	0.0014	0.0014	0.0000
283	0.0014	0.0013	0.0000
284	0.0013	0.0013	0.0000
285	0.0013	0.0013	0.0000
286	0.0013	0.0013	0.0000
287	0.0013	0.0013	0.0000
288	0.0013	0.0013	0.0000

```
TOTAL STORM RAINFALL(INCHES) =  1.57
TOTAL SOIL-LOSS(INCHES) =  1.31
TOTAL EFFECTIVE RAINFALL(INCHES) =  0.26

---------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =       4.4513
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =       0.8728
---------------------------------------------------------------------------
```

==========

2 4 - 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 FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	7.5	15.0	22.5	30.0
0.083	0.0000	0.00	Q	.	.	.	.
0.167	0.0000	0.00	Q	.	.	.	.
0.250	0.0000	0.00	Q	.	.	.	.
0.333	0.0000	0.00	Q	.	.	.	.
0.417	0.0000	0.00	Q	.	.	.	.
0.500	0.0001	0.00	Q	.	.	.	.
0.583	0.0001	0.00	Q	.	.	.	.
0.667	0.0001	0.00	Q	.	.	.	.
0.750	0.0002	0.00	Q	.	.	.	.
0.833	0.0002	0.01	Q	.	.	.	.
0.917	0.0002	0.01	Q	.	.	.	.
1.000	0.0003	0.01	Q	.	.	.	.
1.083	0.0003	0.01	Q	.	.	.	.
1.167	0.0004	0.01	Q	.	.	.	.
1.250	0.0004	0.01	Q	.	.	.	.
1.333	0.0004	0.01	Q	.	.	.	.
1.417	0.0005	0.01	Q	.	.	.	.
1.500	0.0005	0.01	Q	.	.	.	.
1.583	0.0006	0.01	Q	.	.	.	.
1.667	0.0006	0.01	Q	.	.	.	.
1.750	0.0007	0.01	Q	.	.	.	.
1.833	0.0007	0.01	Q	.	.	.	.
1.917	0.0007	0.01	Q	.	.	.	.
2.000	0.0008	0.01	Q	.	.	.	.
2.083	0.0008	0.01	Q	.	.	.	.
2.167	0.0009	0.01	Q	.	.	.	.
2.250	0.0009	0.01	Q	.	.	.	.
2.333	0.0010	0.01	Q	.	.	.	.
2.417	0.0010	0.01	Q	.	.	.	.
2.500	0.0011	0.01	Q	.	.	.	.
2.583	0.0011	0.01	Q	.	.	.	.
2.667	0.0012	0.01	Q	.	.	.	.
2.750	0.0012	0.01	Q	.	.	.	.
2.833	0.0013	0.01	Q	.	.	.	.
2.917	0.0013	0.01	Q	.	.	.	.
3.000	0.0014	0.01	Q	.	.	.	.
3.083	0.0014	0.01	Q	.	.	.	.
3.167	0.0015	0.01	Q	.	.	.	.
3.250	0.0015	0.01	Q	.	.	.	.
3.333	0.0016	0.01	Q	.	.	.	.
3.417	0.0016	0.01	Q	.	.	.	.
3.500	0.0017	0.01	Q	.	.	.	.
3.583	0.0017	0.01	Q	.	.	.	.
3.667	0.0018	0.01	Q	.	.	.	.
3.750	0.0018	0.01	Q	.	.	.	.

3.833	0.0019	0.01	Q	.	.	.	.
3.917	0.0019	0.01	Q	.	.	.	.
4.000	0.0020	0.01	Q	.	.	.	.
4.083	0.0020	0.01	Q	.	.	.	.
4.167	0.0021	0.01	Q	.	.	.	.
4.250	0.0021	0.01	Q	.	.	.	.
4.333	0.0022	0.01	Q	.	.	.	.
4.417	0.0022	0.01	Q	.	.	.	.
4.500	0.0023	0.01	Q	.	.	.	.
4.583	0.0024	0.01	Q	.	.	.	.
4.667	0.0024	0.01	Q	.	.	.	.
4.750	0.0025	0.01	Q	.	.	.	.
4.833	0.0025	0.01	Q	.	.	.	.
4.917	0.0026	0.01	Q	.	.	.	.
5.000	0.0026	0.01	Q	.	.	.	.
5.083	0.0027	0.01	Q	.	.	.	.
5.167	0.0027	0.01	Q	.	.	.	.
5.250	0.0028	0.01	Q	.	.	.	.
5.333	0.0029	0.01	Q	.	.	.	.
5.417	0.0029	0.01	Q	.	.	.	.
5.500	0.0030	0.01	Q	.	.	.	.
5.583	0.0030	0.01	Q	.	.	.	.
5.667	0.0031	0.01	Q	.	.	.	.
5.750	0.0031	0.01	Q	.	.	.	.
5.833	0.0032	0.01	Q	.	.	.	.
5.917	0.0033	0.01	Q	.	.	.	.
6.000	0.0033	0.01	Q	.	.	.	.
6.083	0.0034	0.01	Q	.	.	.	.
6.167	0.0034	0.01	Q	.	.	.	.
6.250	0.0035	0.01	Q	.	.	.	.
6.333	0.0036	0.01	Q	.	.	.	.
6.417	0.0036	0.01	Q	.	.	.	.
6.500	0.0037	0.01	Q	.	.	.	.
6.583	0.0038	0.01	Q	.	.	.	.
6.667	0.0038	0.01	Q	.	.	.	.
6.750	0.0039	0.01	Q	.	.	.	.
6.833	0.0039	0.01	Q	.	.	.	.
6.917	0.0040	0.01	Q	.	.	.	.
7.000	0.0041	0.01	Q	.	.	.	.
7.083	0.0041	0.01	Q	.	.	.	.
7.167	0.0042	0.01	Q	.	.	.	.
7.250	0.0043	0.01	Q	.	.	.	.
7.333	0.0043	0.01	Q	.	.	.	.
7.417	0.0044	0.01	Q	.	.	.	.
7.500	0.0045	0.01	Q	.	.	.	.
7.583	0.0045	0.01	Q	.	.	.	.
7.667	0.0046	0.01	Q	.	.	.	.
7.750	0.0047	0.01	Q	.	.	.	.
7.833	0.0047	0.01	Q	.	.	.	.
7.917	0.0048	0.01	Q	.	.	.	.
8.000	0.0049	0.01	Q	.	.	.	.
8.083	0.0050	0.01	Q	.	.	.	.
8.167	0.0050	0.01	Q	.	.	.	.
8.250	0.0051	0.01	Q	.	.	.	.
8.333	0.0052	0.01	Q	.	.	.	.
8.417	0.0052	0.01	Q	.	.	.	.

8.500	0.0053	0.01	Q
8.583	0.0054	0.01	Q
8.667	0.0055	0.01	Q
8.750	0.0055	0.01	Q
8.833	0.0056	0.01	Q
8.917	0.0057	0.01	Q
9.000	0.0058	0.01	Q
9.083	0.0059	0.01	Q
9.167	0.0059	0.01	Q
9.250	0.0060	0.01	Q
9.333	0.0061	0.01	Q
9.417	0.0062	0.01	Q
9.500	0.0063	0.01	Q
9.583	0.0063	0.01	Q
9.667	0.0064	0.01	Q
9.750	0.0065	0.01	Q
9.833	0.0066	0.01	Q
9.917	0.0067	0.01	Q
10.000	0.0068	0.01	Q
10.083	0.0068	0.01	Q
10.167	0.0069	0.01	Q
10.250	0.0070	0.01	Q
10.333	0.0071	0.01	Q
10.417	0.0072	0.01	Q
10.500	0.0073	0.01	Q
10.583	0.0074	0.01	Q
10.667	0.0075	0.01	Q
10.750	0.0076	0.01	Q
10.833	0.0077	0.01	Q
10.917	0.0078	0.01	Q
11.000	0.0079	0.01	Q
11.083	0.0080	0.01	Q
11.167	0.0081	0.01	Q
11.250	0.0082	0.01	Q
11.333	0.0083	0.01	Q
11.417	0.0084	0.02	Q
11.500	0.0085	0.02	Q
11.583	0.0086	0.02	Q
11.667	0.0087	0.02	Q
11.750	0.0088	0.02	Q
11.833	0.0089	0.02	Q
11.917	0.0090	0.02	Q
12.000	0.0091	0.02	Q
12.083	0.0092	0.02	Q
12.167	0.0094	0.02	Q
12.250	0.0095	0.02	Q
12.333	0.0096	0.02	Q
12.417	0.0097	0.02	Q
12.500	0.0098	0.02	Q
12.583	0.0099	0.02	Q
12.667	0.0101	0.02	Q
12.750	0.0102	0.02	Q
12.833	0.0103	0.02	Q
12.917	0.0104	0.02	Q
13.000	0.0105	0.02	Q
13.083	0.0107	0.02	Q

13.167	0.0108	0.02	Q
13.250	0.0109	0.02	Q
13.333	0.0111	0.02	Q
13.417	0.0112	0.02	Q
13.500	0.0113	0.02	Q
13.583	0.0115	0.02	Q
13.667	0.0116	0.02	Q
13.750	0.0118	0.02	Q
13.833	0.0119	0.02	Q
13.917	0.0121	0.02	Q
14.000	0.0122	0.02	Q
14.083	0.0124	0.02	Q
14.167	0.0126	0.02	Q
14.250	0.0127	0.03	Q
14.333	0.0129	0.03	Q
14.417	0.0131	0.03	Q
14.500	0.0133	0.03	Q
14.583	0.0135	0.03	Q
14.667	0.0137	0.03	Q
14.750	0.0139	0.03	Q
14.833	0.0141	0.03	Q
14.917	0.0144	0.03	Q
15.000	0.0146	0.04	Q
15.083	0.0149	0.04	Q
15.167	0.0152	0.04	Q
15.250	0.0154	0.04	Q
15.333	0.0157	0.04	Q
15.417	0.0161	0.05	Q
15.500	0.0164	0.05	Q
15.583	0.0169	0.06	Q
15.667	0.0174	0.08	Q
15.750	0.0181	0.10	Q
15.833	0.0189	0.12	Q
15.917	0.0205	0.23	Q
16.000	0.0253	0.71	QV
16.083	0.0438	2.68	. VQ
16.167	0.0925	7.07	. V Q.
16.250	0.1815	12.93	. V . Q .
16.333	0.3266	21.06	. . V . Q .
16.417	0.4518	18.19	. . V Q .
16.500	0.5346	12.03	. . Q . V .
16.583	0.5906	8.13	. Q . V .
16.667	0.6336	6.24	. Q . . V.
16.750	0.6675	4.92	. Q . . V
16.833	0.6952	4.03	. Q . . .V
16.917	0.7179	3.30	. Q . . . V
17.000	0.7374	2.82	. Q . . . V
17.083	0.7545	2.49	. Q . . . V
17.167	0.7691	2.12	. Q . . . V
17.250	0.7811	1.74	. Q . . . V
17.333	0.7916	1.53	. Q . . . V
17.417	0.8012	1.39	.Q . . . V
17.500	0.8097	1.23	.Q . . . V
17.583	0.8172	1.10	.Q . . . V
17.667	0.8237	0.93	.Q . . . V
17.750	0.8297	0.88	.Q . . . V .

```
17.833      0.8348      0.74  Q         .         .         .       V .
17.917      0.8395      0.68  Q         .         .         .       V .
18.000      0.8435      0.57  Q         .         .         .       V .
18.083      0.8468      0.48  Q         .         .         .       V .
18.167      0.8495      0.40  Q         .         .         .       V .
18.250      0.8516      0.30  Q         .         .         .        V.
18.333      0.8537      0.30  Q         .         .         .        V.
18.417      0.8560      0.33  Q         .         .         .        V.
18.500      0.8583      0.34  Q         .         .         .        V.
18.583      0.8607      0.34  Q         .         .         .        V.
18.667      0.8630      0.34  Q         .         .         .        V.
18.750      0.8652      0.32  Q         .         .         .        V.
18.833      0.8672      0.29  Q         .         .         .        V.
18.917      0.8682      0.14  Q         .         .         .        V.
19.000      0.8683      0.02  Q         .         .         .        V.
19.083      0.8684      0.02  Q         .         .         .        V.
19.167      0.8685      0.02  Q         .         .         .        V.
19.250      0.8687      0.02  Q         .         .         .        V.
19.333      0.8688      0.02  Q         .         .         .        V.
19.417      0.8689      0.01  Q         .         .         .        V.
19.500      0.8690      0.01  Q         .         .         .        V.
19.583      0.8691      0.01  Q         .         .         .        V.
19.667      0.8691      0.01  Q         .         .         .        V.
19.750      0.8692      0.01  Q         .         .         .        V.
19.833      0.8693      0.01  Q         .         .         .        V.
19.917      0.8694      0.01  Q         .         .         .        V.
20.000      0.8695      0.01  Q         .         .         .        V.
20.083      0.8696      0.01  Q         .         .         .        V.
20.167      0.8697      0.01  Q         .         .         .        V.
20.250      0.8698      0.01  Q         .         .         .        V.
20.333      0.8698      0.01  Q         .         .         .        V.
20.417      0.8699      0.01  Q         .         .         .        V.
20.500      0.8700      0.01  Q         .         .         .        V.
20.583      0.8701      0.01  Q         .         .         .        V.
20.667      0.8701      0.01  Q         .         .         .        V.
20.750      0.8702      0.01  Q         .         .         .        V.
20.833      0.8703      0.01  Q         .         .         .        V.
20.917      0.8704      0.01  Q         .         .         .        V.
21.000      0.8704      0.01  Q         .         .         .        V.
21.083      0.8705      0.01  Q         .         .         .        V.
21.167      0.8706      0.01  Q         .         .         .        V.
21.250      0.8706      0.01  Q         .         .         .        V.
21.333      0.8707      0.01  Q         .         .         .        V.
21.417      0.8708      0.01  Q         .         .         .        V.
21.500      0.8708      0.01  Q         .         .         .        V.
21.583      0.8709      0.01  Q         .         .         .        V.
21.667      0.8710      0.01  Q         .         .         .        V.
21.750      0.8710      0.01  Q         .         .         .        V.
21.833      0.8711      0.01  Q         .         .         .        V.
21.917      0.8711      0.01  Q         .         .         .        V.
22.000      0.8712      0.01  Q         .         .         .        V.
22.083      0.8713      0.01  Q         .         .         .        V.
22.167      0.8713      0.01  Q         .         .         .        V.
22.250      0.8714      0.01  Q         .         .         .        V.
22.333      0.8714      0.01  Q         .         .         .        V.
22.417      0.8715      0.01  Q         .         .         .        V.
```



```
22.500      0.8715      0.01  Q         .         .         .        V.
22.583      0.8716      0.01  Q         .         .         .        V.
22.667      0.8717      0.01  Q         .         .         .        V.
22.750      0.8717      0.01  Q         .         .         .        V.
22.833      0.8718      0.01  Q         .         .         .        V.
22.917      0.8718      0.01  Q         .         .         .        V.
-------------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                Duration
        Peak Flow Rate                     (minutes)
    =======================                =========
              0%                            1375.0
             10%                              70.0
             20%                              40.0
             30%                              30.0
             40%                              20.0
             50%                              20.0
             60%                              15.0
             70%                              10.0
             80%                              10.0
             90%                               5.0
 ===============================================================================

   END OF FLOODSCx ROUTING ANALYSIS
```

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****************************************************************************
              RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                          Analysis prepared by:
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Q3 Consulting

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 ************************* DESCRIPTION OF STUDY *************************
* YERMO SOLAR FARM EXISTING CONDITION RATIONAL METHOD
* 100 YEAR STORM - SUBAREA A AND B                                     *
* 10/22/2024                                                           *
 ************************************************************************

  FILE NAME: EYRMO100.DAT
  TIME/DATE OF STUDY: 10:55 10/24/2024
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                     --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS =  7
   1)    5.00;  5.240
   2)   10.00;  3.760
   3)   15.00;  3.030
   4)   30.00;  2.080
   5)   60.00;  1.400
   6)  120.00;  0.763
   7)  180.00;  0.555
  *ANTECEDENT MOISTURE CONDITION (AMC) I ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED
```



```
****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   850.00
  ELEVATION DATA: UPSTREAM(FEET) =   1910.50  DOWNSTREAM(FEET) =   1906.30

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   22.551
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.552
  SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL POOR COVER
  "BARREN"                   A        4.96      0.67     1.000    61   22.55
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      8.42
  TOTAL AREA(ACRES) =      4.96   PEAK FLOW RATE(CFS) =      8.42

****************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1906.30  DOWNSTREAM(FEET) =   1898.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   900.00   CHANNEL SLOPE =  0.0092
  CHANNEL BASE(FEET) =   15.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   5.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.152
  SUBAREA LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   A        8.07      0.67     1.000    61
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      13.86
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.37
  AVERAGE FLOW DEPTH(FEET) =   0.37   TRAVEL TIME(MIN.) =   6.32
  Tc(MIN.) =   28.87
  SUBAREA AREA(ACRES) =     8.07       SUBAREA RUNOFF(CFS) =   10.79
  EFFECTIVE AREA(ACRES) =     13.03     AREA-AVERAGED Fm(INCH/HR) =   0.67
  AREA-AVERAGED Fp(INCH/HR) =   0.67  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       13.0         PEAK FLOW RATE(CFS) =      17.42

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.42   FLOW VELOCITY(FEET/SEC.) =   2.59
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    102.00 =    1750.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =   1
----------------------------------------------------------------------------
```

```
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   28.87
  RAINFALL INTENSITY(INCH/HR) =   2.15
  AREA-AVERAGED Fm(INCH/HR) =  0.67
  AREA-AVERAGED Fp(INCH/HR) =  0.67
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =      13.03
  TOTAL STREAM AREA(ACRES) =      13.03
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      17.42

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   550.00
  ELEVATION DATA: UPSTREAM(FEET) =   1910.50  DOWNSTREAM(FEET) =   1906.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.129
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.895
  SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL POOR COVER
  "BARREN"                   A        4.34      0.67     1.000    61   17.13
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      8.71
  TOTAL AREA(ACRES) =      4.34   PEAK FLOW RATE(CFS) =      8.71

****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1906.00  DOWNSTREAM(FEET) =   1904.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   450.00   CHANNEL SLOPE =  0.0044
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   5.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.585
  SUBAREA LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   A        7.56      0.67     1.000    61
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      15.26
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.53
  AVERAGE FLOW DEPTH(FEET) =   0.33   TRAVEL TIME(MIN.) =   4.90
```



```
  Tc(MIN.) =   22.03
  SUBAREA AREA(ACRES) =     7.56       SUBAREA RUNOFF(CFS) =   13.06
  EFFECTIVE AREA(ACRES) =     11.90     AREA-AVERAGED Fm(INCH/HR) =   0.67
  AREA-AVERAGED Fp(INCH/HR) =   0.67  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       11.9         PEAK FLOW RATE(CFS) =      20.55

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.39   FLOW VELOCITY(FEET/SEC.) =   1.73
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =    1000.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    102.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1904.00  DOWNSTREAM(FEET) =   1898.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   550.00   CHANNEL SLOPE =  0.0109
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   5.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.400
  SUBAREA LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   A       15.76      0.67     1.000    61
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      32.87
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.14
  AVERAGE FLOW DEPTH(FEET) =   0.50   TRAVEL TIME(MIN.) =   2.92
  Tc(MIN.) =   24.95
  SUBAREA AREA(ACRES) =    15.76       SUBAREA RUNOFF(CFS) =   24.59
  EFFECTIVE AREA(ACRES) =     27.66     AREA-AVERAGED Fm(INCH/HR) =   0.67
  AREA-AVERAGED Fp(INCH/HR) =   0.67  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       27.7         PEAK FLOW RATE(CFS) =      43.16

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.58   FLOW VELOCITY(FEET/SEC.) =   3.49
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    102.00 =    1550.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   24.95
  RAINFALL INTENSITY(INCH/HR) =   2.40
  AREA-AVERAGED Fm(INCH/HR) =  0.67
  AREA-AVERAGED Fp(INCH/HR) =  0.67
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =      27.66
  TOTAL STREAM AREA(ACRES) =      27.66
```

```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      43.16

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       17.42   28.87    2.152  0.67( 0.67) 1.00      13.0     100.00
      2       43.16   24.95    2.400  0.67( 0.67) 1.00      27.7     200.00

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

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       60.59   24.95    2.400  0.67( 0.67) 1.00      38.9     200.00
      2       54.40   28.87    2.152  0.67( 0.67) 1.00      40.7     100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      60.59    Tc(MIN.) =    24.95
  EFFECTIVE AREA(ACRES) =      38.92   AREA-AVERAGED Fm(INCH/HR) =  0.67
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =       40.7
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    102.00 =    1750.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       40.7  TC(MIN.) =     24.95
  EFFECTIVE AREA(ACRES) =     38.92  AREA-AVERAGED Fm(INCH/HR)=  0.67
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap = 1.000
  PEAK FLOW RATE(CFS)   =      60.59

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       60.59   24.95    2.400  0.67( 0.67) 1.00      38.9     200.00
      2       54.40   28.87    2.152  0.67( 0.67) 1.00      40.7     100.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

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

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                          Analysis prepared by:

 ************************* DESCRIPTION OF STUDY *************************
* YERMO EXISTING CONDITION UNIT HYDROGRAPH                               *
* 100YR 24HR UH AT NODE 102                                              *
* 10/25/2024                                                             *
 ************************************************************************

  FILE NAME: EXUH100.DAT
  TIME/DATE OF STUDY: 11:19 10/28/2024


****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    102.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =      40.700 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.333 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         DESERT(UNDEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.666
         LOW LOSS FRACTION = 0.916
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.44
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  1.04
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.40
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.67
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.88
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  2.57

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.998
          30-MINUTE FACTOR = 0.998
           1-HOUR FACTOR = 0.998
```



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           3-HOUR FACTOR = 1.000
           6-HOUR FACTOR = 1.000
          24-HOUR FACTOR = 1.000

         UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  25.025


============================================================================
                      UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
----------------------------------------------------------------------------
        1                 1.352                 6.654
        2                 6.586                25.765
        3                19.753                64.810
        4                41.390               106.498
        5                56.125                72.531
        6                65.089                44.122
        7                71.411                31.114
        8                76.207                23.610
        9                79.978                18.561
       10                82.976                14.755
       11                85.525                12.549
       12                87.723                10.818
       13                89.469                 8.593
       14                90.919                 7.138
       15                92.217                 6.392
       16                93.367                 5.658
       17                94.339                 4.784
       18                95.190                 4.188
       19                95.937                 3.678
       20                96.588                 3.203
       21                97.134                 2.690
       22                97.585                 2.217
       23                97.931                 1.703
       24                98.181                 1.232
       25                98.457                 1.361
       26                98.758                 1.478
       27                99.058                 1.477
       28                99.358                 1.477
       29                99.658                 1.477
       30                99.958                 1.477
       31               100.000                 0.205
```

****

UNIT PERIOD (NUMBER)	UNIT RAINFALL (INCHES)	UNIT SOIL-LOSS (INCHES)	EFFECTIVE RAINFALL (INCHES)
1	0.0020	0.0018	0.0002
2	0.0020	0.0019	0.0002
3	0.0020	0.0019	0.0002
4	0.0020	0.0019	0.0002
5	0.0020	0.0019	0.0002
6	0.0021	0.0019	0.0002
7	0.0021	0.0019	0.0002
8	0.0021	0.0019	0.0002
9	0.0021	0.0019	0.0002
10	0.0021	0.0019	0.0002
11	0.0021	0.0019	0.0002
12	0.0021	0.0019	0.0002
13	0.0021	0.0019	0.0002
14	0.0021	0.0019	0.0002
15	0.0021	0.0020	0.0002
16	0.0021	0.0020	0.0002
17	0.0022	0.0020	0.0002
18	0.0022	0.0020	0.0002
19	0.0022	0.0020	0.0002
20	0.0022	0.0020	0.0002
21	0.0022	0.0020	0.0002
22	0.0022	0.0020	0.0002
23	0.0022	0.0020	0.0002
24	0.0022	0.0020	0.0002
25	0.0022	0.0020	0.0002
26	0.0022	0.0021	0.0002
27	0.0023	0.0021	0.0002
28	0.0023	0.0021	0.0002
29	0.0023	0.0021	0.0002
30	0.0023	0.0021	0.0002
31	0.0023	0.0021	0.0002
32	0.0023	0.0021	0.0002
33	0.0023	0.0021	0.0002
34	0.0023	0.0021	0.0002
35	0.0023	0.0021	0.0002
36	0.0024	0.0022	0.0002
37	0.0024	0.0022	0.0002
38	0.0024	0.0022	0.0002
39	0.0024	0.0022	0.0002
40	0.0024	0.0022	0.0002
41	0.0024	0.0022	0.0002
42	0.0024	0.0022	0.0002
43	0.0024	0.0022	0.0002
44	0.0024	0.0022	0.0002
45	0.0025	0.0023	0.0002
46	0.0025	0.0023	0.0002
47	0.0025	0.0023	0.0002
48	0.0025	0.0023	0.0002
49	0.0025	0.0023	0.0002
50	0.0025	0.0023	0.0002
51	0.0025	0.0023	0.0002

52	0.0026	0.0023	0.0002
53	0.0026	0.0024	0.0002
54	0.0026	0.0024	0.0002
55	0.0026	0.0024	0.0002
56	0.0026	0.0024	0.0002
57	0.0026	0.0024	0.0002
58	0.0026	0.0024	0.0002
59	0.0027	0.0024	0.0002
60	0.0027	0.0025	0.0002
61	0.0027	0.0025	0.0002
62	0.0027	0.0025	0.0002
63	0.0027	0.0025	0.0002
64	0.0027	0.0025	0.0002
65	0.0028	0.0025	0.0002
66	0.0028	0.0025	0.0002
67	0.0028	0.0026	0.0002
68	0.0028	0.0026	0.0002
69	0.0028	0.0026	0.0002
70	0.0028	0.0026	0.0002
71	0.0029	0.0026	0.0002
72	0.0029	0.0026	0.0002
73	0.0029	0.0027	0.0002
74	0.0029	0.0027	0.0002
75	0.0029	0.0027	0.0002
76	0.0030	0.0027	0.0002
77	0.0030	0.0027	0.0003
78	0.0030	0.0027	0.0003
79	0.0030	0.0028	0.0003
80	0.0030	0.0028	0.0003
81	0.0031	0.0028	0.0003
82	0.0031	0.0028	0.0003
83	0.0031	0.0028	0.0003
84	0.0031	0.0029	0.0003
85	0.0031	0.0029	0.0003
86	0.0032	0.0029	0.0003
87	0.0032	0.0029	0.0003
88	0.0032	0.0029	0.0003
89	0.0032	0.0030	0.0003
90	0.0033	0.0030	0.0003
91	0.0033	0.0030	0.0003
92	0.0033	0.0030	0.0003
93	0.0033	0.0031	0.0003
94	0.0034	0.0031	0.0003
95	0.0034	0.0031	0.0003
96	0.0034	0.0031	0.0003
97	0.0035	0.0032	0.0003
98	0.0035	0.0032	0.0003
99	0.0035	0.0032	0.0003
100	0.0035	0.0032	0.0003
101	0.0036	0.0033	0.0003
102	0.0036	0.0033	0.0003
103	0.0036	0.0033	0.0003
104	0.0037	0.0033	0.0003
105	0.0037	0.0034	0.0003
106	0.0037	0.0034	0.0003
107	0.0038	0.0034	0.0003

108	0.0038	0.0035	0.0003
109	0.0038	0.0035	0.0003
110	0.0039	0.0035	0.0003
111	0.0039	0.0036	0.0003
112	0.0039	0.0036	0.0003
113	0.0040	0.0036	0.0003
114	0.0040	0.0037	0.0003
115	0.0041	0.0037	0.0003
116	0.0041	0.0037	0.0003
117	0.0041	0.0038	0.0003
118	0.0042	0.0038	0.0004
119	0.0042	0.0039	0.0004
120	0.0043	0.0039	0.0004
121	0.0043	0.0040	0.0004
122	0.0043	0.0040	0.0004
123	0.0044	0.0040	0.0004
124	0.0044	0.0041	0.0004
125	0.0045	0.0041	0.0004
126	0.0045	0.0042	0.0004
127	0.0046	0.0042	0.0004
128	0.0047	0.0043	0.0004
129	0.0047	0.0043	0.0004
130	0.0048	0.0044	0.0004
131	0.0049	0.0044	0.0004
132	0.0049	0.0045	0.0004
133	0.0050	0.0046	0.0004
134	0.0050	0.0046	0.0004
135	0.0051	0.0047	0.0004
136	0.0052	0.0047	0.0004
137	0.0053	0.0048	0.0004
138	0.0053	0.0049	0.0004
139	0.0054	0.0049	0.0005
140	0.0055	0.0050	0.0005
141	0.0056	0.0051	0.0005
142	0.0056	0.0051	0.0005
143	0.0057	0.0053	0.0005
144	0.0058	0.0053	0.0005
145	0.0045	0.0041	0.0004
146	0.0045	0.0042	0.0004
147	0.0047	0.0043	0.0004
148	0.0047	0.0043	0.0004
149	0.0048	0.0044	0.0004
150	0.0049	0.0045	0.0004
151	0.0050	0.0046	0.0004
152	0.0051	0.0047	0.0004
153	0.0052	0.0048	0.0004
154	0.0053	0.0049	0.0004
155	0.0055	0.0050	0.0005
156	0.0055	0.0051	0.0005
157	0.0057	0.0052	0.0005
158	0.0058	0.0053	0.0005
159	0.0060	0.0055	0.0005
160	0.0061	0.0056	0.0005
161	0.0063	0.0058	0.0005
162	0.0064	0.0059	0.0005
163	0.0067	0.0061	0.0006

164	0.0068	0.0062	0.0006
165	0.0071	0.0065	0.0006
166	0.0072	0.0066	0.0006
167	0.0075	0.0069	0.0006
168	0.0077	0.0070	0.0006
169	0.0076	0.0070	0.0006
170	0.0078	0.0071	0.0007
171	0.0082	0.0075	0.0007
172	0.0084	0.0077	0.0007
173	0.0089	0.0081	0.0007
174	0.0091	0.0084	0.0008
175	0.0097	0.0089	0.0008
176	0.0100	0.0092	0.0008
177	0.0107	0.0098	0.0009
178	0.0111	0.0102	0.0009
179	0.0120	0.0110	0.0010
180	0.0126	0.0115	0.0011
181	0.0137	0.0126	0.0012
182	0.0144	0.0132	0.0012
183	0.0161	0.0147	0.0014
184	0.0171	0.0157	0.0014
185	0.0512	0.0469	0.0043
186	0.0540	0.0494	0.0045
187	0.0608	0.0555	0.0053
188	0.0654	0.0555	0.0099
189	0.0876	0.0555	0.0321
190	0.0973	0.0555	0.0418
191	0.1322	0.0555	0.0767
192	0.1740	0.0555	0.1185
193	0.4362	0.0555	0.3807
194	0.1108	0.0555	0.0553
195	0.0709	0.0555	0.0154
196	0.0571	0.0523	0.0048
197	0.0182	0.0167	0.0015
198	0.0152	0.0139	0.0013
199	0.0131	0.0120	0.0011
200	0.0116	0.0106	0.0010
201	0.0104	0.0095	0.0009
202	0.0094	0.0086	0.0008
203	0.0086	0.0079	0.0007
204	0.0080	0.0073	0.0007
205	0.0078	0.0072	0.0007
206	0.0073	0.0067	0.0006
207	0.0069	0.0063	0.0006
208	0.0065	0.0060	0.0005
209	0.0062	0.0057	0.0005
210	0.0059	0.0054	0.0005
211	0.0056	0.0052	0.0005
212	0.0054	0.0049	0.0005
213	0.0052	0.0047	0.0004
214	0.0050	0.0045	0.0004
215	0.0048	0.0044	0.0004
216	0.0046	0.0042	0.0004
217	0.0059	0.0054	0.0005
218	0.0057	0.0052	0.0005
219	0.0055	0.0050	0.0005

220	0.0053	0.0049	0.0004
221	0.0052	0.0048	0.0004
222	0.0051	0.0046	0.0004
223	0.0049	0.0045	0.0004
224	0.0048	0.0044	0.0004
225	0.0047	0.0043	0.0004
226	0.0046	0.0042	0.0004
227	0.0045	0.0041	0.0004
228	0.0044	0.0040	0.0004
229	0.0043	0.0039	0.0004
230	0.0042	0.0038	0.0004
231	0.0041	0.0038	0.0003
232	0.0040	0.0037	0.0003
233	0.0040	0.0036	0.0003
234	0.0039	0.0036	0.0003
235	0.0038	0.0035	0.0003
236	0.0037	0.0034	0.0003
237	0.0037	0.0034	0.0003
238	0.0036	0.0033	0.0003
239	0.0035	0.0033	0.0003
240	0.0035	0.0032	0.0003
241	0.0034	0.0031	0.0003
242	0.0034	0.0031	0.0003
243	0.0033	0.0030	0.0003
244	0.0033	0.0030	0.0003
245	0.0032	0.0030	0.0003
246	0.0032	0.0029	0.0003
247	0.0031	0.0029	0.0003
248	0.0031	0.0028	0.0003
249	0.0030	0.0028	0.0003
250	0.0030	0.0028	0.0003
251	0.0030	0.0027	0.0002
252	0.0029	0.0027	0.0002
253	0.0029	0.0026	0.0002
254	0.0029	0.0026	0.0002
255	0.0028	0.0026	0.0002
256	0.0028	0.0025	0.0002
257	0.0027	0.0025	0.0002
258	0.0027	0.0025	0.0002
259	0.0027	0.0025	0.0002
260	0.0027	0.0024	0.0002
261	0.0026	0.0024	0.0002
262	0.0026	0.0024	0.0002
263	0.0026	0.0024	0.0002
264	0.0025	0.0023	0.0002
265	0.0025	0.0023	0.0002
266	0.0025	0.0023	0.0002
267	0.0025	0.0023	0.0002
268	0.0024	0.0022	0.0002
269	0.0024	0.0022	0.0002
270	0.0024	0.0022	0.0002
271	0.0024	0.0022	0.0002
272	0.0023	0.0021	0.0002
273	0.0023	0.0021	0.0002
274	0.0023	0.0021	0.0002
275	0.0023	0.0021	0.0002

276	0.0022	0.0021	0.0002
277	0.0022	0.0020	0.0002
278	0.0022	0.0020	0.0002
279	0.0022	0.0020	0.0002
280	0.0022	0.0020	0.0002
281	0.0021	0.0020	0.0002
282	0.0021	0.0020	0.0002
283	0.0021	0.0019	0.0002
284	0.0021	0.0019	0.0002
285	0.0021	0.0019	0.0002
286	0.0021	0.0019	0.0002
287	0.0020	0.0019	0.0002
288	0.0020	0.0019	0.0002

```
TOTAL STORM RAINFALL(INCHES) =  2.57
TOTAL SOIL-LOSS(INCHES) =  1.72
TOTAL EFFECTIVE RAINFALL(INCHES) =  0.85

---------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =       5.8402
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =       2.8742
---------------------------------------------------------------------------
```

==========

2 4 - 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 FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	15.0	30.0	45.0	60.0
0.083	0.0000	0.00	Q	.	.	.	.
0.167	0.0000	0.01	Q	.	.	.	.
0.250	0.0002	0.02	Q	.	.	.	.
0.333	0.0004	0.03	Q	.	.	.	.
0.417	0.0007	0.05	Q	.	.	.	.
0.500	0.0011	0.05	Q	.	.	.	.
0.583	0.0015	0.06	Q	.	.	.	.
0.667	0.0020	0.06	Q	.	.	.	.
0.750	0.0024	0.07	Q	.	.	.	.
0.833	0.0029	0.07	Q	.	.	.	.
0.917	0.0034	0.07	Q	.	.	.	.
1.000	0.0039	0.08	Q	.	.	.	.
1.083	0.0045	0.08	Q	.	.	.	.
1.167	0.0050	0.08	Q	.	.	.	.
1.250	0.0055	0.08	Q	.	.	.	.
1.333	0.0061	0.08	Q	.	.	.	.
1.417	0.0067	0.08	Q	.	.	.	.
1.500	0.0072	0.08	Q	.	.	.	.
1.583	0.0078	0.08	Q	.	.	.	.
1.667	0.0084	0.09	Q	.	.	.	.
1.750	0.0090	0.09	Q	.	.	.	.
1.833	0.0096	0.09	Q	.	.	.	.
1.917	0.0102	0.09	Q	.	.	.	.
2.000	0.0108	0.09	Q	.	.	.	.
2.083	0.0114	0.09	Q	.	.	.	.
2.167	0.0120	0.09	Q	.	.	.	.
2.250	0.0127	0.09	Q	.	.	.	.
2.333	0.0133	0.09	Q	.	.	.	.
2.417	0.0139	0.09	Q	.	.	.	.
2.500	0.0145	0.09	Q	.	.	.	.
2.583	0.0152	0.09	Q	.	.	.	.
2.667	0.0158	0.09	Q	.	.	.	.
2.750	0.0165	0.09	Q	.	.	.	.
2.833	0.0171	0.09	Q	.	.	.	.
2.917	0.0178	0.09	Q	.	.	.	.
3.000	0.0184	0.09	Q	.	.	.	.
3.083	0.0191	0.10	Q	.	.	.	.
3.167	0.0197	0.10	Q	.	.	.	.
3.250	0.0204	0.10	Q	.	.	.	.
3.333	0.0210	0.10	Q	.	.	.	.
3.417	0.0217	0.10	Q	.	.	.	.
3.500	0.0224	0.10	Q	.	.	.	.
3.583	0.0231	0.10	Q	.	.	.	.
3.667	0.0237	0.10	Q	.	.	.	.
3.750	0.0244	0.10	Q	.	.	.	.

3.833	0.0251	0.10	Q	.	.	.	.
3.917	0.0258	0.10	Q	.	.	.	.
4.000	0.0265	0.10	Q	.	.	.	.
4.083	0.0272	0.10	Q	.	.	.	.
4.167	0.0279	0.10	Q	.	.	.	.
4.250	0.0286	0.10	Q	.	.	.	.
4.333	0.0293	0.10	Q	.	.	.	.
4.417	0.0300	0.10	Q	.	.	.	.
4.500	0.0307	0.10	Q	.	.	.	.
4.583	0.0314	0.10	Q	.	.	.	.
4.667	0.0321	0.10	Q	.	.	.	.
4.750	0.0329	0.11	Q	.	.	.	.
4.833	0.0336	0.11	Q	.	.	.	.
4.917	0.0343	0.11	Q	.	.	.	.
5.000	0.0351	0.11	Q	.	.	.	.
5.083	0.0358	0.11	Q	.	.	.	.
5.167	0.0366	0.11	Q	.	.	.	.
5.250	0.0373	0.11	Q	.	.	.	.
5.333	0.0381	0.11	Q	.	.	.	.
5.417	0.0388	0.11	Q	.	.	.	.
5.500	0.0396	0.11	Q	.	.	.	.
5.583	0.0404	0.11	Q	.	.	.	.
5.667	0.0411	0.11	Q	.	.	.	.
5.750	0.0419	0.11	Q	.	.	.	.
5.833	0.0427	0.11	Q	.	.	.	.
5.917	0.0435	0.11	Q	.	.	.	.
6.000	0.0443	0.11	Q	.	.	.	.
6.083	0.0451	0.12	Q	.	.	.	.
6.167	0.0459	0.12	Q	.	.	.	.
6.250	0.0467	0.12	Q	.	.	.	.
6.333	0.0475	0.12	Q	.	.	.	.
6.417	0.0483	0.12	Q	.	.	.	.
6.500	0.0491	0.12	Q	.	.	.	.
6.583	0.0499	0.12	Q	.	.	.	.
6.667	0.0508	0.12	Q	.	.	.	.
6.750	0.0516	0.12	Q	.	.	.	.
6.833	0.0525	0.12	Q	.	.	.	.
6.917	0.0533	0.12	Q	.	.	.	.
7.000	0.0542	0.12	Q	.	.	.	.
7.083	0.0550	0.12	Q	.	.	.	.
7.167	0.0559	0.13	Q	.	.	.	.
7.250	0.0568	0.13	Q	.	.	.	.
7.333	0.0576	0.13	Q	.	.	.	.
7.417	0.0585	0.13	Q	.	.	.	.
7.500	0.0594	0.13	Q	.	.	.	.
7.583	0.0603	0.13	Q	.	.	.	.
7.667	0.0612	0.13	Q	.	.	.	.
7.750	0.0621	0.13	Q	.	.	.	.
7.833	0.0631	0.13	Q	.	.	.	.
7.917	0.0640	0.13	Q	.	.	.	.
8.000	0.0649	0.14	Q	.	.	.	.
8.083	0.0658	0.14	Q	.	.	.	.
8.167	0.0668	0.14	Q	.	.	.	.
8.250	0.0677	0.14	Q	.	.	.	.
8.333	0.0687	0.14	Q	.	.	.	.
8.417	0.0697	0.14	Q	.	.	.	.

8.500	0.0707	0.14	Q
8.583	0.0716	0.14	Q
8.667	0.0726	0.14	QV
8.750	0.0736	0.15	QV
8.833	0.0746	0.15	QV
8.917	0.0757	0.15	QV
9.000	0.0767	0.15	QV
9.083	0.0777	0.15	QV
9.167	0.0788	0.15	QV
9.250	0.0798	0.15	QV
9.333	0.0809	0.15	QV
9.417	0.0819	0.16	QV
9.500	0.0830	0.16	QV
9.583	0.0841	0.16	QV
9.667	0.0852	0.16	QV
9.750	0.0863	0.16	QV
9.833	0.0875	0.16	QV
9.917	0.0886	0.16	QV
10.000	0.0897	0.17	QV
10.083	0.0909	0.17	QV
10.167	0.0921	0.17	QV
10.250	0.0932	0.17	QV
10.333	0.0944	0.17	QV
10.417	0.0956	0.18	QV
10.500	0.0969	0.18	QV
10.583	0.0981	0.18	QV
10.667	0.0993	0.18	QV
10.750	0.1006	0.18	QV
10.833	0.1019	0.18	QV
10.917	0.1032	0.19	QV
11.000	0.1045	0.19	QV
11.083	0.1058	0.19	QV
11.167	0.1071	0.19	QV
11.250	0.1085	0.20	QV
11.333	0.1098	0.20	QV
11.417	0.1112	0.20	QV
11.500	0.1126	0.20	QV
11.583	0.1141	0.21	QV
11.667	0.1155	0.21	QV
11.750	0.1170	0.21	QV
11.833	0.1184	0.21	QV
11.917	0.1199	0.22	QV
12.000	0.1215	0.22	QV
12.083	0.1230	0.22	QV
12.167	0.1245	0.22	QV
12.250	0.1260	0.22	QV
12.333	0.1275	0.21	QV
12.417	0.1289	0.20	QV
12.500	0.1303	0.20	QV
12.583	0.1317	0.20	QV
12.667	0.1331	0.20	QV
12.750	0.1345	0.20	QV
12.833	0.1359	0.21	QV
12.917	0.1374	0.21	QV
13.000	0.1388	0.21	QV
13.083	0.1403	0.22	QV

13.167	0.1418	0.22	QV
13.250	0.1434	0.22	QV
13.333	0.1449	0.23	Q V
13.417	0.1465	0.23	Q V
13.500	0.1481	0.24	Q V
13.583	0.1498	0.24	Q V
13.667	0.1515	0.25	Q V
13.750	0.1532	0.25	Q V
13.833	0.1550	0.26	Q V
13.917	0.1568	0.27	Q V
14.000	0.1587	0.27	Q V
14.083	0.1606	0.28	Q V
14.167	0.1626	0.29	Q V
14.250	0.1646	0.29	Q V
14.333	0.1667	0.30	Q V
14.417	0.1688	0.31	Q V
14.500	0.1710	0.32	Q V
14.583	0.1732	0.33	Q V
14.667	0.1756	0.34	Q V
14.750	0.1780	0.35	Q V
14.833	0.1805	0.37	Q V
14.917	0.1832	0.38	Q V
15.000	0.1859	0.40	Q V
15.083	0.1888	0.42	Q V
15.167	0.1919	0.44	Q V
15.250	0.1951	0.47	Q V
15.333	0.1985	0.50	Q V
15.417	0.2023	0.55	Q V
15.500	0.2069	0.66	Q V
15.583	0.2130	0.89	Q V
15.667	0.2219	1.28	Q V
15.750	0.2346	1.85	.Q V
15.833	0.2554	3.02	. QV
15.917	0.2939	5.60	. QV
16.000	0.3643	10.22	. VQ
16.083	0.4899	18.23	. V . Q
16.167	0.7044	31.14	. V. Q
16.250	1.0332	47.75	. . V . .Q
16.333	1.4397	59.02	. . V . Q.
16.417	1.7441	44.19	. . . V Q.
16.500	1.9497	29.86	. . Q. V .
16.583	2.0981	21.55	. . Q . V.
16.667	2.2112	16.43	. Q . V
16.750	2.3010	13.03	. Q . . V
16.833	2.3739	10.59	. Q . . V
16.917	2.4355	8.94	. Q . . V
17.000	2.4880	7.62	. Q . . V
17.083	2.5315	6.31	. Q . . V
17.167	2.5685	5.37	. Q . . V
17.250	2.6012	4.75	. Q . . V
17.333	2.6301	4.19	. Q . . V
17.417	2.6551	3.63	. Q . . V
17.500	2.6770	3.19	. Q . . V
17.583	2.6962	2.79	.Q . . V
17.667	2.7130	2.43	.Q . . V
17.750	2.7272	2.07	.Q . . V

```
17.833      2.7393      1.76  .Q        .         .         .       V .
17.917      2.7494      1.47  Q         .         .         .       V .
18.000      2.7581      1.26  Q         .         .         .       V .
18.083      2.7668      1.27  Q         .         .         .       V .
18.167      2.7757      1.29  Q         .         .         .       V .
18.250      2.7844      1.26  Q         .         .         .       V .
18.333      2.7927      1.20  Q         .         .         .       V .
18.417      2.8002      1.10  Q         .         .         .       V .
18.500      2.8066      0.93  Q         .         .         .        V.
18.583      2.8095      0.42  Q         .         .         .        V.
18.667      2.8113      0.27  Q         .         .         .        V.
18.750      2.8129      0.23  Q         .         .         .        V.
18.833      2.8145      0.22  Q         .         .         .        V.
18.917      2.8159      0.21  Q         .         .         .        V.
19.000      2.8174      0.21  Q         .         .         .        V.
19.083      2.8188      0.20  Q         .         .         .        V.
19.167      2.8201      0.20  Q         .         .         .        V.
19.250      2.8215      0.19  Q         .         .         .        V.
19.333      2.8228      0.19  Q         .         .         .        V.
19.417      2.8240      0.19  Q         .         .         .        V.
19.500      2.8253      0.18  Q         .         .         .        V.
19.583      2.8265      0.18  Q         .         .         .        V.
19.667      2.8277      0.17  Q         .         .         .        V.
19.750      2.8289      0.17  Q         .         .         .        V.
19.833      2.8301      0.17  Q         .         .         .        V.
19.917      2.8312      0.16  Q         .         .         .        V.
20.000      2.8323      0.16  Q         .         .         .        V.
20.083      2.8334      0.16  Q         .         .         .        V.
20.167      2.8345      0.16  Q         .         .         .        V.
20.250      2.8355      0.15  Q         .         .         .        V.
20.333      2.8365      0.15  Q         .         .         .        V.
20.417      2.8376      0.15  Q         .         .         .        V.
20.500      2.8386      0.15  Q         .         .         .        V.
20.583      2.8396      0.14  Q         .         .         .        V.
20.667      2.8405      0.14  Q         .         .         .        V.
20.750      2.8415      0.14  Q         .         .         .        V.
20.833      2.8424      0.14  Q         .         .         .        V.
20.917      2.8433      0.13  Q         .         .         .        V.
21.000      2.8443      0.13  Q         .         .         .        V.
21.083      2.8452      0.13  Q         .         .         .        V.
21.167      2.8460      0.13  Q         .         .         .        V.
21.250      2.8469      0.13  Q         .         .         .        V.
21.333      2.8478      0.13  Q         .         .         .        V.
21.417      2.8486      0.12  Q         .         .         .        V.
21.500      2.8495      0.12  Q         .         .         .        V.
21.583      2.8503      0.12  Q         .         .         .        V.
21.667      2.8511      0.12  Q         .         .         .        V.
21.750      2.8519      0.12  Q         .         .         .        V.
21.833      2.8527      0.12  Q         .         .         .        V.
21.917      2.8535      0.11  Q         .         .         .        V.
22.000      2.8543      0.11  Q         .         .         .        V.
22.083      2.8550      0.11  Q         .         .         .        V.
22.167      2.8558      0.11  Q         .         .         .        V.
22.250      2.8566      0.11  Q         .         .         .        V.
22.333      2.8573      0.11  Q         .         .         .        V.
22.417      2.8580      0.11  Q         .         .         .        V.
```



```
22.500      2.8588      0.11  Q         .         .         .        V.
22.583      2.8595      0.10  Q         .         .         .        V.
22.667      2.8602      0.10  Q         .         .         .        V.
22.750      2.8609      0.10  Q         .         .         .        V.
22.833      2.8616      0.10  Q         .         .         .        V.
22.917      2.8623      0.10  Q         .         .         .        V.
23.000      2.8629      0.10  Q         .         .         .        V.
23.083      2.8636      0.10  Q         .         .         .        V.
23.167      2.8643      0.10  Q         .         .         .        V.
23.250      2.8649      0.10  Q         .         .         .        V.
23.333      2.8656      0.09  Q         .         .         .        V.
23.417      2.8662      0.09  Q         .         .         .        V.
23.500      2.8669      0.09  Q         .         .         .        V.
23.583      2.8675      0.09  Q         .         .         .        V.
23.667      2.8682      0.09  Q         .         .         .        V.
23.750      2.8688      0.09  Q         .         .         .        V.
23.833      2.8694      0.09  Q         .         .         .        V.
23.917      2.8700      0.09  Q         .         .         .        V.
24.000      2.8706      0.09  Q         .         .         .        V.
24.083      2.8712      0.09  Q         .         .         .        V.
24.167      2.8718      0.08  Q         .         .         .        V.
24.250      2.8723      0.07  Q         .         .         .        V.
24.333      2.8726      0.05  Q         .         .         .        V.
24.417      2.8729      0.04  Q         .         .         .        V.
24.500      2.8731      0.03  Q         .         .         .        V.
24.583      2.8733      0.03  Q         .         .         .        V.
24.667      2.8734      0.02  Q         .         .         .        V.
24.750      2.8735      0.02  Q         .         .         .        V.
24.833      2.8736      0.01  Q         .         .         .        V.
24.917      2.8737      0.01  Q         .         .         .        V.
25.000      2.8738      0.01  Q         .         .         .        V.
25.083      2.8738      0.01  Q         .         .         .        V.
--------------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                Duration
        Peak Flow Rate                     (minutes)
    =======================                =========
              0%                            1505.0
             10%                              70.0
             20%                              45.0
             30%                              35.0
             40%                              25.0
             50%                              25.0
             60%                              15.0
             70%                              15.0
             80%                              10.0
             90%                               5.0
 ==============================================================================

   END OF FLOODSCx ROUTING ANALYSIS
```

```
****************************************************************************
              RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2015 Advanced Engineering Software (aes)
              Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                          Analysis prepared by:

 ************************** DESCRIPTION OF STUDY **************************
* YERMO SOLAR FARM PROPOSED HYDROLOGY STUDY                                *
* RATIONAL METHOD 10 YEAR - SUBAREA A AND B                                *
* 10/24/2024                                                               *
 ****************************************************************************

  FILE NAME: PYRMO10.DAT
  TIME/DATE OF STUDY: 05:33 10/29/2024
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                     --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS =  7
   1)    5.00;  2.880
   2)   10.00;  2.060
   3)   15.00;  1.660
   4)   30.00;  1.140
   5)   60.00;  0.770
   6)  120.00;  0.438
   7)  180.00;  0.325
  *ANTECEDENT MOISTURE CONDITION (AMC) I ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED
```



```
****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   850.00
  ELEVATION DATA: UPSTREAM(FEET) =   1910.50  DOWNSTREAM(FEET) =   1906.30

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   22.551
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.398
  SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL POOR COVER
  "BARREN"                   A        4.96      0.67     1.000    61   22.55
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      3.27
  TOTAL AREA(ACRES) =      4.96   PEAK FLOW RATE(CFS) =      3.27

****************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1906.30  DOWNSTREAM(FEET) =   1898.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   900.00   CHANNEL SLOPE =  0.0092
  CHANNEL BASE(FEET) =   15.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   5.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.116
  SUBAREA LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   A        8.07      0.67     1.000    61
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.93
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.59
  AVERAGE FLOW DEPTH(FEET) =   0.20   TRAVEL TIME(MIN.) =   9.43
  Tc(MIN.) =   31.98
  SUBAREA AREA(ACRES) =     8.07       SUBAREA RUNOFF(CFS) =    3.27
  EFFECTIVE AREA(ACRES) =     13.03     AREA-AVERAGED Fm(INCH/HR) =   0.67
  AREA-AVERAGED Fp(INCH/HR) =   0.67  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       13.0         PEAK FLOW RATE(CFS) =       5.27

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.21   FLOW VELOCITY(FEET/SEC.) =   1.64
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    102.00 =    1750.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =  10
```

```
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   800.00
  ELEVATION DATA: UPSTREAM(FEET) =   1910.50  DOWNSTREAM(FEET) =   1905.60

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   21.085
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.449
  SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  USER-DEFINED               -        1.77      0.50     1.000     -   21.09
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      1.51
  TOTAL AREA(ACRES) =      1.77   PEAK FLOW RATE(CFS) =      1.51

****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1905.60  DOWNSTREAM(FEET) =   1903.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   470.00   CHANNEL SLOPE =  0.0055
  CHANNEL BASE(FEET) =   50.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   5.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.097
  SUBAREA LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        2.76      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.27
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.63
  AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =  12.40
  Tc(MIN.) =   33.49
  SUBAREA AREA(ACRES) =     2.76       SUBAREA RUNOFF(CFS) =    1.48
  EFFECTIVE AREA(ACRES) =      4.53     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        4.5         PEAK FLOW RATE(CFS) =       2.43

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.07   FLOW VELOCITY(FEET/SEC.) =   0.66
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =    1270.00 FEET.

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



```
  FLOW PROCESS FROM NODE    202.00 TO NODE    202.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    203.00 TO NODE    204.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   400.00
  ELEVATION DATA: UPSTREAM(FEET) =   1910.00  DOWNSTREAM(FEET) =   1905.80

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.347
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.712
  SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  USER-DEFINED               -        2.09      0.50     1.000     -   14.35
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      2.28
  TOTAL AREA(ACRES) =      2.09   PEAK FLOW RATE(CFS) =      2.28

****************************************************************************
  FLOW PROCESS FROM NODE    204.00 TO NODE    205.00 IS CODE =  91
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1905.80
  DOWNSTREAM NODE ELEVATION(FEET) =   1904.60
  CHANNEL LENGTH THRU SUBAREA(FEET) =   250.00
  "V" GUTTER WIDTH(FEET) =   4.00   GUTTER HIKE(FEET) =  0.130
  PAVEMENT LIP(FEET) =  0.010   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.02000
  MAXIMUM DEPTH(FEET) =   0.50
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.604
  SUBAREA LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        3.80      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      4.16
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.84
  AVERAGE FLOW DEPTH(FEET) =   0.30   FLOOD WIDTH(FEET) =   20.24
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   2.27   Tc(MIN.) =   16.62
  SUBAREA AREA(ACRES) =    3.80       SUBAREA RUNOFF(CFS) =    3.77
  EFFECTIVE AREA(ACRES) =    5.89     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        5.9         PEAK FLOW RATE(CFS) =       5.85

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.33   FLOOD WIDTH(FEET) =   23.48
```

```
  FLOW VELOCITY(FEET/SEC.) =   1.97   DEPTH*VELOCITY(FT*FT/SEC) =   0.66
  LONGEST FLOWPATH FROM NODE    203.00 TO NODE    205.00 =     650.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    205.00 TO NODE    202.00 IS CODE =  91
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1904.60
  DOWNSTREAM NODE ELEVATION(FEET) =   1903.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   337.00
  "V" GUTTER WIDTH(FEET) =   4.00   GUTTER HIKE(FEET) =  0.130
  PAVEMENT LIP(FEET) =  0.010   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.02000
  MAXIMUM DEPTH(FEET) =   0.50
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.512
  SUBAREA LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.39      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      9.21
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.13
  AVERAGE FLOW DEPTH(FEET) =   0.39   FLOOD WIDTH(FEET) =   28.68
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   2.64   Tc(MIN.) =   19.26
  SUBAREA AREA(ACRES) =    7.39       SUBAREA RUNOFF(CFS) =    6.73
  EFFECTIVE AREA(ACRES) =   13.28     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       13.3         PEAK FLOW RATE(CFS) =      12.10

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.42   FLOOD WIDTH(FEET) =   32.05
  FLOW VELOCITY(FEET/SEC.) =   2.26   DEPTH*VELOCITY(FT*FT/SEC) =   0.95
  LONGEST FLOWPATH FROM NODE    203.00 TO NODE    202.00 =     987.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    202.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       12.10   19.26    1.512  0.50( 0.50) 1.00      13.3     203.00
  LONGEST FLOWPATH FROM NODE    203.00 TO NODE    202.00 =     987.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1        2.43   33.49    1.097  0.50( 0.50) 1.00       4.5     200.00
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =    1270.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
```



```
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       14.47   19.26    1.512  0.50( 0.50) 1.00      15.9     203.00
      2        9.57   33.49    1.097  0.50( 0.50) 1.00      17.8     200.00
    TOTAL AREA(ACRES) =        17.8

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       14.47  Tc(MIN.) =   19.260
  EFFECTIVE AREA(ACRES) =     15.89  AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =       17.8
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =    1270.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    202.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    102.00 IS CODE =  91
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1903.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1898.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   328.00
  "V" GUTTER WIDTH(FEET) =   4.00   GUTTER HIKE(FEET) =  0.130
  PAVEMENT LIP(FEET) =  0.010   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.02000
  MAXIMUM DEPTH(FEET) =   0.50
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.462
  SUBAREA LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   A        3.85      0.67     1.000    61
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     15.85
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.80
  AVERAGE FLOW DEPTH(FEET) =   0.38   FLOOD WIDTH(FEET) =   28.12
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.44   Tc(MIN.) =   20.70
  SUBAREA AREA(ACRES) =    3.85       SUBAREA RUNOFF(CFS) =    2.76
  EFFECTIVE AREA(ACRES) =   19.74     AREA-AVERAGED Fm(INCH/HR) =   0.53
  AREA-AVERAGED Fp(INCH/HR) =   0.53  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       21.7         PEAK FLOW RATE(CFS) =      16.52

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.39   FLOOD WIDTH(FEET) =   28.68
  FLOW VELOCITY(FEET/SEC.) =   3.81   DEPTH*VELOCITY(FT*FT/SEC) =   1.47
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    102.00 =    1598.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
```

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

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       16.52   20.70    1.462  0.53( 0.53) 1.00      19.7     203.00
      2       10.68   35.05    1.078  0.53( 0.53) 1.00      21.7     200.00
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    102.00 =    1598.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1        5.27   31.98    1.116  0.67( 0.67) 1.00      13.0     100.00
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    102.00 =    1750.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       21.79   20.70    1.462  0.57( 0.57) 1.00      28.2     203.00
      2       17.20   31.98    1.116  0.58( 0.58) 1.00      34.3     100.00
      3       15.51   35.05    1.078  0.58( 0.58) 1.00      34.7     200.00
    TOTAL AREA(ACRES) =        34.7

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       21.79  Tc(MIN.) =   20.699
  EFFECTIVE AREA(ACRES) =     28.17  AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.57  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =       34.7
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    102.00 =    1750.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
==============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN.) =   20.70
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.462
  SUBAREA LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        6.00      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    6.00      SUBAREA RUNOFF(CFS) =    5.20
  EFFECTIVE AREA(ACRES) =     34.17   AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.56  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =       40.7       PEAK FLOW RATE(CFS) =      27.76
==============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       40.7  TC(MIN.) =     20.70
```



```
  EFFECTIVE AREA(ACRES) =     34.17  AREA-AVERAGED Fm(INCH/HR)=  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.56  AREA-AVERAGED Ap = 1.000
  PEAK FLOW RATE(CFS)   =      27.76

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       27.76   20.70    1.462  0.56( 0.56) 1.00      34.2     203.00
      2       19.79   31.98    1.116  0.57( 0.57) 1.00      40.3     100.00
      3       18.63   35.05    1.078  0.57( 0.57) 1.00      40.7     200.00
==============================================================================
==============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

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

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                          Analysis prepared by:
```

```
 ************************* DESCRIPTION OF STUDY *************************
* YERMO SOLAR FARM PROPOSED CONDITION UNIT HYDROGRAPH                    *
* 10YR 24 HOUR STORM AT NODE 102                                         *
* 10/25/2024                                                             *
 ************************************************************************

  FILE NAME: PRUH10.DAT
  TIME/DATE OF STUDY: 05:40 10/29/2024


****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    102.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =      40.700 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.276 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         DESERT(UNDEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.504
         LOW LOSS FRACTION = 0.915
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.24
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.57
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  0.77
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  0.98
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.13
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  1.57

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.998
          30-MINUTE FACTOR = 0.998
           1-HOUR FACTOR = 0.998
```



```
           3-HOUR FACTOR = 1.000
           6-HOUR FACTOR = 1.000
          24-HOUR FACTOR = 1.000

         UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  30.193
```

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	1.779	8.756
2	9.538	38.193
3	31.114	106.198
4	52.621	105.862
5	64.525	58.595
6	72.109	37.329
7	77.589	26.971
8	81.682	20.149
9	84.923	15.953
10	87.643	13.385
11	89.718	10.216
12	91.424	8.397
13	92.896	7.242
14	94.149	6.171
15	95.184	5.093
16	96.068	4.350
17	96.829	3.748
18	97.411	2.862
19	97.880	2.310
20	98.188	1.517
21	98.527	1.670
22	98.890	1.784
23	99.252	1.784
24	99.615	1.784
25	99.977	1.784
26	100.000	0.113

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UNIT PERIOD (NUMBER)	UNIT RAINFALL (INCHES)	UNIT SOIL-LOSS (INCHES)	EFFECTIVE RAINFALL (INCHES)
1	0.0013	0.0012	0.0001
2	0.0013	0.0012	0.0001
3	0.0013	0.0012	0.0001
4	0.0013	0.0012	0.0001
5	0.0013	0.0012	0.0001
6	0.0013	0.0012	0.0001
7	0.0013	0.0012	0.0001
8	0.0013	0.0012	0.0001
9	0.0013	0.0012	0.0001
10	0.0013	0.0012	0.0001
11	0.0013	0.0012	0.0001
12	0.0014	0.0012	0.0001
13	0.0014	0.0012	0.0001
14	0.0014	0.0012	0.0001
15	0.0014	0.0013	0.0001
16	0.0014	0.0013	0.0001
17	0.0014	0.0013	0.0001
18	0.0014	0.0013	0.0001
19	0.0014	0.0013	0.0001
20	0.0014	0.0013	0.0001
21	0.0014	0.0013	0.0001
22	0.0014	0.0013	0.0001
23	0.0014	0.0013	0.0001
24	0.0014	0.0013	0.0001
25	0.0014	0.0013	0.0001
26	0.0014	0.0013	0.0001
27	0.0014	0.0013	0.0001
28	0.0015	0.0013	0.0001
29	0.0015	0.0013	0.0001
30	0.0015	0.0013	0.0001
31	0.0015	0.0013	0.0001
32	0.0015	0.0014	0.0001
33	0.0015	0.0014	0.0001
34	0.0015	0.0014	0.0001
35	0.0015	0.0014	0.0001
36	0.0015	0.0014	0.0001
37	0.0015	0.0014	0.0001
38	0.0015	0.0014	0.0001
39	0.0015	0.0014	0.0001
40	0.0015	0.0014	0.0001
41	0.0015	0.0014	0.0001
42	0.0016	0.0014	0.0001
43	0.0016	0.0014	0.0001
44	0.0016	0.0014	0.0001
45	0.0016	0.0014	0.0001
46	0.0016	0.0015	0.0001
47	0.0016	0.0015	0.0001
48	0.0016	0.0015	0.0001
49	0.0016	0.0015	0.0001
50	0.0016	0.0015	0.0001
51	0.0016	0.0015	0.0001

52	0.0016	0.0015	0.0001
53	0.0016	0.0015	0.0001
54	0.0017	0.0015	0.0001
55	0.0017	0.0015	0.0001
56	0.0017	0.0015	0.0001
57	0.0017	0.0015	0.0001
58	0.0017	0.0015	0.0001
59	0.0017	0.0016	0.0001
60	0.0017	0.0016	0.0001
61	0.0017	0.0016	0.0001
62	0.0017	0.0016	0.0001
63	0.0017	0.0016	0.0001
64	0.0018	0.0016	0.0001
65	0.0018	0.0016	0.0002
66	0.0018	0.0016	0.0002
67	0.0018	0.0016	0.0002
68	0.0018	0.0016	0.0002
69	0.0018	0.0017	0.0002
70	0.0018	0.0017	0.0002
71	0.0018	0.0017	0.0002
72	0.0018	0.0017	0.0002
73	0.0019	0.0017	0.0002
74	0.0019	0.0017	0.0002
75	0.0019	0.0017	0.0002
76	0.0019	0.0017	0.0002
77	0.0019	0.0017	0.0002
78	0.0019	0.0017	0.0002
79	0.0019	0.0018	0.0002
80	0.0019	0.0018	0.0002
81	0.0020	0.0018	0.0002
82	0.0020	0.0018	0.0002
83	0.0020	0.0018	0.0002
84	0.0020	0.0018	0.0002
85	0.0020	0.0018	0.0002
86	0.0020	0.0018	0.0002
87	0.0020	0.0019	0.0002
88	0.0020	0.0019	0.0002
89	0.0021	0.0019	0.0002
90	0.0021	0.0019	0.0002
91	0.0021	0.0019	0.0002
92	0.0021	0.0019	0.0002
93	0.0021	0.0020	0.0002
94	0.0021	0.0020	0.0002
95	0.0022	0.0020	0.0002
96	0.0022	0.0020	0.0002
97	0.0022	0.0020	0.0002
98	0.0022	0.0020	0.0002
99	0.0022	0.0020	0.0002
100	0.0022	0.0021	0.0002
101	0.0023	0.0021	0.0002
102	0.0023	0.0021	0.0002
103	0.0023	0.0021	0.0002
104	0.0023	0.0021	0.0002
105	0.0024	0.0022	0.0002
106	0.0024	0.0022	0.0002
107	0.0024	0.0022	0.0002

108	0.0024	0.0022	0.0002
109	0.0024	0.0022	0.0002
110	0.0025	0.0022	0.0002
111	0.0025	0.0023	0.0002
112	0.0025	0.0023	0.0002
113	0.0025	0.0023	0.0002
114	0.0025	0.0023	0.0002
115	0.0026	0.0024	0.0002
116	0.0026	0.0024	0.0002
117	0.0026	0.0024	0.0002
118	0.0026	0.0024	0.0002
119	0.0027	0.0025	0.0002
120	0.0027	0.0025	0.0002
121	0.0027	0.0025	0.0002
122	0.0028	0.0025	0.0002
123	0.0028	0.0026	0.0002
124	0.0028	0.0026	0.0002
125	0.0029	0.0026	0.0002
126	0.0029	0.0026	0.0002
127	0.0029	0.0027	0.0002
128	0.0030	0.0027	0.0003
129	0.0030	0.0027	0.0003
130	0.0030	0.0028	0.0003
131	0.0031	0.0028	0.0003
132	0.0031	0.0028	0.0003
133	0.0032	0.0029	0.0003
134	0.0032	0.0029	0.0003
135	0.0032	0.0030	0.0003
136	0.0033	0.0030	0.0003
137	0.0033	0.0030	0.0003
138	0.0034	0.0031	0.0003
139	0.0034	0.0031	0.0003
140	0.0035	0.0032	0.0003
141	0.0035	0.0032	0.0003
142	0.0036	0.0033	0.0003
143	0.0036	0.0033	0.0003
144	0.0037	0.0034	0.0003
145	0.0033	0.0030	0.0003
146	0.0034	0.0031	0.0003
147	0.0034	0.0031	0.0003
148	0.0035	0.0032	0.0003
149	0.0036	0.0033	0.0003
150	0.0036	0.0033	0.0003
151	0.0037	0.0034	0.0003
152	0.0037	0.0034	0.0003
153	0.0038	0.0035	0.0003
154	0.0039	0.0036	0.0003
155	0.0040	0.0037	0.0003
156	0.0040	0.0037	0.0003
157	0.0042	0.0038	0.0004
158	0.0042	0.0039	0.0004
159	0.0044	0.0040	0.0004
160	0.0044	0.0041	0.0004
161	0.0046	0.0042	0.0004
162	0.0047	0.0043	0.0004
163	0.0048	0.0044	0.0004

164	0.0049	0.0045	0.0004
165	0.0051	0.0047	0.0004
166	0.0052	0.0048	0.0004
167	0.0054	0.0049	0.0005
168	0.0055	0.0051	0.0005
169	0.0060	0.0055	0.0005
170	0.0061	0.0056	0.0005
171	0.0064	0.0059	0.0005
172	0.0066	0.0060	0.0006
173	0.0069	0.0063	0.0006
174	0.0071	0.0065	0.0006
175	0.0075	0.0069	0.0006
176	0.0078	0.0071	0.0007
177	0.0083	0.0076	0.0007
178	0.0085	0.0078	0.0007
179	0.0092	0.0084	0.0008
180	0.0096	0.0087	0.0008
181	0.0104	0.0095	0.0009
182	0.0109	0.0100	0.0009
183	0.0121	0.0110	0.0010
184	0.0127	0.0117	0.0011
185	0.0283	0.0259	0.0024
186	0.0298	0.0273	0.0025
187	0.0336	0.0308	0.0029
188	0.0361	0.0331	0.0031
189	0.0481	0.0420	0.0061
190	0.0534	0.0420	0.0114
191	0.0726	0.0420	0.0306
192	0.0955	0.0420	0.0535
193	0.2396	0.0420	0.1976
194	0.0608	0.0420	0.0188
195	0.0392	0.0358	0.0033
196	0.0316	0.0289	0.0027
197	0.0135	0.0124	0.0012
198	0.0114	0.0105	0.0010
199	0.0100	0.0091	0.0008
200	0.0089	0.0081	0.0008
201	0.0080	0.0073	0.0007
202	0.0073	0.0067	0.0006
203	0.0067	0.0062	0.0006
204	0.0063	0.0057	0.0005
205	0.0056	0.0052	0.0005
206	0.0053	0.0048	0.0005
207	0.0050	0.0046	0.0004
208	0.0047	0.0043	0.0004
209	0.0045	0.0041	0.0004
210	0.0043	0.0039	0.0004
211	0.0041	0.0038	0.0003
212	0.0039	0.0036	0.0003
213	0.0038	0.0035	0.0003
214	0.0036	0.0033	0.0003
215	0.0035	0.0032	0.0003
216	0.0034	0.0031	0.0003
217	0.0037	0.0034	0.0003
218	0.0036	0.0033	0.0003
219	0.0035	0.0032	0.0003

220	0.0034	0.0031	0.0003
221	0.0033	0.0030	0.0003
222	0.0032	0.0029	0.0003
223	0.0031	0.0029	0.0003
224	0.0031	0.0028	0.0003
225	0.0030	0.0027	0.0003
226	0.0029	0.0027	0.0002
227	0.0028	0.0026	0.0002
228	0.0028	0.0025	0.0002
229	0.0027	0.0025	0.0002
230	0.0027	0.0024	0.0002
231	0.0026	0.0024	0.0002
232	0.0026	0.0023	0.0002
233	0.0025	0.0023	0.0002
234	0.0025	0.0023	0.0002
235	0.0024	0.0022	0.0002
236	0.0024	0.0022	0.0002
237	0.0023	0.0021	0.0002
238	0.0023	0.0021	0.0002
239	0.0023	0.0021	0.0002
240	0.0022	0.0020	0.0002
241	0.0022	0.0020	0.0002
242	0.0022	0.0020	0.0002
243	0.0021	0.0019	0.0002
244	0.0021	0.0019	0.0002
245	0.0021	0.0019	0.0002
246	0.0020	0.0019	0.0002
247	0.0020	0.0018	0.0002
248	0.0020	0.0018	0.0002
249	0.0019	0.0018	0.0002
250	0.0019	0.0018	0.0002
251	0.0019	0.0017	0.0002
252	0.0019	0.0017	0.0002
253	0.0018	0.0017	0.0002
254	0.0018	0.0017	0.0002
255	0.0018	0.0016	0.0002
256	0.0018	0.0016	0.0002
257	0.0018	0.0016	0.0001
258	0.0017	0.0016	0.0001
259	0.0017	0.0016	0.0001
260	0.0017	0.0016	0.0001
261	0.0017	0.0015	0.0001
262	0.0017	0.0015	0.0001
263	0.0016	0.0015	0.0001
264	0.0016	0.0015	0.0001
265	0.0016	0.0015	0.0001
266	0.0016	0.0015	0.0001
267	0.0016	0.0014	0.0001
268	0.0016	0.0014	0.0001
269	0.0015	0.0014	0.0001
270	0.0015	0.0014	0.0001
271	0.0015	0.0014	0.0001
272	0.0015	0.0014	0.0001
273	0.0015	0.0014	0.0001
274	0.0015	0.0013	0.0001
275	0.0015	0.0013	0.0001

276	0.0014	0.0013	0.0001
277	0.0014	0.0013	0.0001
278	0.0014	0.0013	0.0001
279	0.0014	0.0013	0.0001
280	0.0014	0.0013	0.0001
281	0.0014	0.0013	0.0001
282	0.0014	0.0013	0.0001
283	0.0014	0.0012	0.0001
284	0.0013	0.0012	0.0001
285	0.0013	0.0012	0.0001
286	0.0013	0.0012	0.0001
287	0.0013	0.0012	0.0001
288	0.0013	0.0012	0.0001

```
TOTAL STORM RAINFALL(INCHES) =  1.57
TOTAL SOIL-LOSS(INCHES) =  1.17
TOTAL EFFECTIVE RAINFALL(INCHES) =  0.40

--------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =       3.9578
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =       1.3660
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==============================================================================

                        2 4 - 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 FIVE-MINUTE UNIT INTERVALS(CFS)
        (Note: Time indicated is at END of Each Unit Intervals)
------------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.        7.5      15.0      22.5      30.0
------------------------------------------------------------------------------
   0.083      0.0000      0.00  Q        .         .         .         .
   0.167      0.0000      0.01  Q        .         .         .         .
   0.250      0.0002      0.02  Q        .         .         .         .
   0.333      0.0004      0.03  Q        .         .         .         .
   0.417      0.0006      0.04  Q        .         .         .         .
   0.500      0.0009      0.04  Q        .         .         .         .
   0.583      0.0012      0.04  Q        .         .         .         .
   0.667      0.0015      0.04  Q        .         .         .         .
   0.750      0.0018      0.05  Q        .         .         .         .
   0.833      0.0021      0.05  Q        .         .         .         .
   0.917      0.0025      0.05  Q        .         .         .         .
   1.000      0.0028      0.05  Q        .         .         .         .
   1.083      0.0032      0.05  Q        .         .         .         .
   1.167      0.0035      0.05  Q        .         .         .         .
   1.250      0.0039      0.05  Q        .         .         .         .
   1.333      0.0043      0.05  Q        .         .         .         .
   1.417      0.0047      0.05  Q        .         .         .         .
   1.500      0.0050      0.06  Q        .         .         .         .
   1.583      0.0054      0.06  Q        .         .         .         .
   1.667      0.0058      0.06  Q        .         .         .         .
   1.750      0.0062      0.06  Q        .         .         .         .
   1.833      0.0066      0.06  Q        .         .         .         .
   1.917      0.0070      0.06  Q        .         .         .         .
   2.000      0.0074      0.06  Q        .         .         .         .
   2.083      0.0078      0.06  Q        .         .         .         .
   2.167      0.0082      0.06  Q        .         .         .         .
   2.250      0.0086      0.06  Q        .         .         .         .
   2.333      0.0090      0.06  Q        .         .         .         .
   2.417      0.0094      0.06  Q        .         .         .         .
   2.500      0.0099      0.06  Q        .         .         .         .
   2.583      0.0103      0.06  Q        .         .         .         .
   2.667      0.0107      0.06  Q        .         .         .         .
   2.750      0.0111      0.06  Q        .         .         .         .
   2.833      0.0115      0.06  Q        .         .         .         .
   2.917      0.0120      0.06  Q        .         .         .         .
   3.000      0.0124      0.06  Q        .         .         .         .
   3.083      0.0128      0.06  Q        .         .         .         .
   3.167      0.0132      0.06  Q        .         .         .         .
   3.250      0.0137      0.06  Q        .         .         .         .
   3.333      0.0141      0.06  Q        .         .         .         .
   3.417      0.0145      0.06  Q        .         .         .         .
   3.500      0.0150      0.06  Q        .         .         .         .
   3.583      0.0154      0.06  Q        .         .         .         .
   3.667      0.0159      0.06  Q        .         .         .         .
   3.750      0.0163      0.06  Q        .         .         .         .
```



```
   3.833      0.0167      0.06  Q        .         .         .         .
   3.917      0.0172      0.07  Q        .         .         .         .
   4.000      0.0176      0.07  Q        .         .         .         .
   4.083      0.0181      0.07  Q        .         .         .         .
   4.167      0.0186      0.07  Q        .         .         .         .
   4.250      0.0190      0.07  Q        .         .         .         .
   4.333      0.0195      0.07  Q        .         .         .         .
   4.417      0.0199      0.07  Q        .         .         .         .
   4.500      0.0204      0.07  Q        .         .         .         .
   4.583      0.0209      0.07  Q        .         .         .         .
   4.667      0.0213      0.07  Q        .         .         .         .
   4.750      0.0218      0.07  Q        .         .         .         .
   4.833      0.0223      0.07  Q        .         .         .         .
   4.917      0.0228      0.07  Q        .         .         .         .
   5.000      0.0232      0.07  Q        .         .         .         .
   5.083      0.0237      0.07  Q        .         .         .         .
   5.167      0.0242      0.07  Q        .         .         .         .
   5.250      0.0247      0.07  Q        .         .         .         .
   5.333      0.0252      0.07  Q        .         .         .         .
   5.417      0.0257      0.07  Q        .         .         .         .
   5.500      0.0262      0.07  Q        .         .         .         .
   5.583      0.0267      0.07  Q        .         .         .         .
   5.667      0.0272      0.07  Q        .         .         .         .
   5.750      0.0277      0.07  Q        .         .         .         .
   5.833      0.0282      0.07  Q        .         .         .         .
   5.917      0.0287      0.07  Q        .         .         .         .
   6.000      0.0292      0.07  Q        .         .         .         .
   6.083      0.0297      0.08  Q        .         .         .         .
   6.167      0.0303      0.08  Q        .         .         .         .
   6.250      0.0308      0.08  Q        .         .         .         .
   6.333      0.0313      0.08  Q        .         .         .         .
   6.417      0.0318      0.08  Q        .         .         .         .
   6.500      0.0324      0.08  Q        .         .         .         .
   6.583      0.0329      0.08  Q        .         .         .         .
   6.667      0.0335      0.08  Q        .         .         .         .
   6.750      0.0340      0.08  Q        .         .         .         .
   6.833      0.0346      0.08  QV       .         .         .         .
   6.917      0.0351      0.08  QV       .         .         .         .
   7.000      0.0357      0.08  QV       .         .         .         .
   7.083      0.0362      0.08  QV       .         .         .         .
   7.167      0.0368      0.08  QV       .         .         .         .
   7.250      0.0374      0.08  QV       .         .         .         .
   7.333      0.0379      0.08  QV       .         .         .         .
   7.417      0.0385      0.08  QV       .         .         .         .
   7.500      0.0391      0.08  QV       .         .         .         .
   7.583      0.0397      0.08  QV       .         .         .         .
   7.667      0.0403      0.09  QV       .         .         .         .
   7.750      0.0408      0.09  QV       .         .         .         .
   7.833      0.0414      0.09  QV       .         .         .         .
   7.917      0.0420      0.09  QV       .         .         .         .
   8.000      0.0427      0.09  QV       .         .         .         .
   8.083      0.0433      0.09  QV       .         .         .         .
   8.167      0.0439      0.09  QV       .         .         .         .
   8.250      0.0445      0.09  QV       .         .         .         .
   8.333      0.0451      0.09  QV       .         .         .         .
   8.417      0.0457      0.09  QV       .         .         .         .
```

8.500	0.0464	0.09	QV
8.583	0.0470	0.09	QV
8.667	0.0477	0.09	QV
8.750	0.0483	0.09	QV
8.833	0.0490	0.10	QV
8.917	0.0496	0.10	QV
9.000	0.0503	0.10	QV
9.083	0.0510	0.10	QV
9.167	0.0517	0.10	QV
9.250	0.0523	0.10	QV
9.333	0.0530	0.10	QV
9.417	0.0537	0.10	QV
9.500	0.0544	0.10	QV
9.583	0.0551	0.10	QV
9.667	0.0559	0.10	QV
9.750	0.0566	0.10	QV
9.833	0.0573	0.11	QV
9.917	0.0580	0.11	QV
10.000	0.0588	0.11	QV
10.083	0.0595	0.11	QV
10.167	0.0603	0.11	QV
10.250	0.0611	0.11	QV
10.333	0.0618	0.11	QV
10.417	0.0626	0.11	QV
10.500	0.0634	0.11	QV
10.583	0.0642	0.12	QV
10.667	0.0650	0.12	QV
10.750	0.0658	0.12	QV
10.833	0.0667	0.12	QV
10.917	0.0675	0.12	QV
11.000	0.0683	0.12	Q V
11.083	0.0692	0.12	Q V
11.167	0.0701	0.13	Q V
11.250	0.0709	0.13	Q V
11.333	0.0718	0.13	Q V
11.417	0.0727	0.13	Q V
11.500	0.0736	0.13	Q V
11.583	0.0746	0.13	Q V
11.667	0.0755	0.14	Q V
11.750	0.0764	0.14	Q V
11.833	0.0774	0.14	Q V
11.917	0.0784	0.14	Q V
12.000	0.0794	0.14	Q V
12.083	0.0804	0.15	Q V
12.167	0.0814	0.15	Q V
12.250	0.0824	0.14	Q V
12.333	0.0834	0.14	Q V
12.417	0.0843	0.14	Q V
12.500	0.0853	0.14	Q V
12.583	0.0863	0.15	Q V
12.667	0.0873	0.15	Q V
12.750	0.0884	0.15	Q V
12.833	0.0894	0.15	Q V
12.917	0.0905	0.15	Q V
13.000	0.0916	0.16	Q V
13.083	0.0926	0.16	Q V

13.167	0.0938	0.16	Q V
13.250	0.0949	0.17	Q V
13.333	0.0961	0.17	Q V
13.417	0.0973	0.17	Q V
13.500	0.0985	0.18	Q V
13.583	0.0997	0.18	Q V
13.667	0.1010	0.18	Q V
13.750	0.1023	0.19	Q V
13.833	0.1036	0.19	Q V
13.917	0.1050	0.20	Q V
14.000	0.1064	0.20	Q V
14.083	0.1078	0.21	Q V
14.167	0.1093	0.22	Q V
14.250	0.1109	0.23	Q V
14.333	0.1125	0.23	Q V
14.417	0.1142	0.24	Q V
14.500	0.1159	0.25	Q V
14.583	0.1177	0.26	Q V
14.667	0.1196	0.27	Q V
14.750	0.1215	0.28	Q V
14.833	0.1235	0.29	Q V
14.917	0.1257	0.31	Q V
15.000	0.1279	0.32	Q V
15.083	0.1302	0.34	Q V
15.167	0.1327	0.36	Q V
15.250	0.1353	0.38	Q V
15.333	0.1381	0.40	Q V
15.417	0.1411	0.44	Q V
15.500	0.1446	0.52	Q V
15.583	0.1494	0.68	Q V
15.667	0.1553	0.87	.Q V
15.750	0.1625	1.03	.Q V
15.833	0.1715	1.32	.Q V
15.917	0.1860	2.10	. Q V
16.000	0.2133	3.97	. QV
16.083	0.2748	8.93	. V .Q
16.167	0.3973	17.79	.V Q
16.250	0.6038	29.98	. V Q.
16.333	0.7963	27.94	. V Q
16.417	0.9156	17.32	. Q V
16.500	0.9955	11.60	. Q V.
16.583	1.0544	8.55	.Q V
16.667	1.0995	6.54	. Q V
16.750	1.1356	5.25	. Q V
16.833	1.1657	4.36	. Q V
16.917	1.1897	3.49	. Q V
17.000	1.2099	2.93	. Q V
17.083	1.2273	2.53	. Q V
17.167	1.2423	2.17	. Q V
17.250	1.2549	1.84	. Q V
17.333	1.2659	1.58	. Q V
17.417	1.2752	1.36	.Q V
17.500	1.2828	1.10	.Q V
17.583	1.2892	0.92	.Q V
17.667	1.2943	0.75	Q V
17.750	1.2995	0.75	.Q V

```
17.833    1.3047    0.76  .Q      .       .       .      V .
17.917    1.3097    0.73  Q       .       .       .      V .
18.000    1.3144    0.67  Q       .       .       .      V .
18.083    1.3183    0.57  Q       .       .       .      V .
18.167    1.3199    0.23  Q       .       .       .      V .
18.250    1.3211    0.18  Q       .       .       .      V .
18.333    1.3222    0.17  Q       .       .       .      V .
18.417    1.3233    0.16  Q       .       .       .      V .
18.500    1.3244    0.16  Q       .       .       .      V .
18.583    1.3254    0.15  Q       .       .       .      V .
18.667    1.3265    0.15  Q       .       .       .      V .
18.750    1.3274    0.14  Q       .       .       .      V .
18.833    1.3284    0.14  Q       .       .       .      V .
18.917    1.3293    0.13  Q       .       .       .      V .
19.000    1.3302    0.13  Q       .       .       .      V .
19.083    1.3311    0.13  Q       .       .       .      V .
19.167    1.3320    0.13  Q       .       .       .       V.
19.250    1.3328    0.12  Q       .       .       .       V.
19.333    1.3336    0.12  Q       .       .       .       V.
19.417    1.3344    0.12  Q       .       .       .       V.
19.500    1.3352    0.11  Q       .       .       .       V.
19.583    1.3360    0.11  Q       .       .       .       V.
19.667    1.3368    0.11  Q       .       .       .       V.
19.750    1.3375    0.11  Q       .       .       .       V.
19.833    1.3382    0.11  Q       .       .       .       V.
19.917    1.3389    0.10  Q       .       .       .       V.
20.000    1.3397    0.10  Q       .       .       .       V.
20.083    1.3403    0.10  Q       .       .       .       V.
20.167    1.3410    0.10  Q       .       .       .       V.
20.250    1.3417    0.10  Q       .       .       .       V.
20.333    1.3423    0.10  Q       .       .       .       V.
20.417    1.3430    0.09  Q       .       .       .       V.
20.500    1.3436    0.09  Q       .       .       .       V.
20.583    1.3442    0.09  Q       .       .       .       V.
20.667    1.3449    0.09  Q       .       .       .       V.
20.750    1.3455    0.09  Q       .       .       .       V.
20.833    1.3461    0.09  Q       .       .       .       V.
20.917    1.3466    0.09  Q       .       .       .       V.
21.000    1.3472    0.08  Q       .       .       .       V.
21.083    1.3478    0.08  Q       .       .       .       V.
21.167    1.3484    0.08  Q       .       .       .       V.
21.250    1.3489    0.08  Q       .       .       .       V.
21.333    1.3495    0.08  Q       .       .       .       V.
21.417    1.3500    0.08  Q       .       .       .       V.
21.500    1.3505    0.08  Q       .       .       .       V.
21.583    1.3511    0.08  Q       .       .       .       V.
21.667    1.3516    0.08  Q       .       .       .       V.
21.750    1.3521    0.07  Q       .       .       .       V.
21.833    1.3526    0.07  Q       .       .       .       V.
21.917    1.3531    0.07  Q       .       .       .       V.
22.000    1.3536    0.07  Q       .       .       .       V.
22.083    1.3541    0.07  Q       .       .       .       V.
22.167    1.3546    0.07  Q       .       .       .       V.
22.250    1.3551    0.07  Q       .       .       .       V.
22.333    1.3555    0.07  Q       .       .       .       V.
22.417    1.3560    0.07  Q       .       .       .       V.
```



```
22.500    1.3565    0.07  Q       .       .       .       V.
22.583    1.3569    0.07  Q       .       .       .       V.
22.667    1.3574    0.07  Q       .       .       .       V.
22.750    1.3578    0.07  Q       .       .       .       V.
22.833    1.3583    0.06  Q       .       .       .       V.
22.917    1.3587    0.06  Q       .       .       .       V.
23.000    1.3591    0.06  Q       .       .       .       V.
23.083    1.3596    0.06  Q       .       .       .       V.
23.167    1.3600    0.06  Q       .       .       .       V.
23.250    1.3604    0.06  Q       .       .       .       V.
23.333    1.3609    0.06  Q       .       .       .       V.
23.417    1.3613    0.06  Q       .       .       .       V.
23.500    1.3617    0.06  Q       .       .       .       V.
23.583    1.3621    0.06  Q       .       .       .       V.
23.667    1.3625    0.06  Q       .       .       .       V.
23.750    1.3629    0.06  Q       .       .       .       V.
23.833    1.3633    0.06  Q       .       .       .       V.
23.917    1.3637    0.06  Q       .       .       .       V.
24.000    1.3641    0.06  Q       .       .       .       V.
24.083    1.3645    0.06  Q       .       .       .       V.
24.167    1.3648    0.05  Q       .       .       .       V.
24.250    1.3651    0.04  Q       .       .       .       V.
24.333    1.3653    0.03  Q       .       .       .       V.
24.417    1.3654    0.02  Q       .       .       .       V.
24.500    1.3655    0.02  Q       .       .       .       V.
24.583    1.3656    0.01  Q       .       .       .       V.
24.667    1.3657    0.01  Q       .       .       .       V.
24.750    1.3657    0.01  Q       .       .       .       V.
-------------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                Duration
        Peak Flow Rate                     (minutes)
    ======================                 =========
              0%                            1485.0
             10%                              60.0
             20%                              40.0
             30%                              25.0
             40%                              20.0
             50%                              20.0
             60%                              10.0
             70%                              10.0
             80%                              10.0
             90%                              10.0
 ===============================================================================

   END OF FLOODSCx ROUTING ANALYSIS
```

```
****************************************************************************
              RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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         (c) Copyright 1983-2015 Advanced Engineering Software (aes)
             Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                          Analysis prepared by:
```

Q3 Consulting

```
 ************************* DESCRIPTION OF STUDY *************************
* YERMO SOLAR FARM PROPOSED HYDROLOGY STUDY                             *
* RATIONAL METHOD 100 YEAR STORM                                        *
* 10/28/2024                                                            *
 ************************************************************************

  FILE NAME: PYRMO100.DAT
  TIME/DATE OF STUDY: 05:34 10/29/2024
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                     --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS =  7
   1)    5.00;  5.340
   2)   10.00;  3.760
   3)   15.00;  3.030
   4)   30.00;  2.080
   5)   60.00;  1.400
   6)  120.00;  0.763
   7)  180.00;  0.555
  *ANTECEDENT MOISTURE CONDITION (AMC) I ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED
```



```
****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   850.00
  ELEVATION DATA: UPSTREAM(FEET) =   1910.50  DOWNSTREAM(FEET) =   1906.30

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   22.551
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.552
  SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL POOR COVER
  "BARREN"                   A        4.96      0.67     1.000    61   22.55
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      8.42
  TOTAL AREA(ACRES) =      4.96   PEAK FLOW RATE(CFS) =      8.42

****************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1906.30  DOWNSTREAM(FEET) =   1898.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   900.00   CHANNEL SLOPE =  0.0092
  CHANNEL BASE(FEET) =   15.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   5.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.152
  SUBAREA LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   A        8.07      0.67     1.000    61
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      13.86
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.37
  AVERAGE FLOW DEPTH(FEET) =   0.37   TRAVEL TIME(MIN.) =   6.32
  Tc(MIN.) =   28.87
  SUBAREA AREA(ACRES) =     8.07       SUBAREA RUNOFF(CFS) =   10.79
  EFFECTIVE AREA(ACRES) =     13.03     AREA-AVERAGED Fm(INCH/HR) =   0.67
  AREA-AVERAGED Fp(INCH/HR) =   0.67  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       13.0         PEAK FLOW RATE(CFS) =      17.42

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.42   FLOW VELOCITY(FEET/SEC.) =   2.59
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    102.00 =    1750.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =  10
```

```
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   800.00
  ELEVATION DATA: UPSTREAM(FEET) =   1910.50  DOWNSTREAM(FEET) =   1905.60

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   21.085
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.645
  SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  USER-DEFINED               -        1.77      0.50     1.000     -   21.09
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      3.42
  TOTAL AREA(ACRES) =      1.77   PEAK FLOW RATE(CFS) =      3.42

****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1905.60  DOWNSTREAM(FEET) =   1903.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   470.00   CHANNEL SLOPE =  0.0055
  CHANNEL BASE(FEET) =   50.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   5.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.098
  SUBAREA LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        2.76      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.43
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.91
  AVERAGE FLOW DEPTH(FEET) =   0.12   TRAVEL TIME(MIN.) =   8.63
  Tc(MIN.) =   29.72
  SUBAREA AREA(ACRES) =     2.76       SUBAREA RUNOFF(CFS) =    3.97
  EFFECTIVE AREA(ACRES) =      4.53     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        4.5         PEAK FLOW RATE(CFS) =       6.51

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.13   FLOW VELOCITY(FEET/SEC.) =   0.96
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =    1270.00 FEET.

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



```
  FLOW PROCESS FROM NODE    202.00 TO NODE    202.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    203.00 TO NODE    204.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   400.00
  ELEVATION DATA: UPSTREAM(FEET) =   1910.00  DOWNSTREAM(FEET) =   1905.80

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.347
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.125
  SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  USER-DEFINED               -        2.09      0.50     1.000     -   14.35
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      4.94
  TOTAL AREA(ACRES) =      2.09   PEAK FLOW RATE(CFS) =      4.94

****************************************************************************
  FLOW PROCESS FROM NODE    204.00 TO NODE    205.00 IS CODE =  91
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1905.80
  DOWNSTREAM NODE ELEVATION(FEET) =   1904.60
  CHANNEL LENGTH THRU SUBAREA(FEET) =   250.00
  "V" GUTTER WIDTH(FEET) =   4.00   GUTTER HIKE(FEET) =  0.130
  PAVEMENT LIP(FEET) =  0.010   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.02000
  MAXIMUM DEPTH(FEET) =   0.50
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.948
  SUBAREA LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        3.80      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      9.12
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.14
  AVERAGE FLOW DEPTH(FEET) =   0.38   FLOOD WIDTH(FEET) =   28.40
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.94   Tc(MIN.) =   16.29
  SUBAREA AREA(ACRES) =    3.80       SUBAREA RUNOFF(CFS) =    8.37
  EFFECTIVE AREA(ACRES) =    5.89     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        5.9         PEAK FLOW RATE(CFS) =      12.98

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.43   FLOOD WIDTH(FEET) =   32.90
```

```
  FLOW VELOCITY(FEET/SEC.) =   2.30   DEPTH*VELOCITY(FT*FT/SEC) =   0.99
  LONGEST FLOWPATH FROM NODE    203.00 TO NODE    205.00 =     650.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    205.00 TO NODE    202.00 IS CODE =  91
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1904.60
  DOWNSTREAM NODE ELEVATION(FEET) =   1903.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   337.00
  "V" GUTTER WIDTH(FEET) =   4.00   GUTTER HIKE(FEET) =  0.130
  PAVEMENT LIP(FEET) =  0.010   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.02000
  MAXIMUM DEPTH(FEET) =   0.50
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.808
  SUBAREA LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.39      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     20.63
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.54
  AVERAGE FLOW DEPTH(FEET) =   0.50   FLOOD WIDTH(FEET) =   39.79
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   2.21   Tc(MIN.) =   18.51
  SUBAREA AREA(ACRES) =    7.39       SUBAREA RUNOFF(CFS) =   15.35
  EFFECTIVE AREA(ACRES) =   13.28     AREA-AVERAGED Fm(INCH/HR) =   0.50
  AREA-AVERAGED Fp(INCH/HR) =   0.50  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       13.3         PEAK FLOW RATE(CFS) =      27.58

         ==>>ERROR:FLOW EXCEEDS CAPACITY OF CHANNEL WITH
             NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM ALLOWABLE DEPTH.
             AS AN APPROXIMATION, TRAVEL TIME CALCULATIONS ARE BASED
             ON FLOW DEPTH EQUAL TO THE SPECIFIED MAXIMUM ALLOWABLE DEPTH.


  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.50   FLOOD WIDTH(FEET) =   40.00
  FLOW VELOCITY(FEET/SEC.) =   3.36   DEPTH*VELOCITY(FT*FT/SEC) =   1.68
  LONGEST FLOWPATH FROM NODE    203.00 TO NODE    202.00 =     987.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    202.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       27.58   18.51    2.808  0.50( 0.50) 1.00      13.3     203.00
  LONGEST FLOWPATH FROM NODE    203.00 TO NODE    202.00 =     987.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
```



```
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1        6.51   29.72    2.098  0.50( 0.50) 1.00       4.5     200.00
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =    1270.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       33.44   18.51    2.808  0.50( 0.50) 1.00      16.1     203.00
      2       25.61   29.72    2.098  0.50( 0.50) 1.00      17.8     200.00
    TOTAL AREA(ACRES) =        17.8

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       33.44  Tc(MIN.) =   18.505
  EFFECTIVE AREA(ACRES) =     16.10  AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.50  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =       17.8
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =    1270.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    202.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    102.00 IS CODE =  91
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1903.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1898.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   328.00
  "V" GUTTER WIDTH(FEET) =   4.00   GUTTER HIKE(FEET) =  0.130
  PAVEMENT LIP(FEET) =  0.010   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.02000
  MAXIMUM DEPTH(FEET) =   0.50
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.732
  SUBAREA LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   A        3.85      0.67     1.000    61
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     37.03
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.55
  AVERAGE FLOW DEPTH(FEET) =   0.50   FLOOD WIDTH(FEET) =   39.79
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.20   Tc(MIN.) =   19.71
  SUBAREA AREA(ACRES) =    3.85       SUBAREA RUNOFF(CFS) =    7.16
  EFFECTIVE AREA(ACRES) =   19.95     AREA-AVERAGED Fm(INCH/HR) =   0.53
  AREA-AVERAGED Fp(INCH/HR) =   0.53  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       21.7         PEAK FLOW RATE(CFS) =      39.50

         ==>>ERROR:FLOW EXCEEDS CAPACITY OF CHANNEL WITH
             NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM ALLOWABLE DEPTH.
             AS AN APPROXIMATION, TRAVEL TIME CALCULATIONS ARE BASED
```

```
            ON FLOW DEPTH EQUAL TO THE SPECIFIED MAXIMUM ALLOWABLE DEPTH.


  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.50   FLOOD WIDTH(FEET) =   40.00
  FLOW VELOCITY(FEET/SEC.) =   4.81   DEPTH*VELOCITY(FT*FT/SEC) =   2.40
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    102.00 =    1598.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       39.50   19.71    2.732  0.53( 0.53) 1.00      20.0     203.00
      2       29.78   31.00    2.057  0.53( 0.53) 1.00      21.7     200.00
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    102.00 =    1598.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       17.42   28.87    2.152  0.67( 0.67) 1.00      13.0     100.00
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    102.00 =    1750.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       56.03   19.71    2.732  0.57( 0.57) 1.00      28.8     203.00
      2       49.03   28.87    2.152  0.58( 0.58) 1.00      34.4     100.00
      3       46.10   31.00    2.057  0.58( 0.58) 1.00      34.7     200.00
    TOTAL AREA(ACRES) =        34.7

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       56.03  Tc(MIN.) =   19.707
  EFFECTIVE AREA(ACRES) =     28.84  AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.57  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =       34.7
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    102.00 =    1750.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   19.71
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.732
  SUBAREA LOSS RATE DATA(AMC  I ):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        6.00      0.50     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.50
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    6.00      SUBAREA RUNOFF(CFS) =   12.05
  EFFECTIVE AREA(ACRES) =     34.84   AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.56  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =       40.7       PEAK FLOW RATE(CFS) =      68.09
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       40.7  TC(MIN.) =     19.71
  EFFECTIVE AREA(ACRES) =     34.84  AREA-AVERAGED Fm(INCH/HR)=  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.56  AREA-AVERAGED Ap = 1.000
  PEAK FLOW RATE(CFS)   =      68.09

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1       68.09   19.71    2.732  0.56( 0.56) 1.00      34.8     203.00
      2       57.48   28.87    2.152  0.57( 0.57) 1.00      40.4     100.00
      3       54.51   31.00    2.057  0.57( 0.57) 1.00      40.7     200.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

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

              F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
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             Ver. 22.0  Release Date: 07/01/2015  License ID 1673

                          Analysis prepared by:
```

```
 ************************* DESCRIPTION OF STUDY *************************
* YERMO SOLAR FARM PROPOSED CONDITION UNIT HYDROGRAPH                    *
* 100YR 24 HOUR STORM AT NODE 102                                        *
* 10/25/2024                                                             *
 ************************************************************************

  FILE NAME: PRUH100.DAT
  TIME/DATE OF STUDY: 05:41 10/29/2024


****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    102.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =      40.700 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.263 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         DESERT(UNDEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.504
         LOW LOSS FRACTION = 0.780
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.44
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  1.04
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.40
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.67
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.88
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  2.57

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.998
          30-MINUTE FACTOR = 0.998
           1-HOUR FACTOR = 0.998
```



```
           3-HOUR FACTOR = 1.000
           6-HOUR FACTOR = 1.000
          24-HOUR FACTOR = 1.000

         UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  31.686
```

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	1.915	9.427
2	10.579	42.643
3	34.354	117.026
4	55.183	102.522
5	66.428	55.350
6	73.756	36.071
7	79.031	25.961
8	82.959	19.336
9	86.129	15.604
10	88.691	12.610
11	90.627	9.528
12	92.288	8.178
13	93.705	6.971
14	94.844	5.607
15	95.840	4.905
16	96.663	4.051
17	97.311	3.187
18	97.829	2.550
19	98.162	1.640
20	98.514	1.735
21	98.895	1.871
22	99.275	1.872
23	99.655	1.871
24	100.000	1.697

****

UNIT PERIOD (NUMBER)	UNIT RAINFALL (INCHES)	UNIT SOIL-LOSS (INCHES)	EFFECTIVE RAINFALL (INCHES)
1	0.0020	0.0016	0.0004
2	0.0020	0.0016	0.0004
3	0.0020	0.0016	0.0004
4	0.0020	0.0016	0.0004
5	0.0020	0.0016	0.0005
6	0.0021	0.0016	0.0005
7	0.0021	0.0016	0.0005
8	0.0021	0.0016	0.0005
9	0.0021	0.0016	0.0005
10	0.0021	0.0016	0.0005
11	0.0021	0.0016	0.0005
12	0.0021	0.0016	0.0005
13	0.0021	0.0017	0.0005
14	0.0021	0.0017	0.0005
15	0.0021	0.0017	0.0005
16	0.0021	0.0017	0.0005
17	0.0022	0.0017	0.0005
18	0.0022	0.0017	0.0005
19	0.0022	0.0017	0.0005
20	0.0022	0.0017	0.0005
21	0.0022	0.0017	0.0005
22	0.0022	0.0017	0.0005
23	0.0022	0.0017	0.0005
24	0.0022	0.0017	0.0005
25	0.0022	0.0017	0.0005
26	0.0022	0.0017	0.0005
27	0.0023	0.0018	0.0005
28	0.0023	0.0018	0.0005
29	0.0023	0.0018	0.0005
30	0.0023	0.0018	0.0005
31	0.0023	0.0018	0.0005
32	0.0023	0.0018	0.0005
33	0.0023	0.0018	0.0005
34	0.0023	0.0018	0.0005
35	0.0023	0.0018	0.0005
36	0.0024	0.0018	0.0005
37	0.0024	0.0018	0.0005
38	0.0024	0.0019	0.0005
39	0.0024	0.0019	0.0005
40	0.0024	0.0019	0.0005
41	0.0024	0.0019	0.0005
42	0.0024	0.0019	0.0005
43	0.0024	0.0019	0.0005
44	0.0024	0.0019	0.0005
45	0.0025	0.0019	0.0005
46	0.0025	0.0019	0.0005
47	0.0025	0.0019	0.0005
48	0.0025	0.0020	0.0006
49	0.0025	0.0020	0.0006
50	0.0025	0.0020	0.0006
51	0.0025	0.0020	0.0006

52	0.0026	0.0020	0.0006
53	0.0026	0.0020	0.0006
54	0.0026	0.0020	0.0006
55	0.0026	0.0020	0.0006
56	0.0026	0.0020	0.0006
57	0.0026	0.0021	0.0006
58	0.0026	0.0021	0.0006
59	0.0027	0.0021	0.0006
60	0.0027	0.0021	0.0006
61	0.0027	0.0021	0.0006
62	0.0027	0.0021	0.0006
63	0.0027	0.0021	0.0006
64	0.0027	0.0021	0.0006
65	0.0028	0.0022	0.0006
66	0.0028	0.0022	0.0006
67	0.0028	0.0022	0.0006
68	0.0028	0.0022	0.0006
69	0.0028	0.0022	0.0006
70	0.0028	0.0022	0.0006
71	0.0029	0.0022	0.0006
72	0.0029	0.0022	0.0006
73	0.0029	0.0023	0.0006
74	0.0029	0.0023	0.0006
75	0.0029	0.0023	0.0006
76	0.0030	0.0023	0.0006
77	0.0030	0.0023	0.0007
78	0.0030	0.0023	0.0007
79	0.0030	0.0024	0.0007
80	0.0030	0.0024	0.0007
81	0.0031	0.0024	0.0007
82	0.0031	0.0024	0.0007
83	0.0031	0.0024	0.0007
84	0.0031	0.0024	0.0007
85	0.0031	0.0025	0.0007
86	0.0032	0.0025	0.0007
87	0.0032	0.0025	0.0007
88	0.0032	0.0025	0.0007
89	0.0032	0.0025	0.0007
90	0.0033	0.0025	0.0007
91	0.0033	0.0026	0.0007
92	0.0033	0.0026	0.0007
93	0.0033	0.0026	0.0007
94	0.0034	0.0026	0.0007
95	0.0034	0.0026	0.0007
96	0.0034	0.0027	0.0008
97	0.0035	0.0027	0.0008
98	0.0035	0.0027	0.0008
99	0.0035	0.0027	0.0008
100	0.0035	0.0028	0.0008
101	0.0036	0.0028	0.0008
102	0.0036	0.0028	0.0008
103	0.0036	0.0028	0.0008
104	0.0037	0.0028	0.0008
105	0.0037	0.0029	0.0008
106	0.0037	0.0029	0.0008
107	0.0038	0.0029	0.0008

108	0.0038	0.0030	0.0008
109	0.0038	0.0030	0.0008
110	0.0039	0.0030	0.0008
111	0.0039	0.0030	0.0009
112	0.0039	0.0031	0.0009
113	0.0040	0.0031	0.0009
114	0.0040	0.0031	0.0009
115	0.0041	0.0032	0.0009
116	0.0041	0.0032	0.0009
117	0.0041	0.0032	0.0009
118	0.0042	0.0033	0.0009
119	0.0042	0.0033	0.0009
120	0.0043	0.0033	0.0009
121	0.0043	0.0034	0.0009
122	0.0043	0.0034	0.0010
123	0.0044	0.0034	0.0010
124	0.0044	0.0035	0.0010
125	0.0045	0.0035	0.0010
126	0.0045	0.0035	0.0010
127	0.0046	0.0036	0.0010
128	0.0047	0.0036	0.0010
129	0.0047	0.0037	0.0010
130	0.0048	0.0037	0.0010
131	0.0049	0.0038	0.0011
132	0.0049	0.0038	0.0011
133	0.0050	0.0039	0.0011
134	0.0050	0.0039	0.0011
135	0.0051	0.0040	0.0011
136	0.0052	0.0040	0.0011
137	0.0053	0.0041	0.0012
138	0.0053	0.0041	0.0012
139	0.0054	0.0042	0.0012
140	0.0055	0.0043	0.0012
141	0.0056	0.0043	0.0012
142	0.0056	0.0044	0.0012
143	0.0057	0.0045	0.0013
144	0.0058	0.0045	0.0013
145	0.0045	0.0035	0.0010
146	0.0045	0.0035	0.0010
147	0.0047	0.0036	0.0010
148	0.0047	0.0037	0.0010
149	0.0048	0.0038	0.0011
150	0.0049	0.0038	0.0011
151	0.0050	0.0039	0.0011
152	0.0051	0.0040	0.0011
153	0.0052	0.0041	0.0012
154	0.0053	0.0041	0.0012
155	0.0055	0.0043	0.0012
156	0.0055	0.0043	0.0012
157	0.0057	0.0045	0.0013
158	0.0058	0.0045	0.0013
159	0.0060	0.0047	0.0013
160	0.0061	0.0048	0.0013
161	0.0063	0.0049	0.0014
162	0.0064	0.0050	0.0014
163	0.0067	0.0052	0.0015

164	0.0068	0.0053	0.0015
165	0.0071	0.0055	0.0016
166	0.0072	0.0056	0.0016
167	0.0075	0.0059	0.0017
168	0.0077	0.0060	0.0017
169	0.0076	0.0059	0.0017
170	0.0078	0.0061	0.0017
171	0.0082	0.0064	0.0018
172	0.0084	0.0066	0.0018
173	0.0089	0.0069	0.0020
174	0.0091	0.0071	0.0020
175	0.0097	0.0076	0.0021
176	0.0100	0.0078	0.0022
177	0.0107	0.0084	0.0024
178	0.0111	0.0087	0.0025
179	0.0120	0.0094	0.0026
180	0.0126	0.0098	0.0028
181	0.0137	0.0107	0.0030
182	0.0144	0.0113	0.0032
183	0.0161	0.0126	0.0035
184	0.0171	0.0133	0.0038
185	0.0512	0.0399	0.0113
186	0.0540	0.0420	0.0120
187	0.0608	0.0420	0.0188
188	0.0654	0.0420	0.0234
189	0.0876	0.0420	0.0456
190	0.0973	0.0420	0.0553
191	0.1322	0.0420	0.0902
192	0.1740	0.0420	0.1320
193	0.4362	0.0420	0.3942
194	0.1108	0.0420	0.0688
195	0.0709	0.0420	0.0289
196	0.0571	0.0420	0.0151
197	0.0182	0.0142	0.0040
198	0.0152	0.0119	0.0033
199	0.0131	0.0102	0.0029
200	0.0116	0.0090	0.0025
201	0.0104	0.0081	0.0023
202	0.0094	0.0073	0.0021
203	0.0086	0.0067	0.0019
204	0.0080	0.0062	0.0018
205	0.0078	0.0061	0.0017
206	0.0073	0.0057	0.0016
207	0.0069	0.0054	0.0015
208	0.0065	0.0051	0.0014
209	0.0062	0.0048	0.0014
210	0.0059	0.0046	0.0013
211	0.0056	0.0044	0.0012
212	0.0054	0.0042	0.0012
213	0.0052	0.0040	0.0011
214	0.0050	0.0039	0.0011
215	0.0048	0.0037	0.0010
216	0.0046	0.0036	0.0010
217	0.0059	0.0046	0.0013
218	0.0057	0.0044	0.0012
219	0.0055	0.0043	0.0012

220	0.0053	0.0042	0.0012
221	0.0052	0.0041	0.0011
222	0.0051	0.0039	0.0011
223	0.0049	0.0038	0.0011
224	0.0048	0.0038	0.0011
225	0.0047	0.0037	0.0010
226	0.0046	0.0036	0.0010
227	0.0045	0.0035	0.0010
228	0.0044	0.0034	0.0010
229	0.0043	0.0033	0.0009
230	0.0042	0.0033	0.0009
231	0.0041	0.0032	0.0009
232	0.0040	0.0031	0.0009
233	0.0040	0.0031	0.0009
234	0.0039	0.0030	0.0009
235	0.0038	0.0030	0.0008
236	0.0037	0.0029	0.0008
237	0.0037	0.0029	0.0008
238	0.0036	0.0028	0.0008
239	0.0035	0.0028	0.0008
240	0.0035	0.0027	0.0008
241	0.0034	0.0027	0.0008
242	0.0034	0.0026	0.0007
243	0.0033	0.0026	0.0007
244	0.0033	0.0026	0.0007
245	0.0032	0.0025	0.0007
246	0.0032	0.0025	0.0007
247	0.0031	0.0024	0.0007
248	0.0031	0.0024	0.0007
249	0.0030	0.0024	0.0007
250	0.0030	0.0023	0.0007
251	0.0030	0.0023	0.0007
252	0.0029	0.0023	0.0006
253	0.0029	0.0023	0.0006
254	0.0029	0.0022	0.0006
255	0.0028	0.0022	0.0006
256	0.0028	0.0022	0.0006
257	0.0027	0.0021	0.0006
258	0.0027	0.0021	0.0006
259	0.0027	0.0021	0.0006
260	0.0027	0.0021	0.0006
261	0.0026	0.0020	0.0006
262	0.0026	0.0020	0.0006
263	0.0026	0.0020	0.0006
264	0.0025	0.0020	0.0006
265	0.0025	0.0020	0.0006
266	0.0025	0.0019	0.0005
267	0.0025	0.0019	0.0005
268	0.0024	0.0019	0.0005
269	0.0024	0.0019	0.0005
270	0.0024	0.0019	0.0005
271	0.0024	0.0018	0.0005
272	0.0023	0.0018	0.0005
273	0.0023	0.0018	0.0005
274	0.0023	0.0018	0.0005
275	0.0023	0.0018	0.0005

276	0.0022	0.0018	0.0005
277	0.0022	0.0017	0.0005
278	0.0022	0.0017	0.0005
279	0.0022	0.0017	0.0005
280	0.0022	0.0017	0.0005
281	0.0021	0.0017	0.0005
282	0.0021	0.0017	0.0005
283	0.0021	0.0016	0.0005
284	0.0021	0.0016	0.0005
285	0.0021	0.0016	0.0005
286	0.0021	0.0016	0.0005
287	0.0020	0.0016	0.0004
288	0.0020	0.0016	0.0004

```
TOTAL STORM RAINFALL(INCHES) =  2.57
TOTAL SOIL-LOSS(INCHES) =  1.42
TOTAL EFFECTIVE RAINFALL(INCHES) =  1.15

--------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =       4.8037
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =       3.9101
--------------------------------------------------------------------------
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==============================================================================

                        2 4 - 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 FIVE-MINUTE UNIT INTERVALS(CFS)
        (Note: Time indicated is at END of Each Unit Intervals)
------------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.       20.0      40.0      60.0      80.0
------------------------------------------------------------------------------
   0.083      0.0000      0.00  Q        .         .         .         .
   0.167      0.0002      0.02  Q        .         .         .         .
   0.250      0.0007      0.08  Q        .         .         .         .
   0.333      0.0015      0.12  Q        .         .         .         .
   0.417      0.0025      0.15  Q        .         .         .         .
   0.500      0.0037      0.16  Q        .         .         .         .
   0.583      0.0049      0.17  Q        .         .         .         .
   0.667      0.0061      0.18  Q        .         .         .         .
   0.750      0.0074      0.19  Q        .         .         .         .
   0.833      0.0088      0.20  Q        .         .         .         .
   0.917      0.0102      0.20  Q        .         .         .         .
   1.000      0.0116      0.21  Q        .         .         .         .
   1.083      0.0131      0.21  Q        .         .         .         .
   1.167      0.0146      0.21  Q        .         .         .         .
   1.250      0.0161      0.22  Q        .         .         .         .
   1.333      0.0176      0.22  Q        .         .         .         .
   1.417      0.0191      0.22  Q        .         .         .         .
   1.500      0.0207      0.23  Q        .         .         .         .
   1.583      0.0222      0.23  Q        .         .         .         .
   1.667      0.0238      0.23  Q        .         .         .         .
   1.750      0.0254      0.23  Q        .         .         .         .
   1.833      0.0270      0.23  Q        .         .         .         .
   1.917      0.0286      0.23  Q        .         .         .         .
   2.000      0.0302      0.24  Q        .         .         .         .
   2.083      0.0319      0.24  Q        .         .         .         .
   2.167      0.0335      0.24  Q        .         .         .         .
   2.250      0.0351      0.24  Q        .         .         .         .
   2.333      0.0368      0.24  Q        .         .         .         .
   2.417      0.0385      0.24  Q        .         .         .         .
   2.500      0.0401      0.24  Q        .         .         .         .
   2.583      0.0418      0.24  Q        .         .         .         .
   2.667      0.0435      0.24  Q        .         .         .         .
   2.750      0.0452      0.25  Q        .         .         .         .
   2.833      0.0469      0.25  Q        .         .         .         .
   2.917      0.0486      0.25  Q        .         .         .         .
   3.000      0.0503      0.25  Q        .         .         .         .
   3.083      0.0520      0.25  Q        .         .         .         .
   3.167      0.0538      0.25  Q        .         .         .         .
   3.250      0.0555      0.25  Q        .         .         .         .
   3.333      0.0573      0.25  Q        .         .         .         .
   3.417      0.0590      0.26  Q        .         .         .         .
   3.500      0.0608      0.26  Q        .         .         .         .
   3.583      0.0626      0.26  Q        .         .         .         .
   3.667      0.0643      0.26  Q        .         .         .         .
   3.750      0.0661      0.26  Q        .         .         .         .
```



```
   3.833      0.0679      0.26  Q        .         .         .         .
   3.917      0.0698      0.26  Q        .         .         .         .
   4.000      0.0716      0.26  Q        .         .         .         .
   4.083      0.0734      0.27  Q        .         .         .         .
   4.167      0.0753      0.27  Q        .         .         .         .
   4.250      0.0771      0.27  Q        .         .         .         .
   4.333      0.0790      0.27  Q        .         .         .         .
   4.417      0.0808      0.27  Q        .         .         .         .
   4.500      0.0827      0.27  Q        .         .         .         .
   4.583      0.0846      0.27  Q        .         .         .         .
   4.667      0.0865      0.28  Q        .         .         .         .
   4.750      0.0884      0.28  Q        .         .         .         .
   4.833      0.0904      0.28  Q        .         .         .         .
   4.917      0.0923      0.28  Q        .         .         .         .
   5.000      0.0942      0.28  Q        .         .         .         .
   5.083      0.0962      0.28  Q        .         .         .         .
   5.167      0.0982      0.29  QV       .         .         .         .
   5.250      0.1001      0.29  QV       .         .         .         .
   5.333      0.1021      0.29  QV       .         .         .         .
   5.417      0.1041      0.29  QV       .         .         .         .
   5.500      0.1061      0.29  QV       .         .         .         .
   5.583      0.1082      0.29  QV       .         .         .         .
   5.667      0.1102      0.30  QV       .         .         .         .
   5.750      0.1123      0.30  QV       .         .         .         .
   5.833      0.1143      0.30  QV       .         .         .         .
   5.917      0.1164      0.30  QV       .         .         .         .
   6.000      0.1185      0.30  QV       .         .         .         .
   6.083      0.1206      0.31  QV       .         .         .         .
   6.167      0.1227      0.31  QV       .         .         .         .
   6.250      0.1248      0.31  QV       .         .         .         .
   6.333      0.1270      0.31  QV       .         .         .         .
   6.417      0.1291      0.31  QV       .         .         .         .
   6.500      0.1313      0.31  QV       .         .         .         .
   6.583      0.1335      0.32  QV       .         .         .         .
   6.667      0.1357      0.32  QV       .         .         .         .
   6.750      0.1379      0.32  QV       .         .         .         .
   6.833      0.1401      0.32  QV       .         .         .         .
   6.917      0.1423      0.33  QV       .         .         .         .
   7.000      0.1446      0.33  QV       .         .         .         .
   7.083      0.1469      0.33  QV       .         .         .         .
   7.167      0.1492      0.33  QV       .         .         .         .
   7.250      0.1515      0.33  QV       .         .         .         .
   7.333      0.1538      0.34  QV       .         .         .         .
   7.417      0.1561      0.34  QV       .         .         .         .
   7.500      0.1585      0.34  QV       .         .         .         .
   7.583      0.1608      0.34  QV       .         .         .         .
   7.667      0.1632      0.35  QV       .         .         .         .
   7.750      0.1656      0.35  QV       .         .         .         .
   7.833      0.1681      0.35  QV       .         .         .         .
   7.917      0.1705      0.35  QV       .         .         .         .
   8.000      0.1730      0.36  QV       .         .         .         .
   8.083      0.1755      0.36  QV       .         .         .         .
   8.167      0.1780      0.36  QV       .         .         .         .
   8.250      0.1805      0.37  QV       .         .         .         .
   8.333      0.1830      0.37  QV       .         .         .         .
   8.417      0.1856      0.37  QV       .         .         .         .
```

8.500	0.1882	0.37	QV
8.583	0.1908	0.38	QV
8.667	0.1934	0.38	QV
8.750	0.1960	0.38	Q V
8.833	0.1987	0.39	Q V
8.917	0.2014	0.39	Q V
9.000	0.2041	0.39	Q V
9.083	0.2068	0.40	Q V
9.167	0.2096	0.40	Q V
9.250	0.2124	0.40	Q V
9.333	0.2152	0.41	Q V
9.417	0.2180	0.41	Q V
9.500	0.2209	0.42	Q V
9.583	0.2238	0.42	Q V
9.667	0.2267	0.42	Q V
9.750	0.2297	0.43	Q V
9.833	0.2326	0.43	Q V
9.917	0.2356	0.44	Q V
10.000	0.2387	0.44	Q V
10.083	0.2417	0.45	Q V
10.167	0.2448	0.45	Q V
10.250	0.2480	0.45	Q V
10.333	0.2511	0.46	Q V
10.417	0.2543	0.46	Q V
10.500	0.2576	0.47	Q V
10.583	0.2608	0.47	Q V
10.667	0.2641	0.48	Q V
10.750	0.2675	0.49	Q V
10.833	0.2709	0.49	Q V
10.917	0.2743	0.50	Q V
11.000	0.2777	0.50	Q V
11.083	0.2812	0.51	Q V
11.167	0.2848	0.51	Q V
11.250	0.2884	0.52	Q V
11.333	0.2920	0.53	Q V
11.417	0.2957	0.53	Q V
11.500	0.2994	0.54	Q V
11.583	0.3032	0.55	Q V
11.667	0.3070	0.56	Q V
11.750	0.3109	0.56	Q V
11.833	0.3148	0.57	Q V
11.917	0.3188	0.58	Q V
12.000	0.3229	0.59	Q V
12.083	0.3270	0.59	Q V
12.167	0.3310	0.59	Q V
12.250	0.3349	0.56	Q V
12.333	0.3386	0.54	Q V
12.417	0.3423	0.53	Q V
12.500	0.3459	0.53	Q V
12.583	0.3496	0.53	Q V
12.667	0.3532	0.53	Q V
12.750	0.3569	0.54	Q V
12.833	0.3607	0.54	Q V
12.917	0.3645	0.55	Q V
13.000	0.3683	0.56	Q V
13.083	0.3723	0.57	Q V

13.167	0.3763	0.58	Q V
13.250	0.3803	0.59	Q V
13.333	0.3845	0.60	Q V
13.417	0.3887	0.62	Q V
13.500	0.3931	0.63	Q V
13.583	0.3975	0.64	Q V
13.667	0.4020	0.66	Q V
13.750	0.4067	0.68	Q V
13.833	0.4115	0.69	Q V
13.917	0.4164	0.71	Q V
14.000	0.4214	0.73	Q V
14.083	0.4266	0.75	Q V
14.167	0.4320	0.77	Q V
14.250	0.4374	0.79	Q V
14.333	0.4429	0.80	Q V
14.417	0.4486	0.83	Q V
14.500	0.4545	0.85	Q V
14.583	0.4606	0.88	Q V
14.667	0.4669	0.92	Q V
14.750	0.4735	0.96	Q V
14.833	0.4803	1.00	Q V
14.917	0.4875	1.04	Q V
15.000	0.4951	1.10	Q V
15.083	0.5031	1.16	Q V
15.167	0.5115	1.22	Q V
15.250	0.5204	1.30	Q V
15.333	0.5300	1.39	Q V
15.417	0.5407	1.56	Q V
15.500	0.5543	1.98	Q V
15.583	0.5751	3.02	.Q V
15.667	0.6043	4.25	. Q V
15.750	0.6455	5.97	. Q V
15.833	0.7046	8.59	. Q V
15.917	0.7943	13.02	. Q V
16.000	0.9250	18.99	. Q.
16.083	1.1319	30.03	.V Q
16.167	1.4647	48.32	. V . Q
16.250	1.9618	72.18	. V . Q
16.333	2.4001	63.64	. V .Q
16.417	2.6932	42.57	.Q V .
16.500	2.9010	30.17	. Q . V.
16.583	3.0532	22.10	.Q .V
16.667	3.1686	16.76	. Q . . V
16.750	3.2612	13.45	. Q . . V
16.833	3.3367	10.96	. Q . . V
16.917	3.3977	8.86	. Q . . V
17.000	3.4496	7.53	. Q . . V
17.083	3.4939	6.43	. Q . . V
17.167	3.5311	5.41	. Q . . V
17.250	3.5634	4.69	. Q . . V
17.333	3.5909	3.99	.Q . . V
17.417	3.6139	3.34	.Q . . V
17.500	3.6335	2.84	.Q . . V
17.583	3.6497	2.35	.Q . . V
17.667	3.6651	2.24	.Q . . V
17.750	3.6799	2.14	.Q . . V

```
17.833    3.6937    2.01  .Q      .       .       .     V  .
17.917    3.7061    1.81  Q       .       .       .     V  .
18.000    3.7164    1.49  Q       .       .       .      V .
18.083    3.7218    0.79  Q       .       .       .      V .
18.167    3.7264    0.66  Q       .       .       .      V .
18.250    3.7307    0.63  Q       .       .       .      V .
18.333    3.7349    0.62  Q       .       .       .      V .
18.417    3.7392    0.61  Q       .       .       .      V .
18.500    3.7433    0.60  Q       .       .       .      V .
18.583    3.7473    0.59  Q       .       .       .      V .
18.667    3.7513    0.57  Q       .       .       .      V .
18.750    3.7552    0.56  Q       .       .       .      V .
18.833    3.7589    0.55  Q       .       .       .      V .
18.917    3.7626    0.54  Q       .       .       .      V .
19.000    3.7663    0.53  Q       .       .       .      V .
19.083    3.7698    0.51  Q       .       .       .      V .
19.167    3.7733    0.50  Q       .       .       .      V .
19.250    3.7767    0.49  Q       .       .       .      V .
19.333    3.7800    0.48  Q       .       .       .      V .
19.417    3.7832    0.47  Q       .       .       .      V .
19.500    3.7864    0.46  Q       .       .       .      V .
19.583    3.7895    0.45  Q       .       .       .      V .
19.667    3.7926    0.44  Q       .       .       .      V .
19.750    3.7956    0.44  Q       .       .       .      V .
19.833    3.7985    0.43  Q       .       .       .      V .
19.917    3.8014    0.42  Q       .       .       .      V .
20.000    3.8043    0.41  Q       .       .       .      V .
20.083    3.8071    0.41  Q       .       .       .      V .
20.167    3.8098    0.40  Q       .       .       .      V .
20.250    3.8125    0.39  Q       .       .       .       V.
20.333    3.8152    0.38  Q       .       .       .       V.
20.417    3.8178    0.38  Q       .       .       .       V.
20.500    3.8203    0.37  Q       .       .       .       V.
20.583    3.8229    0.37  Q       .       .       .       V.
20.667    3.8253    0.36  Q       .       .       .       V.
20.750    3.8278    0.35  Q       .       .       .       V.
20.833    3.8302    0.35  Q       .       .       .       V.
20.917    3.8326    0.34  Q       .       .       .       V.
21.000    3.8349    0.34  Q       .       .       .       V.
21.083    3.8372    0.33  Q       .       .       .       V.
21.167    3.8395    0.33  Q       .       .       .       V.
21.250    3.8417    0.33  Q       .       .       .       V.
21.333    3.8439    0.32  Q       .       .       .       V.
21.417    3.8461    0.32  Q       .       .       .       V.
21.500    3.8483    0.31  Q       .       .       .       V.
21.583    3.8504    0.31  Q       .       .       .       V.
21.667    3.8525    0.30  Q       .       .       .       V.
21.750    3.8546    0.30  Q       .       .       .       V.
21.833    3.8566    0.30  Q       .       .       .       V.
21.917    3.8586    0.29  Q       .       .       .       V.
22.000    3.8606    0.29  Q       .       .       .       V.
22.083    3.8626    0.29  Q       .       .       .       V.
22.167    3.8646    0.28  Q       .       .       .       V.
22.250    3.8665    0.28  Q       .       .       .       V.
22.333    3.8684    0.28  Q       .       .       .       V.
22.417    3.8703    0.27  Q       .       .       .       V.
```



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22.500    3.8722    0.27  Q       .       .       .       V.
22.583    3.8740    0.27  Q       .       .       .       V.
22.667    3.8759    0.27  Q       .       .       .       V.
22.750    3.8777    0.26  Q       .       .       .       V.
22.833    3.8795    0.26  Q       .       .       .       V.
22.917    3.8812    0.26  Q       .       .       .       V.
23.000    3.8830    0.26  Q       .       .       .       V.
23.083    3.8847    0.25  Q       .       .       .       V.
23.167    3.8865    0.25  Q       .       .       .       V.
23.250    3.8882    0.25  Q       .       .       .       V.
23.333    3.8899    0.25  Q       .       .       .       V.
23.417    3.8915    0.24  Q       .       .       .       V.
23.500    3.8932    0.24  Q       .       .       .       V.
23.583    3.8948    0.24  Q       .       .       .       V.
23.667    3.8965    0.24  Q       .       .       .       V.
23.750    3.8981    0.23  Q       .       .       .       V.
23.833    3.8997    0.23  Q       .       .       .       V.
23.917    3.9013    0.23  Q       .       .       .       V.
24.000    3.9028    0.23  Q       .       .       .       V.
24.083    3.9044    0.22  Q       .       .       .       V.
24.167    3.9058    0.20  Q       .       .       .       V.
24.250    3.9068    0.15  Q       .       .       .       V.
24.333    3.9075    0.10  Q       .       .       .       V.
24.417    3.9080    0.08  Q       .       .       .       V.
24.500    3.9084    0.06  Q       .       .       .       V.
24.583    3.9088    0.05  Q       .       .       .       V.
24.667    3.9090    0.04  Q       .       .       .       V.
24.750    3.9092    0.03  Q       .       .       .       V.
24.833    3.9094    0.03  Q       .       .       .       V.
24.917    3.9096    0.02  Q       .       .       .       V.
25.000    3.9097    0.02  Q       .       .       .       V.
25.083    3.9098    0.01  Q       .       .       .       V.
25.167    3.9099    0.01  Q       .       .       .       V.
25.250    3.9099    0.01  Q       .       .       .       V.
-------------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                Duration
        Peak Flow Rate                     (minutes)
    =======================                =========
              0%                            1515.0
             10%                              75.0
             20%                              45.0
             30%                              35.0
             40%                              30.0
             50%                              20.0
             60%                              15.0
             70%                              10.0
             80%                              10.0
             90%                               5.0
 ===============================================================================

   END OF FLOODSCx ROUTING ANALYSIS
```

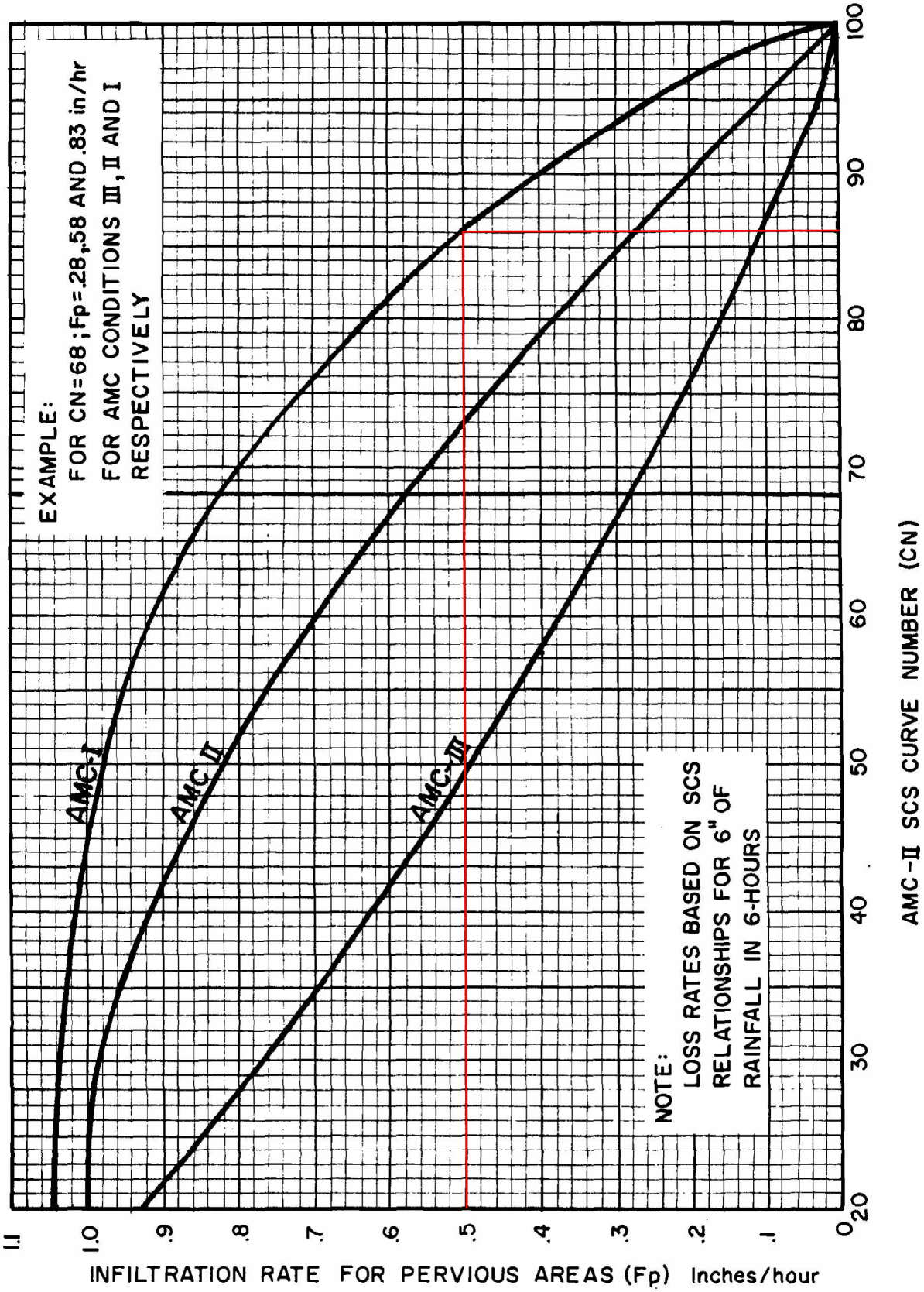

SAN BERNARDINO COUNTY
HYDROLOGY MANUAL

INFILTRATION RATE FOR PERVIOUS AREAS VERSUS SCS CURVE NUMBERS

Figure C-6

35

Revised CN

Cell Orientation	N/W	Others	All
Area (ac)	3.01	20.61	23.63
%Area	0.128	0.872	
Panel Area (fraction)	0.64	0.64	
N (throughfall, in)	2.57	2.57	2.57
Fo (orientation)	0	0.5	
Fp (panel/free area ratio)	1.75	1.75	
Increased Throughfall (in)	2.57	4.81875	
CN	78	78	
Smax (soil capacity)	2.8	2.8	
a (factor, 0.2 for SB County)	0.20	0.20	
Ia (initial abstraction)	0.6	0.6	
A (effective rainfall, in)	0.8	2.6	
Yj (Increased Runoff Coefficient)	0.324	0.531	
Effective Rainfall	0.8	1.4	
weighted effective rainfall	0.1	1.2	1.3
Smax revised			1.6
a			0.20
Ia revised			0.3
A revised			1.3
CN revised			86
Fp (infiltration rate, in/hr)			0.5

$$S = \frac{1000}{CN} - 10$$

$$I_a = a \cdot S_{max}$$

$$A = \frac{(N - I_a)^2}{(N - I_a) + S_{max}}$$

$$Y_j = \frac{(P_{24} - Ia)^2}{(P_{24} - Ia + S)P_{24}}$$

0

*Set weighted eff rainfall equal to A revised by changing CN revised

Appendix B

San Bernardino Desert AMC Addendum

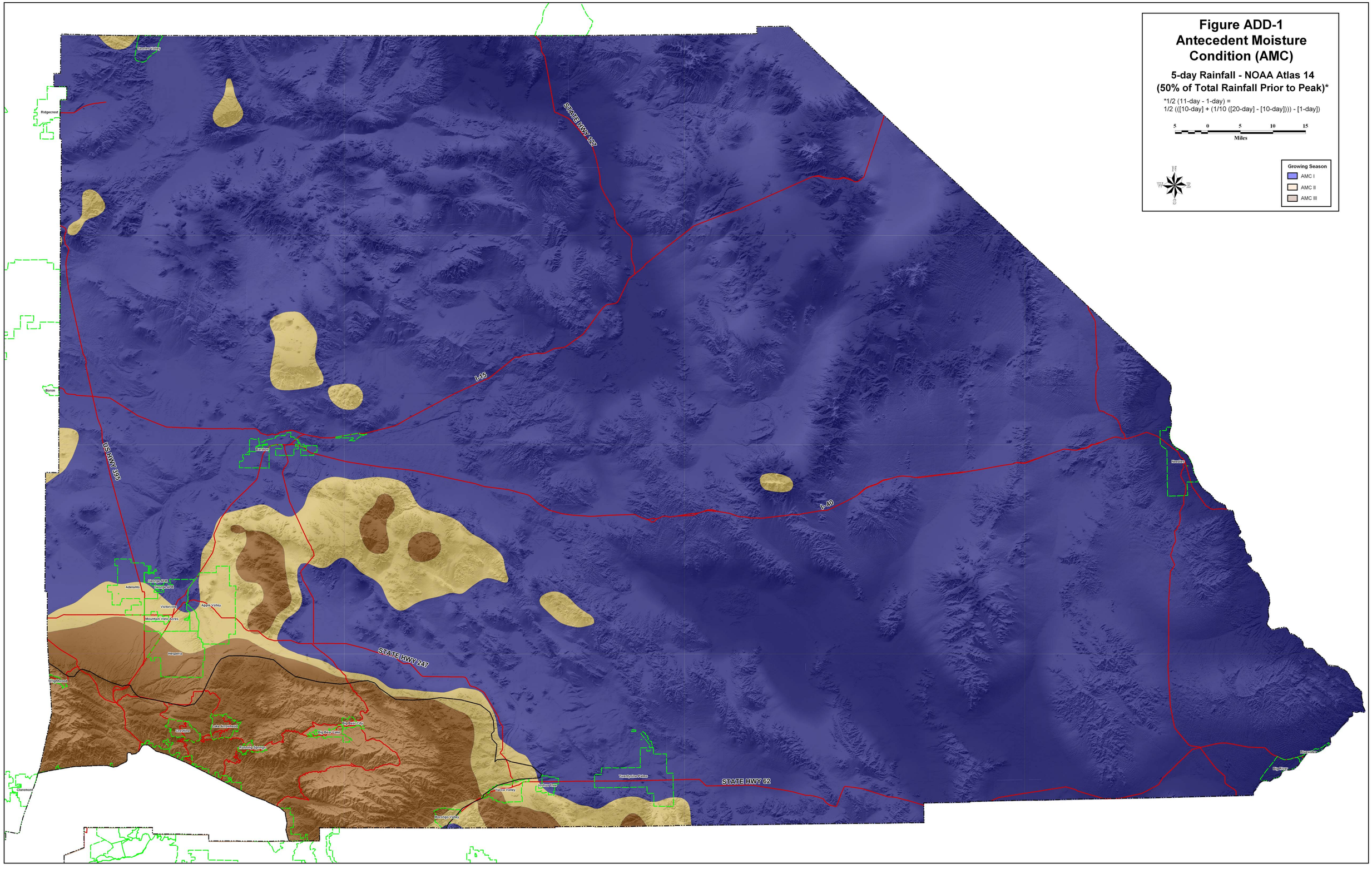
Figure ADD-1
Antecedent Moisture Condition (AMC)
5-day Rainfall - NOAA Atlas 14
(50% of Total Rainfall Prior to Peak)*
*1/2 (11-day - 1-day) =
1/2 (([10-day] + (1/10 ([20-day] - [10-day]))) - [1-day])
5 0 5 10 15
Miles
N
W
E
S
Growing Season
AMC I
AMC II
AMC III
STATE HWY 127
I-15
I-40
US HWY 395
STATE HWY 247
STATE HWY 62
Ridgecrest
Boron
Barstow
Needles
Adelanto
George AFB
Victorville
Apple Valley
Mountain View Acres
Hesperia
Wrightwood
Crestline
Lake Arrowhead
Running Springs
Big Bear City
Big Bear Lake
Twentynine Palms
Yucca Valley
Joshua Tree
Morongo Valley
Claremont
Needles
Bluewater
Big River

Appendix C

NOAA Atlas 14 Rainfall Depth and Intensity

NOAA Atlas 14, Volume 6, Version 2
Location name: Yermo, California, USA*
Latitude: 34.9098°, Longitude: -116.7933°
Elevation: 1907 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	**0.089** (0.073-0.110)	**0.131** (0.107-0.162)	**0.190** (0.155-0.235)	**0.240** (0.194-0.300)	**0.313** (0.245-0.404)	**0.373** (0.287-0.490)	**0.437** (0.328-0.588)	**0.507** (0.371-0.700)	**0.608** (0.427-0.873)	**0.691** (0.471-1.03)
10-min	**0.127** (0.104-0.157)	**0.188** (0.154-0.232)	**0.272** (0.222-0.337)	**0.344** (0.278-0.430)	**0.449** (0.352-0.578)	**0.535** (0.411-0.703)	**0.626** (0.470-0.843)	**0.726** (0.531-1.00)	**0.871** (0.613-1.25)	**0.991** (0.674-1.47)
15-min	**0.154** (0.126-0.190)	**0.227** (0.186-0.281)	**0.329** (0.268-0.408)	**0.416** (0.337-0.520)	**0.543** (0.426-0.700)	**0.646** (0.497-0.850)	**0.758** (0.569-1.02)	**0.879** (0.643-1.21)	**1.05** (0.741-1.51)	**1.20** (0.816-1.78)
30-min	**0.211** (0.173-0.261)	**0.312** (0.255-0.385)	**0.451** (0.368-0.559)	**0.571** (0.462-0.713)	**0.744** (0.584-0.959)	**0.886** (0.681-1.16)	**1.04** (0.780-1.40)	**1.20** (0.881-1.66)	**1.44** (1.02-2.08)	**1.64** (1.12-2.44)
60-min	**0.285** (0.233-0.352)	**0.420** (0.343-0.520)	**0.608** (0.496-0.754)	**0.770** (0.623-0.962)	**1.00** (0.787-1.29)	**1.20** (0.919-1.57)	**1.40** (1.05-1.88)	**1.62** (1.19-2.24)	**1.95** (1.37-2.80)	**2.22** (1.51-3.29)
2-hr	**0.367** (0.300-0.453)	**0.510** (0.417-0.631)	**0.708** (0.577-0.878)	**0.877** (0.710-1.10)	**1.12** (0.878-1.44)	**1.32** (1.01-1.73)	**1.53** (1.15-2.05)	**1.75** (1.28-2.42)	**2.07** (1.46-2.98)	**2.34** (1.59-3.47)
3-hr	**0.426** (0.349-0.527)	**0.582** (0.475-0.719)	**0.796** (0.648-0.986)	**0.977** (0.790-1.22)	**1.24** (0.969-1.59)	**1.45** (1.11-1.90)	**1.67** (1.25-2.24)	**1.90** (1.39-2.63)	**2.24** (1.58-3.22)	**2.52** (1.71-3.73)
6-hr	**0.513** (0.420-0.634)	**0.689** (0.563-0.851)	**0.927** (0.756-1.15)	**1.13** (0.913-1.41)	**1.41** (1.11-1.82)	**1.64** (1.26-2.16)	**1.88** (1.41-2.53)	**2.14** (1.56-2.95)	**2.49** (1.75-3.58)	**2.78** (1.89-4.13)
12-hr	**0.563** (0.460-0.695)	**0.756** (0.618-0.935)	**1.02** (0.829-1.26)	**1.24** (0.999-1.54)	**1.54** (1.21-1.99)	**1.78** (1.37-2.34)	**2.04** (1.53-2.74)	**2.30** (1.68-3.18)	**2.67** (1.88-3.84)	**2.96** (2.02-4.40)
24-hr	**0.699** (0.620-0.804)	**0.951** (0.843-1.10)	**1.29** (1.14-1.49)	**1.57** (1.37-1.82)	**1.95** (1.66-2.35)	**2.26** (1.88-2.77)	**2.57** (2.08-3.24)	**2.90** (2.28-3.75)	**3.34** (2.53-4.51)	**3.70** (2.70-5.16)
2-day	**0.815** (0.723-0.937)	**1.12** (0.991-1.29)	**1.52** (1.34-1.76)	**1.86** (1.63-2.16)	**2.31** (1.96-2.78)	**2.67** (2.22-3.28)	**3.04** (2.46-3.82)	**3.42** (2.70-4.43)	**3.95** (2.98-5.32)	**4.36** (3.19-6.09)
3-day	**0.863** (0.766-0.993)	**1.19** (1.06-1.37)	**1.63** (1.44-1.88)	**1.99** (1.74-2.31)	**2.48** (2.10-2.98)	**2.86** (2.38-3.52)	**3.25** (2.64-4.09)	**3.66** (2.88-4.74)	**4.21** (3.19-5.69)	**4.65** (3.40-6.49)
4-day	**0.894** (0.793-1.03)	**1.24** (1.10-1.43)	**1.70** (1.50-1.96)	**2.07** (1.82-2.41)	**2.58** (2.19-3.11)	**2.98** (2.47-3.66)	**3.38** (2.74-4.26)	**3.80** (2.99-4.92)	**4.36** (3.30-5.89)	**4.81** (3.51-6.71)

7-day	**0.956** (0.848-1.10)	**1.34** (1.19-1.54)	**1.84** (1.62-2.12)	**2.24** (1.96-2.61)	**2.78** (2.36-3.35)	**3.20** (2.65-3.93)	**3.61** (2.93-4.55)	**4.04** (3.18-5.23)	**4.61** (3.49-6.22)	**5.05** (3.69-7.05)
10-day	**1.02** (0.901-1.17)	**1.43** (1.27-1.65)	**1.96** (1.74-2.27)	**2.40** (2.10-2.79)	**2.97** (2.52-3.58)	**3.41** (2.83-4.19)	**3.84** (3.12-4.84)	**4.29** (3.38-5.55)	**4.88** (3.69-6.58)	**5.33** (3.89-7.44)
20-day	**1.16** (1.03-1.34)	**1.65** (1.46-1.90)	**2.28** (2.02-2.64)	**2.79** (2.44-3.25)	**3.46** (2.94-4.17)	**3.98** (3.30-4.88)	**4.48** (3.64-5.65)	**5.00** (3.94-6.47)	**5.68** (4.30-7.66)	**6.19** (4.53-8.65)
30-day	**1.29** (1.14-1.48)	**1.84** (1.63-2.11)	**2.54** (2.25-2.94)	**3.11** (2.73-3.62)	**3.88** (3.29-4.67)	**4.46** (3.70-5.48)	**5.04** (4.08-6.35)	**5.63** (4.44-7.28)	**6.40** (4.84-8.64)	**6.99** (5.11-9.76)
45-day	**1.46** (1.30-1.68)	**2.07** (1.83-2.38)	**2.87** (2.53-3.31)	**3.52** (3.08-4.09)	**4.40** (3.73-5.29)	**5.07** (4.21-6.23)	**5.75** (4.66-7.24)	**6.44** (5.07-8.33)	**7.35** (5.56-9.92)	**8.05** (5.88-11.2)
60-day	**1.60** (1.42-1.84)	**2.25** (1.99-2.59)	**3.12** (2.75-3.60)	**3.83** (3.35-4.46)	**4.80** (4.07-5.77)	**5.55** (4.61-6.82)	**6.31** (5.12-7.95)	**7.09** (5.59-9.18)	**8.13** (6.15-11.0)	**8.93** (6.52-12.5)

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

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

Please refer to NOAA Atlas 14 document for more information.

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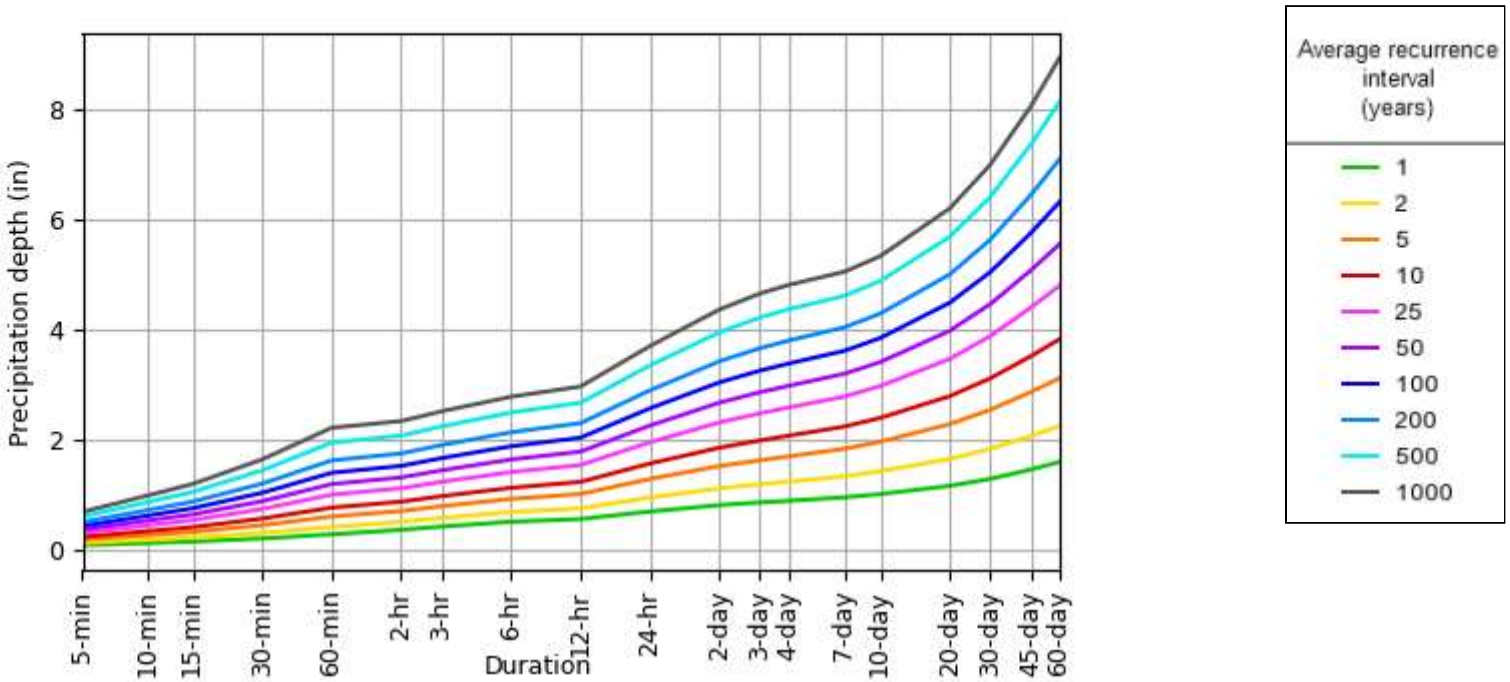
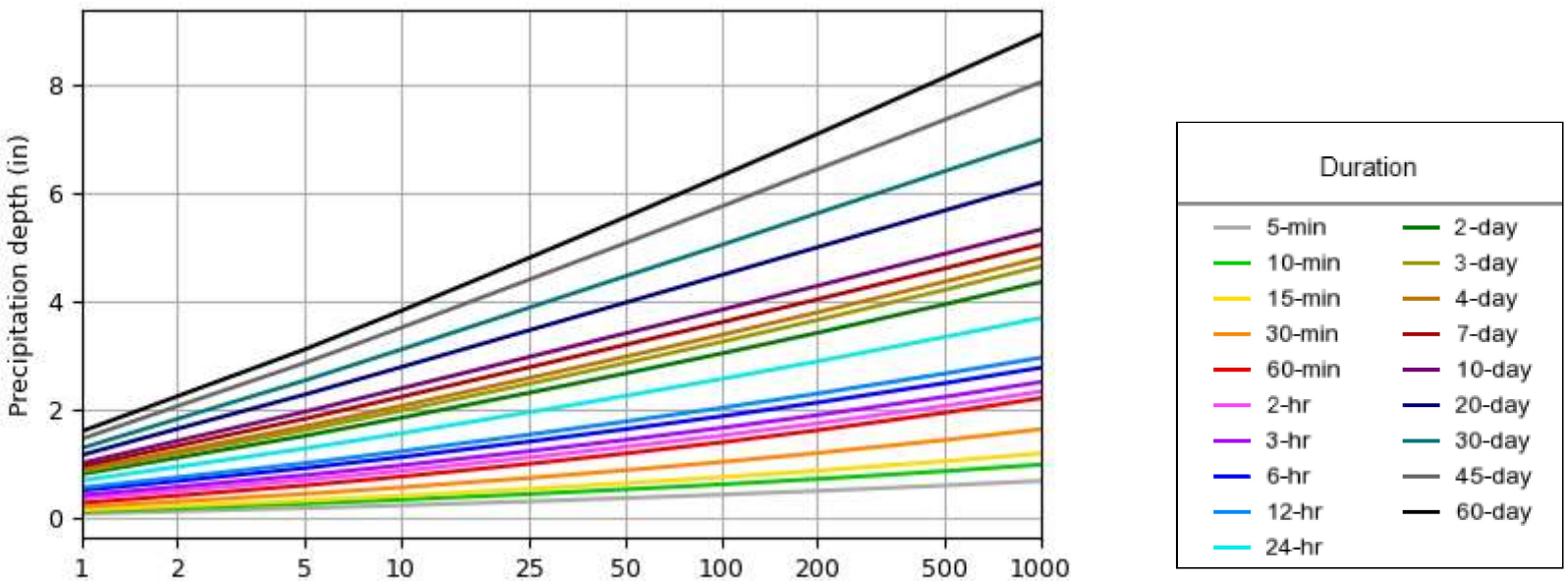
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 34.9098°, Longitude: -116.7933°





Average recurrence interval (years)

NOAA Atlas 14, Volume 6, Version 2 Created (GMT): Mon Jun 3 15:50:53 2024

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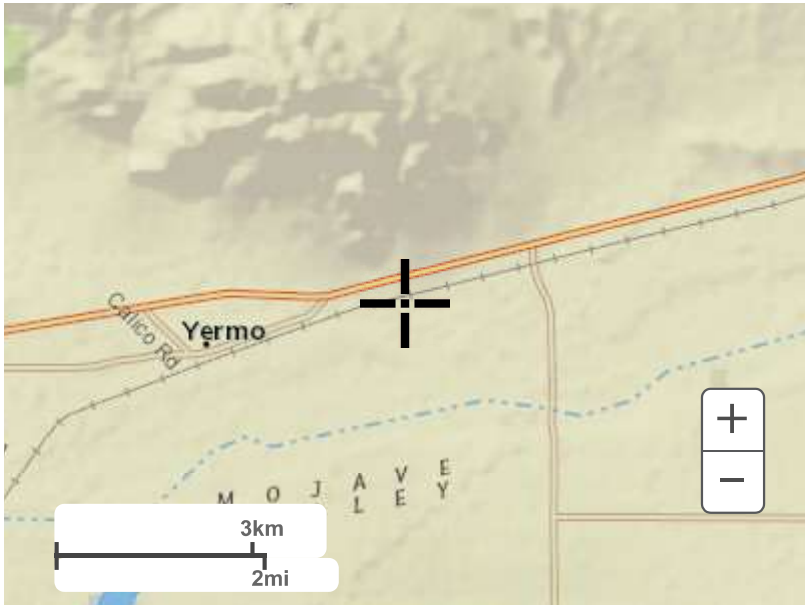
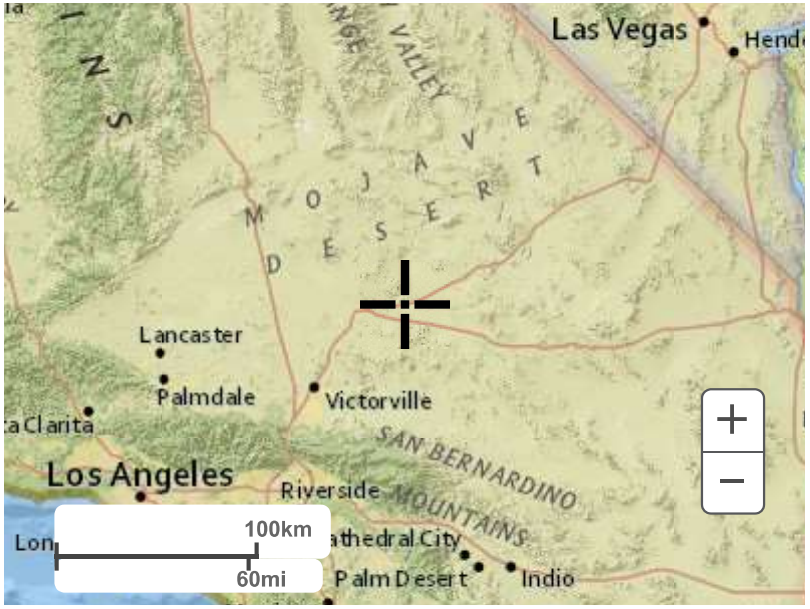
Maps & aerials

Small scale terrain

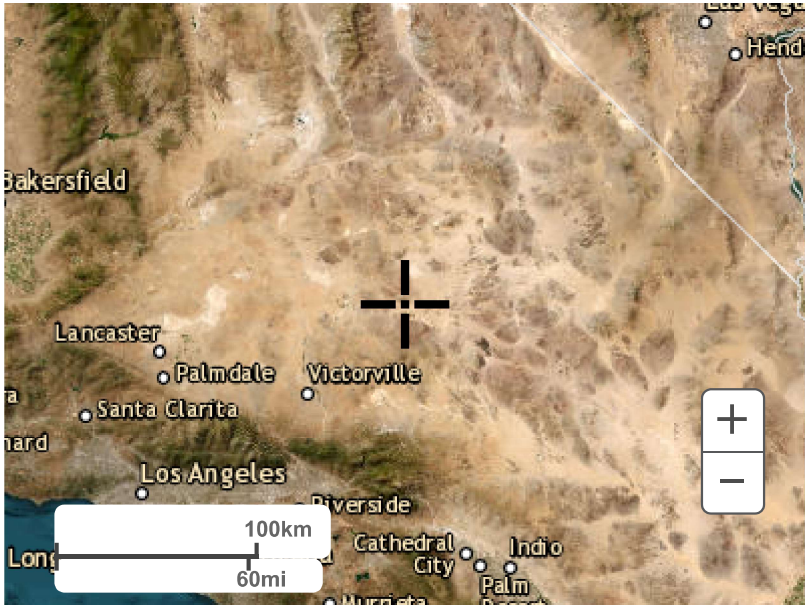


Large scale terrain



Large scale map

Large scale aerial



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NOAA Atlas 14, Volume 6, Version 2
Location name: Yermo, California, USA*
Latitude: 34.9098°, Longitude: -116.7933°
Elevation: 1907 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/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	1.07 (0.876-1.32)	1.57 (1.28-1.94)	2.28 (1.86-2.82)	2.88 (2.33-3.60)	3.76 (2.94-4.85)	4.48 (3.44-5.88)	5.24 (3.94-7.06)	6.08 (4.45-8.40)	7.30 (5.12-10.5)	8.29 (5.65-12.3)
10-min	0.762 (0.624-0.942)	1.13 (0.924-1.39)	1.63 (1.33-2.02)	2.06 (1.67-2.58)	2.69 (2.11-3.47)	3.21 (2.47-4.22)	3.76 (2.82-5.06)	4.36 (3.19-6.02)	5.23 (3.68-7.51)	5.95 (4.04-8.83)
15-min	0.616 (0.504-0.760)	0.908 (0.744-1.12)	1.32 (1.07-1.63)	1.66 (1.35-2.08)	2.17 (1.70-2.80)	2.58 (1.99-3.40)	3.03 (2.28-4.08)	3.52 (2.57-4.85)	4.22 (2.96-6.05)	4.80 (3.26-7.12)
30-min	0.422 (0.346-0.522)	0.624 (0.510-0.770)	0.902 (0.736-1.12)	1.14 (0.924-1.43)	1.49 (1.17-1.92)	1.77 (1.36-2.33)	2.08 (1.56-2.79)	2.41 (1.76-3.33)	2.89 (2.03-4.15)	3.29 (2.24-4.88)
60-min	0.285 (0.233-0.352)	0.420 (0.343-0.520)	0.608 (0.496-0.754)	0.770 (0.623-0.962)	1.00 (0.787-1.29)	1.20 (0.919-1.57)	1.40 (1.05-1.88)	1.62 (1.19-2.24)	1.95 (1.37-2.80)	2.22 (1.51-3.29)
2-hr	0.183 (0.150-0.226)	0.255 (0.208-0.315)	0.354 (0.288-0.439)	0.438 (0.355-0.548)	0.560 (0.439-0.721)	0.658 (0.506-0.865)	0.763 (0.573-1.03)	0.875 (0.640-1.21)	1.04 (0.729-1.49)	1.17 (0.795-1.74)
3-hr	0.141 (0.116-0.175)	0.193 (0.158-0.239)	0.265 (0.215-0.328)	0.325 (0.263-0.406)	0.411 (0.322-0.530)	0.481 (0.369-0.632)	0.555 (0.416-0.746)	0.634 (0.463-0.875)	0.746 (0.524-1.07)	0.837 (0.569-1.24)
6-hr	0.085 (0.070-0.105)	0.115 (0.094-0.142)	0.154 (0.126-0.191)	0.188 (0.152-0.235)	0.236 (0.185-0.304)	0.274 (0.210-0.360)	0.314 (0.235-0.422)	0.356 (0.260-0.492)	0.416 (0.292-0.598)	0.464 (0.315-0.689)
12-hr	0.046 (0.038-0.057)	0.062 (0.051-0.077)	0.084 (0.068-0.104)	0.102 (0.082-0.128)	0.127 (0.100-0.164)	0.148 (0.113-0.194)	0.168 (0.126-0.227)	0.190 (0.139-0.263)	0.221 (0.155-0.318)	0.246 (0.167-0.365)
24-hr	0.029 (0.025-0.033)	0.039 (0.035-0.045)	0.053 (0.047-0.061)	0.065 (0.057-0.076)	0.081 (0.069-0.098)	0.094 (0.078-0.115)	0.107 (0.086-0.134)	0.120 (0.095-0.156)	0.139 (0.105-0.188)	0.154 (0.112-0.215)
2-day	0.016 (0.015-0.019)	0.023 (0.020-0.026)	0.031 (0.028-0.036)	0.038 (0.033-0.044)	0.048 (0.040-0.057)	0.055 (0.046-0.068)	0.063 (0.051-0.079)	0.071 (0.056-0.092)	0.082 (0.062-0.110)	0.090 (0.066-0.126)
3-day	0.011 (0.010-0.013)	0.016 (0.014-0.019)	0.022 (0.019-0.026)	0.027 (0.024-0.032)	0.034 (0.029-0.041)	0.039 (0.033-0.048)	0.045 (0.036-0.056)	0.050 (0.040-0.065)	0.058 (0.044-0.078)	0.064 (0.047-0.090)
4-day	0.009 (0.008-0.010)	0.012 (0.011-0.014)	0.017 (0.015-0.020)	0.021 (0.018-0.025)	0.026 (0.022-0.032)	0.031 (0.025-0.038)	0.035 (0.028-0.044)	0.039 (0.031-0.051)	0.045 (0.034-0.061)	0.050 (0.036-0.069)

7-day	**0.005** (0.005-0.006)	**0.007** (0.007-0.009)	**0.010** (0.009-0.012)	**0.013** (0.011-0.015)	**0.016** (0.014-0.019)	**0.019** (0.015-0.023)	**0.021** (0.017-0.027)	**0.024** (0.018-0.031)	**0.027** (0.020-0.037)	**0.030** (0.021-0.041)
10-day	**0.004** (0.003-0.004)	**0.005** (0.005-0.006)	**0.008** (0.007-0.009)	**0.009** (0.008-0.011)	**0.012** (0.010-0.014)	**0.014** (0.011-0.017)	**0.016** (0.012-0.020)	**0.017** (0.014-0.023)	**0.020** (0.015-0.027)	**0.022** (0.016-0.031)
20-day	**0.002** (0.002-0.002)	**0.003** (0.003-0.003)	**0.004** (0.004-0.005)	**0.005** (0.005-0.006)	**0.007** (0.006-0.008)	**0.008** (0.006-0.010)	**0.009** (0.007-0.011)	**0.010** (0.008-0.013)	**0.011** (0.008-0.015)	**0.012** (0.009-0.018)
30-day	**0.001** (0.001-0.002)	**0.002** (0.002-0.002)	**0.003** (0.003-0.004)	**0.004** (0.003-0.005)	**0.005** (0.004-0.006)	**0.006** (0.005-0.007)	**0.006** (0.005-0.008)	**0.007** (0.006-0.010)	**0.008** (0.006-0.011)	**0.009** (0.007-0.013)
45-day	**0.001** (0.001-0.001)	**0.001** (0.001-0.002)	**0.002** (0.002-0.003)	**0.003** (0.002-0.003)	**0.004** (0.003-0.004)	**0.004** (0.003-0.005)	**0.005** (0.004-0.006)	**0.005** (0.004-0.007)	**0.006** (0.005-0.009)	**0.007** (0.005-0.010)
60-day	**0.001** (0.000-0.001)	**0.001** (0.001-0.001)	**0.002** (0.001-0.002)	**0.002** (0.002-0.003)	**0.003** (0.002-0.004)	**0.003** (0.003-0.004)	**0.004** (0.003-0.005)	**0.004** (0.003-0.006)	**0.005** (0.004-0.007)	**0.006** (0.004-0.008)

[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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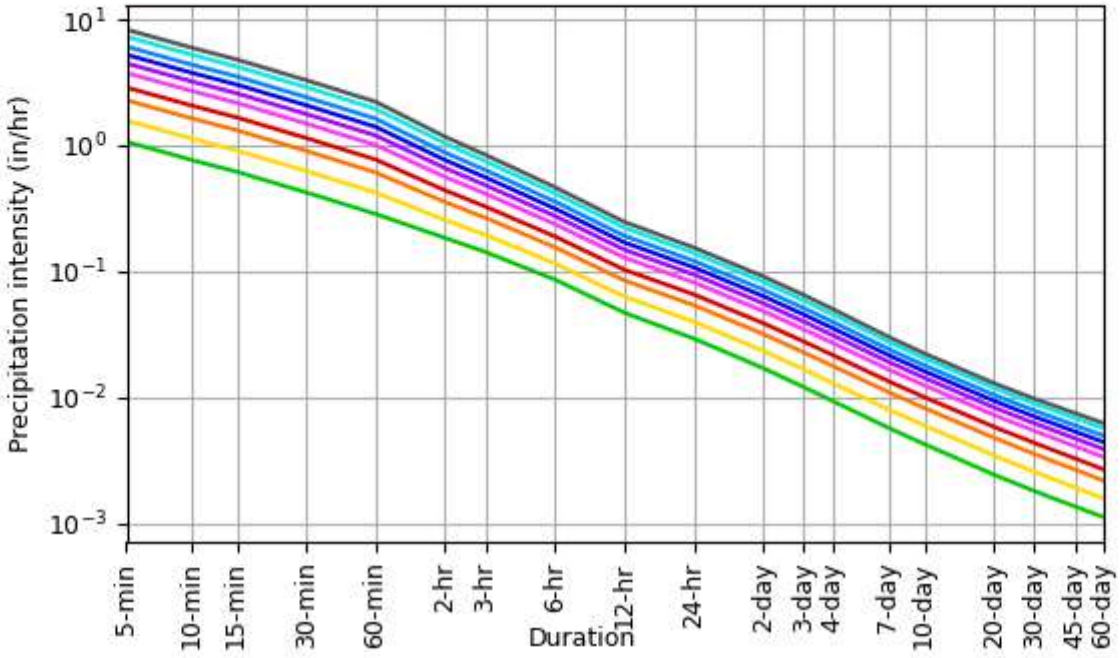
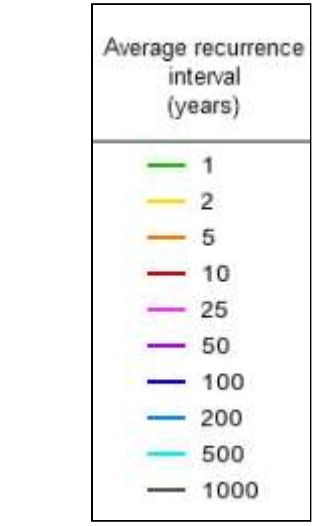
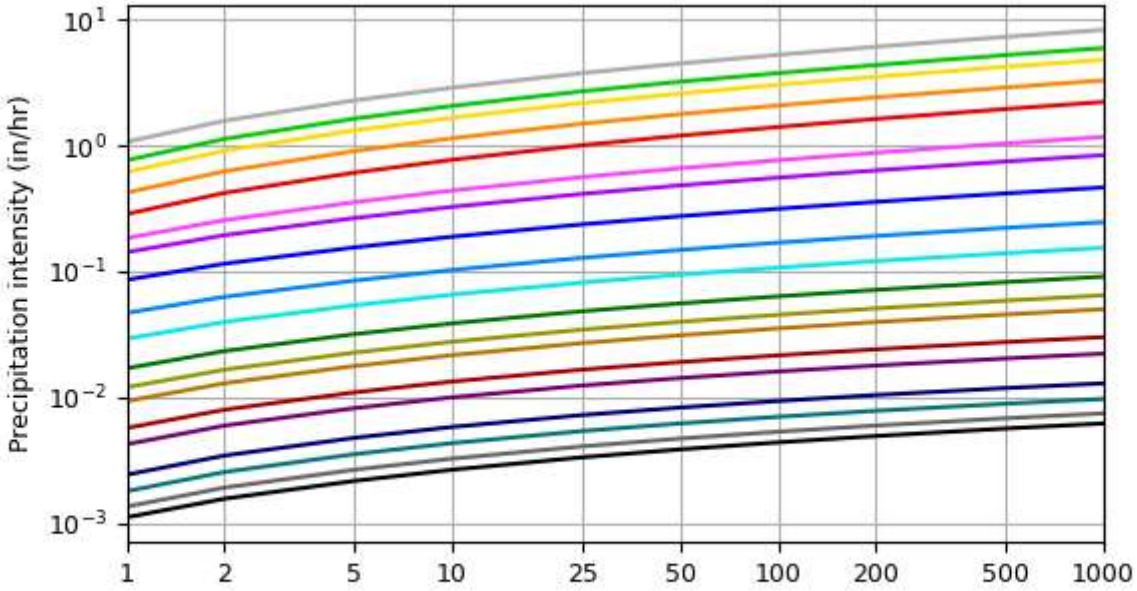
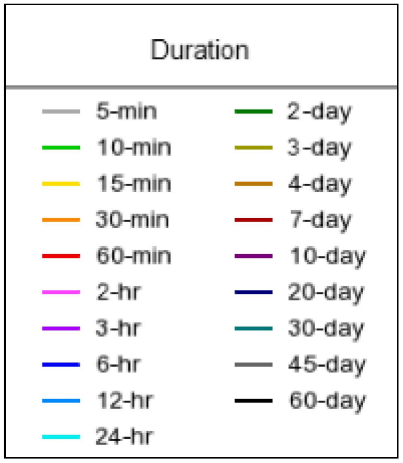
PF graphical

PDS-based intensity-duration-frequency (IDF) curves
Latitude: 34.9098°, Longitude: -116.7933°









Average recurrence interval (years)

NOAA Atlas 14, Volume 6, Version 2 Created (GMT): Mon Jun 3 15:48:44 2024

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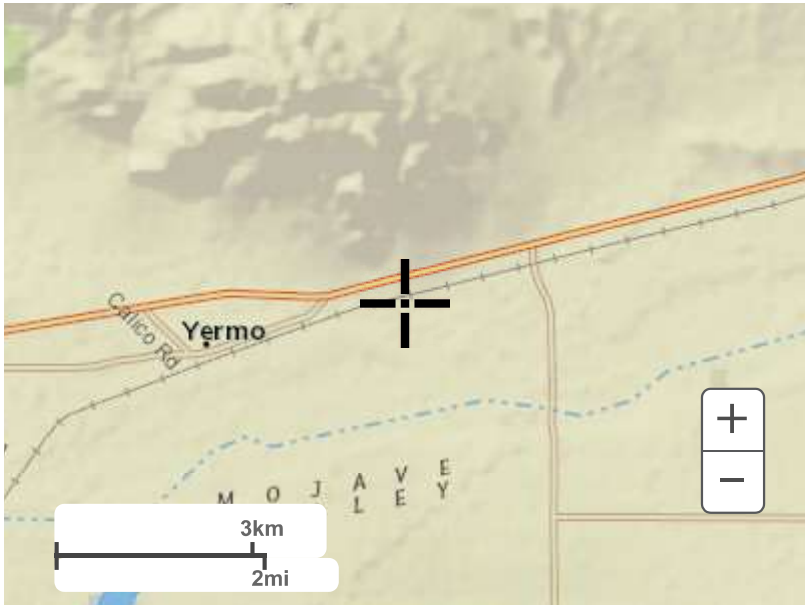
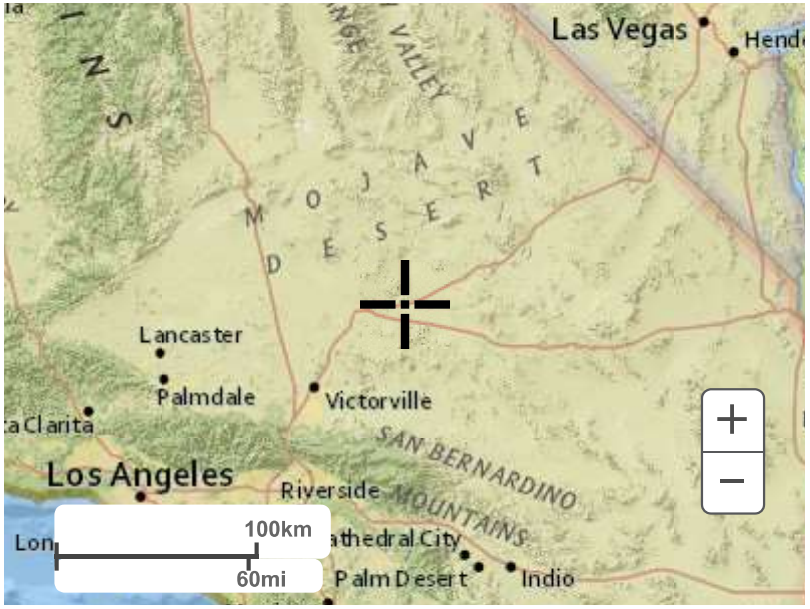
Maps & aerials

Small scale terrain

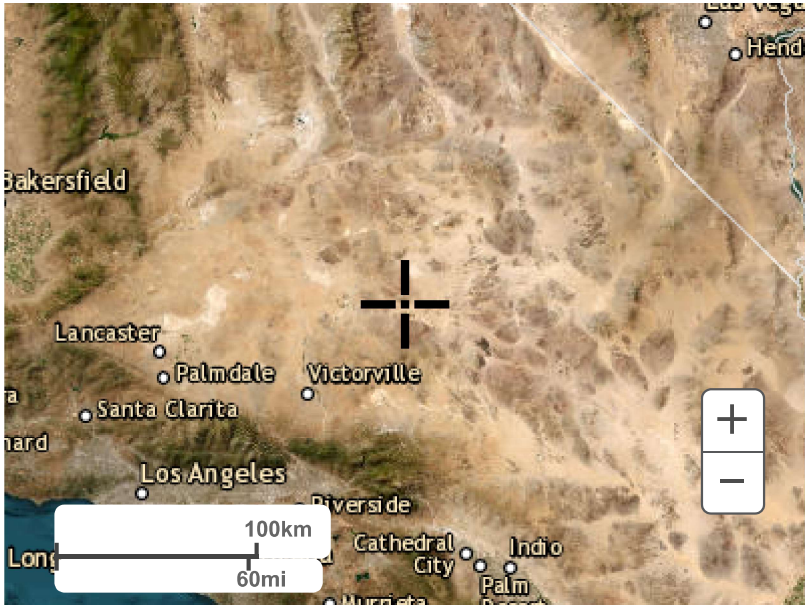


Large scale terrain



Large scale map

Large scale aerial



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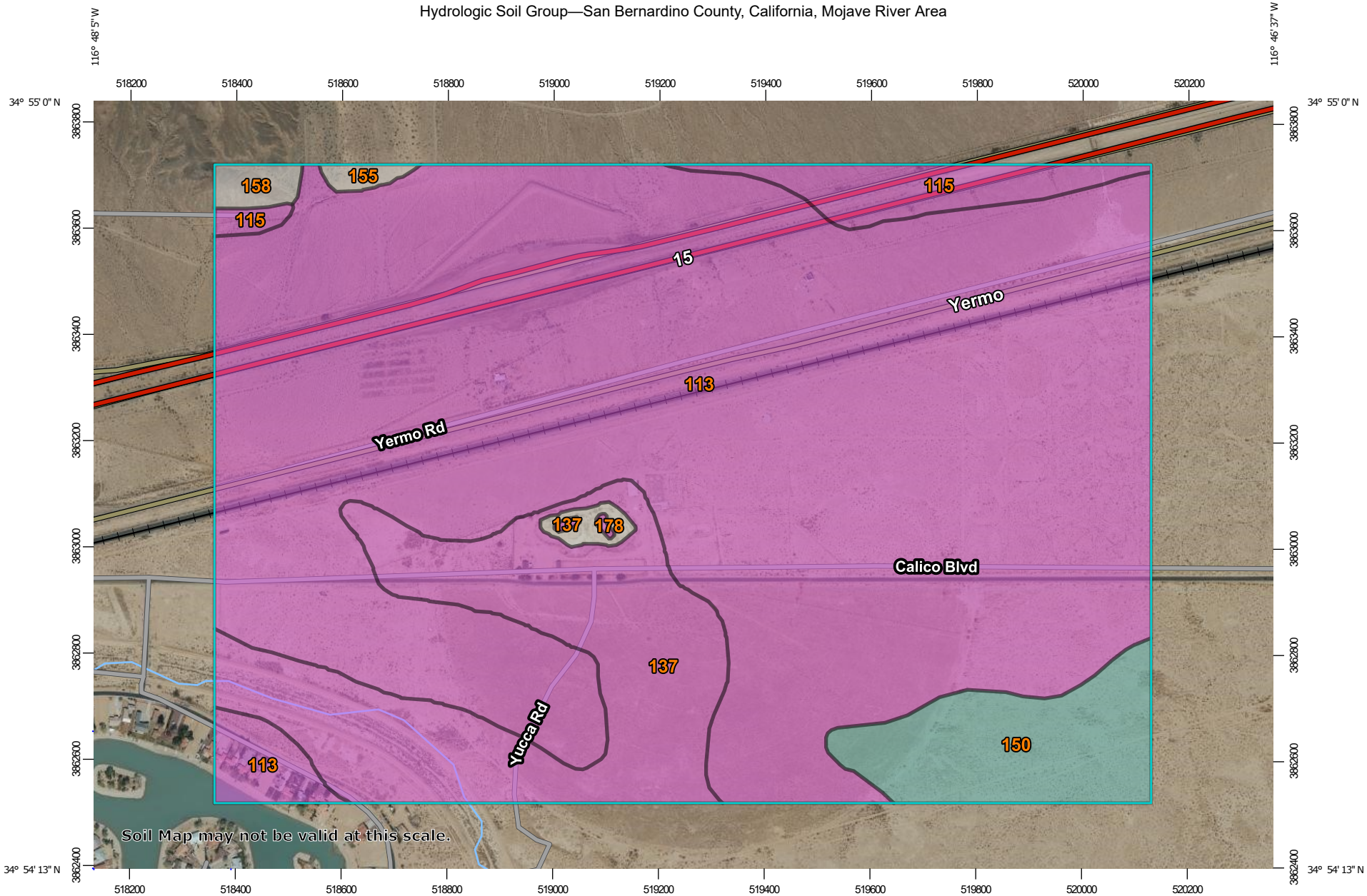
US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Appendix D

USDA NRCS NCSS Soil Report

Hydrologic Soil Group—San Bernardino County, California, Mojave River Area



Map Scale: 1:10,200 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 450 900 1800 2700

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 Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

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 15, Aug 30, 2023

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

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

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
113	CAJON SAND, 2 TO 9 PERCENT SLOPES	A	402.6	76.2%
115	CAJON GRAVELLY SAND, 2 TO 15 PERCENT SLOPES	A	15.5	2.9%
137	KIMBERLINA LOAMY FINE SAND, COOL, 0 TO 2 PERCENT SLOPES	A	73.9	14.0%
150	MOHAVE VARIANT LOAMY SAND, 0 TO 2 PERCENT SLOPES	C	29.5	5.6%
155	PITS		1.7	0.3%
158	ROCK OUTCROP-LITHIC TORRIORTHENTS COMPLEX, 15 TO 50 PERCENT SLOPES*		3.2	0.6%
178	WATER		2.2	0.4%
Totals for Area of Interest			**528.4**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Appendix E

FEMA Flood Map

NOTES TO USERS

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

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

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

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

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

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11 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.

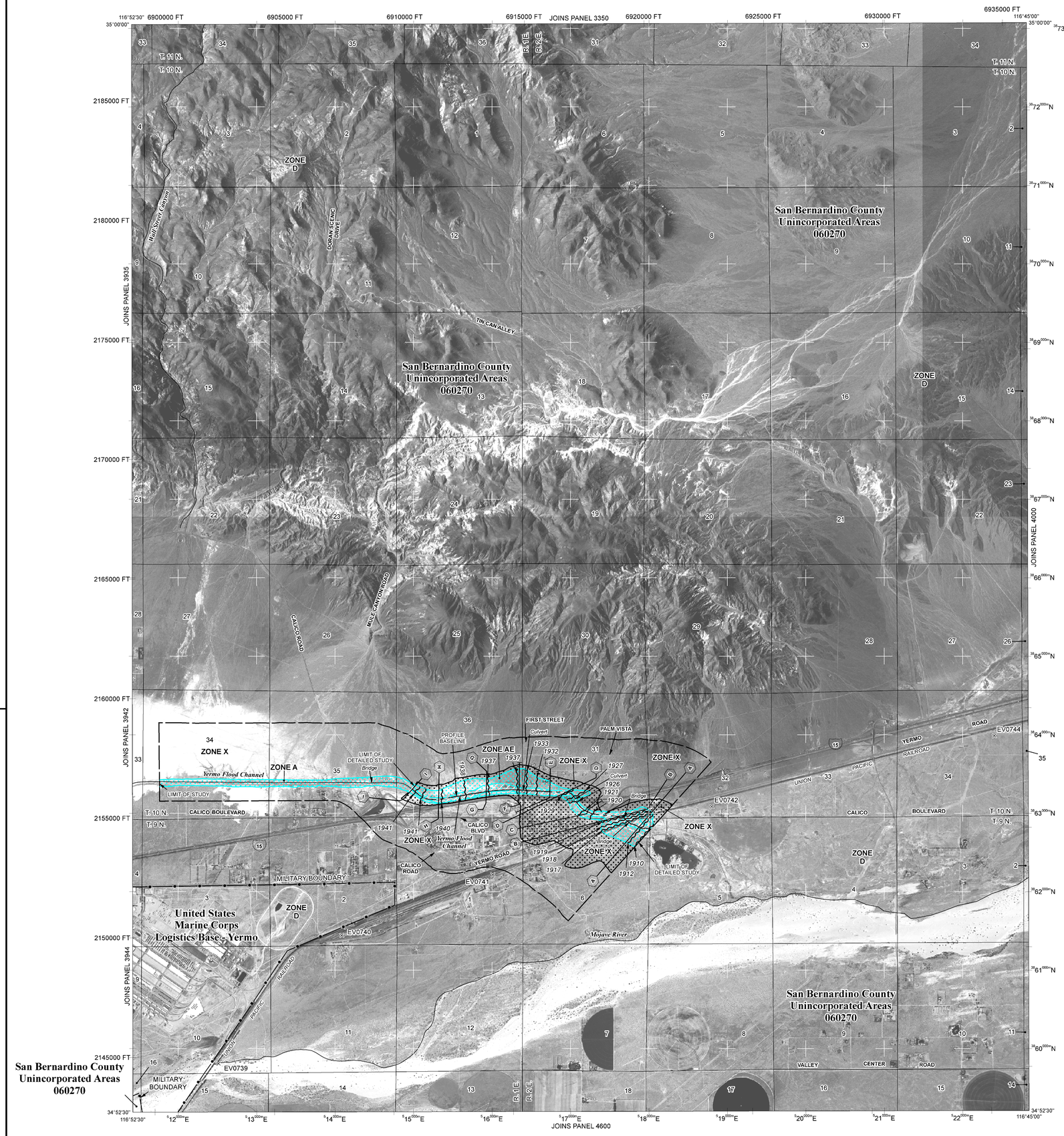
This map may reflect more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to confirm to these new stream channel configurations. As a result,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



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

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

(A)———(A)	Cross section line
(23)- - - - - -(23)	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
2976000mN	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" = 2000'

1000 0 2000 4000 FEET

600 0 600 1200 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 3975H

FIRM
FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA
AND INCORPORATED AREAS
PANEL 3975 OF 9400

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SAN BERNARDINO COUNTY	060270	3975	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
06071C3975H

MAP REVISED
AUGUST 28, 2008

Federal Emergency Management Agency