PRELIMINARY HYDROLOGY REPORT

For

Summerland Senior Living

APN: 1023-011-51-0-000

PROJECT LOCATION

Along the north side of Serenity Trail, north of Chino Avenue
City of Chino, CA

DEVELOPER

RDS Partners, Inc
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PREPARED BY

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C77887, Exp 06/30/2021

PREPARATION DATE

March 3, 2020

HZ PROJECT NUMBER

R309944.01

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Introduction

This preliminary hydrology report has been prepared for RDS Partners, Inc. The project is located along the north side of Serenity Trail and north of Chino Avenue in the unincorporated portion of the County of San Bernardino, within the sphere of the City of Chino, State of California. This project is a new development of a senior assisted living complex, "Summerland Senior Living", proposed on approximately 3.2 acres of undeveloped land.

Purpose

The purpose of this report is to present the drainage concept for the project and to determine the design flow rates for the project site and to demonstrate that peak storm mitigation is achieved for the 2-year and 100-year storm events. The hydrology map and calculations reflect the tributary areas along with 2-year and 100-year flows. Unit hydrograph and basin routing analyses reflect the 2-year and 100-year storm events to determine the on-site storm water detention requirements to demonstrate mitigation of the 2-year and 100-year runoff. The 2-year calculation was selected to show no HCOC impact and the 100-year calculation was selected to address potential downstream capacity constraints.

Existing Condition

The existing site grades range from a maximum elevation of ±756 feet in the northwest region of the site to a minimum elevation of ±723 feet in the east of the site with less than 5.0% gradient. The runoff from the existing site flows from northwest to the southeast in a sheet flow condition. Runoff then spills easterly and southerly. The eastern runoff from Area A drains to eastern neighborhood and continues southeasterly to an existing concrete ditch on the southeast side of the neighborhood, then discharges to Chino Ave and is collected by an existing 36-inch storm drain line in Chino Avenue and ultimately discharges into the Chino Creek (San Antonio Channel). The southern runoff from Area B is collected by an existing concrete ditch along the south side of the property line and discharges directly into the existing 36-inch storm drain line in Chino Avenue. There is run-on tributary flow consisting of 1.9 acres that comes from the north side of the property. An existing condition hydrology map and hydrologic calculations were prepared and attached in Appendix A and B. The rational method time of concentration was used to determine the lag time in unit hydrograph calculation for the existing condition.

Proposed Condition

The existing drainage patterns will be preserved in the proposed condition. The developed condition site runoff will be directed to an on-site detention basin located in the southeast corner of the site. See Appendix A for proposed on-site hydrology map.

Runoff from the north and east driveways, roofs, and the center court yard will be collected by catch basin number one (CB#1) and directed to the proposed on-site detention basin through storm drain Line A.

Runoff from the northwesterly corner, south side planter areas and building roofs will be collected by CB#2, #3, and #4 and drain to the proposed on-site detention basin through storm drain Line B.

The overflow after detention in the basin will be discharged to a proposed 24-inch storm drain Line D and conveyed to an existing 36-inch storm drain in the Chino Avenue, see selected reference in Appendix E.

The offsite run-on from the development to the north of the project site will enter the proposed concrete v-ditch along the north and east property line and conveyed to the proposed storm drain Line D.

Hydrologic Analysis

The hydrologic analysis has been prepared in accordance with San Bernardino County Flood Control District (SBCFCD) Hydrology Manual Rational method using CIVILD software version 7.1. CIVILD hydrology calculations are included in Appendix B and indicate flow data at each node.

The 100-year, 1 hour rainfall and the 2-year, 1 hour rainfall rates were taken from the isohyetal maps in the Hydrology Manual. AMC II was used for the 2-year storm and AMC III was used for the 100-year storm analysis. The hydrologic soil type for the site is "C" and was taken from the soils map in the Hydrology Manual. See Appendix D for reference maps. A "commercial" land use was used for the project site with AMC III for the proposed 100-year condition.

2 and 100-year Peak Storm Mitigation

Due to the potential Hydrologic Condition of Concern (HCOC) per California Water Quality Control Board, the proposed basin was designed as a detention basin to mitigate 2-year runoff from the subject site to address HCOC. The basin also mitigates 100-year peak storm to address downstream capacity constraints. The 100-year runoff generated from the developed site will be less than the existing (undeveloped) runoff. Although the existing condition has two subareas (A and B), the existing unit hydrograph used a single area to make an equal size comparison to the developed condition. The flow into the proposed 36-inch CMP outlet will be restricted by four (4) 5-inch holes at the basin bottom (Elev. 722.70) and a 12-inch outlet drain pipe will be used to mitigate the peak storm and restrict post-development flow from exceeding pre-development flow, see summary table below.

Existing Q2 (CFS) Area A + Area B From Hydrologic Analysis	Existing Q2 (CFS) From Unit Hydrograph Analysis	Proposed Q2 (CFS) (Un-detained)	Proposed Q2 After Detention (CFS)
4.0	3.6	*5.3	2.5

*Offsite run-on excluded from this value.

The 100-year storm event studies also demonstrate that the basin is able to mitigate 100-year runoff from the subject site to address downstream capacity, see summary table below.

Existing Q100 (CFS) Area A + Area B From Hydrologic Analysis	Existing Q100 (CFS) From Unit Hydrograph Analysis	Proposed Q100 (CFS) (Un-detained)	Proposed Q100 After Detention (CFS)
10.0	9.0	*11.5	8.4

*Offsite run-on excluded from this value.

Results

Based on the results of our hydrologic analysis, the proposed development results in an outflow of approximately 11.5 cfs during the 100-year storm event. A 12-inch storm drain, Line D, is proposed for the outlet to control the discharge from the subject site. The proposed 12-inch outlet pipe will limit the outflow capacity. During a peak 100-year storm, the outlet will convey 8.4 cfs to Line D with a maximum water surface elevation in the detention basin of 725.10 which is below the top of the basin elevation of 726. See Appendix B for hydrologic analysis and Appendix C for a basin routing summary.

An additional 6.6 cfs is anticipated to be tributary from the property north of the subject site which will be conveyed around the north and east perimeter and discharged at the southeast corner through the storm drain Line C. This was done to avoid the onsite flow from mixing with the offsite flow. Said flow will be conveyed to the public system without mitigation or water quality treatment.

Based on the results of our preliminary drainage calculations, all proposed project site drainage and storm drain facilities will be sized adequately for a 100-year storm event, and the on-site detention basin will adequately mitigate the 2-year and 100-year 24 hour storm event runoff to less than the undeveloped condition. Additional calculations, including on-site storm drain hydraulics and catch basin sizing will be provided in the final drainage report.

Appendix A

Preliminary Project Drainage Maps

Existing 2-year & 100-year Hydrology Maps

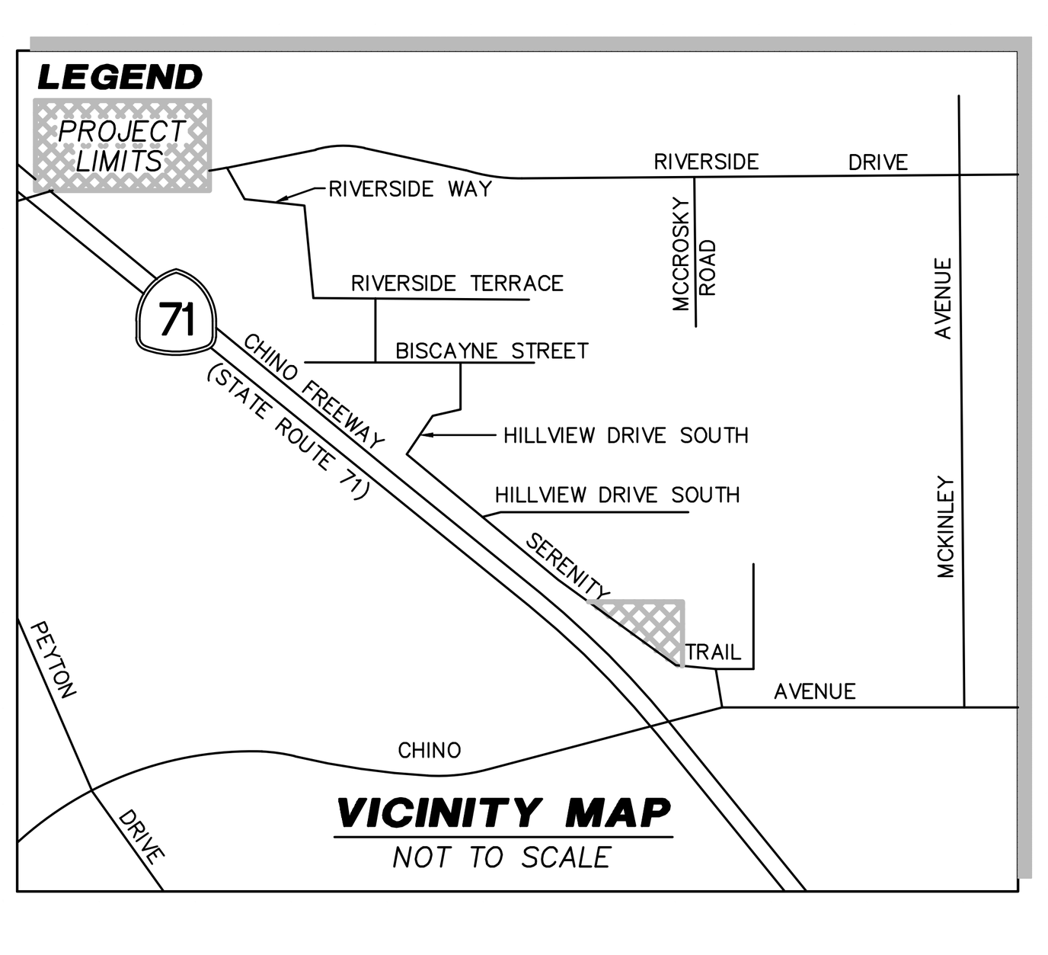
Proposed 2 & 100- year Condition Hydrology Maps

LEGEND

- NO. — HYDROLOGY MODEL NODE NUMBER
- A-11 / 7.40 Ac — TRIBUTARY AREA IN ACRES
- 673' — LENGTH OF FLOW
- DRAINAGE BOUNDARY
- FLOW LINE
- FLOW DIRECTION

TOTAL EXISTING RUNOFF

	AREA A	AREA B	TOTAL
Q2 (CFS)	2.9	1.1	4.0
Q100 (CFS)	7.2	2.8	10.0



VICINITY MAP
NOT TO SCALE

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CITY OF CHINO

SUMMERLAND SENIOR LIVING

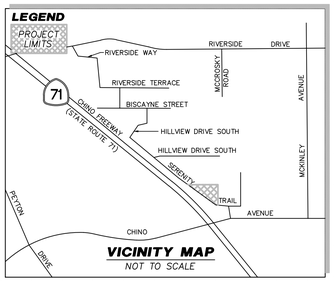
HYDROLOGY MAP - EXISTING CONDITION

SHEET 1 NO. 1

SEE SHEET 2 FOR OFFSITE DRAINAGE

SEE RIGHT FOR CONTINUATION

SEE LEFT FOR CONTINUATION



751.50 FG (1)
755.00 FS (11)
PROPOSED V-DITCH
PROPERTY LINE L=780'
B-1 0.25 Ac
744.36 FL
741.36 INV (12)
Q100=1.3 CFS
Q2 =0.6 CFS
CB#2
L=247'
SD
PROP. 36" RCP
B-2 0.08 Ac
L=64'
CB#3
740.08 INV (13)
Q100=0.4 CFS
Q2 =0.2 CFS
ΣQ100=1.7 CFS
ΣQ2 =0.8 CFS
EXIST. CONCRETE CANNEL
L=110'
B-3 0.14 Ac
GAZEBO
A-2 0.25 Ac
PD
737.26 INV (14)
Q100=0.7 CFS
Q2 =0.3 CFS
ΣQ100=2.4 CFS
ΣQ2 =1.1 CFS
PROPERTY LINE
L=116'
B-4 0.19 Ac
STORM DRAIN LINE B
CB#4
729.60 INV (15)
Q100=0.9 CFS
Q2 =0.4 CFS
ΣQ100=3.2 CFS
ΣQ2 =1.5 CFS
SERENITY TRAILS
EXIST. CONCRETE CANNEL
L=169'
STORMWATER TREATMENT UNIT
STORM DRAIN LINE A
A-1 2.12 Ac
L=747'
726.0 FL
Q2 =2.2 CFS
Q100=6.6 CFS
PROPOSE RIPRAP V-DITCH
PROPERTY LINE
725.55 INV (3)
Q100=0.8 CFS
Q2 =0.4 CFS
ΣQ100=9.0 CFS
ΣQ2 =4.1 CFS
24" CMP RISER
721.25 FL
719.75 INV
Q2 =2.2 CFS
Q100=6.6 CFS
L=81'
729.46 FL
725.96 INV (2)
Q100=8.2 CFS
Q2 =3.8 CFS
CB#1
STORM DRAIN LINE C
L=124'
724.50 INV (4)
ΣQ100=11.5 CFS
ΣQ2 =5.3 CFS
L=60'
DETENTION BASIN (5)
TOP = 726.0
BOT. = 722.7
Q100 = 11.5 CFS
Q2 = 5.3 CFS
AFTER BASIN DETENTION
Q100 = 8.4 CFS
Q2 = 2.5 CFS
722.70 INV
EX 24" RCP
OUTLET
36" CMP RISER
724.00 TG
719.70 INV
28"
PROP. 12" DRAIN PIPE
718.50 INV (6)
Q100=6.3 CFS
Q2 =2.3 CFS
ΣQ100=17.8 CFS
ΣQ2 =7.6 CFS
PROP. 24" RCP TO JOIN EX 36" RCP

OUTLET
36" CMP RISER
724.00 TG
719.70 INV
28"
PROP. 12" DRAIN PIPE
718.50 INV (6)
Q100=6.3 CFS
Q2 =2.3 CFS
ΣQ100=17.8 CFS
ΣQ2 =7.6 CFS
PROP. 24" RCP TO JOIN EX 36" RCP
L=257'
STORM DRAIN LINE D
SERENITY TRAILS
713.65 INV (7)
Q100=17.8 CFS
Q2 =7.2 CFS
EX 36" RCP CHINO STORM DRAIN
CHINO AVENUE

N
0 10 20 40 60
SCALE 1" = 20'

LEGEND
NO. — HYDROLOGY MODEL NODE NUMBER
A-11 7.40 Ac — TRIBUTARY AREA IN ACRES
675' — LENGTH OF FLOW
DRAINAGE BOUNDARY
FLOW LINE
FLOW DIRECTION
DRAINAGE INLET/CATCH BASIN (CB)
SD — PROPOSED STORM DRAIN
PD — PLANTER DRAIN

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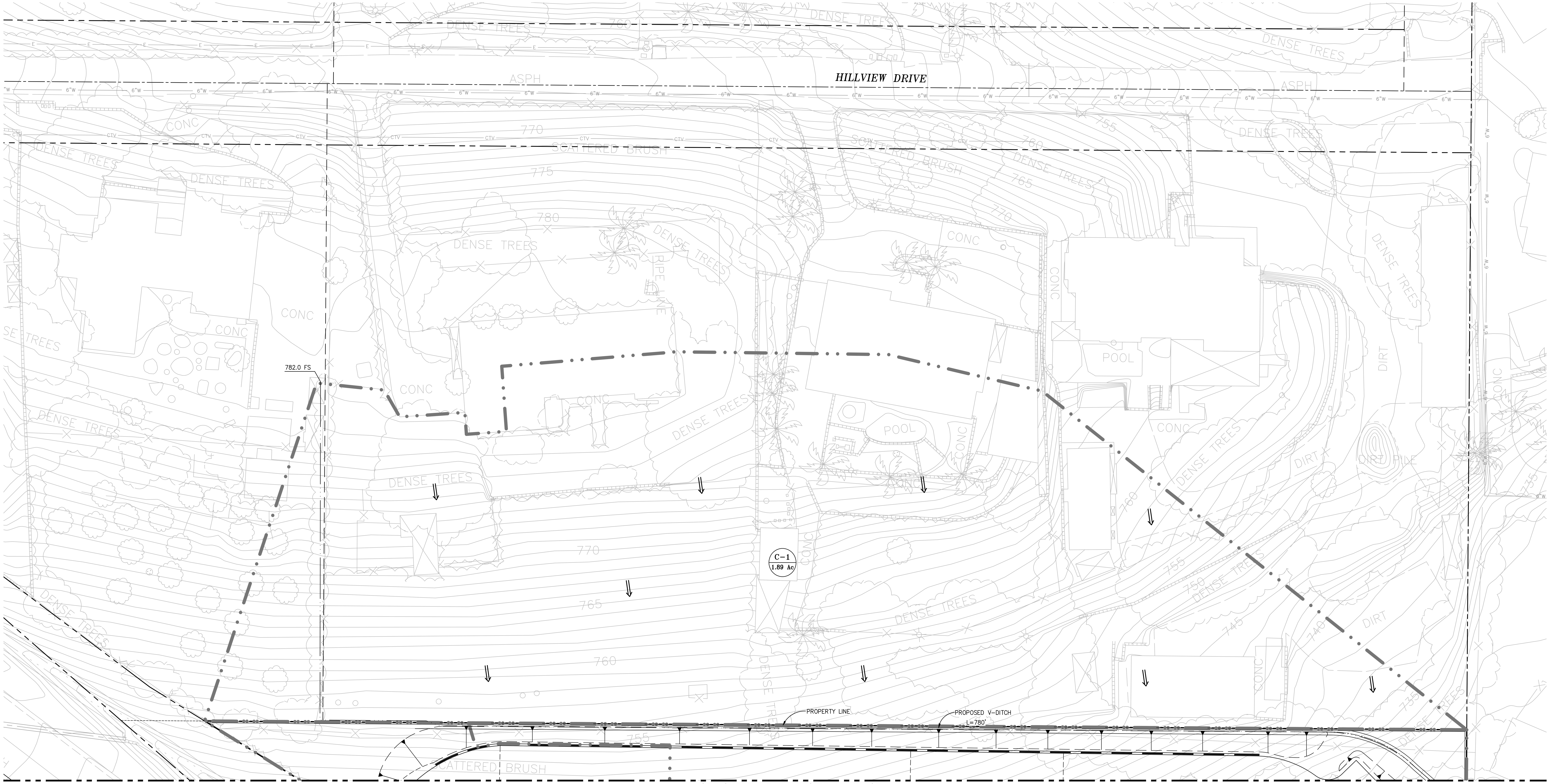
CITY OF CHINO

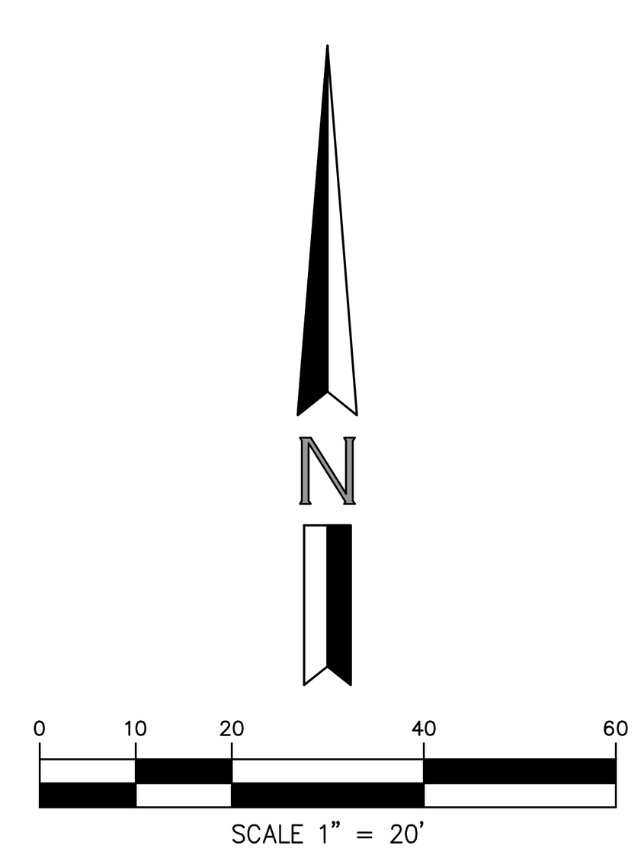
SUMMERLAND SENIOR LIVING

HYDROLOGY MAP - PROPOSED CONDITION

SHEET 1 NO. 2



SEE SHEET 1 FOR OFFSITE DRAINAGE



LEGEND

- NO. — HYDROLOGY MODEL NODE NUMBER
- A-11 / 7.40 Ac — TRIBUTARY AREA IN ACRES
- 673' — LENGTH OF FLOW
- DRAINAGE BOUNDARY
- FLOW LINE
- FLOW DIRECTION
- DRAINAGE INLET/CATCH BASIN (CB)
- SD — PROPOSED STORM DRAIN
- PD — PLANTER DRAIN

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CITY OF CHINO

SUMMERLAND SENIOR LIVING

HYDROLOGY MAP - PROPOSED CONDITION

SHEET 2 NO. 2

Appendix B

Hydrologic Analysis

Existing 2-year Rational Method
Proposed 2-year Rational Method
Existing 100-year Rational Method
Proposed 100-year Rational Method

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: 03/03/20

SUMMERLAND SENIOR LIVING
2 YEAR STORM EVENT - EXISTING CONDITION
HYDROLOGY STUDY AREA A
9944Q2EA

Program License Serial Number 6145

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

Rational hydrology study storm event year is 2.0
Computed rainfall intensity:
Storm year = 2.00 1 hour rainfall = 0.636 (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 = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.265(In/Hr)
Initial subarea data:
Initial area flow distance = 575.000(Ft.)
Top (of initial area) elevation = 754.000(Ft.)
Bottom (of initial area) elevation = 723.000(Ft.)
Difference in elevation = 31.000(Ft.)
Slope = 0.05391 s(%)= 5.39
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.959 min.
Rainfall intensity = 1.674(In/Hr) for a 2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.757
Subarea runoff = 2.904(CFS)
Total initial stream area = 2.290(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.265(In/Hr)
End of computations, Total Study Area = 2.29 (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 = 86.0

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: 03/03/20

SUMMERLAND SENIOR LIVING
2 YEAR STORM EVENT - EXISTING CONDITION
HYDROLOGIC STUDY - AREA B
9944Q2EB

Program License Serial Number 6145

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

Rational hydrology study storm event year is 2.0
Computed rainfall intensity:
Storm year = 2.00 1 hour rainfall = 0.636 (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 = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.265(In/Hr)
Initial subarea data:
Initial area flow distance = 500.000(Ft.)
Top (of initial area) elevation = 755.000(Ft.)
Bottom (of initial area) elevation = 726.000(Ft.)
Difference in elevation = 29.000(Ft.)
Slope = 0.05800 s(%)= 5.80
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.145 min.
Rainfall intensity = 1.746(In/Hr) for a 2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.763
Subarea runoff = 1.146(CFS)
Total initial stream area = 0.860(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.265(In/Hr)
End of computations, Total Study Area = 0.86 (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 = 86.0

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: 03/03/20

SUMMERLAND SENIOR LIVING
2 YEAR STORM EVENT - EXISTING CONDITION
HYDROLOGIC STUDY (Area A & B) For unit hydrograph study
9944Q2E

Program License Serial Number 6145

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

Rational hydrology study storm event year is 2.0
Computed rainfall intensity:
Storm year = 2.00 1 hour rainfall = 0.636 (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 = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.265(In/Hr)
Initial subarea data:
Initial area flow distance = 751.000(Ft.)
Top (of initial area) elevation = 755.000(Ft.)
Bottom (of initial area) elevation = 723.000(Ft.)
Difference in elevation = 32.000(Ft.)
Slope = 0.04261 s(%)= 4.26
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 13.948 min.
Rainfall intensity = 1.526(In/Hr) for a 2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.744
Subarea runoff = 3.576(CFS)
Total initial stream area = 3.150(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.265(In/Hr)
End of computations, Total Study Area = 3.15 (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 = 86.0

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: 02/28/20

SUMMERLAND SENIOR LIVING
100 YEAR STOEM EVENT - EXISTING CONDITION
HYDROLOGIC STUDY - AREA A
9944Q100EA

Program License Serial Number 6145

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

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.930(In.)
100 Year storm 1 hour rainfall = 1.350(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.350 (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 = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Adjusted SCS curve number for AMC 3 = 97.20
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 575.000(Ft.)
Top (of initial area) elevation = 754.000(Ft.)
Bottom (of initial area) elevation = 723.000(Ft.)
Difference in elevation = 31.000(Ft.)
Slope = 0.05391 s(%)= 5.39
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.959 min.
Rainfall intensity = 3.553(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.886
Subarea runoff = 7.209(CFS)
Total initial stream area = 2.290(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.055(In/Hr)
End of computations, Total Study Area = 2.29 (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 = 86.0

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: 02/28/20

SUMMERLAND SENIOR LIVING
100 YEAR STOEM EVENT - EXISTING CONDITION
HYDROLOGIC STUDY - AREA B
9944Q100EB

Program License Serial Number 6145

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

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.930(In.)
100 Year storm 1 hour rainfall = 1.350(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.350 (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 = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Adjusted SCS curve number for AMC 3 = 97.20
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 500.000(Ft.)
Top (of initial area) elevation = 755.000(Ft.)
Bottom (of initial area) elevation = 726.000(Ft.)
Difference in elevation = 29.000(Ft.)
Slope = 0.05800 s(%)= 5.80
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.145 min.
Rainfall intensity = 3.707(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.887
Subarea runoff = 2.826(CFS)
Total initial stream area = 0.860(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.055(In/Hr)
End of computations, Total Study Area = 0.86 (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 = 86.0

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: 12/14/18

SUMMERLAND SENIOR LIVING
100 YEAR STOEM EVENT - EXISTING CONDITION
HYDROLOGIC STUDY (AREA A & B) For unit hydrograph study
9944Q100E

Program License Serial Number 6145

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

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.930(In.)
100 Year storm 1 hour rainfall = 1.350(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.350 (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 = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Adjusted SCS curve number for AMC 3 = 97.20
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 751.000(Ft.)
Top (of initial area) elevation = 755.000(Ft.)
Bottom (of initial area) elevation = 723.000(Ft.)
Difference in elevation = 32.000(Ft.)
Slope = 0.04261 s(%)= 4.26
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 13.948 min.
Rainfall intensity = 3.240(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.885
Subarea runoff = 9.028(CFS)
Total initial stream area = 3.150(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.055(In/Hr)
End of computations, Total Study Area = 3.15 (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 = 86.0

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: 03/03/20

SUMMERLAND SENIOR LIVING
2 YEAR STORM EVENT - PROPOSED CONDITION
HYDROLOGIC STUDY
9944Q2P

Program License Serial Number 6145

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

Rational hydrology study storm event year is 2.0
10 Year storm 1 hour rainfall = 0.930(In.)
100 Year storm 1 hour rainfall = 1.350(In.)
Computed rainfall intensity:
Storm year = 2.00 1 hour rainfall = 0.636 (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 ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 742.000(Ft.)
Top (of initial area) elevation = 751.500(Ft.)
Bottom (of initial area) elevation = 729.460(Ft.)
Difference in elevation = 22.040(Ft.)
Slope = 0.02970 s(%)= 2.97
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.639 min.
Rainfall intensity = 2.036(In/Hr) for a 2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.876
Subarea runoff = 3.780(CFS)
Total initial stream area = 2.120(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

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

Upstream point/station elevation = 725.960(Ft.)
Downstream point/station elevation = 725.550(Ft.)
Pipe length = 83.00(Ft.) Manning's N = 0.012

```
No. of pipes = 1  Required pipe flow  =     3.780(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     3.780(CFS)
Normal flow depth in pipe =    9.86(In.)
Flow top width inside pipe =   14.24(In.)
Critical Depth =    9.43(In.)
Pipe flow velocity =      4.42(Ft/s)
Travel time through pipe =    0.31 min.
Time of concentration (TC) =     8.95 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        3.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     8.95 min.
Rainfall intensity =      1.993(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.875
Subarea runoff =      0.354(CFS) for    0.250(Ac.)
Total runoff =      4.134(CFS)
Effective area this stream =        2.37(Ac.)
Total Study Area (Main Stream No. 1) =        2.37(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        4.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   725.550(Ft.)
Downstream point/station elevation =   724.500(Ft.)
Pipe length  =   124.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     4.134(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     4.134(CFS)
Normal flow depth in pipe =    8.74(In.)
Flow top width inside pipe =   14.79(In.)
Critical Depth =    9.88(In.)
Pipe flow velocity =      5.57(Ft/s)
Travel time through pipe =    0.37 min.
Time of concentration (TC) =     9.32 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        4.000 to Point/Station        4.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      2.370(Ac.)
Runoff from this stream =      4.134(CFS)
Time of concentration =    9.32 min.
Rainfall intensity =     1.945(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       11.000 to Point/Station       12.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   247.000(Ft.)
Top (of initial area) elevation =   755.000(Ft.)
Bottom (of initial area) elevation =   744.360(Ft.)
Difference in elevation =    10.640(Ft.)
Slope =    0.04308  s(%)=       4.31
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.165 min.
Rainfall intensity =      2.772(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.882
Subarea runoff =      0.611(CFS)
Total initial stream area =        0.250(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       12.000 to Point/Station       13.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   741.360(Ft.)
Downstream point/station elevation =   740.080(Ft.)
Pipe length  =    64.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     0.611(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.611(CFS)
Normal flow depth in pipe =    3.74(In.)
Flow top width inside pipe =    5.82(In.)
Critical Depth =    4.77(In.)
Pipe flow velocity =      4.75(Ft/s)
Travel time through pipe =    0.22 min.
Time of concentration (TC) =     5.39 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       13.000 to Point/Station       13.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     5.39 min.
Rainfall intensity =      2.702(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.882
Subarea runoff =      0.175(CFS) for    0.080(Ac.)
Total runoff =      0.786(CFS)
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```
Effective area this stream =        0.33(Ac.)
Total Study Area (Main Stream No. 1) =        2.70(Ac.)
Area averaged Fm value =    0.055(In/Hr)


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Process from Point/Station       13.000 to Point/Station       14.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   740.080(Ft.)
Downstream point/station elevation =   737.260(Ft.)
Pipe length  =   110.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     0.786(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     0.786(CFS)
Normal flow depth in pipe =    4.09(In.)
Flow top width inside pipe =    5.59(In.)
Critical Depth =    5.30(In.)
Pipe flow velocity =      5.52(Ft/s)
Travel time through pipe =    0.33 min.
Time of concentration (TC) =     5.72 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       14.000 to Point/Station       14.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     5.72 min.
Rainfall intensity =      2.607(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.881
Subarea runoff =      0.293(CFS) for    0.140(Ac.)
Total runoff =      1.080(CFS)
Effective area this stream =        0.47(Ac.)
Total Study Area (Main Stream No. 1) =        2.84(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       14.000 to Point/Station       15.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   737.260(Ft.)
Downstream point/station elevation =   729.600(Ft.)
Pipe length  =   116.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     1.080(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     1.080(CFS)
Normal flow depth in pipe =    3.67(In.)
Flow top width inside pipe =    5.85(In.)
Critical depth could not be calculated.
Pipe flow velocity =      8.58(Ft/s)
Travel time through pipe =    0.23 min.
Time of concentration (TC) =     5.95 min.
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       15.000 to Point/Station       15.000
**** SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Time of concentration =     5.95 min.
Rainfall intensity =      2.547(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.881
Subarea runoff =      0.401(CFS) for    0.190(Ac.)
Total runoff =      1.480(CFS)
Effective area this stream =        0.66(Ac.)
Total Study Area (Main Stream No. 1) =        3.03(Ac.)
Area averaged Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       15.000 to Point/Station        4.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =   729.600(Ft.)
Downstream point/station elevation =   724.500(Ft.)
Pipe length  =   169.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     1.480(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.480(CFS)
Normal flow depth in pipe =    4.37(In.)
Flow top width inside pipe =    9.00(In.)
Critical Depth =    6.73(In.)
Pipe flow velocity =      6.96(Ft/s)
Travel time through pipe =    0.40 min.
Time of concentration (TC) =     6.35 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        4.000 to Point/Station        4.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.660(Ac.)
Runoff from this stream =      1.480(CFS)
Time of concentration =    6.35 min.
Rainfall intensity =     2.448(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

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


1      4.13     2.370      9.32    0.055      1.945
2      1.48     0.660      6.35    0.055      2.448
Qmax(1) =
          1.000 *    1.000 *     4.134) +
          0.790 *    1.000 *     1.480) + =       5.303
Qmax(2) =
```

```
          1.266 *    0.681 *     4.134) +
          1.000 *    1.000 *     1.480) + =       5.047

Total of 2 streams to confluence:
Flow rates before confluence point:
       4.134       1.480
Maximum flow rates at confluence using above data:
        5.303        5.047
Area of streams before confluence:
        2.370        0.660
Effective area values after confluence:
        3.030        2.275
Results of confluence:
Total flow rate =      5.303(CFS) This is the runoff generated from the project site
Time of concentration =     9.323 min.
Effective stream area after confluence =      3.030(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.055(In/Hr)
Study area total (this main stream) =       3.03(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        4.000 to Point/Station        5.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   724.500(Ft.)
Downstream point/station elevation =   722.700(Ft.)
Pipe length  =    60.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     5.303(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     5.303(CFS)
Normal flow depth in pipe =    8.07(In.)
Flow top width inside pipe =   11.26(In.)
Critical Depth =   11.18(In.)
Pipe flow velocity =      9.44(Ft/s)
Travel time through pipe =    0.11 min.
Time of concentration (TC) =     9.43 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        5.000 to Point/Station        6.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   719.700(Ft.)
Downstream point/station elevation =   718.500(Ft.)
Pipe length  =    28.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     5.303(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     5.303(CFS)
Normal flow depth in pipe =    7.14(In.)
Flow top width inside pipe =   11.78(In.)
Critical Depth =   11.18(In.)
Pipe flow velocity =     10.88(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =     9.47 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        6.000 to Point/Station        6.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
RESIDENTIAL(1 acre lot)
Decimal fraction soil group A = 0.000
```

```
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.8000     Max loss rate(Fm)=     0.438(In/Hr)
Time of concentration =     9.47 min.
Rainfall intensity =      1.927(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.806
Subarea runoff =      2.333(CFS) for    1.890(Ac.)
Total runoff =       7.636(CFS)
Effective area this stream =        4.92(Ac.)
Total Study Area (Main Stream No. 1) =        4.92(Ac.)
Area averaged Fm value =    0.202(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        6.000 to Point/Station        7.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   718.500(Ft.)
Downstream point/station elevation =   713.650(Ft.)
Pipe length  =   257.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.636(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     7.636(CFS)
Normal flow depth in pipe =   10.72(In.)
Flow top width inside pipe =   13.54(In.)
Critical Depth =   13.16(In.)
Pipe flow velocity =      8.13(Ft/s)
Travel time through pipe =    0.53 min.
Time of concentration (TC) =    10.00 min.
End of computations, Total Study Area =            4.92 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.369
Area averaged SCS curve number =  69.0
```

This runoff includes the offsite run-on

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: 02/28/20

SUMMERLAND SENIOR LIVING
100 YEAR STORM EVENT - PROPOSED CONDITION
HYDROLOGIC STUDY
9944Q100P

Program License Serial Number 6145

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

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.930(In.)
100 Year storm 1 hour rainfall = 1.350(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.350 (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 = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Adjusted SCS curve number for AMC 3 = 86.20
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.026(In/Hr)
Initial subarea data:
Initial area flow distance = 742.000(Ft.)
Top (of initial area) elevation = 751.500(Ft.)
Bottom (of initial area) elevation = 729.460(Ft.)
Difference in elevation = 22.040(Ft.)
Slope = 0.02970 s(%)= 2.97
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.639 min.
Rainfall intensity = 4.319(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.895
Subarea runoff = 8.190(CFS)
Total initial stream area = 2.120(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.026(In/Hr)

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

Upstream point/station elevation = 725.960(Ft.)
Downstream point/station elevation = 725.550(Ft.)

```
Pipe length  =    83.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     8.190(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     8.190(CFS)
Normal flow depth in pipe =   12.68(In.)
Flow top width inside pipe =   20.54(In.)
Critical Depth =   12.75(In.)
Pipe flow velocity =      5.39(Ft/s)
Travel time through pipe =    0.26 min.
Time of concentration (TC) =     8.90 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        3.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Adjusted SCS curve number for AMC 3 = 86.20
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.026(In/Hr)
Time of concentration =     8.90 min.
Rainfall intensity =      4.243(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.894
Subarea runoff =      0.805(CFS) for    0.250(Ac.)
Total runoff =      8.995(CFS)
Effective area this stream =        2.37(Ac.)
Total Study Area (Main Stream No. 1) =        2.37(Ac.)
Area averaged Fm value =    0.026(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        4.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   725.550(Ft.)
Downstream point/station elevation =   724.500(Ft.)
Pipe length  =   124.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     8.995(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     8.995(CFS)
Normal flow depth in pipe =   12.84(In.)
Flow top width inside pipe =   16.28(In.)
Critical Depth =   13.92(In.)
Pipe flow velocity =      6.66(Ft/s)
Travel time through pipe =    0.31 min.
Time of concentration (TC) =     9.21 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        4.000 to Point/Station        4.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      2.370(Ac.)
Runoff from this stream =      8.995(CFS)
Time of concentration =    9.21 min.
Rainfall intensity =     4.157(In/Hr)
Area averaged loss rate (Fm) =    0.0262(In/Hr)
```

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


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       11.000 to Point/Station       12.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Adjusted SCS curve number for AMC 3 = 86.20
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.026(In/Hr)
Initial subarea data:
Initial area flow distance =   247.000(Ft.)
Top (of initial area) elevation =   755.000(Ft.)
Bottom (of initial area) elevation =   744.360(Ft.)
Difference in elevation =    10.640(Ft.)
Slope =    0.04308  s(%)=       4.31
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.165 min.
Rainfall intensity =      5.880(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.896
Subarea runoff =      1.317(CFS)
Total initial stream area =        0.250(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.026(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       12.000 to Point/Station       13.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------
Upstream point/station elevation =   741.360(Ft.)
Downstream point/station elevation =   740.080(Ft.)
Pipe length  =    64.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     1.317(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.317(CFS)
Normal flow depth in pipe =    4.61(In.)
Flow top width inside pipe =    9.00(In.)
Critical Depth =    6.34(In.)
Pipe flow velocity =      5.79(Ft/s)
Travel time through pipe =    0.18 min.
Time of concentration (TC) =     5.35 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       13.000 to Point/Station       13.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Adjusted SCS curve number for AMC 3 = 86.20
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.026(In/Hr)
Time of concentration =     5.35 min.
Rainfall intensity =      5.758(In/Hr) for a   100.0 year storm
```

```
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.896
Subarea runoff =      0.385(CFS) for    0.080(Ac.)
Total runoff =      1.702(CFS)
Effective area this stream =        0.33(Ac.)
Total Study Area (Main Stream No. 1) =        2.70(Ac.)
Area averaged Fm value =    0.026(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       13.000 to Point/Station       14.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------
Upstream point/station elevation =   740.080(Ft.)
Downstream point/station elevation =   737.260(Ft.)
Pipe length  =   110.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     1.702(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.702(CFS)
Normal flow depth in pipe =    4.99(In.)
Flow top width inside pipe =    8.95(In.)
Critical Depth =    7.19(In.)
Pipe flow velocity =      6.77(Ft/s)
Travel time through pipe =    0.27 min.
Time of concentration (TC) =     5.62 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       14.000 to Point/Station       14.000
**** SUBAREA FLOW ADDITION ****
----------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Adjusted SCS curve number for AMC 3 = 86.20
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.026(In/Hr)
Time of concentration =     5.62 min.
Rainfall intensity =      5.589(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.896
Subarea runoff =      0.651(CFS) for    0.140(Ac.)
Total runoff =      2.353(CFS)
Effective area this stream =        0.47(Ac.)
Total Study Area (Main Stream No. 1) =        2.84(Ac.)
Area averaged Fm value =    0.026(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       14.000 to Point/Station       15.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------
Upstream point/station elevation =   737.260(Ft.)
Downstream point/station elevation =   729.600(Ft.)
Pipe length  =   116.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     2.353(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     2.353(CFS)
Normal flow depth in pipe =    4.56(In.)
Flow top width inside pipe =    9.00(In.)
Critical Depth =    8.16(In.)
```

```
Pipe flow velocity =     10.48(Ft/s)
Travel time through pipe =    0.18 min.
Time of concentration (TC) =     5.80 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       15.000 to Point/Station       15.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Adjusted SCS curve number for AMC 3 = 86.20
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.026(In/Hr)
Time of concentration =     5.80 min.
Rainfall intensity =      5.482(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.896
Subarea runoff =      0.888(CFS) for    0.190(Ac.)
Total runoff =      3.241(CFS)
Effective area this stream =        0.66(Ac.)
Total Study Area (Main Stream No. 1) =        3.03(Ac.)
Area averaged Fm value =    0.026(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       15.000 to Point/Station        4.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   729.600(Ft.)
Downstream point/station elevation =   724.500(Ft.)
Pipe length  =   169.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =     3.241(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     3.241(CFS)
Normal flow depth in pipe =    5.88(In.)
Flow top width inside pipe =   12.00(In.)
Critical Depth =    9.25(In.)
Pipe flow velocity =      8.47(Ft/s)
Travel time through pipe =    0.33 min.
Time of concentration (TC) =     6.14 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        4.000 to Point/Station        4.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.660(Ac.)
Runoff from this stream =      3.241(CFS)
Time of concentration =    6.14 min.
Rainfall intensity =     5.302(In/Hr)
Area averaged loss rate (Fm) =    0.0262(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

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

```
1       9.00      2.370       9.21     0.026       4.157
2       3.24      0.660       6.14     0.026       5.302
Qmax(1) =
          1.000 *     1.000 *      8.995) +
          0.783 *     1.000 *      3.241) + =       11.533
Qmax(2) =
          1.277 *     0.667 *      8.995) +
          1.000 *     1.000 *      3.241) + =       10.900

Total of 2 streams to confluence:
Flow rates before confluence point:
        8.995       3.241
Maximum flow rates at confluence using above data:
       11.533       10.900
Area of streams before confluence:
        2.370        0.660
Effective area values after confluence:
        3.030        2.240
Results of confluence:
Total flow rate =      11.533(CFS)
```
This is the runoff generated from the project site
```
Time of concentration =      9.206 min.
Effective stream area after confluence =       3.030(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.026(In/Hr)
Study area total (this main stream) =       3.03(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        4.000 to Point/Station        5.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   724.500(Ft.)
Downstream point/station elevation =   722.700(Ft.)
Pipe length  =    60.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    11.533(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    11.533(CFS)
Normal flow depth in pipe =   11.70(In.)
Flow top width inside pipe =   12.43(In.)
Critical depth could not be calculated.
Pipe flow velocity =     11.24(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =     9.30 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        5.000 to Point/Station        6.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   719.700(Ft.)
Downstream point/station elevation =   718.500(Ft.)
Pipe length  =    28.00(Ft.)   Manning's N = 0.012
No. of pipes = 1  Required pipe flow  =    11.533(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =    11.533(CFS)
Normal flow depth in pipe =   10.11(In.)
Flow top width inside pipe =   14.06(In.)
Critical depth could not be calculated.
Pipe flow velocity =     13.10(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =     9.33 min.
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        6.000 to Point/Station        6.000
**** SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
RESIDENTIAL(1 acre lot)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Adjusted SCS curve number for AMC 3 = 86.20
Pervious ratio(Ap) = 0.8000     Max loss rate(Fm)=     0.209(In/Hr)
Time of concentration =     9.33 min.
Rainfall intensity =      4.124(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.879
Subarea runoff =      6.299(CFS) for    1.890(Ac.)
Total runoff =     17.832(CFS)This runoff includes the offsite run-on
Effective area this stream =        4.92(Ac.)
Total Study Area (Main Stream No. 1) =        4.92(Ac.)
Area averaged Fm value =    0.096(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        6.000 to Point/Station        7.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =   718.500(Ft.)
Downstream point/station elevation =   713.650(Ft.)
Pipe length  =   257.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.832(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    17.832(CFS)
Normal flow depth in pipe =   14.46(In.)
Flow top width inside pipe =   19.45(In.)
Critical Depth =   18.46(In.)
Pipe flow velocity =     10.10(Ft/s)
Travel time through pipe =    0.42 min.
Time of concentration (TC) =     9.75 min.
End of computations, Total Study Area =            4.92 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.369
Area averaged SCS curve number =  69.0
```

Appendix C

Basin Routing Study

2/100-year Detention Basin Study summary
Existing/ Proposed 2-year Unit Hydrograph Analysis
Proposed 2-year Basin Routing Analysis
Proposed 100-year Unit Hydrograph Analysis
Proposed 100-year Basin Routing Analysis

Summerland Senior living
Area, Depth, and Q Summary

Stage Storage Table

#	Depth	Elevation	Area (sf)	Incremental volume (cf)	Total Volume (cf)	Total Volume (acre-ft)	Outflow Q	Notes
1	0.0	722.70	2,244	0	0	0	0.00	**Bottom of Detention Basin, 4-5" holes on 36" CMP @ ELEV 722.70**
2	0.3	723.00	2,428	701	701	0.02	0.79	
3	0.8	723.50	2,775	1,301	2,001	0.05	2.01	
4	1.0	723.70	2,920	569	2,571	0.06	2.33	
5	1.3	724.00	3,125	907	3,478	0.08	2.73	
6	1.8	724.50	3,496	920	4,398	0.10	3.30	**36" Riser TG = 724.50**
7	2.3	725.00	3,867	1,841	5,318	0.12	8.29	
8	3.3	726.00	4,667	4,267	9,585	0.22	9.11	

	Orifice Qout 4-5" holes on 36" CMP	Weir Qout 4-5" holes on 36" CMP	Orifice Qout riser top 36" grateoutlet	Weir Qout riser top 36" grate outlet	Total Qout from 4-5" holes and 36" riser grate	*Total Qout that 12" pipe can handle	Qout from basin
722.70	0.00	0.00	0.00	0.00	0.00	5.98	0.00
723.00	0.79	2.86	0.00	0.00	0.79	6.33	0.79
723.50	2.01	12.46	0.00	0.00	2.01	6.87	2.01
723.70	2.33	17.41	0.00	0.00	2.33	7.07	2.33
724.00	2.73	25.80	0.00	0.00	2.73	7.37	2.73
724.50	3.30	42.04	0.00	0.00	3.30	7.84	3.30
725.00	3.78	60.72	34.04	31.37	35.15	8.29	8.29
726.00	4.60	104.36	48.14	88.72	48.14	9.11	9.11

*12" Outlet Pipe @ 719.70 INV

Basin Routing Summary Table for 2 Year Storm Event

2 YEAR STORM	24 Hour	
Max. Q Out (CFS)	**2.5**	
WSE	**723.81**	<Top of Basin 726.0

2-Year peak discharge 2.5 CFS occurs during the 2 year 24 hour event, which is less than allowable discharge 3.6 CFS from existing condition unit hudrograp analysis.

Basin Routing Summary Table for 100 Year Storm Event

100 YEAR STORM	24 Hour	
Max. Q Out (CFS)	**8.4**	
WSE	**725.10**	<Top of Basin 726.0

100-Year peak discharge 8.4 CFS occurs during the 100 year 24 hour event, which is less than allowable discharge 9.0 CFS from existing condition unit hudrograp analysis.

Example:

Q OutFlow = CA x (2gh)^(1/2)
= 0.6A x (64.4xh)^(1/2)
A = 12" Pipe
h = Water Height Above Half of outlet Pipe

Example: WSE @ 725 for 12" Outlet Pipe
= {0.6 x (3.14 x 0.5^2) x '[64.4 x (725-720.2)]^(1/2)}
= 8.29 CFS

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

Study date 03/03/20

++

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

Program License Serial Number 6145

SUMMERLAND SENIOR LIVING
2 YEAR STORM EVENT - EXISTING CONDITION
UNIT HYDROGRAPH STUDY
9944Q2EUNIHYDR

Storm Event Year = 2

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 2		
3.15	1	0.64
Rainfall data for year 2		
3.15	6	1.50
Rainfall data for year 2		
3.15	24	2.75

++

******** 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)
86.0	86.0	3.15	1.000	0.265	1.000	0.265

Area-averaged adjusted loss rate Fm (In/Hr) = 0.265

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr

```
     3.15   1.000         86.0      86.0       1.63     0.527

Area-averaged catchment yield fraction, Y =  0.527
Area-averaged low loss fraction, Yb =  0.473
User entry of time of concentration  =   0.179 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =       3.15(Ac.)
Catchment Lag time =   0.143 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 58.1937
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.265(In/Hr)
Average low loss rate fraction (Yb) = 0.473 (decimal)
VALLEY UNDEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.237(In)
Computed peak 30-minute rainfall =  0.485(In)
Specified peak 1-hour rainfall =  0.640(In)
Computed peak 3-hour rainfall =  1.079(In)
Specified peak 6-hour rainfall =  1.500(In)
Specified peak 24-hour rainfall =  2.750(In)


Rainfall depth area reduction factors:
Using a total area of       3.15(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.237(In)
30-minute factor = 1.000    Adjusted rainfall =  0.485(In)
1-hour factor = 1.000       Adjusted rainfall =  0.640(In)
3-hour factor = 1.000       Adjusted rainfall =  1.079(In)
6-hour factor = 1.000       Adjusted rainfall =  1.500(In)
24-hour factor = 1.000      Adjusted rainfall =  2.750(In)
----------------------------------------------------------------------

                   U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
----------------------------------------------------------------------
              (K =        38.10 (CFS))

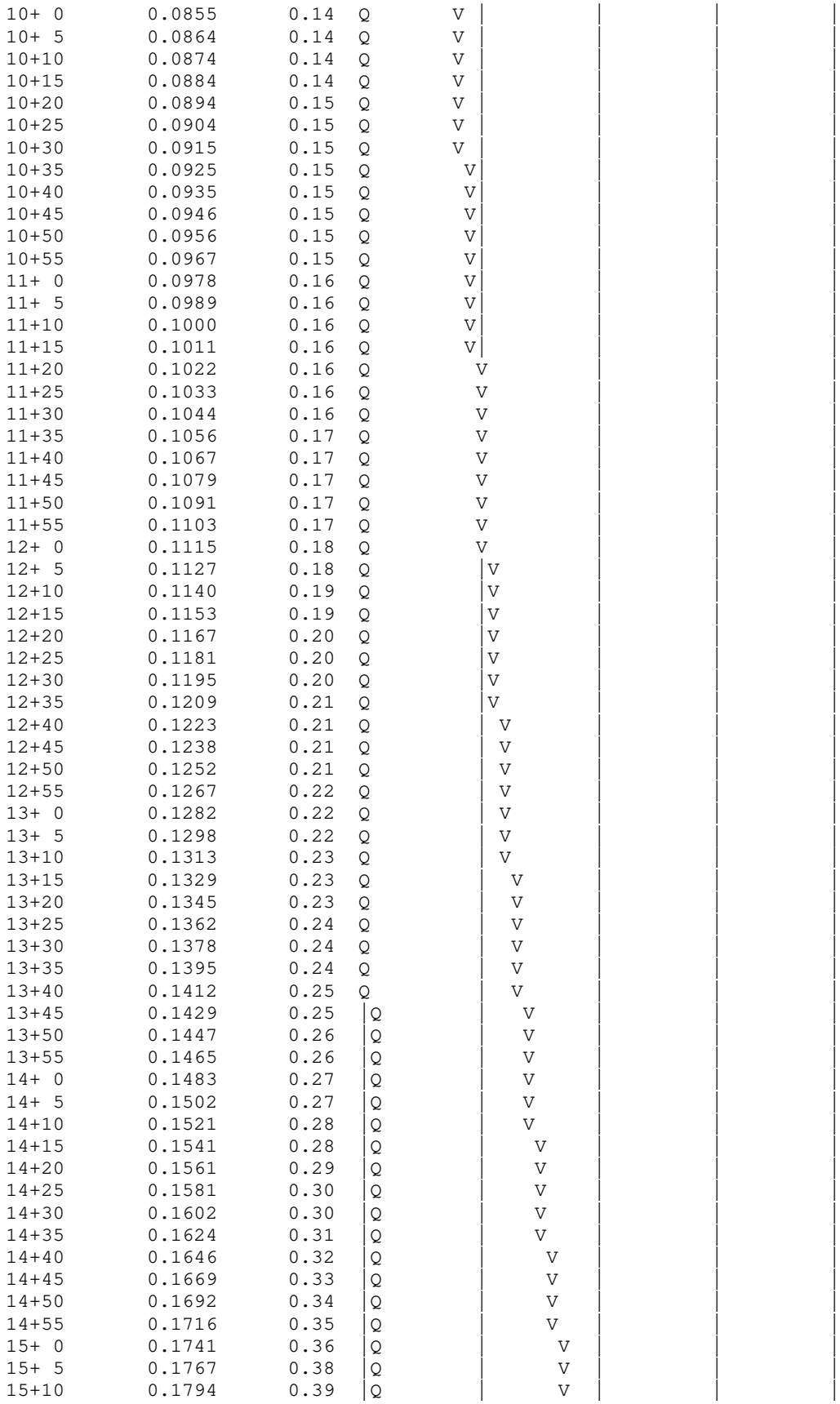
  1                7.810                   2.975
  2               40.476                  12.444
  3               67.626                  10.343
  4               78.275                   4.057
  5               84.479                   2.363
  6               88.696                   1.606
  7               91.738                   1.159
  8               93.862                   0.809
  9               95.601                   0.662
 10               96.927                   0.505
 11               97.943                   0.387
 12               98.689                   0.284
 13               99.274                   0.223
 14              100.000                   0.111
----------------------------------------------------------------------
----------------------------------------------------------------------
----------------------------------------------------------------------
Total soil rain loss =      1.19(In)
Total effective rainfall =      1.56(In)
Peak flow rate in flood hydrograph =      3.56(CFS)
----------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                   24 - H O U R    S T O R M
```

R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.01	Q				
0+10	0.0003	0.03	Q				
0+15	0.0007	0.06	Q				
0+20	0.0011	0.07	Q				
0+25	0.0016	0.07	Q				
0+30	0.0021	0.08	Q				
0+35	0.0027	0.08	Q				
0+40	0.0032	0.08	Q				
0+45	0.0038	0.08	Q				
0+50	0.0044	0.08	Q				
0+55	0.0049	0.08	Q				
1+ 0	0.0055	0.08	Q				
1+ 5	0.0061	0.09	Q				
1+10	0.0067	0.09	Q				
1+15	0.0073	0.09	Q				
1+20	0.0079	0.09	Q				
1+25	0.0085	0.09	Q				
1+30	0.0091	0.09	Q				
1+35	0.0097	0.09	Q				
1+40	0.0103	0.09	QV				
1+45	0.0109	0.09	QV				
1+50	0.0115	0.09	QV				
1+55	0.0121	0.09	QV				
2+ 0	0.0127	0.09	QV				
2+ 5	0.0134	0.09	QV				
2+10	0.0140	0.09	QV				
2+15	0.0146	0.09	QV				
2+20	0.0152	0.09	QV				
2+25	0.0158	0.09	QV				
2+30	0.0165	0.09	QV				
2+35	0.0171	0.09	QV				
2+40	0.0177	0.09	QV				
2+45	0.0184	0.09	QV				
2+50	0.0190	0.09	QV				
2+55	0.0196	0.09	QV				
3+ 0	0.0203	0.09	QV				
3+ 5	0.0209	0.09	Q V				
3+10	0.0216	0.09	Q V				
3+15	0.0222	0.09	Q V				
3+20	0.0229	0.09	Q V				
3+25	0.0235	0.09	Q V				
3+30	0.0242	0.09	Q V				
3+35	0.0248	0.10	Q V				
3+40	0.0255	0.10	Q V				
3+45	0.0261	0.10	Q V				
3+50	0.0268	0.10	Q V				
3+55	0.0275	0.10	Q V				
4+ 0	0.0281	0.10	Q V				
4+ 5	0.0288	0.10	Q V				
4+10	0.0295	0.10	Q V				
4+15	0.0301	0.10	Q V				
4+20	0.0308	0.10	Q V				
4+25	0.0315	0.10	Q V				
4+30	0.0322	0.10	Q V				
4+35	0.0329	0.10	Q V				
4+40	0.0336	0.10	Q V				

4+45	0.0343	0.10	Q	V				
4+50	0.0349	0.10	Q	V				
4+55	0.0356	0.10	Q	V				
5+ 0	0.0363	0.10	Q	V				
5+ 5	0.0370	0.10	Q	V				
5+10	0.0378	0.10	Q	V				
5+15	0.0385	0.10	Q	V				
5+20	0.0392	0.10	Q	V				
5+25	0.0399	0.10	Q	V				
5+30	0.0406	0.10	Q	V				
5+35	0.0413	0.10	Q	V				
5+40	0.0421	0.11	Q	V				
5+45	0.0428	0.11	Q	V				
5+50	0.0435	0.11	Q	V				
5+55	0.0442	0.11	Q	V				
6+ 0	0.0450	0.11	Q	V				
6+ 5	0.0457	0.11	Q	V				
6+10	0.0465	0.11	Q	V				
6+15	0.0472	0.11	Q	V				
6+20	0.0480	0.11	Q	V				
6+25	0.0487	0.11	Q	V				
6+30	0.0495	0.11	Q	V				
6+35	0.0502	0.11	Q	V				
6+40	0.0510	0.11	Q	V				
6+45	0.0518	0.11	Q	V				
6+50	0.0526	0.11	Q	V				
6+55	0.0533	0.11	Q	V				
7+ 0	0.0541	0.11	Q	V				
7+ 5	0.0549	0.11	Q	V				
7+10	0.0557	0.11	Q	V				
7+15	0.0565	0.12	Q	V				
7+20	0.0573	0.12	Q	V				
7+25	0.0581	0.12	Q	V				
7+30	0.0589	0.12	Q	V				
7+35	0.0597	0.12	Q	V				
7+40	0.0605	0.12	Q	V				
7+45	0.0613	0.12	Q	V				
7+50	0.0622	0.12	Q	V				
7+55	0.0630	0.12	Q	V				
8+ 0	0.0638	0.12	Q	V				
8+ 5	0.0647	0.12	Q	V				
8+10	0.0655	0.12	Q	V				
8+15	0.0664	0.12	Q	V				
8+20	0.0672	0.12	Q	V				
8+25	0.0681	0.12	Q	V				
8+30	0.0689	0.13	Q	V				
8+35	0.0698	0.13	Q	V				
8+40	0.0707	0.13	Q	V				
8+45	0.0716	0.13	Q	V				
8+50	0.0724	0.13	Q	V				
8+55	0.0733	0.13	Q	V				
9+ 0	0.0742	0.13	Q	V				
9+ 5	0.0751	0.13	Q	V				
9+10	0.0760	0.13	Q	V				
9+15	0.0769	0.13	Q	V				
9+20	0.0779	0.13	Q	V				
9+25	0.0788	0.13	Q	V				
9+30	0.0797	0.14	Q	V				
9+35	0.0807	0.14	Q	V				
9+40	0.0816	0.14	Q	V				
9+45	0.0826	0.14	Q	V				
9+50	0.0835	0.14	Q	V				
9+55	0.0845	0.14	Q	V				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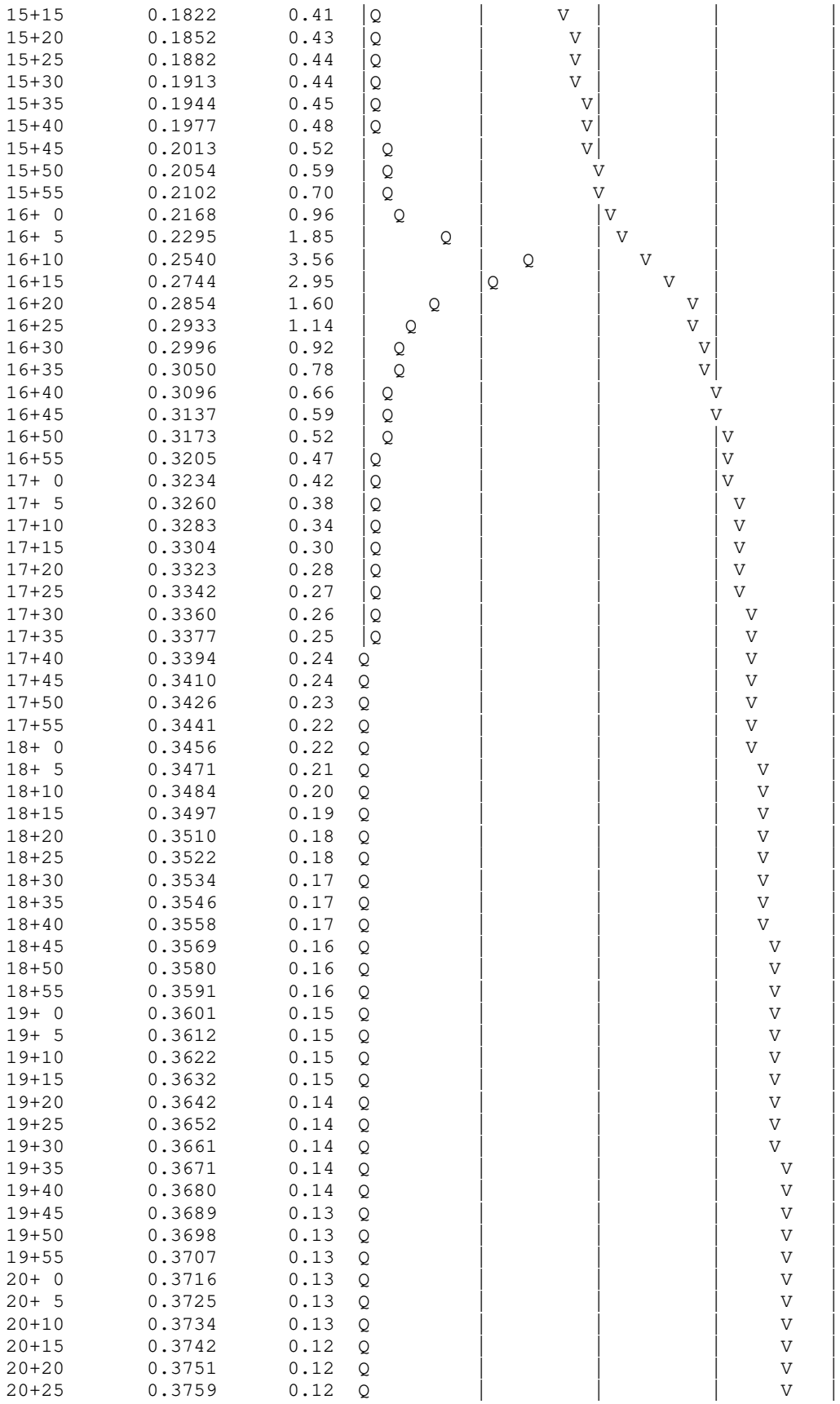
10+ 5 0.0864 0.14 Q V
10+10 0.0874 0.14 Q V
10+15 0.0884 0.14 Q V
10+20 0.0894 0.15 Q V
10+25 0.0904 0.15 Q V
10+30 0.0915 0.15 Q V
10+35 0.0925 0.15 Q V
10+40 0.0935 0.15 Q V
10+45 0.0946 0.15 Q V
10+50 0.0956 0.15 Q V
10+55 0.0967 0.15 Q V
11+ 0 0.0978 0.16 Q V
11+ 5 0.0989 0.16 Q V
11+10 0.1000 0.16 Q V
11+15 0.1011 0.16 Q V
11+20 0.1022 0.16 Q V
11+25 0.1033 0.16 Q V
11+30 0.1044 0.16 Q V
11+35 0.1056 0.17 Q V
11+40 0.1067 0.17 Q V
11+45 0.1079 0.17 Q V
11+50 0.1091 0.17 Q V
11+55 0.1103 0.17 Q V
12+ 0 0.1115 0.18 Q V
12+ 5 0.1127 0.18 Q V
12+10 0.1140 0.19 Q V
12+15 0.1153 0.19 Q V
12+20 0.1167 0.20 Q V
12+25 0.1181 0.20 Q V
12+30 0.1195 0.20 Q V
12+35 0.1209 0.21 Q V
12+40 0.1223 0.21 Q V
12+45 0.1238 0.21 Q V
12+50 0.1252 0.21 Q V
12+55 0.1267 0.22 Q V
13+ 0 0.1282 0.22 Q V
13+ 5 0.1298 0.22 Q V
13+10 0.1313 0.23 Q V
13+15 0.1329 0.23 Q V
13+20 0.1345 0.23 Q V
13+25 0.1362 0.24 Q V
13+30 0.1378 0.24 Q V
13+35 0.1395 0.24 Q V
13+40 0.1412 0.25 Q V
13+45 0.1429 0.25 Q V
13+50 0.1447 0.26 Q V
13+55 0.1465 0.26 Q V
14+ 0 0.1483 0.27 Q V
14+ 5 0.1502 0.27 Q V
14+10 0.1521 0.28 Q V
14+15 0.1541 0.28 Q V
14+20 0.1561 0.29 Q V
14+25 0.1581 0.30 Q V
14+30 0.1602 0.30 Q V
14+35 0.1624 0.31 Q V
14+40 0.1646 0.32 Q V
14+45 0.1669 0.33 Q V
14+50 0.1692 0.34 Q V
14+55 0.1716 0.35 Q V
15+ 0 0.1741 0.36 Q V
15+ 5 0.1767 0.38 Q V
15+10 0.1794 0.39 Q V



20+30	0.3767	0.12	Q	|	|	|	V |
20+35	0.3775	0.12	Q	|	|	|	V |
20+40	0.3783	0.12	Q	|	|	|	V |
20+45	0.3791	0.12	Q	|	|	|	V |
20+50	0.3799	0.11	Q	|	|	|	V |
20+55	0.3807	0.11	Q	|	|	|	V |
21+ 0	0.3815	0.11	Q	|	|	|	V |
21+ 5	0.3823	0.11	Q	|	|	|	V |
21+10	0.3830	0.11	Q	|	|	|	V |
21+15	0.3838	0.11	Q	|	|	|	V |
21+20	0.3845	0.11	Q	|	|	|	V |
21+25	0.3852	0.11	Q	|	|	|	V |
21+30	0.3860	0.11	Q	|	|	|	V |
21+35	0.3867	0.11	Q	|	|	|	V |
21+40	0.3874	0.10	Q	|	|	|	V |
21+45	0.3881	0.10	Q	|	|	|	V |
21+50	0.3888	0.10	Q	|	|	|	V |
21+55	0.3895	0.10	Q	|	|	|	V |
22+ 0	0.3902	0.10	Q	|	|	|	V |
22+ 5	0.3909	0.10	Q	|	|	|	V |
22+10	0.3916	0.10	Q	|	|	|	V |
22+15	0.3923	0.10	Q	|	|	|	V |
22+20	0.3930	0.10	Q	|	|	|	V |
22+25	0.3936	0.10	Q	|	|	|	V |
22+30	0.3943	0.10	Q	|	|	|	V |
22+35	0.3950	0.10	Q	|	|	|	V |
22+40	0.3956	0.09	Q	|	|	|	V |
22+45	0.3963	0.09	Q	|	|	|	V |
22+50	0.3969	0.09	Q	|	|	|	V|
22+55	0.3975	0.09	Q	|	|	|	V|
23+ 0	0.3982	0.09	Q	|	|	|	V|
23+ 5	0.3988	0.09	Q	|	|	|	V|
23+10	0.3994	0.09	Q	|	|	|	V|
23+15	0.4001	0.09	Q	|	|	|	V|
23+20	0.4007	0.09	Q	|	|	|	V|
23+25	0.4013	0.09	Q	|	|	|	V|
23+30	0.4019	0.09	Q	|	|	|	V|
23+35	0.4025	0.09	Q	|	|	|	V|
23+40	0.4031	0.09	Q	|	|	|	V|
23+45	0.4037	0.09	Q	|	|	|	V|
23+50	0.4043	0.09	Q	|	|	|	V|
23+55	0.4049	0.09	Q	|	|	|	V|
24+ 0	0.4055	0.09	Q	|	|	|	V|
24+ 5	0.4060	0.08	Q	|	|	|	V|
24+10	0.4064	0.05	Q	|	|	|	V|
24+15	0.4065	0.03	Q	|	|	|	V|
24+20	0.4067	0.02	Q	|	|	|	V|
24+25	0.4068	0.01	Q	|	|	|	V|
24+30	0.4068	0.01	Q	|	|	|	V|
24+35	0.4069	0.01	Q	|	|	|	V|
24+40	0.4069	0.00	Q	|	|	|	V|
24+45	0.4069	0.00	Q	|	|	|	V|
24+50	0.4069	0.00	Q	|	|	|	V|
24+55	0.4070	0.00	Q	|	|	|	V|
25+ 0	0.4070	0.00	Q	|	|	|	V|
25+ 5	0.4070	0.00	Q	|	|	|	V|

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

Study date 02/28/20

++

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

Program License Serial Number 6145

SUMMERLAND SENIOR LIVING
2 YEAR STORM EVENT - PROPOSED CONDITION
UNIT HYDROGRAPH STUDY
9944Q2PUNIHYDR

Storm Event Year = 2

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 2		
3.03	1	0.64
Rainfall data for year 2		
3.03	6	1.50
Rainfall data for year 2		
3.03	24	2.75

++

******** 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)
69.0	69.0	3.03	1.000	0.548	0.100	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr

```
     0.30   0.100         69.0      69.0       4.49     0.196
     2.73   0.900         98.0      98.0       0.20     0.916

Area-averaged catchment yield fraction, Y =  0.844
Area-averaged low loss fraction, Yb =  0.156
User entry of time of concentration  =   0.138 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =       3.03(Ac.)
Catchment Lag time =   0.110 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 75.4831
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.156 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.237(In)
Computed peak 30-minute rainfall =  0.485(In)
Specified peak 1-hour rainfall =  0.640(In)
Computed peak 3-hour rainfall =  1.079(In)
Specified peak 6-hour rainfall =  1.500(In)
Specified peak 24-hour rainfall =  2.750(In)


Rainfall depth area reduction factors:
Using a total area of       3.03(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.237(In)
30-minute factor = 1.000    Adjusted rainfall =  0.485(In)
1-hour factor = 1.000       Adjusted rainfall =  0.640(In)
3-hour factor = 1.000       Adjusted rainfall =  1.079(In)
6-hour factor = 1.000       Adjusted rainfall =  1.500(In)
24-hour factor = 1.000      Adjusted rainfall =  2.750(In)
----------------------------------------------------------------------

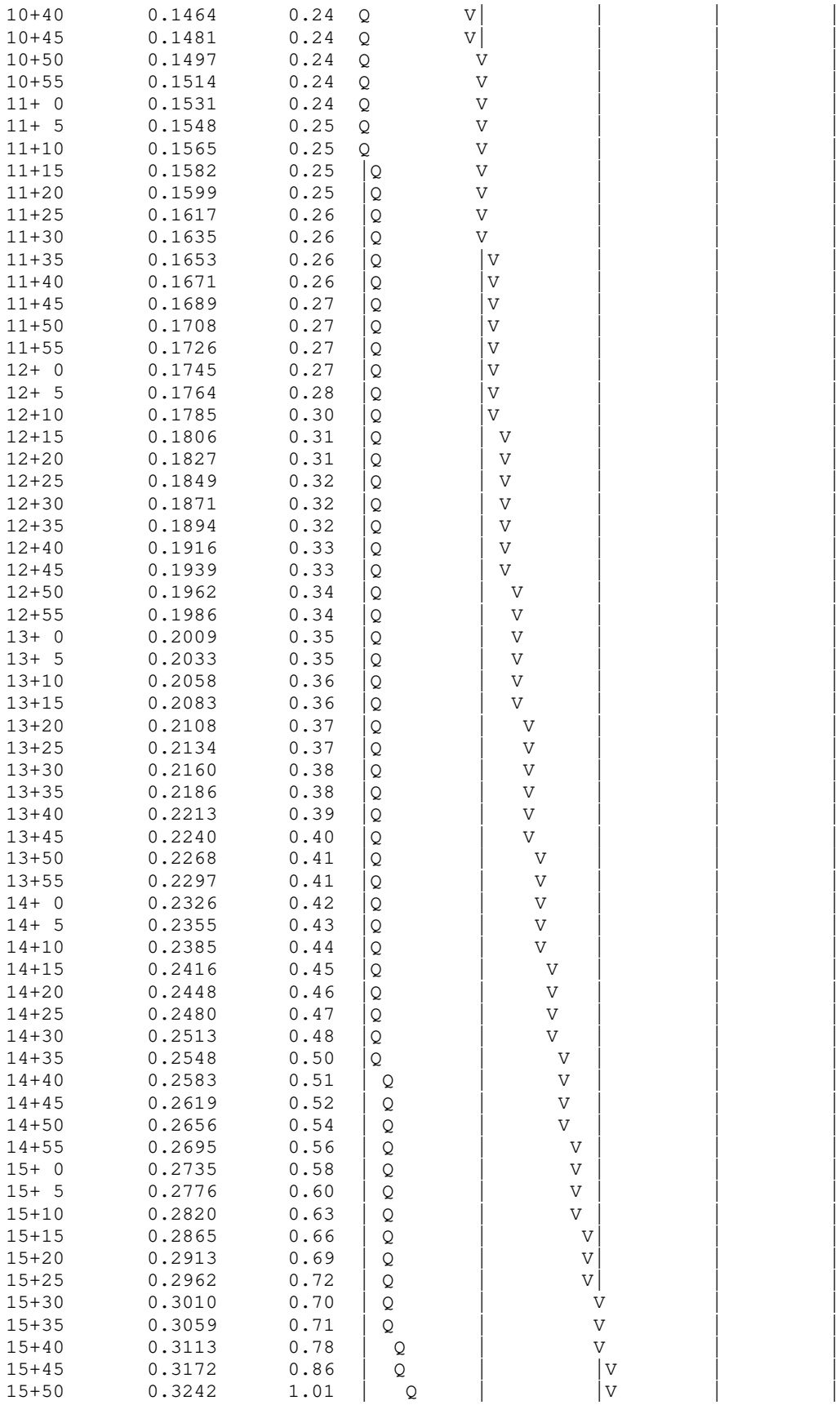
                    U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
----------------------------------------------------------------------
              (K =        36.64 (CFS))

  1               10.130                   3.712
  2               59.272                  18.008
  3               92.217                  12.072
  4               98.509                   2.306
  5              100.000                   0.546
----------------------------------------------------------------------
----------------------------------------------------------------------
----------------------------------------------------------------------
Total soil rain loss =      0.38(In)
Total effective rainfall =      2.37(In)
Peak flow rate in flood hydrograph =      5.33(CFS)
----------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    24 - H O U R    S T O R M
                R u n o f f      H y d r o g r a p h
----------------------------------------------------------------------
             Hydrograph in   5   Minute intervals ((CFS))

----------------------------------------------------------------------
Time(h+m) Volume Ac.Ft    Q(CFS)  0        2.5       5.0       7.5      10.0
----------------------------------------------------------------------
  0+ 5       0.0001      0.01  Q         |         |         |         |
```

0+10	0.0006	0.08	Q				
0+15	0.0014	0.12	Q				
0+20	0.0023	0.13	Q				
0+25	0.0032	0.13	Q				
0+30	0.0041	0.13	Q				
0+35	0.0050	0.13	Q				
0+40	0.0059	0.13	Q				
0+45	0.0068	0.13	Q				
0+50	0.0077	0.13	Q				
0+55	0.0087	0.13	Q				
1+ 0	0.0096	0.13	Q				
1+ 5	0.0105	0.13	Q				
1+10	0.0114	0.13	Q				
1+15	0.0123	0.13	Q				
1+20	0.0133	0.13	Q				
1+25	0.0142	0.14	Q				
1+30	0.0151	0.14	QV				
1+35	0.0161	0.14	QV				
1+40	0.0170	0.14	QV				
1+45	0.0179	0.14	QV				
1+50	0.0189	0.14	QV				
1+55	0.0198	0.14	QV				
2+ 0	0.0208	0.14	QV				
2+ 5	0.0217	0.14	QV				
2+10	0.0227	0.14	QV				
2+15	0.0237	0.14	QV				
2+20	0.0246	0.14	QV				
2+25	0.0256	0.14	QV				
2+30	0.0266	0.14	QV				
2+35	0.0275	0.14	QV				
2+40	0.0285	0.14	QV				
2+45	0.0295	0.14	QV				
2+50	0.0305	0.14	Q V				
2+55	0.0315	0.14	Q V				
3+ 0	0.0325	0.14	Q V				
3+ 5	0.0335	0.14	Q V				
3+10	0.0345	0.15	Q V				
3+15	0.0355	0.15	Q V				
3+20	0.0365	0.15	Q V				
3+25	0.0375	0.15	Q V				
3+30	0.0385	0.15	Q V				
3+35	0.0395	0.15	Q V				
3+40	0.0405	0.15	Q V				
3+45	0.0416	0.15	Q V				
3+50	0.0426	0.15	Q V				
3+55	0.0436	0.15	Q V				
4+ 0	0.0447	0.15	Q V				
4+ 5	0.0457	0.15	Q V				
4+10	0.0467	0.15	Q V				
4+15	0.0478	0.15	Q V				
4+20	0.0488	0.15	Q V				
4+25	0.0499	0.15	Q V				
4+30	0.0510	0.15	Q V				
4+35	0.0520	0.15	Q V				
4+40	0.0531	0.16	Q V				
4+45	0.0542	0.16	Q V				
4+50	0.0553	0.16	Q V				
4+55	0.0563	0.16	Q V				
5+ 0	0.0574	0.16	Q V				
5+ 5	0.0585	0.16	Q V				
5+10	0.0596	0.16	Q V				
5+15	0.0607	0.16	Q V				
5+20	0.0618	0.16	Q V				

5+25	0.0629	0.16	Q	V				
5+30	0.0641	0.16	Q	V				
5+35	0.0652	0.16	Q	V				
5+40	0.0663	0.16	Q	V				
5+45	0.0674	0.16	Q	V				
5+50	0.0686	0.17	Q	V				
5+55	0.0697	0.17	Q	V				
6+ 0	0.0709	0.17	Q	V				
6+ 5	0.0720	0.17	Q	V				
6+10	0.0732	0.17	Q	V				
6+15	0.0743	0.17	Q	V				
6+20	0.0755	0.17	Q	V				
6+25	0.0767	0.17	Q	V				
6+30	0.0778	0.17	Q	V				
6+35	0.0790	0.17	Q	V				
6+40	0.0802	0.17	Q	V				
6+45	0.0814	0.17	Q	V				
6+50	0.0826	0.17	Q	V				
6+55	0.0838	0.18	Q	V				
7+ 0	0.0851	0.18	Q	V				
7+ 5	0.0863	0.18	Q	V				
7+10	0.0875	0.18	Q	V				
7+15	0.0887	0.18	Q	V				
7+20	0.0900	0.18	Q	V				
7+25	0.0912	0.18	Q	V				
7+30	0.0925	0.18	Q	V				
7+35	0.0937	0.18	Q	V				
7+40	0.0950	0.18	Q	V				
7+45	0.0963	0.19	Q	V				
7+50	0.0976	0.19	Q	V				
7+55	0.0989	0.19	Q	V				
8+ 0	0.1002	0.19	Q	V				
8+ 5	0.1015	0.19	Q	V				
8+10	0.1028	0.19	Q	V				
8+15	0.1041	0.19	Q	V				
8+20	0.1054	0.19	Q	V				
8+25	0.1068	0.19	Q	V				
8+30	0.1081	0.20	Q	V				
8+35	0.1094	0.20	Q	V				
8+40	0.1108	0.20	Q	V				
8+45	0.1122	0.20	Q	V				
8+50	0.1136	0.20	Q	V				
8+55	0.1149	0.20	Q	V				
9+ 0	0.1163	0.20	Q	V				
9+ 5	0.1177	0.20	Q	V				
9+10	0.1192	0.21	Q	V				
9+15	0.1206	0.21	Q	V				
9+20	0.1220	0.21	Q	V				
9+25	0.1235	0.21	Q	V				
9+30	0.1249	0.21	Q	V				
9+35	0.1264	0.21	Q	V				
9+40	0.1279	0.21	Q	V				
9+45	0.1293	0.22	Q	V				
9+50	0.1308	0.22	Q	V				
9+55	0.1323	0.22	Q	V				
10+ 0	0.1339	0.22	Q	V				
10+ 5	0.1354	0.22	Q	V				
10+10	0.1369	0.22	Q	V				
10+15	0.1385	0.23	Q	V				
10+20	0.1400	0.23	Q	V				
10+25	0.1416	0.23	Q	V				
10+30	0.1432	0.23	Q	V				
10+35	0.1448	0.23	Q	V				



```
15+55       0.3326      1.22  |   Q     |         | V       |         |
16+ 0       0.3441      1.66  |     Q   |         |  V      |         |
16+ 5       0.3637      2.85  |         |Q        |   V     |         |
16+10       0.4003      5.33  |         |         |Q    V   |         |
16+15       0.4266      3.82  |         |    Q    |       V |         |
16+20       0.4377      1.61  |     Q   |         |        V|         |
16+25       0.4445      0.99  |  Q      |         |        V|         |
16+30       0.4499      0.78  |  Q      |         |         V         |
16+35       0.4548      0.72  | Q       |         |         V         |
16+40       0.4593      0.65  | Q       |         |         V         |
16+45       0.4634      0.60  | Q       |         |         V         |
16+50       0.4673      0.56  | Q       |         |         |V        |
16+55       0.4709      0.52  | Q       |         |         |V        |
17+ 0       0.4742      0.49  |Q        |         |         |V        |
17+ 5       0.4775      0.47  |Q        |         |         |V        |
17+10       0.4805      0.45  |Q        |         |         | V       |
17+15       0.4835      0.43  |Q        |         |         | V       |
17+20       0.4863      0.41  |Q        |         |         | V       |
17+25       0.4890      0.40  |Q        |         |         | V       |
17+30       0.4917      0.38  |Q        |         |         | V       |
17+35       0.4942      0.37  |Q        |         |         |  V      |
17+40       0.4967      0.36  |Q        |         |         |  V      |
17+45       0.4991      0.35  |Q        |         |         |  V      |
17+50       0.5014      0.34  |Q        |         |         |  V      |
17+55       0.5037      0.33  |Q        |         |         |  V      |
18+ 0       0.5059      0.32  |Q        |         |         |  V      |
18+ 5       0.5081      0.31  |Q        |         |         |  V      |
18+10       0.5101      0.29  |Q        |         |         |   V     |
18+15       0.5120      0.28  |Q        |         |         |   V     |
18+20       0.5139      0.27  |Q        |         |         |   V     |
18+25       0.5157      0.27  |Q        |         |         |   V     |
18+30       0.5175      0.26  |Q        |         |         |   V     |
18+35       0.5193      0.25  |Q        |         |         |   V     |
18+40       0.5210      0.25  Q         |         |         |   V     |
18+45       0.5227      0.25  Q         |         |         |   V     |
18+50       0.5243      0.24  Q         |         |         |    V    |
18+55       0.5260      0.24  Q         |         |         |    V    |
19+ 0       0.5276      0.23  Q         |         |         |    V    |
19+ 5       0.5291      0.23  Q         |         |         |    V    |
19+10       0.5307      0.23  Q         |         |         |    V    |
19+15       0.5322      0.22  Q         |         |         |    V    |
19+20       0.5337      0.22  Q         |         |         |    V    |
19+25       0.5352      0.22  Q         |         |         |    V    |
19+30       0.5367      0.21  Q         |         |         |    V    |
19+35       0.5381      0.21  Q         |         |         |    V    |
19+40       0.5395      0.21  Q         |         |         |     V   |
19+45       0.5409      0.20  Q         |         |         |     V   |
19+50       0.5423      0.20  Q         |         |         |     V   |
19+55       0.5437      0.20  Q         |         |         |     V   |
20+ 0       0.5450      0.20  Q         |         |         |     V   |
20+ 5       0.5464      0.19  Q         |         |         |     V   |
20+10       0.5477      0.19  Q         |         |         |     V   |
20+15       0.5490      0.19  Q         |         |         |     V   |
20+20       0.5503      0.19  Q         |         |         |     V   |
20+25       0.5515      0.18  Q         |         |         |     V   |
20+30       0.5528      0.18  Q         |         |         |     V   |
20+35       0.5540      0.18  Q         |         |         |      V  |
20+40       0.5553      0.18  Q         |         |         |      V  |
20+45       0.5565      0.18  Q         |         |         |      V  |
20+50       0.5577      0.18  Q         |         |         |      V  |
20+55       0.5589      0.17  Q         |         |         |      V  |
21+ 0       0.5601      0.17  Q         |         |         |      V  |
21+ 5       0.5613      0.17  Q         |         |         |      V  |
```

21+10	0.5624	0.17	Q				V
21+15	0.5636	0.17	Q				V
21+20	0.5647	0.17	Q				V
21+25	0.5658	0.16	Q				V
21+30	0.5670	0.16	Q				V
21+35	0.5681	0.16	Q				V
21+40	0.5692	0.16	Q				V
21+45	0.5703	0.16	Q				V
21+50	0.5713	0.16	Q				V
21+55	0.5724	0.16	Q				V
22+ 0	0.5735	0.15	Q				V
22+ 5	0.5745	0.15	Q				V
22+10	0.5756	0.15	Q				V
22+15	0.5766	0.15	Q				V
22+20	0.5777	0.15	Q				V
22+25	0.5787	0.15	Q				V
22+30	0.5797	0.15	Q				V
22+35	0.5807	0.15	Q				V
22+40	0.5817	0.15	Q				V
22+45	0.5827	0.14	Q				V
22+50	0.5837	0.14	Q				V
22+55	0.5847	0.14	Q				V
23+ 0	0.5856	0.14	Q				V
23+ 5	0.5866	0.14	Q				V
23+10	0.5876	0.14	Q				V
23+15	0.5885	0.14	Q				V
23+20	0.5895	0.14	Q				V
23+25	0.5904	0.14	Q				V
23+30	0.5913	0.14	Q				V
23+35	0.5923	0.13	Q				V
23+40	0.5932	0.13	Q				V
23+45	0.5941	0.13	Q				V
23+50	0.5950	0.13	Q				V
23+55	0.5959	0.13	Q				V
24+ 0	0.5968	0.13	Q				V
24+ 5	0.5976	0.12	Q				V
24+10	0.5980	0.05	Q				V
24+15	0.5981	0.01	Q				V
24+20	0.5981	0.00	Q				V

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

Study date 03/02/20

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

Program License Serial Number 6145

SUMMERLAND SENIOR LIVING
100 YEAR STORM EVENT - EXISTING CONDITION
UNIT HYDROGRAPH STUDY
9944Q100EUNIHYDR

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		
3.15	1	1.35
Rainfall data for year 100		
3.15	6	3.60
Rainfall data for year 100		
3.15	24	7.60

++

******** 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)
86.0	97.2	3.15	1.000	0.055	1.000	0.055

Area-averaged adjusted loss rate Fm (In/Hr) = 0.055

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr

```
     3.15   1.000         86.0      97.2       0.29     0.956

Area-averaged catchment yield fraction, Y =  0.956
Area-averaged low loss fraction, Yb =  0.044
User entry of time of concentration  =   0.178 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =       3.15(Ac.)
Catchment Lag time =   0.142 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 58.5206
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.055(In/Hr)
Average low loss rate fraction (Yb) = 0.044 (decimal)
VALLEY UNDEVELOPED S-Graph Selected
Computed peak 5-minute rainfall =  0.500(In)
Computed peak 30-minute rainfall =  1.023(In)
Specified peak 1-hour rainfall =  1.350(In)
Computed peak 3-hour rainfall =  2.463(In)
Specified peak 6-hour rainfall =  3.600(In)
Specified peak 24-hour rainfall =  7.600(In)


Rainfall depth area reduction factors:
Using a total area of       3.15(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.500(In)
30-minute factor = 1.000    Adjusted rainfall =  1.023(In)
1-hour factor = 1.000       Adjusted rainfall =  1.350(In)
3-hour factor = 1.000       Adjusted rainfall =  2.463(In)
6-hour factor = 1.000       Adjusted rainfall =  3.600(In)
24-hour factor = 1.000      Adjusted rainfall =  7.600(In)
----------------------------------------------------------------------

                   U n i t  H y d r o g r a p h
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
----------------------------------------------------------------------
              (K =        38.10 (CFS))

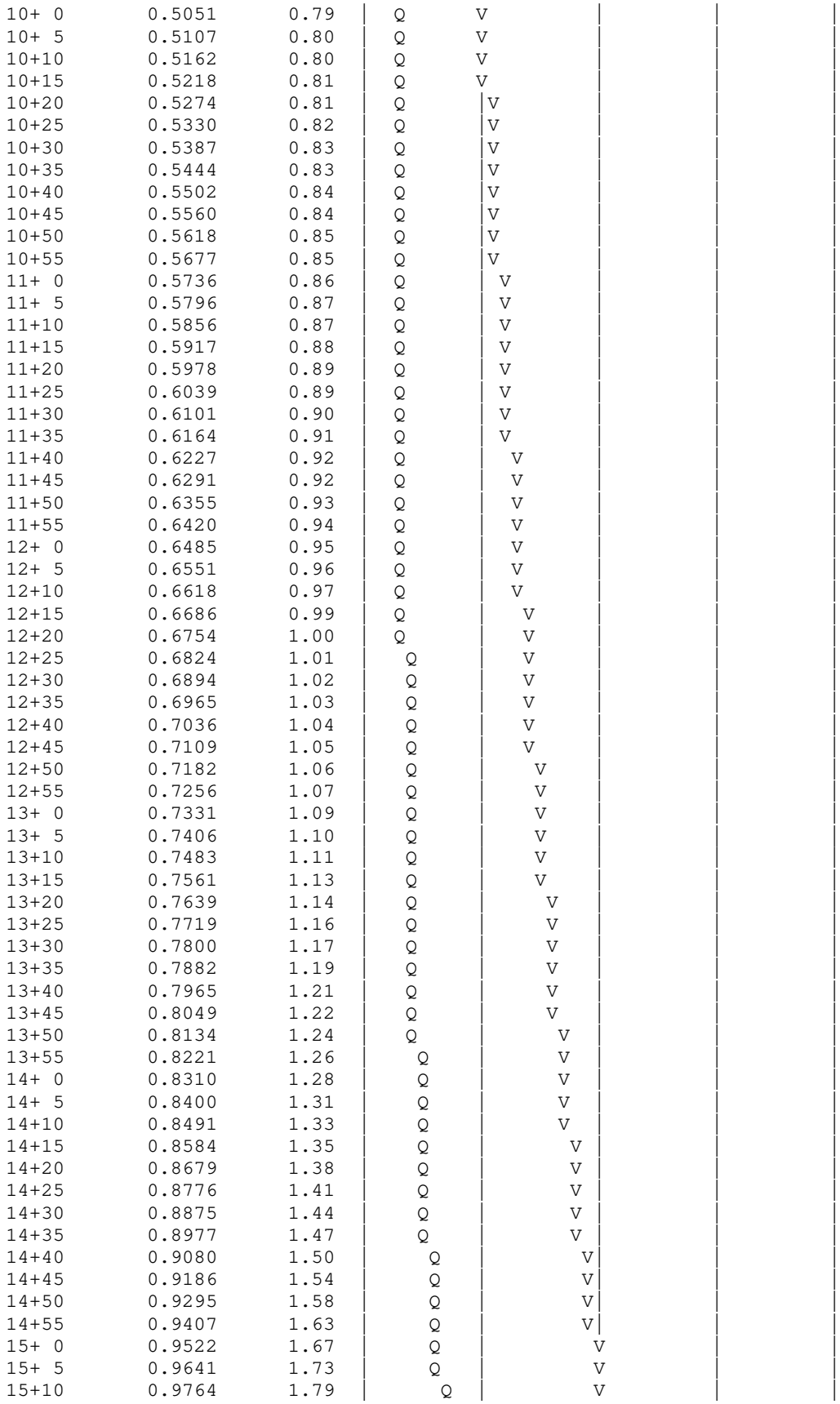
  1                7.883                    3.003
  2               40.789                   12.536
  3               67.839                   10.305
  4               78.422                    4.032
  5               84.606                    2.356
  6               88.806                    1.600
  7               91.827                    1.151
  8               93.939                    0.805
  9               95.674                    0.661
 10               96.988                    0.501
 11               97.995                    0.383
 12               98.729                    0.279
 13               99.315                    0.223
 14              100.000                    0.112
----------------------------------------------------------------------
----------------------------------------------------------------------
----------------------------------------------------------------------
Total soil rain loss =      0.31(In)
Total effective rainfall =      7.29(In)
Peak flow rate in flood hydrograph =      9.03(CFS)
----------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                   24 - H O U R    S T O R M
```

R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 2.5 5.0 7.5 10.0
0+ 5	0.0003	0.04	Q
0+10	0.0017	0.21	Q
0+15	0.0042	0.35	VQ
0+20	0.0070	0.41	VQ
0+25	0.0100	0.44	VQ
0+30	0.0132	0.46	VQ
0+35	0.0165	0.48	VQ
0+40	0.0199	0.49	VQ
0+45	0.0234	0.50	V Q
0+50	0.0269	0.51	V Q
0+55	0.0304	0.52	V Q
1+ 0	0.0340	0.52	V Q
1+ 5	0.0377	0.53	V Q
1+10	0.0413	0.53	V Q
1+15	0.0450	0.53	V Q
1+20	0.0486	0.53	VQ
1+25	0.0523	0.53	VQ
1+30	0.0560	0.54	VQ
1+35	0.0597	0.54	VQ
1+40	0.0634	0.54	VQ
1+45	0.0671	0.54	VQ
1+50	0.0708	0.54	VQ
1+55	0.0746	0.54	VQ
2+ 0	0.0783	0.54	VQ
2+ 5	0.0821	0.55	VQ
2+10	0.0858	0.55	VQ
2+15	0.0896	0.55	VQ
2+20	0.0934	0.55	VQ
2+25	0.0972	0.55	Q
2+30	0.1010	0.55	Q
2+35	0.1048	0.55	Q
2+40	0.1087	0.56	Q
2+45	0.1125	0.56	Q
2+50	0.1163	0.56	Q
2+55	0.1202	0.56	Q
3+ 0	0.1241	0.56	Q
3+ 5	0.1280	0.56	Q
3+10	0.1319	0.57	Q
3+15	0.1358	0.57	Q
3+20	0.1397	0.57	Q
3+25	0.1436	0.57	QV
3+30	0.1476	0.57	QV
3+35	0.1515	0.57	QV
3+40	0.1555	0.58	QV
3+45	0.1595	0.58	QV
3+50	0.1634	0.58	QV
3+55	0.1674	0.58	QV
4+ 0	0.1715	0.58	QV
4+ 5	0.1755	0.58	QV
4+10	0.1795	0.59	QV
4+15	0.1836	0.59	QV
4+20	0.1876	0.59	QV
4+25	0.1917	0.59	Q V
4+30	0.1958	0.59	Q V
4+35	0.1999	0.60	Q V
4+40	0.2040	0.60	Q V

4+45	0.2082	0.60	Q V			
4+50	0.2123	0.60	Q V			
4+55	0.2165	0.60	Q V			
5+ 0	0.2207	0.61	Q V			
5+ 5	0.2248	0.61	Q V			
5+10	0.2290	0.61	Q V			
5+15	0.2333	0.61	Q V			
5+20	0.2375	0.61	Q V			
5+25	0.2417	0.62	Q V			
5+30	0.2460	0.62	Q V			
5+35	0.2503	0.62	Q V			
5+40	0.2546	0.62	Q V			
5+45	0.2589	0.63	Q V			
5+50	0.2632	0.63	Q V			
5+55	0.2676	0.63	Q V			
6+ 0	0.2719	0.63	Q V			
6+ 5	0.2763	0.64	Q V			
6+10	0.2807	0.64	Q V			
6+15	0.2851	0.64	Q V			
6+20	0.2895	0.64	Q V			
6+25	0.2940	0.64	Q V			
6+30	0.2984	0.65	Q V			
6+35	0.3029	0.65	Q V			
6+40	0.3074	0.65	Q V			
6+45	0.3119	0.66	Q V			
6+50	0.3164	0.66	Q V			
6+55	0.3210	0.66	Q V			
7+ 0	0.3255	0.66	Q V			
7+ 5	0.3301	0.67	Q V			
7+10	0.3347	0.67	Q V			
7+15	0.3394	0.67	Q V			
7+20	0.3440	0.67	Q V			
7+25	0.3487	0.68	Q V			
7+30	0.3534	0.68	Q V			
7+35	0.3581	0.68	Q V			
7+40	0.3628	0.69	Q V			
7+45	0.3675	0.69	Q V			
7+50	0.3723	0.69	Q V			
7+55	0.3771	0.70	Q V			
8+ 0	0.3819	0.70	Q V			
8+ 5	0.3868	0.70	Q V			
8+10	0.3916	0.71	Q V			
8+15	0.3965	0.71	Q V			
8+20	0.4014	0.71	Q V			
8+25	0.4063	0.72	Q V			
8+30	0.4113	0.72	Q V			
8+35	0.4163	0.72	Q V			
8+40	0.4213	0.73	Q V			
8+45	0.4263	0.73	Q V			
8+50	0.4314	0.73	Q V			
8+55	0.4365	0.74	Q V			
9+ 0	0.4416	0.74	Q V			
9+ 5	0.4467	0.75	Q V			
9+10	0.4519	0.75	Q V			
9+15	0.4571	0.75	Q V			
9+20	0.4623	0.76	Q V			
9+25	0.4675	0.76	Q V			
9+30	0.4728	0.77	Q V			
9+35	0.4781	0.77	Q V			
9+40	0.4835	0.78	Q V			
9+45	0.4888	0.78	Q V			
9+50	0.4942	0.78	Q V			
9+55	0.4997	0.79	Q V			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10+30 0.5387 0.83
10+35 0.5444 0.83
10+40 0.5502 0.84
10+45 0.5560 0.84
10+50 0.5618 0.85
10+55 0.5677 0.85
11+ 0 0.5736 0.86
11+ 5 0.5796 0.87
11+10 0.5856 0.87
11+15 0.5917 0.88
11+20 0.5978 0.89
11+25 0.6039 0.89
11+30 0.6101 0.90
11+35 0.6164 0.91
11+40 0.6227 0.92
11+45 0.6291 0.92
11+50 0.6355 0.93
11+55 0.6420 0.94
12+ 0 0.6485 0.95
12+ 5 0.6551 0.96
12+10 0.6618 0.97
12+15 0.6686 0.99
12+20 0.6754 1.00
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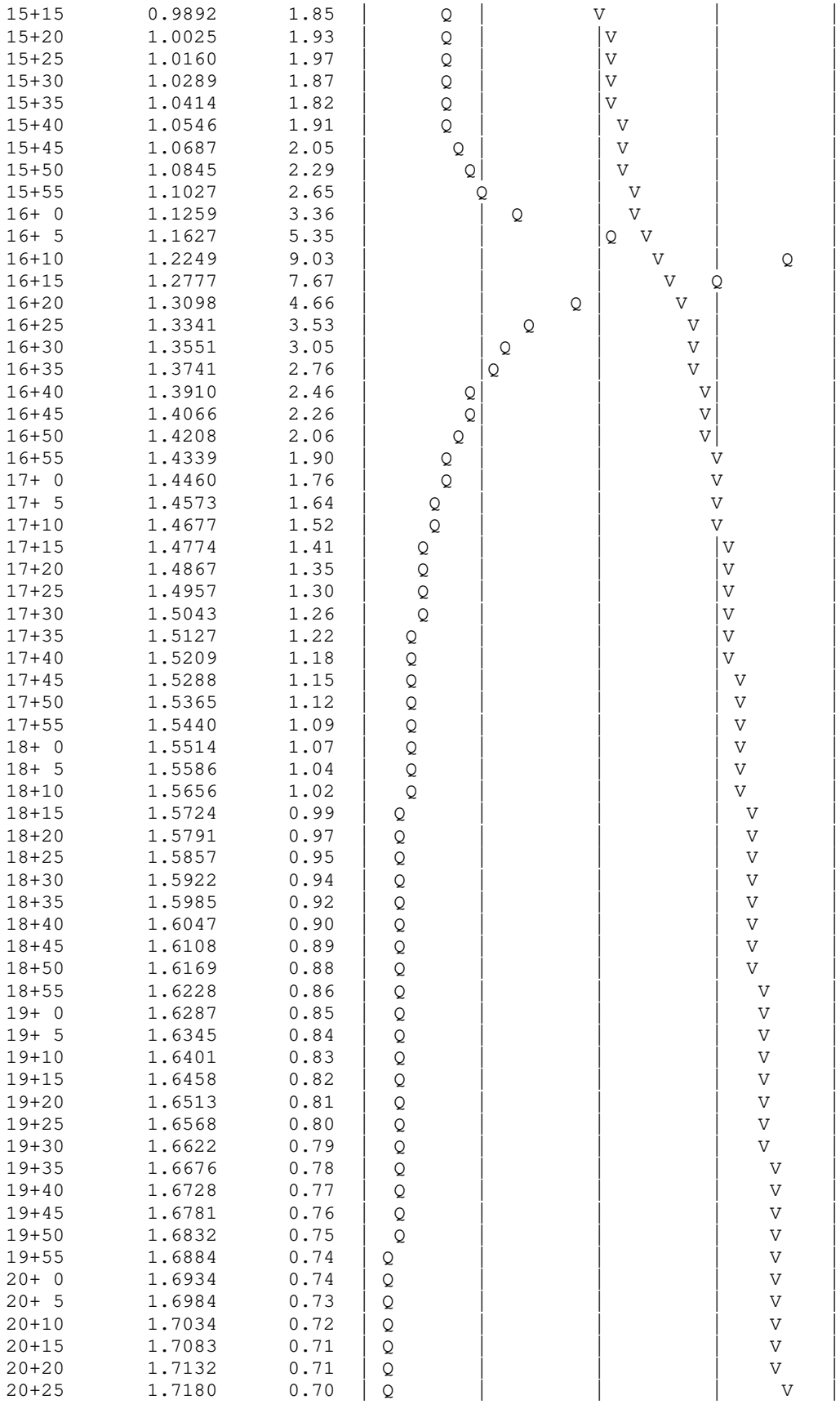
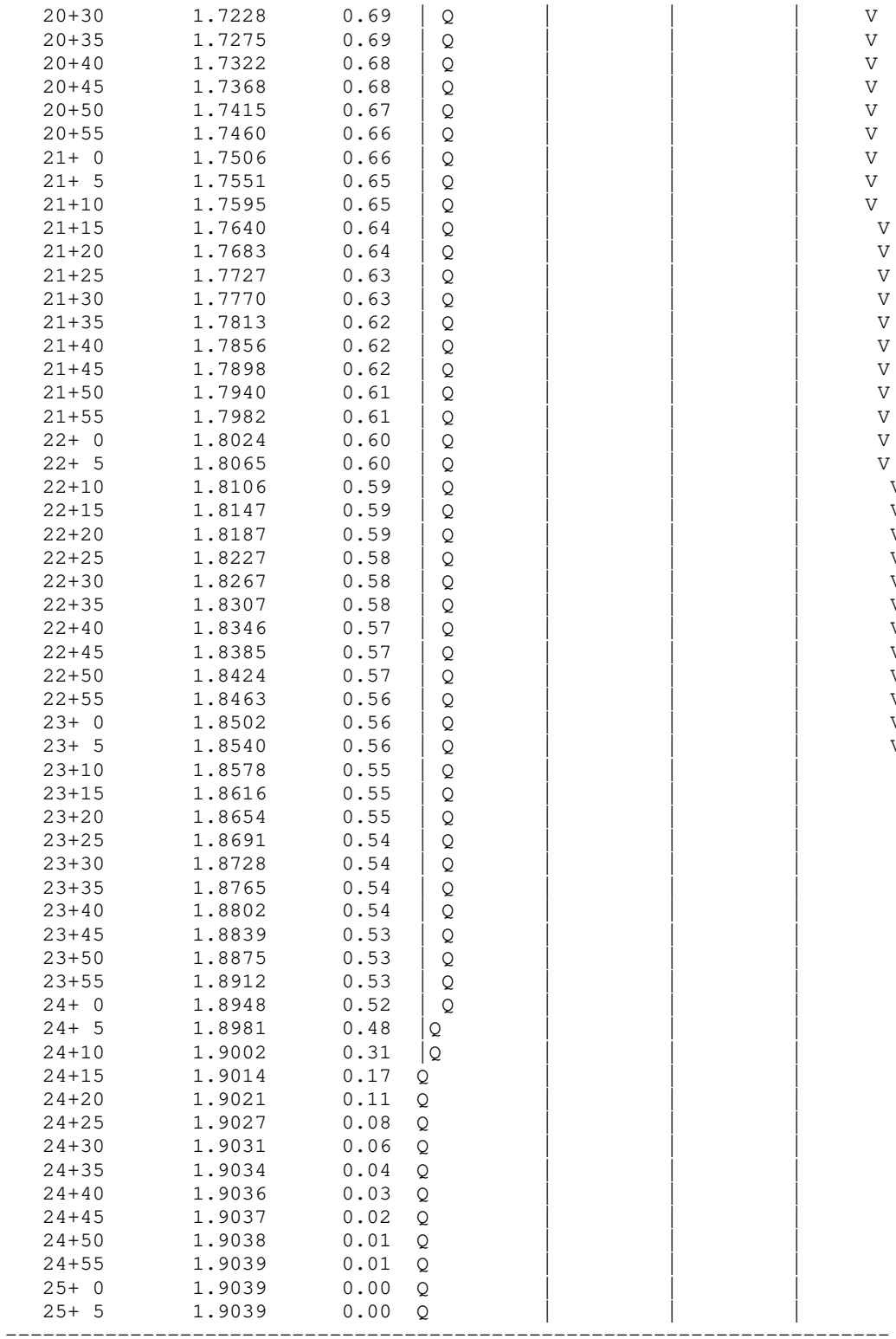
12+40 0.7036 1.04
12+45 0.7109 1.05
12+50 0.7182 1.06
12+55 0.7256 1.07
13+ 0 0.7331 1.09
13+ 5 0.7406 1.10
13+10 0.7483 1.11
13+15 0.7561 1.13
13+20 0.7639 1.14
13+25 0.7719 1.16
13+30 0.7800 1.17
13+35 0.7882 1.19
13+40 0.7965 1.21
13+45 0.8049 1.22
13+50 0.8134 1.24
13+55 0.8221 1.26
14+ 0 0.8310 1.28
14+ 5 0.8400 1.31
14+10 0.8491 1.33
14+15 0.8584 1.35
14+20 0.8679 1.38
14+25 0.8776 1.41
14+30 0.8875 1.44
14+35 0.8977 1.47
14+40 0.9080 1.50
14+45 0.9186 1.54
14+50 0.9295 1.58
14+55 0.9407 1.63
15+ 0 0.9522 1.67
15+ 5 0.9641 1.73
15+10 0.9764 1.79

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21+ 0 1.7506 0.66
21+ 5 1.7551 0.65
21+10 1.7595 0.65
21+15 1.7640 0.64
21+20 1.7683 0.64
21+25 1.7727 0.63
21+30 1.7770 0.63
21+35 1.7813 0.62
21+40 1.7856 0.62
21+45 1.7898 0.62
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22+ 0 1.8024 0.60
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22+40 1.8346 0.57
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23+45 1.8839 0.53
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24+ 0 1.8948 0.52
24+ 5 1.8981 0.48
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24+40 1.9036 0.03
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24+55 1.9039 0.01
25+ 0 1.9039 0.00
25+ 5 1.9039 0.00

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

Study date 12/19/18

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

Program License Serial Number 6145

SUMMERLAND SENIOR LIVING
100 YEAR STORM EVENT - PROPOSED CONDITION
UNIT HYDROGRAPH STUDY
9944Q100PUNIHYDR

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		
3.03	1	1.35
Rainfall data for year 100		
3.03	6	3.60
Rainfall data for year 100		
3.03	24	7.60

++

******** 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)
69.0	86.2	3.03	1.000	0.262	0.100	0.026

Area-averaged adjusted loss rate Fm (In/Hr) = 0.026

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr

```
     0.30   0.100         69.0      86.2       1.60     0.785
     2.73   0.900         98.0      98.0       0.20     0.968

    Area-averaged catchment yield fraction, Y =  0.950
    Area-averaged low loss fraction, Yb =  0.050
    User entry of time of concentration  =   0.137 (hours)
    ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
    Watershed area =       3.03(Ac.)
    Catchment Lag time =   0.110 hours
    Unit interval =   5.000 minutes
    Unit interval percentage of lag time = 76.0341
    Hydrograph baseflow =     0.00(CFS)
    Average maximum watershed loss rate(Fm) =  0.026(In/Hr)
    Average low loss rate fraction (Yb) = 0.050 (decimal)
    VALLEY DEVELOPED S-Graph Selected
    Computed peak 5-minute rainfall =  0.500(In)
    Computed peak 30-minute rainfall =  1.023(In)
    Specified peak 1-hour rainfall =  1.350(In)
    Computed peak 3-hour rainfall =  2.463(In)
    Specified peak 6-hour rainfall =  3.600(In)
    Specified peak 24-hour rainfall =  7.600(In)


    Rainfall depth area reduction factors:
    Using a total area of       3.03(Ac.) (Ref: fig. E-4)

    5-minute factor = 1.000     Adjusted rainfall =  0.500(In)
    30-minute factor = 1.000    Adjusted rainfall =  1.023(In)
    1-hour factor = 1.000       Adjusted rainfall =  1.350(In)
    3-hour factor = 1.000       Adjusted rainfall =  2.463(In)
    6-hour factor = 1.000       Adjusted rainfall =  3.600(In)
    24-hour factor = 1.000      Adjusted rainfall =  7.600(In)
    ----------------------------------------------------------------------

                        U n i t  H y d r o g r a p h
    ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
    Interval          'S' Graph          Unit Hydrograph
    Number            Mean values             ((CFS))
    ----------------------------------------------------------------------
                 (K =        36.64 (CFS))

      1                10.271                   3.764
      2                59.833                  18.162
      3                92.461                  11.956
      4                98.556                   2.233
      5               100.000                   0.529
    ----------------------------------------------------------------------
    ----------------------------------------------------------------------
    ----------------------------------------------------------------------
    Total soil rain loss =      0.33(In)
    Total effective rainfall =      7.27(In)
    Peak flow rate in flood hydrograph =     11.56(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       0.0004       0.05  Q         |         |         |         |
```

0+10	0.0024	0.30	Q	|	|	|	|
0+15	0.0056	0.46	Q	|	|	|	|
0+20	0.0089	0.49	Q	|	|	|	|
0+25	0.0124	0.50	Q	|	|	|	|
0+30	0.0158	0.50	Q	|	|	|	|
0+35	0.0193	0.50	VQ	|	|	|	|
0+40	0.0227	0.50	VQ	|	|	|	|
0+45	0.0262	0.50	VQ	|	|	|	|
0+50	0.0297	0.50	VQ	|	|	|	|
0+55	0.0331	0.51	VQ	|	|	|	|
1+ 0	0.0366	0.51	VQ	|	|	|	|
1+ 5	0.0401	0.51	VQ	|	|	|	|
1+10	0.0437	0.51	VQ	|	|	|	|
1+15	0.0472	0.51	|Q	|	|	|	|
1+20	0.0507	0.51	|Q	|	|	|	|
1+25	0.0542	0.51	|Q	|	|	|	|
1+30	0.0578	0.52	|Q	|	|	|	|
1+35	0.0613	0.52	|Q	|	|	|	|
1+40	0.0649	0.52	|Q	|	|	|	|
1+45	0.0685	0.52	|Q	|	|	|	|
1+50	0.0721	0.52	|Q	|	|	|	|
1+55	0.0757	0.52	|Q	|	|	|	|
2+ 0	0.0793	0.52	|Q	|	|	|	|
2+ 5	0.0829	0.52	|Q	|	|	|	|
2+10	0.0865	0.53	|Q	|	|	|	|
2+15	0.0902	0.53	|Q	|	|	|	|
2+20	0.0938	0.53	|QV	|	|	|	|
2+25	0.0975	0.53	|QV	|	|	|	|
2+30	0.1011	0.53	|QV	|	|	|	|
2+35	0.1048	0.53	|QV	|	|	|	|
2+40	0.1085	0.54	|QV	|	|	|	|
2+45	0.1122	0.54	|QV	|	|	|	|
2+50	0.1159	0.54	|QV	|	|	|	|
2+55	0.1196	0.54	|QV	|	|	|	|
3+ 0	0.1233	0.54	|QV	|	|	|	|
3+ 5	0.1271	0.54	|QV	|	|	|	|
3+10	0.1308	0.54	|QV	|	|	|	|
3+15	0.1346	0.55	|QV	|	|	|	|
3+20	0.1384	0.55	|Q V	|	|	|	|
3+25	0.1421	0.55	|Q V	|	|	|	|
3+30	0.1459	0.55	|Q V	|	|	|	|
3+35	0.1497	0.55	|Q V	|	|	|	|
3+40	0.1536	0.55	|Q V	|	|	|	|
3+45	0.1574	0.56	|Q V	|	|	|	|
3+50	0.1612	0.56	|Q V	|	|	|	|
3+55	0.1651	0.56	|Q V	|	|	|	|
4+ 0	0.1690	0.56	|Q V	|	|	|	|
4+ 5	0.1728	0.56	|Q V	|	|	|	|
4+10	0.1767	0.57	|Q V	|	|	|	|
4+15	0.1806	0.57	|Q V	|	|	|	|
4+20	0.1846	0.57	|Q V	|	|	|	|
4+25	0.1885	0.57	|Q V	|	|	|	|
4+30	0.1924	0.57	|Q V	|	|	|	|
4+35	0.1964	0.57	|Q V	|	|	|	|
4+40	0.2004	0.58	|Q V	|	|	|	|
4+45	0.2043	0.58	|Q V	|	|	|	|
4+50	0.2083	0.58	|Q V	|	|	|	|
4+55	0.2123	0.58	|Q V	|	|	|	|
5+ 0	0.2164	0.58	|Q V	|	|	|	|
5+ 5	0.2204	0.59	|Q V	|	|	|	|
5+10	0.2244	0.59	|Q V	|	|	|	|
5+15	0.2285	0.59	|Q V	|	|	|	|
5+20	0.2326	0.59	|Q V	|	|	|	|

5+25	0.2367	0.59	Q V				
5+30	0.2408	0.60	Q V				
5+35	0.2449	0.60	Q V				
5+40	0.2491	0.60	Q V				
5+45	0.2532	0.60	Q V				
5+50	0.2574	0.61	Q V				
5+55	0.2616	0.61	Q V				
6+ 0	0.2658	0.61	Q V				
6+ 5	0.2700	0.61	Q V				
6+10	0.2742	0.61	Q V				
6+15	0.2785	0.62	Q V				
6+20	0.2827	0.62	Q V				
6+25	0.2870	0.62	Q V				
6+30	0.2913	0.62	Q V				
6+35	0.2956	0.63	Q V				
6+40	0.3000	0.63	Q V				
6+45	0.3043	0.63	Q V				
6+50	0.3087	0.63	Q V				
6+55	0.3131	0.64	Q V				
7+ 0	0.3175	0.64	Q V				
7+ 5	0.3219	0.64	Q V				
7+10	0.3263	0.65	Q V				
7+15	0.3308	0.65	Q V				
7+20	0.3353	0.65	Q V				
7+25	0.3398	0.65	Q V				
7+30	0.3443	0.66	Q V				
7+35	0.3488	0.66	Q V				
7+40	0.3534	0.66	Q V				
7+45	0.3580	0.67	Q V				
7+50	0.3626	0.67	Q V				
7+55	0.3672	0.67	Q V				
8+ 0	0.3719	0.67	Q V				
8+ 5	0.3765	0.68	Q V				
8+10	0.3812	0.68	Q V				
8+15	0.3859	0.68	Q V				
8+20	0.3907	0.69	Q V				
8+25	0.3954	0.69	Q V				
8+30	0.4002	0.69	Q V				
8+35	0.4050	0.70	Q V				
8+40	0.4098	0.70	Q V				
8+45	0.4147	0.71	Q V				
8+50	0.4196	0.71	Q V				
8+55	0.4245	0.71	Q V				
9+ 0	0.4294	0.72	Q V				
9+ 5	0.4344	0.72	Q V				
9+10	0.4394	0.72	Q V				
9+15	0.4444	0.73	Q V				
9+20	0.4494	0.73	Q V				
9+25	0.4545	0.74	Q V				
9+30	0.4596	0.74	Q V				
9+35	0.4647	0.74	Q V				
9+40	0.4699	0.75	Q V				
9+45	0.4751	0.75	Q V				
9+50	0.4803	0.76	Q V				
9+55	0.4855	0.76	Q V				
10+ 0	0.4908	0.77	Q V				
10+ 5	0.4962	0.77	Q V				
10+10	0.5015	0.78	Q V				
10+15	0.5069	0.78	Q V				
10+20	0.5123	0.79	Q V				
10+25	0.5178	0.79	Q V				
10+30	0.5233	0.80	Q V				
10+35	0.5288	0.80	Q V				

10+40	0.5344	0.81	Q	V			
10+45	0.5400	0.81	Q	V			
10+50	0.5456	0.82	Q	V			
10+55	0.5513	0.83	Q	V			
11+ 0	0.5571	0.83	Q	V			
11+ 5	0.5628	0.84	Q	V			
11+10	0.5687	0.85	Q	V			
11+15	0.5745	0.85	Q	V			
11+20	0.5804	0.86	Q	V			
11+25	0.5864	0.87	Q	V			
11+30	0.5924	0.87	Q	V			
11+35	0.5985	0.88	Q	V			
11+40	0.6046	0.89	Q	V			
11+45	0.6107	0.89	Q	V			
11+50	0.6170	0.90	Q	V			
11+55	0.6232	0.91	Q	V			
12+ 0	0.6296	0.92	Q	V			
12+ 5	0.6360	0.93	Q	V			
12+10	0.6425	0.95	Q	V			
12+15	0.6491	0.96	Q	V			
12+20	0.6557	0.97	Q	V			
12+25	0.6625	0.98	Q	V			
12+30	0.6693	0.99	Q	V			
12+35	0.6762	1.00	Q	V			
12+40	0.6831	1.01	Q	V			
12+45	0.6902	1.02	Q	V			
12+50	0.6973	1.03	Q	V			
12+55	0.7045	1.04	Q	V			
13+ 0	0.7118	1.06	Q	V			
13+ 5	0.7191	1.07	Q	V			
13+10	0.7266	1.08	Q	V			
13+15	0.7341	1.10	Q	V			
13+20	0.7418	1.11	Q	V			
13+25	0.7495	1.13	Q	V			
13+30	0.7574	1.14	Q	V			
13+35	0.7654	1.16	Q	V			
13+40	0.7735	1.18	Q	V			
13+45	0.7817	1.19	Q	V			
13+50	0.7900	1.21	Q	V			
13+55	0.7985	1.23	Q	V			
14+ 0	0.8072	1.25	Q	V			
14+ 5	0.8159	1.28	Q	V			
14+10	0.8249	1.30	Q	V			
14+15	0.8340	1.32	Q	V			
14+20	0.8433	1.35	Q	V			
14+25	0.8528	1.38	Q	V			
14+30	0.8625	1.41	Q	V			
14+35	0.8725	1.44	Q	V			
14+40	0.8827	1.48	Q	V			
14+45	0.8931	1.52	Q	V			
14+50	0.9039	1.56	Q	V			
14+55	0.9149	1.61	Q	V			
15+ 0	0.9264	1.66	Q	V			
15+ 5	0.9382	1.72	Q	V			
15+10	0.9505	1.79	Q	V			
15+15	0.9633	1.86	Q	V			
15+20	0.9767	1.95	Q	V			
15+25	0.9903	1.98	Q	V			
15+30	1.0027	1.79	Q	V			
15+35	1.0146	1.73	Q	V			
15+40	1.0275	1.87	Q	V			
15+45	1.0417	2.07	Q	V			
15+50	1.0582	2.40	Q	V			

15+55	1.0779	2.85	Q		V	
16+ 0	1.1040	3.79	Q		V	
16+ 5	1.1474	6.31	Q		V	
16+10	1.2270	11.56	Q		V	
16+15	1.2840	8.27	Q		V	
16+20	1.3090	3.63	Q		V	
16+25	1.3251	2.34	Q		V	
16+30	1.3392	2.04	Q		V	
16+35	1.3528	1.98	Q		V	
16+40	1.3655	1.84	Q		V	
16+45	1.3772	1.71	Q		V	
16+50	1.3882	1.60	Q		V	
16+55	1.3986	1.51	Q		V	
17+ 0	1.4085	1.43	Q		V	
17+ 5	1.4179	1.37	Q		V	
17+10	1.4270	1.32	Q		V	
17+15	1.4357	1.27	Q		V	
17+20	1.4442	1.23	Q		V	
17+25	1.4524	1.19	Q		V	
17+30	1.4603	1.15	Q		V	
17+35	1.4680	1.12	Q		V	
17+40	1.4756	1.09	Q		V	
17+45	1.4829	1.07	Q		V	
17+50	1.4901	1.04	Q		V	
17+55	1.4971	1.02	Q		V	
18+ 0	1.5039	1.00	Q		V	
18+ 5	1.5107	0.97	Q		V	
18+10	1.5172	0.95	Q		V	
18+15	1.5236	0.93	Q		V	
18+20	1.5298	0.91	Q		V	
18+25	1.5360	0.89	Q		V	
18+30	1.5420	0.88	Q		V	
18+35	1.5480	0.86	Q		V	
18+40	1.5538	0.85	Q		V	
18+45	1.5596	0.84	Q		V	
18+50	1.5653	0.82	Q		V	
18+55	1.5709	0.81	Q		V	
19+ 0	1.5764	0.80	Q		V	
19+ 5	1.5818	0.79	Q		V	
19+10	1.5872	0.78	Q		V	
19+15	1.5925	0.77	Q		V	
19+20	1.5978	0.76	Q		V	
19+25	1.6029	0.75	Q		V	
19+30	1.6081	0.74	Q		V	
19+35	1.6131	0.74	Q		V	
19+40	1.6181	0.73	Q		V	
19+45	1.6231	0.72	Q		V	
19+50	1.6280	0.71	Q		V	
19+55	1.6328	0.70	Q		V	
20+ 0	1.6376	0.70	Q		V	
20+ 5	1.6424	0.69	Q		V	
20+10	1.6471	0.68	Q		V	
20+15	1.6517	0.68	Q		V	
20+20	1.6564	0.67	Q		V	
20+25	1.6609	0.66	Q		V	
20+30	1.6655	0.66	Q		V	
20+35	1.6700	0.65	Q		V	
20+40	1.6744	0.65	Q		V	
20+45	1.6788	0.64	Q		V	
20+50	1.6832	0.64	Q		V	
20+55	1.6876	0.63	Q		V	
21+ 0	1.6919	0.63	Q		V	
21+ 5	1.6961	0.62	Q		V	

21+10	1.7004	0.62	Q				V
21+15	1.7046	0.61	Q				V
21+20	1.7088	0.61	Q				V
21+25	1.7129	0.60	Q				V
21+30	1.7170	0.60	Q				V
21+35	1.7211	0.59	Q				V
21+40	1.7252	0.59	Q				V
21+45	1.7292	0.59	Q				V
21+50	1.7332	0.58	Q				V
21+55	1.7372	0.58	Q				V
22+ 0	1.7412	0.57	Q				V
22+ 5	1.7451	0.57	Q				V
22+10	1.7490	0.57	Q				V
22+15	1.7529	0.56	Q				V
22+20	1.7567	0.56	Q				V
22+25	1.7605	0.56	Q				V
22+30	1.7643	0.55	Q				V
22+35	1.7681	0.55	Q				V
22+40	1.7719	0.55	Q				V
22+45	1.7756	0.54	Q				V
22+50	1.7793	0.54	Q				V
22+55	1.7830	0.54	Q				V
23+ 0	1.7867	0.53	Q				V
23+ 5	1.7903	0.53	Q				V
23+10	1.7940	0.53	Q				V
23+15	1.7976	0.52	Q				V
23+20	1.8012	0.52	Q				V
23+25	1.8048	0.52	Q				V
23+30	1.8083	0.52	Q				V
23+35	1.8118	0.51	Q				V
23+40	1.8154	0.51	Q				V
23+45	1.8189	0.51	Q				V
23+50	1.8223	0.51	Q				V
23+55	1.8258	0.50	Q				V
24+ 0	1.8293	0.50	Q				V
24+ 5	1.8323	0.45	Q				V
24+10	1.8337	0.20	Q				V
24+15	1.8340	0.04	Q				V
24+20	1.8340	0.01	Q				V

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2005
Study date: 03/03/20

SUMMERLAND SENIOR LIVING
2 YEAR STORM EVENT - PROPOSED CONDITION
ROUTING STUDY
9944Q2PROUTING

Program License Serial Number 6145

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

From study/file name: 9944Q2PUNIHYDR.rte
**********HYDROGRAPH DATA**********
Number of intervals = 292
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 5.325 (CFS)
Total volume = 0.598 (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 = 292
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

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

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.300	0.020	0.790	0.017	0.023
0.800	0.050	2.010	0.043	0.057
1.000	0.060	2.330	0.052	0.068
1.300	0.080	2.730	0.071	0.089
1.800	0.100	3.300	0.089	0.111
2.300	0.120	8.290	0.091	0.149
3.300	0.220	9.110	0.189	0.251

Hydrograph Detention Basin Routing

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

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	1.3	2.66	3.99	5.33	Depth (Ft.)
0.083	0.01	0.00	0.000	O					0.00
0.167	0.08	0.01	0.000	O					0.00
0.250	0.12	0.03	0.001	O					0.01
0.333	0.13	0.05	0.001	O					0.02
0.417	0.13	0.07	0.002	O					0.03
0.500	0.13	0.09	0.002	O					0.03
0.583	0.13	0.10	0.002	O					0.04
0.667	0.13	0.11	0.003	O					0.04
0.750	0.13	0.11	0.003	O					0.04
0.833	0.13	0.12	0.003	O					0.04
0.917	0.13	0.12	0.003	O					0.05
1.000	0.13	0.12	0.003	O					0.05
1.083	0.13	0.13	0.003	O					0.05
1.167	0.13	0.13	0.003	O					0.05
1.250	0.13	0.13	0.003	O					0.05
1.333	0.13	0.13	0.003	O					0.05
1.417	0.14	0.13	0.003	O					0.05
1.500	0.14	0.13	0.003	O					0.05
1.583	0.14	0.13	0.003	O					0.05
1.667	0.14	0.13	0.003	O					0.05
1.750	0.14	0.13	0.003	O					0.05
1.833	0.14	0.14	0.003	O					0.05
1.917	0.14	0.14	0.003	O					0.05
2.000	0.14	0.14	0.003	O					0.05
2.083	0.14	0.14	0.003	O					0.05
2.167	0.14	0.14	0.003	O					0.05
2.250	0.14	0.14	0.003	O					0.05
2.333	0.14	0.14	0.004	O					0.05
2.417	0.14	0.14	0.004	O					0.05
2.500	0.14	0.14	0.004	O					0.05
2.583	0.14	0.14	0.004	O					0.05
2.667	0.14	0.14	0.004	O					0.05
2.750	0.14	0.14	0.004	O					0.05
2.833	0.14	0.14	0.004	O					0.05
2.917	0.14	0.14	0.004	O					0.05
3.000	0.14	0.14	0.004	O					0.05
3.083	0.14	0.14	0.004	O					0.05
3.167	0.15	0.14	0.004	O					0.05
3.250	0.15	0.14	0.004	O					0.05
3.333	0.15	0.14	0.004	O					0.05
3.417	0.15	0.14	0.004	O					0.05
3.500	0.15	0.15	0.004	O					0.06
3.583	0.15	0.15	0.004	O					0.06
3.667	0.15	0.15	0.004	O					0.06
3.750	0.15	0.15	0.004	O					0.06
3.833	0.15	0.15	0.004	O					0.06
3.917	0.15	0.15	0.004	O					0.06
4.000	0.15	0.15	0.004	O					0.06
4.083	0.15	0.15	0.004	O					0.06
4.167	0.15	0.15	0.004	O					0.06
4.250	0.15	0.15	0.004	O					0.06
4.333	0.15	0.15	0.004	O					0.06
4.417	0.15	0.15	0.004	O					0.06
4.500	0.15	0.15	0.004	O					0.06
4.583	0.15	0.15	0.004	O					0.06

4.667	0.16	0.15	0.004	O					0.06
4.750	0.16	0.15	0.004	O					0.06
4.833	0.16	0.15	0.004	O					0.06
4.917	0.16	0.16	0.004	O					0.06
5.000	0.16	0.16	0.004	O					0.06
5.083	0.16	0.16	0.004	O					0.06
5.167	0.16	0.16	0.004	O					0.06
5.250	0.16	0.16	0.004	O					0.06
5.333	0.16	0.16	0.004	O					0.06
5.417	0.16	0.16	0.004	O					0.06
5.500	0.16	0.16	0.004	O					0.06
5.583	0.16	0.16	0.004	O					0.06
5.667	0.16	0.16	0.004	O					0.06
5.750	0.16	0.16	0.004	O					0.06
5.833	0.17	0.16	0.004	O					0.06
5.917	0.17	0.16	0.004	O					0.06
6.000	0.17	0.16	0.004	OI					0.06
6.083	0.17	0.16	0.004	OI					0.06
6.167	0.17	0.17	0.004	OI					0.06
6.250	0.17	0.17	0.004	OI					0.06
6.333	0.17	0.17	0.004	|O					0.06
6.417	0.17	0.17	0.004	|O					0.06
6.500	0.17	0.17	0.004	|O					0.06
6.583	0.17	0.17	0.004	|O					0.06
6.667	0.17	0.17	0.004	|O					0.06
6.750	0.17	0.17	0.004	|O					0.06
6.833	0.17	0.17	0.004	|O					0.07
6.917	0.18	0.17	0.004	|O					0.07
7.000	0.18	0.17	0.004	|O					0.07
7.083	0.18	0.17	0.004	|O					0.07
7.167	0.18	0.18	0.004	|O					0.07
7.250	0.18	0.18	0.004	|O					0.07
7.333	0.18	0.18	0.004	|O					0.07
7.417	0.18	0.18	0.005	|O					0.07
7.500	0.18	0.18	0.005	|O					0.07
7.583	0.18	0.18	0.005	|O					0.07
7.667	0.18	0.18	0.005	|O					0.07
7.750	0.19	0.18	0.005	|O					0.07
7.833	0.19	0.18	0.005	|O					0.07
7.917	0.19	0.18	0.005	|O					0.07
8.000	0.19	0.18	0.005	|O					0.07
8.083	0.19	0.19	0.005	|O					0.07
8.167	0.19	0.19	0.005	|O					0.07
8.250	0.19	0.19	0.005	|O					0.07
8.333	0.19	0.19	0.005	|O					0.07
8.417	0.19	0.19	0.005	|O					0.07
8.500	0.20	0.19	0.005	|O					0.07
8.583	0.20	0.19	0.005	|O					0.07
8.667	0.20	0.19	0.005	|O					0.07
8.750	0.20	0.19	0.005	|O					0.07
8.833	0.20	0.20	0.005	|O					0.07
8.917	0.20	0.20	0.005	|O					0.07
9.000	0.20	0.20	0.005	|O					0.08
9.083	0.20	0.20	0.005	|O					0.08
9.167	0.21	0.20	0.005	|O					0.08
9.250	0.21	0.20	0.005	|O					0.08
9.333	0.21	0.20	0.005	|O					0.08
9.417	0.21	0.20	0.005	|O					0.08
9.500	0.21	0.21	0.005	|O					0.08
9.583	0.21	0.21	0.005	|O					0.08
9.667	0.21	0.21	0.005	|O					0.08
9.750	0.22	0.21	0.005	|O					0.08
9.833	0.22	0.21	0.005	|O					0.08

9.917	0.22	0.21	0.005	O				0.08
10.000	0.22	0.21	0.005	O				0.08
10.083	0.22	0.22	0.005	O				0.08
10.167	0.22	0.22	0.006	O				0.08
10.250	0.23	0.22	0.006	O				0.08
10.333	0.23	0.22	0.006	O				0.08
10.417	0.23	0.22	0.006	O				0.08
10.500	0.23	0.22	0.006	O				0.09
10.583	0.23	0.23	0.006	O				0.09
10.667	0.24	0.23	0.006	O				0.09
10.750	0.24	0.23	0.006	O				0.09
10.833	0.24	0.23	0.006	O				0.09
10.917	0.24	0.23	0.006	O				0.09
11.000	0.24	0.24	0.006	O				0.09
11.083	0.25	0.24	0.006	O				0.09
11.167	0.25	0.24	0.006	O				0.09
11.250	0.25	0.24	0.006	O				0.09
11.333	0.25	0.24	0.006	O				0.09
11.417	0.26	0.25	0.006	O				0.09
11.500	0.26	0.25	0.006	O				0.09
11.583	0.26	0.25	0.006	O				0.10
11.667	0.26	0.25	0.006	O				0.10
11.750	0.27	0.26	0.006	O				0.10
11.833	0.27	0.26	0.007	O				0.10
11.917	0.27	0.26	0.007	O				0.10
12.000	0.27	0.26	0.007	O				0.10
12.083	0.28	0.27	0.007	O				0.10
12.167	0.30	0.27	0.007	O				0.10
12.250	0.31	0.28	0.007	O				0.11
12.333	0.31	0.29	0.007	O				0.11
12.417	0.32	0.29	0.007	O				0.11
12.500	0.32	0.30	0.008	O				0.11
12.583	0.32	0.30	0.008	O				0.12
12.667	0.33	0.31	0.008	O				0.12
12.750	0.33	0.31	0.008	O				0.12
12.833	0.34	0.32	0.008	OI				0.12
12.917	0.34	0.32	0.008	OI				0.12
13.000	0.35	0.33	0.008	OI				0.12
13.083	0.35	0.33	0.008	O				0.13
13.167	0.36	0.34	0.009	O				0.13
13.250	0.36	0.34	0.009	O				0.13
13.333	0.37	0.35	0.009	O				0.13
13.417	0.37	0.35	0.009	O				0.13
13.500	0.38	0.36	0.009	O				0.14
13.583	0.38	0.36	0.009	O				0.14
13.667	0.39	0.37	0.009	O				0.14
13.750	0.40	0.38	0.009	O				0.14
13.833	0.41	0.38	0.010	O				0.14
13.917	0.41	0.39	0.010	O				0.15
14.000	0.42	0.39	0.010	O				0.15
14.083	0.43	0.40	0.010	O				0.15
14.167	0.44	0.41	0.010	O				0.16
14.250	0.45	0.42	0.011	O				0.16
14.333	0.46	0.43	0.011	O				0.16
14.417	0.47	0.44	0.011	O				0.17
14.500	0.48	0.45	0.011	O				0.17
14.583	0.50	0.46	0.012	O				0.17
14.667	0.51	0.47	0.012	OI				0.18
14.750	0.52	0.48	0.012	OI				0.18
14.833	0.54	0.49	0.012	OI				0.19
14.917	0.56	0.51	0.013	O				0.19
15.000	0.58	0.52	0.013	O				0.20
15.083	0.60	0.54	0.014	O				0.20

15.167	0.63	0.56	0.014	O				0.21
15.250	0.66	0.58	0.015	O				0.22
15.333	0.69	0.60	0.015	OI				0.23
15.417	0.72	0.63	0.016	OI				0.24
15.500	0.70	0.65	0.016	OI				0.25
15.583	0.71	0.66	0.017	OI				0.25
15.667	0.78	0.68	0.017	O				0.26
15.750	0.86	0.71	0.018	OI				0.27
15.833	1.01	0.77	0.019	O I				0.29
15.917	1.22	0.85	0.022	O I				0.33
16.000	1.66	1.00	0.025	O	I			0.38
16.083	2.85	1.31	0.033	O		I		0.51
16.167	5.33	1.99	0.049		O		I	0.79
16.250	3.82	2.44	0.066		O	I		1.09
16.333	1.61	2.48	0.067		I O			1.11
16.417	0.99	2.33	0.060	I	O			1.00
16.500	0.78	2.04	0.051	I	O			0.82
16.583	0.72	1.73	0.043	I	O			0.68
16.667	0.65	1.47	0.037	I O				0.58
16.750	0.60	1.26	0.032	I O				0.49
16.833	0.56	1.10	0.028	I O				0.43
16.917	0.52	0.96	0.024	I O				0.37
17.000	0.49	0.85	0.021	I O				0.32
17.083	0.47	0.76	0.019	I O				0.29
17.167	0.45	0.69	0.017	I O				0.26
17.250	0.43	0.63	0.016	IO				0.24
17.333	0.41	0.58	0.015	IO				0.22
17.417	0.40	0.54	0.014	IO				0.20
17.500	0.38	0.50	0.013	IO				0.19
17.583	0.37	0.47	0.012	O				0.18
17.667	0.36	0.45	0.011	O				0.17
17.750	0.35	0.42	0.011	O				0.16
17.833	0.34	0.40	0.010	O				0.15
17.917	0.33	0.39	0.010	IO				0.15
18.000	0.32	0.37	0.009	IO				0.14
18.083	0.31	0.36	0.009	IO				0.14
18.167	0.29	0.35	0.009	IO				0.13
18.250	0.28	0.33	0.008	O				0.13
18.333	0.27	0.32	0.008	O				0.12
18.417	0.27	0.31	0.008	O				0.12
18.500	0.26	0.30	0.007	O				0.11
18.583	0.25	0.29	0.007	O				0.11
18.667	0.25	0.28	0.007	O				0.11
18.750	0.25	0.27	0.007	O				0.10
18.833	0.24	0.26	0.007	O				0.10
18.917	0.24	0.26	0.007	O				0.10
19.000	0.23	0.25	0.006	O				0.10
19.083	0.23	0.25	0.006	O				0.09
19.167	0.23	0.24	0.006	O				0.09
19.250	0.22	0.24	0.006	O				0.09
19.333	0.22	0.23	0.006	O				0.09
19.417	0.22	0.23	0.006	O				0.09
19.500	0.21	0.23	0.006	O				0.09
19.583	0.21	0.22	0.006	O				0.08
19.667	0.21	0.22	0.006	O				0.08
19.750	0.20	0.22	0.005	O				0.08
19.833	0.20	0.21	0.005	O				0.08
19.917	0.20	0.21	0.005	O				0.08
20.000	0.20	0.21	0.005	O				0.08
20.083	0.19	0.20	0.005	O				0.08
20.167	0.19	0.20	0.005	O				0.08
20.250	0.19	0.20	0.005	O				0.08
20.333	0.19	0.20	0.005	O				0.07

20.417	0.18	0.19	0.005	|O	|	|	|	0.07
20.500	0.18	0.19	0.005	|O	|	|	|	0.07
20.583	0.18	0.19	0.005	|O	|	|	|	0.07
20.667	0.18	0.19	0.005	|O	|	|	|	0.07
20.750	0.18	0.18	0.005	|O	|	|	|	0.07
20.833	0.18	0.18	0.005	|O	|	|	|	0.07
20.917	0.17	0.18	0.005	|O	|	|	|	0.07
21.000	0.17	0.18	0.005	|O	|	|	|	0.07
21.083	0.17	0.18	0.004	|O	|	|	|	0.07
21.167	0.17	0.18	0.004	|O	|	|	|	0.07
21.250	0.17	0.17	0.004	|O	|	|	|	0.07
21.333	0.17	0.17	0.004	IO	|	|	|	0.07
21.417	0.16	0.17	0.004	IO	|	|	|	0.06
21.500	0.16	0.17	0.004	IO	|	|	|	0.06
21.583	0.16	0.17	0.004	IO	|	|	|	0.06
21.667	0.16	0.17	0.004	O	|	|	|	0.06
21.750	0.16	0.16	0.004	O	|	|	|	0.06
21.833	0.16	0.16	0.004	O	|	|	|	0.06
21.917	0.16	0.16	0.004	O	|	|	|	0.06
22.000	0.15	0.16	0.004	O	|	|	|	0.06
22.083	0.15	0.16	0.004	O	|	|	|	0.06
22.167	0.15	0.16	0.004	O	|	|	|	0.06
22.250	0.15	0.16	0.004	O	|	|	|	0.06
22.333	0.15	0.15	0.004	O	|	|	|	0.06
22.417	0.15	0.15	0.004	O	|	|	|	0.06
22.500	0.15	0.15	0.004	O	|	|	|	0.06
22.583	0.15	0.15	0.004	O	|	|	|	0.06
22.667	0.15	0.15	0.004	O	|	|	|	0.06
22.750	0.14	0.15	0.004	O	|	|	|	0.06
22.833	0.14	0.15	0.004	O	|	|	|	0.06
22.917	0.14	0.15	0.004	O	|	|	|	0.06
23.000	0.14	0.15	0.004	O	|	|	|	0.06
23.083	0.14	0.14	0.004	O	|	|	|	0.05
23.167	0.14	0.14	0.004	O	|	|	|	0.05
23.250	0.14	0.14	0.004	O	|	|	|	0.05
23.333	0.14	0.14	0.004	O	|	|	|	0.05
23.417	0.14	0.14	0.004	O	|	|	|	0.05
23.500	0.14	0.14	0.004	O	|	|	|	0.05
23.583	0.13	0.14	0.004	O	|	|	|	0.05
23.667	0.13	0.14	0.003	O	|	|	|	0.05
23.750	0.13	0.14	0.003	O	|	|	|	0.05
23.833	0.13	0.14	0.003	O	|	|	|	0.05
23.917	0.13	0.13	0.003	O	|	|	|	0.05
24.000	0.13	0.13	0.003	O	|	|	|	0.05
24.083	0.12	0.13	0.003	O	|	|	|	0.05
24.167	0.05	0.12	0.003	O	|	|	|	0.05
24.250	0.01	0.10	0.003	O	|	|	|	0.04
24.333	0.00	0.08	0.002	O	|	|	|	0.03
24.417	0.00	0.06	0.001	O	|	|	|	0.02
24.500	0.00	0.04	0.001	O	|	|	|	0.02
24.583	0.00	0.03	0.001	O	|	|	|	0.01
24.667	0.00	0.03	0.001	O	|	|	|	0.01
24.750	0.00	0.02	0.000	O	|	|	|	0.01
24.833	0.00	0.01	0.000	O	|	|	|	0.01
24.917	0.00	0.01	0.000	O	|	|	|	0.00
25.000	0.00	0.01	0.000	O	|	|	|	0.00
25.083	0.00	0.01	0.000	O	|	|	|	0.00
25.167	0.00	0.00	0.000	O	|	|	|	0.00
25.250	0.00	0.00	0.000	O	|	|	|	0.00
25.333	0.00	0.00	0.000	O	|	|	|	0.00
25.417	0.00	0.00	0.000	O	|	|	|	0.00

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

```
            Number of intervals =   305
            Time interval =    5.0 (Min.)
            Maximum/Peak flow rate =        2.479 (CFS)
            Total volume =       0.598 (Ac.Ft)
      Status of hydrographs being held in storage
                 Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
      Peak (CFS)      0.000     0.000     0.000     0.000     0.000
      Vol (Ac.Ft)     0.000     0.000     0.000     0.000     0.000
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FLOOD HYDROGRAPH ROUTING PROGRAM

Study date: 02/28/20

SUMMERLAND SENIOR LIVING
100 YEAR STORM EVENT - PROPOSED CONDITION
ROUTING STUDY
9944Q100PROUTING

Program License Serial Number 6145

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

From study/file name: 9944Q100PUNIHYDR.rte
**********HYDROGRAPH DATA**********
Number of intervals = 292
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 11.560 (CFS)
Total volume = 1.834 (Ac.Ft)

Status of hydrographs being held in storage

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

****

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

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 292
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

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

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.300	0.020	0.790	0.017	0.023
0.800	0.050	2.010	0.043	0.057
1.000	0.060	2.330	0.052	0.068
1.300	0.080	2.730	0.071	0.089
1.800	0.100	3.300	0.089	0.111
2.300	0.120	8.290	0.091	0.149
3.300	0.220	9.110	0.189	0.251

Hydrograph Detention Basin Routing

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

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 2.9 5.78 8.67 11.56	Depth (Ft.)
0.083	0.05	0.01	0.000	O	0.00
0.167	0.30	0.05	0.001	O	0.02
0.250	0.46	0.13	0.003	OI	0.05
0.333	0.49	0.21	0.005	OI	0.08
0.417	0.50	0.28	0.007	OI	0.11
0.500	0.50	0.33	0.008	OI	0.13
0.583	0.50	0.37	0.009	|O	0.14
0.667	0.50	0.40	0.010	|O	0.15
0.750	0.50	0.43	0.011	|O	0.16
0.833	0.50	0.45	0.011	|O	0.17
0.917	0.51	0.46	0.012	|O	0.17
1.000	0.51	0.47	0.012	|O	0.18
1.083	0.51	0.48	0.012	|O	0.18
1.167	0.51	0.49	0.012	|O	0.18
1.250	0.51	0.49	0.012	|O	0.19
1.333	0.51	0.50	0.013	|O	0.19
1.417	0.51	0.50	0.013	|O	0.19
1.500	0.52	0.50	0.013	|O	0.19
1.583	0.52	0.51	0.013	|O	0.19
1.667	0.52	0.51	0.013	|O	0.19
1.750	0.52	0.51	0.013	|O	0.19
1.833	0.52	0.51	0.013	|O	0.20
1.917	0.52	0.52	0.013	|O	0.20
2.000	0.52	0.52	0.013	|O	0.20
2.083	0.52	0.52	0.013	|O	0.20
2.167	0.53	0.52	0.013	|O	0.20
2.250	0.53	0.52	0.013	|O	0.20
2.333	0.53	0.52	0.013	|O	0.20
2.417	0.53	0.53	0.013	|O	0.20
2.500	0.53	0.53	0.013	|O	0.20
2.583	0.53	0.53	0.013	|O	0.20
2.667	0.54	0.53	0.013	|O	0.20
2.750	0.54	0.53	0.013	|O	0.20
2.833	0.54	0.53	0.013	|O	0.20
2.917	0.54	0.53	0.014	|O	0.20
3.000	0.54	0.54	0.014	|O	0.20
3.083	0.54	0.54	0.014	|O	0.20
3.167	0.54	0.54	0.014	|O	0.20
3.250	0.55	0.54	0.014	|O	0.21
3.333	0.55	0.54	0.014	|O	0.21
3.417	0.55	0.54	0.014	|O	0.21
3.500	0.55	0.55	0.014	|O	0.21
3.583	0.55	0.55	0.014	|O	0.21
3.667	0.55	0.55	0.014	|O	0.21
3.750	0.56	0.55	0.014	|O	0.21
3.833	0.56	0.55	0.014	|O	0.21
3.917	0.56	0.55	0.014	|O	0.21
4.000	0.56	0.56	0.014	|O	0.21
4.083	0.56	0.56	0.014	|O	0.21
4.167	0.57	0.56	0.014	|O	0.21
4.250	0.57	0.56	0.014	|O	0.21
4.333	0.57	0.56	0.014	|O	0.21
4.417	0.57	0.56	0.014	|O	0.21
4.500	0.57	0.57	0.014	|O	0.21
4.583	0.57	0.57	0.014	|O	0.22

4.667	0.58	0.57	0.014	O				0.22
4.750	0.58	0.57	0.014	O				0.22
4.833	0.58	0.57	0.015	O				0.22
4.917	0.58	0.58	0.015	O				0.22
5.000	0.58	0.58	0.015	O				0.22
5.083	0.59	0.58	0.015	O				0.22
5.167	0.59	0.58	0.015	O				0.22
5.250	0.59	0.58	0.015	O				0.22
5.333	0.59	0.58	0.015	O				0.22
5.417	0.59	0.59	0.015	O				0.22
5.500	0.60	0.59	0.015	O				0.22
5.583	0.60	0.59	0.015	O				0.22
5.667	0.60	0.59	0.015	O				0.23
5.750	0.60	0.60	0.015	O				0.23
5.833	0.61	0.60	0.015	O				0.23
5.917	0.61	0.60	0.015	O				0.23
6.000	0.61	0.60	0.015	O				0.23
6.083	0.61	0.60	0.015	O				0.23
6.167	0.61	0.61	0.015	O				0.23
6.250	0.62	0.61	0.015	O				0.23
6.333	0.62	0.61	0.015	O				0.23
6.417	0.62	0.61	0.016	O				0.23
6.500	0.62	0.62	0.016	O				0.23
6.583	0.63	0.62	0.016	O				0.23
6.667	0.63	0.62	0.016	O				0.24
6.750	0.63	0.62	0.016	O				0.24
6.833	0.63	0.63	0.016	O				0.24
6.917	0.64	0.63	0.016	O				0.24
7.000	0.64	0.63	0.016	O				0.24
7.083	0.64	0.63	0.016	O				0.24
7.167	0.65	0.64	0.016	O				0.24
7.250	0.65	0.64	0.016	O				0.24
7.333	0.65	0.64	0.016	O				0.24
7.417	0.65	0.64	0.016	O				0.24
7.500	0.66	0.65	0.016	O				0.25
7.583	0.66	0.65	0.016	O				0.25
7.667	0.66	0.65	0.017	O				0.25
7.750	0.67	0.65	0.017	O				0.25
7.833	0.67	0.66	0.017	O				0.25
7.917	0.67	0.66	0.017	O				0.25
8.000	0.67	0.66	0.017	O				0.25
8.083	0.68	0.67	0.017	O				0.25
8.167	0.68	0.67	0.017	O				0.25
8.250	0.68	0.67	0.017	O				0.26
8.333	0.69	0.68	0.017	O				0.26
8.417	0.69	0.68	0.017	O				0.26
8.500	0.69	0.68	0.017	O				0.26
8.583	0.70	0.69	0.017	O				0.26
8.667	0.70	0.69	0.017	O				0.26
8.750	0.71	0.69	0.018	O				0.26
8.833	0.71	0.70	0.018	O				0.26
8.917	0.71	0.70	0.018	O				0.27
9.000	0.72	0.70	0.018	O				0.27
9.083	0.72	0.71	0.018	O				0.27
9.167	0.72	0.71	0.018	OI				0.27
9.250	0.73	0.71	0.018	OI				0.27
9.333	0.73	0.72	0.018	OI				0.27
9.417	0.74	0.72	0.018	OI				0.27
9.500	0.74	0.73	0.018	O				0.28
9.583	0.74	0.73	0.018	O				0.28
9.667	0.75	0.73	0.019	O				0.28
9.750	0.75	0.74	0.019	O				0.28
9.833	0.76	0.74	0.019	O				0.28

9.917	0.76	0.75	0.019	O				0.28
10.000	0.77	0.75	0.019	O				0.29
10.083	0.77	0.76	0.019	O				0.29
10.167	0.78	0.76	0.019	O				0.29
10.250	0.78	0.76	0.019	O				0.29
10.333	0.79	0.77	0.019	O				0.29
10.417	0.79	0.77	0.020	O				0.29
10.500	0.80	0.78	0.020	O				0.30
10.583	0.80	0.78	0.020	O				0.30
10.667	0.81	0.79	0.020	O				0.30
10.750	0.81	0.80	0.020	O				0.30
10.833	0.82	0.80	0.020	O				0.30
10.917	0.83	0.81	0.020	O				0.31
11.000	0.83	0.81	0.021	O				0.31
11.083	0.84	0.82	0.021	O				0.31
11.167	0.85	0.82	0.021	O				0.31
11.250	0.85	0.83	0.021	O				0.32
11.333	0.86	0.84	0.021	O				0.32
11.417	0.87	0.84	0.021	O				0.32
11.500	0.87	0.85	0.021	O				0.32
11.583	0.88	0.86	0.022	O				0.33
11.667	0.89	0.86	0.022	O				0.33
11.750	0.89	0.87	0.022	O				0.33
11.833	0.90	0.88	0.022	O				0.34
11.917	0.91	0.88	0.022	O				0.34
12.000	0.92	0.89	0.022	O				0.34
12.083	0.93	0.90	0.023	O				0.34
12.167	0.95	0.91	0.023	O				0.35
12.250	0.96	0.92	0.023	O				0.35
12.333	0.97	0.93	0.023	O				0.36
12.417	0.98	0.94	0.024	O				0.36
12.500	0.99	0.95	0.024	O				0.37
12.583	1.00	0.96	0.024	O				0.37
12.667	1.01	0.97	0.024	O				0.37
12.750	1.02	0.98	0.025	O				0.38
12.833	1.03	0.99	0.025	O				0.38
12.917	1.04	1.00	0.025	O				0.39
13.000	1.06	1.02	0.026	O				0.39
13.083	1.07	1.03	0.026	O				0.40
13.167	1.08	1.04	0.026	O				0.40
13.250	1.10	1.05	0.026	OI				0.41
13.333	1.11	1.06	0.027	OI				0.41
13.417	1.13	1.08	0.027	OI				0.42
13.500	1.14	1.09	0.027	O				0.42
13.583	1.16	1.11	0.028	O				0.43
13.667	1.18	1.12	0.028	O				0.44
13.750	1.19	1.14	0.029	O				0.44
13.833	1.21	1.15	0.029	O				0.45
13.917	1.23	1.17	0.029	O				0.46
14.000	1.25	1.19	0.030	O				0.46
14.083	1.28	1.21	0.030	O				0.47
14.167	1.30	1.23	0.031	O				0.48
14.250	1.32	1.25	0.031	O				0.49
14.333	1.35	1.27	0.032	O				0.50
14.417	1.38	1.29	0.032	O				0.51
14.500	1.41	1.32	0.033	O				0.52
14.583	1.44	1.34	0.034	O				0.53
14.667	1.48	1.37	0.034	OI				0.54
14.750	1.52	1.40	0.035	OI				0.55
14.833	1.56	1.44	0.036	OI				0.57
14.917	1.61	1.47	0.037	O				0.58
15.000	1.66	1.51	0.038	O				0.60
15.083	1.72	1.56	0.039	O				0.61

15.167	1.79	1.61	0.040	O					0.63
15.250	1.86	1.66	0.041	OI					0.66
15.333	1.95	1.72	0.043	OI					0.68
15.417	1.98	1.78	0.044	OI					0.71
15.500	1.79	1.80	0.045	O					0.72
15.583	1.73	1.79	0.045	O					0.71
15.667	1.87	1.79	0.045	OI					0.71
15.750	2.07	1.84	0.046	O					0.73
15.833	2.40	1.93	0.048	OI					0.77
15.917	2.85	2.09	0.052	O I					0.85
16.000	3.79	2.33	0.060	O	I				1.00
16.083	6.31	2.68	0.078	O		I			1.26
16.167	11.56	5.78	0.110			O		I	2.05
16.250	8.27	8.37	0.130				IO		2.40
16.333	3.63	7.37	0.116		I		O		2.21
16.417	2.34	3.32	0.100	I	O				1.80
16.500	2.04	3.10	0.093	I	O				1.63
16.583	1.98	2.91	0.086	I	O				1.46
16.667	1.84	2.73	0.080	I	O				1.30
16.750	1.71	2.61	0.074	I	O				1.21
16.833	1.60	2.48	0.068	I	O				1.11
16.917	1.51	2.36	0.062	I	O				1.02
17.000	1.43	2.20	0.056	I	O				0.92
17.083	1.37	2.04	0.051	I	O				0.82
17.167	1.32	1.88	0.047	I	O				0.75
17.250	1.27	1.74	0.043	IO					0.69
17.333	1.23	1.62	0.040	IO					0.64
17.417	1.19	1.52	0.038	IO					0.60
17.500	1.15	1.43	0.036	O					0.56
17.583	1.12	1.36	0.034	O					0.53
17.667	1.09	1.30	0.032	O					0.51
17.750	1.07	1.24	0.031	IO					0.49
17.833	1.04	1.20	0.030	IO					0.47
17.917	1.02	1.16	0.029	IO					0.45
18.000	1.00	1.12	0.028	IO					0.43
18.083	0.97	1.09	0.027	IO					0.42
18.167	0.95	1.06	0.027	O					0.41
18.250	0.93	1.03	0.026	O					0.40
18.333	0.91	1.00	0.025	O					0.39
18.417	0.89	0.98	0.025	O					0.38
18.500	0.88	0.95	0.024	O					0.37
18.583	0.86	0.93	0.024	O					0.36
18.667	0.85	0.91	0.023	O					0.35
18.750	0.84	0.90	0.023	O					0.34
18.833	0.82	0.88	0.022	O					0.34
18.917	0.81	0.87	0.022	O					0.33
19.000	0.80	0.85	0.022	O					0.33
19.083	0.79	0.84	0.021	O					0.32
19.167	0.78	0.82	0.021	O					0.31
19.250	0.77	0.81	0.021	O					0.31
19.333	0.76	0.80	0.020	O					0.30
19.417	0.75	0.79	0.020	O					0.30
19.500	0.74	0.78	0.020	O					0.30
19.583	0.74	0.77	0.020	O					0.29
19.667	0.73	0.76	0.019	O					0.29
19.750	0.72	0.75	0.019	IO					0.29
19.833	0.71	0.74	0.019	IO					0.28
19.917	0.70	0.73	0.019	IO					0.28
20.000	0.70	0.73	0.018	IO					0.28
20.083	0.69	0.72	0.018	O					0.27
20.167	0.68	0.71	0.018	O					0.27
20.250	0.68	0.70	0.018	O					0.27
20.333	0.67	0.70	0.018	O					0.26

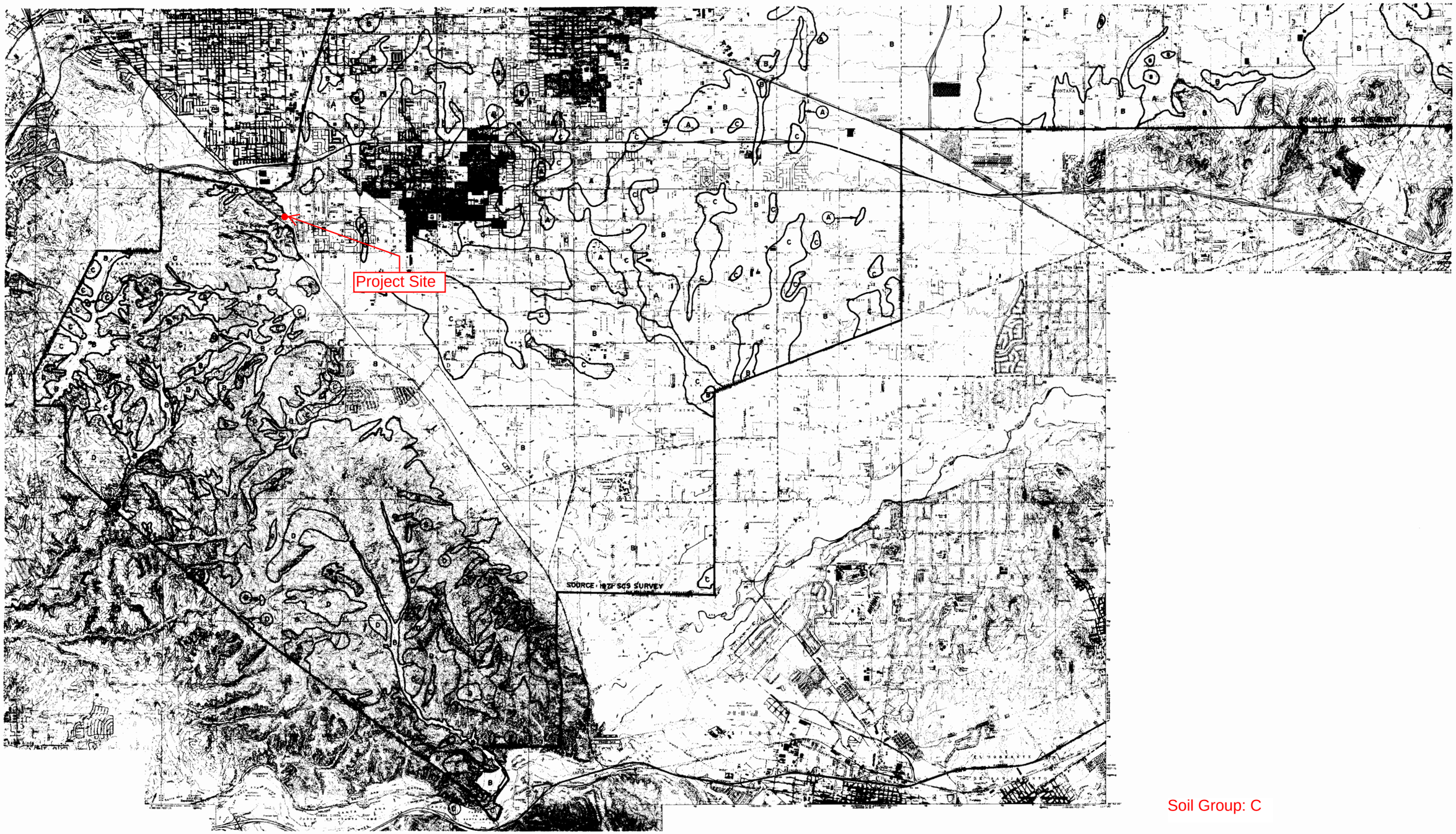
20.417	0.66	0.69	0.017	|O	|	|	|	0.26
20.500	0.66	0.68	0.017	|O	|	|	|	0.26
20.583	0.65	0.68	0.017	|O	|	|	|	0.26
20.667	0.65	0.67	0.017	|O	|	|	|	0.25
20.750	0.64	0.66	0.017	|O	|	|	|	0.25
20.833	0.64	0.66	0.017	|O	|	|	|	0.25
20.917	0.63	0.65	0.017	|O	|	|	|	0.25
21.000	0.63	0.65	0.016	|O	|	|	|	0.25
21.083	0.62	0.64	0.016	|O	|	|	|	0.24
21.167	0.62	0.64	0.016	|O	|	|	|	0.24
21.250	0.61	0.63	0.016	|O	|	|	|	0.24
21.333	0.61	0.63	0.016	|O	|	|	|	0.24
21.417	0.60	0.62	0.016	|O	|	|	|	0.24
21.500	0.60	0.62	0.016	|O	|	|	|	0.23
21.583	0.59	0.61	0.015	|O	|	|	|	0.23
21.667	0.59	0.61	0.015	|O	|	|	|	0.23
21.750	0.59	0.60	0.015	|O	|	|	|	0.23
21.833	0.58	0.60	0.015	|O	|	|	|	0.23
21.917	0.58	0.59	0.015	|O	|	|	|	0.23
22.000	0.57	0.59	0.015	|O	|	|	|	0.22
22.083	0.57	0.58	0.015	|O	|	|	|	0.22
22.167	0.57	0.58	0.015	|O	|	|	|	0.22
22.250	0.56	0.58	0.015	|O	|	|	|	0.22
22.333	0.56	0.57	0.015	|O	|	|	|	0.22
22.417	0.56	0.57	0.014	|O	|	|	|	0.22
22.500	0.55	0.57	0.014	|O	|	|	|	0.21
22.583	0.55	0.56	0.014	|O	|	|	|	0.21
22.667	0.55	0.56	0.014	|O	|	|	|	0.21
22.750	0.54	0.56	0.014	|O	|	|	|	0.21
22.833	0.54	0.55	0.014	|O	|	|	|	0.21
22.917	0.54	0.55	0.014	|O	|	|	|	0.21
23.000	0.53	0.55	0.014	|O	|	|	|	0.21
23.083	0.53	0.54	0.014	|O	|	|	|	0.21
23.167	0.53	0.54	0.014	|O	|	|	|	0.20
23.250	0.52	0.54	0.014	|O	|	|	|	0.20
23.333	0.52	0.53	0.013	|O	|	|	|	0.20
23.417	0.52	0.53	0.013	|O	|	|	|	0.20
23.500	0.52	0.53	0.013	|O	|	|	|	0.20
23.583	0.51	0.52	0.013	|O	|	|	|	0.20
23.667	0.51	0.52	0.013	|O	|	|	|	0.20
23.750	0.51	0.52	0.013	|O	|	|	|	0.20
23.833	0.51	0.52	0.013	|O	|	|	|	0.20
23.917	0.50	0.51	0.013	|O	|	|	|	0.19
24.000	0.50	0.51	0.013	|O	|	|	|	0.19
24.083	0.45	0.50	0.013	|O	|	|	|	0.19
24.167	0.20	0.46	0.012	IO	|	|	|	0.17
24.250	0.04	0.38	0.010	IO	|	|	|	0.14
24.333	0.01	0.29	0.007	O	|	|	|	0.11
24.417	0.00	0.22	0.006	O	|	|	|	0.08
24.500	0.00	0.17	0.004	O	|	|	|	0.06
24.583	0.00	0.13	0.003	O	|	|	|	0.05
24.667	0.00	0.10	0.002	O	|	|	|	0.04
24.750	0.00	0.07	0.002	O	|	|	|	0.03
24.833	0.00	0.06	0.001	O	|	|	|	0.02
24.917	0.00	0.04	0.001	O	|	|	|	0.02
25.000	0.00	0.03	0.001	O	|	|	|	0.01
25.083	0.00	0.02	0.001	O	|	|	|	0.01
25.167	0.00	0.02	0.000	O	|	|	|	0.01
25.250	0.00	0.01	0.000	O	|	|	|	0.01
25.333	0.00	0.01	0.000	O	|	|	|	0.00
25.417	0.00	0.01	0.000	O	|	|	|	0.00
25.500	0.00	0.01	0.000	O	|	|	|	0.00
25.583	0.00	0.00	0.000	O	|	|	|	0.00

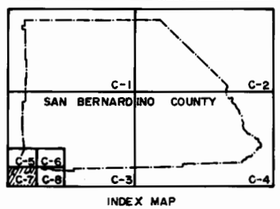
```
25.667    0.00    0.00      0.000  O       |       |       |       |     0.00
25.750    0.00    0.00      0.000  O       |       |       |       |     0.00
25.833    0.00    0.00      0.000  O       |       |       |       |     0.00

      ****************************HYDROGRAPH DATA****************************
                  Number of intervals =   310
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        8.368 (CFS)
                  Total volume =       1.834 (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 D
Soil Group Map and Isohyetal Map





LEGEND

SOIL GROUP BOUNDARY

A SOIL GROUP DESIGNATION

BOUNDARY OF INDICATED SOURCE

SCALE 1:48,000

SCALE REDUCED BY 1/2

SAN BERNARDINO COUNTY

HYDROLOGY MANUAL

HYDROLOGIC SOILS GROUP MAP
FOR
SOUTHWEST-C AREA

Project Site

Isohyetal Data: 1.5"

SAN BERNARDINO COUNTY
HYDROLOGY MANUAL

REDUCED DRAWING
SCALE 1" = 4 MILES

LEGEND:
2.0 ISOLINES PRECIPITATION (INCHES)

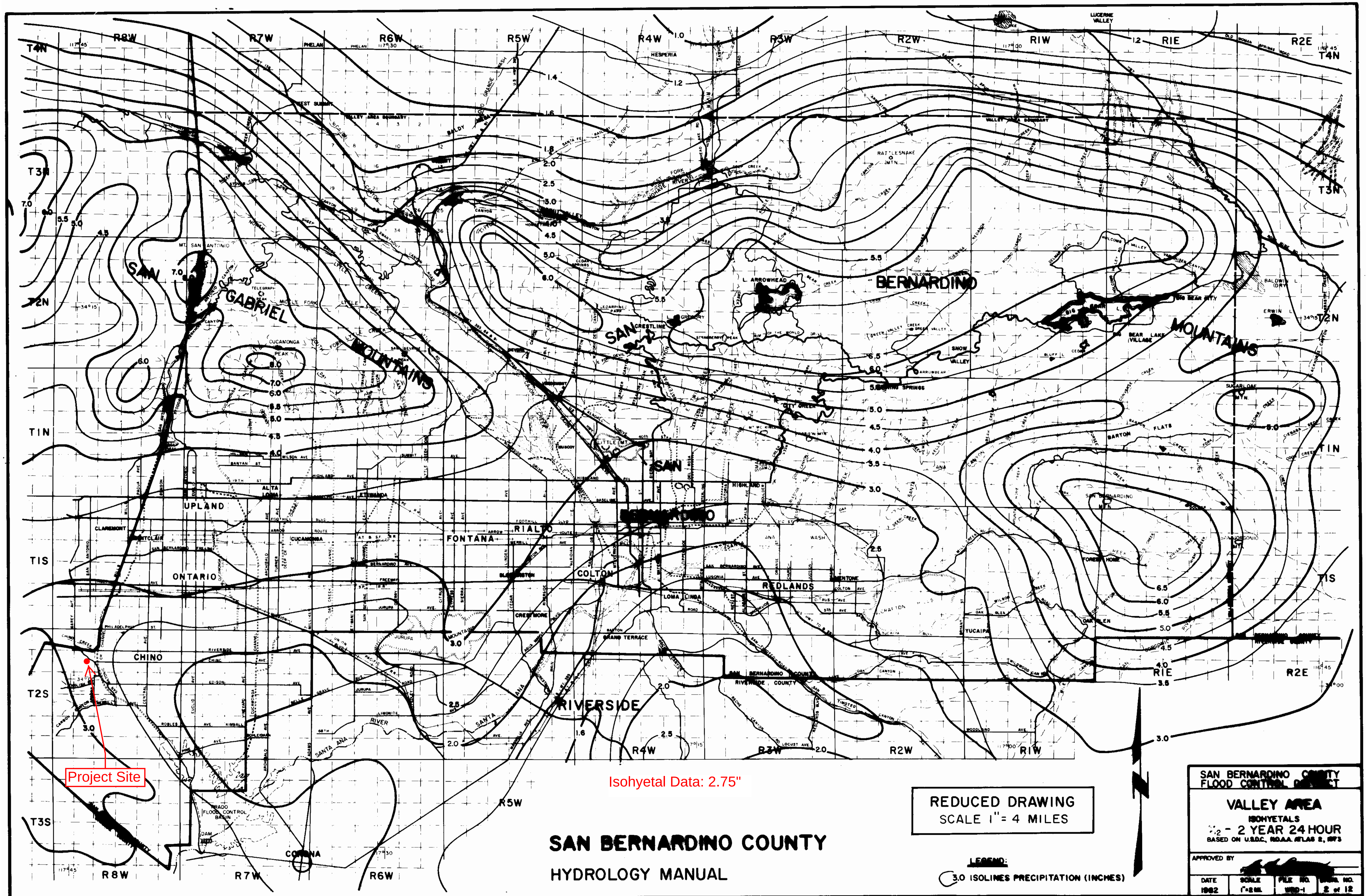
SAN BERNARDINO COUNTY
FLOOD CONTROL DISTRICT

VALLEY AREA
ISOHYETALS
X_1 - 2 YEAR 6 HOUR
BASED ON U.S.D.C., N.O.A.A. ATLAS 2, 1973

APPROVED BY
FLOOD CONTROL ENGINEER

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

FIGURE B-1



Project Site
Isohyetal Data: 2.75"
SAN BERNARDINO COUNTY
HYDROLOGY MANUAL
REDUCED DRAWING
SCALE 1" = 4 MILES
LEGEND:
3.0 ISOLINES PRECIPITATION (INCHES)
SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT
VALLEY AREA
ISOHYETALS
2 YEAR 24 HOUR
BASED ON U.S.D.C., NOAA ATLAS 2, 1973
APPROVED BY
DATE 1982
SCALE 1"=2 MI.
UPLAND
ONTARIO
CHINO
FONTANA
RIALTO
COLTON
REDLANDS
RIVERSIDE
CORONA
YUCAIPA
LOMA LINDA
CLAREMONT
SAN GABRIEL MOUNTAINS
SAN BERNARDINO MOUNTAINS

FIGURE B-2

Project Site

Isohyetal Data: 0.93"

SAN BERNARDINO COUNTY
HYDROLOGY MANUAL

REDUCED DRAWING
SCALE 1" = 4 MILES

LEGEND:
.8 ISOLINES PRECIPITATION (INCHES)

SAN BERNARDINO COUNTY
FLOOD CONTROL DISTRICT

VALLEY AREA
ISOHYETALS
Y_{10} - 10 YEAR 1 HOUR
BASED ON U.S.D.C., N.O.A.A. ATLAS 2, 1973

APPROVED BY _____ FLOOD CONTROL ENGINEER

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

FIGURE B-3

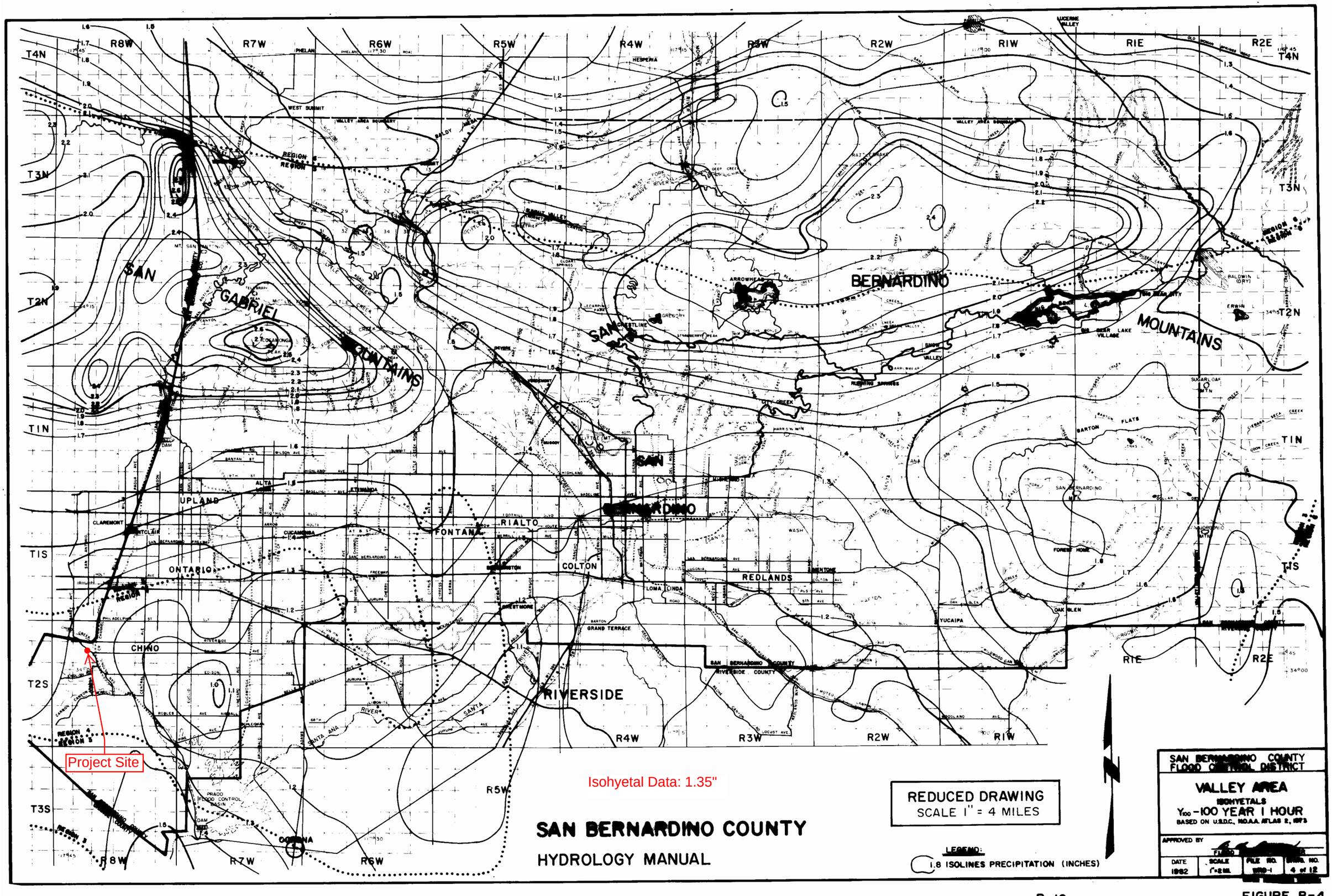

R8W
R7W
R6W
R5W
R4W
R3W
R2W
R1W
R1E
R2E
T4N
T3N
T2N
T1N
T1S
T2S
T3S
SAN GABRIEL MOUNTAINS
SAN BERNARDINO MOUNTAINS
UPLAND
CLAREMONT
ONTARIO
CHINO
FONTANA
RIALTO
COLTON
REDLANDS
LOMA LINDA
YUCAIPA
RIVERSIDE
HESPERIA
APPLE VALLEY
VICTORVILLE
BARSTOW
BARTON FLATS
SUGARLOAD MTN
SAN BERNARDINO MTN
BIG BEAR LAKE
BIG BEAR CITY
ARROWHEAD
L. ARROWHEAD
BALDWIN L. (DRY)
ERWIN L.
Project Site
Isohyetal Data: 1.35"
REDUCED DRAWING
SCALE 1" = 4 MILES
LEGEND:
1.8 ISOLINES PRECIPITATION (INCHES)
SAN BERNARDINO COUNTY
HYDROLOGY MANUAL
SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT
VALLEY AREA
ISOHYETALS
Y100 - 100 YEAR 1 HOUR
BASED ON U.S.D.C., NOAA ATLAS 2, 1973
APPROVED BY
DATE 1982
SCALE 1"=2MI.
FILE NO. SBD-1
DWG. NO. 4 of 12

FIGURE B-4

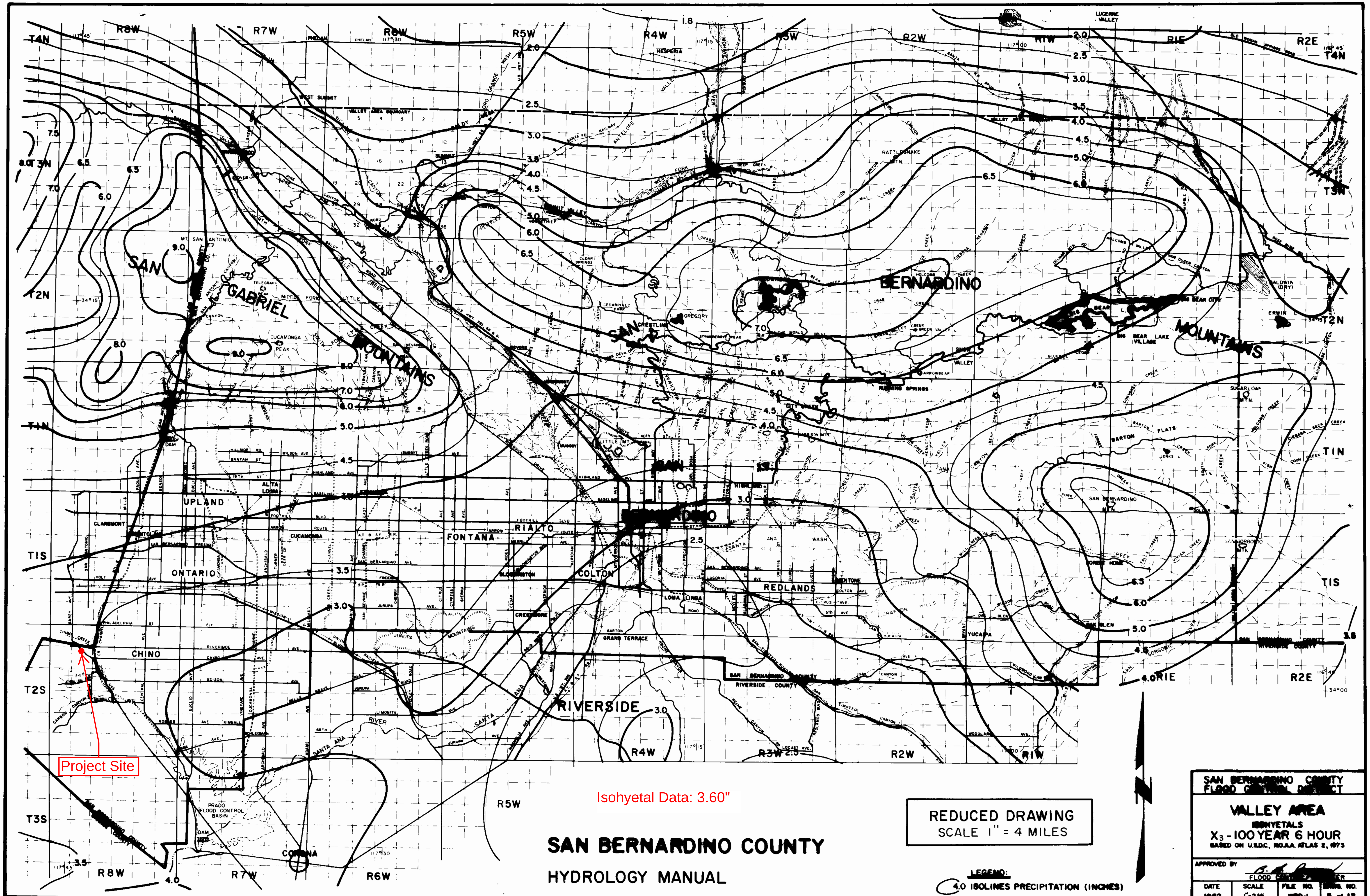

Project Site
Isohyetal Data: 3.60"
SAN GABRIEL MOUNTAINS
SAN BERNARDINO MOUNTAINS
UPLAND
ONTARIO
CHINO
FONTANA
RIALTO
COLTON
SAN BERNARDINO
REDLANDS
RIVERSIDE
CORONA
REDUCED DRAWING
SCALE 1" = 4 MILES
SAN BERNARDINO COUNTY
HYDROLOGY MANUAL
LEGEND:
4.0 ISOLINES PRECIPITATION (INCHES)
SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT
VALLEY AREA
ISOHYETALS
X3 - 100 YEAR 6 HOUR
BASED ON U.S.D.C., NOAA ATLAS 2, 1973
APPROVED BY
FLOOD CONTROL ENGINEER
DATE 1982
SCALE 1"=2 MI.
FILE NO. WRD-1
DWG. NO. 5 of 12

FIGURE B-5

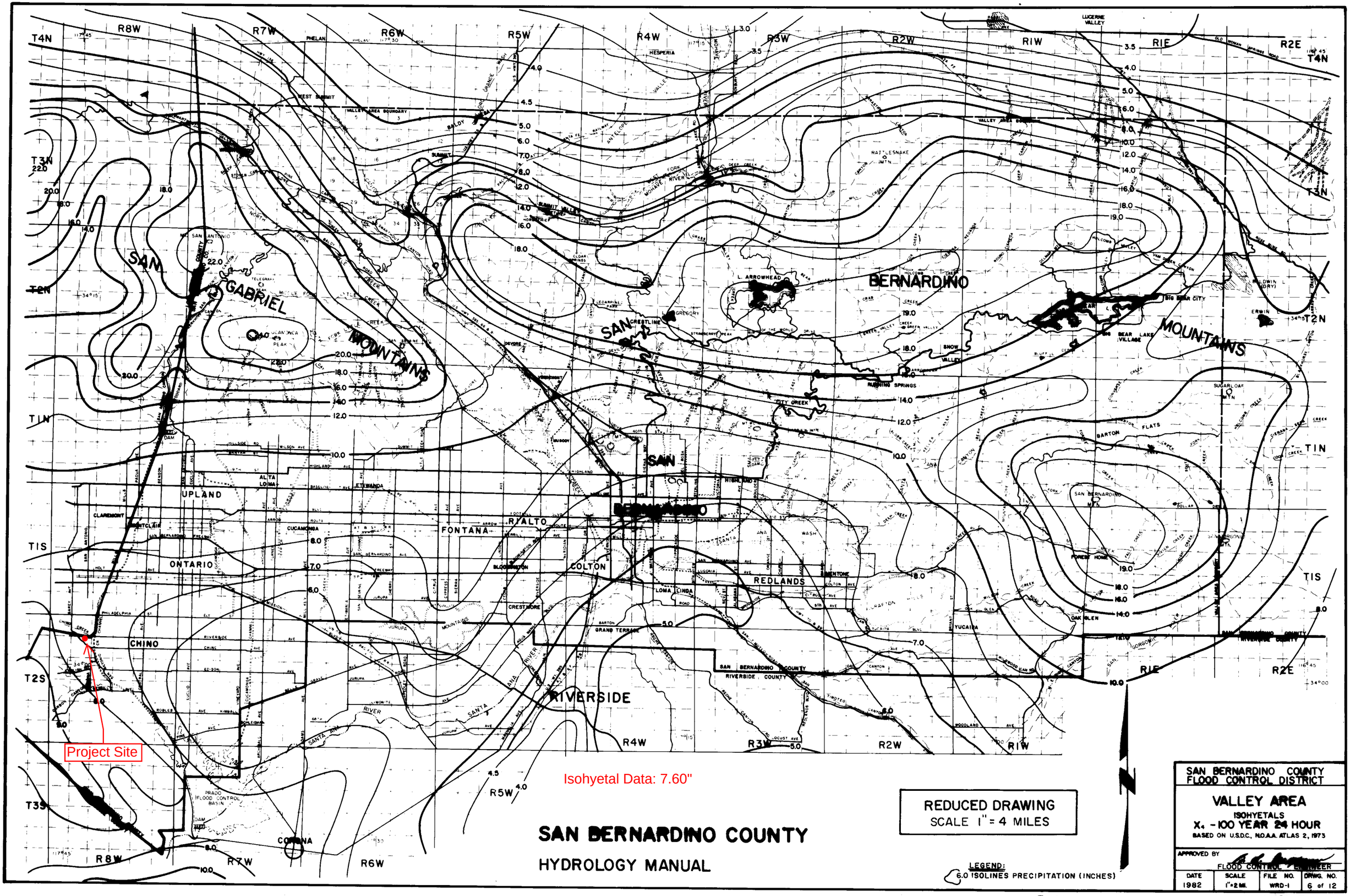

Isohyetal Data: 7.60"
Project Site
SAN BERNARDINO COUNTY
HYDROLOGY MANUAL
REDUCED DRAWING
SCALE 1" = 4 MILES
LEGEND:
6.0 ISOLINES PRECIPITATION (INCHES)
SAN BERNARDINO COUNTY
FLOOD CONTROL DISTRICT
VALLEY AREA
ISOHYETALS
X₄ - 100 YEAR 24 HOUR
BASED ON U.S.D.C., N.O.A.A. ATLAS 2, 1973
APPROVED BY
FLOOD CONTROL ENGINEER
DATE 1982
SCALE 1"=2 MI.
FILE NO. WRD-1
DRWG. NO. 6 of 12

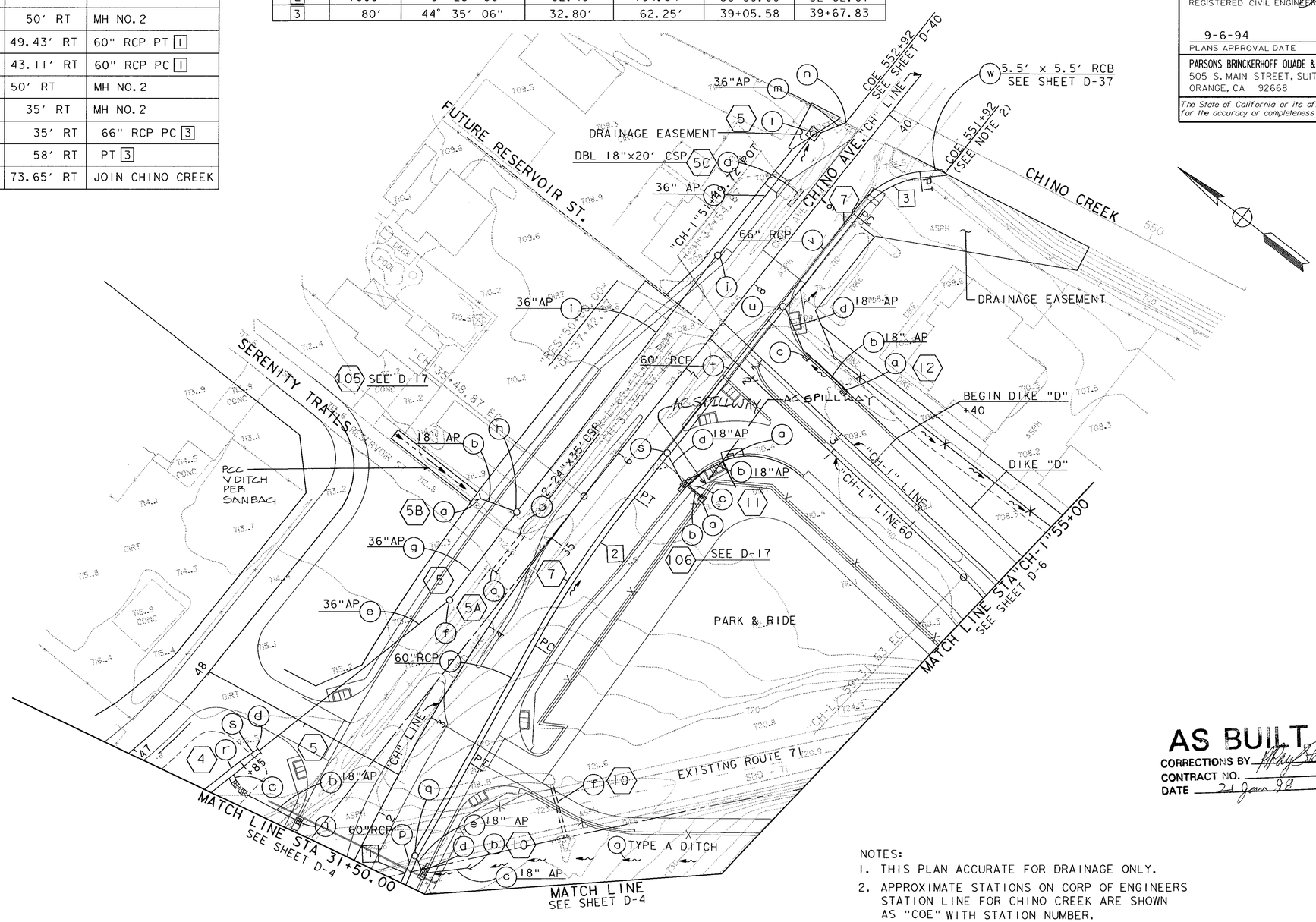
FIGURE B-6

Appendix E
Selected Reference Plans

Sht #	Sys # ⬡	Drn Unit ◯	"CH" LINE	OFFSET	DESCRIPTION
D-5	7	q	31+80	50' RT	MH NO. 2
D-5	7	r	33+79.16	49.43' RT	60" RCP PT [1]
D-5	7	r	34+07.70	43.11' RT	60" RCP PC [1]
D-5	7	r	35+25	50' RT	MH NO. 2
D-5	7	u	38+00	35' RT	MH NO. 2
D-5	7	v	39+17.99	35' RT	66" RCP PC [3]
D-5	7	w	39+74.15	58' RT	PT [3]
D-5	7	w	39+90	73.65' RT	JOIN CHINO CREEK

SYSTEM ⬡7 CURVE DATA

CURVE	R	DELTA	T	L	PC	PT
[1]	1750'	6° 25' 54"	98.33'	196.45'	30+76.25	32+72.70
[2]	1000'	9° 25' 38"	82.46'	164.54'	33+89.09	32+62.61
[3]	80'	44° 35' 06"	32.80'	62.25'	39+05.58	39+67.83



AS BUILT
CORRECTIONS BY
CONTRACT NO.
DATE 21 Jan 98

NOTES:
1. THIS PLAN ACCURATE FOR DRAINAGE ONLY.
2. APPROXIMATE STATIONS ON CORP OF ENGINEERS STATION LINE FOR CHINO CREEK ARE SHOWN AS "COE" WITH STATION NUMBER.

DRAINAGE PLAN

SCALE: 1"=50'

D-5

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
08	SBd	71	0.2/2.9	102	62

Sam S Oyama
REGISTERED CIVIL ENGINEER

9-6-94
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — SAM S. OYAMA — No. 25266 — Exp. 12-31-97 — CIVIL — STATE OF CALIFORNIA

PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC.
505 S. MAIN STREET, SUITE 900
ORANGE, CA 92668

	DATE	REVISED BY
CALCULATED/DESIGNED BY	S O 2/94	DATE REVISED
CHECKED BY	R B 2/94	

DESIGN OVERSIGHT
J. F. HERNANDEZ

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

TIME PLOTTED => 29-SEP-1994 09:42

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
08	SBd	71	0.2/2.9	119	621

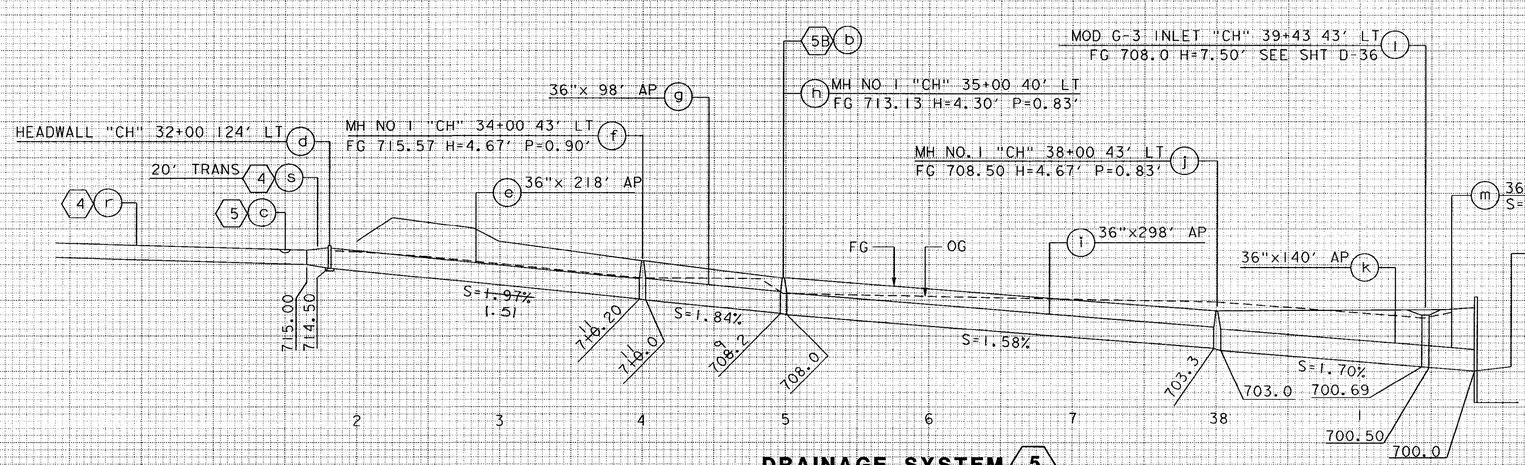
Sam S Oyama
REGISTERED CIVIL ENGINEER

9-6-94
PLANS APPROVAL DATE

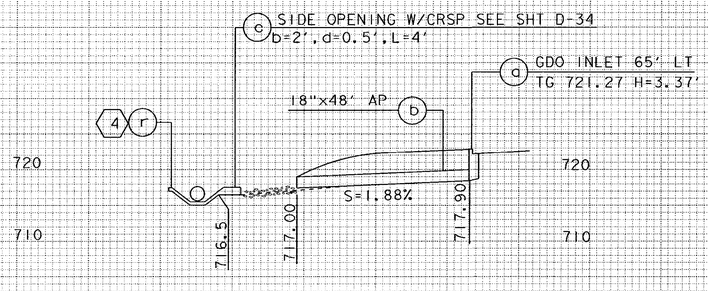
REGISTERED PROFESSIONAL ENGINEER — SAM S. OYAMA No. 25266 Exp. 12-31-97 CIVIL — STATE OF CALIFORNIA

PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC.
505 S. MAIN STREET, SUITE 900
ORANGE, CA 92668

NOTE: SEE SHEET D-42 FOR MH NO. 1

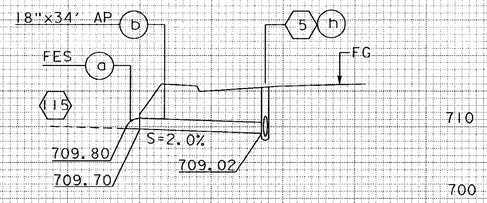


DRAINAGE SYSTEM 5
SCALE HORIZ: 1"=50'
VERT: 1"=10'



DRAINAGE SYSTEM 5
"CH" LINE 31+60
SCALE HORIZ: 1"=20'
VERT: 1"=10'

AS BUILT
CORRECTIONS BY Phil Stokes
CONTRACT NO.
DATE 24 Jan 98



DRAINAGE SYSTEM 5B
SCALE HORIZ: 1"=20'
VERT: 1"=10'

DRAINAGE PROFILE

D-21

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
DESIGN OVERSIGHT
J. F. HERNANDEZ
CALCULATED/ DESIGNED BY
CHECKED BY
DATE REVISED BY
DATE REVISED

Station
Cu. Yds. Exc. Emb.
Sheet Total

FORM DC-OE-91-PF (REV. 3/88)

FOR REDUCED PLANS
ORIGINAL SCALE IS IN INCHES 0 1 2 3

USERNAME => annda
DGN FILE => /usr/annda/P0/844600121.dgn

CU 08232
EA 446001

TIME PLOTTED => 29-SEP-1994 11:03