Thienes Engineering, Inc.
CIVIL ENGINEERING • LAND SURVEYING

PRELIMINARY HYDROLOGY CALCULATIONS

FOR

BAY & DAY INDUSTRIAL BUILDING
SOUTHWEST CORNER OF BAY AVENUE AND DAY STREET
MORENO VALLEY, CA
PEN23-0075 (LST23-0024)

PREPARED FOR

MOLTO PROPERTIES, LLC
1 LINCOLN CENTRE
18W140 BUTTERFIELD ROAD, SUITE 750
OAKBROOK TERRACE, IL
PHONE: (949) 226-4601

OCTOBER 5, 2023
REVISED NOVEMBER 7, 2023
REVISED DECEMBER 26, 2023
REVISED JANUARY 29, 2024
REVISED MAY 2, 2024

JOB NO. 3930

PREPARED BY

THIENES ENGINEERING
14349 FIRESTONE BOULEVARD
LA MIRADA, CALIFORNIA 90638
P. (714) 521-4811
FAX. (714) 521-4173

PRELIMINARY HYDROLOGY CALCULATIONS

FOR

BAY & DAY INDUSTRIAL BUILDING
SOUTHWEST CORNER OF BAY AVENUE AND DAY STREET
PEN21-0123 (LST21-0043)

PREPARED
UNDER THE SUPERVISION OF

5/2/2024

REINHARD STENZEL DATE:
R.C.E. 56155
EXP. 12/31/24

INTRODUCTION

A: PROJECT LOCATION

The project site is located on the southwest corner of Bay Avenue and Day Street in the City of Moreno Valley, California. Please see following page for vicinity map.

B: STUDY PURPOSE

The purpose of this study is to determine the 100-year existing condition and proposed condition discharges from the project site, which drains to the Old 215 Frontage Road.

C: PROJECT STAFF:

Thienes Engineering staff involved in this study include:

Reinhard Stenzel
Kristie Ferronato

Last Update: 4/20/23
O:\3900-3999\3930\3930VICINITYMAP.dwg

Thienes Engineering, Inc.
CIVIL ENGINEERING • LAND SURVEYING
14349 FIRESTONE BOULEVARD
LA MIRADA, CALIFORNIA 90638
PH.(714)521-4811 FAX(714)521-4173

"VICINITY MAP"

FOR

SOUTHWEST CORNER OF BAY AVENUE AND DAY STREET

DISCUSSION

Project Description

The project site encompasses approximately 9.57 acres. Improvements will include a warehouse type building that is approximately 194,775 square feet. There will be a truck yard and trailer parking lot on the west side of the proposed building. Vehicle parking will be located in the east portion of the site. Proposed landscaping will be street adjacent and throughout the site. Landscaping will be street adjacent and along the southerly property line.

Master Plan of Drainage

The site is part of the Line G-G of the Master Plan Project No. 02-8928002, dated December 30, 2004, prepared by AEI CASC Engineering. There are four alternatives for Line G-G. However, Line G-G has not been constructed and does not seem likely in the future. Line G-G drains to an existing system in Old 215 Frontage Road. Instead the City requested the site to flow to the proposed storm drain system in Day Street.

Previous hydrology report and storm drain plans prepared by Thienes Engineering (PEN21-0079 / LST21-0039) tabled a portion of the project site to the storm drain in Day Street and allocated the 100-year peak flow discharge rate of 8.1 cfs. The preliminary, yet not approved, public storm drain plans for PEN21-0079/LST21-0039 are provided in Appendix D.

See Appendix A for Line G-G maps, and other pertinent reference materials.

Existing Off-Site Run-On

The project site receives offsite run-on that is conveyed by an existing 24-inch pipe, Lateral GG-2 Interim Storm Drain, and discharges at the surface via an existing headwall. Flows from Day Street and from the existing residential east of the project site discharge onto the site via this existing storm drain. The offsite 100-year peak flow rate is approximately 8.2 cfs and confluences with the rest of the onsite runoff where it sheet flows southwesterly toward Linda Court and Alessandro Boulevard.

This offsite flow will be intercepted in a proposed storm drain in Day Street with improvements to the project site.

See Appendix A for Lateral GG-2 Interim Storm drain plan and profile, prepared by AEI CASC Engineering.

Existing Condition

The majority of the site is undeveloped and drains southwesterly towards Linda Court. Flows appear to continue southerly and will eventually drain to Alessandro Boulevard. The peak flow rate for the 100-year storm is approximately 9.4 cfs for the larger easterly portion of the site (nodes 100-101). The 100-year peak flow rate for the westerly lot is approximately 1.3 cfs (nodes 110-111).

Please see Appendix B for the existing condition hydrology calculations and Appendix D for the existing condition hydrology map.

Proposed Condition

Off-site run-on that enters the easterly portion of the site from the northeast will be intercepted by a proposed catch basin at Day Street. The existing headwall and existing public catch basin on the west side of Day Street will be removed. A proposed public storm drain, along with a public catch basin, will be constructed along the west side of Day Street in the proposed low spot. This storm drain will connect to the existing lateral from the catch basin along the east side of Day Street. The public storm drain will continue southerly in Day Street and will join the future storm drain in Day Street (PEN21-0079/LST21-0039).

Runoff from the easterly vehicle parking (nodes 100-102), and a portion of the building roof, will drain to catch basins in the parking lot via overland flow. An onsite storm drain, Line A, will convey flows to the north, turn west around the building, and continue south toward the building truck yard. Line A will collect runoff from the building roof, truck yard, and southerly drive aisle along the west side of the building. Stormwater from these areas will surface drain to the several catch basins located in the truck yard (nodes 111 & 121). The westerly 0.73 acres of the site will surface drain to a catch basin and be conveyed via piping to Line A (node 112).

Line A then continues south and turns east along the south of the building to connect with a future storm drain (node 124) in Day Street. The 100-year peak flow rate from the site is approximately 25.4 cfs, un-detained.

Runoff from the northerly driveway and landscaping will surface drain towards Bay Avenue with a 100-year peak flow rate of 1.1 cfs that will drain directly to the street.

See Appendix B for the Proposed Condition Hydrology Calculations and Appendix D for the Proposed Condition Hydrology Map.

Detention

For final design, Riverside County typically requires detention analysis for the 1-hour, 3-hour, 6-hour and 24-hour duration events for the 2-year, 5-year, and 10-year return frequencies. Detention basin and outlet sizing will ensure that none of these storm events

has a higher peak discharge in the post-development condition than in the pre-development condition.

Hydrographs for the above-described events were established for both existing (pre-developed) and proposed (commercial) development conditions. Hydrograph parameters are as follows:

- For the 2-year and 5-year events, the loss rate will be determined using an AMC I condition. For the 10-year event, AMC II was used.
- Undeveloped condition Low Loss=90%
- Basin site Low Loss=10%
- Rainfall values from the Riverside County Hydrology Manual

For preliminary design purposes, sizing may be based on the difference in runoff hydrograph volume between the "developed" condition and the "pre-developed" condition for the 24-hour duration event for the 10-year return frequency.

Hydrographs were established using the area of the project site (site only, no offsite area) for the existing and proposed condition for the 1-hour, 3-hour, 6-hour and 24-hour events for the 10-year storm frequency. The following table summarizes pre- and post-development peak flow rates for the specified 10-year events:

Event	Existing Condition	Proposed Condition	Difference
10-Year 1-hour	14.2 cfs	18.1 cfs	+3.9 cfs
10-Year 3-hour	8.0 cfs	10.6 cfs	+2.6 cfs
10-Year 6-hour	7.0 cfs	9.6 cfs	+2.6 cfs
10-Year 24-hour	1.5 cfs	3.4 cfs	+1.9 cfs

The following table summarizes the volumes for the specified storm events:

Event	Existing Condition	Proposed Condition	Difference
10-Year 1-hour	0.42 ac-ft	0.58 ac-ft	+0.16 ac-ft
10-Year 3-hour	0.44 ac-ft	0.93 ac-ft	+0.49 ac-ft
10-Year 6-hour	0.47 ac-ft	1.25 ac-ft	+0.78 ac-ft
10-Year 24-hour	0.36 ac-ft	2.04 ac-ft	+1.68 ac-ft

From the above table, the largest difference in volume is approximately 1.68 acre-feet. This volume has been provided between the underground storage chambers and the surface of the truck yard.

Per Riverside County and City of Moreno Valley criteria, final design will include 100-year basin routing and show the overall discharge is from the project site is no more than the allocated 8.1 cfs in the 100-year storm event. The difference in volume between existing and proposed condition in all storm events (2-year through 100-year) will be temporarily stored within the project site.

See Appendix “C” for proposed and existing condition hydrographs.

Methodology

Hydrology calculations were computed using Riverside County rational method program (by AES software). The soil type is C per Riverside County Hydrology Manual. AES software was used to calculate all rational method peak flow rates. Hydrographs were computed using CivilD Software.

APPENDIX	DESCRIPTION
A	REFERENCE MATERIAL
B	HYDROLOGY CALCULATIONS
C	DETENTION CACLULATIONS
D	HYDROLOGY MAPS

APPENDIX A

REFERENCE MATERIAL

MASTER DRAINAGE PLAN
LINE GG PRELIMINARY ENGINEERING REPORT
PROJECT NO. 02-89280022

Master Drainage Plan
Line GG Preliminary Engineering Report
Project No. 02-89280022

Submitted to:

MORENO VALLEY

Mr. Larry Gonzales
Senior Engineer
Capital Projects Division
14177 Frederick Street
Moreno Valley, CA 92552-0805

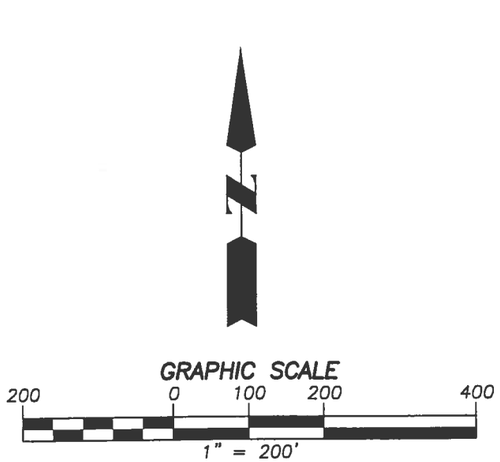
December 30, 2004

Submitted by:

AEI CASC ENGINEERING

937 South Via Lata, Suite 500
Colton, CA 92324
(909) 783-0101
(909) 783-0108 (fax)

LINE "GG" STORM DRAIN PLANS
ALTERNATIVE 1A



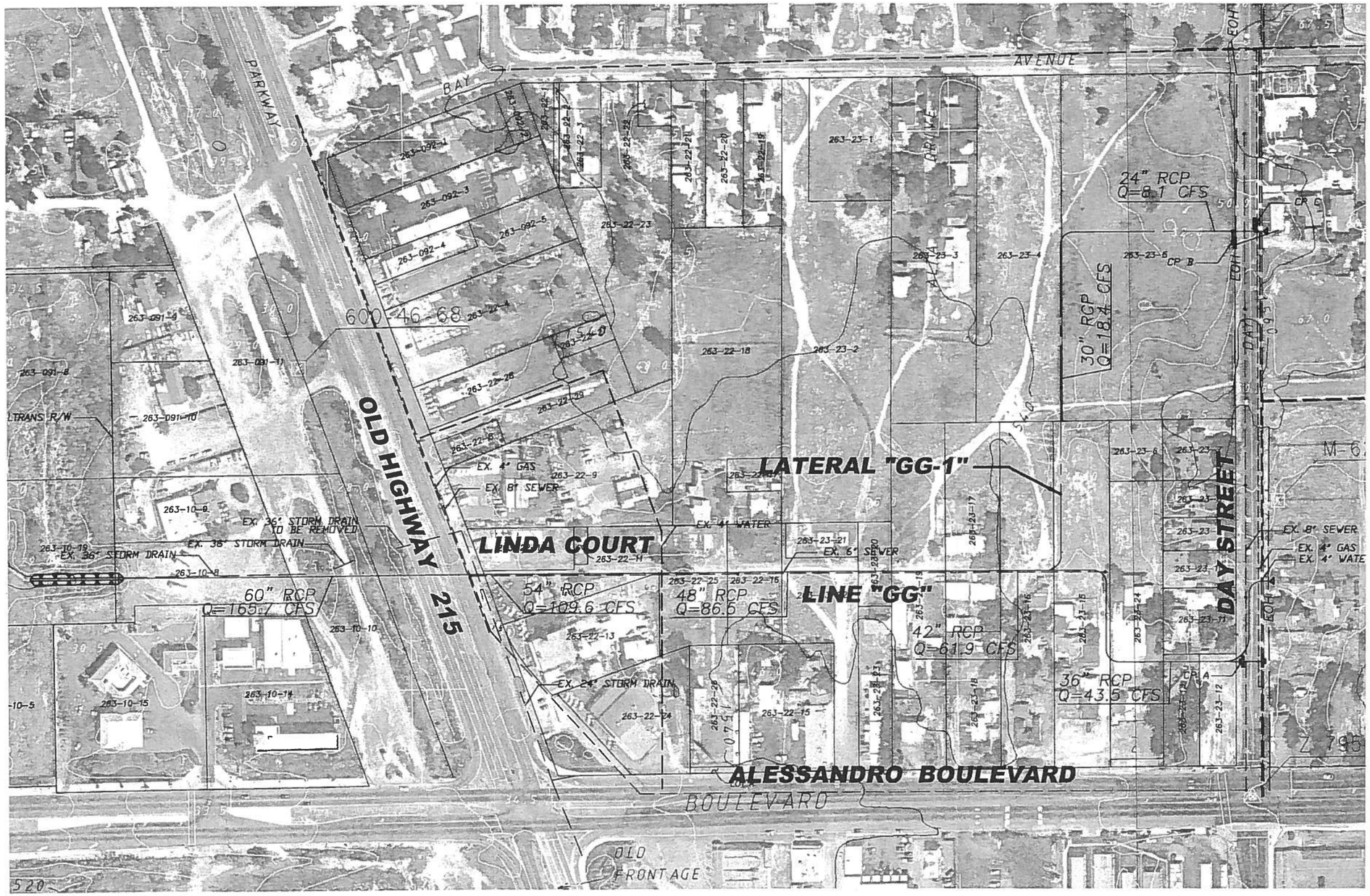


FIGURE 1–1

LINE "GG" STORM DRAIN PLANS
ALTERNATIVE 1B

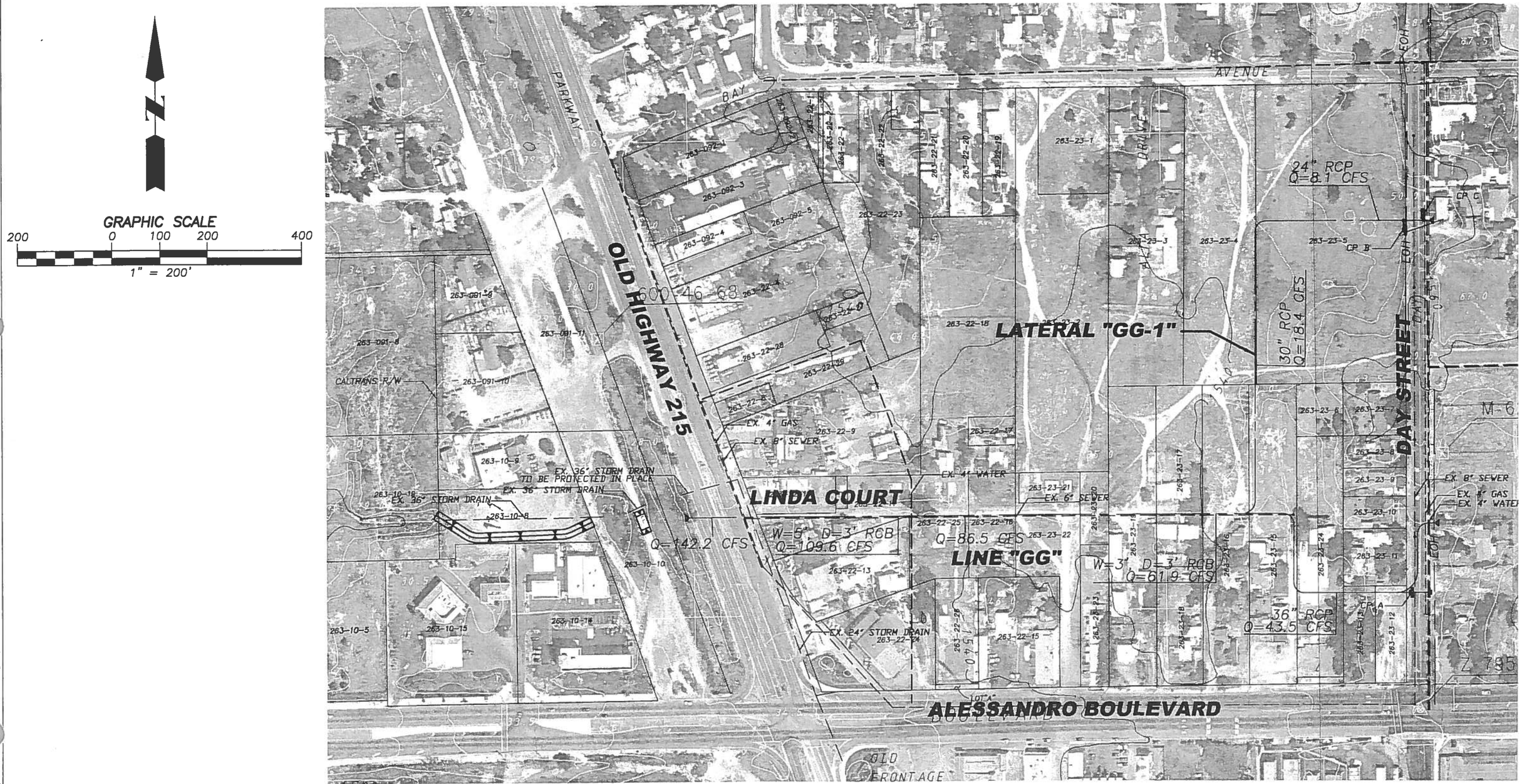


FIGURE 1-2

LINE "GG" STORM DRAIN PLANS
ALTERNATIVE 2A

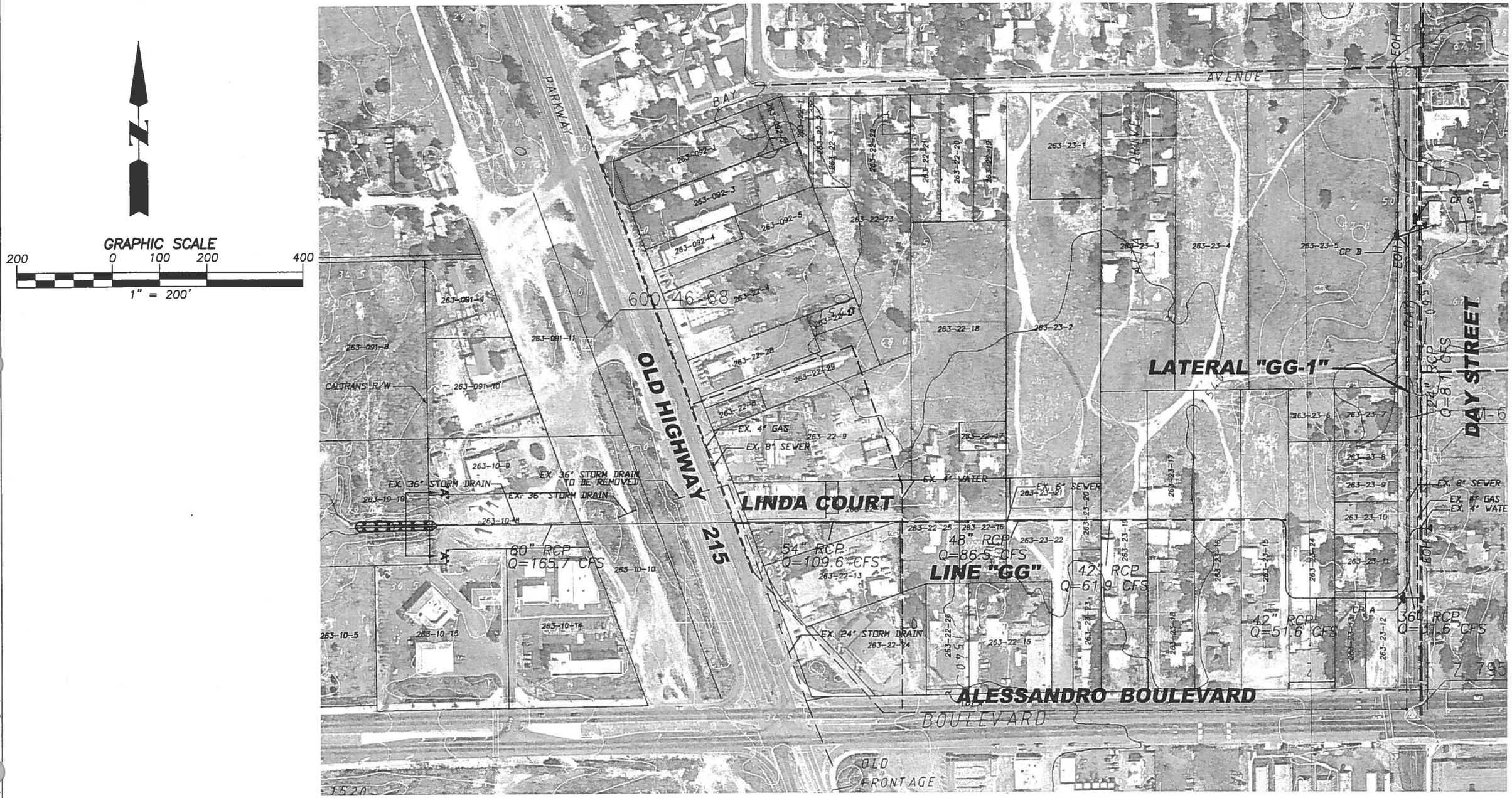


FIGURE 1–3

LINE "GG" STORM DRAIN PLANS
ALTERNATIVE 2B

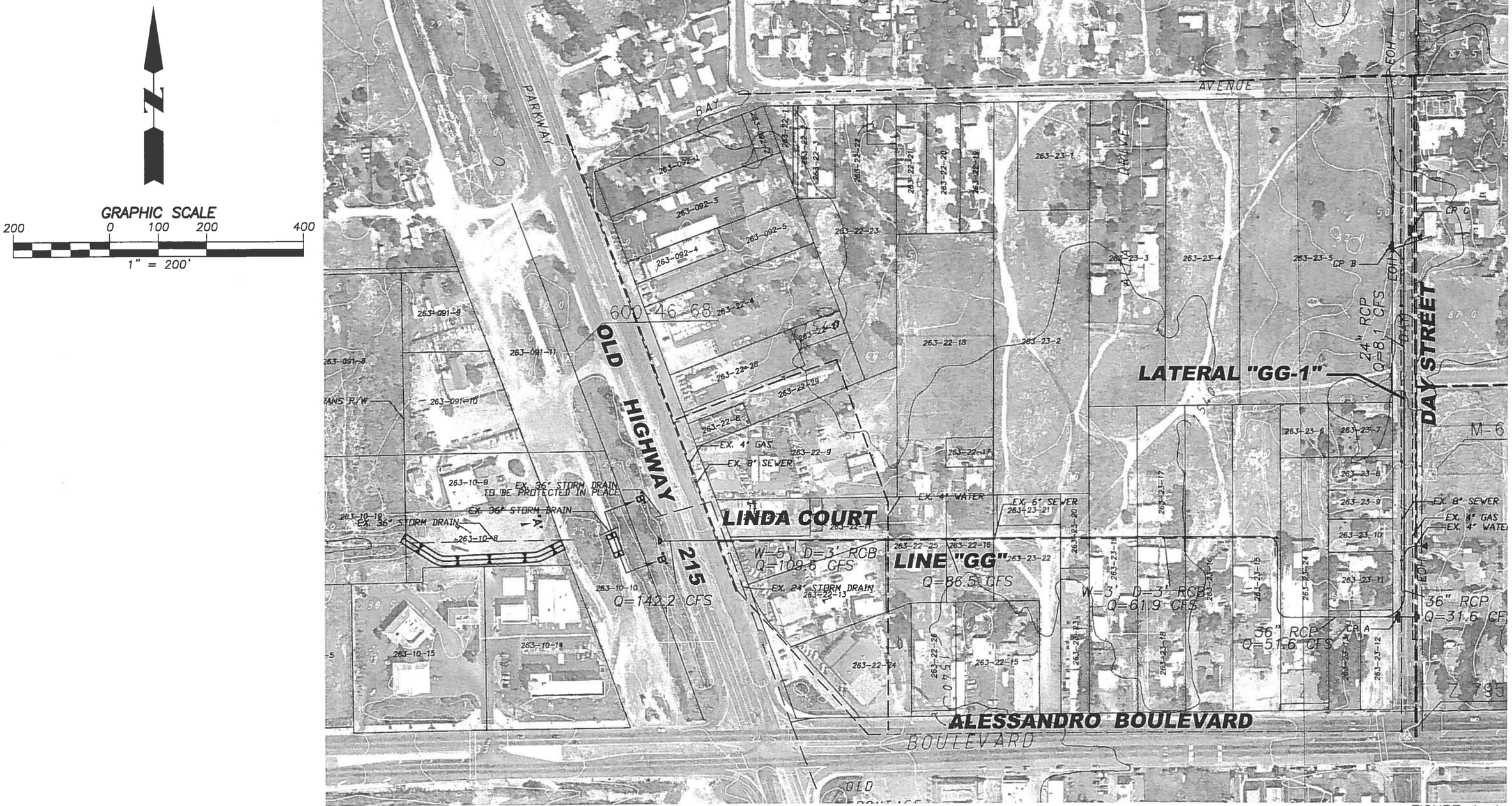
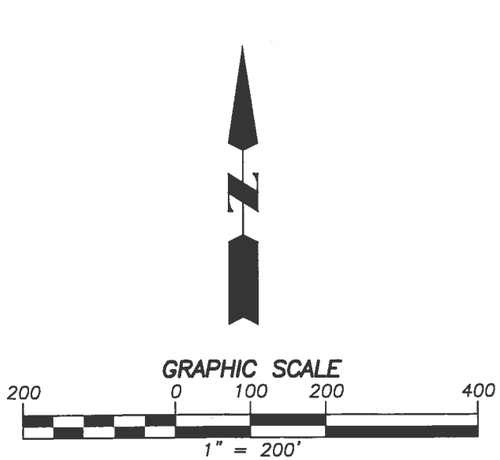


FIGURE 1-4

Q:\56111\...r_Drainage\ SD-Alt2-B.dwg 08/15/04 08:55

LINE "GG" STORM DRAIN PLANS
INTERIM FOR DAY STREET IMPROVEMENTS



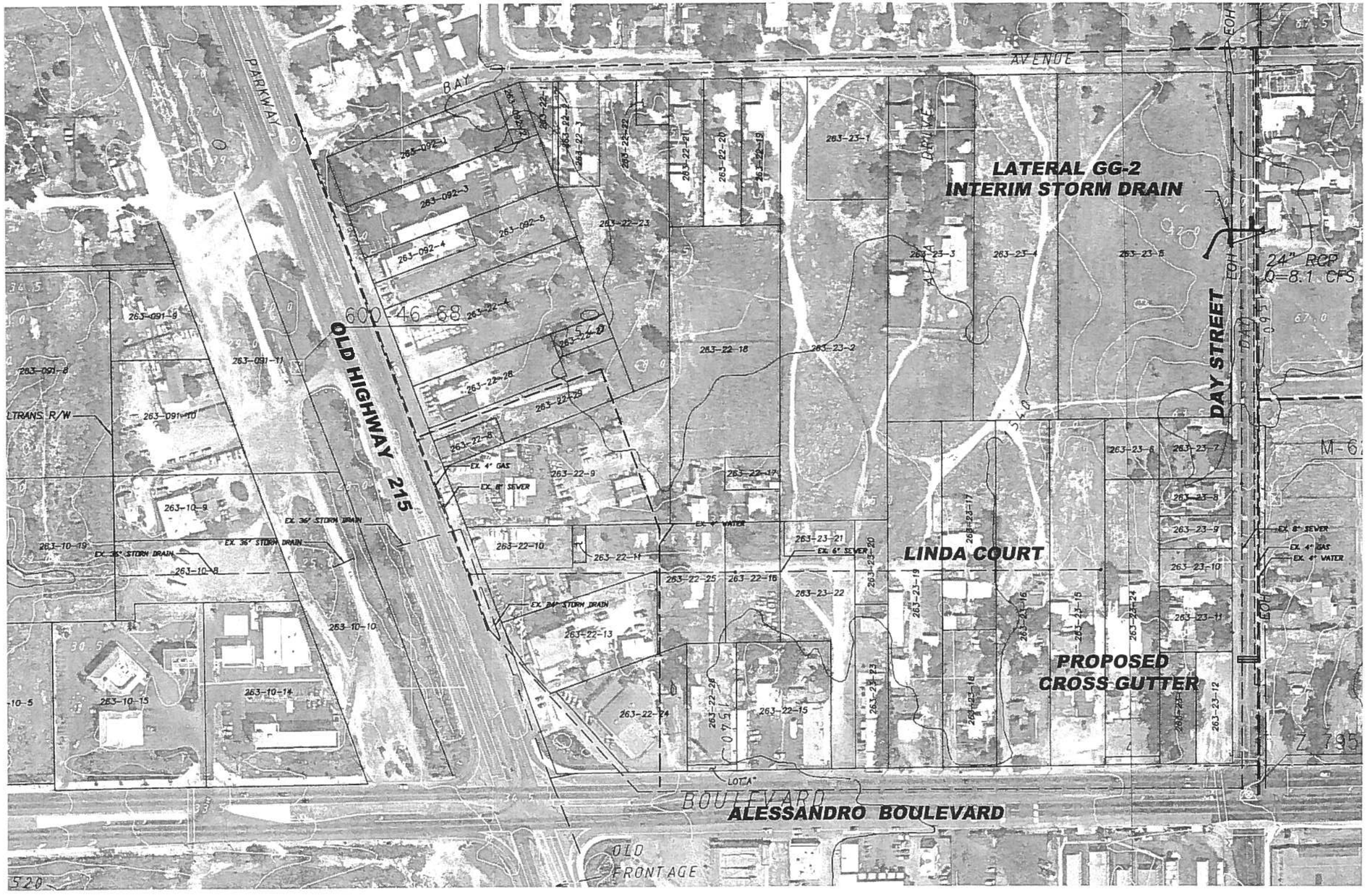
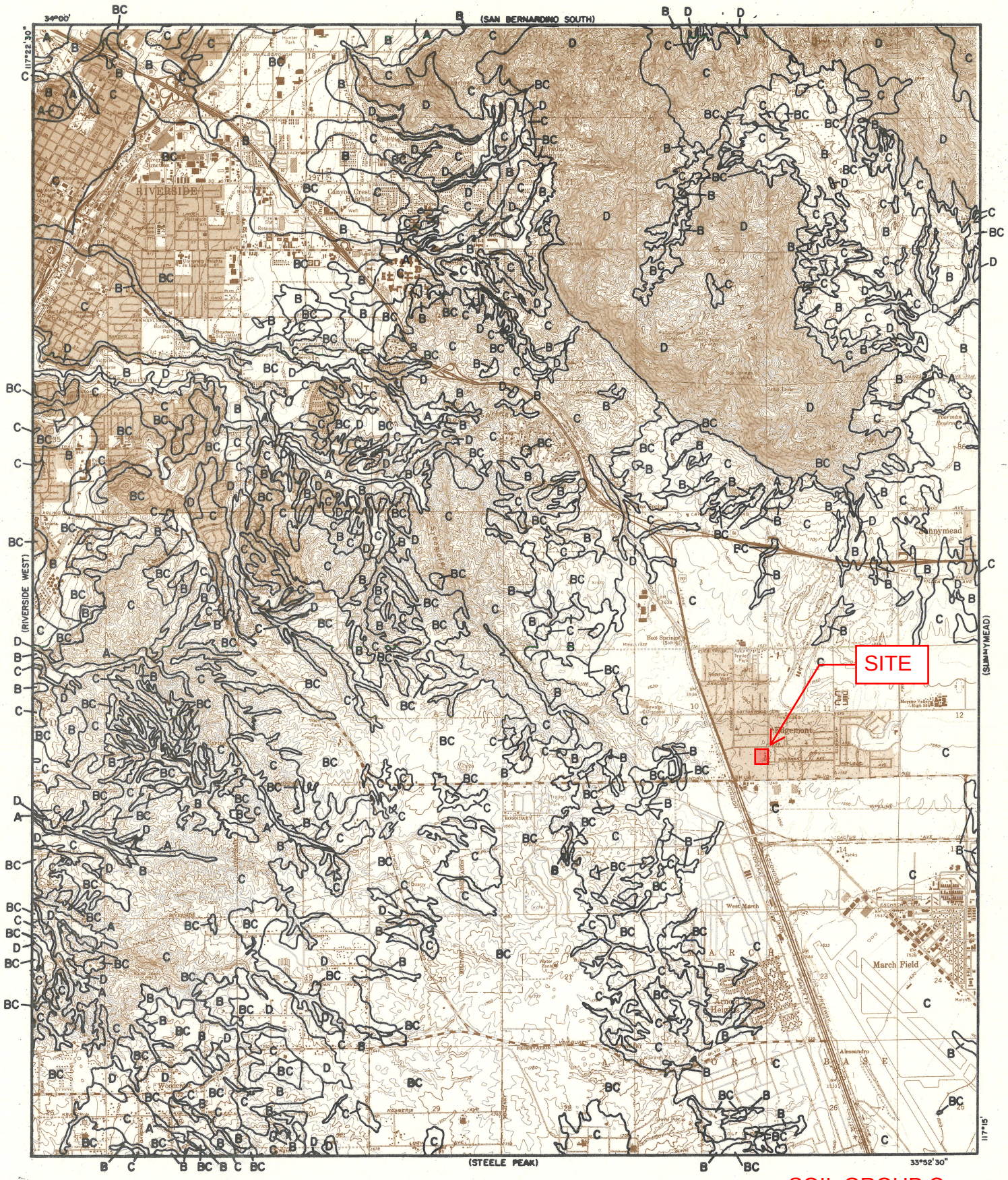


FIGURE 1-5

HYDROLOGIC SOILS GROUP MAP
FROM RCFC&WCD HYDROLOGY MANUAL



SOIL GROUP C

LEGEND

—— SOILS GROUP BOUNDARY

A SOILS GROUP DESIGNATION

RCFC&WCD

HYDROLOGY MANUAL

N

0 FEET 5000

HYDROLOGIC SOILS GROUP MAP FOR RIVERSIDE-EAST

PLATE C-1.16

RAINFALL INTENSITY CHART
FROM RCFC&WCD HYDROLOGY MANUAL

RAINFALL INTENSITY—INCHES PER HOUR

SUNNYMEAD - MORENO			WOODCREST		
DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY	
	10 YEAR	100 YEAR		10 YEAR	100 YEAR
5	2.84	4.16	5	3.37	5.30
6	2.59	3.79	6	3.05	4.79
7	2.40	3.51	7	2.80	4.40
8	2.25	3.29	8	2.60	4.09
9	2.12	3.10	9	2.44	3.83
10	2.01	2.94	10	2.30	3.62
11	1.92	2.80	11	2.19	3.43
12	1.83	2.68	12	2.08	3.27
13	1.76	2.58	13	1.99	3.13
14	1.70	2.48	14	1.91	3.01
15	1.64	2.40	15	1.84	2.89
16	1.59	2.32	16	1.78	2.79
17	1.54	2.25	17	1.72	2.70
18	1.50	2.19	18	1.67	2.62
19	1.46	2.13	19	1.62	2.54
20	1.42	2.08	20	1.57	2.47
22	1.35	1.98	22	1.49	2.34
24	1.30	1.90	24	1.42	2.23
26	1.25	1.82	26	1.36	2.14
28	1.20	1.76	28	1.31	2.05
30	1.16	1.70	30	1.26	1.98
32	1.12	1.64	32	1.22	1.91
34	1.09	1.59	34	1.18	1.85
36	1.06	1.55	36	1.14	1.79
38	1.03	1.51	38	1.11	1.74
40	1.00	1.47	40	1.07	1.69
45	.95	1.39	45	1.01	1.58
50	.90	1.31	50	.95	1.49
55	.86	1.25	55	.90	1.42
60	.82	1.20	60	.86	1.35
65	.79	1.15	65	.82	1.29
70	.76	1.11	70	.79	1.24
75	.73	1.07	75	.76	1.19
80	.71	1.04	80	.73	1.15
85	.69	1.01	85	.71	1.11
SLOPE = .500			SLOPE = .550		

STANDARD INTENSITY-DURATION CURVES DATA

PLATE D-4.1 (6 of 6)

PRECIPITATION MAPS
FROM RCFC&WCD HYDROLOGY MANUAL

SITE

0.50"

NOTES:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973

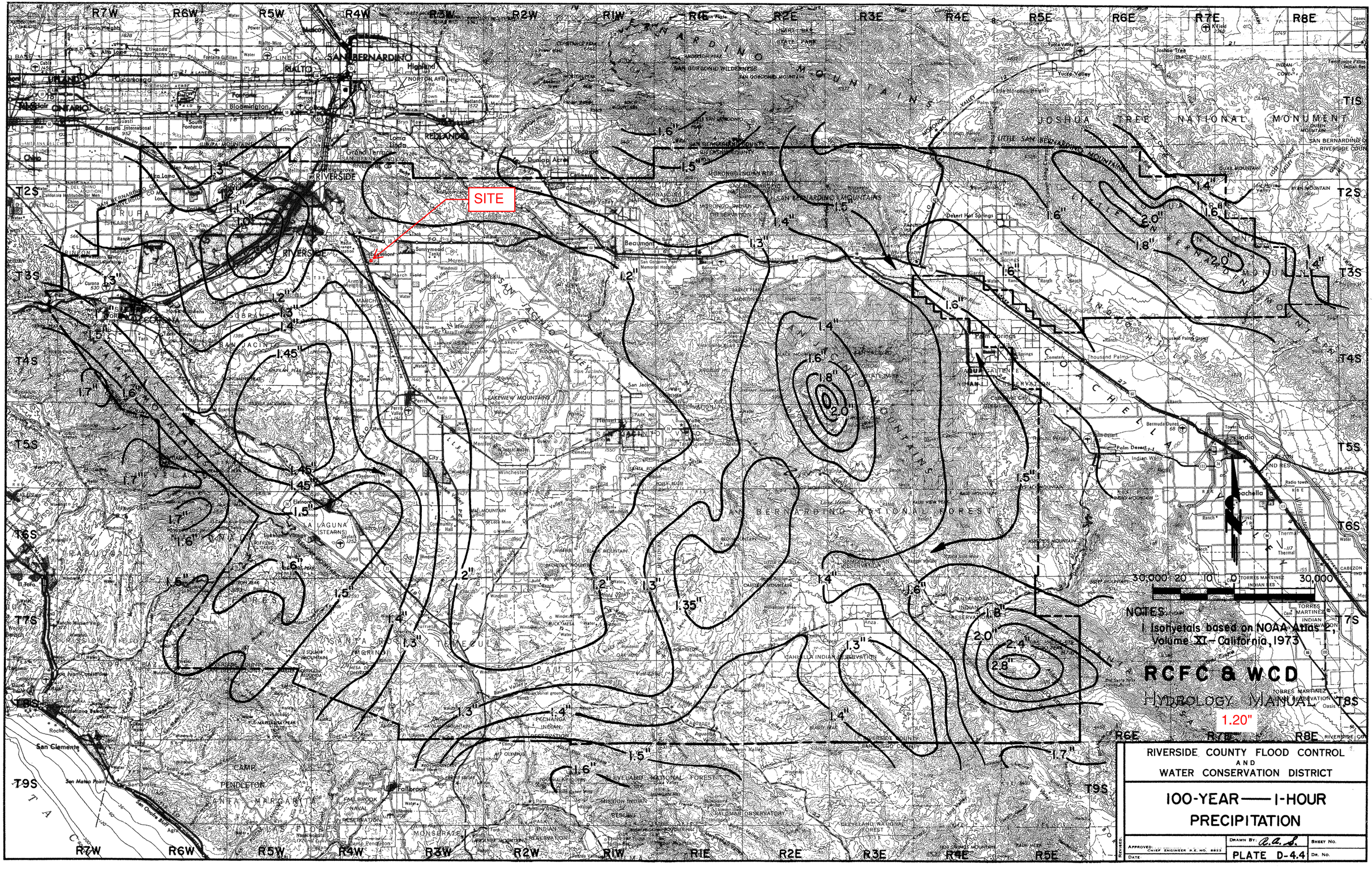
RCFC & WCD
HYDROLOGY MANUAL

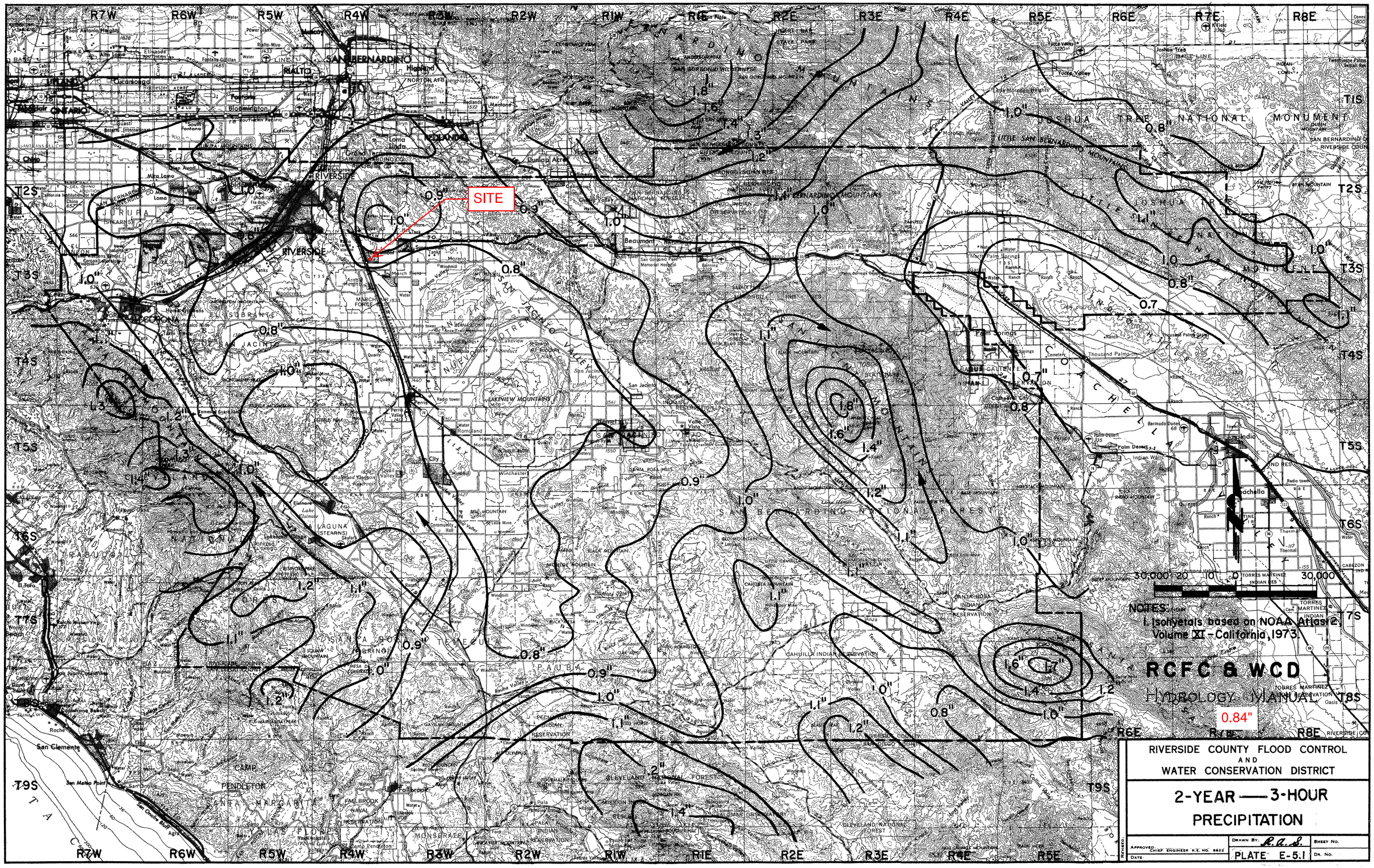
RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

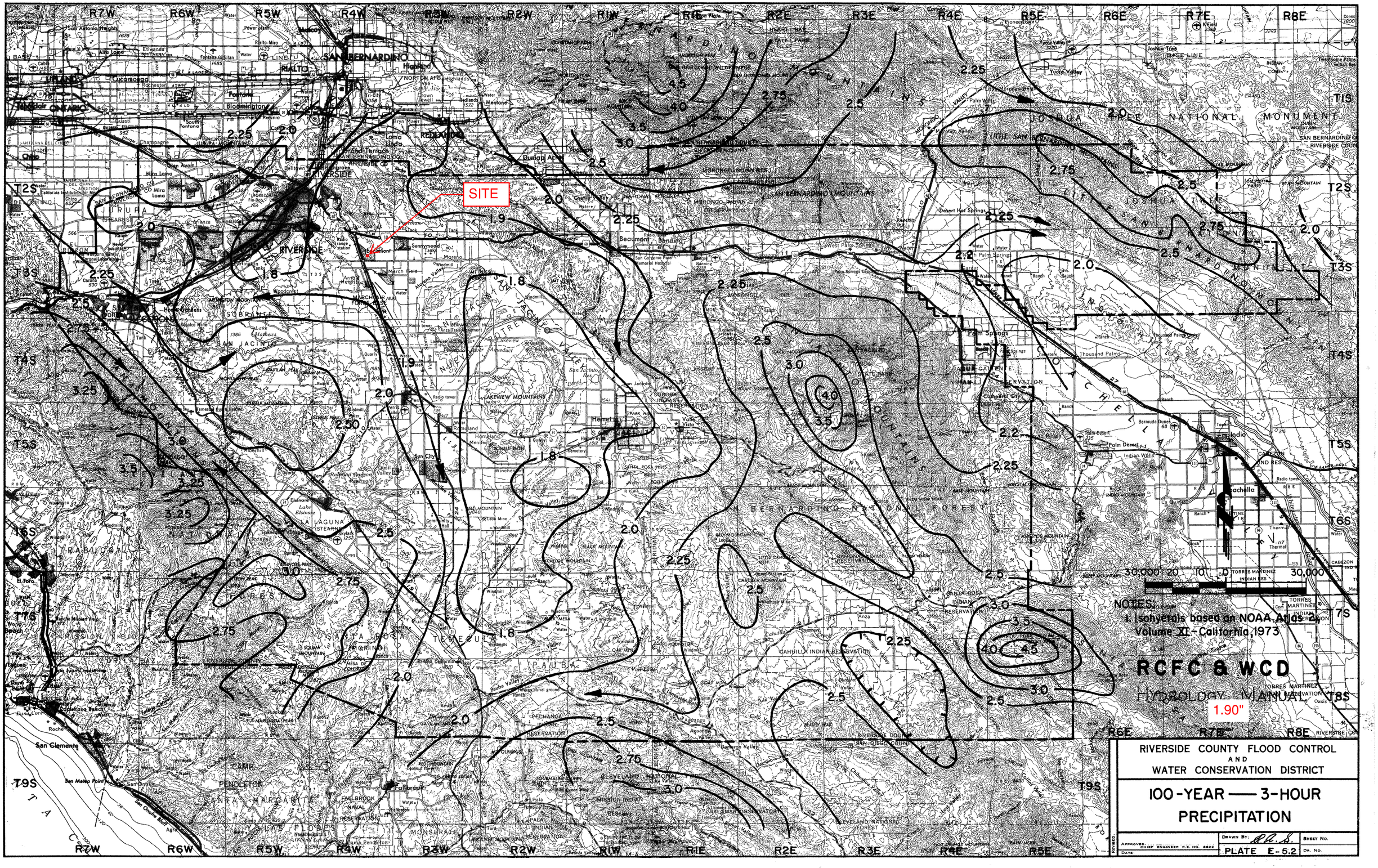
2-YEAR — 1-HOUR
PRECIPITATION

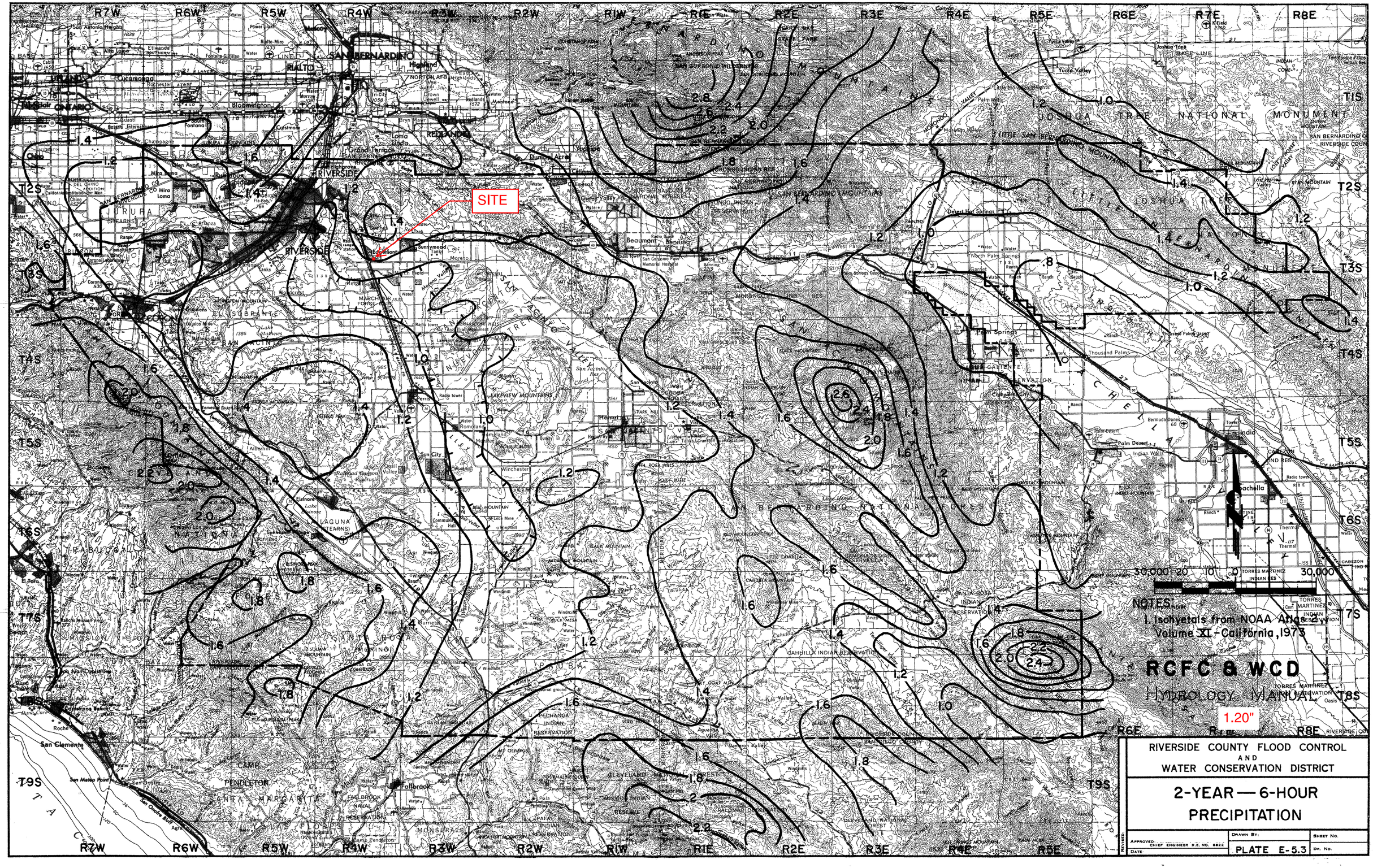
APPROVED CHIEF ENGINEER R.E. NO. 6822	DRAWN BY: R.A.S.	SHEET NO.
DATE	PLATE D-4.3	DR. NO.

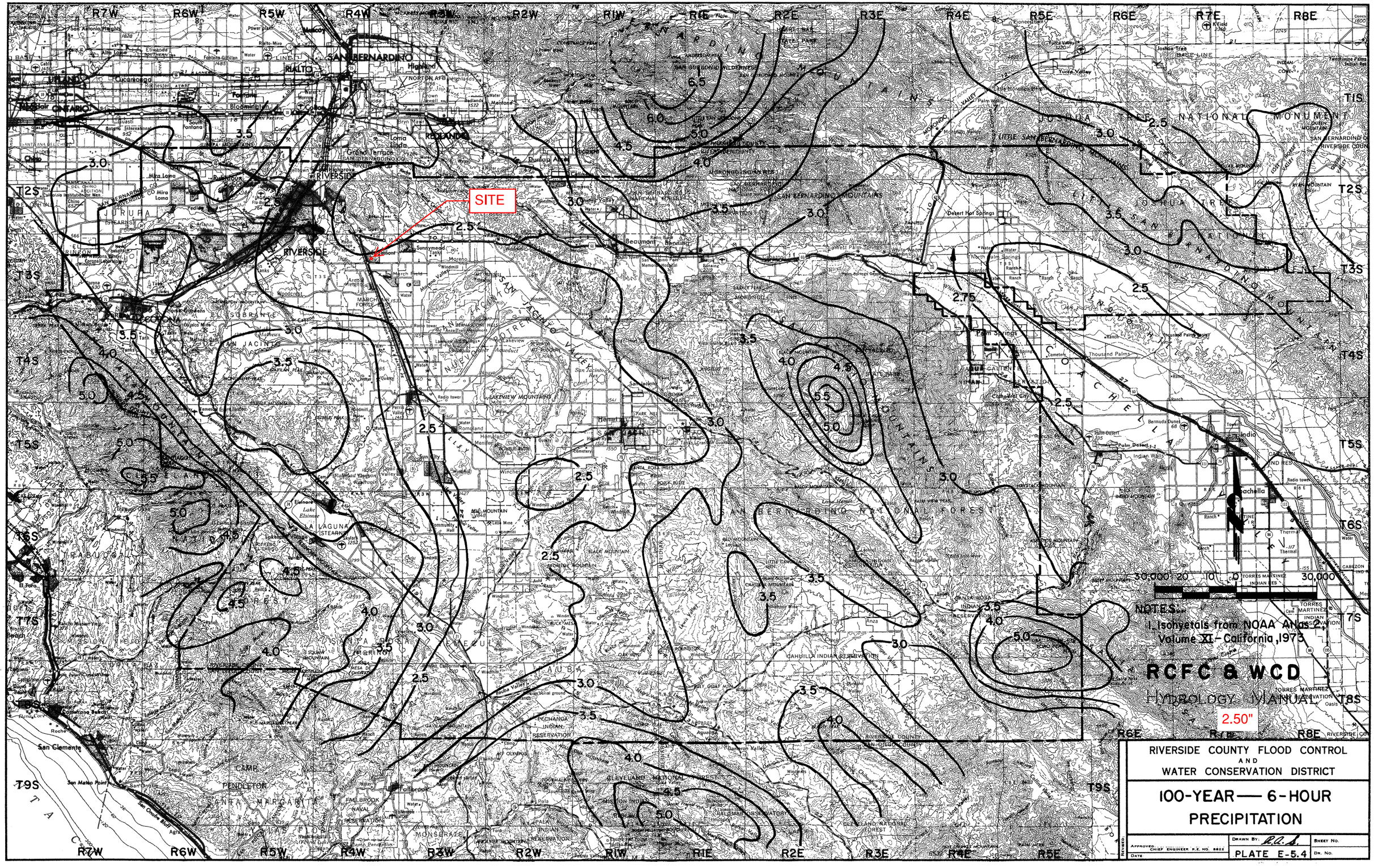
REVISED:

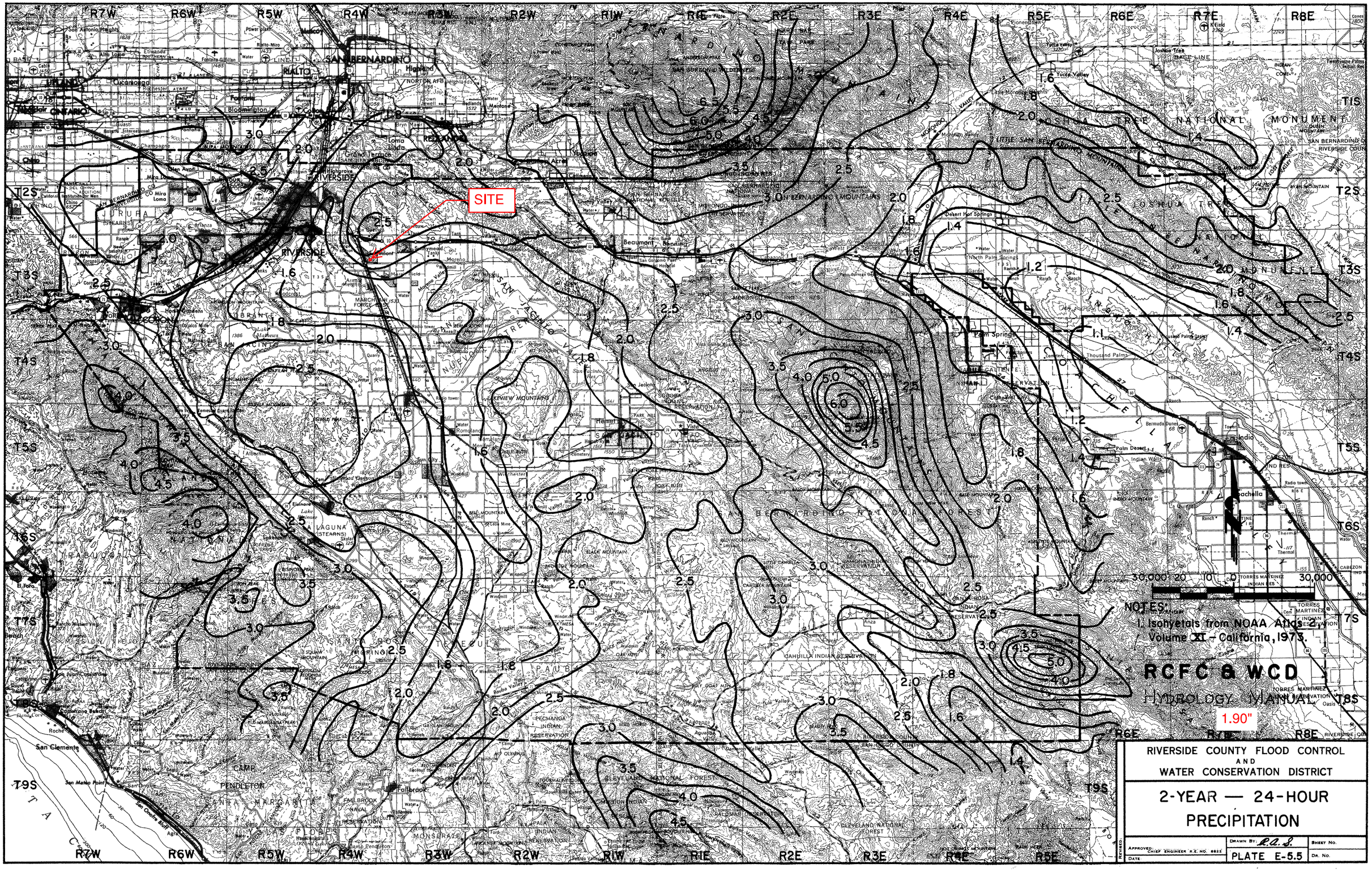

SITE
1.20"
NOTES:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR — 1-HOUR PRECIPITATION
PLATE D-4.4
DRAWN BY: A.A.S.
APPROVED: CHIEF ENGINEER R.E. NO. 6822
DATE
SHEET NO.
DR. NO.
REVISED
30,000 20 10 0 30,000

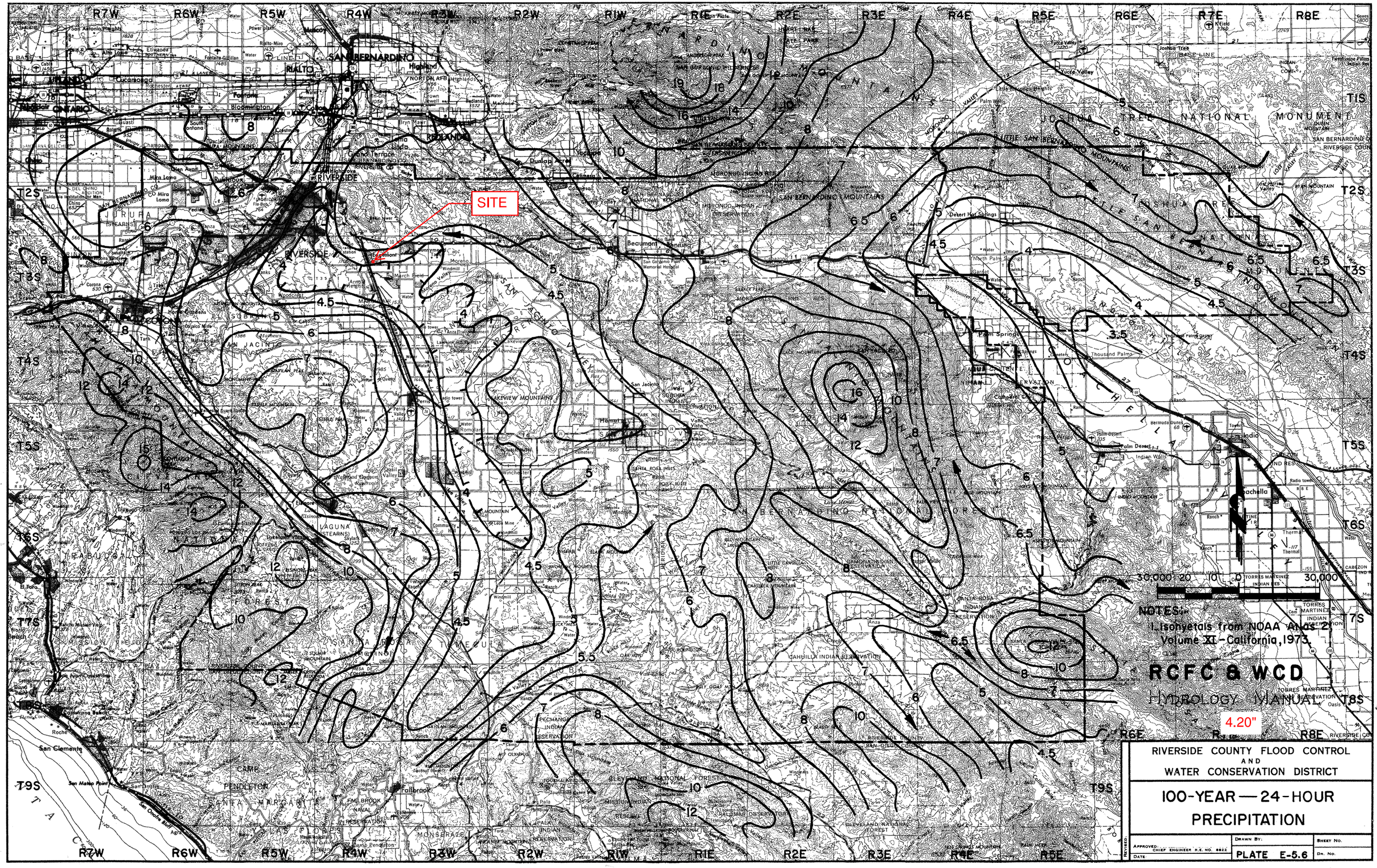

SITE
0.84"
NOTES:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973.
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
2-YEAR — 3-HOUR PRECIPITATION
PLATE E-5.1
DRAWN BY: R.A.S.
SHEET NO.
DR. NO.
APPROVED CHIEF ENGINEER R.E. NO. 6822
DATE
REVISED:

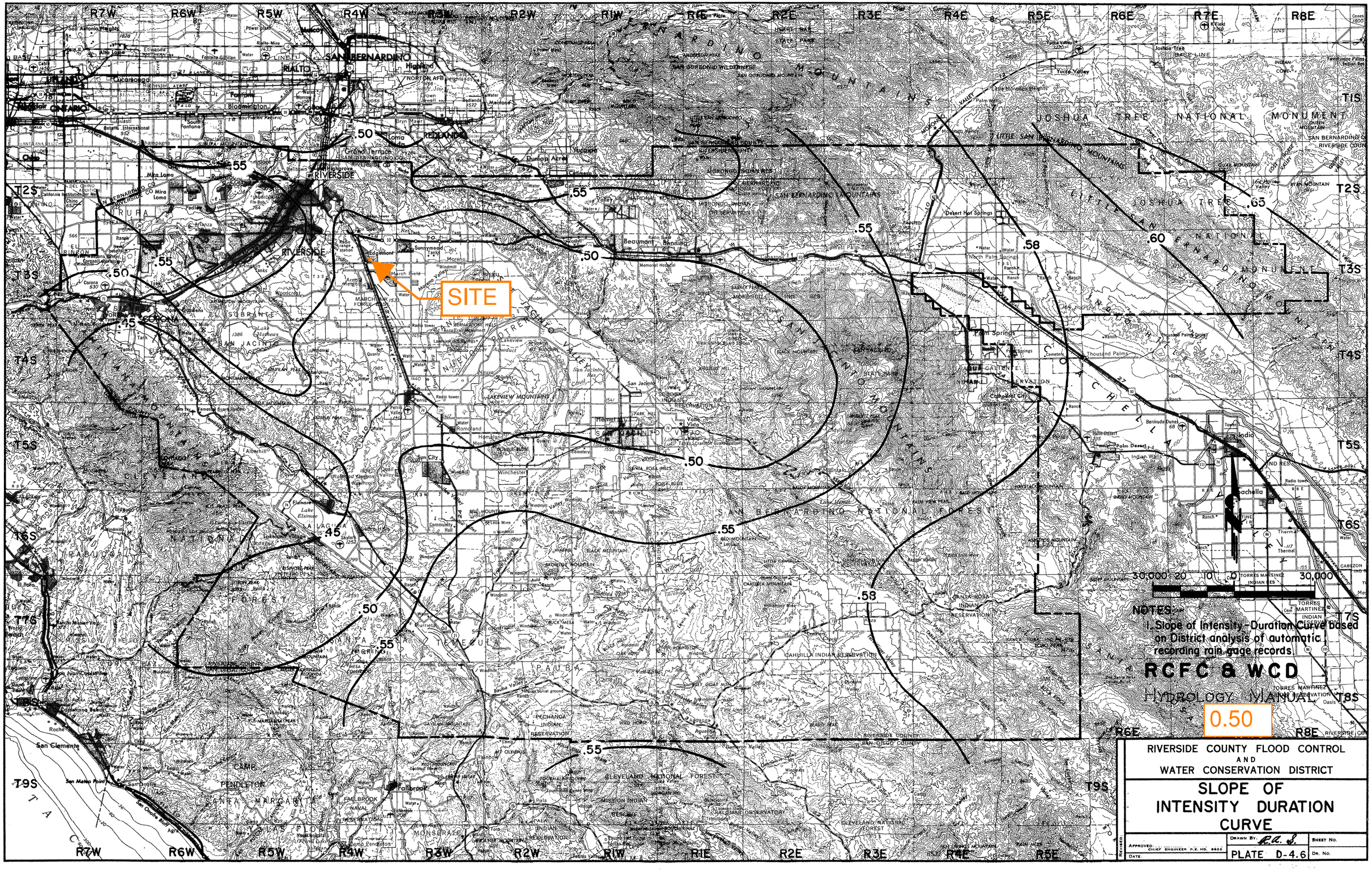

SITE
NOTES:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973
RCFC & WCD
HYDROLOGY MANUAL
1.90"
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR — 3-HOUR PRECIPITATION
PLATE E-5.2
SHEET NO.
DRAWN BY:
APPROVED, CHIEF ENGINEER R.E. NO. 8822
DATE
REVISED


SITE
NOTES)
1. Isohyetals from NOAA Atlas 2 Vol. XI - California, 1973
RCFC & WCD
HYDROLOGY MANUAL
1.20"
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
2-YEAR — 6-HOUR PRECIPITATION
DRAWN BY:
SHEET NO.
PLATE E-5.3
DR. NO.
APPROVED CHIEF ENGINEER R.E. NO. 8822
DATE
REVISED

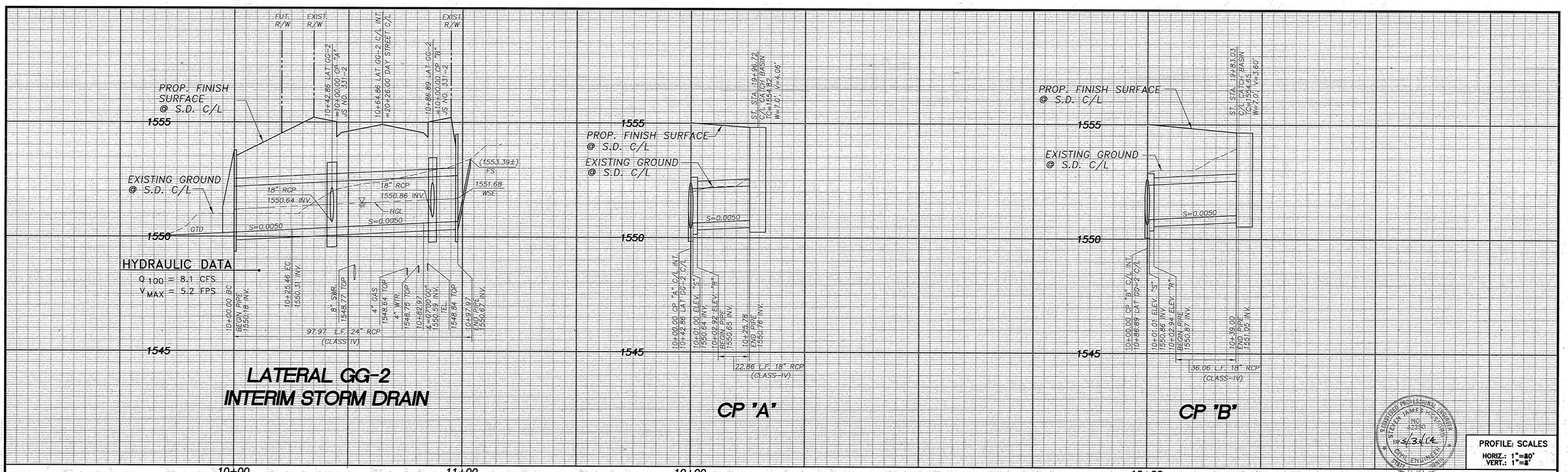

SITE
2.50"
NOTES:
1. Isohyetals from NOAA Atlas 2, Volume XI - California, 1973
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR — 6-HOUR PRECIPITATION
PLATE E-5.4
SAN BERNARDINO
RIVERSIDE
CORONA
SAN JACINTO
HEMET
BANNING
BEAUMONT
PALM SPRINGS
INDIO
COACHELLA
TEMECULA
FALLBROOK
SAN CLEMENTE
CAMP PENDLETON
JOSHUA TREE NATIONAL MONUMENT
SAN BERNARDINO MOUNTAINS
SAN JACINTO MOUNTAINS
SANTA ROSA MOUNTAINS
SAN BERNARDINO NATIONAL FOREST
CLEVELAND NATIONAL FOREST
MORONGO INDIAN RESERVATION
AGUA CALIENTE INDIAN RESERVATION
SANTA ROSA INDIAN RESERVATION
PECHANGA INDIAN RESERVATION
SANTA MARGARITA
SAN LUIS REY
SAN JACINTO VALLEY
TEMECULA VALLEY
PERRIS VALLEY
LAKEVIEW MOUNTAINS
R7W R6W R5W R4W R3W R2W R1W R1E R2E R3E R4E R5E R6E R7E R8E
T2S T3S T4S T5S T6S T7S T8S T9S


SITE
1.90"
NOTES:
1. Isohyetals from NOAA Atlas 2 Volume XI - California, 1973.
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
2-YEAR — 24-HOUR PRECIPITATION
PLATE E-5.5
SAN BERNARDINO
RIVERSIDE
RIALTO
COLTON
CORONA
NORCO
MORENO VALLEY
PERRIS
BEAUMONT
BANNING
HEMET
SAN JACINTO
PALM SPRINGS
CATHEDRAL CITY
INDIO
COACHELLA
SAN CLEMENTE
FALLBROOK
JOSHUA TREE NATIONAL MONUMENT
SAN BERNARDINO NATIONAL FOREST
CLEVELAND NATIONAL FOREST
MARCH AIR FORCE BASE
CAMP PENDLETON
SANTA MARGARITA
SAN JACINTO MOUNTAINS
SAN GABRIEL MOUNTAINS
SAN BERNARDINO MOUNTAINS
SANTA ROSA PLATEAU
AGUANGA
PECHANGA INDIAN RESERVATION
CAHUILLA INDIAN RESERVATION
AGUA CALIENTE INDIAN RESERVATION
SOBOBA INDIAN RESERVATION
MORONGO INDIAN RESERVATION
SAN MANUEL INDIAN RESERVATION
TORRES MARTINEZ INDIAN RESERVATION
SAN JACINTO FAULT
SAN ANDREAS FAULT
CHINO FAULT
SAN JACINTO VALLEY
SAN TIMOTEO CANYON
SAN GORGONIO PASS
COACHELLA VALLEY
SANTA ANA RIVER
SANTA MARGARITA RIVER
TEMECULA CREEK
MURRIETA CREEK
SAN MATEO POINT
SAN ONOFRE BLUFF
R7W R6W R5W R4W R3W R2W R1W R1E R2E R3E R4E R5E R6E R7E R8E
T2S T3S T4S T5S T6S T7S T8S T9S

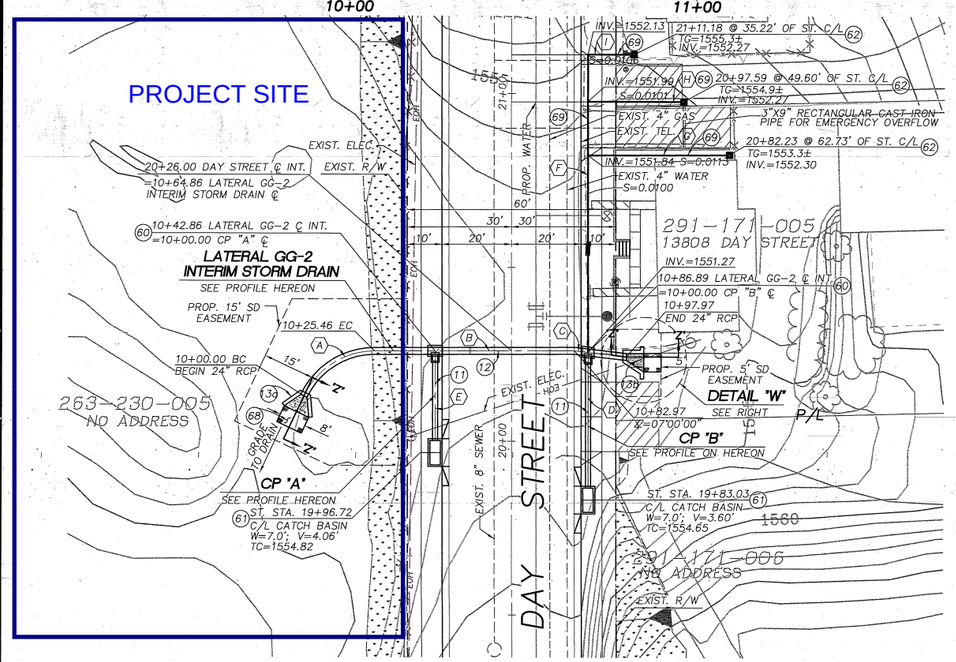

SITE
NOTES:
1. Isohyetals from NOAA Atlas 2, Volume XI - California, 1973.
RCFC & WCD
HYDROLOGY MANUAL
4.20"
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR — 24-HOUR PRECIPITATION
PLATE E-5.6

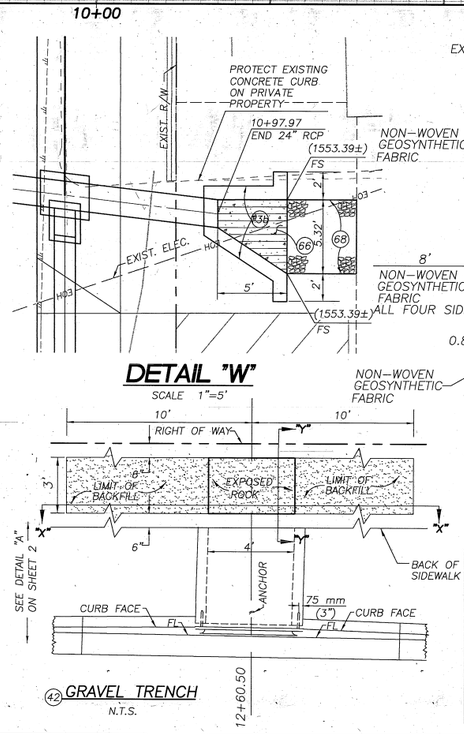

SITE
0.50
NOTES
1. Slope of Intensity-Duration Curve based on District analysis of automatic recording rain gage records
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
SLOPE OF INTENSITY DURATION CURVE
PLATE D-4.6

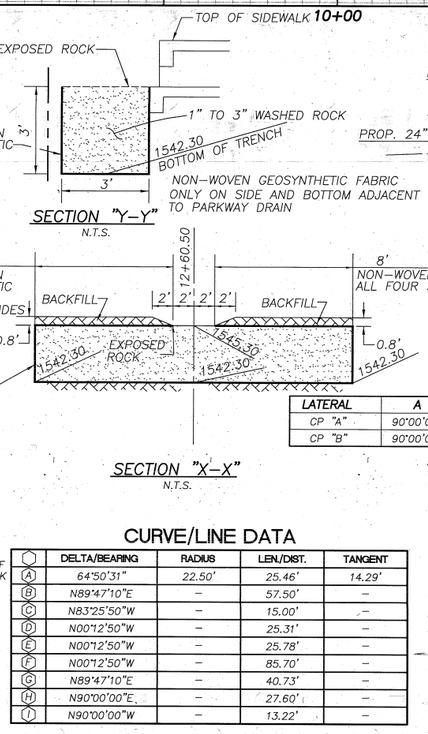
LATERAL GG-2 INTERIM STORM DRAIN
ASBUILT

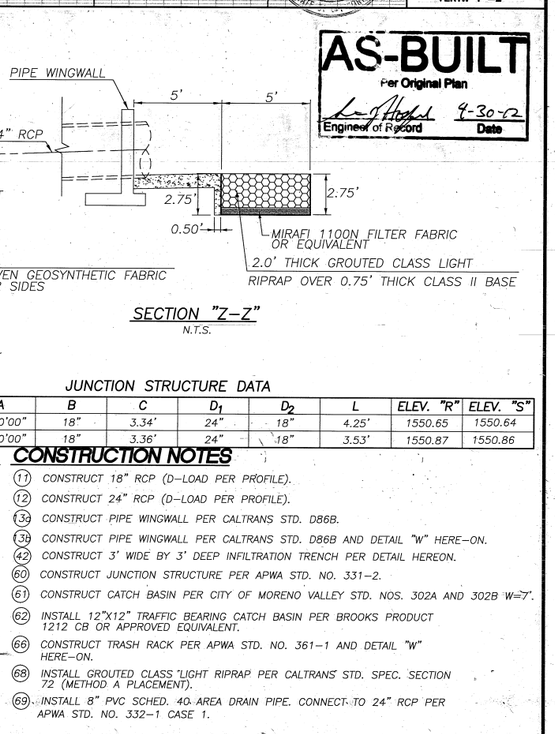


PROFILE SCALES
HORIZ.: 1"=80'
VERT.: 1"=8'









JUNCTION STRUCTURE DATA

LATERAL	A	B	C	D_1	D_2	L	ELEV. "R"	ELEV. "S"
CP "A"	90°00'00"	18"	3.34'	24"	18"	4.25'	1550.65	1550.64
CP "B"	90°00'00"	18"	3.36'	24"	18"	3.53'	1550.87	1550.86

CONSTRUCTION NOTES

(11) CONSTRUCT 18" RCP (D-LOAD PER PROFILE).
(12) CONSTRUCT 24" RCP (D-LOAD PER PROFILE).
(13a) CONSTRUCT PIPE WINGWALL PER CALTRANS STD. D86B.
(13b) CONSTRUCT PIPE WINGWALL PER CALTRANS STD. D86B AND DETAIL "W" HERE-ON.
(42) CONSTRUCT 3' WIDE BY 3' DEEP INFILTRATION TRENCH PER DETAIL HEREON.
(60) CONSTRUCT JUNCTION STRUCTURE PER APWA STD. NO. 331-2.
(61) CONSTRUCT CATCH BASIN PER CITY OF MORENO VALLEY STD. NOS. 302A AND 302B W=7'.
(62) INSTALL 12"X12" TRAFFIC BEARING CATCH BASIN PER BROOKS PRODUCT 1212 CB OR APPROVED EQUIVALENT.
(66) CONSTRUCT TRASH RACK PER APWA STD. NO. 361-1 AND DETAIL "W" HERE-ON.
(68) INSTALL GROUTED CLASS 'LIGHT RIPRAP PER CALTRANS STD. SPEC. SECTION 72 (METHOD A PLACEMENT).
(69) INSTALL 8" PVC SCHED. 40 AREA DRAIN PIPE. CONNECT TO 24" RCP PER APWA STD. NO. 332-1 CASE 1.

CURVE/LINE DATA

	DELTA/BEARING	RADIUS	LEN/DIST.	TANGENT
(A)	64°50'31"	22.50'	25.46'	14.29'
(B)	N89°47'10"E	–	57.50'	–
(C)	N83°25'50"W	–	15.00'	–
(D)	N00°12'50"W	–	25.31'	–
(E)	N00°12'50"W	–	25.78'	–
(F)	N00°12'50"W	–	85.70'	–
(G)	N89°47'10"E	–	40.73'	–
(H)	N90°00'00"E	–	27.60'	–
(I)	N90°00'00"W	–	13.22'	–

AS-BUILT
Per Original Plan
Engineer of Record 4-30-12 Date

GRAPHIC SCALE
20 0 10 20 40
1" = 20'

MARK	REVISIONS	APPR	DATE

DESIGNED BY _____ DRAWN BY _____ CHECKED BY _____

CITY OF MORENO VALLEY APPROVALS

APPROVED BY	DATE	BY
SUPERVISING ENGINEER		
CITY TRAFFIC ENGINEER	1/27/09	EL
MAINTENANCE AND OPERATIONS MANAGER	1-27-09	
SENIOR ENGINEER	01/29/09	

PREM KUMAR
DEPUTY P.W. DIRECTOR/ASSIST. CITY ENGINEER
R.C.E. 52463 EXP. DATE: 12/31/10
1/29/09 DATE

CHRIS A. VOGT
PUBLIC WORKS DIRECTOR/CITY ENGINEER
R.C.E. 44250 EXP. DATE: 06/30/09
2/4/09 DATE

AEI CASC CONSULTING
937 SOUTH VIA LATA
SUITE 500
COLTON, CA 92324
PH. (909) 783-0101
FAX (909) 783-0108

PREPARED UNDER SUPERVISION OF
STEVE J. HOSFORD DATE
RCE 42280 Exp. Date: 03/31/10

ENGINEER OF RECORD'S SEAL
REGISTERED PROFESSIONAL ENGINEER
STEVE J. HOSFORD
NO. 42280
EXP. 03/31/10
CIVIL
STATE OF CALIFORNIA

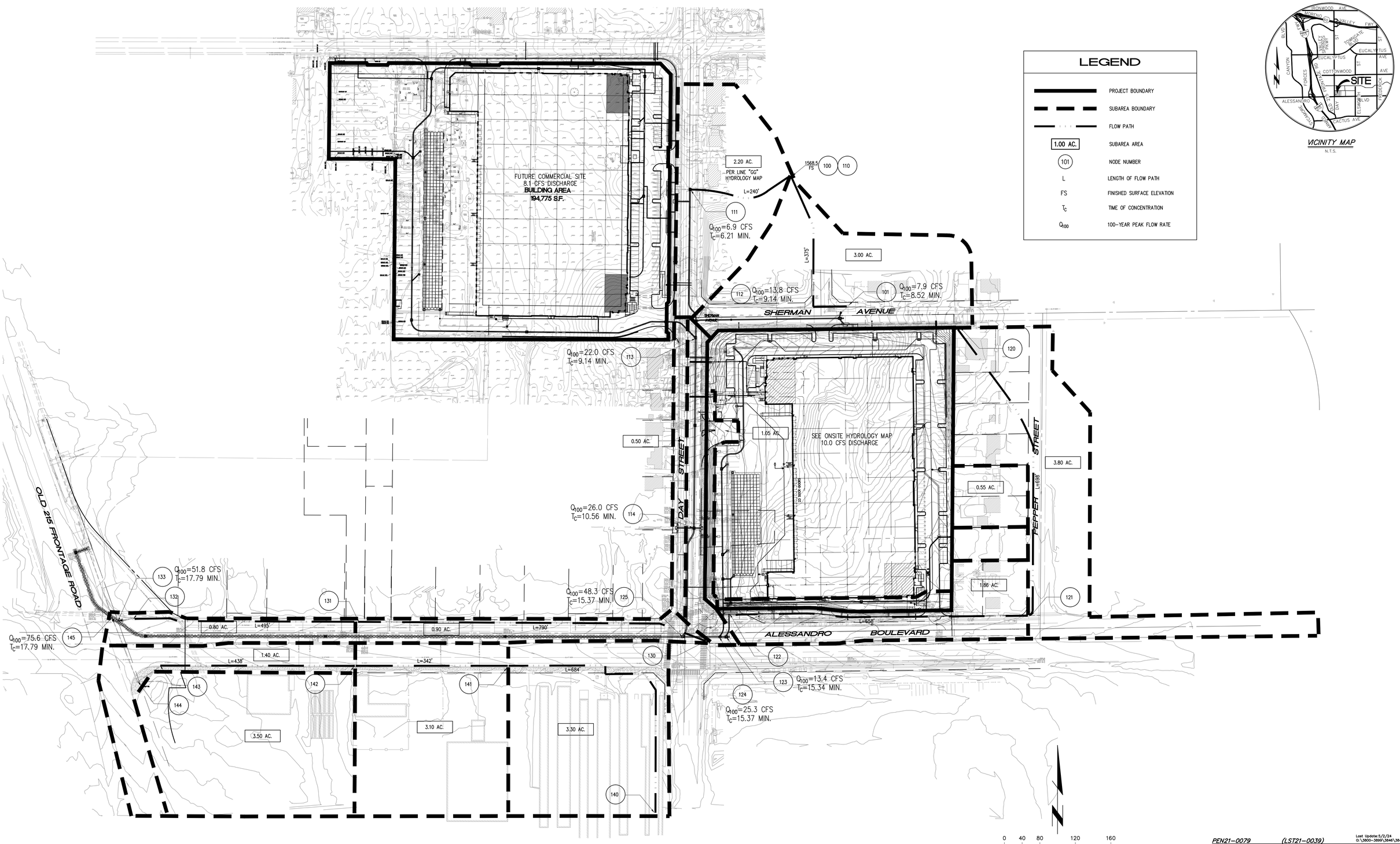
STREET IMPROVEMENT PLANS
DAY STREET
LINE "GG" STORM DRAIN INTERIM CULVERT

ACC. No. 897.91724
SHEET 11 OF 41
PROJECT No. 02-89268220

SHT 11 OF 46

Drawing Name: Q:\06113\25 MPH DESIGN\STREET PLANS\06113_STREET_SHT11.dwg
Last Opened: Jan 25, 2009 - 12:27pm by gsmith

OFFSITE HYDROLOGY MAP AND STORM DRAIN PLAN



LEGEND

———	PROJECT BOUNDARY
– – –	SUBAREA BOUNDARY
— · · —	FLOW PATH
1.00 AC.	SUBAREA AREA
(101)	NODE NUMBER
L	LENGTH OF FLOW PATH
FS	FINISHED SURFACE ELEVATION
T_C	TIME OF CONCENTRATION
Q_{100}	100-YEAR PEAK FLOW RATE

VICINITY MAP
N.T.S.

PEN21-0079 (LST21-0039)

Last Update: 5/2/24
D:\3800-3899\3846\3846HYD-OFFSITE.dwg

OWNER:
LDC INDUSTRIAL REALTY, INC.
3 MACARTHUR PLACE, SUITE 750
SANTA ANA, CA 92707
LARRY D. COCHRUN
TEL: 949-226-4601
EMAIL: LCOCHRUN@LDCINDUSTRIAL.COM

ENGINEER:
Thienes Engineering, Inc.
CIVIL ENGINEERING • LAND SURVEYING
14349 FIRESTONE BOULEVARD
LA MIRADA, CALIFORNIA 90638
PH.(714)521-4811 FAX(714)521-4173
EMAIL: CESAR@THIENESENG.COM

CITY OF MORENO VALLEY
PUBLIC WORKS DEPARTMENT

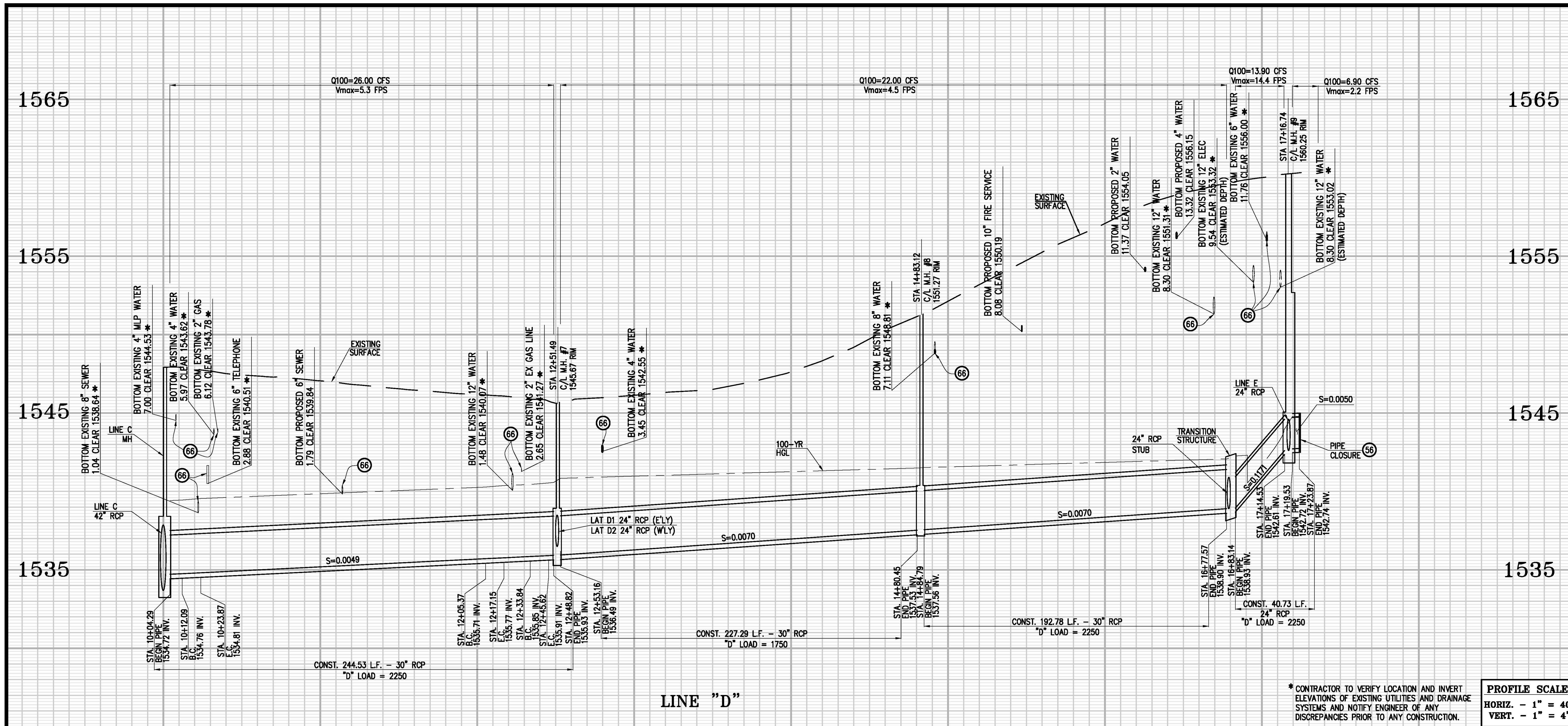
OFFSITE HYDROLOGY MAP
PEN20-0162 / LST20-0025
LDC - ALESSANDRO
NORTHEAST CORNER
OF
ALESSANDRO BLVD. AND DAY ST.
MORENO VALLEY, CALIFORNIA

JN 3846

1 of 1 Sheets

PLOT DATE: 05/02/2024

Last Update: 03/06/2024
D:\3800-3899\3846\3846HYD-OFFSITE.dwg



* CONTRACTOR TO VERIFY LOCATION AND INVERT ELEVATIONS OF EXISTING UTILITIES AND DRAINAGE SYSTEMS AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO ANY CONSTRUCTION.

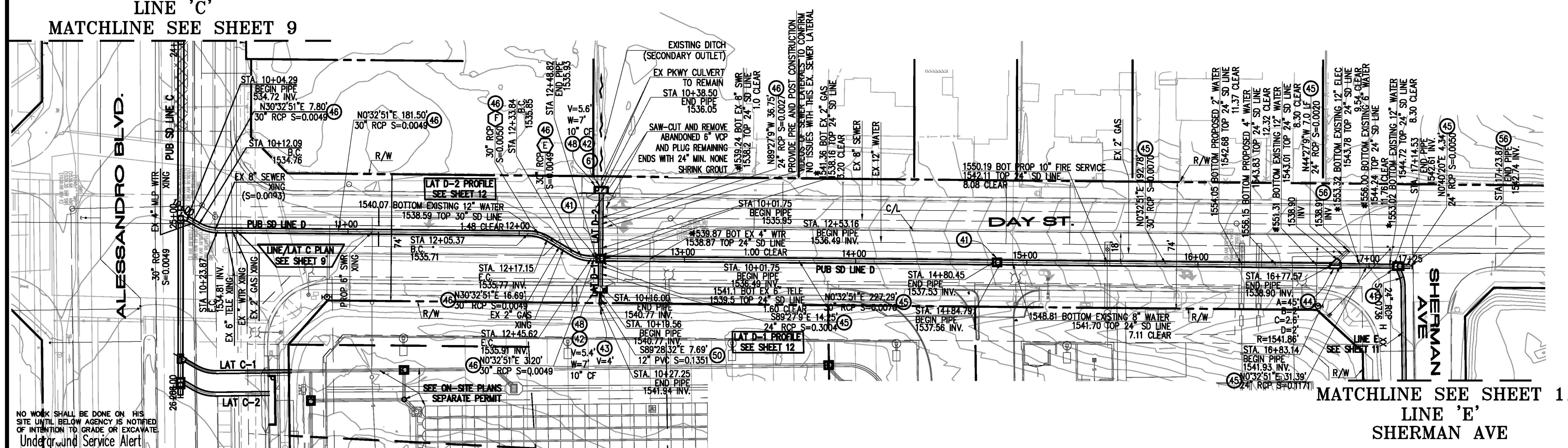
PROFILE SCALE:
HORIZ. – 1" = 40'
VERT. – 1" = 4'

STORM DRAIN CONSTRUCTION NOTES

No.	Note	QUANTITIES
40	CONSTRUCT MANHOLE PER S.P.P.W.C. STD. PLAN NO. 320-2.	4 EA
41	CONSTRUCT MANHOLE PER S.P.P.W.C. STD. PLAN NO. 321-2.	5 EA
42	CONSTRUCT CURBSIDE OPENING CATCH BASIN PER S.P.P.W.C. STD. PLAN NO. 300-4, "V" AND "W" PER PLAN. LOCALIZED DEPRESSION PER S.P.P.W.C. STD. PLAN NO. 313-4.	4 EA
43	CONSTRUCT 18"X18" CATCH BASIN. SEE DETAIL ON SHEET 12.	2 EA
44	CONSTRUCT JUNCTION STRUCTURE PER S.P.P.W.C. STD. DWG. 331-3. VALUES FOR A, B, C AND D PER PLAN.	1 EA
45	CONSTRUCT 24" R.C.P., D-LOAD PER PROFILE. TRENCH BACKFILL AND ROADWAY REPAIR PER CITY STD MVSI-132A/B.	837 LF
46	CONSTRUCT 30" R.C.P., D-LOAD PER PROFILE. TRENCH BACKFILL AND ROADWAY REPAIR PER CITY STD MVSI-132A/B.	323 LF
47	CONSTRUCT 42" R.C.P., D-LOAD PER PROFILE. TRENCH BACKFILL AND ROADWAY REPAIR PER CITY STD MVSI-132A/B.	257 LF
48	CONSTRUCT STORM DRAIN STENCIL PER DETAIL ON SHEET 12.	4 EA
49	CONSTRUCT CONCRETE OUTLET STRUCTURE PER MODIFIED RCFCD STD. PLAN MH251. SEE DETAIL ON SHEET 12.	1 EA
50	CONSTRUCT 12" P.V.C. STD. SDR-35 STORM DRAIN.	8 LF
51	CONSTRUCT 36" R.C.P., D-LOAD PER PROFILE. TRENCH BACKFILL AND ROADWAY REPAIR PER CITY STD MVSI-132A/B.	1,197 LF
52	CONSTRUCT SPECIAL CONNECTION TO CATCH BASIN PER R.C.F.C.W.C.D. STD. DWG. CB109.	2 EA
53	CONSTRUCT CONCRETE COLLAR PER S.P.P.W.C. STD. PLAN MVFE-340-0.	5 EA
54	CONSTRUCT PIPE CLOSURE TYPE 'A' PER S.B.C.F.C.D. STD. PLAN 176. SEE DETAIL ON SHEET 11.	4 EA
55	REMOVE EXISTING/INTERFERING CORRUGATED METAL PIPE (CMP). DIAMETER PER PLAN.	40 LF
56	CONSTRUCT PIPE CLOSURE TYPE 'B' PER S.B.C.F.C.D. STD. PLAN 176. SEE DETAIL ON SHEET 12.	1 EA
57	REMOVE EXISTING/INTERFERING REINFORCED CONCRETE PIPE (RCP). DIAMETER PER PLAN.	78 LF
58	CONSTRUCT 18" R.C.P., D-LOAD PER PROFILE. TRENCH BACKFILL AND ROADWAY REPAIR PER CITY STD MVSI-132A/B.	72 LF
59	REMOVE EXISTING HEADWALL	2 EA
60	REMOVE EXISTING CATCH BASIN	1 EA
61	MODIFY REAR OF CURB OPENING CATCH BASIN TO CONNECT TO EXISTING PARKWAY CULVERT. SEE S.P.P.W.C. STD. PLAN 314-3, CASE 1.	1 EA
62	RELOCATE EXISTING SEWER LATERAL AS NECESSARY PER S.P.P.W.C. STD. PLAN 223-2.	1 EA
63	CONSTRUCT MANHOLE PER S.P.P.W.C. STD. PLAN NO. 322-3.	2 EA
64	CONSTRUCT JUNCTION STRUCTURE PER S.P.P.W.C. STD. DWG. 332-2.	2 EA
65	CONSTRUCT TRANSITION STRUCTURE PER S.P.P.W.C. STD. DWG. 340-2. CONNECT TO EXISTING 24" RCP. A, B & C NOT APPLICABLE. D1=24", D2=24".	1 EA
66	PROTECT IN PLACE EXISTING UTILITIES. MEANS AND METHODS TO BE DETERMINED BY THE GENERAL CONTRACTOR.	

STORM DRAIN CURVE DATA				
INDEX	DELTA	RADIUS	TANGENT	LENGTH
D	30°00'00"	22.50'	83.97'	11.78'
E	30°00'00"	22.50'	83.97'	11.78'
C	29°59'60"	22.50'	83.97'	11.78'

ALESSANDRO BLVD
LINE 'C'
MATCHLINE SEE SHEET 9



MATCHLINE SEE SHEET 11
LINE 'E'
SHERMAN AVE

NO WORK SHALL BE DONE ON HIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.
Underground Service Alert
Call: TOLL FREE
811 OR 1-800-422-4133
WWW.CALL811.COM
TWO WORKING DAYS BEFORE YOU DIG

PEN21-0079

REVIEW BY CITY STAFF

BENCH MARK

RIVERSIDE COUNTY BENCHMARK DESIGNATION "M-61-69"
BRASS DISK AT THE NORTHWEST CORNER OF FREDERICK STREET AND ALESSANDRO BLVD. 175 FEET WEST OF FREDERICK STREET, 48 FEET NORTH OF ALESSANDRO BLVD., 4 FEET SOUTHWEST OF A GAS STATION LIGHT STANCHION AT THE SOUTH END AND INSIDE OF A 4 INCH HIGH CONCRETE PLANTER SET A BRASS DISK MARKED M-61-69 IN THE TOP OF A CONCRETE POST. "NO MARKER POST SET".
ELEVATION = 1569.963'

BASIS OF BEARINGS

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA STATE PLANE COORDINATE SYSTEM (CCS83), ZONE 6, NORTH AMERICAN DATUM 1983 (NAD83) BASED LOCALLY ON CONTINUOUSLY OPERATING REFERENCE STATIONS (CORS) "MLFP" AND "P584" AS BEING NORTH 84°41'07.4104" WEST (BASIS OF BEARINGS) (GRID) AND REPRESENTED HEREON BY THE CENTERLINE OF ALESSANDRO AVENUE AS BEING NORTH 89°14'42" EAST. (2010.0 EPOCH)

DATE	INITIAL	DESCRIPTION	REC.	APPR/DATE
	E.O.R.	REVISION		

CITY OF MORENO VALLEY
ACCEPTED BY:

REGISTERED PROFESSIONAL ENGINEER
REINHARD STENZEL
R.C.E. NO. 56155
Exp. 12-31-24
CIVIL
STATE OF CALIFORNIA

Thienes Engineering, Inc.
CIVIL ENGINEERING • LAND SURVEYING
14349 FIRESTONE BOULEVARD
LA MIRADA, CALIFORNIA 90638
PH.(714)521-4811 FAX(714)521-4173
WWW.THIENESENG.COM

UNDER THE SUPERVISION OF:
REINHARD STENZEL RCE NO. 56155 — 3/15/2024 DATE

CITY OF MORENO VALLEY

STREET AND STORM DRAIN IMPROVEMENT PLANS
MORENO VALLEY BUSINESS CENTER

STORM DRAIN PLAN AND PROFILE
DAY ST.

SHEET 10 NO. 16
CITY I. D. NO. LC022-0032

PLOT DATE: 03/15/2024
Last Update: 3/15/2024
O:\3800-3899\3846\STREET\3846ST-10-SD-PUB-DAY.dwg

APPENDIX B

HYDROLOGY CALCULATIONS

EXISTING CONDITION RATIONAL METHOD CALCULATIONS

```
******************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                    (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1435

                        Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* BAY AND DAY INDUSTRIAL BUILDING                                      *
* EXISTING CONDITION 100-YEAR                                          *
* NODES 100-101                                                        *
 ***********************************************************************

  FILE NAME: W:\3930\EX100100.DAT
  TIME/DATE OF STUDY: 08:40 04/19/2023
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  1.880
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.700
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.680
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.000
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.5513834
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.5501947
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.000
  SLOPE OF INTENSITY DURATION CURVE = 0.5502
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

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

******************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH FAIR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   991.00
  UPSTREAM ELEVATION(FEET) =   1556.82
  DOWNSTREAM ELEVATION(FEET) =   1537.42
  ELEVATION DIFFERENCE(FEET) =     19.40
  TC = 0.709*[(  991.00**3)/(    19.40)]**.2 =   24.602
```

```
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.633
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6585
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =      9.37
  TOTAL AREA(ACRES) =      8.71   TOTAL RUNOFF(CFS) =      9.37
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        8.7  TC(MIN.) =     24.60
  PEAK FLOW RATE(CFS)   =       9.37
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
******************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
         RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                      (RCFC&WCD)  1978 HYDROLOGY MANUAL
          (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                      (Rational Tabling Version 23.0)
                  Release Date: 07/01/2016  License ID 1435

                           Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* BAY AND DAY INDUSTRIAL BUILDING                                       *
* EXISTING CONDITION 100-YEAR                                           *
* NODES 110-111                                                         *
 ************************************************************************

  FILE NAME: W:\3930\EX110100.DAT
  TIME/DATE OF STUDY: 08:42 04/19/2023
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  1.880
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.700
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.680
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.000
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.5513834
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.5501947
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.000
  SLOPE OF INTENSITY DURATION CURVE = 0.5502
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

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

******************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    111.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH FAIR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   295.00
  UPSTREAM ELEVATION(FEET) =   1546.95
  DOWNSTREAM ELEVATION(FEET) =   1541.30
  ELEVATION DIFFERENCE(FEET) =      5.65
  TC = 0.709*[(  295.00**3)/(     5.65)]**.2 =   15.219
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.127
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7022
 SOIL CLASSIFICATION IS "C"
 SUBAREA RUNOFF(CFS) =      1.27
 TOTAL AREA(ACRES) =      0.85   TOTAL RUNOFF(CFS) =      1.27
================================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)     =        0.9  TC(MIN.) =     15.22
 PEAK FLOW RATE(CFS)   =       1.27
================================================================================
================================================================================
 END OF RATIONAL METHOD ANALYSIS
```

PROPOSED CONDITION RATIONAL METHOD CALCULATIONS

```
******************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                      (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                      (Rational Tabling Version 23.0)
                  Release Date: 07/01/2016  License ID 1435

                           Analysis prepared by:




 ************************ DESCRIPTION OF STUDY ************************
* BAY AND DAY INDUSTRIAL BUILDING                                     *
* PROPOSED CONDITION 100-YEAR                                         *
* NODES 100-124                                                       *
 *********************************************************************

  FILE NAME: W:\3930\PR100100.DAT
  TIME/DATE OF STUDY: 16:38 02/23/2024
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  1.880
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.700
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  2.680
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.000
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.5513834
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.5501947
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.000
  SLOPE OF INTENSITY DURATION CURVE = 0.5502
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: CONSIDER ALL CONFLUENCE STREAM COMBINATIONS
        FOR ALL DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.67 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

******************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   254.00
  UPSTREAM ELEVATION(FEET) =   1558.50
  DOWNSTREAM ELEVATION(FEET) =   1550.05
  ELEVATION DIFFERENCE(FEET) =      8.45
  TC = 0.303*[(  254.00**3)/(     8.45)]**.2 =    5.484
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.730
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8875
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =      4.67
  TOTAL AREA(ACRES) =      1.41   TOTAL RUNOFF(CFS) =      4.67

******************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  31
------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1546.05  DOWNSTREAM(FEET) =  1544.34
  FLOW LENGTH(FEET) =    38.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.56
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.67
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =    5.54
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    102.00 =     292.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.707
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8875
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    0.12   SUBAREA RUNOFF(CFS) =    0.39
  TOTAL AREA(ACRES) =        1.5   TOTAL RUNOFF(CFS) =       5.06
  TC(MIN.) =    5.54

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1544.34  DOWNSTREAM(FEET) =  1543.63
  FLOW LENGTH(FEET) =   142.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.72
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.06
  PIPE TRAVEL TIME(MIN.) =   0.50    Tc(MIN.) =    6.05
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    103.00 =     434.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    103.00 TO NODE    103.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.535
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8870
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    0.08   SUBAREA RUNOFF(CFS) =    0.25
  TOTAL AREA(ACRES) =        1.6   TOTAL RUNOFF(CFS) =       5.31
  TC(MIN.) =    6.05

****************************************************************************
  FLOW PROCESS FROM NODE    103.00 TO NODE    104.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1543.63  DOWNSTREAM(FEET) =  1543.56
  FLOW LENGTH(FEET) =    13.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.90
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.31
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    6.09
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    104.00 =     447.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    104.00 TO NODE    104.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.521
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8869
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    0.26   SUBAREA RUNOFF(CFS) =    0.81
  TOTAL AREA(ACRES) =        1.9   TOTAL RUNOFF(CFS) =       6.13
  TC(MIN.) =    6.09

****************************************************************************
  FLOW PROCESS FROM NODE    104.00 TO NODE    105.00 IS CODE =  31
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1543.56  DOWNSTREAM(FEET) =  1542.95
  FLOW LENGTH(FEET) =   123.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.89
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.13
  PIPE TRAVEL TIME(MIN.) =   0.42    Tc(MIN.) =    6.51
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    105.00 =     570.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    105.00 TO NODE    105.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.394
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8865
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    0.44   SUBAREA RUNOFF(CFS) =    1.32
  TOTAL AREA(ACRES) =        2.3   TOTAL RUNOFF(CFS) =       7.45
  TC(MIN.) =    6.51

****************************************************************************
  FLOW PROCESS FROM NODE    105.00 TO NODE    106.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1542.95  DOWNSTREAM(FEET) =  1542.27
  FLOW LENGTH(FEET) =   136.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.05
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.45
  PIPE TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =    6.96
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    106.00 =     706.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    106.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.272
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8861
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    0.05   SUBAREA RUNOFF(CFS) =    0.14
  TOTAL AREA(ACRES) =        2.4   TOTAL RUNOFF(CFS) =       7.59
  TC(MIN.) =    6.96

****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    107.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1542.27  DOWNSTREAM(FEET) =  1540.37
  FLOW LENGTH(FEET) =   239.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.17
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.59
  PIPE TRAVEL TIME(MIN.) =   0.65    Tc(MIN.) =    7.60
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    107.00 =     945.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    107.00 TO NODE    107.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.116
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8855
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    0.12   SUBAREA RUNOFF(CFS) =    0.33
  TOTAL AREA(ACRES) =        2.5   TOTAL RUNOFF(CFS) =       7.93
  TC(MIN.) =    7.60
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    107.00 TO NODE    108.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1540.37  DOWNSTREAM(FEET) =  1539.35
  FLOW LENGTH(FEET) =   106.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.72
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.93
  PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =    7.87
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    108.00 =    1051.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    108.00 TO NODE    108.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.058
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8853
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    0.07   SUBAREA RUNOFF(CFS) =    0.19
  TOTAL AREA(ACRES) =        2.5   TOTAL RUNOFF(CFS) =       8.11
  TC(MIN.) =    7.87

****************************************************************************
  FLOW PROCESS FROM NODE    108.00 TO NODE    108.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.058
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8853
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    0.10   SUBAREA RUNOFF(CFS) =    0.27
  TOTAL AREA(ACRES) =        2.6   TOTAL RUNOFF(CFS) =       8.39
  TC(MIN.) =    7.87

****************************************************************************
  FLOW PROCESS FROM NODE    108.00 TO NODE    112.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1539.35  DOWNSTREAM(FEET) =  1538.96
  FLOW LENGTH(FEET) =   194.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.77
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.39
  PIPE TRAVEL TIME(MIN.) =   0.86    Tc(MIN.) =    8.72
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    112.00 =    1245.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    112.00 TO NODE    112.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.72
  RAINFALL INTENSITY(INCH/HR) =   2.89
  TOTAL STREAM AREA(ACRES) =     2.65
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.39

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    111.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   246.00
  UPSTREAM ELEVATION(FEET) =   1548.80
  DOWNSTREAM ELEVATION(FEET) =   1546.47
  ELEVATION DIFFERENCE(FEET) =      2.33
  TC = 0.303*[(  246.00**3)/(     2.33)]**.2 =    6.961
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.271
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8861
 SOIL CLASSIFICATION IS "C"
 SUBAREA RUNOFF(CFS) =      8.87
 TOTAL AREA(ACRES) =      3.06   TOTAL RUNOFF(CFS) =      8.87

****************************************************************************
 FLOW PROCESS FROM NODE    111.00 TO NODE    112.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1542.47  DOWNSTREAM(FEET) =  1538.96
 FLOW LENGTH(FEET) =    22.00   MANNING'S N =  0.012
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  19.92
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       8.87
 PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    6.98
 LONGEST FLOWPATH FROM NODE    110.00 TO NODE    112.00 =     268.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    112.00 TO NODE    112.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =    6.98
 RAINFALL INTENSITY(INCH/HR) =   3.27
 TOTAL STREAM AREA(ACRES) =     3.06
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.87

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        8.39     8.72        2.889          2.65
     2        8.87     6.98        3.266          3.06

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

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       15.58     6.98       3.266
     2       16.23     8.72       2.889

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      16.23   Tc(MIN.) =    8.72
 TOTAL AREA(ACRES) =        5.7
 LONGEST FLOWPATH FROM NODE    100.00 TO NODE    112.00 =    1245.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    112.00 TO NODE    112.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.889
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8845
 SOIL CLASSIFICATION IS "C"
 SUBAREA AREA(ACRES) =    0.67   SUBAREA RUNOFF(CFS) =    1.71
 TOTAL AREA(ACRES) =        6.4   TOTAL RUNOFF(CFS) =      17.94
 TC(MIN.) =    8.72

****************************************************************************
 FLOW PROCESS FROM NODE    112.00 TO NODE    122.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1538.96  DOWNSTREAM(FEET) =  1538.41
 FLOW LENGTH(FEET) =   276.00   MANNING'S N =  0.012
 DEPTH OF FLOW IN  30.0 INCH PIPE IS  22.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.47
 ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      17.94
 PIPE TRAVEL TIME(MIN.) =   1.03    Tc(MIN.) =    9.75
```

```
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    122.00 =    1521.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.75
  RAINFALL INTENSITY(INCH/HR) =   2.72
  TOTAL STREAM AREA(ACRES) =     6.38
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.94

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    121.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   718.00
  UPSTREAM ELEVATION(FEET) =   1560.21
  DOWNSTREAM ELEVATION(FEET) =   1546.47
  ELEVATION DIFFERENCE(FEET) =     13.74
  TC = 0.303*[(  718.00**3)/(    13.74)]**.2 =    9.282
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.792
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8841
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =      7.65
  TOTAL AREA(ACRES) =      3.10   TOTAL RUNOFF(CFS) =      7.65

****************************************************************************
  FLOW PROCESS FROM NODE    121.00 TO NODE    122.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1542.47  DOWNSTREAM(FEET) =  1538.41
  FLOW LENGTH(FEET) =    22.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   5.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.29
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.65
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    9.30
  LONGEST FLOWPATH FROM NODE    120.00 TO NODE    122.00 =     740.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    122.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.30
  RAINFALL INTENSITY(INCH/HR) =   2.79
  TOTAL STREAM AREA(ACRES) =     3.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.65

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       17.52     8.01        3.028          6.38
      1       17.94     9.75        2.717          6.38
      2        7.65     9.30        2.789          3.10

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       24.11     8.01       3.028
      2       24.76     9.30       2.789
      3       25.40     9.75       2.717

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```

```
  PEAK FLOW RATE(CFS) =      25.40   Tc(MIN.) =    9.75
  TOTAL AREA(ACRES) =        9.5
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    122.00 =    1521.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    123.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1538.41  DOWNSTREAM(FEET) =  1538.24
  FLOW LENGTH(FEET) =    86.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  24.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.93
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      25.40
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =   10.04
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    123.00 =    1607.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    123.00 TO NODE    124.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1540.23  DOWNSTREAM(FEET) =  1538.91
  FLOW LENGTH(FEET) =   662.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  24.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.95
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      25.40
  PIPE TRAVEL TIME(MIN.) =   2.23    Tc(MIN.) =   12.27
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    124.00 =    2269.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        9.5  TC(MIN.) =     12.27
  PEAK FLOW RATE(CFS)   =      25.40
  *** PEAK FLOW RATE TABLE ***
         Q(CFS)   Tc(MIN.)
  1       24.11      10.62
  2       24.76      11.91
  3       25.40      12.27
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

APPENDIX C

DETENTION CALCULATIONS

PROPOSED CONDITION HYDROGRAPHS
(10-YEAR 1HR, 3HR, 6HR & 24HR EVENTS)

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

Study date 04/18/23 File: 3930PR10110.out

++

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

Program License Serial Number 6400

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

English Units used in output format

BAY AND DAY INDUSTRIAL BUILDING
PROPOSED CONDITION
10-YEAR 1 HR
DETENTION CALCULATIONS

Drainage Area = 9.57(Ac.) = 0.015 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 9.57(Ac.) = 0.015 Sq. Mi.
Length along longest watercourse = 991.00(Ft.)
Length along longest watercourse measured to centroid = 533.00(Ft.)
Length along longest watercourse = 0.188 Mi.
Length along longest watercourse measured to centroid = 0.101 Mi.
Difference in elevation = 19.40(Ft.)
Slope along watercourse = 103.3623 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.033 Hr.
Lag time = 1.98 Min.
25% of lag time = 0.50 Min.
40% of lag time = 0.79 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.57	0.50	4.79

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.57	1.20	11.48

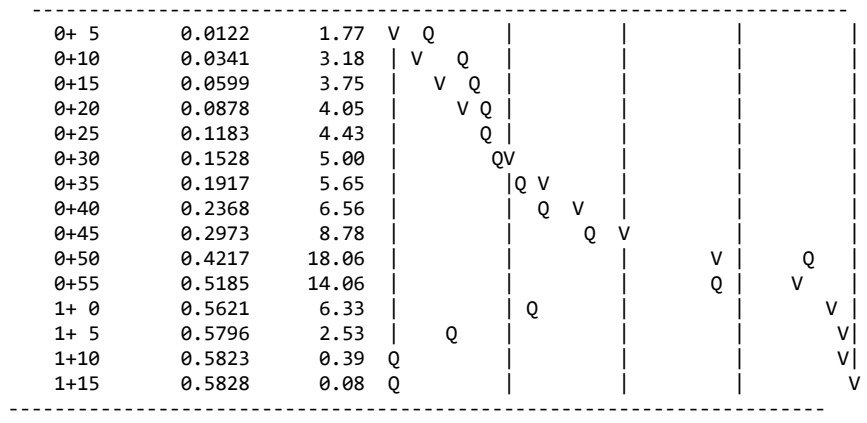
STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 0.500(In)
Area Averaged 100-Year Rainfall = 1.200(In)

Point rain (area averaged) = 0.788(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 0.788(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %

```
          9.570           69.00         0.900
 Total Area Entered =      9.57(Ac.)


 RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
 AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
 69.0  69.0      0.373     0.900        0.071       1.000      0.071
                                                  Sum (F) =   0.071
 Area averaged mean soil loss (F) (In/Hr) =  0.071
 Minimum soil loss rate ((In/Hr)) =  0.035
 (for 24 hour storm duration)
 Soil low loss rate (decimal) =   0.100
 ------------------------------------------------------------------------
 Slope of intensity-duration curve for a 1 hour storm =0.5000
 ------------------------------------------------------------------------

                U n i t  H y d r o g r a p h
                        VALLEY S-Curve
 ------------------------------------------------------------------------
                Unit Hydrograph Data
 ------------------------------------------------------------------------
 Unit time period   Time % of lag   Distribution   Unit Hydrograph
     (hrs)                          Graph %            (CFS)
 ------------------------------------------------------------------------
     1   0.083        252.222         51.184              4.937
     2   0.167        504.443         39.917              3.850
     3   0.250        756.665          6.948              0.670
     4   0.333       1008.887          1.951              0.188
                               Sum = 100.000   Sum=       9.645
------------------------------------------------------------------------


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

  Unit Time   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)         Max   |   Low        (In/Hr)
    1   0.08     4.20      0.397       (  0.071)       0.040        0.357
    2   0.17     4.30      0.407       (  0.071)       0.041        0.366
    3   0.25     5.00      0.473       (  0.071)       0.047        0.425
    4   0.33     5.00      0.473       (  0.071)       0.047        0.425
    5   0.42     5.80      0.548       (  0.071)       0.055        0.494
    6   0.50     6.50      0.615       (  0.071)       0.061        0.553
    7   0.58     7.40      0.700       (  0.071)       0.070        0.630
    8   0.67     8.60      0.813          0.071    (  0.081)        0.742
    9   0.75    12.30      1.163          0.071    (  0.116)        1.092
   10   0.83    29.10      2.751          0.071    (  0.275)        2.681
   11   0.92     6.80      0.643       (  0.071)       0.064        0.579
   12   1.00     5.00      0.473       (  0.071)       0.047        0.425
                (Loss Rate Not Used)
      Sum =     100.0                                  Sum =     8.8
       Flood volume = Effective rainfall      0.73(In)
        times area       9.6(Ac.)/[(In)/(Ft.)] =       0.6(Ac.Ft)
       Total soil loss =      0.06(In)
       Total soil loss =     0.046(Ac.Ft)
       Total rainfall =      0.79(In)
       Flood volume =       25387.8 Cubic Feet
       Total soil loss =        1983.7 Cubic Feet
       ---------------------------------------------------------------------
        Peak flow rate of this hydrograph =     18.063(CFS)
       ---------------------------------------------------------------------
       +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                           1 - 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 0.0122 1.77
0+10 0.0341 3.18
0+15 0.0599 3.75
0+20 0.0878 4.05
0+25 0.1183 4.43
0+30 0.1528 5.00
0+35 0.1917 5.65
0+40 0.2368 6.56
0+45 0.2973 8.78
0+50 0.4217 18.06
0+55 0.5185 14.06
1+ 0 0.5621 6.33
1+ 5 0.5796 2.53
1+10 0.5823 0.39
1+15 0.5828 0.08

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

Study date 04/18/23 File: 3930PR10310.out

++

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

Program License Serial Number 6400

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

English Units used in output format

BAY AND DAY INDUSTRIAL BUILDING
PROPOSED CONDITION
10-YEAR 3 HR
DETENTION CALCULATIONS

Drainage Area = 9.57(Ac.) = 0.015 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 9.57(Ac.) = 0.015 Sq. Mi.
Length along longest watercourse = 991.00(Ft.)
Length along longest watercourse measured to centroid = 533.00(Ft.)
Length along longest watercourse = 0.188 Mi.
Length along longest watercourse measured to centroid = 0.101 Mi.
Difference in elevation = 19.40(Ft.)
Slope along watercourse = 103.3623 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.033 Hr.
Lag time = 1.98 Min.
25% of lag time = 0.50 Min.
40% of lag time = 0.79 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.57	0.84	8.04

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.57	1.90	18.18

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 0.840(In)
Area Averaged 100-Year Rainfall = 1.900(In)

Point rain (area averaged) = 1.276(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.276(In)

Sub-Area Data:
Area(Ac.) Runoff Index Impervious %

```
     9.570          69.00         0.900
 Total Area Entered =      9.57(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
69.0  69.0      0.373     0.900        0.071       1.000      0.071
                                                 Sum (F) =   0.071
Area averaged mean soil loss (F) (In/Hr) =  0.071
Minimum soil loss rate ((In/Hr)) =  0.035
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.100
------------------------------------------------------------------------

               U n i t  H y d r o g r a p h
                      VALLEY S-Curve
------------------------------------------------------------------------
               Unit Hydrograph Data
------------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %           (CFS)
------------------------------------------------------------------------
    1   0.083        252.222         51.184             4.937
    2   0.167        504.443         39.917             3.850
    3   0.250        756.665          6.948             0.670
    4   0.333       1008.887          1.951             0.188
                              Sum = 100.000   Sum=       9.645
------------------------------------------------------------------------

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

  Unit Time   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)         Max   |   Low        (In/Hr)
    1   0.08     1.30      0.199       (  0.071)       0.020        0.179
    2   0.17     1.30      0.199       (  0.071)       0.020        0.179
    3   0.25     1.10      0.168       (  0.071)       0.017        0.152
    4   0.33     1.50      0.230       (  0.071)       0.023        0.207
    5   0.42     1.50      0.230       (  0.071)       0.023        0.207
    6   0.50     1.80      0.276       (  0.071)       0.028        0.248
    7   0.58     1.50      0.230       (  0.071)       0.023        0.207
    8   0.67     1.80      0.276       (  0.071)       0.028        0.248
    9   0.75     1.80      0.276       (  0.071)       0.028        0.248
   10   0.83     1.50      0.230       (  0.071)       0.023        0.207
   11   0.92     1.60      0.245       (  0.071)       0.024        0.220
   12   1.00     1.80      0.276       (  0.071)       0.028        0.248
   13   1.08     2.20      0.337       (  0.071)       0.034        0.303
   14   1.17     2.20      0.337       (  0.071)       0.034        0.303
   15   1.25     2.20      0.337       (  0.071)       0.034        0.303
   16   1.33     2.00      0.306       (  0.071)       0.031        0.276
   17   1.42     2.60      0.398       (  0.071)       0.040        0.358
   18   1.50     2.70      0.413       (  0.071)       0.041        0.372
   19   1.58     2.40      0.367       (  0.071)       0.037        0.331
   20   1.67     2.70      0.413       (  0.071)       0.041        0.372
   21   1.75     3.30      0.505       (  0.071)       0.051        0.455
   22   1.83     3.10      0.475       (  0.071)       0.047        0.427
   23   1.92     2.90      0.444       (  0.071)       0.044        0.400
   24   2.00     3.00      0.459       (  0.071)       0.046        0.413
   25   2.08     3.10      0.475       (  0.071)       0.047        0.427
   26   2.17     4.20      0.643       (  0.071)       0.064        0.579
   27   2.25     5.00      0.766          0.071    (  0.077)       0.695
   28   2.33     3.50      0.536       (  0.071)       0.054        0.482
   29   2.42     6.80      1.041          0.071    (  0.104)       0.970
   30   2.50     7.30      1.118          0.071    (  0.112)       1.047
   31   2.58     8.20      1.256          0.071    (  0.126)       1.185
   32   2.67     5.90      0.903          0.071    (  0.090)       0.833
   33   2.75     2.00      0.306       (  0.071)       0.031        0.276
   34   2.83     1.80      0.276       (  0.071)       0.028        0.248
```

```
35   2.92     1.80      0.276       (  0.071)       0.028        0.248
36   3.00     0.60      0.092       (  0.071)       0.009        0.083
             (Loss Rate Not Used)
   Sum =     100.0                                   Sum =    13.9
      Flood volume = Effective rainfall      1.16(In)
       times area       9.6(Ac.)/[(In)/(Ft.)] =       0.9(Ac.Ft)
      Total soil loss =      0.11(In)
      Total soil loss =     0.092(Ac.Ft)
      Total rainfall =      1.28(In)
      Flood volume =       40342.0 Cubic Feet
      Total soil loss =        3986.4 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =     10.626(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          3 - 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       0.0061      0.88  VQ        |         |         |         |
  0+10       0.0169      1.57  V  Q      |         |         |         |
  0+15       0.0277      1.56  |V Q      |         |         |         |
  0+20       0.0398      1.76  |V Q      |         |         |         |
  0+25       0.0532      1.95  | VQ      |         |         |         |
  0+30       0.0683      2.19  | V Q     |         |         |         |
  0+35       0.0831      2.15  |  VQ     |         |         |         |
  0+40       0.0985      2.23  |   Q     |         |         |         |
  0+45       0.1148      2.37  |   Q     |         |         |         |
  0+50       0.1298      2.18  |   QV    |         |         |         |
  0+55       0.1443      2.10  |   Q V   |         |         |         |
  1+ 0       0.1598      2.26  |   Q V   |         |         |         |
  1+ 5       0.1780      2.64  |    Q V  |         |         |         |
  1+10       0.1978      2.87  |    Q  V |         |         |         |
  1+15       0.2179      2.92  |    Q   V|         |         |         |
  1+20       0.2371      2.79  |    Q    V         |         |         |
  1+25       0.2584      3.09  |     Q   |V        |         |         |
  1+30       0.2822      3.46  |     Q   | V       |         |         |
  1+35       0.3053      3.36  |     Q   |  V      |         |         |
  1+40       0.3289      3.43  |     Q   |   V     |         |         |
  1+45       0.3563      3.97  |      Q  |    V    |         |         |
  1+50       0.3850      4.17  |       Q |     V   |         |         |
  1+55       0.4125      3.99  |      Q  |      V  |         |         |
  2+ 0       0.4398      3.95  |      Q  |       V |         |         |
  2+ 5       0.4677      4.05  |       Q |         V         |         |
  2+10       0.5011      4.86  |        Q|         |V        |         |
  2+15       0.5426      6.03  |         | Q       |  V      |         |
  2+20       0.5807      5.53  |         |Q        |    V    |         |
  2+25       0.6305      7.23  |         |   Q     |      V  |         |
  2+30       0.6949      9.36  |         |       Q |         V         |
  2+35       0.7681     10.63  |         |         |Q        |  V      |
  2+40       0.8340      9.56  |         |        Q|         |     V   |
  2+45       0.8723      5.56  |         |Q        |         |      V  |
  2+50       0.8934      3.07  |     Q   |         |         |       V |
  2+55       0.9108      2.52  |    Q    |         |         |        V|
  3+ 0       0.9217      1.58  |  Q      |         |         |        V|
  3+ 5       0.9253      0.53  |Q        |         |         |        V|
  3+10       0.9260      0.10  Q         |         |         |        V|
  3+15       0.9261      0.02  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 04/18/23 File: 3930PR10610.out

++

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

Program License Serial Number 6400

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

English Units used in output format

BAY AND DAY INDUSTRIAL BUILDING
PROPOSED CONDITION
10-YEAR 6 HR
DETENTION CALCULATIONS

Drainage Area = 9.57(Ac.) = 0.015 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 9.57(Ac.) = 0.015 Sq. Mi.
Length along longest watercourse = 991.00(Ft.)
Length along longest watercourse measured to centroid = 533.00(Ft.)
Length along longest watercourse = 0.188 Mi.
Length along longest watercourse measured to centroid = 0.101 Mi.
Difference in elevation = 19.40(Ft.)
Slope along watercourse = 103.3623 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.033 Hr.
Lag time = 1.98 Min.
25% of lag time = 0.50 Min.
40% of lag time = 0.79 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.57	1.20	11.48

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.57	2.50	23.93

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 1.200(In)
Area Averaged 100-Year Rainfall = 2.500(In)

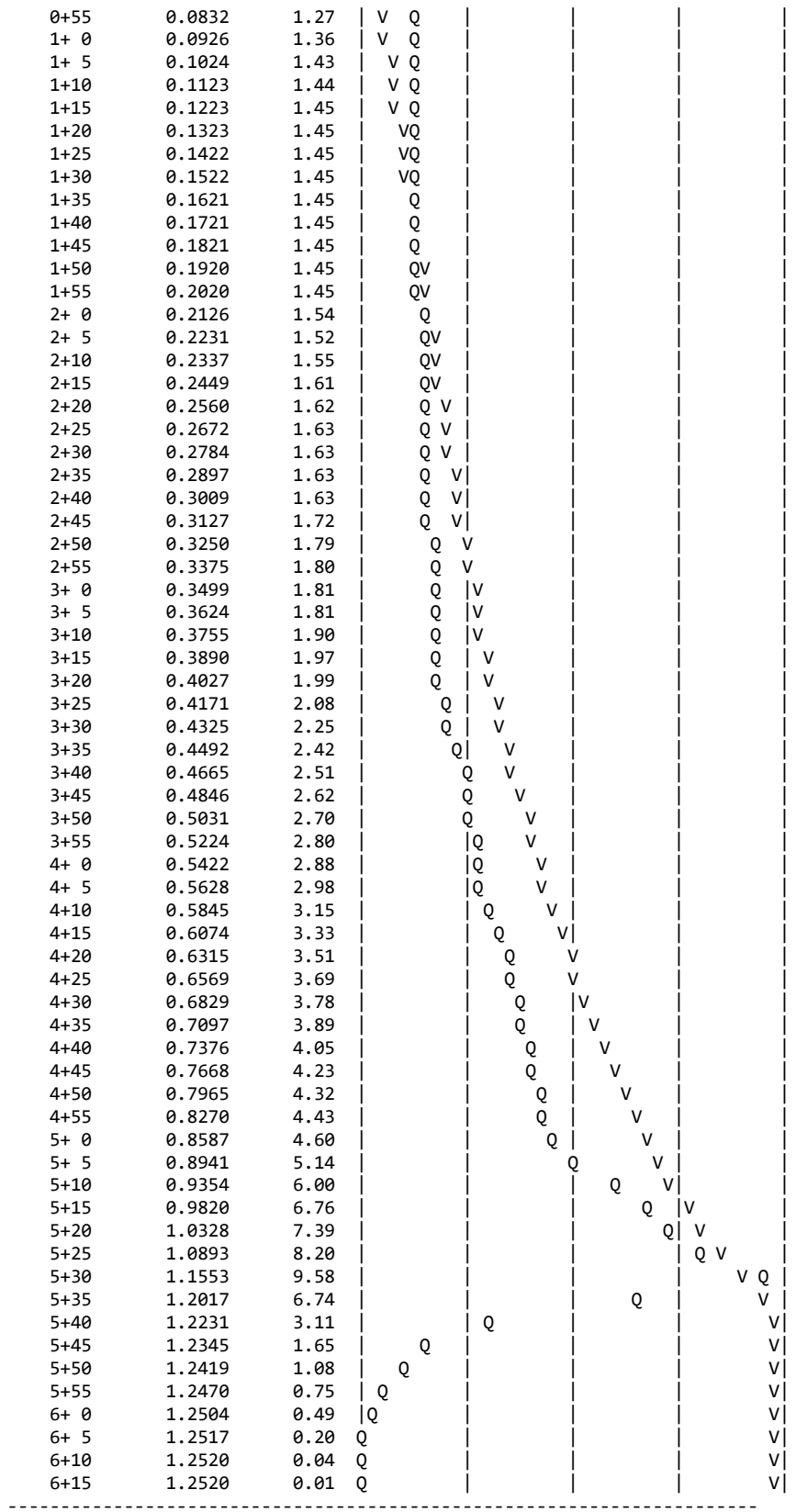
Point rain (area averaged) = 1.735(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.735(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %

```
     9.570          69.00         0.900
 Total Area Entered =      9.57(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
69.0  69.0      0.373     0.900        0.071       1.000      0.071
                                                 Sum (F) =   0.071
Area averaged mean soil loss (F) (In/Hr) =  0.071
Minimum soil loss rate ((In/Hr)) =  0.035
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.100
--------------------------------------------------------------------

               U n i t  H y d r o g r a p h
                      VALLEY S-Curve
--------------------------------------------------------------------
               Unit Hydrograph Data
--------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %            (CFS)
--------------------------------------------------------------------
    1   0.083        252.222         51.184              4.937
    2   0.167        504.443         39.917              3.850
    3   0.250        756.665          6.948              0.670
    4   0.333       1008.887          1.951              0.188
                              Sum = 100.000   Sum=       9.645
--------------------------------------------------------------------

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

 Unit Time   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
      (Hr.)  Percent   (In/Hr)         Max   |   Low        (In/Hr)
  1   0.08     0.50      0.104       (  0.071)       0.010        0.094
  2   0.17     0.60      0.125       (  0.071)       0.012        0.112
  3   0.25     0.60      0.125       (  0.071)       0.012        0.112
  4   0.33     0.60      0.125       (  0.071)       0.012        0.112
  5   0.42     0.60      0.125       (  0.071)       0.012        0.112
  6   0.50     0.70      0.146       (  0.071)       0.015        0.131
  7   0.58     0.70      0.146       (  0.071)       0.015        0.131
  8   0.67     0.70      0.146       (  0.071)       0.015        0.131
  9   0.75     0.70      0.146       (  0.071)       0.015        0.131
 10   0.83     0.70      0.146       (  0.071)       0.015        0.131
 11   0.92     0.70      0.146       (  0.071)       0.015        0.131
 12   1.00     0.80      0.167       (  0.071)       0.017        0.150
 13   1.08     0.80      0.167       (  0.071)       0.017        0.150
 14   1.17     0.80      0.167       (  0.071)       0.017        0.150
 15   1.25     0.80      0.167       (  0.071)       0.017        0.150
 16   1.33     0.80      0.167       (  0.071)       0.017        0.150
 17   1.42     0.80      0.167       (  0.071)       0.017        0.150
 18   1.50     0.80      0.167       (  0.071)       0.017        0.150
 19   1.58     0.80      0.167       (  0.071)       0.017        0.150
 20   1.67     0.80      0.167       (  0.071)       0.017        0.150
 21   1.75     0.80      0.167       (  0.071)       0.017        0.150
 22   1.83     0.80      0.167       (  0.071)       0.017        0.150
 23   1.92     0.80      0.167       (  0.071)       0.017        0.150
 24   2.00     0.90      0.187       (  0.071)       0.019        0.169
 25   2.08     0.80      0.167       (  0.071)       0.017        0.150
 26   2.17     0.90      0.187       (  0.071)       0.019        0.169
 27   2.25     0.90      0.187       (  0.071)       0.019        0.169
 28   2.33     0.90      0.187       (  0.071)       0.019        0.169
 29   2.42     0.90      0.187       (  0.071)       0.019        0.169
 30   2.50     0.90      0.187       (  0.071)       0.019        0.169
 31   2.58     0.90      0.187       (  0.071)       0.019        0.169
 32   2.67     0.90      0.187       (  0.071)       0.019        0.169
 33   2.75     1.00      0.208       (  0.071)       0.021        0.187
 34   2.83     1.00      0.208       (  0.071)       0.021        0.187
```

```
35   2.92     1.00      0.208       (  0.071)       0.021        0.187
36   3.00     1.00      0.208       (  0.071)       0.021        0.187
37   3.08     1.00      0.208       (  0.071)       0.021        0.187
38   3.17     1.10      0.229       (  0.071)       0.023        0.206
39   3.25     1.10      0.229       (  0.071)       0.023        0.206
40   3.33     1.10      0.229       (  0.071)       0.023        0.206
41   3.42     1.20      0.250       (  0.071)       0.025        0.225
42   3.50     1.30      0.271       (  0.071)       0.027        0.244
43   3.58     1.40      0.291       (  0.071)       0.029        0.262
44   3.67     1.40      0.291       (  0.071)       0.029        0.262
45   3.75     1.50      0.312       (  0.071)       0.031        0.281
46   3.83     1.50      0.312       (  0.071)       0.031        0.281
47   3.92     1.60      0.333       (  0.071)       0.033        0.300
48   4.00     1.60      0.333       (  0.071)       0.033        0.300
49   4.08     1.70      0.354       (  0.071)       0.035        0.319
50   4.17     1.80      0.375       (  0.071)       0.037        0.337
51   4.25     1.90      0.396       (  0.071)       0.040        0.356
52   4.33     2.00      0.416       (  0.071)       0.042        0.375
53   4.42     2.10      0.437       (  0.071)       0.044        0.393
54   4.50     2.10      0.437       (  0.071)       0.044        0.393
55   4.58     2.20      0.458       (  0.071)       0.046        0.412
56   4.67     2.30      0.479       (  0.071)       0.048        0.431
57   4.75     2.40      0.500       (  0.071)       0.050        0.450
58   4.83     2.40      0.500       (  0.071)       0.050        0.450
59   4.92     2.50      0.520       (  0.071)       0.052        0.468
60   5.00     2.60      0.541       (  0.071)       0.054        0.487
61   5.08     3.10      0.645       (  0.071)       0.065        0.581
62   5.17     3.60      0.749          0.071    (  0.075)        0.679
63   5.25     3.90      0.812          0.071    (  0.081)        0.741
64   5.33     4.20      0.874          0.071    (  0.087)        0.803
65   5.42     4.70      0.978          0.071    (  0.098)        0.908
66   5.50     5.60      1.166          0.071    (  0.117)        1.095
67   5.58     1.90      0.396       (  0.071)       0.040        0.356
68   5.67     0.90      0.187       (  0.071)       0.019        0.169
69   5.75     0.60      0.125       (  0.071)       0.012        0.112
70   5.83     0.50      0.104       (  0.071)       0.010        0.094
71   5.92     0.30      0.062       (  0.071)       0.006        0.056
72   6.00     0.20      0.042       (  0.071)       0.004        0.037
              (Loss Rate Not Used)
   Sum =     100.0                                    Sum =    18.8
      Flood volume = Effective rainfall      1.57(In)
       times area       9.6(Ac.)/[(In)/(Ft.)] =       1.3(Ac.Ft)
      Total soil loss =      0.16(In)
      Total soil loss =     0.131(Ac.Ft)
      Total rainfall =      1.73(In)
      Flood volume =       54538.6 Cubic Feet
      Total soil loss =        5725.9 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      9.582(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          6 - 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       0.0032      0.46  VQ        |         |         |         |
  0+10       0.0095      0.92  V  Q      |         |         |         |
  0+15       0.0167      1.05  V   Q     |         |         |         |
  0+20       0.0242      1.08  V   Q     |         |         |         |
  0+25       0.0317      1.08  |V  Q     |         |         |         |
  0+30       0.0398      1.18  |V  Q     |         |         |         |
  0+35       0.0484      1.25  |V  Q     |         |         |         |
  0+40       0.0571      1.26  |V   Q    |         |         |         |
  0+45       0.0658      1.27  | V  Q    |         |         |         |
  0+50       0.0745      1.27  | V  Q    |         |         |         |
```



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

Study date 04/18/23 File: 3930PR102410.out

++

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

Program License Serial Number 6400

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

 English Units used in output format

BAY AND DAY INDUSTRIAL BUILDING
PROPOSED CONDITION
10-YEAR 24 HR
DETENTION CALCULATIONS

Drainage Area = 9.57(Ac.) = 0.015 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 9.57(Ac.) = 0.015 Sq. Mi.
Length along longest watercourse = 991.00(Ft.)
Length along longest watercourse measured to centroid = 533.00(Ft.)
Length along longest watercourse = 0.188 Mi.
Length along longest watercourse measured to centroid = 0.101 Mi.
Difference in elevation = 19.40(Ft.)
Slope along watercourse = 103.3623 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.033 Hr.
Lag time = 1.98 Min.
25% of lag time = 0.50 Min.
40% of lag time = 0.79 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.57	1.90	18.18

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.57	4.20	40.19

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 1.900(In)
Area Averaged 100-Year Rainfall = 4.200(In)

Point rain (area averaged) = 2.846(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.846(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %

```
     9.570          69.00         0.900
 Total Area Entered =      9.57(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
69.0  69.0      0.373     0.900        0.071       1.000      0.071
                                                 Sum (F) =   0.071
Area averaged mean soil loss (F) (In/Hr) =  0.071
Minimum soil loss rate ((In/Hr)) =  0.035
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.100
------------------------------------------------------------------------

               U n i t  H y d r o g r a p h
                      VALLEY S-Curve
------------------------------------------------------------------------
               Unit Hydrograph Data
------------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %           (CFS)
------------------------------------------------------------------------
    1   0.083        252.222         51.184             4.937
    2   0.167        504.443         39.917             3.850
    3   0.250        756.665          6.948             0.670
    4   0.333       1008.887          1.951             0.188
                              Sum = 100.000   Sum=       9.645
------------------------------------------------------------------------

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

  Unit Time   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)         Max   |   Low        (In/Hr)
    1   0.08     0.07      0.023       (  0.126)       0.002        0.020
    2   0.17     0.07      0.023       (  0.125)       0.002        0.020
    3   0.25     0.07      0.023       (  0.125)       0.002        0.020
    4   0.33     0.10      0.034       (  0.124)       0.003        0.031
    5   0.42     0.10      0.034       (  0.124)       0.003        0.031
    6   0.50     0.10      0.034       (  0.123)       0.003        0.031
    7   0.58     0.10      0.034       (  0.123)       0.003        0.031
    8   0.67     0.10      0.034       (  0.122)       0.003        0.031
    9   0.75     0.10      0.034       (  0.122)       0.003        0.031
   10   0.83     0.13      0.046       (  0.121)       0.005        0.041
   11   0.92     0.13      0.046       (  0.121)       0.005        0.041
   12   1.00     0.13      0.046       (  0.120)       0.005        0.041
   13   1.08     0.10      0.034       (  0.120)       0.003        0.031
   14   1.17     0.10      0.034       (  0.119)       0.003        0.031
   15   1.25     0.10      0.034       (  0.119)       0.003        0.031
   16   1.33     0.10      0.034       (  0.118)       0.003        0.031
   17   1.42     0.10      0.034       (  0.118)       0.003        0.031
   18   1.50     0.10      0.034       (  0.117)       0.003        0.031
   19   1.58     0.10      0.034       (  0.117)       0.003        0.031
   20   1.67     0.10      0.034       (  0.117)       0.003        0.031
   21   1.75     0.10      0.034       (  0.116)       0.003        0.031
   22   1.83     0.13      0.046       (  0.116)       0.005        0.041
   23   1.92     0.13      0.046       (  0.115)       0.005        0.041
   24   2.00     0.13      0.046       (  0.115)       0.005        0.041
   25   2.08     0.13      0.046       (  0.114)       0.005        0.041
   26   2.17     0.13      0.046       (  0.114)       0.005        0.041
   27   2.25     0.13      0.046       (  0.113)       0.005        0.041
   28   2.33     0.13      0.046       (  0.113)       0.005        0.041
   29   2.42     0.13      0.046       (  0.112)       0.005        0.041
   30   2.50     0.13      0.046       (  0.112)       0.005        0.041
   31   2.58     0.17      0.057       (  0.111)       0.006        0.051
   32   2.67     0.17      0.057       (  0.111)       0.006        0.051
   33   2.75     0.17      0.057       (  0.110)       0.006        0.051
   34   2.83     0.17      0.057       (  0.110)       0.006        0.051
```

35	2.92	0.17	0.057	(0.110)	0.006	0.051
36	3.00	0.17	0.057	(0.109)	0.006	0.051
37	3.08	0.17	0.057	(0.109)	0.006	0.051
38	3.17	0.17	0.057	(0.108)	0.006	0.051
39	3.25	0.17	0.057	(0.108)	0.006	0.051
40	3.33	0.17	0.057	(0.107)	0.006	0.051
41	3.42	0.17	0.057	(0.107)	0.006	0.051
42	3.50	0.17	0.057	(0.106)	0.006	0.051
43	3.58	0.17	0.057	(0.106)	0.006	0.051
44	3.67	0.17	0.057	(0.106)	0.006	0.051
45	3.75	0.17	0.057	(0.105)	0.006	0.051
46	3.83	0.20	0.068	(0.105)	0.007	0.061
47	3.92	0.20	0.068	(0.104)	0.007	0.061
48	4.00	0.20	0.068	(0.104)	0.007	0.061
49	4.08	0.20	0.068	(0.103)	0.007	0.061
50	4.17	0.20	0.068	(0.103)	0.007	0.061
51	4.25	0.20	0.068	(0.102)	0.007	0.061
52	4.33	0.23	0.080	(0.102)	0.008	0.072
53	4.42	0.23	0.080	(0.102)	0.008	0.072
54	4.50	0.23	0.080	(0.101)	0.008	0.072
55	4.58	0.23	0.080	(0.101)	0.008	0.072
56	4.67	0.23	0.080	(0.100)	0.008	0.072
57	4.75	0.23	0.080	(0.100)	0.008	0.072
58	4.83	0.27	0.091	(0.099)	0.009	0.082
59	4.92	0.27	0.091	(0.099)	0.009	0.082
60	5.00	0.27	0.091	(0.099)	0.009	0.082
61	5.08	0.20	0.068	(0.098)	0.007	0.061
62	5.17	0.20	0.068	(0.098)	0.007	0.061
63	5.25	0.20	0.068	(0.097)	0.007	0.061
64	5.33	0.23	0.080	(0.097)	0.008	0.072
65	5.42	0.23	0.080	(0.096)	0.008	0.072
66	5.50	0.23	0.080	(0.096)	0.008	0.072
67	5.58	0.27	0.091	(0.096)	0.009	0.082
68	5.67	0.27	0.091	(0.095)	0.009	0.082
69	5.75	0.27	0.091	(0.095)	0.009	0.082
70	5.83	0.27	0.091	(0.094)	0.009	0.082
71	5.92	0.27	0.091	(0.094)	0.009	0.082
72	6.00	0.27	0.091	(0.093)	0.009	0.082
73	6.08	0.30	0.102	(0.093)	0.010	0.092
74	6.17	0.30	0.102	(0.093)	0.010	0.092
75	6.25	0.30	0.102	(0.092)	0.010	0.092
76	6.33	0.30	0.102	(0.092)	0.010	0.092
77	6.42	0.30	0.102	(0.091)	0.010	0.092
78	6.50	0.30	0.102	(0.091)	0.010	0.092
79	6.58	0.33	0.114	(0.091)	0.011	0.102
80	6.67	0.33	0.114	(0.090)	0.011	0.102
81	6.75	0.33	0.114	(0.090)	0.011	0.102
82	6.83	0.33	0.114	(0.089)	0.011	0.102
83	6.92	0.33	0.114	(0.089)	0.011	0.102
84	7.00	0.33	0.114	(0.089)	0.011	0.102
85	7.08	0.33	0.114	(0.088)	0.011	0.102
86	7.17	0.33	0.114	(0.088)	0.011	0.102
87	7.25	0.33	0.114	(0.087)	0.011	0.102
88	7.33	0.37	0.125	(0.087)	0.013	0.113
89	7.42	0.37	0.125	(0.087)	0.013	0.113
90	7.50	0.37	0.125	(0.086)	0.013	0.113
91	7.58	0.40	0.137	(0.086)	0.014	0.123
92	7.67	0.40	0.137	(0.085)	0.014	0.123
93	7.75	0.40	0.137	(0.085)	0.014	0.123
94	7.83	0.43	0.148	(0.085)	0.015	0.133
95	7.92	0.43	0.148	(0.084)	0.015	0.133
96	8.00	0.43	0.148	(0.084)	0.015	0.133
97	8.08	0.50	0.171	(0.083)	0.017	0.154
98	8.17	0.50	0.171	(0.083)	0.017	0.154
99	8.25	0.50	0.171	(0.083)	0.017	0.154
100	8.33	0.50	0.171	(0.082)	0.017	0.154
101	8.42	0.50	0.171	(0.082)	0.017	0.154
102	8.50	0.50	0.171	(0.082)	0.017	0.154
103	8.58	0.53	0.182	(0.081)	0.018	0.164

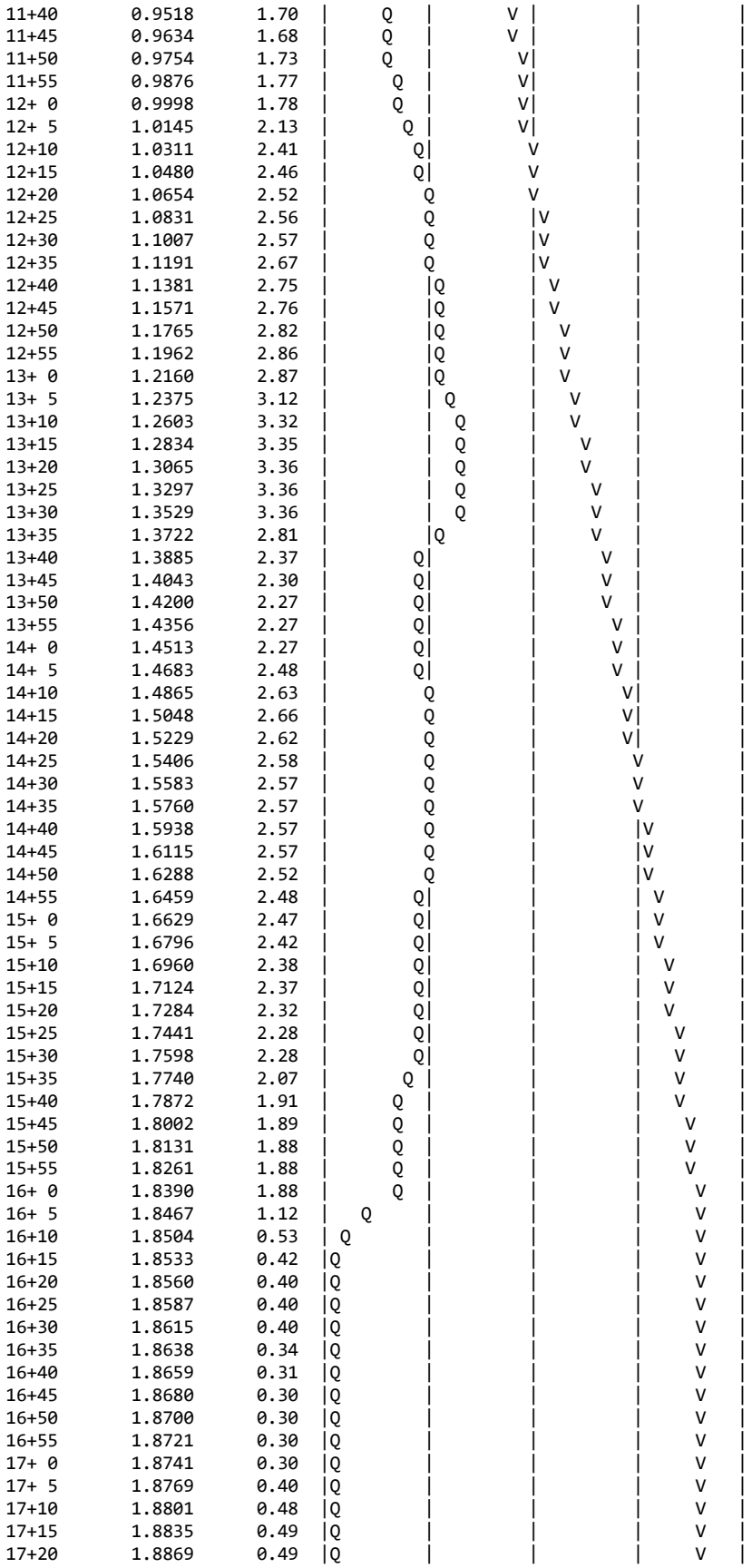
104	8.67	0.53	0.182	(0.081)	0.018	0.164
105	8.75	0.53	0.182	(0.080)	0.018	0.164
106	8.83	0.57	0.194	(0.080)	0.019	0.174
107	8.92	0.57	0.194	(0.080)	0.019	0.174
108	9.00	0.57	0.194	(0.079)	0.019	0.174
109	9.08	0.63	0.216	(0.079)	0.022	0.195
110	9.17	0.63	0.216	(0.078)	0.022	0.195
111	9.25	0.63	0.216	(0.078)	0.022	0.195
112	9.33	0.67	0.228	(0.078)	0.023	0.205
113	9.42	0.67	0.228	(0.077)	0.023	0.205
114	9.50	0.67	0.228	(0.077)	0.023	0.205
115	9.58	0.70	0.239	(0.077)	0.024	0.215
116	9.67	0.70	0.239	(0.076)	0.024	0.215
117	9.75	0.70	0.239	(0.076)	0.024	0.215
118	9.83	0.73	0.250	(0.076)	0.025	0.225
119	9.92	0.73	0.250	(0.075)	0.025	0.225
120	10.00	0.73	0.250	(0.075)	0.025	0.225
121	10.08	0.50	0.171	(0.074)	0.017	0.154
122	10.17	0.50	0.171	(0.074)	0.017	0.154
123	10.25	0.50	0.171	(0.074)	0.017	0.154
124	10.33	0.50	0.171	(0.073)	0.017	0.154
125	10.42	0.50	0.171	(0.073)	0.017	0.154
126	10.50	0.50	0.171	(0.073)	0.017	0.154
127	10.58	0.67	0.228	(0.072)	0.023	0.205
128	10.67	0.67	0.228	(0.072)	0.023	0.205
129	10.75	0.67	0.228	(0.072)	0.023	0.205
130	10.83	0.67	0.228	(0.071)	0.023	0.205
131	10.92	0.67	0.228	(0.071)	0.023	0.205
132	11.00	0.67	0.228	(0.071)	0.023	0.205
133	11.08	0.63	0.216	(0.070)	0.022	0.195
134	11.17	0.63	0.216	(0.070)	0.022	0.195
135	11.25	0.63	0.216	(0.069)	0.022	0.195
136	11.33	0.63	0.216	(0.069)	0.022	0.195
137	11.42	0.63	0.216	(0.069)	0.022	0.195
138	11.50	0.63	0.216	(0.068)	0.022	0.195
139	11.58	0.57	0.194	(0.068)	0.019	0.174
140	11.67	0.57	0.194	(0.068)	0.019	0.174
141	11.75	0.57	0.194	(0.067)	0.019	0.174
142	11.83	0.60	0.205	(0.067)	0.020	0.184
143	11.92	0.60	0.205	(0.067)	0.020	0.184
144	12.00	0.60	0.205	(0.066)	0.020	0.184
145	12.08	0.83	0.285	(0.066)	0.028	0.256
146	12.17	0.83	0.285	(0.066)	0.028	0.256
147	12.25	0.83	0.285	(0.065)	0.028	0.256
148	12.33	0.87	0.296	(0.065)	0.030	0.266
149	12.42	0.87	0.296	(0.065)	0.030	0.266
150	12.50	0.87	0.296	(0.064)	0.030	0.266
151	12.58	0.93	0.319	(0.064)	0.032	0.287
152	12.67	0.93	0.319	(0.064)	0.032	0.287
153	12.75	0.93	0.319	(0.064)	0.032	0.287
154	12.83	0.97	0.330	(0.063)	0.033	0.297
155	12.92	0.97	0.330	(0.063)	0.033	0.297
156	13.00	0.97	0.330	(0.063)	0.033	0.297
157	13.08	1.13	0.387	(0.062)	0.039	0.348
158	13.17	1.13	0.387	(0.062)	0.039	0.348
159	13.25	1.13	0.387	(0.062)	0.039	0.348
160	13.33	1.13	0.387	(0.061)	0.039	0.348
161	13.42	1.13	0.387	(0.061)	0.039	0.348
162	13.50	1.13	0.387	(0.061)	0.039	0.348
163	13.58	0.77	0.262	(0.060)	0.026	0.236
164	13.67	0.77	0.262	(0.060)	0.026	0.236
165	13.75	0.77	0.262	(0.060)	0.026	0.236
166	13.83	0.77	0.262	(0.059)	0.026	0.236
167	13.92	0.77	0.262	(0.059)	0.026	0.236
168	14.00	0.77	0.262	(0.059)	0.026	0.236
169	14.08	0.90	0.307	(0.059)	0.031	0.277
170	14.17	0.90	0.307	(0.058)	0.031	0.277
171	14.25	0.90	0.307	(0.058)	0.031	0.277
172	14.33	0.87	0.296	(0.058)	0.030	0.266

173	14.42	0.87	0.296	(0.057)	0.030	0.266
174	14.50	0.87	0.296	(0.057)	0.030	0.266
175	14.58	0.87	0.296	(0.057)	0.030	0.266
176	14.67	0.87	0.296	(0.056)	0.030	0.266
177	14.75	0.87	0.296	(0.056)	0.030	0.266
178	14.83	0.83	0.285	(0.056)	0.028	0.256
179	14.92	0.83	0.285	(0.056)	0.028	0.256
180	15.00	0.83	0.285	(0.055)	0.028	0.256
181	15.08	0.80	0.273	(0.055)	0.027	0.246
182	15.17	0.80	0.273	(0.055)	0.027	0.246
183	15.25	0.80	0.273	(0.054)	0.027	0.246
184	15.33	0.77	0.262	(0.054)	0.026	0.236
185	15.42	0.77	0.262	(0.054)	0.026	0.236
186	15.50	0.77	0.262	(0.054)	0.026	0.236
187	15.58	0.63	0.216	(0.053)	0.022	0.195
188	15.67	0.63	0.216	(0.053)	0.022	0.195
189	15.75	0.63	0.216	(0.053)	0.022	0.195
190	15.83	0.63	0.216	(0.053)	0.022	0.195
191	15.92	0.63	0.216	(0.052)	0.022	0.195
192	16.00	0.63	0.216	(0.052)	0.022	0.195
193	16.08	0.13	0.046	(0.052)	0.005	0.041
194	16.17	0.13	0.046	(0.051)	0.005	0.041
195	16.25	0.13	0.046	(0.051)	0.005	0.041
196	16.33	0.13	0.046	(0.051)	0.005	0.041
197	16.42	0.13	0.046	(0.051)	0.005	0.041
198	16.50	0.13	0.046	(0.050)	0.005	0.041
199	16.58	0.10	0.034	(0.050)	0.003	0.031
200	16.67	0.10	0.034	(0.050)	0.003	0.031
201	16.75	0.10	0.034	(0.050)	0.003	0.031
202	16.83	0.10	0.034	(0.049)	0.003	0.031
203	16.92	0.10	0.034	(0.049)	0.003	0.031
204	17.00	0.10	0.034	(0.049)	0.003	0.031
205	17.08	0.17	0.057	(0.049)	0.006	0.051
206	17.17	0.17	0.057	(0.048)	0.006	0.051
207	17.25	0.17	0.057	(0.048)	0.006	0.051
208	17.33	0.17	0.057	(0.048)	0.006	0.051
209	17.42	0.17	0.057	(0.048)	0.006	0.051
210	17.50	0.17	0.057	(0.047)	0.006	0.051
211	17.58	0.17	0.057	(0.047)	0.006	0.051
212	17.67	0.17	0.057	(0.047)	0.006	0.051
213	17.75	0.17	0.057	(0.047)	0.006	0.051
214	17.83	0.13	0.046	(0.047)	0.005	0.041
215	17.92	0.13	0.046	(0.046)	0.005	0.041
216	18.00	0.13	0.046	(0.046)	0.005	0.041
217	18.08	0.13	0.046	(0.046)	0.005	0.041
218	18.17	0.13	0.046	(0.046)	0.005	0.041
219	18.25	0.13	0.046	(0.045)	0.005	0.041
220	18.33	0.13	0.046	(0.045)	0.005	0.041
221	18.42	0.13	0.046	(0.045)	0.005	0.041
222	18.50	0.13	0.046	(0.045)	0.005	0.041
223	18.58	0.10	0.034	(0.045)	0.003	0.031
224	18.67	0.10	0.034	(0.044)	0.003	0.031
225	18.75	0.10	0.034	(0.044)	0.003	0.031
226	18.83	0.07	0.023	(0.044)	0.002	0.020
227	18.92	0.07	0.023	(0.044)	0.002	0.020
228	19.00	0.07	0.023	(0.043)	0.002	0.020
229	19.08	0.10	0.034	(0.043)	0.003	0.031
230	19.17	0.10	0.034	(0.043)	0.003	0.031
231	19.25	0.10	0.034	(0.043)	0.003	0.031
232	19.33	0.13	0.046	(0.043)	0.005	0.041
233	19.42	0.13	0.046	(0.042)	0.005	0.041
234	19.50	0.13	0.046	(0.042)	0.005	0.041
235	19.58	0.10	0.034	(0.042)	0.003	0.031
236	19.67	0.10	0.034	(0.042)	0.003	0.031
237	19.75	0.10	0.034	(0.042)	0.003	0.031
238	19.83	0.07	0.023	(0.041)	0.002	0.020
239	19.92	0.07	0.023	(0.041)	0.002	0.020
240	20.00	0.07	0.023	(0.041)	0.002	0.020
241	20.08	0.10	0.034	(0.041)	0.003	0.031

```
242  20.17     0.10      0.034       (  0.041)       0.003        0.031
243  20.25     0.10      0.034       (  0.041)       0.003        0.031
244  20.33     0.10      0.034       (  0.040)       0.003        0.031
245  20.42     0.10      0.034       (  0.040)       0.003        0.031
246  20.50     0.10      0.034       (  0.040)       0.003        0.031
247  20.58     0.10      0.034       (  0.040)       0.003        0.031
248  20.67     0.10      0.034       (  0.040)       0.003        0.031
249  20.75     0.10      0.034       (  0.040)       0.003        0.031
250  20.83     0.07      0.023       (  0.039)       0.002        0.020
251  20.92     0.07      0.023       (  0.039)       0.002        0.020
252  21.00     0.07      0.023       (  0.039)       0.002        0.020
253  21.08     0.10      0.034       (  0.039)       0.003        0.031
254  21.17     0.10      0.034       (  0.039)       0.003        0.031
255  21.25     0.10      0.034       (  0.039)       0.003        0.031
256  21.33     0.07      0.023       (  0.038)       0.002        0.020
257  21.42     0.07      0.023       (  0.038)       0.002        0.020
258  21.50     0.07      0.023       (  0.038)       0.002        0.020
259  21.58     0.10      0.034       (  0.038)       0.003        0.031
260  21.67     0.10      0.034       (  0.038)       0.003        0.031
261  21.75     0.10      0.034       (  0.038)       0.003        0.031
262  21.83     0.07      0.023       (  0.038)       0.002        0.020
263  21.92     0.07      0.023       (  0.038)       0.002        0.020
264  22.00     0.07      0.023       (  0.037)       0.002        0.020
265  22.08     0.10      0.034       (  0.037)       0.003        0.031
266  22.17     0.10      0.034       (  0.037)       0.003        0.031
267  22.25     0.10      0.034       (  0.037)       0.003        0.031
268  22.33     0.07      0.023       (  0.037)       0.002        0.020
269  22.42     0.07      0.023       (  0.037)       0.002        0.020
270  22.50     0.07      0.023       (  0.037)       0.002        0.020
271  22.58     0.07      0.023       (  0.037)       0.002        0.020
272  22.67     0.07      0.023       (  0.036)       0.002        0.020
273  22.75     0.07      0.023       (  0.036)       0.002        0.020
274  22.83     0.07      0.023       (  0.036)       0.002        0.020
275  22.92     0.07      0.023       (  0.036)       0.002        0.020
276  23.00     0.07      0.023       (  0.036)       0.002        0.020
277  23.08     0.07      0.023       (  0.036)       0.002        0.020
278  23.17     0.07      0.023       (  0.036)       0.002        0.020
279  23.25     0.07      0.023       (  0.036)       0.002        0.020
280  23.33     0.07      0.023       (  0.036)       0.002        0.020
281  23.42     0.07      0.023       (  0.036)       0.002        0.020
282  23.50     0.07      0.023       (  0.036)       0.002        0.020
283  23.58     0.07      0.023       (  0.036)       0.002        0.020
284  23.67     0.07      0.023       (  0.036)       0.002        0.020
285  23.75     0.07      0.023       (  0.036)       0.002        0.020
286  23.83     0.07      0.023       (  0.035)       0.002        0.020
287  23.92     0.07      0.023       (  0.035)       0.002        0.020
288  24.00     0.07      0.023       (  0.035)       0.002        0.020
               (Loss Rate Not Used)
    Sum =     100.0                                  Sum =    30.7
       Flood volume = Effective rainfall      2.56(In)
        times area       9.6(Ac.)/[(In)/(Ft.)] =       2.0(Ac.Ft)
       Total soil loss =      0.28(In)
       Total soil loss =     0.227(Ac.Ft)
       Total rainfall =      2.85(In)
       Flood volume =       88986.5 Cubic Feet
       Total soil loss =        9887.4 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      3.362(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       0.0007      0.10  Q         |         |         |         |
```

```
0+10       0.0019      0.18  Q         |         |         |         |
0+15       0.0033      0.19  Q         |         |         |         |
0+20       0.0050      0.25  Q         |         |         |         |
0+25       0.0070      0.29  VQ        |         |         |         |
0+30       0.0090      0.29  VQ        |         |         |         |
0+35       0.0110      0.30  VQ        |         |         |         |
0+40       0.0131      0.30  VQ        |         |         |         |
0+45       0.0151      0.30  VQ        |         |         |         |
0+50       0.0175      0.35  VQ        |         |         |         |
0+55       0.0202      0.39  VQ        |         |         |         |
1+ 0       0.0229      0.39  VQ        |         |         |         |
1+ 5       0.0253      0.34  VQ        |         |         |         |
1+10       0.0274      0.31  VQ        |         |         |         |
1+15       0.0294      0.30  VQ        |         |         |         |
1+20       0.0315      0.30  VQ        |         |         |         |
1+25       0.0335      0.30  VQ        |         |         |         |
1+30       0.0356      0.30  VQ        |         |         |         |
1+35       0.0376      0.30  VQ        |         |         |         |
1+40       0.0396      0.30  VQ        |         |         |         |
1+45       0.0417      0.30  VQ        |         |         |         |
1+50       0.0441      0.35  VQ        |         |         |         |
1+55       0.0467      0.39  VQ        |         |         |         |
2+ 0       0.0494      0.39  VQ        |         |         |         |
2+ 5       0.0522      0.40  |Q        |         |         |         |
2+10       0.0549      0.40  |Q        |         |         |         |
2+15       0.0576      0.40  |Q        |         |         |         |
2+20       0.0603      0.40  |Q        |         |         |         |
2+25       0.0631      0.40  |Q        |         |         |         |
2+30       0.0658      0.40  |Q        |         |         |         |
2+35       0.0689      0.45  |Q        |         |         |         |
2+40       0.0722      0.49  |Q        |         |         |         |
2+45       0.0756      0.49  |Q        |         |         |         |
2+50       0.0790      0.49  |Q        |         |         |         |
2+55       0.0824      0.49  |Q        |         |         |         |
3+ 0       0.0858      0.49  |Q        |         |         |         |
3+ 5       0.0892      0.49  |Q        |         |         |         |
3+10       0.0926      0.49  |Q        |         |         |         |
3+15       0.0960      0.49  |Q        |         |         |         |
3+20       0.0994      0.49  |Q        |         |         |         |
3+25       0.1028      0.49  |QV       |         |         |         |
3+30       0.1062      0.49  |QV       |         |         |         |
3+35       0.1096      0.49  |QV       |         |         |         |
3+40       0.1130      0.49  |QV       |         |         |         |
3+45       0.1165      0.49  |QV       |         |         |         |
3+50       0.1202      0.54  | Q       |         |         |         |
3+55       0.1242      0.58  | Q       |         |         |         |
4+ 0       0.1283      0.59  | Q       |         |         |         |
4+ 5       0.1324      0.59  | Q       |         |         |         |
4+10       0.1365      0.59  | Q       |         |         |         |
4+15       0.1406      0.59  | Q       |         |         |         |
4+20       0.1450      0.64  | Q       |         |         |         |
4+25       0.1497      0.68  | Q       |         |         |         |
4+30       0.1545      0.69  | QV      |         |         |         |
4+35       0.1592      0.69  | QV      |         |         |         |
4+40       0.1640      0.69  | QV      |         |         |         |
4+45       0.1688      0.69  | QV      |         |         |         |
4+50       0.1739      0.74  | QV      |         |         |         |
4+55       0.1793      0.78  |  Q      |         |         |         |
5+ 0       0.1847      0.79  |  Q      |         |         |         |
5+ 5       0.1894      0.69  | QV      |         |         |         |
5+10       0.1936      0.61  | QV      |         |         |         |
5+15       0.1978      0.60  | QV      |         |         |         |
5+20       0.2022      0.64  | QV      |         |         |         |
5+25       0.2069      0.68  | Q V     |         |         |         |
5+30       0.2117      0.69  | Q V     |         |         |         |
5+35       0.2168      0.74  | Q V     |         |         |         |
5+40       0.2222      0.78  |  QV     |         |         |         |
5+45       0.2276      0.79  |  QV     |         |         |         |
5+50       0.2330      0.79  |  QV     |         |         |         |
```

5+55	0.2385	0.79	QV				
6+ 0	0.2439	0.79	QV				
6+ 5	0.2497	0.84	QV				
6+10	0.2558	0.88	Q V				
6+15	0.2619	0.89	Q V				
6+20	0.2680	0.89	Q V				
6+25	0.2742	0.89	Q V				
6+30	0.2803	0.89	Q V				
6+35	0.2868	0.94	Q V				
6+40	0.2935	0.98	Q V				
6+45	0.3003	0.99	Q V				
6+50	0.3071	0.99	Q V				
6+55	0.3139	0.99	Q V				
7+ 0	0.3208	0.99	Q V				
7+ 5	0.3276	0.99	Q V				
7+10	0.3344	0.99	Q V				
7+15	0.3412	0.99	Q V				
7+20	0.3483	1.04	Q V				
7+25	0.3558	1.08	Q V				
7+30	0.3632	1.09	Q V				
7+35	0.3711	1.14	Q V				
7+40	0.3792	1.18	Q V				
7+45	0.3874	1.18	Q V				
7+50	0.3959	1.24	Q V				
7+55	0.4047	1.28	Q V				
8+ 0	0.4135	1.28	Q V				
8+ 5	0.4231	1.39	Q V				
8+10	0.4331	1.47	Q V				
8+15	0.4433	1.48	Q V				
8+20	0.4535	1.48	Q V				
8+25	0.4638	1.48	Q V				
8+30	0.4740	1.48	Q V				
8+35	0.4845	1.53	Q V				
8+40	0.4954	1.57	Q V				
8+45	0.5063	1.58	Q V				
8+50	0.5175	1.63	Q V				
8+55	0.5290	1.67	Q V				
9+ 0	0.5406	1.68	Q V				
9+ 5	0.5528	1.78	Q V				
9+10	0.5657	1.86	Q V				
9+15	0.5786	1.87	Q V				
9+20	0.5919	1.93	Q V				
9+25	0.6054	1.97	Q V				
9+30	0.6190	1.98	Q V				
9+35	0.6330	2.03	Q V				
9+40	0.6472	2.07	Q V				
9+45	0.6615	2.07	Q V				
9+50	0.6762	2.13	Q V				
9+55	0.6911	2.17	Q V				
10+ 0	0.7061	2.17	Q V				
10+ 5	0.7186	1.82	Q V				
10+10	0.7292	1.54	Q V				
10+15	0.7395	1.50	Q V				
10+20	0.7498	1.48	Q V				
10+25	0.7600	1.48	Q V				
10+30	0.7702	1.48	Q V				
10+35	0.7821	1.74	Q V				
10+40	0.7955	1.93	Q V				
10+45	0.8090	1.97	Q V				
10+50	0.8226	1.98	Q V				
10+55	0.8363	1.98	Q V				
11+ 0	0.8499	1.98	Q V				
11+ 5	0.8631	1.93	Q V				
11+10	0.8761	1.89	Q V				
11+15	0.8891	1.88	Q V				
11+20	0.9020	1.88	Q V				
11+25	0.9150	1.88	Q V				
11+30	0.9279	1.88	Q V				
11+35	0.9401	1.78	Q V				



17+25	1.8903	0.49	|Q	|	|	|	V |
17+30	1.8937	0.49	|Q	|	|	|	V |
17+35	1.8971	0.49	|Q	|	|	|	V |
17+40	1.9005	0.49	|Q	|	|	|	V |
17+45	1.9039	0.49	|Q	|	|	|	V |
17+50	1.9070	0.44	|Q	|	|	|	V |
17+55	1.9098	0.40	|Q	|	|	|	V |
18+ 0	1.9125	0.40	|Q	|	|	|	V |
18+ 5	1.9152	0.40	|Q	|	|	|	V |
18+10	1.9180	0.40	|Q	|	|	|	V |
18+15	1.9207	0.40	|Q	|	|	|	V |
18+20	1.9234	0.40	|Q	|	|	|	V |
18+25	1.9261	0.40	|Q	|	|	|	V |
18+30	1.9289	0.40	|Q	|	|	|	V |
18+35	1.9312	0.34	|Q	|	|	|	V |
18+40	1.9333	0.31	|Q	|	|	|	V |
18+45	1.9354	0.30	|Q	|	|	|	V |
18+50	1.9371	0.25	Q	|	|	|	V |
18+55	1.9385	0.21	Q	|	|	|	V |
19+ 0	1.9399	0.20	Q	|	|	|	V |
19+ 5	1.9416	0.25	Q	|	|	|	V |
19+10	1.9436	0.29	|Q	|	|	|	V |
19+15	1.9456	0.29	|Q	|	|	|	V |
19+20	1.9480	0.35	|Q	|	|	|	V |
19+25	1.9507	0.39	|Q	|	|	|	V |
19+30	1.9534	0.39	|Q	|	|	|	V |
19+35	1.9558	0.34	|Q	|	|	|	V |
19+40	1.9579	0.31	|Q	|	|	|	V |
19+45	1.9599	0.30	|Q	|	|	|	V |
19+50	1.9616	0.25	Q	|	|	|	V |
19+55	1.9630	0.21	Q	|	|	|	V |
20+ 0	1.9644	0.20	Q	|	|	|	V |
20+ 5	1.9661	0.25	Q	|	|	|	V |
20+10	1.9681	0.29	|Q	|	|	|	V |
20+15	1.9701	0.29	|Q	|	|	|	V |
20+20	1.9722	0.30	|Q	|	|	|	V |
20+25	1.9742	0.30	|Q	|	|	|	V |
20+30	1.9763	0.30	|Q	|	|	|	V |
20+35	1.9783	0.30	|Q	|	|	|	V |
20+40	1.9803	0.30	|Q	|	|	|	V |
20+45	1.9824	0.30	|Q	|	|	|	V |
20+50	1.9841	0.25	Q	|	|	|	V |
20+55	1.9855	0.21	Q	|	|	|	V |
21+ 0	1.9869	0.20	Q	|	|	|	V |
21+ 5	1.9886	0.25	Q	|	|	|	V |
21+10	1.9906	0.29	|Q	|	|	|	V |
21+15	1.9926	0.29	|Q	|	|	|	V|
21+20	1.9943	0.25	Q	|	|	|	V|
21+25	1.9957	0.21	Q	|	|	|	V|
21+30	1.9971	0.20	Q	|	|	|	V|
21+35	1.9988	0.25	Q	|	|	|	V|
21+40	2.0008	0.29	|Q	|	|	|	V|
21+45	2.0028	0.29	|Q	|	|	|	V|
21+50	2.0045	0.25	Q	|	|	|	V|
21+55	2.0059	0.21	Q	|	|	|	V|
22+ 0	2.0073	0.20	Q	|	|	|	V|
22+ 5	2.0090	0.25	Q	|	|	|	V|
22+10	2.0110	0.29	|Q	|	|	|	V|
22+15	2.0130	0.29	|Q	|	|	|	V|
22+20	2.0147	0.25	Q	|	|	|	V|
22+25	2.0161	0.21	Q	|	|	|	V|
22+30	2.0175	0.20	Q	|	|	|	V|
22+35	2.0189	0.20	Q	|	|	|	V|
22+40	2.0202	0.20	Q	|	|	|	V|
22+45	2.0216	0.20	Q	|	|	|	V|
22+50	2.0230	0.20	Q	|	|	|	V|
22+55	2.0243	0.20	Q	|	|	|	V|
23+ 0	2.0257	0.20	Q	|	|	|	V|
23+ 5	2.0271	0.20	Q	|	|	|	V|

```
   23+10       2.0284      0.20  Q         |         |         |        V|
   23+15       2.0298      0.20  Q         |         |         |        V|
   23+20       2.0311      0.20  Q         |         |         |        V|
   23+25       2.0325      0.20  Q         |         |         |        V|
   23+30       2.0339      0.20  Q         |         |         |        V|
   23+35       2.0352      0.20  Q         |         |         |        V|
   23+40       2.0366      0.20  Q         |         |         |        V|
   23+45       2.0380      0.20  Q         |         |         |        V|
   23+50       2.0393      0.20  Q         |         |         |        V|
   23+55       2.0407      0.20  Q         |         |         |        V|
   24+ 0       2.0420      0.20  Q         |         |         |        V|
   24+ 5       2.0427      0.10  Q         |         |         |        V|
   24+10       2.0428      0.02  Q         |         |         |        V|
   24+15       2.0428      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

EXISTING CONDITION HYDROGRAPHS
(10-YEAR 1HR, 3HR, 6HR & 24HR EVENTS)

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

Study date 04/18/23 File: 3930EX10110.out

++

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

Program License Serial Number 6400

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

English Units used in output format

BAY AND DAY INDUSTRIAL BUILDING
EXISTING CONDITION
10-YEAR 1 HR

Drainage Area = 9.57(Ac.) = 0.015 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 9.57(Ac.) = 0.015 Sq. Mi.
Length along longest watercourse = 991.00(Ft.)
Length along longest watercourse measured to centroid = 533.00(Ft.)
Length along longest watercourse = 0.188 Mi.
Length along longest watercourse measured to centroid = 0.101 Mi.
Difference in elevation = 19.40(Ft.)
Slope along watercourse = 103.3623 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.066 Hr.
Lag time = 3.96 Min.
25% of lag time = 0.99 Min.
40% of lag time = 1.59 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.57	0.50	4.79

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.57	1.20	11.48

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 0.500(In)
Area Averaged 100-Year Rainfall = 1.200(In)

Point rain (area averaged) = 0.788(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 0.788(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %

```
        1.750           69.00         0.500
        7.820           77.00         0.000
     Total Area Entered =      9.57(Ac.)


    RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
    AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
    69.0  69.0      0.373     0.500        0.205       0.183      0.037
    77.0  77.0      0.279     0.000        0.279       0.817      0.228
                                                    Sum (F) =   0.266
    Area averaged mean soil loss (F) (In/Hr) =  0.266
    Minimum soil loss rate ((In/Hr)) =  0.133
    (for 24 hour storm duration)
    Soil low loss rate (decimal) =   0.900
    ------------------------------------------------------------------------
    Slope of intensity-duration curve for a 1 hour storm =0.5000
    ------------------------------------------------------------------------

                  U n i t  H y d r o g r a p h
                         VALLEY S-Curve
    ------------------------------------------------------------------
                  Unit Hydrograph Data
    ------------------------------------------------------------------
    Unit time period   Time % of lag   Distribution   Unit Hydrograph
        (hrs)                           Graph %           (CFS)
    ------------------------------------------------------------------
        1   0.083        126.111         26.943             2.599
        2   0.167        252.222         48.482             4.676
        3   0.250        378.333         12.799             1.234
        4   0.333        504.443          5.754             0.555
        5   0.417        630.554          3.189             0.308
        6   0.500        756.665          1.763             0.170
        7   0.583        882.776          1.070             0.103
                                  Sum = 100.000   Sum=       9.645
------------------------------------------------------------------------


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

  Unit Time   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)         Max    |   Low        (In/Hr)
    1   0.08     4.20      0.397          0.266    (  0.357)        0.131
    2   0.17     4.30      0.407          0.266    (  0.366)        0.141
    3   0.25     5.00      0.473          0.266    (  0.425)        0.207
    4   0.33     5.00      0.473          0.266    (  0.425)        0.207
    5   0.42     5.80      0.548          0.266    (  0.494)        0.283
    6   0.50     6.50      0.615          0.266    (  0.553)        0.349
    7   0.58     7.40      0.700          0.266    (  0.630)        0.434
    8   0.67     8.60      0.813          0.266    (  0.732)        0.547
    9   0.75    12.30      1.163          0.266    (  1.047)        0.897
   10   0.83    29.10      2.751          0.266    (  2.476)        2.486
   11   0.92     6.80      0.643          0.266    (  0.579)        0.377
   12   1.00     5.00      0.473          0.266    (  0.425)        0.207
                (Loss Rate Not Used)
      Sum =     100.0                                  Sum =     6.3
       Flood volume = Effective rainfall      0.52(In)
        times area       9.6(Ac.)/[(In)/(Ft.)] =       0.4(Ac.Ft)
       Total soil loss =      0.27(In)
       Total soil loss =     0.212(Ac.Ft)
       Total rainfall =      0.79(In)
       Flood volume =       18137.8 Cubic Feet
       Total soil loss =        9233.7 Cubic Feet
       ------------------------------------------------------------------
        Peak flow rate of this hydrograph =     14.243(CFS)
       ------------------------------------------------------------------
       ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          1 - 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	0.0024	0.34	Q				
0+10	0.0091	0.98	VQ				
0+15	0.0185	1.36	VQ				
0+20	0.0305	1.75	VQ				
0+25	0.0448	2.08	Q				
0+30	0.0632	2.67	QV				
0+35	0.0861	3.32	Q V				
0+40	0.1147	4.15	Q	V			
0+45	0.1544	5.77		Q V			
0+50	0.2354	11.75			VQ		
0+55	0.3335	14.24			Q	V	
1+ 0	0.3758	6.15		Q		V	
1+ 5	0.3980	3.23	Q			V	
1+10	0.4079	1.44	Q			V	
1+15	0.4131	0.75	Q			V	
1+20	0.4157	0.38	Q			V	
1+25	0.4162	0.07	Q			V	
1+30	0.4164	0.02	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 04/18/23 File: 3930EX10310.out

++

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

Program License Serial Number 6400

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

English Units used in output format

BAY AND DAY INDUSTRIAL BUILDING
EXISTING CONDITION
10-YEAR 3 HR

Drainage Area = 9.57(Ac.) = 0.015 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 9.57(Ac.) = 0.015 Sq. Mi.
Length along longest watercourse = 991.00(Ft.)
Length along longest watercourse measured to centroid = 533.00(Ft.)
Length along longest watercourse = 0.188 Mi.
Length along longest watercourse measured to centroid = 0.101 Mi.
Difference in elevation = 19.40(Ft.)
Slope along watercourse = 103.3623 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.066 Hr.
Lag time = 3.96 Min.
25% of lag time = 0.99 Min.
40% of lag time = 1.59 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.57	0.84	8.04

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.57	1.90	18.18

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 0.840(In)
Area Averaged 100-Year Rainfall = 1.900(In)

Point rain (area averaged) = 1.276(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.276(In)

Sub-Area Data:
Area(Ac.) Runoff Index Impervious %

1.750	69.00	0.500
7.820	77.00	0.000

Total Area Entered = 9.57(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.500	0.205	0.183	0.037
77.0	77.0	0.279	0.000	0.279	0.817	0.228
					Sum (F) =	0.266

Area averaged mean soil loss (F) (In/Hr) = 0.266
Minimum soil loss rate ((In/Hr)) = 0.133
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	126.111	26.943	2.599
2	0.167	252.222	48.482	4.676
3	0.250	378.333	12.799	1.234
4	0.333	504.443	5.754	0.555
5	0.417	630.554	3.189	0.308
6	0.500	756.665	1.763	0.170
7	0.583	882.776	1.070	0.103
			Sum = 100.000	Sum= 9.645

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.199	(0.266)	0.179	0.020
2	0.17	1.30	0.199	(0.266)	0.179	0.020
3	0.25	1.10	0.168	(0.266)	0.152	0.017
4	0.33	1.50	0.230	(0.266)	0.207	0.023
5	0.42	1.50	0.230	(0.266)	0.207	0.023
6	0.50	1.80	0.276	(0.266)	0.248	0.028
7	0.58	1.50	0.230	(0.266)	0.207	0.023
8	0.67	1.80	0.276	(0.266)	0.248	0.028
9	0.75	1.80	0.276	(0.266)	0.248	0.028
10	0.83	1.50	0.230	(0.266)	0.207	0.023
11	0.92	1.60	0.245	(0.266)	0.220	0.024
12	1.00	1.80	0.276	(0.266)	0.248	0.028
13	1.08	2.20	0.337	0.266	(0.303)	0.071
14	1.17	2.20	0.337	0.266	(0.303)	0.071
15	1.25	2.20	0.337	0.266	(0.303)	0.071
16	1.33	2.00	0.306	0.266	(0.276)	0.040
17	1.42	2.60	0.398	0.266	(0.358)	0.132
18	1.50	2.70	0.413	0.266	(0.372)	0.148
19	1.58	2.40	0.367	0.266	(0.331)	0.102
20	1.67	2.70	0.413	0.266	(0.372)	0.148
21	1.75	3.30	0.505	0.266	(0.455)	0.240
22	1.83	3.10	0.475	0.266	(0.427)	0.209
23	1.92	2.90	0.444	0.266	(0.400)	0.178
24	2.00	3.00	0.459	0.266	(0.413)	0.194
25	2.08	3.10	0.475	0.266	(0.427)	0.209
26	2.17	4.20	0.643	0.266	(0.579)	0.377
27	2.25	5.00	0.766	0.266	(0.689)	0.500
28	2.33	3.50	0.536	0.266	(0.482)	0.270
29	2.42	6.80	1.041	0.266	(0.937)	0.775

```
30   2.50     7.30      1.118          0.266    (  1.006)        0.852
31   2.58     8.20      1.256          0.266    (  1.130)        0.990
32   2.67     5.90      0.903          0.266    (  0.813)        0.638
33   2.75     2.00      0.306          0.266    (  0.276)        0.040
34   2.83     1.80      0.276       (  0.266)       0.248        0.028
35   2.92     1.80      0.276       (  0.266)       0.248        0.028
36   3.00     0.60      0.092       (  0.266)       0.083        0.009
              (Loss Rate Not Used)
   Sum =     100.0                                    Sum =     6.6
      Flood volume = Effective rainfall      0.55(In)
       times area       9.6(Ac.)/[(In)/(Ft.)] =       0.4(Ac.Ft)
      Total soil loss =      0.73(In)
      Total soil loss =     0.579(Ac.Ft)
      Total rainfall =      1.28(In)
      Flood volume =       19113.1 Cubic Feet
      Total soil loss =       25215.3 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      7.979(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          3 - 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       0.0004      0.05  Q         |         |         |         |
  0+10       0.0014      0.14  Q         |         |         |         |
  0+15       0.0025      0.16  Q         |         |         |         |
  0+20       0.0037      0.17  Q         |         |         |         |
  0+25       0.0051      0.21  Q         |         |         |         |
  0+30       0.0066      0.23  Q         |         |         |         |
  0+35       0.0083      0.24  Q         |         |         |         |
  0+40       0.0099      0.24  Q         |         |         |         |
  0+45       0.0117      0.26  |Q        |         |         |         |
  0+50       0.0134      0.25  |Q        |         |         |         |
  0+55       0.0150      0.23  QV        |         |         |         |
  1+ 0       0.0167      0.25  QV        |         |         |         |
  1+ 5       0.0193      0.37  |Q        |         |         |         |
  1+10       0.0233      0.58  | Q       |         |         |         |
  1+15       0.0277      0.63  | Q       |         |         |         |
  1+20       0.0316      0.58  | Q       |         |         |         |
  1+25       0.0364      0.69  | QV      |         |         |         |
  1+30       0.0442      1.13  |   Q     |         |         |         |
  1+35       0.0523      1.18  |   Q     |         |         |         |
  1+40       0.0602      1.15  |   QV    |         |         |         |
  1+45       0.0711      1.58  |     Q   |         |         |         |
  1+50       0.0847      1.97  |      Q  |         |         |         |
  1+55       0.0977      1.89  |      QV |         |         |         |
  2+ 0       0.1101      1.81  |      Q  V         |         |         |
  2+ 5       0.1232      1.89  |      Q  |V        |         |         |
  2+10       0.1398      2.42  |        Q| V       |         |         |
  2+15       0.1642      3.55  |         |   Q     |         |         |
  2+20       0.1899      3.73  |         |   Q  V  |         |         |
  2+25       0.2190      4.22  |         |     Q  V|         |         |
  2+30       0.2647      6.63  |         |         |   V Q   |         |
  2+35       0.3191      7.91  |         |         |        V|Q        |
  2+40       0.3741      7.98  |         |         |         |Q  V     |
  2+45       0.4093      5.12  |         |         Q         |      V  |
  2+50       0.4232      2.02  |       Q |         |         |       V |
  2+55       0.4310      1.13  |   Q     |         |         |        V|
  3+ 0       0.4356      0.66  | Q       |         |         |        V|
  3+ 5       0.4378      0.32  |Q        |         |         |        V|
  3+10       0.4385      0.11  Q         |         |         |        V|
  3+15       0.4387      0.02  Q         |         |         |        V|
  3+20       0.4387      0.01  Q         |         |         |        V|
  3+25       0.4388      0.00  Q         |         |         |        V|
```

```
    3+30       0.4388      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 04/18/23 File: 3930EX10610.out

++

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

Program License Serial Number 6400

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

 English Units used in output format

BAY AND DAY INDUSTRIAL BUILDING
EXISTING CONDITION
10-YEAR 6 HR

Drainage Area = 9.57(Ac.) = 0.015 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 9.57(Ac.) = 0.015 Sq. Mi.
Length along longest watercourse = 991.00(Ft.)
Length along longest watercourse measured to centroid = 533.00(Ft.)
Length along longest watercourse = 0.188 Mi.
Length along longest watercourse measured to centroid = 0.101 Mi.
Difference in elevation = 19.40(Ft.)
Slope along watercourse = 103.3623 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.066 Hr.
Lag time = 3.96 Min.
25% of lag time = 0.99 Min.
40% of lag time = 1.59 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.57	1.20	11.48

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.57	2.50	23.93

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 1.200(In)
Area Averaged 100-Year Rainfall = 2.500(In)

Point rain (area averaged) = 1.735(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.735(In)

Sub-Area Data:
Area(Ac.)	Runoff Index	Impervious %

	1.750	69.00	0.500
	7.820	77.00	0.000

Total Area Entered = 9.57(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.500	0.205	0.183	0.037
77.0	77.0	0.279	0.000	0.279	0.817	0.228
					Sum (F) =	0.266

Area averaged mean soil loss (F) (In/Hr) = 0.266
Minimum soil loss rate ((In/Hr)) = 0.133
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	126.111	26.943	2.599
2	0.167	252.222	48.482	4.676
3	0.250	378.333	12.799	1.234
4	0.333	504.443	5.754	0.555
5	0.417	630.554	3.189	0.308
6	0.500	756.665	1.763	0.170
7	0.583	882.776	1.070	0.103
			Sum = 100.000	Sum= 9.645

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.104	(0.266)	0.094	0.010
2	0.17	0.60	0.125	(0.266)	0.112	0.012
3	0.25	0.60	0.125	(0.266)	0.112	0.012
4	0.33	0.60	0.125	(0.266)	0.112	0.012
5	0.42	0.60	0.125	(0.266)	0.112	0.012
6	0.50	0.70	0.146	(0.266)	0.131	0.015
7	0.58	0.70	0.146	(0.266)	0.131	0.015
8	0.67	0.70	0.146	(0.266)	0.131	0.015
9	0.75	0.70	0.146	(0.266)	0.131	0.015
10	0.83	0.70	0.146	(0.266)	0.131	0.015
11	0.92	0.70	0.146	(0.266)	0.131	0.015
12	1.00	0.80	0.167	(0.266)	0.150	0.017
13	1.08	0.80	0.167	(0.266)	0.150	0.017
14	1.17	0.80	0.167	(0.266)	0.150	0.017
15	1.25	0.80	0.167	(0.266)	0.150	0.017
16	1.33	0.80	0.167	(0.266)	0.150	0.017
17	1.42	0.80	0.167	(0.266)	0.150	0.017
18	1.50	0.80	0.167	(0.266)	0.150	0.017
19	1.58	0.80	0.167	(0.266)	0.150	0.017
20	1.67	0.80	0.167	(0.266)	0.150	0.017
21	1.75	0.80	0.167	(0.266)	0.150	0.017
22	1.83	0.80	0.167	(0.266)	0.150	0.017
23	1.92	0.80	0.167	(0.266)	0.150	0.017
24	2.00	0.90	0.187	(0.266)	0.169	0.019
25	2.08	0.80	0.167	(0.266)	0.150	0.017
26	2.17	0.90	0.187	(0.266)	0.169	0.019
27	2.25	0.90	0.187	(0.266)	0.169	0.019
28	2.33	0.90	0.187	(0.266)	0.169	0.019
29	2.42	0.90	0.187	(0.266)	0.169	0.019

```
30   2.50     0.90      0.187       (  0.266)       0.169        0.019
31   2.58     0.90      0.187       (  0.266)       0.169        0.019
32   2.67     0.90      0.187       (  0.266)       0.169        0.019
33   2.75     1.00      0.208       (  0.266)       0.187        0.021
34   2.83     1.00      0.208       (  0.266)       0.187        0.021
35   2.92     1.00      0.208       (  0.266)       0.187        0.021
36   3.00     1.00      0.208       (  0.266)       0.187        0.021
37   3.08     1.00      0.208       (  0.266)       0.187        0.021
38   3.17     1.10      0.229       (  0.266)       0.206        0.023
39   3.25     1.10      0.229       (  0.266)       0.206        0.023
40   3.33     1.10      0.229       (  0.266)       0.206        0.023
41   3.42     1.20      0.250       (  0.266)       0.225        0.025
42   3.50     1.30      0.271       (  0.266)       0.244        0.027
43   3.58     1.40      0.291       (  0.266)       0.262        0.029
44   3.67     1.40      0.291       (  0.266)       0.262        0.029
45   3.75     1.50      0.312          0.266    (  0.281)       0.046
46   3.83     1.50      0.312          0.266    (  0.281)       0.046
47   3.92     1.60      0.333          0.266    (  0.300)       0.067
48   4.00     1.60      0.333          0.266    (  0.300)       0.067
49   4.08     1.70      0.354          0.266    (  0.319)       0.088
50   4.17     1.80      0.375          0.266    (  0.337)       0.109
51   4.25     1.90      0.396          0.266    (  0.356)       0.130
52   4.33     2.00      0.416          0.266    (  0.375)       0.151
53   4.42     2.10      0.437          0.266    (  0.393)       0.171
54   4.50     2.10      0.437          0.266    (  0.393)       0.171
55   4.58     2.20      0.458          0.266    (  0.412)       0.192
56   4.67     2.30      0.479          0.266    (  0.431)       0.213
57   4.75     2.40      0.500          0.266    (  0.450)       0.234
58   4.83     2.40      0.500          0.266    (  0.450)       0.234
59   4.92     2.50      0.520          0.266    (  0.468)       0.255
60   5.00     2.60      0.541          0.266    (  0.487)       0.275
61   5.08     3.10      0.645          0.266    (  0.581)       0.380
62   5.17     3.60      0.749          0.266    (  0.674)       0.484
63   5.25     3.90      0.812          0.266    (  0.731)       0.546
64   5.33     4.20      0.874          0.266    (  0.787)       0.609
65   5.42     4.70      0.978          0.266    (  0.881)       0.713
66   5.50     5.60      1.166          0.266    (  1.049)       0.900
67   5.58     1.90      0.396          0.266    (  0.356)       0.130
68   5.67     0.90      0.187       (  0.266)       0.169        0.019
69   5.75     0.60      0.125       (  0.266)       0.112        0.012
70   5.83     0.50      0.104       (  0.266)       0.094        0.010
71   5.92     0.30      0.062       (  0.266)       0.056        0.006
72   6.00     0.20      0.042       (  0.266)       0.037        0.004
              (Loss Rate Not Used)
   Sum =     100.0                                  Sum =     7.1
      Flood volume = Effective rainfall      0.59(In)
       times area       9.6(Ac.)/[(In)/(Ft.)] =       0.5(Ac.Ft)
      Total soil loss =      1.15(In)
      Total soil loss =     0.914(Ac.Ft)
      Total rainfall =      1.73(In)
      Flood volume =       20437.4 Cubic Feet
      Total soil loss =       39827.1 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      6.970(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          6 - 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       0.0002      0.03  Q         |         |         |         |
  0+10       0.0007      0.08  Q         |         |         |         |
  0+15       0.0015      0.10  Q         |         |         |         |
  0+20       0.0022      0.11  Q         |         |         |         |
  0+25       0.0030      0.12  Q         |         |         |         |
```

```
0+30       0.0039      0.12  Q         |         |         |         |
0+35       0.0048      0.14  Q         |         |         |         |
0+40       0.0058      0.14  Q         |         |         |         |
0+45       0.0067      0.14  Q         |         |         |         |
0+50       0.0077      0.14  Q         |         |         |         |
0+55       0.0087      0.14  Q         |         |         |         |
1+ 0       0.0097      0.15  Q         |         |         |         |
1+ 5       0.0107      0.16  Q         |         |         |         |
1+10       0.0118      0.16  QV        |         |         |         |
1+15       0.0129      0.16  QV        |         |         |         |
1+20       0.0140      0.16  QV        |         |         |         |
1+25       0.0151      0.16  QV        |         |         |         |
1+30       0.0162      0.16  QV        |         |         |         |
1+35       0.0174      0.16  QV        |         |         |         |
1+40       0.0185      0.16  QV        |         |         |         |
1+45       0.0196      0.16  QV        |         |         |         |
1+50       0.0207      0.16  QV        |         |         |         |
1+55       0.0218      0.16  QV        |         |         |         |
2+ 0       0.0229      0.17  QV        |         |         |         |
2+ 5       0.0241      0.17  Q V       |         |         |         |
2+10       0.0253      0.17  Q V       |         |         |         |
2+15       0.0265      0.18  Q V       |         |         |         |
2+20       0.0277      0.18  Q V       |         |         |         |
2+25       0.0290      0.18  Q V       |         |         |         |
2+30       0.0302      0.18  Q V       |         |         |         |
2+35       0.0314      0.18  Q V       |         |         |         |
2+40       0.0327      0.18  Q V       |         |         |         |
2+45       0.0340      0.19  Q V       |         |         |         |
2+50       0.0353      0.20  Q  V      |         |         |         |
2+55       0.0367      0.20  Q  V      |         |         |         |
3+ 0       0.0381      0.20  Q  V      |         |         |         |
3+ 5       0.0394      0.20  Q  V      |         |         |         |
3+10       0.0409      0.21  Q  V      |         |         |         |
3+15       0.0423      0.22  Q  V      |         |         |         |
3+20       0.0439      0.22  Q  V      |         |         |         |
3+25       0.0454      0.23  Q  V      |         |         |         |
3+30       0.0471      0.24  Q   V     |         |         |         |
3+35       0.0488      0.26  |Q  V     |         |         |         |
3+40       0.0507      0.27  |Q  V     |         |         |         |
3+45       0.0529      0.32  |Q  V     |         |         |         |
3+50       0.0557      0.41  |Q  V     |         |         |         |
3+55       0.0591      0.48  |Q   V    |         |         |         |
4+ 0       0.0631      0.59  | Q  V    |         |         |         |
4+ 5       0.0678      0.67  | Q  V    |         |         |         |
4+10       0.0736      0.84  |  Q  V   |         |         |         |
4+15       0.0806      1.03  |   Q V   |         |         |         |
4+20       0.0890      1.22  |   Q  V  |         |         |         |
4+25       0.0988      1.42  |    Q  V |         |         |         |
4+30       0.1095      1.56  |     Q  V|         |         |         |
4+35       0.1210      1.66  |     Q   V         |         |         |
4+40       0.1336      1.84  |      Q  |V        |         |         |
4+45       0.1476      2.03  |       Q | V       |         |         |
4+50       0.1626      2.17  |       Q |  V      |         |         |
4+55       0.1782      2.27  |        Q|    V    |         |         |
5+ 0       0.1950      2.44  |        Q|     V   |         |         |
5+ 5       0.2146      2.85  |         |Q      V |         |         |
5+10       0.2397      3.65  |         |   Q     V         |         |
5+15       0.2704      4.45  |         |      Q  |  V      |         |
5+20       0.3055      5.10  |         |         Q     V   |         |
5+25       0.3456      5.83  |         |         |  Q     V|         |
5+30       0.3936      6.97  |         |         |     Q  |  V      |
5+35       0.4353      6.06  |         |         |   Q     |      V  |
5+40       0.4525      2.49  |        Q|         |         |       V |
5+45       0.4605      1.16  |   Q     |         |         |        V|
5+50       0.4649      0.64  | Q       |         |         |        V|
5+55       0.4674      0.36  |Q        |         |         |        V|
6+ 0       0.4686      0.18  Q         |         |         |        V|
6+ 5       0.4690      0.05  Q         |         |         |        V|
6+10       0.4691      0.02  Q         |         |         |        V|
```

```
    6+15       0.4691      0.01  Q         |         |         |        V|
    6+20       0.4692      0.00  Q         |         |         |        V|
    6+25       0.4692      0.00  Q         |         |         |        V|
    6+30       0.4692      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 04/18/23 File: 3930EX102410.out

++

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

Program License Serial Number 6400

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

 English Units used in output format

BAY AND DAY INDUSTRIAL BUILDING
EXISTING CONDITION
10-YEAR 24 HR

Drainage Area = 9.57(Ac.) = 0.015 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 9.57(Ac.) = 0.015 Sq. Mi.
Length along longest watercourse = 991.00(Ft.)
Length along longest watercourse measured to centroid = 533.00(Ft.)
Length along longest watercourse = 0.188 Mi.
Length along longest watercourse measured to centroid = 0.101 Mi.
Difference in elevation = 19.40(Ft.)
Slope along watercourse = 103.3623 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.066 Hr.
Lag time = 3.96 Min.
25% of lag time = 0.99 Min.
40% of lag time = 1.59 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.57	1.90	18.18

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.57	4.20	40.19

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 1.900(In)
Area Averaged 100-Year Rainfall = 4.200(In)

Point rain (area averaged) = 2.846(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.846(In)

Sub-Area Data:
Area(Ac.) Runoff Index Impervious %

1.750	69.00	0.500
7.820	77.00	0.000

Total Area Entered = 9.57(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.500	0.205	0.183	0.037
77.0	77.0	0.279	0.000	0.279	0.817	0.228
					Sum (F) =	0.266

Area averaged mean soil loss (F) (In/Hr) = 0.266
Minimum soil loss rate ((In/Hr)) = 0.133
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	126.111	26.943	2.599
2	0.167	252.222	48.482	4.676
3	0.250	378.333	12.799	1.234
4	0.333	504.443	5.754	0.555
5	0.417	630.554	3.189	0.308
6	0.500	756.665	1.763	0.170
7	0.583	882.776	1.070	0.103
			Sum = 100.000	Sum= 9.645

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

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.023	(0.471)	0.020	0.002
2	0.17	0.07	0.023	(0.469)	0.020	0.002
3	0.25	0.07	0.023	(0.468)	0.020	0.002
4	0.33	0.10	0.034	(0.466)	0.031	0.003
5	0.42	0.10	0.034	(0.464)	0.031	0.003
6	0.50	0.10	0.034	(0.462)	0.031	0.003
7	0.58	0.10	0.034	(0.460)	0.031	0.003
8	0.67	0.10	0.034	(0.459)	0.031	0.003
9	0.75	0.10	0.034	(0.457)	0.031	0.003
10	0.83	0.13	0.046	(0.455)	0.041	0.005
11	0.92	0.13	0.046	(0.453)	0.041	0.005
12	1.00	0.13	0.046	(0.451)	0.041	0.005
13	1.08	0.10	0.034	(0.450)	0.031	0.003
14	1.17	0.10	0.034	(0.448)	0.031	0.003
15	1.25	0.10	0.034	(0.446)	0.031	0.003
16	1.33	0.10	0.034	(0.444)	0.031	0.003
17	1.42	0.10	0.034	(0.442)	0.031	0.003
18	1.50	0.10	0.034	(0.441)	0.031	0.003
19	1.58	0.10	0.034	(0.439)	0.031	0.003
20	1.67	0.10	0.034	(0.437)	0.031	0.003
21	1.75	0.10	0.034	(0.435)	0.031	0.003
22	1.83	0.13	0.046	(0.434)	0.041	0.005
23	1.92	0.13	0.046	(0.432)	0.041	0.005
24	2.00	0.13	0.046	(0.430)	0.041	0.005
25	2.08	0.13	0.046	(0.428)	0.041	0.005
26	2.17	0.13	0.046	(0.427)	0.041	0.005
27	2.25	0.13	0.046	(0.425)	0.041	0.005
28	2.33	0.13	0.046	(0.423)	0.041	0.005
29	2.42	0.13	0.046	(0.422)	0.041	0.005

30	2.50	0.13	0.046	(0.420)	0.041	0.005
31	2.58	0.17	0.057	(0.418)	0.051	0.006
32	2.67	0.17	0.057	(0.416)	0.051	0.006
33	2.75	0.17	0.057	(0.415)	0.051	0.006
34	2.83	0.17	0.057	(0.413)	0.051	0.006
35	2.92	0.17	0.057	(0.411)	0.051	0.006
36	3.00	0.17	0.057	(0.410)	0.051	0.006
37	3.08	0.17	0.057	(0.408)	0.051	0.006
38	3.17	0.17	0.057	(0.406)	0.051	0.006
39	3.25	0.17	0.057	(0.404)	0.051	0.006
40	3.33	0.17	0.057	(0.403)	0.051	0.006
41	3.42	0.17	0.057	(0.401)	0.051	0.006
42	3.50	0.17	0.057	(0.399)	0.051	0.006
43	3.58	0.17	0.057	(0.398)	0.051	0.006
44	3.67	0.17	0.057	(0.396)	0.051	0.006
45	3.75	0.17	0.057	(0.394)	0.051	0.006
46	3.83	0.20	0.068	(0.393)	0.061	0.007
47	3.92	0.20	0.068	(0.391)	0.061	0.007
48	4.00	0.20	0.068	(0.389)	0.061	0.007
49	4.08	0.20	0.068	(0.388)	0.061	0.007
50	4.17	0.20	0.068	(0.386)	0.061	0.007
51	4.25	0.20	0.068	(0.384)	0.061	0.007
52	4.33	0.23	0.080	(0.383)	0.072	0.008
53	4.42	0.23	0.080	(0.381)	0.072	0.008
54	4.50	0.23	0.080	(0.380)	0.072	0.008
55	4.58	0.23	0.080	(0.378)	0.072	0.008
56	4.67	0.23	0.080	(0.376)	0.072	0.008
57	4.75	0.23	0.080	(0.375)	0.072	0.008
58	4.83	0.27	0.091	(0.373)	0.082	0.009
59	4.92	0.27	0.091	(0.371)	0.082	0.009
60	5.00	0.27	0.091	(0.370)	0.082	0.009
61	5.08	0.20	0.068	(0.368)	0.061	0.007
62	5.17	0.20	0.068	(0.367)	0.061	0.007
63	5.25	0.20	0.068	(0.365)	0.061	0.007
64	5.33	0.23	0.080	(0.363)	0.072	0.008
65	5.42	0.23	0.080	(0.362)	0.072	0.008
66	5.50	0.23	0.080	(0.360)	0.072	0.008
67	5.58	0.27	0.091	(0.359)	0.082	0.009
68	5.67	0.27	0.091	(0.357)	0.082	0.009
69	5.75	0.27	0.091	(0.356)	0.082	0.009
70	5.83	0.27	0.091	(0.354)	0.082	0.009
71	5.92	0.27	0.091	(0.352)	0.082	0.009
72	6.00	0.27	0.091	(0.351)	0.082	0.009
73	6.08	0.30	0.102	(0.349)	0.092	0.010
74	6.17	0.30	0.102	(0.348)	0.092	0.010
75	6.25	0.30	0.102	(0.346)	0.092	0.010
76	6.33	0.30	0.102	(0.345)	0.092	0.010
77	6.42	0.30	0.102	(0.343)	0.092	0.010
78	6.50	0.30	0.102	(0.342)	0.092	0.010
79	6.58	0.33	0.114	(0.340)	0.102	0.011
80	6.67	0.33	0.114	(0.338)	0.102	0.011
81	6.75	0.33	0.114	(0.337)	0.102	0.011
82	6.83	0.33	0.114	(0.335)	0.102	0.011
83	6.92	0.33	0.114	(0.334)	0.102	0.011
84	7.00	0.33	0.114	(0.332)	0.102	0.011
85	7.08	0.33	0.114	(0.331)	0.102	0.011
86	7.17	0.33	0.114	(0.329)	0.102	0.011
87	7.25	0.33	0.114	(0.328)	0.102	0.011
88	7.33	0.37	0.125	(0.326)	0.113	0.013
89	7.42	0.37	0.125	(0.325)	0.113	0.013
90	7.50	0.37	0.125	(0.323)	0.113	0.013
91	7.58	0.40	0.137	(0.322)	0.123	0.014
92	7.67	0.40	0.137	(0.320)	0.123	0.014
93	7.75	0.40	0.137	(0.319)	0.123	0.014
94	7.83	0.43	0.148	(0.318)	0.133	0.015
95	7.92	0.43	0.148	(0.316)	0.133	0.015
96	8.00	0.43	0.148	(0.315)	0.133	0.015
97	8.08	0.50	0.171	(0.313)	0.154	0.017
98	8.17	0.50	0.171	(0.312)	0.154	0.017

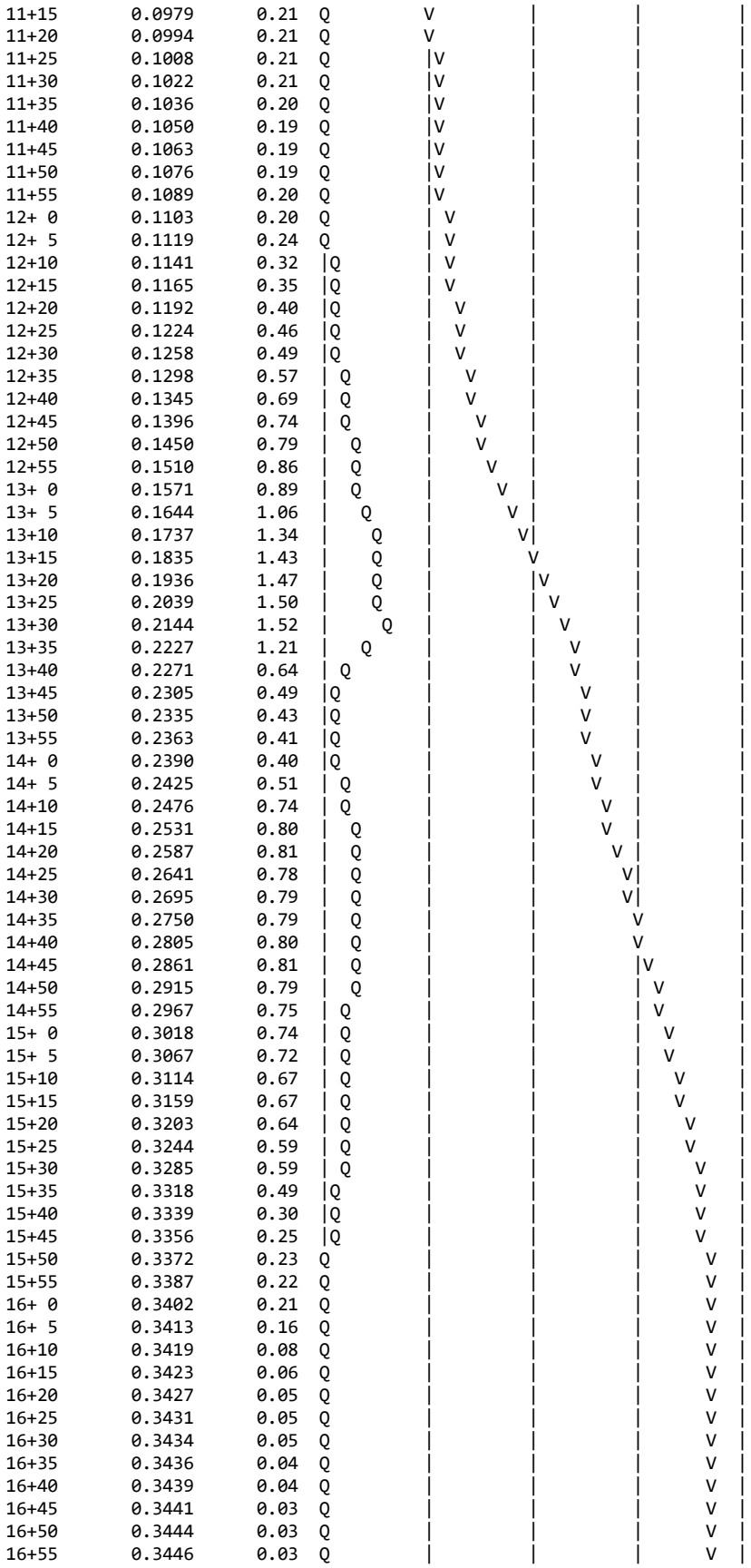
99	8.25	0.50	0.171	(	0.310)	0.154	0.017
100	8.33	0.50	0.171	(	0.309)	0.154	0.017
101	8.42	0.50	0.171	(	0.307)	0.154	0.017
102	8.50	0.50	0.171	(	0.306)	0.154	0.017
103	8.58	0.53	0.182	(	0.304)	0.164	0.018
104	8.67	0.53	0.182	(	0.303)	0.164	0.018
105	8.75	0.53	0.182	(	0.302)	0.164	0.018
106	8.83	0.57	0.194	(	0.300)	0.174	0.019
107	8.92	0.57	0.194	(	0.299)	0.174	0.019
108	9.00	0.57	0.194	(	0.297)	0.174	0.019
109	9.08	0.63	0.216	(	0.296)	0.195	0.022
110	9.17	0.63	0.216	(	0.295)	0.195	0.022
111	9.25	0.63	0.216	(	0.293)	0.195	0.022
112	9.33	0.67	0.228	(	0.292)	0.205	0.023
113	9.42	0.67	0.228	(	0.290)	0.205	0.023
114	9.50	0.67	0.228	(	0.289)	0.205	0.023
115	9.58	0.70	0.239	(	0.288)	0.215	0.024
116	9.67	0.70	0.239	(	0.286)	0.215	0.024
117	9.75	0.70	0.239	(	0.285)	0.215	0.024
118	9.83	0.73	0.250	(	0.283)	0.225	0.025
119	9.92	0.73	0.250	(	0.282)	0.225	0.025
120	10.00	0.73	0.250	(	0.281)	0.225	0.025
121	10.08	0.50	0.171	(	0.279)	0.154	0.017
122	10.17	0.50	0.171	(	0.278)	0.154	0.017
123	10.25	0.50	0.171	(	0.277)	0.154	0.017
124	10.33	0.50	0.171	(	0.275)	0.154	0.017
125	10.42	0.50	0.171	(	0.274)	0.154	0.017
126	10.50	0.50	0.171	(	0.273)	0.154	0.017
127	10.58	0.67	0.228	(	0.271)	0.205	0.023
128	10.67	0.67	0.228	(	0.270)	0.205	0.023
129	10.75	0.67	0.228	(	0.269)	0.205	0.023
130	10.83	0.67	0.228	(	0.267)	0.205	0.023
131	10.92	0.67	0.228	(	0.266)	0.205	0.023
132	11.00	0.67	0.228	(	0.265)	0.205	0.023
133	11.08	0.63	0.216	(	0.263)	0.195	0.022
134	11.17	0.63	0.216	(	0.262)	0.195	0.022
135	11.25	0.63	0.216	(	0.261)	0.195	0.022
136	11.33	0.63	0.216	(	0.260)	0.195	0.022
137	11.42	0.63	0.216	(	0.258)	0.195	0.022
138	11.50	0.63	0.216	(	0.257)	0.195	0.022
139	11.58	0.57	0.194	(	0.256)	0.174	0.019
140	11.67	0.57	0.194	(	0.254)	0.174	0.019
141	11.75	0.57	0.194	(	0.253)	0.174	0.019
142	11.83	0.60	0.205	(	0.252)	0.184	0.020
143	11.92	0.60	0.205	(	0.251)	0.184	0.020
144	12.00	0.60	0.205	(	0.249)	0.184	0.020
145	12.08	0.83	0.285		0.248	(0.256)	0.036
146	12.17	0.83	0.285		0.247	(0.256)	0.038
147	12.25	0.83	0.285		0.246	(0.256)	0.039
148	12.33	0.87	0.296		0.244	(0.266)	0.052
149	12.42	0.87	0.296		0.243	(0.266)	0.053
150	12.50	0.87	0.296		0.242	(0.266)	0.054
151	12.58	0.93	0.319		0.241	(0.287)	0.078
152	12.67	0.93	0.319		0.240	(0.287)	0.079
153	12.75	0.93	0.319		0.238	(0.287)	0.080
154	12.83	0.97	0.330		0.237	(0.297)	0.093
155	12.92	0.97	0.330		0.236	(0.297)	0.094
156	13.00	0.97	0.330		0.235	(0.297)	0.095
157	13.08	1.13	0.387		0.234	(0.348)	0.154
158	13.17	1.13	0.387		0.232	(0.348)	0.155
159	13.25	1.13	0.387		0.231	(0.348)	0.156
160	13.33	1.13	0.387		0.230	(0.348)	0.157
161	13.42	1.13	0.387		0.229	(0.348)	0.158
162	13.50	1.13	0.387		0.228	(0.348)	0.159
163	13.58	0.77	0.262		0.227	(0.236)	0.035
164	13.67	0.77	0.262		0.225	(0.236)	0.036
165	13.75	0.77	0.262		0.224	(0.236)	0.038
166	13.83	0.77	0.262		0.223	(0.236)	0.039
167	13.92	0.77	0.262		0.222	(0.236)	0.040

168	14.00	0.77	0.262		0.221	(0.236)		0.041
169	14.08	0.90	0.307		0.220	(0.277)		0.088
170	14.17	0.90	0.307		0.219	(0.277)		0.089
171	14.25	0.90	0.307		0.217	(0.277)		0.090
172	14.33	0.87	0.296		0.216	(0.266)		0.080
173	14.42	0.87	0.296		0.215	(0.266)		0.081
174	14.50	0.87	0.296		0.214	(0.266)		0.082
175	14.58	0.87	0.296		0.213	(0.266)		0.083
176	14.67	0.87	0.296		0.212	(0.266)		0.084
177	14.75	0.87	0.296		0.211	(0.266)		0.085
178	14.83	0.83	0.285		0.210	(0.256)		0.075
179	14.92	0.83	0.285		0.209	(0.256)		0.076
180	15.00	0.83	0.285		0.208	(0.256)		0.077
181	15.08	0.80	0.273		0.207	(0.246)		0.067
182	15.17	0.80	0.273		0.205	(0.246)		0.068
183	15.25	0.80	0.273		0.204	(0.246)		0.069
184	15.33	0.77	0.262		0.203	(0.236)		0.058
185	15.42	0.77	0.262		0.202	(0.236)		0.060
186	15.50	0.77	0.262		0.201	(0.236)		0.061
187	15.58	0.63	0.216	(0.200)		0.195		0.022
188	15.67	0.63	0.216	(0.199)		0.195		0.022
189	15.75	0.63	0.216	(0.198)		0.195		0.022
190	15.83	0.63	0.216	(0.197)		0.195		0.022
191	15.92	0.63	0.216	(0.196)		0.195		0.022
192	16.00	0.63	0.216	(0.195)		0.195		0.022
193	16.08	0.13	0.046	(0.194)		0.041		0.005
194	16.17	0.13	0.046	(0.193)		0.041		0.005
195	16.25	0.13	0.046	(0.192)		0.041		0.005
196	16.33	0.13	0.046	(0.191)		0.041		0.005
197	16.42	0.13	0.046	(0.190)		0.041		0.005
198	16.50	0.13	0.046	(0.189)		0.041		0.005
199	16.58	0.10	0.034	(0.188)		0.031		0.003
200	16.67	0.10	0.034	(0.187)		0.031		0.003
201	16.75	0.10	0.034	(0.186)		0.031		0.003
202	16.83	0.10	0.034	(0.185)		0.031		0.003
203	16.92	0.10	0.034	(0.185)		0.031		0.003
204	17.00	0.10	0.034	(0.184)		0.031		0.003
205	17.08	0.17	0.057	(0.183)		0.051		0.006
206	17.17	0.17	0.057	(0.182)		0.051		0.006
207	17.25	0.17	0.057	(0.181)		0.051		0.006
208	17.33	0.17	0.057	(0.180)		0.051		0.006
209	17.42	0.17	0.057	(0.179)		0.051		0.006
210	17.50	0.17	0.057	(0.178)		0.051		0.006
211	17.58	0.17	0.057	(0.177)		0.051		0.006
212	17.67	0.17	0.057	(0.176)		0.051		0.006
213	17.75	0.17	0.057	(0.175)		0.051		0.006
214	17.83	0.13	0.046	(0.175)		0.041		0.005
215	17.92	0.13	0.046	(0.174)		0.041		0.005
216	18.00	0.13	0.046	(0.173)		0.041		0.005
217	18.08	0.13	0.046	(0.172)		0.041		0.005
218	18.17	0.13	0.046	(0.171)		0.041		0.005
219	18.25	0.13	0.046	(0.170)		0.041		0.005
220	18.33	0.13	0.046	(0.170)		0.041		0.005
221	18.42	0.13	0.046	(0.169)		0.041		0.005
222	18.50	0.13	0.046	(0.168)		0.041		0.005
223	18.58	0.10	0.034	(0.167)		0.031		0.003
224	18.67	0.10	0.034	(0.166)		0.031		0.003
225	18.75	0.10	0.034	(0.165)		0.031		0.003
226	18.83	0.07	0.023	(0.165)		0.020		0.002
227	18.92	0.07	0.023	(0.164)		0.020		0.002
228	19.00	0.07	0.023	(0.163)		0.020		0.002
229	19.08	0.10	0.034	(0.162)		0.031		0.003
230	19.17	0.10	0.034	(0.162)		0.031		0.003
231	19.25	0.10	0.034	(0.161)		0.031		0.003
232	19.33	0.13	0.046	(0.160)		0.041		0.005
233	19.42	0.13	0.046	(0.159)		0.041		0.005
234	19.50	0.13	0.046	(0.159)		0.041		0.005
235	19.58	0.10	0.034	(0.158)		0.031		0.003
236	19.67	0.10	0.034	(0.157)		0.031		0.003

```
237  19.75     0.10      0.034       (  0.156)       0.031        0.003
238  19.83     0.07      0.023       (  0.156)       0.020        0.002
239  19.92     0.07      0.023       (  0.155)       0.020        0.002
240  20.00     0.07      0.023       (  0.154)       0.020        0.002
241  20.08     0.10      0.034       (  0.154)       0.031        0.003
242  20.17     0.10      0.034       (  0.153)       0.031        0.003
243  20.25     0.10      0.034       (  0.152)       0.031        0.003
244  20.33     0.10      0.034       (  0.152)       0.031        0.003
245  20.42     0.10      0.034       (  0.151)       0.031        0.003
246  20.50     0.10      0.034       (  0.150)       0.031        0.003
247  20.58     0.10      0.034       (  0.150)       0.031        0.003
248  20.67     0.10      0.034       (  0.149)       0.031        0.003
249  20.75     0.10      0.034       (  0.149)       0.031        0.003
250  20.83     0.07      0.023       (  0.148)       0.020        0.002
251  20.92     0.07      0.023       (  0.147)       0.020        0.002
252  21.00     0.07      0.023       (  0.147)       0.020        0.002
253  21.08     0.10      0.034       (  0.146)       0.031        0.003
254  21.17     0.10      0.034       (  0.146)       0.031        0.003
255  21.25     0.10      0.034       (  0.145)       0.031        0.003
256  21.33     0.07      0.023       (  0.144)       0.020        0.002
257  21.42     0.07      0.023       (  0.144)       0.020        0.002
258  21.50     0.07      0.023       (  0.143)       0.020        0.002
259  21.58     0.10      0.034       (  0.143)       0.031        0.003
260  21.67     0.10      0.034       (  0.142)       0.031        0.003
261  21.75     0.10      0.034       (  0.142)       0.031        0.003
262  21.83     0.07      0.023       (  0.141)       0.020        0.002
263  21.92     0.07      0.023       (  0.141)       0.020        0.002
264  22.00     0.07      0.023       (  0.140)       0.020        0.002
265  22.08     0.10      0.034       (  0.140)       0.031        0.003
266  22.17     0.10      0.034       (  0.139)       0.031        0.003
267  22.25     0.10      0.034       (  0.139)       0.031        0.003
268  22.33     0.07      0.023       (  0.139)       0.020        0.002
269  22.42     0.07      0.023       (  0.138)       0.020        0.002
270  22.50     0.07      0.023       (  0.138)       0.020        0.002
271  22.58     0.07      0.023       (  0.137)       0.020        0.002
272  22.67     0.07      0.023       (  0.137)       0.020        0.002
273  22.75     0.07      0.023       (  0.137)       0.020        0.002
274  22.83     0.07      0.023       (  0.136)       0.020        0.002
275  22.92     0.07      0.023       (  0.136)       0.020        0.002
276  23.00     0.07      0.023       (  0.136)       0.020        0.002
277  23.08     0.07      0.023       (  0.135)       0.020        0.002
278  23.17     0.07      0.023       (  0.135)       0.020        0.002
279  23.25     0.07      0.023       (  0.135)       0.020        0.002
280  23.33     0.07      0.023       (  0.134)       0.020        0.002
281  23.42     0.07      0.023       (  0.134)       0.020        0.002
282  23.50     0.07      0.023       (  0.134)       0.020        0.002
283  23.58     0.07      0.023       (  0.134)       0.020        0.002
284  23.67     0.07      0.023       (  0.133)       0.020        0.002
285  23.75     0.07      0.023       (  0.133)       0.020        0.002
286  23.83     0.07      0.023       (  0.133)       0.020        0.002
287  23.92     0.07      0.023       (  0.133)       0.020        0.002
288  24.00     0.07      0.023       (  0.133)       0.020        0.002
              (Loss Rate Not Used)
    Sum =     100.0                                  Sum =     5.5
       Flood volume = Effective rainfall      0.46(In)
        times area       9.6(Ac.)/[(In)/(Ft.)] =       0.4(Ac.Ft)
       Total soil loss =      2.39(In)
       Total soil loss =     1.906(Ac.Ft)
       Total rainfall =      2.85(In)
       Flood volume =       15842.9 Cubic Feet
       Total soil loss =       83031.0 Cubic Feet
       ---------------------------------------------------------------------
        Peak flow rate of this hydrograph =      1.519(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	0.0002	0.02	Q				
0+15	0.0003	0.02	Q				
0+20	0.0005	0.02	Q				
0+25	0.0007	0.03	Q				
0+30	0.0009	0.03	Q				
0+35	0.0011	0.03	Q				
0+40	0.0013	0.03	Q				
0+45	0.0015	0.03	Q				
0+50	0.0018	0.04	Q				
0+55	0.0021	0.04	Q				
1+ 0	0.0024	0.04	Q				
1+ 5	0.0026	0.04	Q				
1+10	0.0029	0.04	Q				
1+15	0.0031	0.03	Q				
1+20	0.0034	0.03	Q				
1+25	0.0036	0.03	Q				
1+30	0.0038	0.03	Q				
1+35	0.0040	0.03	Q				
1+40	0.0043	0.03	Q				
1+45	0.0045	0.03	Q				
1+50	0.0047	0.04	Q				
1+55	0.0050	0.04	Q				
2+ 0	0.0053	0.04	Q				
2+ 5	0.0056	0.04	Q				
2+10	0.0059	0.04	Q				
2+15	0.0062	0.04	Q				
2+20	0.0065	0.04	Q				
2+25	0.0068	0.04	Q				
2+30	0.0071	0.04	Q				
2+35	0.0075	0.05	Q				
2+40	0.0078	0.05	Q				
2+45	0.0082	0.05	Q				
2+50	0.0086	0.05	Q				
2+55	0.0089	0.05	Q				
3+ 0	0.0093	0.05	QV				
3+ 5	0.0097	0.05	QV				
3+10	0.0101	0.05	QV				
3+15	0.0104	0.05	QV				
3+20	0.0108	0.05	QV				
3+25	0.0112	0.05	QV				
3+30	0.0116	0.05	QV				
3+35	0.0120	0.05	QV				
3+40	0.0123	0.05	QV				
3+45	0.0127	0.05	QV				
3+50	0.0131	0.06	QV				
3+55	0.0135	0.06	QV				
4+ 0	0.0140	0.06	QV				
4+ 5	0.0144	0.07	QV				
4+10	0.0149	0.07	QV				
4+15	0.0153	0.07	QV				
4+20	0.0158	0.07	QV				
4+25	0.0163	0.07	QV				
4+30	0.0169	0.08	QV				
4+35	0.0174	0.08	QV				
4+40	0.0179	0.08	QV				
4+45	0.0184	0.08	Q V				
4+50	0.0190	0.08	Q V				
4+55	0.0196	0.09	Q V				
5+ 0	0.0202	0.09	Q V				
5+ 5	0.0207	0.08	Q V				
5+10	0.0212	0.07	Q V				
5+15	0.0217	0.07	Q V				
5+20	0.0222	0.07	Q V				
5+25	0.0227	0.07	Q V				

```
 5+30       0.0232      0.08  Q V       |         |         |         |
 5+35       0.0238      0.08  Q V       |         |         |         |
 5+40       0.0243      0.08  Q V       |         |         |         |
 5+45       0.0249      0.09  Q V       |         |         |         |
 5+50       0.0255      0.09  Q V       |         |         |         |
 5+55       0.0261      0.09  Q V       |         |         |         |
 6+ 0       0.0267      0.09  Q V       |         |         |         |
 6+ 5       0.0274      0.09  Q  V      |         |         |         |
 6+10       0.0280      0.10  Q  V      |         |         |         |
 6+15       0.0287      0.10  Q  V      |         |         |         |
 6+20       0.0294      0.10  Q  V      |         |         |         |
 6+25       0.0301      0.10  Q  V      |         |         |         |
 6+30       0.0307      0.10  Q  V      |         |         |         |
 6+35       0.0314      0.10  Q  V      |         |         |         |
 6+40       0.0322      0.11  Q  V      |         |         |         |
 6+45       0.0329      0.11  Q  V      |         |         |         |
 6+50       0.0337      0.11  Q  V      |         |         |         |
 6+55       0.0344      0.11  Q  V      |         |         |         |
 7+ 0       0.0352      0.11  Q  V      |         |         |         |
 7+ 5       0.0359      0.11  Q  V      |         |         |         |
 7+10       0.0367      0.11  Q   V     |         |         |         |
 7+15       0.0375      0.11  Q   V     |         |         |         |
 7+20       0.0382      0.11  Q   V     |         |         |         |
 7+25       0.0390      0.12  Q   V     |         |         |         |
 7+30       0.0399      0.12  Q   V     |         |         |         |
 7+35       0.0407      0.12  Q   V     |         |         |         |
 7+40       0.0416      0.13  Q   V     |         |         |         |
 7+45       0.0425      0.13  Q   V     |         |         |         |
 7+50       0.0434      0.13  Q   V     |         |         |         |
 7+55       0.0444      0.14  Q   V     |         |         |         |
 8+ 0       0.0454      0.14  Q   V     |         |         |         |
 8+ 5       0.0464      0.15  Q    V    |         |         |         |
 8+10       0.0475      0.16  Q    V    |         |         |         |
 8+15       0.0486      0.16  Q    V    |         |         |         |
 8+20       0.0497      0.16  Q    V    |         |         |         |
 8+25       0.0509      0.16  Q    V    |         |         |         |
 8+30       0.0520      0.16  Q    V    |         |         |         |
 8+35       0.0531      0.17  Q    V    |         |         |         |
 8+40       0.0543      0.17  Q    V    |         |         |         |
 8+45       0.0555      0.17  Q     V   |         |         |         |
 8+50       0.0568      0.18  Q     V   |         |         |         |
 8+55       0.0580      0.18  Q     V   |         |         |         |
 9+ 0       0.0593      0.19  Q     V   |         |         |         |
 9+ 5       0.0606      0.19  Q     V   |         |         |         |
 9+10       0.0620      0.20  Q     V   |         |         |         |
 9+15       0.0634      0.21  Q     V   |         |         |         |
 9+20       0.0649      0.21  Q      V  |         |         |         |
 9+25       0.0664      0.22  Q      V  |         |         |         |
 9+30       0.0679      0.22  Q      V  |         |         |         |
 9+35       0.0694      0.22  Q      V  |         |         |         |
 9+40       0.0710      0.23  Q      V  |         |         |         |
 9+45       0.0726      0.23  Q      V  |         |         |         |
 9+50       0.0742      0.23  Q       V |         |         |         |
 9+55       0.0758      0.24  Q       V |         |         |         |
10+ 0       0.0775      0.24  Q       V |         |         |         |
10+ 5       0.0790      0.22  Q       V |         |         |         |
10+10       0.0802      0.18  Q       V |         |         |         |
10+15       0.0814      0.17  Q       V |         |         |         |
10+20       0.0826      0.17  Q        V|         |         |         |
10+25       0.0838      0.17  Q        V|         |         |         |
10+30       0.0849      0.17  Q        V|         |         |         |
10+35       0.0861      0.18  Q        V|         |         |         |
10+40       0.0876      0.21  Q        V|         |         |         |
10+45       0.0890      0.21  Q        V|         |         |         |
10+50       0.0905      0.22  Q        V|         |         |         |
10+55       0.0920      0.22  Q         V         |         |         |
11+ 0       0.0935      0.22  Q         V         |         |         |
11+ 5       0.0950      0.22  Q         V         |         |         |
11+10       0.0965      0.21  Q         V         |         |         |
```



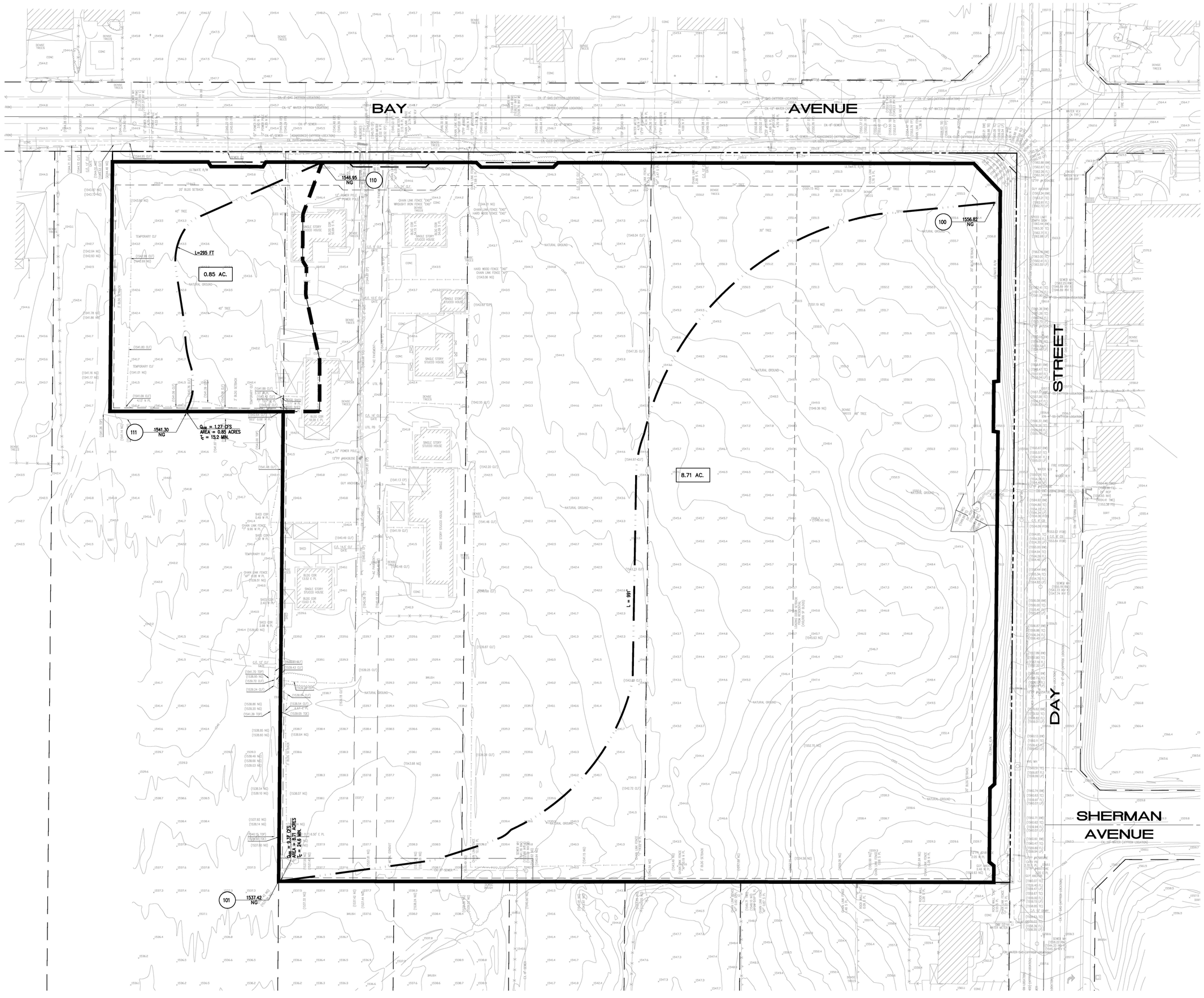
17+ 0	0.3448	0.03	Q	|	|	|	V |
17+ 5	0.3451	0.04	Q	|	|	|	V |
17+10	0.3454	0.05	Q	|	|	|	V |
17+15	0.3458	0.05	Q	|	|	|	V |
17+20	0.3462	0.05	Q	|	|	|	V |
17+25	0.3465	0.05	Q	|	|	|	V |
17+30	0.3469	0.05	Q	|	|	|	V |
17+35	0.3473	0.05	Q	|	|	|	V |
17+40	0.3477	0.05	Q	|	|	|	V |
17+45	0.3480	0.05	Q	|	|	|	V |
17+50	0.3484	0.05	Q	|	|	|	V |
17+55	0.3487	0.05	Q	|	|	|	V |
18+ 0	0.3490	0.05	Q	|	|	|	V |
18+ 5	0.3493	0.04	Q	|	|	|	V |
18+10	0.3496	0.04	Q	|	|	|	V |
18+15	0.3499	0.04	Q	|	|	|	V |
18+20	0.3503	0.04	Q	|	|	|	V |
18+25	0.3506	0.04	Q	|	|	|	V |
18+30	0.3509	0.04	Q	|	|	|	V |
18+35	0.3511	0.04	Q	|	|	|	V |
18+40	0.3514	0.04	Q	|	|	|	V |
18+45	0.3516	0.03	Q	|	|	|	V |
18+50	0.3518	0.03	Q	|	|	|	V |
18+55	0.3520	0.02	Q	|	|	|	V |
19+ 0	0.3522	0.02	Q	|	|	|	V |
19+ 5	0.3523	0.03	Q	|	|	|	V |
19+10	0.3526	0.03	Q	|	|	|	V |
19+15	0.3528	0.03	Q	|	|	|	V |
19+20	0.3530	0.04	Q	|	|	|	V |
19+25	0.3533	0.04	Q	|	|	|	V |
19+30	0.3536	0.04	Q	|	|	|	V |
19+35	0.3539	0.04	Q	|	|	|	V |
19+40	0.3541	0.04	Q	|	|	|	V |
19+45	0.3543	0.03	Q	|	|	|	V |
19+50	0.3546	0.03	Q	|	|	|	V |
19+55	0.3547	0.02	Q	|	|	|	V|
20+ 0	0.3549	0.02	Q	|	|	|	V|
20+ 5	0.3551	0.03	Q	|	|	|	V|
20+10	0.3553	0.03	Q	|	|	|	V|
20+15	0.3555	0.03	Q	|	|	|	V|
20+20	0.3557	0.03	Q	|	|	|	V|
20+25	0.3559	0.03	Q	|	|	|	V|
20+30	0.3562	0.03	Q	|	|	|	V|
20+35	0.3564	0.03	Q	|	|	|	V|
20+40	0.3566	0.03	Q	|	|	|	V|
20+45	0.3568	0.03	Q	|	|	|	V|
20+50	0.3571	0.03	Q	|	|	|	V|
20+55	0.3572	0.02	Q	|	|	|	V|
21+ 0	0.3574	0.02	Q	|	|	|	V|
21+ 5	0.3576	0.03	Q	|	|	|	V|
21+10	0.3578	0.03	Q	|	|	|	V|
21+15	0.3580	0.03	Q	|	|	|	V|
21+20	0.3582	0.03	Q	|	|	|	V|
21+25	0.3584	0.02	Q	|	|	|	V|
21+30	0.3585	0.02	Q	|	|	|	V|
21+35	0.3587	0.03	Q	|	|	|	V|
21+40	0.3589	0.03	Q	|	|	|	V|
21+45	0.3591	0.03	Q	|	|	|	V|
21+50	0.3593	0.03	Q	|	|	|	V|
21+55	0.3595	0.02	Q	|	|	|	V|
22+ 0	0.3597	0.02	Q	|	|	|	V|
22+ 5	0.3598	0.03	Q	|	|	|	V|
22+10	0.3600	0.03	Q	|	|	|	V|
22+15	0.3603	0.03	Q	|	|	|	V|
22+20	0.3605	0.03	Q	|	|	|	V|
22+25	0.3606	0.02	Q	|	|	|	V|
22+30	0.3608	0.02	Q	|	|	|	V|
22+35	0.3609	0.02	Q	|	|	|	V|
22+40	0.3611	0.02	Q	|	|	|	V|

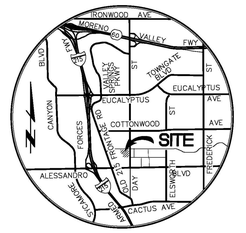
22+45	0.3613	0.02	Q				V
22+50	0.3614	0.02	Q				V
22+55	0.3616	0.02	Q				V
23+ 0	0.3617	0.02	Q				V
23+ 5	0.3619	0.02	Q				V
23+10	0.3620	0.02	Q				V
23+15	0.3622	0.02	Q				V
23+20	0.3623	0.02	Q				V
23+25	0.3625	0.02	Q				V
23+30	0.3626	0.02	Q				V
23+35	0.3628	0.02	Q				V
23+40	0.3629	0.02	Q				V
23+45	0.3631	0.02	Q				V
23+50	0.3632	0.02	Q				V
23+55	0.3634	0.02	Q				V
24+ 0	0.3635	0.02	Q				V
24+ 5	0.3636	0.02	Q				V
24+10	0.3637	0.01	Q				V
24+15	0.3637	0.00	Q				V
24+20	0.3637	0.00	Q				V
24+25	0.3637	0.00	Q				V
24+30	0.3637	0.00	Q				V

APPENDIX D

HYDROLOGY MAPS

EXISTING CONDITION MAP





VICINITY MAP
N.T.S.

LEGEND

- PROJECT BOUNDARY
- SUBAREA BOUNDARY
- FLOW PATH
- 1.00 AC. — SUBAREA AREA
- 101 — NODE NUMBER
- L — LENGTH OF FLOW PATH
- T_C — TIME OF CONCENTRATION
- Q_{100} — DISCHARGE (CUBIC FEET PER SECOND) NUMBER DESIGNATE YEAR OF FREQUENCY

0 15 30 60 90
SCALE: 1"=30'

PEN23-0075 (LST23-0024)

Last Update:11/7/23
O:\3900-3999\3930\3930HYD-ex.dwg

OWNER:
BAY & DAY LLC
ONE LINCOLN CENTRE
18W140 BUTTERFIELD ROAD, #750
OAKBROOK TERRACE, IL 60181
TEL: 630-576-1100

ENGINEER:
Thienes Engineering, Inc.
CIVIL ENGINEERING • LAND SURVEYING
14349 FIRESTONE BOULEVARD
LA MIRADA, CALIFORNIA 90638
PH.(714)521-4811 FAX(714)521-4173

CITY OF MORENO VALLEY
PUBLIC WORKS DEPARTMENT

EXISTING CONDITION HYDROLOGY MAP
PEN23-0075 (LST23-0024)
BAY AND DAY INDUSTRIAL BUILDING
SOUTHWEST CORNER
OF
BAY AVENUE AND DAY STREET
MORENO VALLEY, CALIFORNIA

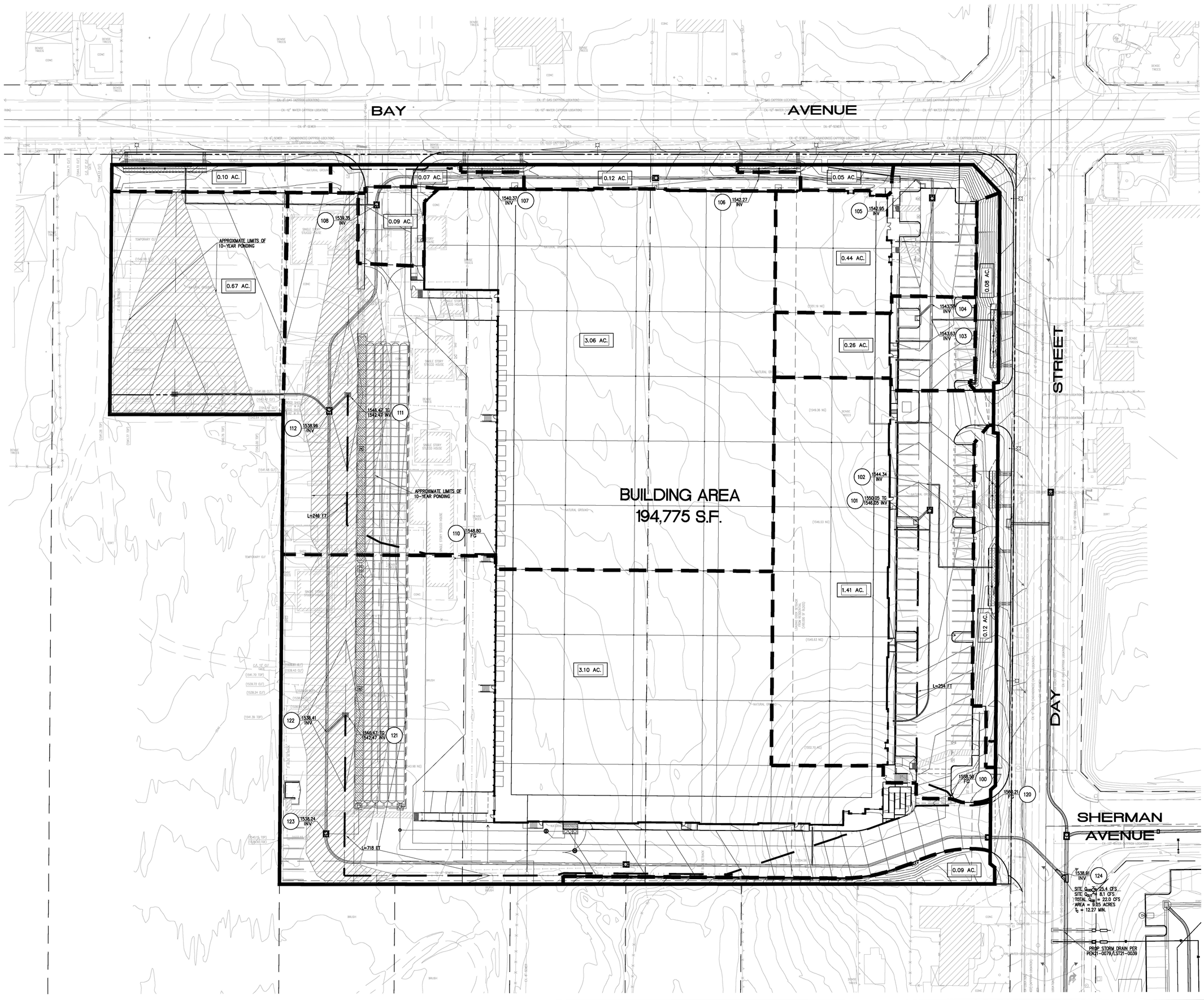
JN 3930

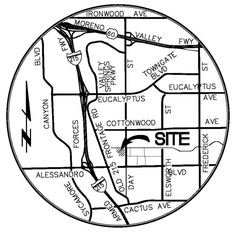
1 of 1 Sheets

PLOT DATE: 11/07/2023

Last Update: 10/31/2023
O:\3900-3999\3930\3930HYD-ex.dwg

PROPOSED CONDITION MAP





VICINITY MAP
N.T.S.

LEGEND

- PROJECT BOUNDARY
- SUBAREA BOUNDARY
- FLOW PATH
- 1.00 AC. — SUBAREA AREA
- 101 — NODE NUMBER
- L — LENGTH OF FLOW PATH
- T_C — TIME OF CONCENTRATION
- Q_{100} — DISCHARGE (CUBIC FEET PER SECOND) NUMBER DESIGNATE YEAR OF FREQUENCY
- APPROXIMATE LIMITS OF 10-YEAR PONDING

0 15 30 60 90
SCALE: 1"=30'

PEN23-0075 (LST23-0024)

OWNER:
BAY & DAY LLC
ONE LINCOLN CENTRE
18W140 BUTTERFIELD ROAD, #750
OAKBROOK TERRACE, IL 60181
TEL: 630-576-1100

ENGINEER:
Thienes Engineering, Inc.
CIVIL ENGINEERING • LAND SURVEYING
14349 FIRESTONE BOULEVARD
LA MIRADA, CALIFORNIA 90638
PH:(714)521-4811 FAX(714)521-4173

CITY OF MORENO VALLEY
PUBLIC WORKS DEPARTMENT

PROPOSED CONDITION HYDROLOGY MAP
PEN23-0075 (LST23-0024)
BAY AND DAY INDUSTRIAL BUILDING
SOUTHWEST CORNER
OF
BAY AVENUE AND DAY STREET
MORENO VALLEY, CALIFORNIA

JN 3930

1 of 1 Sheets

PLOT DATE: 05/02/2024

Last Update: 05/02/2024
O:\3900-3999\3930\3930H15.dwg