PRELIMINARY DRAINAGE ANALYSIS

FOR

APN 263-190-012, 014 – 019, 036

OLD 215 / EDGEMONT STREET

PEN21-0325 / LST22-0007

CITY OF MORENO VALLEY

RIVERSIDE COUNTY, CALIFORNIA

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DECEMBER 14, 2021
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This report has been prepared by or under the direction of the following registered civil engineer who attests to the technical information contained herein.

03/17/2022

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Registered Civil Engineer

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I. PURPOSE AND SCOPE

The purpose of this drainage analysis is to quantify the 100-year storm event runoff emanating from the on-site drainage areas for the proposed industrial warehouse development located in the City of Moreno Valley, Riverside County, California. The study will analyze the existing and proposed hydrologic conditions of the Project's drainage areas and determine the necessary drainage improvements to convey the 100-year Project flows through the property.

The scope of this analysis includes the following:

1. Determination of points of flow concentration and drainage areas.
2. Determination of the on-site 100-year peak storm flows based upon the existing and proposed conditions utilizing the Civil Design Software, Rational Tabling program for Riverside County.
3. Preparation of hydrology maps.
4. Preparation of the drainage report.

II. PROJECT DESCRIPTION

The proposed project is located in the City of Moreno Valley, County of Riverside, California. The site is located along the east side of Old 215 Frontage Road and the west side of Edgemont Street between Cottonwood Avenue to the north, and Bay Avenue, to the south. The project site is made up of eight parcels, which are: APN 263-190-012, 014-019 & 036. The site is bounded by single family residences, a four-plex, and vacant land to the north, Edgemont Street to the east, a vacated cannabis collective and vacant land to the south, and Old 215 Frontage Road to the west. The existing boundary area is approximately 6.88 acres in size. The project proposes to join the existing eight parcels and make two separate large parcels. Each parcel is proposed to be developed with a 49,815 square foot industrial warehouse building with associated parking, hardscape, landscape, and access. Proposed street vacations from Old 215 will bring the total net project area to approximately 7.06 acres.

III. DRAINAGE AREA OVERVIEW

Existing Condition

The project site is currently vacant and undeveloped. Topographically, site elevations range from approximately 1540.00 feet to 1526.00 feet above Mean Sea Level (MSL). The project site generally drains from the south to the north to Edgemont Channel at an approximate grade of 1.20%. A small area from the neighboring single family residences to the north is tributary to the project site. These flows will be honored, but will be left out of the pre and post development analysis.

Proposed Condition

Upon development, the site will be separated into three drainage areas and confluence at one central location. Area A1 will convey flows on the northerly portion of the site from west to east via sheet flow, ribbon gutter, and curb and gutter to a proposed drop inlet located on the east end of the site. Area A2 will convey flows from the central portion of the site west to east via sheet flow and ribbon gutter to the proposed drop inlet on the east side of the site. Area A3 will convey flows generated by the southerly portion of the site west to east via sheet flow, curb and gutter, and ribbon gutter to the proposed drop inlet. Flows captured by the drop inlet will be directed to a proposed underground detention basin via storm drain. Flows from the basin will be directed to a proposed sump and pump via storm drain. The sump and pump will pump flows to a proposed modular wetland unit sized for water quality purposes at a rate optimal for the modular wetland unit. Treated flows will leave the modular wetland unit via storm drain and enter a public storm drain line running through the project site. The public storm drain line is proposed as part of this project. In the event the underground basin reaches capacity, flows will overflow directly to the public storm drain line from the proposed drop inlet.

Off-Site

Flows generated by Edgemont Street adjacent to the project site historically enter the subject site and are conveyed northwesterly to Edgemont Channel. Upon development, flows from the street will enter a series of proposed under sidewalk drains that will direct flows to a proposed bioswale for water quality purposes. Treated flows will enter an underdrain, which will direct flows to a proposed catch basin located at the existing low point of Edgemont Street. The catch basin will direct flows west through the site, then north to Edgemont Channel. See Appendix E for preliminary hydrology calcs including normal depth calcs for the proposed storm drain. See Area B2 on Exhibit "C" for off-site hydrology map, which shows the area analyzed for these preliminary calculations. As seen in Appendix E.2, the peak flow rate entering the catch basin on Edgemont will be approximately 15.82 cfs. As seen in Appendix E.3, the preliminary design of the storm drain will handle these flows.

Flows generated by Old 215 adjacent to the project site historically run along project frontage before entering Edgemont Channel to the north. Upon development, flows will enter a series of under sidewalk drains, directing them to a proposed bioswale for water quality purposes. Treated flows will enter an underdrain, which will direct flows to a proposed catch basin located at the north end of the site. Flows from the proposed catch basin will be directed northwest toward Edgemont Channel where they will confluence with flows from Edgemont Street. The existing storm drain along the frontage that extends northerly from the existing headwall located at the southwest corner of the site will be removed, and a proposed drop inlet will replace the headwall. Flows will be directed northerly to the proposed catch basin via storm drain proposed as part of this project. The proposed raised center median will impede flows conveyed by the swale in the existing center median. A proposed drop inlet located at the south end of the proposed raised median will capture flows and confluence with flows captured at the southwest corner of the site.

See Appendix E for preliminary hydrology calcs including normal depth calcs for the proposed storm drain. See Area B1 on Exhibit "C" for off-site hydrology map, which shows the area analyzed for these preliminary calculations. As seen in Appendix E.1, the peak flow rate entering the catch basin on Edgemont will be approximately 29.11 cfs. As seen in Appendix E.3, the preliminary design of the storm drain will handle these flows.

IV. HYDROLOGY

The Riverside County Hydrology Manual (RCFC&WCD) was used to develop the hydrologic parameters for the hydrology analysis. In addition, Hydrologic Soil Groups (HSG) were determined using the Natural Resources Conservation Service Web Soil Survey. The entire study area consists of soil type "C" (see Appendix E).

The Rational Method was used to determine the peak flow rates and times of concentration under the existing and proposed conditions. Computations were performed using the RSBC computer program developed by Civil Cadd/Civil Design Engineering Software.

V. RESULTS

For preliminary sizing of the proposed underground detention basin, a unit hydrograph analysis was performed for the 10-year, 24-hour storm event for both the existing condition and proposed condition. Calculations can be found in Appendix C and Appendix D. The results of the analysis are found below in Table 5-1. The difference in runoff volume for the existing and proposed condition is 0.73 acre-feet, which is approximately 32,000 cubic feet. The 100-year storm for the proposed condition has a peak flow rate of 4.22cfs compared to the existing condition of 3.95 cfs. The increase is minimal.

Unit Hydrograph			
Condition	Drainage Area (acre)	Q_{10} (cfs)	V_{10} (ac-ft)
Existing	7.06	2.04	0.75
Proposed	7.06	2.59	1.48

Table 5-1: Existing & Proposed Condition Unit Hydrograph Method Hydrology Results

VI. STUDY FINDINGS

The proposed basin will help reduce runoff volume during large storms and also help mitigate for increased peak flow rate caused by the development. Post-development flows will enter the underground basin via drop inlet, then get directed to a proposed sump and pump. The pump will direct flows to the proposed modular wetland system for water quality purposes at a rate optimal for treatment.

VII. CONCLUSION

The proposed underground basin has been sized to retain the difference in volume between the existing condition and the proposed condition for the 10-year, 24-hour storm event. The basin will help reduce flood volume leaving the site and help mitigate post-development peak flow rate. In the event the basin reaches capacity, an overflow pipe will direct flows to the public storm drain line proposed as part of this project. Flows captured onsite will be directed to the proposed modular wetlands system for water quality purposes and discharge into the public storm drain line proposed as part of this project. Off site flows will be conveyed to Edgemont Channel as they are historically.

VIII. REFERENCES

1. Riverside County; *Riverside County Flood Control & Water Conservation District Hydrology Manual*, April 1978.
2. National Resources Conservation Service; Web Soil Survey. September 29, 2021.
3. NOAA's National Weather Service; NOAA Atlas 14, Volume 6, Version 2. November 10, 2021

FIGURE 1: REGIONAL VICINITY MAP

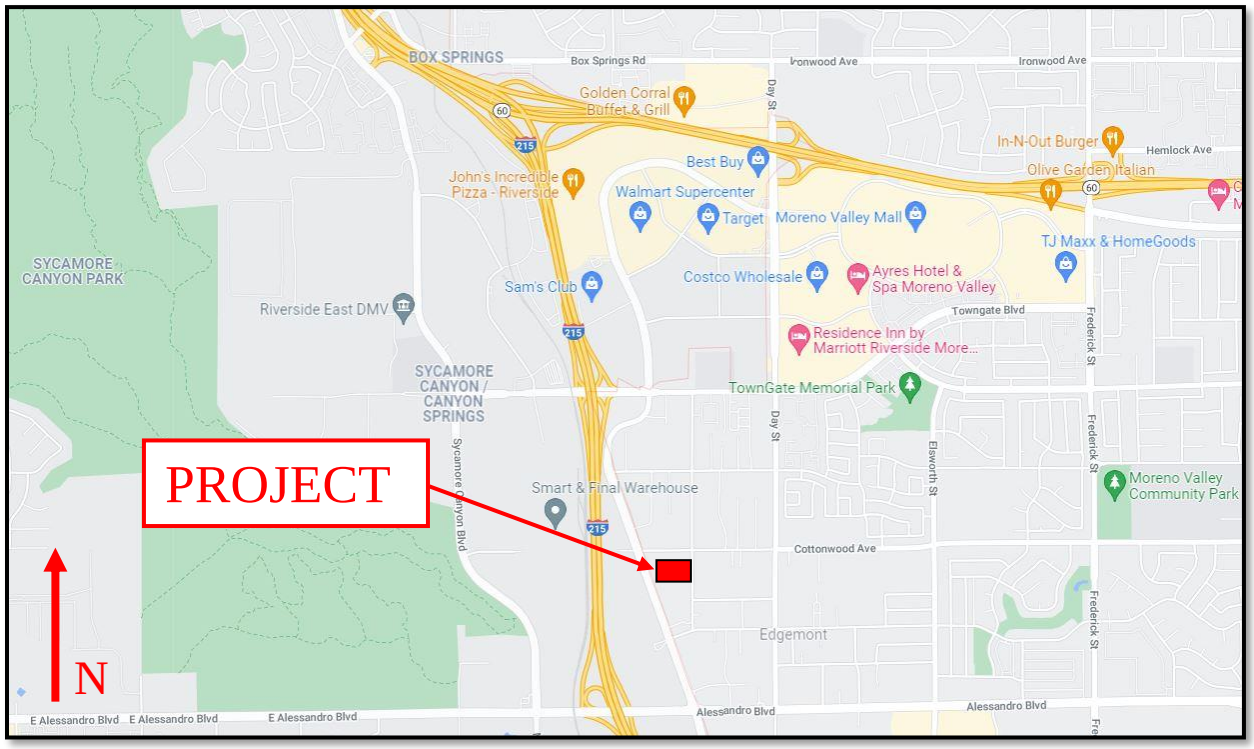
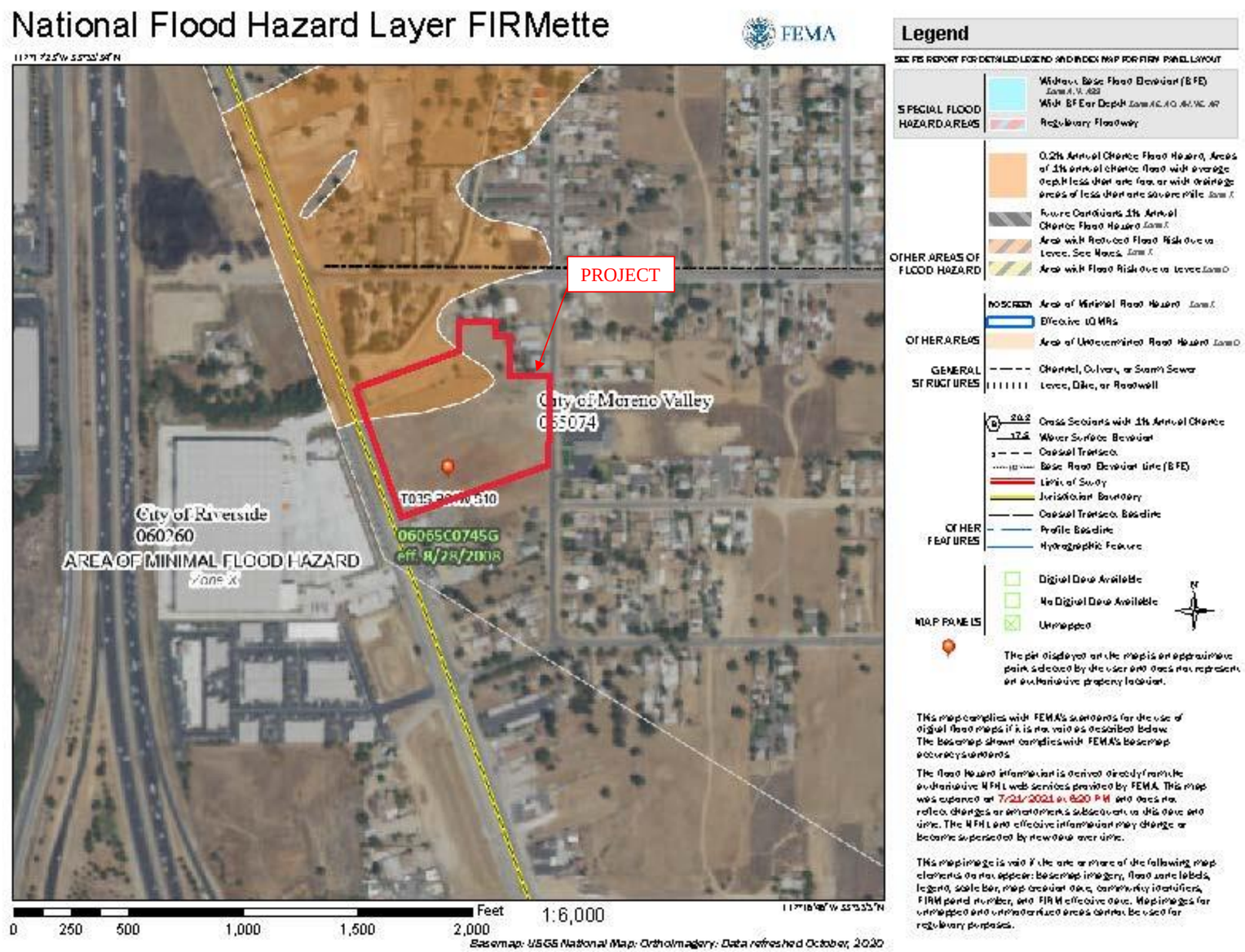


FIGURE 2: LOCAL VICINITY MAP

FIGURE 3: FEMA FLOODPLAIN MAP



APPENDIX A

ON-SITE HYDROLOGY BASED ON EXISTING CONDITION (RATIONAL METHOD)

APPENDIX A.1

10-YEAR HYDROLOGY CALCULATIONS (EXISTING)

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 03/16/22 File:pre10.out

1494-0006 INDUSTRIAL WAREHOUSE
PRE-DEVELOPMENT ANALYSIS
10-YEAR STORM EVENT

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

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

Program License Serial Number 6522

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

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

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.820(In/Hr)
Slope of intensity duration curve = 0.5000

++
Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 895.000(Ft.)
Top (of initial area) elevation = 40.000(Ft.)
Bottom (of initial area) elevation = 27.500(Ft.)
Difference in elevation = 12.500(Ft.)
Slope = 0.01397 s(percent)= 1.40
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 18.879 min.

```
Rainfall intensity =      1.462(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.784
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  86.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      8.088(CFS)
Total initial stream area =        7.060(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            7.06 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  86.0
```

APPENDIX A.2

100-YEAR HYDROLOGY CALCULATIONS (EXISTING)

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 03/16/22 File:pre100.out

1494-0006 INDUSTRIAL WAREHOUSE
PRE-DEVELOPMENT ANALYSIS
100-YEAR STORM EVENT

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

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

Program License Serial Number 6522

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

Storm event (year) = 100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.200(In/Hr)
Slope of intensity duration curve = 0.5000

++
Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 895.000(Ft.)
Top (of initial area) elevation = 40.000(Ft.)
Bottom (of initial area) elevation = 27.500(Ft.)
Difference in elevation = 12.500(Ft.)
Slope = 0.01397 s(percent)= 1.40
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 18.879 min.

```
Rainfall intensity =      2.139(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.868
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  94.40
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =     13.108(CFS)
Total initial stream area =        7.060(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            7.06 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  86.0
```

APPENDIX B

ON-SITE HYDROLOGY BASED ON PROPOSED CONDITION (RATIONAL METHOD)

APPENDIX B.1

10-YEAR HYDROLOGY CALCULATIONS (PROPOSED)

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 03/16/22 File:post10.out

1494-0006 INDUSTRIAL WAREHOUSE
POST-DEVELOPMENT
10-YEAR STORM EVENT

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

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

Program License Serial Number 6522

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

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

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.820(In/Hr)
Slope of intensity duration curve = 0.5000

++
Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 667.000(Ft.)
Top (of initial area) elevation = 36.500(Ft.)
Bottom (of initial area) elevation = 32.050(Ft.)
Difference in elevation = 4.450(Ft.)
Slope = 0.00667 s(percent)= 0.67
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.013 min.

```
Rainfall intensity =      1.914(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      3.228(CFS)
Total initial stream area =        1.920(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      101.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      1.920(Ac.)
Runoff from this stream =      3.228(CFS)
Time of concentration =   11.01 min.
Rainfall intensity =     1.914(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      101.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   557.000(Ft.)
Top (of initial area) elevation =    37.200(Ft.)
Bottom (of initial area) elevation =    32.050(Ft.)
Difference in elevation =     5.150(Ft.)
Slope =    0.00925  s(percent)=       0.92
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.600 min.
Rainfall intensity =      2.050(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.880
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      5.157(CFS)
Total initial stream area =        2.860(Ac.)
Pervious area fraction = 0.100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Process from Point/Station      101.000 to Point/Station      101.000
```

**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area = 2.860(Ac.)
Runoff from this stream = 5.157(CFS)
Time of concentration = 9.60 min.
Rainfall intensity = 2.050(In/Hr)
Program is now starting with Main Stream No. 3

++
Process from Point/Station 103.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 715.000(Ft.)
Top (of initial area) elevation = 37.200(Ft.)
Bottom (of initial area) elevation = 32.050(Ft.)
Difference in elevation = 5.150(Ft.)
Slope = 0.00720 s(percent)= 0.72
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.152 min.
Rainfall intensity = 1.902(In/Hr) for a 10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.878
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 69.00
Pervious area fraction = 0.100; Impervious fraction = 0.900
Initial subarea runoff = 3.809(CFS)
Total initial stream area = 2.280(Ac.)
Pervious area fraction = 0.100

++
Process from Point/Station 101.000 to Point/Station 101.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area = 2.280(Ac.)
Runoff from this stream = 3.809(CFS)
Time of concentration = 11.15 min.
Rainfall intensity = 1.902(In/Hr)
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	3.228	11.01	1.914
2	5.157	9.60	2.050

```
3        3.809     11.15              1.902
Largest stream flow has longer or shorter time of concentration
Qp =      5.157 + sum of
        Qa          Tb/Ta
         3.228 *    0.872 =      2.814
        Qa          Tb/Ta
         3.809 *    0.861 =      3.279
Qp =     11.251

Total of 3 main streams to confluence:
Flow rates before confluence point:
       3.228       5.157       3.809
Area of streams before confluence:
        1.920        2.860        2.280


Results of confluence:
Total flow rate =     11.251(CFS)
Time of concentration =     9.600 min.
Effective stream area after confluence  =      7.060(Ac.)
End of computations, total study area =            7.06 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  69.0
```

APPENDIX B.2

100-YEAR HYDROLOGY CALCULATIONS (PROPOSED)

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 03/16/22 File:post100.out

1494-0006 INDUSTRIAL WAREHOUSE
POST-DEVELOPMENT
100-YEAR STORM EVENT

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

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

Program License Serial Number 6522

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

Storm event (year) = 100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.200(In/Hr)
Slope of intensity duration curve = 0.5000

++
Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 667.000(Ft.)
Top (of initial area) elevation = 36.500(Ft.)
Bottom (of initial area) elevation = 32.050(Ft.)
Difference in elevation = 4.450(Ft.)
Slope = 0.00667 s(percent)= 0.67
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.013 min.

```
Rainfall intensity =      2.801(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.893
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  84.40
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      4.801(CFS)
Total initial stream area =        1.920(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      101.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      1.920(Ac.)
Runoff from this stream =      4.801(CFS)
Time of concentration =   11.01 min.
Rainfall intensity =     2.801(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      101.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
Initial area flow distance =   557.000(Ft.)
Top (of initial area) elevation =    37.200(Ft.)
Bottom (of initial area) elevation =    32.050(Ft.)
Difference in elevation =     5.150(Ft.)
Slope =    0.00925  s(percent)=       0.92
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.600 min.
Rainfall intensity =      3.000(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.893
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  84.40
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      7.663(CFS)
Total initial stream area =        2.860(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station      101.000 to Point/Station      101.000
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**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area = 2.860(Ac.)
Runoff from this stream = 7.663(CFS)
Time of concentration = 9.60 min.
Rainfall intensity = 3.000(In/Hr)
Program is now starting with Main Stream No. 3

++
Process from Point/Station 103.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 715.000(Ft.)
Top (of initial area) elevation = 37.200(Ft.)
Bottom (of initial area) elevation = 32.050(Ft.)
Difference in elevation = 5.150(Ft.)
Slope = 0.00720 s(percent)= 0.72
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.152 min.
Rainfall intensity = 2.783(In/Hr) for a 100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.893
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3) = 84.40
Pervious area fraction = 0.100; Impervious fraction = 0.900
Initial subarea runoff = 5.665(CFS)
Total initial stream area = 2.280(Ac.)
Pervious area fraction = 0.100

++
Process from Point/Station 101.000 to Point/Station 101.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area = 2.280(Ac.)
Runoff from this stream = 5.665(CFS)
Time of concentration = 11.15 min.
Rainfall intensity = 2.783(In/Hr)
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	4.801	11.01	2.801
2	7.663	9.60	3.000

```
3        5.665     11.15              2.783
Largest stream flow has longer or shorter time of concentration
Qp =      7.663 + sum of
        Qa          Tb/Ta
         4.801 *    0.872 =      4.185
        Qa          Tb/Ta
         5.665 *    0.861 =      4.877
Qp =     16.725

Total of 3 main streams to confluence:
Flow rates before confluence point:
       4.801       7.663       5.665
Area of streams before confluence:
        1.920        2.860        2.280


Results of confluence:
Total flow rate =     16.725(CFS)
Time of concentration =     9.600 min.
Effective stream area after confluence  =      7.060(Ac.)
End of computations, total study area =            7.06 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  69.0
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APPENDIX C

ON-SITE HYDROLOGY BASED ON EXISTING CONDITION (UNIT HYDROGRAPH)

APPENDIX C.1

10-YEAR HYDROLOGY CALCULATIONS (EXISTING)

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

Study date 03/16/22 File: 102410.out

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

Program License Serial Number 6522

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

English Units used in output format

1494-0006 OLD 215 FRONTAGE ROAD
EXISTING CONDITION
10-YEAR, 24-HOUR STORM EVENT

Drainage Area = 7.06(Ac.) = 0.011 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 7.06(Ac.) = 0.011 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.189 Hr.
Lag time = 11.33 Min.
25% of lag time = 2.83 Min.
40% of lag time = 4.53 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.06	1.85	13.06

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.06	4.52	31.91

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 1.850(In)
Area Averaged 100-Year Rainfall = 4.520(In)

Point rain (area averaged) = 2.948(In)
Areal adjustment factor = 100.00 %

Adjusted average point rain = 2.948(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.060	91.00	0.000

Total Area Entered = 7.06(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
91.0	91.0	0.117	0.000	0.117	1.000	0.117
					Sum (F) =	0.117

Area averaged mean soil loss (F) (In/Hr) = 0.117
Minimum soil loss rate ((In/Hr)) = 0.059
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	44.138	5.059	0.360
2	0.167	88.277	21.222	1.510
3	0.250	132.415	28.410	2.021
4	0.333	176.554	15.425	1.098
5	0.417	220.692	7.544	0.537
6	0.500	264.831	5.082	0.362
7	0.583	308.969	3.785	0.269
8	0.667	353.107	2.833	0.202
9	0.750	397.246	2.247	0.160
10	0.833	441.384	1.709	0.122
11	0.917	485.523	1.385	0.099
12	1.000	529.661	1.246	0.089
13	1.083	573.799	0.964	0.069
14	1.167	617.938	0.799	0.057
15	1.250	662.076	0.642	0.046
16	1.333	706.215	0.488	0.035
17	1.417	750.353	0.441	0.031
18	1.500	794.492	0.441	0.031
19	1.583	838.630	0.276	0.020
			Sum = 100.000	Sum= 7.115

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

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max		Low	Effective (In/Hr)
1	0.08	0.07	0.024	(0.207)		0.021	0.002
2	0.17	0.07	0.024	(0.207)		0.021	0.002
3	0.25	0.07	0.024	(0.206)		0.021	0.002
4	0.33	0.10	0.035	(0.205)		0.032	0.004
5	0.42	0.10	0.035	(0.204)		0.032	0.004
6	0.50	0.10	0.035	(0.203)		0.032	0.004

7	0.58	0.10	0.035	(0.203)	0.032	0.004
8	0.67	0.10	0.035	(0.202)	0.032	0.004
9	0.75	0.10	0.035	(0.201)	0.032	0.004
10	0.83	0.13	0.047	(0.200)	0.042	0.005
11	0.92	0.13	0.047	(0.199)	0.042	0.005
12	1.00	0.13	0.047	(0.199)	0.042	0.005
13	1.08	0.10	0.035	(0.198)	0.032	0.004
14	1.17	0.10	0.035	(0.197)	0.032	0.004
15	1.25	0.10	0.035	(0.196)	0.032	0.004
16	1.33	0.10	0.035	(0.196)	0.032	0.004
17	1.42	0.10	0.035	(0.195)	0.032	0.004
18	1.50	0.10	0.035	(0.194)	0.032	0.004
19	1.58	0.10	0.035	(0.193)	0.032	0.004
20	1.67	0.10	0.035	(0.192)	0.032	0.004
21	1.75	0.10	0.035	(0.192)	0.032	0.004
22	1.83	0.13	0.047	(0.191)	0.042	0.005
23	1.92	0.13	0.047	(0.190)	0.042	0.005
24	2.00	0.13	0.047	(0.189)	0.042	0.005
25	2.08	0.13	0.047	(0.189)	0.042	0.005
26	2.17	0.13	0.047	(0.188)	0.042	0.005
27	2.25	0.13	0.047	(0.187)	0.042	0.005
28	2.33	0.13	0.047	(0.186)	0.042	0.005
29	2.42	0.13	0.047	(0.186)	0.042	0.005
30	2.50	0.13	0.047	(0.185)	0.042	0.005
31	2.58	0.17	0.059	(0.184)	0.053	0.006
32	2.67	0.17	0.059	(0.183)	0.053	0.006
33	2.75	0.17	0.059	(0.183)	0.053	0.006
34	2.83	0.17	0.059	(0.182)	0.053	0.006
35	2.92	0.17	0.059	(0.181)	0.053	0.006
36	3.00	0.17	0.059	(0.180)	0.053	0.006
37	3.08	0.17	0.059	(0.180)	0.053	0.006
38	3.17	0.17	0.059	(0.179)	0.053	0.006
39	3.25	0.17	0.059	(0.178)	0.053	0.006
40	3.33	0.17	0.059	(0.177)	0.053	0.006
41	3.42	0.17	0.059	(0.177)	0.053	0.006
42	3.50	0.17	0.059	(0.176)	0.053	0.006
43	3.58	0.17	0.059	(0.175)	0.053	0.006
44	3.67	0.17	0.059	(0.174)	0.053	0.006
45	3.75	0.17	0.059	(0.174)	0.053	0.006
46	3.83	0.20	0.071	(0.173)	0.064	0.007
47	3.92	0.20	0.071	(0.172)	0.064	0.007
48	4.00	0.20	0.071	(0.171)	0.064	0.007
49	4.08	0.20	0.071	(0.171)	0.064	0.007
50	4.17	0.20	0.071	(0.170)	0.064	0.007
51	4.25	0.20	0.071	(0.169)	0.064	0.007
52	4.33	0.23	0.083	(0.169)	0.074	0.008
53	4.42	0.23	0.083	(0.168)	0.074	0.008
54	4.50	0.23	0.083	(0.167)	0.074	0.008
55	4.58	0.23	0.083	(0.166)	0.074	0.008
56	4.67	0.23	0.083	(0.166)	0.074	0.008
57	4.75	0.23	0.083	(0.165)	0.074	0.008
58	4.83	0.27	0.094	(0.164)	0.085	0.009
59	4.92	0.27	0.094	(0.164)	0.085	0.009
60	5.00	0.27	0.094	(0.163)	0.085	0.009
61	5.08	0.20	0.071	(0.162)	0.064	0.007
62	5.17	0.20	0.071	(0.161)	0.064	0.007
63	5.25	0.20	0.071	(0.161)	0.064	0.007
64	5.33	0.23	0.083	(0.160)	0.074	0.008
65	5.42	0.23	0.083	(0.159)	0.074	0.008
66	5.50	0.23	0.083	(0.159)	0.074	0.008

67	5.58	0.27	0.094	(0.158)	0.085	0.009
68	5.67	0.27	0.094	(0.157)	0.085	0.009
69	5.75	0.27	0.094	(0.157)	0.085	0.009
70	5.83	0.27	0.094	(0.156)	0.085	0.009
71	5.92	0.27	0.094	(0.155)	0.085	0.009
72	6.00	0.27	0.094	(0.154)	0.085	0.009
73	6.08	0.30	0.106	(0.154)	0.096	0.011
74	6.17	0.30	0.106	(0.153)	0.096	0.011
75	6.25	0.30	0.106	(0.152)	0.096	0.011
76	6.33	0.30	0.106	(0.152)	0.096	0.011
77	6.42	0.30	0.106	(0.151)	0.096	0.011
78	6.50	0.30	0.106	(0.150)	0.096	0.011
79	6.58	0.33	0.118	(0.150)	0.106	0.012
80	6.67	0.33	0.118	(0.149)	0.106	0.012
81	6.75	0.33	0.118	(0.148)	0.106	0.012
82	6.83	0.33	0.118	(0.148)	0.106	0.012
83	6.92	0.33	0.118	(0.147)	0.106	0.012
84	7.00	0.33	0.118	(0.146)	0.106	0.012
85	7.08	0.33	0.118	(0.146)	0.106	0.012
86	7.17	0.33	0.118	(0.145)	0.106	0.012
87	7.25	0.33	0.118	(0.144)	0.106	0.012
88	7.33	0.37	0.130	(0.144)	0.117	0.013
89	7.42	0.37	0.130	(0.143)	0.117	0.013
90	7.50	0.37	0.130	(0.142)	0.117	0.013
91	7.58	0.40	0.142	(0.142)	0.127	0.014
92	7.67	0.40	0.142	(0.141)	0.127	0.014
93	7.75	0.40	0.142	(0.140)	0.127	0.014
94	7.83	0.43	0.153	(0.140)	0.138	0.015
95	7.92	0.43	0.153	(0.139)	0.138	0.015
96	8.00	0.43	0.153	(0.138)	0.138	0.015
97	8.08	0.50	0.177	0.138	(0.159)	0.039
98	8.17	0.50	0.177	0.137	(0.159)	0.040
99	8.25	0.50	0.177	0.137	(0.159)	0.040
100	8.33	0.50	0.177	0.136	(0.159)	0.041
101	8.42	0.50	0.177	0.135	(0.159)	0.042
102	8.50	0.50	0.177	0.135	(0.159)	0.042
103	8.58	0.53	0.189	0.134	(0.170)	0.055
104	8.67	0.53	0.189	0.133	(0.170)	0.055
105	8.75	0.53	0.189	0.133	(0.170)	0.056
106	8.83	0.57	0.200	0.132	(0.180)	0.068
107	8.92	0.57	0.200	0.131	(0.180)	0.069
108	9.00	0.57	0.200	0.131	(0.180)	0.070
109	9.08	0.63	0.224	0.130	(0.202)	0.094
110	9.17	0.63	0.224	0.130	(0.202)	0.094
111	9.25	0.63	0.224	0.129	(0.202)	0.095
112	9.33	0.67	0.236	0.128	(0.212)	0.107
113	9.42	0.67	0.236	0.128	(0.212)	0.108
114	9.50	0.67	0.236	0.127	(0.212)	0.109
115	9.58	0.70	0.248	0.127	(0.223)	0.121
116	9.67	0.70	0.248	0.126	(0.223)	0.122
117	9.75	0.70	0.248	0.125	(0.223)	0.122
118	9.83	0.73	0.259	0.125	(0.234)	0.135
119	9.92	0.73	0.259	0.124	(0.234)	0.135
120	10.00	0.73	0.259	0.124	(0.234)	0.136
121	10.08	0.50	0.177	0.123	(0.159)	0.054
122	10.17	0.50	0.177	0.122	(0.159)	0.055
123	10.25	0.50	0.177	0.122	(0.159)	0.055
124	10.33	0.50	0.177	0.121	(0.159)	0.056
125	10.42	0.50	0.177	0.121	(0.159)	0.056
126	10.50	0.50	0.177	0.120	(0.159)	0.057

127	10.58	0.67	0.236	0.119	(	0.212)	0.116
128	10.67	0.67	0.236	0.119	(	0.212)	0.117
129	10.75	0.67	0.236	0.118	(	0.212)	0.118
130	10.83	0.67	0.236	0.118	(	0.212)	0.118
131	10.92	0.67	0.236	0.117	(	0.212)	0.119
132	11.00	0.67	0.236	0.117	(	0.212)	0.119
133	11.08	0.63	0.224	0.116	(	0.202)	0.108
134	11.17	0.63	0.224	0.115	(	0.202)	0.109
135	11.25	0.63	0.224	0.115	(	0.202)	0.109
136	11.33	0.63	0.224	0.114	(	0.202)	0.110
137	11.42	0.63	0.224	0.114	(	0.202)	0.110
138	11.50	0.63	0.224	0.113	(	0.202)	0.111
139	11.58	0.57	0.200	0.113	(	0.180)	0.088
140	11.67	0.57	0.200	0.112	(	0.180)	0.089
141	11.75	0.57	0.200	0.111	(	0.180)	0.089
142	11.83	0.60	0.212	0.111	(	0.191)	0.101
143	11.92	0.60	0.212	0.110	(	0.191)	0.102
144	12.00	0.60	0.212	0.110	(	0.191)	0.103
145	12.08	0.83	0.295	0.109	(	0.265)	0.186
146	12.17	0.83	0.295	0.109	(	0.265)	0.186
147	12.25	0.83	0.295	0.108	(	0.265)	0.187
148	12.33	0.87	0.307	0.108	(	0.276)	0.199
149	12.42	0.87	0.307	0.107	(	0.276)	0.200
150	12.50	0.87	0.307	0.107	(	0.276)	0.200
151	12.58	0.93	0.330	0.106	(	0.297)	0.224
152	12.67	0.93	0.330	0.105	(	0.297)	0.225
153	12.75	0.93	0.330	0.105	(	0.297)	0.225
154	12.83	0.97	0.342	0.104	(	0.308)	0.238
155	12.92	0.97	0.342	0.104	(	0.308)	0.238
156	13.00	0.97	0.342	0.103	(	0.308)	0.239
157	13.08	1.13	0.401	0.103	(	0.361)	0.298
158	13.17	1.13	0.401	0.102	(	0.361)	0.299
159	13.25	1.13	0.401	0.102	(	0.361)	0.299
160	13.33	1.13	0.401	0.101	(	0.361)	0.300
161	13.42	1.13	0.401	0.101	(	0.361)	0.300
162	13.50	1.13	0.401	0.100	(	0.361)	0.301
163	13.58	0.77	0.271	0.100	(	0.244)	0.172
164	13.67	0.77	0.271	0.099	(	0.244)	0.172
165	13.75	0.77	0.271	0.099	(	0.244)	0.173
166	13.83	0.77	0.271	0.098	(	0.244)	0.173
167	13.92	0.77	0.271	0.098	(	0.244)	0.174
168	14.00	0.77	0.271	0.097	(	0.244)	0.174
169	14.08	0.90	0.318	0.097	(	0.287)	0.222
170	14.17	0.90	0.318	0.096	(	0.287)	0.222
171	14.25	0.90	0.318	0.096	(	0.287)	0.223
172	14.33	0.87	0.307	0.095	(	0.276)	0.211
173	14.42	0.87	0.307	0.095	(	0.276)	0.212
174	14.50	0.87	0.307	0.094	(	0.276)	0.212
175	14.58	0.87	0.307	0.094	(	0.276)	0.213
176	14.67	0.87	0.307	0.093	(	0.276)	0.213
177	14.75	0.87	0.307	0.093	(	0.276)	0.214
178	14.83	0.83	0.295	0.092	(	0.265)	0.203
179	14.92	0.83	0.295	0.092	(	0.265)	0.203
180	15.00	0.83	0.295	0.091	(	0.265)	0.203
181	15.08	0.80	0.283	0.091	(	0.255)	0.192
182	15.17	0.80	0.283	0.090	(	0.255)	0.193
183	15.25	0.80	0.283	0.090	(	0.255)	0.193
184	15.33	0.77	0.271	0.090	(	0.244)	0.182
185	15.42	0.77	0.271	0.089	(	0.244)	0.182
186	15.50	0.77	0.271	0.089	(	0.244)	0.183

187	15.58	0.63	0.224	0.088	(0.202)	0.136
188	15.67	0.63	0.224	0.088	(0.202)	0.136
189	15.75	0.63	0.224	0.087	(0.202)	0.137
190	15.83	0.63	0.224	0.087	(0.202)	0.137
191	15.92	0.63	0.224	0.086	(0.202)	0.138
192	16.00	0.63	0.224	0.086	(0.202)	0.138
193	16.08	0.13	0.047	(0.085)	0.042	0.005
194	16.17	0.13	0.047	(0.085)	0.042	0.005
195	16.25	0.13	0.047	(0.085)	0.042	0.005
196	16.33	0.13	0.047	(0.084)	0.042	0.005
197	16.42	0.13	0.047	(0.084)	0.042	0.005
198	16.50	0.13	0.047	(0.083)	0.042	0.005
199	16.58	0.10	0.035	(0.083)	0.032	0.004
200	16.67	0.10	0.035	(0.082)	0.032	0.004
201	16.75	0.10	0.035	(0.082)	0.032	0.004
202	16.83	0.10	0.035	(0.082)	0.032	0.004
203	16.92	0.10	0.035	(0.081)	0.032	0.004
204	17.00	0.10	0.035	(0.081)	0.032	0.004
205	17.08	0.17	0.059	(0.080)	0.053	0.006
206	17.17	0.17	0.059	(0.080)	0.053	0.006
207	17.25	0.17	0.059	(0.080)	0.053	0.006
208	17.33	0.17	0.059	(0.079)	0.053	0.006
209	17.42	0.17	0.059	(0.079)	0.053	0.006
210	17.50	0.17	0.059	(0.078)	0.053	0.006
211	17.58	0.17	0.059	(0.078)	0.053	0.006
212	17.67	0.17	0.059	(0.078)	0.053	0.006
213	17.75	0.17	0.059	(0.077)	0.053	0.006
214	17.83	0.13	0.047	(0.077)	0.042	0.005
215	17.92	0.13	0.047	(0.076)	0.042	0.005
216	18.00	0.13	0.047	(0.076)	0.042	0.005
217	18.08	0.13	0.047	(0.076)	0.042	0.005
218	18.17	0.13	0.047	(0.075)	0.042	0.005
219	18.25	0.13	0.047	(0.075)	0.042	0.005
220	18.33	0.13	0.047	(0.075)	0.042	0.005
221	18.42	0.13	0.047	(0.074)	0.042	0.005
222	18.50	0.13	0.047	(0.074)	0.042	0.005
223	18.58	0.10	0.035	(0.074)	0.032	0.004
224	18.67	0.10	0.035	(0.073)	0.032	0.004
225	18.75	0.10	0.035	(0.073)	0.032	0.004
226	18.83	0.07	0.024	(0.072)	0.021	0.002
227	18.92	0.07	0.024	(0.072)	0.021	0.002
228	19.00	0.07	0.024	(0.072)	0.021	0.002
229	19.08	0.10	0.035	(0.071)	0.032	0.004
230	19.17	0.10	0.035	(0.071)	0.032	0.004
231	19.25	0.10	0.035	(0.071)	0.032	0.004
232	19.33	0.13	0.047	(0.070)	0.042	0.005
233	19.42	0.13	0.047	(0.070)	0.042	0.005
234	19.50	0.13	0.047	(0.070)	0.042	0.005
235	19.58	0.10	0.035	(0.069)	0.032	0.004
236	19.67	0.10	0.035	(0.069)	0.032	0.004
237	19.75	0.10	0.035	(0.069)	0.032	0.004
238	19.83	0.07	0.024	(0.069)	0.021	0.002
239	19.92	0.07	0.024	(0.068)	0.021	0.002
240	20.00	0.07	0.024	(0.068)	0.021	0.002
241	20.08	0.10	0.035	(0.068)	0.032	0.004
242	20.17	0.10	0.035	(0.067)	0.032	0.004
243	20.25	0.10	0.035	(0.067)	0.032	0.004
244	20.33	0.10	0.035	(0.067)	0.032	0.004
245	20.42	0.10	0.035	(0.066)	0.032	0.004
246	20.50	0.10	0.035	(0.066)	0.032	0.004

247	20.58	0.10	0.035	(0.066)	0.032	0.004
248	20.67	0.10	0.035	(0.066)	0.032	0.004
249	20.75	0.10	0.035	(0.065)	0.032	0.004
250	20.83	0.07	0.024	(0.065)	0.021	0.002
251	20.92	0.07	0.024	(0.065)	0.021	0.002
252	21.00	0.07	0.024	(0.065)	0.021	0.002
253	21.08	0.10	0.035	(0.064)	0.032	0.004
254	21.17	0.10	0.035	(0.064)	0.032	0.004
255	21.25	0.10	0.035	(0.064)	0.032	0.004
256	21.33	0.07	0.024	(0.064)	0.021	0.002
257	21.42	0.07	0.024	(0.063)	0.021	0.002
258	21.50	0.07	0.024	(0.063)	0.021	0.002
259	21.58	0.10	0.035	(0.063)	0.032	0.004
260	21.67	0.10	0.035	(0.063)	0.032	0.004
261	21.75	0.10	0.035	(0.062)	0.032	0.004
262	21.83	0.07	0.024	(0.062)	0.021	0.002
263	21.92	0.07	0.024	(0.062)	0.021	0.002
264	22.00	0.07	0.024	(0.062)	0.021	0.002
265	22.08	0.10	0.035	(0.062)	0.032	0.004
266	22.17	0.10	0.035	(0.061)	0.032	0.004
267	22.25	0.10	0.035	(0.061)	0.032	0.004
268	22.33	0.07	0.024	(0.061)	0.021	0.002
269	22.42	0.07	0.024	(0.061)	0.021	0.002
270	22.50	0.07	0.024	(0.061)	0.021	0.002
271	22.58	0.07	0.024	(0.060)	0.021	0.002
272	22.67	0.07	0.024	(0.060)	0.021	0.002
273	22.75	0.07	0.024	(0.060)	0.021	0.002
274	22.83	0.07	0.024	(0.060)	0.021	0.002
275	22.92	0.07	0.024	(0.060)	0.021	0.002
276	23.00	0.07	0.024	(0.060)	0.021	0.002
277	23.08	0.07	0.024	(0.060)	0.021	0.002
278	23.17	0.07	0.024	(0.059)	0.021	0.002
279	23.25	0.07	0.024	(0.059)	0.021	0.002
280	23.33	0.07	0.024	(0.059)	0.021	0.002
281	23.42	0.07	0.024	(0.059)	0.021	0.002
282	23.50	0.07	0.024	(0.059)	0.021	0.002
283	23.58	0.07	0.024	(0.059)	0.021	0.002
284	23.67	0.07	0.024	(0.059)	0.021	0.002
285	23.75	0.07	0.024	(0.059)	0.021	0.002
286	23.83	0.07	0.024	(0.059)	0.021	0.002
287	23.92	0.07	0.024	(0.059)	0.021	0.002
288	24.00	0.07	0.024	(0.059)	0.021	0.002

(Loss Rate Not Used)

Sum = 100.0 Sum = 15.2

Flood volume = Effective rainfall 1.27(In)
times area 7.1(Ac.)/[(In)/(Ft.)] = 0.7(Ac.Ft)
Total soil loss = 1.68(In)
Total soil loss = 0.989(Ac.Ft)
Total rainfall = 2.95(In)
Flood volume = 32478.2 Cubic Feet
Total soil loss = 43083.3 Cubic Feet

Peak flow rate of this hydrograph = 2.039(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.00	Q				
0+10	0.0000	0.00	Q				
0+15	0.0001	0.01	Q				
0+20	0.0002	0.01	Q				
0+25	0.0003	0.02	Q				
0+30	0.0004	0.02	Q				
0+35	0.0006	0.02	Q				
0+40	0.0007	0.02	Q				
0+45	0.0009	0.02	Q				
0+50	0.0010	0.02	Q				
0+55	0.0012	0.03	Q				
1+ 0	0.0014	0.03	Q				
1+ 5	0.0016	0.03	Q				
1+10	0.0018	0.03	Q				
1+15	0.0020	0.03	Q				
1+20	0.0022	0.03	Q				
1+25	0.0023	0.03	Q				
1+30	0.0025	0.03	Q				
1+35	0.0027	0.03	Q				
1+40	0.0029	0.03	Q				
1+45	0.0030	0.03	Q				
1+50	0.0032	0.03	Q				
1+55	0.0034	0.03	Q				
2+ 0	0.0036	0.03	Q				
2+ 5	0.0038	0.03	Q				
2+10	0.0041	0.03	Q				
2+15	0.0043	0.03	Q				
2+20	0.0045	0.03	Q				
2+25	0.0047	0.03	Q				
2+30	0.0049	0.03	Q				
2+35	0.0052	0.03	Q				
2+40	0.0054	0.04	Q				
2+45	0.0057	0.04	Q				
2+50	0.0060	0.04	Q				
2+55	0.0062	0.04	Q				
3+ 0	0.0065	0.04	Q				
3+ 5	0.0068	0.04	Q				
3+10	0.0071	0.04	Q				
3+15	0.0074	0.04	Q				
3+20	0.0076	0.04	Q				
3+25	0.0079	0.04	Q				
3+30	0.0082	0.04	Q				
3+35	0.0085	0.04	Q				
3+40	0.0088	0.04	Q				
3+45	0.0091	0.04	Q				
3+50	0.0094	0.04	Q				
3+55	0.0097	0.04	Q				
4+ 0	0.0100	0.05	Q				
4+ 5	0.0103	0.05	Q				
4+10	0.0107	0.05	Q				
4+15	0.0110	0.05	Q				
4+20	0.0113	0.05	Q				
4+25	0.0117	0.05	Q				
4+30	0.0121	0.05	Q				
4+35	0.0124	0.06	Q				
4+40	0.0128	0.06	Q				
4+45	0.0132	0.06	Q				

4+50	0.0136	0.06	Q	|	|	|	|
4+55	0.0140	0.06	Q	|	|	|	|
5+ 0	0.0145	0.06	Q	|	|	|	|
5+ 5	0.0149	0.06	Q	|	|	|	|
5+10	0.0153	0.06	Q	|	|	|	|
5+15	0.0157	0.06	Q	|	|	|	|
5+20	0.0161	0.05	Q	|	|	|	|
5+25	0.0165	0.06	Q	|	|	|	|
5+30	0.0169	0.06	Q	|	|	|	|
5+35	0.0173	0.06	Q	|	|	|	|
5+40	0.0177	0.06	Q	|	|	|	|
5+45	0.0181	0.06	Q	|	|	|	|
5+50	0.0185	0.06	Q	|	|	|	|
5+55	0.0190	0.07	QV	|	|	|	|
6+ 0	0.0194	0.07	QV	|	|	|	|
6+ 5	0.0199	0.07	QV	|	|	|	|
6+10	0.0204	0.07	QV	|	|	|	|
6+15	0.0209	0.07	QV	|	|	|	|
6+20	0.0214	0.07	QV	|	|	|	|
6+25	0.0219	0.07	QV	|	|	|	|
6+30	0.0224	0.07	QV	|	|	|	|
6+35	0.0229	0.07	QV	|	|	|	|
6+40	0.0234	0.08	QV	|	|	|	|
6+45	0.0240	0.08	QV	|	|	|	|
6+50	0.0245	0.08	QV	|	|	|	|
6+55	0.0251	0.08	QV	|	|	|	|
7+ 0	0.0256	0.08	QV	|	|	|	|
7+ 5	0.0262	0.08	QV	|	|	|	|
7+10	0.0268	0.08	QV	|	|	|	|
7+15	0.0274	0.08	QV	|	|	|	|
7+20	0.0279	0.08	QV	|	|	|	|
7+25	0.0285	0.09	QV	|	|	|	|
7+30	0.0291	0.09	QV	|	|	|	|
7+35	0.0298	0.09	QV	|	|	|	|
7+40	0.0304	0.09	QV	|	|	|	|
7+45	0.0310	0.10	QV	|	|	|	|
7+50	0.0317	0.10	QV	|	|	|	|
7+55	0.0324	0.10	QV	|	|	|	|
8+ 0	0.0331	0.10	QV	|	|	|	|
8+ 5	0.0339	0.11	QV	|	|	|	|
8+10	0.0349	0.15	QV	|	|	|	|
8+15	0.0363	0.20	QV	|	|	|	|
8+20	0.0379	0.23	Q V	|	|	|	|
8+25	0.0396	0.25	Q V	|	|	|	|
8+30	0.0414	0.26	|QV	|	|	|	|
8+35	0.0433	0.27	|QV	|	|	|	|
8+40	0.0453	0.30	|QV	|	|	|	|
8+45	0.0476	0.33	|QV	|	|	|	|
8+50	0.0501	0.36	|QV	|	|	|	|
8+55	0.0527	0.39	|QV	|	|	|	|
9+ 0	0.0556	0.42	|QV	|	|	|	|
9+ 5	0.0587	0.45	|Q V	|	|	|	|
9+10	0.0622	0.50	| QV	|	|	|	|
9+15	0.0661	0.56	| QV	|	|	|	|
9+20	0.0702	0.60	| QV	|	|	|	|
9+25	0.0746	0.64	| Q V	|	|	|	|
9+30	0.0793	0.68	| Q V	|	|	|	|
9+35	0.0842	0.71	| Q V	|	|	|	|
9+40	0.0893	0.75	| Q V	|	|	|	|
9+45	0.0947	0.78	| Q V	|	|	|	|

9+50	0.1004	0.81	| Q V |	|	|	|
9+55	0.1062	0.85	| Q V |	|	|	|
10+ 0	0.1123	0.88	| Q V |	|	|	|
10+ 5	0.1183	0.88	| Q V |	|	|	|
10+10	0.1236	0.77	| Q V |	|	|	|
10+15	0.1279	0.62	| Q V |	|	|	|
10+20	0.1316	0.54	| Q V |	|	|	|
10+25	0.1350	0.50	| Q V |	|	|	|
10+30	0.1383	0.48	|Q V |	|	|	|
10+35	0.1417	0.49	|Q V |	|	|	|
10+40	0.1456	0.57	| Q V |	|	|	|
10+45	0.1502	0.68	| Q V |	|	|	|
10+50	0.1553	0.74	| Q V |	|	|	|
10+55	0.1606	0.77	| Q V |	|	|	|
11+ 0	0.1660	0.79	| Q V |	|	|	|
11+ 5	0.1715	0.80	| Q V|	|	|	|
11+10	0.1769	0.79	| Q V|	|	|	|
11+15	0.1823	0.78	| Q V|	|	|	|
11+20	0.1876	0.77	| Q V	|	|	|
11+25	0.1929	0.77	| Q V	|	|	|
11+30	0.1983	0.78	| Q V	|	|	|
11+35	0.2036	0.77	| Q V	|	|	|
11+40	0.2087	0.74	| Q |V	|	|	|
11+45	0.2135	0.70	| Q |V	|	|	|
11+50	0.2181	0.68	| Q |V	|	|	|
11+55	0.2229	0.69	| Q |V	|	|	|
12+ 0	0.2278	0.71	| Q | V	|	|	|
12+ 5	0.2329	0.75	| Q | V	|	|	|
12+10	0.2390	0.88	| Q | V	|	|	|
12+15	0.2462	1.05	| Q | V	|	|	|
12+20	0.2541	1.15	| Q | V	|	|	|
12+25	0.2625	1.21	| Q | V	|	|	|
12+30	0.2713	1.27	| Q | V	|	|	|
12+35	0.2804	1.32	| Q | V	|	|	|
12+40	0.2899	1.38	| Q | V	|	|	|
12+45	0.2999	1.45	| Q | V	|	|	|
12+50	0.3102	1.50	| Q | V	|	|	|
12+55	0.3208	1.54	| Q | V	|	|	|
13+ 0	0.3317	1.59	| Q | V	|	|	|
13+ 5	0.3430	1.64	| Q | V |	|	|	|
13+10	0.3551	1.75	| Q | V|	|	|	|
13+15	0.3680	1.89	| Q | V|	|	|	|
13+20	0.3816	1.96	| Q | V	|	|	|
13+25	0.3954	2.01	| Q | |V	|	|	|
13+30	0.4094	2.04	| Q | |V	|	|	|
13+35	0.4233	2.02	| Q | | V	|	|	|
13+40	0.4360	1.84	| Q | | V	|	|	|
13+45	0.4470	1.59	| Q | | V	|	|	|
13+50	0.4570	1.46	| Q | | V	|	|	|
13+55	0.4667	1.40	| Q | | V	|	|	|
14+ 0	0.4761	1.37	| Q | | V	|	|	|
14+ 5	0.4855	1.36	| Q | | V	|	|	|
14+10	0.4952	1.41	| Q | | V	|	|	|
14+15	0.5055	1.49	| Q | | V	|	|	|
14+20	0.5160	1.53	| Q | | V	|	|	|
14+25	0.5265	1.53	| Q | | V	|	|	|
14+30	0.5370	1.52	| Q | | V	|	|	|
14+35	0.5474	1.51	| Q | | V	|	|	|
14+40	0.5578	1.51	| Q | | V	|	|	|
14+45	0.5682	1.51	| Q | | V	|	|	|

14+50	0.5786	1.51	| Q |	|	|	|V |
14+55	0.5889	1.49	| Q |	|	|	|V |
15+ 0	0.5990	1.47	| Q |	|	|	| V |
15+ 5	0.6090	1.46	| Q |	|	|	| V |
15+10	0.6189	1.44	| Q |	|	|	| V |
15+15	0.6287	1.41	| Q |	|	|	| V |
15+20	0.6383	1.40	| Q |	|	|	| V |
15+25	0.6478	1.37	| Q |	|	|	| V |
15+30	0.6571	1.35	| Q |	|	|	| V |
15+35	0.6661	1.32	| Q |	|	|	| V |
15+40	0.6747	1.24	| Q |	|	|	| V |
15+45	0.6825	1.14	| Q |	|	|	| V |
15+50	0.6900	1.09	| Q |	|	|	| V |
15+55	0.6973	1.06	| Q |	|	|	| V |
16+ 0	0.7045	1.04	| Q |	|	|	| V |
16+ 5	0.7113	0.98	| Q |	|	|	| V |
16+10	0.7166	0.77	| Q |	|	|	| V |
16+15	0.7200	0.49	|Q |	|	|	| V |
16+20	0.7223	0.34	|Q |	|	|	| V |
16+25	0.7241	0.26	|Q |	|	|	| V |
16+30	0.7256	0.21	Q |	|	|	| V |
16+35	0.7268	0.17	Q |	|	|	| V |
16+40	0.7277	0.14	Q |	|	|	| V|
16+45	0.7285	0.11	Q |	|	|	| V|
16+50	0.7291	0.09	Q |	|	|	| V|
16+55	0.7297	0.08	Q |	|	|	| V|
17+ 0	0.7301	0.07	Q |	|	|	| V|
17+ 5	0.7305	0.06	Q |	|	|	| V|
17+10	0.7309	0.05	Q |	|	|	| V|
17+15	0.7312	0.05	Q |	|	|	| V|
17+20	0.7316	0.05	Q |	|	|	| V|
17+25	0.7319	0.05	Q |	|	|	| V|
17+30	0.7322	0.04	Q |	|	|	| V|
17+35	0.7325	0.04	Q |	|	|	| V|
17+40	0.7327	0.04	Q |	|	|	| V|
17+45	0.7330	0.04	Q |	|	|	| V|
17+50	0.7333	0.04	Q |	|	|	| V|
17+55	0.7336	0.04	Q |	|	|	| V|
18+ 0	0.7338	0.04	Q |	|	|	| V|
18+ 5	0.7341	0.04	Q |	|	|	| V|
18+10	0.7343	0.04	Q |	|	|	| V|
18+15	0.7345	0.03	Q |	|	|	| V|
18+20	0.7348	0.03	Q |	|	|	| V|
18+25	0.7350	0.03	Q |	|	|	| V|
18+30	0.7353	0.03	Q |	|	|	| V|
18+35	0.7355	0.03	Q |	|	|	| V|
18+40	0.7357	0.03	Q |	|	|	| V|
18+45	0.7359	0.03	Q |	|	|	| V|
18+50	0.7361	0.03	Q |	|	|	| V|
18+55	0.7363	0.03	Q |	|	|	| V|
19+ 0	0.7364	0.02	Q |	|	|	| V|
19+ 5	0.7366	0.02	Q |	|	|	| V|
19+10	0.7367	0.02	Q |	|	|	| V|
19+15	0.7369	0.02	Q |	|	|	| V|
19+20	0.7370	0.02	Q |	|	|	| V|
19+25	0.7372	0.03	Q |	|	|	| V|
19+30	0.7374	0.03	Q |	|	|	| V|
19+35	0.7376	0.03	Q |	|	|	| V|
19+40	0.7378	0.03	Q |	|	|	| V|
19+45	0.7380	0.03	Q |	|	|	| V|

19+50	0.7382	0.03	Q	|	|	|	V|
19+55	0.7384	0.02	Q	|	|	|	V|
20+ 0	0.7385	0.02	Q	|	|	|	V|
20+ 5	0.7387	0.02	Q	|	|	|	V|
20+10	0.7388	0.02	Q	|	|	|	V|
20+15	0.7390	0.02	Q	|	|	|	V|
20+20	0.7391	0.02	Q	|	|	|	V|
20+25	0.7393	0.02	Q	|	|	|	V|
20+30	0.7395	0.02	Q	|	|	|	V|
20+35	0.7396	0.02	Q	|	|	|	V|
20+40	0.7398	0.02	Q	|	|	|	V|
20+45	0.7400	0.02	Q	|	|	|	V|
20+50	0.7402	0.02	Q	|	|	|	V|
20+55	0.7403	0.02	Q	|	|	|	V|
21+ 0	0.7404	0.02	Q	|	|	|	V|
21+ 5	0.7406	0.02	Q	|	|	|	V|
21+10	0.7407	0.02	Q	|	|	|	V|
21+15	0.7409	0.02	Q	|	|	|	V|
21+20	0.7410	0.02	Q	|	|	|	V|
21+25	0.7412	0.02	Q	|	|	|	V|
21+30	0.7413	0.02	Q	|	|	|	V|
21+35	0.7415	0.02	Q	|	|	|	V|
21+40	0.7416	0.02	Q	|	|	|	V|
21+45	0.7418	0.02	Q	|	|	|	V|
21+50	0.7419	0.02	Q	|	|	|	V|
21+55	0.7421	0.02	Q	|	|	|	V|
22+ 0	0.7422	0.02	Q	|	|	|	V|
22+ 5	0.7423	0.02	Q	|	|	|	V|
22+10	0.7425	0.02	Q	|	|	|	V|
22+15	0.7426	0.02	Q	|	|	|	V|
22+20	0.7428	0.02	Q	|	|	|	V|
22+25	0.7429	0.02	Q	|	|	|	V|
22+30	0.7431	0.02	Q	|	|	|	V|
22+35	0.7432	0.02	Q	|	|	|	V|
22+40	0.7433	0.02	Q	|	|	|	V|
22+45	0.7434	0.02	Q	|	|	|	V|
22+50	0.7436	0.02	Q	|	|	|	V|
22+55	0.7437	0.02	Q	|	|	|	V|
23+ 0	0.7438	0.02	Q	|	|	|	V|
23+ 5	0.7439	0.02	Q	|	|	|	V|
23+10	0.7440	0.02	Q	|	|	|	V|
23+15	0.7442	0.02	Q	|	|	|	V|
23+20	0.7443	0.02	Q	|	|	|	V|
23+25	0.7444	0.02	Q	|	|	|	V|
23+30	0.7445	0.02	Q	|	|	|	V|
23+35	0.7446	0.02	Q	|	|	|	V|
23+40	0.7447	0.02	Q	|	|	|	V|
23+45	0.7449	0.02	Q	|	|	|	V|
23+50	0.7450	0.02	Q	|	|	|	V|
23+55	0.7451	0.02	Q	|	|	|	V|
24+ 0	0.7452	0.02	Q	|	|	|	V|
24+ 5	0.7453	0.02	Q	|	|	|	V|
24+10	0.7454	0.01	Q	|	|	|	V|
24+15	0.7454	0.01	Q	|	|	|	V|
24+20	0.7455	0.01	Q	|	|	|	V|
24+25	0.7455	0.00	Q	|	|	|	V|
24+30	0.7455	0.00	Q	|	|	|	V|
24+35	0.7455	0.00	Q	|	|	|	V|
24+40	0.7456	0.00	Q	|	|	|	V|
24+45	0.7456	0.00	Q	|	|	|	V|

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   24+50       0.7456      0.00  Q          |          |          |         V|
   24+55       0.7456      0.00  Q          |          |          |         V|
   25+ 0       0.7456      0.00  Q          |          |          |         V|
   25+ 5       0.7456      0.00  Q          |          |          |         V|
   25+10       0.7456      0.00  Q          |          |          |         V|
   25+15       0.7456      0.00  Q          |          |          |         V|
   25+20       0.7456      0.00  Q          |          |          |         V|
   25+25       0.7456      0.00  Q          |          |          |         V|
   25+30       0.7456      0.00  Q          |          |          |          V
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APPENDIX D

ON-SITE HYDROLOGY BASED ON PROPOSED CONDITION (UNIT HYDROGRAPH)

APPENDIX D.1

10-YEAR HYDROLOGY CALCULATIONS (PROPOSED)

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

Study date 03/16/22 File: 102410.out

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

Program License Serial Number 6522

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

English Units used in output format

1494-0006 OLD 215 FRONTAGE ROAD
PROPOSED CONDITION
10-YEAR, 24-HOUR STORM EVENT

Drainage Area = 7.06(Ac.) = 0.011 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 7.06(Ac.) = 0.011 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.096 Hr.
Lag time = 5.76 Min.
25% of lag time = 1.44 Min.
40% of lag time = 2.30 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.06	1.85	13.06

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.06	4.52	31.91

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 1.850(In)
Area Averaged 100-Year Rainfall = 4.520(In)

Point rain (area averaged) = 2.948(In)
Areal adjustment factor = 100.00 %

Adjusted average point rain = 2.948(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
6.350	98.00	1.000
0.710	69.00	0.000

Total Area Entered = 7.06(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
98.0	98.0	0.026	1.000	0.003	0.899	0.002
69.0	69.0	0.373	0.000	0.373	0.101	0.037
					Sum (F) =	0.040

Area averaged mean soil loss (F) (In/Hr) = 0.040
Minimum soil loss rate ((In/Hr)) = 0.020
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.180

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

Unit Hydrograph Data

Unit time period (hrs)	Time	% of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	86.806	15.240	1.084
2	0.167	173.611	46.398	3.301
3	0.250	260.417	18.139	1.291
4	0.333	347.222	7.824	0.557
5	0.417	434.028	4.605	0.328
6	0.500	520.833	2.893	0.206
7	0.583	607.639	2.035	0.145
8	0.667	694.444	1.334	0.095
9	0.750	781.250	0.909	0.065
10	0.833	868.056	0.622	0.044
			Sum = 100.000	Sum= 7.115

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

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max		Low	Effective (In/Hr)
1	0.08	0.07	0.024	(0.071)		0.004	0.019
2	0.17	0.07	0.024	(0.070)		0.004	0.019
3	0.25	0.07	0.024	(0.070)		0.004	0.019
4	0.33	0.10	0.035	(0.070)		0.006	0.029
5	0.42	0.10	0.035	(0.070)		0.006	0.029
6	0.50	0.10	0.035	(0.069)		0.006	0.029
7	0.58	0.10	0.035	(0.069)		0.006	0.029
8	0.67	0.10	0.035	(0.069)		0.006	0.029
9	0.75	0.10	0.035	(0.068)		0.006	0.029
10	0.83	0.13	0.047	(0.068)		0.008	0.039
11	0.92	0.13	0.047	(0.068)		0.008	0.039
12	1.00	0.13	0.047	(0.068)		0.008	0.039
13	1.08	0.10	0.035	(0.067)		0.006	0.029

14	1.17	0.10	0.035	(0.067)	0.006	0.029
15	1.25	0.10	0.035	(0.067)	0.006	0.029
16	1.33	0.10	0.035	(0.067)	0.006	0.029
17	1.42	0.10	0.035	(0.066)	0.006	0.029
18	1.50	0.10	0.035	(0.066)	0.006	0.029
19	1.58	0.10	0.035	(0.066)	0.006	0.029
20	1.67	0.10	0.035	(0.066)	0.006	0.029
21	1.75	0.10	0.035	(0.065)	0.006	0.029
22	1.83	0.13	0.047	(0.065)	0.008	0.039
23	1.92	0.13	0.047	(0.065)	0.008	0.039
24	2.00	0.13	0.047	(0.064)	0.008	0.039
25	2.08	0.13	0.047	(0.064)	0.008	0.039
26	2.17	0.13	0.047	(0.064)	0.008	0.039
27	2.25	0.13	0.047	(0.064)	0.008	0.039
28	2.33	0.13	0.047	(0.063)	0.008	0.039
29	2.42	0.13	0.047	(0.063)	0.008	0.039
30	2.50	0.13	0.047	(0.063)	0.008	0.039
31	2.58	0.17	0.059	(0.063)	0.011	0.048
32	2.67	0.17	0.059	(0.062)	0.011	0.048
33	2.75	0.17	0.059	(0.062)	0.011	0.048
34	2.83	0.17	0.059	(0.062)	0.011	0.048
35	2.92	0.17	0.059	(0.062)	0.011	0.048
36	3.00	0.17	0.059	(0.061)	0.011	0.048
37	3.08	0.17	0.059	(0.061)	0.011	0.048
38	3.17	0.17	0.059	(0.061)	0.011	0.048
39	3.25	0.17	0.059	(0.061)	0.011	0.048
40	3.33	0.17	0.059	(0.060)	0.011	0.048
41	3.42	0.17	0.059	(0.060)	0.011	0.048
42	3.50	0.17	0.059	(0.060)	0.011	0.048
43	3.58	0.17	0.059	(0.060)	0.011	0.048
44	3.67	0.17	0.059	(0.059)	0.011	0.048
45	3.75	0.17	0.059	(0.059)	0.011	0.048
46	3.83	0.20	0.071	(0.059)	0.013	0.058
47	3.92	0.20	0.071	(0.059)	0.013	0.058
48	4.00	0.20	0.071	(0.058)	0.013	0.058
49	4.08	0.20	0.071	(0.058)	0.013	0.058
50	4.17	0.20	0.071	(0.058)	0.013	0.058
51	4.25	0.20	0.071	(0.058)	0.013	0.058
52	4.33	0.23	0.083	(0.057)	0.015	0.068
53	4.42	0.23	0.083	(0.057)	0.015	0.068
54	4.50	0.23	0.083	(0.057)	0.015	0.068
55	4.58	0.23	0.083	(0.057)	0.015	0.068
56	4.67	0.23	0.083	(0.056)	0.015	0.068
57	4.75	0.23	0.083	(0.056)	0.015	0.068
58	4.83	0.27	0.094	(0.056)	0.017	0.077
59	4.92	0.27	0.094	(0.056)	0.017	0.077
60	5.00	0.27	0.094	(0.055)	0.017	0.077
61	5.08	0.20	0.071	(0.055)	0.013	0.058
62	5.17	0.20	0.071	(0.055)	0.013	0.058
63	5.25	0.20	0.071	(0.055)	0.013	0.058
64	5.33	0.23	0.083	(0.054)	0.015	0.068
65	5.42	0.23	0.083	(0.054)	0.015	0.068
66	5.50	0.23	0.083	(0.054)	0.015	0.068
67	5.58	0.27	0.094	(0.054)	0.017	0.077
68	5.67	0.27	0.094	(0.054)	0.017	0.077
69	5.75	0.27	0.094	(0.053)	0.017	0.077
70	5.83	0.27	0.094	(0.053)	0.017	0.077
71	5.92	0.27	0.094	(0.053)	0.017	0.077
72	6.00	0.27	0.094	(0.053)	0.017	0.077
73	6.08	0.30	0.106	(0.052)	0.019	0.087

74	6.17	0.30	0.106	(0.052)	0.019	0.087
75	6.25	0.30	0.106	(0.052)	0.019	0.087
76	6.33	0.30	0.106	(0.052)	0.019	0.087
77	6.42	0.30	0.106	(0.051)	0.019	0.087
78	6.50	0.30	0.106	(0.051)	0.019	0.087
79	6.58	0.33	0.118	(0.051)	0.021	0.097
80	6.67	0.33	0.118	(0.051)	0.021	0.097
81	6.75	0.33	0.118	(0.050)	0.021	0.097
82	6.83	0.33	0.118	(0.050)	0.021	0.097
83	6.92	0.33	0.118	(0.050)	0.021	0.097
84	7.00	0.33	0.118	(0.050)	0.021	0.097
85	7.08	0.33	0.118	(0.050)	0.021	0.097
86	7.17	0.33	0.118	(0.049)	0.021	0.097
87	7.25	0.33	0.118	(0.049)	0.021	0.097
88	7.33	0.37	0.130	(0.049)	0.023	0.106
89	7.42	0.37	0.130	(0.049)	0.023	0.106
90	7.50	0.37	0.130	(0.048)	0.023	0.106
91	7.58	0.40	0.142	(0.048)	0.025	0.116
92	7.67	0.40	0.142	(0.048)	0.025	0.116
93	7.75	0.40	0.142	(0.048)	0.025	0.116
94	7.83	0.43	0.153	(0.048)	0.028	0.126
95	7.92	0.43	0.153	(0.047)	0.028	0.126
96	8.00	0.43	0.153	(0.047)	0.028	0.126
97	8.08	0.50	0.177	(0.047)	0.032	0.145
98	8.17	0.50	0.177	(0.047)	0.032	0.145
99	8.25	0.50	0.177	(0.046)	0.032	0.145
100	8.33	0.50	0.177	(0.046)	0.032	0.145
101	8.42	0.50	0.177	(0.046)	0.032	0.145
102	8.50	0.50	0.177	(0.046)	0.032	0.145
103	8.58	0.53	0.189	(0.046)	0.034	0.155
104	8.67	0.53	0.189	(0.045)	0.034	0.155
105	8.75	0.53	0.189	(0.045)	0.034	0.155
106	8.83	0.57	0.200	(0.045)	0.036	0.164
107	8.92	0.57	0.200	(0.045)	0.036	0.164
108	9.00	0.57	0.200	(0.045)	0.036	0.164
109	9.08	0.63	0.224	(0.044)	0.040	0.184
110	9.17	0.63	0.224	(0.044)	0.040	0.184
111	9.25	0.63	0.224	(0.044)	0.040	0.184
112	9.33	0.67	0.236	(0.044)	0.042	0.193
113	9.42	0.67	0.236	(0.044)	0.042	0.193
114	9.50	0.67	0.236	(0.043)	0.042	0.193
115	9.58	0.70	0.248	0.043	(0.045)	0.205
116	9.67	0.70	0.248	0.043	(0.045)	0.205
117	9.75	0.70	0.248	0.043	(0.045)	0.205
118	9.83	0.73	0.259	0.042	(0.047)	0.217
119	9.92	0.73	0.259	0.042	(0.047)	0.217
120	10.00	0.73	0.259	0.042	(0.047)	0.217
121	10.08	0.50	0.177	(0.042)	0.032	0.145
122	10.17	0.50	0.177	(0.042)	0.032	0.145
123	10.25	0.50	0.177	(0.041)	0.032	0.145
124	10.33	0.50	0.177	(0.041)	0.032	0.145
125	10.42	0.50	0.177	(0.041)	0.032	0.145
126	10.50	0.50	0.177	(0.041)	0.032	0.145
127	10.58	0.67	0.236	0.041	(0.042)	0.195
128	10.67	0.67	0.236	0.040	(0.042)	0.195
129	10.75	0.67	0.236	0.040	(0.042)	0.196
130	10.83	0.67	0.236	0.040	(0.042)	0.196
131	10.92	0.67	0.236	0.040	(0.042)	0.196
132	11.00	0.67	0.236	0.040	(0.042)	0.196
133	11.08	0.63	0.224	0.039	(0.040)	0.185

134	11.17	0.63	0.224	0.039	(0.040)	0.185
135	11.25	0.63	0.224	0.039	(0.040)	0.185
136	11.33	0.63	0.224	0.039	(0.040)	0.185
137	11.42	0.63	0.224	0.039	(0.040)	0.185
138	11.50	0.63	0.224	0.039	(0.040)	0.186
139	11.58	0.57	0.200	(0.038)	0.036	0.164
140	11.67	0.57	0.200	(0.038)	0.036	0.164
141	11.75	0.57	0.200	(0.038)	0.036	0.164
142	11.83	0.60	0.212	0.038	(0.038)	0.175
143	11.92	0.60	0.212	0.038	(0.038)	0.175
144	12.00	0.60	0.212	0.037	(0.038)	0.175
145	12.08	0.83	0.295	0.037	(0.053)	0.258
146	12.17	0.83	0.295	0.037	(0.053)	0.258
147	12.25	0.83	0.295	0.037	(0.053)	0.258
148	12.33	0.87	0.307	0.037	(0.055)	0.270
149	12.42	0.87	0.307	0.036	(0.055)	0.270
150	12.50	0.87	0.307	0.036	(0.055)	0.270
151	12.58	0.93	0.330	0.036	(0.059)	0.294
152	12.67	0.93	0.330	0.036	(0.059)	0.294
153	12.75	0.93	0.330	0.036	(0.059)	0.295
154	12.83	0.97	0.342	0.036	(0.062)	0.306
155	12.92	0.97	0.342	0.035	(0.062)	0.307
156	13.00	0.97	0.342	0.035	(0.062)	0.307
157	13.08	1.13	0.401	0.035	(0.072)	0.366
158	13.17	1.13	0.401	0.035	(0.072)	0.366
159	13.25	1.13	0.401	0.035	(0.072)	0.366
160	13.33	1.13	0.401	0.034	(0.072)	0.367
161	13.42	1.13	0.401	0.034	(0.072)	0.367
162	13.50	1.13	0.401	0.034	(0.072)	0.367
163	13.58	0.77	0.271	0.034	(0.049)	0.237
164	13.67	0.77	0.271	0.034	(0.049)	0.237
165	13.75	0.77	0.271	0.034	(0.049)	0.238
166	13.83	0.77	0.271	0.033	(0.049)	0.238
167	13.92	0.77	0.271	0.033	(0.049)	0.238
168	14.00	0.77	0.271	0.033	(0.049)	0.238
169	14.08	0.90	0.318	0.033	(0.057)	0.286
170	14.17	0.90	0.318	0.033	(0.057)	0.286
171	14.25	0.90	0.318	0.033	(0.057)	0.286
172	14.33	0.87	0.307	0.032	(0.055)	0.274
173	14.42	0.87	0.307	0.032	(0.055)	0.274
174	14.50	0.87	0.307	0.032	(0.055)	0.275
175	14.58	0.87	0.307	0.032	(0.055)	0.275
176	14.67	0.87	0.307	0.032	(0.055)	0.275
177	14.75	0.87	0.307	0.032	(0.055)	0.275
178	14.83	0.83	0.295	0.031	(0.053)	0.263
179	14.92	0.83	0.295	0.031	(0.053)	0.264
180	15.00	0.83	0.295	0.031	(0.053)	0.264
181	15.08	0.80	0.283	0.031	(0.051)	0.252
182	15.17	0.80	0.283	0.031	(0.051)	0.252
183	15.25	0.80	0.283	0.031	(0.051)	0.252
184	15.33	0.77	0.271	0.030	(0.049)	0.241
185	15.42	0.77	0.271	0.030	(0.049)	0.241
186	15.50	0.77	0.271	0.030	(0.049)	0.241
187	15.58	0.63	0.224	0.030	(0.040)	0.194
188	15.67	0.63	0.224	0.030	(0.040)	0.194
189	15.75	0.63	0.224	0.030	(0.040)	0.194
190	15.83	0.63	0.224	0.030	(0.040)	0.195
191	15.92	0.63	0.224	0.029	(0.040)	0.195
192	16.00	0.63	0.224	0.029	(0.040)	0.195
193	16.08	0.13	0.047	(0.029)	0.008	0.039

194	16.17	0.13	0.047	(0.029)	0.008	0.039
195	16.25	0.13	0.047	(0.029)	0.008	0.039
196	16.33	0.13	0.047	(0.029)	0.008	0.039
197	16.42	0.13	0.047	(0.029)	0.008	0.039
198	16.50	0.13	0.047	(0.028)	0.008	0.039
199	16.58	0.10	0.035	(0.028)	0.006	0.029
200	16.67	0.10	0.035	(0.028)	0.006	0.029
201	16.75	0.10	0.035	(0.028)	0.006	0.029
202	16.83	0.10	0.035	(0.028)	0.006	0.029
203	16.92	0.10	0.035	(0.028)	0.006	0.029
204	17.00	0.10	0.035	(0.028)	0.006	0.029
205	17.08	0.17	0.059	(0.027)	0.011	0.048
206	17.17	0.17	0.059	(0.027)	0.011	0.048
207	17.25	0.17	0.059	(0.027)	0.011	0.048
208	17.33	0.17	0.059	(0.027)	0.011	0.048
209	17.42	0.17	0.059	(0.027)	0.011	0.048
210	17.50	0.17	0.059	(0.027)	0.011	0.048
211	17.58	0.17	0.059	(0.027)	0.011	0.048
212	17.67	0.17	0.059	(0.026)	0.011	0.048
213	17.75	0.17	0.059	(0.026)	0.011	0.048
214	17.83	0.13	0.047	(0.026)	0.008	0.039
215	17.92	0.13	0.047	(0.026)	0.008	0.039
216	18.00	0.13	0.047	(0.026)	0.008	0.039
217	18.08	0.13	0.047	(0.026)	0.008	0.039
218	18.17	0.13	0.047	(0.026)	0.008	0.039
219	18.25	0.13	0.047	(0.026)	0.008	0.039
220	18.33	0.13	0.047	(0.025)	0.008	0.039
221	18.42	0.13	0.047	(0.025)	0.008	0.039
222	18.50	0.13	0.047	(0.025)	0.008	0.039
223	18.58	0.10	0.035	(0.025)	0.006	0.029
224	18.67	0.10	0.035	(0.025)	0.006	0.029
225	18.75	0.10	0.035	(0.025)	0.006	0.029
226	18.83	0.07	0.024	(0.025)	0.004	0.019
227	18.92	0.07	0.024	(0.025)	0.004	0.019
228	19.00	0.07	0.024	(0.024)	0.004	0.019
229	19.08	0.10	0.035	(0.024)	0.006	0.029
230	19.17	0.10	0.035	(0.024)	0.006	0.029
231	19.25	0.10	0.035	(0.024)	0.006	0.029
232	19.33	0.13	0.047	(0.024)	0.008	0.039
233	19.42	0.13	0.047	(0.024)	0.008	0.039
234	19.50	0.13	0.047	(0.024)	0.008	0.039
235	19.58	0.10	0.035	(0.024)	0.006	0.029
236	19.67	0.10	0.035	(0.024)	0.006	0.029
237	19.75	0.10	0.035	(0.023)	0.006	0.029
238	19.83	0.07	0.024	(0.023)	0.004	0.019
239	19.92	0.07	0.024	(0.023)	0.004	0.019
240	20.00	0.07	0.024	(0.023)	0.004	0.019
241	20.08	0.10	0.035	(0.023)	0.006	0.029
242	20.17	0.10	0.035	(0.023)	0.006	0.029
243	20.25	0.10	0.035	(0.023)	0.006	0.029
244	20.33	0.10	0.035	(0.023)	0.006	0.029
245	20.42	0.10	0.035	(0.023)	0.006	0.029
246	20.50	0.10	0.035	(0.023)	0.006	0.029
247	20.58	0.10	0.035	(0.022)	0.006	0.029
248	20.67	0.10	0.035	(0.022)	0.006	0.029
249	20.75	0.10	0.035	(0.022)	0.006	0.029
250	20.83	0.07	0.024	(0.022)	0.004	0.019
251	20.92	0.07	0.024	(0.022)	0.004	0.019
252	21.00	0.07	0.024	(0.022)	0.004	0.019
253	21.08	0.10	0.035	(0.022)	0.006	0.029

254	21.17	0.10	0.035	(0.022)	0.006	0.029
255	21.25	0.10	0.035	(0.022)	0.006	0.029
256	21.33	0.07	0.024	(0.022)	0.004	0.019
257	21.42	0.07	0.024	(0.022)	0.004	0.019
258	21.50	0.07	0.024	(0.021)	0.004	0.019
259	21.58	0.10	0.035	(0.021)	0.006	0.029
260	21.67	0.10	0.035	(0.021)	0.006	0.029
261	21.75	0.10	0.035	(0.021)	0.006	0.029
262	21.83	0.07	0.024	(0.021)	0.004	0.019
263	21.92	0.07	0.024	(0.021)	0.004	0.019
264	22.00	0.07	0.024	(0.021)	0.004	0.019
265	22.08	0.10	0.035	(0.021)	0.006	0.029
266	22.17	0.10	0.035	(0.021)	0.006	0.029
267	22.25	0.10	0.035	(0.021)	0.006	0.029
268	22.33	0.07	0.024	(0.021)	0.004	0.019
269	22.42	0.07	0.024	(0.021)	0.004	0.019
270	22.50	0.07	0.024	(0.021)	0.004	0.019
271	22.58	0.07	0.024	(0.021)	0.004	0.019
272	22.67	0.07	0.024	(0.021)	0.004	0.019
273	22.75	0.07	0.024	(0.020)	0.004	0.019
274	22.83	0.07	0.024	(0.020)	0.004	0.019
275	22.92	0.07	0.024	(0.020)	0.004	0.019
276	23.00	0.07	0.024	(0.020)	0.004	0.019
277	23.08	0.07	0.024	(0.020)	0.004	0.019
278	23.17	0.07	0.024	(0.020)	0.004	0.019
279	23.25	0.07	0.024	(0.020)	0.004	0.019
280	23.33	0.07	0.024	(0.020)	0.004	0.019
281	23.42	0.07	0.024	(0.020)	0.004	0.019
282	23.50	0.07	0.024	(0.020)	0.004	0.019
283	23.58	0.07	0.024	(0.020)	0.004	0.019
284	23.67	0.07	0.024	(0.020)	0.004	0.019
285	23.75	0.07	0.024	(0.020)	0.004	0.019
286	23.83	0.07	0.024	(0.020)	0.004	0.019
287	23.92	0.07	0.024	(0.020)	0.004	0.019
288	24.00	0.07	0.024	(0.020)	0.004	0.019

(Loss Rate Not Used)

Sum = 100.0 Sum = 30.1

Flood volume = Effective rainfall 2.51(In)
times area 7.1(Ac.)/[(In)/(Ft.)] = 1.5(Ac.Ft)
Total soil loss = 0.44(In)
Total soil loss = 0.260(Ac.Ft)
Total rainfall = 2.95(In)
Flood volume = 64250.3 Cubic Feet
Total soil loss = 11311.2 Cubic Feet

Peak flow rate of this hydrograph = 2.588(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001	0.02	Q	|	|	|	|
0+10	0.0007	0.08	Q	|	|	|	|
0+15	0.0015	0.11	Q	|	|	|	|
0+20	0.0024	0.13	Q	|	|	|	|

0+25	0.0036	0.17	Q				
0+30	0.0048	0.19	Q				
0+35	0.0062	0.19	Q				
0+40	0.0075	0.20	Q				
0+45	0.0089	0.20	Q				
0+50	0.0104	0.22	Q				
0+55	0.0121	0.25	Q				
1+ 0	0.0139	0.26	VQ				
1+ 5	0.0157	0.26	VQ				
1+10	0.0173	0.23	Q				
1+15	0.0188	0.22	Q				
1+20	0.0202	0.21	Q				
1+25	0.0217	0.21	Q				
1+30	0.0231	0.21	Q				
1+35	0.0245	0.21	Q				
1+40	0.0260	0.21	Q				
1+45	0.0274	0.21	Q				
1+50	0.0289	0.22	Q				
1+55	0.0306	0.25	Q				
2+ 0	0.0324	0.26	VQ				
2+ 5	0.0343	0.27	VQ				
2+10	0.0361	0.27	VQ				
2+15	0.0380	0.27	|Q				
2+20	0.0399	0.27	|Q				
2+25	0.0418	0.27	|Q				
2+30	0.0437	0.27	|Q				
2+35	0.0456	0.29	|Q				
2+40	0.0478	0.32	|Q				
2+45	0.0501	0.33	|Q				
2+50	0.0524	0.34	|Q				
2+55	0.0547	0.34	|Q				
3+ 0	0.0571	0.34	|Q				
3+ 5	0.0594	0.34	|Q				
3+10	0.0618	0.34	|Q				
3+15	0.0642	0.34	|Q				
3+20	0.0665	0.34	|Q				
3+25	0.0689	0.34	|Q				
3+30	0.0713	0.34	|Q				
3+35	0.0736	0.34	|Q				
3+40	0.0760	0.34	|QV				
3+45	0.0784	0.34	|QV				
3+50	0.0808	0.35	|QV				
3+55	0.0835	0.39	|QV				
4+ 0	0.0862	0.40	|QV				
4+ 5	0.0890	0.40	|QV				
4+10	0.0918	0.41	|QV				
4+15	0.0947	0.41	|QV				
4+20	0.0976	0.42	|QV				
4+25	0.1007	0.45	|QV				
4+30	0.1039	0.47	|QV				
4+35	0.1072	0.47	|QV				
4+40	0.1105	0.48	|QV				
4+45	0.1137	0.48	|Q V				
4+50	0.1171	0.49	|Q V				
4+55	0.1207	0.52	| QV				
5+ 0	0.1244	0.54	| QV				
5+ 5	0.1280	0.52	| QV				
5+10	0.1312	0.46	|Q V				
5+15	0.1342	0.44	|Q V				
5+20	0.1372	0.44	|Q V				

5+25	0.1404	0.47	|Q V	|	|	|	|
5+30	0.1437	0.47	|Q V	|	|	|	|
5+35	0.1471	0.49	|Q V	|	|	|	|
5+40	0.1506	0.52	| Q V	|	|	|	|
5+45	0.1543	0.53	| Q V	|	|	|	|
5+50	0.1580	0.54	| Q V	|	|	|	|
5+55	0.1618	0.54	| Q V	|	|	|	|
6+ 0	0.1656	0.55	| Q V	|	|	|	|
6+ 5	0.1694	0.56	| Q V	|	|	|	|
6+10	0.1735	0.59	| Q V	|	|	|	|
6+15	0.1777	0.61	| Q V	|	|	|	|
6+20	0.1819	0.61	| Q V	|	|	|	|
6+25	0.1861	0.61	| Q V	|	|	|	|
6+30	0.1903	0.62	| Q V	|	|	|	|
6+35	0.1947	0.63	| Q V	|	|	|	|
6+40	0.1992	0.66	| Q V	|	|	|	|
6+45	0.2039	0.67	| Q V	|	|	|	|
6+50	0.2085	0.68	| Q V	|	|	|	|
6+55	0.2132	0.68	| Q V	|	|	|	|
7+ 0	0.2180	0.69	| Q V	|	|	|	|
7+ 5	0.2227	0.69	| Q V	|	|	|	|
7+10	0.2274	0.69	| Q V	|	|	|	|
7+15	0.2322	0.69	| Q V	|	|	|	|
7+20	0.2370	0.70	| Q V	|	|	|	|
7+25	0.2420	0.73	| Q V	|	|	|	|
7+30	0.2471	0.74	| Q V	|	|	|	|
7+35	0.2524	0.76	| Q V	|	|	|	|
7+40	0.2578	0.79	| Q V	|	|	|	|
7+45	0.2634	0.81	| Q V	|	|	|	|
7+50	0.2691	0.83	| Q V	|	|	|	|
7+55	0.2750	0.86	| Q V	|	|	|	|
8+ 0	0.2811	0.88	| Q V	|	|	|	|
8+ 5	0.2873	0.91	| Q V	|	|	|	|
8+10	0.2940	0.97	| Q V	|	|	|	|
8+15	0.3009	1.00	| Q V	|	|	|	|
8+20	0.3079	1.01	| Q V	|	|	|	|
8+25	0.3149	1.02	| Q V	|	|	|	|
8+30	0.3220	1.03	| Q V	|	|	|	|
8+35	0.3291	1.04	| Q V	|	|	|	|
8+40	0.3365	1.07	| Q V|	|	|	|	|
8+45	0.3440	1.09	| Q V|	|	|	|	|
8+50	0.3516	1.10	| Q V|	|	|	|	|
8+55	0.3595	1.14	| Q V|	|	|	|	|
9+ 0	0.3674	1.15	| Q V|	|	|	|	|
9+ 5	0.3755	1.18	| Q V	|	|	|	|
9+10	0.3841	1.25	| Q V	|	|	|	|
9+15	0.3929	1.28	| Q V	|	|	|	|
9+20	0.4019	1.30	| Q V	|	|	|	|
9+25	0.4111	1.34	| Q |V	|	|	|	|
9+30	0.4204	1.36	| Q |V	|	|	|	|
9+35	0.4299	1.38	| Q |V	|	|	|	|
9+40	0.4397	1.42	| Q |V	|	|	|	|
9+45	0.4496	1.44	| Q | V	|	|	|	|
9+50	0.4596	1.46	| Q | V	|	|	|	|
9+55	0.4700	1.50	| Q | V	|	|	|	|
10+ 0	0.4805	1.52	| Q | V	|	|	|	|
10+ 5	0.4905	1.46	| Q | V	|	|	|	|
10+10	0.4989	1.22	| Q | V	|	|	|	|
10+15	0.5067	1.13	| Q | V	|	|	|	|
10+20	0.5142	1.09	| Q | V	|	|	|	|

10+25	0.5216	1.07	Q	V			
10+30	0.5289	1.06	Q	V			
10+35	0.5365	1.10	Q	V			
10+40	0.5452	1.26	Q	V			
10+45	0.5543	1.32	Q	V			
10+50	0.5636	1.35	Q	V			
10+55	0.5730	1.37	Q	V			
11+ 0	0.5825	1.38	Q	V			
11+ 5	0.5919	1.37	Q	V			
11+10	0.6011	1.34	Q	V			
11+15	0.6103	1.33	Q	V			
11+20	0.6194	1.33	Q	V			
11+25	0.6285	1.32	Q	V			
11+30	0.6377	1.32	Q	V			
11+35	0.6466	1.30	Q	V			
11+40	0.6551	1.23	Q	V			
11+45	0.6633	1.20	Q	V			
11+50	0.6716	1.20	Q	V			
11+55	0.6800	1.23	Q	V			
12+ 0	0.6886	1.24	Q	V			
12+ 5	0.6977	1.33	Q	V			
12+10	0.7088	1.60	Q	V			
12+15	0.7206	1.71	Q	V			
12+20	0.7328	1.77	Q	V			
12+25	0.7455	1.84	Q	V			
12+30	0.7584	1.88	Q	V			
12+35	0.7716	1.92	Q	V			
12+40	0.7855	2.01	Q	V			
12+45	0.7996	2.05	Q	V			
12+50	0.8140	2.09	Q	V			
12+55	0.8287	2.13	Q	V			
13+ 0	0.8435	2.16	Q	V			
13+ 5	0.8589	2.23	Q	V			
13+10	0.8757	2.43	Q	V			
13+15	0.8930	2.52	Q	V			
13+20	0.9106	2.55	Q	V			
13+25	0.9283	2.57	Q	V			
13+30	0.9461	2.59	Q	V			
13+35	0.9631	2.46	Q	V			
13+40	0.9771	2.04	Q	V			
13+45	0.9900	1.87	Q	V			
13+50	1.0024	1.81	Q	V			
13+55	1.0146	1.76	Q	V			
14+ 0	1.0266	1.74	Q	V			
14+ 5	1.0388	1.77	Q	V			
14+10	1.0520	1.92	Q	V			
14+15	1.0655	1.97	Q	V			
14+20	1.0792	1.98	Q	V			
14+25	1.0927	1.96	Q	V			
14+30	1.1061	1.95	Q	V			
14+35	1.1196	1.95	Q	V			
14+40	1.1330	1.96	Q	V			
14+45	1.1465	1.96	Q	V			
14+50	1.1599	1.95	Q	V			
14+55	1.1731	1.91	Q	V			
15+ 0	1.1861	1.89	Q	V			
15+ 5	1.1990	1.87	Q	V			
15+10	1.2116	1.83	Q	V			
15+15	1.2241	1.82	Q	V			
15+20	1.2365	1.80	Q	V			

15+25	1.2486	1.75	| Q	|	|	| V	|
15+30	1.2605	1.74	| Q	|	|	| V	|
15+35	1.2721	1.68	| Q	|	|	| V	|
15+40	1.2825	1.52	| Q	|	|	| V	|
15+45	1.2926	1.45	| Q	|	|	| V	|
15+50	1.3024	1.43	| Q	|	|	| V	|
15+55	1.3121	1.41	| Q	|	|	| V	|
16+ 0	1.3218	1.40	| Q	|	|	| V	|
16+ 5	1.3302	1.23	| Q	|	|	| V	|
16+10	1.3351	0.71	| Q	|	|	| V	|
16+15	1.3385	0.50	| Q	|	|	| V	|
16+20	1.3414	0.41	|Q	|	|	| V	|
16+25	1.3439	0.36	|Q	|	|	| V	|
16+30	1.3461	0.33	|Q	|	|	| V	|
16+35	1.3482	0.30	|Q	|	|	| V	|
16+40	1.3499	0.25	Q	|	|	| V	|
16+45	1.3515	0.23	Q	|	|	| V	|
16+50	1.3529	0.22	Q	|	|	| V	|
16+55	1.3544	0.21	Q	|	|	| V	|
17+ 0	1.3559	0.21	Q	|	|	| V	|
17+ 5	1.3574	0.23	Q	|	|	| V	|
17+10	1.3594	0.29	|Q	|	|	| V	|
17+15	1.3616	0.32	|Q	|	|	| V	|
17+20	1.3639	0.33	|Q	|	|	| V	|
17+25	1.3662	0.33	|Q	|	|	| V	|
17+30	1.3685	0.34	|Q	|	|	| V	|
17+35	1.3708	0.34	|Q	|	|	| V	|
17+40	1.3732	0.34	|Q	|	|	| V	|
17+45	1.3756	0.34	|Q	|	|	| V	|
17+50	1.3779	0.33	|Q	|	|	| V	|
17+55	1.3799	0.30	|Q	|	|	| V	|
18+ 0	1.3819	0.29	|Q	|	|	| V	|
18+ 5	1.3839	0.28	|Q	|	|	| V	|
18+10	1.3858	0.28	|Q	|	|	| V	|
18+15	1.3877	0.28	|Q	|	|	| V	|
18+20	1.3897	0.28	|Q	|	|	| V	|
18+25	1.3916	0.28	|Q	|	|	| V	|
18+30	1.3935	0.28	|Q	|	|	| V	|
18+35	1.3953	0.26	|Q	|	|	| V	|
18+40	1.3969	0.23	Q	|	|	| V	|
18+45	1.3984	0.22	Q	|	|	| V	|
18+50	1.3998	0.20	Q	|	|	| V	|
18+55	1.4010	0.17	Q	|	|	| V	|
19+ 0	1.4021	0.15	Q	|	|	| V	|
19+ 5	1.4031	0.16	Q	|	|	| V	|
19+10	1.4044	0.19	Q	|	|	| V	|
19+15	1.4058	0.20	Q	|	|	| V	|
19+20	1.4072	0.21	Q	|	|	| V	|
19+25	1.4089	0.24	Q	|	|	| V	|
19+30	1.4107	0.26	|Q	|	|	| V	|
19+35	1.4124	0.25	|Q	|	|	| V	|
19+40	1.4140	0.23	Q	|	|	| V	|
19+45	1.4155	0.22	Q	|	|	| V	|
19+50	1.4169	0.20	Q	|	|	| V	|
19+55	1.4181	0.17	Q	|	|	| V	|
20+ 0	1.4191	0.15	Q	|	|	| V	|
20+ 5	1.4202	0.16	Q	|	|	| V	|
20+10	1.4215	0.19	Q	|	|	| V	|
20+15	1.4229	0.20	Q	|	|	| V	|
20+20	1.4242	0.20	Q	|	|	| V	|

20+25	1.4256	0.20	Q	|	|	|	V |
20+30	1.4270	0.20	Q	|	|	|	V |
20+35	1.4284	0.20	Q	|	|	|	V |
20+40	1.4298	0.21	Q	|	|	|	V |
20+45	1.4313	0.21	Q	|	|	|	V |
20+50	1.4326	0.20	Q	|	|	|	V |
20+55	1.4337	0.16	Q	|	|	|	V |
21+ 0	1.4348	0.15	Q	|	|	|	V |
21+ 5	1.4359	0.16	Q	|	|	|	V |
21+10	1.4371	0.19	Q	|	|	|	V |
21+15	1.4385	0.20	Q	|	|	|	V|
21+20	1.4398	0.19	Q	|	|	|	V|
21+25	1.4409	0.16	Q	|	|	|	V|
21+30	1.4419	0.15	Q	|	|	|	V|
21+35	1.4430	0.15	Q	|	|	|	V|
21+40	1.4443	0.18	Q	|	|	|	V|
21+45	1.4456	0.20	Q	|	|	|	V|
21+50	1.4469	0.19	Q	|	|	|	V|
21+55	1.4480	0.16	Q	|	|	|	V|
22+ 0	1.4490	0.15	Q	|	|	|	V|
22+ 5	1.4501	0.15	Q	|	|	|	V|
22+10	1.4514	0.18	Q	|	|	|	V|
22+15	1.4527	0.20	Q	|	|	|	V|
22+20	1.4540	0.19	Q	|	|	|	V|
22+25	1.4551	0.16	Q	|	|	|	V|
22+30	1.4562	0.15	Q	|	|	|	V|
22+35	1.4571	0.14	Q	|	|	|	V|
22+40	1.4581	0.14	Q	|	|	|	V|
22+45	1.4591	0.14	Q	|	|	|	V|
22+50	1.4601	0.14	Q	|	|	|	V|
22+55	1.4610	0.14	Q	|	|	|	V|
23+ 0	1.4620	0.14	Q	|	|	|	V|
23+ 5	1.4629	0.14	Q	|	|	|	V|
23+10	1.4639	0.14	Q	|	|	|	V|
23+15	1.4648	0.14	Q	|	|	|	V|
23+20	1.4658	0.14	Q	|	|	|	V|
23+25	1.4667	0.14	Q	|	|	|	V|
23+30	1.4676	0.14	Q	|	|	|	V|
23+35	1.4686	0.14	Q	|	|	|	V|
23+40	1.4695	0.14	Q	|	|	|	V|
23+45	1.4705	0.14	Q	|	|	|	V|
23+50	1.4714	0.14	Q	|	|	|	V|
23+55	1.4724	0.14	Q	|	|	|	V|
24+ 0	1.4733	0.14	Q	|	|	|	V|
24+ 5	1.4741	0.12	Q	|	|	|	V|
24+10	1.4745	0.05	Q	|	|	|	V|
24+15	1.4747	0.03	Q	|	|	|	V|
24+20	1.4748	0.02	Q	|	|	|	V|
24+25	1.4749	0.01	Q	|	|	|	V|
24+30	1.4749	0.01	Q	|	|	|	V|
24+35	1.4750	0.00	Q	|	|	|	V|
24+40	1.4750	0.00	Q	|	|	|	V|
24+45	1.4750	0.00	Q	|	|	|	V|

APPENDIX E

OFF-SITE HYDROLOGY BASED ON EXISTING CONDITION FOR PUBLIC STORM DRAIN

APPENDIX E.1

100-YEAR HYDROLOGY CALCULATIONS (AREA B1, OLD 215)

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

Study date 03/17/22 File: 100B124100.out

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

Program License Serial Number 6522

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

English Units used in output format

1494-0006 OLD 215 FRONTAGE ROAD
EXISTING CONDITION
100-YEAR, 24-HOUR STORM
OFF SITE, B1

Drainage Area = 51.65(Ac.) = 0.081 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 51.65(Ac.) = 0.081 Sq. Mi.
Length along longest watercourse = 2665.00(Ft.)
Length along longest watercourse measured to centroid = 1131.00(Ft.)
Length along longest watercourse = 0.505 Mi.
Length along longest watercourse measured to centroid = 0.214 Mi.
Difference in elevation = 17.50(Ft.)
Slope along watercourse = 34.6717 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time = 0.131 Hr.
Lag time = 7.88 Min.
25% of lag time = 1.97 Min.
40% of lag time = 3.15 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
51.65	1.85	95.55

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
51.65	4.52	233.46

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.850(In)
Area Averaged 100-Year Rainfall = 4.520(In)

Point rain (area averaged) = 4.520(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 4.520(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
51.650	86.00	0.300

Total Area Entered = 51.65(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
86.0	94.4	0.073	0.300	0.053	1.000	0.053
					Sum (F) =	0.053

Area averaged mean soil loss (F) (In/Hr) = 0.053
Minimum soil loss rate ((In/Hr)) = 0.027
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.660

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

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	63.443	9.013	4.692
2	0.167	126.886	36.293	18.892
3	0.250	190.329	25.411	13.228
4	0.333	253.772	9.775	5.088
5	0.417	317.215	5.877	3.059
6	0.500	380.658	3.947	2.055
7	0.583	444.101	2.743	1.428
8	0.667	507.544	2.010	1.046
9	0.750	570.987	1.579	0.822
10	0.833	634.430	1.161	0.605
11	0.917	697.873	0.842	0.439
12	1.000	761.316	0.642	0.334
13	1.083	824.759	0.704	0.366
			Sum = 100.000	Sum= 52.054

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

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.036	(0.094)	0.024	0.012
2	0.17	0.07	0.036	(0.094)	0.024	0.012
3	0.25	0.07	0.036	(0.093)	0.024	0.012
4	0.33	0.10	0.054	(0.093)	0.036	0.018
5	0.42	0.10	0.054	(0.093)	0.036	0.018
6	0.50	0.10	0.054	(0.092)	0.036	0.018

7	0.58	0.10	0.054	(0.092)	0.036	0.018
8	0.67	0.10	0.054	(0.092)	0.036	0.018
9	0.75	0.10	0.054	(0.091)	0.036	0.018
10	0.83	0.13	0.072	(0.091)	0.048	0.025
11	0.92	0.13	0.072	(0.091)	0.048	0.025
12	1.00	0.13	0.072	(0.090)	0.048	0.025
13	1.08	0.10	0.054	(0.090)	0.036	0.018
14	1.17	0.10	0.054	(0.090)	0.036	0.018
15	1.25	0.10	0.054	(0.089)	0.036	0.018
16	1.33	0.10	0.054	(0.089)	0.036	0.018
17	1.42	0.10	0.054	(0.088)	0.036	0.018
18	1.50	0.10	0.054	(0.088)	0.036	0.018
19	1.58	0.10	0.054	(0.088)	0.036	0.018
20	1.67	0.10	0.054	(0.087)	0.036	0.018
21	1.75	0.10	0.054	(0.087)	0.036	0.018
22	1.83	0.13	0.072	(0.087)	0.048	0.025
23	1.92	0.13	0.072	(0.086)	0.048	0.025
24	2.00	0.13	0.072	(0.086)	0.048	0.025
25	2.08	0.13	0.072	(0.086)	0.048	0.025
26	2.17	0.13	0.072	(0.085)	0.048	0.025
27	2.25	0.13	0.072	(0.085)	0.048	0.025
28	2.33	0.13	0.072	(0.085)	0.048	0.025
29	2.42	0.13	0.072	(0.084)	0.048	0.025
30	2.50	0.13	0.072	(0.084)	0.048	0.025
31	2.58	0.17	0.090	(0.084)	0.060	0.031
32	2.67	0.17	0.090	(0.083)	0.060	0.031
33	2.75	0.17	0.090	(0.083)	0.060	0.031
34	2.83	0.17	0.090	(0.083)	0.060	0.031
35	2.92	0.17	0.090	(0.082)	0.060	0.031
36	3.00	0.17	0.090	(0.082)	0.060	0.031
37	3.08	0.17	0.090	(0.082)	0.060	0.031
38	3.17	0.17	0.090	(0.081)	0.060	0.031
39	3.25	0.17	0.090	(0.081)	0.060	0.031
40	3.33	0.17	0.090	(0.081)	0.060	0.031
41	3.42	0.17	0.090	(0.080)	0.060	0.031
42	3.50	0.17	0.090	(0.080)	0.060	0.031
43	3.58	0.17	0.090	(0.080)	0.060	0.031
44	3.67	0.17	0.090	(0.079)	0.060	0.031
45	3.75	0.17	0.090	(0.079)	0.060	0.031
46	3.83	0.20	0.108	(0.079)	0.072	0.037
47	3.92	0.20	0.108	(0.078)	0.072	0.037
48	4.00	0.20	0.108	(0.078)	0.072	0.037
49	4.08	0.20	0.108	(0.078)	0.072	0.037
50	4.17	0.20	0.108	(0.077)	0.072	0.037
51	4.25	0.20	0.108	(0.077)	0.072	0.037
52	4.33	0.23	0.127	0.077	(0.084)	0.050
53	4.42	0.23	0.127	0.076	(0.084)	0.050
54	4.50	0.23	0.127	0.076	(0.084)	0.051
55	4.58	0.23	0.127	0.076	(0.084)	0.051
56	4.67	0.23	0.127	0.075	(0.084)	0.051
57	4.75	0.23	0.127	0.075	(0.084)	0.052
58	4.83	0.27	0.145	0.075	(0.095)	0.070
59	4.92	0.27	0.145	0.074	(0.095)	0.070
60	5.00	0.27	0.145	0.074	(0.095)	0.071
61	5.08	0.20	0.108	(0.074)	0.072	0.037
62	5.17	0.20	0.108	(0.073)	0.072	0.037
63	5.25	0.20	0.108	(0.073)	0.072	0.037
64	5.33	0.23	0.127	0.073	(0.084)	0.054
65	5.42	0.23	0.127	0.072	(0.084)	0.054
66	5.50	0.23	0.127	0.072	(0.084)	0.055

67	5.58	0.27	0.145	0.072	(0.095)	0.073
68	5.67	0.27	0.145	0.071	(0.095)	0.073
69	5.75	0.27	0.145	0.071	(0.095)	0.074
70	5.83	0.27	0.145	0.071	(0.095)	0.074
71	5.92	0.27	0.145	0.070	(0.095)	0.074
72	6.00	0.27	0.145	0.070	(0.095)	0.074
73	6.08	0.30	0.163	0.070	(0.107)	0.093
74	6.17	0.30	0.163	0.070	(0.107)	0.093
75	6.25	0.30	0.163	0.069	(0.107)	0.093
76	6.33	0.30	0.163	0.069	(0.107)	0.094
77	6.42	0.30	0.163	0.069	(0.107)	0.094
78	6.50	0.30	0.163	0.068	(0.107)	0.094
79	6.58	0.33	0.181	0.068	(0.119)	0.113
80	6.67	0.33	0.181	0.068	(0.119)	0.113
81	6.75	0.33	0.181	0.067	(0.119)	0.113
82	6.83	0.33	0.181	0.067	(0.119)	0.114
83	6.92	0.33	0.181	0.067	(0.119)	0.114
84	7.00	0.33	0.181	0.066	(0.119)	0.114
85	7.08	0.33	0.181	0.066	(0.119)	0.115
86	7.17	0.33	0.181	0.066	(0.119)	0.115
87	7.25	0.33	0.181	0.066	(0.119)	0.115
88	7.33	0.37	0.199	0.065	(0.131)	0.134
89	7.42	0.37	0.199	0.065	(0.131)	0.134
90	7.50	0.37	0.199	0.065	(0.131)	0.134
91	7.58	0.40	0.217	0.064	(0.143)	0.153
92	7.67	0.40	0.217	0.064	(0.143)	0.153
93	7.75	0.40	0.217	0.064	(0.143)	0.153
94	7.83	0.43	0.235	0.063	(0.155)	0.172
95	7.92	0.43	0.235	0.063	(0.155)	0.172
96	8.00	0.43	0.235	0.063	(0.155)	0.172
97	8.08	0.50	0.271	0.063	(0.179)	0.209
98	8.17	0.50	0.271	0.062	(0.179)	0.209
99	8.25	0.50	0.271	0.062	(0.179)	0.209
100	8.33	0.50	0.271	0.062	(0.179)	0.209
101	8.42	0.50	0.271	0.061	(0.179)	0.210
102	8.50	0.50	0.271	0.061	(0.179)	0.210
103	8.58	0.53	0.289	0.061	(0.191)	0.228
104	8.67	0.53	0.289	0.061	(0.191)	0.229
105	8.75	0.53	0.289	0.060	(0.191)	0.229
106	8.83	0.57	0.307	0.060	(0.203)	0.247
107	8.92	0.57	0.307	0.060	(0.203)	0.248
108	9.00	0.57	0.307	0.059	(0.203)	0.248
109	9.08	0.63	0.343	0.059	(0.227)	0.284
110	9.17	0.63	0.343	0.059	(0.227)	0.285
111	9.25	0.63	0.343	0.059	(0.227)	0.285
112	9.33	0.67	0.362	0.058	(0.239)	0.303
113	9.42	0.67	0.362	0.058	(0.239)	0.304
114	9.50	0.67	0.362	0.058	(0.239)	0.304
115	9.58	0.70	0.380	0.057	(0.251)	0.322
116	9.67	0.70	0.380	0.057	(0.251)	0.322
117	9.75	0.70	0.380	0.057	(0.251)	0.323
118	9.83	0.73	0.398	0.057	(0.262)	0.341
119	9.92	0.73	0.398	0.056	(0.262)	0.341
120	10.00	0.73	0.398	0.056	(0.262)	0.342
121	10.08	0.50	0.271	0.056	(0.179)	0.215
122	10.17	0.50	0.271	0.056	(0.179)	0.216
123	10.25	0.50	0.271	0.055	(0.179)	0.216
124	10.33	0.50	0.271	0.055	(0.179)	0.216
125	10.42	0.50	0.271	0.055	(0.179)	0.216
126	10.50	0.50	0.271	0.055	(0.179)	0.217

127	10.58	0.67	0.362	0.054	(0.239)	0.307
128	10.67	0.67	0.362	0.054	(0.239)	0.308
129	10.75	0.67	0.362	0.054	(0.239)	0.308
130	10.83	0.67	0.362	0.053	(0.239)	0.308
131	10.92	0.67	0.362	0.053	(0.239)	0.308
132	11.00	0.67	0.362	0.053	(0.239)	0.309
133	11.08	0.63	0.343	0.053	(0.227)	0.291
134	11.17	0.63	0.343	0.052	(0.227)	0.291
135	11.25	0.63	0.343	0.052	(0.227)	0.291
136	11.33	0.63	0.343	0.052	(0.227)	0.292
137	11.42	0.63	0.343	0.052	(0.227)	0.292
138	11.50	0.63	0.343	0.051	(0.227)	0.292
139	11.58	0.57	0.307	0.051	(0.203)	0.256
140	11.67	0.57	0.307	0.051	(0.203)	0.256
141	11.75	0.57	0.307	0.051	(0.203)	0.257
142	11.83	0.60	0.325	0.050	(0.215)	0.275
143	11.92	0.60	0.325	0.050	(0.215)	0.275
144	12.00	0.60	0.325	0.050	(0.215)	0.276
145	12.08	0.83	0.452	0.050	(0.298)	0.402
146	12.17	0.83	0.452	0.049	(0.298)	0.403
147	12.25	0.83	0.452	0.049	(0.298)	0.403
148	12.33	0.87	0.470	0.049	(0.310)	0.421
149	12.42	0.87	0.470	0.049	(0.310)	0.421
150	12.50	0.87	0.470	0.048	(0.310)	0.422
151	12.58	0.93	0.506	0.048	(0.334)	0.458
152	12.67	0.93	0.506	0.048	(0.334)	0.458
153	12.75	0.93	0.506	0.048	(0.334)	0.459
154	12.83	0.97	0.524	0.047	(0.346)	0.477
155	12.92	0.97	0.524	0.047	(0.346)	0.477
156	13.00	0.97	0.524	0.047	(0.346)	0.477
157	13.08	1.13	0.615	0.047	(0.406)	0.568
158	13.17	1.13	0.615	0.046	(0.406)	0.568
159	13.25	1.13	0.615	0.046	(0.406)	0.568
160	13.33	1.13	0.615	0.046	(0.406)	0.569
161	13.42	1.13	0.615	0.046	(0.406)	0.569
162	13.50	1.13	0.615	0.046	(0.406)	0.569
163	13.58	0.77	0.416	0.045	(0.274)	0.371
164	13.67	0.77	0.416	0.045	(0.274)	0.371
165	13.75	0.77	0.416	0.045	(0.274)	0.371
166	13.83	0.77	0.416	0.045	(0.274)	0.371
167	13.92	0.77	0.416	0.044	(0.274)	0.371
168	14.00	0.77	0.416	0.044	(0.274)	0.372
169	14.08	0.90	0.488	0.044	(0.322)	0.444
170	14.17	0.90	0.488	0.044	(0.322)	0.444
171	14.25	0.90	0.488	0.043	(0.322)	0.445
172	14.33	0.87	0.470	0.043	(0.310)	0.427
173	14.42	0.87	0.470	0.043	(0.310)	0.427
174	14.50	0.87	0.470	0.043	(0.310)	0.427
175	14.58	0.87	0.470	0.043	(0.310)	0.427
176	14.67	0.87	0.470	0.042	(0.310)	0.428
177	14.75	0.87	0.470	0.042	(0.310)	0.428
178	14.83	0.83	0.452	0.042	(0.298)	0.410
179	14.92	0.83	0.452	0.042	(0.298)	0.410
180	15.00	0.83	0.452	0.042	(0.298)	0.410
181	15.08	0.80	0.434	0.041	(0.286)	0.393
182	15.17	0.80	0.434	0.041	(0.286)	0.393
183	15.25	0.80	0.434	0.041	(0.286)	0.393
184	15.33	0.77	0.416	0.041	(0.274)	0.375
185	15.42	0.77	0.416	0.040	(0.274)	0.375
186	15.50	0.77	0.416	0.040	(0.274)	0.376

187	15.58	0.63	0.343		0.040	(0.227)	0.303
188	15.67	0.63	0.343		0.040	(0.227)	0.304
189	15.75	0.63	0.343		0.040	(0.227)	0.304
190	15.83	0.63	0.343		0.039	(0.227)	0.304
191	15.92	0.63	0.343		0.039	(0.227)	0.304
192	16.00	0.63	0.343		0.039	(0.227)	0.304
193	16.08	0.13	0.072		0.039	(0.048)	0.033
194	16.17	0.13	0.072		0.039	(0.048)	0.034
195	16.25	0.13	0.072		0.038	(0.048)	0.034
196	16.33	0.13	0.072		0.038	(0.048)	0.034
197	16.42	0.13	0.072		0.038	(0.048)	0.034
198	16.50	0.13	0.072		0.038	(0.048)	0.034
199	16.58	0.10	0.054	(0.038)		0.036	0.018
200	16.67	0.10	0.054	(0.037)		0.036	0.018
201	16.75	0.10	0.054	(0.037)		0.036	0.018
202	16.83	0.10	0.054	(0.037)		0.036	0.018
203	16.92	0.10	0.054	(0.037)		0.036	0.018
204	17.00	0.10	0.054	(0.037)		0.036	0.018
205	17.08	0.17	0.090		0.037	(0.060)	0.054
206	17.17	0.17	0.090		0.036	(0.060)	0.054
207	17.25	0.17	0.090		0.036	(0.060)	0.054
208	17.33	0.17	0.090		0.036	(0.060)	0.054
209	17.42	0.17	0.090		0.036	(0.060)	0.055
210	17.50	0.17	0.090		0.036	(0.060)	0.055
211	17.58	0.17	0.090		0.035	(0.060)	0.055
212	17.67	0.17	0.090		0.035	(0.060)	0.055
213	17.75	0.17	0.090		0.035	(0.060)	0.055
214	17.83	0.13	0.072		0.035	(0.048)	0.037
215	17.92	0.13	0.072		0.035	(0.048)	0.038
216	18.00	0.13	0.072		0.035	(0.048)	0.038
217	18.08	0.13	0.072		0.034	(0.048)	0.038
218	18.17	0.13	0.072		0.034	(0.048)	0.038
219	18.25	0.13	0.072		0.034	(0.048)	0.038
220	18.33	0.13	0.072		0.034	(0.048)	0.038
221	18.42	0.13	0.072		0.034	(0.048)	0.039
222	18.50	0.13	0.072		0.034	(0.048)	0.039
223	18.58	0.10	0.054		0.033	(0.036)	0.021
224	18.67	0.10	0.054		0.033	(0.036)	0.021
225	18.75	0.10	0.054		0.033	(0.036)	0.021
226	18.83	0.07	0.036	(0.033)		0.024	0.012
227	18.92	0.07	0.036	(0.033)		0.024	0.012
228	19.00	0.07	0.036	(0.033)		0.024	0.012
229	19.08	0.10	0.054		0.032	(0.036)	0.022
230	19.17	0.10	0.054		0.032	(0.036)	0.022
231	19.25	0.10	0.054		0.032	(0.036)	0.022
232	19.33	0.13	0.072		0.032	(0.048)	0.040
233	19.42	0.13	0.072		0.032	(0.048)	0.040
234	19.50	0.13	0.072		0.032	(0.048)	0.041
235	19.58	0.10	0.054		0.032	(0.036)	0.023
236	19.67	0.10	0.054		0.031	(0.036)	0.023
237	19.75	0.10	0.054		0.031	(0.036)	0.023
238	19.83	0.07	0.036	(0.031)		0.024	0.012
239	19.92	0.07	0.036	(0.031)		0.024	0.012
240	20.00	0.07	0.036	(0.031)		0.024	0.012
241	20.08	0.10	0.054		0.031	(0.036)	0.024
242	20.17	0.10	0.054		0.031	(0.036)	0.024
243	20.25	0.10	0.054		0.030	(0.036)	0.024
244	20.33	0.10	0.054		0.030	(0.036)	0.024
245	20.42	0.10	0.054		0.030	(0.036)	0.024
246	20.50	0.10	0.054		0.030	(0.036)	0.024

247	20.58	0.10	0.054		0.030	(0.036)		0.024
248	20.67	0.10	0.054		0.030	(0.036)		0.024
249	20.75	0.10	0.054		0.030	(0.036)		0.025
250	20.83	0.07	0.036	(	0.030)	0.024		0.012
251	20.92	0.07	0.036	(	0.029)	0.024		0.012
252	21.00	0.07	0.036	(	0.029)	0.024		0.012
253	21.08	0.10	0.054		0.029	(0.036)		0.025
254	21.17	0.10	0.054		0.029	(0.036)		0.025
255	21.25	0.10	0.054		0.029	(0.036)		0.025
256	21.33	0.07	0.036	(	0.029)	0.024		0.012
257	21.42	0.07	0.036	(	0.029)	0.024		0.012
258	21.50	0.07	0.036	(	0.029)	0.024		0.012
259	21.58	0.10	0.054		0.029	(0.036)		0.026
260	21.67	0.10	0.054		0.028	(0.036)		0.026
261	21.75	0.10	0.054		0.028	(0.036)		0.026
262	21.83	0.07	0.036	(	0.028)	0.024		0.012
263	21.92	0.07	0.036	(	0.028)	0.024		0.012
264	22.00	0.07	0.036	(	0.028)	0.024		0.012
265	22.08	0.10	0.054		0.028	(0.036)		0.026
266	22.17	0.10	0.054		0.028	(0.036)		0.026
267	22.25	0.10	0.054		0.028	(0.036)		0.026
268	22.33	0.07	0.036	(	0.028)	0.024		0.012
269	22.42	0.07	0.036	(	0.028)	0.024		0.012
270	22.50	0.07	0.036	(	0.028)	0.024		0.012
271	22.58	0.07	0.036	(	0.027)	0.024		0.012
272	22.67	0.07	0.036	(	0.027)	0.024		0.012
273	22.75	0.07	0.036	(	0.027)	0.024		0.012
274	22.83	0.07	0.036	(	0.027)	0.024		0.012
275	22.92	0.07	0.036	(	0.027)	0.024		0.012
276	23.00	0.07	0.036	(	0.027)	0.024		0.012
277	23.08	0.07	0.036	(	0.027)	0.024		0.012
278	23.17	0.07	0.036	(	0.027)	0.024		0.012
279	23.25	0.07	0.036	(	0.027)	0.024		0.012
280	23.33	0.07	0.036	(	0.027)	0.024		0.012
281	23.42	0.07	0.036	(	0.027)	0.024		0.012
282	23.50	0.07	0.036	(	0.027)	0.024		0.012
283	23.58	0.07	0.036	(	0.027)	0.024		0.012
284	23.67	0.07	0.036	(	0.027)	0.024		0.012
285	23.75	0.07	0.036	(	0.027)	0.024		0.012
286	23.83	0.07	0.036	(	0.027)	0.024		0.012
287	23.92	0.07	0.036	(	0.027)	0.024		0.012
288	24.00	0.07	0.036	(	0.027)	0.024		0.012

(Loss Rate Not Used)

Sum = 100.0 Sum = 40.9

Flood volume = Effective rainfall 3.41(In)
times area 51.6(Ac.)/[(In)/(Ft.)] = 14.7(Ac.Ft)
Total soil loss = 1.11(In)
Total soil loss = 4.767(Ac.Ft)
Total rainfall = 4.52(In)
Flood volume = 639714.3 Cubic Feet
Total soil loss = 207652.8 Cubic Feet

Peak flow rate of this hydrograph = 29.111(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0004	0.06	Q				
0+10	0.0024	0.29	Q				
0+15	0.0055	0.45	Q				
0+20	0.0093	0.54	Q				
0+25	0.0141	0.70	Q				
0+30	0.0196	0.80	VQ				
0+35	0.0255	0.85	VQ				
0+40	0.0316	0.89	VQ				
0+45	0.0378	0.91	VQ				
0+50	0.0444	0.95	VQ				
0+55	0.0518	1.08	VQ				
1+ 0	0.0599	1.17	VQ				
1+ 5	0.0681	1.18	VQ				
1+10	0.0755	1.09	VQ				
1+15	0.0826	1.02	VQ				
1+20	0.0895	1.00	VQ				
1+25	0.0963	0.99	VQ				
1+30	0.1030	0.98	VQ				
1+35	0.1097	0.98	VQ				
1+40	0.1164	0.97	VQ				
1+45	0.1231	0.97	VQ				
1+50	0.1300	1.00	VQ				
1+55	0.1376	1.11	VQ				
2+ 0	0.1458	1.19	VQ				
2+ 5	0.1542	1.22	VQ				
2+10	0.1627	1.24	VQ				
2+15	0.1713	1.25	VQ				
2+20	0.1800	1.26	VQ				
2+25	0.1887	1.26	VQ				
2+30	0.1974	1.27	VQ				
2+35	0.2064	1.30	VQ				
2+40	0.2162	1.42	VQ				
2+45	0.2266	1.50	V Q				
2+50	0.2371	1.54	V Q				
2+55	0.2479	1.56	V Q				
3+ 0	0.2587	1.57	V Q				
3+ 5	0.2695	1.58	V Q				
3+10	0.2805	1.58	V Q				
3+15	0.2914	1.59	V Q				
3+20	0.3024	1.59	V Q				
3+25	0.3134	1.60	V Q				
3+30	0.3244	1.60	V Q				
3+35	0.3354	1.60	V Q				
3+40	0.3464	1.60	V Q				
3+45	0.3575	1.60	V Q				
3+50	0.3687	1.63	|VQ				
3+55	0.3807	1.75	|VQ				
4+ 0	0.3933	1.83	|VQ				
4+ 5	0.4061	1.86	|VQ				
4+10	0.4190	1.88	|VQ				
4+15	0.4320	1.89	|VQ				
4+20	0.4455	1.96	|VQ				
4+25	0.4608	2.22	|VQ				
4+30	0.4773	2.40	|V Q				
4+35	0.4944	2.49	|V Q				
4+40	0.5120	2.54	|V Q				
4+45	0.5298	2.59	|V Q				

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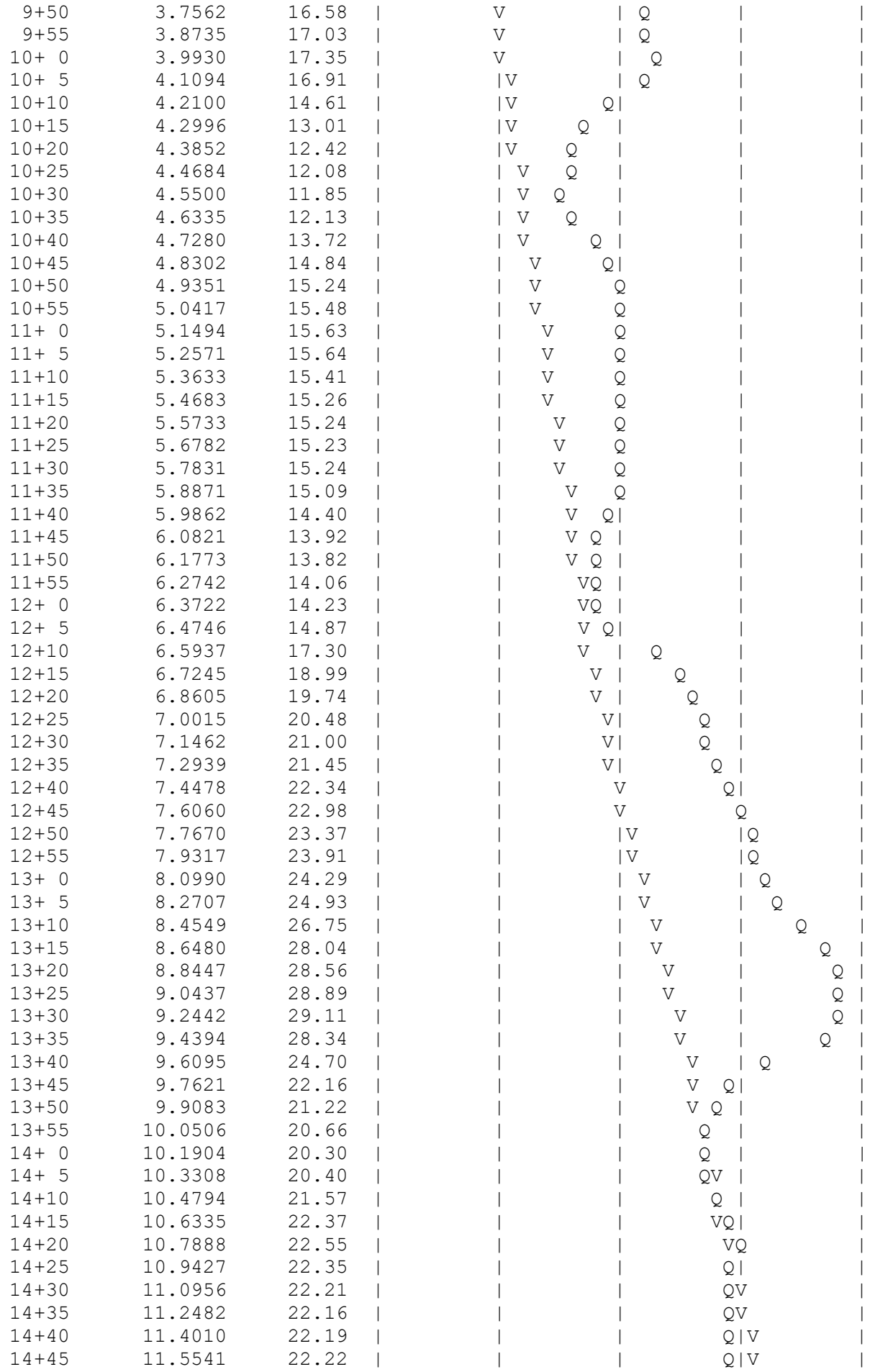
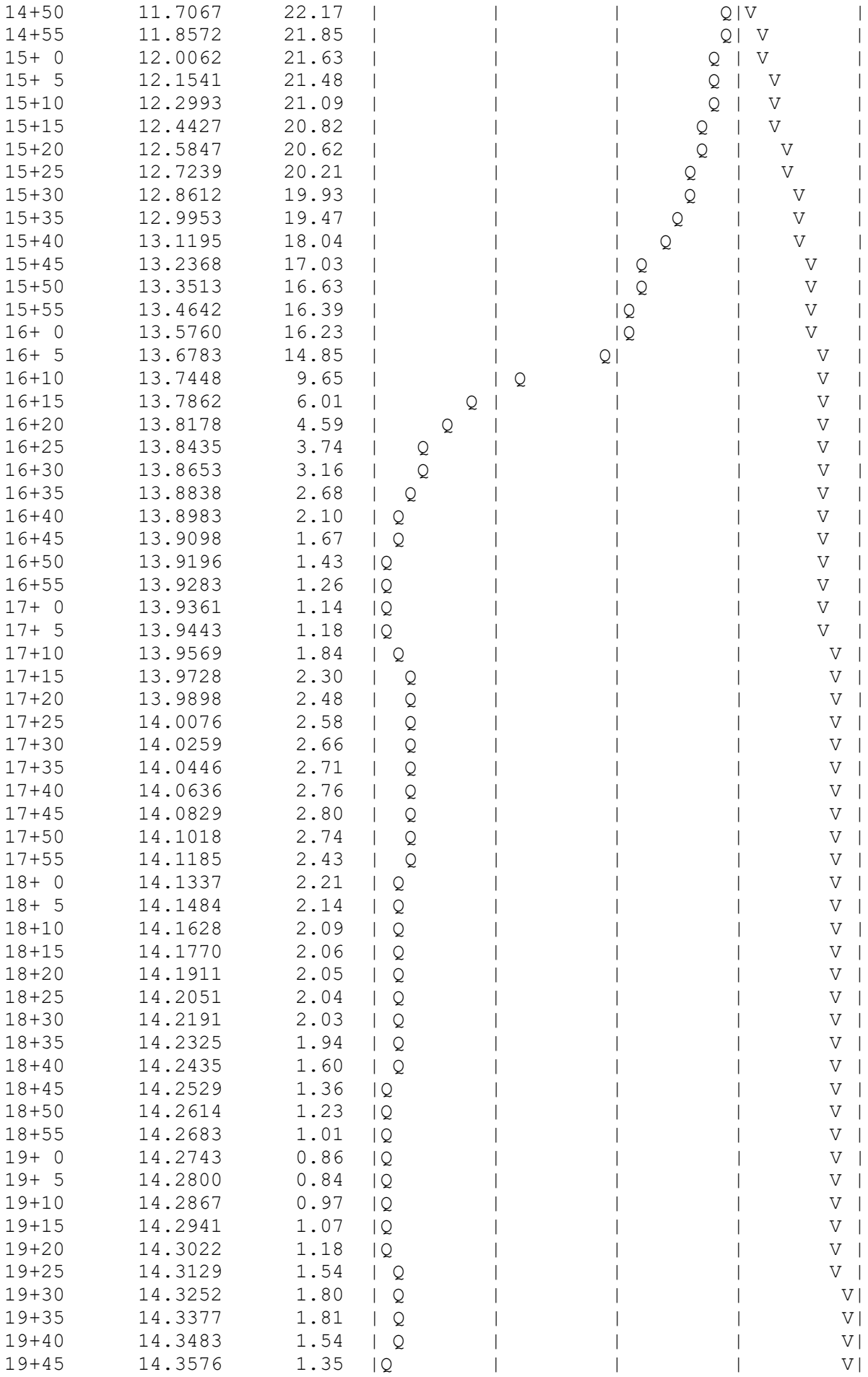
4+50       0.5484      2.71  |V Q      |         |         |         |
4+55       0.5696      3.08  |V  Q     |         |         |         |
5+ 0       0.5926      3.34  |V  Q     |         |         |         |
5+ 5       0.6153      3.30  |V  Q     |         |         |         |
5+10       0.6342      2.73  |V Q      |         |         |         |
5+15       0.6502      2.33  |V Q      |         |         |         |
5+20       0.6658      2.27  |V Q      |         |         |         |
5+25       0.6831      2.51  |V Q      |         |         |         |
5+30       0.7017      2.69  |V Q      |         |         |         |
5+35       0.7212      2.84  |V Q      |         |         |         |
5+40       0.7434      3.22  | V Q     |         |         |         |
5+45       0.7674      3.49  | V Q     |         |         |         |
5+50       0.7922      3.60  | V Q     |         |         |         |
5+55       0.8175      3.68  | V Q     |         |         |         |
6+ 0       0.8432      3.73  | V Q     |         |         |         |
6+ 5       0.8698      3.86  | V  Q    |         |         |         |
6+10       0.8990      4.24  | V  Q    |         |         |         |
6+15       0.9301      4.52  | V   Q   |         |         |         |
6+20       0.9621      4.64  | V   Q   |         |         |         |
6+25       0.9946      4.72  | V   Q   |         |         |         |
6+30       1.0275      4.78  | V   Q   |         |         |         |
6+35       1.0614      4.91  | V   Q   |         |         |         |
6+40       1.0978      5.29  | V    Q  |         |         |         |
6+45       1.1361      5.56  |  V   Q  |         |         |         |
6+50       1.1753      5.68  |  V   Q  |         |         |         |
6+55       1.2149      5.76  |  V   Q  |         |         |         |
7+ 0       1.2550      5.82  |  V   Q  |         |         |         |
7+ 5       1.2954      5.87  |  V   Q  |         |         |         |
7+10       1.3360      5.90  |  V   Q  |         |         |         |
7+15       1.3769      5.93  |  V   Q  |         |         |         |
7+20       1.4185      6.04  |  V    Q |         |         |         |
7+25       1.4627      6.41  |  V    Q |         |         |         |
7+30       1.5086      6.67  |   V   Q |         |         |         |
7+35       1.5559      6.87  |   V    Q|         |         |         |
7+40       1.6060      7.28  |   V    Q|         |         |         |
7+45       1.6582      7.57  |   V     Q         |         |         |
7+50       1.7119      7.79  |   V     Q         |         |         |
7+55       1.7685      8.22  |   V     Q         |         |         |
8+ 0       1.8272      8.53  |   V     |Q        |         |         |
8+ 5       1.8881      8.84  |    V    |Q        |         |         |
8+10       1.9544      9.62  |    V    | Q       |         |         |
8+15       2.0245     10.18  |    V    |  Q      |         |         |
8+20       2.0963     10.42  |    V    |  Q      |         |         |
8+25       2.1691     10.57  |    V    |   Q     |         |         |
8+30       2.2426     10.68  |     V   |   Q     |         |         |
8+35       2.3174     10.85  |     V   |   Q     |         |         |
8+40       2.3949     11.25  |     V   |    Q    |         |         |
8+45       2.4744     11.54  |     V   |    Q    |         |         |
8+50       2.5554     11.76  |     V   |    Q    |         |         |
8+55       2.6393     12.19  |      V  |     Q   |         |         |
9+ 0       2.7254     12.49  |      V  |     Q   |         |         |
9+ 5       2.8136     12.81  |      V  |      Q  |         |         |
9+10       2.9072     13.58  |      V  |       Q |         |         |
9+15       3.0045     14.13  |       V |       Q |         |         |
9+20       3.1040     14.45  |       V |        Q|         |         |
9+25       3.2069     14.94  |       V |        Q|         |         |
9+30       3.3122     15.29  |        V|         Q         |         |
9+35       3.4193     15.55  |        V|         Q         |         |
9+40       3.5295     16.01  |        V|         |Q        |         |
9+45       3.6420     16.34  |        V|         |Q        |         |
```





19+50	14.3662	1.24	|Q	|	|	|	V|
19+55	14.3732	1.01	|Q	|	|	|	V|
20+ 0	14.3790	0.85	|Q	|	|	|	V|
20+ 5	14.3848	0.84	|Q	|	|	|	V|
20+10	14.3918	1.01	|Q	|	|	|	V|
20+15	14.3996	1.13	|Q	|	|	|	V|
20+20	14.4077	1.18	|Q	|	|	|	V|
20+25	14.4160	1.20	|Q	|	|	|	V|
20+30	14.4243	1.21	|Q	|	|	|	V|
20+35	14.4328	1.22	|Q	|	|	|	V|
20+40	14.4413	1.24	|Q	|	|	|	V|
20+45	14.4499	1.25	|Q	|	|	|	V|
20+50	14.4581	1.20	|Q	|	|	|	V|
20+55	14.4648	0.98	|Q	|	|	|	V|
21+ 0	14.4705	0.82	|Q	|	|	|	V|
21+ 5	14.4761	0.82	|Q	|	|	|	V|
21+10	14.4832	1.03	|Q	|	|	|	V|
21+15	14.4913	1.17	|Q	|	|	|	V|
21+20	14.4993	1.16	|Q	|	|	|	V|
21+25	14.5058	0.95	|Q	|	|	|	V|
21+30	14.5113	0.79	|Q	|	|	|	V|
21+35	14.5168	0.80	|Q	|	|	|	V|
21+40	14.5238	1.02	|Q	|	|	|	V|
21+45	14.5320	1.18	|Q	|	|	|	V|
21+50	14.5401	1.18	|Q	|	|	|	V|
21+55	14.5466	0.95	|Q	|	|	|	V|
22+ 0	14.5521	0.80	|Q	|	|	|	V|
22+ 5	14.5577	0.81	|Q	|	|	|	V|
22+10	14.5649	1.04	|Q	|	|	|	V|
22+15	14.5732	1.21	|Q	|	|	|	V|
22+20	14.5814	1.20	|Q	|	|	|	V|
22+25	14.5881	0.97	|Q	|	|	|	V|
22+30	14.5936	0.80	|Q	|	|	|	V|
22+35	14.5988	0.75	Q	|	|	|	V|
22+40	14.6037	0.71	Q	|	|	|	V|
22+45	14.6085	0.69	Q	|	|	|	V|
22+50	14.6131	0.68	Q	|	|	|	V|
22+55	14.6177	0.67	Q	|	|	|	V|
23+ 0	14.6222	0.66	Q	|	|	|	V|
23+ 5	14.6268	0.66	Q	|	|	|	V|
23+10	14.6312	0.65	Q	|	|	|	V|
23+15	14.6357	0.65	Q	|	|	|	V|
23+20	14.6401	0.64	Q	|	|	|	V|
23+25	14.6445	0.64	Q	|	|	|	V|
23+30	14.6489	0.64	Q	|	|	|	V|
23+35	14.6533	0.64	Q	|	|	|	V|
23+40	14.6577	0.64	Q	|	|	|	V|
23+45	14.6621	0.64	Q	|	|	|	V|
23+50	14.6665	0.64	Q	|	|	|	V|
23+55	14.6709	0.64	Q	|	|	|	V|
24+ 0	14.6754	0.64	Q	|	|	|	V|
24+ 5	14.6794	0.58	Q	|	|	|	V|
24+10	14.6818	0.35	Q	|	|	|	V|
24+15	14.6831	0.19	Q	|	|	|	V|
24+20	14.6839	0.12	Q	|	|	|	V|
24+25	14.6845	0.09	Q	|	|	|	V|
24+30	14.6850	0.06	Q	|	|	|	V|
24+35	14.6853	0.04	Q	|	|	|	V|
24+40	14.6855	0.03	Q	|	|	|	V|
24+45	14.6856	0.02	Q	|	|	|	V|

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   24+50      14.6857      0.01  Q         |         |         |        V|
   24+55      14.6858      0.01  Q         |         |         |        V|
   25+ 0      14.6858      0.00  Q         |         |         |         V
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APPENDIX E.2

100-YEAR HYDROLOGY CALCULATIONS (AREA B2, EDGEMONT)

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

Study date 03/17/22 File: 100B224100.out

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

Program License Serial Number 6522

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

English Units used in output format

1494-0006 OLD 215 FRONTAGE ROAD
EXISTING CONDITION
100-YEAR, 24-HOUR STORM
OFF SITE, B2

Drainage Area = 36.13(Ac.) = 0.056 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 36.13(Ac.) = 0.056 Sq. Mi.
Length along longest watercourse = 1570.00(Ft.)
Length along longest watercourse measured to centroid = 832.00(Ft.)
Length along longest watercourse = 0.297 Mi.
Length along longest watercourse measured to centroid = 0.158 Mi.
Difference in elevation = 25.80(Ft.)
Slope along watercourse = 86.7669 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time = 0.080 Hr.
Lag time = 4.82 Min.
25% of lag time = 1.20 Min.
40% of lag time = 1.93 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
36.13	1.85	66.84

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
36.13	4.52	163.31

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.850(In)
Area Averaged 100-Year Rainfall = 4.520(In)

Point rain (area averaged) = 4.520(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 4.520(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
36.130	86.00	0.300

Total Area Entered = 36.13(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
86.0	94.4	0.073	0.300	0.053	1.000	0.053
					Sum (F) =	0.053

Area averaged mean soil loss (F) (In/Hr) = 0.053
Minimum soil loss rate ((In/Hr)) = 0.027
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.660

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

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	103.769	20.355	7.412
2	0.167	207.538	48.639	17.711
3	0.250	311.307	15.093	5.496
4	0.333	415.076	6.865	2.500
5	0.417	518.845	3.832	1.395
6	0.500	622.614	2.461	0.896
7	0.583	726.383	1.486	0.541
8	0.667	830.152	1.269	0.462
			Sum = 100.000	Sum= 36.412

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

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max		Low	Effective (In/Hr)
1	0.08	0.07	0.036	(0.094)		0.024	0.012
2	0.17	0.07	0.036	(0.094)		0.024	0.012
3	0.25	0.07	0.036	(0.093)		0.024	0.012
4	0.33	0.10	0.054	(0.093)		0.036	0.018
5	0.42	0.10	0.054	(0.093)		0.036	0.018
6	0.50	0.10	0.054	(0.092)		0.036	0.018
7	0.58	0.10	0.054	(0.092)		0.036	0.018
8	0.67	0.10	0.054	(0.092)		0.036	0.018
9	0.75	0.10	0.054	(0.091)		0.036	0.018
10	0.83	0.13	0.072	(0.091)		0.048	0.025
11	0.92	0.13	0.072	(0.091)		0.048	0.025

12	1.00	0.13	0.072	(0.090)	0.048	0.025
13	1.08	0.10	0.054	(0.090)	0.036	0.018
14	1.17	0.10	0.054	(0.090)	0.036	0.018
15	1.25	0.10	0.054	(0.089)	0.036	0.018
16	1.33	0.10	0.054	(0.089)	0.036	0.018
17	1.42	0.10	0.054	(0.088)	0.036	0.018
18	1.50	0.10	0.054	(0.088)	0.036	0.018
19	1.58	0.10	0.054	(0.088)	0.036	0.018
20	1.67	0.10	0.054	(0.087)	0.036	0.018
21	1.75	0.10	0.054	(0.087)	0.036	0.018
22	1.83	0.13	0.072	(0.087)	0.048	0.025
23	1.92	0.13	0.072	(0.086)	0.048	0.025
24	2.00	0.13	0.072	(0.086)	0.048	0.025
25	2.08	0.13	0.072	(0.086)	0.048	0.025
26	2.17	0.13	0.072	(0.085)	0.048	0.025
27	2.25	0.13	0.072	(0.085)	0.048	0.025
28	2.33	0.13	0.072	(0.085)	0.048	0.025
29	2.42	0.13	0.072	(0.084)	0.048	0.025
30	2.50	0.13	0.072	(0.084)	0.048	0.025
31	2.58	0.17	0.090	(0.084)	0.060	0.031
32	2.67	0.17	0.090	(0.083)	0.060	0.031
33	2.75	0.17	0.090	(0.083)	0.060	0.031
34	2.83	0.17	0.090	(0.083)	0.060	0.031
35	2.92	0.17	0.090	(0.082)	0.060	0.031
36	3.00	0.17	0.090	(0.082)	0.060	0.031
37	3.08	0.17	0.090	(0.082)	0.060	0.031
38	3.17	0.17	0.090	(0.081)	0.060	0.031
39	3.25	0.17	0.090	(0.081)	0.060	0.031
40	3.33	0.17	0.090	(0.081)	0.060	0.031
41	3.42	0.17	0.090	(0.080)	0.060	0.031
42	3.50	0.17	0.090	(0.080)	0.060	0.031
43	3.58	0.17	0.090	(0.080)	0.060	0.031
44	3.67	0.17	0.090	(0.079)	0.060	0.031
45	3.75	0.17	0.090	(0.079)	0.060	0.031
46	3.83	0.20	0.108	(0.079)	0.072	0.037
47	3.92	0.20	0.108	(0.078)	0.072	0.037
48	4.00	0.20	0.108	(0.078)	0.072	0.037
49	4.08	0.20	0.108	(0.078)	0.072	0.037
50	4.17	0.20	0.108	(0.077)	0.072	0.037
51	4.25	0.20	0.108	(0.077)	0.072	0.037
52	4.33	0.23	0.127	0.077	(0.084)	0.050
53	4.42	0.23	0.127	0.076	(0.084)	0.050
54	4.50	0.23	0.127	0.076	(0.084)	0.051
55	4.58	0.23	0.127	0.076	(0.084)	0.051
56	4.67	0.23	0.127	0.075	(0.084)	0.051
57	4.75	0.23	0.127	0.075	(0.084)	0.052
58	4.83	0.27	0.145	0.075	(0.095)	0.070
59	4.92	0.27	0.145	0.074	(0.095)	0.070
60	5.00	0.27	0.145	0.074	(0.095)	0.071
61	5.08	0.20	0.108	(0.074)	0.072	0.037
62	5.17	0.20	0.108	(0.073)	0.072	0.037
63	5.25	0.20	0.108	(0.073)	0.072	0.037
64	5.33	0.23	0.127	0.073	(0.084)	0.054
65	5.42	0.23	0.127	0.072	(0.084)	0.054
66	5.50	0.23	0.127	0.072	(0.084)	0.055
67	5.58	0.27	0.145	0.072	(0.095)	0.073
68	5.67	0.27	0.145	0.071	(0.095)	0.073
69	5.75	0.27	0.145	0.071	(0.095)	0.074
70	5.83	0.27	0.145	0.071	(0.095)	0.074
71	5.92	0.27	0.145	0.070	(0.095)	0.074

72	6.00	0.27	0.145	0.070	(0.095)	0.074
73	6.08	0.30	0.163	0.070	(0.107)	0.093
74	6.17	0.30	0.163	0.070	(0.107)	0.093
75	6.25	0.30	0.163	0.069	(0.107)	0.093
76	6.33	0.30	0.163	0.069	(0.107)	0.094
77	6.42	0.30	0.163	0.069	(0.107)	0.094
78	6.50	0.30	0.163	0.068	(0.107)	0.094
79	6.58	0.33	0.181	0.068	(0.119)	0.113
80	6.67	0.33	0.181	0.068	(0.119)	0.113
81	6.75	0.33	0.181	0.067	(0.119)	0.113
82	6.83	0.33	0.181	0.067	(0.119)	0.114
83	6.92	0.33	0.181	0.067	(0.119)	0.114
84	7.00	0.33	0.181	0.066	(0.119)	0.114
85	7.08	0.33	0.181	0.066	(0.119)	0.115
86	7.17	0.33	0.181	0.066	(0.119)	0.115
87	7.25	0.33	0.181	0.066	(0.119)	0.115
88	7.33	0.37	0.199	0.065	(0.131)	0.134
89	7.42	0.37	0.199	0.065	(0.131)	0.134
90	7.50	0.37	0.199	0.065	(0.131)	0.134
91	7.58	0.40	0.217	0.064	(0.143)	0.153
92	7.67	0.40	0.217	0.064	(0.143)	0.153
93	7.75	0.40	0.217	0.064	(0.143)	0.153
94	7.83	0.43	0.235	0.063	(0.155)	0.172
95	7.92	0.43	0.235	0.063	(0.155)	0.172
96	8.00	0.43	0.235	0.063	(0.155)	0.172
97	8.08	0.50	0.271	0.063	(0.179)	0.209
98	8.17	0.50	0.271	0.062	(0.179)	0.209
99	8.25	0.50	0.271	0.062	(0.179)	0.209
100	8.33	0.50	0.271	0.062	(0.179)	0.209
101	8.42	0.50	0.271	0.061	(0.179)	0.210
102	8.50	0.50	0.271	0.061	(0.179)	0.210
103	8.58	0.53	0.289	0.061	(0.191)	0.228
104	8.67	0.53	0.289	0.061	(0.191)	0.229
105	8.75	0.53	0.289	0.060	(0.191)	0.229
106	8.83	0.57	0.307	0.060	(0.203)	0.247
107	8.92	0.57	0.307	0.060	(0.203)	0.248
108	9.00	0.57	0.307	0.059	(0.203)	0.248
109	9.08	0.63	0.343	0.059	(0.227)	0.284
110	9.17	0.63	0.343	0.059	(0.227)	0.285
111	9.25	0.63	0.343	0.059	(0.227)	0.285
112	9.33	0.67	0.362	0.058	(0.239)	0.303
113	9.42	0.67	0.362	0.058	(0.239)	0.304
114	9.50	0.67	0.362	0.058	(0.239)	0.304
115	9.58	0.70	0.380	0.057	(0.251)	0.322
116	9.67	0.70	0.380	0.057	(0.251)	0.322
117	9.75	0.70	0.380	0.057	(0.251)	0.323
118	9.83	0.73	0.398	0.057	(0.263)	0.341
119	9.92	0.73	0.398	0.056	(0.263)	0.341
120	10.00	0.73	0.398	0.056	(0.263)	0.342
121	10.08	0.50	0.271	0.056	(0.179)	0.215
122	10.17	0.50	0.271	0.056	(0.179)	0.216
123	10.25	0.50	0.271	0.055	(0.179)	0.216
124	10.33	0.50	0.271	0.055	(0.179)	0.216
125	10.42	0.50	0.271	0.055	(0.179)	0.216
126	10.50	0.50	0.271	0.055	(0.179)	0.217
127	10.58	0.67	0.362	0.054	(0.239)	0.307
128	10.67	0.67	0.362	0.054	(0.239)	0.308
129	10.75	0.67	0.362	0.054	(0.239)	0.308
130	10.83	0.67	0.362	0.053	(0.239)	0.308
131	10.92	0.67	0.362	0.053	(0.239)	0.308

132	11.00	0.67	0.362	0.053	(0.239)	0.309
133	11.08	0.63	0.343	0.053	(0.227)	0.291
134	11.17	0.63	0.343	0.052	(0.227)	0.291
135	11.25	0.63	0.343	0.052	(0.227)	0.291
136	11.33	0.63	0.343	0.052	(0.227)	0.292
137	11.42	0.63	0.343	0.052	(0.227)	0.292
138	11.50	0.63	0.343	0.051	(0.227)	0.292
139	11.58	0.57	0.307	0.051	(0.203)	0.256
140	11.67	0.57	0.307	0.051	(0.203)	0.256
141	11.75	0.57	0.307	0.051	(0.203)	0.257
142	11.83	0.60	0.325	0.050	(0.215)	0.275
143	11.92	0.60	0.325	0.050	(0.215)	0.275
144	12.00	0.60	0.325	0.050	(0.215)	0.276
145	12.08	0.83	0.452	0.050	(0.298)	0.402
146	12.17	0.83	0.452	0.049	(0.298)	0.403
147	12.25	0.83	0.452	0.049	(0.298)	0.403
148	12.33	0.87	0.470	0.049	(0.310)	0.421
149	12.42	0.87	0.470	0.049	(0.310)	0.421
150	12.50	0.87	0.470	0.048	(0.310)	0.422
151	12.58	0.93	0.506	0.048	(0.334)	0.458
152	12.67	0.93	0.506	0.048	(0.334)	0.458
153	12.75	0.93	0.506	0.048	(0.334)	0.459
154	12.83	0.97	0.524	0.047	(0.346)	0.477
155	12.92	0.97	0.524	0.047	(0.346)	0.477
156	13.00	0.97	0.524	0.047	(0.346)	0.477
157	13.08	1.13	0.615	0.047	(0.406)	0.568
158	13.17	1.13	0.615	0.046	(0.406)	0.568
159	13.25	1.13	0.615	0.046	(0.406)	0.568
160	13.33	1.13	0.615	0.046	(0.406)	0.569
161	13.42	1.13	0.615	0.046	(0.406)	0.569
162	13.50	1.13	0.615	0.046	(0.406)	0.569
163	13.58	0.77	0.416	0.045	(0.274)	0.371
164	13.67	0.77	0.416	0.045	(0.274)	0.371
165	13.75	0.77	0.416	0.045	(0.274)	0.371
166	13.83	0.77	0.416	0.045	(0.274)	0.371
167	13.92	0.77	0.416	0.044	(0.274)	0.371
168	14.00	0.77	0.416	0.044	(0.274)	0.372
169	14.08	0.90	0.488	0.044	(0.322)	0.444
170	14.17	0.90	0.488	0.044	(0.322)	0.444
171	14.25	0.90	0.488	0.043	(0.322)	0.445
172	14.33	0.87	0.470	0.043	(0.310)	0.427
173	14.42	0.87	0.470	0.043	(0.310)	0.427
174	14.50	0.87	0.470	0.043	(0.310)	0.427
175	14.58	0.87	0.470	0.043	(0.310)	0.427
176	14.67	0.87	0.470	0.042	(0.310)	0.428
177	14.75	0.87	0.470	0.042	(0.310)	0.428
178	14.83	0.83	0.452	0.042	(0.298)	0.410
179	14.92	0.83	0.452	0.042	(0.298)	0.410
180	15.00	0.83	0.452	0.042	(0.298)	0.410
181	15.08	0.80	0.434	0.041	(0.286)	0.393
182	15.17	0.80	0.434	0.041	(0.286)	0.393
183	15.25	0.80	0.434	0.041	(0.286)	0.393
184	15.33	0.77	0.416	0.041	(0.274)	0.375
185	15.42	0.77	0.416	0.040	(0.274)	0.375
186	15.50	0.77	0.416	0.040	(0.274)	0.376
187	15.58	0.63	0.343	0.040	(0.227)	0.303
188	15.67	0.63	0.343	0.040	(0.227)	0.304
189	15.75	0.63	0.343	0.040	(0.227)	0.304
190	15.83	0.63	0.343	0.039	(0.227)	0.304
191	15.92	0.63	0.343	0.039	(0.227)	0.304

192	16.00	0.63	0.343		0.039	(	0.227)	0.304
193	16.08	0.13	0.072		0.039	(	0.048)	0.033
194	16.17	0.13	0.072		0.039	(	0.048)	0.034
195	16.25	0.13	0.072		0.038	(	0.048)	0.034
196	16.33	0.13	0.072		0.038	(	0.048)	0.034
197	16.42	0.13	0.072		0.038	(	0.048)	0.034
198	16.50	0.13	0.072		0.038	(	0.048)	0.034
199	16.58	0.10	0.054	(	0.038)		0.036	0.018
200	16.67	0.10	0.054	(	0.037)		0.036	0.018
201	16.75	0.10	0.054	(	0.037)		0.036	0.018
202	16.83	0.10	0.054	(	0.037)		0.036	0.018
203	16.92	0.10	0.054	(	0.037)		0.036	0.018
204	17.00	0.10	0.054	(	0.037)		0.036	0.018
205	17.08	0.17	0.090		0.037	(	0.060)	0.054
206	17.17	0.17	0.090		0.036	(	0.060)	0.054
207	17.25	0.17	0.090		0.036	(	0.060)	0.054
208	17.33	0.17	0.090		0.036	(	0.060)	0.054
209	17.42	0.17	0.090		0.036	(	0.060)	0.055
210	17.50	0.17	0.090		0.036	(	0.060)	0.055
211	17.58	0.17	0.090		0.035	(	0.060)	0.055
212	17.67	0.17	0.090		0.035	(	0.060)	0.055
213	17.75	0.17	0.090		0.035	(	0.060)	0.055
214	17.83	0.13	0.072		0.035	(	0.048)	0.037
215	17.92	0.13	0.072		0.035	(	0.048)	0.038
216	18.00	0.13	0.072		0.035	(	0.048)	0.038
217	18.08	0.13	0.072		0.034	(	0.048)	0.038
218	18.17	0.13	0.072		0.034	(	0.048)	0.038
219	18.25	0.13	0.072		0.034	(	0.048)	0.038
220	18.33	0.13	0.072		0.034	(	0.048)	0.038
221	18.42	0.13	0.072		0.034	(	0.048)	0.039
222	18.50	0.13	0.072		0.034	(	0.048)	0.039
223	18.58	0.10	0.054		0.033	(	0.036)	0.021
224	18.67	0.10	0.054		0.033	(	0.036)	0.021
225	18.75	0.10	0.054		0.033	(	0.036)	0.021
226	18.83	0.07	0.036	(	0.033)		0.024	0.012
227	18.92	0.07	0.036	(	0.033)		0.024	0.012
228	19.00	0.07	0.036	(	0.033)		0.024	0.012
229	19.08	0.10	0.054		0.032	(	0.036)	0.022
230	19.17	0.10	0.054		0.032	(	0.036)	0.022
231	19.25	0.10	0.054		0.032	(	0.036)	0.022
232	19.33	0.13	0.072		0.032	(	0.048)	0.040
233	19.42	0.13	0.072		0.032	(	0.048)	0.040
234	19.50	0.13	0.072		0.032	(	0.048)	0.041
235	19.58	0.10	0.054		0.032	(	0.036)	0.023
236	19.67	0.10	0.054		0.031	(	0.036)	0.023
237	19.75	0.10	0.054		0.031	(	0.036)	0.023
238	19.83	0.07	0.036	(	0.031)		0.024	0.012
239	19.92	0.07	0.036	(	0.031)		0.024	0.012
240	20.00	0.07	0.036	(	0.031)		0.024	0.012
241	20.08	0.10	0.054		0.031	(	0.036)	0.024
242	20.17	0.10	0.054		0.031	(	0.036)	0.024
243	20.25	0.10	0.054		0.030	(	0.036)	0.024
244	20.33	0.10	0.054		0.030	(	0.036)	0.024
245	20.42	0.10	0.054		0.030	(	0.036)	0.024
246	20.50	0.10	0.054		0.030	(	0.036)	0.024
247	20.58	0.10	0.054		0.030	(	0.036)	0.024
248	20.67	0.10	0.054		0.030	(	0.036)	0.024
249	20.75	0.10	0.054		0.030	(	0.036)	0.025
250	20.83	0.07	0.036	(	0.030)		0.024	0.012
251	20.92	0.07	0.036	(	0.029)		0.024	0.012

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252  21.00     0.07      0.036       (  0.029)        0.024         0.012
253  21.08     0.10      0.054          0.029     (  0.036)         0.025
254  21.17     0.10      0.054          0.029     (  0.036)         0.025
255  21.25     0.10      0.054          0.029     (  0.036)         0.025
256  21.33     0.07      0.036       (  0.029)        0.024         0.012
257  21.42     0.07      0.036       (  0.029)        0.024         0.012
258  21.50     0.07      0.036       (  0.029)        0.024         0.012
259  21.58     0.10      0.054          0.029     (  0.036)         0.026
260  21.67     0.10      0.054          0.028     (  0.036)         0.026
261  21.75     0.10      0.054          0.028     (  0.036)         0.026
262  21.83     0.07      0.036       (  0.028)        0.024         0.012
263  21.92     0.07      0.036       (  0.028)        0.024         0.012
264  22.00     0.07      0.036       (  0.028)        0.024         0.012
265  22.08     0.10      0.054          0.028     (  0.036)         0.026
266  22.17     0.10      0.054          0.028     (  0.036)         0.026
267  22.25     0.10      0.054          0.028     (  0.036)         0.026
268  22.33     0.07      0.036       (  0.028)        0.024         0.012
269  22.42     0.07      0.036       (  0.028)        0.024         0.012
270  22.50     0.07      0.036       (  0.028)        0.024         0.012
271  22.58     0.07      0.036       (  0.027)        0.024         0.012
272  22.67     0.07      0.036       (  0.027)        0.024         0.012
273  22.75     0.07      0.036       (  0.027)        0.024         0.012
274  22.83     0.07      0.036       (  0.027)        0.024         0.012
275  22.92     0.07      0.036       (  0.027)        0.024         0.012
276  23.00     0.07      0.036       (  0.027)        0.024         0.012
277  23.08     0.07      0.036       (  0.027)        0.024         0.012
278  23.17     0.07      0.036       (  0.027)        0.024         0.012
279  23.25     0.07      0.036       (  0.027)        0.024         0.012
280  23.33     0.07      0.036       (  0.027)        0.024         0.012
281  23.42     0.07      0.036       (  0.027)        0.024         0.012
282  23.50     0.07      0.036       (  0.027)        0.024         0.012
283  23.58     0.07      0.036       (  0.027)        0.024         0.012
284  23.67     0.07      0.036       (  0.027)        0.024         0.012
285  23.75     0.07      0.036       (  0.027)        0.024         0.012
286  23.83     0.07      0.036       (  0.027)        0.024         0.012
287  23.92     0.07      0.036       (  0.027)        0.024         0.012
288  24.00     0.07      0.036       (  0.027)        0.024         0.012
          (Loss Rate Not Used)
    Sum =     100.0                                    Sum =    40.9
     Flood volume = Effective rainfall      3.41(In)
      times area      36.1(Ac.)/[(In)/(Ft.)] =      10.3(Ac.Ft)
     Total soil loss =      1.11(In)
     Total soil loss =     3.335(Ac.Ft)
     Total rainfall =      4.52(In)
     Flood volume =      447507.1 Cubic Feet
     Total soil loss =      145257.7 Cubic Feet
     ------------------------------------------------------------------------
      Peak flow rate of this hydrograph =     20.632(CFS)
     ------------------------------------------------------------------------
     ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                         24 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
     ------------------------------------------------------------------------
                 Hydrograph in   5   Minute intervals ((CFS))

     ------------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5      30.0
 ------------------------------------------------------------------------
   0+ 5       0.0006      0.09  Q         |         |         |         |
   0+10       0.0028      0.31  Q         |         |         |         |
```

0+15	0.0053	0.38	Q	|	|	|	|
0+20	0.0085	0.45	Q	|	|	|	|
0+25	0.0125	0.58	Q	|	|	|	|
0+30	0.0168	0.62	Q	|	|	|	|
0+35	0.0212	0.65	Q	|	|	|	|
0+40	0.0257	0.66	Q	|	|	|	|
0+45	0.0303	0.67	Q	|	|	|	|
0+50	0.0353	0.71	Q	|	|	|	|
0+55	0.0409	0.83	VQ	|	|	|	|
1+ 0	0.0469	0.86	VQ	|	|	|	|
1+ 5	0.0526	0.83	VQ	|	|	|	|
1+10	0.0576	0.73	Q	|	|	|	|
1+15	0.0624	0.70	Q	|	|	|	|
1+20	0.0672	0.69	Q	|	|	|	|
1+25	0.0719	0.68	Q	|	|	|	|
1+30	0.0766	0.68	Q	|	|	|	|
1+35	0.0812	0.67	Q	|	|	|	|
1+40	0.0858	0.67	Q	|	|	|	|
1+45	0.0905	0.67	Q	|	|	|	|
1+50	0.0954	0.72	Q	|	|	|	|
1+55	0.1011	0.83	VQ	|	|	|	|
2+ 0	0.1070	0.86	VQ	|	|	|	|
2+ 5	0.1130	0.88	VQ	|	|	|	|
2+10	0.1191	0.88	VQ	|	|	|	|
2+15	0.1253	0.89	VQ	|	|	|	|
2+20	0.1314	0.89	VQ	|	|	|	|
2+25	0.1376	0.90	VQ	|	|	|	|
2+30	0.1437	0.90	VQ	|	|	|	|
2+35	0.1502	0.94	VQ	|	|	|	|
2+40	0.1575	1.05	VQ	|	|	|	|
2+45	0.1649	1.08	VQ	|	|	|	|
2+50	0.1725	1.10	VQ	|	|	|	|
2+55	0.1801	1.11	VQ	|	|	|	|
3+ 0	0.1878	1.11	VQ	|	|	|	|
3+ 5	0.1955	1.12	VQ	|	|	|	|
3+10	0.2032	1.12	VQ	|	|	|	|
3+15	0.2109	1.12	VQ	|	|	|	|
3+20	0.2186	1.12	VQ	|	|	|	|
3+25	0.2263	1.12	VQ	|	|	|	|
3+30	0.2340	1.12	VQ	|	|	|	|
3+35	0.2418	1.12	VQ	|	|	|	|
3+40	0.2495	1.12	VQ	|	|	|	|
3+45	0.2572	1.12	|Q	|	|	|	|
3+50	0.2652	1.17	|Q	|	|	|	|
3+55	0.2740	1.27	|Q	|	|	|	|
4+ 0	0.2830	1.31	|Q	|	|	|	|
4+ 5	0.2921	1.32	|Q	|	|	|	|
4+10	0.3013	1.33	|Q	|	|	|	|
4+15	0.3105	1.34	|Q	|	|	|	|
4+20	0.3204	1.44	|Q	|	|	|	|
4+25	0.3319	1.68	|VQ	|	|	|	|
4+30	0.3440	1.76	|VQ	|	|	|	|
4+35	0.3564	1.80	|VQ	|	|	|	|
4+40	0.3690	1.83	|VQ	|	|	|	|
4+45	0.3818	1.85	|VQ	|	|	|	|
4+50	0.3956	2.00	|VQ	|	|	|	|
4+55	0.4117	2.34	|V Q	|	|	|	|
5+ 0	0.4286	2.45	|V Q	|	|	|	|
5+ 5	0.4441	2.26	|V Q	|	|	|	|
5+10	0.4557	1.69	|VQ	|	|	|	|

5+15	0.4662	1.52	VQ			
5+20	0.4770	1.57	VQ			
5+25	0.4897	1.84	VQ			
5+30	0.5028	1.91	VQ			
5+35	0.5171	2.08	Q			
5+40	0.5338	2.42	VQ			
5+45	0.5513	2.54	VQ			
5+50	0.5692	2.61	VQ			
5+55	0.5875	2.65	VQ			
6+ 0	0.6059	2.68	VQ			
6+ 5	0.6254	2.83	VQ			
6+10	0.6473	3.17	V Q			
6+15	0.6699	3.28	V Q			
6+20	0.6929	3.34	V Q			
6+25	0.7162	3.38	V Q			
6+30	0.7397	3.41	V Q			
6+35	0.7642	3.56	V Q			
6+40	0.7910	3.90	V Q			
6+45	0.8187	4.01	V Q			
6+50	0.8467	4.07	V Q			
6+55	0.8749	4.10	V Q			
7+ 0	0.9034	4.13	V Q			
7+ 5	0.9320	4.15	V Q			
7+10	0.9607	4.17	V Q			
7+15	0.9895	4.18	V Q			
7+20	1.0193	4.33	V Q			
7+25	1.0514	4.66	V Q			
7+30	1.0842	4.77	V Q			
7+35	1.1184	4.96	V Q			
7+40	1.1550	5.32	V Q			
7+45	1.1925	5.44	V Q			
7+50	1.2313	5.64	V Q			
7+55	1.2727	6.01	V Q			
8+ 0	1.3149	6.13	V Q			
8+ 5	1.3594	6.47	V Q			
8+10	1.4087	7.15	V Q			
8+15	1.4595	7.38	V Q			
8+20	1.5111	7.49	V Q			
8+25	1.5631	7.56	V Q			
8+30	1.6155	7.60	V Q			
8+35	1.6689	7.76	V Q			
8+40	1.7248	8.11	V Q			
8+45	1.7814	8.22	V Q			
8+50	1.8393	8.41	V Q			
8+55	1.8997	8.77	V Q			
9+ 0	1.9610	8.89	V Q			
9+ 5	2.0245	9.23	V Q			
9+10	2.0928	9.91	V Q			
9+15	2.1626	10.14	V Q			
9+20	2.2341	10.38	V Q			
9+25	2.3082	10.77	V Q			
9+30	2.3834	10.91	V Q			
9+35	2.4600	11.12	V Q			
9+40	2.5392	11.49	V Q			
9+45	2.6192	11.62	V Q			
9+50	2.7006	11.82	V Q			
9+55	2.7845	12.18	V Q			
10+ 0	2.8692	12.31	V Q			
10+ 5	2.9480	11.43	V Q			
10+10	3.0116	9.24	VQ			

10+15	3.0706	8.57	|	|Q	|	|	|
10+20	3.1275	8.27	|	|QV	|	|	|
10+25	3.1834	8.11	|	Q V	|	|	|
10+30	3.2385	8.01	|	Q V	|	|	|
10+35	3.2979	8.62	|	|QV	|	|	|
10+40	3.3679	10.17	|	| Q	|	|	|
10+45	3.4415	10.68	|	| VQ	|	|	|
10+50	3.5166	10.91	|	| VQ	|	|	|
10+55	3.5927	11.05	|	| VQ	|	|	|
11+ 0	3.6694	11.14	|	| Q	|	|	|
11+ 5	3.7456	11.06	|	| Q	|	|	|
11+10	3.8200	10.80	|	| Q	|	|	|
11+15	3.8937	10.71	|	| QV	|	|	|
11+20	3.9672	10.67	|	| QV	|	|	|
11+25	4.0406	10.65	|	| QV	|	|	|
11+30	4.1139	10.65	|	| Q V	|	|	|
11+35	4.1854	10.38	|	| Q V	|	|	|
11+40	4.2525	9.74	|	| Q V	|	|	|
11+45	4.3182	9.55	|	| Q V	|	|	|
11+50	4.3843	9.60	|	| Q V	|	|	|
11+55	4.4524	9.88	|	| Q V	|	|	|
12+ 0	4.5210	9.96	|	| Q V	|	|	|
12+ 5	4.5963	10.93	|	| Q V	|	|	|
12+10	4.6871	13.19	|	| QV	|	|	|
12+15	4.7829	13.91	|	| Q	|	|	|
12+20	4.8819	14.38	|	| Q|	|	|	|
12+25	4.9845	14.90	|	| Q|	|	|	|
12+30	5.0886	15.12	|	| VQ	|	|	|
12+35	5.1954	15.51	|	| Q	|	|	|
12+40	5.3073	16.24	|	| VQ	|	|	|
12+45	5.4207	16.47	|	| |Q	|	|	|
12+50	5.5358	16.71	|	| |VQ	|	|	|
12+55	5.6535	17.10	|	| | Q	|	|	|
13+ 0	5.7722	17.24	|	| | Q	|	|	|
13+ 5	5.8961	17.98	|	| | VQ	|	|	|
13+10	6.0313	19.63	|	| | V Q	|	|	|
13+15	6.1701	20.15	|	| | V Q	|	|	|
13+20	6.3106	20.40	|	| | V Q	|	|	|
13+25	6.4520	20.54	|	| | V Q	|	|	|
13+30	6.5941	20.63	|	| | V Q	|	|	|
13+35	6.7265	19.21	|	| | QV	|	|	|
13+40	6.8349	15.74	|	| Q V	|	|	|
13+45	6.9358	14.66	|	| Q| V	|	|	|
13+50	7.0334	14.17	|	| Q | V	|	|	|
13+55	7.1291	13.90	|	| Q | V	|	|	|
14+ 0	7.2236	13.73	|	| Q | V	|	|	|
14+ 5	7.3212	14.16	|	| Q | V	|	|	|
14+10	7.4270	15.36	|	| Q V	|	|	|
14+15	7.5356	15.77	|	| |Q V|	|	|	|
14+20	7.6446	15.82	|	| |Q V|	|	|	|
14+25	7.7521	15.61	|	| Q V	|	|	|
14+30	7.8594	15.59	|	| Q V	|	|	|
14+35	7.9668	15.59	|	| Q |V	|	|	|
14+40	8.0742	15.60	|	| Q |V	|	|	|
14+45	8.1816	15.60	|	| Q |V	|	|	|
14+50	8.2881	15.46	|	| Q | V	|	|	|
14+55	8.3924	15.14	|	| Q | V	|	|	|
15+ 0	8.4960	15.05	|	| Q | V	|	|	|
15+ 5	8.5985	14.88	|	| Q| | V	|	|	|
15+10	8.6986	14.54	|	| Q| | V	|	|	|

15+15	8.7980	14.43	|	Q|	|	V |
15+20	8.8961	14.25	|	Q |	|	V |
15+25	8.9918	13.90	|	Q |	|	V |
15+30	9.0868	13.79	|	Q |	|	V |
15+35	9.1778	13.21	|	Q |	|	V |
15+40	9.2598	11.90	|	Q |	|	V |
15+45	9.3390	11.50	|	Q |	|	V |
15+50	9.4169	11.31	|	Q |	|	V |
15+55	9.4941	11.21	|	Q |	|	V |
16+ 0	9.5709	11.15	|	Q |	|	V |
16+ 5	9.6337	9.11	|	Q |	|	V |
16+10	9.6631	4.28	|	Q |	|	V |
16+15	9.6824	2.80	|	Q |	|	V |
16+20	9.6970	2.13	|	Q |	|	V |
16+25	9.7091	1.75	|	Q |	|	V |
16+30	9.7196	1.52	|	Q |	|	V |
16+35	9.7282	1.26	|	Q |	|	V |
16+40	9.7341	0.85	|	Q |	|	V |
16+45	9.7393	0.76	|	Q |	|	V |
16+50	9.7443	0.72	|	Q |	|	V |
16+55	9.7492	0.70	|	Q |	|	V |
17+ 0	9.7539	0.69	|	Q |	|	V |
17+ 5	9.7604	0.94	|	Q |	|	V |
17+10	9.7712	1.56	|	Q |	|	V |
17+15	9.7833	1.76	|	Q |	|	V |
17+20	9.7961	1.86	|	Q |	|	V |
17+25	9.8093	1.91	|	Q |	|	V |
17+30	9.8227	1.95	|	Q |	|	V |
17+35	9.8363	1.98	|	Q |	|	V |
17+40	9.8501	2.00	|	Q |	|	V |
17+45	9.8639	2.01	|	Q |	|	V |
17+50	9.8768	1.88	|	Q |	|	V |
17+55	9.8876	1.56	|	Q |	|	V |
18+ 0	9.8977	1.47	|	Q |	|	V |
18+ 5	9.9076	1.43	|	Q |	|	V |
18+10	9.9173	1.41	|	Q |	|	V |
18+15	9.9270	1.40	|	Q |	|	V |
18+20	9.9366	1.40	|	Q |	|	V |
18+25	9.9462	1.40	|	Q |	|	V |
18+30	9.9559	1.40	|	Q |	|	V |
18+35	9.9647	1.27	|	Q |	|	V |
18+40	9.9713	0.96	|	Q |	|	V |
18+45	9.9773	0.87	|	Q |	|	V |
18+50	9.9825	0.76	|	Q |	|	V |
18+55	9.9865	0.58	|	Q |	|	V |
19+ 0	9.9901	0.52	|	Q |	|	V |
19+ 5	9.9939	0.56	|	Q |	|	V |
19+10	9.9987	0.70	|	Q |	|	V |
19+15	10.0039	0.75	|	Q |	|	V |
19+20	10.0102	0.91	|	Q |	|	V |
19+25	10.0187	1.24	|	Q |	|	V|
19+30	10.0281	1.36	|	Q |	|	V|
19+35	10.0369	1.28	|	Q |	|	V|
19+40	10.0437	0.99	|	Q |	|	V|
19+45	10.0500	0.92	|	Q |	|	V|
19+50	10.0556	0.81	|	Q |	|	V|
19+55	10.0597	0.60	|	Q |	|	V|
20+ 0	10.0634	0.53	|	Q |	|	V|
20+ 5	10.0673	0.57	|	Q |	|	V|
20+10	10.0725	0.75	|	Q |	|	V|

20+15	10.0780	0.81	|Q	|	|	|	V|
20+20	10.0838	0.83	|Q	|	|	|	V|
20+25	10.0896	0.85	|Q	|	|	|	V|
20+30	10.0956	0.86	|Q	|	|	|	V|
20+35	10.1016	0.87	|Q	|	|	|	V|
20+40	10.1077	0.88	|Q	|	|	|	V|
20+45	10.1138	0.89	|Q	|	|	|	V|
20+50	10.1193	0.80	|Q	|	|	|	V|
20+55	10.1233	0.58	Q	|	|	|	V|
21+ 0	10.1269	0.52	Q	|	|	|	V|
21+ 5	10.1309	0.58	Q	|	|	|	V|
21+10	10.1363	0.79	|Q	|	|	|	V|
21+15	10.1422	0.85	|Q	|	|	|	V|
21+20	10.1476	0.79	|Q	|	|	|	V|
21+25	10.1515	0.57	Q	|	|	|	V|
21+30	10.1551	0.51	Q	|	|	|	V|
21+35	10.1591	0.58	Q	|	|	|	V|
21+40	10.1646	0.81	|Q	|	|	|	V|
21+45	10.1707	0.87	|Q	|	|	|	V|
21+50	10.1762	0.80	|Q	|	|	|	V|
21+55	10.1802	0.58	Q	|	|	|	V|
22+ 0	10.1837	0.51	Q	|	|	|	V|
22+ 5	10.1878	0.59	Q	|	|	|	V|
22+10	10.1934	0.83	|Q	|	|	|	V|
22+15	10.1996	0.89	|Q	|	|	|	V|
22+20	10.2052	0.82	|Q	|	|	|	V|
22+25	10.2092	0.58	Q	|	|	|	V|
22+30	10.2128	0.52	Q	|	|	|	V|
22+35	10.2161	0.49	Q	|	|	|	V|
22+40	10.2194	0.47	Q	|	|	|	V|
22+45	10.2226	0.46	Q	|	|	|	V|
22+50	10.2257	0.45	Q	|	|	|	V|
22+55	10.2288	0.45	Q	|	|	|	V|
23+ 0	10.2319	0.45	Q	|	|	|	V|
23+ 5	10.2350	0.45	Q	|	|	|	V|
23+10	10.2380	0.45	Q	|	|	|	V|
23+15	10.2411	0.45	Q	|	|	|	V|
23+20	10.2442	0.45	Q	|	|	|	V|
23+25	10.2473	0.45	Q	|	|	|	V|
23+30	10.2504	0.45	Q	|	|	|	V|
23+35	10.2535	0.45	Q	|	|	|	V|
23+40	10.2565	0.45	Q	|	|	|	V|
23+45	10.2596	0.45	Q	|	|	|	V|
23+50	10.2627	0.45	Q	|	|	|	V|
23+55	10.2658	0.45	Q	|	|	|	V|
24+ 0	10.2689	0.45	Q	|	|	|	V|
24+ 5	10.2713	0.36	Q	|	|	|	V|
24+10	10.2723	0.14	Q	|	|	|	V|
24+15	10.2728	0.07	Q	|	|	|	V|
24+20	10.2731	0.04	Q	|	|	|	V|
24+25	10.2732	0.02	Q	|	|	|	V|
24+30	10.2733	0.01	Q	|	|	|	V|
24+35	10.2733	0.01	Q	|	|	|	V

APPENDIX E.3

NORMAL DEPTH CALCULATIONS FOR STORM DRAIN

Worksheet for Area B1

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.02000	ft/ft
Normal Depth	1.90	ft
Diameter	2.00	ft

Results

Discharge	34.37	ft^3/s
Flow Area	3.08	ft^2
Wetted Perimeter	5.38	ft
Hydraulic Radius	0.57	ft
Top Width	0.87	ft
Critical Depth	1.91	ft
Percent Full	95.0	%
Critical Slope	0.02008	ft/ft
Velocity	11.15	ft/s
Velocity Head	1.93	ft
Specific Energy	3.83	ft
Froude Number	1.05	
Maximum Discharge	34.41	ft^3/s
Discharge Full	31.99	ft^3/s
Slope Full	0.02309	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	95.00	%
Downstream Velocity	Infinity	ft/s

Worksheet for Area B1

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.90	ft
Critical Depth	1.91	ft
Channel Slope	0.02000	ft/ft
Critical Slope	0.02008	ft/ft

Worksheet for Area B2

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01000	ft/ft
Normal Depth	1.90	ft
Diameter	2.00	ft

Results

Discharge	24.31	ft^3/s
Flow Area	3.08	ft^2
Wetted Perimeter	5.38	ft
Hydraulic Radius	0.57	ft
Top Width	0.87	ft
Critical Depth	1.74	ft
Percent Full	95.0	%
Critical Slope	0.01050	ft/ft
Velocity	7.88	ft/s
Velocity Head	0.97	ft
Specific Energy	2.87	ft
Froude Number	0.74	
Maximum Discharge	24.33	ft^3/s
Discharge Full	22.62	ft^3/s
Slope Full	0.01155	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	95.00	%
Downstream Velocity	Infinity	ft/s

Worksheet for Area B2

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.90	ft
Critical Depth	1.74	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.01050	ft/ft

APPENDIX F

REFERENCES

Map Scale: 1:1,670 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil 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 1:15,800.

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: Western Riverside Area, California
Survey Area Data: Version 13, May 27, 2020

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

Date(s) aerial images were photographed: May 25, 2019—Jun 25, 2019

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
MmB	Monserate sandy loam, 0 to 5 percent slopes	C	6.0	81.9%
MmC2	Monserate sandy loam, 5 to 8 percent slopes, eroded	C	1.3	18.1%
Totals for Area of Interest			**7.3**	**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

NOAA Atlas 14, Volume 6, Version 2
Location name: Moreno Valley, California, USA*
Latitude: 33.9227°, Longitude: -117.2843°
Elevation: 1533.56 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	**0.090** (0.075-0.108)	**0.118** (0.099-0.143)	**0.157** (0.131-0.191)	**0.190** (0.156-0.232)	**0.235** (0.187-0.299)	**0.272** (0.212-0.353)	**0.310** (0.236-0.413)	**0.351** (0.259-0.481)	**0.409** (0.289-0.585)	**0.456** (0.311-0.675)
10-min	**0.128** (0.107-0.155)	**0.169** (0.141-0.205)	**0.225** (0.187-0.273)	**0.272** (0.224-0.333)	**0.337** (0.269-0.428)	**0.390** (0.304-0.506)	**0.445** (0.338-0.592)	**0.504** (0.371-0.690)	**0.586** (0.414-0.838)	**0.653** (0.445-0.968)
15-min	**0.155** (0.130-0.188)	**0.205** (0.171-0.248)	**0.272** (0.226-0.331)	**0.329** (0.271-0.403)	**0.408** (0.325-0.518)	**0.472** (0.367-0.611)	**0.538** (0.409-0.716)	**0.609** (0.449-0.834)	**0.709** (0.501-1.01)	**0.790** (0.538-1.17)
30-min	**0.238** (0.199-0.288)	**0.314** (0.262-0.381)	**0.417** (0.347-0.507)	**0.504** (0.416-0.618)	**0.626** (0.498-0.794)	**0.723** (0.564-0.938)	**0.826** (0.627-1.10)	**0.934** (0.689-1.28)	**1.09** (0.768-1.56)	**1.21** (0.826-1.80)
60-min	**0.341** (0.285-0.413)	**0.450** (0.375-0.545)	**0.597** (0.497-0.726)	**0.721** (0.595-0.884)	**0.896** (0.713-1.14)	**1.03** (0.807-1.34)	**1.18** (0.897-1.57)	**1.34** (0.986-1.83)	**1.56** (1.10-2.23)	**1.74** (1.18-2.57)
2-hr	**0.494** (0.413-0.598)	**0.639** (0.532-0.774)	**0.831** (0.691-1.01)	**0.990** (0.816-1.21)	**1.21** (0.963-1.54)	**1.38** (1.08-1.79)	**1.56** (1.18-2.07)	**1.75** (1.29-2.39)	**2.00** (1.41-2.86)	**2.20** (1.50-3.27)
3-hr	**0.603** (0.503-0.730)	**0.774** (0.645-0.938)	**1.00** (0.832-1.22)	**1.19** (0.978-1.45)	**1.44** (1.15-1.83)	**1.64** (1.28-2.13)	**1.84** (1.40-2.45)	**2.06** (1.52-2.81)	**2.34** (1.66-3.35)	**2.57** (1.75-3.81)
6-hr	**0.830** (0.693-1.00)	**1.06** (0.885-1.29)	**1.37** (1.14-1.66)	**1.61** (1.33-1.98)	**1.95** (1.55-2.48)	**2.21** (1.72-2.87)	**2.48** (1.88-3.29)	**2.75** (2.03-3.77)	**3.12** (2.20-4.46)	**3.41** (2.32-5.05)
12-hr	**1.08** (0.901-1.31)	**1.39** (1.16-1.69)	**1.80** (1.50-2.19)	**2.14** (1.76-2.62)	**2.59** (2.06-3.29)	**2.94** (2.29-3.81)	**3.29** (2.50-4.38)	**3.65** (2.69-5.00)	**4.14** (2.93-5.93)	**4.52** (3.08-6.71)
24-hr	**1.41** (1.25-1.63)	**1.85** (1.64-2.14)	**2.43** (2.14-2.81)	**2.90** (2.53-3.38)	**3.53** (2.99-4.26)	**4.02** (3.34-4.95)	**4.52** (3.66-5.70)	**5.03** (3.97-6.52)	**5.73** (4.34-7.72)	**6.27** (4.59-8.74)
2-day	**1.69** (1.49-1.95)	**2.25** (1.99-2.60)	**2.99** (2.64-3.46)	**3.59** (3.14-4.19)	**4.42** (3.74-5.32)	**5.05** (4.19-6.22)	**5.70** (4.62-7.18)	**6.37** (5.02-8.24)	**7.28** (5.51-9.81)	**7.99** (5.85-11.1)
3-day	**1.81** (1.60-2.08)	**2.44** (2.16-2.82)	**3.28** (2.89-3.79)	**3.96** (3.46-4.62)	**4.90** (4.15-5.90)	**5.62** (4.66-6.92)	**6.36** (5.16-8.02)	**7.13** (5.62-9.23)	**8.18** (6.19-11.0)	**8.99** (6.58-12.5)
4-day	**1.95** (1.73-2.25)	**2.66** (2.35-3.07)	**3.60** (3.17-4.17)	**4.37** (3.82-5.10)	**5.43** (4.59-6.54)	**6.25** (5.18-7.68)	**7.09** (5.74-8.92)	**7.96** (6.27-10.3)	**9.15** (6.93-12.3)	**10.1** (7.38-14.1)
7-day	**2.21** (1.96-2.55)	**3.06** (2.70-3.53)	**4.18** (3.69-4.85)	**5.12** (4.47-5.97)	**6.40** (5.42-7.71)	**7.40** (6.14-9.10)	**8.42** (6.82-10.6)	**9.49** (7.48-12.3)	**11.0** (8.30-14.8)	**12.1** (8.87-16.9)
10-day	**2.36** (2.09-2.72)	**3.29** (2.91-3.80)	**4.54** (4.00-5.26)	**5.58** (4.88-6.51)	**7.01** (5.93-8.44)	**8.13** (6.74-9.99)	**9.28** (7.52-11.7)	**10.5** (8.26-13.6)	**12.1** (9.19-16.4)	**13.5** (9.85-18.8)
20-day	**2.81** (2.49-3.24)	**3.97** (3.51-4.59)	**5.54** (4.89-6.42)	**6.86** (6.00-8.00)	**8.70** (7.36-10.5)	**10.2** (8.42-12.5)	**11.7** (9.45-14.7)	**13.3** (10.5-17.2)	**15.5** (11.7-20.9)	**17.2** (12.6-24.0)
30-day	**3.33** (2.95-3.84)	**4.70** (4.15-5.42)	**6.56** (5.79-7.60)	**8.14** (7.12-9.49)	**10.4** (8.77-12.5)	**12.1** (10.1-14.9)	**14.0** (11.3-17.6)	**16.0** (12.6-20.7)	**18.7** (14.2-25.2)	**20.9** (15.3-29.2)
45-day	**3.95** (3.50-4.56)	**5.53** (4.88-6.38)	**7.69** (6.78-8.90)	**9.53** (8.34-11.1)	**12.2** (10.3-14.7)	**14.3** (11.8-17.6)	**16.5** (13.4-20.8)	**18.9** (14.9-24.5)	**22.3** (16.8-30.0)	**25.0** (18.3-34.8)
60-day	**4.60** (4.07-5.30)	**6.34** (5.60-7.32)	**8.76** (7.72-10.1)	**10.8** (9.47-12.6)	**13.8** (11.7-16.6)	**16.2** (13.4-19.9)	**18.8** (15.2-23.6)	**21.5** (17.0-27.8)	**25.4** (19.2-34.2)	**28.6** (20.9-39.8)

[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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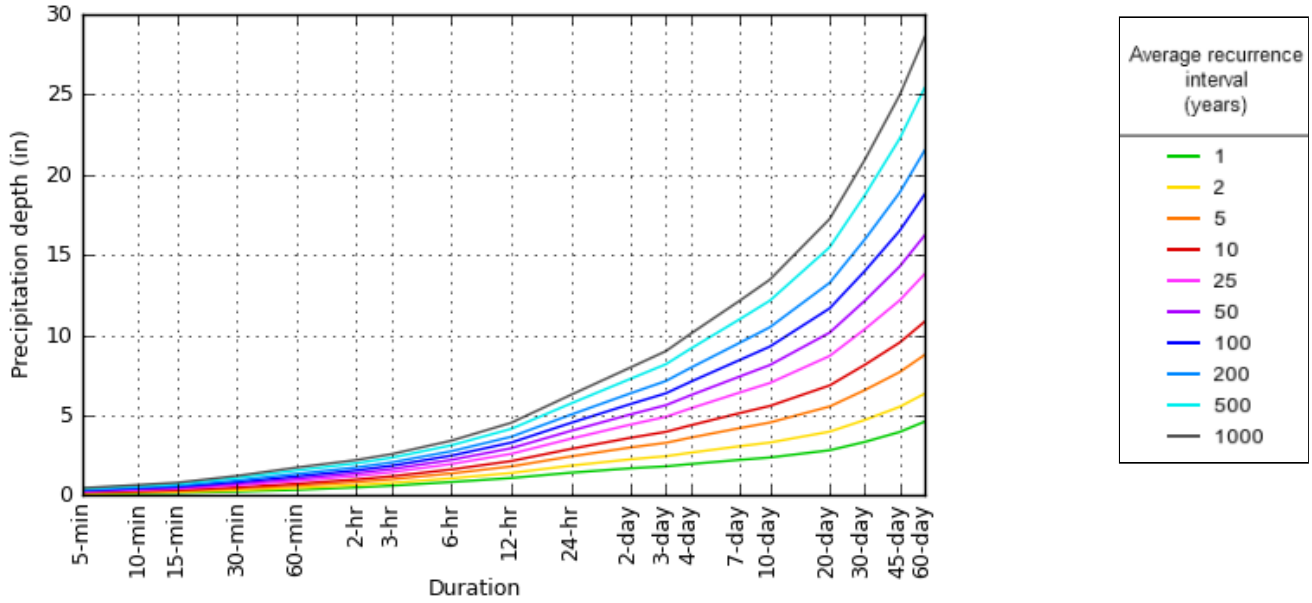
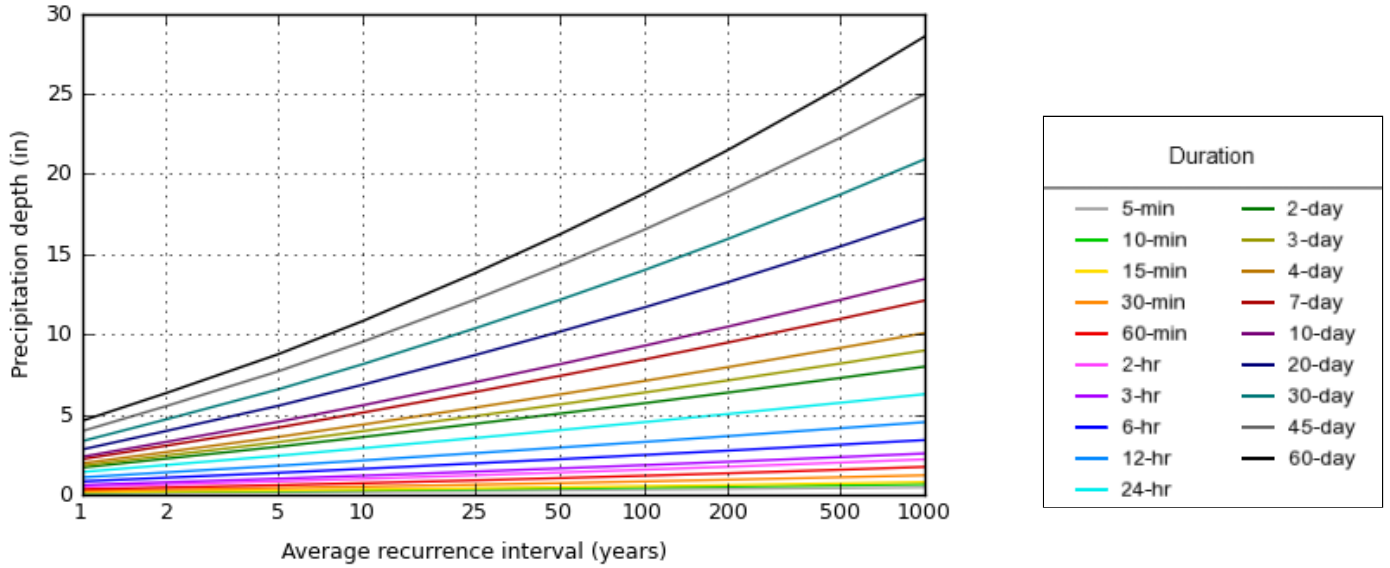
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 33.9227°, Longitude: -117.2843°





NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Wed Nov 10 17:16:15 2021

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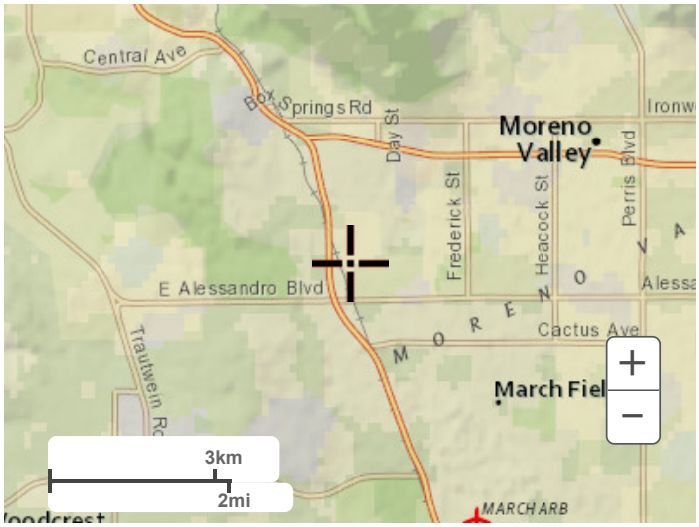
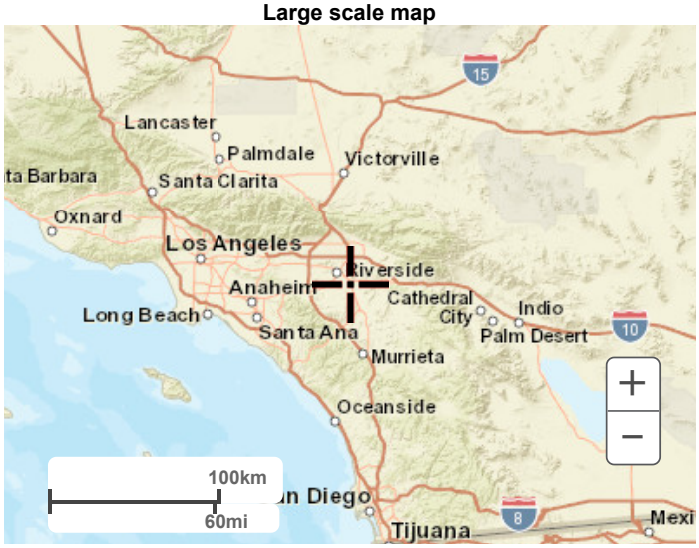
Maps & aerials

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

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

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

RCFC & WCD
HYDROLOGY MANUAL

RUNOFF INDEX NUMBERS FOR PERVIOUS AREA

PLATE D-5.5 (1 of 2)

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

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

Notes:

1. All runoff index (RI) numbers are for Antecedent Moisture Condition (AMC) II.

2. Quality of cover definitions:
   Poor-Heavily grazed or regularly burned areas. Less than 50 percent of the ground surface is protected by plant cover or brush and tree canopy.
   Fair-Moderate cover with 50 percent to 75 percent of the ground surface protected.
   Good-Heavy or dense cover with more than 75 percent of the ground surface protected.

3. See Plate C-2 for a detailed description of cover types.

4. Use runoff index numbers based on ground cover type. See discussion under "Cover Type Descriptions" on Plate C-2.

5. Reference Bibliography item 17.

EXHIBIT A

HYDROLOGY MAP (EXISTING CONDITION; RATIONAL METHOD)

LEGEND

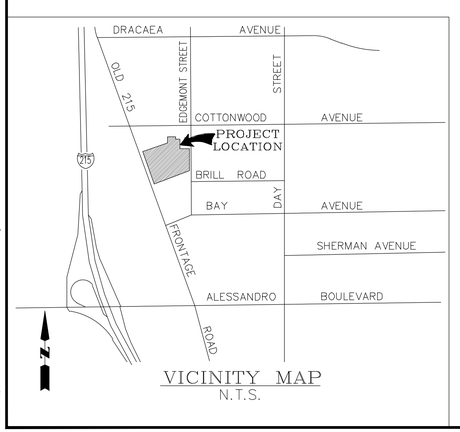
XXX / XXXX — NODE/CONCENTRATION POINT ELEVATION

XX / X.XX — SUBAREA ACRES

L=XXX' — MAIN FLOW PATH

FLOW PATH

WATERSHED BOUNDARY



VICINITY MAP
N.T.S.

PEN21-0325/LST22-0007

EXHIBIT "A"

RATIONAL METHOD

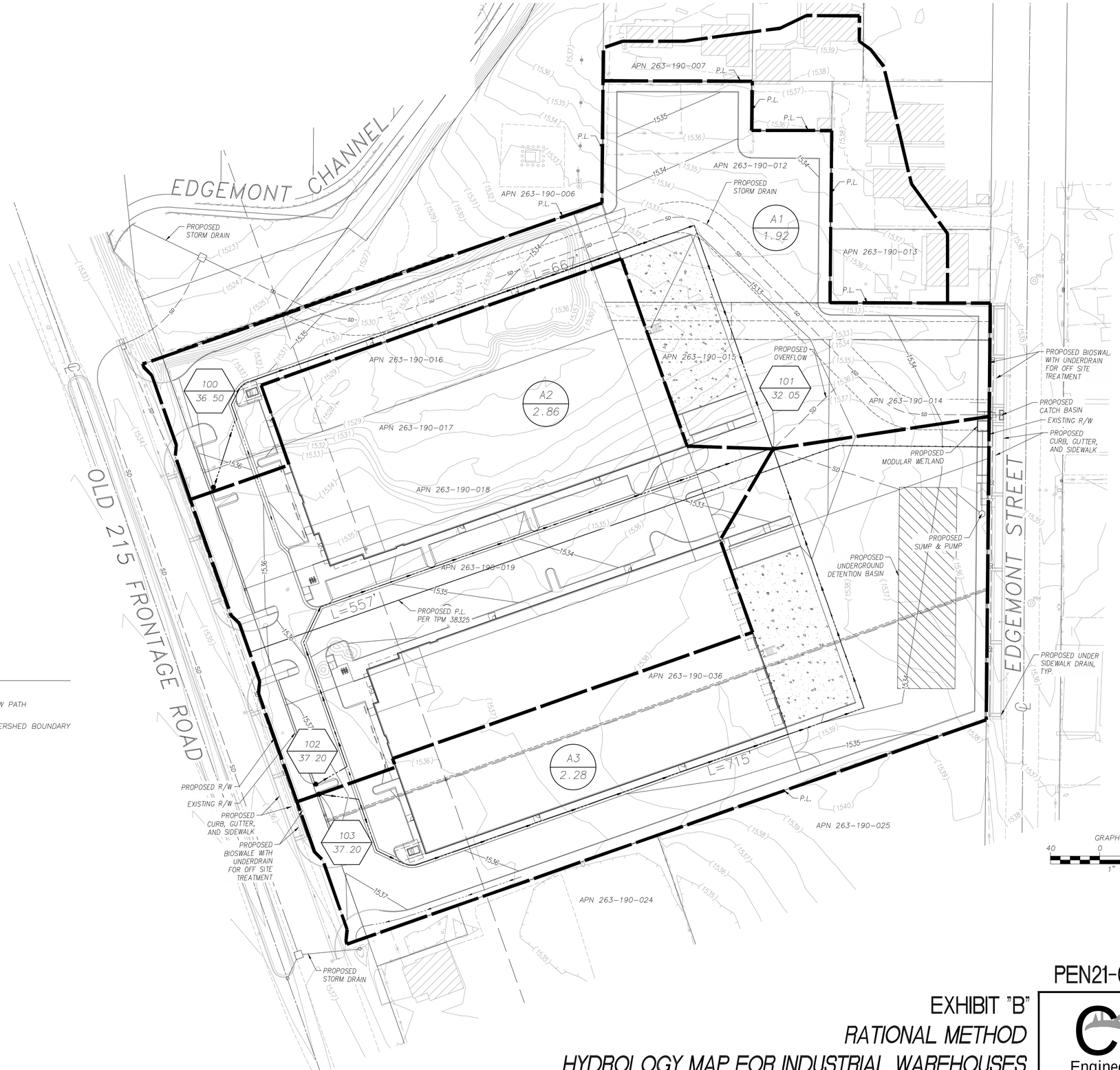
HYDROLOGY MAP FOR INDUSTRIAL WAREHOUSES

EXISTING CONDITION

CASC
Engineering and Consulting
1770 IOWA AVENUE, SUITE 230, RIVERSIDE, CA 92507
PH. (909) 783-0101 FAX (909) 783-0105
WWW.CASCENG.COM

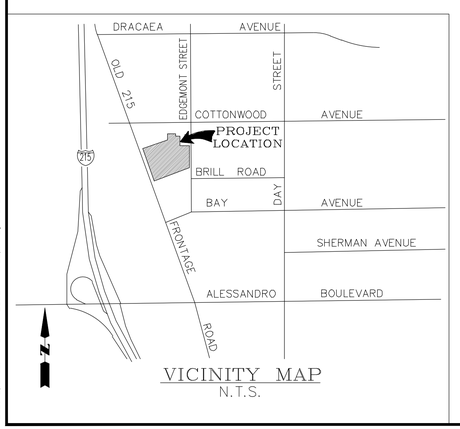
EXHIBIT B

HYDROLOGY MAP (PROPOSED CONDITION; RATIONAL METHOD)



LEGEND

- XXX / XXXX — NODE/CONCENTRATION POINT / ELEVATION
- XX / X.XX — SUBAREA / ACRES
- L=XXX' — MAIN FLOW PATH
- FLOW PATH
- WATERSHED BOUNDARY



VICINITY MAP
N.T.S.

PEN21-0325/LST22-0007

EXHIBIT "B"

RATIONAL METHOD

HYDROLOGY MAP FOR INDUSTRIAL WAREHOUSES

PROPOSED CONDITION

CASC
Engineering and Consulting
17542 East 17th Street, Suite 108, Tustin, CA 92780
Phone: (909) 783-0101 Fax: (909) 783-0105
www.cascengr.com

Drawing Name: G:\1494-0006 Old 215 Frontage Rd, Moreno Valley\Study Drainage\Hydrology Maps\1494-0006 HYDROLOGY MAP.dwg
Last Opened: Mar 17, 2022 - 1:38pm by rlong

EXHIBIT C

HYDROLOGY MAP (OFF SITE; UNIT HYDROGRAPH METHOD)

PEN21-0325/LST22-0007

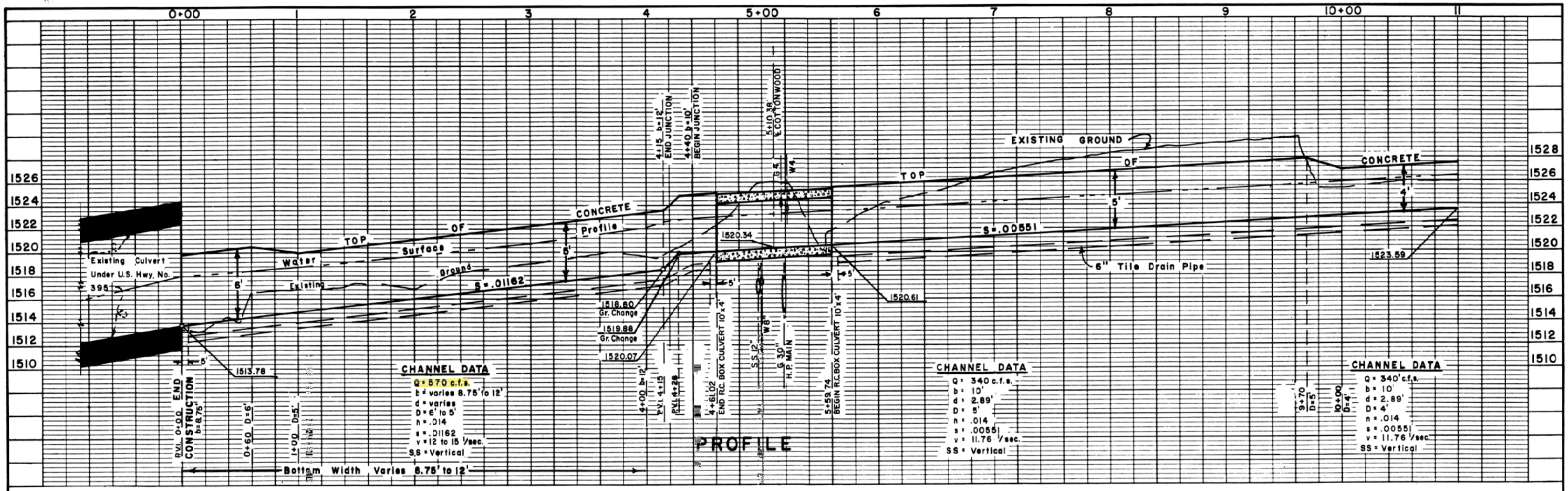
EXHIBIT "C"

UNIT HYDROGRAPH METHOD

HYDROLOGY MAP FOR INDUSTRIAL WAREHOUSES

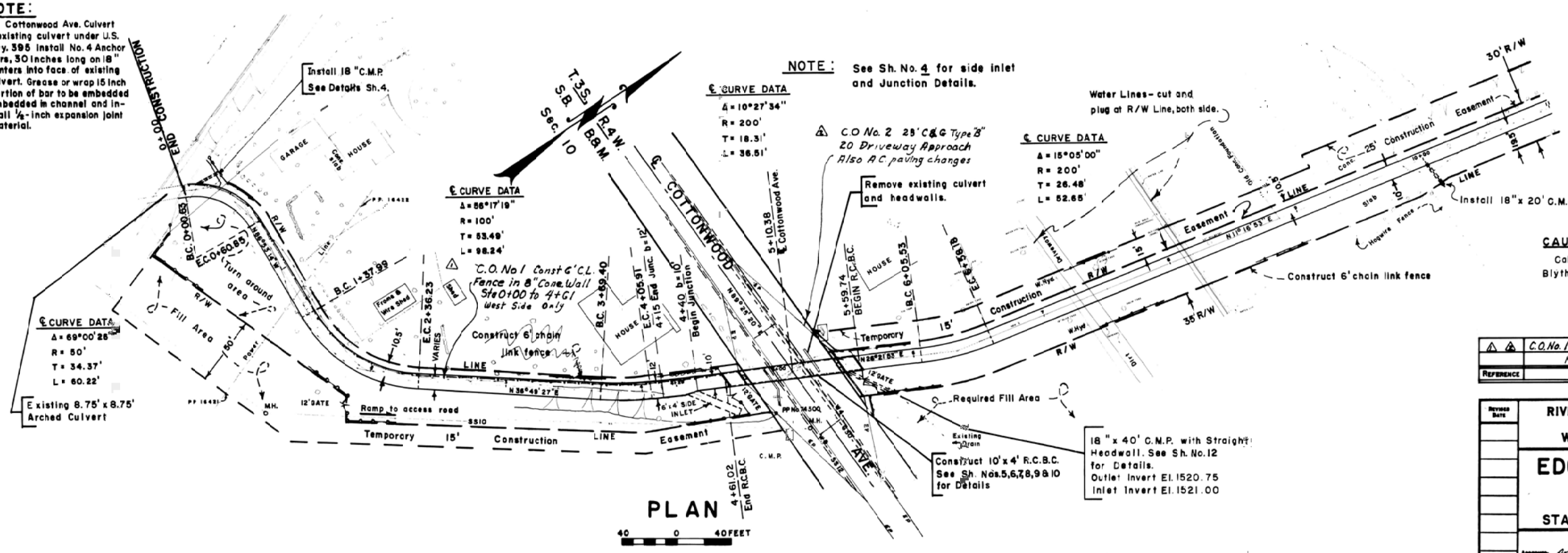
OFF SITE ANALYSIS

CASC
Engineering and Consulting
FAX (909) 783-0108



NOTE:

At Cottonwood Ave. Culvert & existing culvert under U.S. Hwy. 395 install No. 4 Anchor bars, 30 inches long on 18" centers into face of existing culvert. Grease or wrap 15 inch portion of bar to be embedded embedded in channel and install ½-inch expansion joint material.



PROJECT NO. 4 - 0 - 190
AS BUILT

Revised Date	Description	Approved	Date
⚠ ⚠	C.O. No. 1 & 2 Corrections As Shown	J.W.B.	12/15/65 8/1/66
	No Change		

— REVISIONS —

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

EDGEMONT CHANNEL
STAGE II
PLAN & PROFILE
STA. 0+00.00 TO STA. 11+00.00

Approved: John W. Bryant, Chief Engineer, Riv. Co. Flood Control & Water Conservation Dist.	Drawn: J.K.F.	Sheet No. 2 of 12
Date: 4-8-66	Traced:	
	Checked:	Dwg. No. 4-188
	Date Drawn:	