SAKE ENGINEERS, INC.

Engineering - Surveying - Land Development

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PRELIMINARY
HYDROLOGY AND HYDRAULIC REPORT

For

DRNSTY-2022-00013

BAKER TRUCK PARKING

NE CORNER OF CALTRANS AVE AND SILVER LANE

BAKER, CA 92309

SAN BERNARDINO COUNTY

APN# 0544-471-08-000

Prepared For:

RAVINDER GREWAL
18425 BURBANK BLVD, #608
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MAY 2022
Job No. 3234

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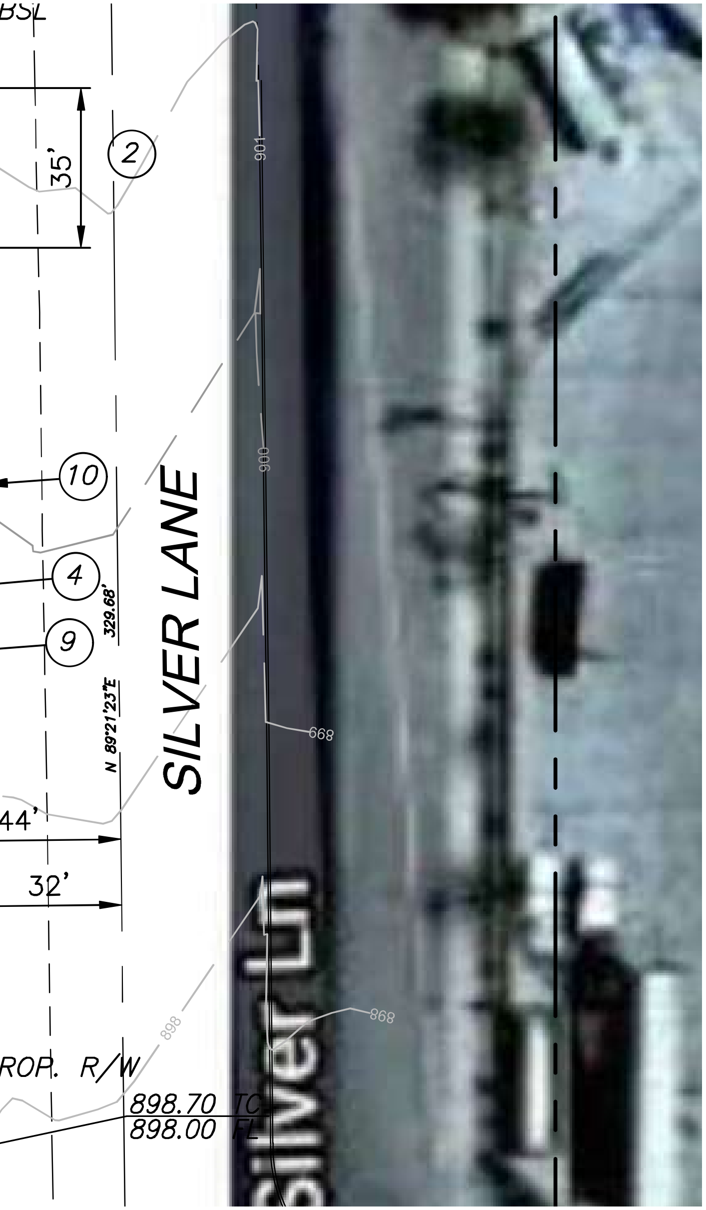

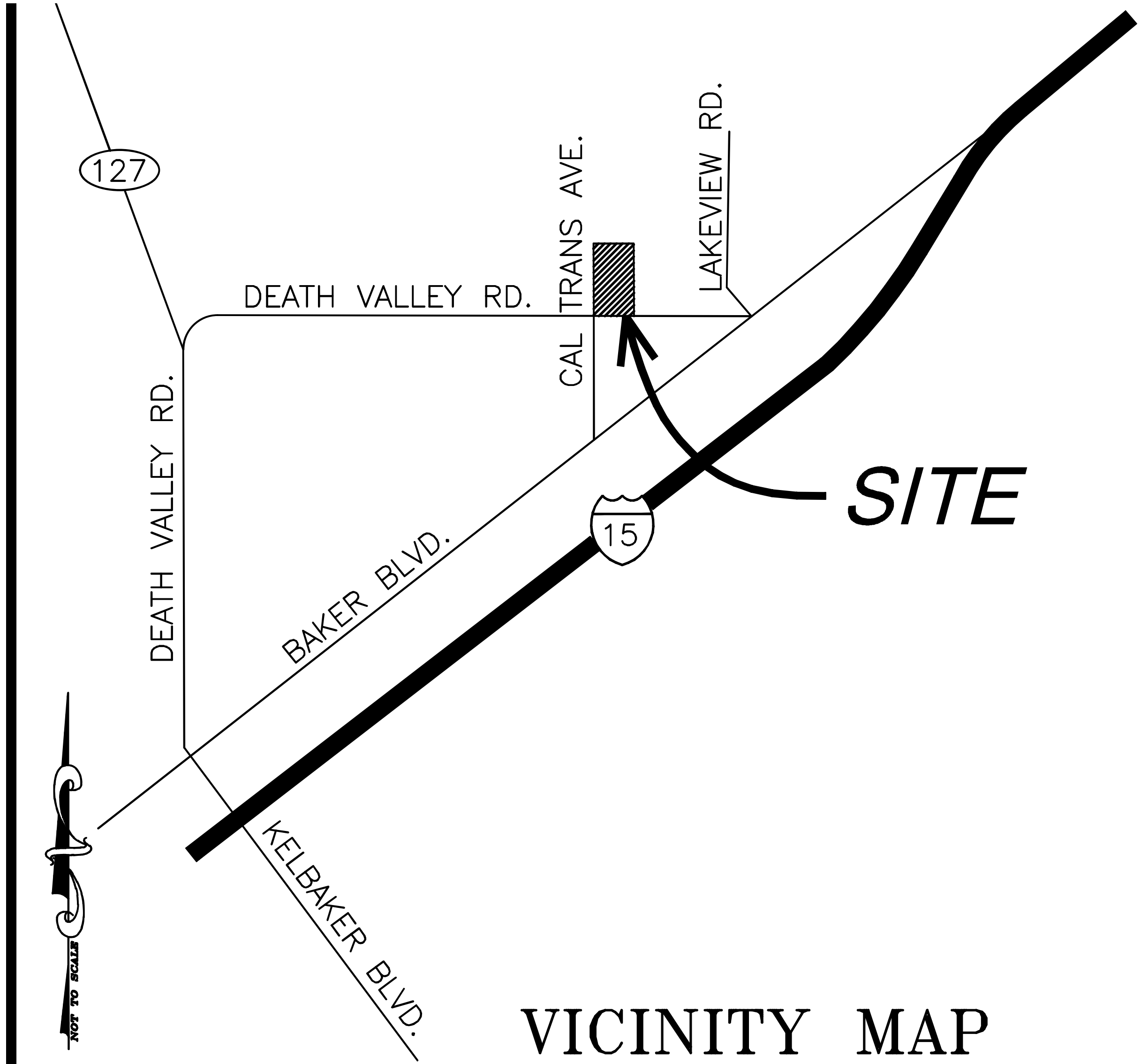

VICINITY MAP

INTRODUCTION

The purpose of this report is to document preliminary hydrology calculations for the development of the subject project, located in Baker , CA, in San Bernardino County, California. (APN 0544-471-08-0000)

The project site is 5.0 ac and located near the interchange for I-15 and State highway 127 in Baker.

San Bernardino County Flood Control District criteria as documented in Hydrology Manual dated April 1986 has been used for these calculations.

PRE-DEVELOPMENT CONDITION

Currently the site is used for vehicle impound.

The existing site is relatively flat with uniform slope of about 1% from the northeast corner to the southwest. A stockpile of soil has created a drainage divide on the northern side of the project site. For the purpose of this study, runoff from the entire site is assumed to accumulate on the southeast corner.

Using rational method hydrology calculations per County of San Bernardino Hydrology Manual, 10 yr, 25yr and 100 yr storm runoff were calculated

POST-DEVELOPMENT CONDITION

Proposed improvements include placement of Decomposed Granite (40% pervious) graded to perpetuate existing drainage pattern.

ON SITE DETENTION/RETENTION

All runoff from the project is collected at the southeast corner, where a water quality basin receives the entire 2 yr runoff or the that portion of the post development runoff above the pre development runoff.

San Bernardino County synthetic Unit Hydrograph method is used to approximate the volume of the storm runoff using Time of concentration from the rational Method calculation and setting the lag time as 0.8Tc.

2 yr Storm Volume = 0.0814 AC-FT = 3546 CF (FROM WQMP)

25 yr pre development volume = 0.519 Ac-ft
25 yr post development volume = 0.507 Ac-ft
100 yr post development volume = 0.76 Ac-ft
100 yr pre development volume = 0.80 Ac-ft

Difference = 0.04 Ac-Ft or 1,742 cf

Therefore, the basin sized for water quality has adequate capacity to control larger runoff due to the development.

SOIL

The hydrological soil group for this region of study was identified as type " A " From Hydrology Manual Soil Map

SOFTWARE

CivilCADD/CivilDesign software was used for Rational Method and Unit Hydrograph computation.

Rational Method
Pre-Development
for

10 Year Storm

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-1999 Version 6.2
Rational Hydrology Study Date: 05/03/22

Sake Consulting Engineers, inc., Corona, CA - S/N 4084

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.674 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

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

Soil classification AP and SCS values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2) = 71.00
Pervious ratio(Ap) = 0.9800 Max loss rate(Fm)= 0.507(In/Hr)
Initial subarea data:
Initial area flow distance = 381.000(Ft.)
Top (of initial area) elevation = 906.000(Ft.)
Bottom (of initial area) elevation = 902.000(Ft.)
Difference in elevation = 4.000(Ft.)
Slope = 0.01050 s(%)= 1.05
TC = k(0.516)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 13.834 min.
Rainfall intensity = 1.882(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.658
Subarea runoff = 1.114(CFS)
Total initial stream area = 0.900(Ac.)
Pervious area fraction = 0.980
Initial area Fm value = 0.507(In/Hr)

++
Process from Point/Station 1.000 to Point/Station 2.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 0.900(Ac.)
Total study area this main stream = 0.900(Ac.)
Runoff from this stream = 1.114(CFS)
Time of concentration = 13.83 min.

```
Rainfall intensity =     1.882(In/Hr)
Area averaged loss rate (Fm) =    0.5065(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9800
Program is now starting with Main Stream No. 2


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Process from Point/Station        3.000 to Point/Station        4.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 71.00
Pervious ratio(Ap) = 0.9800     Max loss rate(Fm)=     0.507(In/Hr)
Initial subarea data:
Initial area flow distance =   725.000(Ft.)
Top (of initial area) elevation =   905.000(Ft.)
Bottom (of initial area) elevation =   898.000(Ft.)
Difference in elevation =     7.000(Ft.)
Slope =    0.00966  s(%)=       0.97
TC = k(0.516)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   18.196 min.
Rainfall intensity =      1.554(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.607
Subarea runoff =      3.770(CFS)
Total initial stream area =        4.000(Ac.)
Pervious area fraction = 0.980
Initial area Fm value =    0.507(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        4.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      4.000(Ac.)
Total study area this main stream =      4.000(Ac.)
Runoff from this stream =      3.770(CFS)
Time of concentration =   18.20 min.
Rainfall intensity =     1.554(In/Hr)
Area averaged loss rate (Fm) =    0.5065(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9800
Summary of stream data:

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


1        1.114     13.83             1.882
2        3.770     18.20             1.554
Qmax(1) =
         1.000 *    1.000 *     1.114) +
         1.314 *    0.760 *     3.770) + =       4.880
Qmax(2) =
         0.761 *    1.000 *     1.114) +
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```
         1.000 *    1.000 *     3.770) + =       4.618

Total of 2 main streams to confluence:
Flow rates before confluence point:
       2.114       4.770
Maximum flow rates at confluence using above data:
        4.880        4.618
Effective Area of streams before confluence:
        0.900        4.000
Effective area values after confluence:
        3.941        4.900


Results of confluence:
Total flow rate =      4.880(CFS)
Time of concentration =    13.834 min.
Effective stream area after confluence  =      3.941(Ac.)
Stream Area average Pervious fraction(Ap) =  0.980
Stream Area average soil loss rate(Fm) =    0.507(In/Hr)
Steam effective area =       4.90(Ac.)
End of computations, Total Study Area =            4.90 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.980
Area averaged SCS curve number =  71.0
```

Rational Method
Pre-Development
for

25 Year Storm

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            San Bernardino County Rational Hydrology Program

                 (Hydrology Manual Date - August 1986)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-1999 Version 6.2
      Rational Hydrology Study        Date: 05/03/22
--------------------------------------------------------------------------

--------------------------------------------------------------------------
Sake Consulting Engineers, inc., Corona, CA     - S/N  4084
--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------
Rational hydrology study storm event year is    25.0
Computed rainfall intensity:
Storm year =    25.00   1 hour rainfall =     0.883 (In.)
Slope used for rainfall intensity curve b =  0.7000
Soil antecedent moisture condition (AMC) = 2


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Process from Point/Station        1.000 to Point/Station        2.000
**** INITIAL AREA EVALUATION ****
__________________________________________________________________________
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 71.00
Pervious ratio(Ap) = 0.9800     Max loss rate(Fm)=     0.507(In/Hr)
Initial subarea data:
Initial area flow distance =   381.000(Ft.)
Top (of initial area) elevation =   906.000(Ft.)
Bottom (of initial area) elevation =   902.000(Ft.)
Difference in elevation =     4.000(Ft.)
Slope =    0.01050  s(%)=       1.05
TC = k(0.516)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   13.834 min.
Rainfall intensity =      2.466(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.715
Subarea runoff =      1.587(CFS)
Total initial stream area =        0.900(Ac.)
Pervious area fraction = 0.980
Initial area Fm value =    0.507(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.000 to Point/Station        2.000
**** CONFLUENCE OF MAIN STREAMS ****
__________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =      0.900(Ac.)
Total study area this main stream =      0.900(Ac.)
Runoff from this stream =      1.587(CFS)
Time of concentration =   13.83 min.
```

```
Rainfall intensity =     2.466(In/Hr)
Area averaged loss rate (Fm) =    0.5065(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9800
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        4.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 71.00
Pervious ratio(Ap) = 0.9800     Max loss rate(Fm)=     0.507(In/Hr)
Initial subarea data:
Initial area flow distance =   725.000(Ft.)
Top (of initial area) elevation =   905.000(Ft.)
Bottom (of initial area) elevation =   898.000(Ft.)
Difference in elevation =     7.000(Ft.)
Slope =    0.00966  s(%)=       0.97
TC = k(0.516)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   18.196 min.
Rainfall intensity =      2.036(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.676
Subarea runoff =      5.504(CFS)
Total initial stream area =        4.000(Ac.)
Pervious area fraction = 0.980
Initial area Fm value =    0.507(In/Hr)


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Process from Point/Station        3.000 to Point/Station        4.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      4.000(Ac.)
Total study area this main stream =      4.000(Ac.)
Runoff from this stream =      5.504(CFS)
Time of concentration =   18.20 min.
Rainfall intensity =     2.036(In/Hr)
Area averaged loss rate (Fm) =    0.5065(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9800
Summary of stream data:

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


1        1.587     13.83             2.466
2        5.504     18.20             2.036
Qmax(1) =
         1.000 *    1.000 *     1.587) +
         1.282 *    0.760 *     5.504) + =       6.950
Qmax(2) =
         0.780 *    1.000 *     1.587) +
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         1.000 *    1.000 *     5.504) + =       6.743

Total of 2 main streams to confluence:
Flow rates before confluence point:
       2.587       6.504
Maximum flow rates at confluence using above data:
        6.950        6.743
Effective Area of streams before confluence:
        0.900        4.000
Effective area values after confluence:
        3.941        4.900


Results of confluence:
Total flow rate =      6.950(CFS)
Time of concentration =    13.834 min.
Effective stream area after confluence  =      3.941(Ac.)
Stream Area average Pervious fraction(Ap) =  0.980
Stream Area average soil loss rate(Fm) =    0.507(In/Hr)
Steam effective area =       4.90(Ac.)
End of computations, Total Study Area =            4.90 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.980
Area averaged SCS curve number =  71.0
```

Rational Method
Pre-Development
for

100 Year Storm

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            San Bernardino County Rational Hydrology Program

                 (Hydrology Manual Date - August 1986)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-1999 Version 6.2
      Rational Hydrology Study        Date: 05/03/22
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--------------------------------------------------------------------------
Sake Consulting Engineers, inc., Corona, CA     - S/N  4084
--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------
Rational hydrology study storm event year is   100.0
Computed rainfall intensity:
Storm year =   100.00   1 hour rainfall =     1.200 (In.)
Slope used for rainfall intensity curve b =  0.7000
Soil antecedent moisture condition (AMC) = 3


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Process from Point/Station        1.000 to Point/Station        2.000
**** INITIAL AREA EVALUATION ****
__________________________________________________________________________
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 71.00
Adjusted SCS curve number for AMC 3 = 87.80
Pervious ratio(Ap) = 0.9800     Max loss rate(Fm)=     0.228(In/Hr)
Initial subarea data:
Initial area flow distance =   381.000(Ft.)
Top (of initial area) elevation =   906.000(Ft.)
Bottom (of initial area) elevation =   902.000(Ft.)
Difference in elevation =     4.000(Ft.)
Slope =    0.01050  s(%)=       1.05
TC = k(0.516)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   13.834 min.
Rainfall intensity =      3.351(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.839
Subarea runoff =      2.530(CFS)
Total initial stream area =        0.900(Ac.)
Pervious area fraction = 0.980
Initial area Fm value =    0.228(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.000 to Point/Station        2.000
**** CONFLUENCE OF MAIN STREAMS ****
__________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =      0.900(Ac.)
Total study area this main stream =      0.900(Ac.)
Runoff from this stream =      2.530(CFS)
```

```
Time of concentration =   13.83 min.
Rainfall intensity =     3.351(In/Hr)
Area averaged loss rate (Fm) =    0.2280(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9800
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        4.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 71.00
Adjusted SCS curve number for AMC 3 = 87.80
Pervious ratio(Ap) = 0.9800     Max loss rate(Fm)=     0.228(In/Hr)
Initial subarea data:
Initial area flow distance =   725.000(Ft.)
Top (of initial area) elevation =   905.000(Ft.)
Bottom (of initial area) elevation =   898.000(Ft.)
Difference in elevation =     7.000(Ft.)
Slope =    0.00966  s(%)=       0.97
TC = k(0.516)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   18.196 min.
Rainfall intensity =      2.766(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.826
Subarea runoff =      9.138(CFS)
Total initial stream area =        4.000(Ac.)
Pervious area fraction = 0.980
Initial area Fm value =    0.228(In/Hr)


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Process from Point/Station        3.000 to Point/Station        4.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      4.000(Ac.)
Total study area this main stream =      4.000(Ac.)
Runoff from this stream =      9.138(CFS)
Time of concentration =   18.20 min.
Rainfall intensity =     2.766(In/Hr)
Area averaged loss rate (Fm) =    0.2280(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9800
Summary of stream data:

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


1        2.530     13.83             3.351
2        9.138     18.20             2.766
Qmax(1) =
         1.000 *    1.000 *     2.530) +
         1.231 *    0.760 *     9.138) + =      11.079
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```
Qmax(2) =
         0.813 *    1.000 *     2.530) +
         1.000 *    1.000 *     9.138) + =      11.194

Total of 2 main streams to confluence:
Flow rates before confluence point:
       3.530      10.138
Maximum flow rates at confluence using above data:
       11.079       11.194
Effective Area of streams before confluence:
        0.900        4.000
Effective area values after confluence:
        3.941        4.900


Results of confluence:
Total flow rate =     11.194(CFS)
Time of concentration =    18.196 min.
Effective stream area after confluence  =      4.900(Ac.)
Stream Area average Pervious fraction(Ap) =  0.980
Stream Area average soil loss rate(Fm) =    0.228(In/Hr)
Steam effective area =       4.90(Ac.)
End of computations, Total Study Area =            4.90 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.980
Area averaged SCS curve number =  71.0
```

Rational Method

Post-Development
for

10 Year Storm

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            San Bernardino County Rational Hydrology Program

                 (Hydrology Manual Date - August 1986)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-1999 Version 6.2
      Rational Hydrology Study        Date: 05/03/22
--------------------------------------------------------------------------



--------------------------------------------------------------------------
Sake Consulting Engineers, inc., Corona, CA     - S/N  4084
--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------
Rational hydrology study storm event year is    10.0
Computed rainfall intensity:
Storm year =    10.00   1 hour rainfall =     0.674 (In.)
Slope used for rainfall intensity curve b =  0.7000
Soil antecedent moisture condition (AMC) = 2


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Process from Point/Station        1.000 to Point/Station        2.000
**** INITIAL AREA EVALUATION ****
__________________________________________________________________________
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.4000     Max loss rate(Fm)=     0.391(In/Hr)
Initial subarea data:
Initial area flow distance =   850.000(Ft.)
Top (of initial area) elevation =   906.000(Ft.)
Bottom (of initial area) elevation =   898.000(Ft.)
Difference in elevation =     8.000(Ft.)
Slope =    0.00941  s(%)=       0.94
TC = k(0.373)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   14.090 min.
Rainfall intensity =      1.858(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.711
Subarea runoff =      6.471(CFS)
Total initial stream area =        4.900(Ac.)
Pervious area fraction = 0.400
Initial area Fm value =    0.391(In/Hr)
End of computations, Total Study Area =            4.90 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.400
Area averaged SCS curve number =  32.0
```

Rational Method
Post-Development
for

25 Year Storm

```
            San Bernardino County Rational Hydrology Program

                 (Hydrology Manual Date - August 1986)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-1999 Version 6.2
      Rational Hydrology Study        Date: 05/03/22
--------------------------------------------------------------------------
--------------------------------------------------------------------------
Sake Consulting Engineers, inc., Corona, CA     - S/N  4084
--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------
Rational hydrology study storm event year is    25.0
Computed rainfall intensity:
Storm year =    25.00   1 hour rainfall =     0.883 (In.)
Slope used for rainfall intensity curve b =  0.7000
Soil antecedent moisture condition (AMC) = 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.000 to Point/Station        2.000
**** INITIAL AREA EVALUATION ****
__________________________________________________________________________
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.4000     Max loss rate(Fm)=     0.391(In/Hr)
Initial subarea data:
Initial area flow distance =   850.000(Ft.)
Top (of initial area) elevation =   906.000(Ft.)
Bottom (of initial area) elevation =   898.000(Ft.)
Difference in elevation =     8.000(Ft.)
Slope =    0.00941  s(%)=       0.94
TC = k(0.373)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   14.090 min.
Rainfall intensity =      2.435(In/Hr) for a    25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.755
Subarea runoff =      9.012(CFS)
Total initial stream area =        4.900(Ac.)
Pervious area fraction = 0.400
Initial area Fm value =    0.391(In/Hr)
End of computations, Total Study Area =            4.90 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.400
Area averaged SCS curve number =  32.0
```

Rational Method
Post-Development
for

100 Year Storm

```
            San Bernardino County Rational Hydrology Program

                 (Hydrology Manual Date - August 1986)

 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-1999 Version 6.2
      Rational Hydrology Study        Date: 05/03/22
--------------------------------------------------------------------------

--------------------------------------------------------------------------
Sake Consulting Engineers, inc., Corona, CA     - S/N  4084
--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

--------------------------------------------------------------------------
Rational hydrology study storm event year is   100.0
Computed rainfall intensity:
Storm year =   100.00   1 hour rainfall =     1.200 (In.)
Slope used for rainfall intensity curve b =  0.7000
Soil antecedent moisture condition (AMC) = 3


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Process from Point/Station        1.000 to Point/Station        2.000
**** INITIAL AREA EVALUATION ****
__________________________________________________________________________
Soil classification AP and SCS  values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2)  = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.4000     Max loss rate(Fm)=     0.314(In/Hr)
Initial subarea data:
Initial area flow distance =   850.000(Ft.)
Top (of initial area) elevation =   906.000(Ft.)
Bottom (of initial area) elevation =   898.000(Ft.)
Difference in elevation =     8.000(Ft.)
Slope =    0.00941  s(%)=       0.94
TC = k(0.373)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   14.090 min.
Rainfall intensity =      3.309(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.815
Subarea runoff =     13.206(CFS)
Total initial stream area =        4.900(Ac.)
Pervious area fraction = 0.400
Initial area Fm value =    0.314(In/Hr)
End of computations, Total Study Area =            4.90 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.400
Area averaged SCS curve number =  32.0
```

Unit Hydrograph
Pre-Development
for

25 Year Storm

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

Study date 05/03/22

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

Sake Consulting Engineers, inc. Corona, CA - S/N 4084

Storm Event Year = 25

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 25		
4.90	1	0.88
Rainfall data for year 25		
4.90	6	1.20
Rainfall data for year 25		
4.90	24	2.07

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
71.0	87.8	4.90	1.000	0.233	0.980	0.228

Area-averaged adjusted loss rate Fm (In/Hr) = 0.228

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
4.80	0.980	71.0	87.8	1.39	0.488
0.10	0.020	98.0	98.0	0.20	0.891

Area-averaged catchment yield fraction, Y = 0.496
Area-averaged low loss fraction, Yb = 0.504
Direct entry of lag time by user
++
Watershed area = 4.90(Ac.)
Catchment Lag time = 0.242 hours
Unit interval = 15.000 minutes
Unit interval percentage of lag time = 103.0928
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.228(In/Hr)
Average low loss rate fraction (Yb) = 0.504 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.419(In)
Computed peak 30-minute rainfall = 0.717(In)
Specified peak 1-hour rainfall = 0.883(In)
Computed peak 3-hour rainfall = 1.066(In)
Specified peak 6-hour rainfall = 1.200(In)
Specified peak 24-hour rainfall = 2.070(In)

Rainfall depth area reduction factors:
Using a total area of 4.90(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.419(In)
30-minute factor = 1.000 Adjusted rainfall = 0.717(In)
1-hour factor = 1.000 Adjusted rainfall = 0.883(In)
3-hour factor = 1.000 Adjusted rainfall = 1.066(In)
6-hour factor = 1.000 Adjusted rainfall = 1.200(In)
24-hour factor = 1.000 Adjusted rainfall = 2.070(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K = 19.75 (CFS))		
1	18.207	3.596
2	81.160	12.435
3	98.171	3.360
4	100.000	0.361

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5824	0.0667
2	0.7171	0.0382
3	0.8098	0.0281
4	0.8828	0.0227

5	0.9172	0.0108
6	0.9463	0.0092
7	0.9717	0.0081
8	0.9942	0.0072
9	1.0144	0.0065
10	1.0329	0.0060
11	1.0499	0.0055
12	1.0657	0.0051
13	1.0804	0.0048
14	1.0942	0.0045
15	1.1072	0.0043
16	1.1195	0.0040
17	1.1312	0.0038
18	1.1423	0.0037
19	1.1529	0.0035
20	1.1631	0.0033
21	1.1729	0.0032
22	1.1822	0.0031
23	1.1913	0.0030
24	1.2000	0.0029
25	1.2194	0.0064
26	1.2384	0.0063
27	1.2569	0.0061
28	1.2750	0.0060
29	1.2927	0.0059
30	1.3101	0.0057
31	1.3271	0.0056
32	1.3437	0.0055
33	1.3601	0.0054
34	1.3762	0.0053
35	1.3919	0.0052
36	1.4074	0.0051
37	1.4227	0.0051
38	1.4377	0.0050
39	1.4525	0.0049
40	1.4670	0.0048
41	1.4813	0.0047
42	1.4954	0.0047
43	1.5093	0.0046
44	1.5230	0.0045
45	1.5366	0.0045
46	1.5499	0.0044
47	1.5631	0.0044
48	1.5761	0.0043
49	1.5889	0.0043
50	1.6016	0.0042
51	1.6141	0.0042
52	1.6265	0.0041
53	1.6387	0.0041
54	1.6508	0.0040
55	1.6627	0.0040
56	1.6746	0.0039
57	1.6863	0.0039
58	1.6978	0.0038
59	1.7093	0.0038
60	1.7206	0.0038

61	1.7318	0.0037
62	1.7430	0.0037
63	1.7540	0.0037
64	1.7649	0.0036
65	1.7757	0.0036
66	1.7863	0.0036
67	1.7969	0.0035
68	1.8074	0.0035
69	1.8179	0.0035
70	1.8282	0.0034
71	1.8384	0.0034
72	1.8485	0.0034
73	1.8586	0.0033
74	1.8686	0.0033
75	1.8785	0.0033
76	1.8883	0.0033
77	1.8980	0.0032
78	1.9077	0.0032
79	1.9172	0.0032
80	1.9267	0.0032
81	1.9362	0.0031
82	1.9456	0.0031
83	1.9549	0.0031
84	1.9641	0.0031
85	1.9732	0.0030
86	1.9823	0.0030
87	1.9914	0.0030
88	2.0003	0.0030
89	2.0093	0.0030
90	2.0181	0.0029
91	2.0269	0.0029
92	2.0356	0.0029
93	2.0443	0.0029
94	2.0529	0.0029
95	2.0615	0.0028
96	2.0700	0.0028

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0085	0.0043	0.0042
2	0.0086	0.0043	0.0043
3	0.0087	0.0044	0.0043
4	0.0088	0.0044	0.0043
5	0.0089	0.0045	0.0044
6	0.0089	0.0045	0.0044
7	0.0090	0.0046	0.0045
8	0.0091	0.0046	0.0045
9	0.0092	0.0047	0.0046
10	0.0093	0.0047	0.0046
11	0.0094	0.0048	0.0047
12	0.0095	0.0048	0.0047
13	0.0097	0.0049	0.0048
14	0.0098	0.0049	0.0048
15	0.0099	0.0050	0.0049

16	0.0100	0.0051	0.0050
17	0.0102	0.0051	0.0050
18	0.0103	0.0052	0.0051
19	0.0104	0.0053	0.0052
20	0.0106	0.0053	0.0052
21	0.0107	0.0054	0.0053
22	0.0109	0.0055	0.0054
23	0.0110	0.0056	0.0055
24	0.0112	0.0056	0.0055
25	0.0113	0.0057	0.0056
26	0.0115	0.0058	0.0057
27	0.0117	0.0059	0.0058
28	0.0119	0.0060	0.0059
29	0.0121	0.0061	0.0060
30	0.0123	0.0062	0.0061
31	0.0125	0.0063	0.0062
32	0.0128	0.0064	0.0063
33	0.0130	0.0066	0.0065
34	0.0133	0.0067	0.0066
35	0.0135	0.0068	0.0067
36	0.0138	0.0070	0.0068
37	0.0141	0.0071	0.0070
38	0.0144	0.0073	0.0072
39	0.0148	0.0075	0.0073
40	0.0151	0.0076	0.0075
41	0.0155	0.0078	0.0077
42	0.0159	0.0080	0.0079
43	0.0164	0.0083	0.0081
44	0.0169	0.0085	0.0084
45	0.0174	0.0088	0.0086
46	0.0179	0.0090	0.0089
47	0.0186	0.0094	0.0092
48	0.0192	0.0097	0.0095
49	0.0087	0.0044	0.0043
50	0.0092	0.0047	0.0046
51	0.0098	0.0049	0.0049
52	0.0104	0.0053	0.0052
53	0.0112	0.0056	0.0055
54	0.0120	0.0061	0.0060
55	0.0131	0.0066	0.0065
56	0.0143	0.0072	0.0071
57	0.0159	0.0080	0.0079
58	0.0178	0.0090	0.0088
59	0.0205	0.0103	0.0102
60	0.0240	0.0121	0.0119
61	0.0297	0.0150	0.0147
62	0.0584	0.0295	0.0290
63	0.0970	0.0489	0.0481
64	0.2075	0.0570	0.1505
65	0.5053	0.0570	0.4483
66	0.0484	0.0244	0.0240
67	0.0236	0.0119	0.0117
68	0.0175	0.0088	0.0087
69	0.0141	0.0071	0.0070
70	0.0119	0.0060	0.0059
71	0.0103	0.0052	0.0051

72	0.0092	0.0046	0.0045
73	0.0191	0.0096	0.0095
74	0.0179	0.0090	0.0088
75	0.0168	0.0085	0.0083
76	0.0159	0.0080	0.0079
77	0.0151	0.0076	0.0075
78	0.0144	0.0073	0.0071
79	0.0138	0.0069	0.0068
80	0.0132	0.0067	0.0066
81	0.0127	0.0064	0.0063
82	0.0123	0.0062	0.0061
83	0.0119	0.0060	0.0059
84	0.0115	0.0058	0.0057
85	0.0111	0.0056	0.0055
86	0.0108	0.0055	0.0054
87	0.0105	0.0053	0.0052
88	0.0103	0.0052	0.0051
89	0.0100	0.0050	0.0050
90	0.0098	0.0049	0.0048
91	0.0095	0.0048	0.0047
92	0.0093	0.0047	0.0046
93	0.0091	0.0046	0.0045
94	0.0089	0.0045	0.0044
95	0.0088	0.0044	0.0043
96	0.0086	0.0043	0.0043

Total soil rain loss = 0.80(In)
Total effective rainfall = 1.27(In)
Peak flow rate in flood hydrograph = 6.18(CFS)

++

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

Hydrograph in 15 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+15	0.0003	0.02	Q	|	|	|	|
0+30	0.0017	0.07	Q	|	|	|	|
0+45	0.0034	0.08	Q	|	|	|	|
1+ 0	0.0052	0.08	Q	|	|	|	|
1+15	0.0069	0.09	Q	|	|	|	|
1+30	0.0087	0.09	Q	|	|	|	|
1+45	0.0106	0.09	Q	|	|	|	|
2+ 0	0.0124	0.09	Q	|	|	|	|
2+15	0.0142	0.09	QV	|	|	|	|
2+30	0.0161	0.09	QV	|	|	|	|
2+45	0.0180	0.09	QV	|	|	|	|
3+ 0	0.0199	0.09	QV	|	|	|	|
3+15	0.0218	0.09	QV	|	|	|	|
3+30	0.0238	0.09	QV	|	|	|	|
3+45	0.0258	0.10	QV	|	|	|	|
4+ 0	0.0278	0.10	Q V	|	|	|	|

```
 4+15       0.0298      0.10  Q V       |         |         |         |
 4+30       0.0318      0.10  Q V       |         |         |         |
 4+45       0.0339      0.10  Q V       |         |         |         |
 5+ 0       0.0360      0.10  Q V       |         |         |         |
 5+15       0.0382      0.10  Q V       |         |         |         |
 5+30       0.0403      0.10  Q  V      |         |         |         |
 5+45       0.0425      0.11  Q  V      |         |         |         |
 6+ 0       0.0447      0.11  Q  V      |         |         |         |
 6+15       0.0470      0.11  Q  V      |         |         |         |
 6+30       0.0493      0.11  Q  V      |         |         |         |
 6+45       0.0516      0.11  Q  V      |         |         |         |
 7+ 0       0.0540      0.11  Q   V     |         |         |         |
 7+15       0.0564      0.12  Q   V     |         |         |         |
 7+30       0.0589      0.12  Q   V     |         |         |         |
 7+45       0.0613      0.12  Q   V     |         |         |         |
 8+ 0       0.0639      0.12  Q   V     |         |         |         |
 8+15       0.0665      0.12  Q    V    |         |         |         |
 8+30       0.0691      0.13  Q    V    |         |         |         |
 8+45       0.0718      0.13  Q    V    |         |         |         |
 9+ 0       0.0745      0.13  Q    V    |         |         |         |
 9+15       0.0773      0.14  Q    V    |         |         |         |
 9+30       0.0802      0.14  Q     V   |         |         |         |
 9+45       0.0831      0.14  Q     V   |         |         |         |
10+ 0       0.0861      0.14  Q     V   |         |         |         |
10+15       0.0891      0.15  Q     V   |         |         |         |
10+30       0.0923      0.15  Q      V  |         |         |         |
10+45       0.0955      0.16  Q      V  |         |         |         |
11+ 0       0.0988      0.16  Q      V  |         |         |         |
11+15       0.1022      0.17  Q      V  |         |         |         |
11+30       0.1058      0.17  Q       V |         |         |         |
11+45       0.1094      0.18  Q       V |         |         |         |
12+ 0       0.1131      0.18  Q       V |         |         |         |
12+15       0.1166      0.17  Q       V |         |         |         |
12+30       0.1188      0.11  Q        V|         |         |         |
12+45       0.1207      0.09  Q        V|         |         |         |
13+ 0       0.1227      0.10  Q        V|         |         |         |
13+15       0.1248      0.10  Q        V|         |         |         |
13+30       0.1271      0.11  Q        V|         |         |         |
13+45       0.1295      0.12  Q        V|         |         |         |
14+ 0       0.1321      0.13  Q         V         |         |         |
14+15       0.1350      0.14  Q         V         |         |         |
14+30       0.1383      0.16  Q         V         |         |         |
14+45       0.1419      0.18  Q         V         |         |         |
15+ 0       0.1461      0.20  Q         |V        |         |         |
15+15       0.1510      0.24  Q         |V        |         |         |
15+30       0.1578      0.33  |Q        | V       |         |         |
15+45       0.1699      0.59  | Q       |  V      |         |         |
16+ 0       0.1956      1.24  |   Q     |    V    |         |         |
16+15       0.2711      3.66  |         |   Q     V         |         |
16+30       0.3989      6.18  |         |         |   Q     V         |
16+45       0.4382      1.90  |      Q  |         |         |  V      |
17+ 0       0.4469      0.42  |Q        |         |         |   V     |
17+15       0.4506      0.18  Q         |         |         |   V     |
17+30       0.4535      0.14  Q         |         |         |   V     |
17+45       0.4560      0.12  Q         |         |         |    V    |
18+ 0       0.4581      0.10  Q         |         |         |    V    |
```

```
   18+15       0.4604      0.11  Q          |           |           |    V     |
   18+30       0.4638      0.17  Q          |           |           |    V     |
   18+45       0.4674      0.17  Q          |           |           |     V    |
   19+ 0       0.4708      0.16  Q          |           |           |     V    |
   19+15       0.4740      0.16  Q          |           |           |     V    |
   19+30       0.4771      0.15  Q          |           |           |     V    |
   19+45       0.4800      0.14  Q          |           |           |     V    |
   20+ 0       0.4828      0.14  Q          |           |           |      V   |
   20+15       0.4855      0.13  Q          |           |           |      V   |
   20+30       0.4880      0.12  Q          |           |           |      V   |
   20+45       0.4905      0.12  Q          |           |           |      V   |
   21+ 0       0.4929      0.12  Q          |           |           |      V   |
   21+15       0.4953      0.11  Q          |           |           |       V  |
   21+30       0.4975      0.11  Q          |           |           |       V  |
   21+45       0.4997      0.11  Q          |           |           |       V  |
   22+ 0       0.5019      0.10  Q          |           |           |       V  |
   22+15       0.5039      0.10  Q          |           |           |       V  |
   22+30       0.5060      0.10  Q          |           |           |       V  |
   22+45       0.5079      0.10  Q          |           |           |        V |
   23+ 0       0.5099      0.09  Q          |           |           |        V |
   23+15       0.5117      0.09  Q          |           |           |        V |
   23+30       0.5136      0.09  Q          |           |           |        V |
   23+45       0.5154      0.09  Q          |           |           |        V |
   24+ 0       0.5172      0.09  Q          |           |           |        V |
   24+15       0.5186      0.07  Q          |           |           |        V |
   24+30       0.5189      0.02  Q          |           |           |        V |
   24+45       0.5190      0.00  Q          |           |           |         V
-------------------------------------------------------------------------------
```

Unit Hydrograph
Pre-Development
for

100 Year Storm

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

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 1999, Version 6.0

Study date 05/03/22

++

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

Sake Consulting Engineers, inc. Corona, CA - S/N 4084

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
4.90	1	1.20
Rainfall data for year 100		
4.90	6	1.67
Rainfall data for year 100		
4.90	24	2.84

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
71.0	87.8	4.90	1.000	0.233	0.980	0.228

Area-averaged adjusted loss rate Fm (In/Hr) = 0.228

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
4.80	0.980	71.0	87.8	1.39	0.585
0.10	0.020	98.0	98.0	0.20	0.919

Area-averaged catchment yield fraction, Y = 0.592
Area-averaged low loss fraction, Yb = 0.408
Direct entry of lag time by user
++
Watershed area = 4.90(Ac.)
Catchment Lag time = 0.242 hours
Unit interval = 15.000 minutes
Unit interval percentage of lag time = 103.0928
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.228(In/Hr)
Average low loss rate fraction (Yb) = 0.408 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.569(In)
Computed peak 30-minute rainfall = 0.975(In)
Specified peak 1-hour rainfall = 1.200(In)
Computed peak 3-hour rainfall = 1.470(In)
Specified peak 6-hour rainfall = 1.670(In)
Specified peak 24-hour rainfall = 2.840(In)

Rainfall depth area reduction factors:
Using a total area of 4.90(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.569(In)
30-minute factor = 1.000 Adjusted rainfall = 0.974(In)
1-hour factor = 1.000 Adjusted rainfall = 1.200(In)
3-hour factor = 1.000 Adjusted rainfall = 1.470(In)
6-hour factor = 1.000 Adjusted rainfall = 1.670(In)
24-hour factor = 1.000 Adjusted rainfall = 2.840(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K = 19.75 (CFS))		
1	18.207	3.596
2	81.160	12.435
3	98.171	3.360
4	100.000	0.361

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.7915	0.0907
2	0.9745	0.0519
3	1.1005	0.0382
4	1.1997	0.0309

5	1.2502	0.0158
6	1.2930	0.0136
7	1.3303	0.0119
8	1.3635	0.0107
9	1.3935	0.0097
10	1.4209	0.0089
11	1.4461	0.0082
12	1.4695	0.0076
13	1.4914	0.0071
14	1.5119	0.0067
15	1.5313	0.0063
16	1.5496	0.0060
17	1.5670	0.0057
18	1.5837	0.0055
19	1.5995	0.0052
20	1.6147	0.0050
21	1.6293	0.0048
22	1.6434	0.0046
23	1.6569	0.0045
24	1.6700	0.0043
25	1.6963	0.0087
26	1.7220	0.0085
27	1.7470	0.0083
28	1.7715	0.0081
29	1.7955	0.0079
30	1.8190	0.0078
31	1.8420	0.0076
32	1.8645	0.0075
33	1.8866	0.0073
34	1.9083	0.0072
35	1.9296	0.0071
36	1.9506	0.0069
37	1.9711	0.0068
38	1.9914	0.0067
39	2.0113	0.0066
40	2.0309	0.0065
41	2.0502	0.0064
42	2.0692	0.0063
43	2.0879	0.0062
44	2.1064	0.0061
45	2.1246	0.0060
46	2.1426	0.0060
47	2.1603	0.0059
48	2.1778	0.0058
49	2.1950	0.0057
50	2.2121	0.0057
51	2.2289	0.0056
52	2.2456	0.0055
53	2.2620	0.0055
54	2.2783	0.0054
55	2.2943	0.0053
56	2.3102	0.0053
57	2.3259	0.0052
58	2.3415	0.0052
59	2.3569	0.0051
60	2.3721	0.0051

61	2.3872	0.0050
62	2.4021	0.0050
63	2.4168	0.0049
64	2.4315	0.0049
65	2.4459	0.0048
66	2.4603	0.0048
67	2.4745	0.0047
68	2.4886	0.0047
69	2.5025	0.0046
70	2.5164	0.0046
71	2.5301	0.0046
72	2.5437	0.0045
73	2.5571	0.0045
74	2.5705	0.0044
75	2.5838	0.0044
76	2.5969	0.0044
77	2.6099	0.0043
78	2.6229	0.0043
79	2.6357	0.0043
80	2.6484	0.0042
81	2.6611	0.0042
82	2.6736	0.0042
83	2.6860	0.0041
84	2.6984	0.0041
85	2.7106	0.0041
86	2.7228	0.0040
87	2.7349	0.0040
88	2.7469	0.0040
89	2.7588	0.0040
90	2.7706	0.0039
91	2.7824	0.0039
92	2.7941	0.0039
93	2.8057	0.0039
94	2.8172	0.0038
95	2.8286	0.0038
96	2.8400	0.0038

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0114	0.0046	0.0067
2	0.0115	0.0047	0.0068
3	0.0116	0.0047	0.0069
4	0.0117	0.0048	0.0069
5	0.0118	0.0048	0.0070
6	0.0120	0.0049	0.0071
7	0.0121	0.0049	0.0072
8	0.0122	0.0050	0.0072
9	0.0124	0.0050	0.0073
10	0.0125	0.0051	0.0074
11	0.0126	0.0052	0.0075
12	0.0128	0.0052	0.0076
13	0.0129	0.0053	0.0077
14	0.0131	0.0053	0.0077
15	0.0133	0.0054	0.0078

16	0.0134	0.0055	0.0079
17	0.0136	0.0056	0.0080
18	0.0138	0.0056	0.0081
19	0.0140	0.0057	0.0083
20	0.0142	0.0058	0.0084
21	0.0144	0.0059	0.0085
22	0.0146	0.0059	0.0086
23	0.0148	0.0060	0.0087
24	0.0150	0.0061	0.0089
25	0.0152	0.0062	0.0090
26	0.0155	0.0063	0.0092
27	0.0157	0.0064	0.0093
28	0.0160	0.0065	0.0095
29	0.0163	0.0066	0.0096
30	0.0166	0.0068	0.0098
31	0.0169	0.0069	0.0100
32	0.0172	0.0070	0.0102
33	0.0175	0.0072	0.0104
34	0.0179	0.0073	0.0106
35	0.0182	0.0074	0.0108
36	0.0186	0.0076	0.0110
37	0.0190	0.0078	0.0113
38	0.0195	0.0079	0.0115
39	0.0199	0.0081	0.0118
40	0.0204	0.0083	0.0121
41	0.0210	0.0086	0.0124
42	0.0215	0.0088	0.0127
43	0.0222	0.0090	0.0131
44	0.0228	0.0093	0.0135
45	0.0235	0.0096	0.0139
46	0.0243	0.0099	0.0144
47	0.0251	0.0103	0.0149
48	0.0260	0.0106	0.0154
49	0.0131	0.0054	0.0078
50	0.0138	0.0056	0.0082
51	0.0147	0.0060	0.0087
52	0.0156	0.0064	0.0092
53	0.0167	0.0068	0.0099
54	0.0179	0.0073	0.0106
55	0.0195	0.0080	0.0115
56	0.0213	0.0087	0.0126
57	0.0236	0.0096	0.0140
58	0.0264	0.0108	0.0156
59	0.0303	0.0124	0.0179
60	0.0354	0.0145	0.0210
61	0.0436	0.0178	0.0258
62	0.0806	0.0329	0.0477
63	0.1318	0.0538	0.0780
64	0.2820	0.0570	0.2250
65	0.6868	0.0570	0.6298
66	0.0682	0.0278	0.0403
67	0.0348	0.0142	0.0206
68	0.0260	0.0106	0.0154
69	0.0210	0.0086	0.0124
70	0.0178	0.0072	0.0105
71	0.0154	0.0063	0.0091

72	0.0137	0.0056	0.0081
73	0.0259	0.0106	0.0153
74	0.0242	0.0099	0.0143
75	0.0227	0.0093	0.0134
76	0.0214	0.0088	0.0127
77	0.0204	0.0083	0.0120
78	0.0194	0.0079	0.0115
79	0.0186	0.0076	0.0110
80	0.0178	0.0073	0.0105
81	0.0171	0.0070	0.0101
82	0.0165	0.0067	0.0098
83	0.0160	0.0065	0.0094
84	0.0154	0.0063	0.0091
85	0.0150	0.0061	0.0089
86	0.0145	0.0059	0.0086
87	0.0141	0.0058	0.0084
88	0.0137	0.0056	0.0081
89	0.0134	0.0055	0.0079
90	0.0131	0.0053	0.0077
91	0.0128	0.0052	0.0076
92	0.0125	0.0051	0.0074
93	0.0122	0.0050	0.0072
94	0.0119	0.0049	0.0071
95	0.0117	0.0048	0.0069
96	0.0115	0.0047	0.0068

Total soil rain loss = 0.88(In)
Total effective rainfall = 1.96(In)
Peak flow rate in flood hydrograph = 8.76(CFS)

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

Hydrograph in 15 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+15	0.0005	0.02	Q				
0+30	0.0027	0.11	Q				
0+45	0.0055	0.13	Q				
1+ 0	0.0083	0.14	Q				
1+15	0.0111	0.14	Q				
1+30	0.0139	0.14	Q				
1+45	0.0168	0.14	Q				
2+ 0	0.0198	0.14	Q				
2+15	0.0227	0.14	QV				
2+30	0.0257	0.14	QV				
2+45	0.0287	0.15	QV				
3+ 0	0.0318	0.15	QV				
3+15	0.0348	0.15	QV				
3+30	0.0380	0.15	QV				
3+45	0.0411	0.15	Q V				
4+ 0	0.0443	0.15	Q V				

4+15	0.0476	0.16	Q V	|	|	|	|
4+30	0.0508	0.16	Q V	|	|	|	|
4+45	0.0542	0.16	Q V	|	|	|	|
5+ 0	0.0575	0.16	Q V	|	|	|	|
5+15	0.0610	0.17	Q V	|	|	|	|
5+30	0.0644	0.17	Q V	|	|	|	|
5+45	0.0679	0.17	Q V	|	|	|	|
6+ 0	0.0715	0.17	Q V	|	|	|	|
6+15	0.0751	0.18	Q V	|	|	|	|
6+30	0.0788	0.18	Q V	|	|	|	|
6+45	0.0825	0.18	Q V	|	|	|	|
7+ 0	0.0863	0.18	Q V	|	|	|	|
7+15	0.0902	0.19	Q V	|	|	|	|
7+30	0.0941	0.19	Q V	|	|	|	|
7+45	0.0981	0.19	Q V	|	|	|	|
8+ 0	0.1022	0.20	Q V	|	|	|	|
8+15	0.1063	0.20	Q V	|	|	|	|
8+30	0.1106	0.20	Q V	|	|	|	|
8+45	0.1149	0.21	Q V	|	|	|	|
9+ 0	0.1193	0.21	Q V	|	|	|	|
9+15	0.1238	0.22	Q V	|	|	|	|
9+30	0.1284	0.22	Q V	|	|	|	|
9+45	0.1331	0.23	Q V	|	|	|	|
10+ 0	0.1379	0.23	Q V	|	|	|	|
10+15	0.1428	0.24	Q V	|	|	|	|
10+30	0.1479	0.24	Q V	|	|	|	|
10+45	0.1531	0.25	|Q V	|	|	|	|
11+ 0	0.1584	0.26	|Q V	|	|	|	|
11+15	0.1639	0.27	|Q V	|	|	|	|
11+30	0.1696	0.27	|Q V	|	|	|	|
11+45	0.1755	0.28	|Q V	|	|	|	|
12+ 0	0.1815	0.29	|Q V|	|	|	|	|
12+15	0.1872	0.27	|Q V|	|	|	|	|
12+30	0.1910	0.18	Q V|	|	|	|	|
12+45	0.1944	0.16	Q V|	|	|	|	|
13+ 0	0.1979	0.17	Q V|	|	|	|	|
13+15	0.2017	0.18	Q V	|	|	|	|
13+30	0.2057	0.20	Q V	|	|	|	|
13+45	0.2100	0.21	Q V	|	|	|	|
14+ 0	0.2148	0.23	Q V	|	|	|	|
14+15	0.2199	0.25	Q V	|	|	|	|
14+30	0.2256	0.28	|Q |V	|	|	|	|
14+45	0.2320	0.31	|Q |V	|	|	|	|
15+ 0	0.2394	0.36	|Q |V	|	|	|	|
15+15	0.2480	0.42	|Q | V	|	|	|	|
15+30	0.2598	0.57	| Q | V	|	|	|	|
15+45	0.2798	0.97	| Q | V	|	|	|	|
16+ 0	0.3201	1.95	| Q | V	|	|	|	|
16+15	0.4304	5.34	| |	|	|Q	|	|
16+30	0.6114	8.76	| |	|	|	V Q	|
16+45	0.6687	2.77	| |Q	|	|	V	|
17+ 0	0.6826	0.67	| Q	|	|	| V	|
17+15	0.6893	0.32	|Q	|	|	| V	|
17+30	0.6944	0.25	|Q	|	|	| V	|
17+45	0.6988	0.21	Q	|	|	| V	|
18+ 0	0.7026	0.18	Q	|	|	| V	|

```
   18+15       0.7065      0.19  Q          |          |          |    V     |
   18+30       0.7121      0.27  |Q         |          |          |    V     |
   18+45       0.7179      0.28  |Q         |          |          |    V     |
   19+ 0       0.7234      0.27  |Q         |          |          |     V    |
   19+15       0.7286      0.25  |Q         |          |          |     V    |
   19+30       0.7335      0.24  Q          |          |          |     V    |
   19+45       0.7382      0.23  Q          |          |          |     V    |
   20+ 0       0.7427      0.22  Q          |          |          |      V   |
   20+15       0.7470      0.21  Q          |          |          |      V   |
   20+30       0.7512      0.20  Q          |          |          |      V   |
   20+45       0.7552      0.19  Q          |          |          |      V   |
   21+ 0       0.7590      0.19  Q          |          |          |      V   |
   21+15       0.7628      0.18  Q          |          |          |       V  |
   21+30       0.7664      0.18  Q          |          |          |       V  |
   21+45       0.7699      0.17  Q          |          |          |       V  |
   22+ 0       0.7733      0.17  Q          |          |          |       V  |
   22+15       0.7766      0.16  Q          |          |          |       V  |
   22+30       0.7799      0.16  Q          |          |          |       V  |
   22+45       0.7830      0.15  Q          |          |          |        V|
   23+ 0       0.7861      0.15  Q          |          |          |        V|
   23+15       0.7891      0.15  Q          |          |          |        V|
   23+30       0.7921      0.14  Q          |          |          |        V|
   23+45       0.7950      0.14  Q          |          |          |        V|
   24+ 0       0.7978      0.14  Q          |          |          |        V|
   24+15       0.8001      0.11  Q          |          |          |        V|
   24+30       0.8006      0.03  Q          |          |          |        V|
   24+45       0.8006      0.00  Q          |          |          |        V|
-------------------------------------------------------------------------------
```

Unit Hydrograph
Post-Development
for

25 Year Storm

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

Study date 05/04/22

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

Sake Consulting Engineers, inc. Corona, CA - S/N 4084

Post25YRUH

Storm Event Year = 25

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 25		
4.90	1	0.88
Rainfall data for year 25		
4.90	6	1.20
Rainfall data for year 25		
4.90	24	2.07

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
32.0	32.0	4.90	1.000	0.978	0.400	0.391

```
Area-averaged adjusted loss rate Fm (In/Hr) =  0.391

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

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC2)           Yield Fr
    1.96   0.400         32.0      32.0      10.35     0.000
    2.94   0.600         98.0      98.0       0.20     0.891

Area-averaged catchment yield fraction, Y =  0.534
Area-averaged low loss fraction, Yb =  0.466
Direct entry of lag time by user
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =       4.90(Ac.)
Catchment Lag time =   0.188 hours
Unit interval =  15.000 minutes
Unit interval percentage of lag time = 133.1203
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.391(In/Hr)
Average low loss rate fraction (Yb) = 0.466 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.419(In)
Computed peak 30-minute rainfall =  0.717(In)
Specified peak 1-hour rainfall =  0.883(In)
Computed peak 3-hour rainfall =  1.066(In)
Specified peak 6-hour rainfall =  1.200(In)
Specified peak 24-hour rainfall =  2.070(In)


Rainfall depth area reduction factors:
Using a total area of       4.90(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.419(In)
30-minute factor = 1.000    Adjusted rainfall =  0.717(In)
1-hour factor = 1.000       Adjusted rainfall =  0.883(In)
3-hour factor = 1.000       Adjusted rainfall =  1.066(In)
6-hour factor = 1.000       Adjusted rainfall =  1.200(In)
24-hour factor = 1.000      Adjusted rainfall =  2.070(In)
----------------------------------------------------------------------

                U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
----------------------------------------------------------------------
           (K =        19.75 (CFS))

  1               28.780                   5.685
  2               92.200                  12.527
  3              100.000                   1.541
----------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.5824              0.0667
  2              0.7171              0.0382
```

3	0.8098	0.0281
4	0.8828	0.0227
5	0.9172	0.0108
6	0.9463	0.0092
7	0.9717	0.0081
8	0.9942	0.0072
9	1.0144	0.0065
10	1.0329	0.0060
11	1.0499	0.0055
12	1.0657	0.0051
13	1.0804	0.0048
14	1.0942	0.0045
15	1.1072	0.0043
16	1.1195	0.0040
17	1.1312	0.0038
18	1.1423	0.0037
19	1.1529	0.0035
20	1.1631	0.0033
21	1.1729	0.0032
22	1.1822	0.0031
23	1.1913	0.0030
24	1.2000	0.0029
25	1.2194	0.0064
26	1.2384	0.0063
27	1.2569	0.0061
28	1.2750	0.0060
29	1.2927	0.0059
30	1.3101	0.0057
31	1.3271	0.0056
32	1.3437	0.0055
33	1.3601	0.0054
34	1.3762	0.0053
35	1.3919	0.0052
36	1.4074	0.0051
37	1.4227	0.0051
38	1.4377	0.0050
39	1.4525	0.0049
40	1.4670	0.0048
41	1.4813	0.0047
42	1.4954	0.0047
43	1.5093	0.0046
44	1.5230	0.0045
45	1.5366	0.0045
46	1.5499	0.0044
47	1.5631	0.0044
48	1.5761	0.0043
49	1.5889	0.0043
50	1.6016	0.0042
51	1.6141	0.0042
52	1.6265	0.0041
53	1.6387	0.0041
54	1.6508	0.0040
55	1.6627	0.0040
56	1.6746	0.0039
57	1.6863	0.0039
58	1.6978	0.0038

59	1.7093	0.0038
60	1.7206	0.0038
61	1.7318	0.0037
62	1.7430	0.0037
63	1.7540	0.0037
64	1.7649	0.0036
65	1.7757	0.0036
66	1.7863	0.0036
67	1.7969	0.0035
68	1.8074	0.0035
69	1.8179	0.0035
70	1.8282	0.0034
71	1.8384	0.0034
72	1.8485	0.0034
73	1.8586	0.0033
74	1.8686	0.0033
75	1.8785	0.0033
76	1.8883	0.0033
77	1.8980	0.0032
78	1.9077	0.0032
79	1.9172	0.0032
80	1.9267	0.0032
81	1.9362	0.0031
82	1.9456	0.0031
83	1.9549	0.0031
84	1.9641	0.0031
85	1.9732	0.0030
86	1.9823	0.0030
87	1.9914	0.0030
88	2.0003	0.0030
89	2.0093	0.0030
90	2.0181	0.0029
91	2.0269	0.0029
92	2.0356	0.0029
93	2.0443	0.0029
94	2.0529	0.0029
95	2.0615	0.0028
96	2.0700	0.0028

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0085	0.0040	0.0045
2	0.0086	0.0040	0.0046
3	0.0087	0.0040	0.0046
4	0.0088	0.0041	0.0047
5	0.0089	0.0041	0.0047
6	0.0089	0.0042	0.0048
7	0.0090	0.0042	0.0048
8	0.0091	0.0043	0.0049
9	0.0092	0.0043	0.0049
10	0.0093	0.0043	0.0050
11	0.0094	0.0044	0.0050
12	0.0095	0.0044	0.0051
13	0.0097	0.0045	0.0052

14	0.0098	0.0046	0.0052
15	0.0099	0.0046	0.0053
16	0.0100	0.0047	0.0054
17	0.0102	0.0047	0.0054
18	0.0103	0.0048	0.0055
19	0.0104	0.0049	0.0056
20	0.0106	0.0049	0.0056
21	0.0107	0.0050	0.0057
22	0.0109	0.0051	0.0058
23	0.0110	0.0051	0.0059
24	0.0112	0.0052	0.0060
25	0.0113	0.0053	0.0061
26	0.0115	0.0054	0.0062
27	0.0117	0.0055	0.0063
28	0.0119	0.0055	0.0064
29	0.0121	0.0056	0.0065
30	0.0123	0.0057	0.0066
31	0.0125	0.0058	0.0067
32	0.0128	0.0059	0.0068
33	0.0130	0.0061	0.0070
34	0.0133	0.0062	0.0071
35	0.0135	0.0063	0.0072
36	0.0138	0.0064	0.0074
37	0.0141	0.0066	0.0076
38	0.0144	0.0067	0.0077
39	0.0148	0.0069	0.0079
40	0.0151	0.0070	0.0081
41	0.0155	0.0072	0.0083
42	0.0159	0.0074	0.0085
43	0.0164	0.0076	0.0088
44	0.0169	0.0078	0.0090
45	0.0174	0.0081	0.0093
46	0.0179	0.0083	0.0096
47	0.0186	0.0086	0.0099
48	0.0192	0.0089	0.0103
49	0.0087	0.0041	0.0047
50	0.0092	0.0043	0.0049
51	0.0098	0.0046	0.0052
52	0.0104	0.0049	0.0056
53	0.0112	0.0052	0.0060
54	0.0120	0.0056	0.0064
55	0.0131	0.0061	0.0070
56	0.0143	0.0067	0.0076
57	0.0159	0.0074	0.0085
58	0.0178	0.0083	0.0095
59	0.0205	0.0096	0.0110
60	0.0240	0.0112	0.0128
61	0.0297	0.0138	0.0159
62	0.0584	0.0272	0.0312
63	0.0970	0.0452	0.0518
64	0.2075	0.0966	0.1109
65	0.5053	0.0978	0.4076
66	0.0484	0.0225	0.0259
67	0.0236	0.0110	0.0126
68	0.0175	0.0082	0.0094
69	0.0141	0.0066	0.0075

70	0.0119	0.0055	0.0064
71	0.0103	0.0048	0.0055
72	0.0092	0.0043	0.0049
73	0.0191	0.0089	0.0102
74	0.0179	0.0083	0.0095
75	0.0168	0.0078	0.0090
76	0.0159	0.0074	0.0085
77	0.0151	0.0070	0.0081
78	0.0144	0.0067	0.0077
79	0.0138	0.0064	0.0074
80	0.0132	0.0062	0.0071
81	0.0127	0.0059	0.0068
82	0.0123	0.0057	0.0066
83	0.0119	0.0055	0.0063
84	0.0115	0.0054	0.0061
85	0.0111	0.0052	0.0060
86	0.0108	0.0050	0.0058
87	0.0105	0.0049	0.0056
88	0.0103	0.0048	0.0055
89	0.0100	0.0047	0.0053
90	0.0098	0.0045	0.0052
91	0.0095	0.0044	0.0051
92	0.0093	0.0043	0.0050
93	0.0091	0.0042	0.0049
94	0.0089	0.0042	0.0048
95	0.0088	0.0041	0.0047
96	0.0086	0.0040	0.0046

Total soil rain loss = 0.83(In)
Total effective rainfall = 1.24(In)
Peak flow rate in flood hydrograph = 5.42(CFS)

++

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

Hydrograph in 15 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+15	0.0005	0.03	Q	|	|	|	|
0+30	0.0023	0.08	Q	|	|	|	|
0+45	0.0041	0.09	Q	|	|	|	|
1+ 0	0.0060	0.09	Q	|	|	|	|
1+15	0.0079	0.09	Q	|	|	|	|
1+30	0.0099	0.09	Q	|	|	|	|
1+45	0.0118	0.09	Q	|	|	|	|
2+ 0	0.0138	0.10	QV	|	|	|	|
2+15	0.0158	0.10	QV	|	|	|	|
2+30	0.0178	0.10	QV	|	|	|	|
2+45	0.0199	0.10	QV	|	|	|	|
3+ 0	0.0219	0.10	QV	|	|	|	|
3+15	0.0240	0.10	QV	|	|	|	|
3+30	0.0261	0.10	Q V	|	|	|	|

```
 3+45       0.0283      0.10  Q V       |          |          |          |
 4+ 0       0.0304      0.10  Q V       |          |          |          |
 4+15       0.0326      0.11  Q V       |          |          |          |
 4+30       0.0348      0.11  Q V       |          |          |          |
 4+45       0.0371      0.11  Q V       |          |          |          |
 5+ 0       0.0394      0.11  Q  V      |          |          |          |
 5+15       0.0417      0.11  Q  V      |          |          |          |
 5+30       0.0440      0.11  Q  V      |          |          |          |
 5+45       0.0464      0.11  Q  V      |          |          |          |
 6+ 0       0.0488      0.12  Q  V      |          |          |          |
 6+15       0.0513      0.12  Q   V     |          |          |          |
 6+30       0.0537      0.12  Q   V     |          |          |          |
 6+45       0.0563      0.12  Q   V     |          |          |          |
 7+ 0       0.0588      0.12  Q   V     |          |          |          |
 7+15       0.0614      0.13  Q   V     |          |          |          |
 7+30       0.0641      0.13  Q    V    |          |          |          |
 7+45       0.0668      0.13  Q    V    |          |          |          |
 8+ 0       0.0695      0.13  Q    V    |          |          |          |
 8+15       0.0723      0.14  Q    V    |          |          |          |
 8+30       0.0752      0.14  Q    V    |          |          |          |
 8+45       0.0781      0.14  Q     V   |          |          |          |
 9+ 0       0.0810      0.14  Q     V   |          |          |          |
 9+15       0.0841      0.15  Q     V   |          |          |          |
 9+30       0.0872      0.15  Q     V   |          |          |          |
 9+45       0.0903      0.15  Q      V  |          |          |          |
10+ 0       0.0936      0.16  Q      V  |          |          |          |
10+15       0.0969      0.16  Q      V  |          |          |          |
10+30       0.1003      0.16  Q      V  |          |          |          |
10+45       0.1038      0.17  Q       V |          |          |          |
11+ 0       0.1074      0.17  Q       V |          |          |          |
11+15       0.1111      0.18  Q       V |          |          |          |
11+30       0.1149      0.18  Q        V|          |          |          |
11+45       0.1189      0.19  Q        V|          |          |          |
12+ 0       0.1229      0.20  Q        V|          |          |          |
12+15       0.1265      0.17  Q        V|          |          |          |
12+30       0.1286      0.10  Q         V          |          |          |
12+45       0.1306      0.10  Q         V          |          |          |
13+ 0       0.1328      0.10  Q         V          |          |          |
13+15       0.1351      0.11  Q         V          |          |          |
13+30       0.1376      0.12  Q         V          |          |          |
13+45       0.1402      0.13  Q          V         |          |          |
14+ 0       0.1432      0.14  Q         |V         |          |          |
14+15       0.1464      0.15  Q         |V         |          |          |
14+30       0.1499      0.17  Q         |V         |          |          |
14+45       0.1539      0.19  Q         | V        |          |          |
15+ 0       0.1586      0.22  Q         | V        |          |          |
15+15       0.1641      0.27  |Q        | V        |          |          |
15+30       0.1723      0.40  |Q        |  V       |          |          |
15+45       0.1870      0.71  | Q       |   V      |          |          |
16+ 0       0.2144      1.33  |    Q    |     V    |          |          |
16+15       0.2926      3.79  |         |    Q     |  V       |          |
16+30       0.4047      5.42  |         |          |Q         |V         |
16+45       0.4258      1.02  |   Q     |          |          |  V       |
17+ 0       0.4310      0.25  |Q        |          |          |  V       |
17+15       0.4347      0.18  Q         |          |          |   V      |
17+30       0.4377      0.15  Q         |          |          |   V      |
```

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   17+45       0.4403      0.12  Q          |          |          |   V      |
   18+ 0       0.4425      0.11  Q          |          |          |   V      |
   18+15       0.4451      0.13  Q          |          |          |    V     |
   18+30       0.4490      0.19  Q          |          |          |    V     |
   18+45       0.4529      0.19  Q          |          |          |    V     |
   19+ 0       0.4565      0.18  Q          |          |          |    V     |
   19+15       0.4599      0.17  Q          |          |          |     V    |
   19+30       0.4632      0.16  Q          |          |          |     V    |
   19+45       0.4663      0.15  Q          |          |          |     V    |
   20+ 0       0.4693      0.14  Q          |          |          |     V    |
   20+15       0.4722      0.14  Q          |          |          |      V   |
   20+30       0.4749      0.13  Q          |          |          |      V   |
   20+45       0.4776      0.13  Q          |          |          |      V   |
   21+ 0       0.4801      0.12  Q          |          |          |      V   |
   21+15       0.4826      0.12  Q          |          |          |       V  |
   21+30       0.4851      0.12  Q          |          |          |       V  |
   21+45       0.4874      0.11  Q          |          |          |       V  |
   22+ 0       0.4897      0.11  Q          |          |          |       V  |
   22+15       0.4919      0.11  Q          |          |          |       V  |
   22+30       0.4941      0.11  Q          |          |          |       V  |
   22+45       0.4962      0.10  Q          |          |          |        V |
   23+ 0       0.4983      0.10  Q          |          |          |        V |
   23+15       0.5003      0.10  Q          |          |          |        V |
   23+30       0.5023      0.10  Q          |          |          |        V |
   23+45       0.5042      0.09  Q          |          |          |        V |
   24+ 0       0.5061      0.09  Q          |          |          |        V |
   24+15       0.5075      0.06  Q          |          |          |        V |
   24+30       0.5076      0.01  Q          |          |          |         V
-----------------------------------------------------------------------------
```

Unit Hydrograph
Post-Development
for

100 Year Storm

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

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 1999, Version 6.0

Study date 05/04/22

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

Sake Consulting Engineers, inc. Corona, CA - S/N 4084

Post100YrUH

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
4.90	1	1.20
Rainfall data for year 100		
4.90	6	1.67
Rainfall data for year 100		
4.90	24	2.84

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
32.0	52.0	4.90	1.000	0.785	0.400	0.314

```
Area-averaged adjusted loss rate Fm (In/Hr) =  0.314

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

Area       Area          SCS CN    SCS CN      S     Pervious
 (Ac.)      Fract         (AMC2)    (AMC3)           Yield Fr
    1.96   0.400         32.0      52.0       9.23     0.034
    2.94   0.600         98.0      98.0       0.20     0.919

Area-averaged catchment yield fraction, Y =  0.565
Area-averaged low loss fraction, Yb =  0.435
Direct entry of lag time by user
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =       4.90(Ac.)
Catchment Lag time =   0.188 hours
Unit interval =  15.000 minutes
Unit interval percentage of lag time = 133.1203
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.314(In/Hr)
Average low loss rate fraction (Yb) = 0.435 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.569(In)
Computed peak 30-minute rainfall =  0.975(In)
Specified peak 1-hour rainfall =  1.200(In)
Computed peak 3-hour rainfall =  1.470(In)
Specified peak 6-hour rainfall =  1.670(In)
Specified peak 24-hour rainfall =  2.840(In)


Rainfall depth area reduction factors:
Using a total area of       4.90(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.569(In)
30-minute factor = 1.000    Adjusted rainfall =  0.974(In)
1-hour factor = 1.000       Adjusted rainfall =  1.200(In)
3-hour factor = 1.000       Adjusted rainfall =  1.470(In)
6-hour factor = 1.000       Adjusted rainfall =  1.670(In)
24-hour factor = 1.000      Adjusted rainfall =  2.840(In)
----------------------------------------------------------------------

                U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
----------------------------------------------------------------------
           (K =        19.75 (CFS))

  1               28.780                   5.685
  2               92.200                  12.527
  3              100.000                   1.541
----------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)                (In)
  1              0.7915              0.0907
  2              0.9745              0.0519
```

3	1.1005	0.0382
4	1.1997	0.0309
5	1.2502	0.0158
6	1.2930	0.0136
7	1.3303	0.0119
8	1.3635	0.0107
9	1.3935	0.0097
10	1.4209	0.0089
11	1.4461	0.0082
12	1.4695	0.0076
13	1.4914	0.0071
14	1.5119	0.0067
15	1.5313	0.0063
16	1.5496	0.0060
17	1.5670	0.0057
18	1.5837	0.0055
19	1.5995	0.0052
20	1.6147	0.0050
21	1.6293	0.0048
22	1.6434	0.0046
23	1.6569	0.0045
24	1.6700	0.0043
25	1.6963	0.0087
26	1.7220	0.0085
27	1.7470	0.0083
28	1.7715	0.0081
29	1.7955	0.0079
30	1.8190	0.0078
31	1.8420	0.0076
32	1.8645	0.0075
33	1.8866	0.0073
34	1.9083	0.0072
35	1.9296	0.0071
36	1.9506	0.0069
37	1.9711	0.0068
38	1.9914	0.0067
39	2.0113	0.0066
40	2.0309	0.0065
41	2.0502	0.0064
42	2.0692	0.0063
43	2.0879	0.0062
44	2.1064	0.0061
45	2.1246	0.0060
46	2.1426	0.0060
47	2.1603	0.0059
48	2.1778	0.0058
49	2.1950	0.0057
50	2.2121	0.0057
51	2.2289	0.0056
52	2.2456	0.0055
53	2.2620	0.0055
54	2.2783	0.0054
55	2.2943	0.0053
56	2.3102	0.0053
57	2.3259	0.0052
58	2.3415	0.0052

59	2.3569	0.0051
60	2.3721	0.0051
61	2.3872	0.0050
62	2.4021	0.0050
63	2.4168	0.0049
64	2.4315	0.0049
65	2.4459	0.0048
66	2.4603	0.0048
67	2.4745	0.0047
68	2.4886	0.0047
69	2.5025	0.0046
70	2.5164	0.0046
71	2.5301	0.0046
72	2.5437	0.0045
73	2.5571	0.0045
74	2.5705	0.0044
75	2.5838	0.0044
76	2.5969	0.0044
77	2.6099	0.0043
78	2.6229	0.0043
79	2.6357	0.0043
80	2.6484	0.0042
81	2.6611	0.0042
82	2.6736	0.0042
83	2.6860	0.0041
84	2.6984	0.0041
85	2.7106	0.0041
86	2.7228	0.0040
87	2.7349	0.0040
88	2.7469	0.0040
89	2.7588	0.0040
90	2.7706	0.0039
91	2.7824	0.0039
92	2.7941	0.0039
93	2.8057	0.0039
94	2.8172	0.0038
95	2.8286	0.0038
96	2.8400	0.0038

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0114	0.0050	0.0064
2	0.0115	0.0050	0.0065
3	0.0116	0.0050	0.0066
4	0.0117	0.0051	0.0066
5	0.0118	0.0052	0.0067
6	0.0120	0.0052	0.0068
7	0.0121	0.0053	0.0068
8	0.0122	0.0053	0.0069
9	0.0124	0.0054	0.0070
10	0.0125	0.0054	0.0071
11	0.0126	0.0055	0.0071
12	0.0128	0.0056	0.0072
13	0.0129	0.0056	0.0073

14	0.0131	0.0057	0.0074
15	0.0133	0.0058	0.0075
16	0.0134	0.0058	0.0076
17	0.0136	0.0059	0.0077
18	0.0138	0.0060	0.0078
19	0.0140	0.0061	0.0079
20	0.0142	0.0062	0.0080
21	0.0144	0.0062	0.0081
22	0.0146	0.0063	0.0082
23	0.0148	0.0064	0.0083
24	0.0150	0.0065	0.0085
25	0.0152	0.0066	0.0086
26	0.0155	0.0067	0.0087
27	0.0157	0.0068	0.0089
28	0.0160	0.0070	0.0090
29	0.0163	0.0071	0.0092
30	0.0166	0.0072	0.0093
31	0.0169	0.0073	0.0095
32	0.0172	0.0075	0.0097
33	0.0175	0.0076	0.0099
34	0.0179	0.0078	0.0101
35	0.0182	0.0079	0.0103
36	0.0186	0.0081	0.0105
37	0.0190	0.0083	0.0108
38	0.0195	0.0085	0.0110
39	0.0199	0.0087	0.0113
40	0.0204	0.0089	0.0115
41	0.0210	0.0091	0.0118
42	0.0215	0.0094	0.0122
43	0.0222	0.0096	0.0125
44	0.0228	0.0099	0.0129
45	0.0235	0.0102	0.0133
46	0.0243	0.0106	0.0137
47	0.0251	0.0109	0.0142
48	0.0260	0.0113	0.0147
49	0.0131	0.0057	0.0074
50	0.0138	0.0060	0.0078
51	0.0147	0.0064	0.0083
52	0.0156	0.0068	0.0088
53	0.0167	0.0073	0.0094
54	0.0179	0.0078	0.0101
55	0.0195	0.0085	0.0110
56	0.0213	0.0093	0.0120
57	0.0236	0.0103	0.0133
58	0.0264	0.0115	0.0149
59	0.0303	0.0132	0.0171
60	0.0354	0.0154	0.0200
61	0.0436	0.0190	0.0246
62	0.0806	0.0351	0.0455
63	0.1318	0.0574	0.0744
64	0.2820	0.0785	0.2035
65	0.6868	0.0785	0.6082
66	0.0682	0.0297	0.0385
67	0.0348	0.0151	0.0196
68	0.0260	0.0113	0.0147
69	0.0210	0.0091	0.0119

70	0.0178	0.0077	0.0100
71	0.0154	0.0067	0.0087
72	0.0137	0.0060	0.0077
73	0.0259	0.0113	0.0146
74	0.0242	0.0105	0.0136
75	0.0227	0.0099	0.0128
76	0.0214	0.0093	0.0121
77	0.0204	0.0089	0.0115
78	0.0194	0.0084	0.0110
79	0.0186	0.0081	0.0105
80	0.0178	0.0077	0.0101
81	0.0171	0.0075	0.0097
82	0.0165	0.0072	0.0093
83	0.0160	0.0069	0.0090
84	0.0154	0.0067	0.0087
85	0.0150	0.0065	0.0085
86	0.0145	0.0063	0.0082
87	0.0141	0.0061	0.0080
88	0.0137	0.0060	0.0078
89	0.0134	0.0058	0.0076
90	0.0131	0.0057	0.0074
91	0.0128	0.0056	0.0072
92	0.0125	0.0054	0.0070
93	0.0122	0.0053	0.0069
94	0.0119	0.0052	0.0067
95	0.0117	0.0051	0.0066
96	0.0115	0.0050	0.0065

Total soil rain loss = 0.97(In)
Total effective rainfall = 1.87(In)
Peak flow rate in flood hydrograph = 8.15(CFS)

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

Hydrograph in 15 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+15	0.0008	0.04	Q	|	|	|	|
0+30	0.0032	0.12	Q	|	|	|	|
0+45	0.0058	0.13	Q	|	|	|	|
1+ 0	0.0085	0.13	Q	|	|	|	|
1+15	0.0112	0.13	Q	|	|	|	|
1+30	0.0140	0.13	Q	|	|	|	|
1+45	0.0167	0.13	Q	|	|	|	|
2+ 0	0.0195	0.14	QV	|	|	|	|
2+15	0.0223	0.14	QV	|	|	|	|
2+30	0.0252	0.14	QV	|	|	|	|
2+45	0.0281	0.14	QV	|	|	|	|
3+ 0	0.0310	0.14	QV	|	|	|	|
3+15	0.0340	0.14	QV	|	|	|	|
3+30	0.0369	0.14	QV	|	|	|	|

3+45	0.0400	0.15	Q V	|	|	|	|
4+ 0	0.0430	0.15	Q V	|	|	|	|
4+15	0.0461	0.15	Q V	|	|	|	|
4+30	0.0493	0.15	Q V	|	|	|	|
4+45	0.0525	0.15	Q V	|	|	|	|
5+ 0	0.0557	0.16	Q V	|	|	|	|
5+15	0.0590	0.16	Q V	|	|	|	|
5+30	0.0623	0.16	Q V	|	|	|	|
5+45	0.0657	0.16	Q V	|	|	|	|
6+ 0	0.0691	0.17	Q V	|	|	|	|
6+15	0.0725	0.17	Q V	|	|	|	|
6+30	0.0761	0.17	Q V	|	|	|	|
6+45	0.0796	0.17	Q V	|	|	|	|
7+ 0	0.0833	0.18	Q V	|	|	|	|
7+15	0.0870	0.18	Q V	|	|	|	|
7+30	0.0908	0.18	Q V	|	|	|	|
7+45	0.0946	0.19	Q V	|	|	|	|
8+ 0	0.0985	0.19	Q V	|	|	|	|
8+15	0.1025	0.19	Q V	|	|	|	|
8+30	0.1065	0.20	Q V	|	|	|	|
8+45	0.1106	0.20	Q V	|	|	|	|
9+ 0	0.1149	0.20	Q V	|	|	|	|
9+15	0.1192	0.21	Q V	|	|	|	|
9+30	0.1236	0.21	Q V	|	|	|	|
9+45	0.1281	0.22	Q V	|	|	|	|
10+ 0	0.1327	0.22	Q V	|	|	|	|
10+15	0.1375	0.23	Q V	|	|	|	|
10+30	0.1423	0.24	Q V	|	|	|	|
10+45	0.1473	0.24	Q V	|	|	|	|
11+ 0	0.1525	0.25	Q V	|	|	|	|
11+15	0.1577	0.26	|Q V	|	|	|	|
11+30	0.1632	0.26	|Q V	|	|	|	|
11+45	0.1688	0.27	|Q V	|	|	|	|
12+ 0	0.1747	0.28	|Q V|	|	|	|
12+15	0.1798	0.25	Q V|	|	|	|
12+30	0.1831	0.16	Q V|	|	|	|
12+45	0.1863	0.16	Q V|	|	|	|
13+ 0	0.1898	0.17	Q V|	|	|	|
13+15	0.1934	0.18	Q V	|	|	|
13+30	0.1973	0.19	Q V	|	|	|
13+45	0.2015	0.20	Q V	|	|	|
14+ 0	0.2061	0.22	Q V	|	|	|
14+15	0.2111	0.24	Q V	|	|	|
14+30	0.2167	0.27	|Q |V	|	|	|
14+45	0.2230	0.30	|Q |V	|	|	|
15+ 0	0.2303	0.35	|Q | V	|	|	|
15+15	0.2389	0.42	|Q | V	|	|	|
15+30	0.2513	0.60	| Q | V	|	|	|
15+45	0.2726	1.03	| Q | V	|	|	|
16+ 0	0.3172	2.16	| Q | V	|	|	|
16+15	0.4437	6.12	| | | VQ	|	|	|
16+30	0.6121	8.15	| | | | Q	|	|	|
16+45	0.6437	1.53	| Q | | | V	|	|	|
17+ 0	0.6518	0.39	|Q | | | V	|	|	|
17+15	0.6576	0.28	|Q | | | V	|	|	|
17+30	0.6623	0.23	Q | | | V	|	|	|

```
  17+45       0.6663      0.19  Q          |          |          |   V      |
  18+ 0       0.6698      0.17  Q          |          |          |    V     |
  18+15       0.6738      0.19  Q          |          |          |    V     |
  18+30       0.6794      0.27  |Q         |          |          |    V     |
  18+45       0.6849      0.27  |Q         |          |          |    V     |
  19+ 0       0.6901      0.25  |Q         |          |          |     V    |
  19+15       0.6950      0.24  Q          |          |          |     V    |
  19+30       0.6996      0.22  Q          |          |          |     V    |
  19+45       0.7041      0.21  Q          |          |          |     V    |
  20+ 0       0.7083      0.21  Q          |          |          |      V   |
  20+15       0.7124      0.20  Q          |          |          |      V   |
  20+30       0.7163      0.19  Q          |          |          |      V   |
  20+45       0.7201      0.18  Q          |          |          |      V   |
  21+ 0       0.7237      0.18  Q          |          |          |      V   |
  21+15       0.7273      0.17  Q          |          |          |       V  |
  21+30       0.7307      0.17  Q          |          |          |       V  |
  21+45       0.7340      0.16  Q          |          |          |       V  |
  22+ 0       0.7373      0.16  Q          |          |          |       V  |
  22+15       0.7404      0.15  Q          |          |          |       V  |
  22+30       0.7435      0.15  Q          |          |          |       V  |
  22+45       0.7465      0.15  Q          |          |          |        V |
  23+ 0       0.7494      0.14  Q          |          |          |        V |
  23+15       0.7523      0.14  Q          |          |          |        V |
  23+30       0.7551      0.14  Q          |          |          |        V |
  23+45       0.7578      0.13  Q          |          |          |        V |
  24+ 0       0.7605      0.13  Q          |          |          |        V |
  24+15       0.7624      0.09  Q          |          |          |        V |
  24+30       0.7626      0.01  Q          |          |          |         V
-------------------------------------------------------------------------
```

EXHIBITS:

Rainfall Data

Soil information

Hydrology Map - Pre Development
Hydrology Map - Post Development

NOAA Atlas 14, Volume 6, Version 2
Location name: Baker, California, USA*
Latitude: 35.28°, Longitude: -116.06°
Elevation: 990.64 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	0.054 (0.045-0.067)	0.098 (0.080-0.121)	0.154 (0.126-0.191)	0.200 (0.162-0.250)	0.262 (0.206-0.338)	0.310 (0.238-0.407)	0.358 (0.269-0.481)	0.407 (0.297-0.562)	0.473 (0.332-0.681)	0.524 (0.356-0.780)
10-min	0.078 (0.064-0.096)	0.140 (0.115-0.173)	0.221 (0.180-0.274)	0.287 (0.232-0.358)	0.376 (0.295-0.484)	0.444 (0.341-0.583)	0.513 (0.385-0.690)	0.583 (0.426-0.806)	0.678 (0.476-0.976)	0.752 (0.511-1.12)
15-min	0.094 (0.077-0.116)	0.170 (0.139-0.209)	0.268 (0.218-0.331)	0.347 (0.281-0.433)	0.455 (0.356-0.586)	0.537 (0.413-0.705)	0.620 (0.465-0.834)	0.705 (0.515-0.975)	0.820 (0.576-1.18)	0.909 (0.618-1.35)
30-min	0.129 (0.106-0.159)	0.232 (0.190-0.286)	0.366 (0.299-0.453)	0.475 (0.384-0.592)	0.622 (0.488-0.801)	0.734 (0.564-0.965)	0.848 (0.637-1.14)	0.965 (0.705-1.33)	1.12 (0.788-1.61)	1.24 (0.845-1.85)
60-min	0.182 (0.149-0.224)	0.327 (0.267-0.403)	0.515 (0.420-0.638)	0.668 (0.541-0.834)	0.875 (0.686-1.13)	1.03 (0.795-1.36)	1.19 (0.896-1.61)	1.36 (0.993-1.88)	1.58 (1.11-2.27)	1.75 (1.19-2.60)
2-hr	0.261 (0.214-0.322)	0.409 (0.334-0.504)	0.609 (0.497-0.754)	0.777 (0.629-0.970)	1.01 (0.795-1.31)	1.20 (0.924-1.58)	1.40 (1.05-1.88)	1.61 (1.18-2.22)	1.90 (1.34-2.74)	2.14 (1.45-3.18)
3-hr	0.295 (0.242-0.364)	0.440 (0.360-0.544)	0.641 (0.523-0.793)	0.812 (0.658-1.01)	1.06 (0.829-1.36)	1.26 (0.965-1.65)	1.47 (1.10-1.97)	1.69 (1.24-2.34)	2.02 (1.42-2.90)	2.28 (1.55-3.39)
6-hr	0.361 (0.296-0.445)	0.513 (0.420-0.633)	0.727 (0.593-0.900)	0.913 (0.739-1.14)	1.19 (0.929-1.53)	1.41 (1.08-1.85)	1.65 (1.24-2.22)	1.92 (1.40-2.65)	2.30 (1.62-3.31)	2.63 (1.78-3.90)
12-hr	0.440 (0.360-0.543)	0.627 (0.513-0.775)	0.891 (0.727-1.10)	1.12 (0.906-1.40)	1.45 (1.14-1.87)	1.73 (1.33-2.27)	2.02 (1.52-2.72)	2.35 (1.72-3.24)	2.82 (1.98-4.05)	3.21 (2.18-4.77)
24-hr	0.610 (0.538-0.706)	0.886 (0.780-1.03)	1.27 (1.11-1.47)	1.59 (1.39-1.86)	2.05 (1.74-2.47)	2.42 (2.02-2.97)	2.82 (2.30-3.53)	3.24 (2.58-4.17)	3.85 (2.95-5.13)	4.34 (3.22-5.96)
2-day	0.706 (0.622-0.817)	1.01 (0.892-1.17)	1.43 (1.25-1.66)	1.78 (1.55-2.08)	2.26 (1.92-2.72)	2.65 (2.20-3.25)	3.05 (2.48-3.82)	3.47 (2.76-4.46)	4.06 (3.11-5.41)	4.53 (3.36-6.23)

WQMP Project Report

County of San Bernardino Stormwater Program

Santa Ana River Watershed Geodatabase

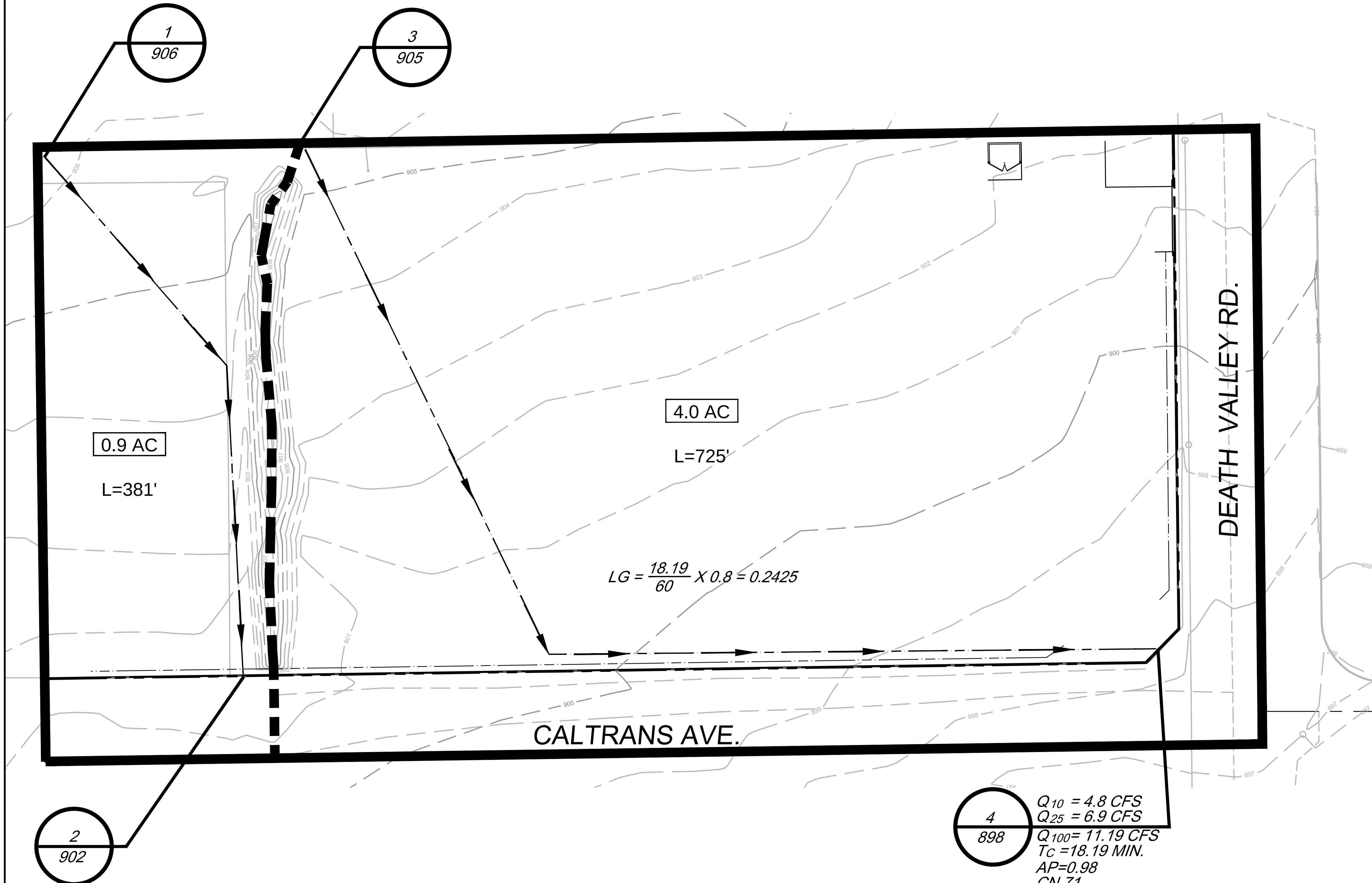
Friday, May 31, 2019

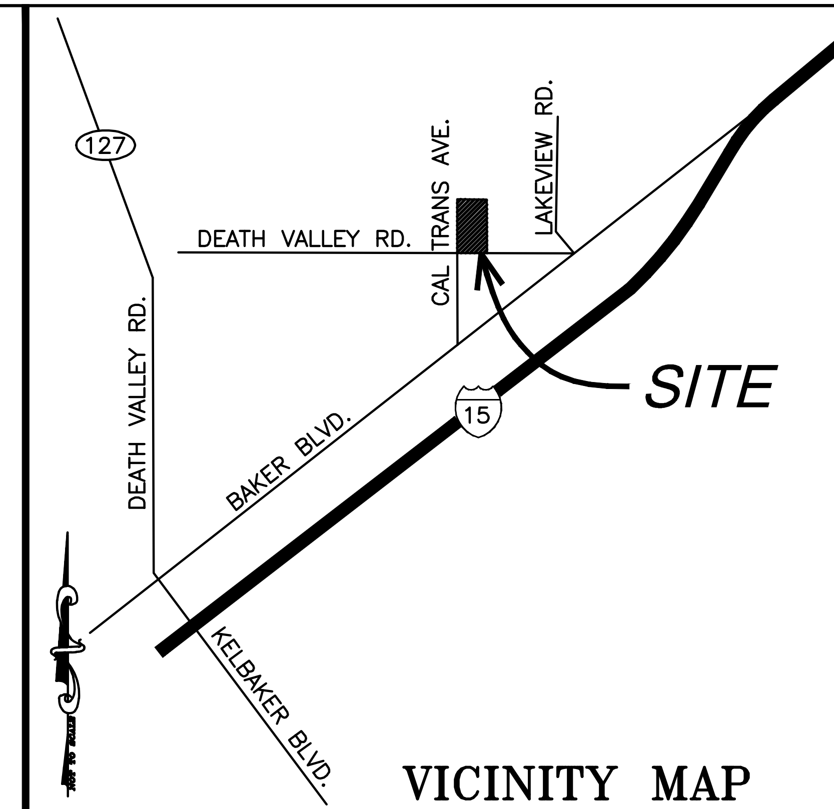
Note: The information provided in this report and on the Stormwater Geodatabase for the County of San Bernardino Stormwater Program is intended to provide basic guidance in the preparation of the applicant's Water Quality Management Plan (WQMP) and should not be relied upon without independent verification.

Project Site Parcel Number(s):	054447108
Project Site Acreage:	4.938
HCOC Exempt Area:	No
Closest Receiving Waters: (Applicant to verify based on local drainage facilities and topography.)	**System Number -** **Facility Name** - Baker School Interceptor **Owner** - OTHERS
Closest channel segment's susceptibility to Hydromodification:	EHM
Highest downstream hydromodification susceptibility:	NULL
Is this drainage segment subject to TMDLs?	No
Are there downstream drainage segments subject to TMDLs?	No
Is this drainage segment a 303d listed stream?	No
Are there 303d listed streams downstream?	No
Are there unlined downstream waterbodies?	No
Project Site Onsite Soil Group(s):	SOIL 'A'
Environmentally Sensitive Areas within 200':	DESERT TORTOISE HABITAT CAT 3
Groundwater Depth (FT):	No data available
Parcels with potential septic tanks within 1000':	No
Known Groundwater Contamination Plumes within 1000':	No
Studies and Reports Related to Project Site:	

RAU 3234

PRE DEVELOPMENT HYDROLOGY MAP
FOR
APN 0544-471-08-0000





VICINITY MAP

OWNER/DEVELOPER:

RAVINDER GREWAL
18425 BURBANK BLVD. #608
TARZANA, CA 91356
(818) 344-4029 PH.

ENGINEER:

SAKE ENGINEERS, INC.
400 S. RAMONA AVE., STE. 202
CORONA, CA 92879
(951) 279-4041 PH.

ASSESSORS PARCEL NO.:

0544-471-08-0000

LEGEND

DRAINAGE SUB-BOUNDARY
DRAINAGE BOUNDARY

13 / 1460 — NODE / ELEV.

AC — DRAINAGE AREA IN ACERS

SOIL TYPE "A"

60 0 60

1 inch = 60 ft.

REGISTERED PROFESSIONAL ENGINEER
SAM AKBARPOUR
C053038
Exp. 6/30/21
CIVIL
STATE OF CALIFORNIA

SAKE ENGINEERS, INC.
www.sakeengineers.com
ENGINEERING ● SURVEYING ● LAND DEVELOPMENT
400 S. RAMONA AVE., STE. 202
CORONA, CALIFORNIA 92879
(951) 279-4041 FAX: (951) 279-2830

COUNTY OF SAN BERNARDINO
PRE DEVELOPMENT
HYDROLOGY MAP
FOR
APN 0544-471-08-0000

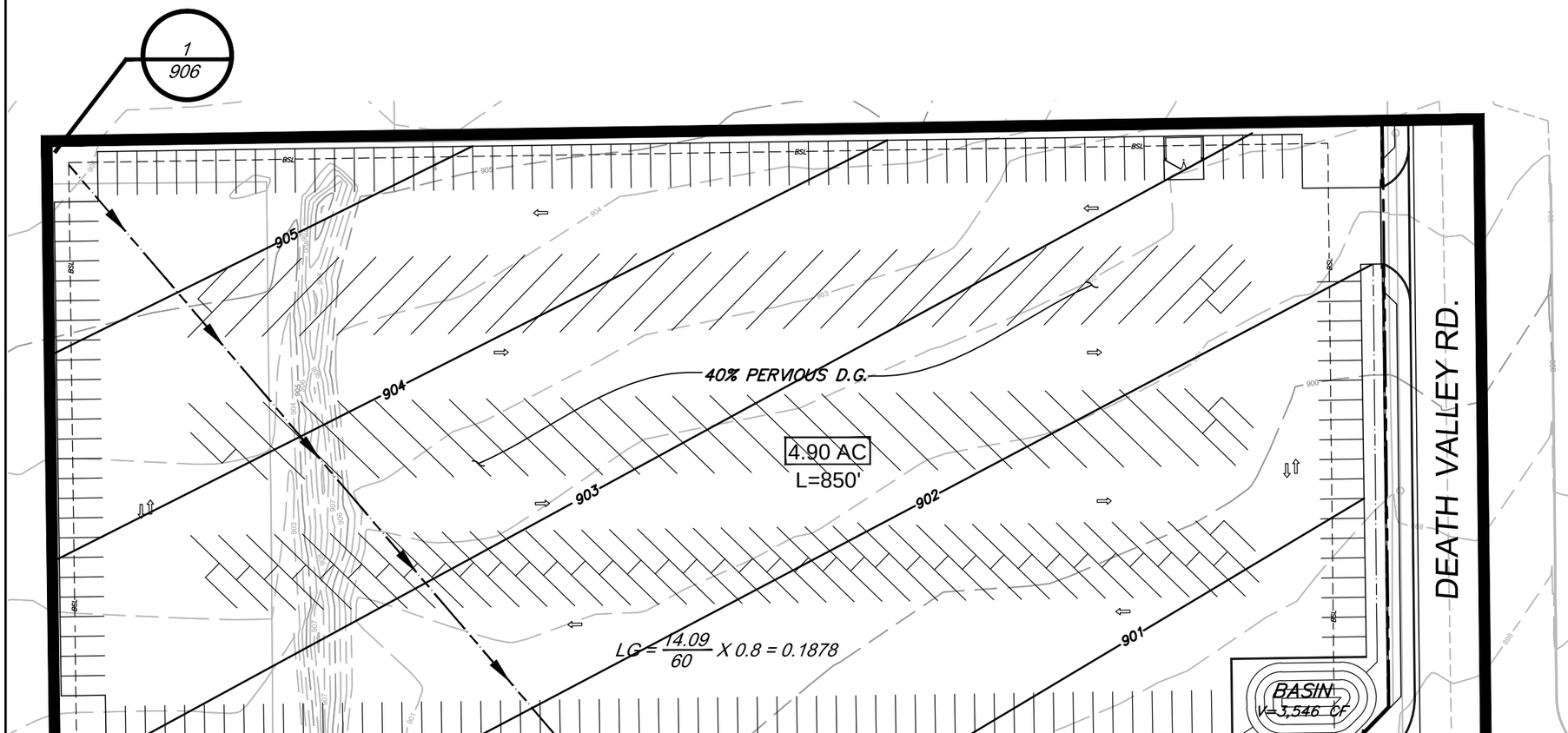
DWG. NO. XX-XXXX

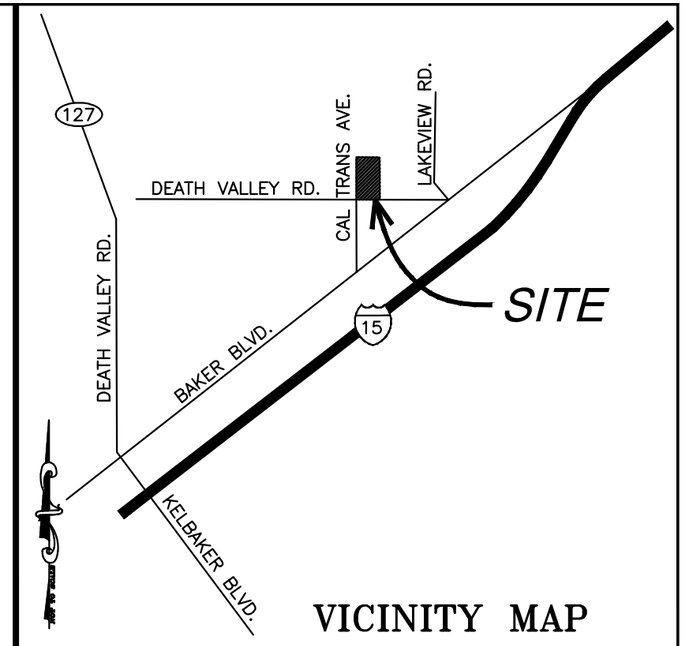
Sh 1 of 1

POST DEVELOPMENT HYDROLOGY MAP

FOR

APN 0544-471-08-0000





VICINITY MAP

2 / 898

Q_{10} = 6.4 CFS
Q_{25} = 9.05 CFS
Q_{100} = 13.2 CFS
T_C = 14.09 MIN.
AP=0.40
CN 32

13 / 1460 — NODE / ELEV.

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- DRAINAGE SUB-BOUNDARY
- DRAINAGE BOUNDARY

60 0 60

1 inch = 60 ft.

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COUNTY OF SAN BERNARDINO

POST DEVELOPMENT HYDROLOGY MAP

FOR

APN 0544-471-08-0000

DWG. NO. XX-XXXX

Sh 1 of 1