



**Thienes Engineering, Inc.**  
CIVIL ENGINEERING • LAND SURVEYING

## **PRELIMINARY HYDROLOGY CALCULATIONS**

FOR

PEN21-0079 / LST21-0039  
LDC ALESSANDRO BUSINESS PARK  
NORTHEAST CORNER OF ALESSANDRO BLVD. AND DAY STREET  
MORENO VALLEY, CALIFORNIA

PREPARED FOR

LDC INDUSTRIAL REALTY LLC  
555 N. EL CAMINO REAL, #A452  
SAN CLEMENTE, CA 92672  
PHONE: (949) 226-4601

AUGUST 7, 2020  
REVISED DECEMBER 24, 2020  
REVISED MARCH 26, 2021  
REVISED JUNE 22, 2021

JOB NO. 3846

PREPARED BY

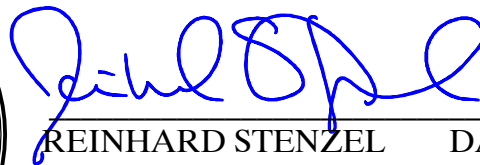
THIENES ENGINEERING  
14349 FIRESTONE BOULEVARD  
LA MIRADA, CALIFORNIA 90638  
P. (714) 521-4811  
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# PRELIMINARY HYDROLOGY CALCULATIONS

FOR

**PEN21-0079 / LST21-0039**  
**LDC ALESSANDRO BUSINESS PARK**

PREPARED BY TONY NUÑEZ  
UNDER THE SUPERVISION OF



06/22/2021

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

## INTRODUCTION

### A: PROJECT LOCATION

The project site is located on the northeast corner of Alessandro Blvd. and Day St. 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 that ultimately drains to Alessandro Blvd.

### C: PROJECT STAFF:

Thienes Engineering staff involved in this study include:

Reinhard Stenzel  
Tony Nunez  
Kristie Ferronato



## DISCUSSION

### Project Description

The project site encompasses approximately 8.2 gross acres with 8.05 net acres. Improvements to the site include a warehouse type building that is approximately 164,489 square feet. There will be a truck yard on the west side of the proposed building. Vehicle parking will be on the north and east sides of the project. Proposed landscaping will be street adjacent and throughout the site.

### Master Plan of Drainage

The site is within the study area of the Line G-G Master Drainage Plan, Project No. 02-8928002, dated December 30, 2004, prepared by AEI CASC Engineering. There are four alternatives for Line G-G. However, the construction of the 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.

Please see Appendix A for Line G-G maps and other pertinent reference materials.

### Existing Off-Site Run-On

There are two existing catch basins on Sherman Avenue near the intersection of Nolze and Sherman, one on the northerly side of Sherman Avenue and the other on the southerly side. These catch basins discharge into an earthen ditch on the project site. The ditch flows southwesterly towards Day Street. There is a low spot along Day Street and the runoff is conveyed westerly through an under sidewalk drain to a cross gutter on Day Street. Flows then pass through a second under sidewalk drain along the west side of Day Street, then discharges into an existing ditch on private property. The runoff does not have a clear path to another collection point. These existing storm drain features are labeled on the existing condition hydrology map in Appendix D.

### Existing Condition

In the existing condition, the site is undeveloped. The site can be divided into 2 drainage zones. The northwestern 5.1 acres of the site drain towards the low spot in Day Street. This runoff continues westerly in a cross gutter at Day Street as describe above. These drainage devices are shown on the existing condition hydrology map. The 2-year, 10-year and 100-year peak flow rates are approximately 2.0 cfs, 4.0 cfs and 7.0 cfs, respectively. AES software was used to calculate all rational method peak flow rates.

The southeastern 2.95 acres of the site drains to Alessandro Blvd. The respective 2-year, 10-year, and 100-year peak flow rates are approximately 1.0 cfs, 2.0 cfs and 3.5 cfs. AES software was used to calculate all rational method peak flow rates.

Please see Appendix B for the Existing Condition Hydrology Calculations and Appendix D for the Existing Condition Hydrology Map.

### Proposed Condition

Runoff from the eastern portion of the building and the eastern vehicle parking (nodes 100-101) will be collected in the southeast corner of the site. A private storm drain, line A, will convey the runoff westerly towards the truck yard. The runoff from the north drive aisle and vehicle parking will be collected in a proposed catch basin in the northwest corner of the site (nodes 200-201). A proposed storm drain, line B, will convey the runoff southerly. The storm drain will continue southerly and collect the runoff from the remaining portions of the site (nodes 202, 300-401). The 2-year, 10-year and 100-year peak flow rates are approximately 7.4 cfs, 12.3 cfs and 19.1 cfs, respectively. AES software was used to calculate all rational method peak flow rates.

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

### Detention

The site will limit discharge to existing conditions flow rates. The peak flow will be detained in the truck yard. The truck yard provides 0.54 ac-ft of storage. The flow will be limited to 7.7 cfs which will require approximately 8.5” of ponding in the truck yard. The limits of ponding elevation is about 1553.70, covering an area of approximately 18,430 square feet. Preliminary detention calculations were determined with Flood Hydrograph Routing Program, CIVILCADD/CIVILDESIGN.

Q-discharge at each incremental depth is calculated using the orifice equation, where hydraulic head “H” is assumed to be the surface ponding depth. Storm drain pipe sizes and hydraulics will be determined during the final design to limit the proposed 100-year site discharge to the required amount.

Please see Appendix C for Detention Calculations.

### Public Storm Drain

A public storm drain will be proposed to collect the runoff from the existing catch basins in Sherman Avenue. Then it will continue westerly towards Day Street., where it will turn south. It will continue southerly collecting the runoff from the proposed catch basins

in Day Street (catch basins will replace the existing under sidewalk drains). At Alessandro, it will turn westerly continuing towards Old 215 Frontage Road. It will continue north in Old 215 Frontage Road where it will connect to a bubbler manhole which will discharge to the existing ditch along the east side of the road.

The proposed catch basin along the west side of Day Street will continue to have an outlet to the existing ditch in addition to the connection to the proposed storm drain system described above. The existing ditch will act as a secondary outlet for the storm drain system. Riverside County Flood Control and Water Conservation District (RCFC&WCD) does not have any records of existing facilities in the Old 215 Frontage Road area. However, there are clearly existing drainage devices in the ditch along the east of Old 215 Frontage Road and along the center median. These appear to convey runoff westerly towards the 215 Freeway. This will be confirmed with RCFC&WCD and in the field during final design.

### Conclusion

In the existing condition the site discharged approximately 7.75 cfs for a 100-year peak flow rate. The proposed site will discharge approximately 18.9 cfs, without detention, for a 100-year peak flow rate. The truck yard will provide the required detention to limit the flow rate to the existing condition. Therefore, the development of the project will not have an adverse effect on the downstream facilities.

See table below for summary of peak flow rates.

Storm Frequency	Existing Q (cfs)	Proposed Q (cfs)	Discharged (with detention) Q (cfs)
2-year	3.0	7.4	3.2
10-year	6.0	12.3	5.3
100-year	10.5	19.1	7.7

### Water Quality

To meet Hydrologic Conditions of Concerns (HCOC) requirements, runoff in the proposed condition will be limited to 105% of the existing condition 2-year storm event. The mitigation volume will be retained onsite using underground infiltration chambers.

The mitigation volume required is approximately 41,915 cf,  $[(49,967 * 0.95) - 5,554]$ . The proposed underground infiltration chambers will retain a total of 42,085 cf of storm water volume.

### Methodology

Hydrology calculations were computed using Riverside County rational method program (by AES software). The soil type is B per Riverside County Hydrology Manual.

APPENDIX

DESCRIPTION

A

REFERENCE MATERIAL

B

HYDROLOGY CALCULATIONS

C

DETENTION CALCULATIONS

D

HYDROLOGY MAPS

# **APPENDIX A**

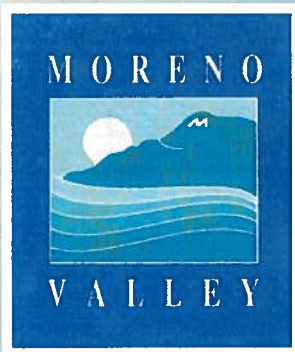
## **REFERENCE MATERIAL**

MASTER DRAINAGE PLAN  
LINE GG PRELIMINARY ENGINEERING REPORT  
PROJECT NO. 02-8928002

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



Submitted to:



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



Submitted by:

**AEI-CASC**  
ENGINEERING

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

**December 30, 2004**

# LINE "GG" STORM DRAIN PLANS ALTERNATIVE 1A

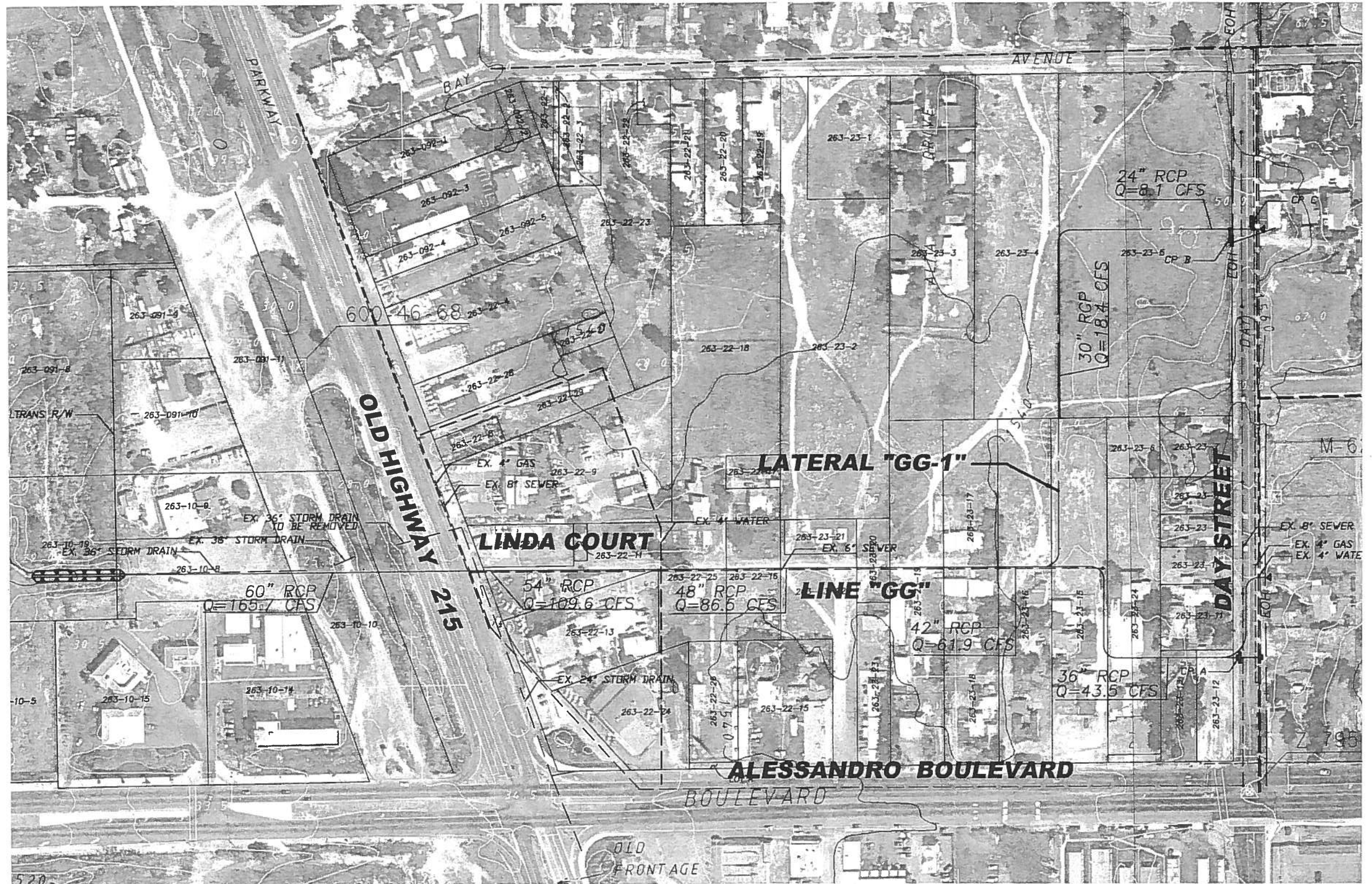
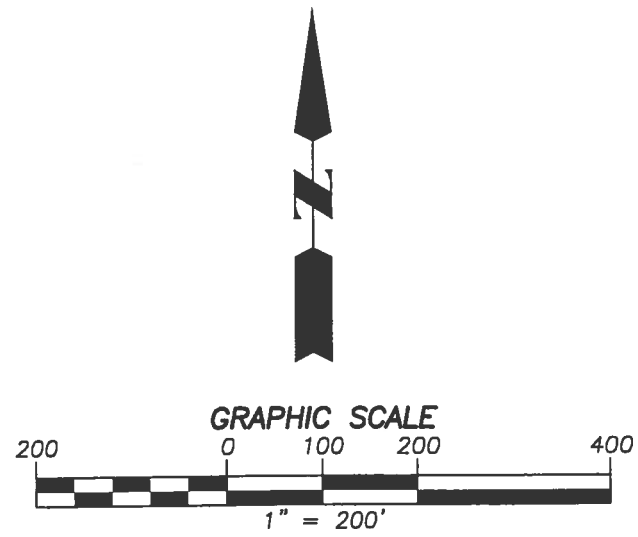
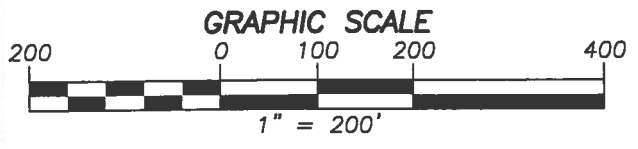
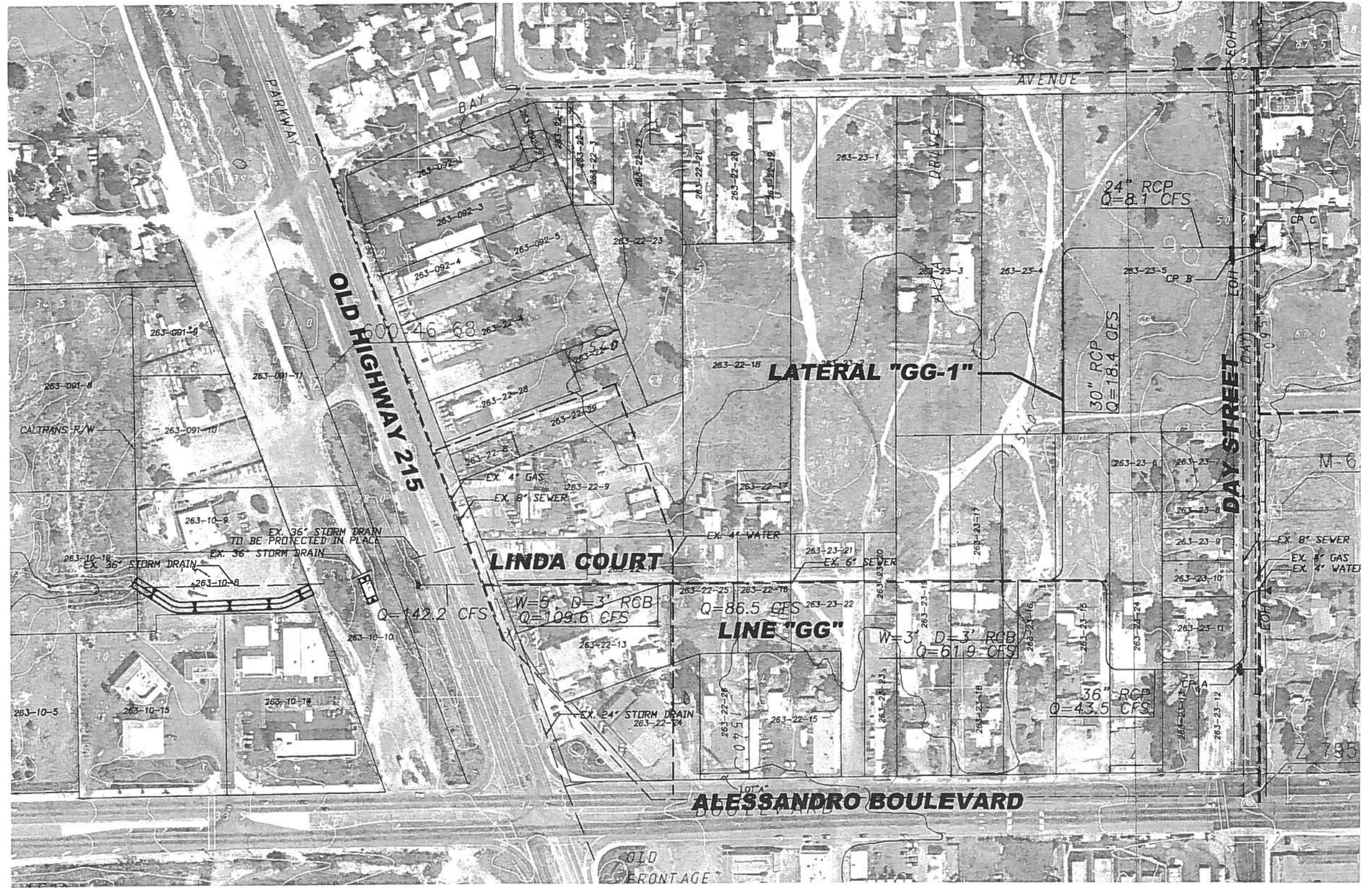


FIGURE 1-1

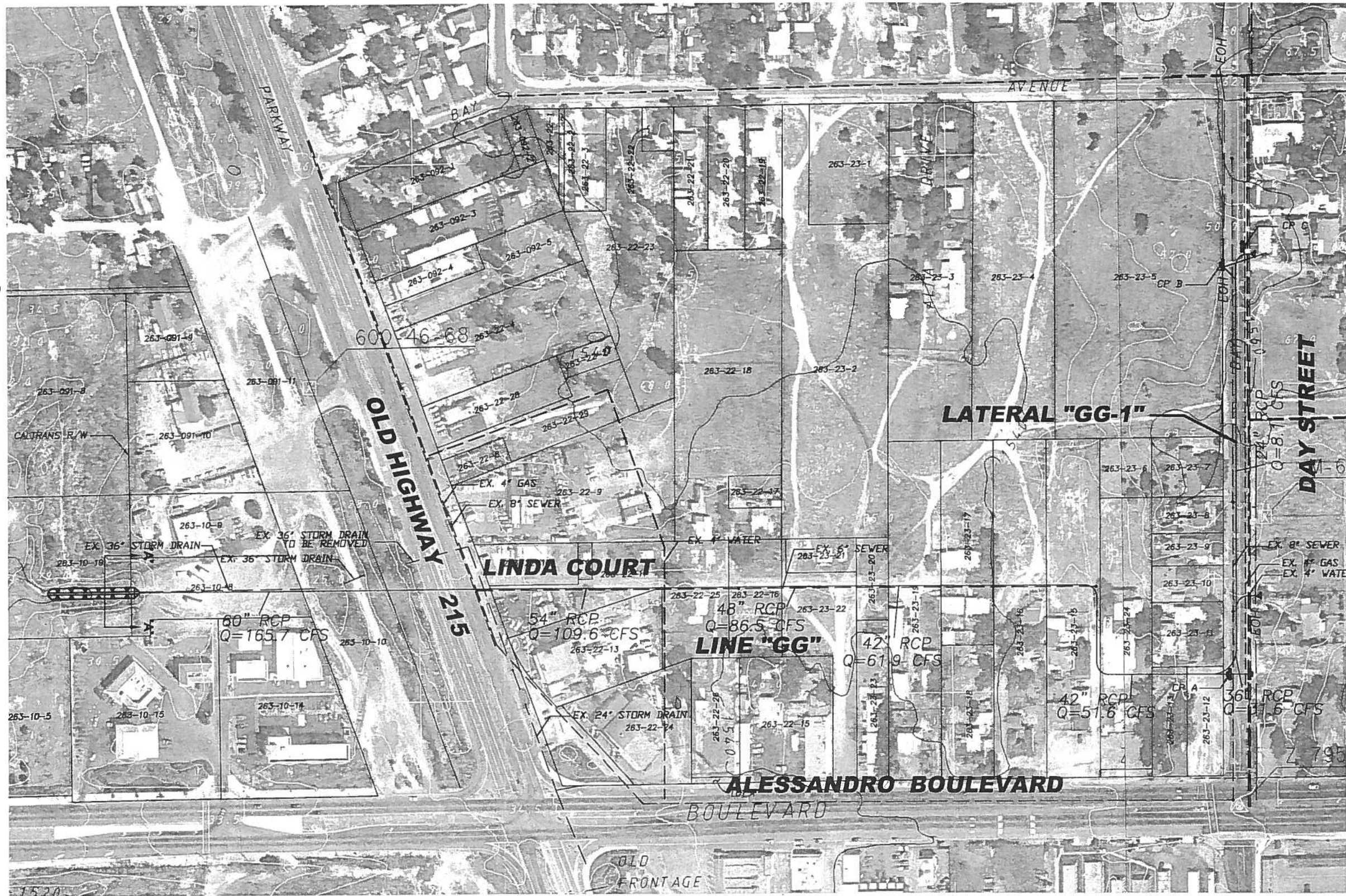
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Q:\56111\er\_Drainage\ SD-Alt1-B.dwg 08/15/04 08:55

FIGURE 1-2

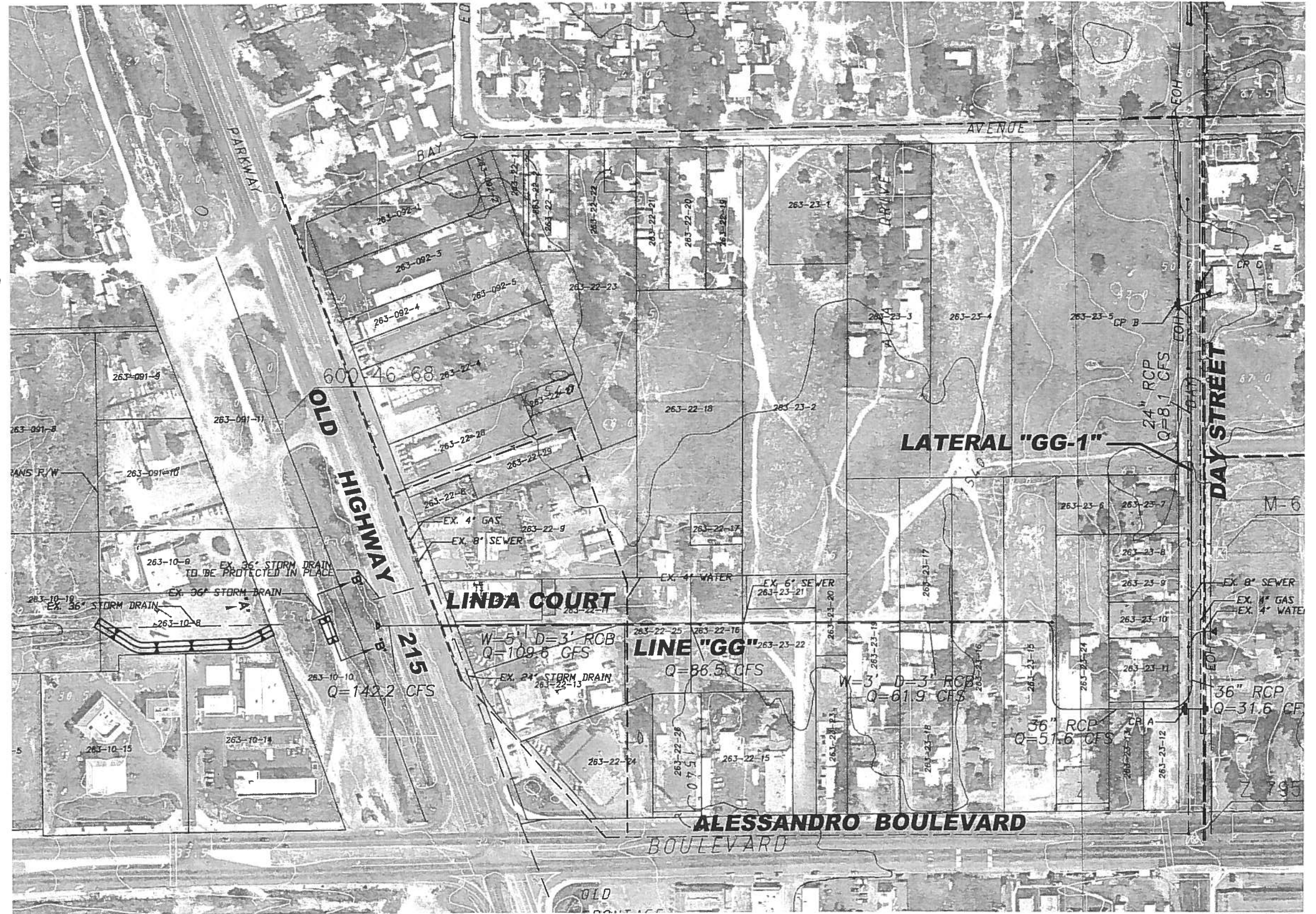
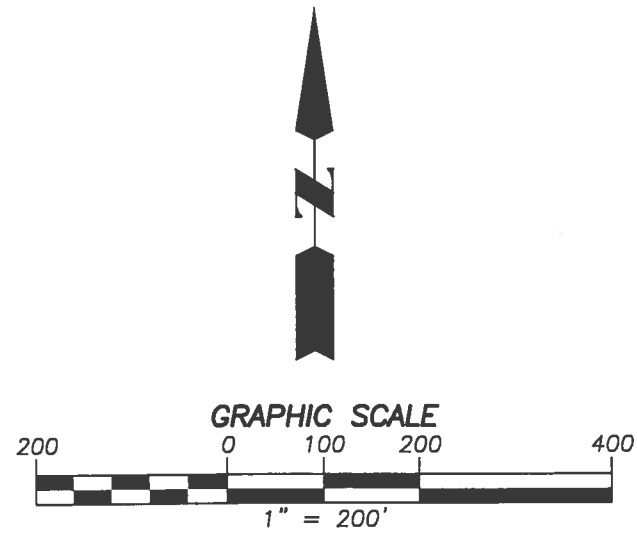
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FIGURE 1-3

# LINE "GG" STORM DRAIN PLANS ALTERNATIVE 2B



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

FIGURE 1-4  
15

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

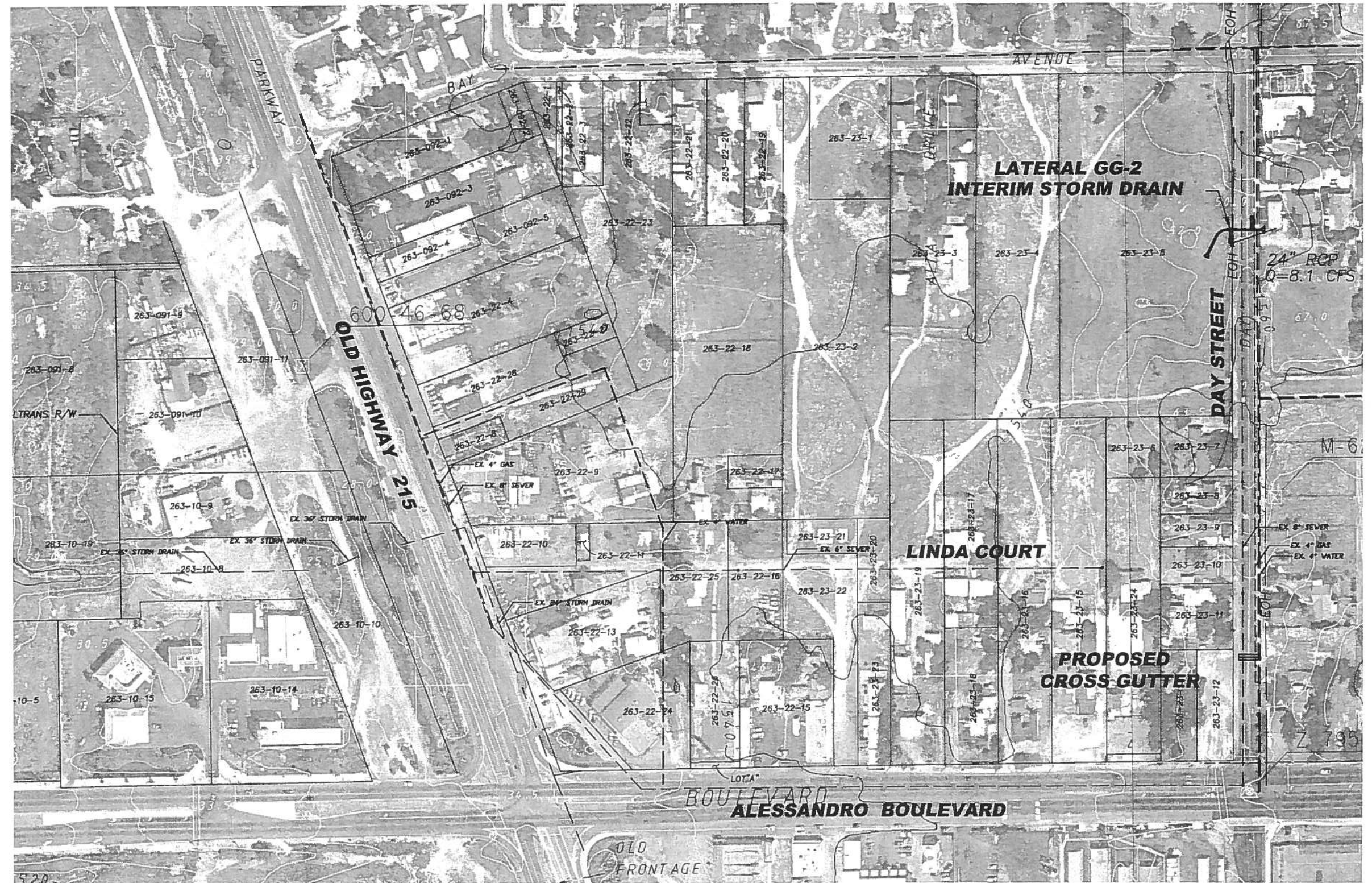
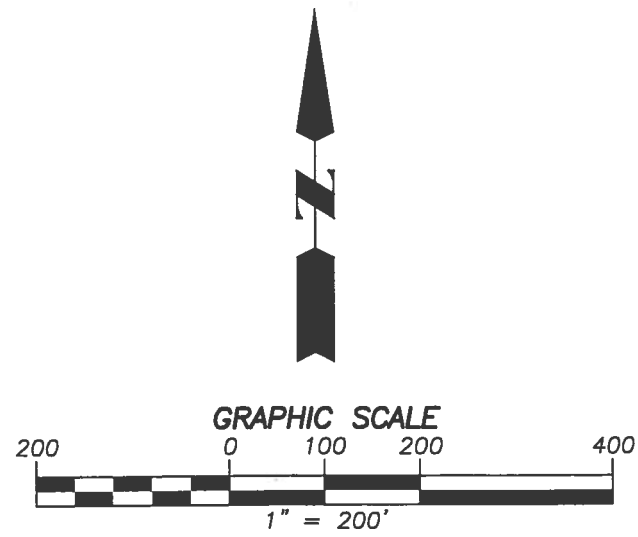
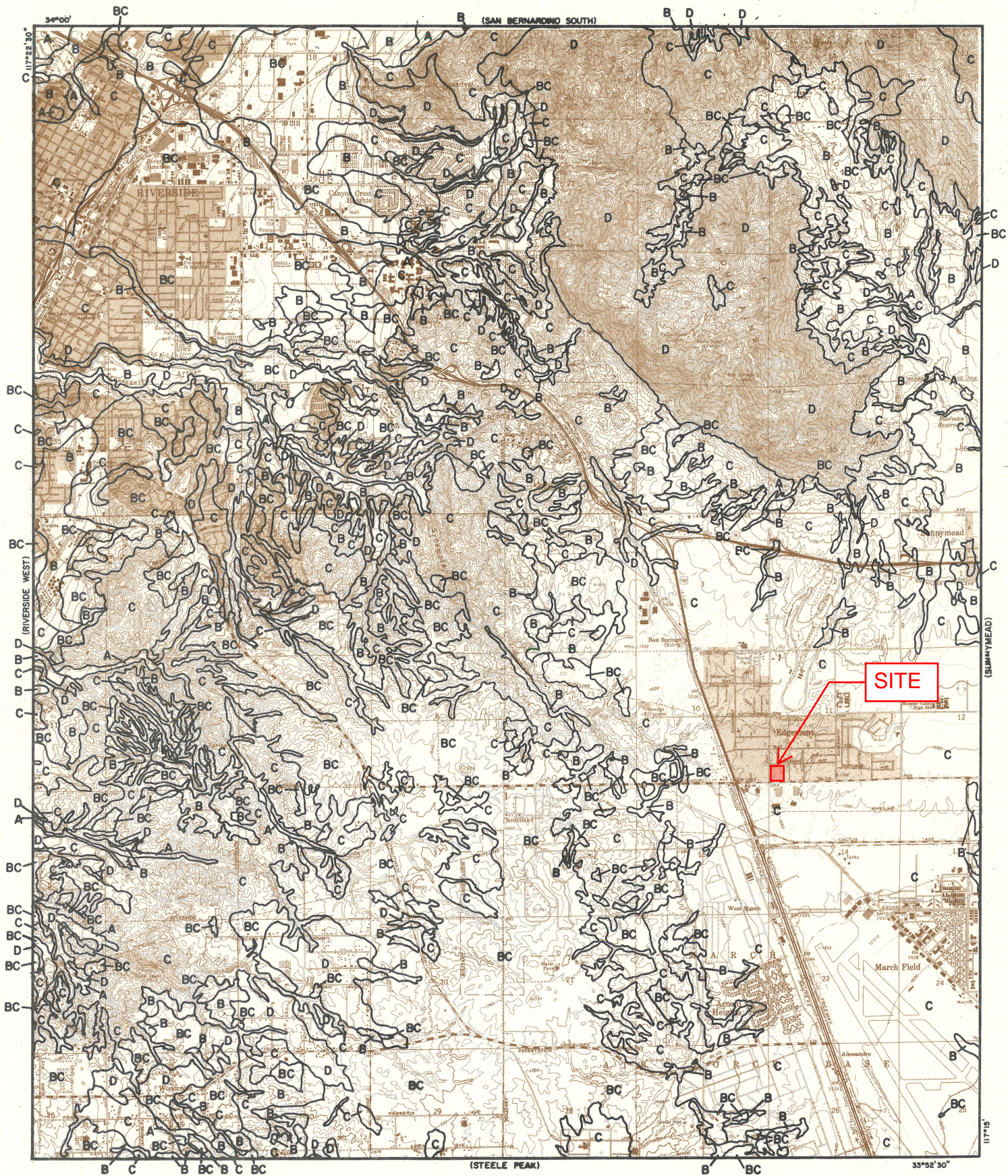


FIGURE 1-5

HYDROLOGIC SOILS GROUP MAP  
FROM RCFC&WCD HYDROLOGY MANUAL



**SITE**

**SOIL GROUP C**

**LEGEND**

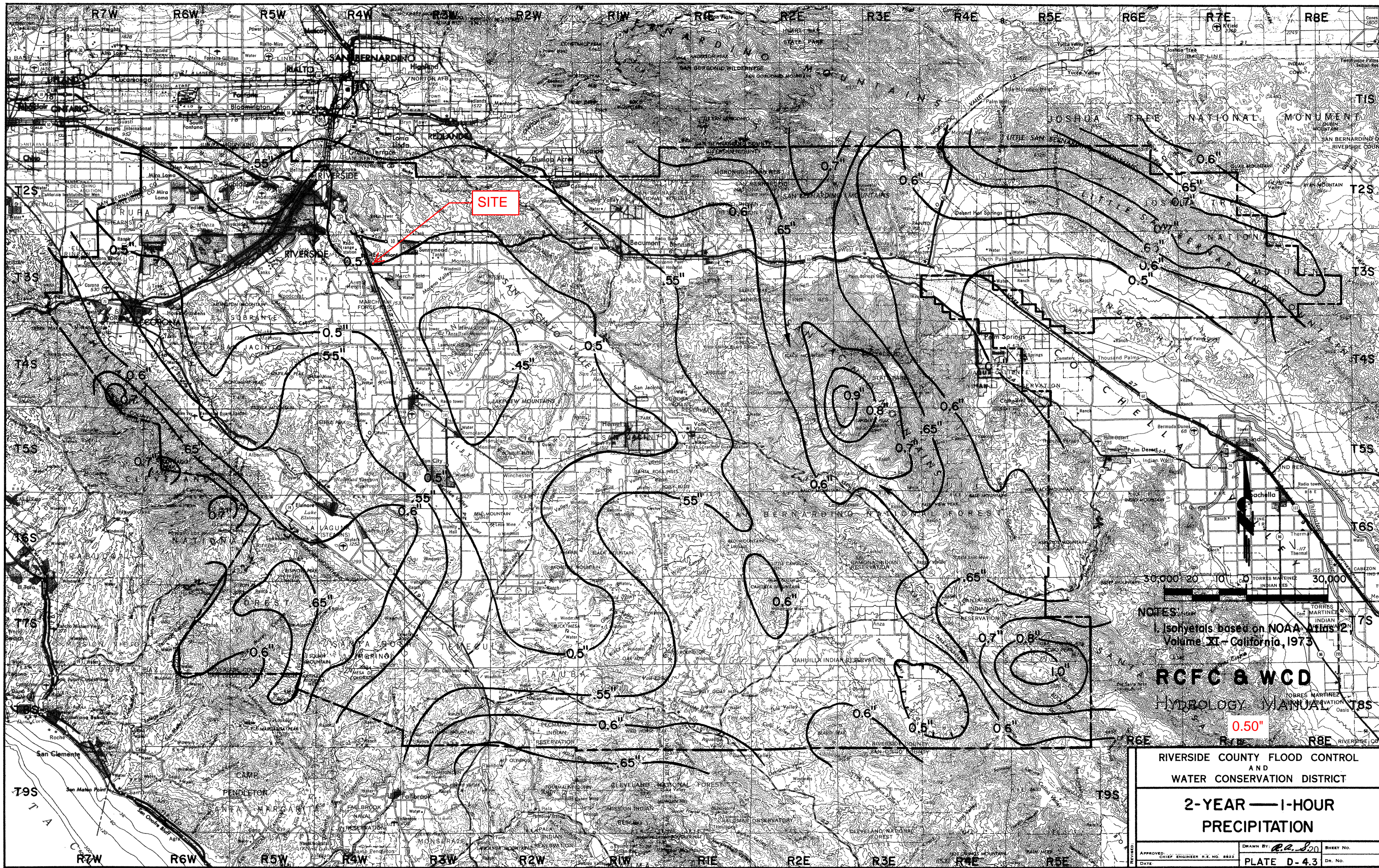
- SOILS GROUP BOUNDARY
- A SOILS GROUP DESIGNATION

**RCFC & WCD**  
HYDROLOGY MANUAL

**HYDROLOGIC SOILS GROUP MAP**  
**FOR**  
**RIVERSIDE-EAST**

18

PRECIPITATION MAPS  
FROM RCFC&WCD HYDROLOGY MANUAL



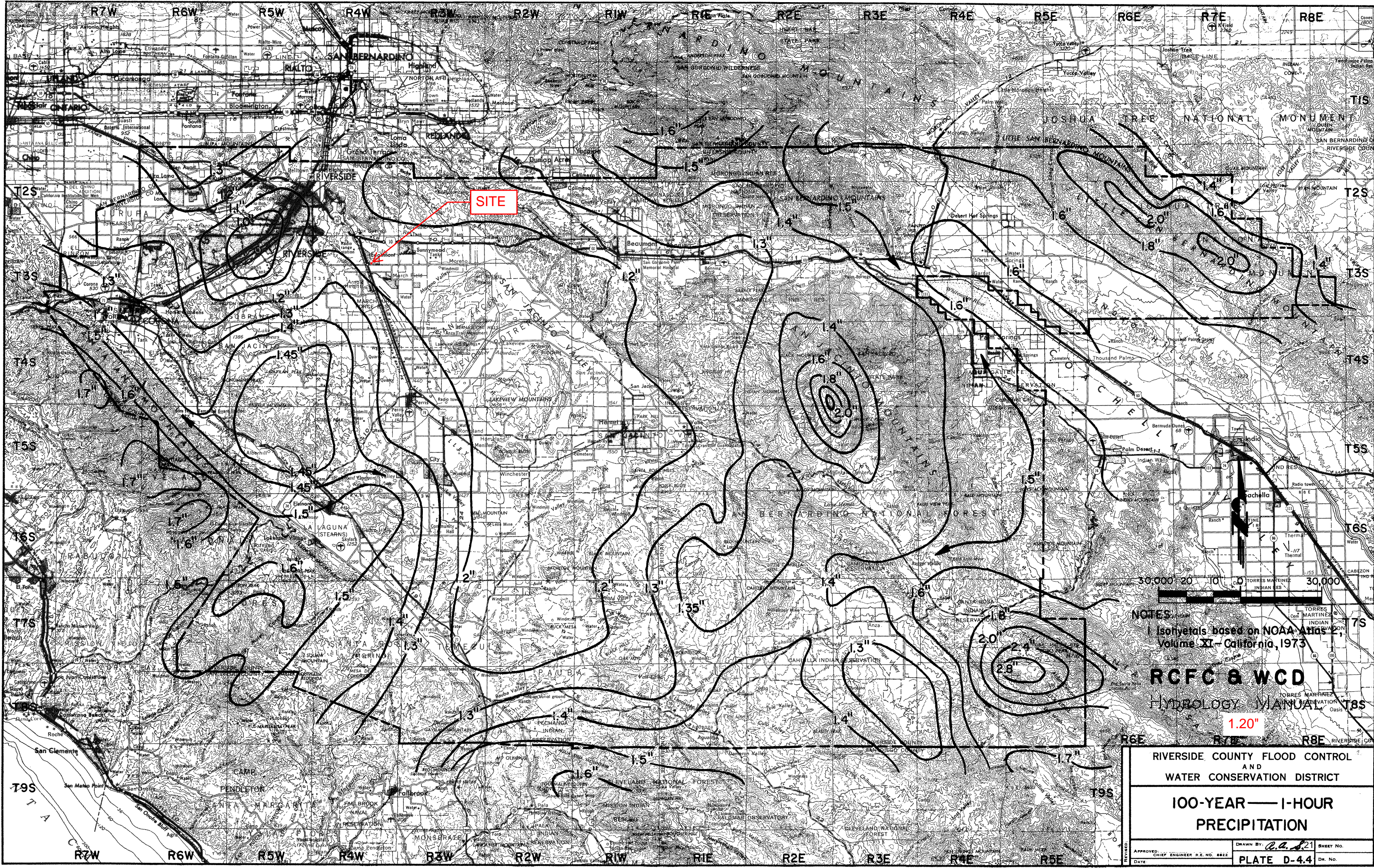
**SITE**

NOTES:  
 Isohyets based on NOAA Atlas 2,  
 Volume XI - California, 1973



**RCFC & WCD**  
 HYDROLOGY MANUAL  
 0.50"

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT		
<b>2-YEAR — 1-HOUR PRECIPITATION</b>		
APPROVED: _____ CHIEF ENGINEER R.E. NO. 8822	DRAWN BY: <i>P.L.S. 20</i>	SHEET NO. _____
DATE: _____	PLATE D-4.3	DR. NO. _____



**SITE**

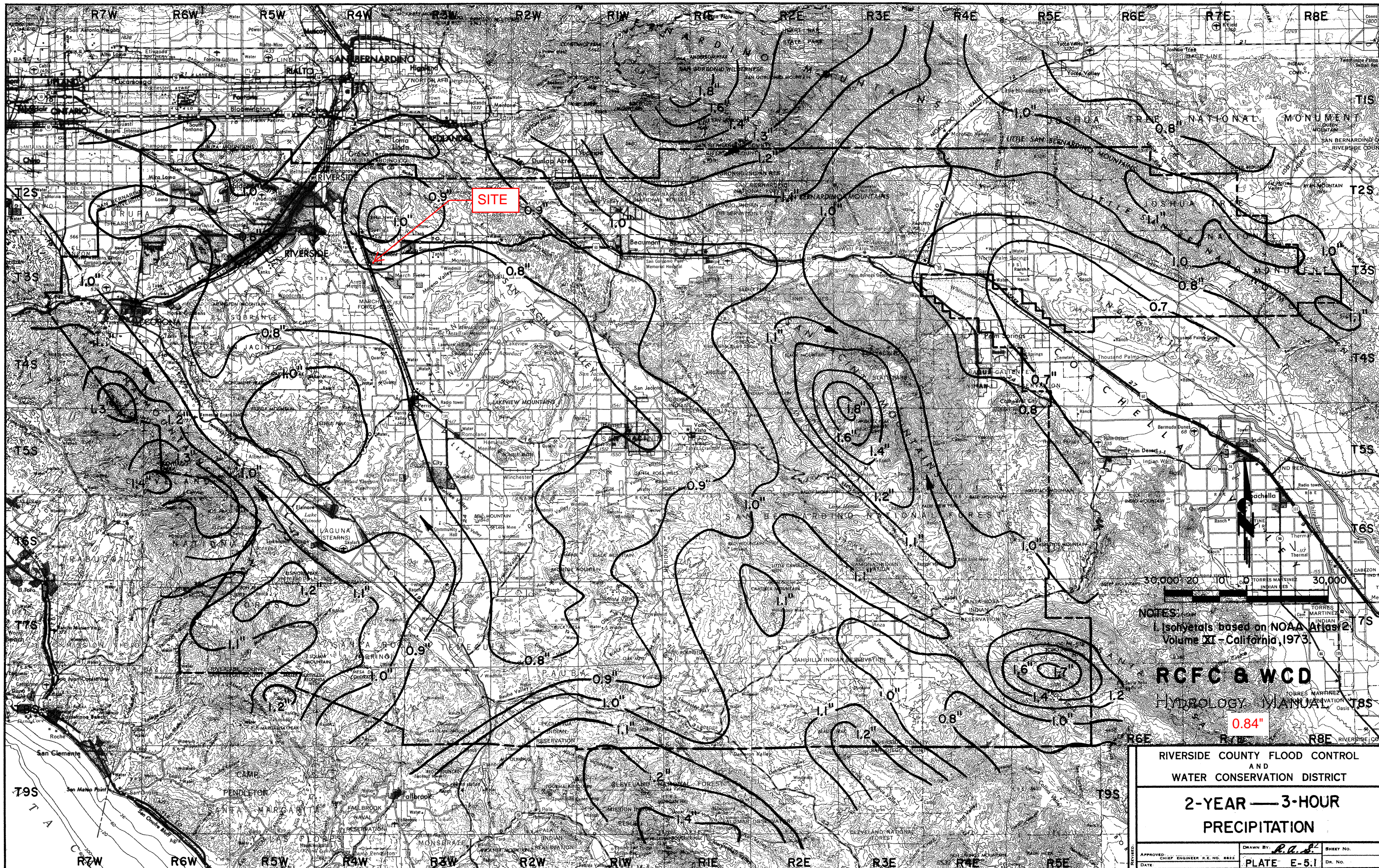


NOTES:  
 1 Isohyets based on NOAA Atlas  
 Volume XI - California, 1973

**RCFC & WCD**  
 HYDROLOGY MANUAL

1.20"

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT		
<b>100-YEAR — 1-HOUR PRECIPITATION</b>		
APPROVED: CHIEF ENGINEER P.E. NO. 8822	DRAWN BY: <i>C.A. S21</i>	SHEET NO.
DATE	PLATE D-4.4	DR. NO.

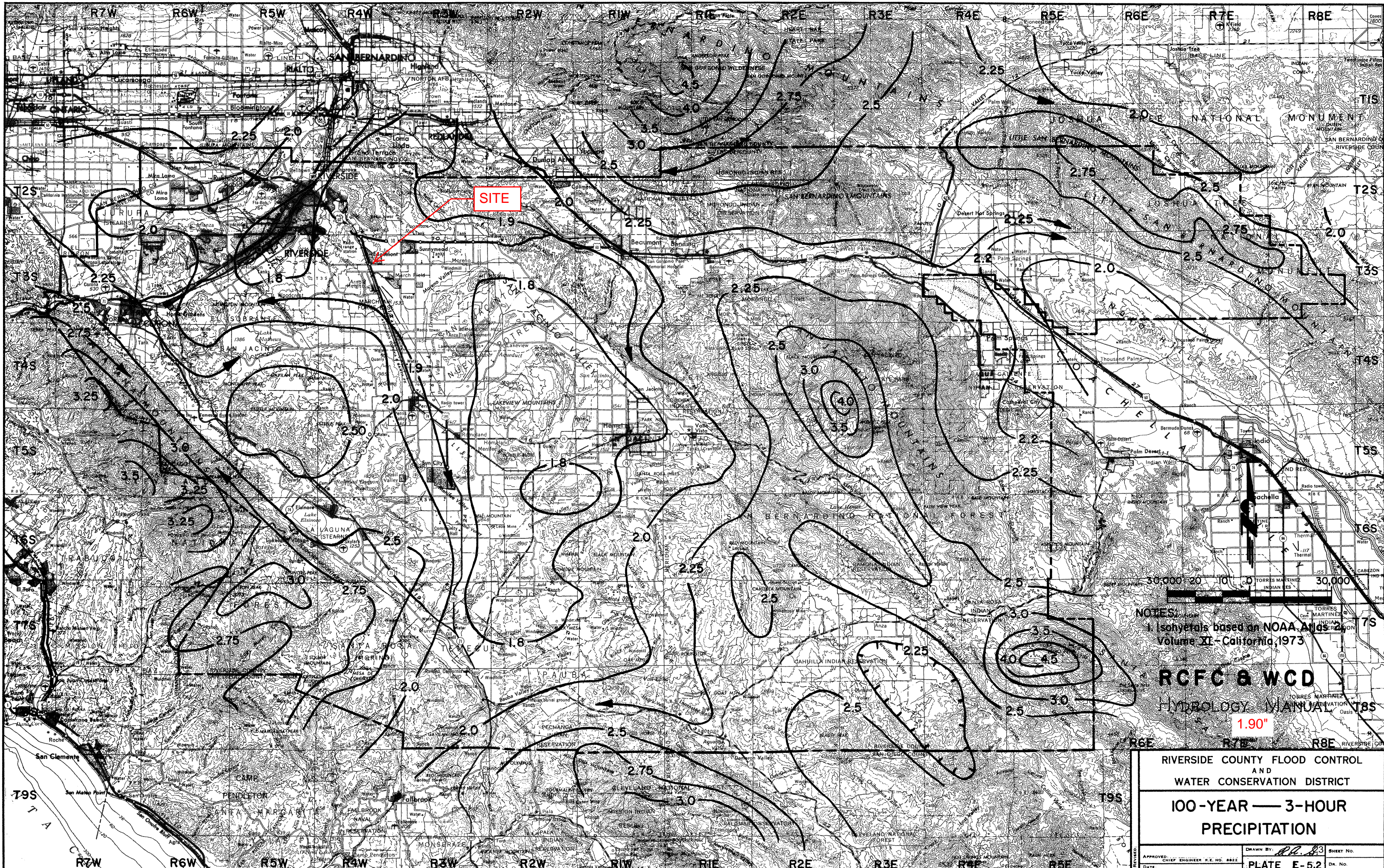


NOTES:  
 1. Isohyets based on NOAA Atlas 2,  
 Volume XI - California, 1973.

**RCFC & WCD**  
 HYDROLOGY MANUAL

0.84"

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT	
<b>2-YEAR — 3-HOUR PRECIPITATION</b>	
APPROVED: <i>[Signature]</i> CHIEF ENGINEER, P.E. NO. 8822	DRAWN BY: <i>[Signature]</i> SHEET NO.
DATE:	PLATE E-5.1 DR. NO.

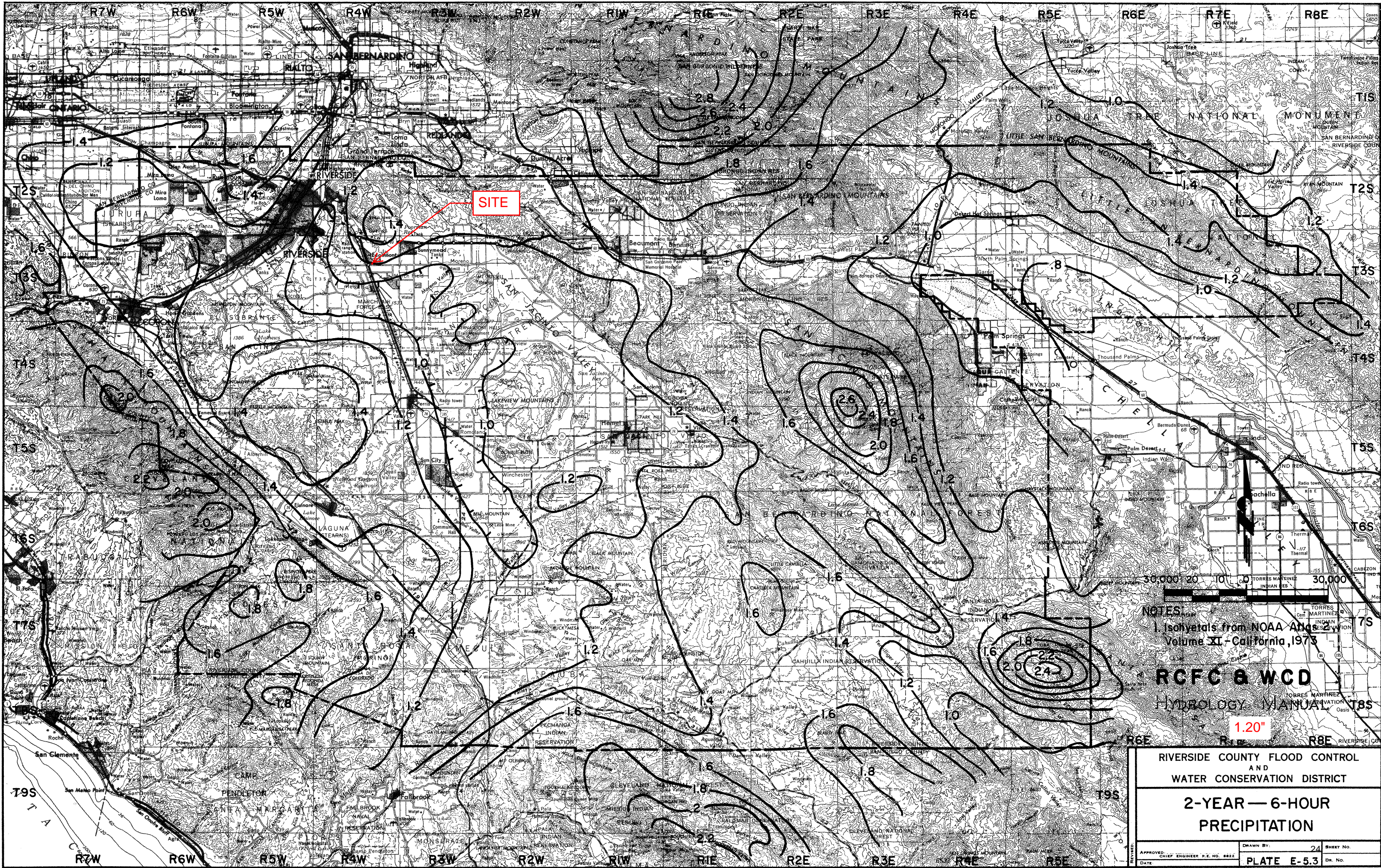


**SITE**

NOTES:  
1 Isohyets 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		
APPROVED: CHIEF ENGINEER R.E. NO. 8822	DRAWN BY: <i>[Signature]</i>	SHEET NO.
DATE	PLATE E-5.2	DR. NO.



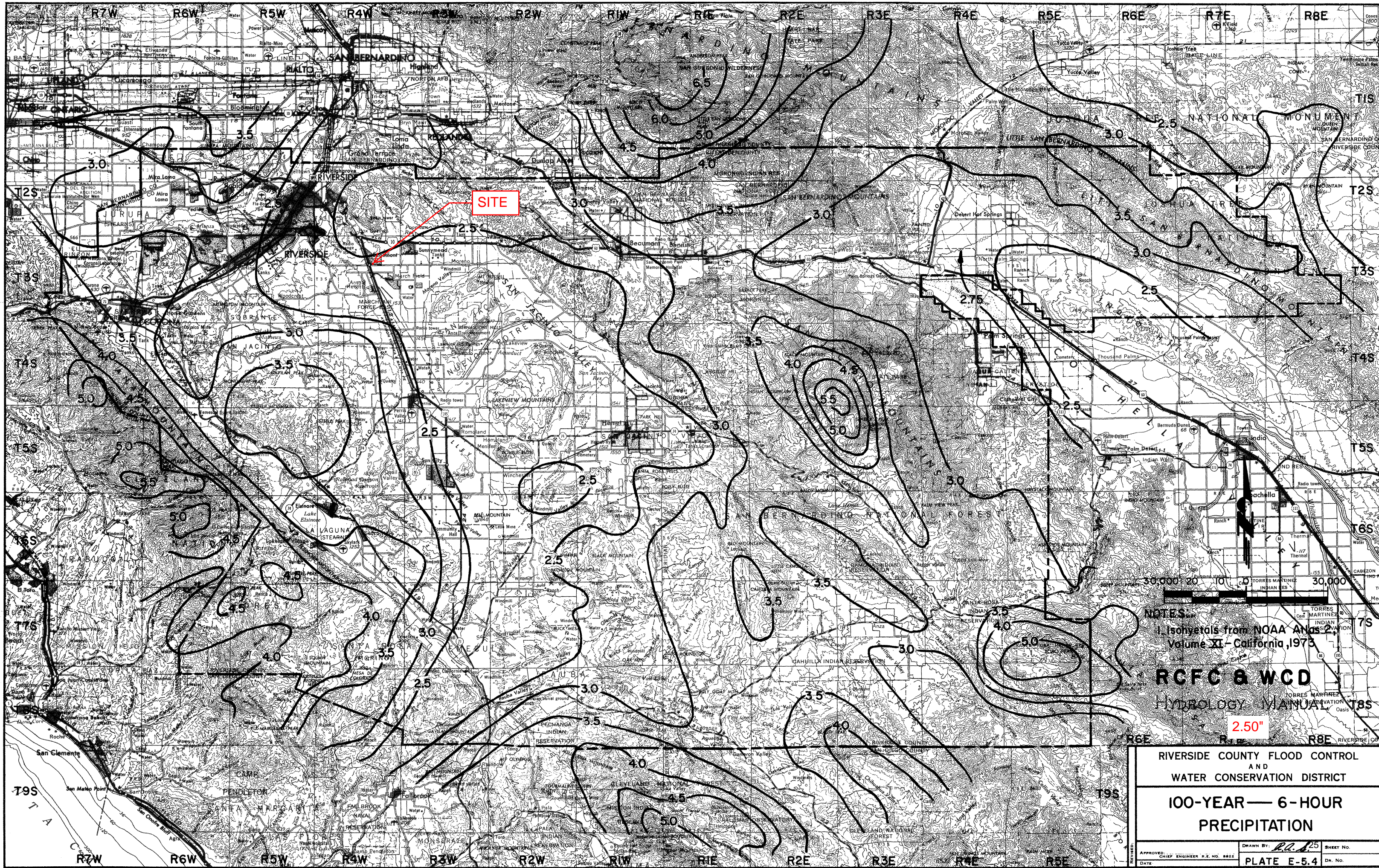
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NOTES  
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 Volume XI - California, 1973

**RCFC & WCD**  
 HYDROLOGY MANUAL

1.20"

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT			
<b>2-YEAR — 6-HOUR PRECIPITATION</b>			
APPROVED:	CHIEF ENGINEER R.E. NO. 8822	DATE:	
DRAWN BY:	24	SHEET NO.:	
		PLATE E-5.3	DR. NO.



**SITE**

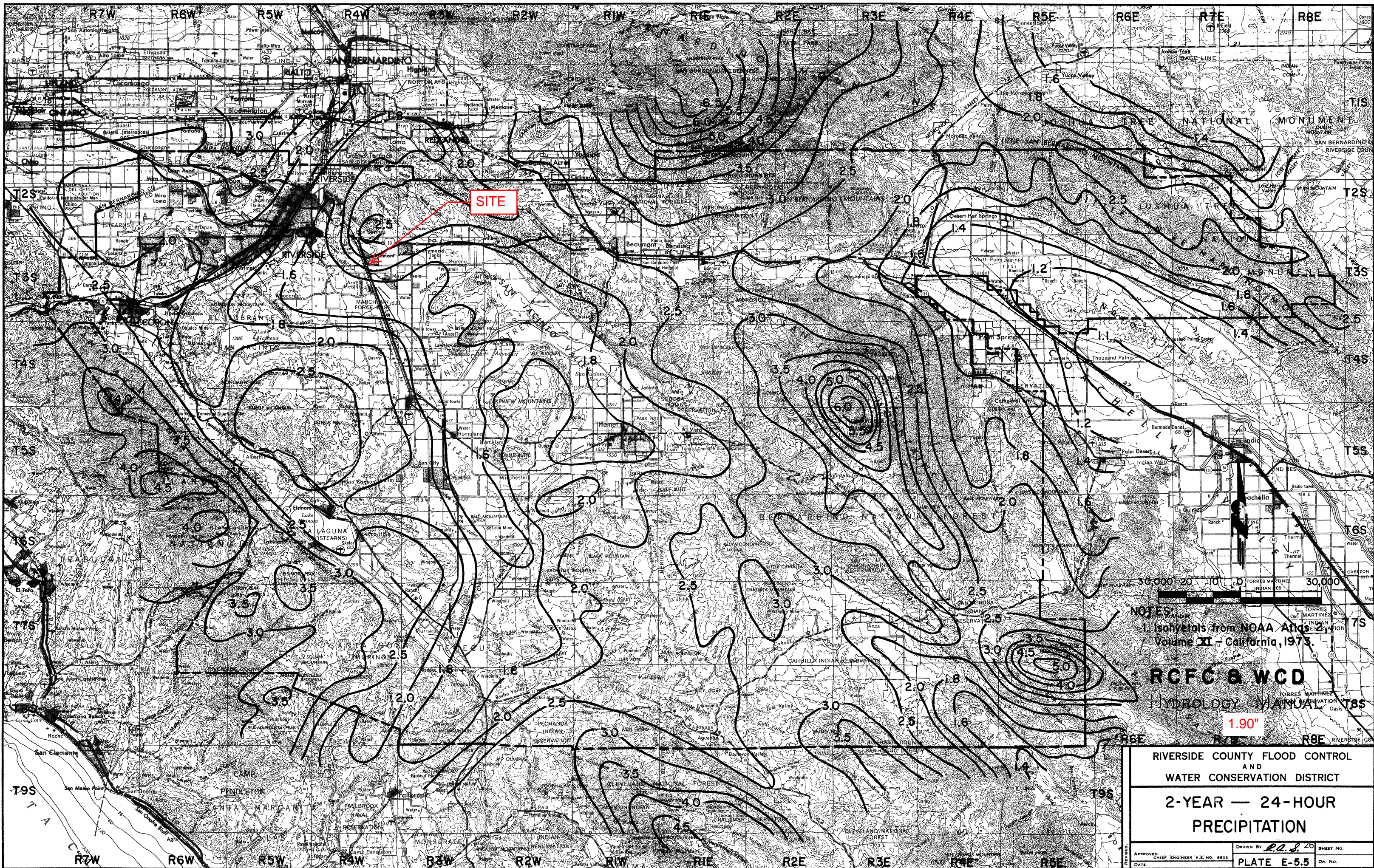
NOTES:  
 1. Isohyets from NOAA Atlas 2,  
 Volume XI - California, 1973

**RCFC & WCD**  
 HYDROLOGY MANUAL

2.50"

RIVERSIDE COUNTY FLOOD CONTROL  
 AND  
 WATER CONSERVATION DISTRICT  
**100-YEAR — 6-HOUR  
 PRECIPITATION**

APPROVED	CHIEF ENGINEER P.E. NO. 8822	DRAWN BY	R.A. 125	SHEET NO.
DATE		PLATE	E-5.4	DR. NO.



**SITE**

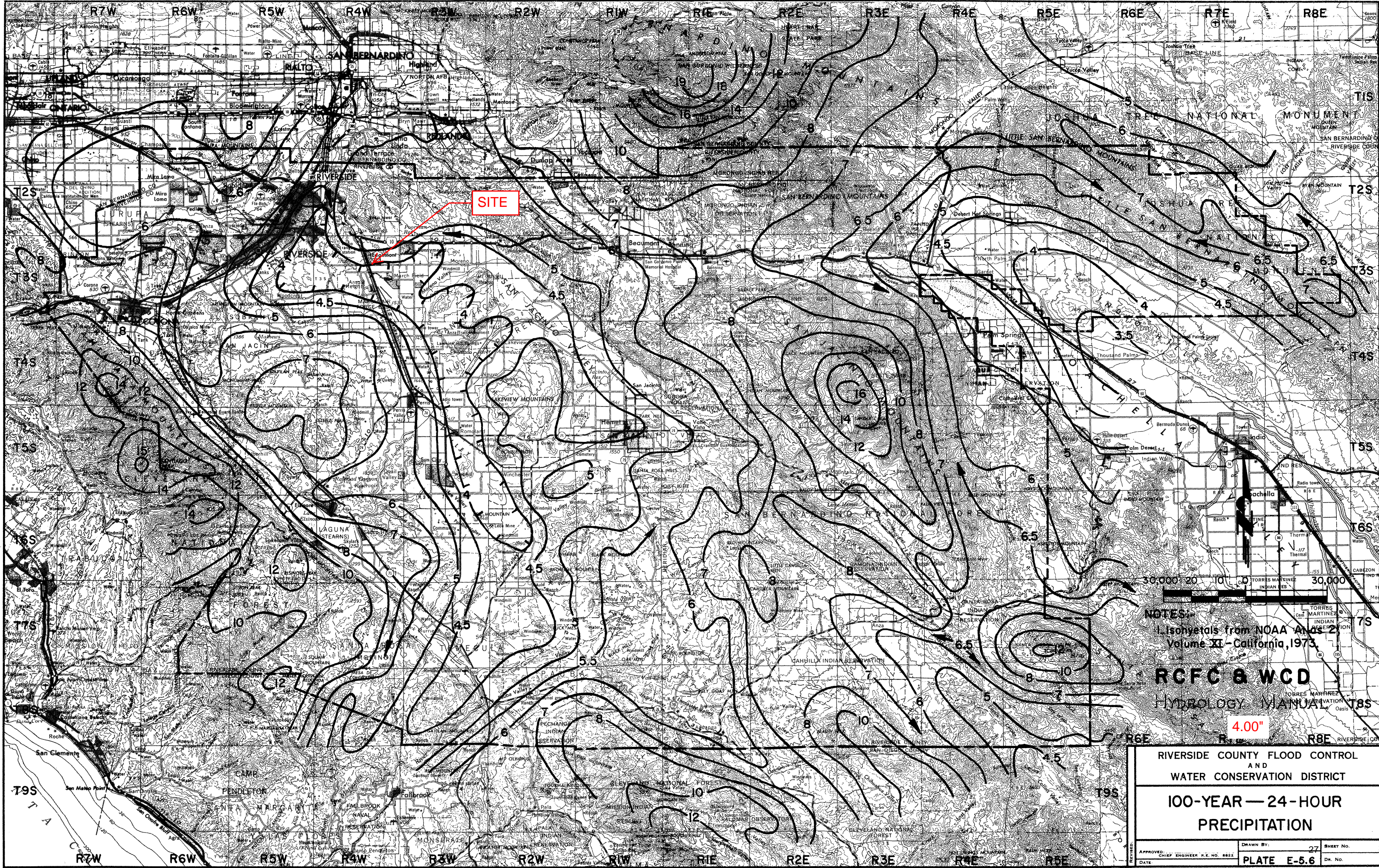


NOTES:  
1. Isohyets from NOAA Atlas 2  
Volume XI - California, 1973.

**RCFC & WCD**  
HYDROLOGY MANUAL

1.90"

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT	
2-YEAR — 24-HOUR PRECIPITATION	
APPROVED: _____ DATE: _____	CHIEF ENGINEER R.E. NO. 8822
DRAWN BY: <i>R.A.J.</i>	26 SHEET NO.
PLATE E-5.5	DR. NO.



**SITE**

NOTES:  
 1. Isohyets from NOAA Atlas 2,  
 Volume XI - California, 1973.

**RCFC & WCD**  
 HYDROLOGY MANUAL  
 4.00"

RIVERSIDE COUNTY FLOOD CONTROL  
 AND  
 WATER CONSERVATION DISTRICT  
**100-YEAR — 24-HOUR  
 PRECIPITATION**

APPROVED: CHIEF ENGINEER P.E. NO. 8822	DRAWN BY: 27	SHEET NO.
DATE:	PLATE E-5.6	DR. NO.

RAINFALL INTENSITY CHART  
FROM RCFC&WCD HYDROLOGY MANUAL

# RAINFALL INTENSITY—INCHES PER HOUR

**RCFC & WCD**  
 HYDROLOGY MANUAL

STANDARD  
 INTENSITY - DURATION  
 CURVES DATA

RIVERSIDE			RIVERSIDE (FOOTHILL AREAS)			RUBIDOUX			SAN JACINTO			SUN CITY		
DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY	
	10 YEAR	100 YEAR		10 YEAR	100 YEAR		10 YEAR	100 YEAR		10 YEAR	100 YEAR		10 YEAR	100 YEAR
5	2.75	3.92	5	3.14	4.71	5	3.18	4.71	5	2.81	4.16	5	3.25	4.85
6	2.48	3.55	6	2.84	4.26	6	2.87	4.26	6	2.56	3.79	6	2.95	4.40
7	2.28	3.26	7	2.61	3.91	7	2.64	3.91	7	2.37	3.51	7	2.72	4.06
8	2.12	3.03	8	2.42	3.63	8	2.45	3.63	8	2.22	3.29	8	2.53	3.78
9	1.99	2.84	9	2.27	3.41	9	2.30	3.41	9	2.09	3.10	9	2.38	3.55
10	1.88	2.68	10	2.14	3.21	10	2.17	3.21	10	1.98	2.94	10	2.25	3.36
11	1.78	2.54	11	2.03	3.05	11	2.06	3.05	11	1.89	2.80	11	2.14	3.19
12	1.70	2.42	12	1.94	2.91	12	1.96	2.91	12	1.81	2.68	12	2.04	3.05
13	1.62	2.32	13	1.86	2.78	13	1.88	2.78	13	1.74	2.58	13	1.96	2.92
14	1.56	2.23	14	1.78	2.67	14	1.80	2.67	14	1.68	2.48	14	1.88	2.81
15	1.50	2.14	15	1.71	2.57	15	1.74	2.57	15	1.62	2.40	15	1.81	2.71
16	1.45	2.07	16	1.66	2.48	16	1.68	2.48	16	1.57	2.32	16	1.75	2.62
17	1.40	2.00	17	1.60	2.40	17	1.62	2.40	17	1.52	2.25	17	1.70	2.54
18	1.36	1.94	18	1.55	2.33	18	1.57	2.33	18	1.48	2.19	18	1.65	2.46
19	1.32	1.88	19	1.51	2.26	19	1.52	2.26	19	1.44	2.13	19	1.60	2.39
20	1.28	1.83	20	1.46	2.20	20	1.48	2.20	20	1.40	2.08	20	1.56	2.33
22	1.22	1.74	22	1.39	2.08	22	1.41	2.08	22	1.34	1.98	22	1.48	2.21
24	1.16	1.66	24	1.32	1.99	24	1.34	1.99	24	1.28	1.90	24	1.41	2.11
26	1.11	1.58	26	1.27	1.90	26	1.28	1.90	26	1.23	1.82	26	1.36	2.03
28	1.06	1.52	28	1.22	1.82	28	1.23	1.82	28	1.19	1.76	28	1.30	1.95
30	1.02	1.46	30	1.17	1.76	30	1.19	1.76	30	1.15	1.70	30	1.26	1.88
32	.99	1.41	32	1.13	1.70	32	1.14	1.70	32	1.11	1.64	32	1.21	1.81
34	.96	1.37	34	1.09	1.64	34	1.11	1.64	34	1.08	1.59	34	1.18	1.76
36	.93	1.32	36	1.06	1.59	36	1.07	1.59	36	1.05	1.55	36	1.14	1.70
38	.90	1.29	38	1.03	1.54	38	1.04	1.54	38	1.02	1.51	38	1.11	1.66
40	.87	1.25	40	1.00	1.50	40	1.01	1.50	40	.99	1.47	40	1.08	1.61
45	.82	1.17	45	.94	1.41	45	.95	1.41	45	.94	1.39	45	1.01	1.51
50	.77	1.11	50	.88	1.33	50	.90	1.33	50	.89	1.31	50	.96	1.43
55	.73	1.05	55	.84	1.26	55	.85	1.26	55	.85	1.25	55	.91	1.36
60	.70	1.00	60	.80	1.20	60	.81	1.20	60	.81	1.20	60	.87	1.30
65	.67	.96	65	.77	1.15	65	.78	1.15	65	.78	1.15	65	.83	1.25
70	.64	.92	70	.73	1.10	70	.74	1.10	70	.75	1.11	70	.80	1.20
75	.62	.88	75	.71	1.06	75	.72	1.06	75	.72	1.07	75	.77	1.15
80	.60	.85	80	.68	1.02	80	.69	1.02	80	.70	1.04	80	.75	1.12
85	.58	.83	85	.66	.99	85	.67	.99	85	.68	1.01	85	.72	1.08
SLOPE = .550			SLOPE = .550			SLOPE = .550			SLOPE = .500			SLOPE = .530		

RCFC&WCD GIS MAP  
FROM RCFC&WCD WEBSITE



# **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:

THIENES ENGINEERING, INC.
14349 FIRESTONE BLVD
LA MIRADA, CA 90638
714-521-4811

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*
\* TEI JOB NO 3846 \*
\* EXISTING CONDITION \*
\* 2 YEAR STORM EVENT \*
\*\*\*\*\*

FILE NAME: W:\3846\100X2.DAT
TIME/DATE OF STUDY: 11:29 12/16/2020

-----
USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
-----

USER SPECIFIED STORM EVENT(YEAR) = 2.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 12.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
2-YEAR, 1-HOUR PRECIPITATION(INCH) = 0.455
100-YEAR, 1-HOUR PRECIPITATION(INCH) = 1.150
COMPUTED RAINFALL INTENSITY DATA:
STORM EVENT = 2.00 1-HOUR INTENSITY(INCH/HOUR) = 0.455
SLOPE OF INTENSITY DURATION CURVE = 0.5000
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 GOOD COVER
TC = K\*[(LENGTH\*\*3)/(ELEVATION CHANGE)]\*\*.2
INITIAL SUBAREA FLOW-LENGTH(FEET) = 570.00
UPSTREAM ELEVATION(FEET) = 1569.90
DOWNSTREAM ELEVATION(FEET) = 1557.40
ELEVATION DIFFERENCE(FEET) = 12.50
TC = 0.937\*[( 570.00\*\*3)/( 12.50)]\*\*.2 = 25.472
2 YEAR RAINFALL INTENSITY(INCH/HOUR) = 0.698
UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .4844
SOIL CLASSIFICATION IS "C"
SUBAREA RUNOFF(CFS) = 1.00
TOTAL AREA(ACRES) = 2.95 TOTAL RUNOFF(CFS) = 1.00
=====

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 3.0 TC(MIN.) = 25.47
PEAK FLOW RATE(CFS) = 1.00
=====

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:

THIENES ENGINEERING, INC.
14349 FIRESTONE BLVD
LA MIRADA, CA 90638
714-521-4811

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*
\* TEI JOB NO 3846 \*
\* EXISTING CONDITION \*
\* 10 YEAR STORM EVENT \*
\*\*\*\*\*

FILE NAME: W:\3846\100X10.DAT
TIME/DATE OF STUDY: 13:16 12/21/2020

-----
USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
-----

USER SPECIFIED STORM EVENT(YEAR) = 10.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 12.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
2-YEAR, 1-HOUR PRECIPITATION(INCH) = 0.455
100-YEAR, 1-HOUR PRECIPITATION(INCH) = 1.150
COMPUTED RAINFALL INTENSITY DATA:
STORM EVENT = 10.00 1-HOUR INTENSITY(INCH/HOUR) = 0.748
SLOPE OF INTENSITY DURATION CURVE = 0.5000
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 0.0312 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 GOOD COVER
TC = K\*[(LENGTH\*\*3)/(ELEVATION CHANGE)]\*\*.2
INITIAL SUBAREA FLOW-LENGTH(FEET) = 570.00
UPSTREAM ELEVATION(FEET) = 1569.90
DOWNSTREAM ELEVATION(FEET) = 1557.40
ELEVATION DIFFERENCE(FEET) = 12.50
TC = 0.937\*[( 570.00\*\*3)/( 12.50)]\*\*.2 = 25.472
10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 1.149
UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .5915
SOIL CLASSIFICATION IS "C"
SUBAREA RUNOFF(CFS) = 2.00
TOTAL AREA(ACRES) = 2.95 TOTAL RUNOFF(CFS) = 2.00
=====

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 3.0 TC(MIN.) = 25.47
PEAK FLOW RATE(CFS) = 2.00
=====

END OF RATIONAL METHOD ANALYSIS



\*\*\*\*\*  
 RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON  
 RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT  
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 Release Date: 07/01/2016 License ID 1435

Analysis prepared by:

THIENES ENGINEERING, INC.  
 14349 FIRESTONE BLVD  
 LA MIRADA, CA 90638  
 714-521-4811

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
 \* TEI JOB NO 3846 \*  
 \* EXISTING CONDITION \*  
 \* 100 YEAR STORM EVENT \*  
 \*\*\*\*\*

FILE NAME: W:\3846\100X.DAT  
 TIME/DATE OF STUDY: 15:40 12/09/2020

-----  
 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  
 2-YEAR, 1-HOUR PRECIPITATION(INCH) = 0.455  
 100-YEAR, 1-HOUR PRECIPITATION(INCH) = 1.150  
 COMPUTED RAINFALL INTENSITY DATA:  
 STORM EVENT = 100.00 1-HOUR INTENSITY(INCH/HOUR) = 1.150  
 SLOPE OF INTENSITY DURATION CURVE = 0.5000  
 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\*

NO.	HALF- WIDTH (FT)	CROWN CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER WIDTH (FT)	GEOMETRIES LIP (FT)	MANNING HIKE (FT)	FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0312	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

- Relative Flow-Depth = 0.00 FEET  
 as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
  - (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 GOOD COVER  
 $TC = K * [(LENGTH**3) / (ELEVATION CHANGE)]**.2$   
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 570.00  
 UPSTREAM ELEVATION(FEET) = 1569.90  
 DOWNSTREAM ELEVATION(FEET) = 1557.40  
 ELEVATION DIFFERENCE(FEET) = 12.50  
 $TC = 0.937 * [(570.00**3) / (12.50)]**.2 = 25.472$   
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 1.765  
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6719  
 SOIL CLASSIFICATION IS "C"  
 SUBAREA RUNOFF(CFS) = 3.50  
 TOTAL AREA(ACRES) = 2.95 TOTAL RUNOFF(CFS) = 3.50

=====

END OF STUDY SUMMARY:  
 TOTAL AREA(ACRES) = 3.0 TC(MIN.) = 25.47  
 PEAK FLOW RATE(CFS) = 3.50

=====

END OF RATIONAL METHOD ANALYSIS



\*\*\*\*\*
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
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Release Date: 07/01/2016 License ID 1435

Analysis prepared by:

THIENES ENGINEERING, INC.
14349 FIRESTONE BLVD
LA MIRADA, CA 90638
714-521-4811

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*
\* TEI JOB NO 3846 \*
\* EXISTING CONDITION \*
\* 2 YEAR STORM EVENT \*
\*\*\*\*\*

FILE NAME: W:\3846\200X2.DAT
TIME/DATE OF STUDY: 11:50 12/16/2020

-----
USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
-----

USER SPECIFIED STORM EVENT(YEAR) = 2.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 12.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
2-YEAR, 1-HOUR PRECIPITATION(INCH) = 0.455
100-YEAR, 1-HOUR PRECIPITATION(INCH) = 1.150
COMPUTED RAINFALL INTENSITY DATA:
STORM EVENT = 2.00 1-HOUR INTENSITY(INCH/HOUR) = 0.455
SLOPE OF INTENSITY DURATION CURVE = 0.5000
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\*

Table with 10 columns: NO., (FT), (FT), SIDE / SIDE/ WAY, (FT), (FT), (FT), (FT), (n). Row 1: 1, 30.0, 20.0, 0.018/0.018/0.020, 0.67, 2.00, 0.0312, 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 200.00 TO NODE 201.00 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) = 763.00
UPSTREAM ELEVATION(FEET) = 1570.60
DOWNSTREAM ELEVATION(FEET) = 1547.10
ELEVATION DIFFERENCE(FEET) = 23.50
TC = 0.709\*[( 763.00\*\*3)/( 23.50)]\*\*.2 = 20.239
2 YEAR RAINFALL INTENSITY(INCH/HOUR) = 0.783
UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .5100
SOIL CLASSIFICATION IS "C"
SUBAREA RUNOFF(CFS) = 2.04
TOTAL AREA(ACRES) = 5.10 TOTAL RUNOFF(CFS) = 2.04
=====

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 5.1 TC(MIN.) = 20.24
PEAK FLOW RATE(CFS) = 2.04
=====

END OF RATIONAL METHOD ANALYSIS



\*\*\*\*\*  
 RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON  
 RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT  
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 Release Date: 07/01/2016 License ID 1435

Analysis prepared by:

THIENES ENGINEERING, INC.  
 14349 FIRESTONE BLVD  
 LA MIRADA, CA 90638  
 714-521-4811

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
 \* TEI JOB NO 3846 \*  
 \* EXISTING CONDITION \*  
 \* 10 YEAR STORM EVENT \*  
 \*\*\*\*\*

FILE NAME: W:\3846\200X10.DAT  
 TIME/DATE OF STUDY: 15:41 12/17/2020

-----  
 USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:  
 -----

USER SPECIFIED STORM EVENT(YEAR) = 10.00  
 SPECIFIED MINIMUM PIPE SIZE(INCH) = 12.00  
 SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95  
 2-YEAR, 1-HOUR PRECIPITATION(INCH) = 0.455  
 100-YEAR, 1-HOUR PRECIPITATION(INCH) = 1.150  
 COMPUTED RAINFALL INTENSITY DATA:

STORM EVENT = 10.00 1-HOUR INTENSITY(INCH/HOUR) = 0.748  
 SLOPE OF INTENSITY DURATION CURVE = 0.5000

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

NO.	(FT)	(FT)	SIDE / SIDE/ WAY	HEIGHT	WIDTH	LIP	HIKE	FACTOR
==	====	====	=====	=====	=====	=====	=====	=====
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 200.00 TO NODE 201.00 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) = 763.00  
 UPSTREAM ELEVATION(FEET) = 1570.60  
 DOWNSTREAM ELEVATION(FEET) = 1547.10  
 ELEVATION DIFFERENCE(FEET) = 23.50  
 $TC = 0.709 * [(763.00**3)/(23.50)]**.2 = 20.239$   
 10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 1.288  
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6144  
 SOIL CLASSIFICATION IS "C"  
 SUBAREA RUNOFF(CFS) = 4.04  
 TOTAL AREA(ACRES) = 5.10 TOTAL RUNOFF(CFS) = 4.04

=====

END OF STUDY SUMMARY:  
 TOTAL AREA(ACRES) = 5.1 TC(MIN.) = 20.24  
 PEAK FLOW RATE(CFS) = 4.04

=====

END OF RATIONAL METHOD ANALYSIS



\*\*\*\*\*
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
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Release Date: 07/01/2016 License ID 1435

Analysis prepared by:

THIENES ENGINEERING, INC.
14349 FIRESTONE BLVD
LA MIRADA, CA 90638
714-521-4811

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*
\* TEI JOB NO 3846 \*
\* EXISTING CONDITION \*
\* 100 YEAR STORM EVENT \*
\*\*\*\*\*

FILE NAME: W:\3846\200X.DAT
TIME/DATE OF STUDY: 15:41 12/09/2020

-----
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
2-YEAR, 1-HOUR PRECIPITATION(INCH) = 0.455
100-YEAR, 1-HOUR PRECIPITATION(INCH) = 1.150
COMPUTED RAINFALL INTENSITY DATA:
STORM EVENT = 100.00 1-HOUR INTENSITY(INCH/HOUR) = 1.150
SLOPE OF INTENSITY DURATION CURVE = 0.5000
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 200.00 TO NODE 201.00 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) = 763.00
UPSTREAM ELEVATION(FEET) = 1570.60
DOWNSTREAM ELEVATION(FEET) = 1547.10
ELEVATION DIFFERENCE(FEET) = 23.50
TC = 0.709\*[( 763.00\*\*3)/( 23.50)]\*\*.2 = 20.239
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 1.980
UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6910
SOIL CLASSIFICATION IS "C"
SUBAREA RUNOFF(CFS) = 6.98
TOTAL AREA(ACRES) = 5.10 TOTAL RUNOFF(CFS) = 6.98
=====

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 5.1 TC(MIN.) = 20.24
PEAK FLOW RATE(CFS) = 6.98
=====

END OF RATIONAL METHOD ANALYSIS



PROPOSED CONDITION RATIONAL METHOD CALCULATIONS

\*\*\*\*\*  
 RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON  
 RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT  
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 (Rational Tabling Version 23.0)  
 Release Date: 07/01/2016 License ID 1435

Analysis prepared by:

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

\* TEI JOB NO 3846 \*  
 \* PROPOSED CONDITION \*  
 \* 2 YEAR STORM EVENT \*  
 \*\*\*\*\*

FILE NAME: W:\3846\100P2.DAT  
 TIME/DATE OF STUDY: 16:35 03/26/2021

-----  
 USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:  
 -----

USER SPECIFIED STORM EVENT(YEAR) = 2.00  
 SPECIFIED MINIMUM PIPE SIZE(INCH) = 12.00  
 SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95  
 2-YEAR, 1-HOUR PRECIPITATION(INCH) = 0.455  
 100-YEAR, 1-HOUR PRECIPITATION(INCH) = 1.150  
 COMPUTED RAINFALL INTENSITY DATA:  
 STORM EVENT = 2.00 1-HOUR INTENSITY(INCH/HOUR) = 0.455  
 SLOPE OF INTENSITY DURATION CURVE = 0.5000  
 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 0.0312 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 COMMERCIAL  
 $TC = K * [(LENGTH**3) / (ELEVATION CHANGE)]**2$   
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 474.00  
 UPSTREAM ELEVATION(FEET) = 1560.69  
 DOWNSTREAM ELEVATION(FEET) = 1555.64  
 ELEVATION DIFFERENCE(FEET) = 5.05  
 $TC = 0.303 * [(474.00**3) / (5.05)]**2 = 8.839$   
 2 YEAR RAINFALL INTENSITY(INCH/HOUR) = 1.185  
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8698  
 SOIL CLASSIFICATION IS "C"  
 SUBAREA RUNOFF(CFS) = 2.53  
 TOTAL AREA(ACRES) = 2.45 TOTAL RUNOFF(CFS) = 2.53

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 101.00 TO NODE 403.00 IS CODE = 31  
 -----

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

-----  
 ELEVATION DATA: UPSTREAM(FEET) = 1549.70 DOWNSTREAM(FEET) = 1545.71  
 FLOW LENGTH(FEET) = 527.00 MANNING'S N = 0.012  
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 7.9 INCHES  
 PIPE-FLOW VELOCITY(FEET/SEC.) = 4.61

100P2.RES  
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1  
PIPE-FLOW(CFS) = 2.53  
PIPE TRAVEL TIME(MIN.) = 1.91 Tc(MIN.) = 10.75  
LONGEST FLOWPATH FROM NODE 100.00 TO NODE 403.00 = 1001.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 403.00 TO NODE 403.00 IS CODE = 10

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 200.00 TO NODE 201.00 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) = 457.00  
UPSTREAM ELEVATION(FEET) = 1560.69  
DOWNSTREAM ELEVATION(FEET) = 1553.98  
ELEVATION DIFFERENCE(FEET) = 6.71  
TC = 0.303\*[( 457.00\*\*3)/( 6.71)]\*\*.2 = 8.169  
2 YEAR RAINFALL INTENSITY(INCH/HOUR) = 1.233  
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8706  
SOIL CLASSIFICATION IS "C"  
SUBAREA RUNOFF(CFS) = 1.61  
TOTAL AREA(ACRES) = 1.50 TOTAL RUNOFF(CFS) = 1.61

\*\*\*\*\*  
FLOW PROCESS FROM NODE 201.00 TO NODE 202.00 IS CODE = 31

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

ELEVATION DATA: UPSTREAM(FEET) = 1550.53 DOWNSTREAM(FEET) = 1549.89  
FLOW LENGTH(FEET) = 135.00 MANNING'S N = 0.012  
DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.8 INCHES  
PIPE-FLOW VELOCITY(FEET/SEC.) = 3.48  
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1  
PIPE-FLOW(CFS) = 1.61  
PIPE TRAVEL TIME(MIN.) = 0.65 Tc(MIN.) = 8.82  
LONGEST FLOWPATH FROM NODE 200.00 TO NODE 202.00 = 592.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 202.00 TO NODE 202.00 IS CODE = 81

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

2 YEAR RAINFALL INTENSITY(INCH/HOUR) = 1.187  
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8578  
SOIL CLASSIFICATION IS "B"  
SUBAREA AREA(ACRES) = 0.40 SUBAREA RUNOFF(CFS) = 0.41  
TOTAL AREA(ACRES) = 1.9 TOTAL RUNOFF(CFS) = 2.02  
TC(MIN.) = 8.82

\*\*\*\*\*  
FLOW PROCESS FROM NODE 202.00 TO NODE 302.00 IS CODE = 31

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

ELEVATION DATA: UPSTREAM(FEET) = 1549.89 DOWNSTREAM(FEET) = 1549.20  
FLOW LENGTH(FEET) = 135.00 MANNING'S N = 0.012  
DEPTH OF FLOW IN 12.0 INCH PIPE IS 7.7 INCHES  
PIPE-FLOW VELOCITY(FEET/SEC.) = 3.76  
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1  
PIPE-FLOW(CFS) = 2.02  
PIPE TRAVEL TIME(MIN.) = 0.60 Tc(MIN.) = 9.41  
LONGEST FLOWPATH FROM NODE 200.00 TO NODE 302.00 = 727.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 302.00 TO NODE 302.00 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.) = 9.41  
RAINFALL INTENSITY(INCH/HR) = 1.15

TOTAL STREAM AREA(ACRES) = 1.90  
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 2.02

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 300.00 TO NODE 301.00 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) = 230.00  
 UPSTREAM ELEVATION(FEET) = 1555.98  
 DOWNSTREAM ELEVATION(FEET) = 1552.98  
 ELEVATION DIFFERENCE(FEET) = 3.00  
 TC = 0.303\*[( 230.00\*\*3)/( 3.00)]\*\*.2 = 6.356  
 2 YEAR RAINFALL INTENSITY(INCH/HOUR) = 1.398  
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8730  
 SOIL CLASSIFICATION IS "C"  
 SUBAREA RUNOFF(CFS) = 1.53  
 TOTAL AREA(ACRES) = 1.25 TOTAL RUNOFF(CFS) = 1.53

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 301.00 TO NODE 302.00 IS CODE = 31

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 1550.05 DOWNSTREAM(FEET) = 1549.20  
 FLOW LENGTH(FEET) = 64.00 MANNING'S N = 0.012  
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 12.000  
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 4.9 INCHES  
 PIPE-FLOW VELOCITY(FEET/SEC.) = 5.04  
 ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1  
 PIPE-FLOW(CFS) = 1.53  
 PIPE TRAVEL TIME(MIN.) = 0.21 Tc(MIN.) = 6.57  
 LONGEST FLOWPATH FROM NODE 300.00 TO NODE 302.00 = 294.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 302.00 TO NODE 302.00 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.) = 6.57  
 RAINFALL INTENSITY(INCH/HR) = 1.38  
 TOTAL STREAM AREA(ACRES) = 1.25  
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.53

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	2.02	9.41	1.149	1.90
2	1.53	6.57	1.375	1.25

\*\*\*\*\*WARNING\*\*\*\*\*  
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED  
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA  
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.  
 \*\*\*\*\*

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	2.93	6.57	1.375
2	3.29	9.41	1.149

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:  
 PEAK FLOW RATE(CFS) = 3.29 Tc(MIN.) = 9.41  
 TOTAL AREA(ACRES) = 3.2  
 LONGEST FLOWPATH FROM NODE 200.00 TO NODE 302.00 = 727.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 302.00 TO NODE 402.00 IS CODE = 31

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

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

```

=====
ELEVATION DATA: UPSTREAM(FEET) = 1549.20  DOWNSTREAM(FEET) = 1548.20
FLOW LENGTH(FEET) = 202.00  MANNING'S N = 0.012
DEPTH OF FLOW IN 15.0 INCH PIPE IS 9.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.21
ESTIMATED PIPE DIAMETER(INCH) = 15.00  NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 3.29
PIPE TRAVEL TIME(MIN.) = 0.80  Tc(MIN.) = 10.21
LONGEST FLOWPATH FROM NODE 200.00 TO NODE 402.00 = 929.00 FEET.
    
```

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 402.00 TO NODE 402.00 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.) = 10.21
RAINFALL INTENSITY(INCH/HR) = 1.10
TOTAL STREAM AREA(ACRES) = 3.15
PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.29
    
```

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 400.00 TO NODE 401.00 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) = 232.00
UPSTREAM ELEVATION(FEET) = 1555.98
DOWNSTREAM ELEVATION(FEET) = 1552.98
ELEVATION DIFFERENCE(FEET) = 3.00
TC = 0.303*[( 232.00**3)/( 3.00)]**.2 = 6.389
2 YEAR RAINFALL INTENSITY(INCH/HOUR) = 1.394
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8730
SOIL CLASSIFICATION IS "C"
SUBAREA RUNOFF(CFS) = 2.07
TOTAL AREA(ACRES) = 1.70  TOTAL RUNOFF(CFS) = 2.07
    
```

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 401.00 TO NODE 402.00 IS CODE = 31

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

```

=====
ELEVATION DATA: UPSTREAM(FEET) = 1548.98  DOWNSTREAM(FEET) = 1548.20
FLOW LENGTH(FEET) = 75.00  MANNING'S N = 0.012
DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.98
ESTIMATED PIPE DIAMETER(INCH) = 12.00  NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 2.07
PIPE TRAVEL TIME(MIN.) = 0.25  Tc(MIN.) = 6.64
LONGEST FLOWPATH FROM NODE 400.00 TO NODE 402.00 = 307.00 FEET.
    
```

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 402.00 TO NODE 402.00 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.) = 6.64
RAINFALL INTENSITY(INCH/HR) = 1.37
TOTAL STREAM AREA(ACRES) = 1.70
PEAK FLOW RATE(CFS) AT CONFLUENCE = 2.07
    
```

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	3.29	10.21	1.103	3.15
2	2.07	6.64	1.368	1.70

\*\*\*\*\*WARNING\*\*\*\*\*  
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED ON THE RFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.  
 \*\*\*\*\*



PEAK FLOW RATE(CFS) = 7.41

=====  
=====  
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 \*\*\*\*\*

\* TEI JOB NO 3846 \*  
 \* PROPOSED CONDITION \*  
 \* 10 YEAR STORM EVENT \*  
 \*\*\*\*\*

FILE NAME: W:\3846\100P10.DAT  
 TIME/DATE OF STUDY: 16:32 03/26/2021

-----  
 USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:  
 -----

USER SPECIFIED STORM EVENT(YEAR) = 10.00  
 SPECIFIED MINIMUM PIPE SIZE(INCH) = 12.00  
 SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95  
 2-YEAR, 1-HOUR PRECIPITATION(INCH) = 0.455  
 100-YEAR, 1-HOUR PRECIPITATION(INCH) = 1.150

COMPUTED RAINFALL INTENSITY DATA:  
 STORM EVENT = 10.00 1-HOUR INTENSITY(INCH/HOUR) = 0.748  
 SLOPE OF INTENSITY DURATION CURVE = 0.5000

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\*

NO.	WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT-/PARK- SIDE / SIDE/ WAY	HEIGHT (FT)	WIDTH (FT)	LIP (FT)	HIKE (FT)	FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0312	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

- Relative Flow-Depth = 0.00 FEET  
 as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
- (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) = 474.00  
 UPSTREAM ELEVATION(FEET) = 1560.69  
 DOWNSTREAM ELEVATION(FEET) = 1555.64  
 ELEVATION DIFFERENCE(FEET) = 5.05  
 TC = 0.303\*[( 474.00\*\*3)/( 5.05)]\*\*.2 = 8.839  
 10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 1.950  
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8788  
 SOIL CLASSIFICATION IS "C"  
 SUBAREA RUNOFF(CFS) = 4.20  
 TOTAL AREA(ACRES) = 2.45 TOTAL RUNOFF(CFS) = 4.20

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 101.00 TO NODE 403.00 IS CODE = 31  
 -----

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

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 1549.70 DOWNSTREAM(FEET) = 1545.71  
 FLOW LENGTH(FEET) = 527.00 MANNING'S N = 0.012  
 DEPTH OF FLOW IN 15.0 INCH PIPE IS 9.3 INCHES  
 PIPE-FLOW VELOCITY(FEET/SEC.) = 5.25

100P10.RES  
ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1  
PIPE-FLOW(CFS) = 4.20  
PIPE TRAVEL TIME(MIN.) = 1.67 Tc(MIN.) = 10.51  
LONGEST FLOWPATH FROM NODE 100.00 TO NODE 403.00 = 1001.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 403.00 TO NODE 403.00 IS CODE = 10

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 200.00 TO NODE 201.00 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) = 457.00  
UPSTREAM ELEVATION(FEET) = 1560.69  
DOWNSTREAM ELEVATION(FEET) = 1553.98  
ELEVATION DIFFERENCE(FEET) = 6.71  
TC = 0.303\*[( 457.00\*\*3)/( 6.71)]\*\*.2 = 8.169  
10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.028  
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8795  
SOIL CLASSIFICATION IS "C"  
SUBAREA RUNOFF(CFS) = 2.68  
TOTAL AREA(ACRES) = 1.50 TOTAL RUNOFF(CFS) = 2.68

\*\*\*\*\*  
FLOW PROCESS FROM NODE 201.00 TO NODE 202.00 IS CODE = 31

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 1550.53 DOWNSTREAM(FEET) = 1549.89  
FLOW LENGTH(FEET) = 135.00 MANNING'S N = 0.012  
DEPTH OF FLOW IN 15.0 INCH PIPE IS 8.1 INCHES  
PIPE-FLOW VELOCITY(FEET/SEC.) = 3.95  
ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1  
PIPE-FLOW(CFS) = 2.68  
PIPE TRAVEL TIME(MIN.) = 0.57 Tc(MIN.) = 8.74  
LONGEST FLOWPATH FROM NODE 200.00 TO NODE 202.00 = 592.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 202.00 TO NODE 202.00 IS CODE = 81

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

=====

10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 1.961  
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8687  
SOIL CLASSIFICATION IS "B"  
SUBAREA AREA(ACRES) = 0.40 SUBAREA RUNOFF(CFS) = 0.68  
TOTAL AREA(ACRES) = 1.9 TOTAL RUNOFF(CFS) = 3.36  
TC(MIN.) = 8.74

\*\*\*\*\*  
FLOW PROCESS FROM NODE 202.00 TO NODE 302.00 IS CODE = 31

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 1549.89 DOWNSTREAM(FEET) = 1549.20  
FLOW LENGTH(FEET) = 135.00 MANNING'S N = 0.012  
DEPTH OF FLOW IN 15.0 INCH PIPE IS 9.1 INCHES  
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.29  
ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1  
PIPE-FLOW(CFS) = 3.36  
PIPE TRAVEL TIME(MIN.) = 0.52 Tc(MIN.) = 9.26  
LONGEST FLOWPATH FROM NODE 200.00 TO NODE 302.00 = 727.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 302.00 TO NODE 302.00 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.) = 9.26  
RAINFALL INTENSITY(INCH/HR) = 1.90

TOTAL STREAM AREA(ACRES) = 1.90  
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.36

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 300.00 TO NODE 301.00 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) = 230.00  
 UPSTREAM ELEVATION(FEET) = 1555.98  
 DOWNSTREAM ELEVATION(FEET) = 1552.98  
 ELEVATION DIFFERENCE(FEET) = 3.00  
 TC = 0.303\*[( 230.00\*\*3)/( 3.00)]\*\*.2 = 6.356  
 10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.299  
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8814  
 SOIL CLASSIFICATION IS "C"  
 SUBAREA RUNOFF(CFS) = 2.53  
 TOTAL AREA(ACRES) = 1.25 TOTAL RUNOFF(CFS) = 2.53

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 301.00 TO NODE 302.00 IS CODE = 31

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 1550.05 DOWNSTREAM(FEET) = 1549.20  
 FLOW LENGTH(FEET) = 64.00 MANNING'S N = 0.012  
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.6 INCHES  
 PIPE-FLOW VELOCITY(FEET/SEC.) = 5.73  
 ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1  
 PIPE-FLOW(CFS) = 2.53  
 PIPE TRAVEL TIME(MIN.) = 0.19 Tc(MIN.) = 6.54  
 LONGEST FLOWPATH FROM NODE 300.00 TO NODE 302.00 = 294.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 302.00 TO NODE 302.00 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.) = 6.54  
 RAINFALL INTENSITY(INCH/HR) = 2.27  
 TOTAL STREAM AREA(ACRES) = 1.25  
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 2.53

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	3.36	9.26	1.905	1.90
2	2.53	6.54	2.266	1.25

\*\*\*\*\*WARNING\*\*\*\*\*  
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED  
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA  
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.  
 \*\*\*\*\*

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	4.90	6.54	2.266
2	5.49	9.26	1.905

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:  
 PEAK FLOW RATE(CFS) = 5.49 Tc(MIN.) = 9.26  
 TOTAL AREA(ACRES) = 3.2  
 LONGEST FLOWPATH FROM NODE 200.00 TO NODE 302.00 = 727.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 302.00 TO NODE 402.00 IS CODE = 31

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

```

=====
ELEVATION DATA: UPSTREAM(FEET) = 1549.20  DOWNSTREAM(FEET) = 1548.20
FLOW LENGTH(FEET) = 202.00  MANNING'S N = 0.012
DEPTH OF FLOW IN 18.0 INCH PIPE IS 11.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.79
ESTIMATED PIPE DIAMETER(INCH) = 18.00  NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 5.49
PIPE TRAVEL TIME(MIN.) = 0.70  Tc(MIN.) = 9.97
LONGEST FLOWPATH FROM NODE 200.00 TO NODE 402.00 = 929.00 FEET.

```

```

*****
FLOW PROCESS FROM NODE 402.00 TO NODE 402.00 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.) = 9.97
RAINFALL INTENSITY(INCH/HR) = 1.84
TOTAL STREAM AREA(ACRES) = 3.15
PEAK FLOW RATE(CFS) AT CONFLUENCE = 5.49

```

```

*****
FLOW PROCESS FROM NODE 400.00 TO NODE 401.00 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) = 232.00
UPSTREAM ELEVATION(FEET) = 1555.98
DOWNSTREAM ELEVATION(FEET) = 1552.98
ELEVATION DIFFERENCE(FEET) = 3.00
TC = 0.303*[( 232.00**3)/( 3.00)]**.2 = 6.389
10 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.293
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8814
SOIL CLASSIFICATION IS "C"
SUBAREA RUNOFF(CFS) = 3.44
TOTAL AREA(ACRES) = 1.70  TOTAL RUNOFF(CFS) = 3.44

```

```

*****
FLOW PROCESS FROM NODE 401.00 TO NODE 402.00 IS CODE = 31
=====

```

```

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

```

```

ELEVATION DATA: UPSTREAM(FEET) = 1548.98  DOWNSTREAM(FEET) = 1548.20
FLOW LENGTH(FEET) = 75.00  MANNING'S N = 0.012
DEPTH OF FLOW IN 12.0 INCH PIPE IS 8.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.52
ESTIMATED PIPE DIAMETER(INCH) = 12.00  NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 3.44
PIPE TRAVEL TIME(MIN.) = 0.23  Tc(MIN.) = 6.62
LONGEST FLOWPATH FROM NODE 400.00 TO NODE 402.00 = 307.00 FEET.

```

```

*****
FLOW PROCESS FROM NODE 402.00 TO NODE 402.00 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.) = 6.62
RAINFALL INTENSITY(INCH/HR) = 2.25
TOTAL STREAM AREA(ACRES) = 1.70
PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.44

```

```

** CONFLUENCE DATA **

```

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	5.49	9.97	1.836	3.15
2	3.44	6.62	2.254	1.70

```

*****WARNING*****
IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
*****

```



=====  
=====  
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 \*\*\*\*\*  
 \* TEI JOB 3846 \*  
 \* 100-YEAR STORM EVENT \*  
 \* PROPOSED CONDITION \*  
 \*\*\*\*\*

FILE NAME: W:\3846\100P.DAT  
 TIME/DATE OF STUDY: 16:29 03/26/2021

-----  
 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  
 2-YEAR, 1-HOUR PRECIPITATION(INCH) = 0.455  
 100-YEAR, 1-HOUR PRECIPITATION(INCH) = 1.150  
 COMPUTED RAINFALL INTENSITY DATA:  
 STORM EVENT = 100.00 1-HOUR INTENSITY(INCH/HOUR) = 1.150  
 SLOPE OF INTENSITY DURATION CURVE = 0.5000  
 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\*

NO.	(FT)	(FT)	IN- / OUT- / PARK- SIDE / SIDE / WAY	HEIGHT (FT)	WIDTH (FT)	LIP (FT)	HIKE (FT)	FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0312	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 COMMERCIAL  
 $TC = K * [(LENGTH**3) / (ELEVATION CHANGE)]**0.2$   
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 474.00  
 UPSTREAM ELEVATION(FEET) = 1560.69  
 DOWNSTREAM ELEVATION(FEET) = 1555.64  
 ELEVATION DIFFERENCE(FEET) = 5.05  
 $TC = 0.303 * [(474.00**3) / (5.05)]**0.2 = 8.839$   
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.996  
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8850  
 SOIL CLASSIFICATION IS "C"  
 SUBAREA RUNOFF(CFS) = 6.50  
 TOTAL AREA(ACRES) = 2.45 TOTAL RUNOFF(CFS) = 6.50

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 101.00 TO NODE 403.00 IS CODE = 31  
 -----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 1549.70 DOWNSTREAM(FEET) = 1545.71  
 FLOW LENGTH(FEET) = 527.00 MANNING'S N = 0.012  
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.8 INCHES  
 PIPE-FLOW VELOCITY(FEET/SEC.) = 5.86

ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1  
 PIPE-FLOW(CFS) = 6.50  
 PIPE TRAVEL TIME(MIN.) = 1.50 Tc(MIN.) = 10.34  
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 403.00 = 1001.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 403.00 TO NODE 403.00 IS CODE = 10

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 200.00 TO NODE 201.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

ASSUMED INITIAL SUBAREA UNIFORM DEVELOPMENT IS COMMERCIAL  
 $TC = K * [(LENGTH**3) / (ELEVATION CHANGE)]**0.2$   
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 457.00  
 UPSTREAM ELEVATION(FEET) = 1560.69  
 DOWNSTREAM ELEVATION(FEET) = 1553.98  
 ELEVATION DIFFERENCE(FEET) = 6.71  
 $TC = 0.303 * [(457.00**3) / (6.71)]**0.2 = 8.169$   
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.117  
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8855  
 SOIL CLASSIFICATION IS "C"  
 SUBAREA RUNOFF(CFS) = 4.14  
 TOTAL AREA(ACRES) = 1.50 TOTAL RUNOFF(CFS) = 4.14

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 201.00 TO NODE 202.00 IS CODE = 31

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

ELEVATION DATA: UPSTREAM(FEET) = 1550.53 DOWNSTREAM(FEET) = 1549.89  
 FLOW LENGTH(FEET) = 135.00 MANNING'S N = 0.012  
 DEPTH OF FLOW IN 15.0 INCH PIPE IS 10.9 INCHES  
 PIPE-FLOW VELOCITY(FEET/SEC.) = 4.32  
 ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1  
 PIPE-FLOW(CFS) = 4.14  
 PIPE TRAVEL TIME(MIN.) = 0.52 Tc(MIN.) = 8.69  
 LONGEST FLOWPATH FROM NODE 200.00 TO NODE 202.00 = 592.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 202.00 TO NODE 202.00 IS CODE = 81

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

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.022  
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8768  
 SOIL CLASSIFICATION IS "B"  
 SUBAREA AREA(ACRES) = 0.40 SUBAREA RUNOFF(CFS) = 1.06  
 TOTAL AREA(ACRES) = 1.9 TOTAL RUNOFF(CFS) = 5.20  
 TC(MIN.) = 8.69

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 202.00 TO NODE 302.00 IS CODE = 31

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

ELEVATION DATA: UPSTREAM(FEET) = 1549.89 DOWNSTREAM(FEET) = 1549.20  
 FLOW LENGTH(FEET) = 135.00 MANNING'S N = 0.012  
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.6 INCHES  
 PIPE-FLOW VELOCITY(FEET/SEC.) = 4.79  
 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1  
 PIPE-FLOW(CFS) = 5.20  
 PIPE TRAVEL TIME(MIN.) = 0.47 Tc(MIN.) = 9.16  
 LONGEST FLOWPATH FROM NODE 200.00 TO NODE 302.00 = 727.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 302.00 TO NODE 302.00 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.) = 9.16  
 RAINFALL INTENSITY(INCH/HR) = 2.94

TOTAL STREAM AREA(ACRES) = 1.90  
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 5.20

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 300.00 TO NODE 301.00 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) = 230.00  
 UPSTREAM ELEVATION(FEET) = 1555.98  
 DOWNSTREAM ELEVATION(FEET) = 1552.98  
 ELEVATION DIFFERENCE(FEET) = 3.00  
 TC = 0.303\*[( 230.00\*\*3)/( 3.00)]\*\*.2 = 6.356  
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.533  
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8870  
 SOIL CLASSIFICATION IS "C"  
 SUBAREA RUNOFF(CFS) = 3.92  
 TOTAL AREA(ACRES) = 1.25 TOTAL RUNOFF(CFS) = 3.92

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 301.00 TO NODE 302.00 IS CODE = 31

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 1550.05 DOWNSTREAM(FEET) = 1549.20  
 FLOW LENGTH(FEET) = 64.00 MANNING'S N = 0.012  
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 8.9 INCHES  
 PIPE-FLOW VELOCITY(FEET/SEC.) = 6.26  
 ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1  
 PIPE-FLOW(CFS) = 3.92  
 PIPE TRAVEL TIME(MIN.) = 0.17 Tc(MIN.) = 6.53  
 LONGEST FLOWPATH FROM NODE 300.00 TO NODE 302.00 = 294.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 302.00 TO NODE 302.00 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.) = 6.53  
 RAINFALL INTENSITY(INCH/HR) = 3.49  
 TOTAL STREAM AREA(ACRES) = 1.25  
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.92

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	5.20	9.16	2.943	1.90
2	3.92	6.53	3.487	1.25

\*\*\*\*\*WARNING\*\*\*\*\*  
 IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED  
 ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA  
 WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.  
 \*\*\*\*\*

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	7.62	6.53	3.487
2	8.51	9.16	2.943

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:  
 PEAK FLOW RATE(CFS) = 8.51 Tc(MIN.) = 9.16  
 TOTAL AREA(ACRES) = 3.2  
 LONGEST FLOWPATH FROM NODE 200.00 TO NODE 302.00 = 727.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 302.00 TO NODE 402.00 IS CODE = 31

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

```

=====
ELEVATION DATA: UPSTREAM(FEET) = 1549.20  DOWNSTREAM(FEET) = 1548.20
FLOW LENGTH(FEET) = 202.00  MANNING'S N = 0.012
DEPTH OF FLOW IN 21.0 INCH PIPE IS 13.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.33
ESTIMATED PIPE DIAMETER(INCH) = 21.00  NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 8.51
PIPE TRAVEL TIME(MIN.) = 0.63  Tc(MIN.) = 9.79
LONGEST FLOWPATH FROM NODE 200.00 TO NODE 402.00 = 929.00 FEET.

```

```

*****
FLOW PROCESS FROM NODE 402.00 TO NODE 402.00 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.) = 9.79
RAINFALL INTENSITY(INCH/HR) = 2.85
TOTAL STREAM AREA(ACRES) = 3.15
PEAK FLOW RATE(CFS) AT CONFLUENCE = 8.51

```

```

*****
FLOW PROCESS FROM NODE 400.00 TO NODE 401.00 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) = 232.00
UPSTREAM ELEVATION(FEET) = 1555.98
DOWNSTREAM ELEVATION(FEET) = 1552.98
ELEVATION DIFFERENCE(FEET) = 3.00
TC = 0.303*[( 232.00**3)/( 3.00)]**.2 = 6.389
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.524
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8869
SOIL CLASSIFICATION IS "C"
SUBAREA RUNOFF(CFS) = 5.31
TOTAL AREA(ACRES) = 1.70  TOTAL RUNOFF(CFS) = 5.31

```

```

*****
FLOW PROCESS FROM NODE 401.00 TO NODE 402.00 IS CODE = 31
=====

```

```

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

```

```

ELEVATION DATA: UPSTREAM(FEET) = 1548.98  DOWNSTREAM(FEET) = 1548.20
FLOW LENGTH(FEET) = 75.00  MANNING'S N = 0.012
DEPTH OF FLOW IN 15.0 INCH PIPE IS 9.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.25
ESTIMATED PIPE DIAMETER(INCH) = 15.00  NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 5.31
PIPE TRAVEL TIME(MIN.) = 0.20  Tc(MIN.) = 6.59
LONGEST FLOWPATH FROM NODE 400.00 TO NODE 402.00 = 307.00 FEET.

```

```

*****
FLOW PROCESS FROM NODE 402.00 TO NODE 402.00 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.) = 6.59
RAINFALL INTENSITY(INCH/HR) = 3.47
TOTAL STREAM AREA(ACRES) = 1.70
PEAK FLOW RATE(CFS) AT CONFLUENCE = 5.31

```

```

** CONFLUENCE DATA **

```

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	8.51	9.79	2.847	3.15
2	5.31	6.59	3.470	1.70

```

*****WARNING*****
IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
*****

```

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

## \*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	11.04	6.59	3.470
2	12.86	9.79	2.847

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 12.86 Tc(MIN.) = 9.79  
TOTAL AREA(ACRES) = 4.9  
LONGEST FLOWPATH FROM NODE 200.00 TO NODE 402.00 = 929.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 402.00 TO NODE 403.00 IS CODE = 31  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 1548.20 DOWNSTREAM(FEET) = 1545.71  
FLOW LENGTH(FEET) = 108.00 MANNING'S N = 0.012  
DEPTH OF FLOW IN 18.0 INCH PIPE IS 11.8 INCHES  
PIPE-FLOW VELOCITY(FEET/SEC.) = 10.50  
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1  
PIPE-FLOW(CFS) = 12.86  
PIPE TRAVEL TIME(MIN.) = 0.17 Tc(MIN.) = 9.96  
LONGEST FLOWPATH FROM NODE 200.00 TO NODE 403.00 = 1037.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 403.00 TO NODE 403.00 IS CODE = 11  
-----

>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

## \*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	12.86	9.96	2.822	4.85

LONGEST FLOWPATH FROM NODE 200.00 TO NODE 403.00 = 1037.00 FEET.

## \*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	6.50	10.34	2.771	2.45

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 403.00 = 1001.00 FEET.

\*\*\*\*\*WARNING\*\*\*\*\*  
IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED  
ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA  
WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.  
\*\*\*\*\*

## \*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	19.13	9.96	2.822
2	19.13	10.34	2.771

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 19.13 Tc(MIN.) = 9.96  
TOTAL AREA(ACRES) = 7.3

\*\*\*\*\*  
FLOW PROCESS FROM NODE 403.00 TO NODE 404.00 IS CODE = 31  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 1545.71 DOWNSTREAM(FEET) = 1535.09  
FLOW LENGTH(FEET) = 167.00 MANNING'S N = 0.012  
DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.9 INCHES  
PIPE-FLOW VELOCITY(FEET/SEC.) = 17.04  
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1  
PIPE-FLOW(CFS) = 19.13  
PIPE TRAVEL TIME(MIN.) = 0.16 Tc(MIN.) = 10.13  
LONGEST FLOWPATH FROM NODE 200.00 TO NODE 404.00 = 1204.00 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 7.3 TC(MIN.) = 10.13  
PEAK FLOW RATE(CFS) = 19.13

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



# **APPENDIX C**

## **DETENTION CALCULATIONS**

TEI JOB NO 3846  
TRUCK YARD

Elevation	Depth (feet)	Area (sq. ft.)	Volume (c.f.)	$\Sigma$ Volume (c.f.)	$\Sigma$ Volume (ac-ft)	Q (cfs)
1553.00	0.00	0				
			159	14940	0.34	6.5
1553.20	0.20	1593				
			704	15644	0.36	7.0
1553.40	0.40	5443				
			1613	17257	0.40	7.5
1553.60	0.60	10689				
			2685	19942	0.46	8
1553.80	0.80	16158				
			3393	23335	0.54	8
1553.98	0.98	21540				

<b>Basin Routing</b>			
<b>2-yr</b>	discharge (cfs)	volume detained (ac-ft)	depth (ft)
1hr	<u>3.24</u>	0.17	0.1
3hr	3.03	0.16	0.09
6hr	3.05	0.16	0.09
24hr	1.5	0.08	0.05
<b>10-yr</b>	discharge (cfs)	volume detained (ac-ft)	depth (ft)
1hr	<u>5.24</u>	0.27	0.16
3hr	4.71	0.25	0.15
6hr	4.48	0.24	0.14
24hr	2.18	0.11	0.07
<b>100-yr</b>	discharge (cfs)	volume detained (ac-ft)	depth (ft)
1hr	<u>7.72</u>	0.43	0.69
3hr	7.16	0.37	0.47
6hr	6.61	0.34	0.24
24hr	3.16	0.16	0.1

3846  
 prop condition  
 2-year 1 hour

Program License Serial Number 6400

\*\*\*\*\* HYDROGRAPH INFORMATION \*\*\*\*\*

From study/file name: 3846pr212.rte  
 \*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*  
 Number of intervals = 14  
 Time interval = 5.0 (Min.)  
 Maximum/Peak flow rate = 10.111 (CFS)  
 Total volume = 0.278 (Ac.Ft)  
 Status of hydrographs being held in storage  
 Stream 1 Stream 2 Stream 3 Stream 4 Stream 5  
 Peak (CFS) 0.000 0.000 0.000 0.000 0.000  
 Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000  
 \*\*\*\*\*

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

-----  
 User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 14  
 Hydrograph time unit = 5.000 (Min.)  
 Initial depth in storage basin = 0.00(Ft.)

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

-----  
 Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-0*dt/2) (Ac.Ft)	(S+0*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.200	0.340	6.500	0.318	0.362
0.400	0.360	7.000	0.336	0.384
0.600	0.400	7.500	0.374	0.426
0.800	0.460	8.000	0.432	0.488
0.980	0.540	8.000	0.512	0.568

-----

Hydrograph Detention Basin Routing

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

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	0	2.5	5.06	7.58	10.11	Depth (Ft.)
0.083	0.81	0.05	0.003	O I					0.00
0.167	1.48	0.19	0.010	O I					0.01
0.250	1.70	0.36	0.019	O I					0.01
0.333	1.84	0.53	0.028	O I					0.02
0.417	2.00	0.71	0.037	O I					0.02
0.500	2.31	0.88	0.046	O I					0.03
0.583	2.60	1.08	0.056	O I					0.03
0.667	3.19	1.30	0.068	O I					0.04
0.750	4.72	1.63	0.085	O I	I				0.05
0.833	10.11	2.34	0.123	O I				I	0.07
0.917	6.45	3.08	0.161	O I		I			0.09
1.000	2.43	3.25	0.170	O I	O				0.10
1.083	0.63	3.03	0.159	I	O				0.09
1.167	0.06	2.70	0.141	I	O				0.08
1.250	0.00	2.37	0.124	I	O				0.07
1.333	0.00	2.08	0.109	I	O				0.06
1.417	0.00	1.82	0.095	I	O				0.06
1.500	0.00	1.60	0.084	I	O				0.05
1.583	0.00	1.40	0.073	I	O				0.04
1.667	0.00	1.23	0.064	I	O				0.04
1.750	0.00	1.08	0.056	I	O				0.03
1.833	0.00	0.94	0.049	I	O				0.03
1.917	0.00	0.83	0.043	I	O				0.03
2.000	0.00	0.72	0.038	I	O				0.02
2.083	0.00	0.63	0.033	I	O				0.02
2.167	0.00	0.56	0.029	IO					0.02
2.250	0.00	0.49	0.025	IO					0.01
2.333	0.00	0.43	0.022	IO					0.01

2.417	0.00	0.37	0.020	IO				0.01
2.500	0.00	0.33	0.017	IO				0.01
2.583	0.00	0.29	0.015	O				0.01
2.667	0.00	0.25	0.013	O				0.01
2.750	0.00	0.22	0.012	O				0.01
2.833	0.00	0.19	0.010	O				0.01
2.917	0.00	0.17	0.009	O				0.01
3.000	0.00	0.15	0.008	O				0.00
3.083	0.00	0.13	0.007	O				0.00
3.167	0.00	0.11	0.006	O				0.00
3.250	0.00	0.10	0.005	O				0.00
3.333	0.00	0.09	0.005	O				0.00
3.417	0.00	0.08	0.004	O				0.00
3.500	0.00	0.07	0.004	O				0.00
3.583	0.00	0.06	0.003	O				0.00
3.667	0.00	0.05	0.003	O				0.00
3.750	0.00	0.05	0.002	O				0.00
3.833	0.00	0.04	0.002	O				0.00
3.917	0.00	0.03	0.002	O				0.00
4.000	0.00	0.03	0.002	O				0.00

Remaining water in basin = 0.00 (Ac.Ft)

```

*****HYDROGRAPH DATA*****
      Number of intervals = 48
      Time interval = 5.0 (Min.)
      Maximum/Peak flow rate = 3.246 (CFS)
      Total volume = 0.276 (Ac.Ft)
      Status of hydrographs being held in storage
      Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
      Peak (CFS) 0.000 0.000 0.000 0.000 0.000
      Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000
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 tei 3846 2 year 3-hour  
 TEI 3846  
 PROPOSED CONDITION  
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Program License Serial Number 6400

\*\*\*\*\* HYDROGRAPH INFORMATION \*\*\*\*\*

From study/file name: 3846pr232.rte  
 \*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*  
 Number of intervals = 38  
 Time interval = 5.0 (Min.)  
 Maximum/Peak flow rate = 5.233 (CFS)  
 Total volume = 0.460 (Ac.Ft)  
 Status of hydrographs being held in storage  
 Stream 1 Stream 2 Stream 3 Stream 4 Stream 5  
 Peak (CFS) 0.000 0.000 0.000 0.000 0.000  
 Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000  
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 Process from Point/Station 1.000 to Point/Station 2.000  
 \*\*\*\* RETARDING BASIN ROUTING \*\*\*\*

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 User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 38  
 Hydrograph time unit = 5.000 (Min.)  
 Initial depth in storage basin = 0.00(Ft.)  
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Initial basin depth = 0.00 (Ft.)  
 Initial basin storage = 0.00 (Ac.Ft)  
 Initial basin outflow = 0.00 (CFS)  
 -----

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-0*dt/2) (Ac.Ft)	(S+0*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.200	0.340	6.500	0.318	0.362
0.400	0.360	7.000	0.336	0.384
0.600	0.400	7.500	0.374	0.426
0.800	0.460	8.000	0.432	0.488
0.980	0.540	8.000	0.512	0.568

-----  
 Hydrograph Detention Basin Routing

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

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	0	1.3	2.62	3.93	5.23	Depth (Ft.)
0.083	0.54	0.03	0.002	O	I				0.00
0.167	0.83	0.11	0.006	O	I				0.00
0.250	0.79	0.20	0.010	O	I				0.01
0.333	0.91	0.28	0.015	O	I				0.01
0.417	0.99	0.36	0.019	O	I				0.01
0.500	1.13	0.45	0.023	O	I				0.01
0.583	1.07	0.53	0.028	O	I				0.02
0.667	1.13	0.60	0.031	O	I				0.02
0.750	1.19	0.67	0.035	O	I				0.02
0.833	1.08	0.73	0.038	O	I				0.02
0.917	1.05	0.77	0.040	O	I				0.02
1.000	1.15	0.81	0.042	O	I				0.02
1.083	1.36	0.86	0.045	O	I				0.03
1.167	1.46	0.93	0.049	O	I				0.03
1.250	1.47	1.00	0.052	O	I				0.03
1.333	1.39	1.05	0.055	O	I				0.03
1.417	1.59	1.10	0.058	O	I				0.03
1.500	1.76	1.18	0.061	O	I				0.04
1.583	1.68	1.24	0.065	O	I				0.04
1.667	1.73	1.30	0.068	O	I				0.04
1.750	2.04	1.37	0.072	O	I				0.04
1.833	2.11	1.46	0.076	O	I				0.04
1.917	1.99	1.53	0.080	O	I				0.05
2.000	1.98	1.59	0.083	O	I				0.05
2.083	2.04	1.64	0.086	O	I				0.05
2.167	2.52	1.72	0.090	O	I				0.05
2.250	3.11	1.86	0.097	O	I				0.06
2.333	2.70	1.98	0.104	O	I				0.06

2.417	3.74	2.14	0.112			0		I		0.07
2.500	4.66	2.39	0.125			0		I		0.07
2.583	5.23	2.71	0.142			0		I		0.08
2.667	4.50	2.97	0.156			0		I		0.09
2.750	2.39	3.03	0.159			I				0.09
2.833	1.36	2.89	0.151		I	0				0.09
2.917	1.21	2.69	0.141		I	0				0.08
3.000	0.71	2.48	0.130		I	0				0.08
3.083	0.18	2.23	0.116		I	0				0.07
3.167	0.02	1.96	0.103		I	0				0.06
3.250	0.00	1.72	0.090		I	0				0.05
3.333	0.00	1.51	0.079		I	0				0.05
3.417	0.00	1.32	0.069		I	0				0.04
3.500	0.00	1.16	0.061		I	0				0.04
3.583	0.00	1.02	0.053		I	0				0.03
3.667	0.00	0.89	0.047		I	0				0.03
3.750	0.00	0.78	0.041		I	0				0.02
3.833	0.00	0.68	0.036		I	0				0.02
3.917	0.00	0.60	0.031		I	0				0.02
4.000	0.00	0.53	0.027		I	0				0.02
4.083	0.00	0.46	0.024		I	0				0.01
4.167	0.00	0.40	0.021		I	0				0.01
4.250	0.00	0.35	0.019		I	0				0.01
4.333	0.00	0.31	0.016		IO					0.01
4.417	0.00	0.27	0.014		IO					0.01
4.500	0.00	0.24	0.012		IO					0.01
4.583	0.00	0.21	0.011		IO					0.01
4.667	0.00	0.18	0.010		IO					0.01
4.750	0.00	0.16	0.008		O					0.00
4.833	0.00	0.14	0.007		O					0.00
4.917	0.00	0.12	0.006		O					0.00
5.000	0.00	0.11	0.006		O					0.00
5.083	0.00	0.09	0.005		O					0.00
5.167	0.00	0.08	0.004		O					0.00
5.250	0.00	0.07	0.004		O					0.00
5.333	0.00	0.06	0.003		O					0.00
5.417	0.00	0.06	0.003		O					0.00
5.500	0.00	0.05	0.003		O					0.00
5.583	0.00	0.04	0.002		O					0.00
5.667	0.00	0.04	0.002		O					0.00
5.750	0.00	0.03	0.002		O					0.00
5.833	0.00	0.03	0.002		O					0.00

Remaining water in basin = 0.00 (Ac.Ft)

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*****HYDROGRAPH DATA*****
      Number of intervals = 70
      Time interval = 5.0 (Min.)
      Maximum/Peak flow rate = 3.032 (CFS)
      Total volume = 0.458 (Ac.Ft)
      Status of hydrographs being held in storage
      Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
      Peak (CFS) 0.000 0.000 0.000 0.000 0.000
      Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000
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 TEI 3846  
 PROP CONDITION  
 2-YEAR 6 HOUR  
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Program License Serial Number 6400

\*\*\*\*\* HYDROGRAPH INFORMATION \*\*\*\*\*

From study/file name: 3846PR262.rte  
 \*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*  
 Number of intervals = 74  
 Time interval = 5.0 (Min.)  
 Maximum/Peak flow rate = 4.996 (CFS)  
 Total volume = 0.657 (Ac.Ft)  
 Status of hydrographs being held in storage  
 Stream 1 Stream 2 Stream 3 Stream 4 Stream 5  
 Peak (CFS) 0.000 0.000 0.000 0.000 0.000  
 Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000  
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 Process from Point/Station 1.000 to Point/Station 2.000  
 \*\*\*\* RETARDING BASIN ROUTING \*\*\*\*

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 User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 74  
 Hydrograph time unit = 5.000 (Min.)  
 Initial depth in storage basin = 0.00(Ft.)  
 -----

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

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-0*dt/2) (Ac.Ft)	(S+0*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.200	0.340	6.500	0.318	0.362
0.400	0.360	7.000	0.336	0.384
0.600	0.400	7.500	0.374	0.426
0.800	0.460	8.000	0.432	0.488
0.980	0.540	8.000	0.512	0.568

-----  
 Hydrograph Detention Basin Routing

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

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	1.2	2.50	3.75	5.00	Depth (Ft.)
0.083	0.30	0.02	0.001	OI					0.00
0.167	0.52	0.07	0.003	O I					0.00
0.250	0.57	0.13	0.007	O I					0.00
0.333	0.57	0.18	0.009	O I					0.01
0.417	0.57	0.23	0.012	O I					0.01
0.500	0.63	0.27	0.014	O I					0.01
0.583	0.66	0.32	0.017	O I					0.01
0.667	0.67	0.36	0.019	O I					0.01
0.750	0.67	0.40	0.021	O I					0.01
0.833	0.67	0.43	0.023	O I					0.01
0.917	0.67	0.46	0.024	O I					0.01
1.000	0.73	0.49	0.026	OI					0.02
1.083	0.76	0.52	0.027	OI					0.02
1.167	0.76	0.55	0.029	OI					0.02
1.250	0.76	0.58	0.030	OI					0.02
1.333	0.76	0.60	0.031	OI					0.02
1.417	0.76	0.62	0.032	OI					0.02
1.500	0.76	0.64	0.033	O					0.02
1.583	0.76	0.65	0.034	O					0.02
1.667	0.76	0.67	0.035	O					0.02
1.750	0.76	0.68	0.036	O					0.02
1.833	0.76	0.69	0.036	O					0.02
1.917	0.76	0.70	0.037	O					0.02
2.000	0.82	0.71	0.037	OI					0.02
2.083	0.80	0.72	0.038	OI					0.02
2.167	0.83	0.73	0.038	OI					0.02
2.250	0.85	0.75	0.039	OI					0.02
2.333	0.86	0.76	0.040	OI					0.02



TEI 3846  
 PROP CONDITION  
 2-YEAR 24 HOUR

Program License Serial Number 6400

\*\*\*\*\* HYDROGRAPH INFORMATION \*\*\*\*\*

From study/file name: 3846PR2242.rte  
 \*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*  
 Number of intervals = 290  
 Time interval = 5.0 (Min.)  
 Maximum/Peak flow rate = 1.712 (CFS)  
 Total volume = 1.040 (Ac.Ft)  
 Status of hydrographs being held in storage  
 Stream 1 Stream 2 Stream 3 Stream 4 Stream 5  
 Peak (CFS) 0.000 0.000 0.000 0.000 0.000  
 Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000  
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 Process from Point/Station 1.000 to Point/Station 2.000  
 \*\*\*\*\* RETARDING BASIN ROUTING \*\*\*\*\*

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 User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 290  
 Hydrograph time unit = 5.000 (Min.)  
 Initial depth in storage basin = 0.00(Ft.)

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

-----  
 Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-0*dt/2) (Ac.Ft)	(S+0*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.200	0.340	6.500	0.318	0.362
0.400	0.360	7.000	0.336	0.384
0.600	0.400	7.500	0.374	0.426
0.800	0.460	8.000	0.432	0.488
0.980	0.540	8.000	0.512	0.568

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Hydrograph Detention Basin Routing

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

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	0.4	0.86	1.28	1.71	Depth (Ft.)
0.083	0.06	0.00	0.000	OI					0.00
0.167	0.10	0.01	0.001	OI					0.00
0.250	0.10	0.02	0.001	OI					0.00
0.333	0.13	0.04	0.002	O I					0.00
0.417	0.15	0.05	0.003	O I					0.00
0.500	0.15	0.06	0.003	OI					0.00
0.583	0.15	0.07	0.004	OI					0.00
0.667	0.15	0.08	0.004	OI					0.00
0.750	0.15	0.09	0.005	OI					0.00
0.833	0.18	0.10	0.005	O I					0.00
0.917	0.20	0.11	0.006	OI					0.00
1.000	0.20	0.12	0.006	OI					0.00
1.083	0.17	0.13	0.007	OI					0.00
1.167	0.15	0.13	0.007	O					0.00
1.250	0.15	0.14	0.007	O					0.00
1.333	0.15	0.14	0.007	O					0.00
1.417	0.15	0.14	0.007	O					0.00
1.500	0.15	0.14	0.007	O					0.00
1.583	0.15	0.14	0.007	O					0.00
1.667	0.15	0.14	0.007	O					0.00
1.750	0.15	0.14	0.008	O					0.00
1.833	0.18	0.15	0.008	OI					0.00
1.917	0.20	0.15	0.008	OI					0.00
2.000	0.20	0.16	0.008	OI					0.00
2.083	0.20	0.16	0.009	O					0.01
2.167	0.20	0.17	0.009	O					0.01
2.250	0.20	0.17	0.009	O					0.01
2.333	0.20	0.18	0.009	O					0.01

2.417	0.20	0.18	0.009	O			0.01
2.500	0.20	0.18	0.010	O			0.01
2.583	0.23	0.19	0.010	OI			0.01
2.667	0.25	0.19	0.010	OI			0.01
2.750	0.25	0.20	0.010	OI			0.01
2.833	0.25	0.21	0.011	OI			0.01
2.917	0.25	0.21	0.011	OI			0.01
3.000	0.25	0.22	0.011	O			0.01
3.083	0.25	0.22	0.012	O			0.01
3.167	0.25	0.23	0.012	O			0.01
3.250	0.25	0.23	0.012	O			0.01
3.333	0.25	0.23	0.012	O			0.01
3.417	0.25	0.23	0.012	O			0.01
3.500	0.25	0.24	0.012	O			0.01
3.583	0.25	0.24	0.012	O			0.01
3.667	0.25	0.24	0.013	O			0.01
3.750	0.25	0.24	0.013	O			0.01
3.833	0.28	0.24	0.013	OI			0.01
3.917	0.30	0.25	0.013	OI			0.01
4.000	0.30	0.26	0.013	OI			0.01
4.083	0.30	0.26	0.014	OI			0.01
4.167	0.30	0.27	0.014	OI			0.01
4.250	0.30	0.27	0.014	O			0.01
4.333	0.33	0.28	0.014	OI			0.01
4.417	0.35	0.29	0.015	OI			0.01
4.500	0.35	0.29	0.015	OI			0.01
4.583	0.35	0.30	0.016	OI			0.01
4.667	0.35	0.31	0.016	OI			0.01
4.750	0.35	0.31	0.016	OI			0.01
4.833	0.38	0.32	0.017	O I			0.01
4.917	0.40	0.33	0.017	OI			0.01
5.000	0.40	0.34	0.018	OI			0.01
5.083	0.34	0.34	0.018	O			0.01
5.167	0.31	0.34	0.018	IO			0.01
5.250	0.30	0.34	0.018	IO			0.01
5.333	0.33	0.33	0.017	O			0.01
5.417	0.35	0.33	0.017	O			0.01
5.500	0.35	0.34	0.018	O			0.01
5.583	0.38	0.34	0.018	OI			0.01
5.667	0.40	0.35	0.018	OI			0.01
5.750	0.40	0.35	0.018	OI			0.01
5.833	0.40	0.36	0.019	OI			0.01
5.917	0.40	0.36	0.019	OI			0.01
6.000	0.40	0.37	0.019	OI			0.01
6.083	0.43	0.38	0.020	OI			0.01
6.167	0.45	0.38	0.020	OI			0.01
6.250	0.45	0.39	0.021	OI			0.01
6.333	0.45	0.40	0.021	OI			0.01
6.417	0.45	0.41	0.021	OI			0.01
6.500	0.45	0.41	0.022	OI			0.01
6.583	0.48	0.42	0.022	O I			0.01
6.667	0.50	0.43	0.022	OI			0.01
6.750	0.50	0.44	0.023	OI			0.01
6.833	0.50	0.45	0.023	OI			0.01
6.917	0.50	0.45	0.024	OI			0.01
7.000	0.50	0.46	0.024	OI			0.01
7.083	0.50	0.46	0.024	OI			0.01
7.167	0.50	0.47	0.025	OI			0.01
7.250	0.50	0.47	0.025	OI			0.01
7.333	0.53	0.48	0.025	OI			0.01
7.417	0.55	0.49	0.025	OI			0.01
7.500	0.55	0.50	0.026	OI			0.02
7.583	0.58	0.50	0.026	OI			0.02
7.667	0.60	0.52	0.027	O I			0.02
7.750	0.60	0.53	0.028	O I			0.02
7.833	0.64	0.54	0.028	OI			0.02
7.917	0.65	0.55	0.029	O I			0.02
8.000	0.65	0.56	0.029	O I			0.02
8.083	0.72	0.58	0.030	O I			0.02
8.167	0.75	0.60	0.031	O I			0.02
8.250	0.76	0.62	0.032	O I			0.02
8.333	0.76	0.63	0.033	O I			0.02
8.417	0.76	0.65	0.034	O I			0.02
8.500	0.76	0.66	0.035	O I			0.02
8.583	0.79	0.68	0.035	O I			0.02
8.667	0.80	0.69	0.036	O I			0.02
8.750	0.81	0.70	0.037	O I			0.02
8.833	0.84	0.72	0.038	O I			0.02
8.917	0.85	0.73	0.038	O I			0.02
9.000	0.86	0.75	0.039	O I			0.02
9.083	0.92	0.77	0.040	O I			0.02
9.167	0.95	0.79	0.041	O I			0.02
9.250	0.96	0.81	0.042	O I			0.02
9.333	0.99	0.83	0.043	O I			0.03
9.417	1.00	0.85	0.044	O I			0.03
9.500	1.01	0.87	0.045	O I			0.03
9.583	1.04	0.89	0.046	O I			0.03
9.667	1.06	0.91	0.047	O I			0.03
9.750	1.06	0.93	0.048	O I			0.03
9.833	1.09	0.94	0.049	O I			0.03
9.917	1.11	0.96	0.050	O I			0.03
10.000	1.11	0.98	0.051	O I			0.03
10.083	0.89	0.98	0.051	I O			0.03
10.167	0.77	0.96	0.050	I O			0.03
10.250	0.76	0.94	0.049	I O			0.03
10.333	0.76	0.92	0.048	I O			0.03
10.417	0.76	0.90	0.047	I O			0.03
10.500	0.76	0.88	0.046	I O			0.03

10.583	0.91	0.87	0.046			OI			0.03
10.667	1.00	0.88	0.046			O I			0.03
10.750	1.01	0.90	0.047			O I			0.03
10.833	1.01	0.91	0.048			OI			0.03
10.917	1.01	0.92	0.048			OI			0.03
11.000	1.01	0.93	0.049			OI			0.03
11.083	0.98	0.94	0.049			OI			0.03
11.167	0.96	0.94	0.049			O			0.03
11.250	0.96	0.95	0.049			O			0.03
11.333	0.96	0.95	0.050			O			0.03
11.417	0.96	0.95	0.050			O			0.03
11.500	0.96	0.95	0.050			O			0.03
11.583	0.89	0.95	0.049			IO			0.03
11.667	0.86	0.94	0.049			IO			0.03
11.750	0.86	0.93	0.049			IO			0.03
11.833	0.89	0.92	0.048			IO			0.03
11.917	0.90	0.92	0.048			IO			0.03
12.000	0.91	0.92	0.048			IO			0.03
12.083	1.12	0.93	0.049			O	I		0.03
12.167	1.24	0.96	0.050			O	O	I	0.03
12.250	1.26	1.00	0.052			O	O	I	0.03
12.333	1.29	1.03	0.054			O	O	I	0.03
12.417	1.31	1.06	0.056			O	O	I	0.03
12.500	1.31	1.09	0.057			O	O	I	0.03
12.583	1.37	1.12	0.059			O	O	I	0.03
12.667	1.41	1.16	0.061			O	O	I	0.04
12.750	1.41	1.19	0.062			O	O	I	0.04
12.833	1.44	1.22	0.064			O	O	I	0.04
12.917	1.46	1.25	0.065			O	O	I	0.04
13.000	1.46	1.27	0.067			O	O	I	0.04
13.083	1.62	1.31	0.068			O	O	I	0.04
13.167	1.70	1.35	0.071			O	O	I	0.04
13.250	1.71	1.39	0.073			O	O	I	0.04
13.333	1.71	1.43	0.075			O	O	I	0.04
13.417	1.71	1.47	0.077			O	O	I	0.05
13.500	1.71	1.50	0.078			O	O	I	0.05
13.583	1.37	1.50	0.079			O	O	I	0.05
13.667	1.18	1.47	0.077			O	O	I	0.05
13.750	1.16	1.44	0.075			O	O	I	0.04
13.833	1.16	1.40	0.073			O	O	I	0.04
13.917	1.16	1.37	0.072			O	O	I	0.04
14.000	1.16	1.35	0.070			O	O	I	0.04
14.083	1.28	1.33	0.070			O	O	I	0.04
14.167	1.35	1.33	0.069			O	O	I	0.04
14.250	1.36	1.33	0.070			O	O	I	0.04
14.333	1.33	1.33	0.070			O	O	I	0.04
14.417	1.31	1.33	0.070			O	O	I	0.04
14.500	1.31	1.33	0.070			O	O	I	0.04
14.583	1.31	1.33	0.069			O	O	I	0.04
14.667	1.31	1.32	0.069			O	O	I	0.04
14.750	1.31	1.32	0.069			O	O	I	0.04
14.833	1.28	1.32	0.069			O	O	I	0.04
14.917	1.26	1.31	0.069			O	O	I	0.04
15.000	1.26	1.31	0.068			O	O	I	0.04
15.083	1.23	1.30	0.068			O	O	I	0.04
15.167	1.21	1.29	0.067			O	O	I	0.04
15.250	1.21	1.28	0.067			O	O	I	0.04
15.333	1.18	1.27	0.066			O	O	I	0.04
15.417	1.16	1.26	0.066			O	O	I	0.04
15.500	1.16	1.24	0.065			O	O	I	0.04
15.583	1.03	1.23	0.064			O	O	I	0.04
15.667	0.96	1.20	0.063			O	O	I	0.04
15.750	0.96	1.17	0.061			O	O	I	0.04
15.833	0.96	1.14	0.060			O	O	I	0.04
15.917	0.96	1.12	0.059			O	O	I	0.03
16.000	0.96	1.10	0.057			O	O	I	0.03
16.083	0.49	1.05	0.055			O	O	I	0.03
16.167	0.23	0.97	0.051			O	O	I	0.03
16.250	0.20	0.87	0.046			O	O	I	0.03
16.333	0.20	0.79	0.041			O	O	I	0.02
16.417	0.20	0.72	0.038			O	O	I	0.02
16.500	0.20	0.65	0.034			O	O	I	0.02
16.583	0.17	0.60	0.031			O	O	I	0.02
16.667	0.15	0.54	0.028			O	O	I	0.02
16.750	0.15	0.49	0.026			O	O	I	0.02
16.833	0.15	0.45	0.024			O	O	I	0.01
16.917	0.15	0.41	0.022			O	O	I	0.01
17.000	0.15	0.38	0.020			O	O	I	0.01
17.083	0.21	0.36	0.019			O	O	I	0.01
17.167	0.25	0.34	0.018			O	O	I	0.01
17.250	0.25	0.33	0.017			O	O	I	0.01
17.333	0.25	0.32	0.017			O	O	I	0.01
17.417	0.25	0.31	0.016			O	O	I	0.01
17.500	0.25	0.30	0.016			O	O	I	0.01
17.583	0.25	0.30	0.016			O	O	I	0.01
17.667	0.25	0.29	0.015			O	O	I	0.01
17.750	0.25	0.29	0.015			O	O	I	0.01
17.833	0.22	0.28	0.015			O	O	I	0.01
17.917	0.20	0.27	0.014			O	O	I	0.01
18.000	0.20	0.26	0.014			O	O	I	0.01
18.083	0.20	0.26	0.013			O	O	I	0.01
18.167	0.20	0.25	0.013			O	O	I	0.01
18.250	0.20	0.24	0.013			O	O	I	0.01
18.333	0.20	0.24	0.012			O	O	I	0.01
18.417	0.20	0.23	0.012			O	O	I	0.01
18.500	0.20	0.23	0.012			O	O	I	0.01
18.583	0.17	0.22	0.012			O	O	I	0.01
18.667	0.15	0.22	0.011			O	O	I	0.01

18.750	0.15	0.21	0.011	IO				0.01
18.833	0.12	0.20	0.010	IO				0.01
18.917	0.10	0.19	0.010	IO				0.01
19.000	0.10	0.18	0.009	IO				0.01
19.083	0.13	0.17	0.009	IO				0.01
19.167	0.15	0.17	0.009	IO				0.01
19.250	0.15	0.16	0.009	IO				0.01
19.333	0.18	0.16	0.009	O				0.01
19.417	0.20	0.17	0.009	O				0.01
19.500	0.20	0.17	0.009	O				0.01
19.583	0.17	0.17	0.009	O				0.01
19.667	0.15	0.17	0.009	IO				0.01
19.750	0.15	0.17	0.009	IO				0.01
19.833	0.12	0.17	0.009	IO				0.01
19.917	0.10	0.16	0.008	IO				0.00
20.000	0.10	0.15	0.008	IO				0.00
20.083	0.13	0.15	0.008	O				0.00
20.167	0.15	0.15	0.008	O				0.00
20.250	0.15	0.15	0.008	O				0.00
20.333	0.15	0.15	0.008	O				0.00
20.417	0.15	0.15	0.008	O				0.00
20.500	0.15	0.15	0.008	O				0.00
20.583	0.15	0.15	0.008	O				0.00
20.667	0.15	0.15	0.008	O				0.00
20.750	0.15	0.15	0.008	O				0.00
20.833	0.12	0.15	0.008	O				0.00
20.917	0.10	0.14	0.007	IO				0.00
21.000	0.10	0.14	0.007	IO				0.00
21.083	0.13	0.14	0.007	O				0.00
21.167	0.15	0.14	0.007	O				0.00
21.250	0.15	0.14	0.007	O				0.00
21.333	0.12	0.14	0.007	O				0.00
21.417	0.10	0.13	0.007	IO				0.00
21.500	0.10	0.13	0.007	IO				0.00
21.583	0.13	0.13	0.007	O				0.00
21.667	0.15	0.13	0.007	O				0.00
21.750	0.15	0.13	0.007	O				0.00
21.833	0.12	0.13	0.007	O				0.00
21.917	0.10	0.13	0.007	IO				0.00
22.000	0.10	0.13	0.007	IO				0.00
22.083	0.13	0.13	0.007	O				0.00
22.167	0.15	0.13	0.007	O				0.00
22.250	0.15	0.13	0.007	O				0.00
22.333	0.12	0.13	0.007	O				0.00
22.417	0.10	0.13	0.007	IO				0.00
22.500	0.10	0.13	0.007	IO				0.00
22.583	0.10	0.12	0.006	IO				0.00
22.667	0.10	0.12	0.006	IO				0.00
22.750	0.10	0.12	0.006	IO				0.00
22.833	0.10	0.12	0.006	IO				0.00
22.917	0.10	0.11	0.006	IO				0.00
23.000	0.10	0.11	0.006	IO				0.00
23.083	0.10	0.11	0.006	IO				0.00
23.167	0.10	0.11	0.006	IO				0.00
23.250	0.10	0.11	0.006	IO				0.00
23.333	0.10	0.11	0.006	IO				0.00
23.417	0.10	0.11	0.006	O				0.00
23.500	0.10	0.11	0.006	O				0.00
23.583	0.10	0.11	0.005	O				0.00
23.667	0.10	0.10	0.005	O				0.00
23.750	0.10	0.10	0.005	O				0.00
23.833	0.10	0.10	0.005	O				0.00
23.917	0.10	0.10	0.005	O				0.00
24.000	0.10	0.10	0.005	O				0.00
24.083	0.04	0.10	0.005	IO				0.00
24.167	0.00	0.09	0.005	IO				0.00
24.250	0.00	0.08	0.004	IO				0.00
24.333	0.00	0.07	0.004	IO				0.00
24.417	0.00	0.06	0.003	IO				0.00
24.500	0.00	0.05	0.003	O				0.00
24.583	0.00	0.05	0.002	O				0.00
24.667	0.00	0.04	0.002	O				0.00
24.750	0.00	0.04	0.002	O				0.00
24.833	0.00	0.03	0.002	O				0.00

Remaining water in basin = 0.00 (Ac.Ft)

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*****HYDROGRAPH DATA*****
      Number of intervals = 298
      Time interval = 5.0 (Min.)
      Maximum/Peak flow rate = 1.503 (CFS)
      Total volume = 1.039 (Ac.Ft)
      Status of hydrographs being held in storage
      Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
      Peak (CFS) 0.000 0.000 0.000 0.000 0.000
      Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000
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 3846  
 10-year event  
 truckyard  
 1hour  
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Program License Serial Number 6400

\*\*\*\*\* HYDROGRAPH INFORMATION \*\*\*\*\*

From study/file name: 3846pr10110.rte  
 \*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*  
 Number of intervals = 14  
 Time interval = 5.0 (Min.)  
 Maximum/Peak flow rate = 16.552 (CFS)  
 Total volume = 0.447 (Ac.Ft)  
 Status of hydrographs being held in storage  
 Stream 1 Stream 2 Stream 3 Stream 4 Stream 5  
 Peak (CFS) 0.000 0.000 0.000 0.000 0.000  
 Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000  
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 Process from Point/Station 1.000 to Point/Station 2.000  
 \*\*\*\* RETARDING BASIN ROUTING \*\*\*\*

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 User entry of depth-outflow-storage data  
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Total number of inflow hydrograph intervals = 14  
 Hydrograph time unit = 5.000 (Min.)  
 Initial depth in storage basin = 0.00(Ft.)  
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Initial basin depth = 0.00 (Ft.)  
 Initial basin storage = 0.00 (Ac.Ft)  
 Initial basin outflow = 0.00 (CFS)  
 -----

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-0*dt/2) (Ac.Ft)	(S+0*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.200	0.340	6.500	0.318	0.362
0.400	0.360	7.000	0.336	0.384
0.600	0.400	7.500	0.374	0.426
0.800	0.460	8.000	0.432	0.488
0.980	0.540	8.000	0.512	0.568

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 Hydrograph Detention Basin Routing  
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Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	0	4.1	8.28	12.41	16.55	Depth (Ft.)
0.083	1.28	0.08	0.004	O I					0.00
0.167	2.33	0.29	0.015	O I					0.01
0.250	2.69	0.57	0.030	O I					0.02
0.333	2.91	0.84	0.044	O I					0.03
0.417	3.15	1.11	0.058	O I					0.03
0.500	3.64	1.39	0.073	O I					0.04
0.583	4.09	1.70	0.089	O I					0.05
0.667	5.08	2.06	0.108	O I					0.06
0.750	7.75	2.59	0.136	O I	I				0.08
0.833	16.55	3.77	0.197	O I				I	0.12
0.917	10.44	4.97	0.260	O I		I			0.15
1.000	3.85	5.24	0.274	O I	O				0.16
1.083	0.99	4.89	0.256	I O					0.15
1.167	0.09	4.36	0.228	I O					0.13
1.250	0.00	3.82	0.200	I O					0.12
1.333	0.00	3.35	0.175	I O					0.10
1.417	0.00	2.94	0.154	I O					0.09
1.500	0.00	2.58	0.135	I O					0.08
1.583	0.00	2.26	0.118	I O					0.07
1.667	0.00	1.98	0.103	I O					0.06
1.750	0.00	1.73	0.091	I O					0.05
1.833	0.00	1.52	0.079	I O					0.05
1.917	0.00	1.33	0.070	I O					0.04
2.000	0.00	1.17	0.061	I O					0.04
2.083	0.00	1.02	0.054	IO					0.03
2.167	0.00	0.90	0.047	IO					0.03
2.250	0.00	0.79	0.041	IO					0.02
2.333	0.00	0.69	0.036	IO					0.02

2.417	0.00	0.60	0.032	IO				0.02
2.500	0.00	0.53	0.028	IO				0.02
2.583	0.00	0.46	0.024	O				0.01
2.667	0.00	0.41	0.021	O				0.01
2.750	0.00	0.36	0.019	O				0.01
2.833	0.00	0.31	0.016	O				0.01
2.917	0.00	0.27	0.014	O				0.01
3.000	0.00	0.24	0.013	O				0.01
3.083	0.00	0.21	0.011	O				0.01
3.167	0.00	0.18	0.010	O				0.01
3.250	0.00	0.16	0.008	O				0.00
3.333	0.00	0.14	0.007	O				0.00
3.417	0.00	0.12	0.006	O				0.00
3.500	0.00	0.11	0.006	O				0.00
3.583	0.00	0.10	0.005	O				0.00
3.667	0.00	0.08	0.004	O				0.00
3.750	0.00	0.07	0.004	O				0.00
3.833	0.00	0.06	0.003	O				0.00
3.917	0.00	0.06	0.003	O				0.00
4.000	0.00	0.05	0.003	O				0.00
4.083	0.00	0.04	0.002	O				0.00
4.167	0.00	0.04	0.002	O				0.00
4.250	0.00	0.03	0.002	O				0.00
4.333	0.00	0.03	0.002	O				0.00

Remaining water in basin = 0.00 (Ac.Ft)

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*****HYDROGRAPH DATA*****
      Number of intervals = 52
      Time interval = 5.0 (Min.)
      Maximum/Peak flow rate = 5.243 (CFS)
      Total volume = 0.445 (Ac.Ft)
      Status of hydrographs being held in storage
      Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
      Peak (CFS) 0.000 0.000 0.000 0.000 0.000
      Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000
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tei 3846  
 10-yr 3-hr  
 truckyard

Program License Serial Number 6400

\*\*\*\*\* HYDROGRAPH INFORMATION \*\*\*\*\*

From study/file name: 3846pr10310.rte  
 \*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*  
 Number of intervals = 38  
 Time interval = 5.0 (Min.)  
 Maximum/Peak flow rate = 8.312 (CFS)  
 Total volume = 0.706 (Ac.Ft)  
 Status of hydrographs being held in storage  
 Stream 1 Stream 2 Stream 3 Stream 4 Stream 5  
 Peak (CFS) 0.000 0.000 0.000 0.000 0.000  
 Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000  
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 Process from Point/Station 1.000 to Point/Station 2.000  
 \*\*\*\* RETARDING BASIN ROUTING \*\*\*\*

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 User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 38  
 Hydrograph time unit = 5.000 (Min.)  
 Initial depth in storage basin = 0.00(Ft.)

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

-----  
 Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-0*dt/2) (Ac.Ft)	(S+0*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.200	0.340	6.500	0.318	0.362
0.400	0.360	7.000	0.336	0.384
0.600	0.400	7.500	0.374	0.426
0.800	0.460	8.000	0.432	0.488
0.980	0.540	8.000	0.512	0.568

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Hydrograph Detention Basin Routing

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

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	0	2.1	4.16	6.23	8.31	Depth (Ft.)
0.083	0.82	0.05	0.003	O I					0.00
0.167	1.27	0.17	0.009	O I					0.01
0.250	1.19	0.30	0.016	O I					0.01
0.333	1.38	0.42	0.022	O I					0.01
0.417	1.51	0.55	0.029	O I					0.02
0.500	1.71	0.68	0.036	O I					0.02
0.583	1.63	0.80	0.042	O I					0.02
0.667	1.72	0.91	0.048	O I					0.03
0.750	1.81	1.02	0.053	O I					0.03
0.833	1.64	1.10	0.058	O I					0.03
0.917	1.60	1.17	0.061	O I					0.04
1.000	1.74	1.23	0.064	O I					0.04
1.083	2.07	1.31	0.069	O I					0.04
1.167	2.22	1.42	0.074	O I					0.04
1.250	2.23	1.52	0.079	O I					0.05
1.333	2.11	1.60	0.083	O I					0.05
1.417	2.41	1.68	0.088	O I					0.05
1.500	2.68	1.79	0.093	O I					0.05
1.583	2.55	1.89	0.099	O I					0.06
1.667	2.63	1.97	0.103	O I					0.06
1.750	3.10	2.08	0.109	O I					0.06
1.833	3.20	2.22	0.116	O I					0.07
1.917	3.03	2.33	0.122	O I					0.07
2.000	3.01	2.41	0.126	O I					0.07
2.083	3.10	2.49	0.130	O I					0.08
2.167	3.83	2.61	0.137	O I					0.08
2.250	4.75	2.82	0.147	O I					0.09
2.333	4.11	3.02	0.158	O I					0.09

2.417	5.84	3.26	0.171			0		I		0.10
2.500	7.35	3.67	0.192			0		I		0.11
2.583	8.31	4.19	0.219			0		I		0.13
2.667	7.08	4.62	0.242			0		I		0.14
2.750	3.69	4.71	0.247			I		0		0.15
2.833	2.06	4.49	0.235		I	0		0		0.14
2.917	1.83	4.17	0.218		I	0		0		0.13
3.000	1.07	3.84	0.201		I	0		0		0.12
3.083	0.28	3.45	0.180		I	0		0		0.11
3.167	0.02	3.04	0.159		I	0		0		0.09
3.250	0.00	2.67	0.139		I	0		0		0.08
3.333	0.00	2.34	0.122		I	0		0		0.07
3.417	0.00	2.05	0.107		I	0		0		0.06
3.500	0.00	1.79	0.094		I	0		0		0.06
3.583	0.00	1.57	0.082		I	0		0		0.05
3.667	0.00	1.38	0.072		I	0		0		0.04
3.750	0.00	1.21	0.063		I	0		0		0.04
3.833	0.00	1.06	0.055		I	0		0		0.03
3.917	0.00	0.93	0.049		I	0		0		0.03
4.000	0.00	0.81	0.043		I	0		0		0.03
4.083	0.00	0.71	0.037		I	0		0		0.02
4.167	0.00	0.63	0.033		I	0		0		0.02
4.250	0.00	0.55	0.029		I	0		0		0.02
4.333	0.00	0.48	0.025		I	0		0		0.01
4.417	0.00	0.42	0.022		I	0		0		0.01
4.500	0.00	0.37	0.019		I	0		0		0.01
4.583	0.00	0.32	0.017		I	0		0		0.01
4.667	0.00	0.28	0.015		I	0		0		0.01
4.750	0.00	0.25	0.013		I	0		0		0.01
4.833	0.00	0.22	0.011		I	0		0		0.01
4.917	0.00	0.19	0.010		I	0		0		0.01
5.000	0.00	0.17	0.009		I	0		0		0.01
5.083	0.00	0.15	0.008		I	0		0		0.00
5.167	0.00	0.13	0.007		I	0		0		0.00
5.250	0.00	0.11	0.006		I	0		0		0.00
5.333	0.00	0.10	0.005		I	0		0		0.00
5.417	0.00	0.09	0.005		I	0		0		0.00
5.500	0.00	0.08	0.004		I	0		0		0.00
5.583	0.00	0.07	0.003		I	0		0		0.00
5.667	0.00	0.06	0.003		I	0		0		0.00
5.750	0.00	0.05	0.003		I	0		0		0.00
5.833	0.00	0.04	0.002		I	0		0		0.00
5.917	0.00	0.04	0.002		I	0		0		0.00
6.000	0.00	0.03	0.002		I	0		0		0.00
6.083	0.00	0.03	0.002		I	0		0		0.00

Remaining water in basin = 0.00 (Ac.Ft)

```

*****HYDROGRAPH DATA*****
Number of intervals = 73
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 4.714 (CFS)
Total volume = 0.705 (Ac.Ft)
Status of hydrographs being held in storage
Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
Peak (CFS) 0.000 0.000 0.000 0.000 0.000
Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000
*****

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 tei 3846  
 10-year 6-hr  
 truckyard  
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Program License Serial Number 6400

\*\*\*\*\* HYDROGRAPH INFORMATION \*\*\*\*\*

From study/file name: 3846pr10610.rte  
 \*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*  
 Number of intervals = 74  
 Time interval = 5.0 (Min.)  
 Maximum/Peak flow rate = 7.504 (CFS)  
 Total volume = 0.955 (Ac.Ft)  
 Status of hydrographs being held in storage  
 Stream 1 Stream 2 Stream 3 Stream 4 Stream 5  
 Peak (CFS) 0.000 0.000 0.000 0.000 0.000  
 Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000  
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 Process from Point/Station 1.000 to Point/Station 2.000  
 \*\*\*\*\* RETARDING BASIN ROUTING \*\*\*\*\*

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 User entry of depth-outflow-storage data  
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Total number of inflow hydrograph intervals = 74  
 Hydrograph time unit = 5.000 (Min.)  
 Initial depth in storage basin = 0.00(Ft.)  
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Initial basin depth = 0.00 (Ft.)  
 Initial basin storage = 0.00 (Ac.Ft)  
 Initial basin outflow = 0.00 (CFS)  
 -----

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-0*dt/2) (Ac.Ft)	(S+0*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.200	0.340	6.500	0.318	0.362
0.400	0.360	7.000	0.336	0.384
0.600	0.400	7.500	0.374	0.426
0.800	0.460	8.000	0.432	0.488
0.980	0.540	8.000	0.512	0.568

-----  
 Hydrograph Detention Basin Routing  
 -----

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

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)		1.9	3.75	5.63	7.50	Depth (Ft.)
0.083	0.43	0.03	0.001	OI					0.00
0.167	0.75	0.10	0.005	O I					0.00
0.250	0.82	0.18	0.009	O I					0.01
0.333	0.83	0.26	0.014	O I					0.01
0.417	0.83	0.33	0.017	O I					0.01
0.500	0.91	0.40	0.021	O I					0.01
0.583	0.96	0.46	0.024	O I					0.01
0.667	0.97	0.53	0.027	O I					0.02
0.750	0.97	0.58	0.030	O I					0.02
0.833	0.97	0.63	0.033	O I					0.02
0.917	0.97	0.67	0.035	O I					0.02
1.000	1.05	0.71	0.037	OI					0.02
1.083	1.10	0.76	0.040	OI					0.02
1.167	1.10	0.80	0.042	OI					0.02
1.250	1.10	0.84	0.044	OI					0.03
1.333	1.10	0.87	0.045	OI					0.03
1.417	1.10	0.90	0.047	OI					0.03
1.500	1.10	0.92	0.048	OI					0.03
1.583	1.10	0.95	0.049	O					0.03
1.667	1.10	0.97	0.050	O					0.03
1.750	1.10	0.98	0.051	O					0.03
1.833	1.10	1.00	0.052	O					0.03
1.917	1.10	1.01	0.053	O					0.03
2.000	1.19	1.03	0.054	OI					0.03
2.083	1.15	1.04	0.055	O					0.03
2.167	1.19	1.06	0.055	OI					0.03
2.250	1.24	1.08	0.056	OI					0.03
2.333	1.24	1.10	0.057	OI					0.03





FLOOD HYDROGRAPH ROUTING PROGRAM  
 Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014  
 Study date: 12/24/20

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 tei 3846  
 10-year 24-hour  
 truckyard  
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Program License Serial Number 6400

\*\*\*\*\* HYDROGRAPH INFORMATION \*\*\*\*\*

From study/file name: 3846pr102410.rte  
 \*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*  
 Number of intervals = 290  
 Time interval = 5.0 (Min.)  
 Maximum/Peak flow rate = 2.490 (CFS)  
 Total volume = 1.513 (Ac.Ft)  
 Status of hydrographs being held in storage  
 Stream 1 Stream 2 Stream 3 Stream 4 Stream 5  
 Peak (CFS) 0.000 0.000 0.000 0.000 0.000  
 Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000  
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 Process from Point/Station 1.000 to Point/Station 2.000  
 \*\*\*\* RETARDING BASIN ROUTING \*\*\*\*

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 User entry of depth-outflow-storage data  
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Total number of inflow hydrograph intervals = 290  
 Hydrograph time unit = 5.000 (Min.)  
 Initial depth in storage basin = 0.00(Ft.)  
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Initial basin depth = 0.00 (Ft.)  
 Initial basin storage = 0.00 (Ac.Ft)  
 Initial basin outflow = 0.00 (CFS)  
 -----

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-0*dt/2) (Ac.Ft)	(S+0*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.200	0.340	6.500	0.318	0.362
0.400	0.360	7.000	0.336	0.384
0.600	0.400	7.500	0.374	0.426
0.800	0.460	8.000	0.432	0.488
0.980	0.540	8.000	0.512	0.568

-----  
 Hydrograph Detention Basin Routing  
 -----

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

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)		0.6	1.25	1.87	2.49	Depth (Ft.)
0.083	0.09	0.01	0.000	OI					0.00
0.167	0.14	0.02	0.001	OI					0.00
0.250	0.15	0.03	0.002	OI					0.00
0.333	0.19	0.05	0.003	O I					0.00
0.417	0.22	0.07	0.004	O I					0.00
0.500	0.22	0.09	0.005	OI					0.00
0.583	0.22	0.10	0.005	OI					0.00
0.667	0.22	0.12	0.006	OI					0.00
0.750	0.22	0.13	0.007	OI					0.00
0.833	0.27	0.15	0.008	O I					0.00
0.917	0.29	0.16	0.008	OI					0.00
1.000	0.29	0.18	0.009	OI					0.01
1.083	0.25	0.19	0.010	OI					0.01
1.167	0.22	0.19	0.010	O					0.01
1.250	0.22	0.20	0.010	O					0.01
1.333	0.22	0.20	0.010	O					0.01
1.417	0.22	0.20	0.011	O					0.01
1.500	0.22	0.21	0.011	O					0.01
1.583	0.22	0.21	0.011	O					0.01
1.667	0.22	0.21	0.011	O					0.01
1.750	0.22	0.21	0.011	O					0.01
1.833	0.27	0.21	0.011	OI					0.01
1.917	0.29	0.22	0.012	OI					0.01
2.000	0.29	0.23	0.012	OI					0.01
2.083	0.29	0.24	0.012	O					0.01
2.167	0.29	0.24	0.013	O					0.01
2.250	0.29	0.25	0.013	O					0.01

2.333	0.29	0.26	0.013	O			0.01
2.417	0.29	0.26	0.014	O			0.01
2.500	0.29	0.26	0.014	O			0.01
2.583	0.34	0.27	0.014	OI			0.01
2.667	0.36	0.28	0.015	OI			0.01
2.750	0.37	0.29	0.015	OI			0.01
2.833	0.37	0.30	0.016	OI			0.01
2.917	0.37	0.31	0.016	OI			0.01
3.000	0.37	0.32	0.017	O			0.01
3.083	0.37	0.32	0.017	O			0.01
3.167	0.37	0.33	0.017	O			0.01
3.250	0.37	0.33	0.017	O			0.01
3.333	0.37	0.34	0.018	O			0.01
3.417	0.37	0.34	0.018	O			0.01
3.500	0.37	0.34	0.018	O			0.01
3.583	0.37	0.35	0.018	O			0.01
3.667	0.37	0.35	0.018	O			0.01
3.750	0.37	0.35	0.018	O			0.01
3.833	0.41	0.36	0.019	OI			0.01
3.917	0.44	0.36	0.019	OI			0.01
4.000	0.44	0.37	0.020	OI			0.01
4.083	0.44	0.38	0.020	OI			0.01
4.167	0.44	0.39	0.020	OI			0.01
4.250	0.44	0.39	0.021	O			0.01
4.333	0.48	0.40	0.021	OI			0.01
4.417	0.51	0.41	0.022	OI			0.01
4.500	0.51	0.43	0.022	OI			0.01
4.583	0.51	0.44	0.023	OI			0.01
4.667	0.51	0.45	0.023	OI			0.01
4.750	0.51	0.45	0.024	OI			0.01
4.833	0.56	0.46	0.024	O I			0.01
4.917	0.58	0.48	0.025	OI			0.01
5.000	0.59	0.49	0.026	OI			0.02
5.083	0.50	0.50	0.026	O			0.02
5.167	0.45	0.49	0.026	IO			0.02
5.250	0.44	0.49	0.025	IO			0.01
5.333	0.48	0.48	0.025	O			0.01
5.417	0.51	0.49	0.025	O			0.01
5.500	0.51	0.49	0.026	O			0.02
5.583	0.56	0.49	0.026	OI			0.02
5.667	0.58	0.50	0.026	OI			0.02
5.750	0.59	0.51	0.027	OI			0.02
5.833	0.59	0.52	0.027	OI			0.02
5.917	0.59	0.53	0.028	OI			0.02
6.000	0.59	0.54	0.028	OI			0.02
6.083	0.63	0.55	0.029	OI			0.02
6.167	0.66	0.56	0.029	OI			0.02
6.250	0.66	0.57	0.030	OI			0.02
6.333	0.66	0.58	0.030	OI			0.02
6.417	0.66	0.59	0.031	OI			0.02
6.500	0.66	0.60	0.031	OI			0.02
6.583	0.70	0.61	0.032	O I			0.02
6.667	0.73	0.62	0.033	OI			0.02
6.750	0.73	0.64	0.033	OI			0.02
6.833	0.73	0.65	0.034	OI			0.02
6.917	0.73	0.66	0.034	OI			0.02
7.000	0.73	0.67	0.035	OI			0.02
7.083	0.73	0.68	0.035	OI			0.02
7.167	0.73	0.68	0.036	OI			0.02
7.250	0.73	0.69	0.036	OI			0.02
7.333	0.78	0.70	0.036	OI			0.02
7.417	0.80	0.71	0.037	OI			0.02
7.500	0.81	0.72	0.038	OI			0.02
7.583	0.85	0.73	0.038	OI			0.02
7.667	0.88	0.75	0.039	O I			0.02
7.750	0.88	0.77	0.040	O I			0.02
7.833	0.92	0.78	0.041	OI			0.02
7.917	0.95	0.80	0.042	O I			0.02
8.000	0.95	0.82	0.043	O I			0.03
8.083	1.04	0.84	0.044	O I			0.03
8.167	1.09	0.87	0.045	O I			0.03
8.250	1.10	0.90	0.047	O I			0.03
8.333	1.10	0.92	0.048	O I			0.03
8.417	1.10	0.94	0.049	O I			0.03
8.500	1.10	0.96	0.050	O I			0.03
8.583	1.14	0.98	0.051	O I			0.03
8.667	1.17	1.00	0.053	O I			0.03
8.750	1.17	1.02	0.054	O I			0.03
8.833	1.22	1.05	0.055	O I			0.03
8.917	1.24	1.07	0.056	O I			0.03
9.000	1.25	1.09	0.057	O I			0.03
9.083	1.34	1.11	0.058	O I			0.03
9.167	1.39	1.15	0.060	O I			0.04
9.250	1.39	1.18	0.061	O I			0.04
9.333	1.44	1.20	0.063	O I			0.04
9.417	1.46	1.24	0.065	O I			0.04
9.500	1.46	1.26	0.066	O I			0.04
9.583	1.51	1.29	0.068	O I			0.04
9.667	1.54	1.32	0.069	O I			0.04
9.750	1.54	1.35	0.070	O I			0.04
9.833	1.58	1.37	0.072	O I			0.04
9.917	1.61	1.40	0.073	O I			0.04
10.000	1.61	1.43	0.075	O I			0.04
10.083	1.29	1.43	0.075	I O			0.04
10.167	1.12	1.40	0.073	I O			0.04
10.250	1.10	1.37	0.071	I O			0.04
10.333	1.10	1.33	0.070	I O			0.04
10.417	1.10	1.30	0.068	I O			0.04



18.667	0.22	0.32	0.016	I O	0.01
18.750	0.22	0.30	0.016	IO	0.01
18.833	0.17	0.29	0.015	IO	0.01
18.917	0.15	0.27	0.014	I O	0.01
19.000	0.15	0.26	0.014	I O	0.01
19.083	0.19	0.25	0.013	IO	0.01
19.167	0.22	0.24	0.013	IO	0.01
19.250	0.22	0.24	0.013	IO	0.01
19.333	0.27	0.24	0.013	O	0.01
19.417	0.29	0.24	0.013	O	0.01
19.500	0.29	0.25	0.013	O	0.01
19.583	0.25	0.25	0.013	O	0.01
19.667	0.22	0.25	0.013	IO	0.01
19.750	0.22	0.25	0.013	IO	0.01
19.833	0.17	0.24	0.013	IO	0.01
19.917	0.15	0.23	0.012	IO	0.01
20.000	0.15	0.22	0.012	IO	0.01
20.083	0.19	0.21	0.011	O	0.01
20.167	0.22	0.21	0.011	O	0.01
20.250	0.22	0.21	0.011	O	0.01
20.333	0.22	0.21	0.011	O	0.01
20.417	0.22	0.22	0.011	O	0.01
20.500	0.22	0.22	0.011	O	0.01
20.583	0.22	0.22	0.011	O	0.01
20.667	0.22	0.22	0.011	O	0.01
20.750	0.22	0.22	0.011	O	0.01
20.833	0.17	0.21	0.011	O	0.01
20.917	0.15	0.21	0.011	IO	0.01
21.000	0.15	0.20	0.010	IO	0.01
21.083	0.19	0.20	0.010	O	0.01
21.167	0.22	0.20	0.010	O	0.01
21.250	0.22	0.20	0.010	O	0.01
21.333	0.17	0.20	0.010	O	0.01
21.417	0.15	0.20	0.010	IO	0.01
21.500	0.15	0.19	0.010	IO	0.01
21.583	0.19	0.19	0.010	O	0.01
21.667	0.22	0.19	0.010	O	0.01
21.750	0.22	0.19	0.010	O	0.01
21.833	0.17	0.19	0.010	O	0.01
21.917	0.15	0.19	0.010	IO	0.01
22.000	0.15	0.18	0.010	IO	0.01
22.083	0.19	0.18	0.010	O	0.01
22.167	0.22	0.19	0.010	O	0.01
22.250	0.22	0.19	0.010	O	0.01
22.333	0.17	0.19	0.010	O	0.01
22.417	0.15	0.19	0.010	IO	0.01
22.500	0.15	0.18	0.010	IO	0.01
22.583	0.15	0.18	0.009	IO	0.01
22.667	0.15	0.17	0.009	IO	0.01
22.750	0.15	0.17	0.009	IO	0.01
22.833	0.15	0.17	0.009	IO	0.01
22.917	0.15	0.16	0.009	IO	0.01
23.000	0.15	0.16	0.009	IO	0.01
23.083	0.15	0.16	0.008	IO	0.00
23.167	0.15	0.16	0.008	IO	0.00
23.250	0.15	0.16	0.008	IO	0.00
23.333	0.15	0.16	0.008	IO	0.00
23.417	0.15	0.15	0.008	O	0.00
23.500	0.15	0.15	0.008	O	0.00
23.583	0.15	0.15	0.008	O	0.00
23.667	0.15	0.15	0.008	O	0.00
23.750	0.15	0.15	0.008	O	0.00
23.833	0.15	0.15	0.008	O	0.00
23.917	0.15	0.15	0.008	O	0.00
24.000	0.15	0.15	0.008	O	0.00
24.083	0.06	0.14	0.008	IO	0.00
24.167	0.01	0.13	0.007	IO	0.00
24.250	0.00	0.11	0.006	IO	0.00
24.333	0.00	0.10	0.005	IO	0.00
24.417	0.00	0.09	0.005	IO	0.00
24.500	0.00	0.08	0.004	O	0.00
24.583	0.00	0.07	0.004	O	0.00
24.667	0.00	0.06	0.003	O	0.00
24.750	0.00	0.05	0.003	O	0.00
24.833	0.00	0.05	0.002	O	0.00
24.917	0.00	0.04	0.002	O	0.00
25.000	0.00	0.03	0.002	O	0.00
25.083	0.00	0.03	0.002	O	0.00

Remaining water in basin = 0.00 (Ac.Ft)

\*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*  
 Number of intervals = 301  
 Time interval = 5.0 (Min.)  
 Maximum/Peak flow rate = 2.186 (CFS)  
 Total volume = 1.512 (Ac.Ft)  
 Status of hydrographs being held in storage  
 Stream 1 Stream 2 Stream 3 Stream 4 Stream 5  
 Peak (CFS) 0.000 0.000 0.000 0.000 0.000  
 vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000  
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 TEI 3846  
 PROPOSED  
 100-YEAR 1 HOUR  
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Program License Serial Number 6400

\*\*\*\*\* HYDROGRAPH INFORMATION \*\*\*\*\*

From study/file name: 3846PR1001100.rte  
 \*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*  
 Number of intervals = 14  
 Time interval = 5.0 (Min.)  
 Maximum/Peak flow rate = 25.479 (CFS)  
 Total volume = 0.690 (Ac.Ft)  
 Status of hydrographs being held in storage  
 Stream 1 Stream 2 Stream 3 Stream 4 Stream 5  
 Peak (CFS) 0.000 0.000 0.000 0.000 0.000  
 Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000  
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 Process from Point/Station 1.000 to Point/Station 2.000  
 \*\*\*\* RETARDING BASIN ROUTING \*\*\*\*

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 User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 14  
 Hydrograph time unit = 5.000 (Min.)  
 Initial depth in storage basin = 0.00(Ft.)  
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Initial basin depth = 0.00 (Ft.)  
 Initial basin storage = 0.00 (Ac.Ft)  
 Initial basin outflow = 0.00 (CFS)  
 -----

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-0*dt/2) (Ac.Ft)	(S+0*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.200	0.340	6.500	0.318	0.362
0.400	0.360	7.000	0.336	0.384
0.600	0.400	7.500	0.374	0.426
0.800	0.460	8.000	0.432	0.488
0.980	0.540	8.000	0.512	0.568

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 Hydrograph Detention Basin Routing

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

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)						Depth (Ft.)
0.083	1.95	0.12	0.006	O	I				0.00
0.167	3.56	0.45	0.023	O	I				0.01
0.250	4.09	0.86	0.045	O	I				0.03
0.333	4.43	1.28	0.067	O	I				0.04
0.417	4.82	1.69	0.089	O	I				0.05
0.500	5.63	2.13	0.111	O	I				0.07
0.583	6.40	2.61	0.137	O	I				0.08
0.667	7.97	3.18	0.166	O	I				0.10
0.750	12.07	4.02	0.210	O	I				0.12
0.833	25.48	5.84	0.306	O	I				0.18
0.917	16.15	7.52	0.403	O	I				0.61
1.000	5.96	7.72	0.427	O	I				0.69
1.083	1.52	7.50	0.400	I	O				0.60
1.167	0.14	6.90	0.356	I	O				0.36
1.250	0.00	5.97	0.312	I	O				0.18
1.333	0.00	5.23	0.274	I	O				0.16
1.417	0.00	4.59	0.240	I	O				0.14
1.500	0.00	4.02	0.210	I	O				0.12
1.583	0.00	3.52	0.184	I	O				0.11
1.667	0.00	3.09	0.162	I	O				0.10
1.750	0.00	2.71	0.142	I	O				0.08
1.833	0.00	2.37	0.124	I	O				0.07
1.917	0.00	2.08	0.109	I	O				0.06
2.000	0.00	1.82	0.095	I	O				0.06
2.083	0.00	1.60	0.084	I	O				0.05
2.167	0.00	1.40	0.073	I	O				0.04
2.250	0.00	1.23	0.064	I	O				0.04
2.333	0.00	1.08	0.056	I	O				0.03

2.417	0.00	0.94	0.049	IO				0.03
2.500	0.00	0.83	0.043	IO				0.03
2.583	0.00	0.72	0.038	O				0.02
2.667	0.00	0.63	0.033	O				0.02
2.750	0.00	0.56	0.029	O				0.02
2.833	0.00	0.49	0.025	O				0.01
2.917	0.00	0.43	0.022	O				0.01
3.000	0.00	0.37	0.020	O				0.01
3.083	0.00	0.33	0.017	O				0.01
3.167	0.00	0.29	0.015	O				0.01
3.250	0.00	0.25	0.013	O				0.01
3.333	0.00	0.22	0.012	O				0.01
3.417	0.00	0.19	0.010	O				0.01
3.500	0.00	0.17	0.009	O				0.01
3.583	0.00	0.15	0.008	O				0.00
3.667	0.00	0.13	0.007	O				0.00
3.750	0.00	0.11	0.006	O				0.00
3.833	0.00	0.10	0.005	O				0.00
3.917	0.00	0.09	0.005	O				0.00
4.000	0.00	0.08	0.004	O				0.00
4.083	0.00	0.07	0.004	O				0.00
4.167	0.00	0.06	0.003	O				0.00
4.250	0.00	0.05	0.003	O				0.00
4.333	0.00	0.05	0.002	O				0.00
4.417	0.00	0.04	0.002	O				0.00
4.500	0.00	0.03	0.002	O				0.00
4.583	0.00	0.03	0.002	O				0.00

Remaining water in basin = 0.00 (Ac.Ft)

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*****HYDROGRAPH DATA*****
      Number of intervals = 55
      Time interval = 5.0 (Min.)
      Maximum/Peak flow rate = 7.722 (CFS)
      Total volume = 0.688 (Ac.Ft)
      Status of hydrographs being held in storage
      Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
      Peak (CFS) 0.000 0.000 0.000 0.000 0.000
      Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000
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 tei 3846  
 proposed condition  
 100-year 3 hour  
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Program License Serial Number 6400

\*\*\*\*\* HYDROGRAPH INFORMATION \*\*\*\*\*

From study/file name: 3846pr1003100.rte  
 \*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*  
 Number of intervals = 38  
 Time interval = 5.0 (Min.)  
 Maximum/Peak flow rate = 12.631 (CFS)  
 Total volume = 1.063 (Ac.Ft)  
 Status of hydrographs being held in storage  
 Stream 1 Stream 2 Stream 3 Stream 4 Stream 5  
 Peak (CFS) 0.000 0.000 0.000 0.000 0.000  
 Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000  
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 Process from Point/Station 1.000 to Point/Station 2.000  
 \*\*\*\* RETARDING BASIN ROUTING \*\*\*\*

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 User entry of depth-outflow-storage data  
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Total number of inflow hydrograph intervals = 38  
 Hydrograph time unit = 5.000 (Min.)  
 Initial depth in storage basin = 0.00(Ft.)  
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Initial basin depth = 0.00 (Ft.)  
 Initial basin storage = 0.00 (Ac.Ft)  
 Initial basin outflow = 0.00 (CFS)  
 -----

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-0*dt/2) (Ac.Ft)	(S+0*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.200	0.340	6.500	0.318	0.362
0.400	0.360	7.000	0.336	0.384
0.600	0.400	7.500	0.374	0.426
0.800	0.460	8.000	0.432	0.488
0.980	0.540	8.000	0.512	0.568

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 Hydrograph Detention Basin Routing  
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Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)						Depth (Ft.)
0.083	1.22	0.08	0.004	O	I				0.00
0.167	1.89	0.26	0.013	O	I				0.01
0.250	1.78	0.45	0.024	O	I				0.01
0.333	2.05	0.63	0.033	O	I				0.02
0.417	2.24	0.82	0.043	O	I				0.03
0.500	2.55	1.01	0.053	O	I				0.03
0.583	2.42	1.20	0.063	O	I				0.04
0.667	2.56	1.36	0.071	O	I				0.04
0.750	2.70	1.51	0.079	O	I				0.05
0.833	2.44	1.64	0.086	O	I				0.05
0.917	2.38	1.74	0.091	O	I				0.05
1.000	2.60	1.83	0.096	O	I				0.06
1.083	3.08	1.96	0.102	O	I				0.06
1.167	3.30	2.11	0.110	O	I				0.06
1.250	3.32	2.26	0.118	O	I				0.07
1.333	3.14	2.38	0.124	O	I				0.07
1.417	3.59	2.50	0.131	O	I				0.08
1.500	3.98	2.66	0.139	O	I				0.08
1.583	3.79	2.81	0.147	O	I				0.09
1.667	3.92	2.94	0.154	O	I				0.09
1.750	4.64	3.11	0.162	O	I				0.10
1.833	4.77	3.30	0.173	O	I				0.10
1.917	4.51	3.47	0.181	O	I				0.11
2.000	4.49	3.60	0.188	O	I				0.11
2.083	4.62	3.71	0.194	O	I				0.11
2.167	5.82	3.90	0.204	O	I				0.12
2.250	7.29	4.23	0.221	O	I				0.13
2.333	6.26	4.54	0.238	O	I				0.14



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 tei 3846  
 proposed condition  
 100-yr 6hour  
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Program License Serial Number 6400

\*\*\*\*\* HYDROGRAPH INFORMATION \*\*\*\*\*

From study/file name: 3846pr1006100.rte  
 \*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*  
 Number of intervals = 74  
 Time interval = 5.0 (Min.)  
 Maximum/Peak flow rate = 11.044 (CFS)  
 Total volume = 1.386 (Ac.Ft)  
 Status of hydrographs being held in storage  
 Stream 1 Stream 2 Stream 3 Stream 4 Stream 5  
 Peak (CFS) 0.000 0.000 0.000 0.000 0.000  
 Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000  
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 Process from Point/Station 1.000 to Point/Station 2.000  
 \*\*\*\* RETARDING BASIN ROUTING \*\*\*\*

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 User entry of depth-outflow-storage data  
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Total number of inflow hydrograph intervals = 74  
 Hydrograph time unit = 5.000 (Min.)  
 Initial depth in storage basin = 0.00(Ft.)  
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Initial basin depth = 0.00 (Ft.)  
 Initial basin storage = 0.00 (Ac.Ft)  
 Initial basin outflow = 0.00 (CFS)  
 -----

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-0*dt/2) (Ac.Ft)	(S+0*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.200	0.340	6.500	0.318	0.362
0.400	0.360	7.000	0.336	0.384
0.600	0.400	7.500	0.374	0.426
0.800	0.460	8.000	0.432	0.488
0.980	0.540	8.000	0.512	0.568

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 Hydrograph Detention Basin Routing  
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Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)		2.8	5.52	8.28	11.04	Depth (Ft.)
0.083	0.62	0.04	0.002	OI					0.00
0.167	1.08	0.14	0.007	O I					0.00
0.250	1.18	0.26	0.014	O I					0.01
0.333	1.19	0.38	0.020	O I					0.01
0.417	1.19	0.48	0.025	O I					0.01
0.500	1.32	0.57	0.030	O I					0.02
0.583	1.38	0.67	0.035	O I					0.02
0.667	1.39	0.76	0.040	O I					0.02
0.750	1.39	0.84	0.044	O I					0.03
0.833	1.39	0.90	0.047	O I					0.03
0.917	1.39	0.96	0.050	O I					0.03
1.000	1.51	1.02	0.054	O I					0.03
1.083	1.58	1.09	0.057	OI					0.03
1.167	1.59	1.15	0.060	OI					0.04
1.250	1.59	1.20	0.063	OI					0.04
1.333	1.59	1.25	0.066	OI					0.04
1.417	1.59	1.29	0.068	OI					0.04
1.500	1.59	1.33	0.070	OI					0.04
1.583	1.59	1.36	0.071	OI					0.04
1.667	1.59	1.39	0.073	O					0.04
1.750	1.59	1.42	0.074	O					0.04
1.833	1.59	1.44	0.075	O					0.04
1.917	1.59	1.46	0.076	O					0.04
2.000	1.71	1.48	0.077	O					0.05
2.083	1.66	1.51	0.079	O					0.05
2.167	1.72	1.53	0.080	O					0.05
2.250	1.78	1.56	0.081	OI					0.05
2.333	1.79	1.58	0.083	OI					0.05





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 tei 3846  
 proposed condition  
 100-year 24 hour  
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Program License Serial Number 6400

\*\*\*\*\* HYDROGRAPH INFORMATION \*\*\*\*\*

From study/file name: 3846pr10024100.rte  
 \*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*  
 Number of intervals = 290  
 Time interval = 5.0 (Min.)  
 Maximum/Peak flow rate = 3.604 (CFS)  
 Total volume = 2.190 (Ac.Ft)  
 Status of hydrographs being held in storage  
 Stream 1 Stream 2 Stream 3 Stream 4 Stream 5  
 Peak (CFS) 0.000 0.000 0.000 0.000 0.000  
 Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000  
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 Process from Point/Station 1.000 to Point/Station 2.000  
 \*\*\*\*\* RETARDING BASIN ROUTING \*\*\*\*\*

-----  
 User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 290  
 Hydrograph time unit = 5.000 (Min.)  
 Initial depth in storage basin = 0.00(Ft.)  
 -----

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

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-0*dt/2) (Ac.Ft)	(S+0*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.200	0.340	6.500	0.318	0.362
0.400	0.360	7.000	0.336	0.384
0.600	0.400	7.500	0.374	0.426
0.800	0.460	8.000	0.432	0.488
0.980	0.540	8.000	0.512	0.568

-----  
 Hydrograph Detention Basin Routing

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

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	0.9	1.80	2.70	3.60	Depth (Ft.)
0.083	0.13	0.01	0.000	OI					0.00
0.167	0.20	0.03	0.001	OI					0.00
0.250	0.21	0.05	0.003	OI					0.00
0.333	0.28	0.07	0.004	O I					0.00
0.417	0.31	0.10	0.005	O I					0.00
0.500	0.32	0.13	0.007	OI					0.00
0.583	0.32	0.15	0.008	OI					0.00
0.667	0.32	0.17	0.009	OI					0.01
0.750	0.32	0.19	0.010	OI					0.01
0.833	0.38	0.21	0.011	O I					0.01
0.917	0.42	0.23	0.012	OI					0.01
1.000	0.42	0.26	0.013	OI					0.01
1.083	0.36	0.27	0.014	OI					0.01
1.167	0.32	0.28	0.015	O					0.01
1.250	0.32	0.29	0.015	O					0.01
1.333	0.32	0.29	0.015	O					0.01
1.417	0.32	0.29	0.015	O					0.01
1.500	0.32	0.30	0.016	O					0.01
1.583	0.32	0.30	0.016	O					0.01
1.667	0.32	0.30	0.016	O					0.01
1.750	0.32	0.30	0.016	O					0.01
1.833	0.38	0.31	0.016	OI					0.01
1.917	0.42	0.32	0.017	OI					0.01
2.000	0.42	0.33	0.017	OI					0.01
2.083	0.42	0.34	0.018	O					0.01
2.167	0.42	0.35	0.019	O					0.01
2.250	0.42	0.36	0.019	O					0.01
2.333	0.42	0.37	0.019	O					0.01

2.417	0.42	0.38	0.020	O			0.01
2.500	0.42	0.38	0.020	O			0.01
2.583	0.49	0.39	0.021	OI			0.01
2.667	0.53	0.41	0.021	OI			0.01
2.750	0.53	0.42	0.022	OI			0.01
2.833	0.53	0.43	0.023	OI			0.01
2.917	0.53	0.45	0.023	OI			0.01
3.000	0.53	0.46	0.024	O			0.01
3.083	0.53	0.47	0.024	O			0.01
3.167	0.53	0.47	0.025	O			0.01
3.250	0.53	0.48	0.025	O			0.01
3.333	0.53	0.49	0.025	O			0.01
3.417	0.53	0.49	0.026	O			0.02
3.500	0.53	0.50	0.026	O			0.02
3.583	0.53	0.50	0.026	O			0.02
3.667	0.53	0.50	0.026	O			0.02
3.750	0.53	0.51	0.027	O			0.02
3.833	0.60	0.51	0.027	OI			0.02
3.917	0.63	0.53	0.028	OI			0.02
4.000	0.64	0.54	0.028	OI			0.02
4.083	0.64	0.55	0.029	OI			0.02
4.167	0.64	0.56	0.029	OI			0.02
4.250	0.64	0.57	0.030	O			0.02
4.333	0.70	0.58	0.031	OI			0.02
4.417	0.74	0.60	0.031	OI			0.02
4.500	0.74	0.62	0.032	OI			0.02
4.583	0.74	0.63	0.033	OI			0.02
4.667	0.74	0.65	0.034	OI			0.02
4.750	0.74	0.66	0.034	OI			0.02
4.833	0.81	0.67	0.035	O I			0.02
4.917	0.84	0.69	0.036	OI			0.02
5.000	0.85	0.71	0.037	OI			0.02
5.083	0.72	0.72	0.038	O			0.02
5.167	0.64	0.71	0.037	IO			0.02
5.250	0.64	0.71	0.037	IO			0.02
5.333	0.70	0.70	0.037	O			0.02
5.417	0.74	0.70	0.037	O			0.02
5.500	0.74	0.71	0.037	O			0.02
5.583	0.81	0.72	0.037	OI			0.02
5.667	0.84	0.73	0.038	OI			0.02
5.750	0.85	0.74	0.039	OI			0.02
5.833	0.85	0.76	0.040	OI			0.02
5.917	0.85	0.77	0.040	OI			0.02
6.000	0.85	0.78	0.041	OI			0.02
6.083	0.91	0.79	0.041	OI			0.02
6.167	0.95	0.81	0.042	OI			0.02
6.250	0.95	0.83	0.043	OI			0.03
6.333	0.95	0.84	0.044	OI			0.03
6.417	0.95	0.86	0.045	OI			0.03
6.500	0.95	0.87	0.045	OI			0.03
6.583	1.02	0.88	0.046	O I			0.03
6.667	1.06	0.90	0.047	OI			0.03
6.750	1.06	0.92	0.048	OI			0.03
6.833	1.06	0.94	0.049	OI			0.03
6.917	1.06	0.95	0.050	OI			0.03
7.000	1.06	0.97	0.051	OI			0.03
7.083	1.06	0.98	0.051	OI			0.03
7.167	1.06	0.99	0.052	OI			0.03
7.250	1.06	1.00	0.052	OI			0.03
7.333	1.13	1.01	0.053	OI			0.03
7.417	1.16	1.03	0.054	OI			0.03
7.500	1.17	1.04	0.055	OI			0.03
7.583	1.23	1.06	0.056	OI			0.03
7.667	1.27	1.09	0.057	O I			0.03
7.750	1.27	1.11	0.058	O I			0.03
7.833	1.34	1.13	0.059	OI			0.03
7.917	1.37	1.16	0.061	O I			0.04
8.000	1.38	1.19	0.062	O I			0.04
8.083	1.51	1.22	0.064	O I			0.04
8.167	1.58	1.26	0.066	O I			0.04
8.250	1.59	1.30	0.068	O I			0.04
8.333	1.59	1.33	0.070	O I			0.04
8.417	1.59	1.37	0.071	O I			0.04
8.500	1.59	1.39	0.073	O I			0.04
8.583	1.66	1.42	0.074	O I			0.04
8.667	1.69	1.45	0.076	O I			0.04
8.750	1.70	1.48	0.078	O I			0.05
8.833	1.76	1.51	0.079	O I			0.05
8.917	1.80	1.55	0.081	O I			0.05
9.000	1.80	1.58	0.083	O I			0.05
9.083	1.93	1.61	0.084	O I			0.05
9.167	2.01	1.66	0.087	O I			0.05
9.250	2.01	1.70	0.089	O I			0.05
9.333	2.08	1.74	0.091	O I			0.05
9.417	2.12	1.79	0.093	O I			0.05
9.500	2.12	1.83	0.096	O I			0.06
9.583	2.19	1.87	0.098	O I			0.06
9.667	2.22	1.91	0.100	O I			0.06
9.750	2.23	1.95	0.102	O I			0.06
9.833	2.29	1.99	0.104	O I			0.06
9.917	2.33	2.03	0.106	O I			0.06
10.000	2.33	2.06	0.108	O I			0.06
10.083	1.87	2.07	0.108	I O			0.06
10.167	1.62	2.03	0.106	I O			0.06
10.250	1.59	1.98	0.103	I O			0.06
10.333	1.59	1.93	0.101	I O			0.06
10.417	1.59	1.89	0.099	I O			0.06
10.500	1.59	1.85	0.097	I O			0.06



18.750	0.32	0.44	0.023	IO				0.01
18.833	0.25	0.42	0.022	IO				0.01
18.917	0.22	0.40	0.021	IO				0.01
19.000	0.21	0.37	0.020	IO				0.01
19.083	0.28	0.36	0.019	IO				0.01
19.167	0.31	0.35	0.018	IO				0.01
19.250	0.32	0.35	0.018	IO				0.01
19.333	0.38	0.35	0.018	O				0.01
19.417	0.42	0.35	0.019	O				0.01
19.500	0.42	0.36	0.019	O				0.01
19.583	0.36	0.37	0.019	O				0.01
19.667	0.32	0.36	0.019	IO				0.01
19.750	0.32	0.36	0.019	IO				0.01
19.833	0.25	0.35	0.018	IO				0.01
19.917	0.22	0.33	0.017	IO				0.01
20.000	0.21	0.32	0.017	IO				0.01
20.083	0.28	0.31	0.016	O				0.01
20.167	0.31	0.31	0.016	O				0.01
20.250	0.32	0.31	0.016	O				0.01
20.333	0.32	0.31	0.016	O				0.01
20.417	0.32	0.31	0.016	O				0.01
20.500	0.32	0.31	0.016	O				0.01
20.583	0.32	0.31	0.016	O				0.01
20.667	0.32	0.31	0.016	O				0.01
20.750	0.32	0.31	0.016	O				0.01
20.833	0.25	0.31	0.016	O				0.01
20.917	0.22	0.30	0.016	IO				0.01
21.000	0.21	0.29	0.015	IO				0.01
21.083	0.28	0.28	0.015	O				0.01
21.167	0.31	0.29	0.015	O				0.01
21.250	0.32	0.29	0.015	O				0.01
21.333	0.25	0.29	0.015	O				0.01
21.417	0.22	0.28	0.015	IO				0.01
21.500	0.21	0.27	0.014	IO				0.01
21.583	0.28	0.27	0.014	O				0.01
21.667	0.31	0.27	0.014	O				0.01
21.750	0.32	0.28	0.015	O				0.01
21.833	0.25	0.28	0.015	O				0.01
21.917	0.22	0.27	0.014	IO				0.01
22.000	0.21	0.27	0.014	IO				0.01
22.083	0.28	0.26	0.014	O				0.01
22.167	0.31	0.27	0.014	O				0.01
22.250	0.32	0.27	0.014	O				0.01
22.333	0.25	0.28	0.014	O				0.01
22.417	0.22	0.27	0.014	IO				0.01
22.500	0.21	0.26	0.014	IO				0.01
22.583	0.21	0.26	0.013	IO				0.01
22.667	0.21	0.25	0.013	IO				0.01
22.750	0.21	0.25	0.013	IO				0.01
22.833	0.21	0.24	0.013	IO				0.01
22.917	0.21	0.24	0.012	IO				0.01
23.000	0.21	0.24	0.012	IO				0.01
23.083	0.21	0.23	0.012	IO				0.01
23.167	0.21	0.23	0.012	IO				0.01
23.250	0.21	0.23	0.012	IO				0.01
23.333	0.21	0.23	0.012	IO				0.01
23.417	0.21	0.22	0.012	O				0.01
23.500	0.21	0.22	0.012	O				0.01
23.583	0.21	0.22	0.012	O				0.01
23.667	0.21	0.22	0.012	O				0.01
23.750	0.21	0.22	0.011	O				0.01
23.833	0.21	0.22	0.011	O				0.01
23.917	0.21	0.22	0.011	O				0.01
24.000	0.21	0.22	0.011	O				0.01
24.083	0.08	0.21	0.011	IO				0.01
24.167	0.01	0.19	0.010	IO				0.01
24.250	0.00	0.17	0.009	IO				0.01
24.333	0.00	0.14	0.008	IO				0.00
24.417	0.00	0.13	0.007	IO				0.00
24.500	0.00	0.11	0.006	O				0.00
24.583	0.00	0.10	0.005	O				0.00
24.667	0.00	0.09	0.004	O				0.00
24.750	0.00	0.07	0.004	O				0.00
24.833	0.00	0.07	0.003	O				0.00
24.917	0.00	0.06	0.003	O				0.00
25.000	0.00	0.05	0.003	O				0.00
25.083	0.00	0.04	0.002	O				0.00
25.167	0.00	0.04	0.002	O				0.00
25.250	0.00	0.03	0.002	O				0.00
25.333	0.00	0.03	0.002	O				0.00

Remaining water in basin = 0.00 (Ac.Ft)

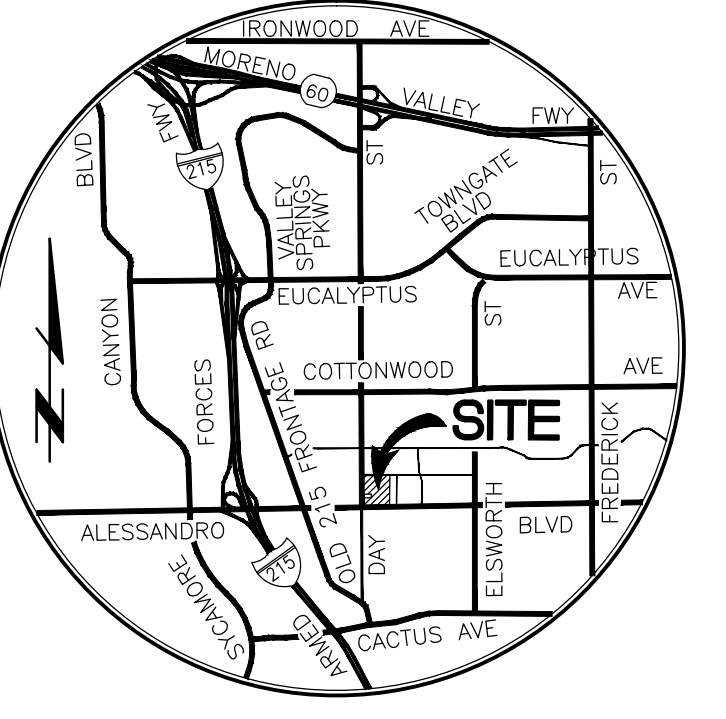
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*****HYDROGRAPH DATA*****
      Number of intervals = 304
      Time interval = 5.0 (Min.)
      Maximum/Peak flow rate = 3.163 (CFS)
      Total volume = 2.189 (Ac.Ft)
      Status of hydrographs being held in storage
      Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
      Peak (CFS) 0.000 0.000 0.000 0.000 0.000
      Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000
*****
    
```

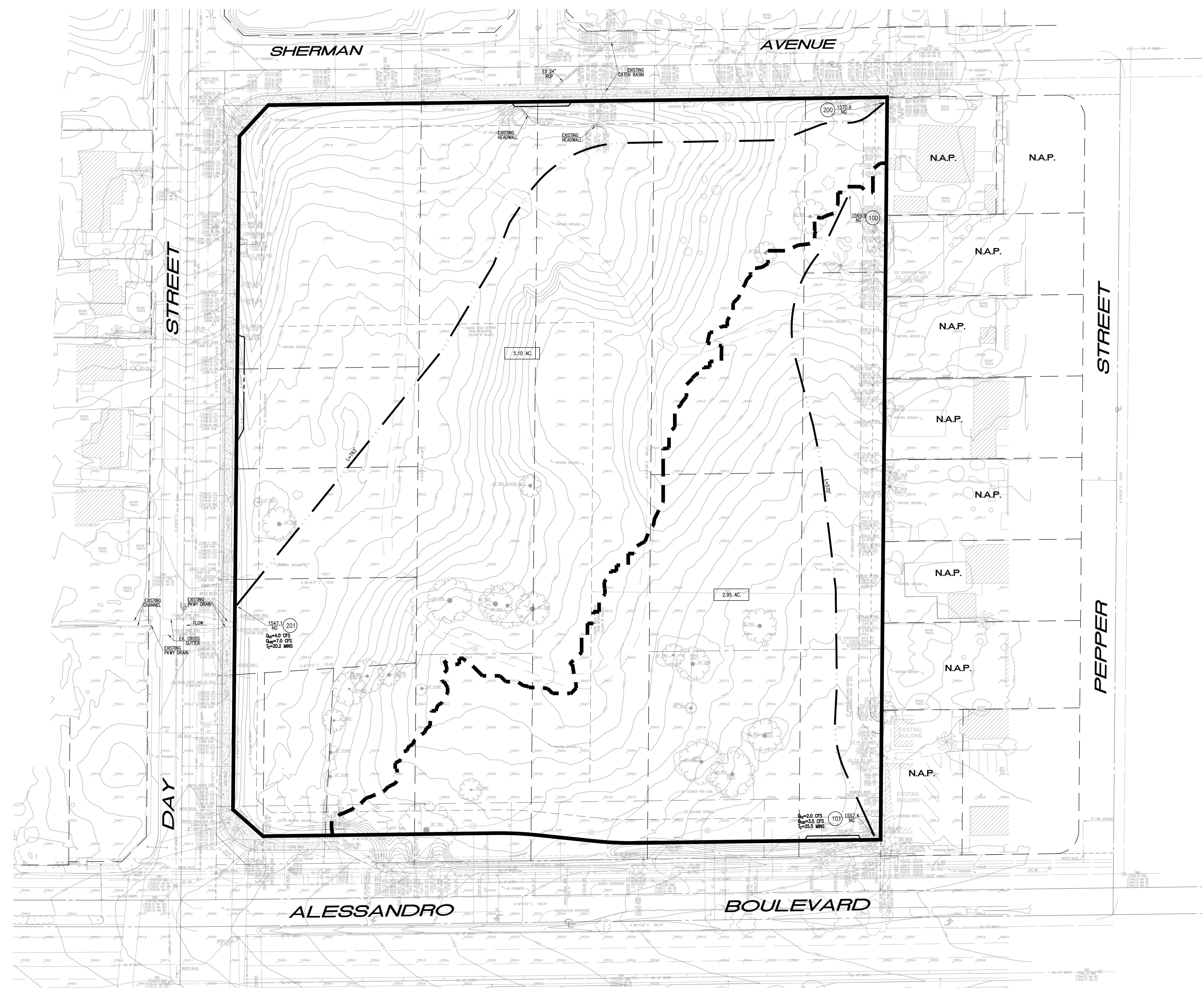
# **APPENDIX D**

## **HYDROLOGY MAPS**

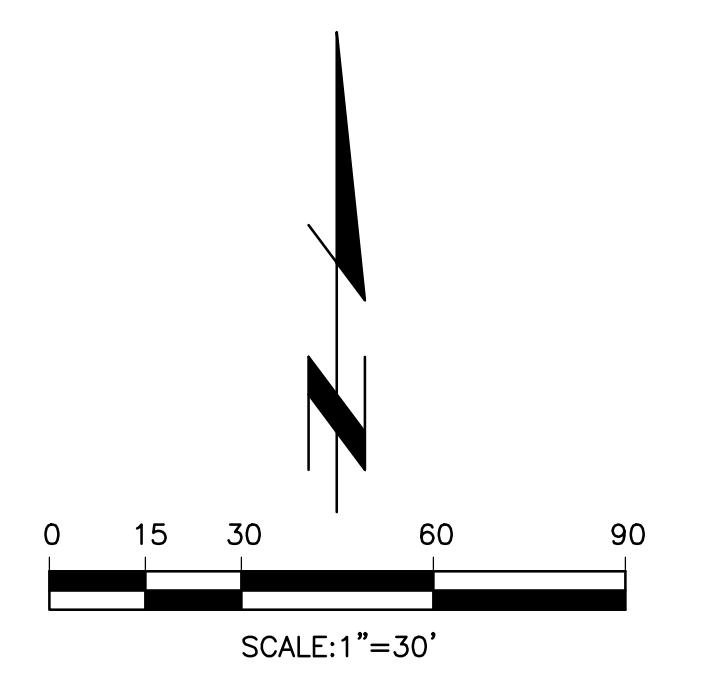
## EXISTING CONDITION MAP



VICINITY MAP  
N.T.S.



LEGEND	
	PROJECT BOUNDARY
	SUBAREA BOUNDARY
	FLOW PATH
	SUBAREA AREA
	NODE NUMBER
	LENGTH OF FLOW PATH
	NATURAL GROUND ELEVATION
	TIME OF CONCENTRATION
	DISCHARGE (CUBIC FEET PER SECOND) NUMBER DESIGNATE YEAR OF FREQUENCY



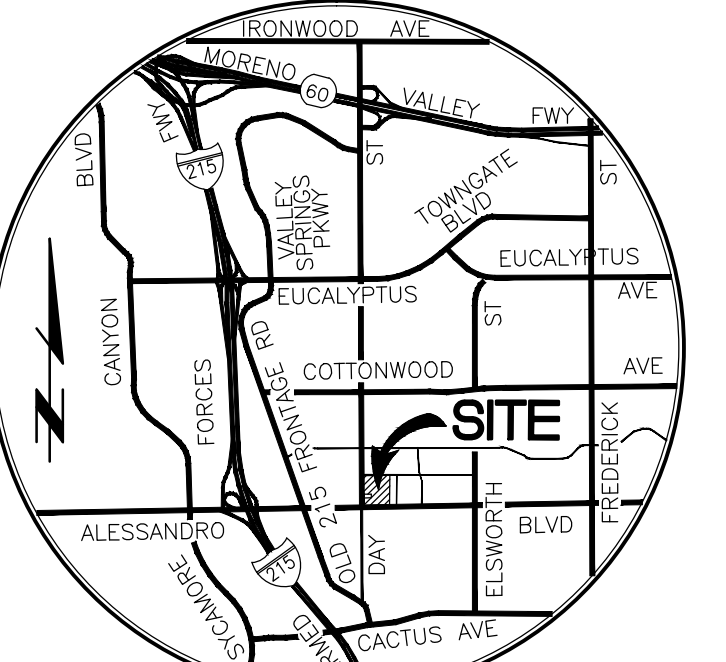
PEN21-0079 (LST21-0039) Last Update: 6/22/21  
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OWNER:  
**LDC INDUSTRIAL REALTY**  
 555 N EL CAMINO REAL, #A456  
 SAN CLEMENTE, CA 92672  
 LARRY D. COCHRAN  
 TEL: 949-226-4601  
 EMAIL: LDCOCHRAN@LDCINDUSTRIAL.COM

ENGINEER:  
**Thienes Engineering, Inc.**  
 CIVIL ENGINEERING & LAND SURVEYING  
 14349 FIRESTONE BOULEVARD  
 LA MIRADA, CALIFORNIA 90638  
 PLYMOUTH-HILL FACTORY-4172  
 EMAIL: CES@THIENES.COM

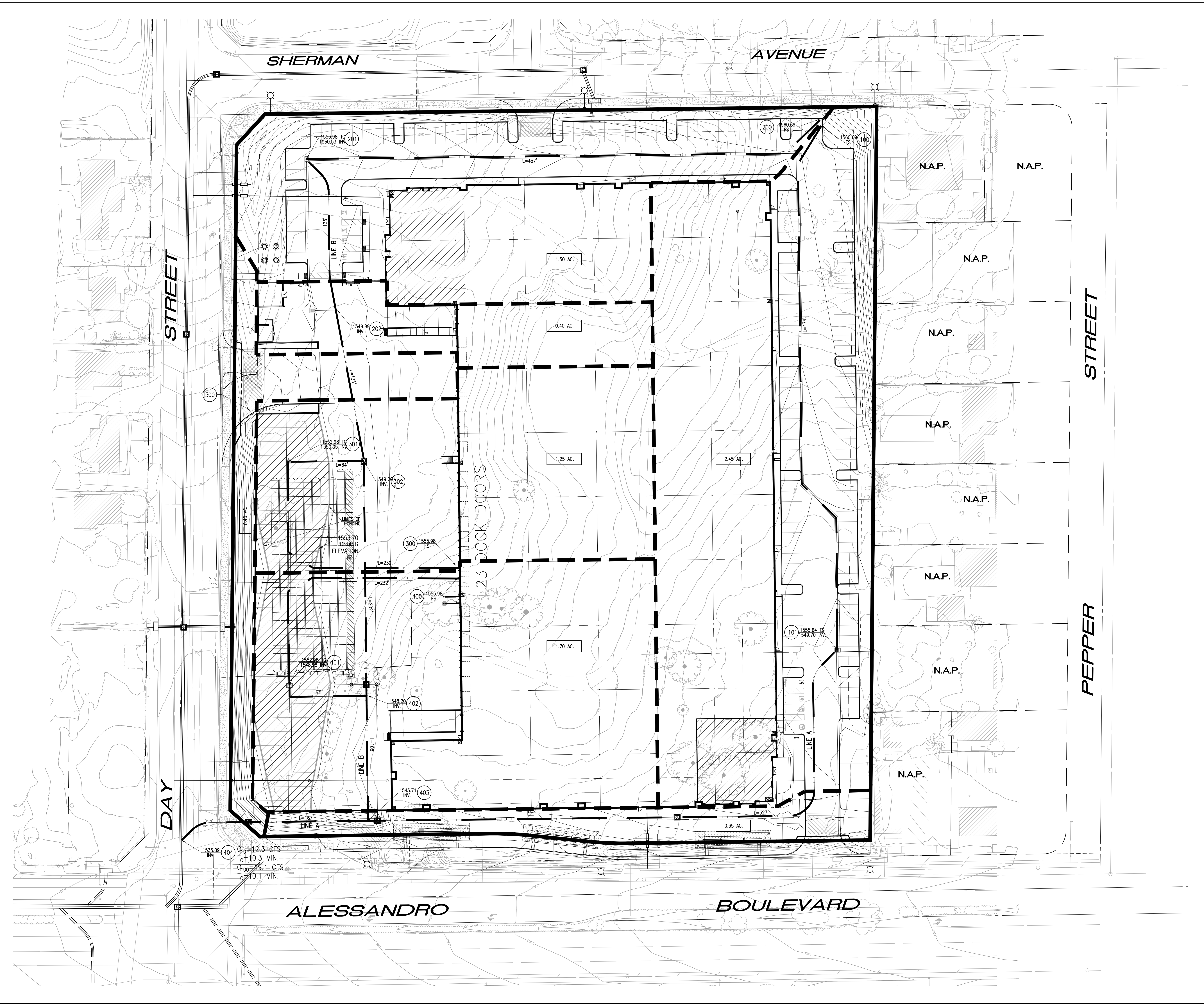
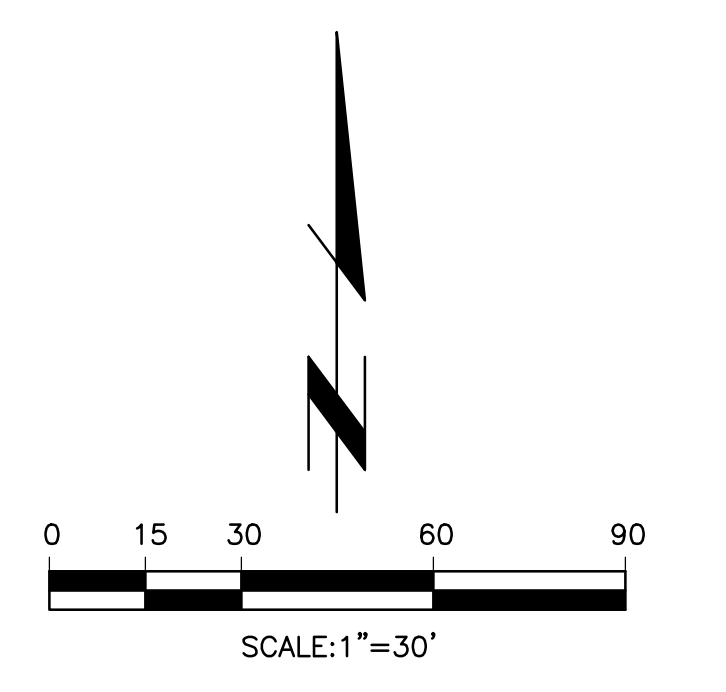
CITY OF MORENO VALLEY  
 PUBLIC WORKS DEPARTMENT  
**EXISTING CONDITION HYDROLOGY MAP**  
 PEN20-0162 / LST20-0025  
**LDC - ALESSANDRO**  
 NORTHEAST CORNER  
 OF  
**ALESSANDRO BLVD. AND DAY ST.**  
**MORENO VALLEY, CALIFORNIA**

## PROPOSED CONDITION MAP



VICINITY MAP  
N.T.S.

LEGEND	
	PROJECT BOUNDARY
	SUBAREA BOUNDARY
	FLOW PATH
	SUBAREA AREA
	NODE NUMBER
	LENGTH OF FLOW PATH
	FINISHED SURFACE ELEVATION
	INVERT ELEVATION
	TIME OF CONCENTRATION
	DISCHARGE (CUBIC FEET PER SECOND) NUMBER DESIGNATE YEAR OF FREQUENCY APPROXIMATE LIMITS OF 100-YEAR PONDING



1535.09 INV. 404  
 $Q_{10} = 12.3$  CFS  
 $T_c = 10.3$  MIN.  
 $Q_{100} = 19.1$  CFS  
 $T_c = 10.1$  MIN.

PEN21-0079 (LST21-0039) Last Update: 6/22/21  
 OWNER: LDC INDUSTRIAL REALTY, 555 N EL CAMINO REAL, #A456, SAN CLEMENTE, CA 92672, LARRY D. COCHRAN, TEL: 949-226-4601, EMAIL: LDCOCHRAN@LDCINDUSTRIAL.COM  
 ENGINEER: Thienes Engineering, Inc., CIVIL ENGINEERING & LAND SURVEYING, 14349 FIRESTONE BOULEVARD, LA MIRADA, CALIFORNIA 90648, PH: 714-521-4411, FAX: 714-521-4172, EMAIL: CES@THIENESINC.COM

CITY OF MORENO VALLEY  
 PUBLIC WORKS DEPARTMENT  
**PROPOSED CONDITION HYDROLOGY MAP**  
 PEN20-0162 / LST20-0025  
**LDC - ALESSANDRO**  
 NORTHEAST CORNER  
 OF  
 ALESSANDRO BLVD. AND DAY ST.  
 MORENO VALLEY, CALIFORNIA

1 of 1 Sheets

JUN 30 2021