



Thienes Engineering, Inc.

CIVIL ENGINEERING LAND SURVEYING



PRELIMINARY HYDROLOGY CALCULATIONS

FOR

**SANTA ANA AVENUE INDUSTRIAL DEVELOPMENT
(BUILDING 1)
NEC OF SANTA ANA AVE. AND CITRUS AVE.
FONTANA, CA 92337**

P21-471

PREPARED FOR

ACACIA REAL ESTATE GROUP, INC.

P.O. BOX 12665
NEWPORT BEACH, CA 92658
PHONE: (949) 640-9995
CONTACT: DAVID PITTMAN
David.pittman@acaciareg.com

MARCH 31, 2022
REVISED AUGUST 17, 2022

JOB NO. 3615B

PREPARED BY

THIENES ENGINEERING
14349 FIRESTONE BLVD.
LA MIRADA, CALIFORNIA 90638
(714) 521-4811

**PRELIMINARY HYDROLOGY
CALCULATIONS**

FOR

**SANTA ANA AVENUE INDUSTRIAL
DEVELOPMENT
(BUILDING 1)**

PREPARED UNDER
THE SUPERVISION OF



REINHARD STENZEL, PE DATE
R.C.E. 56155
EXP. 12/31/22

INTRODUCTION

A: PROJECT LOCATION

The project site is located north of Santa Ana Avenue between Citrus Avenue and Cypress Avenue in the City of Fontana. See following page for vicinity map.

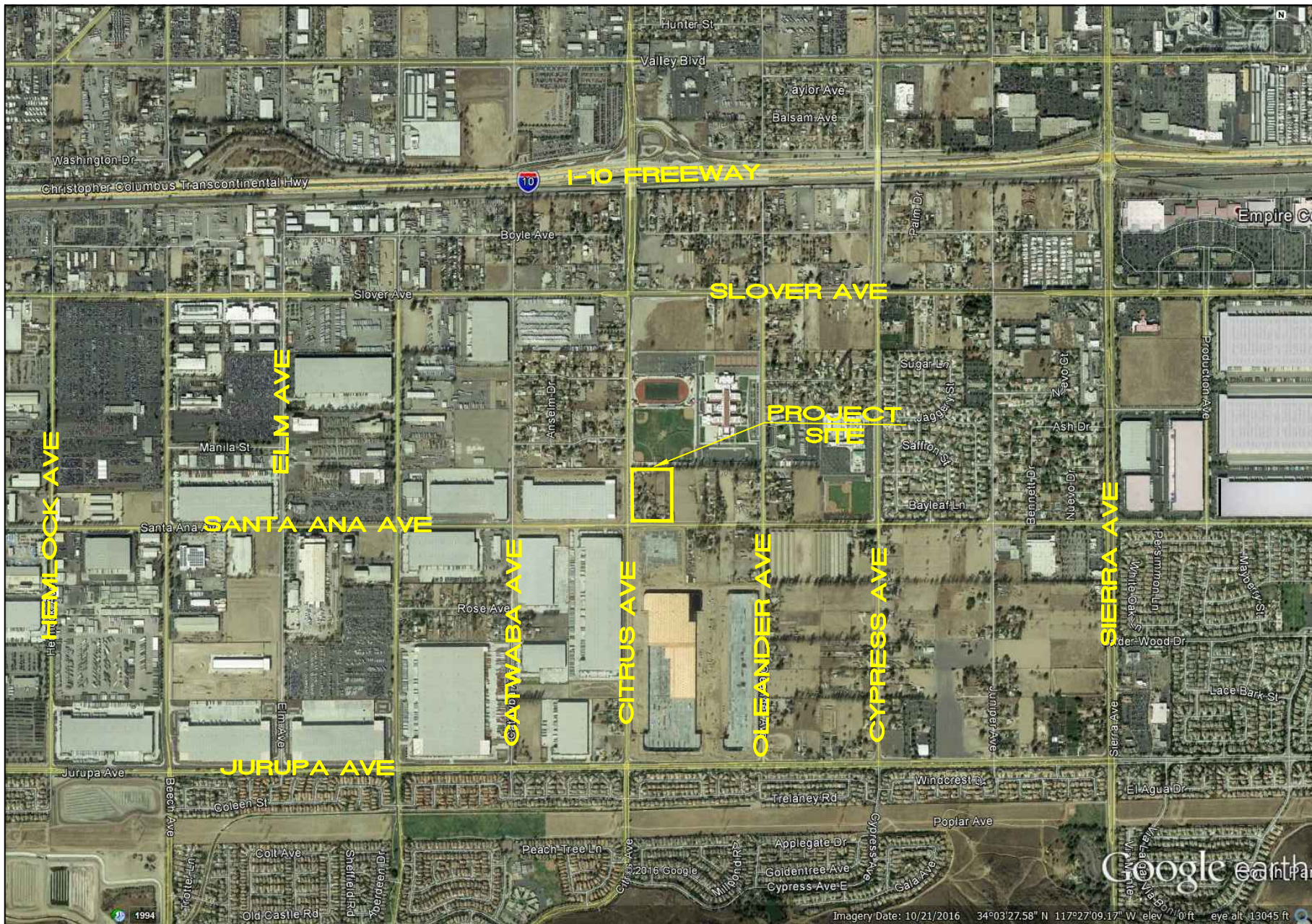
B: STUDY PURPOSE

The purpose of this study is to determine the existing and proposed condition 100-year peak flow rate from the site that drains to an existing storm drain system at Santa Ana Avenue.

C: PROJECT STAFF:

Thienes Engineering staff involved in this study include:

Reinhard Stenzel, PE
Eduardo Toledanes



"VICINITY MAP"

FOR

**SANTA ANA AVENUE INDUSTRIAL DEVELOPMENT
(BUILDING 1)**

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

DISCUSSION

The proposed project site encompasses a total area of approximately 6.78 acres. There will be one proposed warehouse type building with a floor area of approximately 146,618 square feet. A truck yard will be located on the easterly side of the building. Proposed driveways will be located adjacent to the streets. Vehicle parking will be provided on the north, northeasterly and southeasterly side of the proposed buildings. There will be landscaping around the area and adjacent to Citrus Avenue and Santa Ana Avenue.

Master Plan of Drainage

Per City of Fontana's Master Plan of Drainage Plan Line DZ-8 prepared by L.D. King dated May 2000, The project site is tabled to the existing 30" R.C.P. public storm drain Line "A" in Santa Ana Avenue south of the project site which connects to an existing 54" R.C.P. storm drain at Citrus Avenue.

Please see Appendix "A" for portions of the City's Master Plan of Drainage and downstream existing storm drain plans.

Existing Condition

The site is currently a low-density residential with open space area where runoff from the project site drains southerly towards Santa Ana Avenue. Flow appears to discharge to the street via the existing driveways and conveyed westerly to an existing curb opening catch basin that drains to an existing 30" R.C.P. public storm drain in Santa Ana Avenue. The existing 30" R.C.P. connects to an existing 54" R.C.P. at the intersection of Santa Ana Avenue and Citrus Avenue. The existing condition 100-year peak flow rate tributary to the site is approximately 17.2 cfs.

See Appendix "B" for existing condition hydrology calculations and Appendix "D" for existing condition hydrology map.

Proposed Condition

Runoff from the project site at proposed condition will be limited to existing condition. Flows from Buildings #1 will maintain the drainage pattern at existing condition. Runoff from the easterly portion of the building (node 100-101) will drain into a proposed catch basin at the truck yard and conveyed south via a proposed storm drain Line A1. Flows from the southeasterly parking area (node 102 and node 103) will drain and connect to Line A1 downstream. The 100-year peak flow rate from these locations (node 102 and node 103) are approximately 1.0 cfs. and 0.3 cfs undetained. The remaining westerly portion of

Building #1 (node 110-111) will drain south and traverses east and connects to Line A1. Here, runoff will be conveyed to an existing 30" R.C.P. public storm drain in Santa Ana Avenue and ultimately discharged to an existing 54" R.C.P. south of Citrus Avenue. The 100-year peak flow rate at this point (node 111) is approximately 20.2 cfs undetained. A proposed landscaped area south of the site adjacent to Santa Ana Avenue (node 120-121) will drain to an existing catch basin southwest of the site. The 100-year storm event at this location (node 121) is approximately 0.5 cfs undetained. The remaining westerly landscaped area (node 130-131) adjacent to Citrus Avenue will drain south and into an existing catch basin southwest of the site. The 100-year peak flow rate (node 131) is approximately 0.7 cfs. The total 100-year peak flow rate tributary to the project site (Building #1) at proposed condition is approximately 21.4 cfs (20.2 cfs + 0.5 cfs + 0.7 cfs) undetained.

Runoff from Building #1 at proposed condition is higher than the existing condition (17.2 cfs). Therefore, temporary detention is required onsite to limit runoff volume discharge from the site

Detention

Runoff discharge from Building #1 will be limited to existing condition. Runoff volume that exceeds the allowable condition will be stored temporarily at the truck yard. Discharge from Building #1 will be limited to or should be less than 17.2 cfs. The additional runoff volume will be temporarily detained above ground in the easterly truck yard. This will require approximately 0.066 acre-feet (2,875 cubic feet) of storage with a ponding depth of approximately 0.73'.

The total 100-year peak flow rate from the project site tributary to the existing 30" R.C.P. in Santa Ana Avenue are approximately 17.2 cfs. (16.0 cfs. + 0.5 cfs + 0.7 cfs.) at detained condition which is comparable to the existing condition. Therefore, the project site improvements will not impose a negative impact on the existing offsite drainage facilities downstream. Onsite storm drain pipe lateral sizes and hydraulics will be determined during the project's final design phase to reduce proposed condition discharge to existing condition discharge.

See Appendix "C" for Detention Calculations.

Water Quality

Runoff from Buildings #1 will drain to proposed catch basins and conveyed to proposed underground chambers located at the truck yard via proposed onsite storm drain system. Here, initial runoff from the project site will drain to proposed CDS unit for water quality purposes and conveyed to underground chambers for infiltration. Runoff volume that exceeds water quality volume will be conveyed back to the main onsite storm drain line and ultimately discharged to an existing storm drain facilities downstream

Methodology

Hydrology calculations were computed using San Bernardino County rational method program (by AES software). WSPG was used for the hydraulic calculations. The soil type is "A" per San Bernardino County Hydrology Manual.

See Appendix "A" for reference material from the San Bernardino County Hydrology Manual

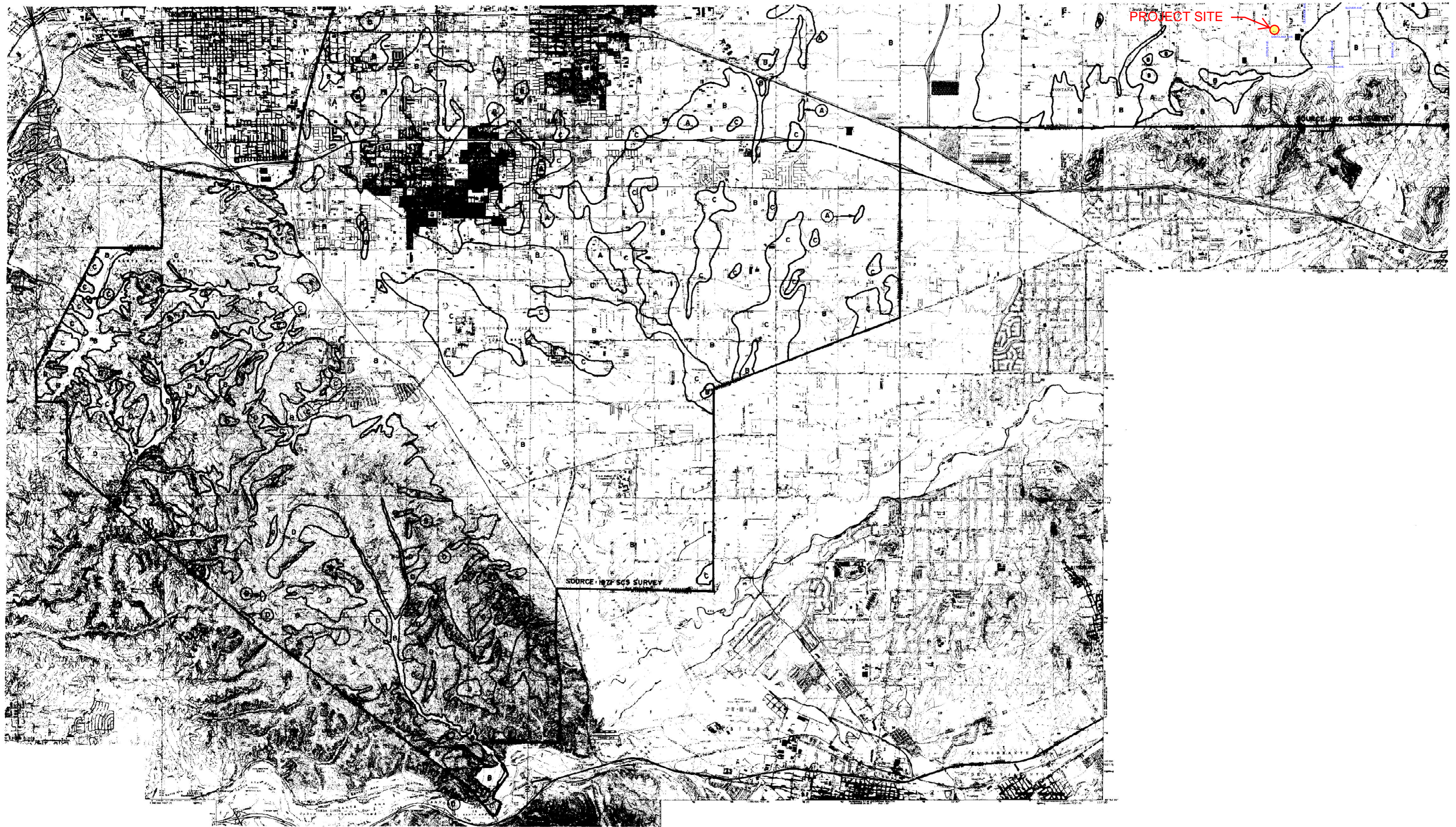
APPENDIX

DESCRIPTION

A	REFERENCE MATERIALS
B	HYDROLOGY CALCULATIONS EXISTING CONDITION PROPOSED CONDITION
C	DETENTION ANALYSIS
D	HYDROLOGY MAP

APPENDIX A

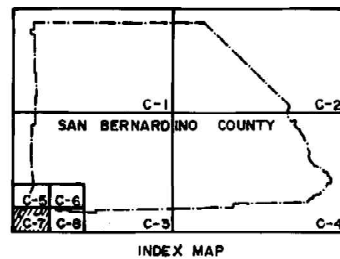
REFERENCE MATERIALS



PROJECT SITE →

SOURCE: 1927 SCS SURVEY

SAN BERNARDINO COUNTY
HYDROLOGY MANUAL

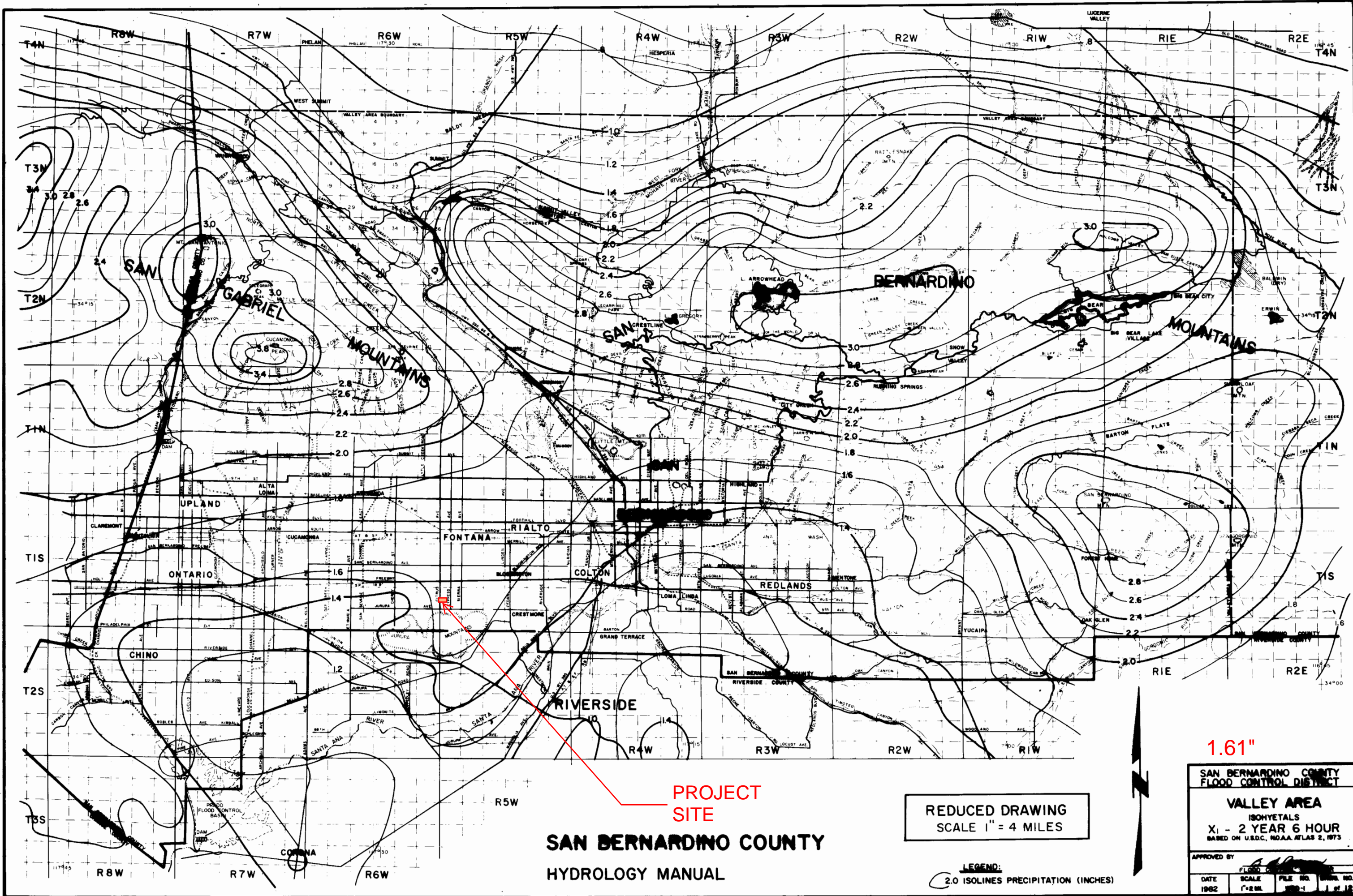


- LEGEND
- SOIL GROUP BOUNDARY
 - A SOIL GROUP DESIGNATION
 - - - BOUNDARY OF INDICATED SOURCE

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

SOIL TYPE "A"

HYDROLOGIC SOILS GROUP MAP
FOR
SOUTHWEST-C AREA



PROJECT SITE

SAN BERNARDINO COUNTY
HYDROLOGY MANUAL

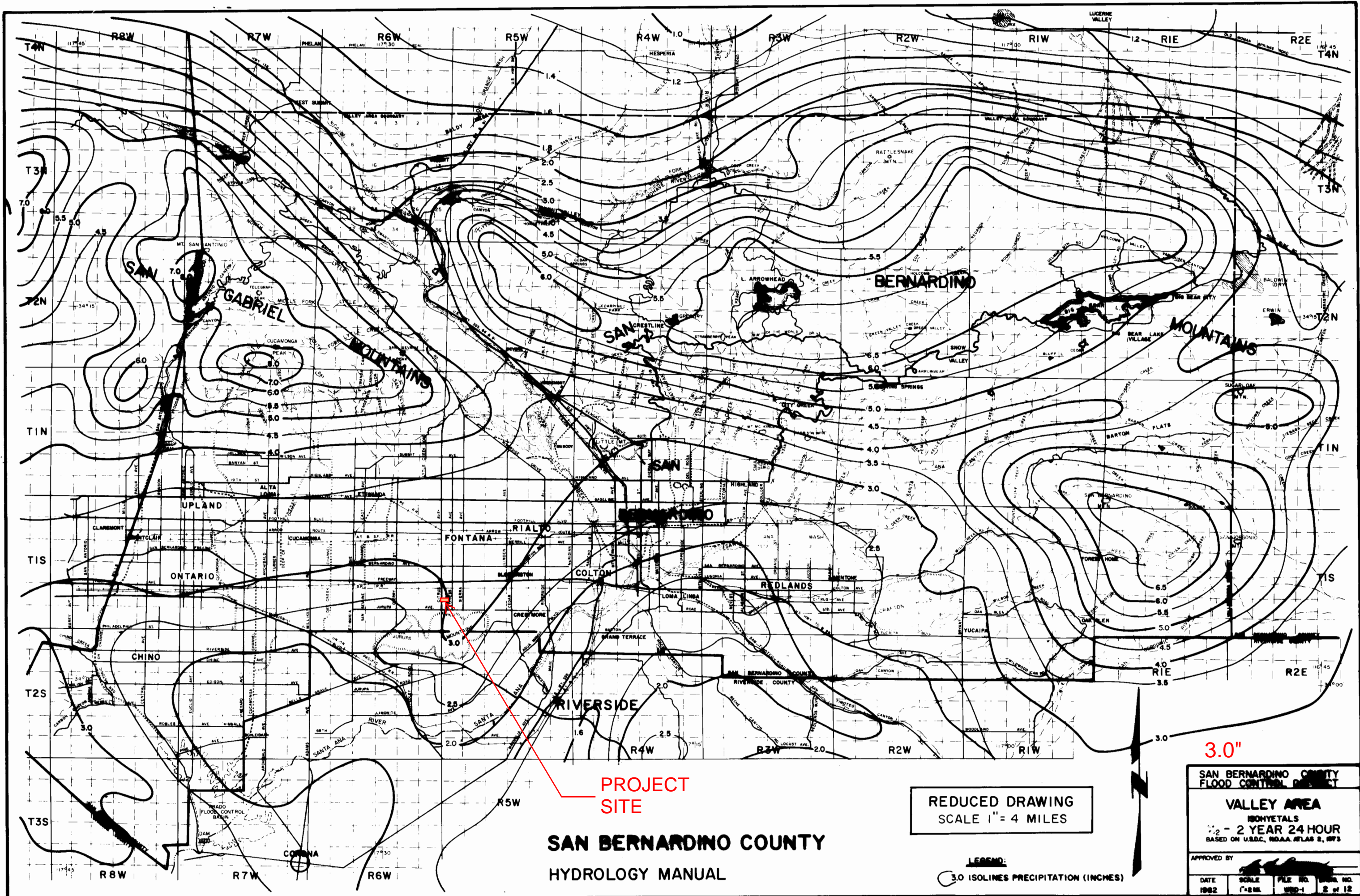
REDUCED DRAWING
SCALE 1" = 4 MILES

LEGEND:
2.0 ISOLINES PRECIPITATION (INCHES)



1.61"

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT			
VALLEY AREA			
ISOHYETALS X1 - 2 YEAR 6 HOUR BASED ON U.S.D.C. NOAA ATLAS 2, 1973			
APPROVED BY			
DATE	SCALE	FILE NO.	SHEET NO.
1982	1" = 4 MILES	VFD-1	1 of 12



PROJECT SITE

**SAN BERNARDINO COUNTY
HYDROLOGY MANUAL**

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

LEGEND:
3.0 ISOLINES PRECIPITATION (INCHES)

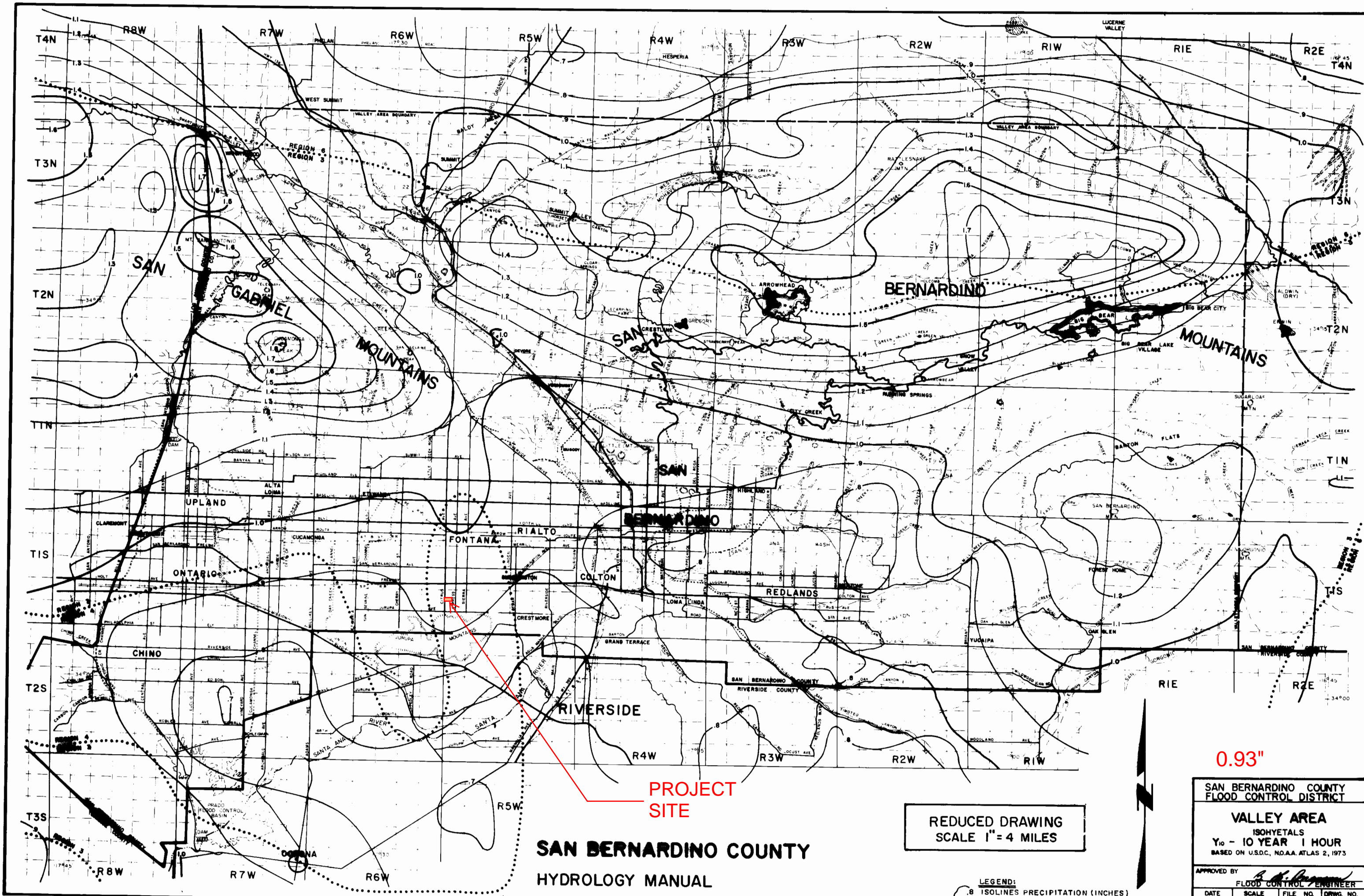
3.0"

**SAN BERNARDINO COUNTY
FLOOD CONTROL DISTRICT**

**VALLEY AREA
ISOHYETALS
2 - 2 YEAR 24 HOUR
BASED ON U.S.D.C. NOAA ATLAS 2, 1973**

APPROVED BY: _____

DATE	SCALE	FILE NO.	DRAW. NO.
1982	1"=4M.	WB-1	2 of 12



PROJECT SITE

SAN BERNARDINO COUNTY
HYDROLOGY MANUAL

REDUCED DRAWING
SCALE 1" = 4 MILES

LEGEND:
0.8 ISOLINES PRECIPITATION (INCHES)



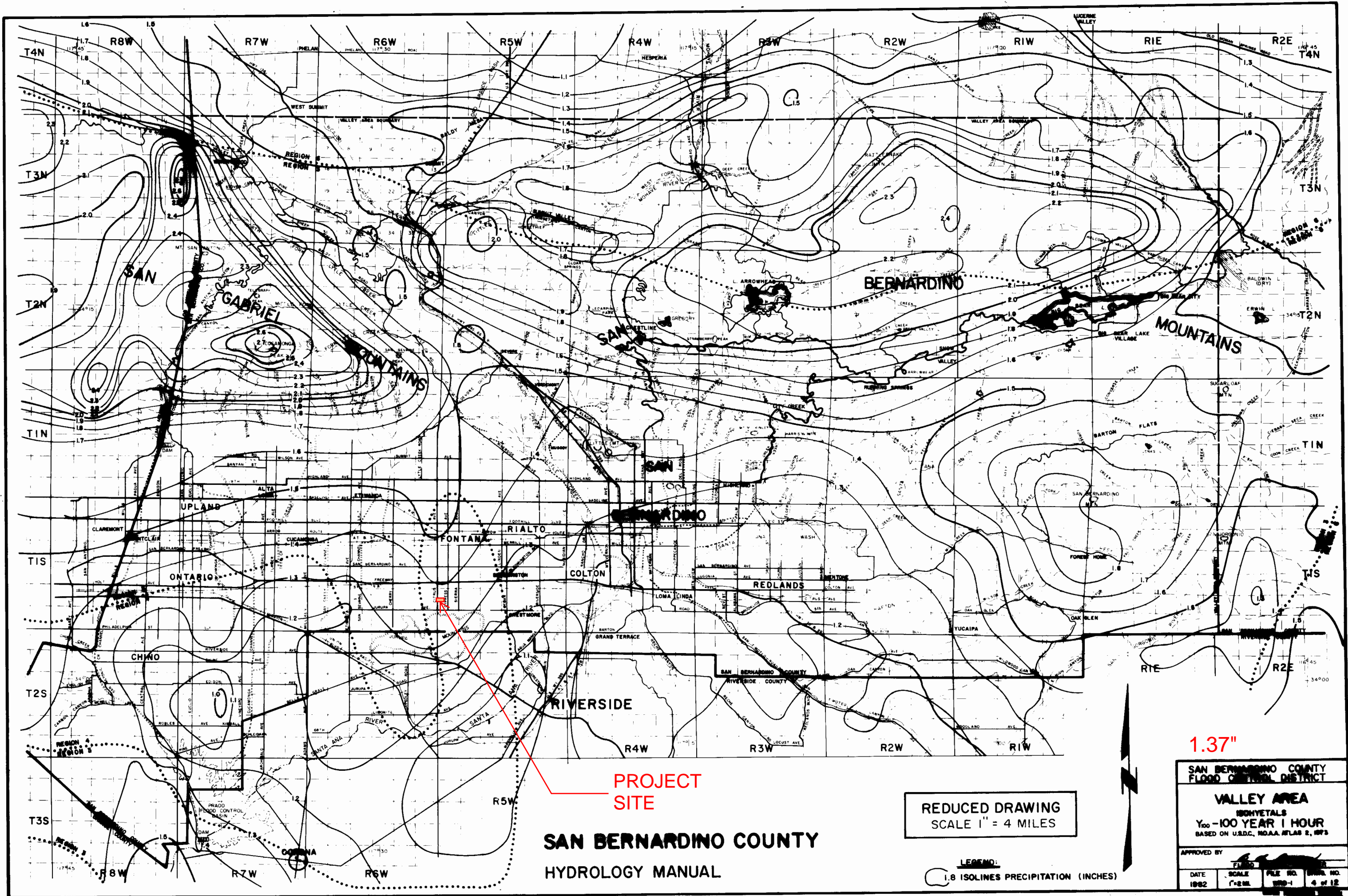
0.93"

SAN BERNARDINO COUNTY
FLOOD CONTROL DISTRICT

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

APPROVED BY *[Signature]*
FLOOD CONTROL ENGINEER

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



SAN BERNARDINO COUNTY
HYDROLOGY MANUAL

REDUCED DRAWING
 SCALE 1" = 4 MILES

LEGEND:
 1.8 ISOLINES PRECIPITATION (INCHES)

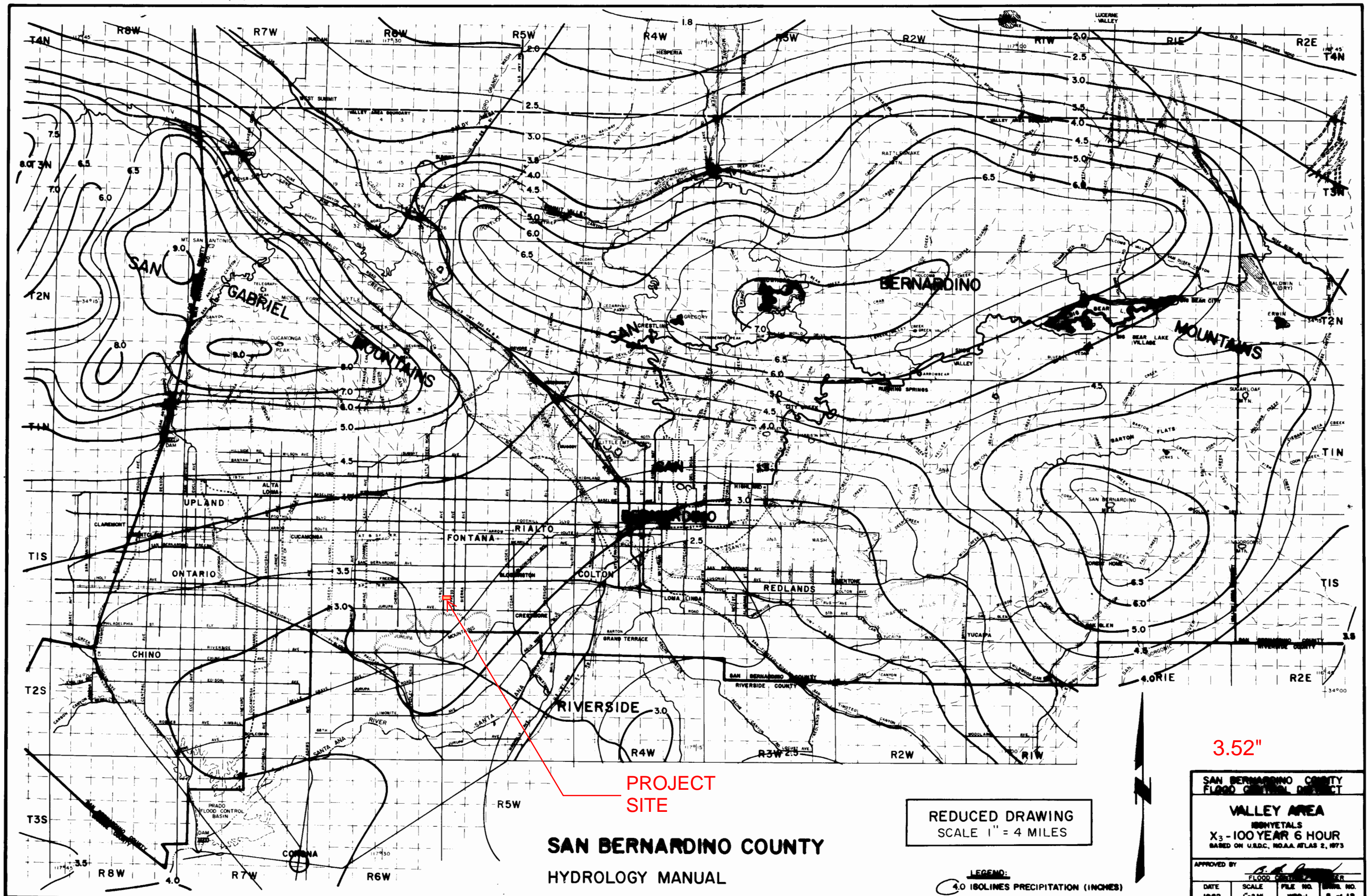
1.37"

SAN BERNARDINO COUNTY
 FLOOD CONTROL DISTRICT

VALLEY AREA
 ISOHYETALS
 Y₁₀₀ - 100 YEAR 1 HOUR
 BASED ON U.S.D.C. NOAA ATLAS 2, 1973

APPROVED BY _____

DATE	SCALE	FILE NO.	SHEET NO.
1982	1"=4 MI.	WB-1	4 of 12

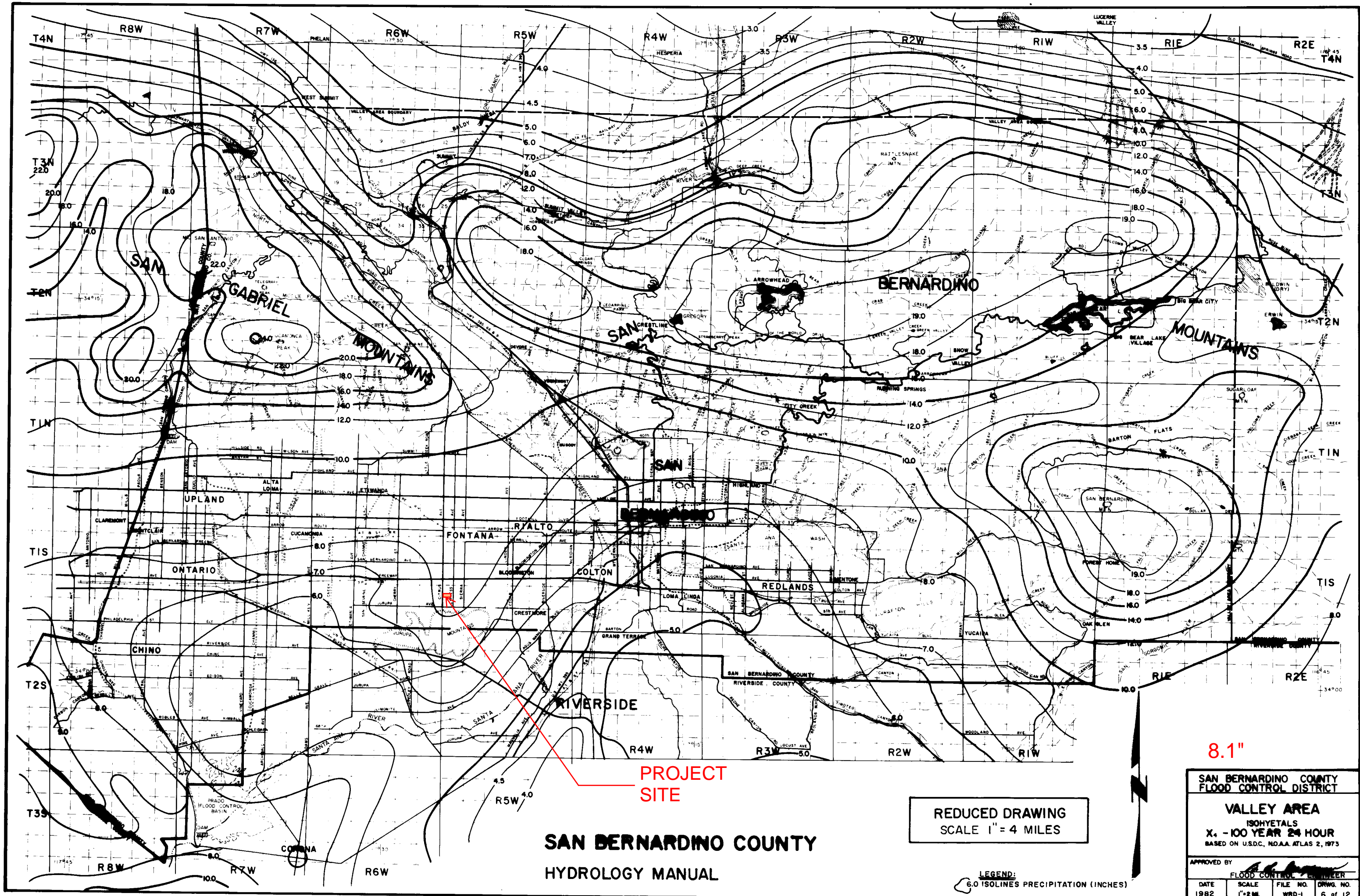


SAN BERNARDINO COUNTY
HYDROLOGY MANUAL

REDUCED DRAWING
 SCALE 1" = 4 MILES

LEGEND:
 4.0 ISOLINES PRECIPITATION (INCHES)

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT			
VALLEY AREA ISOHYETALS X ₃ - 100 YEAR 6 HOUR BASED ON U.S.D.C. NOAA ATLAS 2, 1973			
APPROVED BY: <i>[Signature]</i>			
DATE	SCALE	FILE NO.	DRAW. NO.
1982	1"=2 M.	WB-1	5 of 12



**SAN BERNARDINO COUNTY
HYDROLOGY MANUAL**

REDUCED DRAWING
SCALE 1" = 4 MILES

LEGEND:
6.0 ISOLINES PRECIPITATION (INCHES)

8.1"

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT			
VALLEY AREA			
ISOHYETALS			
X ₄ - 100 YEAR 24 HOUR			
BASED ON U.S.D.C. NOAA ATLAS 2, 1973			
APPROVED BY: _____			
FLOOD CONTROL ENGINEER			
DATE	SCALE	FILE NO.	DRWG. NO.
1982	1" = 2 MI.	WRD-1	6 of 12

FINAL ENGINEERING REPORT

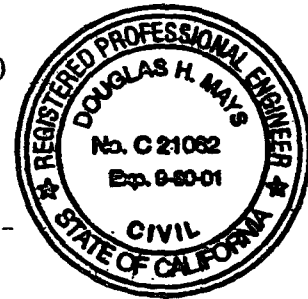
FOR THE CITRUS AVENUE STORM DRAIN (Fontana Master Plan Line DZ-8)

Prepared For:

CITY OF FONTANA
8353 Sierra Avenue
Fontana, California 92335

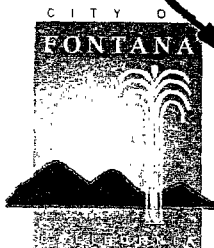
Prepared By:

L.D. KING, INC.
2151 Convention Center Way, Suite 100
Ontario, California 91764
Telephone: (909) 937-0200
Fax: (909) 937-0202



*Please return to
(sole copy) 9/2003*

Douglas H. Mays 6/13/00
Douglas H. Mays, P.E. R.C.E. 21062

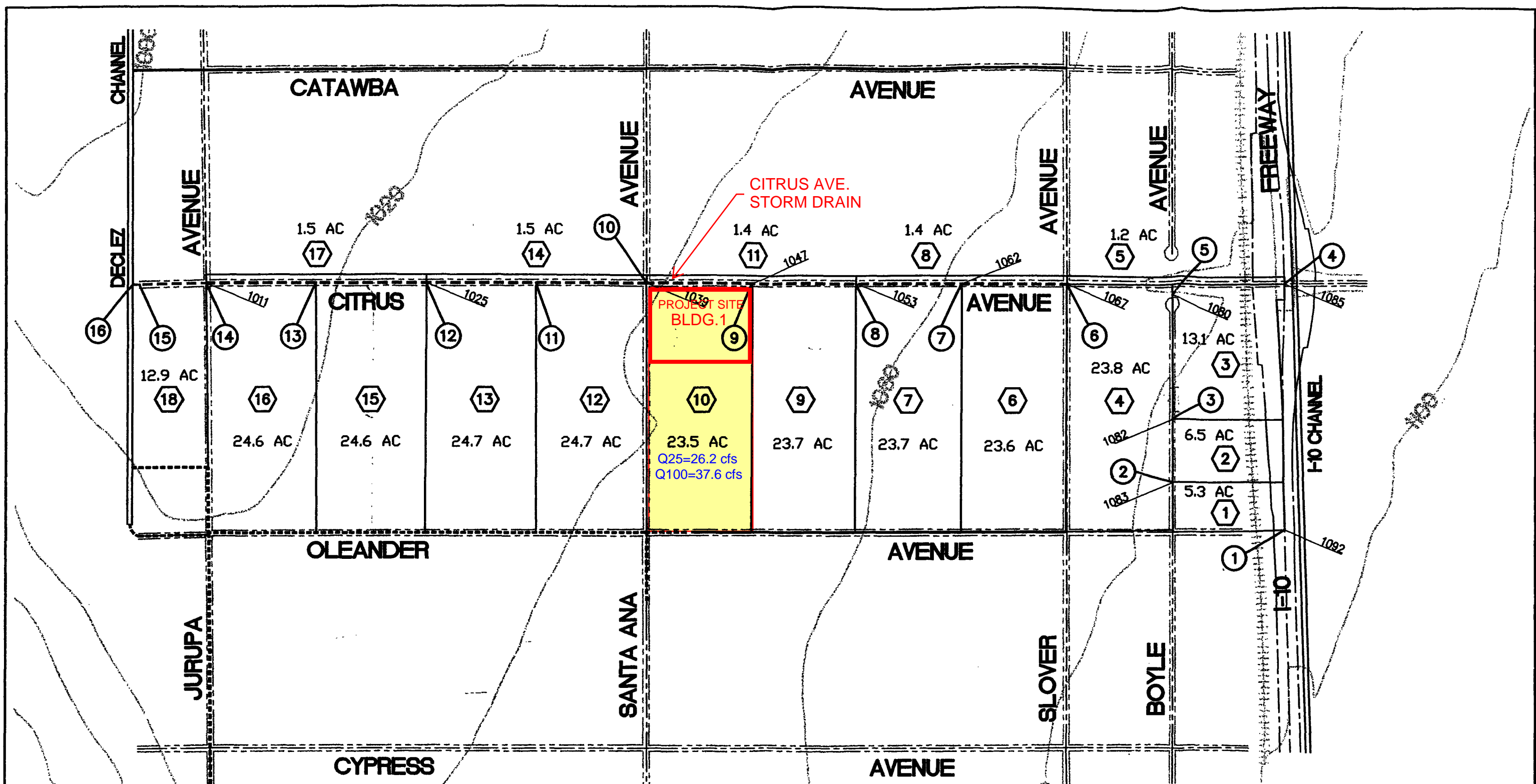


Graciela Martinez
Assistant Engineer

May, 2000

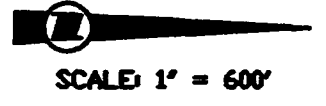
Voice (909) 350-6522
Fax (909) 350-6618
gmartinez@fontana.org
www.fontana.org





LEGEND

- NODE
- SUBAREA
- GROUND SURFACE ELEVATION
- STUDY AREA BOUNDARY
- MASTER PLAN STORM DRAINS
- EXISTING MASTER PLAN STORM DRAINS
- FUTURE MASTER PLAN STORM DRAINS
- PROPOSED STORM DRAIN



LDKING L.D. KING, INC.
 2151 CONVENTION CENTER WAY
 SUITE 100
 ONTARIO, CA 91764
 (909) 937-0200

CITY OF FONTANA
 FIGURE 6
 DRAINAGE SUBAREAS MAP

D:\CAD00\124-07\Figures.dwg 02/23/00 2:22 Plotted By: APW

**Table IIIb
City of Fontana
Citrus Avenue Storm Drain
Preliminary Engineering
Hydrologic Analysis Results**

Subarea	Total Area (ac)	25-Year Runoff (cfs)	100-Year Runoff (cfs)
1	5.3	13.3	16.8
2	6.5	14.1	17.9
3	13.1	22.9	29.7
4	23.8	40.6	52.7
5	1.2	2.0	2.6
6	23.6	40.1	52.7
7	23.7	27.8	39.6
8	1.4	1.7	2.4
9	23.7	26.9	38.6
10	23.5	26.0	37.4
11	1.4	1.6	2.2
12	24.7	26.6	38.4
13	24.7	25.9	37.6
14	1.5	1.6	2.3
15	24.6	25.2	36.6
16	24.6	24.6	35.9
17	1.5	1.5	2.2
18	12.9	12.4	18.2
Total:	261.7	307.9	436.3

1.) Combined Flow = 43.6 cfs

PIPE TRAVEL TIME (MIN.) = 0.77 Tc (MIN.) = 25.83
 LONGEST FLOWPATH FROM NODE 1.00 TO NODE 10.00 = 5468.10 FEET.

 FLOW PROCESS FROM NODE 9.00 TO NODE 10.00 IS CODE = 81

>>>> ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc (MIN) = 25.83
 * 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.824
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL "3-4 DWELLINGS/ACRE"	A	23.50	0.98	0.60	32

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.60 Q25
 SUBAREA AREA (ACRES) = 23.50 SUBAREA RUNOFF (CFS) = 26.20
 EFFECTIVE AREA (ACRES) = 145.80 AREA-AVERAGED Fm (INCH/HR) = 0.34
 AREA-AVERAGED Fp (INCH/HR) = 0.98 AREA-AVERAGED Ap = 0.35
 TOTAL AREA (ACRES) = 145.80 PEAK FLOW RATE (CFS) = 194.32

 FLOW PROCESS FROM NODE 8.00 TO NODE 10.00 IS CODE = 81

>>>> ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc (MIN) = 25.83
 * 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.824
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL "3-4 DWELLINGS/ACRE"	A	1.40	0.98	0.60	32

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.60
 SUBAREA AREA (ACRES) = 1.40 SUBAREA RUNOFF (CFS) = 1.56
 EFFECTIVE AREA (ACRES) = 147.20 AREA-AVERAGED Fm (INCH/HR) = 0.35
 AREA-AVERAGED Fp (INCH/HR) = 0.98 AREA-AVERAGED Ap = 0.35
 TOTAL AREA (ACRES) = 147.20 PEAK FLOW RATE (CFS) = 195.88

 FLOW PROCESS FROM NODE 10.00 TO NODE 11.00 IS CODE = 31

>>>> COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>> USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 1039.00 DOWNSTREAM (FEET) = 1032.00
 FLOW LENGTH (FEET) = 692.25 MANNING'S N = 0.013
 DEPTH OF FLOW IN 57.0 INCH PIPE IS 41.5 INCHES
 PIPE-FLOW VELOCITY (FEET/SEC.) = 14.18
 ESTIMATED PIPE DIAMETER (INCH) = 57.00 NUMBER OF PIPES = 1
 PIPE-FLOW (CFS) = 195.88
 PIPE TRAVEL TIME (MIN.) = 0.81 Tc (MIN.) = 26.65
 LONGEST FLOWPATH FROM NODE 1.00 TO NODE 11.00 = 6160.35 FEET.

PIPE TRAVEL TIME(MIN.) = 0.71 Tc(MIN.) = 25.03
 LONGEST FLOWPATH FROM NODE 1.00 TO NODE 10.00 = 5468.10 FEET.

 FLOW PROCESS FROM NODE 9.00 TO NODE 10.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN) = 25.03
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.365
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL "3-4 DWELLINGS/ACRE"	A	23.50	0.98	0.60	32

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.60 Q100
 SUBAREA AREA(ACRES) = 23.50 SUBAREA RUNOFF(CFS) = 37.65
 EFFECTIVE AREA(ACRES) = 145.80 AREA-AVERAGED Fm(INCH/HR) = 0.34
 AREA-AVERAGED Fp(INCH/HR) = 0.98 AREA-AVERAGED Ap = 0.35
 TOTAL AREA(ACRES) = 145.80 PEAK FLOW RATE(CFS) = 265.39

 FLOW PROCESS FROM NODE 8.00 TO NODE 10.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN) = 25.03
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.365
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL "3-4 DWELLINGS/ACRE"	A	1.40	0.98	0.60	32

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.60
 SUBAREA AREA(ACRES) = 1.40 SUBAREA RUNOFF(CFS) = 2.24
 EFFECTIVE AREA(ACRES) = 147.20 AREA-AVERAGED Fm(INCH/HR) = 0.35
 AREA-AVERAGED Fp(INCH/HR) = 0.98 AREA-AVERAGED Ap = 0.35
 TOTAL AREA(ACRES) = 147.20 PEAK FLOW RATE(CFS) = 267.63

 FLOW PROCESS FROM NODE 10.00 TO NODE 11.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 1039.00 DOWNSTREAM(FEET) = 1032.00
 FLOW LENGTH(FEET) = 692.25 MANNING'S N = 0.013
 DEPTH OF FLOW IN 63.0 INCH PIPE IS 47.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 15.24
 ESTIMATED PIPE DIAMETER(INCH) = 63.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 267.63
 PIPE TRAVEL TIME(MIN.) = 0.76 Tc(MIN.) = 25.79
 LONGEST FLOWPATH FROM NODE 1.00 TO NODE 11.00 = 6160.35 FEET.

STORM DRAIN IMPROVEMENT PLANS FOR CITRUS AVENUE FROM JURUPA AVENUE TO SLOVER AVENUE IN THE CITY OF FONTANA AND THE COUNTY OF SAN BERNARDINO

NOTICE TO CONTRACTORS

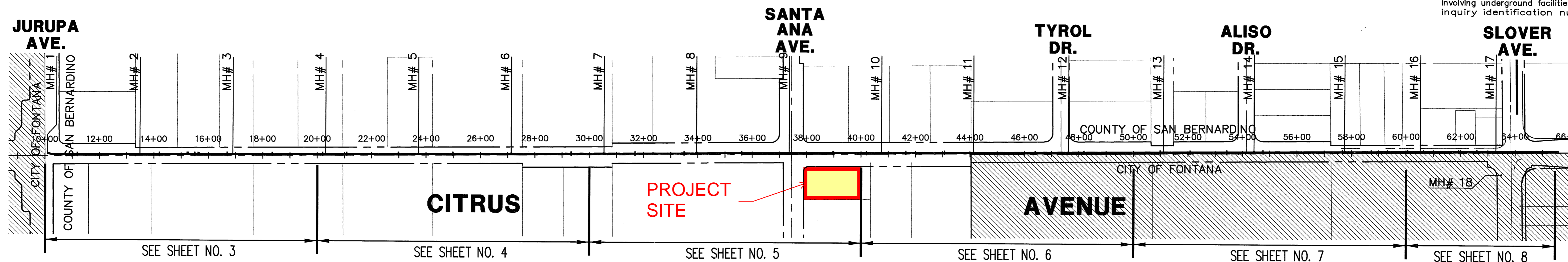
Construction contractor agrees that in accordance with generally accepted construction practices, construction contractor will be required to assume sole and complete responsibility for job site conditions during the course of construction of the project, including safety of all persons and property; that this requirement shall be made to apply continuously and not be limited to normal working hours, and construction contractor further agrees to defend, indemnify and hold design professional harmless from any and all liability, real or alleged, in connection with the performance of work on this project, excepting liability arising from the sole negligence of design professional.

All contractor and subcontractors performing work shown on or related to these plans shall conduct their operations so that employees are provided a safe place to work and the public is protected. All contractors and subcontractors shall comply with the "Occupational Safety and Health Regulations" of the U.S. Department of Labor and with the State of California Department of Industrial Relations "Construction Safety Orders". The Civil Engineer shall not be responsible in any way for the contractor or subcontractors compliance with said regulations and orders.

PRIVATE ENGINEER'S NOTICES TO CONTRACTORS

The existence and approximate location of any underground utilities or structures shown on these plans are obtained by a search of available records. To the best of our knowledge, there are no existing utilities or structures except as shown on these plans. The engineer assumes no liability as to the exact location of said lines nor for utilities or irrigation lines whose locations are not shown. The contractor shall be responsible for notifying all utility and irrigation companies prior to work on excavation to determine exact location of all lines affecting this work, whether or not shown hereon, and for any damage or protection of these lines.

The contractor shall call in a location request to Underground Service Alert (U.S.A.) Phone 1-800-227-2600 two (2) working days prior to digging. No construction permit issued by Public Works Department shall be valid involving underground facilities unless the applicant has an inquiry identification number issued by U.S.A.



CONSTRUCTION NOTES

- 1 CONSTRUCT 66" R.C.P. (1350D)
- 2 CONSTRUCT 60" R.C.P. (1350D)
- 3 CONSTRUCT 54" R.C.P. (1350D)
- 4 CONSTRUCT 48" R.C.P. (1350D)
- 5 CONSTRUCT 42" R.C.P. (1350D)
- 6 NOT USED
- 7 CONSTRUCT 30" R.C.P. (2000D)
- 8 CONSTRUCT 24" R.C.P. (2000D)
- 9 CONSTRUCT MANHOLE PER AMERICAN PUBLIC WORKS ASSOCIATION STANDARD PLAN 320-1 EXCEPT MANHOLE COVER PER SAN BERNARDINO COUNTY TRANSPORTATION DEPARTMENT STANDARD PLAN 205
- 10 CONSTRUCT JUNCTION STRUCTURE PER AMERICAN PUBLIC WORKS ASSOCIATION STANDARD PLAN 332-1, CASE 1
- 11 CONSTRUCT CATCH BASIN PER SAN BERNARDINO COUNTY TRANSPORTATION DEPARTMENT STANDARD DWG. 206 AND 206A WITH LOCAL DEPRESSION PER SBCTD STD. DWG. 203B
- 12 CONSTRUCT TRANSITION STRUCTURE RC2 TO PIPE PER A.P.W.A. STD. PLAN 342-1 AND 342-2
- 13 CONSTRUCT CONCRETE BULKHEAD PER DETAIL "C" ON SHEET NO. 9
- 14 REMOVE EXISTING INLET AND LATERAL
- 15 CONSTRUCT STORM DRAIN INLET PER DETAIL "B" SHEET 8
- 16 CONSTRUCT CAST-IN-PLACE REINFORCED CONCRETE SINGLE BOX CULVERT PER CALTRANS STD. PLAN D80 (SPAN=8', HEIGHT=3', T1=8.5", T2=7", T3=8", STEEL SPACING=6", "a" BAR=#7, "b" BAR=#7)
- 17 CONSTRUCT CONCRETE COLLAR FOR R.C.P. PER AMERICAN PUBLIC WORKS ASSOCIATION STD. PLAN 380-2

LEGEND

- ⊕ = CENTERLINE
- — — = EDGE OF EXISTING ASPHALT CONCRETE PAVEMENT
- EXIST. C & G = EXISTING CURB AND GUTTER
- R/W = EXISTING RIGHT-OF-WAY
- LF = LINEAR FEET
- — — = PROPOSED SEWER
- ==== = PROPOSED STORM DRAIN
- ⊠ = PROPOSED STORM DRAIN MANHOLE
- INV. = STORM DRAIN INVERT ELEVATION
- △ = SURVEY CONTROL TARGET

LEGEND CONT.

- TV = UTILITY INTERFERENCE FLAG (APPROXIMATE LOCATION OF INTERFERENCE WITH TYPE OF UTILITY INDICATED BY:
T-TELEPHONE
E-ELECTRIC
W-WATER
G-GAS
SD-STORM DRAIN
S-SEWER
TV-CABLE TELEVISION
U-UNKNOWN UTILITY
IRR-IRRIGATION)
- # = #—CURVE DATA
- = RECORD SURVEY MONUMENT
- EX. A.C. CURB = EXISTING ASPHALT CONCRETE CURB
- ▨ = EXISTING DRIVEWAY
- (ELEV) = UTILITY (ELEV)

SHEET INDEX

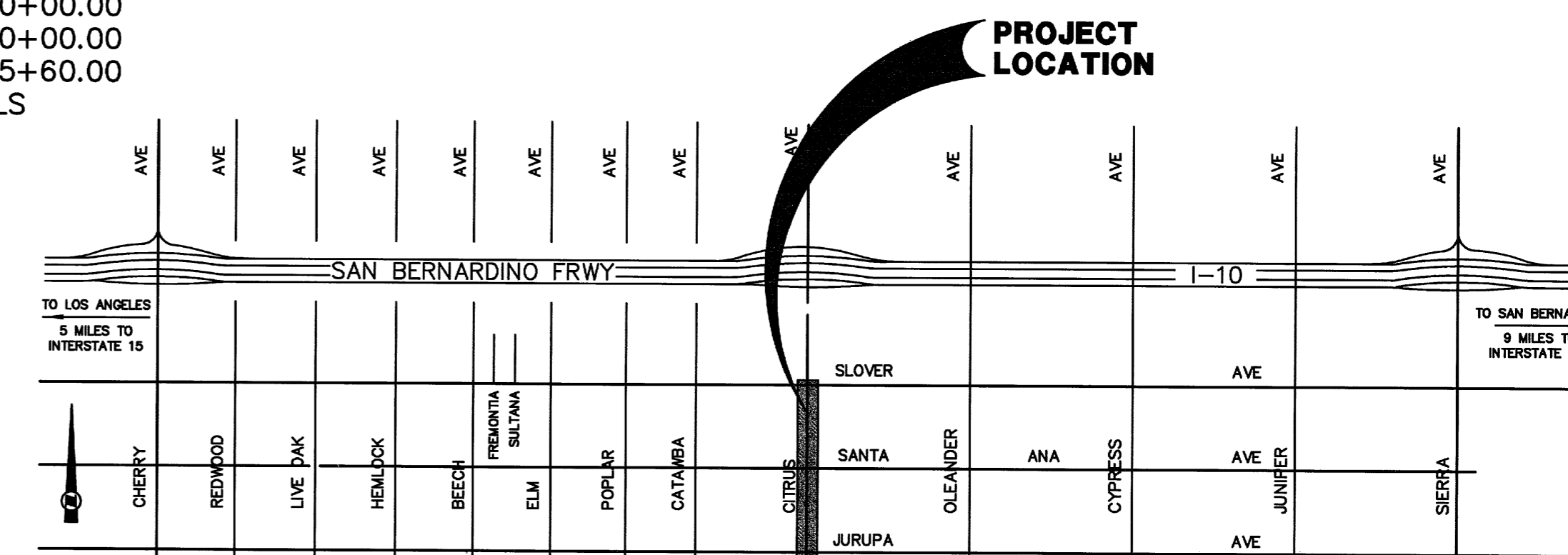
SHT #	TITLE
1	TITLE SHEET
2	CONSTRUCTION NOTES
3	STA. 10+08± TO 20+00.00
4	STA. 20+00.00 TO 30+00.00
5	STA. 30+00.00 TO 40+00.00
6	STA. 40+00.00 TO 50+00.00
7	STA. 50+00.00 TO 60+00.00
8	STA. 60+00.00 TO 65+00.00
9	PROFILES AND DETAILS



SCALE = 1" = 200'

RECORD DRAWINGS

THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THESE DOCUMENTS AS A RESULT THEREOF.



Vicinity Map

SCALE = N.T.S.

CITY BENCHMARK NO. 289
ELEVATION = 1031.22
RR SPIKE IN POLE NO. 61319 NE COR.
OF SANTA ANA AVENUE AND
CATAWBA AVENUE

Underground Service Alert

SECTION 4216/4217 OF THE GOVERNMENT CODE REQUIRES A DIG ALERT IDENTIFICATION NUMBER BE ISSUED BEFORE A PERMIT TO EXCAVATE WILL BE VALID FOR YOUR DIG ALERT I.D. NUMBER CALL UNDERGROUND SERVICE ALERT TOLL FREE 1-800-227-2600 TWO WORKING DAYS BEFORE YOU DIG

REV.	REVISION DESCRIPTION	DATE	ENGR.	QTY	DATE
1	RECORD DRAWING	2/02	EN		
2	Revised Sheets 3, 4, 5, 7, 8, 9	12/00	LDK	12	1/2/01



LDKING L.D. KING, INC.
2151 CONVENTION CENTER WAY
SUITE 100B
ONTARIO, CA 91764
(909) 937-0200

Carl J. Freeman
CARL J. FREEMAN, R.C.E. No. 16434
EXPIRES 6-30-01

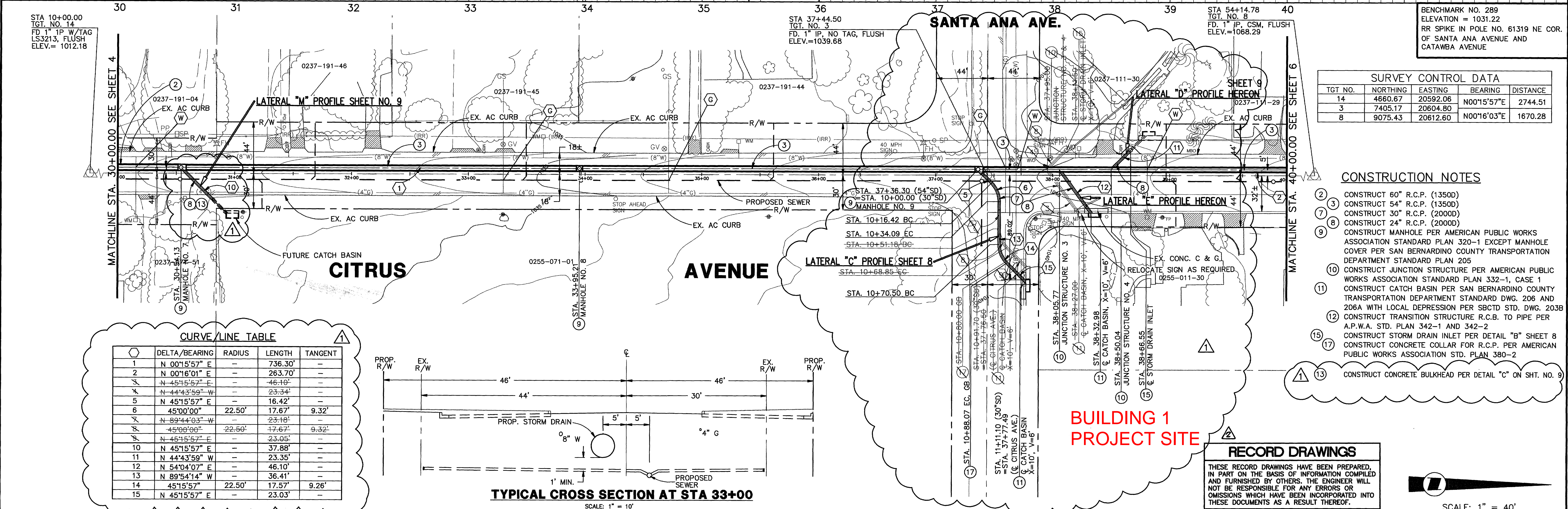
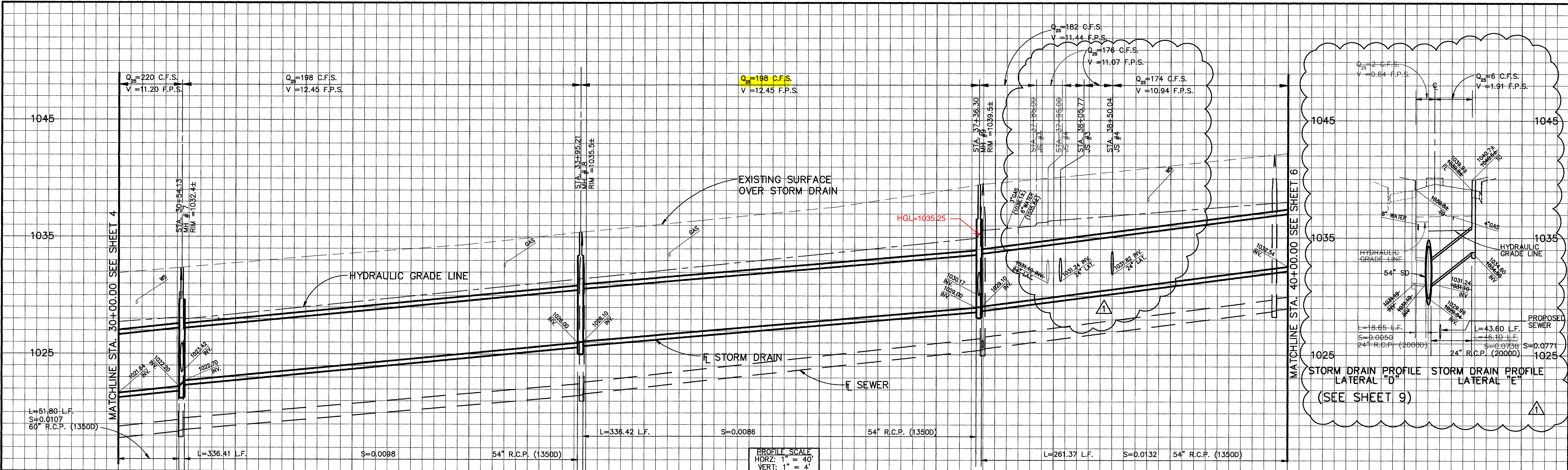
**TITLE SHEET
STORM DRAIN IMPROVEMENTS
CITRUS AVENUE
FROM JURUPA AVE. TO SLOVER AVE.**

SHOULD CONSTRUCTION OF THE REQUIRED IMPROVEMENTS NOT COMMENCE WITHIN TWO YEARS OF THE DATE OF APPROVAL SHOWN HEREON AND CARRIED FORTH IN A DILIGENT MANNER, THE CITY ENGINEER MAY REQUIRE REVISIONS TO THE PLANS TO BRING THEM INTO CONFORMANCE WITH CONDITIONS AND STANDARDS IN EFFECT.

CITY OF FONTANA, CALIFORNIA

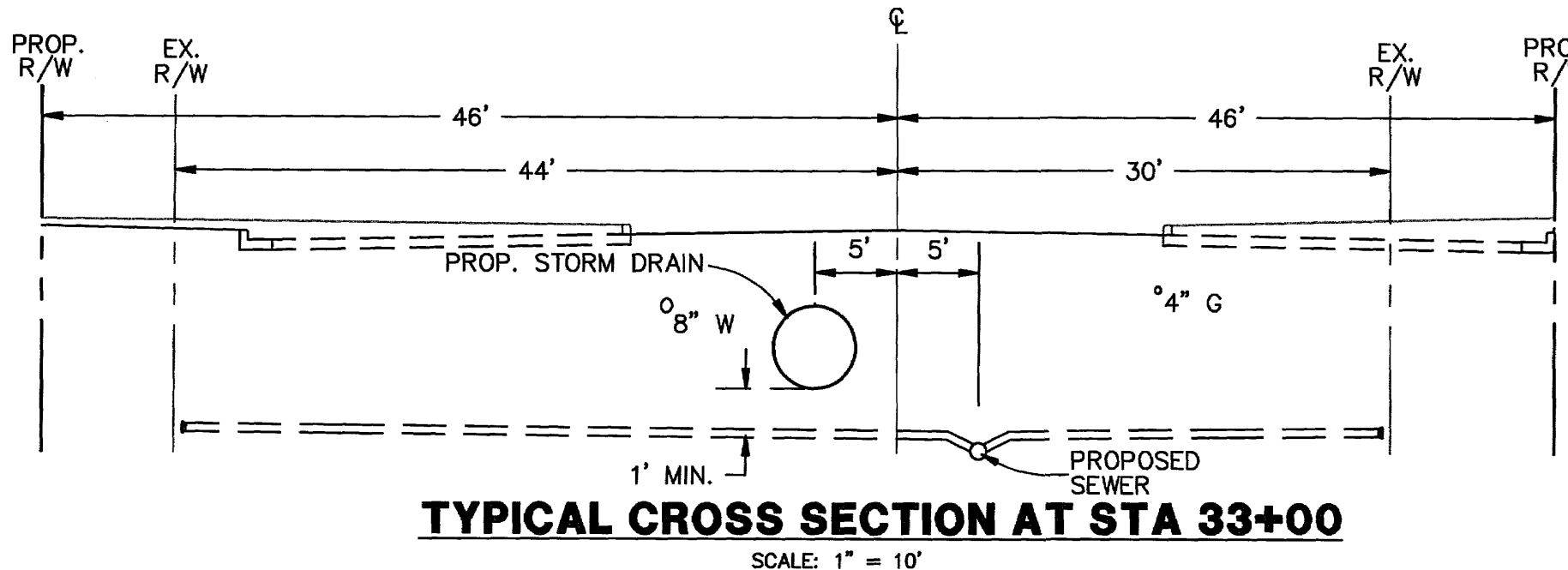
CITRUS AVENUE

DESIGNED BY: CCP	CITRUS AVENUE STORM DRAIN	SCALE: AS SHOWN
CHECKED BY: MPT	TITLE SHEET	DATE: JUNE 2000
CHECKED BY: DHM	APPROVED BY: [Signature]	DATE: 1/2/01
	ACTING CITY ENGINEER	R.C.E. No. 51152
	DRAWING NO.: 2832	SHEET: 1 OF 9



CURVE/LINE TABLE

NO.	DELTA/BEARING	RADIUS	LENGTH	TANGENT
1	N 00°15'57" E	-	736.30'	-
2	N 00°16'01" E	-	263.70'	-
3	N 45°15'57" E	-	46.10'	-
4	N 44°43'59" W	-	23.34'	-
5	N 45°15'57" E	-	16.42'	-
6	45°00'00"	22.50'	17.67'	9.32'
7	N 89°44'03" W	-	23.18'	-
8	45°00'00"	22.50'	17.67'	9.32'
9	N 45°15'57" E	-	23.05'	-
10	N 45°15'57" E	-	37.88'	-
11	N 44°43'59" W	-	23.35'	-
12	N 54°04'07" E	-	46.10'	-
13	N 89°54'14" W	-	36.41'	-
14	45°15'57"	22.50'	17.57'	9.26'
15	N 45°15'57" E	-	23.03'	-



SURVEY CONTROL DATA

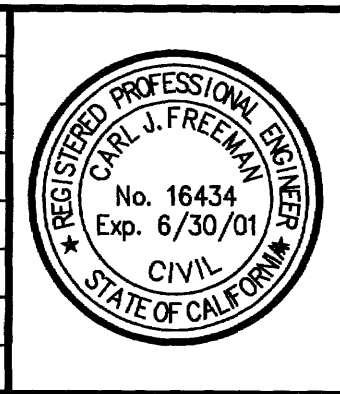
TGT NO.	NORTHING	EASTING	BEARING	DISTANCE
14	4660.67	20592.06	N00°15'57"E	2744.51
3	7405.17	20604.80	N00°16'03"E	1670.28
8	9075.43	20612.60	N00°16'03"E	1670.28

- CONSTRUCTION NOTES**
- CONSTRUCT 60" R.C.P. (13500)
 - CONSTRUCT 54" R.C.P. (13500)
 - CONSTRUCT 30" R.C.P. (20000)
 - CONSTRUCT 24" R.C.P. (20000)
 - CONSTRUCT MANHOLE PER AMERICAN PUBLIC WORKS ASSOCIATION STANDARD PLAN 320-1 EXCEPT MANHOLE COVER PER SAN BERNARDINO COUNTY TRANSPORTATION DEPARTMENT STANDARD PLAN 205
 - CONSTRUCT JUNCTION STRUCTURE PER AMERICAN PUBLIC WORKS ASSOCIATION STANDARD PLAN 332-1, CASE 1
 - CONSTRUCT CATCH BASIN PER SAN BERNARDINO COUNTY TRANSPORTATION DEPARTMENT STANDARD DWG. 206 AND 206A WITH LOCAL DEPRESSION PER SBCTD STD. DWG. 203B
 - CONSTRUCT TRANSITION STRUCTURE R.C.B. TO PIPE PER A.P.W.A. STD. PLAN 342-1 AND 342-2
 - CONSTRUCT STORM DRAIN INLET PER DETAIL "B" SHEET 8
 - CONSTRUCT CONCRETE COLLAR FOR R.C.P. PER AMERICAN PUBLIC WORKS ASSOCIATION STD. PLAN 380-2
 - CONSTRUCT CONCRETE BULKHEAD PER DETAIL "C" ON SHT. NO. 9

RECORD DRAWINGS
THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THESE DOCUMENTS AS A RESULT THEREOF.

Underground Service Alert
SECTION 4216/4217 OF THE GOVERNMENT CODE REQUIRES A DIG ALERT IDENTIFICATION NUMBER BE ISSUED BEFORE A PERMIT TO EXCAVATE WILL BE VALID
FOR YOUR DIG ALERT I.D. NUMBER CALL UNDERGROUND SERVICE ALERT TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG

REV.	REVISION DESCRIPTION	DATE	ENGR.	CITY	DATE
1	RECORD DRAWING	9/02	SLJ		
2	Revised CB & Lateral Locations/Profiles	12/00	LDK		11/30/01



LDKING
L.D. KING, INC.
2151 CONVENTION CENTER WAY
SUITE 100B
ONTARIO, CA 91764
(909) 937-0200
CARL J. FREEMAN, R.C.E. No. 16434
EXPIRES 6-30-01

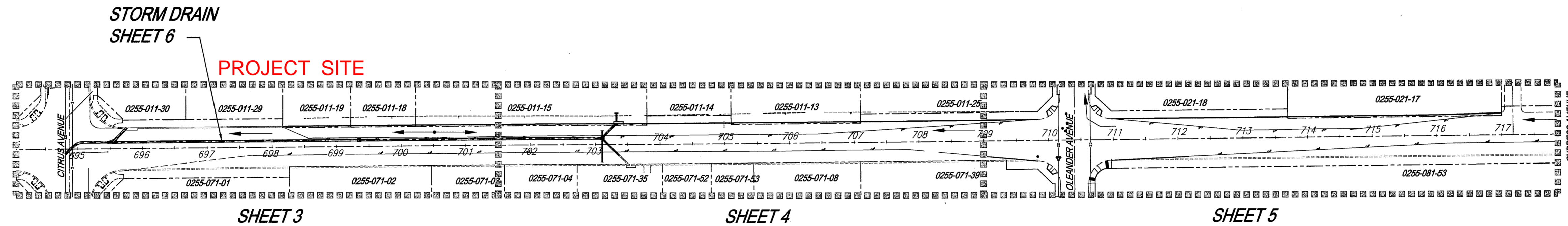
**PLAN / PROFILE FOR
STORM DRAIN IMPROVEMENTS
CITRUS AVENUE
FROM JURUPA AVE. TO SLOVER AVE.**

SHOULD CONSTRUCTION OF THE REQUIRED IMPROVEMENTS NOT COMMENCE WITHIN TWO YEARS OF THE DATE OF APPROVAL SHOWN HEREON AND CARRIED FORTH IN A DILIGENT MANNER, THE CITY ENGINEER MAY REQUIRE REVISIONS TO THE PLANS TO BRING THEM INTO CONFORMANCE WITH CONDITIONS AND STANDARDS IN EFFECT.

**CITY OF FONTANA, CALIFORNIA
CITRUS AVENUE**

DRAWN BY:	CCP	CITRUS AVENUE STORM DRAIN STA. 30+00.00 TO 40+00.00	SCALE: AS SHOWN
DESIGNED BY:	CCP		DATE: JUNE 2000
CHECKED BY:	MPT		DRAWING NO.: 2832
APPROVED BY:	<i>[Signature]</i>	DATE: 11/30/01	SHEET: 5
	ACTING CITY ENGINEER	R.C.E. No. 51152	9

CITY OF FONTANA SANTA ANA AVENUE STREET & STORM DRAIN IMPROVEMENT PLAN CITRUS AVENUE TO CYPRESS AVENUE



SANTA ANA AVENUE INDEX MAP SCALE: 1"=100'

POTHOLE VERIFICATION

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS WAS OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. ADDITIONAL UNDERGROUND FACILITIES MAY EXIST, OR THE LOCATION OF FACILITIES MAY DIFFER FROM THE LOCATIONS SHOWN ON THE PLANS. THE CONTRACTOR SHALL AT HIS OWN EXPENSE DETERMINE THE EXACT LOCATION OF ALL SUCH UNDERGROUND UTILITIES PRIOR TO DOING ANY WORK OR TAKING ANY ACTION THAT MAY DAMAGE SUCH FACILITIES OR INTERFERE WITH THEIR CONTINUOUS OPERATIONS UPON LEARNING OF THE EXISTENCE AND LOCATION OF ANY UNDERGROUND FACILITIES NOT SHOWN ACCURATELY ON THESE PLANS OR NOT PROPERLY MARKED BY THE UTILITY OWNER. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE UTILITY OWNER AND THE ENGINEER BY TELEPHONE AND IN WRITING.

NOTICE TO CONTRACTOR

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY SEARCH OF ALL AVAILABLE RECORDS. THESE LOCATIONS ARE APPROXIMATE AND SHALL BE CONFIRMED BY A CONTRACTOR, SO THAT ANY NECESSARY ADJUSTMENT CAN BE MADE IN ALIGNMENT AND/OR GRADE OF THE PROPOSED IMPROVEMENT. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT ANY UTILITY LINES SHOWN OR NOT SHOWN ON THESE PLANS.

CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD CITY OF FONTANA HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTION LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONAL.

ALL CONTRACTORS AND SUB CONTRACTORS SHALL COMPLY WITH THE "OCCUPATIONAL SAFETY AND HEALTH REGULATIONS" OF THE US DEPARTMENT OF LABOR AND WITH THE STATE OF CALIFORNIA DEPARTMENT OF INDUSTRIAL RELATIONS "CONSTRUCTION SAFETY ORDERS". THE CITY OF FONTANA SHALL NOT BE RESPONSIBLE IN ANY WAY FOR THE CONTRACTOR OR SUBCONTRACTORS COMPLIANCE WITH SAID REGULATIONS AND ORDERS.

UNAUTHORIZED CHANGES & USES: THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE OR LIABLE FOR UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE ENGINEER PREPARING THESE PLANS.

CONSTRUCTION NOTES

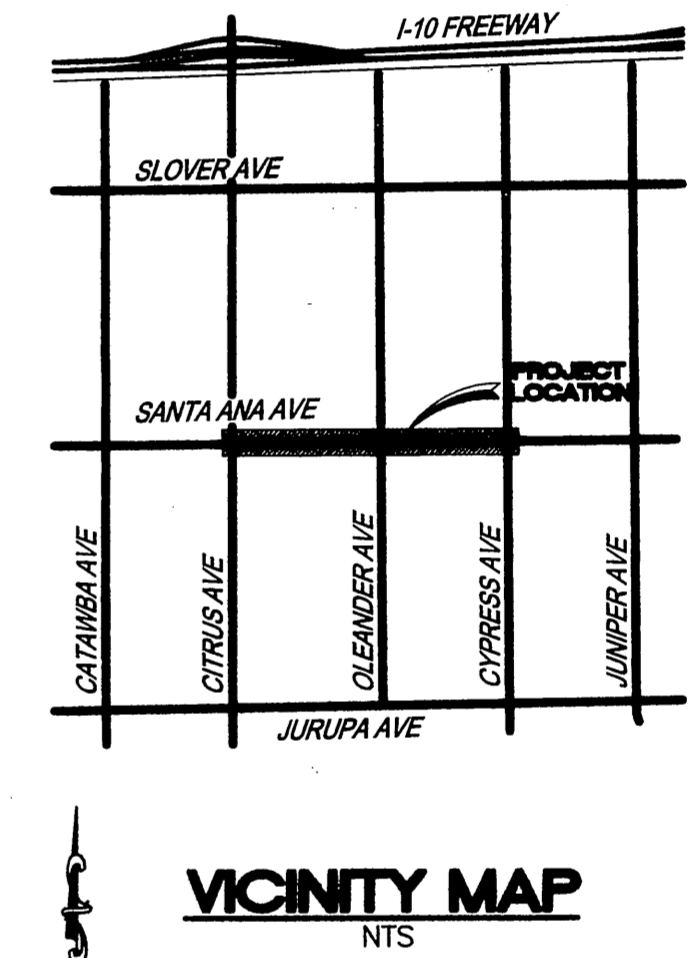
- 1 CONSTRUCT 6-1/2" MIN. A.C. PAVEMENT OVER 12" MIN. OF 95% COMPACTED NATIVE
- 2 CONSTRUCT COMMERCIAL CONCRETE DRIVEWAY PER CITY OF FONTANA STD. NO. 1002 (WIDTH PER PLAN)
- 3 SAW CUT AND REMOVE EXISTING A.C. PAVEMENT
- 4 CONSTRUCT 8" AC DIKE PER CITY OF FONTANA STD. DETAIL NO. 1007
- 5 CONSTRUCT 8" CURB AND GUTTER PER CITY OF FONTANA STD. NO. 1000
- 6 CONSTRUCT 4" PCC SIDEWALK PER CITY OF FONTANA STD. NO. 1006 (W=6')
- 7 CONSTRUCT RESIDENTIAL CONCRETE DRIVEWAY PER CITY OF FONTANA STD. NO. 1002 (WIDTH PER PLAN)
- 8 INSTALL STREET LIGHT 16,000 LUMEN PER CITY OF FONTANA STD. NO. 404 (BY OTHERS)
- 9 RELOCATE EXISTING POWER POLES (BY OTHERS)
- 10 ADJUST EXISTING WATER METER TO GRADE (BY OTHERS)
- 11 ADJUST WATER VALVE TO GRADE PER CITY OF FONTANA STD DETAIL NO. 6000
- 12 SIGN TO BE REMOVED, REFER TO SIGNING AND STRIPING PLAN FOR DETAILS
- 13 REMOVE & CONSTRUCT NEW CHAIN LINK FENCE AND GATES @ NEW RIGHT OF WAY LINE
- 14 RELOCATE EXISTING MAILBOX
- 15 REMOVE EXISTING TREES AND BUSHES WITHIN PROPOSED PUBLIC RIGHT OF WAY
- 16 PROTECT IN PLACE
- 17 INSTALL 3" THICK MULCH IN PARKWAY
- 18 CONSTRUCT CATCH BASIN PER CITY OF FONTANA STD. NO. 3004 (W & V PER PLAN)
- 19 CONSTRUCT LOCAL DEPRESSION PER CITY OF FONTANA STD. NO. 3003 CASE C
- 20 REMOVE EXISTING 18" CMP PIPE AND HEADWALLS
- 21 CONSTRUCT MANHOLE PER CITY OF FONTANA STD NO. 3011
- 22 CONSTRUCT MANHOLE PER CITY OF FONTANA STD NO. 3013
- 23 CONSTRUCT 30" R.C.P. PIPE "D" LOAD PER PLAN
- 24 CONSTRUCT 24" R.C.P. PIPE "D" LOAD PER PLAN
- 25 CONSTRUCT 18" R.C.P. PIPE "D" LOAD PER PLAN
- 26 REMOVE EXIST 30" R.C.P. PIPE
- 27 CONSTRUCT PIPE CLOSURE PER DETAIL ON SHEET NO. 2
- 28 INSTALL STREET LIGHT CONDUITS PER EDISON PLAN
- 29 CONSTRUCT 15"x21" CMP ARCH PIPE
- 30 CONSTRUCT PIPE HEADWALL PER CALTRANS STANDARD D89A, SEE SHT. 2
- 31 CONSTRUCT CONCRETE COLLAR PER CITY OF FONTANA STD NO. 3022
- 32 GRADE AND CONSTRUCT 4" THICK PCC OVER COMPACTED NATIVE BEHIND WALK OR DRIVEWAY (LIMITS PER PLAN)
- 33 GRADE AND CONSTRUCT 4" THICK AC OVER COMPACTED NATIVE BEHIND WALK OR DRIVEWAY (LIMITS PER PLAN)
- 34 MODIFY LANDSCAPE & IRRIGATION LINES AS NEEDED
- 35 ADJUST EXISTING FENCE AND GATE PER FINAL GRADE ELEVATION
- 36 CONSTRUCT 6" A.C. CURB PER CITY OF FONTANA STD. NO. 1006
- 37 REMOVE AND CONSTRUCT GUTTER AS SHOWN ON SHEET 5
- 38 CONSTRUCT 3" A.C. SIDEWALK PER CITY OF FONTANA STD. DETAIL NO. 1007 (W=4')
- 39 CONSTRUCT CONCRETE WALL PER "WALL DETAIL" ON SHEET 3

QUANTITIES

4,031 TONS
2 EA
71,224 SF
200 LF
1,439 LF
11,705 SF
8 EA
6 EA
9 EA
6 EA
8 EA
4 EA
893 LF
4 EA
35 EA
EA
11,083 SF
1 EA
1 EA
1 LS
1 EA
2 EA
759 LF
29 LF
36 LF
18 LF
1 EA
1 LS
13 LF
1 EA
1 EA
2 EA
6 EA
1 LS
283 LF
369 LF
40 LF
1,484 SF
410 LF

UTILITY NOTIFICATION LIST

AT&T DISTRIBUTION 1265 N VAN BUREN ST #180 ANAHEIM, CA 92807 (714) 666-5401	KINDER MORGAN ENERGY PARTNERS 1100 TOWN & COUNTRY RD ORANGE, CA 92868 (714) 560-4409
FONTANA WATER COMPANY 11142 GARVEY AVE EL MONTE, CA 91733 (626) 448-6183	SC GAS 1981 W LUGONIA AVE REDLANDS, CA 92374 (909) 335-7755
LEVEL 3 COMMUNICATIONS 1025 ELDORADO BLVD BLDG 534-522 BROOMFIELD, CO 80021 (720) 888-6482	UTILIQUEST FOR SCE DIST EDISON DISTRIBUTION 7851 REDWOOD AVE FONTANA, CA 92336 (909) 357-6221
TIME WARNER CABLE 1500 AUTO CENTER DR ONTARIO, CA 91761 (909)975-3343	SEWER CITY OF FONTANA 8353 SIERRA AVENUE FONTANA, CA 92335 (909) 350-6632



LEGEND

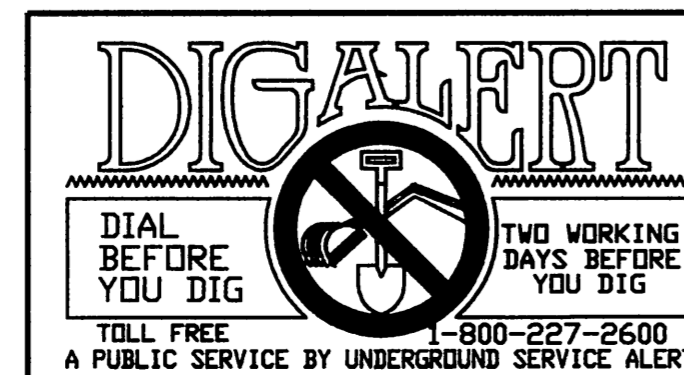
(Symbol)	CONSTRUCT NEW AC PAVEMENT
(Symbol)	PROP SIDEWALK
(Symbol)	EXIST SIDEWALK
(Symbol)	EXISTING GAS LINE
(Symbol)	EXISTING WATER LINE
(Symbol)	EXISTING SEWER LINE
(Symbol)	EXISTING SD LINE
(Symbol)	PROPOSED WALL
(Symbol)	FLOW DIRECTION
(Symbol)	FINISH SURFACE
(Symbol)	TOP OF CURB
(Symbol)	EXISTING GROUND
(Symbol)	EDGE OF PAVEMENT
(Symbol)	EXISTING SURFACE

SHEET INDEX

- 1 TITLE SHEET - INDEX MAP, VICINITY MAP, GENERAL NOTES, CONSTRUCTION NOTES, & QUANTITIES
- 2 GENERAL NOTES TYPICAL SECTIONS & DETAILS
- 3 SANTA ANA AVE STA 694+86.97 - STA 701+50.00
- 4 SANTA ANA AVE STA 701+50.00 - STA 709+00.00
- 5 SANTA ANA AVE STA 709+00.00 - STA 716+92.19
- 6 STORM DRAIN LINE A

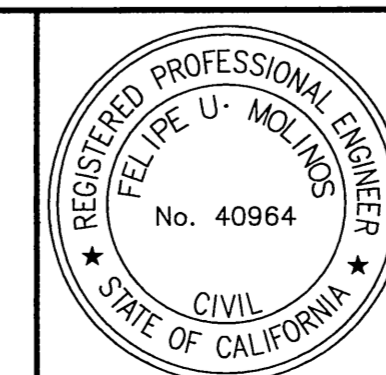
BASIS OF BEARING
CENTERLINE OF SLOVER AVENUE BETWEEN SAN BERNARDINO CO. SURV. GPS CONTROL MONUMENT NOS. 21158 & 21219, BEING THE INTERSECTION OF CITRUS AVENUE & CYPRESS AVENUE RESPECTFULLY, BEING: N89°30'14"E.

BENCHMARK NO. 291 PERPETUATED:
TRANSFERRED ELEVATION FROM CITY OF FONTANA BM 291, A RR SPIKE IN PP NO. 586962H, LOCATED AT THE NE CORNER OF OLEANDER AVE & SANTA ANA AVE, ELEV. 1047.36, TO THE TOP A "PK" NAIL & BRASS WASHER, STAMPED "CITY OF FONTANA BM", SET ON THE TOP OF CURB 1' NORTH OF THE NORTHERLY END OF THE NE CURB RETURN AT OLEANDER AVE & SANTA ANA AVE ELEVATION: 1044.75



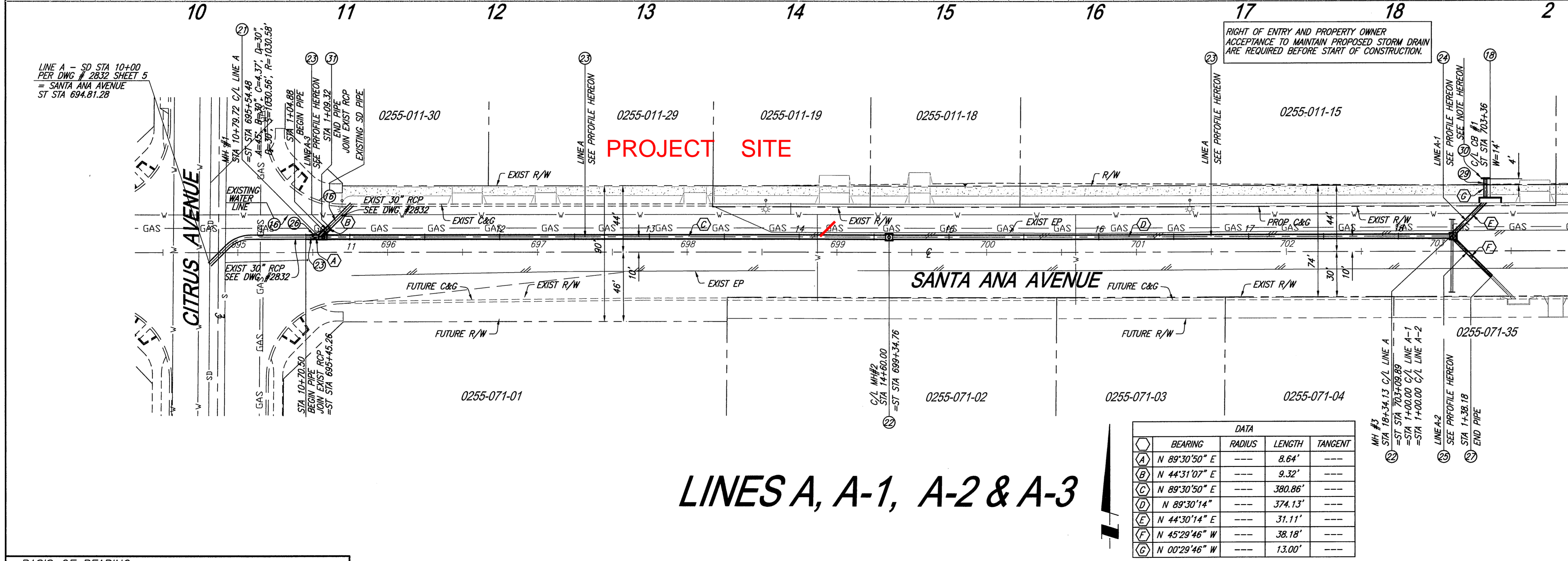
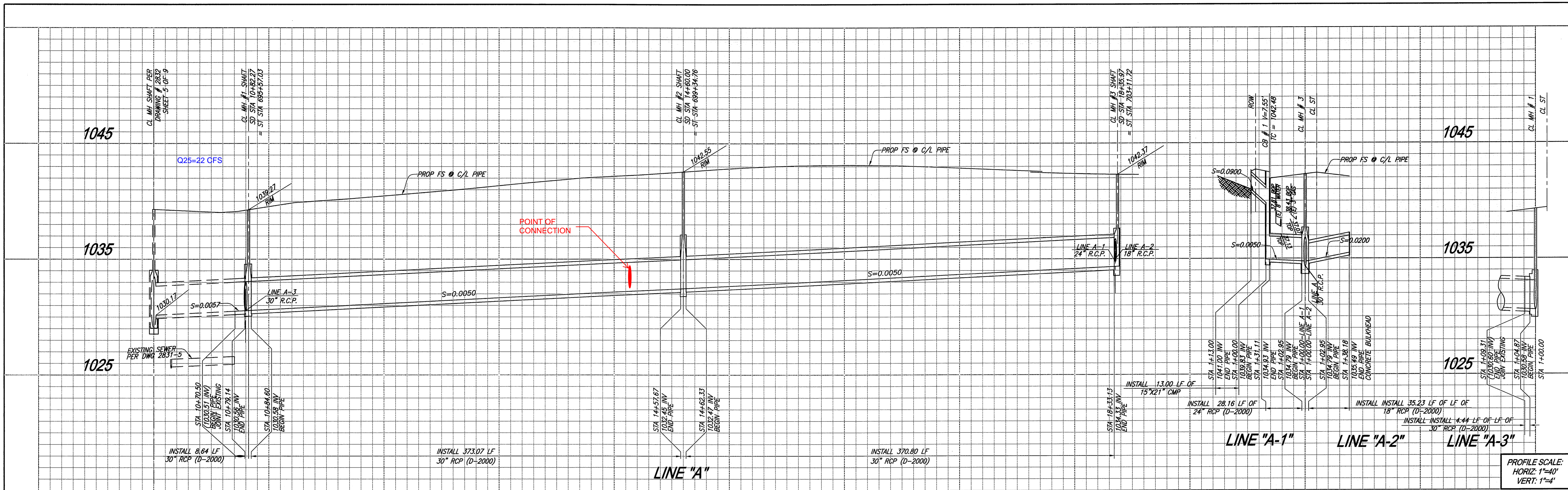
REV.	REVISION DESCRIPTION	DATE	ENGR.	CITY	DATE

SHOULD CONSTRUCTION OF THE REQUIRED IMPROVEMENTS NOT COMMENCE WITHIN TWO YEARS OF THE DATE OF APPROVAL SHOWN HEREON AND CARRIED FORTH IN A DILIGENT MANNER, THE CITY ENGINEER MAY REQUIRE REVISIONS TO THE PLANS TO BRING THEM INTO CONFORMANCE WITH STANDARDS IN EFFECT.



Prepared Under The Supervision Of :
Date :
FELIPE U. MOLINOS R.C.E. 40964

CITY OF FONTANA, CALIFORNIA STREET IMPROVEMENT PLAN		SCALE: AS SHOWN
DRAWN BY: VA	SANTA ANA AVENUE TITLE SHEET INDEX MAP, VICINITY MAP, & QUANTITIES	DATE: 12/06/10
DESIGNED BY: VA/SN		CHECKED BY: SN
CHECKED BY: SN	APPROVED BY: <i>[Signature]</i> CITY ENGINEER	DATE: 5.5.11 R.C.E. 51152
DRAWING NO.: 4859		1/6

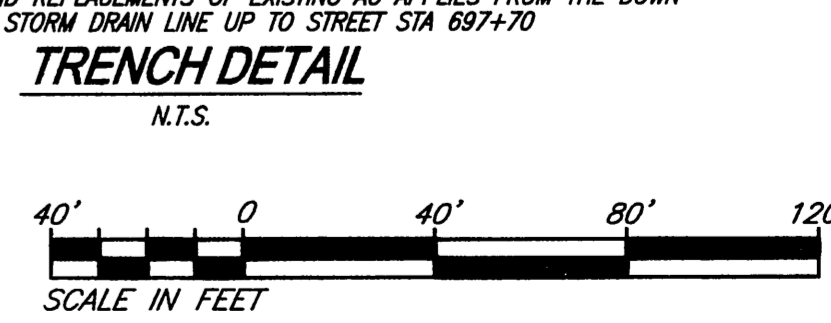
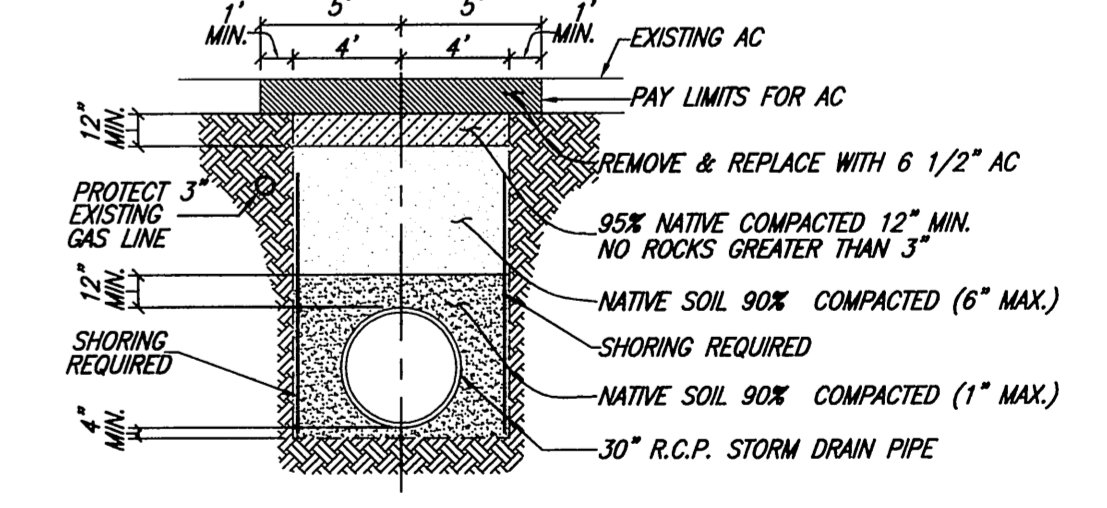


LINES A, A-1, A-2 & A-3

DATA			
BEARING	RADIUS	LENGTH	TANGENT
(A) N 89°30'50" E	---	8.64'	---
(B) N 44°31'07" E	---	9.32'	---
(C) N 89°30'50" E	---	380.86'	---
(D) N 89°30'14" E	---	374.13'	---
(E) N 44°30'14" E	---	31.11'	---
(F) N 45°29'46" W	---	38.18'	---
(G) N 00°29'46" W	---	13.00'	---

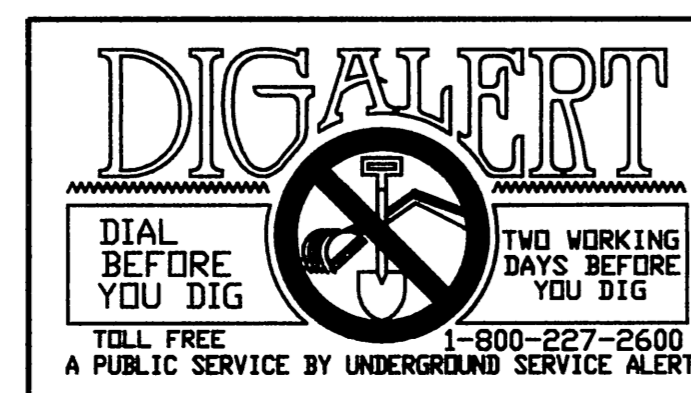
CONSTRUCTION NOTES

- 16 PROTECT IN PLACE
- 18 CONSTRUCT CATCH BASIN PER CITY OF FONTANA STD. NO. 3004 (W & V PER PLAN)
- 21 CONSTRUCT MANHOLE PER CITY OF FONTANA STD NO. 3011
- 22 CONSTRUCT MANHOLE PER CITY OF FONTANA STD NO. 3013
- 23 CONSTRUCT 30" R.C.P. PIPE "D" LOAD PER PLAN
- 24 CONSTRUCT 24" R.C.P. PIPE "D" LOAD PER PLAN
- 25 CONSTRUCT 18" R.C.P. PIPE "D" LOAD PER PLAN
- 26 REMOVE 30" EXISTING R.C.P. PIPE
- 27 CONSTRUCT PIPE CLOSURE PER DETAIL ON SHEET NO. 2
- 29 CONSTRUCT 15'x21" CMP ARCH PIPE
- 30 CONSTRUCT PIPE HEADWALL PER CALTRANS STANDARD DB9A, SEE SHT. 2.
- 31 CONSTRUCT CONCRETE COLLAR PER CITY OF FONTANA STD NO. 3022



BASIS OF BEARING
 CENTERLINE OF SLOVER AVENUE BETWEEN SAN BERNARDINO CO. SURV. GPS CONTROL MONUMENT NO'S. 21158 & 21219, BEING THE INTERSECTION OF CITRUS AVENUE & CYPRESS AVENUE RESPECTFULLY, BEING: N89°30'14"E.

BENCHMARK NO. 291 PERPETUATED:
 TRANSFERRED ELEVATION FROM CITY OF FONTANA BM 291, A RR SPIKE IN PP NO. 586962H, LOCATED AT THE NE CORNER OF OLEANDER AVE & SANTA ANA AVE, ELEV. 1047.36, TO THE TOP A "PK" NAIL & BRASS WASHER, STAMPED "CITY OF FONTANA BM", SET ON THE TOP OF CURB 1' NORTH OF THE NORTHERLY END OF THE NE CURB RETURN AT OLEANDER AVE & SANTA ANA AVE ELEVATION: 1044.75



REV.	REVISION DESCRIPTION	DATE	ENGR.	QTY	DATE

SHOULD CONSTRUCTION OF THE REQUIRED IMPROVEMENTS NOT COMMENCE WITHIN TWO YEARS OF THE DATE OF APPROVAL SHOWN HEREON AND CARRIED FORTH IN A DILIGENT MANNER, THE CITY ENGINEER MAY REQUIRE REVISIONS TO THE PLANS TO BRING THEM INTO CONFORMANCE WITH STANDARDS IN EFFECT.



Prepared Under The Supervision Of :
 Date :
 FELIPE U. MOLINOS R.C.E. 40964

CITY OF FONTANA, CALIFORNIA
 STORM DRAIN IMPROVEMENT PLAN

DRAWN BY: VA	SANTA ANA AVENUE STORM DRAIN LINES A, A-1, A-2, & A-3	SCALE: AS SHOWN
DESIGNED BY: VA/SN		DATE: 12/06/10
CHECKED BY: SN	APPROVED BY: <i>[Signature]</i>	DRAWING NO.: 4859/6
	DATE: 5-9-11	R.C.E. 51152

APPENDIX B

HYDROLOGY CALCULATIONS

EXISTING CONDITION

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
(c) Copyright 1983-99 Advanced Engineering Software (aes)
Ver. 8.0 Release Date: 01/01/99 License ID 1435

Analysis prepared by:

THIENES ENGINEERING
16800 VALLEY VIEW AVENUE
LA MIRADA CA 90638
PH: (714) 521-4811 FAX: (714) 521-4173

***** DESCRIPTION OF STUDY *****

* JOB #3615 SANTA ANA, FONTANA *
* EXISTING CONDITION 100-YEAR *
* NODES 100-101 100X.DAT *

FILE NAME: C:\XDRIVE\3615\100X.DAT
TIME/DATE OF STUDY: 14:23 08/15/2022

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

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
USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL

SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.3700

ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD

FLOW PROCESS FROM NODE 100.00 TO NODE 101.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 637.00
ELEVATION DATA: UPSTREAM(FEET) = 1050.74 DOWNSTREAM(FEET) = 1044.38

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 14.564
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.204

SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
RESIDENTIAL(ARID) "2 DWELLINGS/ACRE"	A	6.78	0.55	0.70	52/81	14.56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.55

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.70

SUBAREA RUNOFF(CFS) = 17.21
TOTAL AREA(ACRES) = 6.78 PEAK FLOW RATE(CFS) = 17.21

=====
END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 6.78 TC(MIN.) = 14.56
EFFECTIVE AREA(ACRES) = 6.78 AREA-AVERAGED Fm(INCH/HR)= 0.38
AREA-AVERAGED Fp(INCH/HR) = 0.55 AREA-AVERAGED Ap = 0.70
PEAK FLOW RATE(CFS) = 17.21

=====
END OF RATIONAL METHOD ANALYSIS

PROPOSED CONDITION

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
(c) Copyright 1983-99 Advanced Engineering Software (aes)
Ver. 8.0 Release Date: 01/01/99 License ID 1435

Analysis prepared by:

THIENES ENGINEERING
16800 VALLEY VIEW AVENUE
LA MIRADA CA 90638
PH: (714) 521-4811 FAX: (714) 521-4173

***** DESCRIPTION OF STUDY *****

* JOB #3615 SANTA ANA, FONTANA *
* PROPOSED CONDITION 100-YEAR *
* NODES 100-111 100P.DAT *

FILE NAME: C:\XDRIVE\3615\100P.DAT
TIME/DATE OF STUDY: 14:08 08/15/2022

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

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
USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL

SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.3700

ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD

FLOW PROCESS FROM NODE 100.00 TO NODE 101.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 681.00
ELEVATION DATA: UPSTREAM(FEET) = 1048.26 DOWNSTREAM(FEET) = 1042.68

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.800
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.833

SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	A	5.24	0.80	0.10	52	10.80

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.80

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.10

SUBAREA RUNOFF(CFS) = 17.70

TOTAL AREA(ACRES) = 5.24 PEAK FLOW RATE(CFS) = 17.70

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) = 1038.68 DOWNSTREAM(FEET) = 1037.31
FLOW LENGTH(FEET) = 78.00 MANNING'S N = 0.012
DEPTH OF FLOW IN 21.0 INCH PIPE IS 14.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 10.24
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 17.70
PIPE TRAVEL TIME(MIN.) = 0.13 Tc(MIN.) = 10.93
LONGEST FLOWPATH FROM NODE 100.00 TO NODE 102.00 = 759.00 FEET.

FLOW PROCESS FROM NODE 102.00 TO NODE 102.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN) = 10.93
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.806
SUBAREA LOSS RATE DATA(AMC III):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
COMMERCIAL A 0.14 0.80 0.10 52
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.80
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.10
SUBAREA AREA(ACRES) = 0.14 SUBAREA RUNOFF(CFS) = 0.47
EFFECTIVE AREA(ACRES) = 5.38 AREA-AVERAGED Fm(INCH/HR) = 0.08
AREA-AVERAGED Fp(INCH/HR) = 0.80 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 5.38 PEAK FLOW RATE(CFS) = 18.04

FLOW PROCESS FROM NODE 102.00 TO NODE 102.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN) = 10.93
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.806
SUBAREA LOSS RATE DATA(AMC III):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
COMMERCIAL A 0.14 0.80 0.10 52
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.80
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.10
SUBAREA AREA(ACRES) = 0.14 SUBAREA RUNOFF(CFS) = 0.47
EFFECTIVE AREA(ACRES) = 5.52 AREA-AVERAGED Fm(INCH/HR) = 0.08
AREA-AVERAGED Fp(INCH/HR) = 0.80 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 5.52 PEAK FLOW RATE(CFS) = 18.51

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) = 1037.31 DOWNSTREAM(FEET) = 1036.40
FLOW LENGTH(FEET) = 100.00 MANNING'S N = 0.012
DEPTH OF FLOW IN 24.0 INCH PIPE IS 16.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 8.08
ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 18.51
PIPE TRAVEL TIME(MIN.) = 0.21 Tc(MIN.) = 11.13
LONGEST FLOWPATH FROM NODE 100.00 TO NODE 103.00 = 859.00 FEET.

FLOW PROCESS FROM NODE 103.00 TO NODE 103.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN) = 11.13
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.764
SUBAREA LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	A	0.08	0.80	0.10	52

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.80
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.10
SUBAREA AREA(ACRES) = 0.08 SUBAREA RUNOFF(CFS) = 0.27
EFFECTIVE AREA(ACRES) = 5.60 AREA-AVERAGED Fm(INCH/HR) = 0.08
AREA-AVERAGED Fp(INCH/HR) = 0.80 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 5.60 PEAK FLOW RATE(CFS) = 18.57

FLOW PROCESS FROM NODE 103.00 TO NODE 111.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 1036.40 DOWNSTREAM(FEET) = 1036.12
FLOW LENGTH(FEET) = 30.00 MANNING'S N = 0.012
DEPTH OF FLOW IN 24.0 INCH PIPE IS 16.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 8.17
ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 18.57
PIPE TRAVEL TIME(MIN.) = 0.06 Tc(MIN.) = 11.19
LONGEST FLOWPATH FROM NODE 100.00 TO NODE 111.00 = 889.00 FEET.

FLOW PROCESS FROM NODE 111.00 TO NODE 111.00 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.) = 11.19
RAINFALL INTENSITY(INCH/HR) = 3.75
AREA-AVERAGED Fm(INCH/HR) = 0.08
AREA-AVERAGED Fp(INCH/HR) = 0.80
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 5.60

TOTAL STREAM AREA(ACRES) = 5.60
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 18.57

FLOW PROCESS FROM NODE 110.00 TO NODE 111.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 702.00
 ELEVATION DATA: UPSTREAM(FEET) = 1042.00 DOWNSTREAM(FEET) = 1036.12

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.884
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.815
 SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	A	0.49	0.80	0.10	52	10.88

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.80
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.10
 SUBAREA RUNOFF(CFS) = 1.65
 TOTAL AREA(ACRES) = 0.49 PEAK FLOW RATE(CFS) = 1.65

FLOW PROCESS FROM NODE 111.00 TO NODE 111.00 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.) = 10.88
 RAINFALL INTENSITY(INCH/HR) = 3.82
 AREA-AVERAGED Fm(INCH/HR) = 0.08
 AREA-AVERAGED Fp(INCH/HR) = 0.80
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.49
 TOTAL STREAM AREA(ACRES) = 0.49
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.65

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap (ACRES)	Ae (ACRES)	HEADWATER NODE
1	18.57	11.19	3.751	0.80(0.08)	0.10	5.6	100.00
2	1.65	10.88	3.815	0.80(0.08)	0.10	0.5	110.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap (ACRES)	Ae (ACRES)	HEADWATER NODE
1	20.19	11.19	3.751	0.80(0.08)	0.10	6.1	100.00
2	20.02	10.88	3.815	0.80(0.08)	0.10	5.9	110.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 20.19 Tc(MIN.) = 11.19
 EFFECTIVE AREA(ACRES) = 6.09 AREA-AVERAGED Fm(INCH/HR) = 0.08
 AREA-AVERAGED Fp(INCH/HR) = 0.80 AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 6.09
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 111.00 = 889.00 FEET.

=====

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 6.09 TC(MIN.) = 11.19
 EFFECTIVE AREA(ACRES) = 6.09 AREA-AVERAGED Fm(INCH/HR)= 0.08
 AREA-AVERAGED Fp(INCH/HR) = 0.80 AREA-AVERAGED Ap = 0.10
 PEAK FLOW RATE(CFS) = 20.19

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20.02	10.88	3.815	0.80(0.08)	0.10	5.9	110.00
2	20.19	11.19	3.751	0.80(0.08)	0.10	6.1	100.00

=====

=====

END OF RATIONAL METHOD ANALYSIS

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
(c) Copyright 1983-99 Advanced Engineering Software (aes)
Ver. 8.0 Release Date: 01/01/99 License ID 1435

Analysis prepared by:

THIENES ENGINEERING
16800 VALLEY VIEW AVENUE
LA MIRADA CA 90638
PH: (714) 521-4811 FAX: (714) 521-4173

***** DESCRIPTION OF STUDY *****

* JOB #3615 SANTA ANA, FONTANA *
* PROPOSED CONDITION 100-YEAR *
* NODES 120-121 120P.DAT *

FILE NAME: C:\XDRIVE\3615\120P.DAT
TIME/DATE OF STUDY: 13:54 08/15/2022

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

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
USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL

SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.3700

ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD

FLOW PROCESS FROM NODE 120.00 TO NODE 121.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 428.00
ELEVATION DATA: UPSTREAM(FEET) = 1043.46 DOWNSTREAM(FEET) = 1040.41

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 21.420
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.542

SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER						
"OPEN BRUSH"	A	0.15	0.61	1.00	66	21.42

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.61
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00

SUBAREA RUNOFF(CFS) = 0.26
TOTAL AREA(ACRES) = 0.15 PEAK FLOW RATE(CFS) = 0.26

FLOW PROCESS FROM NODE 120.00 TO NODE 121.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN) = 21.42
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.542
SUBAREA LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	A	0.09	0.80	0.10	52

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.80
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.10
SUBAREA AREA(ACRES) = 0.09 SUBAREA RUNOFF(CFS) = 0.20
EFFECTIVE AREA(ACRES) = 0.24 AREA-AVERAGED Fm(INCH/HR) = 0.41
AREA-AVERAGED Fp(INCH/HR) = 0.62 AREA-AVERAGED Ap = 0.66
TOTAL AREA(ACRES) = 0.24 PEAK FLOW RATE(CFS) = 0.46

FLOW PROCESS FROM NODE 120.00 TO NODE 121.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN) = 21.42
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.542
SUBAREA LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	A	0.04	0.61	1.00	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.61
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
SUBAREA AREA(ACRES) = 0.04 SUBAREA RUNOFF(CFS) = 0.07
EFFECTIVE AREA(ACRES) = 0.28 AREA-AVERAGED Fm(INCH/HR) = 0.44
AREA-AVERAGED Fp(INCH/HR) = 0.62 AREA-AVERAGED Ap = 0.71
TOTAL AREA(ACRES) = 0.28 PEAK FLOW RATE(CFS) = 0.53

=====

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 0.28 TC(MIN.) = 21.42
EFFECTIVE AREA(ACRES) = 0.28 AREA-AVERAGED Fm(INCH/HR)= 0.44
AREA-AVERAGED Fp(INCH/HR) = 0.62 AREA-AVERAGED Ap = 0.71
PEAK FLOW RATE(CFS) = 0.53

=====

END OF RATIONAL METHOD ANALYSIS

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
(c) Copyright 1983-99 Advanced Engineering Software (aes)
Ver. 8.0 Release Date: 01/01/99 License ID 1435

Analysis prepared by:

THIENES ENGINEERING
16800 VALLEY VIEW AVENUE
LA MIRADA CA 90638
PH: (714) 521-4811 FAX: (714) 521-4173

***** DESCRIPTION OF STUDY *****

* JOB #3615 SANTA ANA, FONTANA *
* PROPOSED CONDITION 100-YEAR *
* NODES 130-131 130P.DAT *

FILE NAME: C:\XDRIVE\3615\130P.DAT
TIME/DATE OF STUDY: 13:57 08/15/2022

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

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
USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL

SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.3700

ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD

FLOW PROCESS FROM NODE 130.00 TO NODE 131.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 564.00
ELEVATION DATA: UPSTREAM(FEET) = 1046.67 DOWNSTREAM(FEET) = 1040.36

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 21.856
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.511

SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER						
"OPEN BRUSH"	A	0.41	0.61	1.00	66	21.86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.61

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00

SUBAREA RUNOFF(CFS) = 0.70
TOTAL AREA(ACRES) = 0.41 PEAK FLOW RATE(CFS) = 0.70

=====
END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 0.41 TC(MIN.) = 21.86
EFFECTIVE AREA(ACRES) = 0.41 AREA-AVERAGED Fm(INCH/HR)= 0.61
AREA-AVERAGED Fp(INCH/HR) = 0.61 AREA-AVERAGED Ap = 1.00
PEAK FLOW RATE(CFS) = 0.70

=====
=====
END OF RATIONAL METHOD ANALYSIS

APPENDIX C

DETENTION CALCULATIONS

NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS

(C) Copyright 1989-99 Advanced Engineering Software (aes)
Ver. 8.0 Release Date: 01/01/99 License ID 1435

Analysis prepared by:

THIENES ENGINEERING
16800 VALLEY VIEW AVENUE
LA MIRADA CA 90638
PH: (714) 521-4811 FAX: (714) 521-4173

*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
AND LOW LOSS FRACTION ESTIMATIONS FOR AMC III:

TOTAL 24-HOUR DURATION RAINFALL DEPTH = 8.10 (inches)

SOIL-COVER TYPE	AREA (Acres)	PERCENT OF PERVIOUS AREA	SCS CURVE NUMBER	LOSS RATE Fp(in./hr.)	YIELD
1	5.24	10.00	52.(32.)	0.742	0.905

TOTAL AREA (Acres) = 5.24

AREA-AVERAGED LOSS RATE, \bar{F}_m (in./hr.) = 0.074

AREA-AVERAGED LOW LOSS FRACTION, \bar{Y} = 0.095

SMALL AREA UNIT HYDROGRAPH MODEL

(C) Copyright 1989-99 Advanced Engineering Software (aes)
 Ver. 8.0 Release Date: 01/01/99 License ID 1435

Analysis prepared by:

THIENES ENGINEERING
 16800 VALLEY VIEW AVENUE
 LA MIRADA CA 90638
 PH: (714) 521-4811 FAX: (714) 521-4173

RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
 TOTAL CATCHMENT AREA(ACRES) = 5.24
 SOIL-LOSS RATE, Fm, (INCH/HR) = 0.074
 LOW LOSS FRACTION = 0.095
 TIME OF CONCENTRATION(MIN.) = 10.80
 SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
 USER SPECIFIED RAINFALL VALUES ARE USED
 RETURN FREQUENCY(YEARS) = 100
 5-MINUTE POINT RAINFALL VALUE(INCHES) = 0.50
 30-MINUTE POINT RAINFALL VALUE(INCHES) = 1.02
 1-HOUR POINT RAINFALL VALUE(INCHES) = 1.37
 3-HOUR POINT RAINFALL VALUE(INCHES) = 2.40
 6-HOUR POINT RAINFALL VALUE(INCHES) = 3.52
 24-HOUR POINT RAINFALL VALUE(INCHES) = 8.10

TOTAL CATCHMENT RUNOFF VOLUME(ACRE-FEET) = 2.89
 TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) = 0.65

TIME (HOURS)	VOLUME (AF)	Q (CFS)	0.	5.0	10.0	15.0	20.0
0.16	0.0064	0.87	.Q	.	.	.	.
0.34	0.0194	0.87	.Q	.	.	.	.
0.52	0.0323	0.87	.Q	.	.	.	.
0.70	0.0454	0.88	.Q	.	.	.	.
0.88	0.0585	0.88	.Q	.	.	.	.
1.06	0.0716	0.89	.Q	.	.	.	.
1.24	0.0848	0.89	.Q	.	.	.	.
1.42	0.0981	0.90	.Q	.	.	.	.
1.60	0.1115	0.90	.Q	.	.	.	.
1.78	0.1249	0.90	.Q	.	.	.	.
1.96	0.1384	0.91	.Q	.	.	.	.
2.14	0.1519	0.91	.Q	.	.	.	.
2.32	0.1655	0.92	.Q	.	.	.	.
2.50	0.1792	0.92	.Q	.	.	.	.
2.68	0.1930	0.93	.Q	.	.	.	.
2.86	0.2068	0.93	.Q	.	.	.	.
3.04	0.2207	0.94	.Q	.	.	.	.

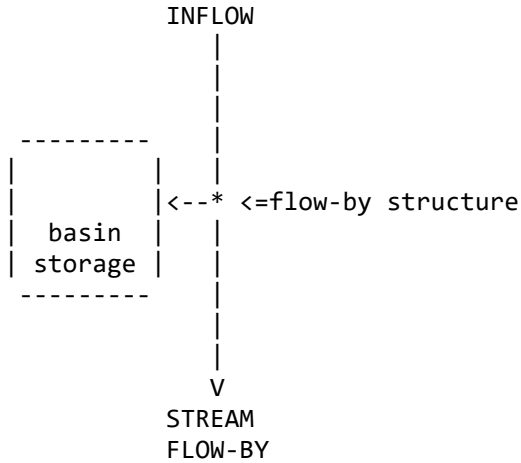
3.22	0.2347	0.94	.Q	.	.	.	.
3.40	0.2488	0.95	.Q	.	.	.	.
3.58	0.2629	0.95	.Q	.	.	.	.
3.76	0.2771	0.96	.Q	.	.	.	.
3.94	0.2914	0.97	.Q	.	.	.	.
4.12	0.3058	0.97	.Q	.	.	.	.
4.30	0.3203	0.98	.Q	.	.	.	.
4.48	0.3349	0.98	.Q	.	.	.	.
4.66	0.3495	0.99	.Q	.	.	.	.
4.84	0.3643	0.99	.Q	.	.	.	.
5.02	0.3791	1.00	.Q	.	.	.	.
5.20	0.3941	1.01	.Q	.	.	.	.
5.38	0.4091	1.02	.Q	.	.	.	.
5.56	0.4242	1.02	.Q	.	.	.	.
5.74	0.4395	1.03	.Q	.	.	.	.
5.92	0.4548	1.03	.Q	.	.	.	.
6.10	0.4703	1.04	.Q	.	.	.	.
6.28	0.4858	1.05	.Q	.	.	.	.
6.46	0.5015	1.06	.Q	.	.	.	.
6.64	0.5173	1.06	.Q	.	.	.	.
6.82	0.5332	1.08	.Q	.	.	.	.
7.00	0.5492	1.08	.Q	.	.	.	.
7.18	0.5654	1.09	.Q	.	.	.	.
7.36	0.5817	1.10	.Q	.	.	.	.
7.54	0.5981	1.11	.Q	.	.	.	.
7.72	0.6147	1.12	.Q	.	.	.	.
7.90	0.6314	1.13	.Q	.	.	.	.
8.08	0.6482	1.14	.Q	.	.	.	.
8.26	0.6653	1.15	.Q	.	.	.	.
8.44	0.6824	1.16	.Q	.	.	.	.
8.62	0.6997	1.17	.Q	.	.	.	.
8.80	0.7172	1.18	.Q	.	.	.	.
8.98	0.7349	1.19	.Q	.	.	.	.
9.16	0.7527	1.20	.Q	.	.	.	.
9.34	0.7707	1.22	.Q	.	.	.	.
9.52	0.7889	1.23	.Q	.	.	.	.
9.70	0.8073	1.25	.Q	.	.	.	.
9.88	0.8259	1.26	.Q	.	.	.	.
10.06	0.8448	1.28	.Q	.	.	.	.
10.24	0.8638	1.29	.Q	.	.	.	.
10.42	0.8831	1.31	.Q	.	.	.	.
10.60	0.9026	1.32	.Q	.	.	.	.
10.78	0.9224	1.34	.Q	.	.	.	.
10.96	0.9425	1.35	.Q	.	.	.	.
11.14	0.9628	1.38	.Q	.	.	.	.
11.32	0.9834	1.39	.Q	.	.	.	.
11.50	1.0043	1.42	.Q	.	.	.	.
11.68	1.0256	1.44	.Q	.	.	.	.
11.86	1.0472	1.47	.Q	.	.	.	.
12.04	1.0692	1.48	.Q	.	.	.	.
12.22	1.0906	1.40	.Q	.	.	.	.
12.40	1.1116	1.42	.Q	.	.	.	.
12.58	1.1330	1.46	.Q	.	.	.	.
12.76	1.1549	1.48	.Q	.	.	.	.
12.94	1.1773	1.53	.Q	.	.	.	.
13.12	1.2003	1.56	.Q	.	.	.	.
13.30	1.2240	1.62	.Q	.	.	.	.

13.48	1.2483	1.65	.	Q	.	.	.	.
13.66	1.2733	1.72	.	Q	.	.	.	.
13.84	1.2992	1.76	.	Q	.	.	.	.
14.02	1.3260	1.85	.	Q	.	.	.	.
14.20	1.3531	1.80	.	Q	.	.	.	.
14.38	1.3804	1.87	.	Q	.	.	.	.
14.56	1.4087	1.93	.	Q	.	.	.	.
14.74	1.4386	2.09	.	Q	.	.	.	.
14.92	1.4704	2.19	.	Q	.	.	.	.
15.10	1.5047	2.42	.	Q	.	.	.	.
15.28	1.5419	2.58	.	Q	.	.	.	.
15.46	1.5813	2.73	.	Q	.	.	.	.
15.64	1.6225	2.81	.	Q	.	.	.	.
15.82	1.6718	3.82	.		Q	.	.	.
16.00	1.7396	5.30	.			Q	.	.
16.18	1.9089	17.45	.				Q	.
16.36	2.0629	3.26	.		Q	.	.	.
16.54	2.1076	2.77	.		Q	.	.	.
16.72	2.1453	2.30	.		Q	.	.	.
16.90	2.1773	2.01	.		Q	.	.	.
17.08	2.2056	1.81	.		Q	.	.	.
17.26	2.2325	1.80	.		Q	.	.	.
17.44	2.2584	1.68	.		Q	.	.	.
17.62	2.2827	1.59	.		Q	.	.	.
17.80	2.3057	1.51	.		Q	.	.	.
17.98	2.3277	1.44	.		Q	.	.	.
18.16	2.3492	1.46	.		Q	.	.	.
18.34	2.3709	1.45	.		Q	.	.	.
18.52	2.3922	1.41	.		Q	.	.	.
18.70	2.4128	1.37	.		Q	.	.	.
18.88	2.4328	1.33	.		Q	.	.	.
19.06	2.4524	1.30	.		Q	.	.	.
19.24	2.4714	1.27	.		Q	.	.	.
19.42	2.4900	1.24	.		Q	.	.	.
19.60	2.5083	1.21	.		Q	.	.	.
19.78	2.5261	1.19	.		Q	.	.	.
19.96	2.5436	1.16	.		Q	.	.	.
20.14	2.5607	1.14	.		Q	.	.	.
20.32	2.5776	1.12	.		Q	.	.	.
20.50	2.5942	1.10	.		Q	.	.	.
20.68	2.6105	1.09	.		Q	.	.	.
20.86	2.6265	1.07	.		Q	.	.	.
21.04	2.6423	1.05	.		Q	.	.	.
21.22	2.6578	1.04	.		Q	.	.	.
21.40	2.6732	1.02	.		Q	.	.	.
21.58	2.6883	1.01	.		Q	.	.	.
21.76	2.7033	1.00	.		Q	.	.	.
21.94	2.7180	0.99	.		Q	.	.	.
22.12	2.7326	0.97	.		Q	.	.	.
22.30	2.7470	0.96	.		Q	.	.	.
22.48	2.7612	0.95	.		Q	.	.	.
22.66	2.7753	0.94	.		Q	.	.	.
22.84	2.7892	0.93	.		Q	.	.	.
23.02	2.8029	0.92	.		Q	.	.	.
23.20	2.8165	0.91	.		Q	.	.	.
23.38	2.8300	0.90	.		Q	.	.	.
23.56	2.8434	0.89	.		Q	.	.	.

23.74	2.8566	0.88	.Q	.	.	.	.
23.92	2.8697	0.88	.Q	.	.	.	.
24.10	2.8827	0.87	.Q	.	.	.	.
24.28	2.8891	0.00	Q	.	.	.	.

=====

FLOW PASS A FLOW-BY STRUCTURE:



MAXIMUM FLOW-BY Q(CFS) = 13.00

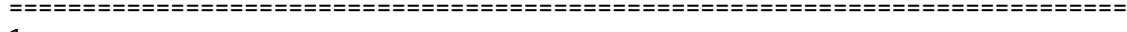
FLOW-BY BASIN MODELING RESULTS:

MODEL TIME (HRS)	INFLOW (CFS)	FLOW-BY (CFS)	BASIN VOLUME (AF)
0.160	0.87	0.87	0.000
0.340	0.87	0.87	0.000
0.520	0.87	0.87	0.000
0.700	0.88	0.88	0.000
0.880	0.88	0.88	0.000
1.060	0.89	0.89	0.000
1.240	0.89	0.89	0.000
1.420	0.90	0.90	0.000
1.600	0.90	0.90	0.000
1.780	0.90	0.90	0.000
1.960	0.91	0.91	0.000
2.140	0.91	0.91	0.000
2.320	0.92	0.92	0.000
2.500	0.92	0.92	0.000
2.680	0.93	0.93	0.000
2.860	0.93	0.93	0.000
3.040	0.94	0.94	0.000
3.220	0.94	0.94	0.000
3.400	0.95	0.95	0.000
3.580	0.95	0.95	0.000

3.760	0.96	0.96	0.000
3.940	0.97	0.97	0.000
4.120	0.97	0.97	0.000
4.300	0.98	0.98	0.000
4.480	0.98	0.98	0.000
4.660	0.99	0.99	0.000
4.840	0.99	0.99	0.000
5.020	1.00	1.00	0.000
5.200	1.01	1.01	0.000
5.380	1.02	1.02	0.000
5.560	1.02	1.02	0.000
5.740	1.03	1.03	0.000
5.920	1.03	1.03	0.000
6.100	1.04	1.04	0.000
6.280	1.05	1.05	0.000
6.460	1.06	1.06	0.000
6.640	1.06	1.06	0.000
6.820	1.08	1.08	0.000
7.000	1.08	1.08	0.000
7.180	1.09	1.09	0.000
7.360	1.10	1.10	0.000
7.540	1.11	1.11	0.000
7.720	1.12	1.12	0.000
7.900	1.13	1.13	0.000
8.080	1.14	1.14	0.000
8.260	1.15	1.15	0.000
8.440	1.16	1.16	0.000
8.620	1.17	1.17	0.000
8.800	1.18	1.18	0.000
8.980	1.19	1.19	0.000
9.160	1.20	1.20	0.000
9.340	1.22	1.22	0.000
9.520	1.23	1.23	0.000
9.700	1.25	1.25	0.000
9.880	1.26	1.26	0.000
10.060	1.28	1.28	0.000
10.240	1.29	1.29	0.000
10.420	1.31	1.31	0.000
10.600	1.32	1.32	0.000
10.780	1.34	1.34	0.000
10.960	1.35	1.35	0.000
11.140	1.38	1.38	0.000
11.320	1.39	1.39	0.000
11.500	1.42	1.42	0.000
11.680	1.44	1.44	0.000
11.860	1.47	1.47	0.000
12.040	1.48	1.48	0.000
12.220	1.40	1.40	0.000
12.400	1.42	1.42	0.000
12.580	1.46	1.46	0.000
12.760	1.48	1.48	0.000
12.940	1.53	1.53	0.000
13.120	1.56	1.56	0.000
13.300	1.62	1.62	0.000
13.480	1.65	1.65	0.000
13.660	1.72	1.72	0.000
13.840	1.76	1.76	0.000

14.020	1.85	1.85	0.000
14.200	1.80	1.80	0.000
14.380	1.87	1.87	0.000
14.560	1.93	1.93	0.000
14.740	2.09	2.09	0.000
14.920	2.19	2.19	0.000
15.100	2.42	2.42	0.000
15.280	2.58	2.58	0.000
15.460	2.73	2.73	0.000
15.640	2.81	2.81	0.000
15.820	3.82	3.82	0.000
16.000	5.30	5.30	0.000
16.180	17.45	13.00	0.066
16.360	3.26	3.26	0.066
16.540	2.77	2.77	0.066
16.720	2.30	2.30	0.066
16.900	2.01	2.01	0.066
17.080	1.81	1.81	0.066
17.260	1.80	1.80	0.066
17.440	1.68	1.68	0.066
17.620	1.59	1.59	0.066
17.800	1.51	1.51	0.066
17.980	1.44	1.44	0.066
18.160	1.46	1.46	0.066
18.340	1.45	1.45	0.066
18.520	1.41	1.41	0.066
18.700	1.37	1.37	0.066
18.880	1.33	1.33	0.066
19.060	1.30	1.30	0.066
19.240	1.27	1.27	0.066
19.420	1.24	1.24	0.066
19.600	1.21	1.21	0.066
19.780	1.19	1.19	0.066
19.960	1.16	1.16	0.066
20.140	1.14	1.14	0.066
20.320	1.12	1.12	0.066
20.500	1.10	1.10	0.066
20.680	1.09	1.09	0.066
20.860	1.07	1.07	0.066
21.040	1.05	1.05	0.066
21.220	1.04	1.04	0.066
21.400	1.02	1.02	0.066
21.580	1.01	1.01	0.066
21.760	1.00	1.00	0.066
21.940	0.99	0.99	0.066
22.120	0.97	0.97	0.066
22.300	0.96	0.96	0.066
22.480	0.95	0.95	0.066
22.660	0.94	0.94	0.066
22.840	0.93	0.93	0.066
23.020	0.92	0.92	0.066
23.200	0.91	0.91	0.066
23.380	0.90	0.90	0.066
23.560	0.89	0.89	0.066
23.740	0.88	0.88	0.066
23.920	0.88	0.88	0.066
24.100	0.87	0.87	0.066

24.280 0.00 0.00 0.066



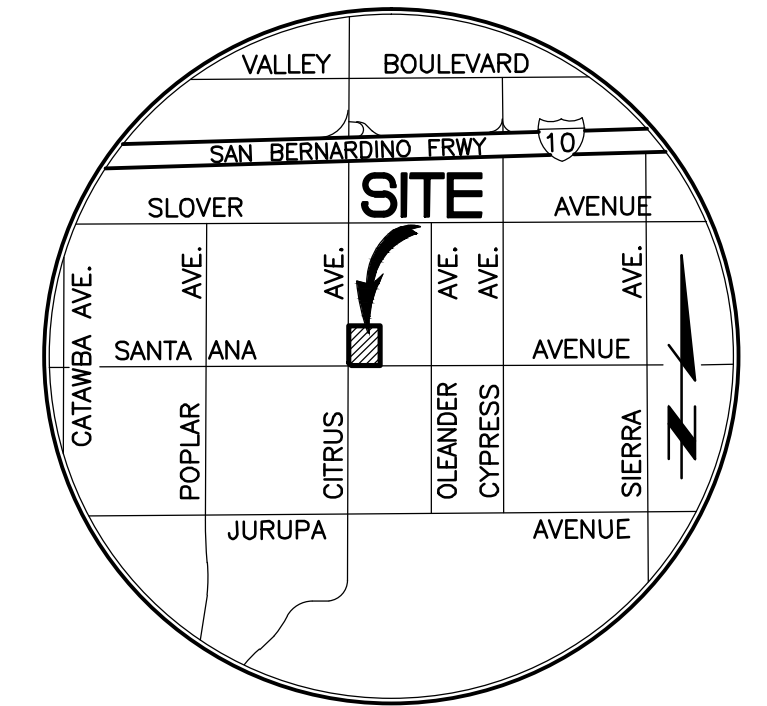
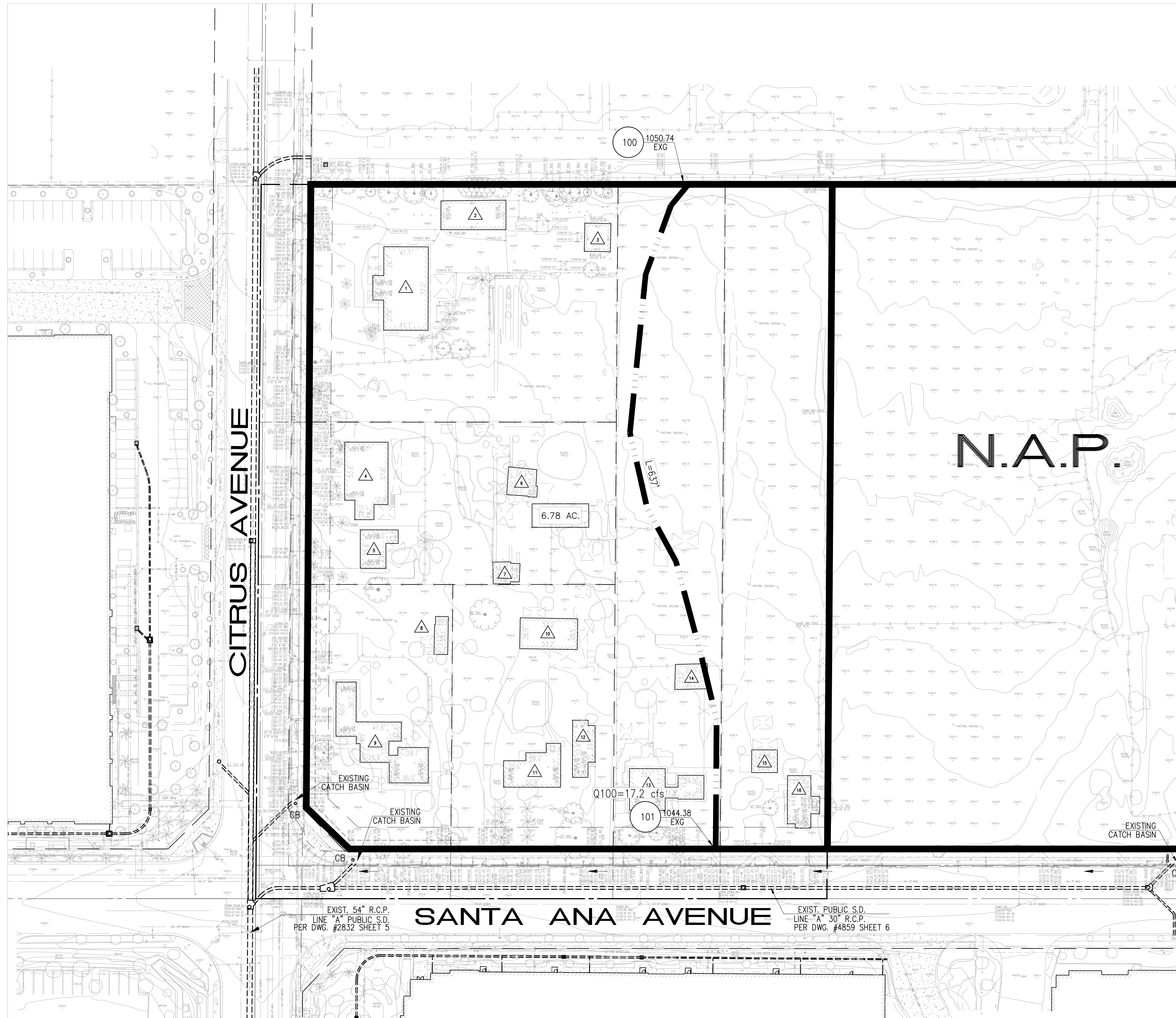
1

SANTA ANA INDUSTRIAL DEVELOPMENT BLDG. 1
EASTERLY TRUCK YARD PONDING

Elevation	Depth (feet)	Area (sq. ft.)	Volume (c.f.)	Σ Volume (c.f.)	Σ Volume (ac-ft)
1042.59	0.00	46.4	148	148	0.00
1042.80	0.21	1360	559	707	0.016
1043.00	0.41	4232	1190	1,897	0.044
1043.20	0.61	7670	1051	2,948	0.068
1043.32	0.73	9839	847	3,795	0.087
1043.40	0.81	11338	2662	6,457	0.148
1043.60	1.01	15283			

APPENDIX D

HYDROLOGY MAP

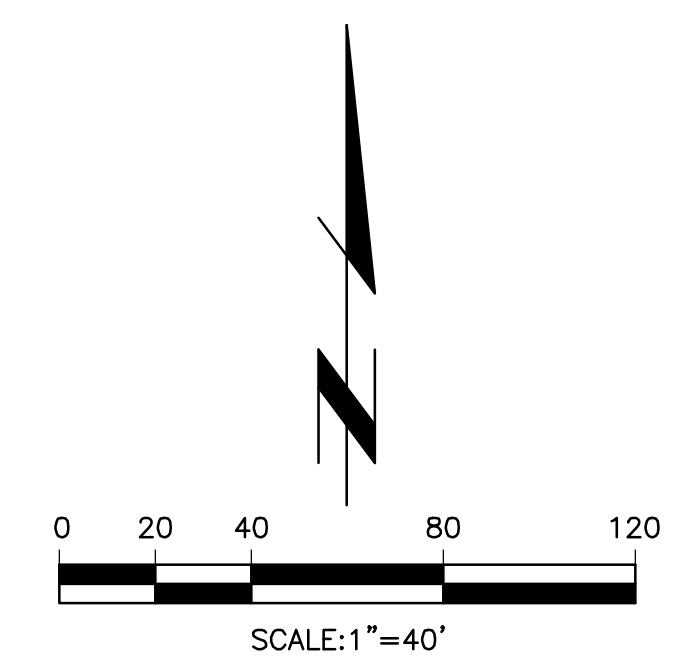


VICINITY MAP
N.T.S.

EXIST. 54" R.C.P.
LINE "A" PUBLIC S.D.
PER DWG. #2832 SHEET 5

SANTA ANA AVENUE

EXIST. PUBLIC S.D.
LINE "A" 30" R.C.P.
PER DWG. #4859 SHEET 6



PREPARED FOR:
ACACIA REAL ESTATE GROUP
260 NEWPORT CENTER DR., SUITE 100
NEWPORT BEACH, CA 92660
PHONE: (949) 640-9995

PREPARED BY:
T&E Thienes Engineering, Inc.
CIVIL ENGINEERING - LAND SURVEYING
14140 FIRESTONE BOULEVARD
LA MIRADA, CALIFORNIA 90638
PH: (714) 521-4811 FAX: (714) 521-4173

CITY OF FONTANA ENGINEERING DEPARTMENT HYDROLOGY MAP (EXISTING CONDITION) BUILDING 1 SANTA ANA AVENUE INDUSTRIAL DEVELOPMENT FONTANA, CA		3615/1 OF 2 SHEETS
Designed by _____ Date _____ Checked by _____ Date _____ Designed by _____ Date _____ Checked by _____ Date _____	Approved by _____ Date _____ Public Works Director R.C.E. XXXXX	
Sheet 1 of 2 Sheets		
Last Update: 8/15/22 0:\3600-3699\3615\Building 1\3615 B1HYD-EX-PRELIM.dwg		

