

Appendix L

Preliminary Hydrology Report

PRELIMINARY HYDROLOGY REPORT

For

Hillwood – Almond at Whittram Industrial

PROJECT LOCATION

Almond Ave, North of Whittram Ave and South of Arrow Route
Unincorporated Area of San Bernardino County

DEVELOPER

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PREPARATION DATE

Feb 6, 2020

HZ PROJECT NUMBER

R311694.01

Manuel Gonzales, P.E.
C65195, Exp 09/30/2021

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Introduction

This preliminary hydrology analysis has been prepared for Hillwood Enterprises, L.P. The project is a new development of an industrial warehouse facility located on the east side of Almond Avenue between Arrow Route and Whittram Avenue in an unincorporated area of County of San Bernardino, California. The proposed building is approximately 185,600 square feet and on approximately 9.5 acres of mostly undeveloped land.

Purpose

The purpose of this report is to present the drainage concept for the project and to determine the design flow rates and storm drain sizes for the project site. The hydrology maps and calculations reflect the tributary areas and 100-year storm event runoff flows.

Existing Condition

The project site is rectangular-shaped and is mostly undeveloped. There is however a house at the northwest corner of the site. The project site generally slopes 1.4 % from the northeast property corner to the southwest corner of the property. The maximum site elevation, located at the northeast property corner, is 1187.1± feet mean sea level (msl). The minimum site elevation located at the southeast right-of-way, is 1173.6± feet msl. Runoff from the existing site flows from the northeast corner to the southwest corner and drains onto Almond Avenue. The adjacent properties to the north and east of the project drains on to the site.

Proposed Condition

During the proposed condition, the project area runoff will be directed to the on-site infiltration/detention basin located along the south property line. The basin will be sized to capture and retain the WQMP design capture volume as well as 100-year peak storm mitigation volume. Once the basin reaches capacity it will spill to Almond Avenue through a parkway drain. See Appendix A for proposed on-site hydrology map.

Site runoff from the northwest parking area and northwest building roof will be collected by catch basin No. 1. The collected runoff will then be conveyed through the proposed on-site storm drain Line A to the infiltration basin.

Site runoff from the northeast parking and northeast building roof will be collected by catch basin No. 2. The collected runoff will then be conveyed through the proposed on-site storm drain Line A to the infiltration basin.

Site runoff from the southeast truck court and southeast building roof will be collected by catch basin No. 3. The collected runoff will then be conveyed through the proposed on-site storm drain Line B to the infiltration basin.

Site runoff from the southwest truck court, southwest parking, and southwest building roof will drain to catch basin No. 4. The water will drain into storm drain Line C into the infiltration basin.

Off-site run-on from the property to the north of the project will be collected by a concrete U-channel located at the north property line and conveyed westerly to a parkway drain and discharged on to Almond Avenue.

Off-site run-on from the properties to the east of the project will be collected by a concrete U-channel located at the east property line. The flow will then be conveyed southerly along the east property line and then westerly along the south property line to a parkway drain and discharged on to Almond Avenue.

The overflow from the infiltration basin, in excess of the design capture volume of 35,308, will be allowed to overflow/discharge through proposed 4-foot parkway drain onto Almond Avenue.

Hydrologic Analysis

A hydrologic analysis was prepared using the methodology outlined in the San Bernardino County Flood Control District (SBCFCD) Hydrology Manual. A rational method analysis was completed for the proposed 100-year return event using Civild software.

Rainfall intensity rates were taken from the isohyetal maps in the County of San Bernardino Hydrology Manual. The hydrologic soils type for the site is "A" and was taken from the soil map in the Hydrology Manual (see Appendix E for reference maps). A "commercial" land use was used with an AMC of III. A unit area hydrograph analysis was completed for the 25-year and 100-year existing and proposed 100-year storm events using Civild software.

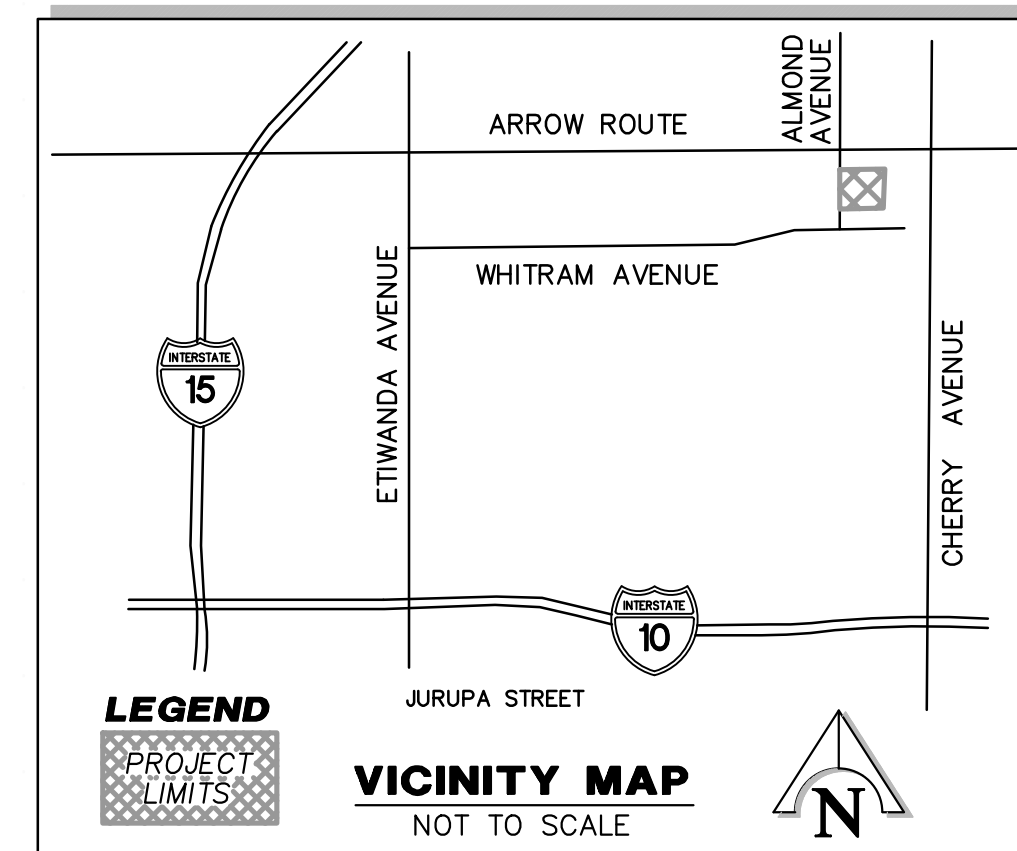
Peak Storm Mitigation

The proposed infiltration/detention basin has been designed to mitigate the peak flow increase to the downstream facilities from the proposed project. Once the infiltration basin reaches the basin outlet elevation of 1173.5, the basin will overflow through a 4-foot wide parkway drain on to Almond Avenue. The basin has been designed with two feet of gravel base with 40 percent voids to increase the capacity of the basin. The basin will store 0.81 acre-ft (35,308cf) of storm water and will reach elevation 1173.5 before any storm water is allowed to discharge from the project site. The excess capacity in the basin will be used for detention and peak storm mitigation. The basin routing calculations (in Appendix D) demonstrate that during a 100-year storm event the basin will discharge 8.2 cfs which is less than the historic existing 100-year 21.3 cfs and is also less than the existing 25-year 17.1 cfs.

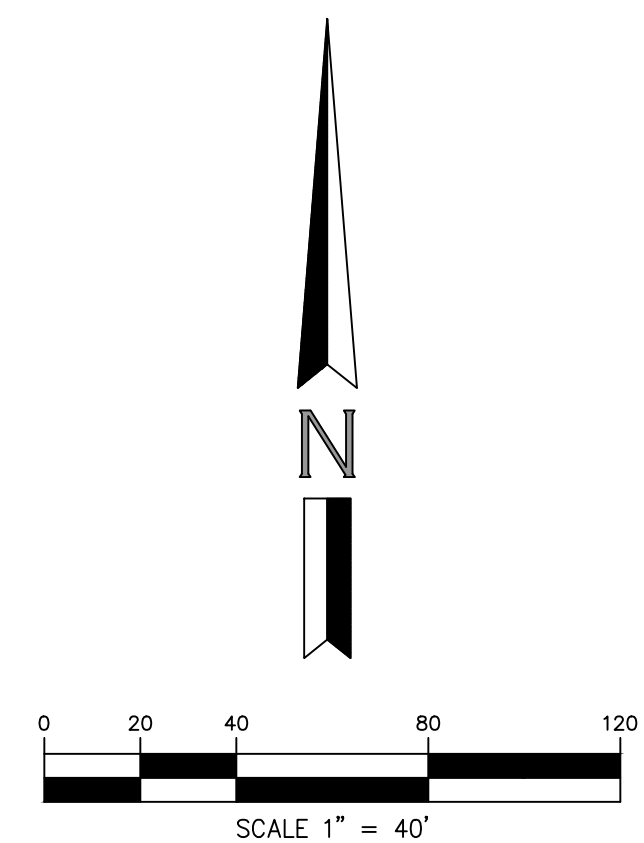
Results

The results in this preliminary study demonstrate that the proposed basin has the capacity to serve as both, a water quality basin and a detention basin. All proposed drainage and storm drain facilities will be sized adequately for a 100-year storm event. Additional supporting calculations will be provided in the final drainage report including storm drain hydraulics, catch basin sizing and basin routing analysis for other storm events. The preliminary drainage design as proposed will fulfill project goals of capturing and conveying the onsite drainage. The peak discharge will be released at a controlled rate and will be less than the existing condition discharge rates.

Appendix A
Hydrology Maps



- LEGEND**
- NO. HYDROLOGY MODEL NODE NUMBER
 - TRIBUTARY AREA IN ACRES
 - 673' LENGTH OF FLOW
 - DRAINAGE BOUNDARY
 - DRAINAGE INLET/CATCH BASIN (CB)
 - PROPOSED STORM DRAIN
 - FLOW DIRECTION

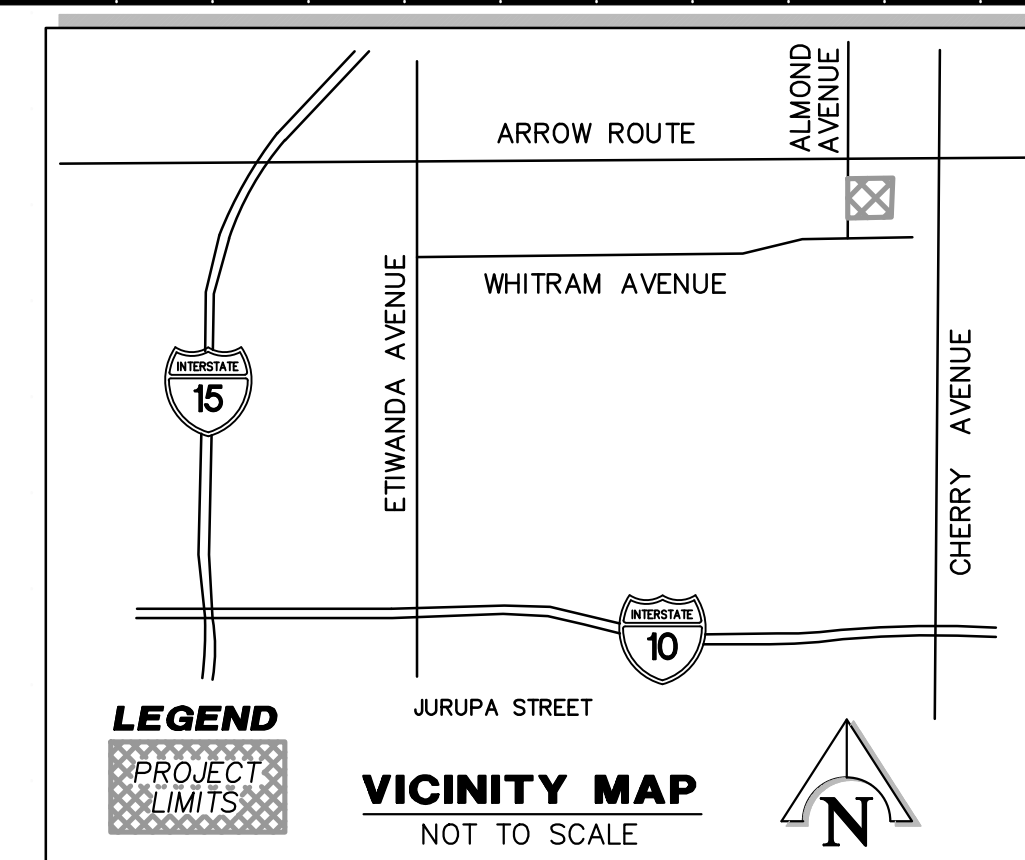


HYDROLOGY MAP - EXISTING CONDITIONS
 FOR
HILLWOOD - ALMOND AT WHITTRAM IND
 EAST OF ALMOND AVE NORTH OF WHITTRAM AND SOUTH OF ARROW
 COUNTY OF SAN BERNARDINO

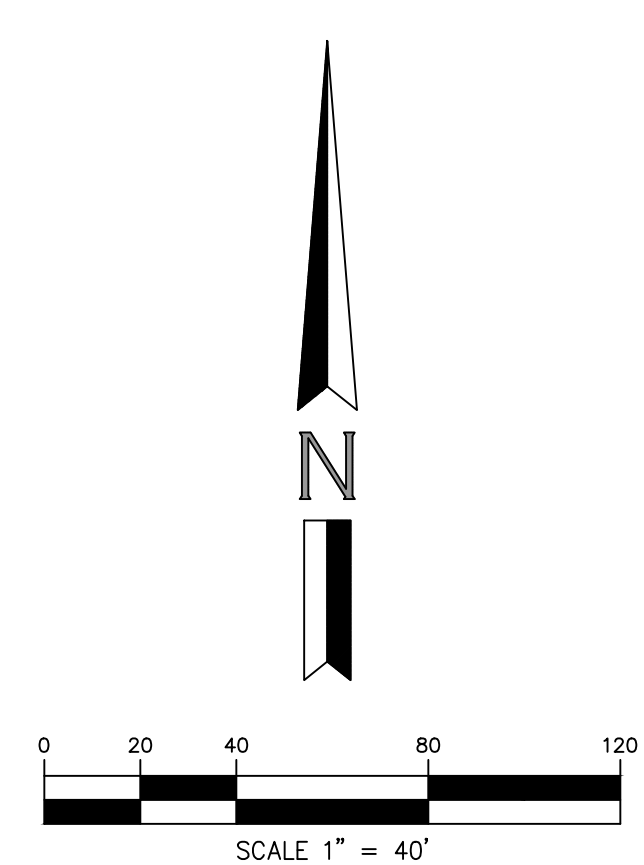
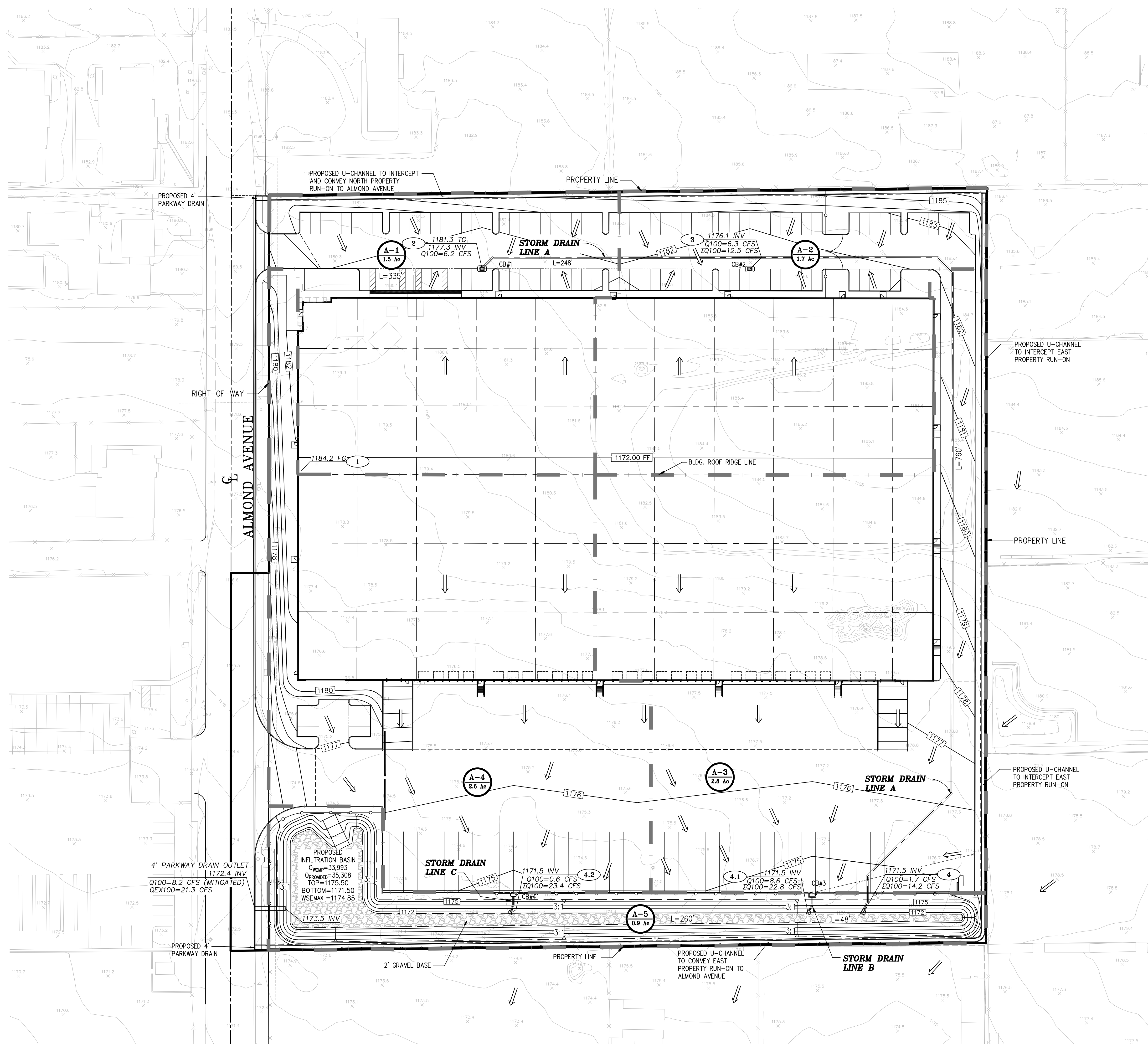
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CHECKED BY J.M.	SHEETS
FIELD BOOK	JOB NO. R3211694.01

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- LEGEND**
- NO. HYDROLOGY MODEL NODE NUMBER
 - A-1 7.40 AC TRIBUTARY AREA IN ACRES
 - 673' LENGTH OF FLOW
 - DRAINAGE BOUNDARY
 - DRAINAGE INLET/CATCH BASIN (CB)
 - SD PROPOSED STORM DRAIN
 - ← FLOW DIRECTION



PROPOSED HYDROLOGY MAP
FOR
HILLWOOD - ALMOND AT WHITTRAM IND
EAST OF ALMOND AVE NORTH OF WHITTRAM AND SOUTH OF ARROW
COUNTY OF SAN BERNARDINO

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Appendix B
Rational Method Hydrologic Analysis

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2005 Version 7.1
Rational Hydrology Study Date: 02/05/20

HILLWOOD - ALMOND AT WHITTRAM IND
25 YEAR STORM EVENT EXISTING
1694Q25EX
DS

Program License Serial Number 6145

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

Rational hydrology study storm event year is 25.0
10 Year storm 1 hour rainfall = 0.940(In.)
100 Year storm 1 hour rainfall = 1.400(In.)
Computed rainfall intensity:
Storm year = 25.00 1 hour rainfall = 1.123 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

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

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil (AMC 2) = 67.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.578(In/Hr)
Initial subarea data:
Initial area flow distance = 958.000(Ft.)
Top (of initial area) elevation = 1187.100(Ft.)
Bottom (of initial area) elevation = 1173.600(Ft.)
Difference in elevation = 13.500(Ft.)
Slope = 0.01409 s(%)= 1.41
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 19.183 min.
Rainfall intensity = 2.226(In/Hr) for a 25.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.666
Subarea runoff = 14.088(CFS)
Total initial stream area = 9.500(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.578(In/Hr)
End of computations, Total Study Area = 9.50 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

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

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2005 Version 7.1
Rational Hydrology Study Date: 01/15/20

HILLWOOD - ALMOND AT WHITTRAM IND
100 YEAR STORM EVENT EXISTING
1694Q100EX
DS

Program License Serial Number 6145

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.400 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

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

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 67.00
Adjusted SCS curve number for AMC 3 = 84.60
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.290(In/Hr)
Initial subarea data:
Initial area flow distance = 958.000(Ft.)
Top (of initial area) elevation = 1187.100(Ft.)
Bottom (of initial area) elevation = 1173.600(Ft.)
Difference in elevation = 13.500(Ft.)
Slope = 0.01409 s(%)= 1.41
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 19.183 min.
Rainfall intensity = 2.775(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.806
Subarea runoff = 21.247(CFS)
Total initial stream area = 9.500(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.290(In/Hr)
End of computations, Total Study Area = 9.50 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

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

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2005 Version 7.1
Rational Hydrology Study Date: 02/14/20

HILLWOOD - ALMOND AT WHITTRAM IND
100 YEAR STORM EVENT PROPOSED
1694Q100P
DS-MG

Program License Serial Number 6145

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.400 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

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

COMMERCIAL subarea type
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil (AMC 2) = 32.00
Adjusted SCS curve number for AMC 3 = 52.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.079(In/Hr)
Initial subarea data:
Initial area flow distance = 335.000(Ft.)
Top (of initial area) elevation = 1184.200(Ft.)
Bottom (of initial area) elevation = 1181.300(Ft.)
Difference in elevation = 2.900(Ft.)
Slope = 0.00866 s(%)= 0.87
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.043 min.
Rainfall intensity = 4.675(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KClA) is C = 0.885
Subarea runoff = 6.205(CFS)
Total initial stream area = 1.500(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.079(In/Hr)

Process from Point/Station 2.000 to Point/Station 3.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1177.300(Ft.)
Downstream point/station elevation = 1176.100(Ft.)
Pipe length = 248.00(Ft.) Manning's N = 0.012
No. of pipes = 1 Required pipe flow = 6.205(CFS)
Nearest computed pipe diameter = 18.00(In.)
Calculated individual pipe flow = 6.205(CFS)
Normal flow depth in pipe = 12.00(In.)
Flow top width inside pipe = 16.97(In.)
Critical Depth = 11.55(In.)
Pipe flow velocity = 4.96(Ft/s)
Travel time through pipe = 0.83 min.
Time of concentration (TC) = 8.88 min.

Process from Point/Station 3.000 to Point/Station 3.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type

Decimal fraction soil group A = 1.000
 Decimal fraction soil group B = 0.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 SCS curve number for soil (AMC 2) = 32.00
 Adjusted SCS curve number for AMC 3 = 52.00
 Pervious ratio (Ap) = 0.1000 Max loss rate (Fm) = 0.079 (In/Hr)
 Time of concentration = 8.88 min.
 Rainfall intensity = 4.406 (In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area, (total area with modified
 rational method) (Q=KCIA) is C = 0.884
 Subarea runoff = 6.259 (CFS) for 1.700 (Ac.)
 Total runoff = 12.464 (CFS)
 Effective area this stream = 3.20 (Ac.)
 Total Study Area (Main Stream No. 1) = 3.20 (Ac.)
 Area averaged Fm value = 0.079 (In/Hr)

++++++
 Process from Point/Station 3.000 to Point/Station 4.000
 **** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1176.100 (Ft.)
 Downstream point/station elevation = 1171.500 (Ft.)
 Pipe length = 760.00 (Ft.) Manning's N = 0.012
 No. of pipes = 1 Required pipe flow = 12.464 (CFS)
 Nearest computed pipe diameter = 21.00 (In.)
 Calculated individual pipe flow = 12.464 (CFS)
 Normal flow depth in pipe = 16.08 (In.)
 Flow top width inside pipe = 17.79 (In.)
 Critical Depth = 15.78 (In.)
 Pipe flow velocity = 6.31 (Ft/s)
 Travel time through pipe = 2.01 min.
 Time of concentration (TC) = 10.88 min.

++++++
 Process from Point/Station 4.000 to Point/Station 4.000
 **** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type

Decimal fraction soil group A = 1.000
 Decimal fraction soil group B = 0.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 SCS curve number for soil (AMC 2) = 32.00
 Adjusted SCS curve number for AMC 3 = 52.00
 Pervious ratio (Ap) = 0.1000 Max loss rate (Fm) = 0.079 (In/Hr)
 Time of concentration = 10.88 min.
 Rainfall intensity = 3.899 (In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area, (total area with modified
 rational method) (Q=KCIA) is C = 0.882
 Subarea runoff = 1.633 (CFS) for 0.900 (Ac.)
 Total runoff = 14.097 (CFS)
 Effective area this stream = 4.10 (Ac.)
 Total Study Area (Main Stream No. 1) = 4.10 (Ac.)
 Area averaged Fm value = 0.079 (In/Hr)

++++++
 Process from Point/Station 4.000 to Point/Station 4.100
 **** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 1172.000 (Ft.)
 Downstream point elevation = 1171.990 (Ft.)
 Channel length thru subarea = 48.000 (Ft.)
 Channel base width = 10.000 (Ft.)
 Slope or 'Z' of left channel bank = 2.000
 Slope or 'Z' of right channel bank = 2.000
 Manning's 'N' = 0.022
 Maximum depth of channel = 3.000 (Ft.)
 Flow (q) thru subarea = 14.097 (CFS)
 Depth of flow = 1.195 (Ft.), Average velocity = 0.952 (Ft/s)
 Channel flow top width = 14.780 (Ft.)
 Flow Velocity = 0.95 (Ft/s)
 Travel time = 0.84 min.
 Time of concentration = 11.72 min.

Critical depth = 0.383(Ft.)

 Process from Point/Station 4.100 to Point/Station 4.100
 **** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
 Decimal fraction soil group A = 1.000
 Decimal fraction soil group B = 0.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 SCS curve number for soil (AMC 2) = 32.00
 Adjusted SCS curve number for AMC 3 = 52.00
 Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.079(In/Hr)
 Time of concentration = 11.72 min.
 Rainfall intensity = 3.729(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area, (total area with modified
 rational method)(Q=KCIA) is C = 0.881
 Subarea runoff = 8.571(CFS) for 2.800(Ac.)
 Total runoff = 22.668(CFS)
 Effective area this stream = 6.90(Ac.)
 Total Study Area (Main Stream No. 1) = 6.90(Ac.)
 Area averaged Fm value = 0.079(In/Hr)

 Process from Point/Station 4.100 to Point/Station 4.200
 **** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 1171.990(Ft.)
 Downstream point elevation = 1171.980(Ft.)
 Channel length thru subarea = 260.000(Ft.)
 Channel base width = 10.000(Ft.)
 Slope or 'Z' of left channel bank = 2.000
 Slope or 'Z' of right channel bank = 2.000
 Manning's 'N' = 0.022
 Maximum depth of channel = 3.000(Ft.)
 Flow(q) thru subarea = 22.668(CFS)
 Depth of flow = 2.481(Ft.), Average velocity = 0.611(Ft/s)
 Channel flow top width = 19.925(Ft.)
 Flow Velocity = 0.61(Ft/s)
 Travel time = 7.10 min.
 Time of concentration = 18.82 min.
 Critical depth = 0.523(Ft.)

 Process from Point/Station 4.200 to Point/Station 4.200
 **** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
 Decimal fraction soil group A = 1.000
 Decimal fraction soil group B = 0.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 SCS curve number for soil (AMC 2) = 32.00
 Adjusted SCS curve number for AMC 3 = 52.00
 Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.079(In/Hr)
 Time of concentration = 18.82 min.
 Rainfall intensity = 2.807(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area, (total area with modified
 rational method)(Q=KCIA) is C = 0.875
 Subarea runoff = 0.660(CFS) for 2.600(Ac.)
 Total runoff = 23.327(CFS)
 Effective area this stream = 9.50(Ac.)
 Total Study Area (Main Stream No. 1) = 9.50(Ac.)
 Area averaged Fm value = 0.079(In/Hr)

 Process from Point/Station 4.200 to Point/Station 4.300
 **** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 1171.980(Ft.)
 Downstream point elevation = 1171.970(Ft.)
 Channel length thru subarea = 500.000(Ft.)
 Channel base width = 30.000(Ft.)

Slope or 'Z' of left channel bank = 2.000
Slope or 'Z' of right channel bank = 2.000
Manning's 'N' = 0.022
Maximum depth of channel = 3.000(Ft.)
Flow(q) thru subarea = 23.327(CFS)
Depth of flow = 1.733(Ft.), Average velocity = 0.402(Ft/s)
Channel flow top width = 36.932(Ft.)
Flow Velocity = 0.40(Ft/s)
Travel time = 20.72 min.
Time of concentration = 39.54 min.
Critical depth = 0.266(Ft.)
End of computations, Total Study Area = 9.50 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

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

Area averaged SCS curve number = 32.0

Appendix C
Unit Hydrograph Hydrologic Analysis

Unit Hydrograph Analysis

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Study date 02/05/20

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

Program License Serial Number 6145

HILLWOOD - ALMOND AT WHITTRAM IND
25 YEAR STORM EVENT EXISTING UH
1694Q100UHEX
DS MG

Storm Event Year = 25

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10 9.50	1	0.94
Rainfall data for year 2 9.50	6	1.68
Rainfall data for year 2 9.50	24	3.20
Rainfall data for year 100 9.50	1	1.40
Rainfall data for year 100 9.50	6	3.70
Rainfall data for year 100 9.50	24	8.10

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

SCS curve No. (AMCII)	SCS curve NO. (AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
67.0	67.0	9.50	1.000	0.578	0.100	0.058

Area-averaged adjusted loss rate Fm (In/Hr) = 0.058

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
0.95	0.100	67.0	67.0	4.93	0.441
8.55	0.900	98.0	98.0	0.20	0.963

Area-averaged catchment yield fraction, Y = 0.910

Area-averaged low loss fraction, Yb = 0.090

User entry of time of concentration = 0.320 (hours)
 +-----+
 Watershed area = 9.50(Ac.)
 Catchment Lag time = 0.256 hours
 Unit interval = 5.000 minutes
 Unit interval percentage of lag time = 32.5826
 Hydrograph baseflow = 0.00(CFS)
 Average maximum watershed loss rate(Fm) = 0.058(In/Hr)
 Average low loss rate fraction (Yb) = 0.075 (decimal)
 Note: user entry of the Yb value
 VALLEY UNDEVELOPED S-Graph Selected
 Computed peak 5-minute rainfall = 0.416(In)
 Computed peak 30-minute rainfall = 0.851(In)
 Specified peak 1-hour rainfall = 1.123(In)
 Computed peak 3-hour rainfall = 2.045(In)
 Specified peak 6-hour rainfall = 2.984(In)
 Specified peak 24-hour rainfall = 6.364(In)

Rainfall depth area reduction factors:
 Using a total area of 9.50(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000	Adjusted rainfall = 0.415(In)
30-minute factor = 1.000	Adjusted rainfall = 0.851(In)
1-hour factor = 1.000	Adjusted rainfall = 1.123(In)
3-hour factor = 1.000	Adjusted rainfall = 2.045(In)
6-hour factor = 1.000	Adjusted rainfall = 2.984(In)
24-hour factor = 1.000	Adjusted rainfall = 6.364(In)

Unit Hydrograph

+-----+
 Interval 'S' Graph Unit Hydrograph
 Number Mean values ((CFS))

(K = 114.89 (CFS))

1	3.246	3.729
2	15.603	14.197
3	36.678	24.214
4	56.919	23.254
5	68.354	13.138
6	74.870	7.487
7	79.403	5.207
8	82.916	4.036
9	85.790	3.302
10	88.064	2.612
11	90.010	2.236
12	91.587	1.812
13	92.918	1.530
14	93.975	1.214
15	94.973	1.148
16	95.895	1.059
17	96.627	0.840
18	97.264	0.732
19	97.828	0.648
20	98.295	0.537
21	98.679	0.442
22	99.005	0.374
23	99.331	0.374
24	99.657	0.374
25	100.000	0.187

Peak Uni t Number	Adjusted mass rainfall (In)	Uni t rainfall (In)
1	0.4155	0.4155
2	0.5482	0.1327
3	0.6447	0.0965
4	0.7234	0.0786
5	0.7909	0.0675
6	0.8507	0.0598
7	0.9048	0.0541
8	0.9545	0.0496
9	1.0005	0.0460
10	1.0436	0.0431
11	1.0842	0.0406
12	1.1226	0.0384
13	1.1727	0.0501

14	1. 2211	0. 0484
15	1. 2679	0. 0469
16	1. 3134	0. 0455
17	1. 3576	0. 0442
18	1. 4006	0. 0430
19	1. 4425	0. 0419
20	1. 4835	0. 0410
21	1. 5235	0. 0400
22	1. 5627	0. 0392
23	1. 6011	0. 0384
24	1. 6387	0. 0376
25	1. 6756	0. 0369
26	1. 7119	0. 0363
27	1. 7475	0. 0356
28	1. 7825	0. 0350
29	1. 8170	0. 0345
30	1. 8509	0. 0339
31	1. 8844	0. 0334
32	1. 9173	0. 0329
33	1. 9498	0. 0325
34	1. 9818	0. 0320
35	2. 0134	0. 0316
36	2. 0446	0. 0312
37	2. 0754	0. 0308
38	2. 1058	0. 0304
39	2. 1359	0. 0300
40	2. 1656	0. 0297
41	2. 1949	0. 0294
42	2. 2240	0. 0290
43	2. 2527	0. 0287
44	2. 2811	0. 0284
45	2. 3093	0. 0281
46	2. 3371	0. 0279
47	2. 3647	0. 0276
48	2. 3920	0. 0273
49	2. 4190	0. 0271
50	2. 4459	0. 0268
51	2. 4724	0. 0266
52	2. 4987	0. 0263
53	2. 5248	0. 0261
54	2. 5507	0. 0259
55	2. 5764	0. 0257
56	2. 6018	0. 0254
57	2. 6271	0. 0252
58	2. 6521	0. 0250
59	2. 6769	0. 0248
60	2. 7016	0. 0247
61	2. 7261	0. 0245
62	2. 7504	0. 0243
63	2. 7745	0. 0241
64	2. 7984	0. 0239
65	2. 8222	0. 0238
66	2. 8458	0. 0236
67	2. 8692	0. 0234
68	2. 8925	0. 0233
69	2. 9156	0. 0231
70	2. 9386	0. 0230
71	2. 9614	0. 0228
72	2. 9841	0. 0227
73	3. 0067	0. 0226
74	3. 0291	0. 0224
75	3. 0514	0. 0223
76	3. 0735	0. 0222
77	3. 0956	0. 0220
78	3. 1175	0. 0219
79	3. 1392	0. 0218
80	3. 1609	0. 0216
81	3. 1824	0. 0215
82	3. 2038	0. 0214
83	3. 2251	0. 0213
84	3. 2463	0. 0212
85	3. 2673	0. 0211
86	3. 2883	0. 0209
87	3. 3091	0. 0208
88	3. 3298	0. 0207
89	3. 3504	0. 0206
90	3. 3709	0. 0205
91	3. 3913	0. 0204

92	3. 4117	0. 0203
93	3. 4319	0. 0202
94	3. 4520	0. 0201
95	3. 4720	0. 0200
96	3. 4919	0. 0199
97	3. 5117	0. 0198
98	3. 5315	0. 0197
99	3. 5511	0. 0196
100	3. 5706	0. 0195
101	3. 5901	0. 0195
102	3. 6095	0. 0194
103	3. 6288	0. 0193
104	3. 6480	0. 0192
105	3. 6671	0. 0191
106	3. 6861	0. 0190
107	3. 7051	0. 0190
108	3. 7240	0. 0189
109	3. 7428	0. 0188
110	3. 7615	0. 0187
111	3. 7801	0. 0186
112	3. 7987	0. 0186
113	3. 8172	0. 0185
114	3. 8356	0. 0184
115	3. 8539	0. 0183
116	3. 8722	0. 0183
117	3. 8904	0. 0182
118	3. 9085	0. 0181
119	3. 9266	0. 0181
120	3. 9446	0. 0180
121	3. 9625	0. 0179
122	3. 9804	0. 0179
123	3. 9981	0. 0178
124	4. 0159	0. 0177
125	4. 0335	0. 0177
126	4. 0511	0. 0176
127	4. 0687	0. 0175
128	4. 0861	0. 0175
129	4. 1035	0. 0174
130	4. 1209	0. 0173
131	4. 1382	0. 0173
132	4. 1554	0. 0172
133	4. 1726	0. 0172
134	4. 1897	0. 0171
135	4. 2067	0. 0171
136	4. 2237	0. 0170
137	4. 2406	0. 0169
138	4. 2575	0. 0169
139	4. 2744	0. 0168
140	4. 2911	0. 0168
141	4. 3078	0. 0167
142	4. 3245	0. 0167
143	4. 3411	0. 0166
144	4. 3577	0. 0166
145	4. 3742	0. 0165
146	4. 3906	0. 0165
147	4. 4070	0. 0164
148	4. 4234	0. 0164
149	4. 4397	0. 0163
150	4. 4559	0. 0163
151	4. 4721	0. 0162
152	4. 4883	0. 0162
153	4. 5044	0. 0161
154	4. 5205	0. 0161
155	4. 5365	0. 0160
156	4. 5524	0. 0160
157	4. 5684	0. 0159
158	4. 5842	0. 0159
159	4. 6001	0. 0158
160	4. 6158	0. 0158
161	4. 6316	0. 0157
162	4. 6473	0. 0157
163	4. 6629	0. 0156
164	4. 6785	0. 0156
165	4. 6941	0. 0156
166	4. 7096	0. 0155
167	4. 7251	0. 0155
168	4. 7405	0. 0154
169	4. 7559	0. 0154

170	4. 7713	0. 0154
171	4. 7866	0. 0153
172	4. 8018	0. 0153
173	4. 8171	0. 0152
174	4. 8323	0. 0152
175	4. 8474	0. 0152
176	4. 8625	0. 0151
177	4. 8776	0. 0151
178	4. 8926	0. 0150
179	4. 9076	0. 0150
180	4. 9226	0. 0150
181	4. 9375	0. 0149
182	4. 9524	0. 0149
183	4. 9672	0. 0148
184	4. 9820	0. 0148
185	4. 9968	0. 0148
186	5. 0116	0. 0147
187	5. 0263	0. 0147
188	5. 0409	0. 0147
189	5. 0556	0. 0146
190	5. 0701	0. 0146
191	5. 0847	0. 0146
192	5. 0992	0. 0145
193	5. 1137	0. 0145
194	5. 1282	0. 0145
195	5. 1426	0. 0144
196	5. 1570	0. 0144
197	5. 1713	0. 0144
198	5. 1857	0. 0143
199	5. 2000	0. 0143
200	5. 2142	0. 0143
201	5. 2284	0. 0142
202	5. 2426	0. 0142
203	5. 2568	0. 0142
204	5. 2709	0. 0141
205	5. 2850	0. 0141
206	5. 2991	0. 0141
207	5. 3131	0. 0140
208	5. 3271	0. 0140
209	5. 3411	0. 0140
210	5. 3551	0. 0139
211	5. 3690	0. 0139
212	5. 3829	0. 0139
213	5. 3967	0. 0139
214	5. 4105	0. 0138
215	5. 4243	0. 0138
216	5. 4381	0. 0138
217	5. 4518	0. 0137
218	5. 4656	0. 0137
219	5. 4792	0. 0137
220	5. 4929	0. 0137
221	5. 5065	0. 0136
222	5. 5201	0. 0136
223	5. 5337	0. 0136
224	5. 5472	0. 0135
225	5. 5607	0. 0135
226	5. 5742	0. 0135
227	5. 5877	0. 0135
228	5. 6011	0. 0134
229	5. 6145	0. 0134
230	5. 6279	0. 0134
231	5. 6413	0. 0134
232	5. 6546	0. 0133
233	5. 6679	0. 0133
234	5. 6812	0. 0133
235	5. 6944	0. 0132
236	5. 7076	0. 0132
237	5. 7208	0. 0132
238	5. 7340	0. 0132
239	5. 7472	0. 0131
240	5. 7603	0. 0131
241	5. 7734	0. 0131
242	5. 7865	0. 0131
243	5. 7995	0. 0130
244	5. 8125	0. 0130
245	5. 8255	0. 0130
246	5. 8385	0. 0130
247	5. 8515	0. 0130

248	5. 8644	0. 0129
249	5. 8773	0. 0129
250	5. 8902	0. 0129
251	5. 9030	0. 0129
252	5. 9159	0. 0128
253	5. 9287	0. 0128
254	5. 9415	0. 0128
255	5. 9542	0. 0128
256	5. 9670	0. 0127
257	5. 9797	0. 0127
258	5. 9924	0. 0127
259	6. 0051	0. 0127
260	6. 0177	0. 0127
261	6. 0304	0. 0126
262	6. 0430	0. 0126
263	6. 0556	0. 0126
264	6. 0681	0. 0126
265	6. 0807	0. 0125
266	6. 0932	0. 0125
267	6. 1057	0. 0125
268	6. 1182	0. 0125
269	6. 1306	0. 0125
270	6. 1431	0. 0124
271	6. 1555	0. 0124
272	6. 1679	0. 0124
273	6. 1803	0. 0124
274	6. 1926	0. 0124
275	6. 2050	0. 0123
276	6. 2173	0. 0123
277	6. 2296	0. 0123
278	6. 2419	0. 0123
279	6. 2541	0. 0123
280	6. 2663	0. 0122
281	6. 2786	0. 0122
282	6. 2908	0. 0122
283	6. 3029	0. 0122
284	6. 3151	0. 0122
285	6. 3272	0. 0121
286	6. 3393	0. 0121
287	6. 3514	0. 0121
288	6. 3635	0. 0121

Uni t Peri od (number)	Uni t Rai nfal l (In)	Uni t Soi l -Loss (In)	Effecti ve Rai nfal l (In)
1	0. 0121	0. 0009	0. 0112
2	0. 0121	0. 0009	0. 0112
3	0. 0121	0. 0009	0. 0112
4	0. 0122	0. 0009	0. 0112
5	0. 0122	0. 0009	0. 0113
6	0. 0122	0. 0009	0. 0113
7	0. 0123	0. 0009	0. 0113
8	0. 0123	0. 0009	0. 0114
9	0. 0123	0. 0009	0. 0114
10	0. 0123	0. 0009	0. 0114
11	0. 0124	0. 0009	0. 0115
12	0. 0124	0. 0009	0. 0115
13	0. 0124	0. 0009	0. 0115
14	0. 0125	0. 0009	0. 0115
15	0. 0125	0. 0009	0. 0116
16	0. 0125	0. 0009	0. 0116
17	0. 0126	0. 0009	0. 0116
18	0. 0126	0. 0009	0. 0116
19	0. 0126	0. 0009	0. 0117
20	0. 0127	0. 0009	0. 0117
21	0. 0127	0. 0009	0. 0117
22	0. 0127	0. 0010	0. 0118
23	0. 0128	0. 0010	0. 0118
24	0. 0128	0. 0010	0. 0118
25	0. 0128	0. 0010	0. 0119
26	0. 0129	0. 0010	0. 0119
27	0. 0129	0. 0010	0. 0119
28	0. 0129	0. 0010	0. 0120
29	0. 0130	0. 0010	0. 0120
30	0. 0130	0. 0010	0. 0120
31	0. 0130	0. 0010	0. 0121
32	0. 0131	0. 0010	0. 0121

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33	0. 0131	0. 0010	0. 0121
34	0. 0131	0. 0010	0. 0122
35	0. 0132	0. 0010	0. 0122
36	0. 0132	0. 0010	0. 0122
37	0. 0133	0. 0010	0. 0123
38	0. 0133	0. 0010	0. 0123
39	0. 0134	0. 0010	0. 0124
40	0. 0134	0. 0010	0. 0124
41	0. 0134	0. 0010	0. 0124
42	0. 0135	0. 0010	0. 0125
43	0. 0135	0. 0010	0. 0125
44	0. 0135	0. 0010	0. 0125
45	0. 0136	0. 0010	0. 0126
46	0. 0136	0. 0010	0. 0126
47	0. 0137	0. 0010	0. 0127
48	0. 0137	0. 0010	0. 0127
49	0. 0138	0. 0010	0. 0127
50	0. 0138	0. 0010	0. 0128
51	0. 0139	0. 0010	0. 0128
52	0. 0139	0. 0010	0. 0128
53	0. 0139	0. 0010	0. 0129
54	0. 0140	0. 0010	0. 0129
55	0. 0140	0. 0010	0. 0130
56	0. 0141	0. 0011	0. 0130
57	0. 0141	0. 0011	0. 0131
58	0. 0142	0. 0011	0. 0131
59	0. 0142	0. 0011	0. 0132
60	0. 0143	0. 0011	0. 0132
61	0. 0143	0. 0011	0. 0133
62	0. 0144	0. 0011	0. 0133
63	0. 0144	0. 0011	0. 0133
64	0. 0145	0. 0011	0. 0134
65	0. 0145	0. 0011	0. 0134
66	0. 0146	0. 0011	0. 0135
67	0. 0146	0. 0011	0. 0135
68	0. 0147	0. 0011	0. 0136
69	0. 0147	0. 0011	0. 0136
70	0. 0148	0. 0011	0. 0137
71	0. 0148	0. 0011	0. 0137
72	0. 0149	0. 0011	0. 0138
73	0. 0150	0. 0011	0. 0138
74	0. 0150	0. 0011	0. 0139
75	0. 0151	0. 0011	0. 0139
76	0. 0151	0. 0011	0. 0140
77	0. 0152	0. 0011	0. 0141
78	0. 0152	0. 0011	0. 0141
79	0. 0153	0. 0011	0. 0142
80	0. 0154	0. 0011	0. 0142
81	0. 0154	0. 0012	0. 0143
82	0. 0155	0. 0012	0. 0143
83	0. 0156	0. 0012	0. 0144
84	0. 0156	0. 0012	0. 0144
85	0. 0157	0. 0012	0. 0145
86	0. 0157	0. 0012	0. 0146
87	0. 0158	0. 0012	0. 0146
88	0. 0159	0. 0012	0. 0147
89	0. 0160	0. 0012	0. 0148
90	0. 0160	0. 0012	0. 0148
91	0. 0161	0. 0012	0. 0149
92	0. 0162	0. 0012	0. 0149
93	0. 0163	0. 0012	0. 0150
94	0. 0163	0. 0012	0. 0151
95	0. 0164	0. 0012	0. 0152
96	0. 0165	0. 0012	0. 0152
97	0. 0166	0. 0012	0. 0153
98	0. 0166	0. 0012	0. 0154
99	0. 0167	0. 0012	0. 0155
100	0. 0168	0. 0013	0. 0155
101	0. 0169	0. 0013	0. 0156
102	0. 0169	0. 0013	0. 0157
103	0. 0171	0. 0013	0. 0158
104	0. 0171	0. 0013	0. 0158
105	0. 0172	0. 0013	0. 0159
106	0. 0173	0. 0013	0. 0160
107	0. 0174	0. 0013	0. 0161
108	0. 0175	0. 0013	0. 0162
109	0. 0176	0. 0013	0. 0163
110	0. 0177	0. 0013	0. 0163

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111	0. 0178	0. 0013	0. 0165
112	0. 0179	0. 0013	0. 0165
113	0. 0180	0. 0013	0. 0166
114	0. 0181	0. 0013	0. 0167
115	0. 0182	0. 0014	0. 0168
116	0. 0183	0. 0014	0. 0169
117	0. 0184	0. 0014	0. 0170
118	0. 0185	0. 0014	0. 0171
119	0. 0186	0. 0014	0. 0172
120	0. 0187	0. 0014	0. 0173
121	0. 0189	0. 0014	0. 0175
122	0. 0190	0. 0014	0. 0175
123	0. 0191	0. 0014	0. 0177
124	0. 0192	0. 0014	0. 0178
125	0. 0194	0. 0014	0. 0179
126	0. 0195	0. 0015	0. 0180
127	0. 0196	0. 0015	0. 0182
128	0. 0197	0. 0015	0. 0183
129	0. 0199	0. 0015	0. 0184
130	0. 0200	0. 0015	0. 0185
131	0. 0202	0. 0015	0. 0187
132	0. 0203	0. 0015	0. 0188
133	0. 0205	0. 0015	0. 0190
134	0. 0206	0. 0015	0. 0191
135	0. 0208	0. 0016	0. 0193
136	0. 0209	0. 0016	0. 0194
137	0. 0212	0. 0016	0. 0196
138	0. 0213	0. 0016	0. 0197
139	0. 0215	0. 0016	0. 0199
140	0. 0216	0. 0016	0. 0200
141	0. 0219	0. 0016	0. 0203
142	0. 0220	0. 0016	0. 0204
143	0. 0223	0. 0017	0. 0206
144	0. 0224	0. 0017	0. 0208
145	0. 0227	0. 0017	0. 0210
146	0. 0228	0. 0017	0. 0211
147	0. 0231	0. 0017	0. 0214
148	0. 0233	0. 0017	0. 0215
149	0. 0236	0. 0018	0. 0218
150	0. 0238	0. 0018	0. 0220
151	0. 0241	0. 0018	0. 0223
152	0. 0243	0. 0018	0. 0225
153	0. 0247	0. 0018	0. 0228
154	0. 0248	0. 0019	0. 0230
155	0. 0252	0. 0019	0. 0234
156	0. 0254	0. 0019	0. 0235
157	0. 0259	0. 0019	0. 0239
158	0. 0261	0. 0020	0. 0241
159	0. 0266	0. 0020	0. 0246
160	0. 0268	0. 0020	0. 0248
161	0. 0273	0. 0020	0. 0253
162	0. 0276	0. 0021	0. 0255
163	0. 0281	0. 0021	0. 0260
164	0. 0284	0. 0021	0. 0263
165	0. 0290	0. 0022	0. 0269
166	0. 0294	0. 0022	0. 0272
167	0. 0300	0. 0022	0. 0278
168	0. 0304	0. 0023	0. 0281
169	0. 0312	0. 0023	0. 0289
170	0. 0316	0. 0024	0. 0292
171	0. 0325	0. 0024	0. 0300
172	0. 0329	0. 0025	0. 0305
173	0. 0339	0. 0025	0. 0314
174	0. 0345	0. 0026	0. 0319
175	0. 0356	0. 0027	0. 0330
176	0. 0363	0. 0027	0. 0335
177	0. 0376	0. 0028	0. 0348
178	0. 0384	0. 0029	0. 0355
179	0. 0400	0. 0030	0. 0370
180	0. 0410	0. 0031	0. 0379
181	0. 0430	0. 0032	0. 0398
182	0. 0442	0. 0033	0. 0409
183	0. 0469	0. 0035	0. 0434
184	0. 0484	0. 0036	0. 0448
185	0. 0384	0. 0029	0. 0355
186	0. 0406	0. 0030	0. 0375
187	0. 0460	0. 0034	0. 0426
188	0. 0496	0. 0037	0. 0459

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189	0. 0598	0. 0045	0. 0554
190	0. 0675	0. 0048	0. 0627
191	0. 0965	0. 0048	0. 0917
192	0. 1327	0. 0048	0. 1279
193	0. 4155	0. 0048	0. 4106
194	0. 0786	0. 0048	0. 0738
195	0. 0541	0. 0040	0. 0501
196	0. 0431	0. 0032	0. 0398
197	0. 0501	0. 0037	0. 0464
198	0. 0455	0. 0034	0. 0421
199	0. 0419	0. 0031	0. 0388
200	0. 0392	0. 0029	0. 0362
201	0. 0369	0. 0028	0. 0342
202	0. 0350	0. 0026	0. 0324
203	0. 0334	0. 0025	0. 0309
204	0. 0320	0. 0024	0. 0296
205	0. 0308	0. 0023	0. 0285
206	0. 0297	0. 0022	0. 0275
207	0. 0287	0. 0021	0. 0266
208	0. 0279	0. 0021	0. 0258
209	0. 0271	0. 0020	0. 0250
210	0. 0263	0. 0020	0. 0244
211	0. 0257	0. 0019	0. 0237
212	0. 0250	0. 0019	0. 0232
213	0. 0245	0. 0018	0. 0226
214	0. 0239	0. 0018	0. 0221
215	0. 0234	0. 0018	0. 0217
216	0. 0230	0. 0017	0. 0213
217	0. 0226	0. 0017	0. 0209
218	0. 0222	0. 0017	0. 0205
219	0. 0218	0. 0016	0. 0201
220	0. 0214	0. 0016	0. 0198
221	0. 0211	0. 0016	0. 0195
222	0. 0207	0. 0015	0. 0192
223	0. 0204	0. 0015	0. 0189
224	0. 0201	0. 0015	0. 0186
225	0. 0198	0. 0015	0. 0183
226	0. 0195	0. 0015	0. 0181
227	0. 0193	0. 0014	0. 0178
228	0. 0190	0. 0014	0. 0176
229	0. 0188	0. 0014	0. 0174
230	0. 0186	0. 0014	0. 0172
231	0. 0183	0. 0014	0. 0170
232	0. 0181	0. 0014	0. 0168
233	0. 0179	0. 0013	0. 0166
234	0. 0177	0. 0013	0. 0164
235	0. 0175	0. 0013	0. 0162
236	0. 0173	0. 0013	0. 0160
237	0. 0172	0. 0013	0. 0159
238	0. 0170	0. 0013	0. 0157
239	0. 0168	0. 0013	0. 0156
240	0. 0167	0. 0012	0. 0154
241	0. 0165	0. 0012	0. 0153
242	0. 0164	0. 0012	0. 0151
243	0. 0162	0. 0012	0. 0150
244	0. 0161	0. 0012	0. 0149
245	0. 0159	0. 0012	0. 0147
246	0. 0158	0. 0012	0. 0146
247	0. 0156	0. 0012	0. 0145
248	0. 0155	0. 0012	0. 0144
249	0. 0154	0. 0012	0. 0142
250	0. 0153	0. 0011	0. 0141
251	0. 0152	0. 0011	0. 0140
252	0. 0150	0. 0011	0. 0139
253	0. 0149	0. 0011	0. 0138
254	0. 0148	0. 0011	0. 0137
255	0. 0147	0. 0011	0. 0136
256	0. 0146	0. 0011	0. 0135
257	0. 0145	0. 0011	0. 0134
258	0. 0144	0. 0011	0. 0133
259	0. 0143	0. 0011	0. 0132
260	0. 0142	0. 0011	0. 0131
261	0. 0141	0. 0011	0. 0130
262	0. 0140	0. 0010	0. 0130
263	0. 0139	0. 0010	0. 0129
264	0. 0138	0. 0010	0. 0128
265	0. 0137	0. 0010	0. 0127
266	0. 0137	0. 0010	0. 0126

267	0.0136	0.0010	0.0126
268	0.0135	0.0010	0.0125
269	0.0134	0.0010	0.0124
270	0.0133	0.0010	0.0123
271	0.0132	0.0010	0.0123
272	0.0132	0.0010	0.0122
273	0.0131	0.0010	0.0121
274	0.0130	0.0010	0.0121
275	0.0130	0.0010	0.0120
276	0.0129	0.0010	0.0119
277	0.0128	0.0010	0.0119
278	0.0127	0.0010	0.0118
279	0.0127	0.0009	0.0117
280	0.0126	0.0009	0.0117
281	0.0125	0.0009	0.0116
282	0.0125	0.0009	0.0115
283	0.0124	0.0009	0.0115
284	0.0124	0.0009	0.0114
285	0.0123	0.0009	0.0114
286	0.0122	0.0009	0.0113
287	0.0122	0.0009	0.0113
288	0.0121	0.0009	0.0112

 Total soil rain loss = 0.44(In)
 Total effective rainfall = 5.92(In)
 Peak flow rate in flood hydrograph = 17.05(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

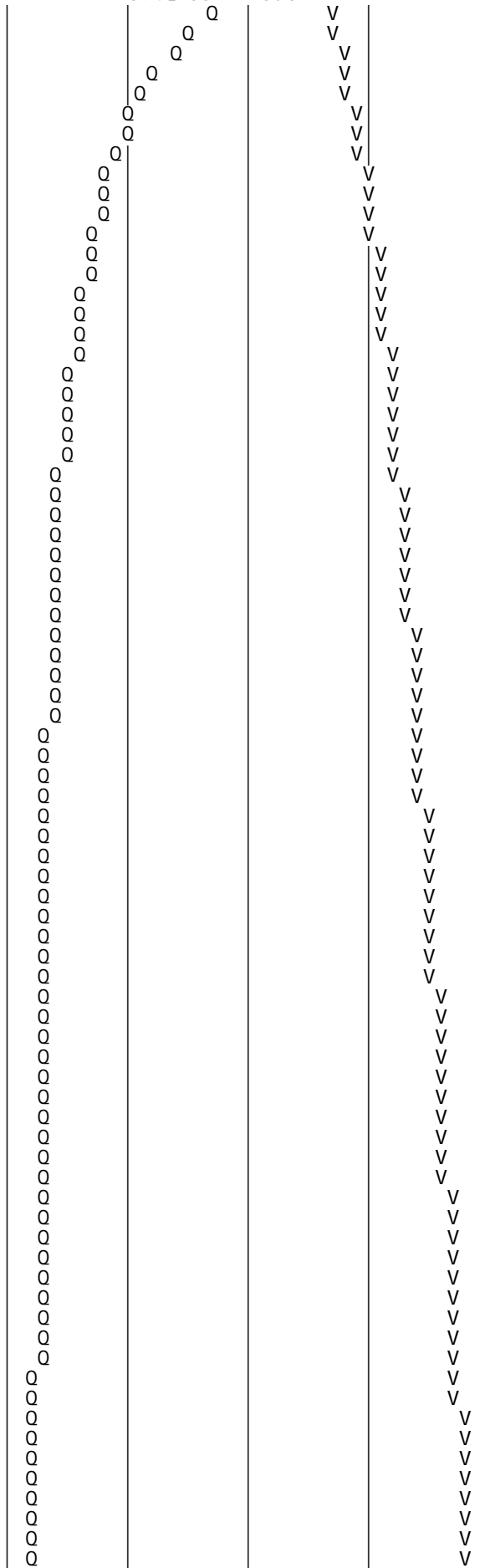
Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume	Ac. Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0003	0.04	Q					
0+10	0.0017	0.20	Q					
0+15	0.0049	0.47	Q					
0+20	0.0100	0.73	VQ					
0+25	0.0160	0.88	VQ					
0+30	0.0227	0.97	VQ					
0+35	0.0298	1.03	V Q					
0+40	0.0372	1.07	V Q					
0+45	0.0448	1.11	V Q					
0+50	0.0527	1.15	V Q					
0+55	0.0608	1.17	V Q					
1+ 0	0.0691	1.20	V Q					
1+ 5	0.0774	1.22	V Q					
1+10	0.0859	1.23	V Q					
1+15	0.0945	1.25	V Q					
1+20	0.1032	1.26	V Q					
1+25	0.1120	1.28	V Q					
1+30	0.1209	1.29	VQ					
1+35	0.1299	1.30	VQ					
1+40	0.1389	1.31	VQ					
1+45	0.1479	1.32	VQ					
1+50	0.1571	1.32	VQ					
1+55	0.1662	1.33	VQ					
2+ 0	0.1755	1.34	VQ					
2+ 5	0.1847	1.35	VQ					
2+10	0.1940	1.35	VQ					
2+15	0.2033	1.35	VQ					
2+20	0.2127	1.36	VQ					
2+25	0.2220	1.36	VQ					
2+30	0.2314	1.36	VQ					
2+35	0.2408	1.37	Q					
2+40	0.2503	1.37	Q					
2+45	0.2597	1.37	Q					
2+50	0.2692	1.38	Q					
2+55	0.2787	1.38	Q					
3+ 0	0.2883	1.39	Q					
3+ 5	0.2979	1.39	Q					
3+10	0.3075	1.39	Q					
3+15	0.3171	1.40	Q					
3+20	0.3267	1.40	Q					
3+25	0.3364	1.41	Q					

3+30	0. 3461	1. 41	Q			
3+35	0. 3559	1. 41	QV			
3+40	0. 3656	1. 42	QV			
3+45	0. 3754	1. 42	QV			
3+50	0. 3853	1. 43	QV			
3+55	0. 3951	1. 43	QV			
4+ 0	0. 4050	1. 44	QV			
4+ 5	0. 4149	1. 44	QV			
4+10	0. 4249	1. 44	QV			
4+15	0. 4348	1. 45	QV			
4+20	0. 4449	1. 45	QV			
4+25	0. 4549	1. 46	QV			
4+30	0. 4650	1. 46	QV			
4+35	0. 4751	1. 47	Q V			
4+40	0. 4852	1. 47	Q V			
4+45	0. 4954	1. 48	Q V			
4+50	0. 5056	1. 48	Q V			
4+55	0. 5158	1. 49	Q V			
5+ 0	0. 5261	1. 49	Q V			
5+ 5	0. 5364	1. 50	Q V			
5+10	0. 5467	1. 50	QV			
5+15	0. 5571	1. 51	QV			
5+20	0. 5675	1. 51	QV			
5+25	0. 5779	1. 52	QV			
5+30	0. 5884	1. 52	Q V			
5+35	0. 5989	1. 53	Q V			
5+40	0. 6095	1. 53	Q V			
5+45	0. 6201	1. 54	Q V			
5+50	0. 6307	1. 54	Q V			
5+55	0. 6414	1. 55	Q V			
6+ 0	0. 6521	1. 55	Q V			
6+ 5	0. 6628	1. 56	Q V			
6+10	0. 6736	1. 57	Q V			
6+15	0. 6844	1. 57	Q V			
6+20	0. 6953	1. 58	Q V			
6+25	0. 7062	1. 58	Q V			
6+30	0. 7172	1. 59	Q V			
6+35	0. 7281	1. 60	Q V			
6+40	0. 7392	1. 60	Q V			
6+45	0. 7502	1. 61	Q V			
6+50	0. 7614	1. 61	Q V			
6+55	0. 7725	1. 62	Q V			
7+ 0	0. 7837	1. 63	Q V			
7+ 5	0. 7950	1. 63	Q V			
7+10	0. 8063	1. 64	Q V			
7+15	0. 8176	1. 65	Q V			
7+20	0. 8290	1. 65	Q V			
7+25	0. 8404	1. 66	Q V			
7+30	0. 8519	1. 67	Q V			
7+35	0. 8635	1. 67	Q V			
7+40	0. 8750	1. 68	Q V			
7+45	0. 8867	1. 69	Q V			
7+50	0. 8984	1. 70	Q V			
7+55	0. 9101	1. 70	Q V			
8+ 0	0. 9219	1. 71	Q V			
8+ 5	0. 9337	1. 72	Q V			
8+10	0. 9456	1. 73	Q V			
8+15	0. 9576	1. 74	Q V			
8+20	0. 9696	1. 74	Q V			
8+25	0. 9817	1. 75	Q V			
8+30	0. 9938	1. 76	Q V			
8+35	1. 0060	1. 77	Q V			
8+40	1. 0182	1. 78	Q V			
8+45	1. 0305	1. 79	Q V			
8+50	1. 0429	1. 79	Q V			
8+55	1. 0553	1. 80	Q V			
9+ 0	1. 0678	1. 81	Q V			
9+ 5	1. 0803	1. 82	Q V			
9+10	1. 0929	1. 83	Q V			
9+15	1. 1056	1. 84	Q V			
9+20	1. 1184	1. 85	Q V			
9+25	1. 1312	1. 86	Q V			
9+30	1. 1441	1. 87	Q V			
9+35	1. 1570	1. 88	Q V			
9+40	1. 1701	1. 89	Q V			
9+45	1. 1832	1. 90	Q V			
9+50	1. 1963	1. 91	Q V			
9+55	1. 2096	1. 92	Q V			

10+ 0	1. 2229	1. 94	Q	V		
10+ 5	1. 2363	1. 95	Q	V		
10+10	1. 2498	1. 96	Q	V		
10+15	1. 2634	1. 97	Q	V		
10+20	1. 2771	1. 98	Q	V		
10+25	1. 2908	2. 00	Q	V		
10+30	1. 3046	2. 01	Q	V		
10+35	1. 3185	2. 02	Q	V		
10+40	1. 3326	2. 03	Q	V		
10+45	1. 3467	2. 05	Q	V		
10+50	1. 3609	2. 06	Q	V		
10+55	1. 3752	2. 08	Q	V		
11+ 0	1. 3896	2. 09	Q	V		
11+ 5	1. 4041	2. 10	Q	V		
11+10	1. 4187	2. 12	Q	V		
11+15	1. 4334	2. 14	Q	V		
11+20	1. 4482	2. 15	Q	V		
11+25	1. 4631	2. 17	Q	V		
11+30	1. 4781	2. 18	Q	V		
11+35	1. 4933	2. 20	Q	V		
11+40	1. 5086	2. 22	Q	V		
11+45	1. 5240	2. 24	Q	V		
11+50	1. 5395	2. 25	Q	V		
11+55	1. 5552	2. 27	Q	V		
12+ 0	1. 5710	2. 29	Q	V		
12+ 5	1. 5869	2. 31	Q	V		
12+10	1. 6030	2. 33	Q	V		
12+15	1. 6192	2. 35	Q	V		
12+20	1. 6355	2. 37	Q	V		
12+25	1. 6520	2. 40	Q	V		
12+30	1. 6687	2. 42	Q	V		
12+35	1. 6855	2. 44	Q	V		
12+40	1. 7025	2. 47	Q	V		
12+45	1. 7196	2. 49	Q	V		
12+50	1. 7370	2. 52	Q	V		
12+55	1. 7545	2. 55	Q	V		
13+ 0	1. 7722	2. 57	Q	V		
13+ 5	1. 7902	2. 60	Q	V		
13+10	1. 8083	2. 63	Q	V		
13+15	1. 8266	2. 66	Q	V		
13+20	1. 8452	2. 70	Q	V		
13+25	1. 8640	2. 73	Q	V		
13+30	1. 8831	2. 77	Q	V		
13+35	1. 9024	2. 80	Q	V		
13+40	1. 9219	2. 84	Q	V		
13+45	1. 9418	2. 88	Q	V		
13+50	1. 9619	2. 92	Q	V		
13+55	1. 9824	2. 97	Q	V		
14+ 0	2. 0031	3. 01	Q	V		
14+ 5	2. 0242	3. 06	Q	V		
14+10	2. 0457	3. 12	Q	V		
14+15	2. 0675	3. 17	Q	V		
14+20	2. 0897	3. 23	Q	V		
14+25	2. 1124	3. 29	Q	V		
14+30	2. 1355	3. 36	Q	V		
14+35	2. 1591	3. 43	Q	V		
14+40	2. 1832	3. 50	Q	V		
14+45	2. 2079	3. 58	Q	V		
14+50	2. 2331	3. 67	Q	V		
14+55	2. 2590	3. 76	Q	V		
15+ 0	2. 2856	3. 86	Q	V		
15+ 5	2. 3130	3. 98	Q	V		
15+10	2. 3413	4. 10	Q	V		
15+15	2. 3704	4. 24	Q	V		
15+20	2. 4007	4. 39	Q	V		
15+25	2. 4318	4. 52	Q	V		
15+30	2. 4631	4. 54	Q	V		
15+35	2. 4939	4. 47	Q	V		
15+40	2. 5245	4. 45	Q	V		
15+45	2. 5564	4. 63	Q	V		
15+50	2. 5908	4. 99	Q	V		
15+55	2. 6291	5. 57	Q	V		
16+ 0	2. 6745	6. 59	Q	V		
16+ 5	2. 7379	9. 21	Q	V		
16+10	2. 8324	13. 72	Q	V		
16+15	2. 9499	17. 05	Q	V		
16+20	3. 0594	15. 89	Q	V		
16+25	3. 1391	11. 58	Q	V		

16+30	3. 2006	8. 92
16+35	3. 2536	7. 70
16+40	3. 3019	7. 01
16+45	3. 3462	6. 44
16+50	3. 3869	5. 90
16+55	3. 4247	5. 49
17+ 0	3. 4598	5. 10
17+ 5	3. 4927	4. 78
17+10	3. 5236	4. 48
17+15	3. 5531	4. 28
17+20	3. 5812	4. 09
17+25	3. 6078	3. 87
17+30	3. 6333	3. 69
17+35	3. 6576	3. 54
17+40	3. 6810	3. 39
17+45	3. 7033	3. 25
17+50	3. 7249	3. 13
17+55	3. 7458	3. 04
18+ 0	3. 7660	2. 94
18+ 5	3. 7852	2. 78
18+10	3. 8034	2. 64
18+15	3. 8211	2. 58
18+20	3. 8385	2. 52
18+25	3. 8555	2. 47
18+30	3. 8721	2. 42
18+35	3. 8884	2. 37
18+40	3. 9044	2. 32
18+45	3. 9201	2. 28
18+50	3. 9356	2. 24
18+55	3. 9508	2. 21
19+ 0	3. 9657	2. 17
19+ 5	3. 9805	2. 14
19+10	3. 9950	2. 11
19+15	4. 0093	2. 08
19+20	4. 0234	2. 05
19+25	4. 0373	2. 02
19+30	4. 0511	2. 00
19+35	4. 0646	1. 97
19+40	4. 0781	1. 95
19+45	4. 0913	1. 92
19+50	4. 1044	1. 90
19+55	4. 1173	1. 88
20+ 0	4. 1302	1. 86
20+ 5	4. 1428	1. 84
20+10	4. 1554	1. 82
20+15	4. 1678	1. 80
20+20	4. 1801	1. 78
20+25	4. 1922	1. 77
20+30	4. 2043	1. 75
20+35	4. 2162	1. 73
20+40	4. 2281	1. 72
20+45	4. 2398	1. 70
20+50	4. 2514	1. 69
20+55	4. 2629	1. 67
21+ 0	4. 2743	1. 66
21+ 5	4. 2857	1. 64
21+10	4. 2969	1. 63
21+15	4. 3081	1. 62
21+20	4. 3191	1. 61
21+25	4. 3301	1. 59
21+30	4. 3410	1. 58
21+35	4. 3518	1. 57
21+40	4. 3625	1. 56
21+45	4. 3732	1. 55
21+50	4. 3838	1. 54
21+55	4. 3943	1. 52
22+ 0	4. 4047	1. 51
22+ 5	4. 4150	1. 50
22+10	4. 4253	1. 49
22+15	4. 4356	1. 48
22+20	4. 4457	1. 47
22+25	4. 4558	1. 47
22+30	4. 4658	1. 46
22+35	4. 4758	1. 45
22+40	4. 4857	1. 44
22+45	4. 4955	1. 43
22+50	4. 5053	1. 42
22+55	4. 5151	1. 41



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23+ 0	4. 5247	1. 40	Q	V
23+ 5	4. 5343	1. 40	Q	V
23+10	4. 5439	1. 39	Q	V
23+15	4. 5534	1. 38	Q	V
23+20	4. 5629	1. 37	Q	V
23+25	4. 5723	1. 37	Q	V
23+30	4. 5816	1. 36	Q	V
23+35	4. 5909	1. 35	Q	V
23+40	4. 6002	1. 34	Q	V
23+45	4. 6094	1. 34	Q	V
23+50	4. 6185	1. 33	Q	V
23+55	4. 6276	1. 32	Q	V
24+ 0	4. 6367	1. 32	Q	V
24+ 5	4. 6454	1. 27	Q	V
24+10	4. 6530	1. 10	Q	V
24+15	4. 6587	0. 83	Q	V
24+20	4. 6626	0. 56	Q	V
24+25	4. 6655	0. 41	Q	V
24+30	4. 6677	0. 33	Q	V
24+35	4. 6696	0. 27	Q	V
24+40	4. 6711	0. 22	Q	V
24+45	4. 6724	0. 18	Q	V
24+50	4. 6735	0. 15	Q	V
24+55	4. 6743	0. 13	Q	V
25+ 0	4. 6751	0. 11	Q	V
25+ 5	4. 6757	0. 09	Q	V
25+10	4. 6762	0. 08	Q	V
25+15	4. 6767	0. 06	Q	V
25+20	4. 6770	0. 05	Q	V
25+25	4. 6773	0. 04	Q	V
25+30	4. 6776	0. 03	Q	V
25+35	4. 6777	0. 03	Q	V
25+40	4. 6779	0. 02	Q	V
25+45	4. 6780	0. 01	Q	V
25+50	4. 6780	0. 01	Q	V
25+55	4. 6781	0. 01	Q	V
26+ 0	4. 6781	0. 00	Q	V

Unit Hydrograph Analysis

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Study date 01/15/20

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

Program License Serial Number 6145

HILLWOOD - ALMOND AT WHITTRAM IND
100 YEAR STORM EVENT EXISITNG UH
1694Q100UHEX
DS

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
9.50	1	1.40

Rainfall data for year 100
9.50 6 3.70

Rainfall data for year 100
9.50 24 8.10

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
67.0	84.6	9.50	1.000	0.290	0.100	0.029

Area-averaged adjusted loss rate Fm (In/Hr) = 0.029

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

Area	Area	SCS CN	SCS CN	S	Pervious
------	------	--------	--------	---	----------

(Ac.)	Fract	(AMC2)	(AMC3)		Yield Fr
0.95	0.100	67.0	84.6	1.82	0.773
8.55	0.900	98.0	98.0	0.20	0.970

Area-averaged catchment yield fraction, Y = 0.951
 Area-averaged low loss fraction, Yb = 0.049
 User entry of time of concentration = 0.320 (hours)
 ++++++
 Watershed area = 9.50(Ac.)
 Catchment Lag time = 0.256 hours
 Unit interval = 5.000 minutes
 Unit interval percentage of lag time = 32.5826
 Hydrograph baseflow = 0.00(CFS)
 Average maximum watershed loss rate(Fm) = 0.029(In/Hr)
 Average low loss rate fraction (Yb) = 0.049 (decimal)
 VALLEY UNDEVELOPED S-Graph Selected
 Computed peak 5-minute rainfall = 0.518(In)
 Computed peak 30-minute rainfall = 1.061(In)
 Specified peak 1-hour rainfall = 1.400(In)
 Computed peak 3-hour rainfall = 2.541(In)
 Specified peak 6-hour rainfall = 3.700(In)
 Specified peak 24-hour rainfall = 8.100(In)

Rainfall depth area reduction factors:
 Using a total area of 9.50(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000	Adjusted rainfall = 0.518(In)
30-minute factor = 1.000	Adjusted rainfall = 1.061(In)
1-hour factor = 1.000	Adjusted rainfall = 1.399(In)
3-hour factor = 1.000	Adjusted rainfall = 2.540(In)
6-hour factor = 1.000	Adjusted rainfall = 3.700(In)
24-hour factor = 1.000	Adjusted rainfall = 8.100(In)

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

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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K = 114.89 (CFS))		
1	3.246	3.729
2	15.603	14.197
3	36.678	24.214
4	56.919	23.254
5	68.354	13.138
6	74.870	7.487
7	79.403	5.207
8	82.916	4.036
9	85.790	3.302
10	88.064	2.612
11	90.010	2.236
12	91.587	1.812
13	92.918	1.530
14	93.975	1.214
15	94.973	1.148
16	95.895	1.059
17	96.627	0.840
18	97.264	0.732
19	97.828	0.648
20	98.295	0.537
21	98.679	0.442

22	99.005	0.374
23	99.331	0.374
24	99.657	0.374
25	100.000	0.187

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5179	0.5179
2	0.6834	0.1655
3	0.8037	0.1203
4	0.9017	0.0980
5	0.9859	0.0842
6	1.0605	0.0746
7	1.1280	0.0675
8	1.1899	0.0619
9	1.2473	0.0574
10	1.3010	0.0537
11	1.3515	0.0506
12	1.3994	0.0479
13	1.4615	0.0621
14	1.5215	0.0600
15	1.5796	0.0581
16	1.6359	0.0563
17	1.6906	0.0547
18	1.7439	0.0533
19	1.7958	0.0519
20	1.8465	0.0507
21	1.8960	0.0496
22	1.9445	0.0485
23	1.9920	0.0475
24	2.0386	0.0466
25	2.0842	0.0457
26	2.1291	0.0448
27	2.1731	0.0441
28	2.2164	0.0433
29	2.2591	0.0426
30	2.3010	0.0420
31	2.3423	0.0413
32	2.3831	0.0407
33	2.4232	0.0401
34	2.4628	0.0396
35	2.5018	0.0391
36	2.5404	0.0385
37	2.5784	0.0380
38	2.6160	0.0376
39	2.6531	0.0371
40	2.6898	0.0367
41	2.7261	0.0363
42	2.7619	0.0359
43	2.7974	0.0355
44	2.8325	0.0351
45	2.8672	0.0347
46	2.9016	0.0344
47	2.9357	0.0340
48	2.9694	0.0337
49	3.0028	0.0334
50	3.0359	0.0331
51	3.0687	0.0328
52	3.1012	0.0325
53	3.1334	0.0322
54	3.1653	0.0319
55	3.1970	0.0317
56	3.2284	0.0314

57	3.2595	0.0311
58	3.2904	0.0309
59	3.3211	0.0307
60	3.3515	0.0304
61	3.3817	0.0302
62	3.4116	0.0300
63	3.4414	0.0297
64	3.4709	0.0295
65	3.5002	0.0293
66	3.5293	0.0291
67	3.5582	0.0289
68	3.5869	0.0287
69	3.6155	0.0285
70	3.6438	0.0283
71	3.6719	0.0281
72	3.6999	0.0280
73	3.7288	0.0290
74	3.7576	0.0288
75	3.7863	0.0286
76	3.8147	0.0285
77	3.8430	0.0283
78	3.8711	0.0281
79	3.8991	0.0280
80	3.9269	0.0278
81	3.9546	0.0277
82	3.9821	0.0275
83	4.0095	0.0274
84	4.0367	0.0272
85	4.0638	0.0271
86	4.0908	0.0270
87	4.1176	0.0268
88	4.1443	0.0267
89	4.1708	0.0266
90	4.1972	0.0264
91	4.2235	0.0263
92	4.2497	0.0262
93	4.2758	0.0260
94	4.3017	0.0259
95	4.3275	0.0258
96	4.3532	0.0257
97	4.3787	0.0256
98	4.4042	0.0255
99	4.4295	0.0253
100	4.4548	0.0252
101	4.4799	0.0251
102	4.5049	0.0250
103	4.5298	0.0249
104	4.5546	0.0248
105	4.5793	0.0247
106	4.6039	0.0246
107	4.6284	0.0245
108	4.6528	0.0244
109	4.6771	0.0243
110	4.7013	0.0242
111	4.7254	0.0241
112	4.7495	0.0240
113	4.7734	0.0239
114	4.7972	0.0238
115	4.8210	0.0237
116	4.8446	0.0236
117	4.8682	0.0236
118	4.8916	0.0235
119	4.9150	0.0234

120	4.9383	0.0233
121	4.9615	0.0232
122	4.9847	0.0231
123	5.0077	0.0231
124	5.0307	0.0230
125	5.0536	0.0229
126	5.0764	0.0228
127	5.0991	0.0227
128	5.1218	0.0227
129	5.1444	0.0226
130	5.1669	0.0225
131	5.1893	0.0224
132	5.2117	0.0224
133	5.2339	0.0223
134	5.2561	0.0222
135	5.2783	0.0221
136	5.3003	0.0221
137	5.3223	0.0220
138	5.3443	0.0219
139	5.3661	0.0219
140	5.3879	0.0218
141	5.4096	0.0217
142	5.4313	0.0217
143	5.4529	0.0216
144	5.4744	0.0215
145	5.4958	0.0215
146	5.5172	0.0214
147	5.5385	0.0213
148	5.5598	0.0213
149	5.5810	0.0212
150	5.6022	0.0211
151	5.6232	0.0211
152	5.6442	0.0210
153	5.6652	0.0210
154	5.6861	0.0209
155	5.7069	0.0208
156	5.7277	0.0208
157	5.7485	0.0207
158	5.7691	0.0207
159	5.7897	0.0206
160	5.8103	0.0206
161	5.8308	0.0205
162	5.8512	0.0204
163	5.8716	0.0204
164	5.8919	0.0203
165	5.9122	0.0203
166	5.9324	0.0202
167	5.9526	0.0202
168	5.9727	0.0201
169	5.9928	0.0201
170	6.0128	0.0200
171	6.0328	0.0200
172	6.0527	0.0199
173	6.0726	0.0199
174	6.0924	0.0198
175	6.1121	0.0198
176	6.1319	0.0197
177	6.1515	0.0197
178	6.1712	0.0196
179	6.1907	0.0196
180	6.2102	0.0195
181	6.2297	0.0195
182	6.2492	0.0194

183	6.2685	0.0194
184	6.2879	0.0193
185	6.3072	0.0193
186	6.3264	0.0192
187	6.3456	0.0192
188	6.3648	0.0192
189	6.3839	0.0191
190	6.4030	0.0191
191	6.4220	0.0190
192	6.4410	0.0190
193	6.4599	0.0189
194	6.4788	0.0189
195	6.4977	0.0189
196	6.5165	0.0188
197	6.5352	0.0188
198	6.5540	0.0187
199	6.5727	0.0187
200	6.5913	0.0186
201	6.6099	0.0186
202	6.6285	0.0186
203	6.6470	0.0185
204	6.6655	0.0185
205	6.6839	0.0184
206	6.7024	0.0184
207	6.7207	0.0184
208	6.7391	0.0183
209	6.7573	0.0183
210	6.7756	0.0183
211	6.7938	0.0182
212	6.8120	0.0182
213	6.8301	0.0181
214	6.8483	0.0181
215	6.8663	0.0181
216	6.8844	0.0180
217	6.9023	0.0180
218	6.9203	0.0180
219	6.9382	0.0179
220	6.9561	0.0179
221	6.9740	0.0179
222	6.9918	0.0178
223	7.0096	0.0178
224	7.0273	0.0177
225	7.0450	0.0177
226	7.0627	0.0177
227	7.0804	0.0176
228	7.0980	0.0176
229	7.1156	0.0176
230	7.1331	0.0175
231	7.1506	0.0175
232	7.1681	0.0175
233	7.1855	0.0174
234	7.2030	0.0174
235	7.2203	0.0174
236	7.2377	0.0174
237	7.2550	0.0173
238	7.2723	0.0173
239	7.2896	0.0173
240	7.3068	0.0172
241	7.3240	0.0172
242	7.3411	0.0172
243	7.3583	0.0171
244	7.3754	0.0171
245	7.3924	0.0171

246	7.4095	0.0170
247	7.4265	0.0170
248	7.4435	0.0170
249	7.4604	0.0169
250	7.4773	0.0169
251	7.4942	0.0169
252	7.5111	0.0169
253	7.5279	0.0168
254	7.5447	0.0168
255	7.5615	0.0168
256	7.5782	0.0167
257	7.5949	0.0167
258	7.6116	0.0167
259	7.6283	0.0167
260	7.6449	0.0166
261	7.6615	0.0166
262	7.6781	0.0166
263	7.6947	0.0166
264	7.7112	0.0165
265	7.7277	0.0165
266	7.7442	0.0165
267	7.7606	0.0164
268	7.7770	0.0164
269	7.7934	0.0164
270	7.8098	0.0164
271	7.8261	0.0163
272	7.8424	0.0163
273	7.8587	0.0163
274	7.8749	0.0163
275	7.8912	0.0162
276	7.9074	0.0162
277	7.9236	0.0162
278	7.9397	0.0162
279	7.9558	0.0161
280	7.9720	0.0161
281	7.9880	0.0161
282	8.0041	0.0161
283	8.0201	0.0160
284	8.0361	0.0160
285	8.0521	0.0160
286	8.0681	0.0160
287	8.0840	0.0159
288	8.0999	0.0159

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0159	0.0008	0.0151
2	0.0159	0.0008	0.0151
3	0.0160	0.0008	0.0152
4	0.0160	0.0008	0.0152
5	0.0161	0.0008	0.0153
6	0.0161	0.0008	0.0153
7	0.0161	0.0008	0.0153
8	0.0162	0.0008	0.0154
9	0.0162	0.0008	0.0154
10	0.0162	0.0008	0.0154
11	0.0163	0.0008	0.0155
12	0.0163	0.0008	0.0155
13	0.0164	0.0008	0.0156
14	0.0164	0.0008	0.0156
15	0.0164	0.0008	0.0156

16	0.0165	0.0008	0.0157
17	0.0165	0.0008	0.0157
18	0.0166	0.0008	0.0157
19	0.0166	0.0008	0.0158
20	0.0166	0.0008	0.0158
21	0.0167	0.0008	0.0159
22	0.0167	0.0008	0.0159
23	0.0168	0.0008	0.0159
24	0.0168	0.0008	0.0160
25	0.0169	0.0008	0.0160
26	0.0169	0.0008	0.0161
27	0.0169	0.0008	0.0161
28	0.0170	0.0008	0.0161
29	0.0170	0.0008	0.0162
30	0.0171	0.0008	0.0162
31	0.0171	0.0008	0.0163
32	0.0172	0.0008	0.0163
33	0.0172	0.0008	0.0164
34	0.0173	0.0009	0.0164
35	0.0173	0.0009	0.0165
36	0.0174	0.0009	0.0165
37	0.0174	0.0009	0.0166
38	0.0174	0.0009	0.0166
39	0.0175	0.0009	0.0166
40	0.0175	0.0009	0.0167
41	0.0176	0.0009	0.0167
42	0.0176	0.0009	0.0168
43	0.0177	0.0009	0.0168
44	0.0177	0.0009	0.0169
45	0.0178	0.0009	0.0169
46	0.0179	0.0009	0.0170
47	0.0179	0.0009	0.0170
48	0.0180	0.0009	0.0171
49	0.0180	0.0009	0.0171
50	0.0181	0.0009	0.0172
51	0.0181	0.0009	0.0172
52	0.0182	0.0009	0.0173
53	0.0183	0.0009	0.0174
54	0.0183	0.0009	0.0174
55	0.0184	0.0009	0.0175
56	0.0184	0.0009	0.0175
57	0.0185	0.0009	0.0176
58	0.0185	0.0009	0.0176
59	0.0186	0.0009	0.0177
60	0.0186	0.0009	0.0177
61	0.0187	0.0009	0.0178
62	0.0188	0.0009	0.0178
63	0.0189	0.0009	0.0179
64	0.0189	0.0009	0.0180
65	0.0190	0.0009	0.0180
66	0.0190	0.0009	0.0181
67	0.0191	0.0009	0.0182
68	0.0192	0.0009	0.0182
69	0.0192	0.0009	0.0183
70	0.0193	0.0010	0.0183
71	0.0194	0.0010	0.0184
72	0.0194	0.0010	0.0185
73	0.0195	0.0010	0.0186
74	0.0196	0.0010	0.0186
75	0.0197	0.0010	0.0187
76	0.0197	0.0010	0.0187
77	0.0198	0.0010	0.0188
78	0.0199	0.0010	0.0189

79	0.0200	0.0010	0.0190
80	0.0200	0.0010	0.0190
81	0.0201	0.0010	0.0191
82	0.0202	0.0010	0.0192
83	0.0203	0.0010	0.0193
84	0.0203	0.0010	0.0193
85	0.0204	0.0010	0.0194
86	0.0205	0.0010	0.0195
87	0.0206	0.0010	0.0196
88	0.0207	0.0010	0.0196
89	0.0208	0.0010	0.0198
90	0.0208	0.0010	0.0198
91	0.0210	0.0010	0.0199
92	0.0210	0.0010	0.0200
93	0.0211	0.0010	0.0201
94	0.0212	0.0010	0.0202
95	0.0213	0.0011	0.0203
96	0.0214	0.0011	0.0203
97	0.0215	0.0011	0.0205
98	0.0216	0.0011	0.0205
99	0.0217	0.0011	0.0206
100	0.0218	0.0011	0.0207
101	0.0219	0.0011	0.0208
102	0.0220	0.0011	0.0209
103	0.0221	0.0011	0.0210
104	0.0222	0.0011	0.0211
105	0.0224	0.0011	0.0212
106	0.0224	0.0011	0.0213
107	0.0226	0.0011	0.0215
108	0.0227	0.0011	0.0215
109	0.0228	0.0011	0.0217
110	0.0229	0.0011	0.0218
111	0.0231	0.0011	0.0219
112	0.0231	0.0011	0.0220
113	0.0233	0.0011	0.0222
114	0.0234	0.0012	0.0222
115	0.0236	0.0012	0.0224
116	0.0236	0.0012	0.0225
117	0.0238	0.0012	0.0227
118	0.0239	0.0012	0.0227
119	0.0241	0.0012	0.0229
120	0.0242	0.0012	0.0230
121	0.0244	0.0012	0.0232
122	0.0245	0.0012	0.0233
123	0.0247	0.0012	0.0235
124	0.0248	0.0012	0.0236
125	0.0250	0.0012	0.0238
126	0.0251	0.0012	0.0239
127	0.0253	0.0013	0.0241
128	0.0255	0.0013	0.0242
129	0.0257	0.0013	0.0244
130	0.0258	0.0013	0.0245
131	0.0260	0.0013	0.0248
132	0.0262	0.0013	0.0249
133	0.0264	0.0013	0.0251
134	0.0266	0.0013	0.0252
135	0.0268	0.0013	0.0255
136	0.0270	0.0013	0.0256
137	0.0272	0.0013	0.0259
138	0.0274	0.0014	0.0260
139	0.0277	0.0014	0.0263
140	0.0278	0.0014	0.0264
141	0.0281	0.0014	0.0267

142	0.0283	0.0014	0.0269
143	0.0286	0.0014	0.0272
144	0.0288	0.0014	0.0274
145	0.0280	0.0014	0.0266
146	0.0281	0.0014	0.0268
147	0.0285	0.0014	0.0271
148	0.0287	0.0014	0.0273
149	0.0291	0.0014	0.0277
150	0.0293	0.0014	0.0279
151	0.0297	0.0015	0.0283
152	0.0300	0.0015	0.0285
153	0.0304	0.0015	0.0289
154	0.0307	0.0015	0.0291
155	0.0311	0.0015	0.0296
156	0.0314	0.0015	0.0299
157	0.0319	0.0016	0.0304
158	0.0322	0.0016	0.0306
159	0.0328	0.0016	0.0312
160	0.0331	0.0016	0.0315
161	0.0337	0.0017	0.0321
162	0.0340	0.0017	0.0324
163	0.0347	0.0017	0.0330
164	0.0351	0.0017	0.0334
165	0.0359	0.0018	0.0341
166	0.0363	0.0018	0.0345
167	0.0371	0.0018	0.0353
168	0.0376	0.0019	0.0357
169	0.0385	0.0019	0.0366
170	0.0391	0.0019	0.0371
171	0.0401	0.0020	0.0382
172	0.0407	0.0020	0.0387
173	0.0420	0.0021	0.0399
174	0.0426	0.0021	0.0405
175	0.0441	0.0022	0.0419
176	0.0448	0.0022	0.0426
177	0.0466	0.0023	0.0443
178	0.0475	0.0023	0.0451
179	0.0496	0.0024	0.0471
180	0.0507	0.0024	0.0483
181	0.0533	0.0024	0.0509
182	0.0547	0.0024	0.0523
183	0.0581	0.0024	0.0556
184	0.0600	0.0024	0.0576
185	0.0479	0.0024	0.0455
186	0.0506	0.0024	0.0481
187	0.0574	0.0024	0.0550
188	0.0619	0.0024	0.0595
189	0.0746	0.0024	0.0722
190	0.0842	0.0024	0.0818
191	0.1203	0.0024	0.1179
192	0.1655	0.0024	0.1631
193	0.5179	0.0024	0.5155
194	0.0980	0.0024	0.0956
195	0.0675	0.0024	0.0650
196	0.0537	0.0024	0.0513
197	0.0621	0.0024	0.0597
198	0.0563	0.0024	0.0539
199	0.0519	0.0024	0.0495
200	0.0485	0.0024	0.0461
201	0.0457	0.0023	0.0434
202	0.0433	0.0021	0.0412
203	0.0413	0.0020	0.0393
204	0.0396	0.0020	0.0376

205	0.0380	0.0019	0.0362
206	0.0367	0.0018	0.0349
207	0.0355	0.0018	0.0337
208	0.0344	0.0017	0.0327
209	0.0334	0.0016	0.0318
210	0.0325	0.0016	0.0309
211	0.0317	0.0016	0.0301
212	0.0309	0.0015	0.0294
213	0.0302	0.0015	0.0287
214	0.0295	0.0015	0.0281
215	0.0289	0.0014	0.0275
216	0.0283	0.0014	0.0269
217	0.0290	0.0014	0.0275
218	0.0285	0.0014	0.0270
219	0.0280	0.0014	0.0266
220	0.0275	0.0014	0.0262
221	0.0271	0.0013	0.0258
222	0.0267	0.0013	0.0254
223	0.0263	0.0013	0.0250
224	0.0259	0.0013	0.0246
225	0.0256	0.0013	0.0243
226	0.0252	0.0012	0.0240
227	0.0249	0.0012	0.0237
228	0.0246	0.0012	0.0234
229	0.0243	0.0012	0.0231
230	0.0240	0.0012	0.0228
231	0.0237	0.0012	0.0226
232	0.0235	0.0012	0.0223
233	0.0232	0.0011	0.0221
234	0.0230	0.0011	0.0218
235	0.0227	0.0011	0.0216
236	0.0225	0.0011	0.0214
237	0.0223	0.0011	0.0212
238	0.0221	0.0011	0.0210
239	0.0219	0.0011	0.0208
240	0.0217	0.0011	0.0206
241	0.0215	0.0011	0.0204
242	0.0213	0.0010	0.0202
243	0.0211	0.0010	0.0200
244	0.0209	0.0010	0.0199
245	0.0207	0.0010	0.0197
246	0.0206	0.0010	0.0195
247	0.0204	0.0010	0.0194
248	0.0202	0.0010	0.0192
249	0.0201	0.0010	0.0191
250	0.0199	0.0010	0.0189
251	0.0198	0.0010	0.0188
252	0.0196	0.0010	0.0187
253	0.0195	0.0010	0.0185
254	0.0193	0.0010	0.0184
255	0.0192	0.0009	0.0183
256	0.0191	0.0009	0.0181
257	0.0189	0.0009	0.0180
258	0.0188	0.0009	0.0179
259	0.0187	0.0009	0.0178
260	0.0186	0.0009	0.0177
261	0.0184	0.0009	0.0175
262	0.0183	0.0009	0.0174
263	0.0182	0.0009	0.0173
264	0.0181	0.0009	0.0172
265	0.0180	0.0009	0.0171
266	0.0179	0.0009	0.0170
267	0.0178	0.0009	0.0169

268	0.0177	0.0009	0.0168
269	0.0176	0.0009	0.0167
270	0.0175	0.0009	0.0166
271	0.0174	0.0009	0.0165
272	0.0173	0.0009	0.0164
273	0.0172	0.0008	0.0163
274	0.0171	0.0008	0.0163
275	0.0170	0.0008	0.0162
276	0.0169	0.0008	0.0161
277	0.0168	0.0008	0.0160
278	0.0167	0.0008	0.0159
279	0.0167	0.0008	0.0158
280	0.0166	0.0008	0.0158
281	0.0165	0.0008	0.0157
282	0.0164	0.0008	0.0156
283	0.0163	0.0008	0.0155
284	0.0163	0.0008	0.0155
285	0.0162	0.0008	0.0154
286	0.0161	0.0008	0.0153
287	0.0160	0.0008	0.0152
288	0.0160	0.0008	0.0152

Total soil rain loss = 0.36(In)
Total effective rainfall = 7.74(In)
Peak flow rate in flood hydrograph = 21.62(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	0.0004	0.06	Q				
0+10	0.0023	0.27	Q				
0+15	0.0066	0.64	Q				
0+20	0.0135	0.99	VQ				
0+25	0.0217	1.19	VQ				
0+30	0.0307	1.31	VQ				
0+35	0.0403	1.39	VQ				
0+40	0.0503	1.45	VQ				
0+45	0.0606	1.51	V Q				
0+50	0.0713	1.55	V Q				
0+55	0.0823	1.59	V Q				
1+ 0	0.0934	1.62	V Q				
1+ 5	0.1047	1.65	V Q				
1+10	0.1162	1.67	V Q				
1+15	0.1278	1.69	V Q				
1+20	0.1396	1.71	V Q				
1+25	0.1515	1.73	V Q				
1+30	0.1635	1.74	VQ				
1+35	0.1756	1.76	VQ				
1+40	0.1878	1.77	VQ				
1+45	0.2000	1.78	VQ				
1+50	0.2123	1.79	VQ				
1+55	0.2247	1.80	VQ				
2+ 0	0.2372	1.81	VQ				
2+ 5	0.2497	1.82	VQ				
2+10	0.2622	1.82	VQ				
2+15	0.2748	1.83	VQ				

2+20	0.2874	1.83	VQ				
2+25	0.3000	1.84	VQ				
2+30	0.3127	1.84	Q				
2+35	0.3254	1.84	Q				
2+40	0.3382	1.85	Q				
2+45	0.3509	1.85	Q				
2+50	0.3637	1.86	Q				
2+55	0.3766	1.86	Q				
3+ 0	0.3894	1.87	Q				
3+ 5	0.4024	1.87	Q				
3+10	0.4153	1.88	Q				
3+15	0.4283	1.88	Q				
3+20	0.4413	1.89	Q				
3+25	0.4543	1.90	Q				
3+30	0.4674	1.90	QV				
3+35	0.4806	1.91	QV				
3+40	0.4937	1.91	QV				
3+45	0.5069	1.92	QV				
3+50	0.5202	1.92	QV				
3+55	0.5334	1.93	QV				
4+ 0	0.5467	1.93	QV				
4+ 5	0.5601	1.94	QV				
4+10	0.5735	1.94	QV				
4+15	0.5869	1.95	QV				
4+20	0.6004	1.96	QV				
4+25	0.6139	1.96	Q V				
4+30	0.6275	1.97	Q V				
4+35	0.6411	1.97	Q V				
4+40	0.6547	1.98	Q V				
4+45	0.6684	1.99	Q V				
4+50	0.6821	1.99	Q V				
4+55	0.6959	2.00	Q V				
5+ 0	0.7097	2.00	Q V				
5+ 5	0.7235	2.01	Q V				
5+10	0.7374	2.02	Q V				
5+15	0.7514	2.02	Q V				
5+20	0.7653	2.03	Q V				
5+25	0.7794	2.04	Q V				
5+30	0.7935	2.04	Q V				
5+35	0.8076	2.05	Q V				
5+40	0.8218	2.06	Q V				
5+45	0.8360	2.06	Q V				
5+50	0.8502	2.07	Q V				
5+55	0.8646	2.08	Q V				
6+ 0	0.8789	2.09	Q V				
6+ 5	0.8934	2.09	Q V				
6+10	0.9078	2.10	Q V				
6+15	0.9223	2.11	Q V				
6+20	0.9369	2.12	Q V				
6+25	0.9515	2.12	Q V				
6+30	0.9662	2.13	Q V				
6+35	0.9810	2.14	Q V				
6+40	0.9957	2.15	Q V				
6+45	1.0106	2.16	Q V				
6+50	1.0255	2.16	Q V				
6+55	1.0404	2.17	Q V				
7+ 0	1.0555	2.18	Q V				
7+ 5	1.0705	2.19	Q V				
7+10	1.0857	2.20	Q V				
7+15	1.1008	2.21	Q V				
7+20	1.1161	2.21	Q V				
7+25	1.1314	2.22	Q V				
7+30	1.1468	2.23	Q V				

7+35	1.1622	2.24	Q	V				
7+40	1.1777	2.25	Q	V				
7+45	1.1933	2.26	Q	V				
7+50	1.2089	2.27	Q	V				
7+55	1.2246	2.28	Q	V				
8+ 0	1.2403	2.29	Q	V				
8+ 5	1.2562	2.30	Q	V				
8+10	1.2721	2.31	Q	V				
8+15	1.2880	2.32	Q	V				
8+20	1.3041	2.33	Q	V				
8+25	1.3202	2.34	Q	V				
8+30	1.3364	2.35	Q	V				
8+35	1.3526	2.36	Q	V				
8+40	1.3690	2.37	Q	V				
8+45	1.3854	2.38	Q	V				
8+50	1.4019	2.39	Q	V				
8+55	1.4185	2.41	Q	V				
9+ 0	1.4351	2.42	Q	V				
9+ 5	1.4518	2.43	Q	V				
9+10	1.4687	2.44	Q	V				
9+15	1.4856	2.45	Q	V				
9+20	1.5025	2.47	Q	V				
9+25	1.5196	2.48	Q	V				
9+30	1.5368	2.49	Q	V				
9+35	1.5540	2.51	Q	V				
9+40	1.5714	2.52	Q	V				
9+45	1.5888	2.53	Q	V				
9+50	1.6064	2.55	Q	V				
9+55	1.6240	2.56	Q	V				
10+ 0	1.6417	2.57	Q	V				
10+ 5	1.6596	2.59	Q	V				
10+10	1.6775	2.60	Q	V				
10+15	1.6955	2.62	Q	V				
10+20	1.7137	2.63	Q	V				
10+25	1.7319	2.65	Q	V				
10+30	1.7503	2.67	Q	V				
10+35	1.7688	2.68	Q	V				
10+40	1.7874	2.70	Q	V				
10+45	1.8061	2.72	Q	V				
10+50	1.8249	2.73	Q	V				
10+55	1.8439	2.75	Q	V				
11+ 0	1.8630	2.77	Q	V				
11+ 5	1.8822	2.79	Q	V				
11+10	1.9015	2.81	Q	V				
11+15	1.9210	2.83	Q	V				
11+20	1.9406	2.85	Q	V				
11+25	1.9604	2.87	Q	V				
11+30	1.9803	2.89	Q	V				
11+35	2.0004	2.91	Q	V				
11+40	2.0206	2.93	Q	V				
11+45	2.0409	2.96	Q	V				
11+50	2.0614	2.98	Q	V				
11+55	2.0821	3.00	Q	V				
12+ 0	2.1030	3.03	Q	V				
12+ 5	2.1240	3.05	Q	V				
12+10	2.1451	3.06	Q	V				
12+15	2.1661	3.06	Q	V				
12+20	2.1872	3.06	Q	V				
12+25	2.2084	3.07	Q	V				
12+30	2.2297	3.10	Q	V				
12+35	2.2512	3.12	Q	V				
12+40	2.2729	3.15	Q	V				
12+45	2.2947	3.18	Q	V				

12+50	2.3168	3.21	Q	V		
12+55	2.3391	3.24	Q	V		
13+ 0	2.3616	3.27	Q	V		
13+ 5	2.3844	3.31	Q	V		
13+10	2.4075	3.34	Q	V		
13+15	2.4308	3.38	Q	V		
13+20	2.4543	3.42	Q	V		
13+25	2.4782	3.47	Q	V		
13+30	2.5024	3.51	Q	V		
13+35	2.5269	3.56	Q	V		
13+40	2.5517	3.61	Q	V		
13+45	2.5769	3.66	Q	V		
13+50	2.6024	3.71	Q	V		
13+55	2.6284	3.77	Q	V		
14+ 0	2.6547	3.82	Q	V		
14+ 5	2.6815	3.89	Q	V		
14+10	2.7087	3.95	Q	V		
14+15	2.7364	4.02	Q	V		
14+20	2.7647	4.10	Q	V		
14+25	2.7934	4.18	Q	V		
14+30	2.8228	4.26	Q	V		
14+35	2.8527	4.35	Q	V		
14+40	2.8833	4.45	Q	V		
14+45	2.9147	4.55	Q	V		
14+50	2.9467	4.66	Q	V		
14+55	2.9797	4.78	Q	V		
15+ 0	3.0135	4.91	Q	V		
15+ 5	3.0483	5.06	Q	V		
15+10	3.0843	5.22	Q	V		
15+15	3.1215	5.40	Q	V		
15+20	3.1601	5.61	Q	V		
15+25	3.1999	5.78	Q	V		
15+30	3.2399	5.81	Q	V		
15+35	3.2793	5.72	Q	V		
15+40	3.3187	5.71	Q	V		
15+45	3.3597	5.95	Q	V		
15+50	3.4040	6.43	Q	V		
15+55	3.4536	7.20	Q	V		
16+ 0	3.5123	8.52	Q	V		
16+ 5	3.5936	11.81	Q	Q	V	
16+10	3.7138	17.46			QV	
16+15	3.8627	21.62			V	Q
16+20	4.0015	20.16			Q	V
16+25	4.1032	14.76		Q	V	V
16+30	4.1817	11.40		Q	V	V
16+35	4.2495	9.85		Q	V	V
16+40	4.3112	8.96		Q	V	V
16+45	4.3679	8.23		Q	V	V
16+50	4.4197	7.53		Q	V	V
16+55	4.4679	7.00		Q	V	V
17+ 0	4.5126	6.49		Q	V	V
17+ 5	4.5545	6.08		Q	V	V
17+10	4.5938	5.70		Q	V	V
17+15	4.6313	5.45		Q	V	V
17+20	4.6671	5.20		Q	V	V
17+25	4.7010	4.91		Q	V	V
17+30	4.7333	4.69		Q	V	V
17+35	4.7642	4.49		Q	V	V
17+40	4.7938	4.30		Q	V	V
17+45	4.8222	4.12		Q	V	V
17+50	4.8496	3.97		Q	V	V
17+55	4.8761	3.85		Q	V	V
18+ 0	4.9018	3.72	Q			V

18+ 5	4.9261	3.53	Q	V
18+10	4.9493	3.37	Q	V
18+15	4.9721	3.31	Q	V
18+20	4.9946	3.26	Q	V
18+25	5.0167	3.21	Q	V
18+30	5.0385	3.15	Q	V
18+35	5.0598	3.10	Q	V
18+40	5.0808	3.05	Q	V
18+45	5.1014	3.00	Q	V
18+50	5.1217	2.95	Q	V
18+55	5.1418	2.91	Q	V
19+ 0	5.1615	2.86	Q	V
19+ 5	5.1809	2.82	Q	V
19+10	5.2001	2.79	Q	V
19+15	5.2191	2.75	Q	V
19+20	5.2378	2.71	Q	V
19+25	5.2562	2.68	Q	V
19+30	5.2744	2.65	Q	V
19+35	5.2925	2.62	Q	V
19+40	5.3103	2.59	Q	V
19+45	5.3279	2.56	Q	V
19+50	5.3453	2.53	Q	V
19+55	5.3626	2.50	Q	V
20+ 0	5.3796	2.48	Q	V
20+ 5	5.3965	2.45	Q	V
20+10	5.4132	2.43	Q	V
20+15	5.4298	2.40	Q	V
20+20	5.4462	2.38	Q	V
20+25	5.4624	2.36	Q	V
20+30	5.4785	2.34	Q	V
20+35	5.4945	2.32	Q	V
20+40	5.5103	2.30	Q	V
20+45	5.5260	2.28	Q	V
20+50	5.5415	2.26	Q	V
20+55	5.5569	2.24	Q	V
21+ 0	5.5722	2.22	Q	V
21+ 5	5.5874	2.20	Q	V
21+10	5.6024	2.19	Q	V
21+15	5.6174	2.17	Q	V
21+20	5.6322	2.15	Q	V
21+25	5.6469	2.14	Q	V
21+30	5.6615	2.12	Q	V
21+35	5.6760	2.11	Q	V
21+40	5.6904	2.09	Q	V
21+45	5.7047	2.08	Q	V
21+50	5.7189	2.06	Q	V
21+55	5.7330	2.05	Q	V
22+ 0	5.7471	2.03	Q	V
22+ 5	5.7610	2.02	Q	V
22+10	5.7748	2.01	Q	V
22+15	5.7886	2.00	Q	V
22+20	5.8022	1.98	Q	V
22+25	5.8158	1.97	Q	V
22+30	5.8293	1.96	Q	V
22+35	5.8427	1.95	Q	V
22+40	5.8561	1.94	Q	V
22+45	5.8693	1.93	Q	V
22+50	5.8825	1.91	Q	V
22+55	5.8956	1.90	Q	V
23+ 0	5.9086	1.89	Q	V
23+ 5	5.9216	1.88	Q	V
23+10	5.9345	1.87	Q	V
23+15	5.9473	1.86	Q	V

23+20	5.9601	1.85	Q				V
23+25	5.9728	1.84	Q				V
23+30	5.9854	1.83	Q				V
23+35	5.9979	1.82	Q				V
23+40	6.0104	1.81	Q				V
23+45	6.0229	1.81	Q				V
23+50	6.0352	1.80	Q				V
23+55	6.0475	1.79	Q				V
24+ 0	6.0598	1.78	Q				V
24+ 5	6.0716	1.71	Q				V
24+10	6.0819	1.49	Q				V
24+15	6.0896	1.12	Q				V
24+20	6.0948	0.76	Q				V
24+25	6.0987	0.56	Q				V
24+30	6.1018	0.44	Q				V
24+35	6.1043	0.36	Q				V
24+40	6.1063	0.30	Q				V
24+45	6.1081	0.25	Q				V
24+50	6.1095	0.21	Q				V
24+55	6.1107	0.17	Q				V
25+ 0	6.1117	0.15	Q				V
25+ 5	6.1125	0.12	Q				V
25+10	6.1133	0.10	Q				V
25+15	6.1139	0.09	Q				V
25+20	6.1143	0.07	Q				V
25+25	6.1147	0.06	Q				V
25+30	6.1150	0.05	Q				V
25+35	6.1153	0.04	Q				V
25+40	6.1155	0.03	Q				V
25+45	6.1156	0.02	Q				V
25+50	6.1157	0.01	Q				V
25+55	6.1157	0.01	Q				V
26+ 0	6.1158	0.00	Q				V

Unit Hydrograph Analysis

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Study date 01/15/20

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

Program License Serial Number 6145

HILLWOOD - ALMOND AT WHITTRAM IND
100 YEAR STORM EVENT PROPOSED UH
1694Q100UHP
DS

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
9.50	1	1.40

Rainfall data for year 100
9.50 6 3.70

Rainfall data for year 100
9.50 24 8.10

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
67.0	84.6	9.50	1.000	0.290	0.100	0.029

Area-averaged adjusted loss rate Fm (In/Hr) = 0.029

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

Area	Area	SCS CN	SCS CN	S	Pervious
------	------	--------	--------	---	----------

(Ac.)	Fract	(AMC2)	(AMC3)		Yield Fr
0.95	0.100	67.0	84.6	1.82	0.773
8.55	0.900	98.0	98.0	0.20	0.970

Area-averaged catchment yield fraction, Y = 0.951
Area-averaged low loss fraction, Yb = 0.049
User entry of time of concentration = 0.312 (hours)
++++
Watershed area = 9.50(Ac.)
Catchment Lag time = 0.250 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 33.3868
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.029(In/Hr)
Average low loss rate fraction (Yb) = 0.049 (decimal)
VALLEY UNDEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.518(In)
Computed peak 30-minute rainfall = 1.061(In)
Specified peak 1-hour rainfall = 1.400(In)
Computed peak 3-hour rainfall = 2.541(In)
Specified peak 6-hour rainfall = 3.700(In)
Specified peak 24-hour rainfall = 8.100(In)

Rainfall depth area reduction factors:
Using a total area of 9.50(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000	Adjusted rainfall = 0.518(In)
30-minute factor = 1.000	Adjusted rainfall = 1.061(In)
1-hour factor = 1.000	Adjusted rainfall = 1.399(In)
3-hour factor = 1.000	Adjusted rainfall = 2.540(In)
6-hour factor = 1.000	Adjusted rainfall = 3.700(In)
24-hour factor = 1.000	Adjusted rainfall = 8.100(In)

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

++++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K = 114.89 (CFS))		
1	3.357	3.857
2	16.274	14.840
3	38.116	25.095
4	58.177	23.048
5	69.260	12.733
6	75.555	7.233
7	80.019	5.128
8	83.488	3.985
9	86.318	3.252
10	88.530	2.542
11	90.462	2.220
12	91.994	1.759
13	93.255	1.449
14	94.314	1.217
15	95.323	1.159
16	96.185	0.990
17	96.901	0.823
18	97.517	0.708
19	98.047	0.609
20	98.496	0.515
21	98.844	0.400

22	99.178	0.384
23	99.512	0.384
24	100.000	0.192

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5179	0.5179
2	0.6834	0.1655
3	0.8037	0.1203
4	0.9017	0.0980
5	0.9859	0.0842
6	1.0605	0.0746
7	1.1280	0.0675
8	1.1899	0.0619
9	1.2473	0.0574
10	1.3010	0.0537
11	1.3515	0.0506
12	1.3994	0.0479
13	1.4615	0.0621
14	1.5215	0.0600
15	1.5796	0.0581
16	1.6359	0.0563
17	1.6906	0.0547
18	1.7439	0.0533
19	1.7958	0.0519
20	1.8465	0.0507
21	1.8960	0.0496
22	1.9445	0.0485
23	1.9920	0.0475
24	2.0386	0.0466
25	2.0842	0.0457
26	2.1291	0.0448
27	2.1731	0.0441
28	2.2164	0.0433
29	2.2591	0.0426
30	2.3010	0.0420
31	2.3423	0.0413
32	2.3831	0.0407
33	2.4232	0.0401
34	2.4628	0.0396
35	2.5018	0.0391
36	2.5404	0.0385
37	2.5784	0.0380
38	2.6160	0.0376
39	2.6531	0.0371
40	2.6898	0.0367
41	2.7261	0.0363
42	2.7619	0.0359
43	2.7974	0.0355
44	2.8325	0.0351
45	2.8672	0.0347
46	2.9016	0.0344
47	2.9357	0.0340
48	2.9694	0.0337
49	3.0028	0.0334
50	3.0359	0.0331
51	3.0687	0.0328
52	3.1012	0.0325
53	3.1334	0.0322
54	3.1653	0.0319
55	3.1970	0.0317
56	3.2284	0.0314
57	3.2595	0.0311

58	3.2904	0.0309
59	3.3211	0.0307
60	3.3515	0.0304
61	3.3817	0.0302
62	3.4116	0.0300
63	3.4414	0.0297
64	3.4709	0.0295
65	3.5002	0.0293
66	3.5293	0.0291
67	3.5582	0.0289
68	3.5869	0.0287
69	3.6155	0.0285
70	3.6438	0.0283
71	3.6719	0.0281
72	3.6999	0.0280
73	3.7288	0.0290
74	3.7576	0.0288
75	3.7863	0.0286
76	3.8147	0.0285
77	3.8430	0.0283
78	3.8711	0.0281
79	3.8991	0.0280
80	3.9269	0.0278
81	3.9546	0.0277
82	3.9821	0.0275
83	4.0095	0.0274
84	4.0367	0.0272
85	4.0638	0.0271
86	4.0908	0.0270
87	4.1176	0.0268
88	4.1443	0.0267
89	4.1708	0.0266
90	4.1972	0.0264
91	4.2235	0.0263
92	4.2497	0.0262
93	4.2758	0.0260
94	4.3017	0.0259
95	4.3275	0.0258
96	4.3532	0.0257
97	4.3787	0.0256
98	4.4042	0.0255
99	4.4295	0.0253
100	4.4548	0.0252
101	4.4799	0.0251
102	4.5049	0.0250
103	4.5298	0.0249
104	4.5546	0.0248
105	4.5793	0.0247
106	4.6039	0.0246
107	4.6284	0.0245
108	4.6528	0.0244
109	4.6771	0.0243
110	4.7013	0.0242
111	4.7254	0.0241
112	4.7495	0.0240
113	4.7734	0.0239
114	4.7972	0.0238
115	4.8210	0.0237
116	4.8446	0.0236
117	4.8682	0.0236
118	4.8916	0.0235
119	4.9150	0.0234
120	4.9383	0.0233

121	4.9615	0.0232
122	4.9847	0.0231
123	5.0077	0.0231
124	5.0307	0.0230
125	5.0536	0.0229
126	5.0764	0.0228
127	5.0991	0.0227
128	5.1218	0.0227
129	5.1444	0.0226
130	5.1669	0.0225
131	5.1893	0.0224
132	5.2117	0.0224
133	5.2339	0.0223
134	5.2561	0.0222
135	5.2783	0.0221
136	5.3003	0.0221
137	5.3223	0.0220
138	5.3443	0.0219
139	5.3661	0.0219
140	5.3879	0.0218
141	5.4096	0.0217
142	5.4313	0.0217
143	5.4529	0.0216
144	5.4744	0.0215
145	5.4958	0.0215
146	5.5172	0.0214
147	5.5385	0.0213
148	5.5598	0.0213
149	5.5810	0.0212
150	5.6022	0.0211
151	5.6232	0.0211
152	5.6442	0.0210
153	5.6652	0.0210
154	5.6861	0.0209
155	5.7069	0.0208
156	5.7277	0.0208
157	5.7485	0.0207
158	5.7691	0.0207
159	5.7897	0.0206
160	5.8103	0.0206
161	5.8308	0.0205
162	5.8512	0.0204
163	5.8716	0.0204
164	5.8919	0.0203
165	5.9122	0.0203
166	5.9324	0.0202
167	5.9526	0.0202
168	5.9727	0.0201
169	5.9928	0.0201
170	6.0128	0.0200
171	6.0328	0.0200
172	6.0527	0.0199
173	6.0726	0.0199
174	6.0924	0.0198
175	6.1121	0.0198
176	6.1319	0.0197
177	6.1515	0.0197
178	6.1712	0.0196
179	6.1907	0.0196
180	6.2102	0.0195
181	6.2297	0.0195
182	6.2492	0.0194
183	6.2685	0.0194

184	6.2879	0.0193
185	6.3072	0.0193
186	6.3264	0.0192
187	6.3456	0.0192
188	6.3648	0.0192
189	6.3839	0.0191
190	6.4030	0.0191
191	6.4220	0.0190
192	6.4410	0.0190
193	6.4599	0.0189
194	6.4788	0.0189
195	6.4977	0.0189
196	6.5165	0.0188
197	6.5352	0.0188
198	6.5540	0.0187
199	6.5727	0.0187
200	6.5913	0.0186
201	6.6099	0.0186
202	6.6285	0.0186
203	6.6470	0.0185
204	6.6655	0.0185
205	6.6839	0.0184
206	6.7024	0.0184
207	6.7207	0.0184
208	6.7391	0.0183
209	6.7573	0.0183
210	6.7756	0.0183
211	6.7938	0.0182
212	6.8120	0.0182
213	6.8301	0.0181
214	6.8483	0.0181
215	6.8663	0.0181
216	6.8844	0.0180
217	6.9023	0.0180
218	6.9203	0.0180
219	6.9382	0.0179
220	6.9561	0.0179
221	6.9740	0.0179
222	6.9918	0.0178
223	7.0096	0.0178
224	7.0273	0.0177
225	7.0450	0.0177
226	7.0627	0.0177
227	7.0804	0.0176
228	7.0980	0.0176
229	7.1156	0.0176
230	7.1331	0.0175
231	7.1506	0.0175
232	7.1681	0.0175
233	7.1855	0.0174
234	7.2030	0.0174
235	7.2203	0.0174
236	7.2377	0.0174
237	7.2550	0.0173
238	7.2723	0.0173
239	7.2896	0.0173
240	7.3068	0.0172
241	7.3240	0.0172
242	7.3411	0.0172
243	7.3583	0.0171
244	7.3754	0.0171
245	7.3924	0.0171
246	7.4095	0.0170

247	7.4265	0.0170
248	7.4435	0.0170
249	7.4604	0.0169
250	7.4773	0.0169
251	7.4942	0.0169
252	7.5111	0.0169
253	7.5279	0.0168
254	7.5447	0.0168
255	7.5615	0.0168
256	7.5782	0.0167
257	7.5949	0.0167
258	7.6116	0.0167
259	7.6283	0.0167
260	7.6449	0.0166
261	7.6615	0.0166
262	7.6781	0.0166
263	7.6947	0.0166
264	7.7112	0.0165
265	7.7277	0.0165
266	7.7442	0.0165
267	7.7606	0.0164
268	7.7770	0.0164
269	7.7934	0.0164
270	7.8098	0.0164
271	7.8261	0.0163
272	7.8424	0.0163
273	7.8587	0.0163
274	7.8749	0.0163
275	7.8912	0.0162
276	7.9074	0.0162
277	7.9236	0.0162
278	7.9397	0.0162
279	7.9558	0.0161
280	7.9720	0.0161
281	7.9880	0.0161
282	8.0041	0.0161
283	8.0201	0.0160
284	8.0361	0.0160
285	8.0521	0.0160
286	8.0681	0.0160
287	8.0840	0.0159
288	8.0999	0.0159

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0159	0.0008	0.0151
2	0.0159	0.0008	0.0151
3	0.0160	0.0008	0.0152
4	0.0160	0.0008	0.0152
5	0.0161	0.0008	0.0153
6	0.0161	0.0008	0.0153
7	0.0161	0.0008	0.0153
8	0.0162	0.0008	0.0154
9	0.0162	0.0008	0.0154
10	0.0162	0.0008	0.0154
11	0.0163	0.0008	0.0155
12	0.0163	0.0008	0.0155
13	0.0164	0.0008	0.0156
14	0.0164	0.0008	0.0156
15	0.0164	0.0008	0.0156
16	0.0165	0.0008	0.0157

17	0.0165	0.0008	0.0157
18	0.0166	0.0008	0.0157
19	0.0166	0.0008	0.0158
20	0.0166	0.0008	0.0158
21	0.0167	0.0008	0.0159
22	0.0167	0.0008	0.0159
23	0.0168	0.0008	0.0159
24	0.0168	0.0008	0.0160
25	0.0169	0.0008	0.0160
26	0.0169	0.0008	0.0161
27	0.0169	0.0008	0.0161
28	0.0170	0.0008	0.0161
29	0.0170	0.0008	0.0162
30	0.0171	0.0008	0.0162
31	0.0171	0.0008	0.0163
32	0.0172	0.0008	0.0163
33	0.0172	0.0008	0.0164
34	0.0173	0.0009	0.0164
35	0.0173	0.0009	0.0165
36	0.0174	0.0009	0.0165
37	0.0174	0.0009	0.0166
38	0.0174	0.0009	0.0166
39	0.0175	0.0009	0.0166
40	0.0175	0.0009	0.0167
41	0.0176	0.0009	0.0167
42	0.0176	0.0009	0.0168
43	0.0177	0.0009	0.0168
44	0.0177	0.0009	0.0169
45	0.0178	0.0009	0.0169
46	0.0179	0.0009	0.0170
47	0.0179	0.0009	0.0170
48	0.0180	0.0009	0.0171
49	0.0180	0.0009	0.0171
50	0.0181	0.0009	0.0172
51	0.0181	0.0009	0.0172
52	0.0182	0.0009	0.0173
53	0.0183	0.0009	0.0174
54	0.0183	0.0009	0.0174
55	0.0184	0.0009	0.0175
56	0.0184	0.0009	0.0175
57	0.0185	0.0009	0.0176
58	0.0185	0.0009	0.0176
59	0.0186	0.0009	0.0177
60	0.0186	0.0009	0.0177
61	0.0187	0.0009	0.0178
62	0.0188	0.0009	0.0178
63	0.0189	0.0009	0.0179
64	0.0189	0.0009	0.0180
65	0.0190	0.0009	0.0180
66	0.0190	0.0009	0.0181
67	0.0191	0.0009	0.0182
68	0.0192	0.0009	0.0182
69	0.0192	0.0009	0.0183
70	0.0193	0.0010	0.0183
71	0.0194	0.0010	0.0184
72	0.0194	0.0010	0.0185
73	0.0195	0.0010	0.0186
74	0.0196	0.0010	0.0186
75	0.0197	0.0010	0.0187
76	0.0197	0.0010	0.0187
77	0.0198	0.0010	0.0188
78	0.0199	0.0010	0.0189
79	0.0200	0.0010	0.0190

80	0.0200	0.0010	0.0190
81	0.0201	0.0010	0.0191
82	0.0202	0.0010	0.0192
83	0.0203	0.0010	0.0193
84	0.0203	0.0010	0.0193
85	0.0204	0.0010	0.0194
86	0.0205	0.0010	0.0195
87	0.0206	0.0010	0.0196
88	0.0207	0.0010	0.0196
89	0.0208	0.0010	0.0198
90	0.0208	0.0010	0.0198
91	0.0210	0.0010	0.0199
92	0.0210	0.0010	0.0200
93	0.0211	0.0010	0.0201
94	0.0212	0.0010	0.0202
95	0.0213	0.0011	0.0203
96	0.0214	0.0011	0.0203
97	0.0215	0.0011	0.0205
98	0.0216	0.0011	0.0205
99	0.0217	0.0011	0.0206
100	0.0218	0.0011	0.0207
101	0.0219	0.0011	0.0208
102	0.0220	0.0011	0.0209
103	0.0221	0.0011	0.0210
104	0.0222	0.0011	0.0211
105	0.0224	0.0011	0.0212
106	0.0224	0.0011	0.0213
107	0.0226	0.0011	0.0215
108	0.0227	0.0011	0.0215
109	0.0228	0.0011	0.0217
110	0.0229	0.0011	0.0218
111	0.0231	0.0011	0.0219
112	0.0231	0.0011	0.0220
113	0.0233	0.0011	0.0222
114	0.0234	0.0012	0.0222
115	0.0236	0.0012	0.0224
116	0.0236	0.0012	0.0225
117	0.0238	0.0012	0.0227
118	0.0239	0.0012	0.0227
119	0.0241	0.0012	0.0229
120	0.0242	0.0012	0.0230
121	0.0244	0.0012	0.0232
122	0.0245	0.0012	0.0233
123	0.0247	0.0012	0.0235
124	0.0248	0.0012	0.0236
125	0.0250	0.0012	0.0238
126	0.0251	0.0012	0.0239
127	0.0253	0.0013	0.0241
128	0.0255	0.0013	0.0242
129	0.0257	0.0013	0.0244
130	0.0258	0.0013	0.0245
131	0.0260	0.0013	0.0248
132	0.0262	0.0013	0.0249
133	0.0264	0.0013	0.0251
134	0.0266	0.0013	0.0252
135	0.0268	0.0013	0.0255
136	0.0270	0.0013	0.0256
137	0.0272	0.0013	0.0259
138	0.0274	0.0014	0.0260
139	0.0277	0.0014	0.0263
140	0.0278	0.0014	0.0264
141	0.0281	0.0014	0.0267
142	0.0283	0.0014	0.0269

143	0.0286	0.0014	0.0272
144	0.0288	0.0014	0.0274
145	0.0280	0.0014	0.0266
146	0.0281	0.0014	0.0268
147	0.0285	0.0014	0.0271
148	0.0287	0.0014	0.0273
149	0.0291	0.0014	0.0277
150	0.0293	0.0014	0.0279
151	0.0297	0.0015	0.0283
152	0.0300	0.0015	0.0285
153	0.0304	0.0015	0.0289
154	0.0307	0.0015	0.0291
155	0.0311	0.0015	0.0296
156	0.0314	0.0015	0.0299
157	0.0319	0.0016	0.0304
158	0.0322	0.0016	0.0306
159	0.0328	0.0016	0.0312
160	0.0331	0.0016	0.0315
161	0.0337	0.0017	0.0321
162	0.0340	0.0017	0.0324
163	0.0347	0.0017	0.0330
164	0.0351	0.0017	0.0334
165	0.0359	0.0018	0.0341
166	0.0363	0.0018	0.0345
167	0.0371	0.0018	0.0353
168	0.0376	0.0019	0.0357
169	0.0385	0.0019	0.0366
170	0.0391	0.0019	0.0371
171	0.0401	0.0020	0.0382
172	0.0407	0.0020	0.0387
173	0.0420	0.0021	0.0399
174	0.0426	0.0021	0.0405
175	0.0441	0.0022	0.0419
176	0.0448	0.0022	0.0426
177	0.0466	0.0023	0.0443
178	0.0475	0.0023	0.0451
179	0.0496	0.0024	0.0471
180	0.0507	0.0024	0.0483
181	0.0533	0.0024	0.0509
182	0.0547	0.0024	0.0523
183	0.0581	0.0024	0.0556
184	0.0600	0.0024	0.0576
185	0.0479	0.0024	0.0455
186	0.0506	0.0024	0.0481
187	0.0574	0.0024	0.0550
188	0.0619	0.0024	0.0595
189	0.0746	0.0024	0.0722
190	0.0842	0.0024	0.0818
191	0.1203	0.0024	0.1179
192	0.1655	0.0024	0.1631
193	0.5179	0.0024	0.5155
194	0.0980	0.0024	0.0956
195	0.0675	0.0024	0.0650
196	0.0537	0.0024	0.0513
197	0.0621	0.0024	0.0597
198	0.0563	0.0024	0.0539
199	0.0519	0.0024	0.0495
200	0.0485	0.0024	0.0461
201	0.0457	0.0023	0.0434
202	0.0433	0.0021	0.0412
203	0.0413	0.0020	0.0393
204	0.0396	0.0020	0.0376
205	0.0380	0.0019	0.0362

206	0.0367	0.0018	0.0349
207	0.0355	0.0018	0.0337
208	0.0344	0.0017	0.0327
209	0.0334	0.0016	0.0318
210	0.0325	0.0016	0.0309
211	0.0317	0.0016	0.0301
212	0.0309	0.0015	0.0294
213	0.0302	0.0015	0.0287
214	0.0295	0.0015	0.0281
215	0.0289	0.0014	0.0275
216	0.0283	0.0014	0.0269
217	0.0290	0.0014	0.0275
218	0.0285	0.0014	0.0270
219	0.0280	0.0014	0.0266
220	0.0275	0.0014	0.0262
221	0.0271	0.0013	0.0258
222	0.0267	0.0013	0.0254
223	0.0263	0.0013	0.0250
224	0.0259	0.0013	0.0246
225	0.0256	0.0013	0.0243
226	0.0252	0.0012	0.0240
227	0.0249	0.0012	0.0237
228	0.0246	0.0012	0.0234
229	0.0243	0.0012	0.0231
230	0.0240	0.0012	0.0228
231	0.0237	0.0012	0.0226
232	0.0235	0.0012	0.0223
233	0.0232	0.0011	0.0221
234	0.0230	0.0011	0.0218
235	0.0227	0.0011	0.0216
236	0.0225	0.0011	0.0214
237	0.0223	0.0011	0.0212
238	0.0221	0.0011	0.0210
239	0.0219	0.0011	0.0208
240	0.0217	0.0011	0.0206
241	0.0215	0.0011	0.0204
242	0.0213	0.0010	0.0202
243	0.0211	0.0010	0.0200
244	0.0209	0.0010	0.0199
245	0.0207	0.0010	0.0197
246	0.0206	0.0010	0.0195
247	0.0204	0.0010	0.0194
248	0.0202	0.0010	0.0192
249	0.0201	0.0010	0.0191
250	0.0199	0.0010	0.0189
251	0.0198	0.0010	0.0188
252	0.0196	0.0010	0.0187
253	0.0195	0.0010	0.0185
254	0.0193	0.0010	0.0184
255	0.0192	0.0009	0.0183
256	0.0191	0.0009	0.0181
257	0.0189	0.0009	0.0180
258	0.0188	0.0009	0.0179
259	0.0187	0.0009	0.0178
260	0.0186	0.0009	0.0177
261	0.0184	0.0009	0.0175
262	0.0183	0.0009	0.0174
263	0.0182	0.0009	0.0173
264	0.0181	0.0009	0.0172
265	0.0180	0.0009	0.0171
266	0.0179	0.0009	0.0170
267	0.0178	0.0009	0.0169
268	0.0177	0.0009	0.0168

269	0.0176	0.0009	0.0167
270	0.0175	0.0009	0.0166
271	0.0174	0.0009	0.0165
272	0.0173	0.0009	0.0164
273	0.0172	0.0008	0.0163
274	0.0171	0.0008	0.0163
275	0.0170	0.0008	0.0162
276	0.0169	0.0008	0.0161
277	0.0168	0.0008	0.0160
278	0.0167	0.0008	0.0159
279	0.0167	0.0008	0.0158
280	0.0166	0.0008	0.0158
281	0.0165	0.0008	0.0157
282	0.0164	0.0008	0.0156
283	0.0163	0.0008	0.0155
284	0.0163	0.0008	0.0155
285	0.0162	0.0008	0.0154
286	0.0161	0.0008	0.0153
287	0.0160	0.0008	0.0152
288	0.0160	0.0008	0.0152

Total soil rain loss = 0.36(In)
Total effective rainfall = 7.74(In)
Peak flow rate in flood hydrograph = 21.99(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	0.0023	0.28	Q				
0+15	0.0069	0.66	Q				
0+20	0.0139	1.01	VQ				
0+25	0.0222	1.21	VQ				
0+30	0.0313	1.32	VQ				
0+35	0.0409	1.40	VQ				
0+40	0.0510	1.46	VQ				
0+45	0.0615	1.52	V Q				
0+50	0.0722	1.56	V Q				
0+55	0.0832	1.60	V Q				
1+ 0	0.0944	1.63	V Q				
1+ 5	0.1058	1.65	V Q				
1+10	0.1173	1.67	V Q				
1+15	0.1290	1.70	V Q				
1+20	0.1408	1.71	V Q				
1+25	0.1527	1.73	VQ				
1+30	0.1647	1.75	VQ				
1+35	0.1768	1.76	VQ				
1+40	0.1890	1.77	VQ				
1+45	0.2013	1.78	VQ				
1+50	0.2137	1.79	VQ				
1+55	0.2261	1.80	VQ				
2+ 0	0.2385	1.81	VQ				
2+ 5	0.2510	1.81	VQ				
2+10	0.2636	1.82	VQ				
2+15	0.2761	1.82	VQ				
2+20	0.2887	1.83	VQ				

2+25	0.3013	1.83	VQ
2+30	0.3140	1.84	Q
2+35	0.3267	1.84	Q
2+40	0.3394	1.85	Q
2+45	0.3522	1.85	Q
2+50	0.3650	1.86	Q
2+55	0.3778	1.86	Q
3+ 0	0.3906	1.87	Q
3+ 5	0.4035	1.87	Q
3+10	0.4165	1.88	Q
3+15	0.4294	1.88	Q
3+20	0.4424	1.89	Q
3+25	0.4555	1.89	Q
3+30	0.4685	1.90	QV
3+35	0.4817	1.90	QV
3+40	0.4948	1.91	QV
3+45	0.5080	1.91	QV
3+50	0.5212	1.92	QV
3+55	0.5345	1.93	QV
4+ 0	0.5478	1.93	QV
4+ 5	0.5611	1.94	QV
4+10	0.5745	1.94	QV
4+15	0.5879	1.95	QV
4+20	0.6014	1.95	QV
4+25	0.6149	1.96	Q V
4+30	0.6284	1.97	Q V
4+35	0.6420	1.97	Q V
4+40	0.6556	1.98	Q V
4+45	0.6693	1.98	Q V
4+50	0.6830	1.99	Q V
4+55	0.6967	2.00	Q V
5+ 0	0.7105	2.00	Q V
5+ 5	0.7244	2.01	Q V
5+10	0.7383	2.02	Q V
5+15	0.7522	2.02	Q V
5+20	0.7662	2.03	Q V
5+25	0.7802	2.04	Q V
5+30	0.7942	2.04	Q V
5+35	0.8083	2.05	Q V
5+40	0.8225	2.06	Q V
5+45	0.8367	2.06	Q V
5+50	0.8510	2.07	Q V
5+55	0.8653	2.08	Q V
6+ 0	0.8796	2.08	Q V
6+ 5	0.8940	2.09	Q V
6+10	0.9085	2.10	Q V
6+15	0.9230	2.11	Q V
6+20	0.9376	2.11	Q V
6+25	0.9522	2.12	Q V
6+30	0.9668	2.13	Q V
6+35	0.9816	2.14	Q V
6+40	0.9963	2.15	Q V
6+45	1.0112	2.15	Q V
6+50	1.0260	2.16	Q V
6+55	1.0410	2.17	Q V
7+ 0	1.0560	2.18	Q V
7+ 5	1.0710	2.19	Q V
7+10	1.0862	2.19	Q V
7+15	1.1013	2.20	Q V
7+20	1.1166	2.21	Q V
7+25	1.1319	2.22	Q V
7+30	1.1472	2.23	Q V
7+35	1.1626	2.24	Q V

7+40	1.1781	2.25	Q	V				
7+45	1.1937	2.26	Q	V				
7+50	1.2093	2.27	Q	V				
7+55	1.2250	2.28	Q	V				
8+ 0	1.2407	2.29	Q	V				
8+ 5	1.2565	2.30	Q	V				
8+10	1.2724	2.31	Q	V				
8+15	1.2884	2.32	Q	V				
8+20	1.3044	2.33	Q	V				
8+25	1.3205	2.34	Q	V				
8+30	1.3367	2.35	Q	V				
8+35	1.3529	2.36	Q	V				
8+40	1.3692	2.37	Q	V				
8+45	1.3856	2.38	Q	V				
8+50	1.4021	2.39	Q	V				
8+55	1.4187	2.40	Q	V				
9+ 0	1.4353	2.42	Q	V				
9+ 5	1.4520	2.43	Q	V				
9+10	1.4688	2.44	Q	V				
9+15	1.4857	2.45	Q	V				
9+20	1.5027	2.46	Q	V				
9+25	1.5198	2.48	Q	V				
9+30	1.5369	2.49	Q	V				
9+35	1.5542	2.50	Q	V				
9+40	1.5715	2.52	Q	V				
9+45	1.5889	2.53	Q	V				
9+50	1.6064	2.54	Q	V				
9+55	1.6241	2.56	Q	V				
10+ 0	1.6418	2.57	Q	V				
10+ 5	1.6596	2.59	Q	V				
10+10	1.6775	2.60	Q	V				
10+15	1.6955	2.62	Q	V				
10+20	1.7137	2.63	Q	V				
10+25	1.7319	2.65	Q	V				
10+30	1.7503	2.67	Q	V				
10+35	1.7688	2.68	Q	V				
10+40	1.7873	2.70	Q	V				
10+45	1.8060	2.72	Q	V				
10+50	1.8249	2.73	Q	V				
10+55	1.8438	2.75	Q	V				
11+ 0	1.8629	2.77	Q	V				
11+ 5	1.8821	2.79	Q	V				
11+10	1.9014	2.81	Q	V				
11+15	1.9209	2.83	Q	V				
11+20	1.9405	2.85	Q	V				
11+25	1.9603	2.87	Q	V				
11+30	1.9801	2.89	Q	V				
11+35	2.0002	2.91	Q	V				
11+40	2.0204	2.93	Q	V				
11+45	2.0407	2.96	Q	V				
11+50	2.0613	2.98	Q	V				
11+55	2.0819	3.00	Q	V				
12+ 0	2.1028	3.03	Q	V				
12+ 5	2.1238	3.05	Q	V				
12+10	2.1448	3.06	Q	V				
12+15	2.1659	3.06	Q	V				
12+20	2.1869	3.06	Q	V				
12+25	2.2081	3.07	Q	V				
12+30	2.2294	3.09	Q	V				
12+35	2.2509	3.12	Q	V				
12+40	2.2725	3.15	Q	V				
12+45	2.2944	3.17	Q	V				
12+50	2.3165	3.20	Q	V				

12+55	2.3388	3.24	Q		V		
13+ 0	2.3613	3.27	Q		V		
13+ 5	2.3841	3.31	Q		V		
13+10	2.4071	3.34	Q		V		
13+15	2.4304	3.38	Q		V		
13+20	2.4540	3.42	Q		V		
13+25	2.4778	3.47	Q		V		
13+30	2.5020	3.51	Q		V		
13+35	2.5265	3.56	Q		V		
13+40	2.5513	3.61	Q		V		
13+45	2.5765	3.66	Q		V		
13+50	2.6021	3.71	Q		V		
13+55	2.6280	3.77	Q		V		
14+ 0	2.6544	3.83	Q		V		
14+ 5	2.6812	3.89	Q		V		
14+10	2.7084	3.96	Q		V		
14+15	2.7361	4.03	Q		V		
14+20	2.7644	4.10	Q		V		
14+25	2.7931	4.18	Q		V		
14+30	2.8225	4.26	Q		V		
14+35	2.8525	4.35	Q		V		
14+40	2.8831	4.45	Q		V		
14+45	2.9145	4.55	Q		V		
14+50	2.9466	4.66	Q		V		
14+55	2.9796	4.79	Q		V		
15+ 0	3.0135	4.92	Q		V		
15+ 5	3.0483	5.06	Q		V		
15+10	3.0843	5.23	Q		V		
15+15	3.1216	5.41	Q		V		
15+20	3.1603	5.62	Q		V		
15+25	3.2002	5.79	Q		V		
15+30	3.2403	5.82	Q		V		
15+35	3.2797	5.72	Q		V		
15+40	3.3190	5.71	Q		V		
15+45	3.3601	5.97	Q		V		
15+50	3.4046	6.46	Q		V		
15+55	3.4545	7.25	Q		V		
16+ 0	3.5137	8.60	Q	Q	V		
16+ 5	3.5962	11.98		Q	V		
16+10	3.7190	17.82			QV		
16+15	3.8704	21.99			V	Q	
16+20	4.0085	20.04			Q	V	
16+25	4.1085	14.53		Q	V	V	
16+30	4.1860	11.25		Q	V	V	
16+35	4.2534	9.79		Q	V	V	
16+40	4.3148	8.91		Q	V	V	
16+45	4.3711	8.17		Q	V	V	
16+50	4.4225	7.47		Q	V	V	
16+55	4.4704	6.95		Q	V	V	
17+ 0	4.5147	6.43		Q	V	V	
17+ 5	4.5561	6.02		Q	V	V	
17+10	4.5952	5.67		Q	V	V	
17+15	4.6325	5.42		Q	V	V	
17+20	4.6678	5.13		Q	V	V	
17+25	4.7014	4.87		Q	V	V	
17+30	4.7334	4.65		Q	V	V	
17+35	4.7640	4.45		Q	V	V	
17+40	4.7934	4.26		Q	V	V	
17+45	4.8214	4.07		Q	V	V	
17+50	4.8485	3.94		Q	V	V	
17+55	4.8747	3.80		Q	V	V	
18+ 0	4.8995	3.60	Q				V
18+ 5	4.9230	3.42	Q				V

18+10	4.9460	3.34	Q	V
18+15	4.9687	3.29	Q	V
18+20	4.9911	3.25	Q	V
18+25	5.0130	3.19	Q	V
18+30	5.0346	3.14	Q	V
18+35	5.0559	3.08	Q	V
18+40	5.0767	3.03	Q	V
18+45	5.0973	2.98	Q	V
18+50	5.1175	2.94	Q	V
18+55	5.1375	2.89	Q	V
19+ 0	5.1571	2.85	Q	V
19+ 5	5.1765	2.81	Q	V
19+10	5.1956	2.78	Q	V
19+15	5.2145	2.74	Q	V
19+20	5.2331	2.70	Q	V
19+25	5.2515	2.67	Q	V
19+30	5.2696	2.64	Q	V
19+35	5.2876	2.61	Q	V
19+40	5.3054	2.58	Q	V
19+45	5.3229	2.55	Q	V
19+50	5.3403	2.52	Q	V
19+55	5.3575	2.50	Q	V
20+ 0	5.3745	2.47	Q	V
20+ 5	5.3913	2.44	Q	V
20+10	5.4080	2.42	Q	V
20+15	5.4245	2.40	Q	V
20+20	5.4409	2.37	Q	V
20+25	5.4570	2.35	Q	V
20+30	5.4731	2.33	Q	V
20+35	5.4890	2.31	Q	V
20+40	5.5048	2.29	Q	V
20+45	5.5204	2.27	Q	V
20+50	5.5359	2.25	Q	V
20+55	5.5513	2.23	Q	V
21+ 0	5.5665	2.21	Q	V
21+ 5	5.5817	2.20	Q	V
21+10	5.5967	2.18	Q	V
21+15	5.6116	2.16	Q	V
21+20	5.6264	2.15	Q	V
21+25	5.6410	2.13	Q	V
21+30	5.6556	2.12	Q	V
21+35	5.6701	2.10	Q	V
21+40	5.6844	2.09	Q	V
21+45	5.6987	2.07	Q	V
21+50	5.7129	2.06	Q	V
21+55	5.7269	2.04	Q	V
22+ 0	5.7409	2.03	Q	V
22+ 5	5.7548	2.02	Q	V
22+10	5.7686	2.00	Q	V
22+15	5.7823	1.99	Q	V
22+20	5.7960	1.98	Q	V
22+25	5.8095	1.97	Q	V
22+30	5.8230	1.95	Q	V
22+35	5.8364	1.94	Q	V
22+40	5.8497	1.93	Q	V
22+45	5.8629	1.92	Q	V
22+50	5.8760	1.91	Q	V
22+55	5.8891	1.90	Q	V
23+ 0	5.9021	1.89	Q	V
23+ 5	5.9151	1.88	Q	V
23+10	5.9279	1.87	Q	V
23+15	5.9407	1.86	Q	V
23+20	5.9534	1.85	Q	V

23+25	5.9661	1.84	Q			V
23+30	5.9787	1.83	Q			V
23+35	5.9912	1.82	Q			V
23+40	6.0037	1.81	Q			V
23+45	6.0161	1.80	Q			V
23+50	6.0284	1.79	Q			V
23+55	6.0407	1.78	Q			V
24+ 0	6.0530	1.78	Q			V
24+ 5	6.0647	1.71	Q			V
24+10	6.0749	1.48	Q			V
24+15	6.0824	1.09	Q			V
24+20	6.0875	0.74	Q			V
24+25	6.0912	0.54	Q			V
24+30	6.0942	0.43	Q			V
24+35	6.0966	0.35	Q			V
24+40	6.0986	0.29	Q			V
24+45	6.1002	0.24	Q			V
24+50	6.1016	0.20	Q			V
24+55	6.1027	0.16	Q			V
25+ 0	6.1036	0.14	Q			V
25+ 5	6.1044	0.11	Q			V
25+10	6.1051	0.09	Q			V
25+15	6.1056	0.08	Q			V
25+20	6.1060	0.06	Q			V
25+25	6.1064	0.05	Q			V
25+30	6.1066	0.04	Q			V
25+35	6.1068	0.03	Q			V
25+40	6.1070	0.02	Q			V
25+45	6.1071	0.01	Q			V
25+50	6.1071	0.01	Q			V
25+55	6.1071	0.00	Q			V

Appendix D
100-year Basin Routing Analysis

DETENTION BASIN - HILLWOOD - ALMOND AT WHITTRAM IND

Elevation	Depth ft	Outflow cfs	Storage ac-ft		open basin storage				infiltration cfs	parkway drain * cfs	total outflow cfs
					Basin Area	media factor	Volume CF	Cumulative volume CF			
1169.5	0	0	0.000		9,465						
1170.0	0.5	0.88	0.043		9,465	0.4	1,893	1,893	0.043		
1170.5	1	0.88	0.087		9,465	0.4	1,893	3,786	0.087		
1171.0	1.5	0.88	0.130		9,465	0.4	1,893	5,679	0.130		
1171.5	2	0.88	0.174		9,465	0.4	1,893	7,572	0.174		
1172.0	2.5	0.88	0.294		11,540	1.0	5,251	12,823	0.294		
1172.5	3	0.88	0.443		14,279	1.0	6,455	19,278	0.443		
1173.0	3.5	0.88	0.615		15,698	1.0	7,494	26,772	0.615		
1173.5	4	0.88	0.811	SPILL ELEV	18,445	1.0	8,536	35,308	0.811		
1174.0	4.5	5.37	1.031		19,890	1.0	9,584	44,892	1.031		
1174.5	5	7.23	1.275		22,685	1.0	10,644	55,536	1.275		
1175.0	5.5	8.66	1.544		24,131	1.0	11,704	67,240	1.544		
1175.5	6	9.86	1.837		26,948	1.0	12,770	80,009	1.837		

*Using an orifice eqn for a 4' x 0.33' parkway drain

Orifice Control Equation = $CA(2gh)^{1/2}$ C = 0.6

Water is NOT released through the 4' parkway drain until 1173.5

Basin Routing Summary Table	
100 YEAR STORM	24 Hour
Max. Q Out (CFS)	8.2
Max. Ponding	5.35
WSE	1174.85

Peak discharge of 8.2 CFS which is smaller than existing Q100 21.3 CFS.
Also less than the existing Q25 of 17.1 cfs

4-FT PARKWAY DRAIN CAPACITY

>>>>CHANNEL INPUT INFORMATION<<<<

NORMAL DEPTH(FEET) = 0.33
CHANNEL Z1(HORIZONTAL/VERTICAL) = 0.00
Z2(HORIZONTAL/VERTICAL) = 0.00
BASEWIDTH(FEET) = 4.00
CONSTANT CHANNEL SLOPE(FEET/FEET) = 0.020200
MANNINGS FRICTION FACTOR = 0.0147

=====

NORMAL-DEPTH FLOW INFORMATION:

>>>> NORMAL DEPTH FLOW(CFS) = 8.21
FLOW TOP-WIDTH(FEET) = 4.00
FLOW AREA(SQUARE FEET) = 1.32
HYDRAULIC DEPTH(FEET) = 0.33
FLOW AVERAGE VELOCITY(FEET/SEC.) = 6.19
UNIFORM FROUDE NUMBER = 1.897
PRESSURE + MOMENTUM(POUNDS) = 111.46
AVERAGED VELOCITY HEAD(FEET) = 0.594
SPECIFIC ENERGY(FEET) = 0.924

=====

CRITICAL-DEPTH FLOW INFORMATION:

CRITICAL FLOW TOP-WIDTH(FEET) = 4.00
CRITICAL FLOW AREA(SQUARE FEET) = 2.03
CRITICAL FLOW HYDRAULIC DEPTH(FEET) = 0.51
CRITICAL FLOW AVERAGE VELOCITY(FEET/SEC.) = 4.03
CRITICAL DEPTH(FEET) = 0.51
CRITICAL FLOW PRESSURE + MOMENTUM(POUNDS) = 95.78
AVERAGED CRITICAL FLOW VELOCITY HEAD(FEET) = 0.252
CRITICAL FLOW SPECIFIC ENERGY(FEET) = 0.759

=====

FLOOD HYDROGRAPH ROUTING PROGRAM
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 Study date: 02/06/20

HILLWOOD - ALMOND AT WHITTRAM IND
 100 YEAR STORM EVENT BASIN ROUTING
 1694Q100BR
 DS

Program License Serial Number 6145

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

From study/file name: 1694Q100UHP.rte
 *****HYDROGRAPH DATA*****
 Number of intervals = 311
 Time interval = 5.0 (Min.)
 Maximum/Peak flow rate = 21.993 (CFS)
 Total volume = 6.107 (Ac. Ft)
 Status of hydrographs being held in storage
 Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
 Peak (CFS) 0.000 0.000 0.000 0.000 0.000
 Vol (Ac. Ft) 0.000 0.000 0.000 0.000 0.000

+++++
 Process from Point/Station 1.000 to Point/Station 2.000
 **** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 311
 Hydrograph time unit = 5.000 (Min.)
 Initial depth in storage basin = 0.00(Ft.)

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

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac. Ft)	Outflow (CFS)	(S-0*dt/2) (Ac. Ft)	(S+0*dt/2) (Ac. Ft)
0.000	0.000	0.000	0.000	0.000
0.500	0.046	0.880	0.043	0.049
1.000	0.087	0.880	0.084	0.090
1.500	0.130	0.880	0.127	0.133
2.000	0.174	0.880	0.171	0.177
2.500	0.294	0.880	0.291	0.297
3.000	0.443	0.880	0.440	0.446
3.500	0.615	0.880	0.612	0.618
4.000	0.811	0.880	0.808	0.814
4.500	1.031	5.370	1.013	1.049
5.000	1.275	7.230	1.250	1.300
5.500	1.544	8.660	1.514	1.574
6.000	1.837	9.860	1.803	1.871

Hydrograph Detention Basin Routing

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

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac. Ft)	0	5.5	11.00	16.49	21.99	Depth (Ft.)
0.083	0.06	0.00	0.000	0					0.00

0.167	0.28	0.02	0.001	0	0.01
0.250	0.66	0.08	0.004	0	0.05
0.333	1.01	0.17	0.009	0I	0.10
0.417	1.21	0.29	0.015	0I	0.16
0.500	1.32	0.41	0.021	0I	0.23
0.583	1.40	0.53	0.028	0 I	0.30
0.667	1.46	0.64	0.033	0 I	0.36
0.750	1.52	0.74	0.039	0I	0.42
0.833	1.56	0.84	0.044	0I	0.48
0.917	1.60	0.88	0.049	0I	0.54
1.000	1.63	0.88	0.054	0I	0.60
1.083	1.65	0.88	0.059	0I	0.66
1.167	1.67	0.88	0.065	0I	0.73
1.250	1.70	0.88	0.070	0I	0.79
1.333	1.71	0.88	0.076	0I	0.86
1.417	1.73	0.88	0.082	0I	0.93
1.500	1.75	0.88	0.088	0I	1.01
1.583	1.76	0.88	0.094	0I	1.08
1.667	1.77	0.88	0.100	0I	1.15
1.750	1.78	0.88	0.106	0I	1.22
1.833	1.79	0.88	0.112	0I	1.29
1.917	1.80	0.88	0.118	0I	1.37
2.000	1.81	0.88	0.125	0I	1.44
2.083	1.81	0.88	0.131	0I	1.51
2.167	1.82	0.88	0.138	0I	1.59
2.250	1.82	0.88	0.144	0I	1.66
2.333	1.83	0.88	0.151	0I	1.73
2.417	1.83	0.88	0.157	0I	1.81
2.500	1.84	0.88	0.164	0I	1.88
2.583	1.84	0.88	0.170	0I	1.96
2.667	1.85	0.88	0.177	0I	2.01
2.750	1.85	0.88	0.184	0I	2.04
2.833	1.86	0.88	0.190	0I	2.07
2.917	1.86	0.88	0.197	0I	2.10
3.000	1.87	0.88	0.204	0I	2.12
3.083	1.87	0.88	0.211	0I	2.15
3.167	1.88	0.88	0.218	0I	2.18
3.250	1.88	0.88	0.225	0I	2.21
3.333	1.89	0.88	0.231	0I	2.24
3.417	1.89	0.88	0.238	0I	2.27
3.500	1.90	0.88	0.245	0I	2.30
3.583	1.90	0.88	0.252	0I	2.33
3.667	1.91	0.88	0.259	0I	2.36
3.750	1.91	0.88	0.267	0I	2.39
3.833	1.92	0.88	0.274	0I	2.42
3.917	1.93	0.88	0.281	0I	2.45
4.000	1.93	0.88	0.288	0I	2.48
4.083	1.94	0.88	0.295	0I	2.50
4.167	1.94	0.88	0.303	0I	2.53
4.250	1.95	0.88	0.310	0I	2.55
4.333	1.95	0.88	0.317	0I	2.58
4.417	1.96	0.88	0.325	0I	2.60
4.500	1.97	0.88	0.332	0I	2.63
4.583	1.97	0.88	0.340	0I	2.65
4.667	1.98	0.88	0.347	0I	2.68
4.750	1.98	0.88	0.355	0I	2.70
4.833	1.99	0.88	0.363	0I	2.73
4.917	2.00	0.88	0.370	0I	2.76
5.000	2.00	0.88	0.378	0I	2.78
5.083	2.01	0.88	0.386	0I	2.81
5.167	2.02	0.88	0.393	0I	2.83
5.250	2.02	0.88	0.401	0I	2.86
5.333	2.03	0.88	0.409	0I	2.89
5.417	2.04	0.88	0.417	0I	2.91
5.500	2.04	0.88	0.425	0I	2.94
5.583	2.05	0.88	0.433	0I	2.97
5.667	2.06	0.88	0.441	0I	2.99
5.750	2.06	0.88	0.449	0 I	3.02
5.833	2.07	0.88	0.458	0 I	3.04
5.917	2.08	0.88	0.466	0 I	3.07
6.000	2.08	0.88	0.474	0 I	3.09
6.083	2.09	0.88	0.482	0 I	3.11
6.167	2.10	0.88	0.491	0 I	3.14
6.250	2.11	0.88	0.499	0 I	3.16
6.333	2.11	0.88	0.508	0 I	3.19
6.417	2.12	0.88	0.516	0 I	3.21
6.500	2.13	0.88	0.525	0 I	3.24
6.583	2.14	0.88	0.533	0 I	3.26

6.667	2.15	0.88	0.542	0	0	3.29
6.750	2.15	0.88	0.551	0	0	3.31
6.833	2.16	0.88	0.560	0	0	3.34
6.917	2.17	0.88	0.568	0	0	3.36
7.000	2.18	0.88	0.577	0	0	3.39
7.083	2.19	0.88	0.586	0	0	3.42
7.167	2.19	0.88	0.595	0	0	3.44
7.250	2.20	0.88	0.604	0	0	3.47
7.333	2.21	0.88	0.614	0	0	3.50
7.417	2.22	0.88	0.623	0	0	3.52
7.500	2.23	0.88	0.632	0	0	3.54
7.583	2.24	0.88	0.641	0	0	3.57
7.667	2.25	0.88	0.651	0	0	3.59
7.750	2.26	0.88	0.660	0	0	3.62
7.833	2.27	0.88	0.670	0	0	3.64
7.917	2.28	0.88	0.679	0	0	3.66
8.000	2.29	0.88	0.689	0	0	3.69
8.083	2.30	0.88	0.699	0	0	3.71
8.167	2.31	0.88	0.708	0	0	3.74
8.250	2.32	0.88	0.718	0	0	3.76
8.333	2.33	0.88	0.728	0	0	3.79
8.417	2.34	0.88	0.738	0	0	3.81
8.500	2.35	0.88	0.748	0	0	3.84
8.583	2.36	0.88	0.758	0	0	3.87
8.667	2.37	0.88	0.769	0	0	3.89
8.750	2.38	0.88	0.779	0	0	3.92
8.833	2.39	0.88	0.789	0	0	3.94
8.917	2.40	0.88	0.800	0	0	3.97
9.000	2.42	0.88	0.810	0	0	4.00
9.083	2.43	1.07	0.820	0	0	4.02
9.167	2.44	1.25	0.829	0	0	4.04
9.250	2.45	1.41	0.837	0	0	4.06
9.333	2.46	1.54	0.844	0	0	4.07
9.417	2.48	1.67	0.850	0	0	4.09
9.500	2.49	1.77	0.855	0	0	4.10
9.583	2.50	1.87	0.859	0	0	4.11
9.667	2.52	1.95	0.864	0	0	4.12
9.750	2.53	2.03	0.867	0	0	4.13
9.833	2.54	2.09	0.871	0	0	4.14
9.917	2.56	2.15	0.873	0	0	4.14
10.000	2.57	2.21	0.876	0	0	4.15
10.083	2.59	2.26	0.878	0	0	4.15
10.167	2.60	2.30	0.881	0	0	4.16
10.250	2.62	2.34	0.883	0	0	4.16
10.333	2.63	2.38	0.884	0	0	4.17
10.417	2.65	2.41	0.886	0	0	4.17
10.500	2.67	2.45	0.888	0	0	4.17
10.583	2.68	2.48	0.889	0	0	4.18
10.667	2.70	2.50	0.891	0	0	4.18
10.750	2.72	2.53	0.892	0	0	4.18
10.833	2.73	2.56	0.893	0	0	4.19
10.917	2.75	2.58	0.894	0	0	4.19
11.000	2.77	2.60	0.895	0	0	4.19
11.083	2.79	2.63	0.897	0	0	4.19
11.167	2.81	2.65	0.898	0	0	4.20
11.250	2.83	2.67	0.899	0	0	4.20
11.333	2.85	2.69	0.900	0	0	4.20
11.417	2.87	2.71	0.901	0	0	4.20
11.500	2.89	2.74	0.902	0	0	4.21
11.583	2.91	2.76	0.903	0	0	4.21
11.667	2.93	2.78	0.904	0	0	4.21
11.750	2.96	2.80	0.905	0	0	4.21
11.833	2.98	2.82	0.906	0	0	4.22
11.917	3.00	2.84	0.907	0	0	4.22
12.000	3.03	2.87	0.908	0	0	4.22
12.083	3.05	2.89	0.909	0	0	4.22
12.167	3.06	2.91	0.911	0	0	4.23
12.250	3.06	2.93	0.911	0	0	4.23
12.333	3.06	2.95	0.912	0	0	4.23
12.417	3.07	2.96	0.913	0	0	4.23
12.500	3.09	2.98	0.914	0	0	4.23
12.583	3.12	2.99	0.915	0	0	4.24
12.667	3.15	3.01	0.916	0	0	4.24
12.750	3.17	3.03	0.916	0	0	4.24
12.833	3.20	3.05	0.917	0	0	4.24
12.917	3.24	3.07	0.919	0	0	4.24
13.000	3.27	3.10	0.920	0	0	4.25
13.083	3.31	3.12	0.921	0	0	4.25

13. 167	3. 34	3. 15	0. 922	0					4. 25
13. 250	3. 38	3. 18	0. 924	0					4. 26
13. 333	3. 42	3. 21	0. 925	0					4. 26
13. 417	3. 47	3. 24	0. 927	0I					4. 26
13. 500	3. 51	3. 27	0. 928	0I					4. 27
13. 583	3. 56	3. 31	0. 930	0I					4. 27
13. 667	3. 61	3. 34	0. 932	0I					4. 27
13. 750	3. 66	3. 38	0. 933	0I					4. 28
13. 833	3. 71	3. 42	0. 935	0I					4. 28
13. 917	3. 77	3. 46	0. 937	0					4. 29
14. 000	3. 83	3. 51	0. 940	0					4. 29
14. 083	3. 89	3. 55	0. 942	0					4. 30
14. 167	3. 96	3. 60	0. 944	0					4. 30
14. 250	4. 03	3. 65	0. 947	0					4. 31
14. 333	4. 10	3. 71	0. 949	0					4. 31
14. 417	4. 18	3. 76	0. 952	0I					4. 32
14. 500	4. 26	3. 82	0. 955	0I					4. 33
14. 583	4. 35	3. 89	0. 958	0I					4. 33
14. 667	4. 45	3. 95	0. 962	0I					4. 34
14. 750	4. 55	4. 03	0. 965	0I					4. 35
14. 833	4. 66	4. 10	0. 969	0I					4. 36
14. 917	4. 79	4. 18	0. 973	0					4. 37
15. 000	4. 92	4. 27	0. 977	0I					4. 38
15. 083	5. 06	4. 37	0. 982	0I					4. 39
15. 167	5. 23	4. 47	0. 987	0I					4. 40
15. 250	5. 41	4. 58	0. 992	0I					4. 41
15. 333	5. 62	4. 70	0. 998	0	I				4. 43
15. 417	5. 79	4. 84	1. 005	0I					4. 44
15. 500	5. 82	4. 96	1. 011	0I					4. 45
15. 583	5. 72	5. 07	1. 016	0I					4. 47
15. 667	5. 71	5. 15	1. 020	0I					4. 48
15. 750	5. 97	5. 24	1. 025	0I					4. 49
15. 833	6. 46	5. 37	1. 031	0	I				4. 50
15. 917	7. 25	5. 45	1. 041	0	I				4. 52
16. 000	8. 60	5. 57	1. 058	0	I				4. 55
16. 083	11. 98	5. 81	1. 089	0	I				4. 62
16. 167	17. 82	6. 28	1. 150	0	I				4. 74
16. 250	21. 99	6. 98	1. 242	0	I				4. 93
16. 333	20. 04	7. 56	1. 336	0	I				5. 11
16. 417	14. 53	7. 91	1. 402	0	I				5. 24
16. 500	11. 25	8. 09	1. 436	0	I				5. 30
16. 583	9. 79	8. 17	1. 452	0	I				5. 33
16. 667	8. 91	8. 22	1. 460	0I					5. 34
16. 750	8. 17	8. 23	1. 463	0					5. 35
16. 833	7. 47	8. 21	1. 460	0I					5. 34
16. 917	6. 95	8. 18	1. 453	0I					5. 33
17. 000	6. 43	8. 12	1. 443	0					5. 31
17. 083	6. 02	8. 05	1. 430	0					5. 29
17. 167	5. 67	7. 98	1. 415	0					5. 26
17. 250	5. 42	7. 89	1. 399	0					5. 23
17. 333	5. 13	7. 79	1. 381	0					5. 20
17. 417	4. 87	7. 69	1. 362	0					5. 16
17. 500	4. 65	7. 59	1. 342	0					5. 13
17. 583	4. 45	7. 48	1. 322	0					5. 09
17. 667	4. 26	7. 37	1. 301	0					5. 05
17. 750	4. 07	7. 25	1. 279	0					5. 01
17. 833	3. 94	7. 09	1. 257	0					4. 96
17. 917	3. 80	6. 93	1. 236	0					4. 92
18. 000	3. 60	6. 76	1. 214	0					4. 87
18. 083	3. 42	6. 60	1. 192	0					4. 83
18. 167	3. 34	6. 43	1. 170	0					4. 79
18. 250	3. 29	6. 27	1. 150	0					4. 74
18. 333	3. 25	6. 12	1. 129	0					4. 70
18. 417	3. 19	5. 97	1. 110	0					4. 66
18. 500	3. 14	5. 83	1. 091	0					4. 62
18. 583	3. 08	5. 69	1. 073	0					4. 59
18. 667	3. 03	5. 55	1. 055	0					4. 55
18. 750	2. 98	5. 42	1. 038	0					4. 51
18. 833	2. 94	5. 18	1. 022	0					4. 48
18. 917	2. 89	4. 89	1. 007	0					4. 45
19. 000	2. 85	4. 62	0. 994	0					4. 42
19. 083	2. 81	4. 39	0. 983	0					4. 39
19. 167	2. 78	4. 18	0. 973	0					4. 37
19. 250	2. 74	3. 99	0. 963	0					4. 35
19. 333	2. 70	3. 82	0. 955	0					4. 33
19. 417	2. 67	3. 68	0. 948	0					4. 31
19. 500	2. 64	3. 54	0. 941	0					4. 30
19. 583	2. 61	3. 42	0. 935	0					4. 28

19. 667	2. 58	3. 31	0. 930	10		4. 27
19. 750	2. 55	3. 21	0. 925	10		4. 26
19. 833	2. 52	3. 12	0. 921	10		4. 25
19. 917	2. 50	3. 04	0. 917	10		4. 24
20. 000	2. 47	2. 97	0. 913	10		4. 23
20. 083	2. 44	2. 90	0. 910	10		4. 23
20. 167	2. 42	2. 84	0. 907	10		4. 22
20. 250	2. 40	2. 78	0. 904	10		4. 21
20. 333	2. 37	2. 73	0. 902	0		4. 21
20. 417	2. 35	2. 68	0. 899	0		4. 20
20. 500	2. 33	2. 64	0. 897	0		4. 20
20. 583	2. 31	2. 60	0. 895	0		4. 19
20. 667	2. 29	2. 56	0. 893	0		4. 19
20. 750	2. 27	2. 52	0. 891	0		4. 18
20. 833	2. 25	2. 49	0. 890	0		4. 18
20. 917	2. 23	2. 45	0. 888	0		4. 18
21. 000	2. 21	2. 42	0. 887	0		4. 17
21. 083	2. 20	2. 40	0. 885	0		4. 17
21. 167	2. 18	2. 37	0. 884	0		4. 17
21. 250	2. 16	2. 34	0. 883	0		4. 16
21. 333	2. 15	2. 32	0. 881	0		4. 16
21. 417	2. 13	2. 29	0. 880	0		4. 16
21. 500	2. 12	2. 27	0. 879	0		4. 16
21. 583	2. 10	2. 25	0. 878	0		4. 15
21. 667	2. 09	2. 23	0. 877	0		4. 15
21. 750	2. 07	2. 21	0. 876	0		4. 15
21. 833	2. 06	2. 19	0. 875	10		4. 15
21. 917	2. 04	2. 17	0. 874	10		4. 14
22. 000	2. 03	2. 15	0. 873	10		4. 14
22. 083	2. 02	2. 14	0. 873	10		4. 14
22. 167	2. 00	2. 12	0. 872	10		4. 14
22. 250	1. 99	2. 10	0. 871	10		4. 14
22. 333	1. 98	2. 09	0. 870	10		4. 13
22. 417	1. 97	2. 07	0. 869	10		4. 13
22. 500	1. 95	2. 06	0. 869	0		4. 13
22. 583	1. 94	2. 04	0. 868	0		4. 13
22. 667	1. 93	2. 03	0. 867	0		4. 13
22. 750	1. 92	2. 02	0. 867	0		4. 13
22. 833	1. 91	2. 00	0. 866	0		4. 13
22. 917	1. 90	1. 99	0. 865	0		4. 12
23. 000	1. 89	1. 98	0. 865	0		4. 12
23. 083	1. 88	1. 97	0. 864	0		4. 12
23. 167	1. 87	1. 95	0. 864	0		4. 12
23. 250	1. 86	1. 94	0. 863	0		4. 12
23. 333	1. 85	1. 93	0. 862	0		4. 12
23. 417	1. 84	1. 92	0. 862	0		4. 12
23. 500	1. 83	1. 91	0. 861	0		4. 11
23. 583	1. 82	1. 90	0. 861	0		4. 11
23. 667	1. 81	1. 89	0. 860	0		4. 11
23. 750	1. 80	1. 88	0. 860	0		4. 11
23. 833	1. 79	1. 86	0. 859	0		4. 11
23. 917	1. 78	1. 85	0. 859	0		4. 11
24. 000	1. 78	1. 84	0. 858	0		4. 11
24. 083	1. 71	1. 83	0. 858	0		4. 11
24. 167	1. 48	1. 80	0. 856	0		4. 10
24. 250	1. 09	1. 73	0. 853	10		4. 09
24. 333	0. 74	1. 62	0. 847	10		4. 08
24. 417	0. 54	1. 50	0. 841	0		4. 07
24. 500	0. 43	1. 36	0. 835	10		4. 05
24. 583	0. 35	1. 23	0. 828	10		4. 04
24. 667	0. 29	1. 11	0. 822	10		4. 03
24. 750	0. 24	1. 00	0. 817	10		4. 01
24. 833	0. 20	0. 90	0. 812	10		4. 00
24. 917	0. 16	0. 88	0. 807	10		3. 99
25. 000	0. 14	0. 88	0. 802	10		3. 98
25. 083	0. 11	0. 88	0. 797	10		3. 96
25. 167	0. 09	0. 88	0. 792	10		3. 95
25. 250	0. 08	0. 88	0. 786	10		3. 94
25. 333	0. 06	0. 88	0. 780	10		3. 92
25. 417	0. 05	0. 88	0. 775	10		3. 91
25. 500	0. 04	0. 88	0. 769	10		3. 89
25. 583	0. 03	0. 88	0. 763	10		3. 88
25. 667	0. 02	0. 88	0. 757	10		3. 86
25. 750	0. 01	0. 88	0. 751	10		3. 85
25. 833	0. 01	0. 88	0. 745	10		3. 83
25. 917	0. 00	0. 88	0. 739	10		3. 82
26. 000	0. 00	0. 88	0. 733	10		3. 80
26. 083	0. 00	0. 88	0. 727	10		3. 79

26.167	0.00	0.88	0.721	10	3.77
26.250	0.00	0.88	0.715	10	3.76
26.333	0.00	0.88	0.709	10	3.74
26.417	0.00	0.88	0.703	10	3.72
26.500	0.00	0.88	0.697	10	3.71
26.583	0.00	0.88	0.691	10	3.69
26.667	0.00	0.88	0.685	10	3.68
26.750	0.00	0.88	0.679	10	3.66
26.833	0.00	0.88	0.673	10	3.65
26.917	0.00	0.88	0.667	10	3.63
27.000	0.00	0.88	0.661	10	3.62
27.083	0.00	0.88	0.655	10	3.60
27.167	0.00	0.88	0.648	10	3.59
27.250	0.00	0.88	0.642	10	3.57
27.333	0.00	0.88	0.636	10	3.55
27.417	0.00	0.88	0.630	10	3.54
27.500	0.00	0.88	0.624	10	3.52
27.583	0.00	0.88	0.618	10	3.51
27.667	0.00	0.88	0.612	10	3.49
27.750	0.00	0.88	0.606	10	3.47
27.833	0.00	0.88	0.600	10	3.46
27.917	0.00	0.88	0.594	10	3.44
28.000	0.00	0.88	0.588	10	3.42
28.083	0.00	0.88	0.582	10	3.40
28.167	0.00	0.88	0.576	10	3.39
28.250	0.00	0.88	0.570	10	3.37
28.333	0.00	0.88	0.564	10	3.35
28.417	0.00	0.88	0.558	10	3.33
28.500	0.00	0.88	0.551	10	3.32
28.583	0.00	0.88	0.545	10	3.30
28.667	0.00	0.88	0.539	10	3.28
28.750	0.00	0.88	0.533	10	3.26
28.833	0.00	0.88	0.527	10	3.24
28.917	0.00	0.88	0.521	10	3.23
29.000	0.00	0.88	0.515	10	3.21
29.083	0.00	0.88	0.509	10	3.19
29.167	0.00	0.88	0.503	10	3.17
29.250	0.00	0.88	0.497	10	3.16
29.333	0.00	0.88	0.491	10	3.14
29.417	0.00	0.88	0.485	10	3.12
29.500	0.00	0.88	0.479	10	3.10
29.583	0.00	0.88	0.473	10	3.09
29.667	0.00	0.88	0.467	10	3.07
29.750	0.00	0.88	0.461	10	3.05
29.833	0.00	0.88	0.455	10	3.03
29.917	0.00	0.88	0.448	10	3.02
30.000	0.00	0.88	0.442	10	3.00
30.083	0.00	0.88	0.436	10	2.98
30.167	0.00	0.88	0.430	10	2.96
30.250	0.00	0.88	0.424	10	2.94
30.333	0.00	0.88	0.418	10	2.92
30.417	0.00	0.88	0.412	10	2.90
30.500	0.00	0.88	0.406	10	2.88
30.583	0.00	0.88	0.400	10	2.86
30.667	0.00	0.88	0.394	10	2.84
30.750	0.00	0.88	0.388	10	2.81
30.833	0.00	0.88	0.382	10	2.79
30.917	0.00	0.88	0.376	10	2.77
31.000	0.00	0.88	0.370	10	2.75
31.083	0.00	0.88	0.364	10	2.73
31.167	0.00	0.88	0.358	10	2.71
31.250	0.00	0.88	0.351	10	2.69
31.333	0.00	0.88	0.345	10	2.67
31.417	0.00	0.88	0.339	10	2.65
31.500	0.00	0.88	0.333	10	2.63
31.583	0.00	0.88	0.327	10	2.61
31.667	0.00	0.88	0.321	10	2.59
31.750	0.00	0.88	0.315	10	2.57
31.833	0.00	0.88	0.309	10	2.55
31.917	0.00	0.88	0.303	10	2.53
32.000	0.00	0.88	0.297	10	2.51
32.083	0.00	0.88	0.291	10	2.49
32.167	0.00	0.88	0.285	10	2.46
32.250	0.00	0.88	0.279	10	2.44
32.333	0.00	0.88	0.273	10	2.41
32.417	0.00	0.88	0.267	10	2.39
32.500	0.00	0.88	0.261	10	2.36
32.583	0.00	0.88	0.255	10	2.34

32.667	0.00	0.88	0.248	10	2.31
32.750	0.00	0.88	0.242	10	2.28
32.833	0.00	0.88	0.236	10	2.26
32.917	0.00	0.88	0.230	10	2.23
33.000	0.00	0.88	0.224	10	2.21
33.083	0.00	0.88	0.218	10	2.18
33.167	0.00	0.88	0.212	10	2.16
33.250	0.00	0.88	0.206	10	2.13
33.333	0.00	0.88	0.200	10	2.11
33.417	0.00	0.88	0.194	10	2.08
33.500	0.00	0.88	0.188	10	2.06
33.583	0.00	0.88	0.182	10	2.03
33.667	0.00	0.88	0.176	10	2.01
33.750	0.00	0.88	0.170	10	1.95
33.833	0.00	0.88	0.164	10	1.88
33.917	0.00	0.88	0.158	10	1.81
34.000	0.00	0.88	0.151	10	1.74
34.083	0.00	0.88	0.145	10	1.68
34.167	0.00	0.88	0.139	10	1.61
34.250	0.00	0.88	0.133	10	1.54
34.333	0.00	0.88	0.127	10	1.47
34.417	0.00	0.88	0.121	10	1.40
34.500	0.00	0.88	0.115	10	1.33
34.583	0.00	0.88	0.109	10	1.26
34.667	0.00	0.88	0.103	10	1.19
34.750	0.00	0.88	0.097	10	1.12
34.833	0.00	0.88	0.091	10	1.05
34.917	0.00	0.88	0.085	10	0.97
35.000	0.00	0.88	0.079	10	0.90
35.083	0.00	0.88	0.073	10	0.83
35.167	0.00	0.88	0.067	10	0.75
35.250	0.00	0.88	0.061	10	0.68
35.333	0.00	0.88	0.055	10	0.60
35.417	0.00	0.88	0.048	10	0.53
35.500	0.00	0.82	0.043	10	0.46
35.583	0.00	0.71	0.037	10	0.41
35.667	0.00	0.63	0.033	0	0.36
35.750	0.00	0.55	0.029	0	0.31
35.833	0.00	0.48	0.025	0	0.27
35.917	0.00	0.42	0.022	0	0.24
36.000	0.00	0.37	0.019	0	0.21
36.083	0.00	0.32	0.017	0	0.18
36.167	0.00	0.28	0.015	0	0.16
36.250	0.00	0.25	0.013	0	0.14
36.333	0.00	0.22	0.011	0	0.12
36.417	0.00	0.19	0.010	0	0.11
36.500	0.00	0.17	0.009	0	0.10
36.583	0.00	0.15	0.008	0	0.08
36.667	0.00	0.13	0.007	0	0.07
36.750	0.00	0.11	0.006	0	0.06
36.833	0.00	0.10	0.005	0	0.06
36.917	0.00	0.09	0.005	0	0.05
37.000	0.00	0.08	0.004	0	0.04
37.083	0.00	0.07	0.003	0	0.04
37.167	0.00	0.06	0.003	0	0.03
37.250	0.00	0.05	0.003	0	0.03
37.333	0.00	0.04	0.002	0	0.03
37.417	0.00	0.04	0.002	0	0.02
37.500	0.00	0.03	0.002	0	0.02
37.583	0.00	0.03	0.002	0	0.02
37.667	0.00	0.03	0.001	0	0.01
37.750	0.00	0.02	0.001	0	0.01
37.833	0.00	0.02	0.001	0	0.01
37.917	0.00	0.02	0.001	0	0.01
38.000	0.00	0.02	0.001	0	0.01
38.083	0.00	0.01	0.001	0	0.01
38.167	0.00	0.01	0.001	0	0.01
38.250	0.00	0.01	0.001	0	0.01
38.333	0.00	0.01	0.000	0	0.01
38.417	0.00	0.01	0.000	0	0.00
38.500	0.00	0.01	0.000	0	0.00
38.583	0.00	0.01	0.000	0	0.00
38.667	0.00	0.01	0.000	0	0.00
38.750	0.00	0.00	0.000	0	0.00
38.833	0.00	0.00	0.000	0	0.00
38.917	0.00	0.00	0.000	0	0.00
39.000	0.00	0.00	0.000	0	0.00
39.083	0.00	0.00	0.000	0	0.00

					1694Q100BR. out				
39.167	0.00	0.00	0.000	0					0.00
39.250	0.00	0.00	0.000	0					0.00
39.333	0.00	0.00	0.000	0					0.00
39.417	0.00	0.00	0.000	0					0.00

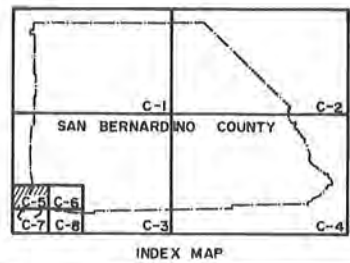
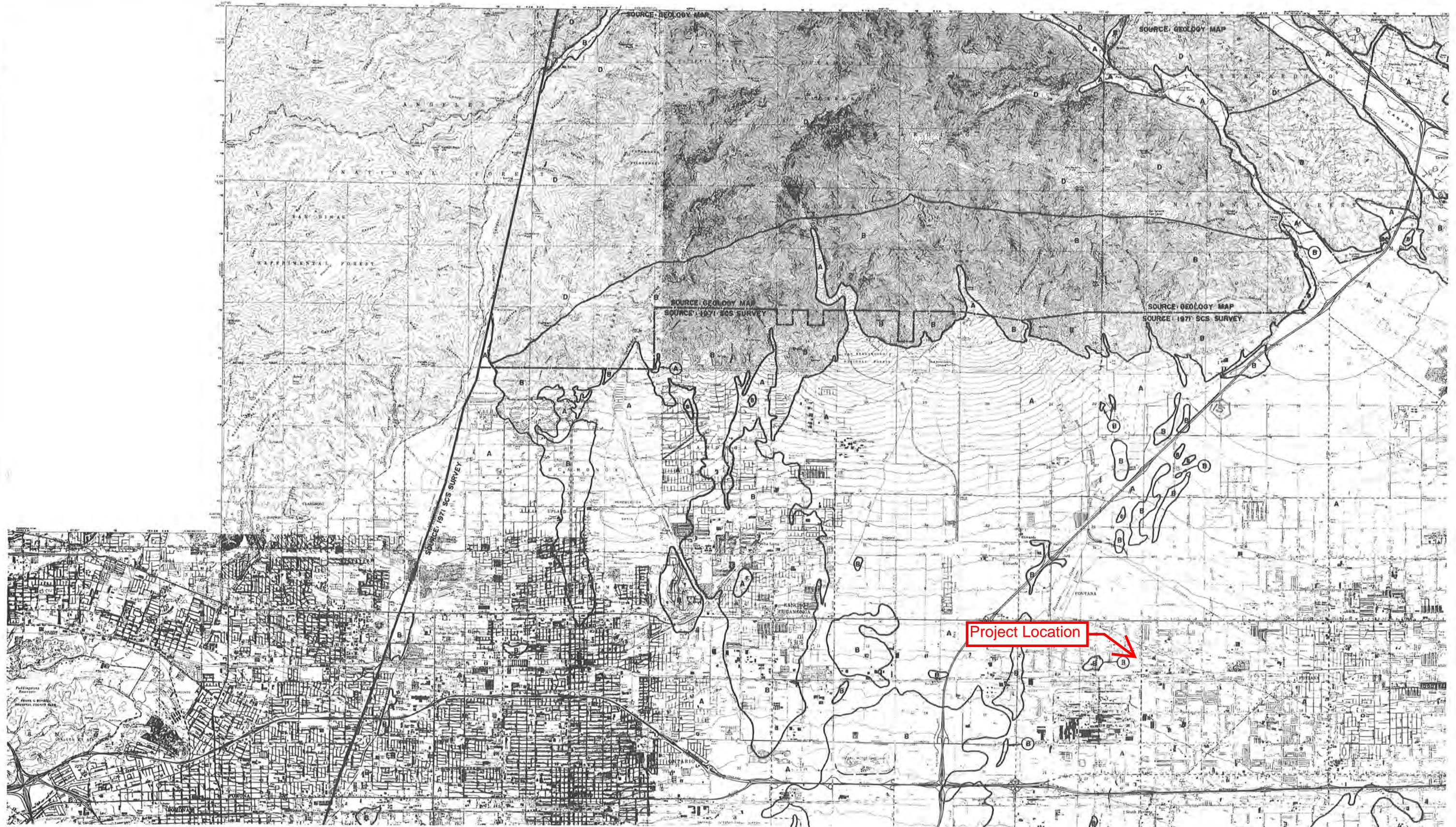
*****HYDROGRAPH DATA*****

Number of intervals = 473
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 8.227 (CFS)
Total volume = 6.107 (Ac. Ft)

Status of hydrographs being held in storage

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

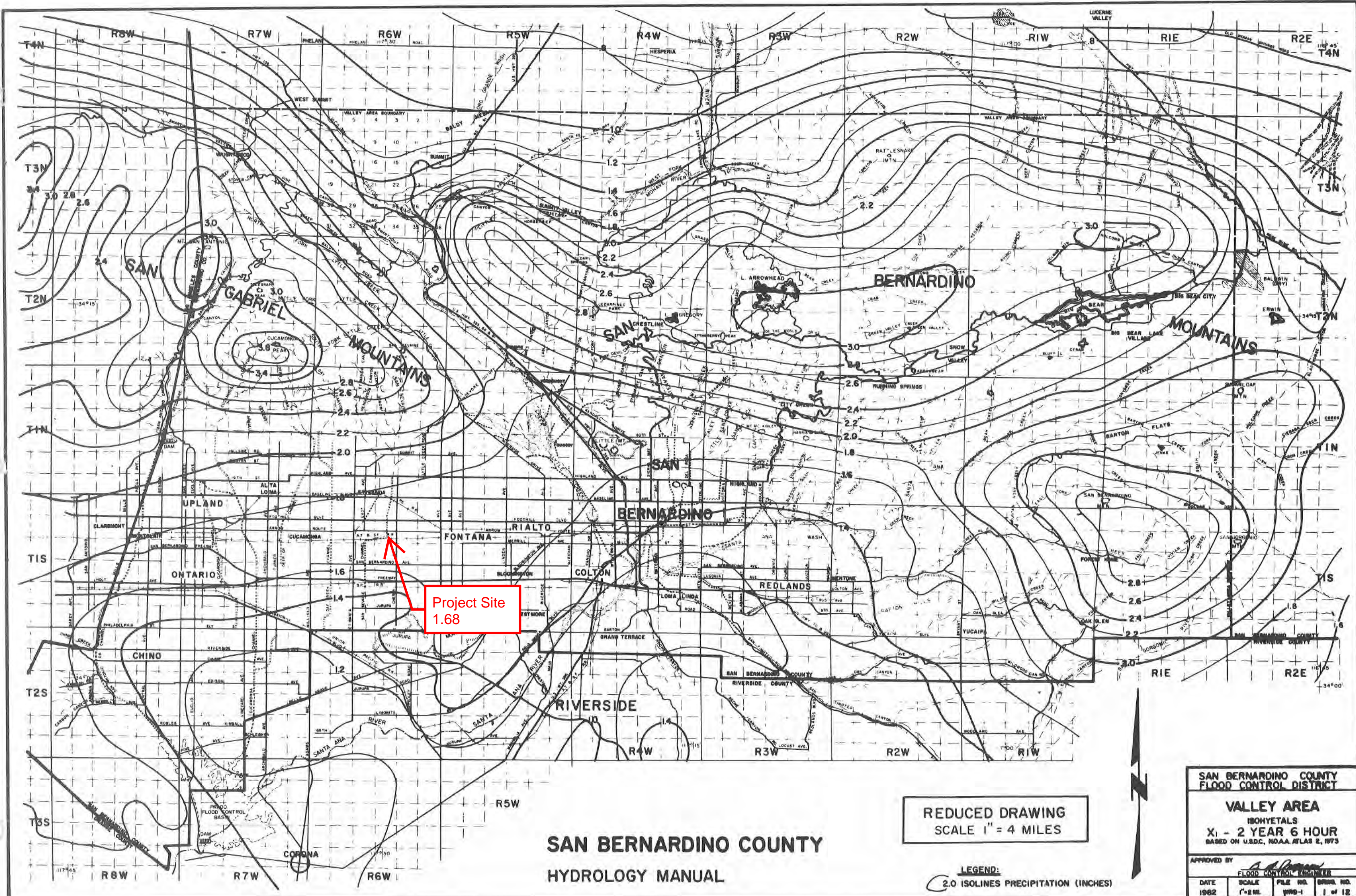
Appendix E
Soil Group Map and Isohyetal Maps



- LEGEND
- SOIL GROUP BOUNDARY
 - A SOIL GROUP DESIGNATION
 - BOUNDARY OF INDICATED SOURCE

SCALE 1:48,000
SCALE REDUCED BY 1/2

HYDROLOGIC SOILS GROUP MAP
FOR
SOUTHWEST-A AREA



Project Site
1.68

REDUCED DRAWING
SCALE 1" = 4 MILES

SAN BERNARDINO COUNTY
HYDROLOGY MANUAL

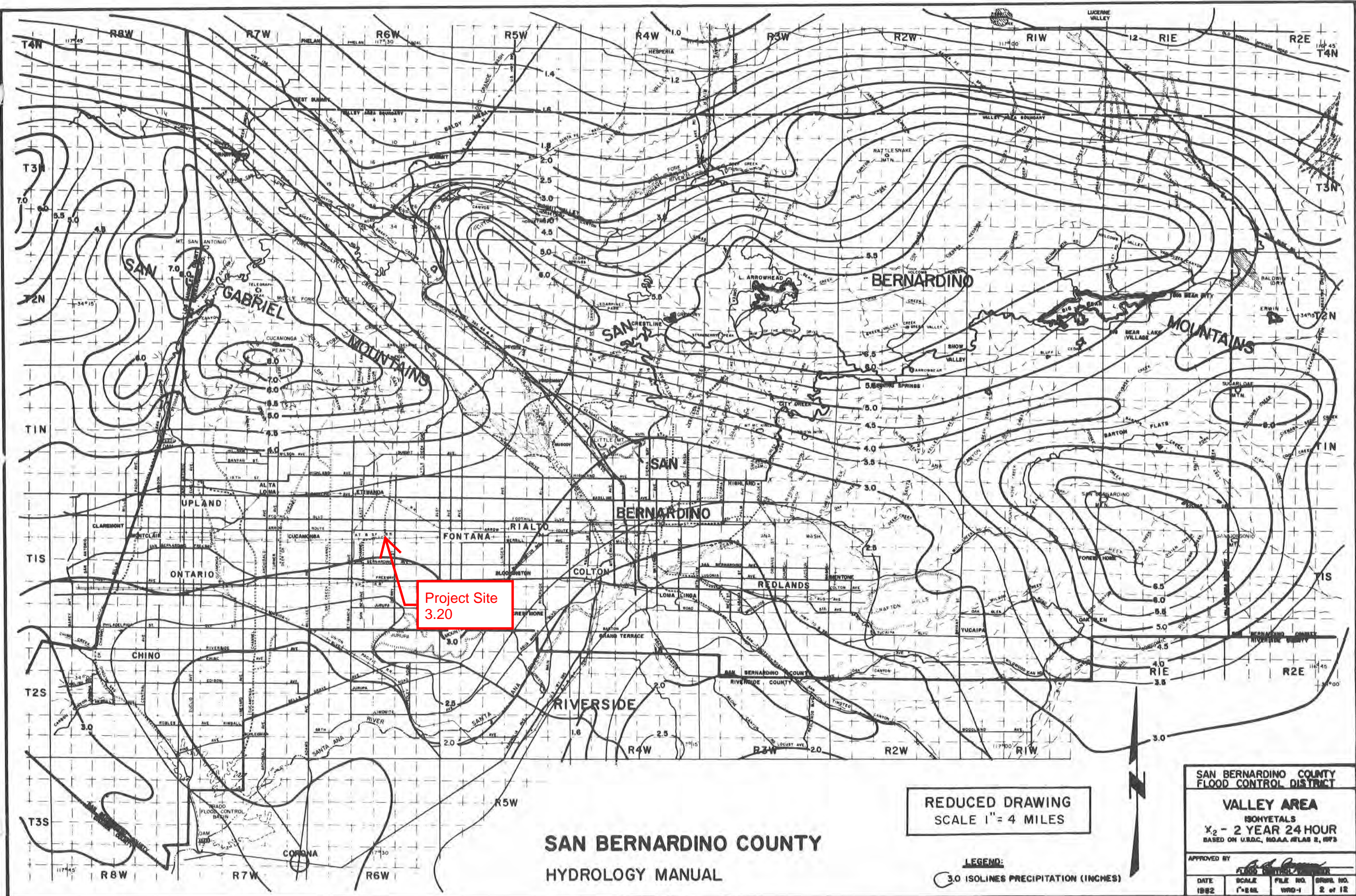
LEGEND:
2.0 ISOLINES PRECIPITATION (INCHES)

SAN BERNARDINO COUNTY
FLOOD CONTROL DISTRICT

VALLEY AREA
ISOHYETALS
X₁ - 2 YEAR 6 HOUR
BASED ON U.S.D.C. NOAA ATLAS 2, 1973

APPROVED BY: *[Signature]*

DATE	SCALE	FILE NO.	SPRNG. NO.
1982	1"=2 MI.	VWD-1	1 of 12



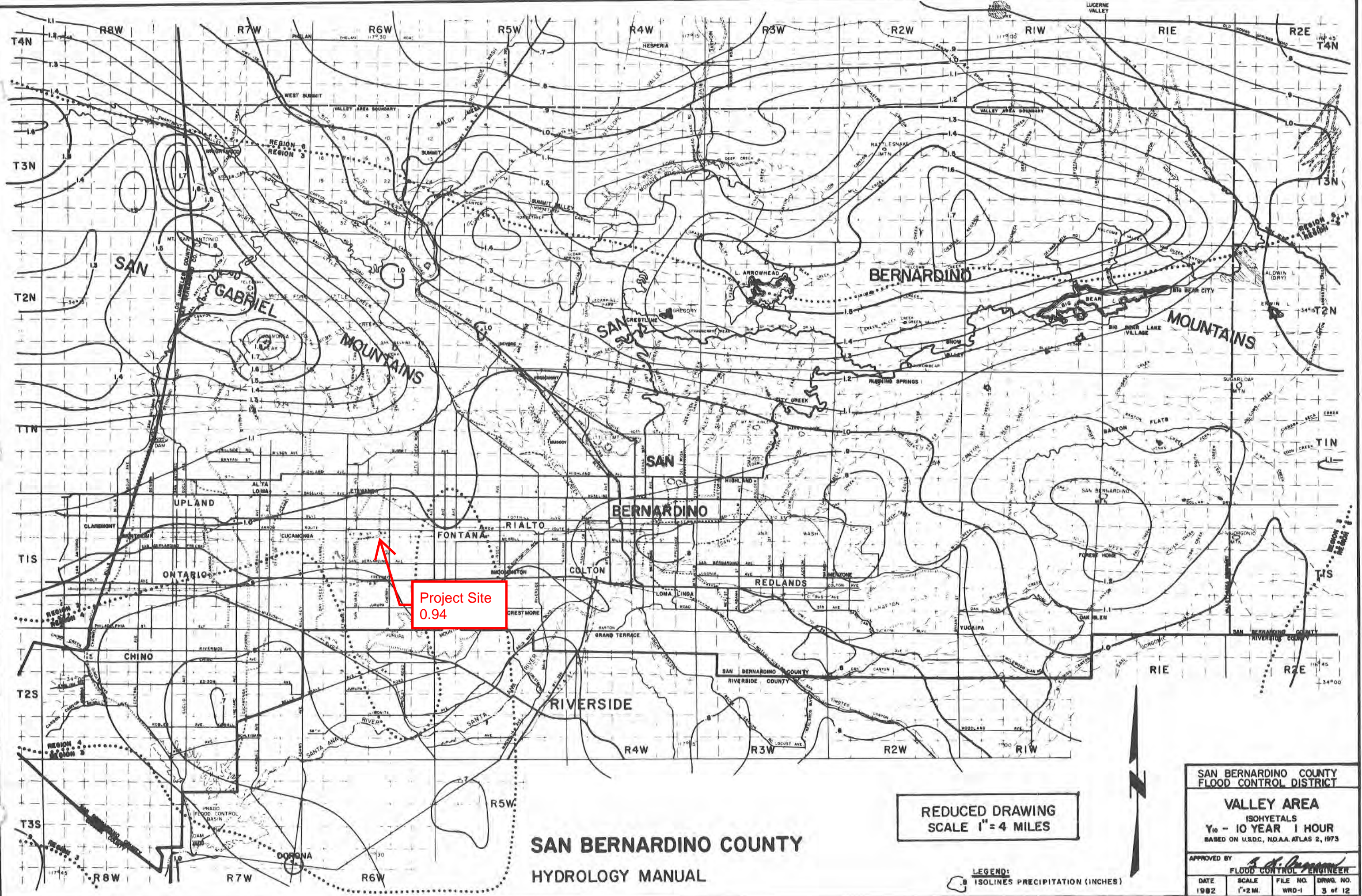
Project Site
3.20

REDUCED DRAWING
SCALE 1" = 4 MILES

**SAN BERNARDINO COUNTY
HYDROLOGY MANUAL**

LEGEND:
3.0 ISOLINES PRECIPITATION (INCHES)

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT			
VALLEY AREA			
ISOHYETALS			
X ₂ - 2 YEAR 24 HOUR			
BASED ON U.R.C. NOAA ATLAS 2, 1973			
APPROVED BY <i>[Signature]</i>			
DATE	SCALE	FILE NO.	SHEET NO.
1982	1"=4M	WD-1	2 of 12



Project Site
0.94

REDUCED DRAWING
SCALE 1" = 4 MILES

**SAN BERNARDINO COUNTY
HYDROLOGY MANUAL**

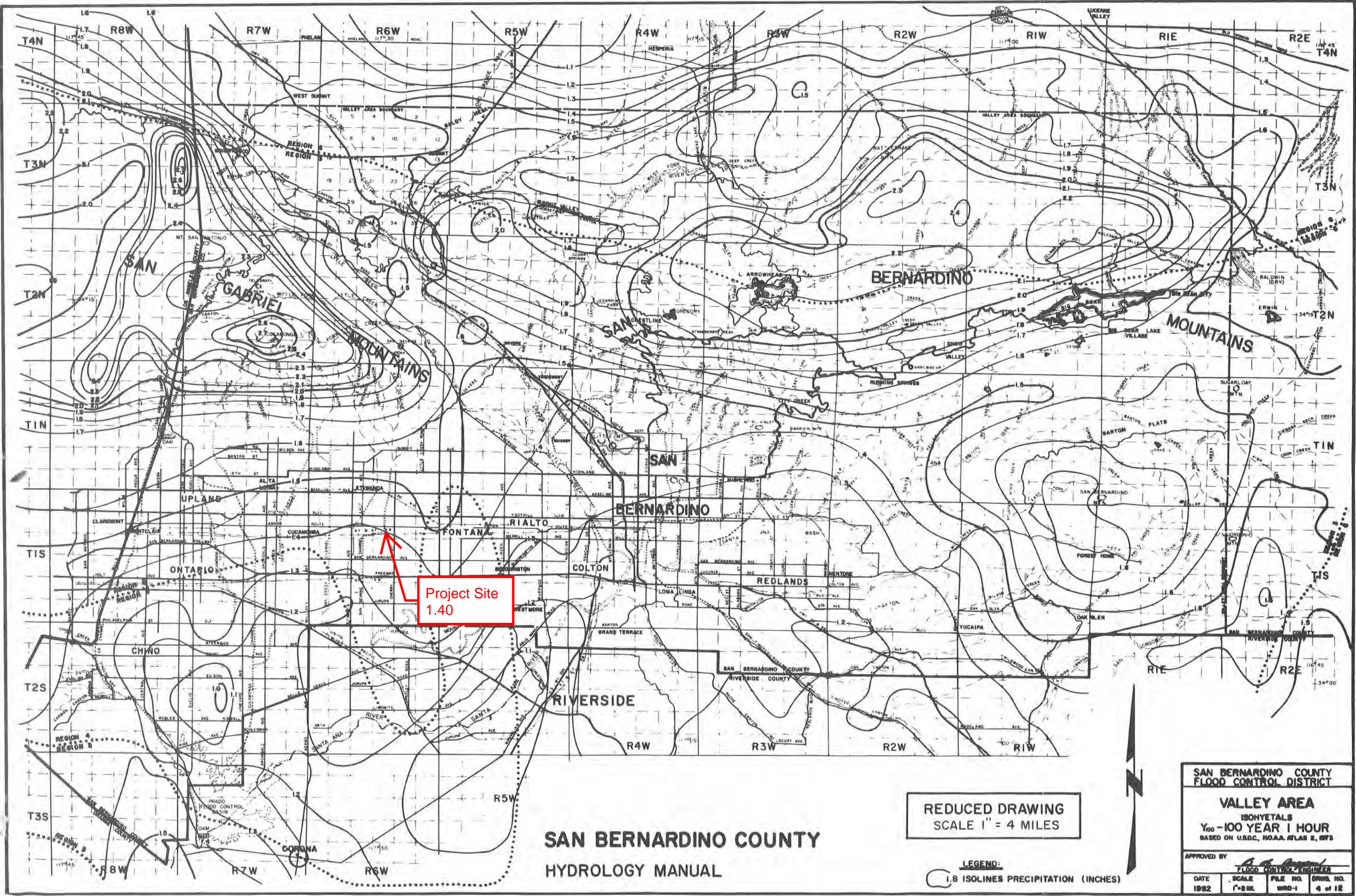
LEGEND:
ISOLINES PRECIPITATION (INCHES)

SAN BERNARDINO COUNTY
FLOOD CONTROL DISTRICT

VALLEY AREA
ISOHYETALS
Y₁₀ - 10 YEAR 1 HOUR
BASED ON U.S.D.C. NO. AA ATLAS 2, 1973

APPROVED BY *[Signature]*
FLOOD CONTROL ENGINEER

DATE	SCALE	FILE NO.	DRWG. NO.
1982	1"=2MI.	WRD-1	3 of 12



Project Site
1.40

SAN BERNARDINO COUNTY
HYDROLOGY MANUAL

REDUCED DRAWING
SCALE 1" = 4 MILES

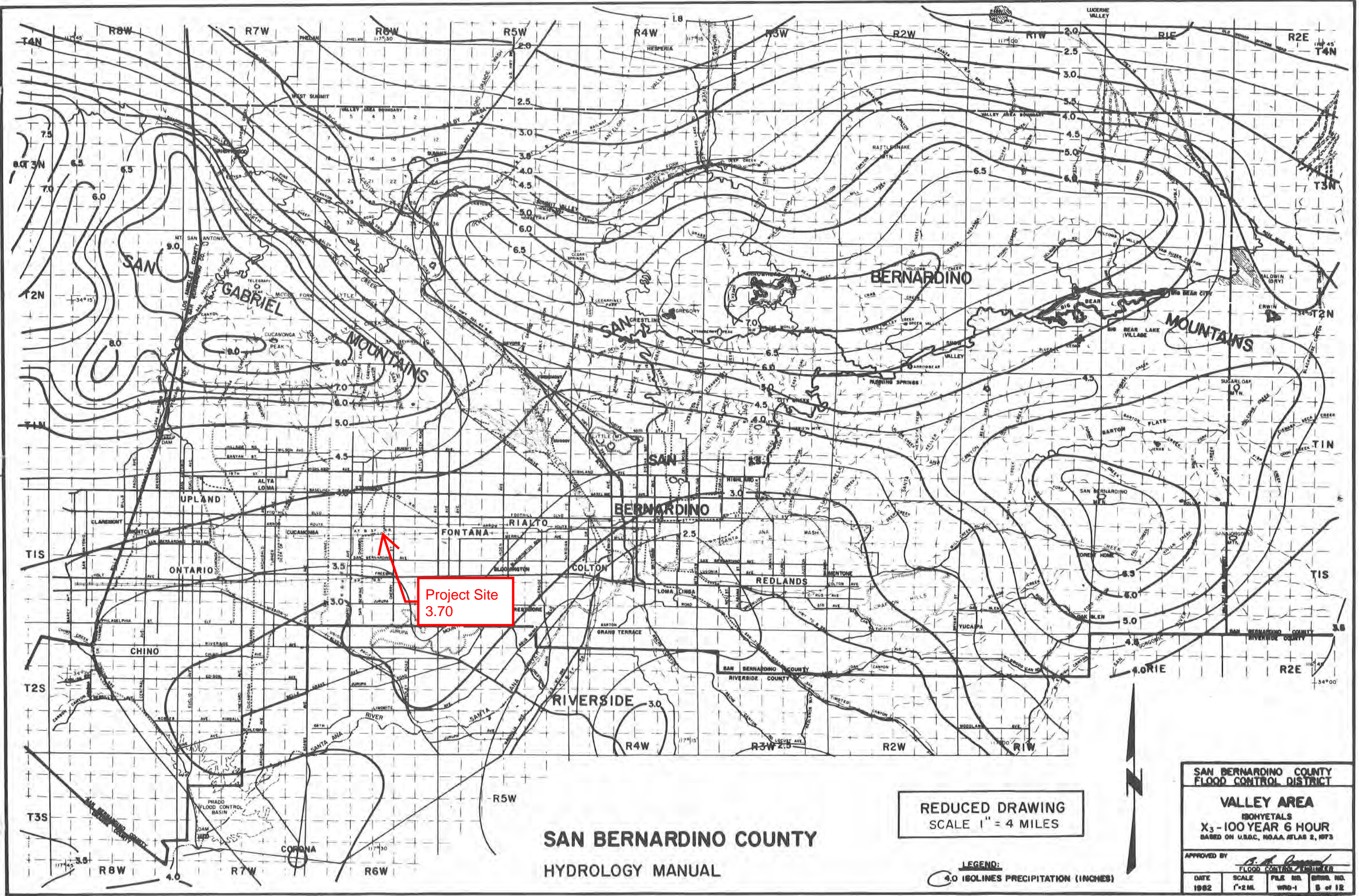
LEGEND:
1.8 ISOLINES PRECIPITATION (INCHES)

SAN BERNARDINO COUNTY
FLOOD CONTROL DISTRICT

VALLEY AREA
ISOHYETALS
Y₁₀₀ - 100 YEAR 1 HOUR
BASED ON U.S.D.C. NOAA ATLAS 2, 1975

APPROVED BY: *[Signature]*
FLOOD CONTROL ENGINEER

DATE	SCALE	FILE NO.	DRAW. NO.
1982	1"=4M	WRD-1	4 of 12



Project Site
3.70

**SAN BERNARDINO COUNTY
HYDROLOGY MANUAL**

**REDUCED DRAWING
SCALE 1" = 4 MILES**

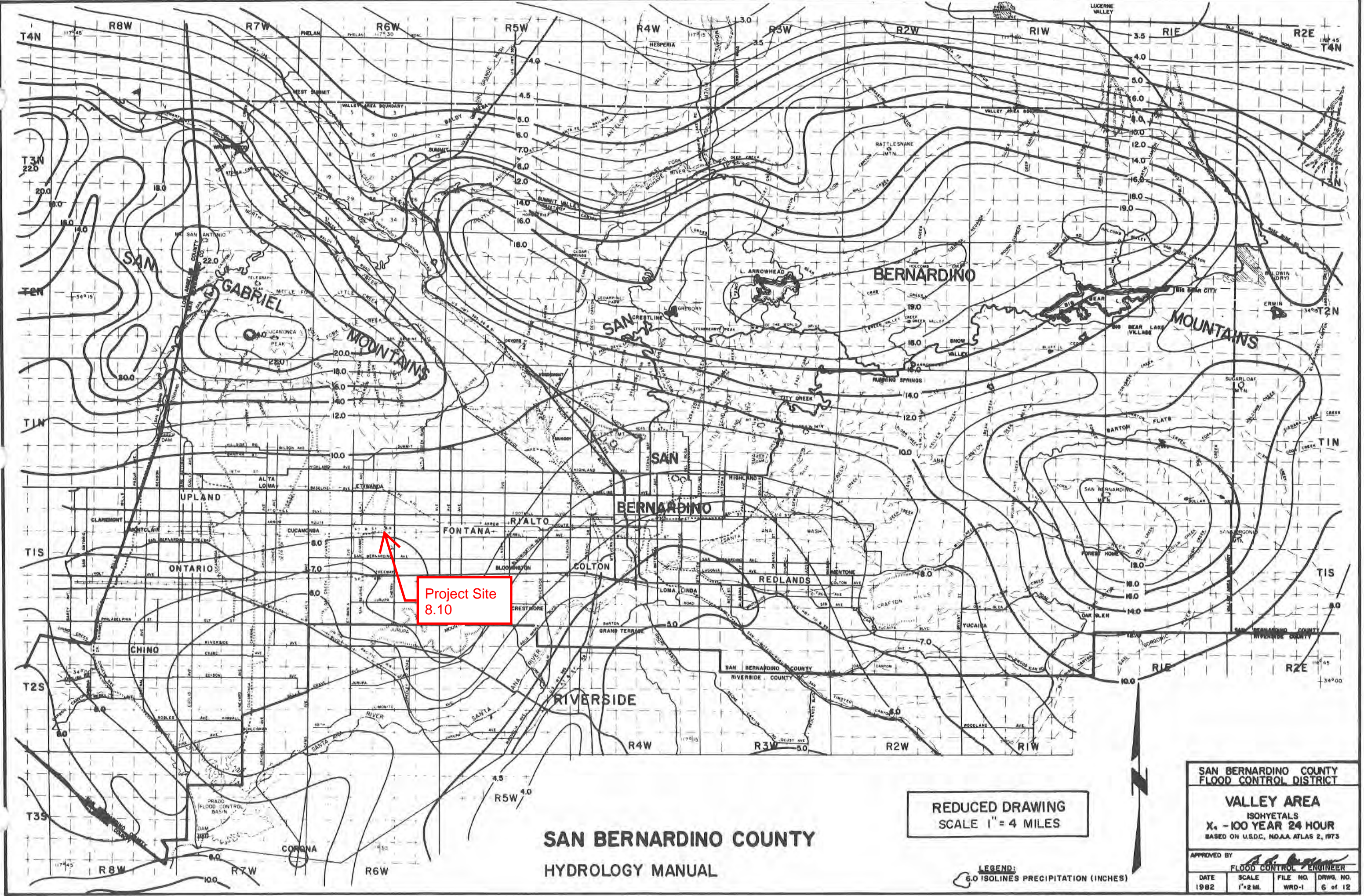
LEGEND:
4.0 ISOLINES PRECIPITATION (INCHES)

**SAN BERNARDINO COUNTY
FLOOD CONTROL DISTRICT**

VALLEY AREA
ISOHYETALS
X₃-100 YEAR 6 HOUR
BASED ON U.S.G.C. NOAA ATLAS 2, 1973

APPROVED BY *[Signature]*
FLOOD CONTROL ENGINEER

DATE	SCALE	FILE NO.	DRWG. NO.
1982	1"=2M.	WB-1	8 of 12



**Project Site
8.10**

**REDUCED DRAWING
SCALE 1" = 4 MILES**

**SAN BERNARDINO COUNTY
HYDROLOGY MANUAL**

LEGEND:
6.0 ISOLINES PRECIPITATION (INCHES)

**SAN BERNARDINO COUNTY
FLOOD CONTROL DISTRICT**

VALLEY AREA
ISOHYETALS
X₄ - 100 YEAR 24 HOUR
BASED ON U.S.D.C. NO. AA ATLAS 2, 1973

APPROVED BY *[Signature]*
FLOOD CONTROL ENGINEER

DATE	SCALE	FILE NO.	DRWG. NO.
1982	1"=2 MI.	WRD-1	6 of 12