



Winchester Associates, Inc.

CIVIL ENGINEERING • LAND SURVEYING • PLANNING

MAILING ADDRESS
P.O. Box 280
Moreno Valley, CA 92556

(951) 924-5425
www.wai-eng.com

STREET ADDRESS
23640 Tower St., Suite 3
Moreno Valley, CA 92553

PRELIMINARY HYDROLOGY STUDIES

**APN 488-310-012
INDEPENDENT PLAZA
Redlands Boulevard and Hemlock Avenue
City of Moreno Valley**

PEN18-0038
LST21-0032

Prepared for:

Chandresh Ravaliya
ANTHEM ENERGY, LLC
2640 Camino Del Sol
Fullerton, CA 92833
Phone: (909) 562-6388

Prepared by:

Mariela Anguelov, PE, CPSWQ
Winchester Associates, Inc.
23640 Tower Street, Suite 3
Moreno Valley, CA 92553
Telephone: (951) 924-5425



June 09, 2021

Date: June 2021

TABLE OF CONTENTS

Discussion	1
Vicinity Map	5
Soils Group Map	6
Moreno MDP	7
Precipitation Table and Graphs	8
Appendix A - Hydrology Rational Method Studies	
Pre-Developed Conditions Studies	
100 Year	Off-site (Northerly)
Pre-Developed Conditions Studies	
10 Year	On-site and Off-site (Westerly)
100 Year	On-site and Off-site (Westerly)
Post-Developed Conditions Studies	
Interim Site Plan	
10 Year	On-site and Off-site (Westerly)
100 Year	On-site and Off-site (Westerly)
Ultimate Site Plan	
10 Year	On-site and Off-site (Westerly)
100 Year	On-site and Off-site (Westerly)
Appendix B – Unit Hydrograph Studies	
Unit Hydrograph Pre- and Post-Development Maps	
Unit Hydrograph Summery Table	
2 year, 5 year, 10 year, and 100 year – 1 hour, 3 hour, 6 hour, and 24 hour Calcs	
Appendix C – Water Quality Facility Sizing Calculations and Site Plans	
(For Reference Only)	
Appendix D – Reference Materials and Plans	
Attached Exhibits	
Hydrology Map Pre-Developed Conditions (Scale 1"=300')	
Hydrology Map Post-Developed Conditions Interim Site Plan (Scale 1"=40')	
Hydrology Map Post-Developed Conditions Ultimate Site Plan (Scale 1"=40')	

Discussion

The purpose of this study is to determine the off-site and on-site hydrology for the design of Tesoro Service Station on SWC of Redlands Boulevard and Hemlock Avenue, in the City of Moreno Valley, County of Riverside, State of California. The study uses the procedures outlined in the Riverside County Flood Control and Water Conservation District (RCFC & WCD) Hydrology Manual, dated April 1978. Rational – Hydrology Program Package of CIVILD Engineering Software was used to determine 10 year - 1 hour and 100 year - 1 hour return frequency storm runoffs.

An analysis for the water quality runoff facilities using the procedures outlined in the Water Quality Management Plan - A Guidance Document for the Santa Ana Region of Riverside County, dated October 22, 2012, was used to outline the design of LID BMPs for the project site.

Site Description

The proposed project will consist of a gas station, fast food eatery, associated improvements, and undisturbed open spaces on 6.67 ac. Two site layouts are proposed – interim and ultimate. The project site is a roughly L-shaped parcel located at the southwest corner of Redlands Boulevard and Hemlock Avenue in the city of Moreno Valley. The topography of the site is generally planar with a gentle fall to the southeast. The project is a portion of Sections 2, T. 3S., R. 3W, SBM.

Pre-Developed Conditions

(See attached Pre-Developed Conditions Hydrology Map)

During the pre-developed conditions the project site is impacted from the north by $Q_{100}=208.0$ cfs offsite stormwater runoff and from the west by $Q_{100}=3.6$ cfs. The combined offsite and onsite stormwater runoff flows sheet trough the site and discharge at the southeast corner into an existing concrete drainage ditch along Redlands Boulevard. The existing concrete drainage ditch intercepts the runoff accumulated by a hydrology area west of

Redlands Boulevard and discharges the storm flow into an existing 60" RCP, which is a portion of Moreno MDP Line F-2.

(See Appendix A for hydrology calculations)

Post - Developed Conditions

(See attached Post-Developed Conditions Hydrology Map)

During the post-developed interim conditions the drainage pattern will be very similar. The northerly offsite stormwater runoff will be intercepted northerly of Hemlock avenue and through a proposed 54" RCP portion of MDP Line F-15 will be conveyed and discharged into the existing concrete drainage ditch on Redlands Boulevard. The westerly offsite and onsite stormwater runoff accumulated from the undeveloped hydrology subarea (B1) will flow westerly to the southeast property corner, where will be intercepted by the existing storm drain inlet and discharged into the existing concrete drainage ditch along Redlands Boulevard. The stormwater runoff accumulated from the developed hydrology areas (B2, B3, B4, B5 and B6) will be intercepted by a system of storm drain inlets and through a proposed 18" RCP storm drain will be discharged into the existing concrete drainage ditch along Redlands Boulevard. The combined offsite and onsite tributary area is 8.76 ac and generates $Q_{10}=10.2$ cfs and $Q_{100}=15.6$ cfs.

(See Appendix A for hydrology calculations.)

Some of downstream conveyance channels to an adequate sump that will receive runoff from the project site are not engineered and regularly maintained to ensure design flow capacity, hence the increased stormwater runoffs generated by the proposed development shall be mitigated to mimic the pre-development hydrograph with the post-development hydrograph for 2-year, 5-year, 10-year and 100-year return frequency storms. Unit hydrograph calculations were performed for pre- and post-developed conditions for all storm events. Underground detention storage system is proposed to mitigate the increased volumes (Stormtech MC-3500 Chambers or equal). Preliminary analysis shows that the proposed detention underground chambers provide the required volume needed to mitigate the increased volumes. Further

analysis will be performed during the final design phase to show that the post-developed discharged flow rates are not greater than the pre-developed peak flow rates.

(See Appendix B for Unit hydrograph calculations.)

Water Quality Facility

First flush and dry weather nuisance flows shall be routed through proposed structural LID BMPs (bioretention w/underdrain and Filterra Bioscape open top planter) located along the easterly property line and underground detention/infiltration chambers ($I_{inf} = 2.5$ in/h). Pre-treatment unit shall be installed upstream of underground chambers (CDS Hydrodynamic Separator by Contech or equal). The project site location is identified on the City of Moreno Valley Watershed Boundaries map (dated May 23, 2017) as a project that must mitigate for hydromodification impact. Preliminary analysis shows that the incorporated throughout the project site LID principles, BMPs, and detention/infiltration chambers provide the required volume needed to mitigate the HCOC (2 year – 24 hour). Further analysis will be performed during the final design phase.

(See Appendix C for BMPs sizing calculations.)

Conclusion

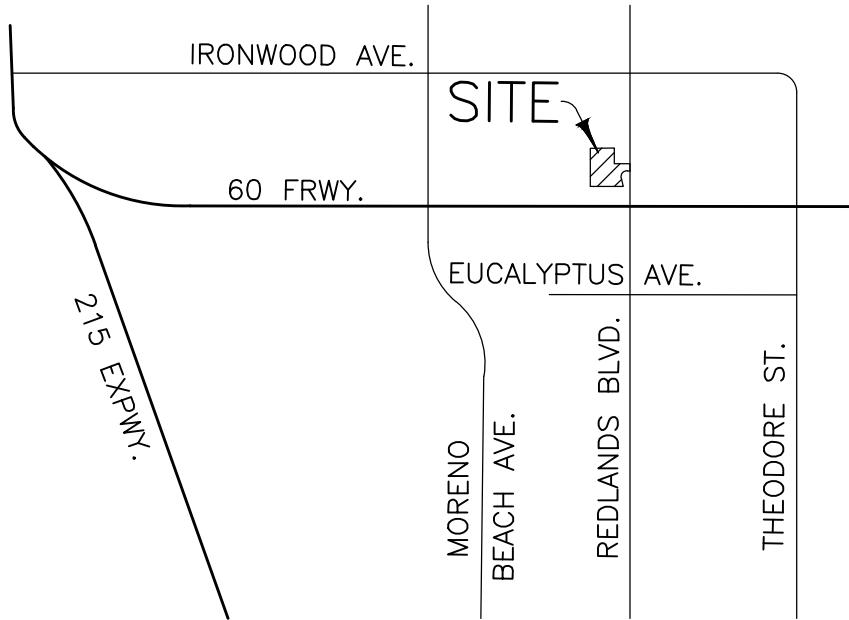
The proposed development does not create any impact to the downstream storm drain system. The difference in the peak flow rates of storm water runoffs for the post-developed conditions and the pre-developed conditions shall be mitigated by the proposed detention underground system.

(See the Pre- and Post-Development Flow Rates Comparison Table on Page 4)

PRE- AND POST-DEVELOPMENT FLOW RATES COMPARISON TABLE
ON-SITE AND OFF-SITE RUNOFF FLOW

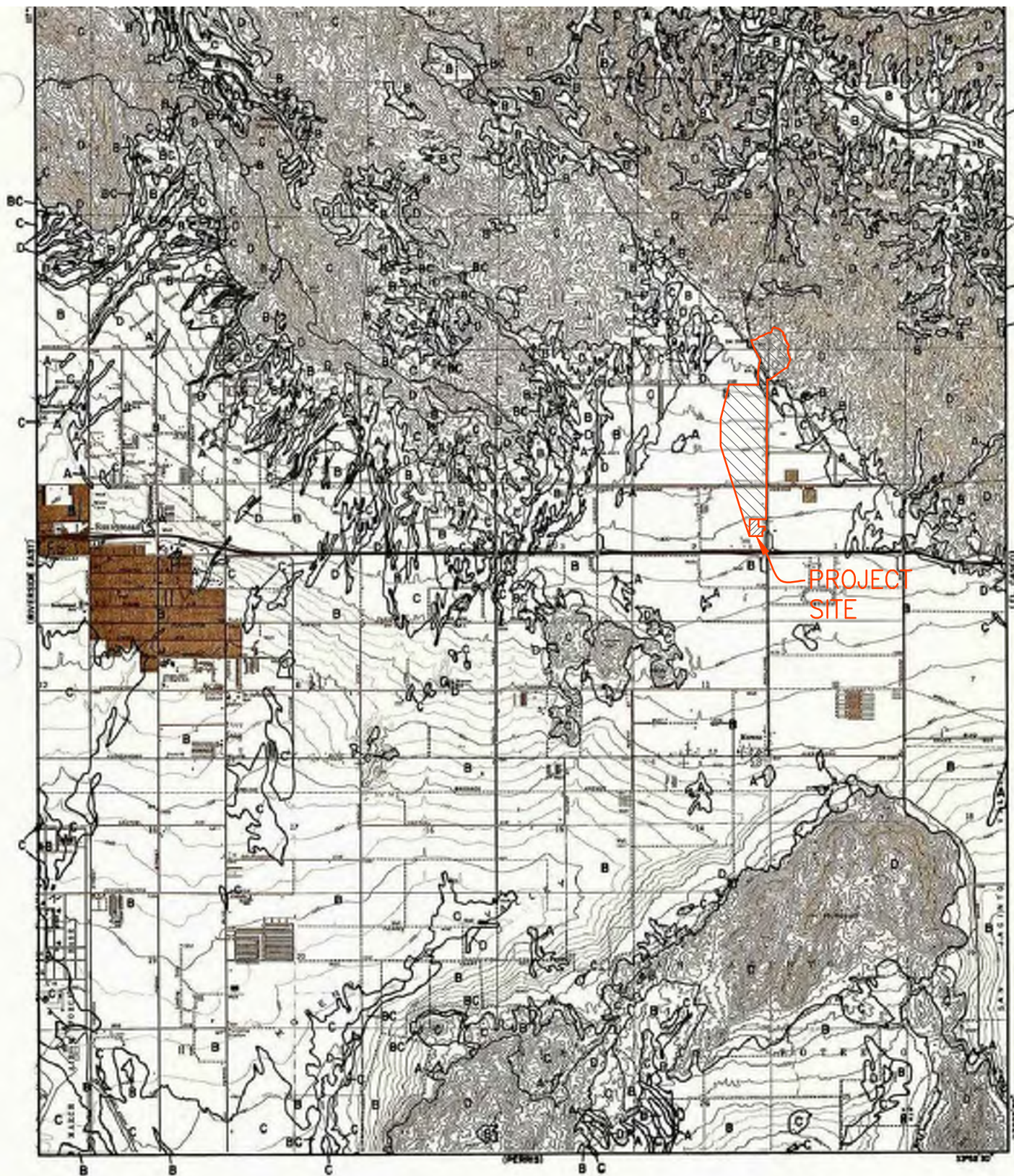
REDLANDS BLVD AND HEMLOCK AVE, MV APN 488-310-012
T.3S, R.3W, SEC. 01

	AREA (AC)		1 HOUR STORM EVENT				PROJECT IMPACT
	PRE-	POST-	Q10 (CFS)		Q100 (CFS)		
			PRE-	POST-	PRE-	POST-	
AREA "B"	8.76	8.76	10.0	10.2 int 9.1 ult	15.7	15.6 int 14.1 ult	The proposed development is not creating any impact to the downstream stormwater system. The increased stormwater runoffs shall be mitigated by the proposed underground detention/infiltration chambers.



VICINITY MAP

T. 3S., R. 3W, SECTION 2 SBB&M
THOMAS BROS. MAPS: PAGE 718 F-2, E-2



LEGEND

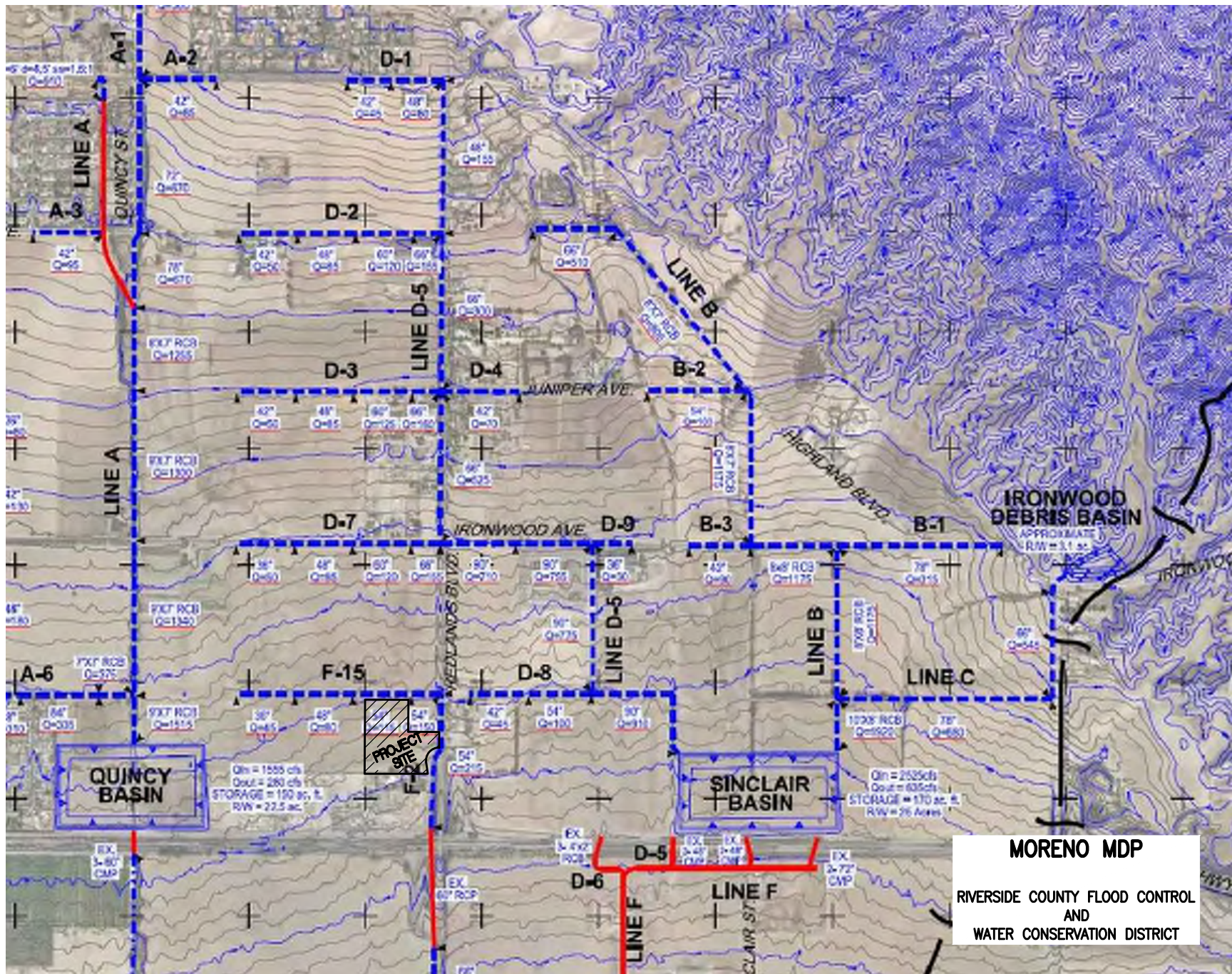
— SOILS GROUP BOUNDARY
 A SOILS GROUP DESIGNATION

RCFC & WCD
 HYDROLOGY MANUAL

0 FEET 5000

**HYDROLOGIC SOILS GROUP MAP
 FOR
 SUNNYMEAD**

PLATE C-1.17



RAINFALL INTENSITY—INCHES PER HOUR

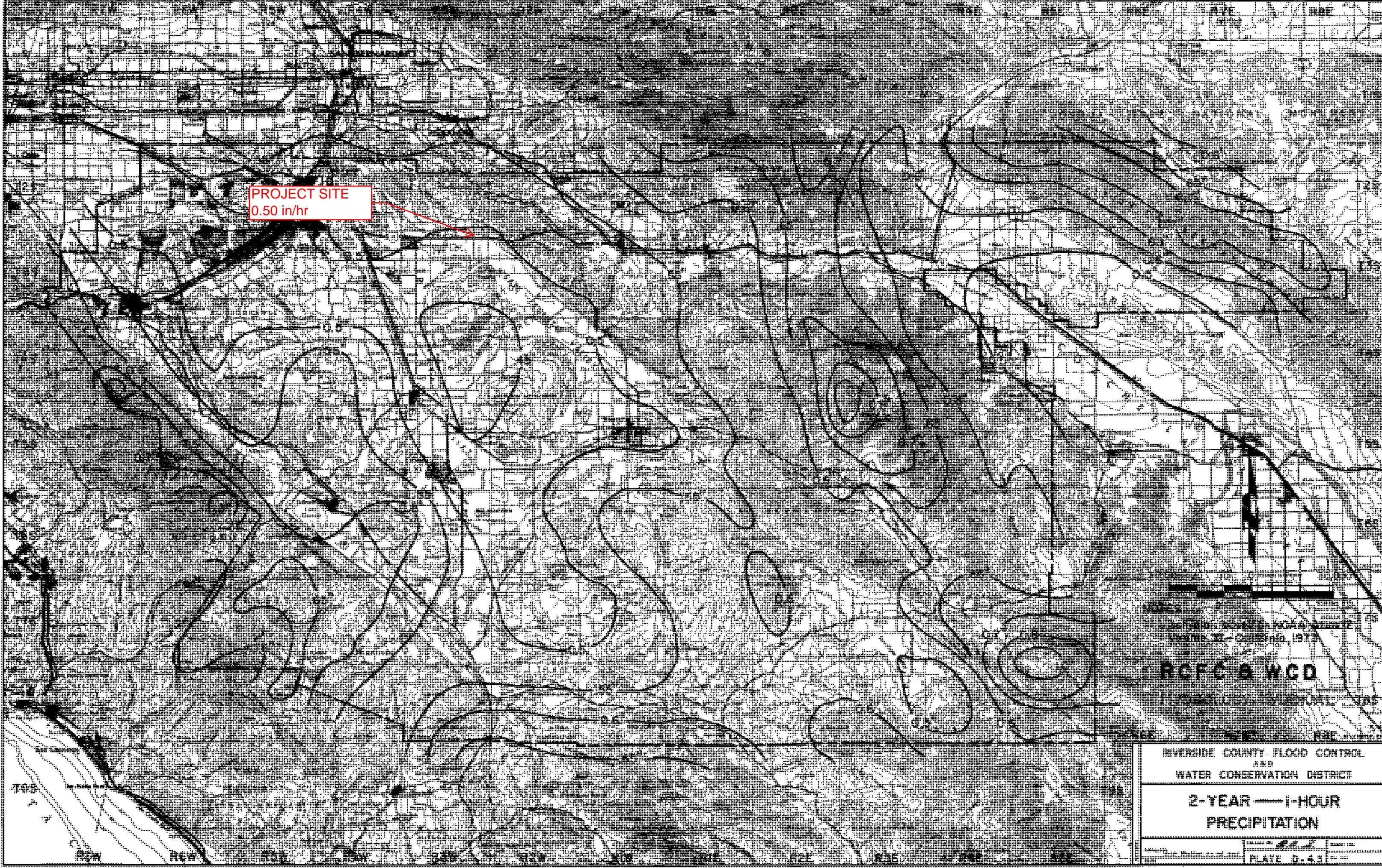
RCFC & WCD
 HYDROLOGY MANUAL

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

SLOPE = .500

SLOPE = .550

STANDARD
 INTENSITY - DURATION
 CURVES DATA



PROJECT SITE
0.50 in/hr

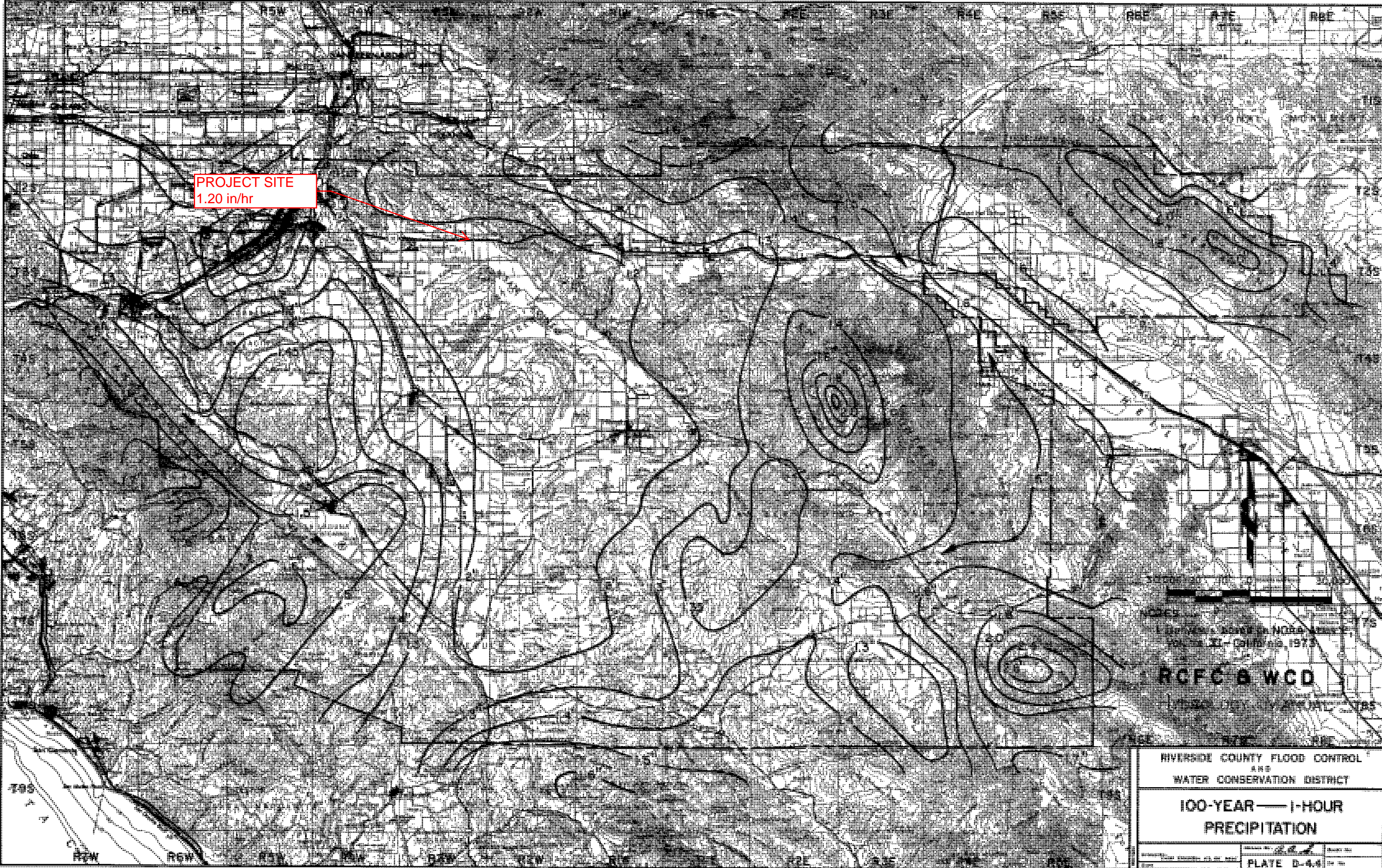
NOTES:
1. Contours based on NOAA chart
2. Contour interval, 10 ft.

RCFC & WCD

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

**2-YEAR — 1-HOUR
PRECIPITATION**

PLATE D-43



PROJECT SITE
1.20 in/hr

RCFC & WCD

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

100-YEAR — 1-HOUR
PRECIPITATION

PLATE D-4.4

PROJECT SITE
0.81 in/hr

Topographic map based on NOAA Aerial Photo
and USGS Contour, 1970.

RCFC & WCD

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

2-YEAR — 3-HOUR
PRECIPITATION

PLATE E-51

PROJECT SITE
1.86 in/hr

U.S. GEOLOGICAL SURVEY
NATIONAL CENTER FOR
HYDROLOGIC INFORMATION
Riverside County Flood Control
and
Water Conservation District
Riverside, California 92503

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
100-YEAR — 3-HOUR
PRECIPITATION

PLATE E-02

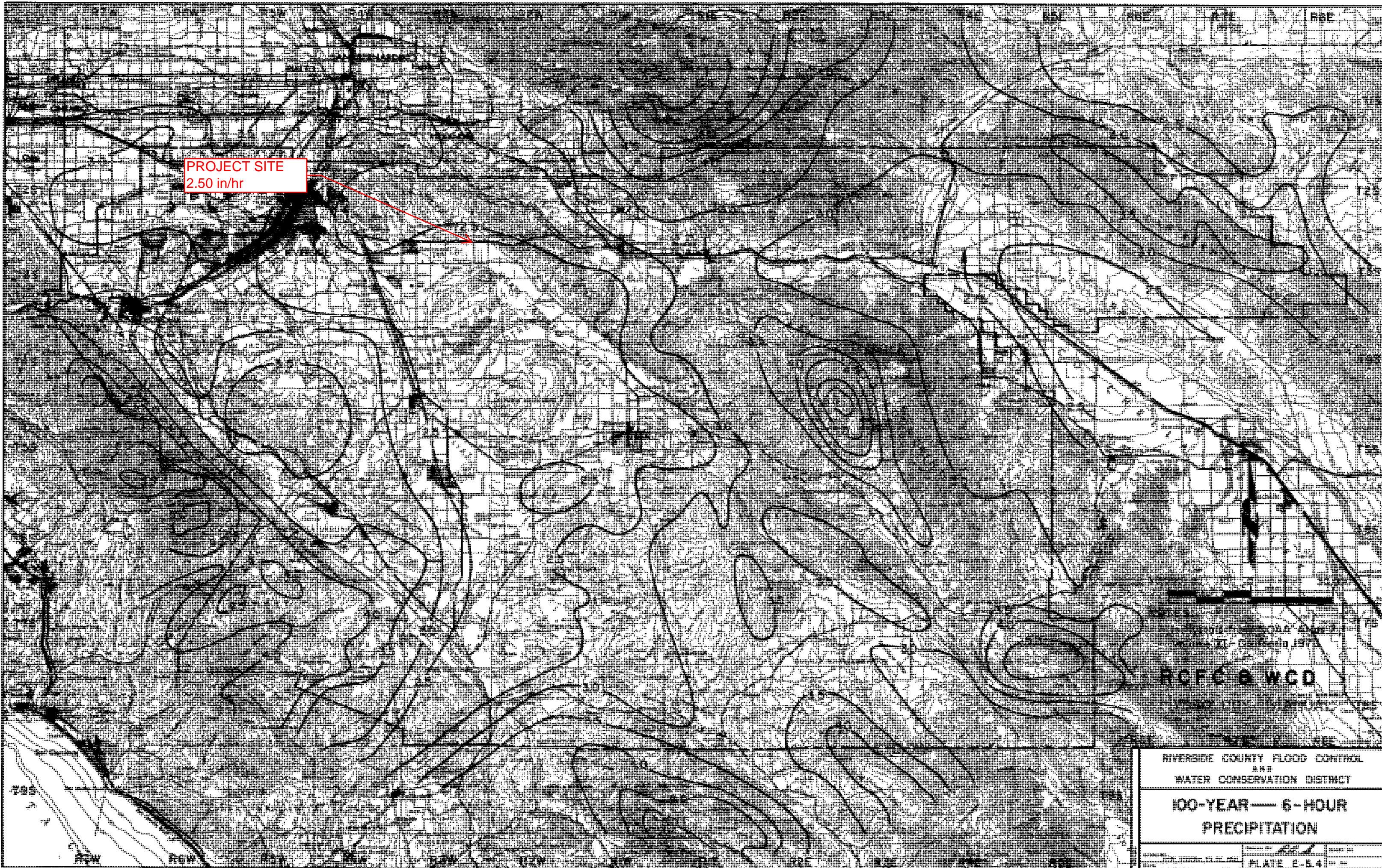
PROJECT SITE
1.4 in/hr

RCFC & WCD

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

2-YEAR — 6-HOUR
PRECIPITATION

PLATE E-53



PROJECT SITE
2.50 in/hr

Copyright © 1977
Riverside County Flood Control
and Water Conservation District
Riverside County Manual
1977

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
**100-YEAR — 6-HOUR
PRECIPITATION**
PLATE E-5.4

PROJECT SITE
1.9 in/hr

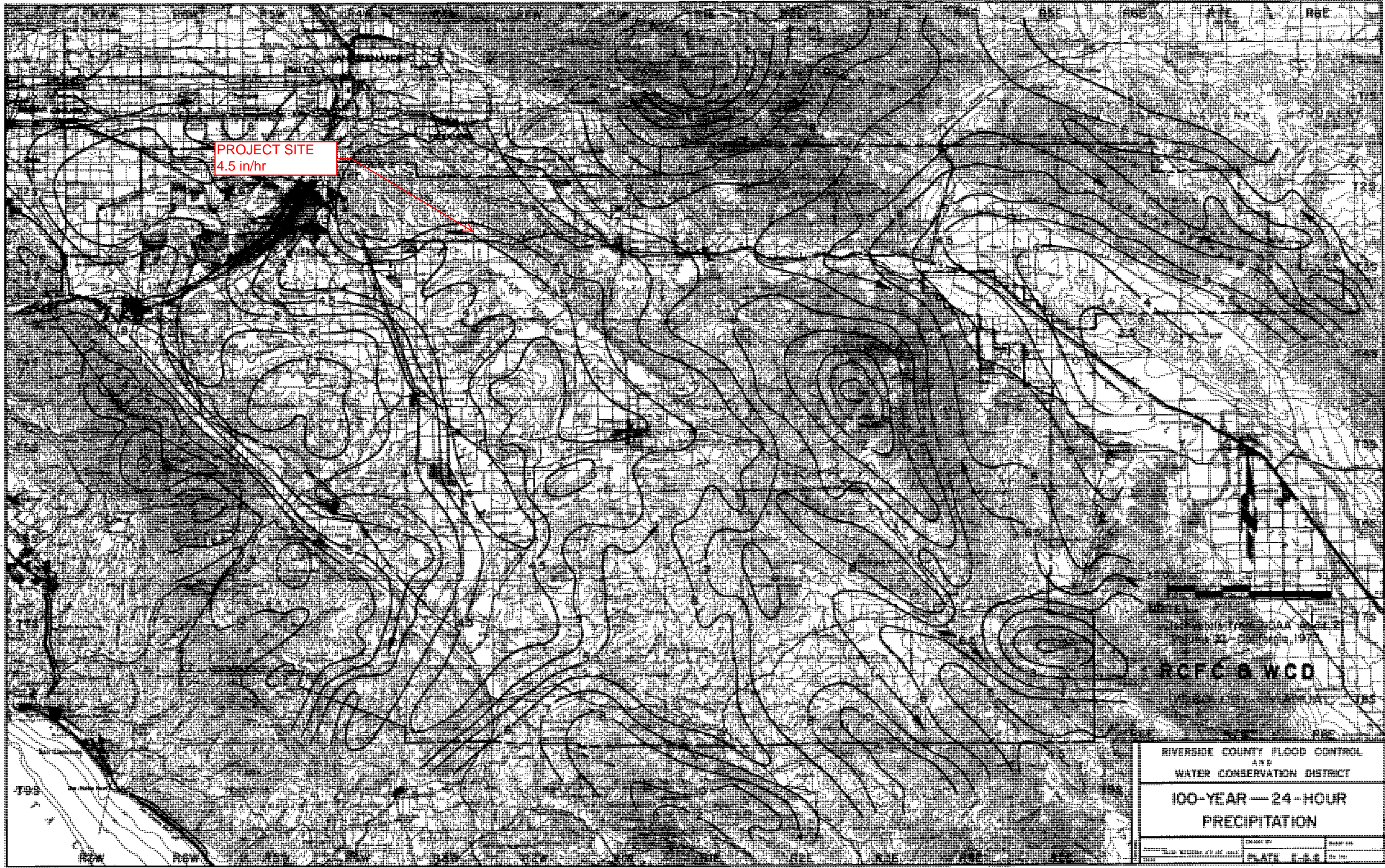
NOTES:
1. Contours are based on 1971 data.
2. Contours are based on 1971 data.

RCFC & WCD

RIVERSIDE COUNTY FLOOD CONTROL
&
WATER CONSERVATION DISTRICT

2-YEAR — 24-HOUR
PRECIPITATION

PLATE 1-10



PROJECT SITE
4.5 in/hr

EDITION: 1980
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR — 24-HOUR PRECIPITATION

RCFC & WCD

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

100-YEAR — 24-HOUR
PRECIPITATION

PLATE E-88

APPENDIX A

HYDROLOGY RATIONAL STUDIES

**PRE-DEVELOPED CONDITIONS
NORTHERLY OFF-SITE
100 YEAR STORM EVENT**

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version 8.0
Rational Hydrology Study Date: 04/08/21 File:863pre100offsite.out

REDLANDS BLVD AND HEMLOCK AVE, MV APN 488-310-012
OFF SITE NORTH PRE-DEVELOPED CONDITIONS
100 YEAR STORM EVENT
(Job 863)

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

English (in-lb) Units used in input data file

Program License Serial Number 6311

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.200(In/Hr)
Slope of intensity duration curve = 0.5000

Process from Point/Station 100.000 to Point/Station 110.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 958.000(Ft.)
Top (of initial area) elevation = 2172.000(Ft.)
Bottom (of initial area) elevation = 2060.000(Ft.)
Difference in elevation = 112.000(Ft.)
Slope = 0.11691 s(percent)= 11.69
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.684 min.
Rainfall intensity = 2.610(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.847
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2) = 89.00
Pervious area fraction = 1.000; Impervious fraction = 0.000

Initial subarea runoff = 18.780(CFS)
Total initial stream area = 8.500(Ac.)
Pervious area fraction = 1.000

Process from Point/Station 110.000 to Point/Station 120.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****

Top of natural channel elevation = 2060.000(Ft.)
End of natural channel elevation = 2032.000(Ft.)
Length of natural channel = 781.000(Ft.)
Estimated mean flow rate at midpoint of channel = 34.578(CFS)

Natural mountain channel type used
L.A. County flood control district formula for channel velocity:
Velocity = $5.48(q^{.33})(\text{slope}^{.492})$
Velocity using mean channel flow = 3.43(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
Normal channel slope = 0.0359
Corrected/adjusted channel slope = 0.0359
Travel time = 3.79 min. TC = 16.48 min.

Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.840
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2) = 89.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Rainfall intensity = 2.290(In/Hr) for a 100.0 year storm
Subarea runoff = 27.492(CFS) for 14.300(Ac.)
Total runoff = 46.272(CFS) Total area = 22.800(Ac.)

Process from Point/Station 120.000 to Point/Station 130.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****

Top of street segment elevation = 2032.000(Ft.)
End of street segment elevation = 1980.000(Ft.)
Length of street segment = 974.000(Ft.)
Height of curb above gutter flowline = 6.0(In.)
Width of half street (curb to crown) = 18.000(Ft.)
Distance from crown to crossfall grade break = 12.000(Ft.)
Slope from gutter to grade break (v/hz) = 0.020
Slope from grade break to crown (v/hz) = 0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line = 10.000(Ft.)
Slope from curb to property line (v/hz) = 0.025
Gutter width = 2.000(Ft.)
Gutter hike from flowline = 2.000(In.)
Manning's N in gutter = 0.0150
Manning's N from gutter to grade break = 0.0150
Manning's N from grade break to crown = 0.0150
Estimated mean flow rate at midpoint of street = 67.936(CFS)
Depth of flow = 0.531(Ft.), Average velocity = 8.130(Ft/s)
Warning: depth of flow exceeds top of curb

Note: depth of flow exceeds top of street crown.
 Distance that curb overflow reaches into property = 1.23(Ft.)
 Streetflow hydraulics at midpoint of street travel:
 Halfstreet flow width = 18.000(Ft.)
 Flow velocity = 8.13(Ft/s)
 Travel time = 2.00 min. TC = 18.47 min.
 Adding area flow to street
 UNDEVELOPED (fair cover) subarea
 Runoff Coefficient = 0.774
 Decimal fraction soil group A = 0.100
 Decimal fraction soil group B = 0.100
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.800
 RI index for soil(AMC 2) = 79.10
 Pervious area fraction = 1.000; Impervious fraction = 0.000
 Rainfall intensity = 2.163(In/Hr) for a 100.0 year storm
 Subarea runoff = 43.180(CFS) for 25.800(Ac.)
 Total runoff = 89.452(CFS) Total area = 48.600(Ac.)
 Street flow at end of street = 89.452(CFS)
 Half street flow at end of street = 44.726(CFS)
 Depth of flow = 0.577(Ft.), Average velocity = 8.757(Ft/s)
 Warning: depth of flow exceeds top of curb
 Note: depth of flow exceeds top of street crown.
 Distance that curb overflow reaches into property = 3.07(Ft.)
 Flow width (from curb towards crown)= 18.000(Ft.)

 Process from Point/Station 130.000 to Point/Station 140.000
 **** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 1980.000(Ft.)
 Downstream point elevation = 1927.000(Ft.)
 Channel length thru subarea = 1261.000(Ft.)
 Channel base width = 2.000(Ft.)
 Slope or 'Z' of left channel bank = 2.000
 Slope or 'Z' of right channel bank = 2.000
 Estimated mean flow rate at midpoint of channel = 90.984(CFS)
 Manning's 'N' = 0.030
 Maximum depth of channel = 3.000(Ft.)
 Flow(q) thru subarea = 90.984(CFS)
 Depth of flow = 1.704(Ft.), Average velocity = 9.869(Ft/s)
 Channel flow top width = 8.818(Ft.)
 Flow Velocity = 9.87(Ft/s)
 Travel time = 2.13 min.
 Time of concentration = 20.60 min.

Sub-Channel No. 1 Critical depth = 2.188(Ft.)
 ' ' ' Critical flow top width = 10.750(Ft.)
 ' ' ' Critical flow velocity= 6.524(Ft/s)
 ' ' ' Critical flow area = 13.945(Sq.Ft)

Adding area flow to channel
 COMMERCIAL subarea type
 Runoff Coefficient = 0.861
 Decimal fraction soil group A = 0.400
 Decimal fraction soil group B = 0.600
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 RI index for soil(AMC 2) = 46.40
 Pervious area fraction = 0.100; Impervious fraction = 0.900
 Rainfall intensity = 2.048(In/Hr) for a 100.0 year storm
 Subarea runoff = 2.999(CFS) for 1.700(Ac.)

Total runoff = 92.451(CFS) Total area = 50.300(Ac.)
Depth of flow = 1.717(Ft.), Average velocity = 9.909(Ft/s)

Sub-Channel No. 1 Critical depth = 2.219(Ft.)
' ' ' Critical flow top width = 10.875(Ft.)
' ' ' Critical flow velocity= 6.473(Ft/s)
' ' ' Critical flow area = 14.283(Sq.Ft)

Process from Point/Station 140.000 to Point/Station 150.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 1927.000(Ft.)
Downstream point elevation = 1853.000(Ft.)
Channel length thru subarea = 2162.000(Ft.)
Channel base width = 2.000(Ft.)
Slope or 'Z' of left channel bank = 2.000
Slope or 'Z' of right channel bank = 2.000
Estimated mean flow rate at midpoint of channel = 94.686(CFS)
Manning's 'N' = 0.030
Maximum depth of channel = 3.000(Ft.)
Flow(q) thru subarea = 94.686(CFS)
Depth of flow = 1.819(Ft.), Average velocity = 9.236(Ft/s)
Channel flow top width = 9.275(Ft.)
Flow Velocity = 9.24(Ft/s)
Travel time = 3.90 min.
Time of concentration = 24.51 min.

Sub-Channel No. 1 Critical depth = 2.234(Ft.)
' ' ' Critical flow top width = 10.938(Ft.)
' ' ' Critical flow velocity= 6.551(Ft/s)
' ' ' Critical flow area = 14.454(Sq.Ft)

Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.868
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 56.00
Pervious area fraction = 0.100; Impervious fraction = 0.900
Rainfall intensity = 1.878(In/Hr) for a 100.0 year storm
Subarea runoff = 4.399(CFS) for 2.700(Ac.)
Total runoff = 96.850(CFS) Total area = 53.000(Ac.)
Depth of flow = 1.837(Ft.), Average velocity = 9.289(Ft/s)

Sub-Channel No. 1 Critical depth = 2.266(Ft.)
' ' ' Critical flow top width = 11.063(Ft.)
' ' ' Critical flow velocity= 6.545(Ft/s)
' ' ' Critical flow area = 14.797(Sq.Ft)

Process from Point/Station 150.000 to Point/Station 160.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 1853.000(Ft.)
Downstream point elevation = 1796.000(Ft.)
Channel length thru subarea = 1753.000(Ft.)

Channel base width = 2.000(Ft.)
Slope or 'Z' of left channel bank = 2.000
Slope or 'Z' of right channel bank = 2.000
Estimated mean flow rate at midpoint of channel = 98.575(CFS)
Manning's 'N' = 0.030
Maximum depth of channel = 3.000(Ft.)
Flow(q) thru subarea = 98.575(CFS)
Depth of flow = 1.874(Ft.), Average velocity = 9.154(Ft/s)
Channel flow top width = 9.495(Ft.)
Flow Velocity = 9.15(Ft/s)
Travel time = 3.19 min.
Time of concentration = 27.70 min.

Sub-Channel No. 1 Critical depth = 2.281(Ft.)
' ' ' Critical flow top width = 11.125(Ft.)
' ' ' Critical flow velocity= 6.585(Ft/s)
' ' ' Critical flow area = 14.971(Sq.Ft)

Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.866
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 56.00
Pervious area fraction = 0.100; Impervious fraction = 0.900
Rainfall intensity = 1.766(In/Hr) for a 100.0 year storm
Subarea runoff = 3.367(CFS) for 2.200(Ac.)
Total runoff = 100.217(CFS) Total area = 55.200(Ac.)
Depth of flow = 1.888(Ft.), Average velocity = 9.192(Ft/s)

Sub-Channel No. 1 Critical depth = 2.297(Ft.)
' ' ' Critical flow top width = 11.188(Ft.)
' ' ' Critical flow velocity= 6.617(Ft/s)
' ' ' Critical flow area = 15.145(Sq.Ft)

++++
Process from Point/Station 160.000 to Point/Station 160.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area = 55.200(Ac.)
Runoff from this stream = 100.217(CFS)
Time of concentration = 27.70 min.
Rainfall intensity = 1.766(In/Hr)
Program is now starting with Main Stream No. 2

++++
Process from Point/Station 200.000 to Point/Station 210.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 954.000(Ft.)
Top (of initial area) elevation = 1982.000(Ft.)
Bottom (of initial area) elevation = 1940.000(Ft.)
Difference in elevation = 42.000(Ft.)
Slope = 0.04403 s(percent)= 4.40
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 20.622 min.

Rainfall intensity = 2.047(In/Hr) for a 100.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.668
Decimal fraction soil group A = 0.200
Decimal fraction soil group B = 0.800
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 65.20
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 10.799(CFS)
Total initial stream area = 7.900(Ac.)
Pervious area fraction = 1.000

Process from Point/Station 210.000 to Point/Station 220.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****

Top of natural channel elevation = 1940.000(Ft.)
End of natural channel elevation = 1884.000(Ft.)
Length of natural channel = 1371.000(Ft.)
Estimated mean flow rate at midpoint of channel = 21.392(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
Velocity(ft/s) = $(7 + 8(q(\text{English Units})^{.352})(\text{slope}^{0.5}))$
Velocity using mean channel flow = 6.17(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
Normal channel slope = 0.0408
Corrected/adjusted channel slope = 0.0408
Travel time = 3.71 min. TC = 24.33 min.

Adding area flow to channel
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.683
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 69.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Rainfall intensity = 1.885(In/Hr) for a 100.0 year storm
Subarea runoff = 19.949(CFS) for 15.500(Ac.)
Total runoff = 30.747(CFS) Total area = 23.400(Ac.)

Process from Point/Station 220.000 to Point/Station 230.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****

Top of natural channel elevation = 1884.000(Ft.)
End of natural channel elevation = 1802.000(Ft.)
Length of natural channel = 2850.000(Ft.)
Estimated mean flow rate at midpoint of channel = 48.617(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
Velocity(ft/s) = $(7 + 8(q(\text{English Units})^{.352})(\text{slope}^{0.5}))$
Velocity using mean channel flow = 6.51(Ft/s)

Correction to map slope used on extremely rugged channels with
 drops and waterfalls (Plate D-6.2)
 Normal channel slope = 0.0288
 Corrected/adjusted channel slope = 0.0288
 Travel time = 7.29 min. TC = 31.62 min.

Adding area flow to channel
 UNDEVELOPED (fair cover) subarea
 Runoff Coefficient = 0.661
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 1.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 RI index for soil(AMC 2) = 69.00
 Pervious area fraction = 1.000; Impervious fraction = 0.000
 Rainfall intensity = 1.653(In/Hr) for a 100.0 year storm
 Subarea runoff = 29.701(CFS) for 27.200(Ac.)
 Total runoff = 60.449(CFS) Total area = 50.600(Ac.)

 Process from Point/Station 230.000 to Point/Station 230.000
 **** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 2
 Stream flow area = 50.600(Ac.)
 Runoff from this stream = 60.449(CFS)
 Time of concentration = 31.62 min.
 Rainfall intensity = 1.653(In/Hr)
 Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
------------	-----------------	----------	----------------------------

1	100.217	27.70	1.766
2	60.449	31.62	1.653

Largest stream flow has longer or shorter time of concentration

Qp = 100.217 + sum of

$$Qa \cdot \frac{Tb}{Ta}$$

$$60.449 * 0.876 = 52.948$$
 Qp = 153.165

Total of 2 main streams to confluence:

Flow rates before confluence point:

100.217 60.449

Area of streams before confluence:

55.200 50.600

Results of confluence:

Total flow rate = 153.165(CFS)

Time of concentration = 27.697 min.

Effective stream area after confluence = 105.800(Ac.)

Process from Point/Station 160.000 to Point/Station 160.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 1
Stream flow area = 105.800(Ac.)
Runoff from this stream = 153.165(CFS)
Time of concentration = 27.70 min.
Rainfall intensity = 1.766(In/Hr)
Program is now starting with Main Stream No. 2

Process from Point/Station 300.000 to Point/Station 310.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 690.000(Ft.)
Top (of initial area) elevation = 1982.000(Ft.)
Bottom (of initial area) elevation = 1948.000(Ft.)
Difference in elevation = 34.000(Ft.)
Slope = 0.04928 s(percent)= 4.93
TC = $k(0.530)*[(\text{length}^3)/(\text{elevation change})]^{0.2}$
Initial area time of concentration = 13.222 min.
Rainfall intensity = 2.556(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.785
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 19.454(CFS)
Total initial stream area = 9.700(Ac.)
Pervious area fraction = 1.000

Process from Point/Station 310.000 to Point/Station 320.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****

Top of natural channel elevation = 1948.000(Ft.)
End of natural channel elevation = 1900.000(Ft.)
Length of natural channel = 1320.000(Ft.)
Estimated mean flow rate at midpoint of channel = 36.603(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
Velocity(ft/s) = $(7 + 8(q(\text{English Units})^{.352})(\text{slope}^{0.5}))$
Velocity using mean channel flow = 6.75(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
Normal channel slope = 0.0364
Corrected/adjusted channel slope = 0.0364
Travel time = 3.26 min. TC = 16.48 min.

Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.773
Decimal fraction soil group A = 0.000

Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Rainfall intensity = 2.290(In/Hr) for a 100.0 year storm
Subarea runoff = 30.267(CFS) for 17.100(Ac.)
Total runoff = 49.722(CFS) Total area = 26.800(Ac.)

Process from Point/Station 320.000 to Point/Station 330.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****

Top of natural channel elevation = 1900.000(Ft.)
End of natural channel elevation = 1836.000(Ft.)
Length of natural channel = 2000.000(Ft.)
Estimated mean flow rate at midpoint of channel = 71.568(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
Velocity(ft/s) = $(7 + 8(q(\text{English Units})^{.352})(\text{slope}^{.5}))$
Velocity using mean channel flow = 7.69(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
Normal channel slope = 0.0320
Corrected/adjusted channel slope = 0.0320
Travel time = 4.34 min. TC = 20.82 min.

Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.760
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Rainfall intensity = 2.037(In/Hr) for a 100.0 year storm
Subarea runoff = 36.452(CFS) for 23.550(Ac.)
Total runoff = 86.173(CFS) Total area = 50.350(Ac.)

Process from Point/Station 330.000 to Point/Station 330.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 2 in normal stream number 1
Stream flow area = 50.350(Ac.)
Runoff from this stream = 86.173(CFS)
Time of concentration = 20.82 min.
Rainfall intensity = 2.037(In/Hr)

Process from Point/Station 400.000 to Point/Station 410.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 635.000(Ft.)
Top (of initial area) elevation = 1972.000(Ft.)
Bottom (of initial area) elevation = 1948.000(Ft.)

Difference in elevation = 24.000(Ft.)
Slope = 0.03780 s(percent)= 3.78
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 13.486 min.
Rainfall intensity = 2.531(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.784
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 16.362(CFS)
Total initial stream area = 8.250(Ac.)
Pervious area fraction = 1.000

Process from Point/Station 410.000 to Point/Station 420.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****

Top of natural channel elevation = 1948.000(Ft.)
End of natural channel elevation = 1912.000(Ft.)
Length of natural channel = 1035.000(Ft.)
Estimated mean flow rate at midpoint of channel = 32.576(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow = 6.39(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
Normal channel slope = 0.0348
Corrected/adjusted channel slope = 0.0348
Travel time = 2.70 min. TC = 16.19 min.

Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.774
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Rainfall intensity = 2.310(In/Hr) for a 100.0 year storm
Subarea runoff = 29.239(CFS) for 16.350(Ac.)
Total runoff = 45.601(CFS) Total area = 24.600(Ac.)

Process from Point/Station 420.000 to Point/Station 430.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****

Top of natural channel elevation = 1912.000(Ft.)
End of natural channel elevation = 1836.000(Ft.)
Length of natural channel = 2375.000(Ft.)
Estimated mean flow rate at midpoint of channel = 75.631(CFS)

Natural valley channel type used

L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
 Velocity using mean channel flow = 7.81(Ft/s)

Correction to map slope used on extremely rugged channels with
 drops and waterfalls (Plate D-6.2)
 Normal channel slope = 0.0320
 Corrected/adjusted channel slope = 0.0320
 Travel time = 5.07 min. TC = 21.25 min.

Adding area flow to channel
 UNDEVELOPED (poor cover) subarea
 Runoff Coefficient = 0.759
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 1.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 RI index for soil(AMC 2) = 78.00
 Pervious area fraction = 1.000; Impervious fraction = 0.000
 Rainfall intensity = 2.016(In/Hr) for a 100.0 year storm
 Subarea runoff = 49.553(CFS) for 32.400(Ac.)
 Total runoff = 95.154(CFS) Total area = 57.000(Ac.)

++++
 Process from Point/Station 330.000 to Point/Station 330.000
 **** CONFLUENCE OF MINOR STREAMS ****

 Along Main Stream number: 2 in normal stream number 2
 Stream flow area = 57.000(Ac.)
 Runoff from this stream = 95.154(CFS)
 Time of concentration = 21.25 min.
 Rainfall intensity = 2.016(In/Hr)
 Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	86.173	20.82	2.037
2	95.154	21.25	2.016

Largest stream flow has longer time of concentration
 $Q_p = 95.154 + \text{sum of } Q_b \cdot I_a/I_b$
 $86.173 * 0.990 = 85.286$
 $Q_p = 180.440$

Total of 2 streams to confluence:
 Flow rates before confluence point:
 86.173 95.154
 Area of streams before confluence:
 50.350 57.000
 Results of confluence:
 Total flow rate = 180.440(CFS)
 Time of concentration = 21.252 min.
 Effective stream area after confluence = 107.350(Ac.)

++++
 Process from Point/Station 430.000 to Point/Station 500.000
 **** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****

Top of natural channel elevation = 1836.000(Ft.)
 End of natural channel elevation = 1802.000(Ft.)
 Length of natural channel = 1460.000(Ft.)
 Estimated mean flow rate at midpoint of channel = 196.661(CFS)

Natural valley channel type used
 L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
 Velocity using mean channel flow = 8.90(Ft/s)

Correction to map slope used on extremely rugged channels with
 drops and waterfalls (Plate D-6.2)
 Normal channel slope = 0.0233
 Corrected/adjusted channel slope = 0.0233
 Travel time = 2.73 min. TC = 23.99 min.

Adding area flow to channel
 UNDEVELOPED (poor cover) subarea
 Runoff Coefficient = 0.751
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 1.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 RI index for soil(AMC 2) = 78.00
 Pervious area fraction = 1.000; Impervious fraction = 0.000
 Rainfall intensity = 1.898(In/Hr) for a 100.0 year storm
 Subarea runoff = 27.516(CFS) for 19.300(Ac.)
 Total runoff = 207.956(CFS) Total area = 126.650(Ac.)

 Process from Point/Station 160.000 to Point/Station 160.000
 **** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 2
 Stream flow area = 126.650(Ac.)
 Runoff from this stream = 207.956(CFS)
 Time of concentration = 23.99 min.
 Rainfall intensity = 1.898(In/Hr)
 Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
------------	-----------------	----------	----------------------------

1	153.165	27.70	1.766
2	207.956	23.99	1.898

Largest stream flow has longer or shorter time of concentration

Qp = 207.956 + sum of
 Qa Tb/Ta
 153.165 * 0.866 = 132.636
 Qp = 340.591

Total of 2 main streams to confluence:

Flow rates before confluence point:

153.165 207.956

Area of streams before confluence:

105.800 126.650

Results of confluence:

Total flow rate = 340.591(CFS)

Time of concentration = 23.985 min.

Effective stream area after confluence = 232.450(Ac.)

End of computations, total study area = 232.45 (Ac.)

The following figures may

be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(A_p) = 0.974

Area averaged RI index number = 76.4

**PRE-DEVELOPED CONDITIONS
ON-SITE AND WESTERLY OFF-SITE
10 YEAR STORM EVENT**

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version 8.0
Rational Hydrology Study Date: 04/08/21 File:863prel0onsite.out

REDLANDS BLVD AND HEMLOCK AVE, MV APN 488-310-012
PRE-DEVELOPED CONDITIONS
10 YEAR STORM EVENT
(Job 863)

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

English (in-lb) Units used in input data file

Program License Serial Number 6311

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.820(In/Hr)
Slope of intensity duration curve = 0.5000

Process from Point/Station 500.000 to Point/Station 520.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 720.000(Ft.)
Top (of initial area) elevation = 1802.000(Ft.)
Bottom (of initial area) elevation = 1782.000(Ft.)
Difference in elevation = 20.000(Ft.)
Slope = 0.02778 s(percent)= 2.78
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 15.082 min.
Rainfall intensity = 1.636(In/Hr) for a 10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.732
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000

Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 8.294(CFS)
Total initial stream area = 6.930(Ac.)
Pervious area fraction = 1.000

Process from Point/Station 520.000 to Point/Station 520.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
Stream flow area = 6.930(Ac.)
Runoff from this stream = 8.294(CFS)
Time of concentration = 15.08 min.
Rainfall intensity = 1.636(In/Hr)

Process from Point/Station 510.000 to Point/Station 530.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 590.000(Ft.)
Top (of initial area) elevation = 1803.000(Ft.)
Bottom (of initial area) elevation = 1786.000(Ft.)
Difference in elevation = 17.000(Ft.)
Slope = 0.02881 s(percent)= 2.88
TC = $k(0.530)*[(\text{length}^3)/(\text{elevation change})]^{0.2}$
Initial area time of concentration = 13.826 min.
Rainfall intensity = 1.708(In/Hr) for a 10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.738
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 2.306(CFS)
Total initial stream area = 1.830(Ac.)
Pervious area fraction = 1.000

Process from Point/Station 530.000 to Point/Station 520.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 1786.000(Ft.)
Downstream point elevation = 1782.000(Ft.)
Channel length thru subarea = 515.000(Ft.)
Channel base width = 0.000(Ft.)
Slope or 'Z' of left channel bank = 4.000
Slope or 'Z' of right channel bank = 4.000
Manning's 'N' = 0.045
Maximum depth of channel = 1.000(Ft.)
Flow(q) thru subarea = 2.306(CFS)
Depth of flow = 0.653(Ft.), Average velocity = 1.352(Ft/s)
Channel flow top width = 5.223(Ft.)
Flow Velocity = 1.35(Ft/s)
Travel time = 6.35 min.
Time of concentration = 20.17 min.

Sub-Channel No. 1 Critical depth = 0.461(Ft.)
 ' ' ' Critical flow top width = 3.688(Ft.)
 ' ' ' Critical flow velocity= 2.713(Ft/s)
 ' ' ' Critical flow area = 0.850(Sq.Ft)

Process from Point/Station 520.000 to Point/Station 520.000
 **** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 2
 Stream flow area = 1.830(Ac.)
 Runoff from this stream = 2.306(CFS)
 Time of concentration = 20.17 min.
 Rainfall intensity = 1.414(In/Hr)
 Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	8.294	15.08	1.636
2	2.306	20.17	1.414

Largest stream flow has longer or shorter time of concentration
 $Q_p = 8.294 + \sum \frac{Q_a T_b}{T_a}$
 $Q_p = 2.306 * \frac{0.748}{20.17} = 1.724$
 $Q_p = 10.018$

Total of 2 streams to confluence:
 Flow rates before confluence point:
 8.294 2.306
 Area of streams before confluence:
 6.930 1.830

Results of confluence:
 Total flow rate = 10.018(CFS)
 Time of concentration = 15.082 min.
 Effective stream area after confluence = 8.760(Ac.)
 End of computations, total study area = 8.76 (Ac.)
 The following figures may be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(A_p) = 1.000
 Area averaged RI index number = 78.0

**PRE-DEVELOPED CONDITIONS
ON-SITE AND WESTERLY OFF-SITE
100 YEAR STORM EVENT**

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version 8.0
Rational Hydrology Study Date: 04/08/21 File:863pre100onsite.out

REDLANDS BLVD AND HEMLOCK AVE, MV APN 488-310-012
PRE-DEVELOPED CONDITIONS
100 YEAR STORM EVENT
(Job 863)

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

English (in-lb) Units used in input data file

Program License Serial Number 6311

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.200(In/Hr)
Slope of intensity duration curve = 0.5000

Process from Point/Station 500.000 to Point/Station 520.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 720.000(Ft.)
Top (of initial area) elevation = 1802.000(Ft.)
Bottom (of initial area) elevation = 1782.000(Ft.)
Difference in elevation = 20.000(Ft.)
Slope = 0.02778 s(percent)= 2.78
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 15.082 min.
Rainfall intensity = 2.393(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.778
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000

Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 12.901(CFS)
Total initial stream area = 6.930(Ac.)
Pervious area fraction = 1.000

Process from Point/Station 520.000 to Point/Station 520.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
Stream flow area = 6.930(Ac.)
Runoff from this stream = 12.901(CFS)
Time of concentration = 15.08 min.
Rainfall intensity = 2.393(In/Hr)

Process from Point/Station 510.000 to Point/Station 530.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 590.000(Ft.)
Top (of initial area) elevation = 1803.000(Ft.)
Bottom (of initial area) elevation = 1786.000(Ft.)
Difference in elevation = 17.000(Ft.)
Slope = 0.02881 s(percent)= 2.88
TC = $k(0.530)*[(\text{length}^3)/(\text{elevation change})]^{0.2}$
Initial area time of concentration = 13.826 min.
Rainfall intensity = 2.500(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.782
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 3.579(CFS)
Total initial stream area = 1.830(Ac.)
Pervious area fraction = 1.000

Process from Point/Station 530.000 to Point/Station 520.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 1786.000(Ft.)
Downstream point elevation = 1782.000(Ft.)
Channel length thru subarea = 515.000(Ft.)
Channel base width = 0.000(Ft.)
Slope or 'Z' of left channel bank = 4.000
Slope or 'Z' of right channel bank = 4.000
Manning's 'N' = 0.045
Maximum depth of channel = 1.000(Ft.)
Flow(q) thru subarea = 3.579(CFS)
Depth of flow = 0.770(Ft.), Average velocity = 1.509(Ft/s)
Channel flow top width = 6.159(Ft.)
Flow Velocity = 1.51(Ft/s)
Travel time = 5.69 min.
Time of concentration = 19.51 min.

Sub-Channel No. 1 Critical depth = 0.547(Ft.)
 ' ' ' Critical flow top width = 4.375(Ft.)
 ' ' ' Critical flow velocity= 2.992(Ft/s)
 ' ' ' Critical flow area = 1.196(Sq.Ft)

Process from Point/Station 520.000 to Point/Station 520.000
 **** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 2
 Stream flow area = 1.830(Ac.)
 Runoff from this stream = 3.579(CFS)
 Time of concentration = 19.51 min.
 Rainfall intensity = 2.104(In/Hr)
 Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	12.901	15.08	2.393
2	3.579	19.51	2.104

Largest stream flow has longer or shorter time of concentration
 $Q_p = 12.901 + \text{sum of } \frac{Q_a \cdot T_b}{T_a}$
 $Q_p = 12.901 + \frac{3.579 \cdot 0.773}{19.51} = 15.667$

Total of 2 streams to confluence:
 Flow rates before confluence point:
 12.901 3.579
 Area of streams before confluence:
 6.930 1.830
 Results of confluence:
 Total flow rate = 15.667(CFS)
 Time of concentration = 15.082 min.
 Effective stream area after confluence = 8.760(Ac.)
 End of computations, total study area = 8.76 (Ac.)
 The following figures may
 be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(A_p) = 1.000
 Area averaged RI index number = 78.0

POST-DEVELOPED INTERIM CONDITIONS
10 YEAR - 1 HOUR STORM EVENT

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version 8.0
Rational Hydrology Study Date: 04/15/21 File:863post10int.out

REDLANDS BLVD AND HEMLOCK AVE, MV APN 488-310-012
POST-DEVELOPED INTERIM CONDITIONS
10 YEAR - 1 HOUR STORM EVENT
(Job 863)

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

English (in-lb) Units used in input data file

Program License Serial Number 6311

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)

For the [Sunnymead-Moreno] area used.

10 year storm 10 minute intensity = 2.010(In/Hr)

10 year storm 60 minute intensity = 0.820(In/Hr)

100 year storm 10 minute intensity = 2.940(In/Hr)

100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 10.0

Calculated rainfall intensity data:

1 hour intensity = 0.820(In/Hr)

Slope of intensity duration curve = 0.5000

+++++
Process from Point/Station 100.000 to Point/Station 110.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 1000.000(Ft.)

Top (of initial area) elevation = 1803.000(Ft.)

Bottom (of initial area) elevation = 1780.000(Ft.)

Difference in elevation = 23.000(Ft.)

Slope = 0.02300 s(percent)= 2.30

TC = k(0.530)*[(length^3)/(elevation change)]^0.2

Initial area time of concentration = 17.862 min.

Rainfall intensity = 1.503(In/Hr) for a 10.0 year storm

UNDEVELOPED (poor cover) subarea

Runoff Coefficient = 0.720

Decimal fraction soil group A = 0.000

Decimal fraction soil group B = 1.000

Decimal fraction soil group C = 0.000

Decimal fraction soil group D = 0.000

RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 6.361(CFS)
Total initial stream area = 5.880(Ac.)
Pervious area fraction = 1.000

++++
Process from Point/Station 170.000 to Point/Station 170.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 1
Stream flow area = 5.880(Ac.)
Runoff from this stream = 6.361(CFS)
Time of concentration = 17.86 min.
Rainfall intensity = 1.503(In/Hr)
Program is now starting with Main Stream No. 2

++++
Process from Point/Station 120.000 to Point/Station 130.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 290.000(Ft.)
Top (of initial area) elevation = 1802.000(Ft.)
Bottom (of initial area) elevation = 1799.000(Ft.)
Difference in elevation = 3.000(Ft.)
Slope = 0.01034 s(percent)= 1.03
TC = $k(0.300)*[(\text{length}^3)/(\text{elevation change})]^{0.2}$
Initial area time of concentration = 7.230 min.
Rainfall intensity = 2.362(In/Hr) for a 10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.872
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 56.00
Pervious area fraction = 0.100; Impervious fraction = 0.900
Initial subarea runoff = 0.577(CFS)
Total initial stream area = 0.280(Ac.)
Pervious area fraction = 0.100

++++
Process from Point/Station 130.000 to Point/Station 140.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****

Top of street segment elevation = 1799.000(Ft.)
End of street segment elevation = 1785.000(Ft.)
Length of street segment = 680.000(Ft.)
Height of curb above gutter flowline = 6.0(In.)
Width of half street (curb to crown) = 45.000(Ft.)
Distance from crown to crossfall grade break = 43.000(Ft.)
Slope from gutter to grade break (v/hz) = 0.010
Slope from grade break to crown (v/hz) = 0.010
Street flow is on [1] side(s) of the street
Distance from curb to property line = 5.000(Ft.)
Slope from curb to property line (v/hz) = 0.020
Gutter width = 2.000(Ft.)
Gutter hike from flowline = 0.200(In.)
Manning's N in gutter = 0.0140

Manning's N from gutter to grade break = 0.0160
Manning's N from grade break to crown = 0.0160
Estimated mean flow rate at midpoint of street = 1.588(CFS)
Depth of flow = 0.120(Ft.), Average velocity = 2.102(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width = 12.321(Ft.)
Flow velocity = 2.10(Ft/s)
Travel time = 5.39 min. TC = 12.62 min.
Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.867
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 56.00
Pervious area fraction = 0.100; Impervious fraction = 0.900
Rainfall intensity = 1.788(In/Hr) for a 10.0 year storm
Subarea runoff = 1.937(CFS) for 1.250(Ac.)
Total runoff = 2.514(CFS) Total area = 1.530(Ac.)
Street flow at end of street = 2.514(CFS)
Half street flow at end of street = 2.514(CFS)
Depth of flow = 0.143(Ft.), Average velocity = 2.352(Ft/s)
Flow width (from curb towards crown)= 14.642(Ft.)

+++++
Process from Point/Station 140.000 to Point/Station 140.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 2 in normal stream number 1
Stream flow area = 1.530(Ac.)
Runoff from this stream = 2.514(CFS)
Time of concentration = 12.62 min.
Rainfall intensity = 1.788(In/Hr)

+++++
Process from Point/Station 190.000 to Point/Station 141.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 245.000(Ft.)
Top (of initial area) elevation = 1791.000(Ft.)
Bottom (of initial area) elevation = 1784.000(Ft.)
Difference in elevation = 7.000(Ft.)
Slope = 0.02857 s(percent)= 2.86
TC = $k(0.300)*[(\text{length}^3)/(\text{elevation change})]^{0.2}$
Initial area time of concentration = 5.516 min.
Rainfall intensity = 2.705(In/Hr) for a 10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.875
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 56.00
Pervious area fraction = 0.100; Impervious fraction = 0.900
Initial subarea runoff = 1.467(CFS)
Total initial stream area = 0.620(Ac.)
Pervious area fraction = 0.100

++++++
 Process from Point/Station 141.000 to Point/Station 140.000
 **** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1780.000(Ft.)
 Downstream point/station elevation = 1779.000(Ft.)
 Pipe length = 120.00(Ft.) Manning's N = 0.010
 No. of pipes = 1 Required pipe flow = 1.467(CFS)
 Nearest computed pipe diameter = 9.00(In.)
 Calculated individual pipe flow = 1.467(CFS)
 Normal flow depth in pipe = 5.80(In.)
 Flow top width inside pipe = 8.62(In.)
 Critical Depth = 6.69(In.)
 Pipe flow velocity = 4.87(Ft/s)
 Travel time through pipe = 0.41 min.
 Time of concentration (TC) = 5.93 min.

++++++
 Process from Point/Station 140.000 to Point/Station 140.000
 **** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 2 in normal stream number 2
 Stream flow area = 0.620(Ac.)
 Runoff from this stream = 1.467(CFS)
 Time of concentration = 5.93 min.
 Rainfall intensity = 2.609(In/Hr)
 Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	2.514	12.62	1.788
2	1.467	5.93	2.609

Largest stream flow has longer time of concentration
 $Q_p = 2.514 + \text{sum of } \frac{Q_b \cdot I_a/I_b}{1.467 * 0.685} = 1.005$
 $Q_p = 3.519$

Total of 2 streams to confluence:
 Flow rates before confluence point:
 2.514 1.467
 Area of streams before confluence:
 1.530 0.620
 Results of confluence:
 Total flow rate = 3.519(CFS)
 Time of concentration = 12.623 min.
 Effective stream area after confluence = 2.150(Ac.)

++++++
 Process from Point/Station 140.000 to Point/Station 170.000
 **** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1779.000(Ft.)
 Downstream point/station elevation = 1778.000(Ft.)
 Pipe length = 275.00(Ft.) Manning's N = 0.010
 No. of pipes = 1 Required pipe flow = 3.519(CFS)
 Nearest computed pipe diameter = 15.00(In.)
 Calculated individual pipe flow = 3.519(CFS)
 Normal flow depth in pipe = 9.20(In.)

Flow top width inside pipe = 14.61(In.)
Critical Depth = 9.08(In.)
Pipe flow velocity = 4.46(Ft/s)
Travel time through pipe = 1.03 min.
Time of concentration (TC) = 13.65 min.

++++
Process from Point/Station 170.000 to Point/Station 170.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area = 2.150(Ac.)
Runoff from this stream = 3.519(CFS)
Time of concentration = 13.65 min.
Rainfall intensity = 1.719(In/Hr)
Program is now starting with Main Stream No. 3

++++
Process from Point/Station 180.000 to Point/Station 150.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 240.000(Ft.)
Top (of initial area) elevation = 1799.000(Ft.)
Bottom (of initial area) elevation = 1790.000(Ft.)
Difference in elevation = 9.000(Ft.)
Slope = 0.03750 s(percent)= 3.75
TC = $k(0.530)*[(\text{length}^3)/(\text{elevation change})]^{0.2}$
Initial area time of concentration = 9.153 min.
Rainfall intensity = 2.099(In/Hr) for a 10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.763
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 0.144(CFS)
Total initial stream area = 0.090(Ac.)
Pervious area fraction = 1.000

++++
Process from Point/Station 180.000 to Point/Station 150.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1795.000(Ft.)
Downstream point/station elevation = 1782.000(Ft.)
Pipe length = 230.00(Ft.) Manning's N = 0.010
No. of pipes = 1 Required pipe flow = 0.144(CFS)
Nearest computed pipe diameter = 3.00(In.)
Calculated individual pipe flow = 0.144(CFS)
Normal flow depth in pipe = 1.55(In.)
Flow top width inside pipe = 3.00(In.)
Critical Depth = 2.68(In.)
Pipe flow velocity = 5.64(Ft/s)
Travel time through pipe = 0.68 min.
Time of concentration (TC) = 9.83 min.

 Process from Point/Station 160.000 to Point/Station 160.000
 **** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 3 in normal stream number 1
 Stream flow area = 0.090(Ac.)
 Runoff from this stream = 0.144(CFS)
 Time of concentration = 9.83 min.
 Rainfall intensity = 2.026(In/Hr)

 Process from Point/Station 150.000 to Point/Station 160.000
 **** INITIAL AREA EVALUATION ****

Initial area flow distance = 230.000(Ft.)
 Top (of initial area) elevation = 1790.000(Ft.)
 Bottom (of initial area) elevation = 1786.000(Ft.)
 Difference in elevation = 4.000(Ft.)
 Slope = 0.01739 s(percent)= 1.74
 $TC = k(0.480)*[(length^3)/(elevation\ change)]^{0.2}$
 Initial area time of concentration = 9.503 min.
 Rainfall intensity = 2.060(In/Hr) for a 10.0 year storm
 SINGLE FAMILY (1 Acre Lot)
 Runoff Coefficient = 0.657
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 1.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 RI index for soil(AMC 2) = 56.00
 Pervious area fraction = 0.800; Impervious fraction = 0.200
 Initial subarea runoff = 0.867(CFS)
 Total initial stream area = 0.640(Ac.)
 Pervious area fraction = 0.800

 Process from Point/Station 160.000 to Point/Station 160.000
 **** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 3 in normal stream number 2
 Stream flow area = 0.640(Ac.)
 Runoff from this stream = 0.867(CFS)
 Time of concentration = 9.50 min.
 Rainfall intensity = 2.060(In/Hr)
 Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
------------	-----------------	----------	----------------------------

1	0.144	9.83	2.026
2	0.867	9.50	2.060

Largest stream flow has longer or shorter time of concentration

Qp = 0.867 + sum of
 $Qa \cdot \frac{Tb}{Ta}$
 $0.144 * 0.967 = 0.139$
 Qp = 1.006

Total of 2 streams to confluence:
 Flow rates before confluence point:
 0.144 0.867
 Area of streams before confluence:

0.090 0.640
 Results of confluence:
 Total flow rate = 1.006(CFS)
 Time of concentration = 9.503 min.
 Effective stream area after confluence = 0.730(Ac.)

+++++
 Process from Point/Station 170.000 to Point/Station 170.000
 **** CONFLUENCE OF MAIN STREAMS ****

 The following data inside Main Stream is listed:

In Main Stream number: 3
 Stream flow area = 0.730(Ac.)
 Runoff from this stream = 1.006(CFS)
 Time of concentration = 9.50 min.
 Rainfall intensity = 2.060(In/Hr)
 Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	6.361	17.86	1.503
2	3.519	13.65	1.719
3	1.006	9.50	2.060

Largest stream flow has longer time of concentration

Qp = 6.361 + sum of
 Qb Ia/Ib
 3.519 * 0.874 = 3.076
 Qb Ia/Ib
 1.006 * 0.729 = 0.734
 Qp = 10.172

Total of 3 main streams to confluence:

Flow rates before confluence point:
 6.361 3.519 1.006
 Area of streams before confluence:
 5.880 2.150 0.730

Results of confluence:

Total flow rate = 10.172(CFS)
 Time of concentration = 17.862 min.
 Effective stream area after confluence = 8.760(Ac.)
 End of computations, total study area = 8.76 (Ac.)
 The following figures may

be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.764
 Area averaged RI index number = 71.0

**POST-DEVELOPED INTERIM CONDITIONS
100 YEAR - 1 HOUR STORM EVENT**

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version 8.0
Rational Hydrology Study Date: 04/15/21 File:863post100int.out

REDLANDS BLVD AND HEMLOCK AVE, MV APN 488-310-012
POST-DEVELOPED INTERIM CONDITIONS
100 YEAR - 1 HOUR STORM EVENT
(Job 863)

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

English (in-lb) Units used in input data file

Program License Serial Number 6311

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.200(In/Hr)
Slope of intensity duration curve = 0.5000

Process from Point/Station 100.000 to Point/Station 110.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 1000.000(Ft.)
Top (of initial area) elevation = 1803.000(Ft.)
Bottom (of initial area) elevation = 1780.000(Ft.)
Difference in elevation = 23.000(Ft.)
Slope = 0.02300 s(percent)= 2.30
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 17.862 min.
Rainfall intensity = 2.199(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.769
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000

Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 9.939(CFS)
Total initial stream area = 5.880(Ac.)
Pervious area fraction = 1.000

Process from Point/Station 170.000 to Point/Station 170.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 1
Stream flow area = 5.880(Ac.)
Runoff from this stream = 9.939(CFS)
Time of concentration = 17.86 min.
Rainfall intensity = 2.199(In/Hr)
Program is now starting with Main Stream No. 2

Process from Point/Station 120.000 to Point/Station 130.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 290.000(Ft.)
Top (of initial area) elevation = 1802.000(Ft.)
Bottom (of initial area) elevation = 1799.000(Ft.)
Difference in elevation = 3.000(Ft.)
Slope = 0.01034 s(percent) = 1.03
TC = $k(0.300)*[(length^3)/(elevation\ change)]^{0.2}$
Initial area time of concentration = 7.230 min.
Rainfall intensity = 3.457(In/Hr) for a 100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 56.00
Pervious area fraction = 0.100; Impervious fraction = 0.900
Initial subarea runoff = 0.851(CFS)
Total initial stream area = 0.280(Ac.)
Pervious area fraction = 0.100

Process from Point/Station 130.000 to Point/Station 140.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****

Top of street segment elevation = 1799.000(Ft.)
End of street segment elevation = 1785.000(Ft.)
Length of street segment = 680.000(Ft.)
Height of curb above gutter flowline = 6.0(In.)
Width of half street (curb to crown) = 45.000(Ft.)
Distance from crown to crossfall grade break = 43.000(Ft.)
Slope from gutter to grade break (v/hz) = 0.010
Slope from grade break to crown (v/hz) = 0.010
Street flow is on [1] side(s) of the street
Distance from curb to property line = 5.000(Ft.)
Slope from curb to property line (v/hz) = 0.020
Gutter width = 2.000(Ft.)
Gutter hike from flowline = 0.200(In.)

Manning's N in gutter = 0.0140
 Manning's N from gutter to grade break = 0.0160
 Manning's N from grade break to crown = 0.0160
 Estimated mean flow rate at midpoint of street = 2.340(CFS)
 Depth of flow = 0.139(Ft.), Average velocity = 2.311(Ft/s)
 Streetflow hydraulics at midpoint of street travel:
 Halfstreet flow width = 14.252(Ft.)
 Flow velocity = 2.31(Ft/s)
 Travel time = 4.90 min. TC = 12.13 min.
 Adding area flow to street
 COMMERCIAL subarea type
 Runoff Coefficient = 0.875
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 1.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 RI index for soil(AMC 2) = 56.00
 Pervious area fraction = 0.100; Impervious fraction = 0.900
 Rainfall intensity = 2.668(In/Hr) for a 100.0 year storm
 Subarea runoff = 2.917(CFS) for 1.250(Ac.)
 Total runoff = 3.768(CFS) Total area = 1.530(Ac.)
 Street flow at end of street = 3.768(CFS)
 Half street flow at end of street = 3.768(CFS)
 Depth of flow = 0.167(Ft.), Average velocity = 2.599(Ft/s)
 Flow width (from curb towards crown)= 17.048(Ft.)

++++++
 Process from Point/Station 140.000 to Point/Station 140.000
 **** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 2 in normal stream number 1
 Stream flow area = 1.530(Ac.)
 Runoff from this stream = 3.768(CFS)
 Time of concentration = 12.13 min.
 Rainfall intensity = 2.668(In/Hr)

++++++
 Process from Point/Station 190.000 to Point/Station 141.000
 **** INITIAL AREA EVALUATION ****

Initial area flow distance = 245.000(Ft.)
 Top (of initial area) elevation = 1791.000(Ft.)
 Bottom (of initial area) elevation = 1784.000(Ft.)
 Difference in elevation = 7.000(Ft.)
 Slope = 0.02857 s(percent)= 2.86
 $TC = k(0.300)*[(length^3)/(elevation\ change)]^{0.2}$
 Initial area time of concentration = 5.516 min.
 Rainfall intensity = 3.958(In/Hr) for a 100.0 year storm
 COMMERCIAL subarea type
 Runoff Coefficient = 0.881
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 1.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 RI index for soil(AMC 2) = 56.00
 Pervious area fraction = 0.100; Impervious fraction = 0.900
 Initial subarea runoff = 2.162(CFS)
 Total initial stream area = 0.620(Ac.)
 Pervious area fraction = 0.100

+-----+
 Process from Point/Station 141.000 to Point/Station 140.000
 **** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1780.000(Ft.)
 Downstream point/station elevation = 1779.000(Ft.)
 Pipe length = 120.00(Ft.) Manning's N = 0.010
 No. of pipes = 1 Required pipe flow = 2.162(CFS)
 Nearest computed pipe diameter = 12.00(In.)
 Calculated individual pipe flow = 2.162(CFS)
 Normal flow depth in pipe = 6.08(In.)
 Flow top width inside pipe = 12.00(In.)
 Critical Depth = 7.55(In.)
 Pipe flow velocity = 5.41(Ft/s)
 Travel time through pipe = 0.37 min.
 Time of concentration (TC) = 5.89 min.

+-----+
 Process from Point/Station 140.000 to Point/Station 140.000
 **** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 2 in normal stream number 2
 Stream flow area = 0.620(Ac.)
 Runoff from this stream = 2.162(CFS)
 Time of concentration = 5.89 min.
 Rainfall intensity = 3.832(In/Hr)
 Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	3.768	12.13	2.668
2	2.162	5.89	3.832

Largest stream flow has longer time of concentration
 $Q_p = 3.768 + \text{sum of } \frac{Q_b \cdot I_a/I_b}{I_b}$
 $Q_p = 2.162 * 0.696 = 1.506$
 $Q_p = 5.274$

Total of 2 streams to confluence:
 Flow rates before confluence point:
 3.768 2.162
 Area of streams before confluence:
 1.530 0.620
 Results of confluence:
 Total flow rate = 5.274(CFS)
 Time of concentration = 12.133 min.
 Effective stream area after confluence = 2.150(Ac.)

+-----+
 Process from Point/Station 140.000 to Point/Station 170.000
 **** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1779.000(Ft.)
 Downstream point/station elevation = 1778.000(Ft.)
 Pipe length = 275.00(Ft.) Manning's N = 0.010
 No. of pipes = 1 Required pipe flow = 5.274(CFS)
 Nearest computed pipe diameter = 18.00(In.)
 Calculated individual pipe flow = 5.274(CFS)
 Normal flow depth in pipe = 10.48(In.)

Flow top width inside pipe = 17.76(In.)
Critical Depth = 10.62(In.)
Pipe flow velocity = 4.95(Ft/s)
Travel time through pipe = 0.93 min.
Time of concentration (TC) = 13.06 min.

Process from Point/Station 170.000 to Point/Station 170.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 2
Stream flow area = 2.150(Ac.)
Runoff from this stream = 5.274(CFS)
Time of concentration = 13.06 min.
Rainfall intensity = 2.572(In/Hr)
Program is now starting with Main Stream No. 3

Process from Point/Station 180.000 to Point/Station 150.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 240.000(Ft.)
Top (of initial area) elevation = 1799.000(Ft.)
Bottom (of initial area) elevation = 1790.000(Ft.)
Difference in elevation = 9.000(Ft.)
Slope = 0.03750 s(percent)= 3.75
TC = $k(0.530)*[(\text{length}^3)/(\text{elevation change})]^{0.2}$
Initial area time of concentration = 9.153 min.
Rainfall intensity = 3.072(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.802
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 0.222(CFS)
Total initial stream area = 0.090(Ac.)
Pervious area fraction = 1.000

Process from Point/Station 180.000 to Point/Station 150.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1795.000(Ft.)
Downstream point/station elevation = 1782.000(Ft.)
Pipe length = 230.00(Ft.) Manning's N = 0.010
No. of pipes = 1 Required pipe flow = 0.222(CFS)
Nearest computed pipe diameter = 3.00(In.)
Calculated individual pipe flow = 0.222(CFS)
Normal flow depth in pipe = 2.06(In.)
Flow top width inside pipe = 2.79(In.)
Critical depth could not be calculated.
Pipe flow velocity = 6.20(Ft/s)
Travel time through pipe = 0.62 min.
Time of concentration (TC) = 9.77 min.

 Process from Point/Station 160.000 to Point/Station 160.000
 **** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 3 in normal stream number 1
 Stream flow area = 0.090(Ac.)
 Runoff from this stream = 0.222(CFS)
 Time of concentration = 9.77 min.
 Rainfall intensity = 2.974(In/Hr)

 Process from Point/Station 150.000 to Point/Station 160.000
 **** INITIAL AREA EVALUATION ****

Initial area flow distance = 230.000(Ft.)
 Top (of initial area) elevation = 1790.000(Ft.)
 Bottom (of initial area) elevation = 1786.000(Ft.)
 Difference in elevation = 4.000(Ft.)
 Slope = 0.01739 s(percent)= 1.74
 $TC = k(0.480)*[(length^3)/(elevation\ change)]^{0.2}$
 Initial area time of concentration = 9.503 min.
 Rainfall intensity = 3.015(In/Hr) for a 100.0 year storm
 SINGLE FAMILY (1 Acre Lot)
 Runoff Coefficient = 0.714
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 1.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 RI index for soil(AMC 2) = 56.00
 Pervious area fraction = 0.800; Impervious fraction = 0.200
 Initial subarea runoff = 1.379(CFS)
 Total initial stream area = 0.640(Ac.)
 Pervious area fraction = 0.800

 Process from Point/Station 160.000 to Point/Station 160.000
 **** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 3 in normal stream number 2
 Stream flow area = 0.640(Ac.)
 Runoff from this stream = 1.379(CFS)
 Time of concentration = 9.50 min.
 Rainfall intensity = 3.015(In/Hr)
 Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
------------	-----------------	----------	----------------------------

1	0.222	9.77	2.974
2	1.379	9.50	3.015

Largest stream flow has longer or shorter time of concentration

Qp = 1.379 + sum of
 $Qa \frac{Tb}{Ta}$
 $0.222 * 0.973 = 0.216$
 Qp = 1.594

Total of 2 streams to confluence:
 Flow rates before confluence point:
 0.222 1.379
 Area of streams before confluence:

0.090 0.640
 Results of confluence:
 Total flow rate = 1.594(CFS)
 Time of concentration = 9.503 min.
 Effective stream area after confluence = 0.730(Ac.)

+++++
 Process from Point/Station 170.000 to Point/Station 170.000
 **** CONFLUENCE OF MAIN STREAMS ****

 The following data inside Main Stream is listed:

In Main Stream number: 3
 Stream flow area = 0.730(Ac.)
 Runoff from this stream = 1.594(CFS)
 Time of concentration = 9.50 min.
 Rainfall intensity = 3.015(In/Hr)
 Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	9.939	17.86	2.199
2	5.274	13.06	2.572
3	1.594	9.50	3.015

Largest stream flow has longer time of concentration

Qp = 9.939 + sum of
 Qb Ia/Ib
 5.274 * 0.855 = 4.510
 Qb Ia/Ib
 1.594 * 0.729 = 1.163
 Qp = 15.612

Total of 3 main streams to confluence:

Flow rates before confluence point:
 9.939 5.274 1.594
 Area of streams before confluence:
 5.880 2.150 0.730

Results of confluence:

Total flow rate = 15.612(CFS)
 Time of concentration = 17.862 min.
 Effective stream area after confluence = 8.760(Ac.)
 End of computations, total study area = 8.76 (Ac.)
 The following figures may

be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.764
 Area averaged RI index number = 71.0

**POST-DEVELOPED ULTIMATE CONDITION
10 YEAR - 1 HOUR STORM EVENT**

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version 8.0
Rational Hydrology Study Date: 04/15/21 File:863post10ult.out

REDLANDS BLVD AND HEMLOCK AVE, MV APN 488-310-012
POST-DEVELOPED ULTIMATE CONDITION
10 YEAR - 1 HOUR STORM EVENT
(Job 863)

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

English (in-lb) Units used in input data file

Program License Serial Number 6311

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.820(In/Hr)
Slope of intensity duration curve = 0.5000

Process from Point/Station 120.000 to Point/Station 130.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 290.000(Ft.)
Top (of initial area) elevation = 1802.000(Ft.)
Bottom (of initial area) elevation = 1799.000(Ft.)
Difference in elevation = 3.000(Ft.)
Slope = 0.01034 s(percent)= 1.03
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 7.230 min.
Rainfall intensity = 2.362(In/Hr) for a 10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.872
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000

Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 56.00
Pervious area fraction = 0.100; Impervious fraction = 0.900
Initial subarea runoff = 0.577(CFS)
Total initial stream area = 0.280(Ac.)
Pervious area fraction = 0.100

++++
Process from Point/Station 130.000 to Point/Station 140.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****

Top of street segment elevation = 1799.000(Ft.)
End of street segment elevation = 1785.000(Ft.)
Length of street segment = 680.000(Ft.)
Height of curb above gutter flowline = 6.0(In.)
Width of half street (curb to crown) = 45.000(Ft.)
Distance from crown to crossfall grade break = 43.000(Ft.)
Slope from gutter to grade break (v/hz) = 0.010
Slope from grade break to crown (v/hz) = 0.010
Street flow is on [1] side(s) of the street
Distance from curb to property line = 5.000(Ft.)
Slope from curb to property line (v/hz) = 0.020
Gutter width = 2.000(Ft.)
Gutter hike from flowline = 0.200(In.)
Manning's N in gutter = 0.0140
Manning's N from gutter to grade break = 0.0160
Manning's N from grade break to crown = 0.0160
Estimated mean flow rate at midpoint of street = 1.663(CFS)
Depth of flow = 0.122(Ft.), Average velocity = 2.125(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width = 12.536(Ft.)
Flow velocity = 2.13(Ft/s)
Travel time = 5.33 min. TC = 12.56 min.
Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.867
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 56.00
Pervious area fraction = 0.100; Impervious fraction = 0.900
Rainfall intensity = 1.792(In/Hr) for a 10.0 year storm
Subarea runoff = 2.082(CFS) for 1.340(Ac.)
Total runoff = 2.659(CFS) Total area = 1.620(Ac.)
Street flow at end of street = 2.659(CFS)
Half street flow at end of street = 2.659(CFS)
Depth of flow = 0.146(Ft.), Average velocity = 2.385(Ft/s)
Flow width (from curb towards crown)= 14.953(Ft.)

++++
Process from Point/Station 140.000 to Point/Station 140.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
Stream flow area = 1.620(Ac.)
Runoff from this stream = 2.659(CFS)
Time of concentration = 12.56 min.
Rainfall intensity = 1.792(In/Hr)

 Process from Point/Station 160.000 to Point/Station 150.000
 **** INITIAL AREA EVALUATION ****

Initial area flow distance = 305.000(Ft.)
 Top (of initial area) elevation = 1790.000(Ft.)
 Bottom (of initial area) elevation = 1784.000(Ft.)
 Difference in elevation = 6.000(Ft.)
 Slope = 0.01967 s(percent)= 1.97
 $TC = k(0.300)*[(length^3)/(elevation\ change)]^{0.2}$
 Initial area time of concentration = 6.487 min.
 Rainfall intensity = 2.494(In/Hr) for a 10.0 year storm
 COMMERCIAL subarea type
 Runoff Coefficient = 0.873
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 1.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 RI index for soil(AMC 2) = 56.00
 Pervious area fraction = 0.100; Impervious fraction = 0.900
 Initial subarea runoff = 2.744(CFS)
 Total initial stream area = 1.260(Ac.)
 Pervious area fraction = 0.100

 Process from Point/Station 150.000 to Point/Station 140.000
 **** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1780.000(Ft.)
 Downstream point/station elevation = 1779.000(Ft.)
 Pipe length = 120.00(Ft.) Manning's N = 0.010
 No. of pipes = 1 Required pipe flow = 2.744(CFS)
 Nearest computed pipe diameter = 12.00(In.)
 Calculated individual pipe flow = 2.744(CFS)
 Normal flow depth in pipe = 7.04(In.)
 Flow top width inside pipe = 11.82(In.)
 Critical Depth = 8.52(In.)
 Pipe flow velocity = 5.73(Ft/s)
 Travel time through pipe = 0.35 min.
 Time of concentration (TC) = 6.84 min.

 Process from Point/Station 140.000 to Point/Station 140.000
 **** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 2
 Stream flow area = 1.260(Ac.)
 Runoff from this stream = 2.744(CFS)
 Time of concentration = 6.84 min.
 Rainfall intensity = 2.429(In/Hr)
 Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
------------	-----------------	----------	----------------------------

1	2.659	12.56	1.792
2	2.744	6.84	2.429

Largest stream flow has longer or shorter time of concentration

Qp = 2.744 + sum of
 Qa Tb/Ta

2.659 * 0.544 = 1.447
Qp = 4.191

Total of 2 streams to confluence:
Flow rates before confluence point:
2.659 2.744
Area of streams before confluence:
1.620 1.260

Results of confluence:
Total flow rate = 4.191(CFS)
Time of concentration = 6.836 min.
Effective stream area after confluence = 2.880(Ac.)

Process from Point/Station 140.000 to Point/Station 170.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1779.000(Ft.)
Downstream point/station elevation = 1778.000(Ft.)
Pipe length = 280.00(Ft.) Manning's N = 0.010
No. of pipes = 1 Required pipe flow = 4.191(CFS)
Nearest computed pipe diameter = 15.00(In.)
Calculated individual pipe flow = 4.191(CFS)
Normal flow depth in pipe = 10.48(In.)
Flow top width inside pipe = 13.77(In.)
Critical Depth = 9.95(In.)
Pipe flow velocity = 4.58(Ft/s)
Travel time through pipe = 1.02 min.
Time of concentration (TC) = 7.86 min.

Process from Point/Station 170.000 to Point/Station 170.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
Stream flow area = 2.880(Ac.)
Runoff from this stream = 4.191(CFS)
Time of concentration = 7.86 min.
Rainfall intensity = 2.266(In/Hr)

Process from Point/Station 100.000 to Point/Station 110.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 1000.000(Ft.)
Top (of initial area) elevation = 1803.000(Ft.)
Bottom (of initial area) elevation = 1780.000(Ft.)
Difference in elevation = 23.000(Ft.)
Slope = 0.02300 s(percent)= 2.30
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 17.862 min.
Rainfall intensity = 1.503(In/Hr) for a 10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.720
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000

Initial subarea runoff = 6.361(CFS)
 Total initial stream area = 5.880(Ac.)
 Pervious area fraction = 1.000

Process from Point/Station 170.000 to Point/Station 170.000
 **** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 2
 Stream flow area = 5.880(Ac.)
 Runoff from this stream = 6.361(CFS)
 Time of concentration = 17.86 min.
 Rainfall intensity = 1.503(In/Hr)
 Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
------------	-----------------	----------	----------------------------

1	4.191	7.86	2.266
2	6.361	17.86	1.503

Largest stream flow has longer time of concentration

Qp = 6.361 + sum of

$$Qb \cdot \frac{Ia}{Ib}$$

$$4.191 * 0.663 = 2.779$$
 Qp = 9.141

Total of 2 streams to confluence:
 Flow rates before confluence point:
 4.191 6.361

Area of streams before confluence:
 2.880 5.880

Results of confluence:

Total flow rate = 9.141(CFS)
 Time of concentration = 17.862 min.
 Effective stream area after confluence = 8.760(Ac.)
 End of computations, total study area = 8.76 (Ac.)

The following figures may be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.704
 Area averaged RI index number = 70.8

**POST-DEVELOPED ULTIMATE CONDITION
100 YEAR - 1 HOUR STORM EVENT**

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version 8.0
Rational Hydrology Study Date: 04/15/21 File:863post100ult.out

REDLANDS BLVD AND HEMLOCK AVE, MV APN 488-310-012
POST-DEVELOPED ULTIMATE CONDITION
100 YEAR - 1 HOUR STORM EVENT
(Job 863)

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

English (in-lb) Units used in input data file

Program License Serial Number 6311

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.200(In/Hr)
Slope of intensity duration curve = 0.5000

Process from Point/Station 120.000 to Point/Station 130.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 290.000(Ft.)
Top (of initial area) elevation = 1802.000(Ft.)
Bottom (of initial area) elevation = 1799.000(Ft.)
Difference in elevation = 3.000(Ft.)
Slope = 0.01034 s(percent)= 1.03
TC = $k(0.300)*[(\text{length}^3)/(\text{elevation change})]^{0.2}$
Initial area time of concentration = 7.230 min.
Rainfall intensity = 3.457(In/Hr) for a 100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000

Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 56.00
Pervious area fraction = 0.100; Impervious fraction = 0.900
Initial subarea runoff = 0.851(CFS)
Total initial stream area = 0.280(Ac.)
Pervious area fraction = 0.100

++++
Process from Point/Station 130.000 to Point/Station 140.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****

Top of street segment elevation = 1799.000(Ft.)
End of street segment elevation = 1785.000(Ft.)
Length of street segment = 680.000(Ft.)
Height of curb above gutter flowline = 6.0(In.)
Width of half street (curb to crown) = 45.000(Ft.)
Distance from crown to crossfall grade break = 43.000(Ft.)
Slope from gutter to grade break (v/hz) = 0.010
Slope from grade break to crown (v/hz) = 0.010
Street flow is on [1] side(s) of the street
Distance from curb to property line = 5.000(Ft.)
Slope from curb to property line (v/hz) = 0.020
Gutter width = 2.000(Ft.)
Gutter hike from flowline = 0.200(In.)
Manning's N in gutter = 0.0140
Manning's N from gutter to grade break = 0.0160
Manning's N from grade break to crown = 0.0160
Estimated mean flow rate at midpoint of street = 2.450(CFS)
Depth of flow = 0.142(Ft.), Average velocity = 2.338(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width = 14.502(Ft.)
Flow velocity = 2.34(Ft/s)
Travel time = 4.85 min. TC = 12.08 min.
Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.875
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 56.00
Pervious area fraction = 0.100; Impervious fraction = 0.900
Rainfall intensity = 2.675(In/Hr) for a 100.0 year storm
Subarea runoff = 3.135(CFS) for 1.340(Ac.)
Total runoff = 3.986(CFS) Total area = 1.620(Ac.)
Street flow at end of street = 3.986(CFS)
Half street flow at end of street = 3.986(CFS)
Depth of flow = 0.171(Ft.), Average velocity = 2.635(Ft/s)
Flow width (from curb towards crown)= 17.412(Ft.)

++++
Process from Point/Station 140.000 to Point/Station 140.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
Stream flow area = 1.620(Ac.)
Runoff from this stream = 3.986(CFS)
Time of concentration = 12.08 min.
Rainfall intensity = 2.675(In/Hr)

+-----+
 Process from Point/Station 160.000 to Point/Station 150.000
 **** INITIAL AREA EVALUATION ****

Initial area flow distance = 305.000(Ft.)
 Top (of initial area) elevation = 1790.000(Ft.)
 Bottom (of initial area) elevation = 1784.000(Ft.)
 Difference in elevation = 6.000(Ft.)
 Slope = 0.01967 s(percent)= 1.97
 $TC = k(0.300)*[(length^3)/(elevation\ change)]^{0.2}$
 Initial area time of concentration = 6.487 min.
 Rainfall intensity = 3.649(In/Hr) for a 100.0 year storm
 COMMERCIAL subarea type
 Runoff Coefficient = 0.880
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 1.000
 Decimal fraction soil group C = 0.000
 Decimal fraction soil group D = 0.000
 RI index for soil(AMC 2) = 56.00
 Pervious area fraction = 0.100; Impervious fraction = 0.900
 Initial subarea runoff = 4.046(CFS)
 Total initial stream area = 1.260(Ac.)
 Pervious area fraction = 0.100

+-----+
 Process from Point/Station 150.000 to Point/Station 140.000
 **** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1780.000(Ft.)
 Downstream point/station elevation = 1779.000(Ft.)
 Pipe length = 120.00(Ft.) Manning's N = 0.010
 No. of pipes = 1 Required pipe flow = 4.046(CFS)
 Nearest computed pipe diameter = 12.00(In.)
 Calculated individual pipe flow = 4.046(CFS)
 Normal flow depth in pipe = 9.40(In.)
 Flow top width inside pipe = 9.89(In.)
 Critical Depth = 10.21(In.)
 Pipe flow velocity = 6.13(Ft/s)
 Travel time through pipe = 0.33 min.
 Time of concentration (TC) = 6.81 min.

+-----+
 Process from Point/Station 140.000 to Point/Station 140.000
 **** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 2
 Stream flow area = 1.260(Ac.)
 Runoff from this stream = 4.046(CFS)
 Time of concentration = 6.81 min.
 Rainfall intensity = 3.561(In/Hr)
 Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
------------	-----------------	----------	----------------------------

1	3.986	12.08	2.675
2	4.046	6.81	3.561

Largest stream flow has longer or shorter time of concentration

$Q_p = 4.046 + \text{sum of } Q_a$
 $T_c = T_b/T_a$

3.986 * 0.564 = 2.248
Qp = 6.295

Total of 2 streams to confluence:
Flow rates before confluence point:
3.986 4.046
Area of streams before confluence:
1.620 1.260

Results of confluence:
Total flow rate = 6.295(CFS)
Time of concentration = 6.814 min.
Effective stream area after confluence = 2.880(Ac.)

Process from Point/Station 140.000 to Point/Station 170.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1779.000(Ft.)
Downstream point/station elevation = 1778.000(Ft.)
Pipe length = 280.00(Ft.) Manning's N = 0.010
No. of pipes = 1 Required pipe flow = 6.295(CFS)
Nearest computed pipe diameter = 18.00(In.)
Calculated individual pipe flow = 6.295(CFS)
Normal flow depth in pipe = 11.86(In.)
Flow top width inside pipe = 17.07(In.)
Critical Depth = 11.63(In.)
Pipe flow velocity = 5.10(Ft/s)
Travel time through pipe = 0.92 min.
Time of concentration (TC) = 7.73 min.

Process from Point/Station 170.000 to Point/Station 170.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
Stream flow area = 2.880(Ac.)
Runoff from this stream = 6.295(CFS)
Time of concentration = 7.73 min.
Rainfall intensity = 3.343(In/Hr)

Process from Point/Station 100.000 to Point/Station 110.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 1000.000(Ft.)
Top (of initial area) elevation = 1803.000(Ft.)
Bottom (of initial area) elevation = 1780.000(Ft.)
Difference in elevation = 23.000(Ft.)
Slope = 0.02300 s(percent)= 2.30
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 17.862 min.
Rainfall intensity = 2.199(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.769
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 78.00
Pervious area fraction = 1.000; Impervious fraction = 0.000

Initial subarea runoff = 9.939(CFS)
 Total initial stream area = 5.880(Ac.)
 Pervious area fraction = 1.000

 Process from Point/Station 170.000 to Point/Station 170.000
 **** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 2
 Stream flow area = 5.880(Ac.)
 Runoff from this stream = 9.939(CFS)
 Time of concentration = 17.86 min.
 Rainfall intensity = 2.199(In/Hr)
 Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
------------	-----------------	----------	----------------------------

1	6.295	7.73	3.343
2	9.939	17.86	2.199

Largest stream flow has longer time of concentration

Qp = 9.939 + sum of

$$Qb \quad Ia/Ib$$

$$6.295 * 0.658 = 4.141$$
 Qp = 14.080

Total of 2 streams to confluence:
 Flow rates before confluence point:
 6.295 9.939

Area of streams before confluence:
 2.880 5.880

Results of confluence:

Total flow rate = 14.080(CFS)
 Time of concentration = 17.862 min.
 Effective stream area after confluence = 8.760(Ac.)
 End of computations, total study area = 8.76 (Ac.)

The following figures may
 be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.704
 Area averaged RI index number = 70.8

APPENDIX B

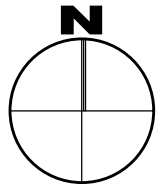
Unit Hydrograph Studies

EXHIBIT

INDEPENDENT PLAZA PRE-DEVELOPED CONDITIONS UNIT HYDROGRAPH MAP

WINCHESTER ASSOCIATES, INC.

APRIL 2021



NOT TO SCALE

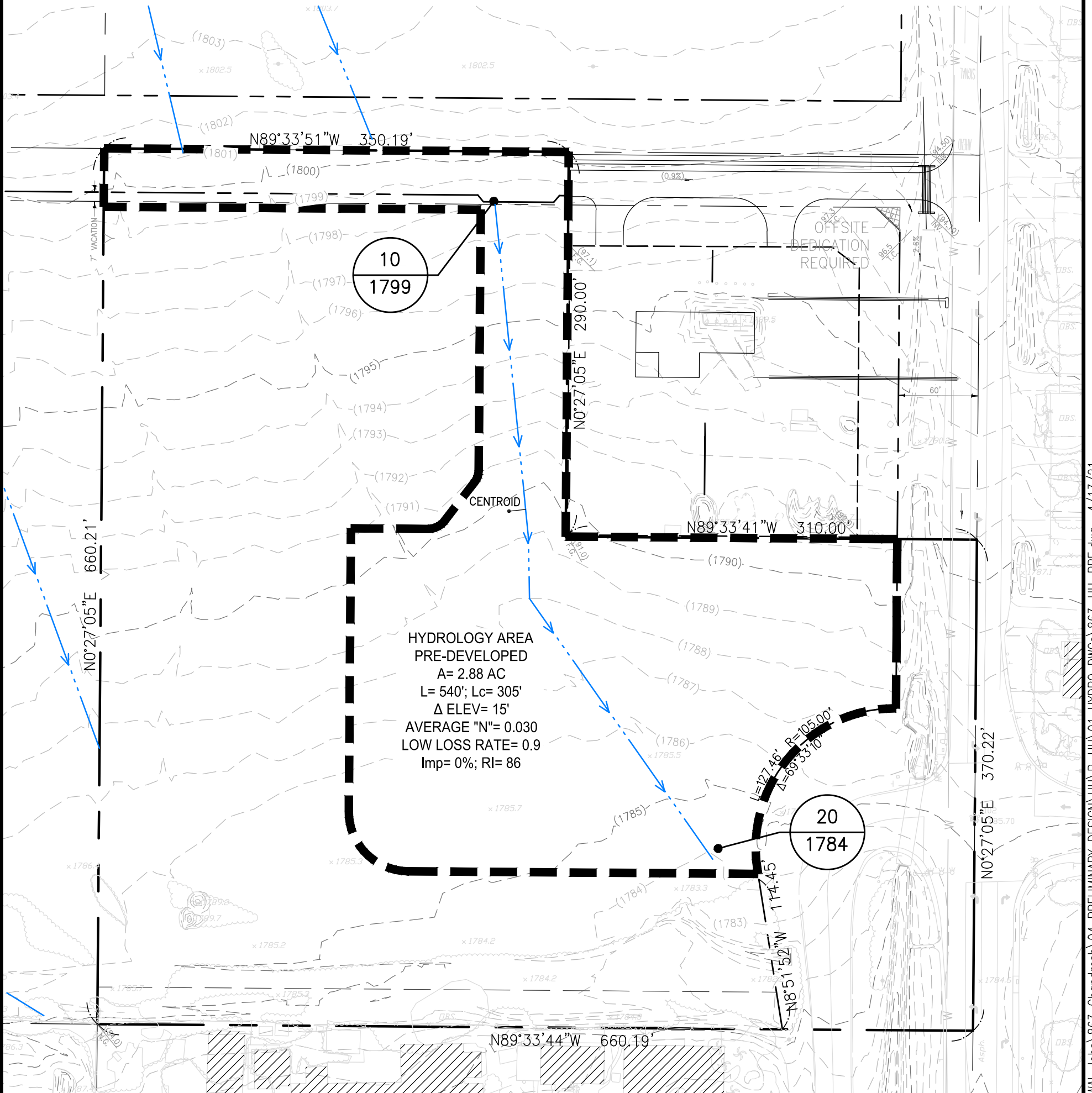
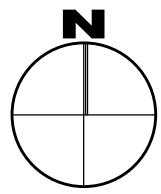


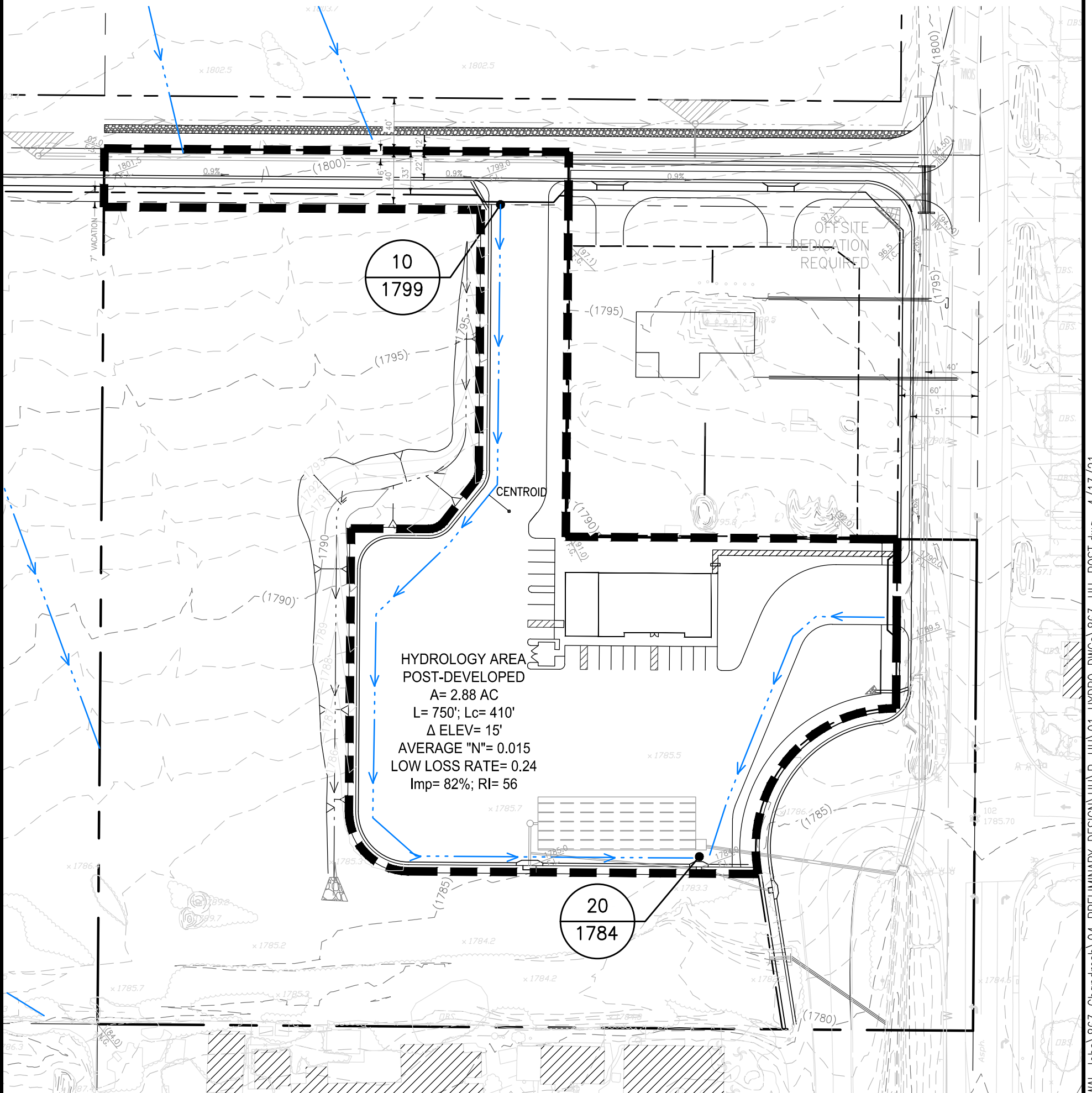
EXHIBIT INDEPENDENT PLAZA POST-DEVELOPED CONDITIONS UNIT HYDROGRAPH MAP

WINCHESTER ASSOCIATES, INC.

APRIL 2021

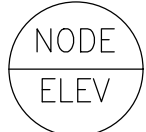


NOT TO SCALE



LEGEND:

--- DRAINAGE AREA BOUNDARY



UNIT HYDROGRAPH SUMMARY TABLE

INDEPENDENT PLAZA (APN 488-310-012), REDLANDS BOULEVARD AND HEMLOCK AVENUE
CITY OF MORENO VALLEY

4/9/2021

Table

STORM	DURATIO	UNIT HYDROGRAPH RESULTS				BASIN
		PRE-DEV CONDITIONS		POST-DEV CONDITIONS		
		Flood Volume	Peak Flow	Flood Volume	Peak Flow	Basin Volume
		CF	CFS	CF	CFS	Req'd (CF)
	1-HOUR	2055	2.4	4176.0	3.3	
	3-HOUR	1904	1.1	6441.0	1.7	
	6-HOUR	3089	1.5	11163.0	2.0	
2-YEAR	24-HOUR	1986	0.08	15096.0	0.6	
	1-HOUR	3420	3.5	5643.0	4.5	
	3-HOUR	3122	1.8	8497.0	2.3	
	6-HOUR	4377	1.9	13291.0	2.5	
5-YEAR	24-HOUR	2672	0.1	19935.0	0.8	
	1-HOUR	6402	4.8	6959.0	5.6	
	3-HOUR	7586	2.7	10334.0	3.0	
	6-HOUR	9307	2.7	15190.0	3.0	
10-YEAR	24-HOUR	9252	0.7	23595.0	0.9	
	1-HOUR	11784	7.9	11707.0	8.9	
	3-HOUR	17162	4.7	17014.0	4.8	
	6-HOUR	21586	4.2	22027.0	4.3	
100-YEAR	24-HOUR	31223	1.6	37710.0	1.6	

**Pre-developed conditions
2 year 1 hour**

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863pre12.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MV
Pre-developed conditions
2 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 540.00(Ft.)
Length along longest watercourse measured to centroid = 305.00(Ft.)
Length along longest watercourse = 0.102 Mi.
Length along longest watercourse measured to centroid = 0.058 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 146.6667 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.040 Hr.
Lag time = 2.38 Min.
25% of lag time = 0.60 Min.
40% of lag time = 0.95 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	0.50	1.44

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.20	3.46

STORM EVENT (YEAR) = 2.00

Total soil loss = 0.073(Ac.Ft)
 Total rainfall = 0.50(In)
 Flood volume = 2055.1 Cubic Feet
 Total soil loss = 3171.9 Cubic Feet

 Peak flow rate of this hydrograph = 2.378(CFS)

+++++

1 - H O U R S T O R M
 R u n o f f H y d r o g r a p h

 Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0002	0.03	Q				
0+10	0.0007	0.06	Q				
0+15	0.0012	0.08	QV				
0+20	0.0018	0.09	QV				
0+25	0.0024	0.09	Q V				
0+30	0.0032	0.12	Q V				
0+35	0.0046	0.20	Q V				
0+40	0.0071	0.37	Q V				
0+45	0.0124	0.76	Q	V			
0+50	0.0288	2.38		Q	V		
0+55	0.0421	1.94		Q		V	
1+ 0	0.0456	0.51	Q				V
1+ 5	0.0471	0.21	Q				V
1+10	0.0472	0.01	Q				V
1+15	0.0472	0.00	Q				V

**Pre-developed conditions
2 year 3 year**

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863pre32.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MV
Pre-developed conditions
2 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 540.00(Ft.)
Length along longest watercourse measured to centroid = 305.00(Ft.)
Length along longest watercourse = 0.102 Mi.
Length along longest watercourse measured to centroid = 0.058 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 146.6667 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.040 Hr.
Lag time = 2.38 Min.
25% of lag time = 0.60 Min.
40% of lag time = 0.95 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	0.81	2.33

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.86	5.36

STORM EVENT (YEAR) = 2.00

Area Averaged 2-Year Rainfall = 0.810(In)
 Area Averaged 100-Year Rainfall = 1.860(In)

Point rain (area averaged) = 0.810(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 0.810(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
2.880	86.00	0.000
Total Area Entered = 2.88(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-1	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
86.0	71.6	0.343	0.000	0.343	1.000	0.343
						Sum (F) = 0.343

Area averaged mean soil loss (F) (In/Hr) = 0.343
 Minimum soil loss rate ((In/Hr)) = 0.172
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	209.869	1.308
2	0.167	419.737	1.239
3	0.250	629.606	0.244
4	0.333	839.474	0.112
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	1.30	(0.343)	0.114	0.013
2	0.17	1.30	(0.343)	0.114	0.013
3	0.25	1.10	(0.343)	0.096	0.011
4	0.33	1.50	(0.343)	0.131	0.015
5	0.42	1.50	(0.343)	0.131	0.015
6	0.50	1.80	(0.343)	0.157	0.017
7	0.58	1.50	(0.343)	0.131	0.015
8	0.67	1.80	(0.343)	0.157	0.017
9	0.75	1.80	(0.343)	0.157	0.017
10	0.83	1.50	(0.343)	0.131	0.015
11	0.92	1.60	(0.343)	0.140	0.016
12	1.00	1.80	(0.343)	0.157	0.017
13	1.08	2.20	(0.343)	0.192	0.021
14	1.17	2.20	(0.343)	0.192	0.021
15	1.25	2.20	(0.343)	0.192	0.021
16	1.33	2.00	(0.343)	0.175	0.019
17	1.42	2.60	(0.343)	0.227	0.025
18	1.50	2.70	(0.343)	0.236	0.026
19	1.58	2.40	(0.343)	0.210	0.023

20	1.67	2.70	0.262	(0.343)	0.236	0.026
21	1.75	3.30	0.321	(0.343)	0.289	0.032
22	1.83	3.10	0.301	(0.343)	0.271	0.030
23	1.92	2.90	0.282	(0.343)	0.254	0.028
24	2.00	3.00	0.292	(0.343)	0.262	0.029
25	2.08	3.10	0.301	(0.343)	0.271	0.030
26	2.17	4.20	0.408	0.343	(0.367)	0.065
27	2.25	5.00	0.486	0.343	(0.437)	0.143
28	2.33	3.50	0.340	(0.343)	0.306	0.034
29	2.42	6.80	0.661	0.343	(0.595)	0.318
30	2.50	7.30	0.710	0.343	(0.639)	0.366
31	2.58	8.20	0.797	0.343	(0.717)	0.454
32	2.67	5.90	0.573	0.343	(0.516)	0.230
33	2.75	2.00	0.194	(0.343)	0.175	0.019
34	2.83	1.80	0.175	(0.343)	0.157	0.017
35	2.92	1.80	0.175	(0.343)	0.157	0.017
36	3.00	0.60	0.058	(0.343)	0.052	0.006

(Loss Rate Not Used)

Sum = 100.0 Sum = 2.2

Flood volume = Effective rainfall 0.18(In)
times area 2.9(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.63(In)
Total soil loss = 0.151(Ac.Ft)
Total rainfall = 0.81(In)
Flood volume = 1903.6 Cubic Feet
Total soil loss = 6564.4 Cubic Feet

Peak flow rate of this hydrograph = 1.130(CFS)

+++++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001	0.02	Q				
0+10	0.0003	0.03	Q				
0+15	0.0006	0.03	Q				
0+20	0.0008	0.04	Q				
0+25	0.0011	0.04	QV				
0+30	0.0014	0.05	QV				
0+35	0.0017	0.05	QV				
0+40	0.0021	0.05	QV				
0+45	0.0024	0.05	Q V				
0+50	0.0027	0.05	Q V				
0+55	0.0030	0.04	Q V				
1+ 0	0.0034	0.05	Q V				
1+ 5	0.0037	0.06	Q V				
1+10	0.0042	0.06	Q V				
1+15	0.0046	0.06	Q V				
1+20	0.0050	0.06	Q V				
1+25	0.0054	0.06	Q V				
1+30	0.0059	0.07	Q V				
1+35	0.0064	0.07	Q V				
1+40	0.0069	0.07	Q V				
1+45	0.0075	0.08	Q V				
1+50	0.0081	0.09	Q V				
1+55	0.0087	0.08	Q V				
2+ 0	0.0093	0.08	Q V				
2+ 5	0.0099	0.09	Q V				

2+10	0.0108	0.13	Q	V				
2+15	0.0127	0.28	Q		V			
2+20	0.0143	0.24	Q		V			
2+25	0.0178	0.50		Q		V		
2+30	0.0240	0.90		Q				
2+35	0.0318	1.13		Q			V	
2+40	0.0386	0.99		Q			V	
2+45	0.0418	0.46	Q					V
2+50	0.0428	0.15	Q					V
2+55	0.0433	0.08	Q					V
3+ 0	0.0436	0.04	Q					V
3+ 5	0.0437	0.01	Q					V
3+10	0.0437	0.00	Q					V
3+15	0.0437	0.00	Q					V

Pre-developed conditions
2 year 6 hour

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

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863pre62.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Indepenent Plaza, MV
Pre-developed conditions
2 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 540.00(Ft.)
Length along longest watercourse measured to centroid = 305.00(Ft.)
Length along longest watercourse = 0.102 Mi.
Length along longest watercourse measured to centroid = 0.058 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 146.6667 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.040 Hr.
Lag time = 2.38 Min.
25% of lag time = 0.60 Min.
40% of lag time = 0.95 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.40	4.03

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	2.50	7.20

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 1.400(In)
Area Averaged 100-Year Rainfall = 2.500(In)

Point rain (area averaged) = 1.400(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 1.400(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 2.880 86.00 0.000
 Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-1	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
86.0	71.6	0.343	0.000	0.343	1.000	0.343
						Sum (F) = 0.343

Area averaged mean soil loss (F) (In/Hr) = 0.343
 Minimum soil loss rate ((In/Hr)) = 0.172
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	209.869	45.056
2	0.167	419.737	42.685
3	0.250	629.606	8.406
4	0.333	839.474	3.853
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max Low	Effective (In/Hr)
1	0.08	0.50	0.084 (0.343)	0.076 0.008
2	0.17	0.60	0.101 (0.343)	0.091 0.010
3	0.25	0.60	0.101 (0.343)	0.091 0.010
4	0.33	0.60	0.101 (0.343)	0.091 0.010
5	0.42	0.60	0.101 (0.343)	0.091 0.010
6	0.50	0.70	0.118 (0.343)	0.106 0.012
7	0.58	0.70	0.118 (0.343)	0.106 0.012
8	0.67	0.70	0.118 (0.343)	0.106 0.012
9	0.75	0.70	0.118 (0.343)	0.106 0.012
10	0.83	0.70	0.118 (0.343)	0.106 0.012
11	0.92	0.70	0.118 (0.343)	0.106 0.012
12	1.00	0.80	0.134 (0.343)	0.121 0.013
13	1.08	0.80	0.134 (0.343)	0.121 0.013
14	1.17	0.80	0.134 (0.343)	0.121 0.013
15	1.25	0.80	0.134 (0.343)	0.121 0.013
16	1.33	0.80	0.134 (0.343)	0.121 0.013
17	1.42	0.80	0.134 (0.343)	0.121 0.013
18	1.50	0.80	0.134 (0.343)	0.121 0.013
19	1.58	0.80	0.134 (0.343)	0.121 0.013
20	1.67	0.80	0.134 (0.343)	0.121 0.013
21	1.75	0.80	0.134 (0.343)	0.121 0.013

22	1.83	0.80	0.134	(0.343)	0.121	0.013
23	1.92	0.80	0.134	(0.343)	0.121	0.013
24	2.00	0.90	0.151	(0.343)	0.136	0.015
25	2.08	0.80	0.134	(0.343)	0.121	0.013
26	2.17	0.90	0.151	(0.343)	0.136	0.015
27	2.25	0.90	0.151	(0.343)	0.136	0.015
28	2.33	0.90	0.151	(0.343)	0.136	0.015
29	2.42	0.90	0.151	(0.343)	0.136	0.015
30	2.50	0.90	0.151	(0.343)	0.136	0.015
31	2.58	0.90	0.151	(0.343)	0.136	0.015
32	2.67	0.90	0.151	(0.343)	0.136	0.015
33	2.75	1.00	0.168	(0.343)	0.151	0.017
34	2.83	1.00	0.168	(0.343)	0.151	0.017
35	2.92	1.00	0.168	(0.343)	0.151	0.017
36	3.00	1.00	0.168	(0.343)	0.151	0.017
37	3.08	1.00	0.168	(0.343)	0.151	0.017
38	3.17	1.10	0.185	(0.343)	0.166	0.018
39	3.25	1.10	0.185	(0.343)	0.166	0.018
40	3.33	1.10	0.185	(0.343)	0.166	0.018
41	3.42	1.20	0.202	(0.343)	0.181	0.020
42	3.50	1.30	0.218	(0.343)	0.197	0.022
43	3.58	1.40	0.235	(0.343)	0.212	0.024
44	3.67	1.40	0.235	(0.343)	0.212	0.024
45	3.75	1.50	0.252	(0.343)	0.227	0.025
46	3.83	1.50	0.252	(0.343)	0.227	0.025
47	3.92	1.60	0.269	(0.343)	0.242	0.027
48	4.00	1.60	0.269	(0.343)	0.242	0.027
49	4.08	1.70	0.286	(0.343)	0.257	0.029
50	4.17	1.80	0.302	(0.343)	0.272	0.030
51	4.25	1.90	0.319	(0.343)	0.287	0.032
52	4.33	2.00	0.336	(0.343)	0.302	0.034
53	4.42	2.10	0.353	(0.343)	0.318	0.035
54	4.50	2.10	0.353	(0.343)	0.318	0.035
55	4.58	2.20	0.370	(0.343)	0.333	0.037
56	4.67	2.30	0.386	0.343	(0.348)	0.043
57	4.75	2.40	0.403	0.343	(0.363)	0.060
58	4.83	2.40	0.403	0.343	(0.363)	0.060
59	4.92	2.50	0.420	0.343	(0.378)	0.077
60	5.00	2.60	0.437	0.343	(0.393)	0.094
61	5.08	3.10	0.521	0.343	(0.469)	0.178
62	5.17	3.60	0.605	0.343	(0.544)	0.262
63	5.25	3.90	0.655	0.343	(0.590)	0.312
64	5.33	4.20	0.706	0.343	(0.635)	0.362
65	5.42	4.70	0.790	0.343	(0.711)	0.446
66	5.50	5.60	0.941	0.343	(0.847)	0.598
67	5.58	1.90	0.319	(0.343)	0.287	0.032
68	5.67	0.90	0.151	(0.343)	0.136	0.015
69	5.75	0.60	0.101	(0.343)	0.091	0.010
70	5.83	0.50	0.084	(0.343)	0.076	0.008
71	5.92	0.30	0.050	(0.343)	0.045	0.005
72	6.00	0.20	0.034	(0.343)	0.030	0.003

(Loss Rate Not Used)

Sum = 100.0 Sum = 3.5

Flood volume = Effective rainfall 0.30(In)
times area 2.9(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)
Total soil loss = 1.10(In)
Total soil loss = 0.265(Ac.Ft)
Total rainfall = 1.40(In)
Flood volume = 3088.7 Cubic Feet
Total soil loss = 11547.3 Cubic Feet

Peak flow rate of this hydrograph = 1.459(CFS)

+++++

6 - H O U R S T O R M
 R u n o f f H y d r o g r a p h

 Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume	Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001		0.01	Q				
0+10	0.0002		0.02	Q				
0+15	0.0004		0.03	Q				
0+20	0.0006		0.03	Q				
0+25	0.0008		0.03	Q				
0+30	0.0010		0.03	Q				
0+35	0.0013		0.03	Q				
0+40	0.0015		0.03	Q				
0+45	0.0017		0.03	Q				
0+50	0.0020		0.03	QV				
0+55	0.0022		0.03	QV				
1+ 0	0.0025		0.04	QV				
1+ 5	0.0027		0.04	QV				
1+10	0.0030		0.04	QV				
1+15	0.0033		0.04	QV				
1+20	0.0035		0.04	QV				
1+25	0.0038		0.04	Q V				
1+30	0.0041		0.04	Q V				
1+35	0.0043		0.04	Q V				
1+40	0.0046		0.04	Q V				
1+45	0.0049		0.04	Q V				
1+50	0.0052		0.04	Q V				
1+55	0.0054		0.04	Q V				
2+ 0	0.0057		0.04	Q V				
2+ 5	0.0060		0.04	Q V				
2+10	0.0063		0.04	Q V				
2+15	0.0066		0.04	Q V				
2+20	0.0069		0.04	Q V				
2+25	0.0072		0.04	Q V				
2+30	0.0075		0.04	Q V				
2+35	0.0078		0.04	Q V				
2+40	0.0081		0.04	Q V				
2+45	0.0084		0.05	Q V				
2+50	0.0087		0.05	Q V				
2+55	0.0091		0.05	Q V				
3+ 0	0.0094		0.05	Q V				
3+ 5	0.0097		0.05	Q V				
3+10	0.0101		0.05	Q V				
3+15	0.0105		0.05	Q V				
3+20	0.0108		0.05	Q V				
3+25	0.0112		0.06	Q V				
3+30	0.0116		0.06	Q V				
3+35	0.0121		0.06	Q V				
3+40	0.0125		0.07	Q V				
3+45	0.0130		0.07	Q V				
3+50	0.0135		0.07	Q V				
3+55	0.0140		0.08	Q V				
4+ 0	0.0146		0.08	Q V				
4+ 5	0.0151		0.08	Q V				
4+10	0.0157		0.08	Q V				
4+15	0.0163		0.09	Q V				
4+20	0.0170		0.09	Q V				
4+25	0.0176		0.10	Q V				
4+30	0.0183		0.10	Q V				

4+35	0.0191	0.10	Q	V				
4+40	0.0199	0.11	Q	V				
4+45	0.0209	0.15	Q	V				
4+50	0.0220	0.17	Q	V				
4+55	0.0234	0.19	Q	V				
5+ 0	0.0250	0.24	Q	V				
5+ 5	0.0276	0.37	Q	V				
5+10	0.0317	0.59	Q	V				
5+15	0.0371	0.79	Q	V				
5+20	0.0436	0.94	Q	V				
5+25	0.0514	1.14	Q	V				
5+30	0.0615	1.46	Q	V				
5+35	0.0679	0.93	Q	V				
5+40	0.0697	0.26	Q	V				
5+45	0.0704	0.11	Q	V				
5+50	0.0706	0.03	Q	V				
5+55	0.0708	0.02	Q	V				
6+ 0	0.0709	0.01	Q	V				
6+ 5	0.0709	0.01	Q	V				
6+10	0.0709	0.00	Q	V				
6+15	0.0709	0.00	Q	V				

**Pre-developed conditions
2 year 24 hour**

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863pre242.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MV
Pre-developed conditions
2 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 540.00(Ft.)
Length along longest watercourse measured to centroid = 305.00(Ft.)
Length along longest watercourse = 0.102 Mi.
Length along longest watercourse measured to centroid = 0.058 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 146.6667 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.040 Hr.
Lag time = 2.38 Min.
25% of lag time = 0.60 Min.
40% of lag time = 0.95 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.90	5.47

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	4.50	12.96

STORM EVENT (YEAR) = 2.00

Area Averaged 2-Year Rainfall = 1.900(In)
 Area Averaged 100-Year Rainfall = 4.500(In)

Point rain (area averaged) = 1.900(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 1.900(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 2.880 86.00 0.000
 Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-1	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
86.0	71.6	0.343	0.000	0.343	1.000	0.343
						Sum (F) = 0.343

Area averaged mean soil loss (F) (In/Hr) = 0.343
 Minimum soil loss rate ((In/Hr)) = 0.172
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	209.869	1.308
2	0.167	419.737	1.239
3	0.250	629.606	0.244
4	0.333	839.474	0.112
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	0.07	(0.608)	0.014	0.002
2	0.17	0.07	(0.606)	0.014	0.002
3	0.25	0.07	(0.604)	0.014	0.002
4	0.33	0.10	(0.601)	0.021	0.002
5	0.42	0.10	(0.599)	0.021	0.002
6	0.50	0.10	(0.597)	0.021	0.002
7	0.58	0.10	(0.594)	0.021	0.002
8	0.67	0.10	(0.592)	0.021	0.002
9	0.75	0.10	(0.590)	0.021	0.002
10	0.83	0.13	(0.587)	0.027	0.003
11	0.92	0.13	(0.585)	0.027	0.003
12	1.00	0.13	(0.583)	0.027	0.003
13	1.08	0.10	(0.580)	0.021	0.002
14	1.17	0.10	(0.578)	0.021	0.002
15	1.25	0.10	(0.576)	0.021	0.002
16	1.33	0.10	(0.573)	0.021	0.002
17	1.42	0.10	(0.571)	0.021	0.002
18	1.50	0.10	(0.569)	0.021	0.002
19	1.58	0.10	(0.567)	0.021	0.002

20	1.67	0.10	0.023	(0.564)	0.021	0.002
21	1.75	0.10	0.023	(0.562)	0.021	0.002
22	1.83	0.13	0.030	(0.560)	0.027	0.003
23	1.92	0.13	0.030	(0.558)	0.027	0.003
24	2.00	0.13	0.030	(0.555)	0.027	0.003
25	2.08	0.13	0.030	(0.553)	0.027	0.003
26	2.17	0.13	0.030	(0.551)	0.027	0.003
27	2.25	0.13	0.030	(0.549)	0.027	0.003
28	2.33	0.13	0.030	(0.546)	0.027	0.003
29	2.42	0.13	0.030	(0.544)	0.027	0.003
30	2.50	0.13	0.030	(0.542)	0.027	0.003
31	2.58	0.17	0.038	(0.540)	0.034	0.004
32	2.67	0.17	0.038	(0.537)	0.034	0.004
33	2.75	0.17	0.038	(0.535)	0.034	0.004
34	2.83	0.17	0.038	(0.533)	0.034	0.004
35	2.92	0.17	0.038	(0.531)	0.034	0.004
36	3.00	0.17	0.038	(0.529)	0.034	0.004
37	3.08	0.17	0.038	(0.526)	0.034	0.004
38	3.17	0.17	0.038	(0.524)	0.034	0.004
39	3.25	0.17	0.038	(0.522)	0.034	0.004
40	3.33	0.17	0.038	(0.520)	0.034	0.004
41	3.42	0.17	0.038	(0.518)	0.034	0.004
42	3.50	0.17	0.038	(0.516)	0.034	0.004
43	3.58	0.17	0.038	(0.513)	0.034	0.004
44	3.67	0.17	0.038	(0.511)	0.034	0.004
45	3.75	0.17	0.038	(0.509)	0.034	0.004
46	3.83	0.20	0.046	(0.507)	0.041	0.005
47	3.92	0.20	0.046	(0.505)	0.041	0.005
48	4.00	0.20	0.046	(0.503)	0.041	0.005
49	4.08	0.20	0.046	(0.501)	0.041	0.005
50	4.17	0.20	0.046	(0.498)	0.041	0.005
51	4.25	0.20	0.046	(0.496)	0.041	0.005
52	4.33	0.23	0.053	(0.494)	0.048	0.005
53	4.42	0.23	0.053	(0.492)	0.048	0.005
54	4.50	0.23	0.053	(0.490)	0.048	0.005
55	4.58	0.23	0.053	(0.488)	0.048	0.005
56	4.67	0.23	0.053	(0.486)	0.048	0.005
57	4.75	0.23	0.053	(0.484)	0.048	0.005
58	4.83	0.27	0.061	(0.482)	0.055	0.006
59	4.92	0.27	0.061	(0.480)	0.055	0.006
60	5.00	0.27	0.061	(0.477)	0.055	0.006
61	5.08	0.20	0.046	(0.475)	0.041	0.005
62	5.17	0.20	0.046	(0.473)	0.041	0.005
63	5.25	0.20	0.046	(0.471)	0.041	0.005
64	5.33	0.23	0.053	(0.469)	0.048	0.005
65	5.42	0.23	0.053	(0.467)	0.048	0.005
66	5.50	0.23	0.053	(0.465)	0.048	0.005
67	5.58	0.27	0.061	(0.463)	0.055	0.006
68	5.67	0.27	0.061	(0.461)	0.055	0.006
69	5.75	0.27	0.061	(0.459)	0.055	0.006
70	5.83	0.27	0.061	(0.457)	0.055	0.006
71	5.92	0.27	0.061	(0.455)	0.055	0.006
72	6.00	0.27	0.061	(0.453)	0.055	0.006
73	6.08	0.30	0.068	(0.451)	0.062	0.007
74	6.17	0.30	0.068	(0.449)	0.062	0.007
75	6.25	0.30	0.068	(0.447)	0.062	0.007
76	6.33	0.30	0.068	(0.445)	0.062	0.007
77	6.42	0.30	0.068	(0.443)	0.062	0.007
78	6.50	0.30	0.068	(0.441)	0.062	0.007
79	6.58	0.33	0.076	(0.439)	0.068	0.008
80	6.67	0.33	0.076	(0.437)	0.068	0.008
81	6.75	0.33	0.076	(0.435)	0.068	0.008
82	6.83	0.33	0.076	(0.433)	0.068	0.008

83	6.92	0.33	0.076	(0.431)	0.068	0.008
84	7.00	0.33	0.076	(0.429)	0.068	0.008
85	7.08	0.33	0.076	(0.427)	0.068	0.008
86	7.17	0.33	0.076	(0.425)	0.068	0.008
87	7.25	0.33	0.076	(0.423)	0.068	0.008
88	7.33	0.37	0.084	(0.421)	0.075	0.008
89	7.42	0.37	0.084	(0.419)	0.075	0.008
90	7.50	0.37	0.084	(0.417)	0.075	0.008
91	7.58	0.40	0.091	(0.416)	0.082	0.009
92	7.67	0.40	0.091	(0.414)	0.082	0.009
93	7.75	0.40	0.091	(0.412)	0.082	0.009
94	7.83	0.43	0.099	(0.410)	0.089	0.010
95	7.92	0.43	0.099	(0.408)	0.089	0.010
96	8.00	0.43	0.099	(0.406)	0.089	0.010
97	8.08	0.50	0.114	(0.404)	0.103	0.011
98	8.17	0.50	0.114	(0.402)	0.103	0.011
99	8.25	0.50	0.114	(0.400)	0.103	0.011
100	8.33	0.50	0.114	(0.399)	0.103	0.011
101	8.42	0.50	0.114	(0.397)	0.103	0.011
102	8.50	0.50	0.114	(0.395)	0.103	0.011
103	8.58	0.53	0.122	(0.393)	0.109	0.012
104	8.67	0.53	0.122	(0.391)	0.109	0.012
105	8.75	0.53	0.122	(0.389)	0.109	0.012
106	8.83	0.57	0.129	(0.387)	0.116	0.013
107	8.92	0.57	0.129	(0.386)	0.116	0.013
108	9.00	0.57	0.129	(0.384)	0.116	0.013
109	9.08	0.63	0.144	(0.382)	0.130	0.014
110	9.17	0.63	0.144	(0.380)	0.130	0.014
111	9.25	0.63	0.144	(0.378)	0.130	0.014
112	9.33	0.67	0.152	(0.377)	0.137	0.015
113	9.42	0.67	0.152	(0.375)	0.137	0.015
114	9.50	0.67	0.152	(0.373)	0.137	0.015
115	9.58	0.70	0.160	(0.371)	0.144	0.016
116	9.67	0.70	0.160	(0.369)	0.144	0.016
117	9.75	0.70	0.160	(0.368)	0.144	0.016
118	9.83	0.73	0.167	(0.366)	0.150	0.017
119	9.92	0.73	0.167	(0.364)	0.150	0.017
120	10.00	0.73	0.167	(0.362)	0.150	0.017
121	10.08	0.50	0.114	(0.361)	0.103	0.011
122	10.17	0.50	0.114	(0.359)	0.103	0.011
123	10.25	0.50	0.114	(0.357)	0.103	0.011
124	10.33	0.50	0.114	(0.355)	0.103	0.011
125	10.42	0.50	0.114	(0.354)	0.103	0.011
126	10.50	0.50	0.114	(0.352)	0.103	0.011
127	10.58	0.67	0.152	(0.350)	0.137	0.015
128	10.67	0.67	0.152	(0.348)	0.137	0.015
129	10.75	0.67	0.152	(0.347)	0.137	0.015
130	10.83	0.67	0.152	(0.345)	0.137	0.015
131	10.92	0.67	0.152	(0.343)	0.137	0.015
132	11.00	0.67	0.152	(0.342)	0.137	0.015
133	11.08	0.63	0.144	(0.340)	0.130	0.014
134	11.17	0.63	0.144	(0.338)	0.130	0.014
135	11.25	0.63	0.144	(0.337)	0.130	0.014
136	11.33	0.63	0.144	(0.335)	0.130	0.014
137	11.42	0.63	0.144	(0.333)	0.130	0.014
138	11.50	0.63	0.144	(0.332)	0.130	0.014
139	11.58	0.57	0.129	(0.330)	0.116	0.013
140	11.67	0.57	0.129	(0.328)	0.116	0.013
141	11.75	0.57	0.129	(0.327)	0.116	0.013
142	11.83	0.60	0.137	(0.325)	0.123	0.014
143	11.92	0.60	0.137	(0.324)	0.123	0.014
144	12.00	0.60	0.137	(0.322)	0.123	0.014
145	12.08	0.83	0.190	(0.320)	0.171	0.019

146	12.17	0.83	0.190	(0.319)	0.171	0.019
147	12.25	0.83	0.190	(0.317)	0.171	0.019
148	12.33	0.87	0.198	(0.316)	0.178	0.020
149	12.42	0.87	0.198	(0.314)	0.178	0.020
150	12.50	0.87	0.198	(0.312)	0.178	0.020
151	12.58	0.93	0.213	(0.311)	0.192	0.021
152	12.67	0.93	0.213	(0.309)	0.192	0.021
153	12.75	0.93	0.213	(0.308)	0.192	0.021
154	12.83	0.97	0.220	(0.306)	0.198	0.022
155	12.92	0.97	0.220	(0.305)	0.198	0.022
156	13.00	0.97	0.220	(0.303)	0.198	0.022
157	13.08	1.13	0.258	(0.301)	0.233	0.026
158	13.17	1.13	0.258	(0.300)	0.233	0.026
159	13.25	1.13	0.258	(0.298)	0.233	0.026
160	13.33	1.13	0.258	(0.297)	0.233	0.026
161	13.42	1.13	0.258	(0.295)	0.233	0.026
162	13.50	1.13	0.258	(0.294)	0.233	0.026
163	13.58	0.77	0.175	(0.292)	0.157	0.017
164	13.67	0.77	0.175	(0.291)	0.157	0.017
165	13.75	0.77	0.175	(0.289)	0.157	0.017
166	13.83	0.77	0.175	(0.288)	0.157	0.017
167	13.92	0.77	0.175	(0.286)	0.157	0.017
168	14.00	0.77	0.175	(0.285)	0.157	0.017
169	14.08	0.90	0.205	(0.284)	0.185	0.021
170	14.17	0.90	0.205	(0.282)	0.185	0.021
171	14.25	0.90	0.205	(0.281)	0.185	0.021
172	14.33	0.87	0.198	(0.279)	0.178	0.020
173	14.42	0.87	0.198	(0.278)	0.178	0.020
174	14.50	0.87	0.198	(0.276)	0.178	0.020
175	14.58	0.87	0.198	(0.275)	0.178	0.020
176	14.67	0.87	0.198	(0.274)	0.178	0.020
177	14.75	0.87	0.198	(0.272)	0.178	0.020
178	14.83	0.83	0.190	(0.271)	0.171	0.019
179	14.92	0.83	0.190	(0.269)	0.171	0.019
180	15.00	0.83	0.190	(0.268)	0.171	0.019
181	15.08	0.80	0.182	(0.267)	0.164	0.018
182	15.17	0.80	0.182	(0.265)	0.164	0.018
183	15.25	0.80	0.182	(0.264)	0.164	0.018
184	15.33	0.77	0.175	(0.263)	0.157	0.017
185	15.42	0.77	0.175	(0.261)	0.157	0.017
186	15.50	0.77	0.175	(0.260)	0.157	0.017
187	15.58	0.63	0.144	(0.259)	0.130	0.014
188	15.67	0.63	0.144	(0.257)	0.130	0.014
189	15.75	0.63	0.144	(0.256)	0.130	0.014
190	15.83	0.63	0.144	(0.255)	0.130	0.014
191	15.92	0.63	0.144	(0.253)	0.130	0.014
192	16.00	0.63	0.144	(0.252)	0.130	0.014
193	16.08	0.13	0.030	(0.251)	0.027	0.003
194	16.17	0.13	0.030	(0.249)	0.027	0.003
195	16.25	0.13	0.030	(0.248)	0.027	0.003
196	16.33	0.13	0.030	(0.247)	0.027	0.003
197	16.42	0.13	0.030	(0.246)	0.027	0.003
198	16.50	0.13	0.030	(0.244)	0.027	0.003
199	16.58	0.10	0.023	(0.243)	0.021	0.002
200	16.67	0.10	0.023	(0.242)	0.021	0.002
201	16.75	0.10	0.023	(0.241)	0.021	0.002
202	16.83	0.10	0.023	(0.239)	0.021	0.002
203	16.92	0.10	0.023	(0.238)	0.021	0.002
204	17.00	0.10	0.023	(0.237)	0.021	0.002
205	17.08	0.17	0.038	(0.236)	0.034	0.004
206	17.17	0.17	0.038	(0.235)	0.034	0.004
207	17.25	0.17	0.038	(0.233)	0.034	0.004
208	17.33	0.17	0.038	(0.232)	0.034	0.004

209	17.42	0.17	0.038	(0.231)	0.034	0.004
210	17.50	0.17	0.038	(0.230)	0.034	0.004
211	17.58	0.17	0.038	(0.229)	0.034	0.004
212	17.67	0.17	0.038	(0.228)	0.034	0.004
213	17.75	0.17	0.038	(0.227)	0.034	0.004
214	17.83	0.13	0.030	(0.225)	0.027	0.003
215	17.92	0.13	0.030	(0.224)	0.027	0.003
216	18.00	0.13	0.030	(0.223)	0.027	0.003
217	18.08	0.13	0.030	(0.222)	0.027	0.003
218	18.17	0.13	0.030	(0.221)	0.027	0.003
219	18.25	0.13	0.030	(0.220)	0.027	0.003
220	18.33	0.13	0.030	(0.219)	0.027	0.003
221	18.42	0.13	0.030	(0.218)	0.027	0.003
222	18.50	0.13	0.030	(0.217)	0.027	0.003
223	18.58	0.10	0.023	(0.216)	0.021	0.002
224	18.67	0.10	0.023	(0.215)	0.021	0.002
225	18.75	0.10	0.023	(0.214)	0.021	0.002
226	18.83	0.07	0.015	(0.213)	0.014	0.002
227	18.92	0.07	0.015	(0.212)	0.014	0.002
228	19.00	0.07	0.015	(0.211)	0.014	0.002
229	19.08	0.10	0.023	(0.210)	0.021	0.002
230	19.17	0.10	0.023	(0.209)	0.021	0.002
231	19.25	0.10	0.023	(0.208)	0.021	0.002
232	19.33	0.13	0.030	(0.207)	0.027	0.003
233	19.42	0.13	0.030	(0.206)	0.027	0.003
234	19.50	0.13	0.030	(0.205)	0.027	0.003
235	19.58	0.10	0.023	(0.204)	0.021	0.002
236	19.67	0.10	0.023	(0.203)	0.021	0.002
237	19.75	0.10	0.023	(0.202)	0.021	0.002
238	19.83	0.07	0.015	(0.201)	0.014	0.002
239	19.92	0.07	0.015	(0.200)	0.014	0.002
240	20.00	0.07	0.015	(0.199)	0.014	0.002
241	20.08	0.10	0.023	(0.198)	0.021	0.002
242	20.17	0.10	0.023	(0.197)	0.021	0.002
243	20.25	0.10	0.023	(0.197)	0.021	0.002
244	20.33	0.10	0.023	(0.196)	0.021	0.002
245	20.42	0.10	0.023	(0.195)	0.021	0.002
246	20.50	0.10	0.023	(0.194)	0.021	0.002
247	20.58	0.10	0.023	(0.193)	0.021	0.002
248	20.67	0.10	0.023	(0.192)	0.021	0.002
249	20.75	0.10	0.023	(0.192)	0.021	0.002
250	20.83	0.07	0.015	(0.191)	0.014	0.002
251	20.92	0.07	0.015	(0.190)	0.014	0.002
252	21.00	0.07	0.015	(0.189)	0.014	0.002
253	21.08	0.10	0.023	(0.189)	0.021	0.002
254	21.17	0.10	0.023	(0.188)	0.021	0.002
255	21.25	0.10	0.023	(0.187)	0.021	0.002
256	21.33	0.07	0.015	(0.186)	0.014	0.002
257	21.42	0.07	0.015	(0.186)	0.014	0.002
258	21.50	0.07	0.015	(0.185)	0.014	0.002
259	21.58	0.10	0.023	(0.184)	0.021	0.002
260	21.67	0.10	0.023	(0.184)	0.021	0.002
261	21.75	0.10	0.023	(0.183)	0.021	0.002
262	21.83	0.07	0.015	(0.182)	0.014	0.002
263	21.92	0.07	0.015	(0.182)	0.014	0.002
264	22.00	0.07	0.015	(0.181)	0.014	0.002
265	22.08	0.10	0.023	(0.181)	0.021	0.002
266	22.17	0.10	0.023	(0.180)	0.021	0.002
267	22.25	0.10	0.023	(0.179)	0.021	0.002
268	22.33	0.07	0.015	(0.179)	0.014	0.002
269	22.42	0.07	0.015	(0.178)	0.014	0.002
270	22.50	0.07	0.015	(0.178)	0.014	0.002
271	22.58	0.07	0.015	(0.177)	0.014	0.002

272	22.67	0.07	0.015	(0.177)	0.014	0.002
273	22.75	0.07	0.015	(0.176)	0.014	0.002
274	22.83	0.07	0.015	(0.176)	0.014	0.002
275	22.92	0.07	0.015	(0.175)	0.014	0.002
276	23.00	0.07	0.015	(0.175)	0.014	0.002
277	23.08	0.07	0.015	(0.175)	0.014	0.002
278	23.17	0.07	0.015	(0.174)	0.014	0.002
279	23.25	0.07	0.015	(0.174)	0.014	0.002
280	23.33	0.07	0.015	(0.173)	0.014	0.002
281	23.42	0.07	0.015	(0.173)	0.014	0.002
282	23.50	0.07	0.015	(0.173)	0.014	0.002
283	23.58	0.07	0.015	(0.173)	0.014	0.002
284	23.67	0.07	0.015	(0.172)	0.014	0.002
285	23.75	0.07	0.015	(0.172)	0.014	0.002
286	23.83	0.07	0.015	(0.172)	0.014	0.002
287	23.92	0.07	0.015	(0.172)	0.014	0.002
288	24.00	0.07	0.015	(0.172)	0.014	0.002

(Loss Rate Not Used)

Sum = 100.0 Sum = 2.3

Flood volume = Effective rainfall 0.19(In)
times area 2.9(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)

Total soil loss = 1.71(In)
Total soil loss = 0.410(Ac.Ft)
Total rainfall = 1.90(In)
Flood volume = 1986.3 Cubic Feet
Total soil loss = 17876.9 Cubic Feet

Peak flow rate of this hydrograph = 0.075(CFS)

+++++

24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.00	Q				
0+10	0.0000	0.00	Q				
0+15	0.0001	0.00	Q				
0+20	0.0001	0.01	Q				
0+25	0.0002	0.01	Q				
0+30	0.0002	0.01	Q				
0+35	0.0002	0.01	Q				
0+40	0.0003	0.01	Q				
0+45	0.0003	0.01	Q				
0+50	0.0004	0.01	Q				
0+55	0.0004	0.01	Q				
1+ 0	0.0005	0.01	Q				
1+ 5	0.0006	0.01	Q				
1+10	0.0006	0.01	Q				
1+15	0.0007	0.01	Q				
1+20	0.0007	0.01	Q				
1+25	0.0007	0.01	Q				
1+30	0.0008	0.01	Q				
1+35	0.0008	0.01	Q				
1+40	0.0009	0.01	Q				
1+45	0.0009	0.01	Q				
1+50	0.0010	0.01	Q				
1+55	0.0010	0.01	Q				
2+ 0	0.0011	0.01	Q				
2+ 5	0.0012	0.01	QV				

2+10	0.0012	0.01	QV
2+15	0.0013	0.01	QV
2+20	0.0013	0.01	QV
2+25	0.0014	0.01	QV
2+30	0.0015	0.01	QV
2+35	0.0015	0.01	QV
2+40	0.0016	0.01	QV
2+45	0.0017	0.01	QV
2+50	0.0018	0.01	QV
2+55	0.0018	0.01	QV
3+ 0	0.0019	0.01	QV
3+ 5	0.0020	0.01	QV
3+10	0.0021	0.01	QV
3+15	0.0021	0.01	QV
3+20	0.0022	0.01	QV
3+25	0.0023	0.01	Q V
3+30	0.0024	0.01	Q V
3+35	0.0024	0.01	Q V
3+40	0.0025	0.01	Q V
3+45	0.0026	0.01	Q V
3+50	0.0027	0.01	Q V
3+55	0.0028	0.01	Q V
4+ 0	0.0029	0.01	Q V
4+ 5	0.0029	0.01	Q V
4+10	0.0030	0.01	Q V
4+15	0.0031	0.01	Q V
4+20	0.0032	0.01	Q V
4+25	0.0033	0.02	Q V
4+30	0.0034	0.02	Q V
4+35	0.0035	0.02	Q V
4+40	0.0036	0.02	Q V
4+45	0.0038	0.02	Q V
4+50	0.0039	0.02	Q V
4+55	0.0040	0.02	Q V
5+ 0	0.0041	0.02	Q V
5+ 5	0.0042	0.02	Q V
5+10	0.0043	0.01	Q V
5+15	0.0044	0.01	Q V
5+20	0.0045	0.01	Q V
5+25	0.0046	0.02	Q V
5+30	0.0047	0.02	Q V
5+35	0.0048	0.02	Q V
5+40	0.0049	0.02	Q V
5+45	0.0051	0.02	Q V
5+50	0.0052	0.02	Q V
5+55	0.0053	0.02	Q V
6+ 0	0.0054	0.02	Q V
6+ 5	0.0056	0.02	Q V
6+10	0.0057	0.02	Q V
6+15	0.0058	0.02	Q V
6+20	0.0060	0.02	Q V
6+25	0.0061	0.02	Q V
6+30	0.0062	0.02	Q V
6+35	0.0064	0.02	Q V
6+40	0.0065	0.02	Q V
6+45	0.0067	0.02	Q V
6+50	0.0068	0.02	Q V
6+55	0.0070	0.02	Q V
7+ 0	0.0071	0.02	Q V
7+ 5	0.0073	0.02	Q V
7+10	0.0074	0.02	Q V
7+15	0.0076	0.02	Q V
7+20	0.0078	0.02	Q V

7+25	0.0079	0.02	Q	V				
7+30	0.0081	0.02	Q	V				
7+35	0.0083	0.03	Q	V				
7+40	0.0084	0.03	Q	V				
7+45	0.0086	0.03	Q	V				
7+50	0.0088	0.03	Q	V				
7+55	0.0090	0.03	Q	V				
8+ 0	0.0092	0.03	Q	V				
8+ 5	0.0094	0.03	Q	V				
8+10	0.0096	0.03	Q	V				
8+15	0.0099	0.03	Q	V				
8+20	0.0101	0.03	Q	V				
8+25	0.0103	0.03	Q	V				
8+30	0.0106	0.03	Q	V				
8+35	0.0108	0.03	Q	V				
8+40	0.0110	0.04	Q	V				
8+45	0.0113	0.04	Q	V				
8+50	0.0115	0.04	Q	V				
8+55	0.0118	0.04	Q	V				
9+ 0	0.0120	0.04	Q	V				
9+ 5	0.0123	0.04	Q	V				
9+10	0.0126	0.04	Q	V				
9+15	0.0129	0.04	Q	V				
9+20	0.0132	0.04	Q	V				
9+25	0.0135	0.04	Q	V				
9+30	0.0138	0.04	Q	V				
9+35	0.0141	0.05	Q	V				
9+40	0.0144	0.05	Q	V				
9+45	0.0147	0.05	Q	V				
9+50	0.0151	0.05	Q	V				
9+55	0.0154	0.05	Q	V				
10+ 0	0.0157	0.05	Q	V				
10+ 5	0.0160	0.04	Q	V				
10+10	0.0162	0.03	Q	V				
10+15	0.0165	0.03	Q	V				
10+20	0.0167	0.03	Q	V				
10+25	0.0169	0.03	Q	V				
10+30	0.0172	0.03	Q	V				
10+35	0.0174	0.04	Q	V				
10+40	0.0177	0.04	Q	V				
10+45	0.0180	0.04	Q	V				
10+50	0.0183	0.04	Q	V				
10+55	0.0186	0.04	Q	V				
11+ 0	0.0189	0.04	Q	V				
11+ 5	0.0192	0.04	Q	V				
11+10	0.0195	0.04	Q	V				
11+15	0.0198	0.04	Q	V				
11+20	0.0201	0.04	Q	V				
11+25	0.0204	0.04	Q	V				
11+30	0.0207	0.04	Q	V				
11+35	0.0210	0.04	Q	V				
11+40	0.0212	0.04	Q	V				
11+45	0.0215	0.04	Q	V				
11+50	0.0217	0.04	Q	V				
11+55	0.0220	0.04	Q	V				
12+ 0	0.0223	0.04	Q	V				
12+ 5	0.0226	0.05	Q	V				
12+10	0.0230	0.05	Q	V				
12+15	0.0234	0.05	Q	V				
12+20	0.0237	0.06	Q	V				
12+25	0.0241	0.06	Q	V				
12+30	0.0245	0.06	Q	V				
12+35	0.0249	0.06	Q	V				

12+40	0.0254	0.06	Q	V		
12+45	0.0258	0.06	Q	V		
12+50	0.0262	0.06	Q	V		
12+55	0.0267	0.06	Q	V		
13+ 0	0.0271	0.06	Q	V		
13+ 5	0.0276	0.07	Q	V		
13+10	0.0281	0.07	Q	V		
13+15	0.0286	0.07	Q	V		
13+20	0.0291	0.08	Q	V		
13+25	0.0296	0.08	Q	V		
13+30	0.0301	0.08	Q	V		
13+35	0.0306	0.06	Q	V		
13+40	0.0310	0.05	Q	V		
13+45	0.0313	0.05	Q	V		
13+50	0.0317	0.05	Q	V		
13+55	0.0320	0.05	Q	V		
14+ 0	0.0324	0.05	Q	V		
14+ 5	0.0327	0.05	Q	V		
14+10	0.0331	0.06	Q	V		
14+15	0.0335	0.06	Q	V		
14+20	0.0339	0.06	Q	V		
14+25	0.0343	0.06	Q	V		
14+30	0.0347	0.06	Q	V		
14+35	0.0351	0.06	Q	V		
14+40	0.0355	0.06	Q	V		
14+45	0.0359	0.06	Q	V		
14+50	0.0363	0.06	Q	V		
14+55	0.0367	0.06	Q	V		
15+ 0	0.0371	0.06	Q	V		
15+ 5	0.0374	0.05	Q	V		
15+10	0.0378	0.05	Q	V		
15+15	0.0382	0.05	Q	V		
15+20	0.0385	0.05	Q	V		
15+25	0.0389	0.05	Q	V		
15+30	0.0392	0.05	Q	V		
15+35	0.0396	0.05	Q	V		
15+40	0.0399	0.04	Q	V		
15+45	0.0402	0.04	Q	V		
15+50	0.0404	0.04	Q	V		
15+55	0.0407	0.04	Q	V		
16+ 0	0.0410	0.04	Q	V		
16+ 5	0.0412	0.03	Q	V		
16+10	0.0413	0.01	Q	V		
16+15	0.0414	0.01	Q	V		
16+20	0.0414	0.01	Q	V		
16+25	0.0415	0.01	Q	V		
16+30	0.0415	0.01	Q	V		
16+35	0.0416	0.01	Q	V		
16+40	0.0416	0.01	Q	V		
16+45	0.0417	0.01	Q	V		
16+50	0.0417	0.01	Q	V		
16+55	0.0418	0.01	Q	V		
17+ 0	0.0418	0.01	Q	V		
17+ 5	0.0419	0.01	Q	V		
17+10	0.0420	0.01	Q	V		
17+15	0.0420	0.01	Q	V		
17+20	0.0421	0.01	Q	V		
17+25	0.0422	0.01	Q	V		
17+30	0.0423	0.01	Q	V		
17+35	0.0423	0.01	Q	V		
17+40	0.0424	0.01	Q	V		
17+45	0.0425	0.01	Q	V		
17+50	0.0426	0.01	Q	V		

17+55	0.0426	0.01	Q	V
18+ 0	0.0427	0.01	Q	V
18+ 5	0.0427	0.01	Q	V
18+10	0.0428	0.01	Q	V
18+15	0.0429	0.01	Q	V
18+20	0.0429	0.01	Q	V
18+25	0.0430	0.01	Q	V
18+30	0.0430	0.01	Q	V
18+35	0.0431	0.01	Q	V
18+40	0.0431	0.01	Q	V
18+45	0.0432	0.01	Q	V
18+50	0.0432	0.01	Q	V
18+55	0.0433	0.00	Q	V
19+ 0	0.0433	0.00	Q	V
19+ 5	0.0433	0.01	Q	V
19+10	0.0434	0.01	Q	V
19+15	0.0434	0.01	Q	V
19+20	0.0435	0.01	Q	V
19+25	0.0435	0.01	Q	V
19+30	0.0436	0.01	Q	V
19+35	0.0436	0.01	Q	V
19+40	0.0437	0.01	Q	V
19+45	0.0437	0.01	Q	V
19+50	0.0438	0.01	Q	V
19+55	0.0438	0.00	Q	V
20+ 0	0.0438	0.00	Q	V
20+ 5	0.0439	0.01	Q	V
20+10	0.0439	0.01	Q	V
20+15	0.0440	0.01	Q	V
20+20	0.0440	0.01	Q	V
20+25	0.0441	0.01	Q	V
20+30	0.0441	0.01	Q	V
20+35	0.0442	0.01	Q	V
20+40	0.0442	0.01	Q	V
20+45	0.0442	0.01	Q	V
20+50	0.0443	0.01	Q	V
20+55	0.0443	0.00	Q	V
21+ 0	0.0443	0.00	Q	V
21+ 5	0.0444	0.01	Q	V
21+10	0.0444	0.01	Q	V
21+15	0.0445	0.01	Q	V
21+20	0.0445	0.01	Q	V
21+25	0.0445	0.00	Q	V
21+30	0.0446	0.00	Q	V
21+35	0.0446	0.01	Q	V
21+40	0.0447	0.01	Q	V
21+45	0.0447	0.01	Q	V
21+50	0.0447	0.01	Q	V
21+55	0.0448	0.00	Q	V
22+ 0	0.0448	0.00	Q	V
22+ 5	0.0448	0.01	Q	V
22+10	0.0449	0.01	Q	V
22+15	0.0449	0.01	Q	V
22+20	0.0450	0.01	Q	V
22+25	0.0450	0.00	Q	V
22+30	0.0450	0.00	Q	V
22+35	0.0451	0.00	Q	V
22+40	0.0451	0.00	Q	V
22+45	0.0451	0.00	Q	V
22+50	0.0452	0.00	Q	V
22+55	0.0452	0.00	Q	V
23+ 0	0.0452	0.00	Q	V
23+ 5	0.0452	0.00	Q	V

23+10	0.0453	0.00	Q				V
23+15	0.0453	0.00	Q				V
23+20	0.0453	0.00	Q				V
23+25	0.0454	0.00	Q				V
23+30	0.0454	0.00	Q				V
23+35	0.0454	0.00	Q				V
23+40	0.0455	0.00	Q				V
23+45	0.0455	0.00	Q				V
23+50	0.0455	0.00	Q				V
23+55	0.0455	0.00	Q				V
24+ 0	0.0456	0.00	Q				V
24+ 5	0.0456	0.00	Q				V
24+10	0.0456	0.00	Q				V
24+15	0.0456	0.00	Q				V

**Pre-developed conditions
5 year 1 hour**

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863pre15.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MV
Pre-developed conditions
5 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 540.00(Ft.)
Length along longest watercourse measured to centroid = 305.00(Ft.)
Length along longest watercourse = 0.102 Mi.
Length along longest watercourse measured to centroid = 0.058 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 146.6667 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.040 Hr.
Lag time = 2.38 Min.
25% of lag time = 0.60 Min.
40% of lag time = 0.95 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	0.50	1.44

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.20	3.46

STORM EVENT (YEAR) = 5.00

Area Averaged 2-Year Rainfall = 0.500(In)
 Area Averaged 100-Year Rainfall = 1.200(In)

Point rain (area averaged) = 0.664(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 0.664(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 2.880 86.00 0.000
 Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-1	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
86.0	71.6	0.343	0.000	0.343	1.000	0.343
						Sum (F) = 0.343

Area averaged mean soil loss (F) (In/Hr) = 0.343
 Minimum soil loss rate ((In/Hr)) = 0.172
 (for 24 hour storm duration)
 Soil loss rate (decimal) = 0.900

 Slope of intensity-duration curve for a 1 hour storm = 0.5000

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

 Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	209.869	45.056
2	0.167	419.737	42.685
3	0.250	629.606	8.406
4	0.333	839.474	3.853
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max Low	Effective (In/Hr)
1	0.08	4.20	(0.343) 0.301	0.033
2	0.17	4.30	(0.343) 0.308	0.034
3	0.25	5.00	0.343 (0.359)	0.055
4	0.33	5.00	0.343 (0.359)	0.055
5	0.42	5.80	0.343 (0.416)	0.119
6	0.50	6.50	0.343 (0.466)	0.175
7	0.58	7.40	0.343 (0.531)	0.246
8	0.67	8.60	0.343 (0.617)	0.342
9	0.75	12.30	0.343 (0.882)	0.637
10	0.83	29.10	0.343 (2.087)	1.975
11	0.92	6.80	0.343 (0.488)	0.199
12	1.00	5.00	0.343 (0.359)	0.055

(Loss Rate Not Used)
 Sum = 100.0 Sum = 3.9

Flood volume = Effective rainfall 0.33(In)
 times area 2.9(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)
 Total soil loss = 0.34(In)

Total soil loss = 0.081(Ac.Ft)
 Total rainfall = 0.66(In)
 Flood volume = 3420.8 Cubic Feet
 Total soil loss = 3520.3 Cubic Feet

 Peak flow rate of this hydrograph = 3.485(CFS)

+++++
 1 - H O U R S T O R M
 R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0003	0.04	Q				
0+10	0.0009	0.09	Q				
0+15	0.0017	0.12	Q				
0+20	0.0028	0.15	QV				
0+25	0.0045	0.24	Q V				
0+30	0.0072	0.40	Q V				
0+35	0.0111	0.57	Q V				
0+40	0.0167	0.81	Q V				
0+45	0.0259	1.34	Q	V			
0+50	0.0499	3.49		Q	V		
0+55	0.0699	2.90		Q		V	
1+ 0	0.0759	0.87	Q				V
1+ 5	0.0782	0.34	Q				V
1+10	0.0785	0.04	Q				V
1+15	0.0785	0.01	Q				V

**Pre-developed conditions
5 year 3 hour**

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863pre35.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MV
Pre-developed conditions
5 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 540.00(Ft.)
Length along longest watercourse measured to centroid = 305.00(Ft.)
Length along longest watercourse = 0.102 Mi.
Length along longest watercourse measured to centroid = 0.058 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 146.6667 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.040 Hr.
Lag time = 2.38 Min.
25% of lag time = 0.60 Min.
40% of lag time = 0.95 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	0.81	2.33

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.86	5.36

STORM EVENT (YEAR) = 5.00

Area Averaged 2-Year Rainfall = 0.810(In)
 Area Averaged 100-Year Rainfall = 1.860(In)

Point rain (area averaged) = 1.056(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 1.056(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 2.880 86.00 0.000
 Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-1	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
86.0	71.6	0.343	0.000	0.343	1.000	0.343
						Sum (F) = 0.343

Area averaged mean soil loss (F) (In/Hr) = 0.343
 Minimum soil loss rate ((In/Hr)) = 0.172
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	209.869	1.308
2	0.167	419.737	1.239
3	0.250	629.606	0.244
4	0.333	839.474	0.112
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	1.30	(0.343)	0.148	0.016
2	0.17	1.30	(0.343)	0.148	0.016
3	0.25	1.10	(0.343)	0.125	0.014
4	0.33	1.50	(0.343)	0.171	0.019
5	0.42	1.50	(0.343)	0.171	0.019
6	0.50	1.80	(0.343)	0.205	0.023
7	0.58	1.50	(0.343)	0.171	0.019
8	0.67	1.80	(0.343)	0.205	0.023
9	0.75	1.80	(0.343)	0.205	0.023
10	0.83	1.50	(0.343)	0.171	0.019
11	0.92	1.60	(0.343)	0.182	0.020
12	1.00	1.80	(0.343)	0.205	0.023
13	1.08	2.20	(0.343)	0.251	0.028
14	1.17	2.20	(0.343)	0.251	0.028
15	1.25	2.20	(0.343)	0.251	0.028
16	1.33	2.00	(0.343)	0.228	0.025
17	1.42	2.60	(0.343)	0.297	0.033
18	1.50	2.70	(0.343)	0.308	0.034
19	1.58	2.40	(0.343)	0.274	0.030

20	1.67	2.70	0.342	(0.343)	0.308	0.034
21	1.75	3.30	0.418	0.343	(0.376)	0.075
22	1.83	3.10	0.393	0.343	(0.354)	0.050
23	1.92	2.90	0.367	(0.343)	0.331	0.037
24	2.00	3.00	0.380	(0.343)	0.342	0.038
25	2.08	3.10	0.393	0.343	(0.354)	0.050
26	2.17	4.20	0.532	0.343	(0.479)	0.189
27	2.25	5.00	0.634	0.343	(0.570)	0.290
28	2.33	3.50	0.443	0.343	(0.399)	0.100
29	2.42	6.80	0.862	0.343	(0.775)	0.519
30	2.50	7.30	0.925	0.343	(0.832)	0.582
31	2.58	8.20	1.039	0.343	(0.935)	0.696
32	2.67	5.90	0.748	0.343	(0.673)	0.404
33	2.75	2.00	0.253	(0.343)	0.228	0.025
34	2.83	1.80	0.228	(0.343)	0.205	0.023
35	2.92	1.80	0.228	(0.343)	0.205	0.023
36	3.00	0.60	0.076	(0.343)	0.068	0.008

(Loss Rate Not Used)

Sum = 100.0 Sum = 3.6

Flood volume = Effective rainfall 0.30(In)
times area 2.9(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)
Total soil loss = 0.76(In)
Total soil loss = 0.182(Ac.Ft)
Total rainfall = 1.06(In)
Flood volume = 3121.9 Cubic Feet
Total soil loss = 7917.1 Cubic Feet

Peak flow rate of this hydrograph = 1.770(CFS)

+++++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001	0.02	Q				
0+10	0.0004	0.04	Q				
0+15	0.0007	0.04	Q				
0+20	0.0011	0.05	Q				
0+25	0.0014	0.05	Q				
0+30	0.0018	0.06	QV				
0+35	0.0023	0.06	QV				
0+40	0.0027	0.06	QV				
0+45	0.0031	0.07	QV				
0+50	0.0035	0.06	QV				
0+55	0.0039	0.06	Q V				
1+ 0	0.0044	0.06	Q V				
1+ 5	0.0049	0.07	Q V				
1+10	0.0054	0.08	Q V				
1+15	0.0060	0.08	Q V				
1+20	0.0065	0.08	Q V				
1+25	0.0071	0.08	Q V				
1+30	0.0077	0.09	Q V				
1+35	0.0084	0.09	Q V				
1+40	0.0090	0.09	Q V				
1+45	0.0101	0.15	Q V				
1+50	0.0112	0.17	Q V				
1+55	0.0121	0.13	Q V				
2+ 0	0.0129	0.12	Q V				
2+ 5	0.0138	0.13	Q V				

2+10	0.0160	0.32	Q	V					
2+15	0.0204	0.63	Q		V				
2+20	0.0241	0.54	Q		V				
2+25	0.0303	0.89	Q			V			
2+30	0.0403	1.46		Q			V		
2+35	0.0525	1.77		Q			V		
2+40	0.0635	1.59		Q				V	
2+45	0.0688	0.77	Q						V
2+50	0.0704	0.24	Q						V
2+55	0.0712	0.11	Q						V
3+ 0	0.0715	0.05	Q						V
3+ 5	0.0716	0.02	Q						V
3+10	0.0717	0.00	Q						V
3+15	0.0717	0.00	Q						V

**Pre-developed conditions
5 year 6 hour**

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863pre65.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MV
Pre-developed conditions
5 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 540.00(Ft.)
Length along longest watercourse measured to centroid = 305.00(Ft.)
Length along longest watercourse = 0.102 Mi.
Length along longest watercourse measured to centroid = 0.058 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 146.6667 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.040 Hr.
Lag time = 2.38 Min.
25% of lag time = 0.60 Min.
40% of lag time = 0.95 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.40	4.03

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	2.50	7.20

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 1.400(In)
Area Averaged 100-Year Rainfall = 2.500(In)

Point rain (area averaged) = 1.658(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 1.658(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
2.880	86.00	0.000
Total Area Entered = 2.88(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-1	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
86.0	71.6	0.343	0.000	0.343	1.000	0.343
Sum (F) =						0.343

Area averaged mean soil loss (F) (In/Hr) = 0.343
 Minimum soil loss rate ((In/Hr)) = 0.172
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	209.869	45.056
2	0.167	419.737	42.685
3	0.250	629.606	8.406
4	0.333	839.474	3.853
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max Low	Effective (In/Hr)
1	0.08	0.50	(0.343)	0.090
2	0.17	0.60	(0.343)	0.107
3	0.25	0.60	(0.343)	0.107
4	0.33	0.60	(0.343)	0.107
5	0.42	0.60	(0.343)	0.107
6	0.50	0.70	(0.343)	0.125
7	0.58	0.70	(0.343)	0.125
8	0.67	0.70	(0.343)	0.125
9	0.75	0.70	(0.343)	0.125
10	0.83	0.70	(0.343)	0.125
11	0.92	0.70	(0.343)	0.125
12	1.00	0.80	(0.343)	0.143
13	1.08	0.80	(0.343)	0.143
14	1.17	0.80	(0.343)	0.143
15	1.25	0.80	(0.343)	0.143
16	1.33	0.80	(0.343)	0.143
17	1.42	0.80	(0.343)	0.143
18	1.50	0.80	(0.343)	0.143
19	1.58	0.80	(0.343)	0.143
20	1.67	0.80	(0.343)	0.143
21	1.75	0.80	(0.343)	0.143
22	1.83	0.80	(0.343)	0.143

23	1.92	0.80	0.159	(0.343)	0.143	0.016
24	2.00	0.90	0.179	(0.343)	0.161	0.018
25	2.08	0.80	0.159	(0.343)	0.143	0.016
26	2.17	0.90	0.179	(0.343)	0.161	0.018
27	2.25	0.90	0.179	(0.343)	0.161	0.018
28	2.33	0.90	0.179	(0.343)	0.161	0.018
29	2.42	0.90	0.179	(0.343)	0.161	0.018
30	2.50	0.90	0.179	(0.343)	0.161	0.018
31	2.58	0.90	0.179	(0.343)	0.161	0.018
32	2.67	0.90	0.179	(0.343)	0.161	0.018
33	2.75	1.00	0.199	(0.343)	0.179	0.020
34	2.83	1.00	0.199	(0.343)	0.179	0.020
35	2.92	1.00	0.199	(0.343)	0.179	0.020
36	3.00	1.00	0.199	(0.343)	0.179	0.020
37	3.08	1.00	0.199	(0.343)	0.179	0.020
38	3.17	1.10	0.219	(0.343)	0.197	0.022
39	3.25	1.10	0.219	(0.343)	0.197	0.022
40	3.33	1.10	0.219	(0.343)	0.197	0.022
41	3.42	1.20	0.239	(0.343)	0.215	0.024
42	3.50	1.30	0.259	(0.343)	0.233	0.026
43	3.58	1.40	0.278	(0.343)	0.251	0.028
44	3.67	1.40	0.278	(0.343)	0.251	0.028
45	3.75	1.50	0.298	(0.343)	0.269	0.030
46	3.83	1.50	0.298	(0.343)	0.269	0.030
47	3.92	1.60	0.318	(0.343)	0.286	0.032
48	4.00	1.60	0.318	(0.343)	0.286	0.032
49	4.08	1.70	0.338	(0.343)	0.304	0.034
50	4.17	1.80	0.358	(0.343)	0.322	0.036
51	4.25	1.90	0.378	(0.343)	0.340	0.038
52	4.33	2.00	0.398	0.343	(0.358)	0.055
53	4.42	2.10	0.418	0.343	(0.376)	0.075
54	4.50	2.10	0.418	0.343	(0.376)	0.075
55	4.58	2.20	0.438	0.343	(0.394)	0.094
56	4.67	2.30	0.458	0.343	(0.412)	0.114
57	4.75	2.40	0.477	0.343	(0.430)	0.134
58	4.83	2.40	0.477	0.343	(0.430)	0.134
59	4.92	2.50	0.497	0.343	(0.448)	0.154
60	5.00	2.60	0.517	0.343	(0.465)	0.174
61	5.08	3.10	0.617	0.343	(0.555)	0.274
62	5.17	3.60	0.716	0.343	(0.644)	0.373
63	5.25	3.90	0.776	0.343	(0.698)	0.433
64	5.33	4.20	0.835	0.343	(0.752)	0.492
65	5.42	4.70	0.935	0.343	(0.841)	0.592
66	5.50	5.60	1.114	0.343	(1.003)	0.771
67	5.58	1.90	0.378	(0.343)	0.340	0.038
68	5.67	0.90	0.179	(0.343)	0.161	0.018
69	5.75	0.60	0.119	(0.343)	0.107	0.012
70	5.83	0.50	0.099	(0.343)	0.090	0.010
71	5.92	0.30	0.060	(0.343)	0.054	0.006
72	6.00	0.20	0.040	(0.343)	0.036	0.004

(Loss Rate Not Used)

Sum = 100.0 Sum = 5.0

Flood volume = Effective rainfall 0.42(In)
times area 2.9(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)

Total soil loss = 1.24(In)
Total soil loss = 0.297(Ac.Ft)
Total rainfall = 1.66(In)
Flood volume = 4376.7 Cubic Feet
Total soil loss = 12952.8 Cubic Feet

Peak flow rate of this hydrograph = 1.911(CFS)

+++++

6 - H O U R S T O R M
 R u n o f f H y d r o g r a p h

 Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume	Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001		0.01	Q				
0+10	0.0003		0.03	Q				
0+15	0.0005		0.03	Q				
0+20	0.0007		0.03	Q				
0+25	0.0010		0.03	Q				
0+30	0.0012		0.04	Q				
0+35	0.0015		0.04	Q				
0+40	0.0018		0.04	Q				
0+45	0.0021		0.04	Q				
0+50	0.0023		0.04	Q				
0+55	0.0026		0.04	QV				
1+ 0	0.0029		0.04	QV				
1+ 5	0.0032		0.05	QV				
1+10	0.0036		0.05	QV				
1+15	0.0039		0.05	QV				
1+20	0.0042		0.05	QV				
1+25	0.0045		0.05	QV				
1+30	0.0048		0.05	QV				
1+35	0.0051		0.05	Q V				
1+40	0.0055		0.05	Q V				
1+45	0.0058		0.05	Q V				
1+50	0.0061		0.05	Q V				
1+55	0.0064		0.05	Q V				
2+ 0	0.0068		0.05	Q V				
2+ 5	0.0071		0.05	Q V				
2+10	0.0074		0.05	Q V				
2+15	0.0078		0.05	Q V				
2+20	0.0081		0.05	Q V				
2+25	0.0085		0.05	Q V				
2+30	0.0089		0.05	Q V				
2+35	0.0092		0.05	Q V				
2+40	0.0096		0.05	Q V				
2+45	0.0099		0.05	Q V				
2+50	0.0103		0.06	Q V				
2+55	0.0107		0.06	Q V				
3+ 0	0.0111		0.06	Q V				
3+ 5	0.0115		0.06	Q V				
3+10	0.0119		0.06	Q V				
3+15	0.0124		0.06	Q V				
3+20	0.0128		0.06	Q V				
3+25	0.0133		0.07	Q V				
3+30	0.0138		0.07	Q V				
3+35	0.0143		0.08	Q V				
3+40	0.0148		0.08	Q V				
3+45	0.0154		0.08	Q V				
3+50	0.0160		0.09	Q V				
3+55	0.0166		0.09	Q V				
4+ 0	0.0173		0.09	Q V				
4+ 5	0.0179		0.09	Q V				
4+10	0.0186		0.10	Q V				
4+15	0.0193		0.11	Q V				
4+20	0.0202		0.13	Q V				
4+25	0.0215		0.18	Q V				
4+30	0.0229		0.21	Q V				

4+35	0.0245	0.24	Q	V				
4+40	0.0266	0.29	Q	V				
4+45	0.0290	0.35	Q	V				
4+50	0.0316	0.38	Q	V				
4+55	0.0344	0.41	Q	V				
5+ 0	0.0376	0.47	Q	V				
5+ 5	0.0420	0.63	Q	V				
5+10	0.0481	0.89	Q	V				
5+15	0.0557	1.11	Q	V				
5+20	0.0647	1.30	Q	V				
5+25	0.0753	1.53	Q	V				
5+30	0.0884	1.91	Q	V				
5+35	0.0967	1.20	Q	V				
5+40	0.0990	0.32	Q	V				
5+45	0.0999	0.13	Q	V				
5+50	0.1001	0.04	Q	V				
5+55	0.1003	0.03	Q	V				
6+ 0	0.1004	0.02	Q	V				
6+ 5	0.1005	0.01	Q	V				
6+10	0.1005	0.00	Q	V				
6+15	0.1005	0.00	Q	V				

**Pre-developed conditions
5 year 24 hour**

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863pre245.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independen Plaza, MV
Pre-developed conditions
5 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 540.00(Ft.)
Length along longest watercourse measured to centroid = 305.00(Ft.)
Length along longest watercourse = 0.102 Mi.
Length along longest watercourse measured to centroid = 0.058 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 146.6667 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.040 Hr.
Lag time = 2.38 Min.
25% of lag time = 0.60 Min.
40% of lag time = 0.95 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.90	5.47

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	4.50	12.96

STORM EVENT (YEAR) = 5.00

Area Averaged 2-Year Rainfall = 1.900(In)
 Area Averaged 100-Year Rainfall = 4.500(In)

Point rain (area averaged) = 2.509(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 2.509(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 2.880 86.00 0.000
 Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-1	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
86.0	71.6	0.343	0.000	0.343	1.000	0.343
						Sum (F) = 0.343

Area averaged mean soil loss (F) (In/Hr) = 0.343
 Minimum soil loss rate ((In/Hr)) = 0.172
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	209.869	1.308
2	0.167	419.737	1.239
3	0.250	629.606	0.244
4	0.333	839.474	0.112
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	0.07	(0.608)	0.018	0.002
2	0.17	0.07	(0.606)	0.018	0.002
3	0.25	0.07	(0.604)	0.018	0.002
4	0.33	0.10	(0.601)	0.027	0.003
5	0.42	0.10	(0.599)	0.027	0.003
6	0.50	0.10	(0.597)	0.027	0.003
7	0.58	0.10	(0.594)	0.027	0.003
8	0.67	0.10	(0.592)	0.027	0.003
9	0.75	0.10	(0.590)	0.027	0.003
10	0.83	0.13	(0.587)	0.036	0.004
11	0.92	0.13	(0.585)	0.036	0.004
12	1.00	0.13	(0.583)	0.036	0.004
13	1.08	0.10	(0.580)	0.027	0.003
14	1.17	0.10	(0.578)	0.027	0.003
15	1.25	0.10	(0.576)	0.027	0.003
16	1.33	0.10	(0.573)	0.027	0.003
17	1.42	0.10	(0.571)	0.027	0.003
18	1.50	0.10	(0.569)	0.027	0.003
19	1.58	0.10	(0.567)	0.027	0.003

20	1.67	0.10	0.030	(0.564)	0.027	0.003
21	1.75	0.10	0.030	(0.562)	0.027	0.003
22	1.83	0.13	0.040	(0.560)	0.036	0.004
23	1.92	0.13	0.040	(0.558)	0.036	0.004
24	2.00	0.13	0.040	(0.555)	0.036	0.004
25	2.08	0.13	0.040	(0.553)	0.036	0.004
26	2.17	0.13	0.040	(0.551)	0.036	0.004
27	2.25	0.13	0.040	(0.549)	0.036	0.004
28	2.33	0.13	0.040	(0.546)	0.036	0.004
29	2.42	0.13	0.040	(0.544)	0.036	0.004
30	2.50	0.13	0.040	(0.542)	0.036	0.004
31	2.58	0.17	0.050	(0.540)	0.045	0.005
32	2.67	0.17	0.050	(0.537)	0.045	0.005
33	2.75	0.17	0.050	(0.535)	0.045	0.005
34	2.83	0.17	0.050	(0.533)	0.045	0.005
35	2.92	0.17	0.050	(0.531)	0.045	0.005
36	3.00	0.17	0.050	(0.529)	0.045	0.005
37	3.08	0.17	0.050	(0.526)	0.045	0.005
38	3.17	0.17	0.050	(0.524)	0.045	0.005
39	3.25	0.17	0.050	(0.522)	0.045	0.005
40	3.33	0.17	0.050	(0.520)	0.045	0.005
41	3.42	0.17	0.050	(0.518)	0.045	0.005
42	3.50	0.17	0.050	(0.516)	0.045	0.005
43	3.58	0.17	0.050	(0.513)	0.045	0.005
44	3.67	0.17	0.050	(0.511)	0.045	0.005
45	3.75	0.17	0.050	(0.509)	0.045	0.005
46	3.83	0.20	0.060	(0.507)	0.054	0.006
47	3.92	0.20	0.060	(0.505)	0.054	0.006
48	4.00	0.20	0.060	(0.503)	0.054	0.006
49	4.08	0.20	0.060	(0.501)	0.054	0.006
50	4.17	0.20	0.060	(0.498)	0.054	0.006
51	4.25	0.20	0.060	(0.496)	0.054	0.006
52	4.33	0.23	0.070	(0.494)	0.063	0.007
53	4.42	0.23	0.070	(0.492)	0.063	0.007
54	4.50	0.23	0.070	(0.490)	0.063	0.007
55	4.58	0.23	0.070	(0.488)	0.063	0.007
56	4.67	0.23	0.070	(0.486)	0.063	0.007
57	4.75	0.23	0.070	(0.484)	0.063	0.007
58	4.83	0.27	0.080	(0.482)	0.072	0.008
59	4.92	0.27	0.080	(0.480)	0.072	0.008
60	5.00	0.27	0.080	(0.477)	0.072	0.008
61	5.08	0.20	0.060	(0.475)	0.054	0.006
62	5.17	0.20	0.060	(0.473)	0.054	0.006
63	5.25	0.20	0.060	(0.471)	0.054	0.006
64	5.33	0.23	0.070	(0.469)	0.063	0.007
65	5.42	0.23	0.070	(0.467)	0.063	0.007
66	5.50	0.23	0.070	(0.465)	0.063	0.007
67	5.58	0.27	0.080	(0.463)	0.072	0.008
68	5.67	0.27	0.080	(0.461)	0.072	0.008
69	5.75	0.27	0.080	(0.459)	0.072	0.008
70	5.83	0.27	0.080	(0.457)	0.072	0.008
71	5.92	0.27	0.080	(0.455)	0.072	0.008
72	6.00	0.27	0.080	(0.453)	0.072	0.008
73	6.08	0.30	0.090	(0.451)	0.081	0.009
74	6.17	0.30	0.090	(0.449)	0.081	0.009
75	6.25	0.30	0.090	(0.447)	0.081	0.009
76	6.33	0.30	0.090	(0.445)	0.081	0.009
77	6.42	0.30	0.090	(0.443)	0.081	0.009
78	6.50	0.30	0.090	(0.441)	0.081	0.009
79	6.58	0.33	0.100	(0.439)	0.090	0.010
80	6.67	0.33	0.100	(0.437)	0.090	0.010
81	6.75	0.33	0.100	(0.435)	0.090	0.010
82	6.83	0.33	0.100	(0.433)	0.090	0.010

83	6.92	0.33	0.100	(0.431)	0.090	0.010
84	7.00	0.33	0.100	(0.429)	0.090	0.010
85	7.08	0.33	0.100	(0.427)	0.090	0.010
86	7.17	0.33	0.100	(0.425)	0.090	0.010
87	7.25	0.33	0.100	(0.423)	0.090	0.010
88	7.33	0.37	0.110	(0.421)	0.099	0.011
89	7.42	0.37	0.110	(0.419)	0.099	0.011
90	7.50	0.37	0.110	(0.417)	0.099	0.011
91	7.58	0.40	0.120	(0.416)	0.108	0.012
92	7.67	0.40	0.120	(0.414)	0.108	0.012
93	7.75	0.40	0.120	(0.412)	0.108	0.012
94	7.83	0.43	0.130	(0.410)	0.117	0.013
95	7.92	0.43	0.130	(0.408)	0.117	0.013
96	8.00	0.43	0.130	(0.406)	0.117	0.013
97	8.08	0.50	0.151	(0.404)	0.135	0.015
98	8.17	0.50	0.151	(0.402)	0.135	0.015
99	8.25	0.50	0.151	(0.400)	0.135	0.015
100	8.33	0.50	0.151	(0.399)	0.135	0.015
101	8.42	0.50	0.151	(0.397)	0.135	0.015
102	8.50	0.50	0.151	(0.395)	0.135	0.015
103	8.58	0.53	0.161	(0.393)	0.145	0.016
104	8.67	0.53	0.161	(0.391)	0.145	0.016
105	8.75	0.53	0.161	(0.389)	0.145	0.016
106	8.83	0.57	0.171	(0.387)	0.154	0.017
107	8.92	0.57	0.171	(0.386)	0.154	0.017
108	9.00	0.57	0.171	(0.384)	0.154	0.017
109	9.08	0.63	0.191	(0.382)	0.172	0.019
110	9.17	0.63	0.191	(0.380)	0.172	0.019
111	9.25	0.63	0.191	(0.378)	0.172	0.019
112	9.33	0.67	0.201	(0.377)	0.181	0.020
113	9.42	0.67	0.201	(0.375)	0.181	0.020
114	9.50	0.67	0.201	(0.373)	0.181	0.020
115	9.58	0.70	0.211	(0.371)	0.190	0.021
116	9.67	0.70	0.211	(0.369)	0.190	0.021
117	9.75	0.70	0.211	(0.368)	0.190	0.021
118	9.83	0.73	0.221	(0.366)	0.199	0.022
119	9.92	0.73	0.221	(0.364)	0.199	0.022
120	10.00	0.73	0.221	(0.362)	0.199	0.022
121	10.08	0.50	0.151	(0.361)	0.135	0.015
122	10.17	0.50	0.151	(0.359)	0.135	0.015
123	10.25	0.50	0.151	(0.357)	0.135	0.015
124	10.33	0.50	0.151	(0.355)	0.135	0.015
125	10.42	0.50	0.151	(0.354)	0.135	0.015
126	10.50	0.50	0.151	(0.352)	0.135	0.015
127	10.58	0.67	0.201	(0.350)	0.181	0.020
128	10.67	0.67	0.201	(0.348)	0.181	0.020
129	10.75	0.67	0.201	(0.347)	0.181	0.020
130	10.83	0.67	0.201	(0.345)	0.181	0.020
131	10.92	0.67	0.201	(0.343)	0.181	0.020
132	11.00	0.67	0.201	(0.342)	0.181	0.020
133	11.08	0.63	0.191	(0.340)	0.172	0.019
134	11.17	0.63	0.191	(0.338)	0.172	0.019
135	11.25	0.63	0.191	(0.337)	0.172	0.019
136	11.33	0.63	0.191	(0.335)	0.172	0.019
137	11.42	0.63	0.191	(0.333)	0.172	0.019
138	11.50	0.63	0.191	(0.332)	0.172	0.019
139	11.58	0.57	0.171	(0.330)	0.154	0.017
140	11.67	0.57	0.171	(0.328)	0.154	0.017
141	11.75	0.57	0.171	(0.327)	0.154	0.017
142	11.83	0.60	0.181	(0.325)	0.163	0.018
143	11.92	0.60	0.181	(0.324)	0.163	0.018
144	12.00	0.60	0.181	(0.322)	0.163	0.018
145	12.08	0.83	0.251	(0.320)	0.226	0.025

146	12.17	0.83	0.251	(0.319)	0.226	0.025
147	12.25	0.83	0.251	(0.317)	0.226	0.025
148	12.33	0.87	0.261	(0.316)	0.235	0.026
149	12.42	0.87	0.261	(0.314)	0.235	0.026
150	12.50	0.87	0.261	(0.312)	0.235	0.026
151	12.58	0.93	0.281	(0.311)	0.253	0.028
152	12.67	0.93	0.281	(0.309)	0.253	0.028
153	12.75	0.93	0.281	(0.308)	0.253	0.028
154	12.83	0.97	0.291	(0.306)	0.262	0.029
155	12.92	0.97	0.291	(0.305)	0.262	0.029
156	13.00	0.97	0.291	(0.303)	0.262	0.029
157	13.08	1.13	0.341	0.301 (0.307)		0.040
158	13.17	1.13	0.341	0.300 (0.307)		0.041
159	13.25	1.13	0.341	0.298 (0.307)		0.043
160	13.33	1.13	0.341	0.297 (0.307)		0.044
161	13.42	1.13	0.341	0.295 (0.307)		0.046
162	13.50	1.13	0.341	0.294 (0.307)		0.047
163	13.58	0.77	0.231	(0.292)	0.208	0.023
164	13.67	0.77	0.231	(0.291)	0.208	0.023
165	13.75	0.77	0.231	(0.289)	0.208	0.023
166	13.83	0.77	0.231	(0.288)	0.208	0.023
167	13.92	0.77	0.231	(0.286)	0.208	0.023
168	14.00	0.77	0.231	(0.285)	0.208	0.023
169	14.08	0.90	0.271	(0.284)	0.244	0.027
170	14.17	0.90	0.271	(0.282)	0.244	0.027
171	14.25	0.90	0.271	(0.281)	0.244	0.027
172	14.33	0.87	0.261	(0.279)	0.235	0.026
173	14.42	0.87	0.261	(0.278)	0.235	0.026
174	14.50	0.87	0.261	(0.276)	0.235	0.026
175	14.58	0.87	0.261	(0.275)	0.235	0.026
176	14.67	0.87	0.261	(0.274)	0.235	0.026
177	14.75	0.87	0.261	(0.272)	0.235	0.026
178	14.83	0.83	0.251	(0.271)	0.226	0.025
179	14.92	0.83	0.251	(0.269)	0.226	0.025
180	15.00	0.83	0.251	(0.268)	0.226	0.025
181	15.08	0.80	0.241	(0.267)	0.217	0.024
182	15.17	0.80	0.241	(0.265)	0.217	0.024
183	15.25	0.80	0.241	(0.264)	0.217	0.024
184	15.33	0.77	0.231	(0.263)	0.208	0.023
185	15.42	0.77	0.231	(0.261)	0.208	0.023
186	15.50	0.77	0.231	(0.260)	0.208	0.023
187	15.58	0.63	0.191	(0.259)	0.172	0.019
188	15.67	0.63	0.191	(0.257)	0.172	0.019
189	15.75	0.63	0.191	(0.256)	0.172	0.019
190	15.83	0.63	0.191	(0.255)	0.172	0.019
191	15.92	0.63	0.191	(0.253)	0.172	0.019
192	16.00	0.63	0.191	(0.252)	0.172	0.019
193	16.08	0.13	0.040	(0.251)	0.036	0.004
194	16.17	0.13	0.040	(0.249)	0.036	0.004
195	16.25	0.13	0.040	(0.248)	0.036	0.004
196	16.33	0.13	0.040	(0.247)	0.036	0.004
197	16.42	0.13	0.040	(0.246)	0.036	0.004
198	16.50	0.13	0.040	(0.244)	0.036	0.004
199	16.58	0.10	0.030	(0.243)	0.027	0.003
200	16.67	0.10	0.030	(0.242)	0.027	0.003
201	16.75	0.10	0.030	(0.241)	0.027	0.003
202	16.83	0.10	0.030	(0.239)	0.027	0.003
203	16.92	0.10	0.030	(0.238)	0.027	0.003
204	17.00	0.10	0.030	(0.237)	0.027	0.003
205	17.08	0.17	0.050	(0.236)	0.045	0.005
206	17.17	0.17	0.050	(0.235)	0.045	0.005
207	17.25	0.17	0.050	(0.233)	0.045	0.005
208	17.33	0.17	0.050	(0.232)	0.045	0.005

209	17.42	0.17	0.050	(0.231)	0.045	0.005
210	17.50	0.17	0.050	(0.230)	0.045	0.005
211	17.58	0.17	0.050	(0.229)	0.045	0.005
212	17.67	0.17	0.050	(0.228)	0.045	0.005
213	17.75	0.17	0.050	(0.227)	0.045	0.005
214	17.83	0.13	0.040	(0.225)	0.036	0.004
215	17.92	0.13	0.040	(0.224)	0.036	0.004
216	18.00	0.13	0.040	(0.223)	0.036	0.004
217	18.08	0.13	0.040	(0.222)	0.036	0.004
218	18.17	0.13	0.040	(0.221)	0.036	0.004
219	18.25	0.13	0.040	(0.220)	0.036	0.004
220	18.33	0.13	0.040	(0.219)	0.036	0.004
221	18.42	0.13	0.040	(0.218)	0.036	0.004
222	18.50	0.13	0.040	(0.217)	0.036	0.004
223	18.58	0.10	0.030	(0.216)	0.027	0.003
224	18.67	0.10	0.030	(0.215)	0.027	0.003
225	18.75	0.10	0.030	(0.214)	0.027	0.003
226	18.83	0.07	0.020	(0.213)	0.018	0.002
227	18.92	0.07	0.020	(0.212)	0.018	0.002
228	19.00	0.07	0.020	(0.211)	0.018	0.002
229	19.08	0.10	0.030	(0.210)	0.027	0.003
230	19.17	0.10	0.030	(0.209)	0.027	0.003
231	19.25	0.10	0.030	(0.208)	0.027	0.003
232	19.33	0.13	0.040	(0.207)	0.036	0.004
233	19.42	0.13	0.040	(0.206)	0.036	0.004
234	19.50	0.13	0.040	(0.205)	0.036	0.004
235	19.58	0.10	0.030	(0.204)	0.027	0.003
236	19.67	0.10	0.030	(0.203)	0.027	0.003
237	19.75	0.10	0.030	(0.202)	0.027	0.003
238	19.83	0.07	0.020	(0.201)	0.018	0.002
239	19.92	0.07	0.020	(0.200)	0.018	0.002
240	20.00	0.07	0.020	(0.199)	0.018	0.002
241	20.08	0.10	0.030	(0.198)	0.027	0.003
242	20.17	0.10	0.030	(0.197)	0.027	0.003
243	20.25	0.10	0.030	(0.197)	0.027	0.003
244	20.33	0.10	0.030	(0.196)	0.027	0.003
245	20.42	0.10	0.030	(0.195)	0.027	0.003
246	20.50	0.10	0.030	(0.194)	0.027	0.003
247	20.58	0.10	0.030	(0.193)	0.027	0.003
248	20.67	0.10	0.030	(0.192)	0.027	0.003
249	20.75	0.10	0.030	(0.192)	0.027	0.003
250	20.83	0.07	0.020	(0.191)	0.018	0.002
251	20.92	0.07	0.020	(0.190)	0.018	0.002
252	21.00	0.07	0.020	(0.189)	0.018	0.002
253	21.08	0.10	0.030	(0.189)	0.027	0.003
254	21.17	0.10	0.030	(0.188)	0.027	0.003
255	21.25	0.10	0.030	(0.187)	0.027	0.003
256	21.33	0.07	0.020	(0.186)	0.018	0.002
257	21.42	0.07	0.020	(0.186)	0.018	0.002
258	21.50	0.07	0.020	(0.185)	0.018	0.002
259	21.58	0.10	0.030	(0.184)	0.027	0.003
260	21.67	0.10	0.030	(0.184)	0.027	0.003
261	21.75	0.10	0.030	(0.183)	0.027	0.003
262	21.83	0.07	0.020	(0.182)	0.018	0.002
263	21.92	0.07	0.020	(0.182)	0.018	0.002
264	22.00	0.07	0.020	(0.181)	0.018	0.002
265	22.08	0.10	0.030	(0.181)	0.027	0.003
266	22.17	0.10	0.030	(0.180)	0.027	0.003
267	22.25	0.10	0.030	(0.179)	0.027	0.003
268	22.33	0.07	0.020	(0.179)	0.018	0.002
269	22.42	0.07	0.020	(0.178)	0.018	0.002
270	22.50	0.07	0.020	(0.178)	0.018	0.002
271	22.58	0.07	0.020	(0.177)	0.018	0.002

272	22.67	0.07	0.020	(0.177)	0.018	0.002
273	22.75	0.07	0.020	(0.176)	0.018	0.002
274	22.83	0.07	0.020	(0.176)	0.018	0.002
275	22.92	0.07	0.020	(0.175)	0.018	0.002
276	23.00	0.07	0.020	(0.175)	0.018	0.002
277	23.08	0.07	0.020	(0.175)	0.018	0.002
278	23.17	0.07	0.020	(0.174)	0.018	0.002
279	23.25	0.07	0.020	(0.174)	0.018	0.002
280	23.33	0.07	0.020	(0.173)	0.018	0.002
281	23.42	0.07	0.020	(0.173)	0.018	0.002
282	23.50	0.07	0.020	(0.173)	0.018	0.002
283	23.58	0.07	0.020	(0.173)	0.018	0.002
284	23.67	0.07	0.020	(0.172)	0.018	0.002
285	23.75	0.07	0.020	(0.172)	0.018	0.002
286	23.83	0.07	0.020	(0.172)	0.018	0.002
287	23.92	0.07	0.020	(0.172)	0.018	0.002
288	24.00	0.07	0.020	(0.172)	0.018	0.002

(Loss Rate Not Used)

Sum = 100.0 Sum = 3.1

Flood volume = Effective rainfall 0.26(In)
times area 2.9(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)

Total soil loss = 2.25(In)
Total soil loss = 0.541(Ac.Ft)
Total rainfall = 2.51(In)
Flood volume = 2672.3 Cubic Feet
Total soil loss = 23557.5 Cubic Feet

Peak flow rate of this hydrograph = 0.134(CFS)

+++++

24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.00	Q				
0+10	0.0001	0.01	Q				
0+15	0.0001	0.01	Q				
0+20	0.0001	0.01	Q				
0+25	0.0002	0.01	Q				
0+30	0.0003	0.01	Q				
0+35	0.0003	0.01	Q				
0+40	0.0004	0.01	Q				
0+45	0.0004	0.01	Q				
0+50	0.0005	0.01	Q				
0+55	0.0006	0.01	Q				
1+ 0	0.0007	0.01	Q				
1+ 5	0.0007	0.01	Q				
1+10	0.0008	0.01	Q				
1+15	0.0009	0.01	Q				
1+20	0.0009	0.01	Q				
1+25	0.0010	0.01	Q				
1+30	0.0010	0.01	Q				
1+35	0.0011	0.01	Q				
1+40	0.0012	0.01	Q				
1+45	0.0012	0.01	Q				
1+50	0.0013	0.01	Q				
1+55	0.0014	0.01	Q				
2+ 0	0.0014	0.01	Q				
2+ 5	0.0015	0.01	Q				

2+10	0.0016	0.01	QV
2+15	0.0017	0.01	QV
2+20	0.0018	0.01	QV
2+25	0.0018	0.01	QV
2+30	0.0019	0.01	QV
2+35	0.0020	0.01	QV
2+40	0.0021	0.01	QV
2+45	0.0022	0.01	QV
2+50	0.0023	0.01	QV
2+55	0.0024	0.01	QV
3+ 0	0.0025	0.01	QV
3+ 5	0.0026	0.01	QV
3+10	0.0027	0.01	QV
3+15	0.0028	0.01	QV
3+20	0.0029	0.01	QV
3+25	0.0030	0.01	QV
3+30	0.0031	0.01	Q V
3+35	0.0032	0.01	Q V
3+40	0.0033	0.01	Q V
3+45	0.0034	0.01	Q V
3+50	0.0035	0.02	Q V
3+55	0.0036	0.02	Q V
4+ 0	0.0038	0.02	Q V
4+ 5	0.0039	0.02	Q V
4+10	0.0040	0.02	Q V
4+15	0.0041	0.02	Q V
4+20	0.0043	0.02	Q V
4+25	0.0044	0.02	Q V
4+30	0.0045	0.02	Q V
4+35	0.0047	0.02	Q V
4+40	0.0048	0.02	Q V
4+45	0.0050	0.02	Q V
4+50	0.0051	0.02	Q V
4+55	0.0053	0.02	Q V
5+ 0	0.0054	0.02	Q V
5+ 5	0.0056	0.02	Q V
5+10	0.0057	0.02	Q V
5+15	0.0058	0.02	Q V
5+20	0.0059	0.02	Q V
5+25	0.0061	0.02	Q V
5+30	0.0062	0.02	Q V
5+35	0.0064	0.02	Q V
5+40	0.0065	0.02	Q V
5+45	0.0067	0.02	Q V
5+50	0.0069	0.02	Q V
5+55	0.0070	0.02	Q V
6+ 0	0.0072	0.02	Q V
6+ 5	0.0073	0.02	Q V
6+10	0.0075	0.03	Q V
6+15	0.0077	0.03	Q V
6+20	0.0079	0.03	Q V
6+25	0.0081	0.03	Q V
6+30	0.0082	0.03	Q V
6+35	0.0084	0.03	Q V
6+40	0.0086	0.03	Q V
6+45	0.0088	0.03	Q V
6+50	0.0090	0.03	Q V
6+55	0.0092	0.03	Q V
7+ 0	0.0094	0.03	Q V
7+ 5	0.0096	0.03	Q V
7+10	0.0098	0.03	Q V
7+15	0.0100	0.03	Q V
7+20	0.0102	0.03	Q V

7+25	0.0105	0.03	Q	V				
7+30	0.0107	0.03	Q	V				
7+35	0.0109	0.03	Q	V				
7+40	0.0112	0.03	Q	V				
7+45	0.0114	0.03	Q	V				
7+50	0.0116	0.04	Q	V				
7+55	0.0119	0.04	Q	V				
8+ 0	0.0122	0.04	Q	V				
8+ 5	0.0124	0.04	Q	V				
8+10	0.0127	0.04	Q	V				
8+15	0.0130	0.04	Q	V				
8+20	0.0133	0.04	Q	V				
8+25	0.0136	0.04	Q	V				
8+30	0.0139	0.04	Q	V				
8+35	0.0142	0.05	Q	V				
8+40	0.0146	0.05	Q	V				
8+45	0.0149	0.05	Q	V				
8+50	0.0152	0.05	Q	V				
8+55	0.0156	0.05	Q	V				
9+ 0	0.0159	0.05	Q	V				
9+ 5	0.0163	0.05	Q	V				
9+10	0.0166	0.05	Q	V				
9+15	0.0170	0.06	Q	V				
9+20	0.0174	0.06	Q	V				
9+25	0.0178	0.06	Q	V				
9+30	0.0182	0.06	Q	V				
9+35	0.0186	0.06	Q	V				
9+40	0.0190	0.06	Q	V				
9+45	0.0195	0.06	Q	V				
9+50	0.0199	0.06	Q	V				
9+55	0.0203	0.06	Q	V				
10+ 0	0.0208	0.06	Q	V				
10+ 5	0.0211	0.05	Q	V				
10+10	0.0215	0.05	Q	V				
10+15	0.0218	0.04	Q	V				
10+20	0.0221	0.04	Q	V				
10+25	0.0224	0.04	Q	V				
10+30	0.0227	0.04	Q	V				
10+35	0.0230	0.05	Q	V				
10+40	0.0234	0.06	Q	V				
10+45	0.0238	0.06	Q	V				
10+50	0.0242	0.06	Q	V				
10+55	0.0246	0.06	Q	V				
11+ 0	0.0250	0.06	Q	V				
11+ 5	0.0254	0.06	Q	V				
11+10	0.0258	0.06	Q	V				
11+15	0.0262	0.06	Q	V				
11+20	0.0265	0.06	Q	V				
11+25	0.0269	0.06	Q	V				
11+30	0.0273	0.06	Q	V				
11+35	0.0277	0.05	Q	V				
11+40	0.0280	0.05	Q	V				
11+45	0.0284	0.05	Q	V				
11+50	0.0287	0.05	Q	V				
11+55	0.0291	0.05	Q	V				
12+ 0	0.0294	0.05	Q	V				
12+ 5	0.0299	0.06	Q	V				
12+10	0.0303	0.07	Q	V				
12+15	0.0308	0.07	Q	V				
12+20	0.0313	0.07	Q	V				
12+25	0.0319	0.08	Q	V				
12+30	0.0324	0.08	Q	V				
12+35	0.0329	0.08	Q	V				

12+40	0.0335	0.08	Q	V		
12+45	0.0340	0.08	Q	V		
12+50	0.0346	0.08	Q	V		
12+55	0.0352	0.08	Q	V		
13+ 0	0.0358	0.08	Q	V		
13+ 5	0.0365	0.10	Q	V		
13+10	0.0372	0.11	Q	V		
13+15	0.0381	0.12	Q	V		
13+20	0.0389	0.13	Q	V		
13+25	0.0398	0.13	Q	V		
13+30	0.0407	0.13	Q	V		
13+35	0.0415	0.11	Q	V		
13+40	0.0420	0.08	Q	V		
13+45	0.0425	0.07	Q	V		
13+50	0.0429	0.07	Q	V		
13+55	0.0434	0.07	Q	V		
14+ 0	0.0439	0.07	Q	V		
14+ 5	0.0444	0.07	Q	V		
14+10	0.0449	0.08	Q	V		
14+15	0.0454	0.08	Q	V		
14+20	0.0460	0.08	Q	V		
14+25	0.0465	0.08	Q	V		
14+30	0.0470	0.08	Q	V		
14+35	0.0475	0.08	Q	V		
14+40	0.0480	0.08	Q	V		
14+45	0.0486	0.08	Q	V		
14+50	0.0491	0.07	Q	V		
14+55	0.0496	0.07	Q	V		
15+ 0	0.0501	0.07	Q	V		
15+ 5	0.0506	0.07	Q	V		
15+10	0.0511	0.07	Q	V		
15+15	0.0516	0.07	Q	V		
15+20	0.0520	0.07	Q	V		
15+25	0.0525	0.07	Q	V		
15+30	0.0530	0.07	Q	V		
15+35	0.0534	0.06	Q	V		
15+40	0.0538	0.06	Q	V		
15+45	0.0542	0.06	Q	V		
15+50	0.0545	0.06	Q	V		
15+55	0.0549	0.06	Q	V		
16+ 0	0.0553	0.06	Q	V		
16+ 5	0.0555	0.04	Q	V		
16+10	0.0557	0.02	Q	V		
16+15	0.0558	0.01	Q	V		
16+20	0.0558	0.01	Q	V		
16+25	0.0559	0.01	Q	V		
16+30	0.0560	0.01	Q	V		
16+35	0.0561	0.01	Q	V		
16+40	0.0561	0.01	Q	V		
16+45	0.0562	0.01	Q	V		
16+50	0.0562	0.01	Q	V		
16+55	0.0563	0.01	Q	V		
17+ 0	0.0564	0.01	Q	V		
17+ 5	0.0564	0.01	Q	V		
17+10	0.0565	0.01	Q	V		
17+15	0.0566	0.01	Q	V		
17+20	0.0567	0.01	Q	V		
17+25	0.0568	0.01	Q	V		
17+30	0.0569	0.01	Q	V		
17+35	0.0570	0.01	Q	V		
17+40	0.0571	0.01	Q	V		
17+45	0.0572	0.01	Q	V		
17+50	0.0573	0.01	Q	V		

17+55	0.0574	0.01	Q	V
18+ 0	0.0575	0.01	Q	V
18+ 5	0.0576	0.01	Q	V
18+10	0.0577	0.01	Q	V
18+15	0.0577	0.01	Q	V
18+20	0.0578	0.01	Q	V
18+25	0.0579	0.01	Q	V
18+30	0.0580	0.01	Q	V
18+35	0.0580	0.01	Q	V
18+40	0.0581	0.01	Q	V
18+45	0.0582	0.01	Q	V
18+50	0.0582	0.01	Q	V
18+55	0.0583	0.01	Q	V
19+ 0	0.0583	0.01	Q	V
19+ 5	0.0584	0.01	Q	V
19+10	0.0584	0.01	Q	V
19+15	0.0585	0.01	Q	V
19+20	0.0585	0.01	Q	V
19+25	0.0586	0.01	Q	V
19+30	0.0587	0.01	Q	V
19+35	0.0588	0.01	Q	V
19+40	0.0588	0.01	Q	V
19+45	0.0589	0.01	Q	V
19+50	0.0589	0.01	Q	V
19+55	0.0590	0.01	Q	V
20+ 0	0.0590	0.01	Q	V
20+ 5	0.0591	0.01	Q	V
20+10	0.0591	0.01	Q	V
20+15	0.0592	0.01	Q	V
20+20	0.0593	0.01	Q	V
20+25	0.0593	0.01	Q	V
20+30	0.0594	0.01	Q	V
20+35	0.0594	0.01	Q	V
20+40	0.0595	0.01	Q	V
20+45	0.0596	0.01	Q	V
20+50	0.0596	0.01	Q	V
20+55	0.0597	0.01	Q	V
21+ 0	0.0597	0.01	Q	V
21+ 5	0.0597	0.01	Q	V
21+10	0.0598	0.01	Q	V
21+15	0.0599	0.01	Q	V
21+20	0.0599	0.01	Q	V
21+25	0.0600	0.01	Q	V
21+30	0.0600	0.01	Q	V
21+35	0.0600	0.01	Q	V
21+40	0.0601	0.01	Q	V
21+45	0.0602	0.01	Q	V
21+50	0.0602	0.01	Q	V
21+55	0.0603	0.01	Q	V
22+ 0	0.0603	0.01	Q	V
22+ 5	0.0603	0.01	Q	V
22+10	0.0604	0.01	Q	V
22+15	0.0605	0.01	Q	V
22+20	0.0605	0.01	Q	V
22+25	0.0606	0.01	Q	V
22+30	0.0606	0.01	Q	V
22+35	0.0606	0.01	Q	V
22+40	0.0607	0.01	Q	V
22+45	0.0607	0.01	Q	V
22+50	0.0608	0.01	Q	V
22+55	0.0608	0.01	Q	V
23+ 0	0.0608	0.01	Q	V
23+ 5	0.0609	0.01	Q	V

23+10	0.0609	0.01	Q				V
23+15	0.0610	0.01	Q				V
23+20	0.0610	0.01	Q				V
23+25	0.0610	0.01	Q				V
23+30	0.0611	0.01	Q				V
23+35	0.0611	0.01	Q				V
23+40	0.0612	0.01	Q				V
23+45	0.0612	0.01	Q				V
23+50	0.0612	0.01	Q				V
23+55	0.0613	0.01	Q				V
24+ 0	0.0613	0.01	Q				V
24+ 5	0.0613	0.00	Q				V
24+10	0.0613	0.00	Q				V
24+15	0.0613	0.00	Q				V

**Pre-developed conditions
10 year 1 hour**

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863pre110.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MV
Pre-developed conditions
10 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 540.00(Ft.)
Length along longest watercourse measured to centroid = 305.00(Ft.)
Length along longest watercourse = 0.102 Mi.
Length along longest watercourse measured to centroid = 0.058 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 146.6667 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.040 Hr.
Lag time = 2.38 Min.
25% of lag time = 0.60 Min.
40% of lag time = 0.95 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	0.50	1.44

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.20	3.46

STORM EVENT (YEAR) = 10.00

Area Averaged 2-Year Rainfall = 0.500(In)
 Area Averaged 100-Year Rainfall = 1.200(In)

Point rain (area averaged) = 0.788(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 0.788(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
2.880	86.00	0.000
Total Area Entered = 2.88(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
86.0	86.0	0.176	0.000	0.176	1.000	0.176
					Sum (F) =	0.176

Area averaged mean soil loss (F) (In/Hr) = 0.176

Minimum soil loss rate ((In/Hr)) = 0.088

(for 24 hour storm duration)

Soil low loss rate (decimal) = 0.900

 Slope of intensity-duration curve for a 1 hour storm =0.5000

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

 Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	209.869	45.056
2	0.167	419.737	42.685
3	0.250	629.606	8.406
4	0.333	839.474	3.853
		Sum = 100.000	Sum = 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	4.20	0.397	(0.357)	0.222
2	0.17	4.30	0.407	(0.366)	0.231
3	0.25	5.00	0.473	(0.426)	0.297
4	0.33	5.00	0.473	(0.426)	0.297
5	0.42	5.80	0.548	(0.494)	0.373
6	0.50	6.50	0.615	(0.553)	0.439
7	0.58	7.40	0.700	(0.630)	0.524
8	0.67	8.60	0.813	(0.732)	0.638
9	0.75	12.30	1.163	(1.047)	0.987
10	0.83	29.10	2.752	(2.476)	2.576
11	0.92	6.80	0.643	(0.579)	0.467
12	1.00	5.00	0.473	(0.426)	0.297

(Loss Rate Not Used)

Sum = 100.0 Sum = 7.3

Flood volume = Effective rainfall 0.61(In)

times area 2.9(Ac.) / [(In)/(Ft.)] = 0.1(Ac.Ft)

Total soil loss = 0.18(In)

Total soil loss = 0.042(Ac.Ft)
 Total rainfall = 0.79(In)
 Flood volume = 6401.9 Cubic Feet
 Total soil loss = 1835.8 Cubic Feet

 Peak flow rate of this hydrograph = 4.809(CFS)

+++++
 1 - H O U R S T O R M
 R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0020	0.29	VQ				
0+10	0.0060	0.58	VQ				
0+15	0.0110	0.73	Q				
0+20	0.0168	0.84	QV				
0+25	0.0233	0.95	Q V				
0+30	0.0312	1.14	Q V				
0+35	0.0405	1.35	Q	V			
0+40	0.0518	1.63	Q	V			
0+45	0.0673	2.26		Q	V		
0+50	0.1005	4.81			Q	V	
0+55	0.1288	4.12			Q		V
1+ 0	0.1406	1.71		Q			V
1+ 5	0.1459	0.77	Q				V
1+10	0.1467	0.12	Q				V
1+15	0.1470	0.03	Q				V

**Pre-developed conditions
10 year 3 hour**

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863pre310.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MV
Pre-developed conditions
10 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 540.00(Ft.)
Length along longest watercourse measured to centroid = 305.00(Ft.)
Length along longest watercourse = 0.102 Mi.
Length along longest watercourse measured to centroid = 0.058 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 146.6667 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.040 Hr.
Lag time = 2.38 Min.
25% of lag time = 0.60 Min.
40% of lag time = 0.95 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	0.81	2.33

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.86	5.36

STORM EVENT (YEAR) = 10.00

Area Averaged 2-Year Rainfall = 0.810(In)
 Area Averaged 100-Year Rainfall = 1.860(In)

Point rain (area averaged) = 1.242(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 1.242(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 2.880 86.00 0.000
 Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
86.0	86.0	0.176	0.000	0.176	1.000	0.176
						Sum (F) = 0.176

Area averaged mean soil loss (F) (In/Hr) = 0.176
 Minimum soil loss rate ((In/Hr)) = 0.088
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	209.869	1.308
2	0.167	419.737	1.239
3	0.250	629.606	0.244
4	0.333	839.474	0.112
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	1.30	(0.176)	0.174	0.019
2	0.17	1.30	(0.176)	0.174	0.019
3	0.25	1.10	(0.176)	0.148	0.016
4	0.33	1.50	0.176	(0.201)	0.048
5	0.42	1.50	0.176	(0.201)	0.048
6	0.50	1.80	0.176	(0.241)	0.093
7	0.58	1.50	0.176	(0.201)	0.048
8	0.67	1.80	0.176	(0.241)	0.093
9	0.75	1.80	0.176	(0.241)	0.093
10	0.83	1.50	0.176	(0.201)	0.048
11	0.92	1.60	0.176	(0.215)	0.063
12	1.00	1.80	0.176	(0.241)	0.093
13	1.08	2.20	0.176	(0.295)	0.152
14	1.17	2.20	0.176	(0.295)	0.152
15	1.25	2.20	0.176	(0.295)	0.152
16	1.33	2.00	0.176	(0.268)	0.122
17	1.42	2.60	0.176	(0.349)	0.212
18	1.50	2.70	0.176	(0.362)	0.227
19	1.58	2.40	0.176	(0.322)	0.182

20	1.67	2.70	0.402	0.176	(0.362)	0.227
21	1.75	3.30	0.492	0.176	(0.443)	0.316
22	1.83	3.10	0.462	0.176	(0.416)	0.286
23	1.92	2.90	0.432	0.176	(0.389)	0.257
24	2.00	3.00	0.447	0.176	(0.402)	0.272
25	2.08	3.10	0.462	0.176	(0.416)	0.286
26	2.17	4.20	0.626	0.176	(0.563)	0.450
27	2.25	5.00	0.745	0.176	(0.671)	0.570
28	2.33	3.50	0.522	0.176	(0.469)	0.346
29	2.42	6.80	1.013	0.176	(0.912)	0.838
30	2.50	7.30	1.088	0.176	(0.979)	0.912
31	2.58	8.20	1.222	0.176	(1.100)	1.046
32	2.67	5.90	0.879	0.176	(0.791)	0.704
33	2.75	2.00	0.298	0.176	(0.268)	0.122
34	2.83	1.80	0.268	0.176	(0.241)	0.093
35	2.92	1.80	0.268	0.176	(0.241)	0.093
36	3.00	0.60	0.089	(0.176)	0.080	0.009

(Loss Rate Not Used)

Sum = 100.0 Sum = 8.7

Flood volume = Effective rainfall 0.73(In)
times area 2.9(Ac.)/[(In)/(Ft.)] = 0.2(Ac.Ft)
Total soil loss = 0.52(In)
Total soil loss = 0.124(Ac.Ft)
Total rainfall = 1.24(In)
Flood volume = 7586.0 Cubic Feet
Total soil loss = 5397.9 Cubic Feet

Peak flow rate of this hydrograph = 2.743(CFS)

+++++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0002	0.03	Q				
0+10	0.0005	0.05	Q				
0+15	0.0009	0.05	Q				
0+20	0.0015	0.09	Q				
0+25	0.0024	0.13	Q				
0+30	0.0037	0.19	Q				
0+35	0.0050	0.19	QV				
0+40	0.0065	0.21	QV				
0+45	0.0083	0.26	Q				
0+50	0.0097	0.21	Q V				
0+55	0.0109	0.17	Q V				
1+ 0	0.0124	0.22	Q V				
1+ 5	0.0147	0.33	Q V				
1+10	0.0176	0.42	Q V				
1+15	0.0206	0.44	Q V				
1+20	0.0234	0.40	Q V				
1+25	0.0267	0.48	Q V				
1+30	0.0309	0.61	Q V				
1+35	0.0349	0.58	Q V				
1+40	0.0390	0.60	Q V				
1+45	0.0443	0.76	Q V				
1+50	0.0501	0.84	Q V				
1+55	0.0556	0.79	Q V				
2+ 0	0.0609	0.78	Q V				
2+ 5	0.0665	0.81	Q V				

2+10	0.0736	1.04	Q		V			
2+15	0.0833	1.40	Q		V			
2+20	0.0923	1.30	Q		V			
2+25	0.1041	1.71	Q		V			
2+30	0.1205	2.38		Q				
2+35	0.1394	2.74		Q			V	
2+40	0.1568	2.53		Q			V	
2+45	0.1664	1.39	Q					V
2+50	0.1703	0.56	Q					V
2+55	0.1726	0.34	Q					V
3+ 0	0.1738	0.16	Q					V
3+ 5	0.1741	0.04	Q					V
3+10	0.1741	0.01	Q					V
3+15	0.1742	0.00	Q					V

**Pre-developed conditions
10 year 6 hour**

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

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863pre610.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MV
Pre-developed conditions
10 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 540.00(Ft.)
Length along longest watercourse measured to centroid = 305.00(Ft.)
Length along longest watercourse = 0.102 Mi.
Length along longest watercourse measured to centroid = 0.058 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 146.6667 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.040 Hr.
Lag time = 2.38 Min.
25% of lag time = 0.60 Min.
40% of lag time = 0.95 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.40	4.03

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	2.50	7.20

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 1.400(In)
Area Averaged 100-Year Rainfall = 2.500(In)

Point rain (area averaged) = 1.853(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 1.853(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 2.880 86.00 0.000
 Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
86.0	86.0	0.176	0.000	0.176	1.000	0.176
						Sum (F) = 0.176

Area averaged mean soil loss (F) (In/Hr) = 0.176
 Minimum soil loss rate ((In/Hr)) = 0.088
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	209.869	45.056
2	0.167	419.737	42.685
3	0.250	629.606	8.406
4	0.333	839.474	3.853
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max Low	Effective (In/Hr)
1	0.08	0.50	(0.176)	0.100
2	0.17	0.60	(0.176)	0.120
3	0.25	0.60	(0.176)	0.120
4	0.33	0.60	(0.176)	0.120
5	0.42	0.60	(0.176)	0.120
6	0.50	0.70	(0.176)	0.140
7	0.58	0.70	(0.176)	0.140
8	0.67	0.70	(0.176)	0.140
9	0.75	0.70	(0.176)	0.140
10	0.83	0.70	(0.176)	0.140
11	0.92	0.70	(0.176)	0.140
12	1.00	0.80	(0.176)	0.160
13	1.08	0.80	(0.176)	0.160
14	1.17	0.80	(0.176)	0.160
15	1.25	0.80	(0.176)	0.160
16	1.33	0.80	(0.176)	0.160
17	1.42	0.80	(0.176)	0.160
18	1.50	0.80	(0.176)	0.160
19	1.58	0.80	(0.176)	0.160
20	1.67	0.80	(0.176)	0.160
21	1.75	0.80	(0.176)	0.160

22	1.83	0.80	0.178	(0.176)	0.160	0.018
23	1.92	0.80	0.178	(0.176)	0.160	0.018
24	2.00	0.90	0.200	0.176	(0.180)	0.024
25	2.08	0.80	0.178	(0.176)	0.160	0.018
26	2.17	0.90	0.200	0.176	(0.180)	0.024
27	2.25	0.90	0.200	0.176	(0.180)	0.024
28	2.33	0.90	0.200	0.176	(0.180)	0.024
29	2.42	0.90	0.200	0.176	(0.180)	0.024
30	2.50	0.90	0.200	0.176	(0.180)	0.024
31	2.58	0.90	0.200	0.176	(0.180)	0.024
32	2.67	0.90	0.200	0.176	(0.180)	0.024
33	2.75	1.00	0.222	0.176	(0.200)	0.047
34	2.83	1.00	0.222	0.176	(0.200)	0.047
35	2.92	1.00	0.222	0.176	(0.200)	0.047
36	3.00	1.00	0.222	0.176	(0.200)	0.047
37	3.08	1.00	0.222	0.176	(0.200)	0.047
38	3.17	1.10	0.245	0.176	(0.220)	0.069
39	3.25	1.10	0.245	0.176	(0.220)	0.069
40	3.33	1.10	0.245	0.176	(0.220)	0.069
41	3.42	1.20	0.267	0.176	(0.240)	0.091
42	3.50	1.30	0.289	0.176	(0.260)	0.113
43	3.58	1.40	0.311	0.176	(0.280)	0.136
44	3.67	1.40	0.311	0.176	(0.280)	0.136
45	3.75	1.50	0.333	0.176	(0.300)	0.158
46	3.83	1.50	0.333	0.176	(0.300)	0.158
47	3.92	1.60	0.356	0.176	(0.320)	0.180
48	4.00	1.60	0.356	0.176	(0.320)	0.180
49	4.08	1.70	0.378	0.176	(0.340)	0.202
50	4.17	1.80	0.400	0.176	(0.360)	0.225
51	4.25	1.90	0.422	0.176	(0.380)	0.247
52	4.33	2.00	0.445	0.176	(0.400)	0.269
53	4.42	2.10	0.467	0.176	(0.420)	0.291
54	4.50	2.10	0.467	0.176	(0.420)	0.291
55	4.58	2.20	0.489	0.176	(0.440)	0.313
56	4.67	2.30	0.511	0.176	(0.460)	0.336
57	4.75	2.40	0.534	0.176	(0.480)	0.358
58	4.83	2.40	0.534	0.176	(0.480)	0.358
59	4.92	2.50	0.556	0.176	(0.500)	0.380
60	5.00	2.60	0.578	0.176	(0.520)	0.402
61	5.08	3.10	0.689	0.176	(0.620)	0.514
62	5.17	3.60	0.800	0.176	(0.720)	0.625
63	5.25	3.90	0.867	0.176	(0.780)	0.691
64	5.33	4.20	0.934	0.176	(0.840)	0.758
65	5.42	4.70	1.045	0.176	(0.940)	0.869
66	5.50	5.60	1.245	0.176	(1.120)	1.069
67	5.58	1.90	0.422	0.176	(0.380)	0.247
68	5.67	0.90	0.200	0.176	(0.180)	0.024
69	5.75	0.60	0.133	(0.176)	0.120	0.013
70	5.83	0.50	0.111	(0.176)	0.100	0.011
71	5.92	0.30	0.067	(0.176)	0.060	0.007
72	6.00	0.20	0.044	(0.176)	0.040	0.004

(Loss Rate Not Used)

Sum = 100.0 Sum = 10.7

Flood volume = Effective rainfall 0.89(In)

times area 2.9(Ac.)/[(In)/(Ft.)] = 0.2(Ac.Ft)

Total soil loss = 0.96(In)

Total soil loss = 0.231(Ac.Ft)

Total rainfall = 1.85(In)

Flood volume = 9306.7 Cubic Feet

Total soil loss = 10060.4 Cubic Feet

Peak flow rate of this hydrograph = 2.739(CFS)

+++++

6 - H O U R S T O R M
 R u n o f f H y d r o g r a p h

 Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume	Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001		0.01	Q				
0+10	0.0003		0.03	Q				
0+15	0.0006		0.04	Q				
0+20	0.0008		0.04	Q				
0+25	0.0011		0.04	Q				
0+30	0.0014		0.04	Q				
0+35	0.0017		0.04	Q				
0+40	0.0020		0.04	Q				
0+45	0.0023		0.05	Q				
0+50	0.0026		0.05	Q				
0+55	0.0029		0.05	Q				
1+ 0	0.0033		0.05	Q				
1+ 5	0.0036		0.05	Q				
1+10	0.0040		0.05	Q				
1+15	0.0043		0.05	Q				
1+20	0.0047		0.05	Q				
1+25	0.0050		0.05	Q				
1+30	0.0054		0.05	QV				
1+35	0.0057		0.05	QV				
1+40	0.0061		0.05	QV				
1+45	0.0065		0.05	QV				
1+50	0.0068		0.05	QV				
1+55	0.0072		0.05	QV				
2+ 0	0.0076		0.06	QV				
2+ 5	0.0080		0.06	QV				
2+10	0.0084		0.06	QV				
2+15	0.0089		0.07	QV				
2+20	0.0094		0.07	QV				
2+25	0.0099		0.07	QV				
2+30	0.0104		0.07	QV				
2+35	0.0109		0.07	Q V				
2+40	0.0113		0.07	Q V				
2+45	0.0120		0.10	Q V				
2+50	0.0129		0.13	Q V				
2+55	0.0138		0.13	Q V				
3+ 0	0.0148		0.14	Q V				
3+ 5	0.0157		0.14	Q V				
3+10	0.0168		0.16	Q V				
3+15	0.0182		0.19	Q V				
3+20	0.0195		0.20	Q V				
3+25	0.0211		0.23	Q V				
3+30	0.0231		0.29	Q V				
3+35	0.0255		0.35	Q V				
3+40	0.0281		0.38	Q V				
3+45	0.0310		0.42	Q V				
3+50	0.0341		0.45	Q V				
3+55	0.0374		0.49	Q V				
4+ 0	0.0410		0.52	Q V				
4+ 5	0.0448		0.55	Q V				
4+10	0.0490		0.61	Q V				
4+15	0.0536		0.67	Q V				
4+20	0.0587		0.74	Q V				
4+25	0.0642		0.80	Q V				
4+30	0.0699		0.84	Q V				

4+35	0.0759	0.87	Q		V			
4+40	0.0823	0.93	Q		V			
4+45	0.0892	0.99	Q		V			
4+50	0.0963	1.03	Q		V			
4+55	0.1036	1.07	Q		V			
5+ 0	0.1114	1.13	Q		V			
5+ 5	0.1203	1.30	Q		V			
5+10	0.1313	1.59	Q		V			
5+15	0.1441	1.85	Q		V			
5+20	0.1582	2.06	Q		V			
5+25	0.1742	2.32	Q		V			
5+30	0.1930	2.74	Q		V			
5+35	0.2064	1.95	Q		V			
5+40	0.2112	0.70	Q		V			
5+45	0.2128	0.23	Q		V			
5+50	0.2133	0.06	Q		V			
5+55	0.2135	0.03	Q		V			
6+ 0	0.2136	0.02	Q		V			
6+ 5	0.2136	0.01	Q		V			
6+10	0.2136	0.00	Q		V			
6+15	0.2137	0.00	Q		V			

**Pre-developed conditions
10 year 24 hour**

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863pre2410.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MV
Pre-developed conditions
10 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 540.00(Ft.)
Length along longest watercourse measured to centroid = 305.00(Ft.)
Length along longest watercourse = 0.102 Mi.
Length along longest watercourse measured to centroid = 0.058 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 146.6667 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.040 Hr.
Lag time = 2.38 Min.
25% of lag time = 0.60 Min.
40% of lag time = 0.95 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.90	5.47

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	4.50	12.96

STORM EVENT (YEAR) = 10.00

Area Averaged 2-Year Rainfall = 1.900(In)
 Area Averaged 100-Year Rainfall = 4.500(In)

Point rain (area averaged) = 2.970(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 2.970(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 2.880 86.00 0.000
 Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
86.0	86.0	0.176	0.000	0.176	1.000	0.176
						Sum (F) = 0.176

Area averaged mean soil loss (F) (In/Hr) = 0.176
 Minimum soil loss rate ((In/Hr)) = 0.088
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	209.869	1.308
2	0.167	419.737	1.239
3	0.250	629.606	0.244
4	0.333	839.474	0.112
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	0.07	(0.311)	0.021	0.002
2	0.17	0.07	(0.310)	0.021	0.002
3	0.25	0.07	(0.309)	0.021	0.002
4	0.33	0.10	(0.308)	0.032	0.004
5	0.42	0.10	(0.306)	0.032	0.004
6	0.50	0.10	(0.305)	0.032	0.004
7	0.58	0.10	(0.304)	0.032	0.004
8	0.67	0.10	(0.303)	0.032	0.004
9	0.75	0.10	(0.302)	0.032	0.004
10	0.83	0.13	(0.301)	0.043	0.005
11	0.92	0.13	(0.299)	0.043	0.005
12	1.00	0.13	(0.298)	0.043	0.005
13	1.08	0.10	(0.297)	0.032	0.004
14	1.17	0.10	(0.296)	0.032	0.004
15	1.25	0.10	(0.295)	0.032	0.004
16	1.33	0.10	(0.293)	0.032	0.004
17	1.42	0.10	(0.292)	0.032	0.004
18	1.50	0.10	(0.291)	0.032	0.004
19	1.58	0.10	(0.290)	0.032	0.004

20	1.67	0.10	0.036	(0.289)	0.032	0.004
21	1.75	0.10	0.036	(0.288)	0.032	0.004
22	1.83	0.13	0.048	(0.287)	0.043	0.005
23	1.92	0.13	0.048	(0.285)	0.043	0.005
24	2.00	0.13	0.048	(0.284)	0.043	0.005
25	2.08	0.13	0.048	(0.283)	0.043	0.005
26	2.17	0.13	0.048	(0.282)	0.043	0.005
27	2.25	0.13	0.048	(0.281)	0.043	0.005
28	2.33	0.13	0.048	(0.280)	0.043	0.005
29	2.42	0.13	0.048	(0.278)	0.043	0.005
30	2.50	0.13	0.048	(0.277)	0.043	0.005
31	2.58	0.17	0.059	(0.276)	0.053	0.006
32	2.67	0.17	0.059	(0.275)	0.053	0.006
33	2.75	0.17	0.059	(0.274)	0.053	0.006
34	2.83	0.17	0.059	(0.273)	0.053	0.006
35	2.92	0.17	0.059	(0.272)	0.053	0.006
36	3.00	0.17	0.059	(0.271)	0.053	0.006
37	3.08	0.17	0.059	(0.269)	0.053	0.006
38	3.17	0.17	0.059	(0.268)	0.053	0.006
39	3.25	0.17	0.059	(0.267)	0.053	0.006
40	3.33	0.17	0.059	(0.266)	0.053	0.006
41	3.42	0.17	0.059	(0.265)	0.053	0.006
42	3.50	0.17	0.059	(0.264)	0.053	0.006
43	3.58	0.17	0.059	(0.263)	0.053	0.006
44	3.67	0.17	0.059	(0.262)	0.053	0.006
45	3.75	0.17	0.059	(0.261)	0.053	0.006
46	3.83	0.20	0.071	(0.259)	0.064	0.007
47	3.92	0.20	0.071	(0.258)	0.064	0.007
48	4.00	0.20	0.071	(0.257)	0.064	0.007
49	4.08	0.20	0.071	(0.256)	0.064	0.007
50	4.17	0.20	0.071	(0.255)	0.064	0.007
51	4.25	0.20	0.071	(0.254)	0.064	0.007
52	4.33	0.23	0.083	(0.253)	0.075	0.008
53	4.42	0.23	0.083	(0.252)	0.075	0.008
54	4.50	0.23	0.083	(0.251)	0.075	0.008
55	4.58	0.23	0.083	(0.250)	0.075	0.008
56	4.67	0.23	0.083	(0.249)	0.075	0.008
57	4.75	0.23	0.083	(0.248)	0.075	0.008
58	4.83	0.27	0.095	(0.246)	0.086	0.010
59	4.92	0.27	0.095	(0.245)	0.086	0.010
60	5.00	0.27	0.095	(0.244)	0.086	0.010
61	5.08	0.20	0.071	(0.243)	0.064	0.007
62	5.17	0.20	0.071	(0.242)	0.064	0.007
63	5.25	0.20	0.071	(0.241)	0.064	0.007
64	5.33	0.23	0.083	(0.240)	0.075	0.008
65	5.42	0.23	0.083	(0.239)	0.075	0.008
66	5.50	0.23	0.083	(0.238)	0.075	0.008
67	5.58	0.27	0.095	(0.237)	0.086	0.010
68	5.67	0.27	0.095	(0.236)	0.086	0.010
69	5.75	0.27	0.095	(0.235)	0.086	0.010
70	5.83	0.27	0.095	(0.234)	0.086	0.010
71	5.92	0.27	0.095	(0.233)	0.086	0.010
72	6.00	0.27	0.095	(0.232)	0.086	0.010
73	6.08	0.30	0.107	(0.231)	0.096	0.011
74	6.17	0.30	0.107	(0.230)	0.096	0.011
75	6.25	0.30	0.107	(0.229)	0.096	0.011
76	6.33	0.30	0.107	(0.228)	0.096	0.011
77	6.42	0.30	0.107	(0.227)	0.096	0.011
78	6.50	0.30	0.107	(0.226)	0.096	0.011
79	6.58	0.33	0.119	(0.225)	0.107	0.012
80	6.67	0.33	0.119	(0.224)	0.107	0.012
81	6.75	0.33	0.119	(0.223)	0.107	0.012
82	6.83	0.33	0.119	(0.222)	0.107	0.012

83	6.92	0.33	0.119	(0.221)	0.107	0.012
84	7.00	0.33	0.119	(0.220)	0.107	0.012
85	7.08	0.33	0.119	(0.219)	0.107	0.012
86	7.17	0.33	0.119	(0.218)	0.107	0.012
87	7.25	0.33	0.119	(0.217)	0.107	0.012
88	7.33	0.37	0.131	(0.216)	0.118	0.013
89	7.42	0.37	0.131	(0.215)	0.118	0.013
90	7.50	0.37	0.131	(0.214)	0.118	0.013
91	7.58	0.40	0.143	(0.213)	0.128	0.014
92	7.67	0.40	0.143	(0.212)	0.128	0.014
93	7.75	0.40	0.143	(0.211)	0.128	0.014
94	7.83	0.43	0.154	(0.210)	0.139	0.015
95	7.92	0.43	0.154	(0.209)	0.139	0.015
96	8.00	0.43	0.154	(0.208)	0.139	0.015
97	8.08	0.50	0.178	(0.207)	0.160	0.018
98	8.17	0.50	0.178	(0.206)	0.160	0.018
99	8.25	0.50	0.178	(0.205)	0.160	0.018
100	8.33	0.50	0.178	(0.204)	0.160	0.018
101	8.42	0.50	0.178	(0.203)	0.160	0.018
102	8.50	0.50	0.178	(0.202)	0.160	0.018
103	8.58	0.53	0.190	(0.201)	0.171	0.019
104	8.67	0.53	0.190	(0.200)	0.171	0.019
105	8.75	0.53	0.190	(0.199)	0.171	0.019
106	8.83	0.57	0.202	(0.198)	0.182	0.020
107	8.92	0.57	0.202	(0.197)	0.182	0.020
108	9.00	0.57	0.202	(0.196)	0.182	0.020
109	9.08	0.63	0.226	0.195 (0.203)		0.030
110	9.17	0.63	0.226	0.195 (0.203)		0.031
111	9.25	0.63	0.226	0.194 (0.203)		0.032
112	9.33	0.67	0.238	0.193 (0.214)		0.045
113	9.42	0.67	0.238	0.192 (0.214)		0.046
114	9.50	0.67	0.238	0.191 (0.214)		0.047
115	9.58	0.70	0.249	0.190 (0.225)		0.059
116	9.67	0.70	0.249	0.189 (0.225)		0.060
117	9.75	0.70	0.249	0.188 (0.225)		0.061
118	9.83	0.73	0.261	0.187 (0.235)		0.074
119	9.92	0.73	0.261	0.186 (0.235)		0.075
120	10.00	0.73	0.261	0.185 (0.235)		0.076
121	10.08	0.50	0.178	(0.185)	0.160	0.018
122	10.17	0.50	0.178	(0.184)	0.160	0.018
123	10.25	0.50	0.178	(0.183)	0.160	0.018
124	10.33	0.50	0.178	(0.182)	0.160	0.018
125	10.42	0.50	0.178	(0.181)	0.160	0.018
126	10.50	0.50	0.178	(0.180)	0.160	0.018
127	10.58	0.67	0.238	0.179 (0.214)		0.058
128	10.67	0.67	0.238	0.178 (0.214)		0.059
129	10.75	0.67	0.238	0.177 (0.214)		0.060
130	10.83	0.67	0.238	0.177 (0.214)		0.061
131	10.92	0.67	0.238	0.176 (0.214)		0.062
132	11.00	0.67	0.238	0.175 (0.214)		0.063
133	11.08	0.63	0.226	0.174 (0.203)		0.052
134	11.17	0.63	0.226	0.173 (0.203)		0.053
135	11.25	0.63	0.226	0.172 (0.203)		0.053
136	11.33	0.63	0.226	0.171 (0.203)		0.054
137	11.42	0.63	0.226	0.171 (0.203)		0.055
138	11.50	0.63	0.226	0.170 (0.203)		0.056
139	11.58	0.57	0.202	0.169 (0.182)		0.033
140	11.67	0.57	0.202	0.168 (0.182)		0.034
141	11.75	0.57	0.202	0.167 (0.182)		0.035
142	11.83	0.60	0.214	0.166 (0.192)		0.047
143	11.92	0.60	0.214	0.166 (0.192)		0.048
144	12.00	0.60	0.214	0.165 (0.192)		0.049
145	12.08	0.83	0.297	0.164 (0.267)		0.133

146	12.17	0.83	0.297	0.163	(0.267)	0.134
147	12.25	0.83	0.297	0.162	(0.267)	0.135
148	12.33	0.87	0.309	0.161	(0.278)	0.147
149	12.42	0.87	0.309	0.161	(0.278)	0.148
150	12.50	0.87	0.309	0.160	(0.278)	0.149
151	12.58	0.93	0.333	0.159	(0.299)	0.174
152	12.67	0.93	0.333	0.158	(0.299)	0.174
153	12.75	0.93	0.333	0.157	(0.299)	0.175
154	12.83	0.97	0.344	0.157	(0.310)	0.188
155	12.92	0.97	0.344	0.156	(0.310)	0.189
156	13.00	0.97	0.344	0.155	(0.310)	0.189
157	13.08	1.13	0.404	0.154	(0.363)	0.250
158	13.17	1.13	0.404	0.154	(0.363)	0.250
159	13.25	1.13	0.404	0.153	(0.363)	0.251
160	13.33	1.13	0.404	0.152	(0.363)	0.252
161	13.42	1.13	0.404	0.151	(0.363)	0.253
162	13.50	1.13	0.404	0.150	(0.363)	0.253
163	13.58	0.77	0.273	0.150	(0.246)	0.124
164	13.67	0.77	0.273	0.149	(0.246)	0.124
165	13.75	0.77	0.273	0.148	(0.246)	0.125
166	13.83	0.77	0.273	0.147	(0.246)	0.126
167	13.92	0.77	0.273	0.147	(0.246)	0.127
168	14.00	0.77	0.273	0.146	(0.246)	0.127
169	14.08	0.90	0.321	0.145	(0.289)	0.176
170	14.17	0.90	0.321	0.144	(0.289)	0.176
171	14.25	0.90	0.321	0.144	(0.289)	0.177
172	14.33	0.87	0.309	0.143	(0.278)	0.166
173	14.42	0.87	0.309	0.142	(0.278)	0.167
174	14.50	0.87	0.309	0.141	(0.278)	0.167
175	14.58	0.87	0.309	0.141	(0.278)	0.168
176	14.67	0.87	0.309	0.140	(0.278)	0.169
177	14.75	0.87	0.309	0.139	(0.278)	0.170
178	14.83	0.83	0.297	0.139	(0.267)	0.158
179	14.92	0.83	0.297	0.138	(0.267)	0.159
180	15.00	0.83	0.297	0.137	(0.267)	0.160
181	15.08	0.80	0.285	0.136	(0.257)	0.149
182	15.17	0.80	0.285	0.136	(0.257)	0.149
183	15.25	0.80	0.285	0.135	(0.257)	0.150
184	15.33	0.77	0.273	0.134	(0.246)	0.139
185	15.42	0.77	0.273	0.134	(0.246)	0.140
186	15.50	0.77	0.273	0.133	(0.246)	0.140
187	15.58	0.63	0.226	0.132	(0.203)	0.093
188	15.67	0.63	0.226	0.132	(0.203)	0.094
189	15.75	0.63	0.226	0.131	(0.203)	0.095
190	15.83	0.63	0.226	0.130	(0.203)	0.095
191	15.92	0.63	0.226	0.130	(0.203)	0.096
192	16.00	0.63	0.226	0.129	(0.203)	0.097
193	16.08	0.13	0.048	(0.128)	0.043	0.005
194	16.17	0.13	0.048	(0.128)	0.043	0.005
195	16.25	0.13	0.048	(0.127)	0.043	0.005
196	16.33	0.13	0.048	(0.126)	0.043	0.005
197	16.42	0.13	0.048	(0.126)	0.043	0.005
198	16.50	0.13	0.048	(0.125)	0.043	0.005
199	16.58	0.10	0.036	(0.124)	0.032	0.004
200	16.67	0.10	0.036	(0.124)	0.032	0.004
201	16.75	0.10	0.036	(0.123)	0.032	0.004
202	16.83	0.10	0.036	(0.123)	0.032	0.004
203	16.92	0.10	0.036	(0.122)	0.032	0.004
204	17.00	0.10	0.036	(0.121)	0.032	0.004
205	17.08	0.17	0.059	(0.121)	0.053	0.006
206	17.17	0.17	0.059	(0.120)	0.053	0.006
207	17.25	0.17	0.059	(0.119)	0.053	0.006
208	17.33	0.17	0.059	(0.119)	0.053	0.006

209	17.42	0.17	0.059	(0.118)	0.053	0.006
210	17.50	0.17	0.059	(0.118)	0.053	0.006
211	17.58	0.17	0.059	(0.117)	0.053	0.006
212	17.67	0.17	0.059	(0.117)	0.053	0.006
213	17.75	0.17	0.059	(0.116)	0.053	0.006
214	17.83	0.13	0.048	(0.115)	0.043	0.005
215	17.92	0.13	0.048	(0.115)	0.043	0.005
216	18.00	0.13	0.048	(0.114)	0.043	0.005
217	18.08	0.13	0.048	(0.114)	0.043	0.005
218	18.17	0.13	0.048	(0.113)	0.043	0.005
219	18.25	0.13	0.048	(0.113)	0.043	0.005
220	18.33	0.13	0.048	(0.112)	0.043	0.005
221	18.42	0.13	0.048	(0.111)	0.043	0.005
222	18.50	0.13	0.048	(0.111)	0.043	0.005
223	18.58	0.10	0.036	(0.110)	0.032	0.004
224	18.67	0.10	0.036	(0.110)	0.032	0.004
225	18.75	0.10	0.036	(0.109)	0.032	0.004
226	18.83	0.07	0.024	(0.109)	0.021	0.002
227	18.92	0.07	0.024	(0.108)	0.021	0.002
228	19.00	0.07	0.024	(0.108)	0.021	0.002
229	19.08	0.10	0.036	(0.107)	0.032	0.004
230	19.17	0.10	0.036	(0.107)	0.032	0.004
231	19.25	0.10	0.036	(0.106)	0.032	0.004
232	19.33	0.13	0.048	(0.106)	0.043	0.005
233	19.42	0.13	0.048	(0.105)	0.043	0.005
234	19.50	0.13	0.048	(0.105)	0.043	0.005
235	19.58	0.10	0.036	(0.104)	0.032	0.004
236	19.67	0.10	0.036	(0.104)	0.032	0.004
237	19.75	0.10	0.036	(0.103)	0.032	0.004
238	19.83	0.07	0.024	(0.103)	0.021	0.002
239	19.92	0.07	0.024	(0.102)	0.021	0.002
240	20.00	0.07	0.024	(0.102)	0.021	0.002
241	20.08	0.10	0.036	(0.102)	0.032	0.004
242	20.17	0.10	0.036	(0.101)	0.032	0.004
243	20.25	0.10	0.036	(0.101)	0.032	0.004
244	20.33	0.10	0.036	(0.100)	0.032	0.004
245	20.42	0.10	0.036	(0.100)	0.032	0.004
246	20.50	0.10	0.036	(0.099)	0.032	0.004
247	20.58	0.10	0.036	(0.099)	0.032	0.004
248	20.67	0.10	0.036	(0.099)	0.032	0.004
249	20.75	0.10	0.036	(0.098)	0.032	0.004
250	20.83	0.07	0.024	(0.098)	0.021	0.002
251	20.92	0.07	0.024	(0.097)	0.021	0.002
252	21.00	0.07	0.024	(0.097)	0.021	0.002
253	21.08	0.10	0.036	(0.097)	0.032	0.004
254	21.17	0.10	0.036	(0.096)	0.032	0.004
255	21.25	0.10	0.036	(0.096)	0.032	0.004
256	21.33	0.07	0.024	(0.095)	0.021	0.002
257	21.42	0.07	0.024	(0.095)	0.021	0.002
258	21.50	0.07	0.024	(0.095)	0.021	0.002
259	21.58	0.10	0.036	(0.094)	0.032	0.004
260	21.67	0.10	0.036	(0.094)	0.032	0.004
261	21.75	0.10	0.036	(0.094)	0.032	0.004
262	21.83	0.07	0.024	(0.093)	0.021	0.002
263	21.92	0.07	0.024	(0.093)	0.021	0.002
264	22.00	0.07	0.024	(0.093)	0.021	0.002
265	22.08	0.10	0.036	(0.092)	0.032	0.004
266	22.17	0.10	0.036	(0.092)	0.032	0.004
267	22.25	0.10	0.036	(0.092)	0.032	0.004
268	22.33	0.07	0.024	(0.092)	0.021	0.002
269	22.42	0.07	0.024	(0.091)	0.021	0.002
270	22.50	0.07	0.024	(0.091)	0.021	0.002
271	22.58	0.07	0.024	(0.091)	0.021	0.002

272	22.67	0.07	0.024	(0.090)	0.021	0.002
273	22.75	0.07	0.024	(0.090)	0.021	0.002
274	22.83	0.07	0.024	(0.090)	0.021	0.002
275	22.92	0.07	0.024	(0.090)	0.021	0.002
276	23.00	0.07	0.024	(0.090)	0.021	0.002
277	23.08	0.07	0.024	(0.089)	0.021	0.002
278	23.17	0.07	0.024	(0.089)	0.021	0.002
279	23.25	0.07	0.024	(0.089)	0.021	0.002
280	23.33	0.07	0.024	(0.089)	0.021	0.002
281	23.42	0.07	0.024	(0.089)	0.021	0.002
282	23.50	0.07	0.024	(0.088)	0.021	0.002
283	23.58	0.07	0.024	(0.088)	0.021	0.002
284	23.67	0.07	0.024	(0.088)	0.021	0.002
285	23.75	0.07	0.024	(0.088)	0.021	0.002
286	23.83	0.07	0.024	(0.088)	0.021	0.002
287	23.92	0.07	0.024	(0.088)	0.021	0.002
288	24.00	0.07	0.024	(0.088)	0.021	0.002

(Loss Rate Not Used)

Sum = 100.0 Sum = 10.6

Flood volume = Effective rainfall 0.89(In)
times area 2.9(Ac.)/[(In)/(Ft.)] = 0.2(Ac.Ft)

Total soil loss = 2.08(In)
Total soil loss = 0.500(Ac.Ft)
Total rainfall = 2.97(In)
Flood volume = 9252.5 Cubic Feet
Total soil loss = 21793.3 Cubic Feet

Peak flow rate of this hydrograph = 0.734(CFS)

+++++

24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

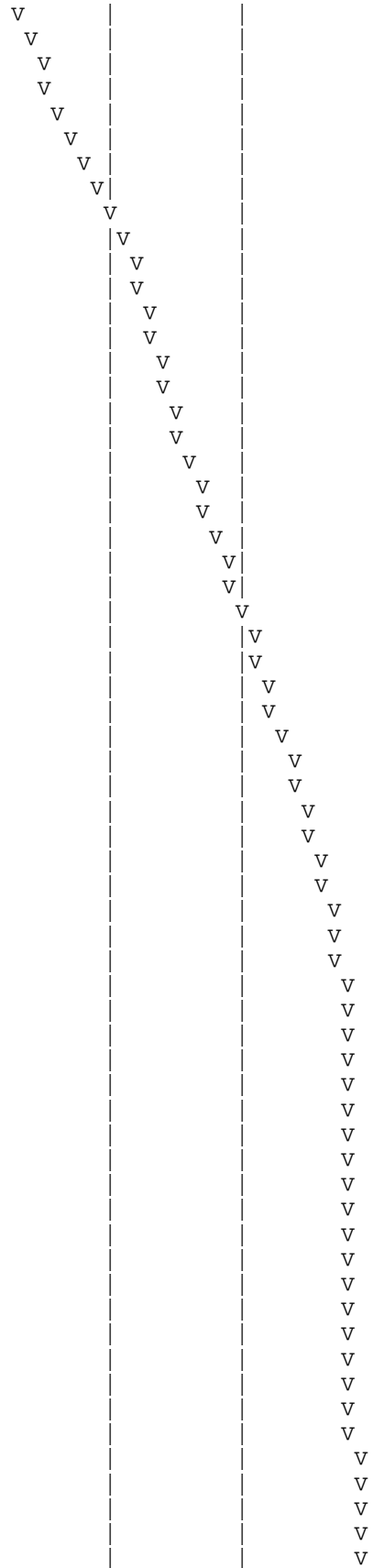
Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.00	Q				
0+10	0.0001	0.01	Q				
0+15	0.0001	0.01	Q				
0+20	0.0002	0.01	Q				
0+25	0.0002	0.01	Q				
0+30	0.0003	0.01	Q				
0+35	0.0004	0.01	Q				
0+40	0.0004	0.01	Q				
0+45	0.0005	0.01	Q				
0+50	0.0006	0.01	Q				
0+55	0.0007	0.01	Q				
1+ 0	0.0008	0.01	Q				
1+ 5	0.0009	0.01	Q				
1+10	0.0009	0.01	Q				
1+15	0.0010	0.01	Q				
1+20	0.0011	0.01	Q				
1+25	0.0012	0.01	Q				
1+30	0.0012	0.01	Q				
1+35	0.0013	0.01	Q				
1+40	0.0014	0.01	Q				
1+45	0.0014	0.01	Q				
1+50	0.0015	0.01	Q				
1+55	0.0016	0.01	Q				
2+ 0	0.0017	0.01	Q				
2+ 5	0.0018	0.01	Q				

2+10	0.0019	0.01	Q
2+15	0.0020	0.01	Q
2+20	0.0021	0.01	Q
2+25	0.0022	0.01	Q
2+30	0.0023	0.01	Q
2+35	0.0024	0.02	Q
2+40	0.0025	0.02	Q
2+45	0.0026	0.02	Q
2+50	0.0027	0.02	Q
2+55	0.0029	0.02	Q
3+ 0	0.0030	0.02	Q
3+ 5	0.0031	0.02	Q
3+10	0.0032	0.02	Q
3+15	0.0033	0.02	Q
3+20	0.0035	0.02	Q
3+25	0.0036	0.02	Q
3+30	0.0037	0.02	Q
3+35	0.0038	0.02	Q
3+40	0.0039	0.02	Q
3+45	0.0040	0.02	Q
3+50	0.0042	0.02	Q
3+55	0.0043	0.02	Q
4+ 0	0.0045	0.02	Q
4+ 5	0.0046	0.02	Q
4+10	0.0047	0.02	Q
4+15	0.0049	0.02	Q
4+20	0.0050	0.02	Q
4+25	0.0052	0.02	Q
4+30	0.0054	0.02	QV
4+35	0.0055	0.02	QV
4+40	0.0057	0.02	QV
4+45	0.0059	0.02	QV
4+50	0.0060	0.03	QV
4+55	0.0062	0.03	QV
5+ 0	0.0064	0.03	QV
5+ 5	0.0066	0.02	QV
5+10	0.0067	0.02	QV
5+15	0.0069	0.02	QV
5+20	0.0070	0.02	QV
5+25	0.0072	0.02	QV
5+30	0.0074	0.02	QV
5+35	0.0075	0.03	QV
5+40	0.0077	0.03	QV
5+45	0.0079	0.03	QV
5+50	0.0081	0.03	QV
5+55	0.0083	0.03	QV
6+ 0	0.0085	0.03	QV
6+ 5	0.0087	0.03	QV
6+10	0.0089	0.03	QV
6+15	0.0091	0.03	QV
6+20	0.0093	0.03	QV
6+25	0.0095	0.03	QV
6+30	0.0098	0.03	QV
6+35	0.0100	0.03	QV
6+40	0.0102	0.03	QV
6+45	0.0105	0.03	QV
6+50	0.0107	0.03	Q V
6+55	0.0109	0.03	Q V
7+ 0	0.0112	0.03	Q V
7+ 5	0.0114	0.03	Q V
7+10	0.0116	0.03	Q V
7+15	0.0119	0.03	Q V
7+20	0.0121	0.04	Q V

7+25	0.0124	0.04	Q	V				
7+30	0.0126	0.04	Q	V				
7+35	0.0129	0.04	Q	V				
7+40	0.0132	0.04	Q	V				
7+45	0.0135	0.04	Q	V				
7+50	0.0138	0.04	Q	V				
7+55	0.0141	0.04	Q	V				
8+ 0	0.0144	0.04	Q	V				
8+ 5	0.0147	0.05	Q	V				
8+10	0.0151	0.05	Q	V				
8+15	0.0154	0.05	Q	V				
8+20	0.0158	0.05	Q	V				
8+25	0.0161	0.05	Q	V				
8+30	0.0165	0.05	Q	V				
8+35	0.0169	0.05	Q	V				
8+40	0.0172	0.05	Q	V				
8+45	0.0176	0.06	Q	V				
8+50	0.0180	0.06	Q	V				
8+55	0.0184	0.06	Q	V				
9+ 0	0.0188	0.06	Q	V				
9+ 5	0.0193	0.07	Q	V				
9+10	0.0199	0.09	Q	V				
9+15	0.0205	0.09	Q	V				
9+20	0.0213	0.11	Q	V				
9+25	0.0221	0.13	Q	V				
9+30	0.0231	0.13	Q	V				
9+35	0.0241	0.15	Q	V				
9+40	0.0253	0.17	Q	V				
9+45	0.0265	0.17	Q	V				
9+50	0.0278	0.19	Q	V				
9+55	0.0293	0.21	Q	V				
10+ 0	0.0308	0.22	Q	V				
10+ 5	0.0318	0.14	Q	V				
10+10	0.0323	0.07	Q	V				
10+15	0.0327	0.06	Q	V				
10+20	0.0330	0.05	Q	V				
10+25	0.0334	0.05	Q	V				
10+30	0.0337	0.05	Q	V				
10+35	0.0344	0.10	Q	V				
10+40	0.0355	0.16	Q	V				
10+45	0.0367	0.17	Q	V				
10+50	0.0379	0.18	Q	V				
10+55	0.0391	0.18	Q	V				
11+ 0	0.0404	0.18	Q	V				
11+ 5	0.0415	0.17	Q	V				
11+10	0.0426	0.16	Q	V				
11+15	0.0436	0.15	Q	V				
11+20	0.0447	0.16	Q	V				
11+25	0.0458	0.16	Q	V				
11+30	0.0469	0.16	Q	V				
11+35	0.0478	0.13	Q	V				
11+40	0.0485	0.11	Q	V				
11+45	0.0492	0.10	Q	V				
11+50	0.0500	0.12	Q	V				
11+55	0.0510	0.13	Q	V				
12+ 0	0.0519	0.14	Q	V				
12+ 5	0.0537	0.25	Q	V				
12+10	0.0561	0.36	Q	V				
12+15	0.0587	0.38	Q	V				
12+20	0.0616	0.41	Q	V				
12+25	0.0645	0.42	Q	V				
12+30	0.0674	0.43	Q	V				
12+35	0.0706	0.46	Q	V				

12+40	0.0741	0.50	Q
12+45	0.0775	0.50	Q
12+50	0.0811	0.52	Q
12+55	0.0849	0.54	Q
13+ 0	0.0886	0.55	Q
13+ 5	0.0930	0.63	Q
13+10	0.0978	0.70	Q
13+15	0.1028	0.72	Q
13+20	0.1078	0.73	Q
13+25	0.1129	0.73	Q
13+30	0.1179	0.73	Q
13+35	0.1218	0.57	Q
13+40	0.1246	0.41	Q
13+45	0.1272	0.38	Q
13+50	0.1297	0.36	Q
13+55	0.1322	0.37	Q
14+ 0	0.1348	0.37	Q
14+ 5	0.1377	0.43	Q
14+10	0.1411	0.49	Q
14+15	0.1446	0.51	Q
14+20	0.1481	0.50	Q
14+25	0.1514	0.49	Q
14+30	0.1548	0.49	Q
14+35	0.1581	0.49	Q
14+40	0.1615	0.49	Q
14+45	0.1649	0.49	Q
14+50	0.1682	0.48	Q
14+55	0.1714	0.46	Q
15+ 0	0.1746	0.46	Q
15+ 5	0.1777	0.45	Q
15+10	0.1807	0.44	Q
15+15	0.1837	0.44	Q
15+20	0.1866	0.42	Q
15+25	0.1894	0.41	Q
15+30	0.1922	0.41	Q
15+35	0.1945	0.35	Q
15+40	0.1965	0.29	Q
15+45	0.1985	0.28	Q
15+50	0.2004	0.28	Q
15+55	0.2023	0.28	Q
16+ 0	0.2042	0.28	Q
16+ 5	0.2053	0.16	Q
16+10	0.2056	0.05	Q
16+15	0.2058	0.02	Q
16+20	0.2059	0.01	Q
16+25	0.2060	0.01	Q
16+30	0.2061	0.01	Q
16+35	0.2062	0.01	Q
16+40	0.2062	0.01	Q
16+45	0.2063	0.01	Q
16+50	0.2064	0.01	Q
16+55	0.2064	0.01	Q
17+ 0	0.2065	0.01	Q
17+ 5	0.2066	0.01	Q
17+10	0.2067	0.02	Q
17+15	0.2068	0.02	Q
17+20	0.2070	0.02	Q
17+25	0.2071	0.02	Q
17+30	0.2072	0.02	Q
17+35	0.2073	0.02	Q
17+40	0.2074	0.02	Q
17+45	0.2075	0.02	Q
17+50	0.2077	0.02	Q



17+55	0.2078	0.01	Q				V
18+ 0	0.2079	0.01	Q				V
18+ 5	0.2079	0.01	Q				V
18+10	0.2080	0.01	Q				V
18+15	0.2081	0.01	Q				V
18+20	0.2082	0.01	Q				V
18+25	0.2083	0.01	Q				V
18+30	0.2084	0.01	Q				V
18+35	0.2085	0.01	Q				V
18+40	0.2086	0.01	Q				V
18+45	0.2087	0.01	Q				V
18+50	0.2087	0.01	Q				V
18+55	0.2088	0.01	Q				V
19+ 0	0.2088	0.01	Q				V
19+ 5	0.2089	0.01	Q				V
19+10	0.2089	0.01	Q				V
19+15	0.2090	0.01	Q				V
19+20	0.2091	0.01	Q				V
19+25	0.2092	0.01	Q				V
19+30	0.2093	0.01	Q				V
19+35	0.2094	0.01	Q				V
19+40	0.2094	0.01	Q				V
19+45	0.2095	0.01	Q				V
19+50	0.2096	0.01	Q				V
19+55	0.2096	0.01	Q				V
20+ 0	0.2097	0.01	Q				V
20+ 5	0.2097	0.01	Q				V
20+10	0.2098	0.01	Q				V
20+15	0.2099	0.01	Q				V
20+20	0.2099	0.01	Q				V
20+25	0.2100	0.01	Q				V
20+30	0.2101	0.01	Q				V
20+35	0.2101	0.01	Q				V
20+40	0.2102	0.01	Q				V
20+45	0.2103	0.01	Q				V
20+50	0.2104	0.01	Q				V
20+55	0.2104	0.01	Q				V
21+ 0	0.2105	0.01	Q				V
21+ 5	0.2105	0.01	Q				V
21+10	0.2106	0.01	Q				V
21+15	0.2106	0.01	Q				V
21+20	0.2107	0.01	Q				V
21+25	0.2108	0.01	Q				V
21+30	0.2108	0.01	Q				V
21+35	0.2109	0.01	Q				V
21+40	0.2109	0.01	Q				V
21+45	0.2110	0.01	Q				V
21+50	0.2111	0.01	Q				V
21+55	0.2111	0.01	Q				V
22+ 0	0.2112	0.01	Q				V
22+ 5	0.2112	0.01	Q				V
22+10	0.2113	0.01	Q				V
22+15	0.2114	0.01	Q				V
22+20	0.2114	0.01	Q				V
22+25	0.2115	0.01	Q				V
22+30	0.2115	0.01	Q				V
22+35	0.2116	0.01	Q				V
22+40	0.2116	0.01	Q				V
22+45	0.2117	0.01	Q				V
22+50	0.2117	0.01	Q				V
22+55	0.2118	0.01	Q				V
23+ 0	0.2118	0.01	Q				V
23+ 5	0.2119	0.01	Q				V

23+10	0.2119	0.01	Q				V
23+15	0.2119	0.01	Q				V
23+20	0.2120	0.01	Q				V
23+25	0.2120	0.01	Q				V
23+30	0.2121	0.01	Q				V
23+35	0.2121	0.01	Q				V
23+40	0.2122	0.01	Q				V
23+45	0.2122	0.01	Q				V
23+50	0.2123	0.01	Q				V
23+55	0.2123	0.01	Q				V
24+ 0	0.2124	0.01	Q				V
24+ 5	0.2124	0.00	Q				V
24+10	0.2124	0.00	Q				V
24+15	0.2124	0.00	Q				V

**Pre-developed conditions
100 year 1 hour**

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863pre1100.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MV
Pre-developed conditions
100 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 540.00(Ft.)
Length along longest watercourse measured to centroid = 305.00(Ft.)
Length along longest watercourse = 0.102 Mi.
Length along longest watercourse measured to centroid = 0.058 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 146.6667 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.040 Hr.
Lag time = 2.38 Min.
25% of lag time = 0.60 Min.
40% of lag time = 0.95 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	0.50	1.44

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.20	3.46

STORM EVENT (YEAR) = 100.00

Area Averaged 2-Year Rainfall = 0.500(In)
 Area Averaged 100-Year Rainfall = 1.200(In)

Point rain (area averaged) = 1.200(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 1.200(In)

Sub-Area Data:
 Area(Ac.) Runoff Index Impervious %
 2.880 86.00 0.000
 Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
86.0	94.4	0.073	0.000	0.073	1.000	0.073
						Sum (F) = 0.073

Area averaged mean soil loss (F) (In/Hr) = 0.073
 Minimum soil loss rate ((In/Hr)) = 0.036
 (for 24 hour storm duration)
 Soil loss rate (decimal) = 0.900

 Slope of intensity-duration curve for a 1 hour storm =0.5000

Unit Hydrograph
 VALLEY S-Curve

 Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	209.869	45.056
2	0.167	419.737	42.685
3	0.250	629.606	8.406
4	0.333	839.474	3.853
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max Low	Effective (In/Hr)
1	0.08	4.20	0.605 (0.544)	0.532
2	0.17	4.30	0.619 (0.557)	0.546
3	0.25	5.00	0.720 (0.648)	0.647
4	0.33	5.00	0.720 (0.648)	0.647
5	0.42	5.80	0.835 (0.752)	0.762
6	0.50	6.50	0.936 (0.842)	0.863
7	0.58	7.40	1.066 (0.959)	0.993
8	0.67	8.60	1.238 (1.115)	1.166
9	0.75	12.30	1.771 (1.594)	1.698
10	0.83	29.10	4.190 (3.771)	4.117
11	0.92	6.80	0.979 (0.881)	0.906
12	1.00	5.00	0.720 (0.648)	0.647
		(Loss Rate Not Used)		
Sum =	100.0			Sum = 13.5
Flood volume = Effective rainfall		1.13(In)		
times area		2.9(Ac.)/[(In)/(Ft.)] =	0.3(Ac.Ft)	
Total soil loss =		0.07(In)		

Total soil loss = 0.017(Ac.Ft)
 Total rainfall = 1.20(In)
 Flood volume = 11783.9 Cubic Feet
 Total soil loss = 761.1 Cubic Feet

 Peak flow rate of this hydrograph = 7.888(CFS)

+++++

1 - H O U R S T O R M
 R u n o f f H y d r o g r a p h

 Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0048	0.70	V Q				
0+10	0.0143	1.37	V Q				
0+15	0.0256	1.65	V Q				
0+20	0.0383	1.84	V Q				
0+25	0.0522	2.02	VQ				
0+30	0.0681	2.30		QV			
0+35	0.0862	2.63		Q V			
0+40	0.1072	3.05		Q V			
0+45	0.1348	4.01		Q V			
0+50	0.1891	7.89				V Q	
0+55	0.2362	6.83				Q V	
1+ 0	0.2580	3.17		Q			V
1+ 5	0.2682	1.48		Q			V
1+10	0.2700	0.26	Q				V
1+15	0.2705	0.07	Q				V

**Pre-developed conditions
100 year 3 hour**

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

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863pre3100.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MV
Pre-developed conditions
100 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 540.00(Ft.)
Length along longest watercourse measured to centroid = 305.00(Ft.)
Length along longest watercourse = 0.102 Mi.
Length along longest watercourse measured to centroid = 0.058 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 146.6667 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.040 Hr.
Lag time = 2.38 Min.
25% of lag time = 0.60 Min.
40% of lag time = 0.95 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	0.81	2.33

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.86	5.36

STORM EVENT (YEAR) = 100.00

Area Averaged 2-Year Rainfall = 0.810(In)
 Area Averaged 100-Year Rainfall = 1.860(In)

Point rain (area averaged) = 1.860(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 1.860(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 2.880 86.00 0.000
 Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
86.0	94.4	0.073	0.000	0.073	1.000	0.073
						Sum (F) = 0.073

Area averaged mean soil loss (F) (In/Hr) = 0.073
 Minimum soil loss rate ((In/Hr)) = 0.036
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	209.869	1.308
2	0.167	419.737	1.239
3	0.250	629.606	0.244
4	0.333	839.474	0.112
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	1.30	0.290	(0.261)	0.217
2	0.17	1.30	0.290	(0.261)	0.217
3	0.25	1.10	0.246	(0.221)	0.173
4	0.33	1.50	0.335	(0.301)	0.262
5	0.42	1.50	0.335	(0.301)	0.262
6	0.50	1.80	0.402	(0.362)	0.329
7	0.58	1.50	0.335	(0.301)	0.262
8	0.67	1.80	0.402	(0.362)	0.329
9	0.75	1.80	0.402	(0.362)	0.329
10	0.83	1.50	0.335	(0.301)	0.262
11	0.92	1.60	0.357	(0.321)	0.284
12	1.00	1.80	0.402	(0.362)	0.329
13	1.08	2.20	0.491	(0.442)	0.418
14	1.17	2.20	0.491	(0.442)	0.418
15	1.25	2.20	0.491	(0.442)	0.418
16	1.33	2.00	0.446	(0.402)	0.374
17	1.42	2.60	0.580	(0.522)	0.508
18	1.50	2.70	0.603	(0.542)	0.530
19	1.58	2.40	0.536	(0.482)	0.463

2+10	0.2056	2.11		Q		V		
2+15	0.2238	2.65			Q		V	
2+20	0.2411	2.50			Q			V
2+25	0.2625	3.12				Q		V
2+30	0.2909	4.12					Q	V
2+35	0.3230	4.66						V
2+40	0.3529	4.35						V
2+45	0.3711	2.63			Q			V
2+50	0.3807	1.39						V
2+55	0.3880	1.07						V
3+ 0	0.3922	0.61	Q					V
3+ 5	0.3936	0.19		Q				V
3+10	0.3939	0.05			Q			V
3+15	0.3940	0.01				Q		V

**Pre-developed conditions
100 year 6 hour**

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

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863pre6100.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MV
Pre-developed conditions
100 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 540.00(Ft.)
Length along longest watercourse measured to centroid = 305.00(Ft.)
Length along longest watercourse = 0.102 Mi.
Length along longest watercourse measured to centroid = 0.058 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 146.6667 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.040 Hr.
Lag time = 2.38 Min.
25% of lag time = 0.60 Min.
40% of lag time = 0.95 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.40	4.03

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	2.50	7.20

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.400(In)
Area Averaged 100-Year Rainfall = 2.500(In)

Point rain (area averaged) = 2.500(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 2.500(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 2.880 86.00 0.000
 Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
86.0	94.4	0.073	0.000	0.073	1.000	0.073
						Sum (F) = 0.073

Area averaged mean soil loss (F) (In/Hr) = 0.073
 Minimum soil loss rate ((In/Hr)) = 0.036
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	209.869	45.056
2	0.167	419.737	42.685
3	0.250	629.606	8.406
4	0.333	839.474	3.853
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	0.150	0.073	(0.135)	0.077
2	0.17	0.180	0.073	(0.162)	0.107
3	0.25	0.180	0.073	(0.162)	0.107
4	0.33	0.180	0.073	(0.162)	0.107
5	0.42	0.180	0.073	(0.162)	0.107
6	0.50	0.210	0.073	(0.189)	0.137
7	0.58	0.210	0.073	(0.189)	0.137
8	0.67	0.210	0.073	(0.189)	0.137
9	0.75	0.210	0.073	(0.189)	0.137
10	0.83	0.210	0.073	(0.189)	0.137
11	0.92	0.210	0.073	(0.189)	0.137
12	1.00	0.240	0.073	(0.216)	0.167
13	1.08	0.240	0.073	(0.216)	0.167
14	1.17	0.240	0.073	(0.216)	0.167
15	1.25	0.240	0.073	(0.216)	0.167
16	1.33	0.240	0.073	(0.216)	0.167
17	1.42	0.240	0.073	(0.216)	0.167
18	1.50	0.240	0.073	(0.216)	0.167
19	1.58	0.240	0.073	(0.216)	0.167
20	1.67	0.240	0.073	(0.216)	0.167
21	1.75	0.240	0.073	(0.216)	0.167

22	1.83	0.80	0.240	0.073	(0.216)	0.167
23	1.92	0.80	0.240	0.073	(0.216)	0.167
24	2.00	0.90	0.270	0.073	(0.243)	0.197
25	2.08	0.80	0.240	0.073	(0.216)	0.167
26	2.17	0.90	0.270	0.073	(0.243)	0.197
27	2.25	0.90	0.270	0.073	(0.243)	0.197
28	2.33	0.90	0.270	0.073	(0.243)	0.197
29	2.42	0.90	0.270	0.073	(0.243)	0.197
30	2.50	0.90	0.270	0.073	(0.243)	0.197
31	2.58	0.90	0.270	0.073	(0.243)	0.197
32	2.67	0.90	0.270	0.073	(0.243)	0.197
33	2.75	1.00	0.300	0.073	(0.270)	0.227
34	2.83	1.00	0.300	0.073	(0.270)	0.227
35	2.92	1.00	0.300	0.073	(0.270)	0.227
36	3.00	1.00	0.300	0.073	(0.270)	0.227
37	3.08	1.00	0.300	0.073	(0.270)	0.227
38	3.17	1.10	0.330	0.073	(0.297)	0.257
39	3.25	1.10	0.330	0.073	(0.297)	0.257
40	3.33	1.10	0.330	0.073	(0.297)	0.257
41	3.42	1.20	0.360	0.073	(0.324)	0.287
42	3.50	1.30	0.390	0.073	(0.351)	0.317
43	3.58	1.40	0.420	0.073	(0.378)	0.347
44	3.67	1.40	0.420	0.073	(0.378)	0.347
45	3.75	1.50	0.450	0.073	(0.405)	0.377
46	3.83	1.50	0.450	0.073	(0.405)	0.377
47	3.92	1.60	0.480	0.073	(0.432)	0.407
48	4.00	1.60	0.480	0.073	(0.432)	0.407
49	4.08	1.70	0.510	0.073	(0.459)	0.437
50	4.17	1.80	0.540	0.073	(0.486)	0.467
51	4.25	1.90	0.570	0.073	(0.513)	0.497
52	4.33	2.00	0.600	0.073	(0.540)	0.527
53	4.42	2.10	0.630	0.073	(0.567)	0.557
54	4.50	2.10	0.630	0.073	(0.567)	0.557
55	4.58	2.20	0.660	0.073	(0.594)	0.587
56	4.67	2.30	0.690	0.073	(0.621)	0.617
57	4.75	2.40	0.720	0.073	(0.648)	0.647
58	4.83	2.40	0.720	0.073	(0.648)	0.647
59	4.92	2.50	0.750	0.073	(0.675)	0.677
60	5.00	2.60	0.780	0.073	(0.702)	0.707
61	5.08	3.10	0.930	0.073	(0.837)	0.857
62	5.17	3.60	1.080	0.073	(0.972)	1.007
63	5.25	3.90	1.170	0.073	(1.053)	1.097
64	5.33	4.20	1.260	0.073	(1.134)	1.187
65	5.42	4.70	1.410	0.073	(1.269)	1.337
66	5.50	5.60	1.680	0.073	(1.512)	1.607
67	5.58	1.90	0.570	0.073	(0.513)	0.497
68	5.67	0.90	0.270	0.073	(0.243)	0.197
69	5.75	0.60	0.180	0.073	(0.162)	0.107
70	5.83	0.50	0.150	0.073	(0.135)	0.077
71	5.92	0.30	0.090	0.073	(0.081)	0.017
72	6.00	0.20	0.060	(0.073)	0.054	0.006

(Loss Rate Not Used)

Sum = 100.0 Sum = 24.8

Flood volume = Effective rainfall 2.06(In)
times area 2.9(Ac.)/[(In)/(Ft.)] = 0.5(Ac.Ft)
Total soil loss = 0.44(In)
Total soil loss = 0.104(Ac.Ft)
Total rainfall = 2.50(In)
Flood volume = 21585.6 Cubic Feet
Total soil loss = 4550.1 Cubic Feet

Peak flow rate of this hydrograph = 4.173(CFS)

+++++

6 - H O U R S T O R M
 R u n o f f H y d r o g r a p h

 Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume	Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0007		0.10	Q				
0+10	0.0023		0.24	Q				
0+15	0.0043		0.29	VQ				
0+20	0.0065		0.31	VQ				
0+25	0.0086		0.31	VQ				
0+30	0.0110		0.35	VQ				
0+35	0.0137		0.39	Q				
0+40	0.0164		0.40	Q				
0+45	0.0191		0.40	Q				
0+50	0.0219		0.40	Q				
0+55	0.0246		0.40	Q				
1+ 0	0.0276		0.44	QV				
1+ 5	0.0309		0.47	QV				
1+10	0.0342		0.48	QV				
1+15	0.0376		0.49	Q V				
1+20	0.0409		0.49	Q V				
1+25	0.0443		0.49	Q V				
1+30	0.0476		0.49	Q V				
1+35	0.0510		0.49	Q V				
1+40	0.0543		0.49	Q V				
1+45	0.0576		0.49	Q V				
1+50	0.0610		0.49	Q V				
1+55	0.0643		0.49	Q V				
2+ 0	0.0679		0.52	Q V				
2+ 5	0.0715		0.52	Q V				
2+10	0.0752		0.53	Q V				
2+15	0.0791		0.57	Q V				
2+20	0.0830		0.57	Q V				
2+25	0.0870		0.57	Q V				
2+30	0.0909		0.57	Q V				
2+35	0.0949		0.57	Q V				
2+40	0.0988		0.57	Q V				
2+45	0.1030		0.61	Q V				
2+50	0.1075		0.65	Q V				
2+55	0.1120		0.66	Q V				
3+ 0	0.1166		0.66	Q V				
3+ 5	0.1211		0.66	Q V				
3+10	0.1259		0.70	Q V				
3+15	0.1310		0.74	Q V				
3+20	0.1361		0.74	Q V				
3+25	0.1415		0.79	Q V				
3+30	0.1475		0.86	Q V				
3+35	0.1540		0.95	Q V				
3+40	0.1608		0.99	Q V				
3+45	0.1680		1.04	Q V				
3+50	0.1755		1.08	Q V				
3+55	0.1833		1.13	Q V				
4+ 0	0.1913		1.17	Q V				
4+ 5	0.1997		1.22	Q V				
4+10	0.2087		1.30	Q V				
4+15	0.2182		1.38	Q V				
4+20	0.2283		1.47	Q V				
4+25	0.2390		1.56	Q V				
4+30	0.2501		1.60	Q V				

4+35	0.2615	1.65		Q		V	
4+40	0.2734	1.73		Q		V	
4+45	0.2859	1.82		Q		V	
4+50	0.2988	1.87		Q		V	
4+55	0.3120	1.92		Q		V	
5+ 0	0.3257	2.00		Q		V	
5+ 5	0.3411	2.24		Q		V	
5+10	0.3592	2.63		Q	Q	V	
5+15	0.3797	2.97			Q	V	
5+20	0.4021	3.26			Q		V
5+25	0.4269	3.60			Q		V
5+30	0.4556	4.17			Q		V
5+35	0.4770	3.10			Q		V
5+40	0.4868	1.42		Q			V
5+45	0.4915	0.69		Q			V
5+50	0.4938	0.34		Q			V
5+55	0.4950	0.17		Q			V
6+ 0	0.4954	0.06		Q			V
6+ 5	0.4955	0.02		Q			V
6+10	0.4955	0.00		Q			V
6+15	0.4955	0.00		Q			V

**Pre-developed conditions
100 year 24 hour**

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

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863pre24100.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MV
Pre-developed conditions
100 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 540.00(Ft.)
Length along longest watercourse measured to centroid = 305.00(Ft.)
Length along longest watercourse = 0.102 Mi.
Length along longest watercourse measured to centroid = 0.058 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 146.6667 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.040 Hr.
Lag time = 2.38 Min.
25% of lag time = 0.60 Min.
40% of lag time = 0.95 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.90	5.47

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	4.50	12.96

STORM EVENT (YEAR) = 100.00

Area Averaged 2-Year Rainfall = 1.900(In)
 Area Averaged 100-Year Rainfall = 4.500(In)

Point rain (area averaged) = 4.500(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 4.500(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 2.880 86.00 0.000
 Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
86.0	94.4	0.073	0.000	0.073	1.000	0.073
						Sum (F) = 0.073

Area averaged mean soil loss (F) (In/Hr) = 0.073
 Minimum soil loss rate ((In/Hr)) = 0.036
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.900

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	209.869	1.308
2	0.167	419.737	1.239
3	0.250	629.606	0.244
4	0.333	839.474	0.112
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	0.07	(0.129)	0.032	0.004
2	0.17	0.07	(0.129)	0.032	0.004
3	0.25	0.07	(0.128)	0.032	0.004
4	0.33	0.10	(0.128)	0.049	0.005
5	0.42	0.10	(0.127)	0.049	0.005
6	0.50	0.10	(0.127)	0.049	0.005
7	0.58	0.10	(0.126)	0.049	0.005
8	0.67	0.10	(0.126)	0.049	0.005
9	0.75	0.10	(0.125)	0.049	0.005
10	0.83	0.13	(0.125)	0.065	0.007
11	0.92	0.13	(0.124)	0.065	0.007
12	1.00	0.13	(0.124)	0.065	0.007
13	1.08	0.10	(0.123)	0.049	0.005
14	1.17	0.10	(0.123)	0.049	0.005
15	1.25	0.10	(0.122)	0.049	0.005
16	1.33	0.10	(0.122)	0.049	0.005
17	1.42	0.10	(0.121)	0.049	0.005
18	1.50	0.10	(0.121)	0.049	0.005
19	1.58	0.10	(0.120)	0.049	0.005

20	1.67	0.10	0.054	(0.120)	0.049	0.005
21	1.75	0.10	0.054	(0.119)	0.049	0.005
22	1.83	0.13	0.072	(0.119)	0.065	0.007
23	1.92	0.13	0.072	(0.118)	0.065	0.007
24	2.00	0.13	0.072	(0.118)	0.065	0.007
25	2.08	0.13	0.072	(0.117)	0.065	0.007
26	2.17	0.13	0.072	(0.117)	0.065	0.007
27	2.25	0.13	0.072	(0.116)	0.065	0.007
28	2.33	0.13	0.072	(0.116)	0.065	0.007
29	2.42	0.13	0.072	(0.115)	0.065	0.007
30	2.50	0.13	0.072	(0.115)	0.065	0.007
31	2.58	0.17	0.090	(0.115)	0.081	0.009
32	2.67	0.17	0.090	(0.114)	0.081	0.009
33	2.75	0.17	0.090	(0.114)	0.081	0.009
34	2.83	0.17	0.090	(0.113)	0.081	0.009
35	2.92	0.17	0.090	(0.113)	0.081	0.009
36	3.00	0.17	0.090	(0.112)	0.081	0.009
37	3.08	0.17	0.090	(0.112)	0.081	0.009
38	3.17	0.17	0.090	(0.111)	0.081	0.009
39	3.25	0.17	0.090	(0.111)	0.081	0.009
40	3.33	0.17	0.090	(0.110)	0.081	0.009
41	3.42	0.17	0.090	(0.110)	0.081	0.009
42	3.50	0.17	0.090	(0.109)	0.081	0.009
43	3.58	0.17	0.090	(0.109)	0.081	0.009
44	3.67	0.17	0.090	(0.108)	0.081	0.009
45	3.75	0.17	0.090	(0.108)	0.081	0.009
46	3.83	0.20	0.108	(0.108)	0.097	0.011
47	3.92	0.20	0.108	(0.107)	0.097	0.011
48	4.00	0.20	0.108	(0.107)	0.097	0.011
49	4.08	0.20	0.108	(0.106)	0.097	0.011
50	4.17	0.20	0.108	(0.106)	0.097	0.011
51	4.25	0.20	0.108	(0.105)	0.097	0.011
52	4.33	0.23	0.126	0.105 (0.113)		0.021
53	4.42	0.23	0.126	0.104 (0.113)		0.022
54	4.50	0.23	0.126	0.104 (0.113)		0.022
55	4.58	0.23	0.126	0.104 (0.113)		0.022
56	4.67	0.23	0.126	0.103 (0.113)		0.023
57	4.75	0.23	0.126	0.103 (0.113)		0.023
58	4.83	0.27	0.144	0.102 (0.130)		0.042
59	4.92	0.27	0.144	0.102 (0.130)		0.042
60	5.00	0.27	0.144	0.101 (0.130)		0.043
61	5.08	0.20	0.108	(0.101) 0.097		0.011
62	5.17	0.20	0.108	(0.100) 0.097		0.011
63	5.25	0.20	0.108	(0.100) 0.097		0.011
64	5.33	0.23	0.126	0.100 (0.113)		0.026
65	5.42	0.23	0.126	0.099 (0.113)		0.027
66	5.50	0.23	0.126	0.099 (0.113)		0.027
67	5.58	0.27	0.144	0.098 (0.130)		0.046
68	5.67	0.27	0.144	0.098 (0.130)		0.046
69	5.75	0.27	0.144	0.097 (0.130)		0.047
70	5.83	0.27	0.144	0.097 (0.130)		0.047
71	5.92	0.27	0.144	0.097 (0.130)		0.047
72	6.00	0.27	0.144	0.096 (0.130)		0.048
73	6.08	0.30	0.162	0.096 (0.146)		0.066
74	6.17	0.30	0.162	0.095 (0.146)		0.067
75	6.25	0.30	0.162	0.095 (0.146)		0.067
76	6.33	0.30	0.162	0.094 (0.146)		0.068
77	6.42	0.30	0.162	0.094 (0.146)		0.068
78	6.50	0.30	0.162	0.094 (0.146)		0.068
79	6.58	0.33	0.180	0.093 (0.162)		0.087
80	6.67	0.33	0.180	0.093 (0.162)		0.087
81	6.75	0.33	0.180	0.092 (0.162)		0.088
82	6.83	0.33	0.180	0.092 (0.162)		0.088

83	6.92	0.33	0.180	0.091	(0.162)	0.089
84	7.00	0.33	0.180	0.091	(0.162)	0.089
85	7.08	0.33	0.180	0.091	(0.162)	0.089
86	7.17	0.33	0.180	0.090	(0.162)	0.090
87	7.25	0.33	0.180	0.090	(0.162)	0.090
88	7.33	0.37	0.198	0.089	(0.178)	0.109
89	7.42	0.37	0.198	0.089	(0.178)	0.109
90	7.50	0.37	0.198	0.089	(0.178)	0.109
91	7.58	0.40	0.216	0.088	(0.194)	0.128
92	7.67	0.40	0.216	0.088	(0.194)	0.128
93	7.75	0.40	0.216	0.087	(0.194)	0.129
94	7.83	0.43	0.234	0.087	(0.211)	0.147
95	7.92	0.43	0.234	0.087	(0.211)	0.147
96	8.00	0.43	0.234	0.086	(0.211)	0.148
97	8.08	0.50	0.270	0.086	(0.243)	0.184
98	8.17	0.50	0.270	0.085	(0.243)	0.185
99	8.25	0.50	0.270	0.085	(0.243)	0.185
100	8.33	0.50	0.270	0.085	(0.243)	0.185
101	8.42	0.50	0.270	0.084	(0.243)	0.186
102	8.50	0.50	0.270	0.084	(0.243)	0.186
103	8.58	0.53	0.288	0.083	(0.259)	0.205
104	8.67	0.53	0.288	0.083	(0.259)	0.205
105	8.75	0.53	0.288	0.083	(0.259)	0.205
106	8.83	0.57	0.306	0.082	(0.275)	0.224
107	8.92	0.57	0.306	0.082	(0.275)	0.224
108	9.00	0.57	0.306	0.081	(0.275)	0.225
109	9.08	0.63	0.342	0.081	(0.308)	0.261
110	9.17	0.63	0.342	0.081	(0.308)	0.261
111	9.25	0.63	0.342	0.080	(0.308)	0.262
112	9.33	0.67	0.360	0.080	(0.324)	0.280
113	9.42	0.67	0.360	0.080	(0.324)	0.280
114	9.50	0.67	0.360	0.079	(0.324)	0.281
115	9.58	0.70	0.378	0.079	(0.340)	0.299
116	9.67	0.70	0.378	0.078	(0.340)	0.300
117	9.75	0.70	0.378	0.078	(0.340)	0.300
118	9.83	0.73	0.396	0.078	(0.356)	0.318
119	9.92	0.73	0.396	0.077	(0.356)	0.319
120	10.00	0.73	0.396	0.077	(0.356)	0.319
121	10.08	0.50	0.270	0.077	(0.243)	0.193
122	10.17	0.50	0.270	0.076	(0.243)	0.194
123	10.25	0.50	0.270	0.076	(0.243)	0.194
124	10.33	0.50	0.270	0.075	(0.243)	0.195
125	10.42	0.50	0.270	0.075	(0.243)	0.195
126	10.50	0.50	0.270	0.075	(0.243)	0.195
127	10.58	0.67	0.360	0.074	(0.324)	0.286
128	10.67	0.67	0.360	0.074	(0.324)	0.286
129	10.75	0.67	0.360	0.074	(0.324)	0.286
130	10.83	0.67	0.360	0.073	(0.324)	0.287
131	10.92	0.67	0.360	0.073	(0.324)	0.287
132	11.00	0.67	0.360	0.072	(0.324)	0.288
133	11.08	0.63	0.342	0.072	(0.308)	0.270
134	11.17	0.63	0.342	0.072	(0.308)	0.270
135	11.25	0.63	0.342	0.071	(0.308)	0.271
136	11.33	0.63	0.342	0.071	(0.308)	0.271
137	11.42	0.63	0.342	0.071	(0.308)	0.271
138	11.50	0.63	0.342	0.070	(0.308)	0.272
139	11.58	0.57	0.306	0.070	(0.275)	0.236
140	11.67	0.57	0.306	0.070	(0.275)	0.236
141	11.75	0.57	0.306	0.069	(0.275)	0.237
142	11.83	0.60	0.324	0.069	(0.292)	0.255
143	11.92	0.60	0.324	0.069	(0.292)	0.255
144	12.00	0.60	0.324	0.068	(0.292)	0.256
145	12.08	0.83	0.450	0.068	(0.405)	0.382

146	12.17	0.83	0.450	0.068	(0.405)	0.382
147	12.25	0.83	0.450	0.067	(0.405)	0.383
148	12.33	0.87	0.468	0.067	(0.421)	0.401
149	12.42	0.87	0.468	0.067	(0.421)	0.401
150	12.50	0.87	0.468	0.066	(0.421)	0.402
151	12.58	0.93	0.504	0.066	(0.454)	0.438
152	12.67	0.93	0.504	0.066	(0.454)	0.438
153	12.75	0.93	0.504	0.065	(0.454)	0.439
154	12.83	0.97	0.522	0.065	(0.470)	0.457
155	12.92	0.97	0.522	0.065	(0.470)	0.457
156	13.00	0.97	0.522	0.064	(0.470)	0.458
157	13.08	1.13	0.612	0.064	(0.551)	0.548
158	13.17	1.13	0.612	0.064	(0.551)	0.548
159	13.25	1.13	0.612	0.063	(0.551)	0.549
160	13.33	1.13	0.612	0.063	(0.551)	0.549
161	13.42	1.13	0.612	0.063	(0.551)	0.549
162	13.50	1.13	0.612	0.062	(0.551)	0.550
163	13.58	0.77	0.414	0.062	(0.373)	0.352
164	13.67	0.77	0.414	0.062	(0.373)	0.352
165	13.75	0.77	0.414	0.061	(0.373)	0.353
166	13.83	0.77	0.414	0.061	(0.373)	0.353
167	13.92	0.77	0.414	0.061	(0.373)	0.353
168	14.00	0.77	0.414	0.060	(0.373)	0.354
169	14.08	0.90	0.486	0.060	(0.437)	0.426
170	14.17	0.90	0.486	0.060	(0.437)	0.426
171	14.25	0.90	0.486	0.060	(0.437)	0.426
172	14.33	0.87	0.468	0.059	(0.421)	0.409
173	14.42	0.87	0.468	0.059	(0.421)	0.409
174	14.50	0.87	0.468	0.059	(0.421)	0.409
175	14.58	0.87	0.468	0.058	(0.421)	0.410
176	14.67	0.87	0.468	0.058	(0.421)	0.410
177	14.75	0.87	0.468	0.058	(0.421)	0.410
178	14.83	0.83	0.450	0.057	(0.405)	0.393
179	14.92	0.83	0.450	0.057	(0.405)	0.393
180	15.00	0.83	0.450	0.057	(0.405)	0.393
181	15.08	0.80	0.432	0.057	(0.389)	0.375
182	15.17	0.80	0.432	0.056	(0.389)	0.376
183	15.25	0.80	0.432	0.056	(0.389)	0.376
184	15.33	0.77	0.414	0.056	(0.373)	0.358
185	15.42	0.77	0.414	0.055	(0.373)	0.359
186	15.50	0.77	0.414	0.055	(0.373)	0.359
187	15.58	0.63	0.342	0.055	(0.308)	0.287
188	15.67	0.63	0.342	0.055	(0.308)	0.287
189	15.75	0.63	0.342	0.054	(0.308)	0.288
190	15.83	0.63	0.342	0.054	(0.308)	0.288
191	15.92	0.63	0.342	0.054	(0.308)	0.288
192	16.00	0.63	0.342	0.053	(0.308)	0.289
193	16.08	0.13	0.072	0.053	(0.065)	0.019
194	16.17	0.13	0.072	0.053	(0.065)	0.019
195	16.25	0.13	0.072	0.053	(0.065)	0.019
196	16.33	0.13	0.072	0.052	(0.065)	0.020
197	16.42	0.13	0.072	0.052	(0.065)	0.020
198	16.50	0.13	0.072	0.052	(0.065)	0.020
199	16.58	0.10	0.054	(0.052)	0.049	0.005
200	16.67	0.10	0.054	(0.051)	0.049	0.005
201	16.75	0.10	0.054	(0.051)	0.049	0.005
202	16.83	0.10	0.054	(0.051)	0.049	0.005
203	16.92	0.10	0.054	(0.051)	0.049	0.005
204	17.00	0.10	0.054	(0.050)	0.049	0.005
205	17.08	0.17	0.090	0.050	(0.081)	0.040
206	17.17	0.17	0.090	0.050	(0.081)	0.040
207	17.25	0.17	0.090	0.050	(0.081)	0.040
208	17.33	0.17	0.090	0.049	(0.081)	0.041

209	17.42	0.17	0.090	0.049	(0.081)	0.041
210	17.50	0.17	0.090	0.049	(0.081)	0.041
211	17.58	0.17	0.090	0.049	(0.081)	0.041
212	17.67	0.17	0.090	0.048	(0.081)	0.042
213	17.75	0.17	0.090	0.048	(0.081)	0.042
214	17.83	0.13	0.072	0.048	(0.065)	0.024
215	17.92	0.13	0.072	0.048	(0.065)	0.024
216	18.00	0.13	0.072	0.047	(0.065)	0.025
217	18.08	0.13	0.072	0.047	(0.065)	0.025
218	18.17	0.13	0.072	0.047	(0.065)	0.025
219	18.25	0.13	0.072	0.047	(0.065)	0.025
220	18.33	0.13	0.072	0.046	(0.065)	0.026
221	18.42	0.13	0.072	0.046	(0.065)	0.026
222	18.50	0.13	0.072	0.046	(0.065)	0.026
223	18.58	0.10	0.054	0.046	(0.049)	0.008
224	18.67	0.10	0.054	0.046	(0.049)	0.008
225	18.75	0.10	0.054	0.045	(0.049)	0.009
226	18.83	0.07	0.036	(0.045)	0.032	0.004
227	18.92	0.07	0.036	(0.045)	0.032	0.004
228	19.00	0.07	0.036	(0.045)	0.032	0.004
229	19.08	0.10	0.054	0.044	(0.049)	0.010
230	19.17	0.10	0.054	0.044	(0.049)	0.010
231	19.25	0.10	0.054	0.044	(0.049)	0.010
232	19.33	0.13	0.072	0.044	(0.065)	0.028
233	19.42	0.13	0.072	0.044	(0.065)	0.028
234	19.50	0.13	0.072	0.043	(0.065)	0.029
235	19.58	0.10	0.054	0.043	(0.049)	0.011
236	19.67	0.10	0.054	0.043	(0.049)	0.011
237	19.75	0.10	0.054	0.043	(0.049)	0.011
238	19.83	0.07	0.036	(0.043)	0.032	0.004
239	19.92	0.07	0.036	(0.042)	0.032	0.004
240	20.00	0.07	0.036	(0.042)	0.032	0.004
241	20.08	0.10	0.054	0.042	(0.049)	0.012
242	20.17	0.10	0.054	0.042	(0.049)	0.012
243	20.25	0.10	0.054	0.042	(0.049)	0.012
244	20.33	0.10	0.054	0.042	(0.049)	0.012
245	20.42	0.10	0.054	0.041	(0.049)	0.013
246	20.50	0.10	0.054	0.041	(0.049)	0.013
247	20.58	0.10	0.054	0.041	(0.049)	0.013
248	20.67	0.10	0.054	0.041	(0.049)	0.013
249	20.75	0.10	0.054	0.041	(0.049)	0.013
250	20.83	0.07	0.036	(0.041)	0.032	0.004
251	20.92	0.07	0.036	(0.040)	0.032	0.004
252	21.00	0.07	0.036	(0.040)	0.032	0.004
253	21.08	0.10	0.054	0.040	(0.049)	0.014
254	21.17	0.10	0.054	0.040	(0.049)	0.014
255	21.25	0.10	0.054	0.040	(0.049)	0.014
256	21.33	0.07	0.036	(0.040)	0.032	0.004
257	21.42	0.07	0.036	(0.039)	0.032	0.004
258	21.50	0.07	0.036	(0.039)	0.032	0.004
259	21.58	0.10	0.054	0.039	(0.049)	0.015
260	21.67	0.10	0.054	0.039	(0.049)	0.015
261	21.75	0.10	0.054	0.039	(0.049)	0.015
262	21.83	0.07	0.036	(0.039)	0.032	0.004
263	21.92	0.07	0.036	(0.039)	0.032	0.004
264	22.00	0.07	0.036	(0.038)	0.032	0.004
265	22.08	0.10	0.054	0.038	(0.049)	0.016
266	22.17	0.10	0.054	0.038	(0.049)	0.016
267	22.25	0.10	0.054	0.038	(0.049)	0.016
268	22.33	0.07	0.036	(0.038)	0.032	0.004
269	22.42	0.07	0.036	(0.038)	0.032	0.004
270	22.50	0.07	0.036	(0.038)	0.032	0.004
271	22.58	0.07	0.036	(0.038)	0.032	0.004

272	22.67	0.07	0.036	(0.038)	0.032	0.004
273	22.75	0.07	0.036	(0.037)	0.032	0.004
274	22.83	0.07	0.036	(0.037)	0.032	0.004
275	22.92	0.07	0.036	(0.037)	0.032	0.004
276	23.00	0.07	0.036	(0.037)	0.032	0.004
277	23.08	0.07	0.036	(0.037)	0.032	0.004
278	23.17	0.07	0.036	(0.037)	0.032	0.004
279	23.25	0.07	0.036	(0.037)	0.032	0.004
280	23.33	0.07	0.036	(0.037)	0.032	0.004
281	23.42	0.07	0.036	(0.037)	0.032	0.004
282	23.50	0.07	0.036	(0.037)	0.032	0.004
283	23.58	0.07	0.036	(0.037)	0.032	0.004
284	23.67	0.07	0.036	(0.037)	0.032	0.004
285	23.75	0.07	0.036	(0.036)	0.032	0.004
286	23.83	0.07	0.036	(0.036)	0.032	0.004
287	23.92	0.07	0.036	(0.036)	0.032	0.004
288	24.00	0.07	0.036	(0.036)	0.032	0.004

(Loss Rate Not Used)

Sum = 100.0 Sum = 35.8

Flood volume = Effective rainfall 2.99(In)
times area 2.9(Ac.)/[(In)/(Ft.)] = 0.7(Ac.Ft)
Total soil loss = 1.51(In)
Total soil loss = 0.363(Ac.Ft)
Total rainfall = 4.50(In)
Flood volume = 31223.4 Cubic Feet
Total soil loss = 15821.1 Cubic Feet

Peak flow rate of this hydrograph = 1.596(CFS)

+++++

24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.00	Q				
0+10	0.0001	0.01	Q				
0+15	0.0002	0.01	Q				
0+20	0.0003	0.01	Q				
0+25	0.0004	0.02	Q				
0+30	0.0005	0.02	Q				
0+35	0.0006	0.02	Q				
0+40	0.0007	0.02	Q				
0+45	0.0008	0.02	Q				
0+50	0.0009	0.02	Q				
0+55	0.0011	0.02	Q				
1+ 0	0.0012	0.02	Q				
1+ 5	0.0013	0.02	Q				
1+10	0.0014	0.02	Q				
1+15	0.0015	0.02	Q				
1+20	0.0017	0.02	Q				
1+25	0.0018	0.02	Q				
1+30	0.0019	0.02	Q				
1+35	0.0020	0.02	Q				
1+40	0.0021	0.02	Q				
1+45	0.0022	0.02	Q				
1+50	0.0023	0.02	Q				
1+55	0.0025	0.02	Q				
2+ 0	0.0026	0.02	Q				
2+ 5	0.0027	0.02	Q				

2+10	0.0029	0.02	Q
2+15	0.0030	0.02	Q
2+20	0.0032	0.02	Q
2+25	0.0033	0.02	Q
2+30	0.0035	0.02	Q
2+35	0.0036	0.02	Q
2+40	0.0038	0.03	Q
2+45	0.0040	0.03	Q
2+50	0.0042	0.03	Q
2+55	0.0043	0.03	Q
3+ 0	0.0045	0.03	Q
3+ 5	0.0047	0.03	Q
3+10	0.0049	0.03	Q
3+15	0.0051	0.03	Q
3+20	0.0052	0.03	Q
3+25	0.0054	0.03	Q
3+30	0.0056	0.03	Q
3+35	0.0058	0.03	Q
3+40	0.0060	0.03	Q
3+45	0.0061	0.03	Q
3+50	0.0063	0.03	Q
3+55	0.0065	0.03	Q
4+ 0	0.0068	0.03	Q
4+ 5	0.0070	0.03	Q
4+10	0.0072	0.03	Q
4+15	0.0074	0.03	Q
4+20	0.0077	0.04	Q
4+25	0.0081	0.06	Q
4+30	0.0085	0.06	Q
4+35	0.0090	0.06	Q
4+40	0.0094	0.07	Q
4+45	0.0099	0.07	Q
4+50	0.0105	0.09	Q
4+55	0.0113	0.12	Q
5+ 0	0.0122	0.12	Q
5+ 5	0.0127	0.08	Q
5+10	0.0130	0.04	Q
5+15	0.0133	0.03	Q
5+20	0.0136	0.05	Q
5+25	0.0141	0.07	Q
5+30	0.0146	0.08	Q
5+35	0.0154	0.10	Q
5+40	0.0162	0.13	Q
5+45	0.0171	0.13	Q
5+50	0.0181	0.14	QV
5+55	0.0190	0.14	QV
6+ 0	0.0200	0.14	QV
6+ 5	0.0211	0.16	QV
6+10	0.0224	0.19	QV
6+15	0.0237	0.19	QV
6+20	0.0250	0.20	QV
6+25	0.0264	0.20	QV
6+30	0.0278	0.20	QV
6+35	0.0293	0.22	QV
6+40	0.0310	0.25	QV
6+45	0.0327	0.25	Q
6+50	0.0345	0.26	Q
6+55	0.0362	0.26	QV
7+ 0	0.0380	0.26	QV
7+ 5	0.0398	0.26	QV
7+10	0.0416	0.26	QV
7+15	0.0434	0.26	QV
7+20	0.0454	0.29	QV

7+25	0.0475	0.31	QV					
7+30	0.0497	0.31	QV					
7+35	0.0520	0.34	QV					
7+40	0.0545	0.37	Q V					
7+45	0.0571	0.37	Q V					
7+50	0.0598	0.40	Q V					
7+55	0.0627	0.42	Q V					
8+ 0	0.0657	0.43	Q V					
8+ 5	0.0689	0.48	Q V					
8+10	0.0725	0.52	Q V					
8+15	0.0762	0.53	Q V					
8+20	0.0799	0.54	Q V					
8+25	0.0836	0.54	Q V					
8+30	0.0873	0.54	Q V					
8+35	0.0912	0.56	Q V					
8+40	0.0953	0.59	Q V					
8+45	0.0994	0.59	Q V					
8+50	0.1036	0.62	Q V					
8+55	0.1081	0.64	Q V					
9+ 0	0.1125	0.65	Q V					
9+ 5	0.1174	0.70	Q V					
9+10	0.1225	0.75	Q V					
9+15	0.1277	0.76	Q V					
9+20	0.1331	0.78	Q V					
9+25	0.1387	0.81	Q V					
9+30	0.1443	0.81	Q V					
9+35	0.1500	0.84	Q V					
9+40	0.1560	0.86	Q V					
9+45	0.1620	0.87	Q V					
9+50	0.1681	0.90	Q V					
9+55	0.1744	0.92	Q V					
10+ 0	0.1808	0.92	Q V					
10+ 5	0.1861	0.76	Q V					
10+10	0.1902	0.61	Q V					
10+15	0.1942	0.58	Q V					
10+20	0.1981	0.56	Q V					
10+25	0.2020	0.57	Q V					
10+30	0.2059	0.57	Q V					
10+35	0.2106	0.69	Q V					
10+40	0.2161	0.80	Q V					
10+45	0.2218	0.82	Q V					
10+50	0.2275	0.83	Q V					
10+55	0.2332	0.83	Q V					
11+ 0	0.2390	0.83	Q V					
11+ 5	0.2446	0.81	Q V					
11+10	0.2500	0.79	Q V					
11+15	0.2554	0.79	Q V					
11+20	0.2608	0.79	Q V					
11+25	0.2663	0.79	Q V					
11+30	0.2717	0.79	Q V					
11+35	0.2768	0.74	Q V					
11+40	0.2816	0.70	Q V					
11+45	0.2864	0.69	Q V					
11+50	0.2913	0.71	Q V					
11+55	0.2963	0.73	Q V					
12+ 0	0.3014	0.74	Q V					
12+ 5	0.3077	0.91	Q V					
12+10	0.3150	1.06	Q V					
12+15	0.3226	1.10	Q V					
12+20	0.3304	1.14	Q V					
12+25	0.3384	1.16	Q V					
12+30	0.3464	1.16	Q V					
12+35	0.3547	1.21	Q V					

12+40	0.3634	1.26	Q	V	
12+45	0.3722	1.27	Q	V	
12+50	0.3811	1.30	Q	V	
12+55	0.3902	1.32	Q	V	
13+ 0	0.3993	1.33	Q	V	
13+ 5	0.4093	1.45	Q	V	
13+10	0.4200	1.56	Q	V	
13+15	0.4309	1.58	Q	V	
13+20	0.4419	1.59	Q	V	
13+25	0.4529	1.59	Q	V	
13+30	0.4639	1.60	Q	V	
13+35	0.4731	1.34	Q	V	
13+40	0.4806	1.09	Q	V	
13+45	0.4878	1.05	Q	V	
13+50	0.4949	1.02	Q	V	
13+55	0.5019	1.03	Q	V	
14+ 0	0.5090	1.03	Q	V	
14+ 5	0.5167	1.12	Q	V	
14+10	0.5251	1.21	Q	V	
14+15	0.5335	1.23	Q	V	
14+20	0.5419	1.22	Q	V	
14+25	0.5501	1.19	Q	V	
14+30	0.5583	1.19	Q	V	
14+35	0.5665	1.19	Q	V	
14+40	0.5747	1.19	Q	V	
14+45	0.5829	1.19	Q	V	
14+50	0.5909	1.17	Q	V	
14+55	0.5988	1.15	Q	V	
15+ 0	0.6067	1.14	Q	V	
15+ 5	0.6144	1.12	Q	V	
15+10	0.6220	1.10	Q	V	
15+15	0.6295	1.09	Q	V	
15+20	0.6369	1.07	Q	V	
15+25	0.6441	1.05	Q	V	
15+30	0.6513	1.04	Q	V	
15+35	0.6578	0.95	Q	V	
15+40	0.6637	0.86	Q	V	
15+45	0.6695	0.84	Q	V	
15+50	0.6753	0.84	Q	V	
15+55	0.6810	0.84	Q	V	
16+ 0	0.6868	0.84	Q	V	
16+ 5	0.6901	0.48	Q	V	
16+10	0.6912	0.15	Q	V	
16+15	0.6918	0.09	Q	V	
16+20	0.6922	0.06	Q	V	
16+25	0.6926	0.06	Q	V	
16+30	0.6930	0.06	Q	V	
16+35	0.6932	0.04	Q	V	
16+40	0.6934	0.02	Q	V	
16+45	0.6935	0.02	Q	V	
16+50	0.6936	0.02	Q	V	
16+55	0.6937	0.02	Q	V	
17+ 0	0.6938	0.02	Q	V	
17+ 5	0.6942	0.06	Q	V	
17+10	0.6949	0.10	Q	V	
17+15	0.6957	0.11	Q	V	
17+20	0.6965	0.12	Q	V	
17+25	0.6973	0.12	Q	V	
17+30	0.6982	0.12	Q	V	
17+35	0.6990	0.12	Q	V	
17+40	0.6998	0.12	Q	V	
17+45	0.7007	0.12	Q	V	
17+50	0.7013	0.10	Q	V	

17+55	0.7019	0.08	Q				V
18+ 0	0.7024	0.07	Q				V
18+ 5	0.7029	0.07	Q				V
18+10	0.7034	0.07	Q				V
18+15	0.7039	0.07	Q				V
18+20	0.7044	0.07	Q				V
18+25	0.7049	0.07	Q				V
18+30	0.7054	0.08	Q				V
18+35	0.7058	0.05	Q				V
18+40	0.7060	0.03	Q				V
18+45	0.7062	0.03	Q				V
18+50	0.7063	0.02	Q				V
18+55	0.7064	0.01	Q				V
19+ 0	0.7064	0.01	Q				V
19+ 5	0.7066	0.02	Q				V
19+10	0.7068	0.03	Q				V
19+15	0.7069	0.03	Q				V
19+20	0.7073	0.05	Q				V
19+25	0.7078	0.08	Q				V
19+30	0.7084	0.08	Q				V
19+35	0.7088	0.06	Q				V
19+40	0.7091	0.04	Q				V
19+45	0.7093	0.03	Q				V
19+50	0.7094	0.02	Q				V
19+55	0.7095	0.01	Q				V
20+ 0	0.7096	0.01	Q				V
20+ 5	0.7098	0.02	Q				V
20+10	0.7100	0.03	Q				V
20+15	0.7102	0.03	Q				V
20+20	0.7105	0.04	Q				V
20+25	0.7107	0.04	Q				V
20+30	0.7110	0.04	Q				V
20+35	0.7112	0.04	Q				V
20+40	0.7115	0.04	Q				V
20+45	0.7117	0.04	Q				V
20+50	0.7119	0.03	Q				V
20+55	0.7120	0.01	Q				V
21+ 0	0.7121	0.01	Q				V
21+ 5	0.7123	0.02	Q				V
21+10	0.7125	0.04	Q				V
21+15	0.7128	0.04	Q				V
21+20	0.7130	0.03	Q				V
21+25	0.7131	0.01	Q				V
21+30	0.7132	0.01	Q				V
21+35	0.7133	0.03	Q				V
21+40	0.7136	0.04	Q				V
21+45	0.7139	0.04	Q				V
21+50	0.7141	0.03	Q				V
21+55	0.7142	0.01	Q				V
22+ 0	0.7143	0.01	Q				V
22+ 5	0.7145	0.03	Q				V
22+10	0.7147	0.04	Q				V
22+15	0.7151	0.04	Q				V
22+20	0.7153	0.03	Q				V
22+25	0.7154	0.01	Q				V
22+30	0.7154	0.01	Q				V
22+35	0.7155	0.01	Q				V
22+40	0.7156	0.01	Q				V
22+45	0.7157	0.01	Q				V
22+50	0.7157	0.01	Q				V
22+55	0.7158	0.01	Q				V
23+ 0	0.7159	0.01	Q				V
23+ 5	0.7159	0.01	Q				V

23+10	0.7160	0.01	Q				V
23+15	0.7161	0.01	Q				V
23+20	0.7162	0.01	Q				V
23+25	0.7162	0.01	Q				V
23+30	0.7163	0.01	Q				V
23+35	0.7164	0.01	Q				V
23+40	0.7165	0.01	Q				V
23+45	0.7165	0.01	Q				V
23+50	0.7166	0.01	Q				V
23+55	0.7167	0.01	Q				V
24+ 0	0.7167	0.01	Q				V
24+ 5	0.7168	0.01	Q				V
24+10	0.7168	0.00	Q				V
24+15	0.7168	0.00	Q				V

**Post-developed conditions
2 year 1 hour**

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863post12.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MoVal (APN 488-310-012)
Post-developed conditions
2 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 750.00(Ft.)
Length along longest watercourse measured to centroid = 410.00(Ft.)
Length along longest watercourse = 0.142 Mi.
Length along longest watercourse measured to centroid = 0.078 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 105.6000 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.027 Hr.
Lag time = 1.61 Min.
25% of lag time = 0.40 Min.
40% of lag time = 0.64 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	0.50	1.44

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.20	3.46

STORM EVENT (YEAR) = 2.00

Area Averaged 2-Year Rainfall = 0.500(In)
 Area Averaged 100-Year Rainfall = 1.200(In)

Point rain (area averaged) = 0.500(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 0.500(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 2.880 56.00 0.820
 Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-1	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
56.0	36.0	0.706	0.820	0.185	1.000	0.185
						Sum (F) = 0.185

Area averaged mean soil loss (F) (In/Hr) = 0.185
 Minimum soil loss rate ((In/Hr)) = 0.092
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.240

 Slope of intensity-duration curve for a 1 hour storm =0.5000

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

 Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)	
1	0.083	311.052	57.787	1.677
2	0.167	622.104	36.528	1.060
3	0.250	933.156	5.685	0.165
			Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max Low	Effective (In/Hr)	
1	0.08	4.20	(0.185)	0.060	0.192
2	0.17	4.30	(0.185)	0.062	0.196
3	0.25	5.00	(0.185)	0.072	0.228
4	0.33	5.00	(0.185)	0.072	0.228
5	0.42	5.80	(0.185)	0.084	0.264
6	0.50	6.50	(0.185)	0.094	0.296
7	0.58	7.40	(0.185)	0.107	0.337
8	0.67	8.60	(0.185)	0.124	0.392
9	0.75	12.30	(0.185)	0.177	0.561
10	0.83	29.10	0.185 (0.419)		1.561
11	0.92	6.80	(0.185)	0.098	0.310
12	1.00	5.00	(0.185)	0.072	0.228

(Loss Rate Not Used)
 Sum = 100.0 Sum = 4.8

Flood volume = Effective rainfall 0.40(In)
 times area 2.9(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)
 Total soil loss = 0.10(In)
 Total soil loss = 0.024(Ac.Ft)

Total rainfall = 0.50(In)
 Flood volume = 4176.5 Cubic Feet
 Total soil loss = 1050.6 Cubic Feet

 Peak flow rate of this hydrograph = 3.279(CFS)

+++++

1 - H O U R S T O R M
 R u n o f f H y d r o g r a p h

 Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0022	0.32	VQ				
0+10	0.0059	0.53	Q				
0+15	0.0102	0.62	Q V				
0+20	0.0147	0.66	Q V				
0+25	0.0197	0.72	Q V				
0+30	0.0253	0.82	Q V				
0+35	0.0317	0.92	Q V				
0+40	0.0390	1.06	Q V				
0+45	0.0487	1.41	Q V				
0+50	0.0713	3.28	Q V				
0+55	0.0869	2.27	Q V				
1+ 0	0.0936	0.97	Q V				
1+ 5	0.0956	0.29	Q V				
1+10	0.0959	0.04	Q V				

**Post-developed conditions
2 year 3 hour**

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863post32.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MoVal (APN 488-310-012)
Post-developed conditions
2 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 750.00(Ft.)
Length along longest watercourse measured to centroid = 410.00(Ft.)
Length along longest watercourse = 0.142 Mi.
Length along longest watercourse measured to centroid = 0.078 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 105.6000 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.027 Hr.
Lag time = 1.61 Min.
25% of lag time = 0.40 Min.
40% of lag time = 0.64 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	0.81	2.33

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.86	5.36

STORM EVENT (YEAR) = 2.00

Area Averaged 2-Year Rainfall = 0.810(In)
 Area Averaged 100-Year Rainfall = 1.860(In)

Point rain (area averaged) = 0.810(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 0.810(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 2.880 56.00 0.820
 Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-1	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
56.0	36.0	0.706	0.820	0.185	1.000	0.185
						Sum (F) = 0.185

Area averaged mean soil loss (F) (In/Hr) = 0.185
 Minimum soil loss rate ((In/Hr)) = 0.092
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.240

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	311.052	1.677
2	0.167	622.104	1.060
3	0.250	933.156	0.165
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	1.30	(0.185)	0.030	0.096
2	0.17	1.30	(0.185)	0.030	0.096
3	0.25	1.10	(0.185)	0.026	0.081
4	0.33	1.50	(0.185)	0.035	0.111
5	0.42	1.50	(0.185)	0.035	0.111
6	0.50	1.80	(0.185)	0.042	0.133
7	0.58	1.50	(0.185)	0.035	0.111
8	0.67	1.80	(0.185)	0.042	0.133
9	0.75	1.80	(0.185)	0.042	0.133
10	0.83	1.50	(0.185)	0.035	0.111
11	0.92	1.60	(0.185)	0.037	0.118
12	1.00	1.80	(0.185)	0.042	0.133
13	1.08	2.20	(0.185)	0.051	0.163
14	1.17	2.20	(0.185)	0.051	0.163
15	1.25	2.20	(0.185)	0.051	0.163
16	1.33	2.00	(0.185)	0.047	0.148
17	1.42	2.60	(0.185)	0.061	0.192
18	1.50	2.70	(0.185)	0.063	0.199
19	1.58	2.40	(0.185)	0.056	0.177
20	1.67	2.70	(0.185)	0.063	0.199

21	1.75	3.30	0.321	(0.185)	0.077	0.244
22	1.83	3.10	0.301	(0.185)	0.072	0.229
23	1.92	2.90	0.282	(0.185)	0.068	0.214
24	2.00	3.00	0.292	(0.185)	0.070	0.222
25	2.08	3.10	0.301	(0.185)	0.072	0.229
26	2.17	4.20	0.408	(0.185)	0.098	0.310
27	2.25	5.00	0.486	(0.185)	0.117	0.369
28	2.33	3.50	0.340	(0.185)	0.082	0.259
29	2.42	6.80	0.661	(0.185)	0.159	0.502
30	2.50	7.30	0.710	(0.185)	0.170	0.539
31	2.58	8.20	0.797	0.185 (0.191)		0.612
32	2.67	5.90	0.573	(0.185)	0.138	0.436
33	2.75	2.00	0.194	(0.185)	0.047	0.148
34	2.83	1.80	0.175	(0.185)	0.042	0.133
35	2.92	1.80	0.175	(0.185)	0.042	0.133
36	3.00	0.60	0.058	(0.185)	0.014	0.044

(Loss Rate Not Used)

Sum = 100.0 Sum = 7.4

Flood volume = Effective rainfall 0.62(In)
times area 2.9(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)
Total soil loss = 0.19(In)
Total soil loss = 0.047(Ac.Ft)
Total rainfall = 0.81(In)
Flood volume = 6441.1 Cubic Feet
Total soil loss = 2026.8 Cubic Feet

Peak flow rate of this hydrograph = 1.682(CFS)

+++++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0011	0.16	Q				
0+10	0.0029	0.26	VQ				
0+15	0.0047	0.25	Q				
0+20	0.0067	0.29	Q				
0+25	0.0088	0.32	QV				
0+30	0.0113	0.36	Q V				
0+35	0.0137	0.35	Q V				
0+40	0.0162	0.36	Q V				
0+45	0.0188	0.38	Q V				
0+50	0.0212	0.35	Q V				
0+55	0.0235	0.34	Q V				
1+ 0	0.0261	0.37	Q V				
1+ 5	0.0291	0.43	Q V				
1+10	0.0323	0.47	Q V				
1+15	0.0355	0.47	Q V				
1+20	0.0386	0.45	Q V				
1+25	0.0421	0.51	Q V				
1+30	0.0460	0.56	Q V				
1+35	0.0497	0.54	Q V				
1+40	0.0535	0.56	Q V				
1+45	0.0580	0.65	Q V				
1+50	0.0626	0.68	Q V				
1+55	0.0671	0.64	Q V				
2+ 0	0.0715	0.64	Q V				
2+ 5	0.0760	0.65	Q V				
2+10	0.0815	0.80	Q V				

2+15	0.0883	0.99	Q		v		
2+20	0.0943	0.88	Q		v		
2+25	0.1024	1.18	Q		v		
2+30	0.1126	1.48	Q		v		
2+35	0.1242	1.68	Q		v		
2+40	0.1343	1.47	Q		v		
2+45	0.1399	0.81	Q		v		
2+50	0.1430	0.45	Q		v		
2+55	0.1457	0.39	Q		v		
3+ 0	0.1473	0.24	Q		v		
3+ 5	0.1478	0.07	Q		v		
3+10	0.1479	0.01	Q		v		

**Post-developed conditions
2 year 6 hour**

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863post62.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MoVal (APN 488-310-012)
Post-developed conditions
2 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 750.00(Ft.)
Length along longest watercourse measured to centroid = 410.00(Ft.)
Length along longest watercourse = 0.142 Mi.
Length along longest watercourse measured to centroid = 0.078 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 105.6000 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.027 Hr.
Lag time = 1.61 Min.
25% of lag time = 0.40 Min.
40% of lag time = 0.64 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.40	4.03

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	2.50	7.20

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 1.400(In)

Area Averaged 100-Year Rainfall = 2.500(In)

Point rain (area averaged) = 1.400(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 1.400(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 2.880 56.00 0.820
 Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-1	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
56.0	36.0	0.706	0.820	0.185	1.000	0.185
						Sum (F) = 0.185

Area averaged mean soil loss (F) (In/Hr) = 0.185
 Minimum soil loss rate ((In/Hr)) = 0.092
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.240

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	311.052	57.787
2	0.167	622.104	36.528
3	0.250	933.156	5.685
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	0.50	(0.185)	0.020	0.064
2	0.17	0.60	(0.185)	0.024	0.077
3	0.25	0.60	(0.185)	0.024	0.077
4	0.33	0.60	(0.185)	0.024	0.077
5	0.42	0.60	(0.185)	0.024	0.077
6	0.50	0.70	(0.185)	0.028	0.089
7	0.58	0.70	(0.185)	0.028	0.089
8	0.67	0.70	(0.185)	0.028	0.089
9	0.75	0.70	(0.185)	0.028	0.089
10	0.83	0.70	(0.185)	0.028	0.089
11	0.92	0.70	(0.185)	0.028	0.089
12	1.00	0.80	(0.185)	0.032	0.102
13	1.08	0.80	(0.185)	0.032	0.102
14	1.17	0.80	(0.185)	0.032	0.102
15	1.25	0.80	(0.185)	0.032	0.102
16	1.33	0.80	(0.185)	0.032	0.102
17	1.42	0.80	(0.185)	0.032	0.102
18	1.50	0.80	(0.185)	0.032	0.102
19	1.58	0.80	(0.185)	0.032	0.102
20	1.67	0.80	(0.185)	0.032	0.102
21	1.75	0.80	(0.185)	0.032	0.102

22	1.83	0.80	0.134	(0.185)	0.032	0.102
23	1.92	0.80	0.134	(0.185)	0.032	0.102
24	2.00	0.90	0.151	(0.185)	0.036	0.115
25	2.08	0.80	0.134	(0.185)	0.032	0.102
26	2.17	0.90	0.151	(0.185)	0.036	0.115
27	2.25	0.90	0.151	(0.185)	0.036	0.115
28	2.33	0.90	0.151	(0.185)	0.036	0.115
29	2.42	0.90	0.151	(0.185)	0.036	0.115
30	2.50	0.90	0.151	(0.185)	0.036	0.115
31	2.58	0.90	0.151	(0.185)	0.036	0.115
32	2.67	0.90	0.151	(0.185)	0.036	0.115
33	2.75	1.00	0.168	(0.185)	0.040	0.128
34	2.83	1.00	0.168	(0.185)	0.040	0.128
35	2.92	1.00	0.168	(0.185)	0.040	0.128
36	3.00	1.00	0.168	(0.185)	0.040	0.128
37	3.08	1.00	0.168	(0.185)	0.040	0.128
38	3.17	1.10	0.185	(0.185)	0.044	0.140
39	3.25	1.10	0.185	(0.185)	0.044	0.140
40	3.33	1.10	0.185	(0.185)	0.044	0.140
41	3.42	1.20	0.202	(0.185)	0.048	0.153
42	3.50	1.30	0.218	(0.185)	0.052	0.166
43	3.58	1.40	0.235	(0.185)	0.056	0.179
44	3.67	1.40	0.235	(0.185)	0.056	0.179
45	3.75	1.50	0.252	(0.185)	0.060	0.192
46	3.83	1.50	0.252	(0.185)	0.060	0.192
47	3.92	1.60	0.269	(0.185)	0.065	0.204
48	4.00	1.60	0.269	(0.185)	0.065	0.204
49	4.08	1.70	0.286	(0.185)	0.069	0.217
50	4.17	1.80	0.302	(0.185)	0.073	0.230
51	4.25	1.90	0.319	(0.185)	0.077	0.243
52	4.33	2.00	0.336	(0.185)	0.081	0.255
53	4.42	2.10	0.353	(0.185)	0.085	0.268
54	4.50	2.10	0.353	(0.185)	0.085	0.268
55	4.58	2.20	0.370	(0.185)	0.089	0.281
56	4.67	2.30	0.386	(0.185)	0.093	0.294
57	4.75	2.40	0.403	(0.185)	0.097	0.306
58	4.83	2.40	0.403	(0.185)	0.097	0.306
59	4.92	2.50	0.420	(0.185)	0.101	0.319
60	5.00	2.60	0.437	(0.185)	0.105	0.332
61	5.08	3.10	0.521	(0.185)	0.125	0.396
62	5.17	3.60	0.605	(0.185)	0.145	0.460
63	5.25	3.90	0.655	(0.185)	0.157	0.498
64	5.33	4.20	0.706	(0.185)	0.169	0.536
65	5.42	4.70	0.790	0.185	(0.190)	0.605
66	5.50	5.60	0.941	0.185	(0.226)	0.756
67	5.58	1.90	0.319	(0.185)	0.077	0.243
68	5.67	0.90	0.151	(0.185)	0.036	0.115
69	5.75	0.60	0.101	(0.185)	0.024	0.077
70	5.83	0.50	0.084	(0.185)	0.020	0.064
71	5.92	0.30	0.050	(0.185)	0.012	0.038
72	6.00	0.20	0.034	(0.185)	0.008	0.026

(Loss Rate Not Used)

Sum = 100.0 Sum = 12.8

Flood volume = Effective rainfall 1.07(In)
times area 2.9(Ac.)/[(In)/(Ft.)] = 0.3(Ac.Ft)
Total soil loss = 0.33(In)
Total soil loss = 0.080(Ac.Ft)
Total rainfall = 1.40(In)
Flood volume = 11162.9 Cubic Feet
Total soil loss = 3473.1 Cubic Feet

Peak flow rate of this hydrograph = 1.998(CFS)

+++++

6 - H O U R S T O R M
 R u n o f f H y d r o g r a p h

 Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume	Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0007		0.11	Q				
0+10	0.0021		0.20	Q				
0+15	0.0036		0.22	Q				
0+20	0.0051		0.22	Q				
0+25	0.0067		0.22	QV				
0+30	0.0084		0.24	QV				
0+35	0.0101		0.26	Q				
0+40	0.0119		0.26	Q				
0+45	0.0137		0.26	QV				
0+50	0.0155		0.26	QV				
0+55	0.0173		0.26	QV				
1+ 0	0.0192		0.28	QV				
1+ 5	0.0212		0.29	Q V				
1+10	0.0233		0.30	Q V				
1+15	0.0253		0.30	Q V				
1+20	0.0274		0.30	Q V				
1+25	0.0294		0.30	Q V				
1+30	0.0315		0.30	Q V				
1+35	0.0335		0.30	Q V				
1+40	0.0355		0.30	Q V				
1+45	0.0376		0.30	Q V				
1+50	0.0396		0.30	Q V				
1+55	0.0417		0.30	Q V				
2+ 0	0.0439		0.32	Q V				
2+ 5	0.0460		0.31	Q V				
2+10	0.0482		0.32	Q V				
2+15	0.0505		0.33	Q V				
2+20	0.0528		0.33	Q V				
2+25	0.0551		0.33	Q V				
2+30	0.0574		0.33	Q V				
2+35	0.0597		0.33	Q V				
2+40	0.0620		0.33	Q V				
2+45	0.0644		0.36	Q V				
2+50	0.0670		0.37	Q V				
2+55	0.0695		0.37	Q V				
3+ 0	0.0721		0.37	Q V				
3+ 5	0.0746		0.37	Q V				
3+10	0.0773		0.39	Q V				
3+15	0.0801		0.41	Q V				
3+20	0.0829		0.41	Q V				
3+25	0.0859		0.43	Q V				
3+30	0.0891		0.46	Q V				
3+35	0.0925		0.50	Q V				
3+40	0.0961		0.52	Q V				
3+45	0.0998		0.54	Q V				
3+50	0.1036		0.55	Q V				
3+55	0.1076		0.58	Q V				
4+ 0	0.1117		0.59	Q V				
4+ 5	0.1159		0.61	Q V				
4+10	0.1204		0.65	Q V				
4+15	0.1251		0.69	Q V				
4+20	0.1301		0.72	Q V				
4+25	0.1353		0.76	Q V				
4+30	0.1407		0.78	Q V				

4+35	0.1462	0.80	Q		V		
4+40	0.1519	0.84	Q		V		
4+45	0.1580	0.87	Q		V		
4+50	0.1641	0.89	Q		V		
4+55	0.1703	0.91	Q		V		
5+ 0	0.1769	0.95	Q		V		
5+ 5	0.1842	1.07	Q	Q	V		
5+10	0.1928	1.25	Q	Q	V		
5+15	0.2024	1.39	Q	Q	V		
5+20	0.2127	1.50	Q	Q	V		
5+25	0.2242	1.67	Q	Q	V		
5+30	0.2380	2.00	Q	Q	V		
5+35	0.2470	1.31	Q	Q	V		
5+40	0.2509	0.57	Q	Q	V		
5+45	0.2529	0.29	Q	Q	V		
5+50	0.2544	0.21	Q	Q	V		
5+55	0.2554	0.14	Q	Q	V		
6+ 0	0.2560	0.09	Q	Q	V		
6+ 5	0.2562	0.03	Q	Q	V		
6+10	0.2563	0.00	Q	Q	V		

**Post-developed conditions
2 year 24 hour**

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

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863post242.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MoVal (APN 488-310-012)
Post-developed conditions
2 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 750.00(Ft.)
Length along longest watercourse measured to centroid = 410.00(Ft.)
Length along longest watercourse = 0.142 Mi.
Length along longest watercourse measured to centroid = 0.078 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 105.6000 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.027 Hr.
Lag time = 1.61 Min.
25% of lag time = 0.40 Min.
40% of lag time = 0.64 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.90	5.47

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	4.50	12.96

STORM EVENT (YEAR) = 2.00

Area Averaged 2-Year Rainfall = 1.900(In)
 Area Averaged 100-Year Rainfall = 4.500(In)

Point rain (area averaged) = 1.900(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 1.900(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 2.880 56.00 0.820
 Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-1	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
56.0	36.0	0.706	0.820	0.185	1.000	0.185
						Sum (F) = 0.185

Area averaged mean soil loss (F) (In/Hr) = 0.185
 Minimum soil loss rate ((In/Hr)) = 0.092
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.240

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	311.052	1.677
2	0.167	622.104	1.060
3	0.250	933.156	0.165
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	0.015	(0.328)	0.004	0.012
2	0.17	0.015	(0.327)	0.004	0.012
3	0.25	0.015	(0.325)	0.004	0.012
4	0.33	0.023	(0.324)	0.005	0.017
5	0.42	0.023	(0.323)	0.005	0.017
6	0.50	0.023	(0.322)	0.005	0.017
7	0.58	0.023	(0.320)	0.005	0.017
8	0.67	0.023	(0.319)	0.005	0.017
9	0.75	0.023	(0.318)	0.005	0.017
10	0.83	0.030	(0.317)	0.007	0.023
11	0.92	0.030	(0.315)	0.007	0.023
12	1.00	0.030	(0.314)	0.007	0.023
13	1.08	0.023	(0.313)	0.005	0.017
14	1.17	0.023	(0.312)	0.005	0.017
15	1.25	0.023	(0.310)	0.005	0.017
16	1.33	0.023	(0.309)	0.005	0.017
17	1.42	0.023	(0.308)	0.005	0.017
18	1.50	0.023	(0.307)	0.005	0.017
19	1.58	0.023	(0.305)	0.005	0.017
20	1.67	0.023	(0.304)	0.005	0.017

21	1.75	0.10	0.023	(0.303)	0.005	0.017
22	1.83	0.13	0.030	(0.302)	0.007	0.023
23	1.92	0.13	0.030	(0.301)	0.007	0.023
24	2.00	0.13	0.030	(0.299)	0.007	0.023
25	2.08	0.13	0.030	(0.298)	0.007	0.023
26	2.17	0.13	0.030	(0.297)	0.007	0.023
27	2.25	0.13	0.030	(0.296)	0.007	0.023
28	2.33	0.13	0.030	(0.295)	0.007	0.023
29	2.42	0.13	0.030	(0.293)	0.007	0.023
30	2.50	0.13	0.030	(0.292)	0.007	0.023
31	2.58	0.17	0.038	(0.291)	0.009	0.029
32	2.67	0.17	0.038	(0.290)	0.009	0.029
33	2.75	0.17	0.038	(0.289)	0.009	0.029
34	2.83	0.17	0.038	(0.287)	0.009	0.029
35	2.92	0.17	0.038	(0.286)	0.009	0.029
36	3.00	0.17	0.038	(0.285)	0.009	0.029
37	3.08	0.17	0.038	(0.284)	0.009	0.029
38	3.17	0.17	0.038	(0.283)	0.009	0.029
39	3.25	0.17	0.038	(0.281)	0.009	0.029
40	3.33	0.17	0.038	(0.280)	0.009	0.029
41	3.42	0.17	0.038	(0.279)	0.009	0.029
42	3.50	0.17	0.038	(0.278)	0.009	0.029
43	3.58	0.17	0.038	(0.277)	0.009	0.029
44	3.67	0.17	0.038	(0.276)	0.009	0.029
45	3.75	0.17	0.038	(0.274)	0.009	0.029
46	3.83	0.20	0.046	(0.273)	0.011	0.035
47	3.92	0.20	0.046	(0.272)	0.011	0.035
48	4.00	0.20	0.046	(0.271)	0.011	0.035
49	4.08	0.20	0.046	(0.270)	0.011	0.035
50	4.17	0.20	0.046	(0.269)	0.011	0.035
51	4.25	0.20	0.046	(0.268)	0.011	0.035
52	4.33	0.23	0.053	(0.266)	0.013	0.040
53	4.42	0.23	0.053	(0.265)	0.013	0.040
54	4.50	0.23	0.053	(0.264)	0.013	0.040
55	4.58	0.23	0.053	(0.263)	0.013	0.040
56	4.67	0.23	0.053	(0.262)	0.013	0.040
57	4.75	0.23	0.053	(0.261)	0.013	0.040
58	4.83	0.27	0.061	(0.260)	0.015	0.046
59	4.92	0.27	0.061	(0.259)	0.015	0.046
60	5.00	0.27	0.061	(0.257)	0.015	0.046
61	5.08	0.20	0.046	(0.256)	0.011	0.035
62	5.17	0.20	0.046	(0.255)	0.011	0.035
63	5.25	0.20	0.046	(0.254)	0.011	0.035
64	5.33	0.23	0.053	(0.253)	0.013	0.040
65	5.42	0.23	0.053	(0.252)	0.013	0.040
66	5.50	0.23	0.053	(0.251)	0.013	0.040
67	5.58	0.27	0.061	(0.250)	0.015	0.046
68	5.67	0.27	0.061	(0.249)	0.015	0.046
69	5.75	0.27	0.061	(0.247)	0.015	0.046
70	5.83	0.27	0.061	(0.246)	0.015	0.046
71	5.92	0.27	0.061	(0.245)	0.015	0.046
72	6.00	0.27	0.061	(0.244)	0.015	0.046
73	6.08	0.30	0.068	(0.243)	0.016	0.052
74	6.17	0.30	0.068	(0.242)	0.016	0.052
75	6.25	0.30	0.068	(0.241)	0.016	0.052
76	6.33	0.30	0.068	(0.240)	0.016	0.052
77	6.42	0.30	0.068	(0.239)	0.016	0.052
78	6.50	0.30	0.068	(0.238)	0.016	0.052
79	6.58	0.33	0.076	(0.237)	0.018	0.058
80	6.67	0.33	0.076	(0.236)	0.018	0.058
81	6.75	0.33	0.076	(0.234)	0.018	0.058
82	6.83	0.33	0.076	(0.233)	0.018	0.058
83	6.92	0.33	0.076	(0.232)	0.018	0.058

84	7.00	0.33	0.076	(0.231)	0.018	0.058
85	7.08	0.33	0.076	(0.230)	0.018	0.058
86	7.17	0.33	0.076	(0.229)	0.018	0.058
87	7.25	0.33	0.076	(0.228)	0.018	0.058
88	7.33	0.37	0.084	(0.227)	0.020	0.064
89	7.42	0.37	0.084	(0.226)	0.020	0.064
90	7.50	0.37	0.084	(0.225)	0.020	0.064
91	7.58	0.40	0.091	(0.224)	0.022	0.069
92	7.67	0.40	0.091	(0.223)	0.022	0.069
93	7.75	0.40	0.091	(0.222)	0.022	0.069
94	7.83	0.43	0.099	(0.221)	0.024	0.075
95	7.92	0.43	0.099	(0.220)	0.024	0.075
96	8.00	0.43	0.099	(0.219)	0.024	0.075
97	8.08	0.50	0.114	(0.218)	0.027	0.087
98	8.17	0.50	0.114	(0.217)	0.027	0.087
99	8.25	0.50	0.114	(0.216)	0.027	0.087
100	8.33	0.50	0.114	(0.215)	0.027	0.087
101	8.42	0.50	0.114	(0.214)	0.027	0.087
102	8.50	0.50	0.114	(0.213)	0.027	0.087
103	8.58	0.53	0.122	(0.212)	0.029	0.092
104	8.67	0.53	0.122	(0.211)	0.029	0.092
105	8.75	0.53	0.122	(0.210)	0.029	0.092
106	8.83	0.57	0.129	(0.209)	0.031	0.098
107	8.92	0.57	0.129	(0.208)	0.031	0.098
108	9.00	0.57	0.129	(0.207)	0.031	0.098
109	9.08	0.63	0.144	(0.206)	0.035	0.110
110	9.17	0.63	0.144	(0.205)	0.035	0.110
111	9.25	0.63	0.144	(0.204)	0.035	0.110
112	9.33	0.67	0.152	(0.203)	0.036	0.116
113	9.42	0.67	0.152	(0.202)	0.036	0.116
114	9.50	0.67	0.152	(0.201)	0.036	0.116
115	9.58	0.70	0.160	(0.200)	0.038	0.121
116	9.67	0.70	0.160	(0.199)	0.038	0.121
117	9.75	0.70	0.160	(0.198)	0.038	0.121
118	9.83	0.73	0.167	(0.197)	0.040	0.127
119	9.92	0.73	0.167	(0.196)	0.040	0.127
120	10.00	0.73	0.167	(0.195)	0.040	0.127
121	10.08	0.50	0.114	(0.194)	0.027	0.087
122	10.17	0.50	0.114	(0.193)	0.027	0.087
123	10.25	0.50	0.114	(0.193)	0.027	0.087
124	10.33	0.50	0.114	(0.192)	0.027	0.087
125	10.42	0.50	0.114	(0.191)	0.027	0.087
126	10.50	0.50	0.114	(0.190)	0.027	0.087
127	10.58	0.67	0.152	(0.189)	0.036	0.116
128	10.67	0.67	0.152	(0.188)	0.036	0.116
129	10.75	0.67	0.152	(0.187)	0.036	0.116
130	10.83	0.67	0.152	(0.186)	0.036	0.116
131	10.92	0.67	0.152	(0.185)	0.036	0.116
132	11.00	0.67	0.152	(0.184)	0.036	0.116
133	11.08	0.63	0.144	(0.183)	0.035	0.110
134	11.17	0.63	0.144	(0.182)	0.035	0.110
135	11.25	0.63	0.144	(0.181)	0.035	0.110
136	11.33	0.63	0.144	(0.181)	0.035	0.110
137	11.42	0.63	0.144	(0.180)	0.035	0.110
138	11.50	0.63	0.144	(0.179)	0.035	0.110
139	11.58	0.57	0.129	(0.178)	0.031	0.098
140	11.67	0.57	0.129	(0.177)	0.031	0.098
141	11.75	0.57	0.129	(0.176)	0.031	0.098
142	11.83	0.60	0.137	(0.175)	0.033	0.104
143	11.92	0.60	0.137	(0.174)	0.033	0.104
144	12.00	0.60	0.137	(0.174)	0.033	0.104
145	12.08	0.83	0.190	(0.173)	0.046	0.144
146	12.17	0.83	0.190	(0.172)	0.046	0.144

147	12.25	0.83	0.190	(0.171)	0.046	0.144
148	12.33	0.87	0.198	(0.170)	0.047	0.150
149	12.42	0.87	0.198	(0.169)	0.047	0.150
150	12.50	0.87	0.198	(0.168)	0.047	0.150
151	12.58	0.93	0.213	(0.168)	0.051	0.162
152	12.67	0.93	0.213	(0.167)	0.051	0.162
153	12.75	0.93	0.213	(0.166)	0.051	0.162
154	12.83	0.97	0.220	(0.165)	0.053	0.168
155	12.92	0.97	0.220	(0.164)	0.053	0.168
156	13.00	0.97	0.220	(0.163)	0.053	0.168
157	13.08	1.13	0.258	(0.163)	0.062	0.196
158	13.17	1.13	0.258	(0.162)	0.062	0.196
159	13.25	1.13	0.258	(0.161)	0.062	0.196
160	13.33	1.13	0.258	(0.160)	0.062	0.196
161	13.42	1.13	0.258	(0.159)	0.062	0.196
162	13.50	1.13	0.258	(0.158)	0.062	0.196
163	13.58	0.77	0.175	(0.158)	0.042	0.133
164	13.67	0.77	0.175	(0.157)	0.042	0.133
165	13.75	0.77	0.175	(0.156)	0.042	0.133
166	13.83	0.77	0.175	(0.155)	0.042	0.133
167	13.92	0.77	0.175	(0.154)	0.042	0.133
168	14.00	0.77	0.175	(0.154)	0.042	0.133
169	14.08	0.90	0.205	(0.153)	0.049	0.156
170	14.17	0.90	0.205	(0.152)	0.049	0.156
171	14.25	0.90	0.205	(0.151)	0.049	0.156
172	14.33	0.87	0.198	(0.151)	0.047	0.150
173	14.42	0.87	0.198	(0.150)	0.047	0.150
174	14.50	0.87	0.198	(0.149)	0.047	0.150
175	14.58	0.87	0.198	(0.148)	0.047	0.150
176	14.67	0.87	0.198	(0.147)	0.047	0.150
177	14.75	0.87	0.198	(0.147)	0.047	0.150
178	14.83	0.83	0.190	(0.146)	0.046	0.144
179	14.92	0.83	0.190	(0.145)	0.046	0.144
180	15.00	0.83	0.190	(0.144)	0.046	0.144
181	15.08	0.80	0.182	(0.144)	0.044	0.139
182	15.17	0.80	0.182	(0.143)	0.044	0.139
183	15.25	0.80	0.182	(0.142)	0.044	0.139
184	15.33	0.77	0.175	(0.142)	0.042	0.133
185	15.42	0.77	0.175	(0.141)	0.042	0.133
186	15.50	0.77	0.175	(0.140)	0.042	0.133
187	15.58	0.63	0.144	(0.139)	0.035	0.110
188	15.67	0.63	0.144	(0.139)	0.035	0.110
189	15.75	0.63	0.144	(0.138)	0.035	0.110
190	15.83	0.63	0.144	(0.137)	0.035	0.110
191	15.92	0.63	0.144	(0.137)	0.035	0.110
192	16.00	0.63	0.144	(0.136)	0.035	0.110
193	16.08	0.13	0.030	(0.135)	0.007	0.023
194	16.17	0.13	0.030	(0.134)	0.007	0.023
195	16.25	0.13	0.030	(0.134)	0.007	0.023
196	16.33	0.13	0.030	(0.133)	0.007	0.023
197	16.42	0.13	0.030	(0.132)	0.007	0.023
198	16.50	0.13	0.030	(0.132)	0.007	0.023
199	16.58	0.10	0.023	(0.131)	0.005	0.017
200	16.67	0.10	0.023	(0.130)	0.005	0.017
201	16.75	0.10	0.023	(0.130)	0.005	0.017
202	16.83	0.10	0.023	(0.129)	0.005	0.017
203	16.92	0.10	0.023	(0.128)	0.005	0.017
204	17.00	0.10	0.023	(0.128)	0.005	0.017
205	17.08	0.17	0.038	(0.127)	0.009	0.029
206	17.17	0.17	0.038	(0.126)	0.009	0.029
207	17.25	0.17	0.038	(0.126)	0.009	0.029
208	17.33	0.17	0.038	(0.125)	0.009	0.029
209	17.42	0.17	0.038	(0.125)	0.009	0.029

210	17.50	0.17	0.038	(0.124)	0.009	0.029
211	17.58	0.17	0.038	(0.123)	0.009	0.029
212	17.67	0.17	0.038	(0.123)	0.009	0.029
213	17.75	0.17	0.038	(0.122)	0.009	0.029
214	17.83	0.13	0.030	(0.122)	0.007	0.023
215	17.92	0.13	0.030	(0.121)	0.007	0.023
216	18.00	0.13	0.030	(0.120)	0.007	0.023
217	18.08	0.13	0.030	(0.120)	0.007	0.023
218	18.17	0.13	0.030	(0.119)	0.007	0.023
219	18.25	0.13	0.030	(0.119)	0.007	0.023
220	18.33	0.13	0.030	(0.118)	0.007	0.023
221	18.42	0.13	0.030	(0.117)	0.007	0.023
222	18.50	0.13	0.030	(0.117)	0.007	0.023
223	18.58	0.10	0.023	(0.116)	0.005	0.017
224	18.67	0.10	0.023	(0.116)	0.005	0.017
225	18.75	0.10	0.023	(0.115)	0.005	0.017
226	18.83	0.07	0.015	(0.115)	0.004	0.012
227	18.92	0.07	0.015	(0.114)	0.004	0.012
228	19.00	0.07	0.015	(0.114)	0.004	0.012
229	19.08	0.10	0.023	(0.113)	0.005	0.017
230	19.17	0.10	0.023	(0.112)	0.005	0.017
231	19.25	0.10	0.023	(0.112)	0.005	0.017
232	19.33	0.13	0.030	(0.111)	0.007	0.023
233	19.42	0.13	0.030	(0.111)	0.007	0.023
234	19.50	0.13	0.030	(0.110)	0.007	0.023
235	19.58	0.10	0.023	(0.110)	0.005	0.017
236	19.67	0.10	0.023	(0.109)	0.005	0.017
237	19.75	0.10	0.023	(0.109)	0.005	0.017
238	19.83	0.07	0.015	(0.108)	0.004	0.012
239	19.92	0.07	0.015	(0.108)	0.004	0.012
240	20.00	0.07	0.015	(0.107)	0.004	0.012
241	20.08	0.10	0.023	(0.107)	0.005	0.017
242	20.17	0.10	0.023	(0.106)	0.005	0.017
243	20.25	0.10	0.023	(0.106)	0.005	0.017
244	20.33	0.10	0.023	(0.106)	0.005	0.017
245	20.42	0.10	0.023	(0.105)	0.005	0.017
246	20.50	0.10	0.023	(0.105)	0.005	0.017
247	20.58	0.10	0.023	(0.104)	0.005	0.017
248	20.67	0.10	0.023	(0.104)	0.005	0.017
249	20.75	0.10	0.023	(0.103)	0.005	0.017
250	20.83	0.07	0.015	(0.103)	0.004	0.012
251	20.92	0.07	0.015	(0.103)	0.004	0.012
252	21.00	0.07	0.015	(0.102)	0.004	0.012
253	21.08	0.10	0.023	(0.102)	0.005	0.017
254	21.17	0.10	0.023	(0.101)	0.005	0.017
255	21.25	0.10	0.023	(0.101)	0.005	0.017
256	21.33	0.07	0.015	(0.101)	0.004	0.012
257	21.42	0.07	0.015	(0.100)	0.004	0.012
258	21.50	0.07	0.015	(0.100)	0.004	0.012
259	21.58	0.10	0.023	(0.099)	0.005	0.017
260	21.67	0.10	0.023	(0.099)	0.005	0.017
261	21.75	0.10	0.023	(0.099)	0.005	0.017
262	21.83	0.07	0.015	(0.098)	0.004	0.012
263	21.92	0.07	0.015	(0.098)	0.004	0.012
264	22.00	0.07	0.015	(0.098)	0.004	0.012
265	22.08	0.10	0.023	(0.097)	0.005	0.017
266	22.17	0.10	0.023	(0.097)	0.005	0.017
267	22.25	0.10	0.023	(0.097)	0.005	0.017
268	22.33	0.07	0.015	(0.096)	0.004	0.012
269	22.42	0.07	0.015	(0.096)	0.004	0.012
270	22.50	0.07	0.015	(0.096)	0.004	0.012
271	22.58	0.07	0.015	(0.096)	0.004	0.012
272	22.67	0.07	0.015	(0.095)	0.004	0.012

273	22.75	0.07	0.015	(0.095)	0.004	0.012
274	22.83	0.07	0.015	(0.095)	0.004	0.012
275	22.92	0.07	0.015	(0.095)	0.004	0.012
276	23.00	0.07	0.015	(0.094)	0.004	0.012
277	23.08	0.07	0.015	(0.094)	0.004	0.012
278	23.17	0.07	0.015	(0.094)	0.004	0.012
279	23.25	0.07	0.015	(0.094)	0.004	0.012
280	23.33	0.07	0.015	(0.093)	0.004	0.012
281	23.42	0.07	0.015	(0.093)	0.004	0.012
282	23.50	0.07	0.015	(0.093)	0.004	0.012
283	23.58	0.07	0.015	(0.093)	0.004	0.012
284	23.67	0.07	0.015	(0.093)	0.004	0.012
285	23.75	0.07	0.015	(0.093)	0.004	0.012
286	23.83	0.07	0.015	(0.093)	0.004	0.012
287	23.92	0.07	0.015	(0.093)	0.004	0.012
288	24.00	0.07	0.015	(0.092)	0.004	0.012

(Loss Rate Not Used)

Sum = 100.0 Sum = 17.3

Flood volume = Effective rainfall 1.44(In)
times area 2.9(Ac.)/[(In)/(Ft.)] = 0.3(Ac.Ft)
Total soil loss = 0.46(In)
Total soil loss = 0.109(Ac.Ft)
Total rainfall = 1.90(In)
Flood volume = 15096.1 Cubic Feet
Total soil loss = 4767.2 Cubic Feet

Peak flow rate of this hydrograph = 0.570(CFS)

+++++

24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001	0.02	Q				
0+10	0.0004	0.03	Q				
0+15	0.0006	0.03	Q				
0+20	0.0009	0.04	Q				
0+25	0.0012	0.05	Q				
0+30	0.0016	0.05	Q				
0+35	0.0019	0.05	Q				
0+40	0.0023	0.05	Q				
0+45	0.0026	0.05	Q				
0+50	0.0030	0.06	Q				
0+55	0.0035	0.07	Q				
1+ 0	0.0039	0.07	Q				
1+ 5	0.0043	0.06	Q				
1+10	0.0047	0.05	Q				
1+15	0.0050	0.05	Q				
1+20	0.0054	0.05	Q				
1+25	0.0057	0.05	Q				
1+30	0.0061	0.05	Q				
1+35	0.0064	0.05	Q				
1+40	0.0068	0.05	Q				
1+45	0.0071	0.05	Q				
1+50	0.0075	0.06	Q				
1+55	0.0080	0.07	Q				
2+ 0	0.0084	0.07	Q				
2+ 5	0.0089	0.07	QV				
2+10	0.0094	0.07	QV				

2+15	0.0098	0.07	QV
2+20	0.0103	0.07	QV
2+25	0.0108	0.07	QV
2+30	0.0112	0.07	QV
2+35	0.0117	0.08	QV
2+40	0.0123	0.08	QV
2+45	0.0129	0.08	QV
2+50	0.0135	0.08	QV
2+55	0.0140	0.08	QV
3+ 0	0.0146	0.08	QV
3+ 5	0.0152	0.08	QV
3+10	0.0158	0.08	QV
3+15	0.0164	0.08	QV
3+20	0.0169	0.08	QV
3+25	0.0175	0.08	Q V
3+30	0.0181	0.08	Q V
3+35	0.0187	0.08	Q V
3+40	0.0192	0.08	Q V
3+45	0.0198	0.08	Q V
3+50	0.0205	0.09	Q V
3+55	0.0212	0.10	Q V
4+ 0	0.0218	0.10	Q V
4+ 5	0.0225	0.10	Q V
4+10	0.0232	0.10	Q V
4+15	0.0239	0.10	Q V
4+20	0.0247	0.11	Q V
4+25	0.0255	0.12	Q V
4+30	0.0263	0.12	Q V
4+35	0.0271	0.12	Q V
4+40	0.0279	0.12	Q V
4+45	0.0287	0.12	Q V
4+50	0.0296	0.13	Q V
4+55	0.0305	0.13	Q V
5+ 0	0.0314	0.13	Q V
5+ 5	0.0322	0.11	Q V
5+10	0.0329	0.10	Q V
5+15	0.0336	0.10	Q V
5+20	0.0344	0.11	Q V
5+25	0.0352	0.12	Q V
5+30	0.0360	0.12	Q V
5+35	0.0369	0.13	Q V
5+40	0.0378	0.13	Q V
5+45	0.0387	0.13	Q V
5+50	0.0396	0.13	Q V
5+55	0.0406	0.13	Q V
6+ 0	0.0415	0.13	Q V
6+ 5	0.0425	0.14	Q V
6+10	0.0435	0.15	Q V
6+15	0.0446	0.15	Q V
6+20	0.0456	0.15	Q V
6+25	0.0466	0.15	Q V
6+30	0.0477	0.15	Q V
6+35	0.0488	0.16	Q V
6+40	0.0499	0.17	Q V
6+45	0.0511	0.17	Q V
6+50	0.0522	0.17	Q V
6+55	0.0534	0.17	Q V
7+ 0	0.0545	0.17	Q V
7+ 5	0.0557	0.17	Q V
7+10	0.0569	0.17	Q V
7+15	0.0580	0.17	Q V
7+20	0.0592	0.18	Q V
7+25	0.0605	0.18	Q V

7+30	0.0618	0.18	Q	V				
7+35	0.0631	0.19	Q	V				
7+40	0.0645	0.20	Q	V				
7+45	0.0659	0.20	Q	V				
7+50	0.0673	0.21	Q	V				
7+55	0.0688	0.22	Q	V				
8+ 0	0.0703	0.22	Q	V				
8+ 5	0.0720	0.24	Q	V				
8+10	0.0737	0.25	Q	V				
8+15	0.0754	0.25	Q	V				
8+20	0.0771	0.25	Q	V				
8+25	0.0789	0.25	Q	V				
8+30	0.0806	0.25	Q	V				
8+35	0.0824	0.26	Q	V				
8+40	0.0843	0.27	Q	V				
8+45	0.0861	0.27	Q	V				
8+50	0.0880	0.28	Q	V				
8+55	0.0900	0.28	Q	V				
9+ 0	0.0919	0.29	Q	V				
9+ 5	0.0940	0.30	Q	V				
9+10	0.0962	0.32	Q	V				
9+15	0.0984	0.32	Q	V				
9+20	0.1007	0.33	Q	V				
9+25	0.1030	0.33	Q	V				
9+30	0.1053	0.34	Q	V				
9+35	0.1077	0.35	Q	V				
9+40	0.1101	0.35	Q	V				
9+45	0.1125	0.35	Q	V				
9+50	0.1150	0.36	Q	V				
9+55	0.1175	0.37	Q	V				
10+ 0	0.1201	0.37	Q	V				
10+ 5	0.1222	0.30	Q	V				
10+10	0.1239	0.26	Q	V				
10+15	0.1257	0.25	Q	V				
10+20	0.1274	0.25	Q	V				
10+25	0.1291	0.25	Q	V				
10+30	0.1309	0.25	Q	V				
10+35	0.1329	0.30	Q	V				
10+40	0.1352	0.33	Q	V				
10+45	0.1375	0.34	Q	V				
10+50	0.1398	0.34	Q	V				
10+55	0.1421	0.34	Q	V				
11+ 0	0.1444	0.34	Q	V				
11+ 5	0.1467	0.33	Q	V				
11+10	0.1489	0.32	Q	V				
11+15	0.1511	0.32	Q	V				
11+20	0.1533	0.32	Q	V				
11+25	0.1555	0.32	Q	V				
11+30	0.1577	0.32	Q	V				
11+35	0.1597	0.30	Q	V				
11+40	0.1617	0.29	Q	V				
11+45	0.1637	0.29	Q	V				
11+50	0.1657	0.29	Q	V				
11+55	0.1678	0.30	Q	V				
12+ 0	0.1699	0.30	Q	V				
12+ 5	0.1724	0.37	Q	V				
12+10	0.1752	0.41	Q	V				
12+15	0.1781	0.42	Q	V				
12+20	0.1811	0.43	Q	V				
12+25	0.1841	0.44	Q	V				
12+30	0.1871	0.44	Q	V				
12+35	0.1902	0.46	Q	V				
12+40	0.1934	0.47	Q	V				

12+45	0.1967	0.47	Q	V		
12+50	0.2000	0.48	Q	V		
12+55	0.2033	0.49	Q	V		
13+ 0	0.2067	0.49	Q	V		
13+ 5	0.2104	0.53	Q	V		
13+10	0.2143	0.57	Q	V		
13+15	0.2182	0.57	Q	V		
13+20	0.2221	0.57	Q	V		
13+25	0.2260	0.57	Q	V		
13+30	0.2300	0.57	Q	V		
13+35	0.2332	0.46	Q	V		
13+40	0.2359	0.40	Q	V		
13+45	0.2385	0.39	Q	V		
13+50	0.2412	0.39	Q	V		
13+55	0.2439	0.39	Q	V		
14+ 0	0.2465	0.39	Q	V		
14+ 5	0.2494	0.42	Q	V		
14+10	0.2525	0.45	Q	V		
14+15	0.2557	0.45	Q	V		
14+20	0.2587	0.44	Q	V		
14+25	0.2617	0.44	Q	V		
14+30	0.2647	0.44	Q	V		
14+35	0.2677	0.44	Q	V		
14+40	0.2707	0.44	Q	V		
14+45	0.2737	0.44	Q	V		
14+50	0.2767	0.43	Q	V		
14+55	0.2796	0.42	Q	V		
15+ 0	0.2824	0.42	Q	V		
15+ 5	0.2853	0.41	Q	V		
15+10	0.2880	0.40	Q	V		
15+15	0.2908	0.40	Q	V		
15+20	0.2935	0.39	Q	V		
15+25	0.2962	0.39	Q	V		
15+30	0.2988	0.39	Q	V		
15+35	0.3012	0.35	Q	V		
15+40	0.3035	0.32	Q	V		
15+45	0.3057	0.32	Q	V		
15+50	0.3078	0.32	Q	V		
15+55	0.3100	0.32	Q	V		
16+ 0	0.3122	0.32	Q	V		
16+ 5	0.3134	0.17	Q	V		
16+10	0.3140	0.08	Q	V		
16+15	0.3145	0.07	Q	V		
16+20	0.3149	0.07	Q	V		
16+25	0.3154	0.07	Q	V		
16+30	0.3158	0.07	Q	V		
16+35	0.3162	0.06	Q	V		
16+40	0.3166	0.05	Q	V		
16+45	0.3169	0.05	Q	V		
16+50	0.3173	0.05	Q	V		
16+55	0.3176	0.05	Q	V		
17+ 0	0.3180	0.05	Q	V		
17+ 5	0.3185	0.07	Q	V		
17+10	0.3190	0.08	Q	V		
17+15	0.3196	0.08	Q	V		
17+20	0.3202	0.08	Q	V		
17+25	0.3208	0.08	Q	V		
17+30	0.3213	0.08	Q	V		
17+35	0.3219	0.08	Q	V		
17+40	0.3225	0.08	Q	V		
17+45	0.3231	0.08	Q	V		
17+50	0.3236	0.07	Q	V		
17+55	0.3240	0.07	Q	V		

18+ 0	0.3245	0.07	Q	V
18+ 5	0.3250	0.07	Q	V
18+10	0.3254	0.07	Q	V
18+15	0.3259	0.07	Q	V
18+20	0.3264	0.07	Q	V
18+25	0.3268	0.07	Q	V
18+30	0.3273	0.07	Q	V
18+35	0.3277	0.06	Q	V
18+40	0.3280	0.05	Q	V
18+45	0.3284	0.05	Q	V
18+50	0.3287	0.04	Q	V
18+55	0.3289	0.03	Q	V
19+ 0	0.3291	0.03	Q	V
19+ 5	0.3294	0.04	Q	V
19+10	0.3298	0.05	Q	V
19+15	0.3301	0.05	Q	V
19+20	0.3305	0.06	Q	V
19+25	0.3310	0.07	Q	V
19+30	0.3314	0.07	Q	V
19+35	0.3318	0.06	Q	V
19+40	0.3322	0.05	Q	V
19+45	0.3325	0.05	Q	V
19+50	0.3328	0.04	Q	V
19+55	0.3330	0.03	Q	V
20+ 0	0.3333	0.03	Q	V
20+ 5	0.3336	0.04	Q	V
20+10	0.3339	0.05	Q	V
20+15	0.3343	0.05	Q	V
20+20	0.3346	0.05	Q	V
20+25	0.3350	0.05	Q	V
20+30	0.3353	0.05	Q	V
20+35	0.3356	0.05	Q	V
20+40	0.3360	0.05	Q	V
20+45	0.3363	0.05	Q	V
20+50	0.3366	0.04	Q	V
20+55	0.3369	0.03	Q	V
21+ 0	0.3371	0.03	Q	V
21+ 5	0.3374	0.04	Q	V
21+10	0.3377	0.05	Q	V
21+15	0.3381	0.05	Q	V
21+20	0.3384	0.04	Q	V
21+25	0.3386	0.03	Q	V
21+30	0.3388	0.03	Q	V
21+35	0.3391	0.04	Q	V
21+40	0.3395	0.05	Q	V
21+45	0.3398	0.05	Q	V
21+50	0.3401	0.04	Q	V
21+55	0.3403	0.03	Q	V
22+ 0	0.3406	0.03	Q	V
22+ 5	0.3409	0.04	Q	V
22+10	0.3412	0.05	Q	V
22+15	0.3415	0.05	Q	V
22+20	0.3418	0.04	Q	V
22+25	0.3421	0.03	Q	V
22+30	0.3423	0.03	Q	V
22+35	0.3425	0.03	Q	V
22+40	0.3428	0.03	Q	V
22+45	0.3430	0.03	Q	V
22+50	0.3432	0.03	Q	V
22+55	0.3434	0.03	Q	V
23+ 0	0.3437	0.03	Q	V
23+ 5	0.3439	0.03	Q	V
23+10	0.3441	0.03	Q	V

23+15	0.3444	0.03	Q				V	
23+20	0.3446	0.03	Q				V	
23+25	0.3448	0.03	Q				V	
23+30	0.3451	0.03	Q				V	
23+35	0.3453	0.03	Q				V	
23+40	0.3455	0.03	Q				V	
23+45	0.3458	0.03	Q				V	
23+50	0.3460	0.03	Q				V	
23+55	0.3462	0.03	Q				V	
24+ 0	0.3464	0.03	Q				V	
24+ 5	0.3465	0.01	Q				V	
24+10	0.3466	0.00	Q				V	

**Post-developed conditions
5 year 1 hour**

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

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863post15.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MoVal (APN 488-310-012)
Post-developed conditions
5 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004
Sq. Mi.

Length along longest watercourse = 750.00(Ft.)
Length along longest watercourse measured to centroid = 410.00(Ft.)
Length along longest watercourse = 0.142 Mi.
Length along longest watercourse measured to centroid = 0.078 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 105.6000 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.027 Hr.
Lag time = 1.61 Min.
25% of lag time = 0.40 Min.
40% of lag time = 0.64 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	0.50	1.44

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.20	3.46

Total soil loss = 0.030(Ac.Ft)
 Total rainfall = 0.66(In)
 Flood volume = 5642.6 Cubic Feet
 Total soil loss = 1298.5 Cubic Feet

 Peak flow rate of this hydrograph = 4.510(CFS)

+++++

1 - H O U R S T O R M
 R u n o f f H y d r o g r a p h

 Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0029	0.43	VQ				
0+10	0.0078	0.71	Q				
0+15	0.0135	0.83	QV				
0+20	0.0195	0.87	Q V				
0+25	0.0261	0.96	Q V				
0+30	0.0336	1.08	Q V				
0+35	0.0420	1.23	Q V				
0+40	0.0518	1.41	Q V				
0+45	0.0653	1.96	Q V				
0+50	0.0963	4.51	Q V				
0+55	0.1176	3.09	Q V				
1+ 0	0.1265	1.30	Q V				
1+ 5	0.1292	0.39	Q V				
1+10	0.1295	0.05	Q V				

**Post-developed conditions
5 year 3 hour**

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

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863post35.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MoVal (APN 488-310-012)
Post-developed conditions
5 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 750.00(Ft.)
Length along longest watercourse measured to centroid = 410.00(Ft.)
Length along longest watercourse = 0.142 Mi.
Length along longest watercourse measured to centroid = 0.078 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 105.6000 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.027 Hr.
Lag time = 1.61 Min.
25% of lag time = 0.40 Min.
40% of lag time = 0.64 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	0.81	2.33

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.86	5.36

STORM EVENT (YEAR) = 5.00

Area Averaged 2-Year Rainfall = 0.810(In)
 Area Averaged 100-Year Rainfall = 1.860(In)

Point rain (area averaged) = 1.056(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 1.056(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 2.880 56.00 0.820
 Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-1	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
56.0	36.0	0.706	0.820	0.185	1.000	0.185
						Sum (F) = 0.185

Area averaged mean soil loss (F) (In/Hr) = 0.185
 Minimum soil loss rate ((In/Hr)) = 0.092
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.240

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	311.052	1.677
2	0.167	622.104	1.060
3	0.250	933.156	0.165
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	1.30	(0.185)	0.040	0.125
2	0.17	1.30	(0.185)	0.040	0.125
3	0.25	1.10	(0.185)	0.033	0.106
4	0.33	1.50	(0.185)	0.046	0.144
5	0.42	1.50	(0.185)	0.046	0.144
6	0.50	1.80	(0.185)	0.055	0.173
7	0.58	1.50	(0.185)	0.046	0.144
8	0.67	1.80	(0.185)	0.055	0.173
9	0.75	1.80	(0.185)	0.055	0.173
10	0.83	1.50	(0.185)	0.046	0.144
11	0.92	1.60	(0.185)	0.049	0.154
12	1.00	1.80	(0.185)	0.055	0.173
13	1.08	2.20	(0.185)	0.067	0.212
14	1.17	2.20	(0.185)	0.067	0.212
15	1.25	2.20	(0.185)	0.067	0.212
16	1.33	2.00	(0.185)	0.061	0.193
17	1.42	2.60	(0.185)	0.079	0.250
18	1.50	2.70	(0.185)	0.082	0.260
19	1.58	2.40	(0.185)	0.073	0.231
20	1.67	2.70	(0.185)	0.082	0.260

21	1.75	3.30	0.418	(0.185)	0.100	0.318
22	1.83	3.10	0.393	(0.185)	0.094	0.299
23	1.92	2.90	0.367	(0.185)	0.088	0.279
24	2.00	3.00	0.380	(0.185)	0.091	0.289
25	2.08	3.10	0.393	(0.185)	0.094	0.299
26	2.17	4.20	0.532	(0.185)	0.128	0.404
27	2.25	5.00	0.634	(0.185)	0.152	0.482
28	2.33	3.50	0.443	(0.185)	0.106	0.337
29	2.42	6.80	0.862	0.185 (0.207)		0.677
30	2.50	7.30	0.925	0.185 (0.222)		0.740
31	2.58	8.20	1.039	0.185 (0.249)		0.854
32	2.67	5.90	0.748	(0.185)	0.179	0.568
33	2.75	2.00	0.253	(0.185)	0.061	0.193
34	2.83	1.80	0.228	(0.185)	0.055	0.173
35	2.92	1.80	0.228	(0.185)	0.055	0.173
36	3.00	0.60	0.076	(0.185)	0.018	0.058

(Loss Rate Not Used)

Sum = 100.0 Sum = 9.8

Flood volume = Effective rainfall 0.81(In)
times area 2.9(Ac.)/[(In)/(Ft.)] = 0.2(Ac.Ft)
Total soil loss = 0.24(In)
Total soil loss = 0.058(Ac.Ft)
Total rainfall = 1.06(In)
Flood volume = 8497.0 Cubic Feet
Total soil loss = 2542.0 Cubic Feet

Peak flow rate of this hydrograph = 2.330(CFS)

+++++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0014	0.21	Q				
0+10	0.0038	0.34	VQ				
0+15	0.0061	0.33	Q				
0+20	0.0087	0.38	Q				
0+25	0.0115	0.41	QV				
0+30	0.0147	0.47	Q V				
0+35	0.0178	0.45	Q V				
0+40	0.0211	0.47	Q V				
0+45	0.0245	0.50	Q V				
0+50	0.0277	0.45	Q V				
0+55	0.0307	0.44	Q V				
1+ 0	0.0340	0.48	Q V				
1+ 5	0.0379	0.56	Q V				
1+10	0.0421	0.61	Q V				
1+15	0.0463	0.62	Q V				
1+20	0.0503	0.58	Q V				
1+25	0.0549	0.66	Q V				
1+30	0.0599	0.73	Q V				
1+35	0.0648	0.70	Q V				
1+40	0.0698	0.72	Q V				
1+45	0.0756	0.85	Q V				
1+50	0.0817	0.88	Q V				
1+55	0.0874	0.84	Q V				
2+ 0	0.0932	0.83	Q V				
2+ 5	0.0990	0.85	Q V				
2+10	0.1062	1.04	Q V				

2+15	0.1151	1.29		Q		V		
2+20	0.1230	1.14		Q		V		
2+25	0.1338	1.57		Q		V		
2+30	0.1477	2.02		Q		V		
2+35	0.1637	2.33		Q		V		
2+40	0.1774	1.98		Q		V		
2+45	0.1847	1.07		Q		V		
2+50	0.1888	0.59		Q		V		
2+55	0.1922	0.51		Q		V		
3+ 0	0.1944	0.31		Q		V		
3+ 5	0.1950	0.09		Q		V		
3+10	0.1951	0.01		Q		V		

Post-developed conditions
5 year 6 hour

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

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863post65.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MoVal (APN 488-310-012)
Post-developed conditions
5 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 750.00(Ft.)
Length along longest watercourse measured to centroid = 410.00(Ft.)
Length along longest watercourse = 0.142 Mi.
Length along longest watercourse measured to centroid = 0.078 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 105.6000 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.027 Hr.
Lag time = 1.61 Min.
25% of lag time = 0.40 Min.
40% of lag time = 0.64 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.40	4.03

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	2.50	7.20

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 1.400(In)

Area Averaged 100-Year Rainfall = 2.500(In)

Point rain (area averaged) = 1.658(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 1.658(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 2.880 56.00 0.820
 Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-1	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
56.0	36.0	0.706	0.820	0.185	1.000	0.185
						Sum (F) = 0.185

Area averaged mean soil loss (F) (In/Hr) = 0.185
 Minimum soil loss rate ((In/Hr)) = 0.092
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.240

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	311.052	1.677
2	0.167	622.104	1.060
3	0.250	933.156	0.165
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	0.099	(0.185)	0.024	0.076
2	0.17	0.119	(0.185)	0.029	0.091
3	0.25	0.119	(0.185)	0.029	0.091
4	0.33	0.119	(0.185)	0.029	0.091
5	0.42	0.119	(0.185)	0.029	0.091
6	0.50	0.139	(0.185)	0.033	0.106
7	0.58	0.139	(0.185)	0.033	0.106
8	0.67	0.139	(0.185)	0.033	0.106
9	0.75	0.139	(0.185)	0.033	0.106
10	0.83	0.139	(0.185)	0.033	0.106
11	0.92	0.139	(0.185)	0.033	0.106
12	1.00	0.159	(0.185)	0.038	0.121
13	1.08	0.159	(0.185)	0.038	0.121
14	1.17	0.159	(0.185)	0.038	0.121
15	1.25	0.159	(0.185)	0.038	0.121
16	1.33	0.159	(0.185)	0.038	0.121
17	1.42	0.159	(0.185)	0.038	0.121
18	1.50	0.159	(0.185)	0.038	0.121
19	1.58	0.159	(0.185)	0.038	0.121
20	1.67	0.159	(0.185)	0.038	0.121
21	1.75	0.159	(0.185)	0.038	0.121

22	1.83	0.80	0.159	(0.185)	0.038	0.121
23	1.92	0.80	0.159	(0.185)	0.038	0.121
24	2.00	0.90	0.179	(0.185)	0.043	0.136
25	2.08	0.80	0.159	(0.185)	0.038	0.121
26	2.17	0.90	0.179	(0.185)	0.043	0.136
27	2.25	0.90	0.179	(0.185)	0.043	0.136
28	2.33	0.90	0.179	(0.185)	0.043	0.136
29	2.42	0.90	0.179	(0.185)	0.043	0.136
30	2.50	0.90	0.179	(0.185)	0.043	0.136
31	2.58	0.90	0.179	(0.185)	0.043	0.136
32	2.67	0.90	0.179	(0.185)	0.043	0.136
33	2.75	1.00	0.199	(0.185)	0.048	0.151
34	2.83	1.00	0.199	(0.185)	0.048	0.151
35	2.92	1.00	0.199	(0.185)	0.048	0.151
36	3.00	1.00	0.199	(0.185)	0.048	0.151
37	3.08	1.00	0.199	(0.185)	0.048	0.151
38	3.17	1.10	0.219	(0.185)	0.053	0.166
39	3.25	1.10	0.219	(0.185)	0.053	0.166
40	3.33	1.10	0.219	(0.185)	0.053	0.166
41	3.42	1.20	0.239	(0.185)	0.057	0.181
42	3.50	1.30	0.259	(0.185)	0.062	0.197
43	3.58	1.40	0.278	(0.185)	0.067	0.212
44	3.67	1.40	0.278	(0.185)	0.067	0.212
45	3.75	1.50	0.298	(0.185)	0.072	0.227
46	3.83	1.50	0.298	(0.185)	0.072	0.227
47	3.92	1.60	0.318	(0.185)	0.076	0.242
48	4.00	1.60	0.318	(0.185)	0.076	0.242
49	4.08	1.70	0.338	(0.185)	0.081	0.257
50	4.17	1.80	0.358	(0.185)	0.086	0.272
51	4.25	1.90	0.378	(0.185)	0.091	0.287
52	4.33	2.00	0.398	(0.185)	0.095	0.302
53	4.42	2.10	0.418	(0.185)	0.100	0.317
54	4.50	2.10	0.418	(0.185)	0.100	0.317
55	4.58	2.20	0.438	(0.185)	0.105	0.333
56	4.67	2.30	0.458	(0.185)	0.110	0.348
57	4.75	2.40	0.477	(0.185)	0.115	0.363
58	4.83	2.40	0.477	(0.185)	0.115	0.363
59	4.92	2.50	0.497	(0.185)	0.119	0.378
60	5.00	2.60	0.517	(0.185)	0.124	0.393
61	5.08	3.10	0.617	(0.185)	0.148	0.469
62	5.17	3.60	0.716	(0.185)	0.172	0.544
63	5.25	3.90	0.776	0.185 (0.186)		0.591
64	5.33	4.20	0.835	0.185 (0.201)		0.650
65	5.42	4.70	0.935	0.185 (0.224)		0.750
66	5.50	5.60	1.114	0.185 (0.267)		0.929
67	5.58	1.90	0.378	(0.185)	0.091	0.287
68	5.67	0.90	0.179	(0.185)	0.043	0.136
69	5.75	0.60	0.119	(0.185)	0.029	0.091
70	5.83	0.50	0.099	(0.185)	0.024	0.076
71	5.92	0.30	0.060	(0.185)	0.014	0.045
72	6.00	0.20	0.040	(0.185)	0.010	0.030

(Loss Rate Not Used)

Sum = 100.0 Sum = 15.3

Flood volume = Effective rainfall 1.27(In)
times area 2.9(Ac.)/[(In)/(Ft.)] = 0.3(Ac.Ft)
Total soil loss = 0.39(In)
Total soil loss = 0.093(Ac.Ft)
Total rainfall = 1.66(In)
Flood volume = 13291.1 Cubic Feet
Total soil loss = 4038.4 Cubic Feet

Peak flow rate of this hydrograph = 2.462(CFS)

+++++

6 - H O U R S T O R M
 R u n o f f H y d r o g r a p h

 Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume	Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0009		0.13	Q				
0+10	0.0025		0.23	Q				
0+15	0.0043		0.26	VQ				
0+20	0.0061		0.26	VQ				
0+25	0.0079		0.26	Q				
0+30	0.0099		0.29	Q				
0+35	0.0120		0.30	Q				
0+40	0.0141		0.31	Q				
0+45	0.0162		0.31	QV				
0+50	0.0183		0.31	QV				
0+55	0.0205		0.31	QV				
1+ 0	0.0227		0.33	QV				
1+ 5	0.0251		0.35	Q V				
1+10	0.0276		0.35	Q V				
1+15	0.0300		0.35	Q V				
1+20	0.0324		0.35	Q V				
1+25	0.0348		0.35	Q V				
1+30	0.0372		0.35	Q V				
1+35	0.0397		0.35	Q V				
1+40	0.0421		0.35	Q V				
1+45	0.0445		0.35	Q V				
1+50	0.0469		0.35	Q V				
1+55	0.0493		0.35	Q V				
2+ 0	0.0519		0.38	Q V				
2+ 5	0.0545		0.37	Q V				
2+10	0.0571		0.38	Q V				
2+15	0.0598		0.39	Q V				
2+20	0.0625		0.40	Q V				
2+25	0.0652		0.40	Q V				
2+30	0.0679		0.40	Q V				
2+35	0.0707		0.40	Q V				
2+40	0.0734		0.40	Q V				
2+45	0.0763		0.42	Q V				
2+50	0.0793		0.44	Q V				
2+55	0.0823		0.44	Q V				
3+ 0	0.0853		0.44	Q V				
3+ 5	0.0884		0.44	Q V				
3+10	0.0915		0.46	Q V				
3+15	0.0949		0.48	Q V				
3+20	0.0982		0.48	Q V				
3+25	0.1017		0.51	Q V				
3+30	0.1055		0.55	Q V				
3+35	0.1096		0.59	Q V				
3+40	0.1138		0.61	Q V				
3+45	0.1182		0.64	Q V				
3+50	0.1227		0.66	Q V				
3+55	0.1274		0.68	Q V				
4+ 0	0.1322		0.70	Q V				
4+ 5	0.1372		0.73	Q V				
4+10	0.1425		0.77	Q V				
4+15	0.1481		0.81	Q V				
4+20	0.1540		0.86	Q V				
4+25	0.1602		0.90	Q V				
4+30	0.1666		0.92	Q V				

4+35	0.1731	0.95	Q	V
4+40	0.1799	0.99	Q	V
4+45	0.1870	1.03	Q	V
4+50	0.1943	1.05	Q	V
4+55	0.2017	1.08	Q	V
5+ 0	0.2094	1.12	Q	V
5+ 5	0.2181	1.27	Q	V
5+10	0.2283	1.48	Q	V
5+15	0.2396	1.65	Q	V
5+20	0.2521	1.81	Q	V
5+25	0.2662	2.05	Q	V
5+30	0.2831	2.46	Q	V
5+35	0.2941	1.59	Q	V
5+40	0.2988	0.69	Q	V
5+45	0.3012	0.34	Q	V
5+50	0.3029	0.25	Q	V
5+55	0.3040	0.17	Q	V
6+ 0	0.3048	0.11	Q	V
6+ 5	0.3051	0.04	Q	V
6+10	0.3051	0.00	Q	V

**Post-developed conditions
5 year 24 hour**

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863post245.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independant Plaza, MoVal (APN 488-310-012)
Post-developed conditions
5 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 750.00(Ft.)
Length along longest watercourse measured to centroid = 410.00(Ft.)
Length along longest watercourse = 0.142 Mi.
Length along longest watercourse measured to centroid = 0.078 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 105.6000 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.027 Hr.
Lag time = 1.61 Min.
25% of lag time = 0.40 Min.
40% of lag time = 0.64 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.90	5.47

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	4.50	12.96

STORM EVENT (YEAR) = 5.00

Area Averaged 2-Year Rainfall = 1.900(In)
 Area Averaged 100-Year Rainfall = 4.500(In)

Point rain (area averaged) = 2.509(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 2.509(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 2.880 56.00 0.820
 Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-1	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
56.0	36.0	0.706	0.820	0.185	1.000	0.185
						Sum (F) = 0.185

Area averaged mean soil loss (F) (In/Hr) = 0.185
 Minimum soil loss rate ((In/Hr)) = 0.092
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.240

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	311.052	1.677
2	0.167	622.104	1.060
3	0.250	933.156	0.165
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	0.07	(0.328)	0.005	0.015
2	0.17	0.07	(0.327)	0.005	0.015
3	0.25	0.07	(0.325)	0.005	0.015
4	0.33	0.10	(0.324)	0.007	0.023
5	0.42	0.10	(0.323)	0.007	0.023
6	0.50	0.10	(0.322)	0.007	0.023
7	0.58	0.10	(0.320)	0.007	0.023
8	0.67	0.10	(0.319)	0.007	0.023
9	0.75	0.10	(0.318)	0.007	0.023
10	0.83	0.13	(0.317)	0.010	0.031
11	0.92	0.13	(0.315)	0.010	0.031
12	1.00	0.13	(0.314)	0.010	0.031
13	1.08	0.10	(0.313)	0.007	0.023
14	1.17	0.10	(0.312)	0.007	0.023
15	1.25	0.10	(0.310)	0.007	0.023
16	1.33	0.10	(0.309)	0.007	0.023
17	1.42	0.10	(0.308)	0.007	0.023
18	1.50	0.10	(0.307)	0.007	0.023
19	1.58	0.10	(0.305)	0.007	0.023
20	1.67	0.10	(0.304)	0.007	0.023

21	1.75	0.10	0.030	(0.303)	0.007	0.023
22	1.83	0.13	0.040	(0.302)	0.010	0.031
23	1.92	0.13	0.040	(0.301)	0.010	0.031
24	2.00	0.13	0.040	(0.299)	0.010	0.031
25	2.08	0.13	0.040	(0.298)	0.010	0.031
26	2.17	0.13	0.040	(0.297)	0.010	0.031
27	2.25	0.13	0.040	(0.296)	0.010	0.031
28	2.33	0.13	0.040	(0.295)	0.010	0.031
29	2.42	0.13	0.040	(0.293)	0.010	0.031
30	2.50	0.13	0.040	(0.292)	0.010	0.031
31	2.58	0.17	0.050	(0.291)	0.012	0.038
32	2.67	0.17	0.050	(0.290)	0.012	0.038
33	2.75	0.17	0.050	(0.289)	0.012	0.038
34	2.83	0.17	0.050	(0.287)	0.012	0.038
35	2.92	0.17	0.050	(0.286)	0.012	0.038
36	3.00	0.17	0.050	(0.285)	0.012	0.038
37	3.08	0.17	0.050	(0.284)	0.012	0.038
38	3.17	0.17	0.050	(0.283)	0.012	0.038
39	3.25	0.17	0.050	(0.281)	0.012	0.038
40	3.33	0.17	0.050	(0.280)	0.012	0.038
41	3.42	0.17	0.050	(0.279)	0.012	0.038
42	3.50	0.17	0.050	(0.278)	0.012	0.038
43	3.58	0.17	0.050	(0.277)	0.012	0.038
44	3.67	0.17	0.050	(0.276)	0.012	0.038
45	3.75	0.17	0.050	(0.274)	0.012	0.038
46	3.83	0.20	0.060	(0.273)	0.014	0.046
47	3.92	0.20	0.060	(0.272)	0.014	0.046
48	4.00	0.20	0.060	(0.271)	0.014	0.046
49	4.08	0.20	0.060	(0.270)	0.014	0.046
50	4.17	0.20	0.060	(0.269)	0.014	0.046
51	4.25	0.20	0.060	(0.268)	0.014	0.046
52	4.33	0.23	0.070	(0.266)	0.017	0.053
53	4.42	0.23	0.070	(0.265)	0.017	0.053
54	4.50	0.23	0.070	(0.264)	0.017	0.053
55	4.58	0.23	0.070	(0.263)	0.017	0.053
56	4.67	0.23	0.070	(0.262)	0.017	0.053
57	4.75	0.23	0.070	(0.261)	0.017	0.053
58	4.83	0.27	0.080	(0.260)	0.019	0.061
59	4.92	0.27	0.080	(0.259)	0.019	0.061
60	5.00	0.27	0.080	(0.257)	0.019	0.061
61	5.08	0.20	0.060	(0.256)	0.014	0.046
62	5.17	0.20	0.060	(0.255)	0.014	0.046
63	5.25	0.20	0.060	(0.254)	0.014	0.046
64	5.33	0.23	0.070	(0.253)	0.017	0.053
65	5.42	0.23	0.070	(0.252)	0.017	0.053
66	5.50	0.23	0.070	(0.251)	0.017	0.053
67	5.58	0.27	0.080	(0.250)	0.019	0.061
68	5.67	0.27	0.080	(0.249)	0.019	0.061
69	5.75	0.27	0.080	(0.247)	0.019	0.061
70	5.83	0.27	0.080	(0.246)	0.019	0.061
71	5.92	0.27	0.080	(0.245)	0.019	0.061
72	6.00	0.27	0.080	(0.244)	0.019	0.061
73	6.08	0.30	0.090	(0.243)	0.022	0.069
74	6.17	0.30	0.090	(0.242)	0.022	0.069
75	6.25	0.30	0.090	(0.241)	0.022	0.069
76	6.33	0.30	0.090	(0.240)	0.022	0.069
77	6.42	0.30	0.090	(0.239)	0.022	0.069
78	6.50	0.30	0.090	(0.238)	0.022	0.069
79	6.58	0.33	0.100	(0.237)	0.024	0.076
80	6.67	0.33	0.100	(0.236)	0.024	0.076
81	6.75	0.33	0.100	(0.234)	0.024	0.076
82	6.83	0.33	0.100	(0.233)	0.024	0.076
83	6.92	0.33	0.100	(0.232)	0.024	0.076

84	7.00	0.33	0.100	(0.231)	0.024	0.076
85	7.08	0.33	0.100	(0.230)	0.024	0.076
86	7.17	0.33	0.100	(0.229)	0.024	0.076
87	7.25	0.33	0.100	(0.228)	0.024	0.076
88	7.33	0.37	0.110	(0.227)	0.026	0.084
89	7.42	0.37	0.110	(0.226)	0.026	0.084
90	7.50	0.37	0.110	(0.225)	0.026	0.084
91	7.58	0.40	0.120	(0.224)	0.029	0.092
92	7.67	0.40	0.120	(0.223)	0.029	0.092
93	7.75	0.40	0.120	(0.222)	0.029	0.092
94	7.83	0.43	0.130	(0.221)	0.031	0.099
95	7.92	0.43	0.130	(0.220)	0.031	0.099
96	8.00	0.43	0.130	(0.219)	0.031	0.099
97	8.08	0.50	0.151	(0.218)	0.036	0.114
98	8.17	0.50	0.151	(0.217)	0.036	0.114
99	8.25	0.50	0.151	(0.216)	0.036	0.114
100	8.33	0.50	0.151	(0.215)	0.036	0.114
101	8.42	0.50	0.151	(0.214)	0.036	0.114
102	8.50	0.50	0.151	(0.213)	0.036	0.114
103	8.58	0.53	0.161	(0.212)	0.039	0.122
104	8.67	0.53	0.161	(0.211)	0.039	0.122
105	8.75	0.53	0.161	(0.210)	0.039	0.122
106	8.83	0.57	0.171	(0.209)	0.041	0.130
107	8.92	0.57	0.171	(0.208)	0.041	0.130
108	9.00	0.57	0.171	(0.207)	0.041	0.130
109	9.08	0.63	0.191	(0.206)	0.046	0.145
110	9.17	0.63	0.191	(0.205)	0.046	0.145
111	9.25	0.63	0.191	(0.204)	0.046	0.145
112	9.33	0.67	0.201	(0.203)	0.048	0.153
113	9.42	0.67	0.201	(0.202)	0.048	0.153
114	9.50	0.67	0.201	(0.201)	0.048	0.153
115	9.58	0.70	0.211	(0.200)	0.051	0.160
116	9.67	0.70	0.211	(0.199)	0.051	0.160
117	9.75	0.70	0.211	(0.198)	0.051	0.160
118	9.83	0.73	0.221	(0.197)	0.053	0.168
119	9.92	0.73	0.221	(0.196)	0.053	0.168
120	10.00	0.73	0.221	(0.195)	0.053	0.168
121	10.08	0.50	0.151	(0.194)	0.036	0.114
122	10.17	0.50	0.151	(0.193)	0.036	0.114
123	10.25	0.50	0.151	(0.193)	0.036	0.114
124	10.33	0.50	0.151	(0.192)	0.036	0.114
125	10.42	0.50	0.151	(0.191)	0.036	0.114
126	10.50	0.50	0.151	(0.190)	0.036	0.114
127	10.58	0.67	0.201	(0.189)	0.048	0.153
128	10.67	0.67	0.201	(0.188)	0.048	0.153
129	10.75	0.67	0.201	(0.187)	0.048	0.153
130	10.83	0.67	0.201	(0.186)	0.048	0.153
131	10.92	0.67	0.201	(0.185)	0.048	0.153
132	11.00	0.67	0.201	(0.184)	0.048	0.153
133	11.08	0.63	0.191	(0.183)	0.046	0.145
134	11.17	0.63	0.191	(0.182)	0.046	0.145
135	11.25	0.63	0.191	(0.181)	0.046	0.145
136	11.33	0.63	0.191	(0.181)	0.046	0.145
137	11.42	0.63	0.191	(0.180)	0.046	0.145
138	11.50	0.63	0.191	(0.179)	0.046	0.145
139	11.58	0.57	0.171	(0.178)	0.041	0.130
140	11.67	0.57	0.171	(0.177)	0.041	0.130
141	11.75	0.57	0.171	(0.176)	0.041	0.130
142	11.83	0.60	0.181	(0.175)	0.043	0.137
143	11.92	0.60	0.181	(0.174)	0.043	0.137
144	12.00	0.60	0.181	(0.174)	0.043	0.137
145	12.08	0.83	0.251	(0.173)	0.060	0.191
146	12.17	0.83	0.251	(0.172)	0.060	0.191

147	12.25	0.83	0.251	(0.171)	0.060	0.191
148	12.33	0.87	0.261	(0.170)	0.063	0.198
149	12.42	0.87	0.261	(0.169)	0.063	0.198
150	12.50	0.87	0.261	(0.168)	0.063	0.198
151	12.58	0.93	0.281	(0.168)	0.067	0.214
152	12.67	0.93	0.281	(0.167)	0.067	0.214
153	12.75	0.93	0.281	(0.166)	0.067	0.214
154	12.83	0.97	0.291	(0.165)	0.070	0.221
155	12.92	0.97	0.291	(0.164)	0.070	0.221
156	13.00	0.97	0.291	(0.163)	0.070	0.221
157	13.08	1.13	0.341	(0.163)	0.082	0.259
158	13.17	1.13	0.341	(0.162)	0.082	0.259
159	13.25	1.13	0.341	(0.161)	0.082	0.259
160	13.33	1.13	0.341	(0.160)	0.082	0.259
161	13.42	1.13	0.341	(0.159)	0.082	0.259
162	13.50	1.13	0.341	(0.158)	0.082	0.259
163	13.58	0.77	0.231	(0.158)	0.055	0.175
164	13.67	0.77	0.231	(0.157)	0.055	0.175
165	13.75	0.77	0.231	(0.156)	0.055	0.175
166	13.83	0.77	0.231	(0.155)	0.055	0.175
167	13.92	0.77	0.231	(0.154)	0.055	0.175
168	14.00	0.77	0.231	(0.154)	0.055	0.175
169	14.08	0.90	0.271	(0.153)	0.065	0.206
170	14.17	0.90	0.271	(0.152)	0.065	0.206
171	14.25	0.90	0.271	(0.151)	0.065	0.206
172	14.33	0.87	0.261	(0.151)	0.063	0.198
173	14.42	0.87	0.261	(0.150)	0.063	0.198
174	14.50	0.87	0.261	(0.149)	0.063	0.198
175	14.58	0.87	0.261	(0.148)	0.063	0.198
176	14.67	0.87	0.261	(0.147)	0.063	0.198
177	14.75	0.87	0.261	(0.147)	0.063	0.198
178	14.83	0.83	0.251	(0.146)	0.060	0.191
179	14.92	0.83	0.251	(0.145)	0.060	0.191
180	15.00	0.83	0.251	(0.144)	0.060	0.191
181	15.08	0.80	0.241	(0.144)	0.058	0.183
182	15.17	0.80	0.241	(0.143)	0.058	0.183
183	15.25	0.80	0.241	(0.142)	0.058	0.183
184	15.33	0.77	0.231	(0.142)	0.055	0.175
185	15.42	0.77	0.231	(0.141)	0.055	0.175
186	15.50	0.77	0.231	(0.140)	0.055	0.175
187	15.58	0.63	0.191	(0.139)	0.046	0.145
188	15.67	0.63	0.191	(0.139)	0.046	0.145
189	15.75	0.63	0.191	(0.138)	0.046	0.145
190	15.83	0.63	0.191	(0.137)	0.046	0.145
191	15.92	0.63	0.191	(0.137)	0.046	0.145
192	16.00	0.63	0.191	(0.136)	0.046	0.145
193	16.08	0.13	0.040	(0.135)	0.010	0.031
194	16.17	0.13	0.040	(0.134)	0.010	0.031
195	16.25	0.13	0.040	(0.134)	0.010	0.031
196	16.33	0.13	0.040	(0.133)	0.010	0.031
197	16.42	0.13	0.040	(0.132)	0.010	0.031
198	16.50	0.13	0.040	(0.132)	0.010	0.031
199	16.58	0.10	0.030	(0.131)	0.007	0.023
200	16.67	0.10	0.030	(0.130)	0.007	0.023
201	16.75	0.10	0.030	(0.130)	0.007	0.023
202	16.83	0.10	0.030	(0.129)	0.007	0.023
203	16.92	0.10	0.030	(0.128)	0.007	0.023
204	17.00	0.10	0.030	(0.128)	0.007	0.023
205	17.08	0.17	0.050	(0.127)	0.012	0.038
206	17.17	0.17	0.050	(0.126)	0.012	0.038
207	17.25	0.17	0.050	(0.126)	0.012	0.038
208	17.33	0.17	0.050	(0.125)	0.012	0.038
209	17.42	0.17	0.050	(0.125)	0.012	0.038

210	17.50	0.17	0.050	(0.124)	0.012	0.038
211	17.58	0.17	0.050	(0.123)	0.012	0.038
212	17.67	0.17	0.050	(0.123)	0.012	0.038
213	17.75	0.17	0.050	(0.122)	0.012	0.038
214	17.83	0.13	0.040	(0.122)	0.010	0.031
215	17.92	0.13	0.040	(0.121)	0.010	0.031
216	18.00	0.13	0.040	(0.120)	0.010	0.031
217	18.08	0.13	0.040	(0.120)	0.010	0.031
218	18.17	0.13	0.040	(0.119)	0.010	0.031
219	18.25	0.13	0.040	(0.119)	0.010	0.031
220	18.33	0.13	0.040	(0.118)	0.010	0.031
221	18.42	0.13	0.040	(0.117)	0.010	0.031
222	18.50	0.13	0.040	(0.117)	0.010	0.031
223	18.58	0.10	0.030	(0.116)	0.007	0.023
224	18.67	0.10	0.030	(0.116)	0.007	0.023
225	18.75	0.10	0.030	(0.115)	0.007	0.023
226	18.83	0.07	0.020	(0.115)	0.005	0.015
227	18.92	0.07	0.020	(0.114)	0.005	0.015
228	19.00	0.07	0.020	(0.114)	0.005	0.015
229	19.08	0.10	0.030	(0.113)	0.007	0.023
230	19.17	0.10	0.030	(0.112)	0.007	0.023
231	19.25	0.10	0.030	(0.112)	0.007	0.023
232	19.33	0.13	0.040	(0.111)	0.010	0.031
233	19.42	0.13	0.040	(0.111)	0.010	0.031
234	19.50	0.13	0.040	(0.110)	0.010	0.031
235	19.58	0.10	0.030	(0.110)	0.007	0.023
236	19.67	0.10	0.030	(0.109)	0.007	0.023
237	19.75	0.10	0.030	(0.109)	0.007	0.023
238	19.83	0.07	0.020	(0.108)	0.005	0.015
239	19.92	0.07	0.020	(0.108)	0.005	0.015
240	20.00	0.07	0.020	(0.107)	0.005	0.015
241	20.08	0.10	0.030	(0.107)	0.007	0.023
242	20.17	0.10	0.030	(0.106)	0.007	0.023
243	20.25	0.10	0.030	(0.106)	0.007	0.023
244	20.33	0.10	0.030	(0.106)	0.007	0.023
245	20.42	0.10	0.030	(0.105)	0.007	0.023
246	20.50	0.10	0.030	(0.105)	0.007	0.023
247	20.58	0.10	0.030	(0.104)	0.007	0.023
248	20.67	0.10	0.030	(0.104)	0.007	0.023
249	20.75	0.10	0.030	(0.103)	0.007	0.023
250	20.83	0.07	0.020	(0.103)	0.005	0.015
251	20.92	0.07	0.020	(0.103)	0.005	0.015
252	21.00	0.07	0.020	(0.102)	0.005	0.015
253	21.08	0.10	0.030	(0.102)	0.007	0.023
254	21.17	0.10	0.030	(0.101)	0.007	0.023
255	21.25	0.10	0.030	(0.101)	0.007	0.023
256	21.33	0.07	0.020	(0.101)	0.005	0.015
257	21.42	0.07	0.020	(0.100)	0.005	0.015
258	21.50	0.07	0.020	(0.100)	0.005	0.015
259	21.58	0.10	0.030	(0.099)	0.007	0.023
260	21.67	0.10	0.030	(0.099)	0.007	0.023
261	21.75	0.10	0.030	(0.099)	0.007	0.023
262	21.83	0.07	0.020	(0.098)	0.005	0.015
263	21.92	0.07	0.020	(0.098)	0.005	0.015
264	22.00	0.07	0.020	(0.098)	0.005	0.015
265	22.08	0.10	0.030	(0.097)	0.007	0.023
266	22.17	0.10	0.030	(0.097)	0.007	0.023
267	22.25	0.10	0.030	(0.097)	0.007	0.023
268	22.33	0.07	0.020	(0.096)	0.005	0.015
269	22.42	0.07	0.020	(0.096)	0.005	0.015
270	22.50	0.07	0.020	(0.096)	0.005	0.015
271	22.58	0.07	0.020	(0.096)	0.005	0.015
272	22.67	0.07	0.020	(0.095)	0.005	0.015

273	22.75	0.07	0.020	(0.095)	0.005	0.015
274	22.83	0.07	0.020	(0.095)	0.005	0.015
275	22.92	0.07	0.020	(0.095)	0.005	0.015
276	23.00	0.07	0.020	(0.094)	0.005	0.015
277	23.08	0.07	0.020	(0.094)	0.005	0.015
278	23.17	0.07	0.020	(0.094)	0.005	0.015
279	23.25	0.07	0.020	(0.094)	0.005	0.015
280	23.33	0.07	0.020	(0.093)	0.005	0.015
281	23.42	0.07	0.020	(0.093)	0.005	0.015
282	23.50	0.07	0.020	(0.093)	0.005	0.015
283	23.58	0.07	0.020	(0.093)	0.005	0.015
284	23.67	0.07	0.020	(0.093)	0.005	0.015
285	23.75	0.07	0.020	(0.093)	0.005	0.015
286	23.83	0.07	0.020	(0.093)	0.005	0.015
287	23.92	0.07	0.020	(0.093)	0.005	0.015
288	24.00	0.07	0.020	(0.092)	0.005	0.015

(Loss Rate Not Used)

Sum = 100.0 Sum = 22.9

Flood volume = Effective rainfall 1.91(In)
times area 2.9(Ac.)/[(In)/(Ft.)] = 0.5(Ac.Ft)
Total soil loss = 0.60(In)
Total soil loss = 0.145(Ac.Ft)
Total rainfall = 2.51(In)
Flood volume = 19934.6 Cubic Feet
Total soil loss = 6295.1 Cubic Feet

Peak flow rate of this hydrograph = 0.753(CFS)

+++++

24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0002	0.03	Q				
0+10	0.0005	0.04	Q				
0+15	0.0008	0.04	Q				
0+20	0.0012	0.06	Q				
0+25	0.0016	0.07	Q				
0+30	0.0021	0.07	Q				
0+35	0.0025	0.07	Q				
0+40	0.0030	0.07	Q				
0+45	0.0034	0.07	Q				
0+50	0.0040	0.08	Q				
0+55	0.0046	0.09	Q				
1+ 0	0.0052	0.09	Q				
1+ 5	0.0057	0.08	Q				
1+10	0.0062	0.07	Q				
1+15	0.0066	0.07	Q				
1+20	0.0071	0.07	Q				
1+25	0.0076	0.07	Q				
1+30	0.0080	0.07	Q				
1+35	0.0085	0.07	Q				
1+40	0.0089	0.07	Q				
1+45	0.0094	0.07	Q				
1+50	0.0099	0.08	Q				
1+55	0.0105	0.09	Q				
2+ 0	0.0111	0.09	Q				
2+ 5	0.0118	0.09	QV				
2+10	0.0124	0.09	QV				

2+15	0.0130	0.09	QV
2+20	0.0136	0.09	QV
2+25	0.0142	0.09	QV
2+30	0.0148	0.09	QV
2+35	0.0155	0.10	QV
2+40	0.0163	0.11	QV
2+45	0.0170	0.11	QV
2+50	0.0178	0.11	QV
2+55	0.0186	0.11	QV
3+ 0	0.0193	0.11	QV
3+ 5	0.0201	0.11	QV
3+10	0.0208	0.11	QV
3+15	0.0216	0.11	QV
3+20	0.0224	0.11	QV
3+25	0.0231	0.11	Q V
3+30	0.0239	0.11	Q V
3+35	0.0247	0.11	Q V
3+40	0.0254	0.11	Q V
3+45	0.0262	0.11	Q V
3+50	0.0270	0.12	Q V
3+55	0.0279	0.13	Q V
4+ 0	0.0289	0.13	Q V
4+ 5	0.0298	0.13	Q V
4+10	0.0307	0.13	Q V
4+15	0.0316	0.13	Q V
4+20	0.0326	0.15	Q V
4+25	0.0337	0.15	Q V
4+30	0.0347	0.16	Q V
4+35	0.0358	0.16	Q V
4+40	0.0369	0.16	Q V
4+45	0.0379	0.16	Q V
4+50	0.0391	0.17	Q V
4+55	0.0403	0.18	Q V
5+ 0	0.0415	0.18	Q V
5+ 5	0.0426	0.15	Q V
5+10	0.0435	0.14	Q V
5+15	0.0444	0.13	Q V
5+20	0.0454	0.15	Q V
5+25	0.0465	0.15	Q V
5+30	0.0475	0.16	Q V
5+35	0.0487	0.17	Q V
5+40	0.0499	0.18	Q V
5+45	0.0511	0.18	Q V
5+50	0.0523	0.18	Q V
5+55	0.0536	0.18	Q V
6+ 0	0.0548	0.18	Q V
6+ 5	0.0561	0.19	Q V
6+10	0.0575	0.20	Q V
6+15	0.0588	0.20	Q V
6+20	0.0602	0.20	Q V
6+25	0.0616	0.20	Q V
6+30	0.0630	0.20	Q V
6+35	0.0644	0.21	Q V
6+40	0.0659	0.22	Q V
6+45	0.0675	0.22	Q V
6+50	0.0690	0.22	Q V
6+55	0.0705	0.22	Q V
7+ 0	0.0720	0.22	Q V
7+ 5	0.0736	0.22	Q V
7+10	0.0751	0.22	Q V
7+15	0.0766	0.22	Q V
7+20	0.0782	0.23	Q V
7+25	0.0799	0.24	Q V

7+30	0.0816	0.24	Q	V				
7+35	0.0833	0.26	Q	V				
7+40	0.0852	0.26	Q	V				
7+45	0.0870	0.27	Q	V				
7+50	0.0889	0.28	Q	V				
7+55	0.0909	0.29	Q	V				
8+ 0	0.0929	0.29	Q	V				
8+ 5	0.0950	0.31	Q	V				
8+10	0.0973	0.33	Q	V				
8+15	0.0996	0.33	Q	V				
8+20	0.1019	0.33	Q	V				
8+25	0.1042	0.33	Q	V				
8+30	0.1064	0.33	Q	V				
8+35	0.1088	0.35	Q	V				
8+40	0.1113	0.35	Q	V				
8+45	0.1137	0.35	Q	V				
8+50	0.1162	0.37	Q	V				
8+55	0.1188	0.38	Q	V				
9+ 0	0.1214	0.38	Q	V				
9+ 5	0.1242	0.40	Q	V				
9+10	0.1271	0.42	Q	V				
9+15	0.1300	0.42	Q	V				
9+20	0.1329	0.43	Q	V				
9+25	0.1360	0.44	Q	V				
9+30	0.1390	0.44	Q	V				
9+35	0.1422	0.46	Q	V				
9+40	0.1454	0.46	Q	V				
9+45	0.1486	0.47	Q	V				
9+50	0.1519	0.48	Q	V				
9+55	0.1552	0.49	Q	V				
10+ 0	0.1586	0.49	Q	V				
10+ 5	0.1613	0.40	Q	V				
10+10	0.1637	0.34	Q	V				
10+15	0.1659	0.33	Q	V				
10+20	0.1682	0.33	Q	V				
10+25	0.1705	0.33	Q	V				
10+30	0.1728	0.33	Q	V				
10+35	0.1755	0.40	Q	V				
10+40	0.1785	0.44	Q	V				
10+45	0.1816	0.44	Q	V				
10+50	0.1846	0.44	Q	V				
10+55	0.1877	0.44	Q	V				
11+ 0	0.1907	0.44	Q	V				
11+ 5	0.1937	0.43	Q	V				
11+10	0.1966	0.42	Q	V				
11+15	0.1995	0.42	Q	V				
11+20	0.2024	0.42	Q	V				
11+25	0.2053	0.42	Q	V				
11+30	0.2082	0.42	Q	V				
11+35	0.2109	0.40	Q	V				
11+40	0.2135	0.38	Q	V				
11+45	0.2161	0.38	Q	V				
11+50	0.2188	0.39	Q	V				
11+55	0.2216	0.40	Q	V				
12+ 0	0.2243	0.40	Q	V				
12+ 5	0.2277	0.49	Q	V				
12+10	0.2314	0.54	Q	V				
12+15	0.2352	0.55	Q	V				
12+20	0.2391	0.57	Q	V				
12+25	0.2431	0.57	Q	V				
12+30	0.2471	0.58	Q	V				
12+35	0.2512	0.60	Q	V				
12+40	0.2555	0.62	Q	V				

12+45	0.2597	0.62	Q	V		
12+50	0.2641	0.63	Q	V		
12+55	0.2685	0.64	Q	V		
13+ 0	0.2729	0.64	Q	V		
13+ 5	0.2778	0.71	Q	V		
13+10	0.2829	0.75	Q	V		
13+15	0.2881	0.75	Q	V		
13+20	0.2933	0.75	Q	V		
13+25	0.2985	0.75	Q	V		
13+30	0.3037	0.75	Q	V		
13+35	0.3079	0.61	Q	V		
13+40	0.3115	0.52	Q	V		
13+45	0.3150	0.51	Q	V		
13+50	0.3185	0.51	Q	V		
13+55	0.3220	0.51	Q	V		
14+ 0	0.3255	0.51	Q	V		
14+ 5	0.3294	0.56	Q	V		
14+10	0.3335	0.59	Q	V		
14+15	0.3376	0.60	Q	V		
14+20	0.3416	0.59	Q	V		
14+25	0.3456	0.58	Q	V		
14+30	0.3496	0.58	Q	V		
14+35	0.3535	0.58	Q	V		
14+40	0.3575	0.58	Q	V		
14+45	0.3615	0.58	Q	V		
14+50	0.3653	0.56	Q	V		
14+55	0.3692	0.55	Q	V		
15+ 0	0.3730	0.55	Q	V		
15+ 5	0.3767	0.54	Q	V		
15+10	0.3804	0.53	Q	V		
15+15	0.3840	0.53	Q	V		
15+20	0.3876	0.52	Q	V		
15+25	0.3911	0.51	Q	V		
15+30	0.3946	0.51	Q	V		
15+35	0.3978	0.46	Q	V		
15+40	0.4007	0.43	Q	V		
15+45	0.4036	0.42	Q	V		
15+50	0.4065	0.42	Q	V		
15+55	0.4094	0.42	Q	V		
16+ 0	0.4123	0.42	Q	V		
16+ 5	0.4139	0.23	Q	V		
16+10	0.4146	0.11	Q	V		
16+15	0.4152	0.09	Q	V		
16+20	0.4159	0.09	Q	V		
16+25	0.4165	0.09	Q	V		
16+30	0.4171	0.09	Q	V		
16+35	0.4176	0.08	Q	V		
16+40	0.4181	0.07	Q	V		
16+45	0.4185	0.07	Q	V		
16+50	0.4190	0.07	Q	V		
16+55	0.4194	0.07	Q	V		
17+ 0	0.4199	0.07	Q	V		
17+ 5	0.4205	0.09	Q	V		
17+10	0.4213	0.11	Q	V		
17+15	0.4220	0.11	Q	V		
17+20	0.4228	0.11	Q	V		
17+25	0.4236	0.11	Q	V		
17+30	0.4243	0.11	Q	V		
17+35	0.4251	0.11	Q	V		
17+40	0.4258	0.11	Q	V		
17+45	0.4266	0.11	Q	V		
17+50	0.4273	0.10	Q	V		
17+55	0.4279	0.09	Q	V		

18+ 0	0.4285	0.09	Q	V
18+ 5	0.4291	0.09	Q	V
18+10	0.4297	0.09	Q	V
18+15	0.4303	0.09	Q	V
18+20	0.4310	0.09	Q	V
18+25	0.4316	0.09	Q	V
18+30	0.4322	0.09	Q	V
18+35	0.4327	0.08	Q	V
18+40	0.4332	0.07	Q	V
18+45	0.4336	0.07	Q	V
18+50	0.4340	0.05	Q	V
18+55	0.4343	0.05	Q	V
19+ 0	0.4346	0.04	Q	V
19+ 5	0.4350	0.06	Q	V
19+10	0.4355	0.07	Q	V
19+15	0.4359	0.07	Q	V
19+20	0.4365	0.08	Q	V
19+25	0.4371	0.09	Q	V
19+30	0.4377	0.09	Q	V
19+35	0.4382	0.08	Q	V
19+40	0.4387	0.07	Q	V
19+45	0.4391	0.07	Q	V
19+50	0.4395	0.05	Q	V
19+55	0.4398	0.05	Q	V
20+ 0	0.4401	0.04	Q	V
20+ 5	0.4405	0.06	Q	V
20+10	0.4409	0.07	Q	V
20+15	0.4414	0.07	Q	V
20+20	0.4419	0.07	Q	V
20+25	0.4423	0.07	Q	V
20+30	0.4428	0.07	Q	V
20+35	0.4432	0.07	Q	V
20+40	0.4437	0.07	Q	V
20+45	0.4441	0.07	Q	V
20+50	0.4445	0.05	Q	V
20+55	0.4448	0.05	Q	V
21+ 0	0.4451	0.04	Q	V
21+ 5	0.4455	0.06	Q	V
21+10	0.4460	0.07	Q	V
21+15	0.4464	0.07	Q	V
21+20	0.4468	0.05	Q	V
21+25	0.4471	0.05	Q	V
21+30	0.4474	0.04	Q	V
21+35	0.4478	0.06	Q	V
21+40	0.4483	0.07	Q	V
21+45	0.4487	0.07	Q	V
21+50	0.4491	0.05	Q	V
21+55	0.4494	0.05	Q	V
22+ 0	0.4497	0.04	Q	V
22+ 5	0.4501	0.06	Q	V
22+10	0.4506	0.07	Q	V
22+15	0.4510	0.07	Q	V
22+20	0.4514	0.05	Q	V
22+25	0.4517	0.05	Q	V
22+30	0.4520	0.04	Q	V
22+35	0.4523	0.04	Q	V
22+40	0.4526	0.04	Q	V
22+45	0.4529	0.04	Q	V
22+50	0.4532	0.04	Q	V
22+55	0.4535	0.04	Q	V
23+ 0	0.4538	0.04	Q	V
23+ 5	0.4541	0.04	Q	V
23+10	0.4544	0.04	Q	V

23+15	0.4547	0.04	Q				V
23+20	0.4550	0.04	Q				V
23+25	0.4554	0.04	Q				V
23+30	0.4557	0.04	Q				V
23+35	0.4560	0.04	Q				V
23+40	0.4563	0.04	Q				V
23+45	0.4566	0.04	Q				V
23+50	0.4569	0.04	Q				V
23+55	0.4572	0.04	Q				V
24+ 0	0.4575	0.04	Q				V
24+ 5	0.4576	0.02	Q				V
24+10	0.4576	0.00	Q				V

**Post-developed conditions
10 year 1 hour**

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863post110.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MoVal (APN 488-310-012)
Post-developed conditions
10 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 750.00(Ft.)
Length along longest watercourse measured to centroid = 410.00(Ft.)
Length along longest watercourse = 0.142 Mi.
Length along longest watercourse measured to centroid = 0.078 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 105.6000 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.027 Hr.
Lag time = 1.61 Min.
25% of lag time = 0.40 Min.
40% of lag time = 0.64 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	0.50	1.44

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.20	3.46

STORM EVENT (YEAR) = 10.00

Area Averaged 2-Year Rainfall = 0.500(In)
 Area Averaged 100-Year Rainfall = 1.200(In)

Point rain (area averaged) = 0.788(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 0.788(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 2.880 56.00 0.820
 Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
56.0	56.0	0.511	0.820	0.134	1.000	0.134
						Sum (F) = 0.134

Area averaged mean soil loss (F) (In/Hr) = 0.134
 Minimum soil loss rate ((In/Hr)) = 0.067
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.240

 Slope of intensity-duration curve for a 1 hour storm =0.5000

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

 Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	311.052	57.787
2	0.167	622.104	36.528
3	0.250	933.156	5.685
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	4.20	(0.134)	0.095	0.302
2	0.17	4.30	(0.134)	0.098	0.309
3	0.25	5.00	(0.134)	0.113	0.359
4	0.33	5.00	(0.134)	0.113	0.359
5	0.42	5.80	(0.134)	0.132	0.417
6	0.50	6.50	0.615	(0.148)	0.481
7	0.58	7.40	0.700	(0.168)	0.566
8	0.67	8.60	0.813	(0.195)	0.679
9	0.75	12.30	1.163	(0.279)	1.029
10	0.83	29.10	2.752	(0.660)	2.618
11	0.92	6.80	0.643	(0.154)	0.509
12	1.00	5.00	0.473	(0.134)	0.359

(Loss Rate Not Used)
 Sum = 100.0 Sum = 8.0

Flood volume = Effective rainfall 0.67(In)
 times area 2.9(Ac.)/[(In)/(Ft.)] = 0.2(Ac.Ft)
 Total soil loss = 0.12(In)
 Total soil loss = 0.029(Ac.Ft)

Total rainfall = 0.79(In)
 Flood volume = 6958.9 Cubic Feet
 Total soil loss = 1278.8 Cubic Feet

 Peak flow rate of this hydrograph = 5.597(CFS)

+++++

1 - H O U R S T O R M
 R u n o f f H y d r o g r a p h

 Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0035	0.51	V Q				
0+10	0.0093	0.84	VQ				
0+15	0.0160	0.98	QV				
0+20	0.0231	1.04	QV				
0+25	0.0310	1.14	Q V				
0+30	0.0400	1.31	Q V				
0+35	0.0505	1.53	Q V				
0+40	0.0631	1.82	Q V				
0+45	0.0806	2.54	Q V				
0+50	0.1191	5.60	Q V				
0+55	0.1453	3.80	Q V				
1+ 0	0.1561	1.58	Q V				
1+ 5	0.1593	0.47	Q V				
1+10	0.1598	0.06	Q V				

**Post-developed conditions
10 year 3 hour**

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863post310.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independant Plaza, MoVal (APN 488-310-012)
Post-developed conditions
10 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 750.00(Ft.)
Length along longest watercourse measured to centroid = 410.00(Ft.)
Length along longest watercourse = 0.142 Mi.
Length along longest watercourse measured to centroid = 0.078 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 105.6000 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.027 Hr.
Lag time = 1.61 Min.
25% of lag time = 0.40 Min.
40% of lag time = 0.64 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	0.81	2.33

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.86	5.36

STORM EVENT (YEAR) = 10.00

Area Averaged 2-Year Rainfall = 0.810(In)
 Area Averaged 100-Year Rainfall = 1.860(In)

Point rain (area averaged) = 1.242(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 1.242(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 2.880 56.00 0.820
 Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
56.0	56.0	0.511	0.820	0.134	1.000	0.134
						Sum (F) = 0.134

Area averaged mean soil loss (F) (In/Hr) = 0.134
 Minimum soil loss rate ((In/Hr)) = 0.067
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.240

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	311.052	1.677
2	0.167	622.104	1.060
3	0.250	933.156	0.165
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	1.30	0.194	(0.134)	0.046
2	0.17	1.30	0.194	(0.134)	0.046
3	0.25	1.10	0.164	(0.134)	0.039
4	0.33	1.50	0.224	(0.134)	0.054
5	0.42	1.50	0.224	(0.134)	0.054
6	0.50	1.80	0.268	(0.134)	0.064
7	0.58	1.50	0.224	(0.134)	0.054
8	0.67	1.80	0.268	(0.134)	0.064
9	0.75	1.80	0.268	(0.134)	0.064
10	0.83	1.50	0.224	(0.134)	0.054
11	0.92	1.60	0.238	(0.134)	0.057
12	1.00	1.80	0.268	(0.134)	0.064
13	1.08	2.20	0.328	(0.134)	0.079
14	1.17	2.20	0.328	(0.134)	0.079
15	1.25	2.20	0.328	(0.134)	0.079
16	1.33	2.00	0.298	(0.134)	0.072
17	1.42	2.60	0.387	(0.134)	0.093
18	1.50	2.70	0.402	(0.134)	0.097
19	1.58	2.40	0.358	(0.134)	0.086
20	1.67	2.70	0.402	(0.134)	0.097

21	1.75	3.30	0.492	(0.134)	0.118	0.374
22	1.83	3.10	0.462	(0.134)	0.111	0.351
23	1.92	2.90	0.432	(0.134)	0.104	0.328
24	2.00	3.00	0.447	(0.134)	0.107	0.340
25	2.08	3.10	0.462	(0.134)	0.111	0.351
26	2.17	4.20	0.626	0.134 (0.150)		0.492
27	2.25	5.00	0.745	0.134 (0.179)		0.611
28	2.33	3.50	0.522	(0.134)	0.125	0.396
29	2.42	6.80	1.013	0.134 (0.243)		0.880
30	2.50	7.30	1.088	0.134 (0.261)		0.954
31	2.58	8.20	1.222	0.134 (0.293)		1.088
32	2.67	5.90	0.879	0.134 (0.211)		0.745
33	2.75	2.00	0.298	(0.134)	0.072	0.227
34	2.83	1.80	0.268	(0.134)	0.064	0.204
35	2.92	1.80	0.268	(0.134)	0.064	0.204
36	3.00	0.60	0.089	(0.134)	0.021	0.068

(Loss Rate Not Used)

Sum = 100.0 Sum = 11.9

Flood volume = Effective rainfall 0.99(In)
times area 2.9(Ac.)/[(In)/(Ft.)] = 0.2(Ac.Ft)
Total soil loss = 0.25(In)
Total soil loss = 0.061(Ac.Ft)
Total rainfall = 1.24(In)
Flood volume = 10333.7 Cubic Feet
Total soil loss = 2650.3 Cubic Feet

Peak flow rate of this hydrograph = 2.984(CFS)

+++++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0017	0.25	Q				
0+10	0.0045	0.40	VQ				
0+15	0.0072	0.39	Q				
0+20	0.0102	0.44	Q				
0+25	0.0136	0.49	QV				
0+30	0.0173	0.55	Q				
0+35	0.0210	0.53	QV				
0+40	0.0248	0.56	Q V				
0+45	0.0289	0.59	Q V				
0+50	0.0325	0.54	Q V				
0+55	0.0361	0.52	Q V				
1+ 0	0.0400	0.56	Q V				
1+ 5	0.0446	0.66	Q V				
1+10	0.0495	0.72	Q V				
1+15	0.0545	0.72	Q V				
1+20	0.0592	0.69	Q V				
1+25	0.0645	0.78	Q V				
1+30	0.0705	0.86	Q V				
1+35	0.0762	0.83	Q V				
1+40	0.0821	0.85	Q V				
1+45	0.0889	1.00	Q V				
1+50	0.0961	1.04	Q V				
1+55	0.1028	0.99	Q V				
2+ 0	0.1096	0.98	Q V				
2+ 5	0.1165	1.00	Q V				
2+10	0.1251	1.25	Q V				

2+15	0.1362	1.61		Q		V			
2+20	0.1458	1.40		Q		V			
2+25	0.1595	2.00		Q		V			
2+30	0.1775	2.60				V			
2+35	0.1980	2.98						V	
2+40	0.2157	2.56						V	
2+45	0.2250	1.35		Q				V	
2+50	0.2298	0.71		Q				V	
2+55	0.2339	0.60		Q				V	
3+ 0	0.2364	0.36		Q				V	
3+ 5	0.2372	0.11		Q				V	
3+10	0.2372	0.01		Q				V	

**Post-developed conditions
10 year 6 hour**

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

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863post610.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independant Plaza, MoVal (APN 488-310-012)
Post-developed conditions
10 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 750.00(Ft.)
Length along longest watercourse measured to centroid = 410.00(Ft.)
Length along longest watercourse = 0.142 Mi.
Length along longest watercourse measured to centroid = 0.078 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 105.6000 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.027 Hr.
Lag time = 1.61 Min.
25% of lag time = 0.40 Min.
40% of lag time = 0.64 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.40	4.03

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	2.50	7.20

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 1.400(In)

Area Averaged 100-Year Rainfall = 2.500(In)

Point rain (area averaged) = 1.853(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.853(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
2.880 56.00 0.820
Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
56.0	56.0	0.511	0.820	0.134	1.000	0.134
						Sum (F) = 0.134

Area averaged mean soil loss (F) (In/Hr) = 0.134
Minimum soil loss rate ((In/Hr)) = 0.067
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.240

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

Unit Hydrograph Data

Unit time period	Time	% of lag	Distribution	Unit Hydrograph
(hrs)			Graph %	(CFS)
1	0.083	311.052	57.787	1.677
2	0.167	622.104	36.528	1.060
3	0.250	933.156	5.685	0.165
			Sum = 100.000	Sum= 2.902

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

Unit Time	Pattern	Storm Rain	Loss rate(In./Hr)	Effective
(Hr.)	Percent	(In/Hr)	Max Low	(In/Hr)
1	0.08	0.50	0.111 (0.134)	0.027 0.084
2	0.17	0.60	0.133 (0.134)	0.032 0.101
3	0.25	0.60	0.133 (0.134)	0.032 0.101
4	0.33	0.60	0.133 (0.134)	0.032 0.101
5	0.42	0.60	0.133 (0.134)	0.032 0.101
6	0.50	0.70	0.156 (0.134)	0.037 0.118
7	0.58	0.70	0.156 (0.134)	0.037 0.118
8	0.67	0.70	0.156 (0.134)	0.037 0.118
9	0.75	0.70	0.156 (0.134)	0.037 0.118
10	0.83	0.70	0.156 (0.134)	0.037 0.118
11	0.92	0.70	0.156 (0.134)	0.037 0.118
12	1.00	0.80	0.178 (0.134)	0.043 0.135
13	1.08	0.80	0.178 (0.134)	0.043 0.135
14	1.17	0.80	0.178 (0.134)	0.043 0.135
15	1.25	0.80	0.178 (0.134)	0.043 0.135
16	1.33	0.80	0.178 (0.134)	0.043 0.135
17	1.42	0.80	0.178 (0.134)	0.043 0.135
18	1.50	0.80	0.178 (0.134)	0.043 0.135
19	1.58	0.80	0.178 (0.134)	0.043 0.135
20	1.67	0.80	0.178 (0.134)	0.043 0.135
21	1.75	0.80	0.178 (0.134)	0.043 0.135

22	1.83	0.80	0.178	(0.134)	0.043	0.135
23	1.92	0.80	0.178	(0.134)	0.043	0.135
24	2.00	0.90	0.200	(0.134)	0.048	0.152
25	2.08	0.80	0.178	(0.134)	0.043	0.135
26	2.17	0.90	0.200	(0.134)	0.048	0.152
27	2.25	0.90	0.200	(0.134)	0.048	0.152
28	2.33	0.90	0.200	(0.134)	0.048	0.152
29	2.42	0.90	0.200	(0.134)	0.048	0.152
30	2.50	0.90	0.200	(0.134)	0.048	0.152
31	2.58	0.90	0.200	(0.134)	0.048	0.152
32	2.67	0.90	0.200	(0.134)	0.048	0.152
33	2.75	1.00	0.222	(0.134)	0.053	0.169
34	2.83	1.00	0.222	(0.134)	0.053	0.169
35	2.92	1.00	0.222	(0.134)	0.053	0.169
36	3.00	1.00	0.222	(0.134)	0.053	0.169
37	3.08	1.00	0.222	(0.134)	0.053	0.169
38	3.17	1.10	0.245	(0.134)	0.059	0.186
39	3.25	1.10	0.245	(0.134)	0.059	0.186
40	3.33	1.10	0.245	(0.134)	0.059	0.186
41	3.42	1.20	0.267	(0.134)	0.064	0.203
42	3.50	1.30	0.289	(0.134)	0.069	0.220
43	3.58	1.40	0.311	(0.134)	0.075	0.237
44	3.67	1.40	0.311	(0.134)	0.075	0.237
45	3.75	1.50	0.333	(0.134)	0.080	0.253
46	3.83	1.50	0.333	(0.134)	0.080	0.253
47	3.92	1.60	0.356	(0.134)	0.085	0.270
48	4.00	1.60	0.356	(0.134)	0.085	0.270
49	4.08	1.70	0.378	(0.134)	0.091	0.287
50	4.17	1.80	0.400	(0.134)	0.096	0.304
51	4.25	1.90	0.422	(0.134)	0.101	0.321
52	4.33	2.00	0.445	(0.134)	0.107	0.338
53	4.42	2.10	0.467	(0.134)	0.112	0.355
54	4.50	2.10	0.467	(0.134)	0.112	0.355
55	4.58	2.20	0.489	(0.134)	0.117	0.372
56	4.67	2.30	0.511	(0.134)	0.123	0.389
57	4.75	2.40	0.534	(0.134)	0.128	0.405
58	4.83	2.40	0.534	(0.134)	0.128	0.405
59	4.92	2.50	0.556	(0.134)	0.133	0.422
60	5.00	2.60	0.578	0.134	(0.139)	0.444
61	5.08	3.10	0.689	0.134	(0.165)	0.555
62	5.17	3.60	0.800	0.134	(0.192)	0.666
63	5.25	3.90	0.867	0.134	(0.208)	0.733
64	5.33	4.20	0.934	0.134	(0.224)	0.800
65	5.42	4.70	1.045	0.134	(0.251)	0.911
66	5.50	5.60	1.245	0.134	(0.299)	1.111
67	5.58	1.90	0.422	(0.134)	0.101	0.321
68	5.67	0.90	0.200	(0.134)	0.048	0.152
69	5.75	0.60	0.133	(0.134)	0.032	0.101
70	5.83	0.50	0.111	(0.134)	0.027	0.084
71	5.92	0.30	0.067	(0.134)	0.016	0.051
72	6.00	0.20	0.044	(0.134)	0.011	0.034

(Loss Rate Not Used)

Sum = 100.0 Sum = 17.4

Flood volume = Effective rainfall 1.45(In)

times area 2.9(Ac.)/[(In)/(Ft.)] = 0.3(Ac.Ft)

Total soil loss = 0.40(In)

Total soil loss = 0.096(Ac.Ft)

Total rainfall = 1.85(In)

Flood volume = 15190.4 Cubic Feet

Total soil loss = 4176.7 Cubic Feet

Peak flow rate of this hydrograph = 2.963(CFS)

+++++

6 - H O U R S T O R M
 R u n o f f H y d r o g r a p h

 Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume	Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0010		0.14	Q				
0+10	0.0028		0.26	VQ				
0+15	0.0048		0.29	VQ				
0+20	0.0068		0.29	VQ				
0+25	0.0088		0.29	Q				
0+30	0.0111		0.32	Q				
0+35	0.0134		0.34	Q				
0+40	0.0158		0.34	Q				
0+45	0.0181		0.34	QV				
0+50	0.0205		0.34	QV				
0+55	0.0229		0.34	QV				
1+ 0	0.0254		0.37	QV				
1+ 5	0.0281		0.39	Q V				
1+10	0.0308		0.39	Q V				
1+15	0.0335		0.39	Q V				
1+20	0.0362		0.39	Q V				
1+25	0.0389		0.39	Q V				
1+30	0.0416		0.39	Q V				
1+35	0.0443		0.39	Q V				
1+40	0.0470		0.39	Q V				
1+45	0.0497		0.39	Q V				
1+50	0.0524		0.39	Q V				
1+55	0.0551		0.39	Q V				
2+ 0	0.0580		0.42	Q V				
2+ 5	0.0609		0.41	Q V				
2+10	0.0638		0.42	Q V				
2+15	0.0668		0.44	Q V				
2+20	0.0698		0.44	Q V				
2+25	0.0729		0.44	Q V				
2+30	0.0759		0.44	Q V				
2+35	0.0790		0.44	Q V				
2+40	0.0820		0.44	Q V				
2+45	0.0852		0.47	Q V				
2+50	0.0886		0.49	Q V				
2+55	0.0920		0.49	Q V				
3+ 0	0.0954		0.49	Q V				
3+ 5	0.0987		0.49	Q	V			
3+10	0.1023		0.52	Q	V			
3+15	0.1060		0.54	Q	V			
3+20	0.1097		0.54	Q	V			
3+25	0.1136		0.57	Q	V			
3+30	0.1179		0.61	Q	V			
3+35	0.1224		0.66	Q	V			
3+40	0.1272		0.68	Q	V			
3+45	0.1321		0.72	Q	V			
3+50	0.1371		0.73	Q	V			
3+55	0.1424		0.76	Q	V			
4+ 0	0.1478		0.78	Q	V			
4+ 5	0.1534		0.81	Q	V			
4+10	0.1593		0.86	Q	V			
4+15	0.1656		0.91	Q	V			
4+20	0.1722		0.96	Q	V			
4+25	0.1791		1.01	Q	V			
4+30	0.1862		1.03	Q	V			

4+35	0.1935	1.06	Q		V		
4+40	0.2011	1.10	Q		V		
4+45	0.2090	1.15	Q		V		
4+50	0.2171	1.17	Q		V		
4+55	0.2254	1.21	Q		V		
5+ 0	0.2341	1.26	Q		V		
5+ 5	0.2442	1.47	Q		V		
5+10	0.2565	1.78		Q	V		
5+15	0.2705	2.03		Q	V		
5+20	0.2858	2.23		Q	V		
5+25	0.3030	2.50		Q	V		
5+30	0.3234	2.96		Q	V		
5+35	0.3363	1.87		Q		V	
5+40	0.3417	0.78	Q			V	
5+45	0.3443	0.38	Q			V	
5+50	0.3462	0.27	Q			V	
5+55	0.3475	0.19	Q			V	
6+ 0	0.3484	0.12	Q			V	
6+ 5	0.3487	0.04	Q			V	
6+10	0.3487	0.01	Q			V	

**Post-developed conditions
10 year 24 hour**

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

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863post2410.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MoVal (APN 488-310-012)
Post-developed conditions
10 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 750.00(Ft.)
Length along longest watercourse measured to centroid = 410.00(Ft.)
Length along longest watercourse = 0.142 Mi.
Length along longest watercourse measured to centroid = 0.078 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 105.6000 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.027 Hr.
Lag time = 1.61 Min.
25% of lag time = 0.40 Min.
40% of lag time = 0.64 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.90	5.47

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	4.50	12.96

STORM EVENT (YEAR) = 10.00

Area Averaged 2-Year Rainfall = 1.900(In)
 Area Averaged 100-Year Rainfall = 4.500(In)

Point rain (area averaged) = 2.970(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 2.970(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 2.880 56.00 0.820
 Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
56.0	56.0	0.511	0.820	0.134	1.000	0.134
						Sum (F) = 0.134

Area averaged mean soil loss (F) (In/Hr) = 0.134
 Minimum soil loss rate ((In/Hr)) = 0.067
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.240

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	311.052	1.677
2	0.167	622.104	1.060
3	0.250	933.156	0.165
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	0.07	(0.237)	0.006	0.018
2	0.17	0.07	(0.236)	0.006	0.018
3	0.25	0.07	(0.235)	0.006	0.018
4	0.33	0.10	(0.234)	0.009	0.027
5	0.42	0.10	(0.234)	0.009	0.027
6	0.50	0.10	(0.233)	0.009	0.027
7	0.58	0.10	(0.232)	0.009	0.027
8	0.67	0.10	(0.231)	0.009	0.027
9	0.75	0.10	(0.230)	0.009	0.027
10	0.83	0.13	(0.229)	0.011	0.036
11	0.92	0.13	(0.228)	0.011	0.036
12	1.00	0.13	(0.227)	0.011	0.036
13	1.08	0.10	(0.226)	0.009	0.027
14	1.17	0.10	(0.225)	0.009	0.027
15	1.25	0.10	(0.225)	0.009	0.027
16	1.33	0.10	(0.224)	0.009	0.027
17	1.42	0.10	(0.223)	0.009	0.027
18	1.50	0.10	(0.222)	0.009	0.027
19	1.58	0.10	(0.221)	0.009	0.027
20	1.67	0.10	(0.220)	0.009	0.027

21	1.75	0.10	0.036	(0.219)	0.009	0.027
22	1.83	0.13	0.048	(0.218)	0.011	0.036
23	1.92	0.13	0.048	(0.217)	0.011	0.036
24	2.00	0.13	0.048	(0.217)	0.011	0.036
25	2.08	0.13	0.048	(0.216)	0.011	0.036
26	2.17	0.13	0.048	(0.215)	0.011	0.036
27	2.25	0.13	0.048	(0.214)	0.011	0.036
28	2.33	0.13	0.048	(0.213)	0.011	0.036
29	2.42	0.13	0.048	(0.212)	0.011	0.036
30	2.50	0.13	0.048	(0.211)	0.011	0.036
31	2.58	0.17	0.059	(0.210)	0.014	0.045
32	2.67	0.17	0.059	(0.210)	0.014	0.045
33	2.75	0.17	0.059	(0.209)	0.014	0.045
34	2.83	0.17	0.059	(0.208)	0.014	0.045
35	2.92	0.17	0.059	(0.207)	0.014	0.045
36	3.00	0.17	0.059	(0.206)	0.014	0.045
37	3.08	0.17	0.059	(0.205)	0.014	0.045
38	3.17	0.17	0.059	(0.204)	0.014	0.045
39	3.25	0.17	0.059	(0.204)	0.014	0.045
40	3.33	0.17	0.059	(0.203)	0.014	0.045
41	3.42	0.17	0.059	(0.202)	0.014	0.045
42	3.50	0.17	0.059	(0.201)	0.014	0.045
43	3.58	0.17	0.059	(0.200)	0.014	0.045
44	3.67	0.17	0.059	(0.199)	0.014	0.045
45	3.75	0.17	0.059	(0.199)	0.014	0.045
46	3.83	0.20	0.071	(0.198)	0.017	0.054
47	3.92	0.20	0.071	(0.197)	0.017	0.054
48	4.00	0.20	0.071	(0.196)	0.017	0.054
49	4.08	0.20	0.071	(0.195)	0.017	0.054
50	4.17	0.20	0.071	(0.194)	0.017	0.054
51	4.25	0.20	0.071	(0.194)	0.017	0.054
52	4.33	0.23	0.083	(0.193)	0.020	0.063
53	4.42	0.23	0.083	(0.192)	0.020	0.063
54	4.50	0.23	0.083	(0.191)	0.020	0.063
55	4.58	0.23	0.083	(0.190)	0.020	0.063
56	4.67	0.23	0.083	(0.189)	0.020	0.063
57	4.75	0.23	0.083	(0.189)	0.020	0.063
58	4.83	0.27	0.095	(0.188)	0.023	0.072
59	4.92	0.27	0.095	(0.187)	0.023	0.072
60	5.00	0.27	0.095	(0.186)	0.023	0.072
61	5.08	0.20	0.071	(0.185)	0.017	0.054
62	5.17	0.20	0.071	(0.185)	0.017	0.054
63	5.25	0.20	0.071	(0.184)	0.017	0.054
64	5.33	0.23	0.083	(0.183)	0.020	0.063
65	5.42	0.23	0.083	(0.182)	0.020	0.063
66	5.50	0.23	0.083	(0.181)	0.020	0.063
67	5.58	0.27	0.095	(0.181)	0.023	0.072
68	5.67	0.27	0.095	(0.180)	0.023	0.072
69	5.75	0.27	0.095	(0.179)	0.023	0.072
70	5.83	0.27	0.095	(0.178)	0.023	0.072
71	5.92	0.27	0.095	(0.177)	0.023	0.072
72	6.00	0.27	0.095	(0.177)	0.023	0.072
73	6.08	0.30	0.107	(0.176)	0.026	0.081
74	6.17	0.30	0.107	(0.175)	0.026	0.081
75	6.25	0.30	0.107	(0.174)	0.026	0.081
76	6.33	0.30	0.107	(0.174)	0.026	0.081
77	6.42	0.30	0.107	(0.173)	0.026	0.081
78	6.50	0.30	0.107	(0.172)	0.026	0.081
79	6.58	0.33	0.119	(0.171)	0.029	0.090
80	6.67	0.33	0.119	(0.170)	0.029	0.090
81	6.75	0.33	0.119	(0.170)	0.029	0.090
82	6.83	0.33	0.119	(0.169)	0.029	0.090
83	6.92	0.33	0.119	(0.168)	0.029	0.090

84	7.00	0.33	0.119	(0.167)	0.029	0.090
85	7.08	0.33	0.119	(0.167)	0.029	0.090
86	7.17	0.33	0.119	(0.166)	0.029	0.090
87	7.25	0.33	0.119	(0.165)	0.029	0.090
88	7.33	0.37	0.131	(0.164)	0.031	0.099
89	7.42	0.37	0.131	(0.164)	0.031	0.099
90	7.50	0.37	0.131	(0.163)	0.031	0.099
91	7.58	0.40	0.143	(0.162)	0.034	0.108
92	7.67	0.40	0.143	(0.161)	0.034	0.108
93	7.75	0.40	0.143	(0.161)	0.034	0.108
94	7.83	0.43	0.154	(0.160)	0.037	0.117
95	7.92	0.43	0.154	(0.159)	0.037	0.117
96	8.00	0.43	0.154	(0.158)	0.037	0.117
97	8.08	0.50	0.178	(0.158)	0.043	0.135
98	8.17	0.50	0.178	(0.157)	0.043	0.135
99	8.25	0.50	0.178	(0.156)	0.043	0.135
100	8.33	0.50	0.178	(0.155)	0.043	0.135
101	8.42	0.50	0.178	(0.155)	0.043	0.135
102	8.50	0.50	0.178	(0.154)	0.043	0.135
103	8.58	0.53	0.190	(0.153)	0.046	0.144
104	8.67	0.53	0.190	(0.153)	0.046	0.144
105	8.75	0.53	0.190	(0.152)	0.046	0.144
106	8.83	0.57	0.202	(0.151)	0.048	0.153
107	8.92	0.57	0.202	(0.150)	0.048	0.153
108	9.00	0.57	0.202	(0.150)	0.048	0.153
109	9.08	0.63	0.226	(0.149)	0.054	0.172
110	9.17	0.63	0.226	(0.148)	0.054	0.172
111	9.25	0.63	0.226	(0.148)	0.054	0.172
112	9.33	0.67	0.238	(0.147)	0.057	0.181
113	9.42	0.67	0.238	(0.146)	0.057	0.181
114	9.50	0.67	0.238	(0.145)	0.057	0.181
115	9.58	0.70	0.249	(0.145)	0.060	0.190
116	9.67	0.70	0.249	(0.144)	0.060	0.190
117	9.75	0.70	0.249	(0.143)	0.060	0.190
118	9.83	0.73	0.261	(0.143)	0.063	0.199
119	9.92	0.73	0.261	(0.142)	0.063	0.199
120	10.00	0.73	0.261	(0.141)	0.063	0.199
121	10.08	0.50	0.178	(0.141)	0.043	0.135
122	10.17	0.50	0.178	(0.140)	0.043	0.135
123	10.25	0.50	0.178	(0.139)	0.043	0.135
124	10.33	0.50	0.178	(0.139)	0.043	0.135
125	10.42	0.50	0.178	(0.138)	0.043	0.135
126	10.50	0.50	0.178	(0.137)	0.043	0.135
127	10.58	0.67	0.238	(0.137)	0.057	0.181
128	10.67	0.67	0.238	(0.136)	0.057	0.181
129	10.75	0.67	0.238	(0.135)	0.057	0.181
130	10.83	0.67	0.238	(0.135)	0.057	0.181
131	10.92	0.67	0.238	(0.134)	0.057	0.181
132	11.00	0.67	0.238	(0.133)	0.057	0.181
133	11.08	0.63	0.226	(0.133)	0.054	0.172
134	11.17	0.63	0.226	(0.132)	0.054	0.172
135	11.25	0.63	0.226	(0.131)	0.054	0.172
136	11.33	0.63	0.226	(0.131)	0.054	0.172
137	11.42	0.63	0.226	(0.130)	0.054	0.172
138	11.50	0.63	0.226	(0.129)	0.054	0.172
139	11.58	0.57	0.202	(0.129)	0.048	0.153
140	11.67	0.57	0.202	(0.128)	0.048	0.153
141	11.75	0.57	0.202	(0.127)	0.048	0.153
142	11.83	0.60	0.214	(0.127)	0.051	0.162
143	11.92	0.60	0.214	(0.126)	0.051	0.162
144	12.00	0.60	0.214	(0.126)	0.051	0.162
145	12.08	0.83	0.297	(0.125)	0.071	0.226
146	12.17	0.83	0.297	(0.124)	0.071	0.226

147	12.25	0.83	0.297	(0.124)	0.071	0.226
148	12.33	0.87	0.309	(0.123)	0.074	0.235
149	12.42	0.87	0.309	(0.122)	0.074	0.235
150	12.50	0.87	0.309	(0.122)	0.074	0.235
151	12.58	0.93	0.333	(0.121)	0.080	0.253
152	12.67	0.93	0.333	(0.121)	0.080	0.253
153	12.75	0.93	0.333	(0.120)	0.080	0.253
154	12.83	0.97	0.344	(0.119)	0.083	0.262
155	12.92	0.97	0.344	(0.119)	0.083	0.262
156	13.00	0.97	0.344	(0.118)	0.083	0.262
157	13.08	1.13	0.404	(0.118)	0.097	0.307
158	13.17	1.13	0.404	(0.117)	0.097	0.307
159	13.25	1.13	0.404	(0.116)	0.097	0.307
160	13.33	1.13	0.404	(0.116)	0.097	0.307
161	13.42	1.13	0.404	(0.115)	0.097	0.307
162	13.50	1.13	0.404	(0.115)	0.097	0.307
163	13.58	0.77	0.273	(0.114)	0.066	0.208
164	13.67	0.77	0.273	(0.113)	0.066	0.208
165	13.75	0.77	0.273	(0.113)	0.066	0.208
166	13.83	0.77	0.273	(0.112)	0.066	0.208
167	13.92	0.77	0.273	(0.112)	0.066	0.208
168	14.00	0.77	0.273	(0.111)	0.066	0.208
169	14.08	0.90	0.321	(0.111)	0.077	0.244
170	14.17	0.90	0.321	(0.110)	0.077	0.244
171	14.25	0.90	0.321	(0.109)	0.077	0.244
172	14.33	0.87	0.309	(0.109)	0.074	0.235
173	14.42	0.87	0.309	(0.108)	0.074	0.235
174	14.50	0.87	0.309	(0.108)	0.074	0.235
175	14.58	0.87	0.309	(0.107)	0.074	0.235
176	14.67	0.87	0.309	(0.107)	0.074	0.235
177	14.75	0.87	0.309	(0.106)	0.074	0.235
178	14.83	0.83	0.297	(0.106)	0.071	0.226
179	14.92	0.83	0.297	(0.105)	0.071	0.226
180	15.00	0.83	0.297	(0.105)	0.071	0.226
181	15.08	0.80	0.285	(0.104)	0.068	0.217
182	15.17	0.80	0.285	(0.103)	0.068	0.217
183	15.25	0.80	0.285	(0.103)	0.068	0.217
184	15.33	0.77	0.273	(0.102)	0.066	0.208
185	15.42	0.77	0.273	(0.102)	0.066	0.208
186	15.50	0.77	0.273	(0.101)	0.066	0.208
187	15.58	0.63	0.226	(0.101)	0.054	0.172
188	15.67	0.63	0.226	(0.100)	0.054	0.172
189	15.75	0.63	0.226	(0.100)	0.054	0.172
190	15.83	0.63	0.226	(0.099)	0.054	0.172
191	15.92	0.63	0.226	(0.099)	0.054	0.172
192	16.00	0.63	0.226	(0.098)	0.054	0.172
193	16.08	0.13	0.048	(0.098)	0.011	0.036
194	16.17	0.13	0.048	(0.097)	0.011	0.036
195	16.25	0.13	0.048	(0.097)	0.011	0.036
196	16.33	0.13	0.048	(0.096)	0.011	0.036
197	16.42	0.13	0.048	(0.096)	0.011	0.036
198	16.50	0.13	0.048	(0.095)	0.011	0.036
199	16.58	0.10	0.036	(0.095)	0.009	0.027
200	16.67	0.10	0.036	(0.094)	0.009	0.027
201	16.75	0.10	0.036	(0.094)	0.009	0.027
202	16.83	0.10	0.036	(0.093)	0.009	0.027
203	16.92	0.10	0.036	(0.093)	0.009	0.027
204	17.00	0.10	0.036	(0.092)	0.009	0.027
205	17.08	0.17	0.059	(0.092)	0.014	0.045
206	17.17	0.17	0.059	(0.092)	0.014	0.045
207	17.25	0.17	0.059	(0.091)	0.014	0.045
208	17.33	0.17	0.059	(0.091)	0.014	0.045
209	17.42	0.17	0.059	(0.090)	0.014	0.045

210	17.50	0.17	0.059	(0.090)	0.014	0.045
211	17.58	0.17	0.059	(0.089)	0.014	0.045
212	17.67	0.17	0.059	(0.089)	0.014	0.045
213	17.75	0.17	0.059	(0.088)	0.014	0.045
214	17.83	0.13	0.048	(0.088)	0.011	0.036
215	17.92	0.13	0.048	(0.087)	0.011	0.036
216	18.00	0.13	0.048	(0.087)	0.011	0.036
217	18.08	0.13	0.048	(0.087)	0.011	0.036
218	18.17	0.13	0.048	(0.086)	0.011	0.036
219	18.25	0.13	0.048	(0.086)	0.011	0.036
220	18.33	0.13	0.048	(0.085)	0.011	0.036
221	18.42	0.13	0.048	(0.085)	0.011	0.036
222	18.50	0.13	0.048	(0.085)	0.011	0.036
223	18.58	0.10	0.036	(0.084)	0.009	0.027
224	18.67	0.10	0.036	(0.084)	0.009	0.027
225	18.75	0.10	0.036	(0.083)	0.009	0.027
226	18.83	0.07	0.024	(0.083)	0.006	0.018
227	18.92	0.07	0.024	(0.083)	0.006	0.018
228	19.00	0.07	0.024	(0.082)	0.006	0.018
229	19.08	0.10	0.036	(0.082)	0.009	0.027
230	19.17	0.10	0.036	(0.081)	0.009	0.027
231	19.25	0.10	0.036	(0.081)	0.009	0.027
232	19.33	0.13	0.048	(0.081)	0.011	0.036
233	19.42	0.13	0.048	(0.080)	0.011	0.036
234	19.50	0.13	0.048	(0.080)	0.011	0.036
235	19.58	0.10	0.036	(0.079)	0.009	0.027
236	19.67	0.10	0.036	(0.079)	0.009	0.027
237	19.75	0.10	0.036	(0.079)	0.009	0.027
238	19.83	0.07	0.024	(0.078)	0.006	0.018
239	19.92	0.07	0.024	(0.078)	0.006	0.018
240	20.00	0.07	0.024	(0.078)	0.006	0.018
241	20.08	0.10	0.036	(0.077)	0.009	0.027
242	20.17	0.10	0.036	(0.077)	0.009	0.027
243	20.25	0.10	0.036	(0.077)	0.009	0.027
244	20.33	0.10	0.036	(0.076)	0.009	0.027
245	20.42	0.10	0.036	(0.076)	0.009	0.027
246	20.50	0.10	0.036	(0.076)	0.009	0.027
247	20.58	0.10	0.036	(0.075)	0.009	0.027
248	20.67	0.10	0.036	(0.075)	0.009	0.027
249	20.75	0.10	0.036	(0.075)	0.009	0.027
250	20.83	0.07	0.024	(0.074)	0.006	0.018
251	20.92	0.07	0.024	(0.074)	0.006	0.018
252	21.00	0.07	0.024	(0.074)	0.006	0.018
253	21.08	0.10	0.036	(0.074)	0.009	0.027
254	21.17	0.10	0.036	(0.073)	0.009	0.027
255	21.25	0.10	0.036	(0.073)	0.009	0.027
256	21.33	0.07	0.024	(0.073)	0.006	0.018
257	21.42	0.07	0.024	(0.072)	0.006	0.018
258	21.50	0.07	0.024	(0.072)	0.006	0.018
259	21.58	0.10	0.036	(0.072)	0.009	0.027
260	21.67	0.10	0.036	(0.072)	0.009	0.027
261	21.75	0.10	0.036	(0.071)	0.009	0.027
262	21.83	0.07	0.024	(0.071)	0.006	0.018
263	21.92	0.07	0.024	(0.071)	0.006	0.018
264	22.00	0.07	0.024	(0.071)	0.006	0.018
265	22.08	0.10	0.036	(0.070)	0.009	0.027
266	22.17	0.10	0.036	(0.070)	0.009	0.027
267	22.25	0.10	0.036	(0.070)	0.009	0.027
268	22.33	0.07	0.024	(0.070)	0.006	0.018
269	22.42	0.07	0.024	(0.070)	0.006	0.018
270	22.50	0.07	0.024	(0.069)	0.006	0.018
271	22.58	0.07	0.024	(0.069)	0.006	0.018
272	22.67	0.07	0.024	(0.069)	0.006	0.018

273	22.75	0.07	0.024	(0.069)	0.006	0.018
274	22.83	0.07	0.024	(0.069)	0.006	0.018
275	22.92	0.07	0.024	(0.068)	0.006	0.018
276	23.00	0.07	0.024	(0.068)	0.006	0.018
277	23.08	0.07	0.024	(0.068)	0.006	0.018
278	23.17	0.07	0.024	(0.068)	0.006	0.018
279	23.25	0.07	0.024	(0.068)	0.006	0.018
280	23.33	0.07	0.024	(0.068)	0.006	0.018
281	23.42	0.07	0.024	(0.068)	0.006	0.018
282	23.50	0.07	0.024	(0.067)	0.006	0.018
283	23.58	0.07	0.024	(0.067)	0.006	0.018
284	23.67	0.07	0.024	(0.067)	0.006	0.018
285	23.75	0.07	0.024	(0.067)	0.006	0.018
286	23.83	0.07	0.024	(0.067)	0.006	0.018
287	23.92	0.07	0.024	(0.067)	0.006	0.018
288	24.00	0.07	0.024	(0.067)	0.006	0.018

(Loss Rate Not Used)

Sum = 100.0 Sum = 27.1

Flood volume = Effective rainfall 2.26(In)
times area 2.9(Ac.)/[(In)/(Ft.)] = 0.5(Ac.Ft)
Total soil loss = 0.71(In)
Total soil loss = 0.171(Ac.Ft)
Total rainfall = 2.97(In)
Flood volume = 23594.8 Cubic Feet
Total soil loss = 7451.0 Cubic Feet

Peak flow rate of this hydrograph = 0.891(CFS)

+++++

24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0002	0.03	Q				
0+10	0.0005	0.05	Q				
0+15	0.0009	0.05	Q				
0+20	0.0014	0.07	Q				
0+25	0.0019	0.08	Q				
0+30	0.0024	0.08	Q				
0+35	0.0030	0.08	Q				
0+40	0.0035	0.08	Q				
0+45	0.0041	0.08	Q				
0+50	0.0047	0.09	Q				
0+55	0.0054	0.10	Q				
1+ 0	0.0062	0.10	Q				
1+ 5	0.0068	0.09	Q				
1+10	0.0073	0.08	Q				
1+15	0.0079	0.08	Q				
1+20	0.0084	0.08	Q				
1+25	0.0089	0.08	Q				
1+30	0.0095	0.08	Q				
1+35	0.0100	0.08	Q				
1+40	0.0106	0.08	Q				
1+45	0.0111	0.08	Q				
1+50	0.0118	0.09	Q				
1+55	0.0125	0.10	Q				
2+ 0	0.0132	0.10	Q				
2+ 5	0.0139	0.10	QV				
2+10	0.0146	0.10	QV				

2+15	0.0154	0.10	QV
2+20	0.0161	0.10	QV
2+25	0.0168	0.10	QV
2+30	0.0175	0.10	QV
2+35	0.0184	0.12	QV
2+40	0.0192	0.13	QV
2+45	0.0202	0.13	QV
2+50	0.0211	0.13	QV
2+55	0.0220	0.13	QV
3+ 0	0.0229	0.13	QV
3+ 5	0.0238	0.13	QV
3+10	0.0247	0.13	QV
3+15	0.0256	0.13	QV
3+20	0.0265	0.13	QV
3+25	0.0274	0.13	Q V
3+30	0.0283	0.13	Q V
3+35	0.0292	0.13	Q V
3+40	0.0301	0.13	Q V
3+45	0.0310	0.13	Q V
3+50	0.0320	0.15	Q V
3+55	0.0331	0.16	Q V
4+ 0	0.0341	0.16	Q V
4+ 5	0.0352	0.16	Q V
4+10	0.0363	0.16	Q V
4+15	0.0374	0.16	Q V
4+20	0.0386	0.17	Q V
4+25	0.0398	0.18	Q V
4+30	0.0411	0.18	Q V
4+35	0.0424	0.18	Q V
4+40	0.0436	0.18	Q V
4+45	0.0449	0.18	Q V
4+50	0.0463	0.20	Q V
4+55	0.0477	0.21	Q V
5+ 0	0.0491	0.21	Q V
5+ 5	0.0504	0.18	Q V
5+10	0.0515	0.16	Q V
5+15	0.0526	0.16	Q V
5+20	0.0538	0.17	Q V
5+25	0.0550	0.18	Q V
5+30	0.0563	0.18	Q V
5+35	0.0576	0.20	Q V
5+40	0.0591	0.21	Q V
5+45	0.0605	0.21	Q V
5+50	0.0620	0.21	Q V
5+55	0.0634	0.21	Q V
6+ 0	0.0648	0.21	Q V
6+ 5	0.0664	0.22	Q V
6+10	0.0680	0.23	Q V
6+15	0.0696	0.24	Q V
6+20	0.0713	0.24	Q V
6+25	0.0729	0.24	Q V
6+30	0.0745	0.24	Q V
6+35	0.0762	0.25	Q V
6+40	0.0780	0.26	Q V
6+45	0.0798	0.26	Q V
6+50	0.0816	0.26	Q V
6+55	0.0835	0.26	Q V
7+ 0	0.0853	0.26	Q V
7+ 5	0.0871	0.26	Q V
7+10	0.0889	0.26	Q V
7+15	0.0907	0.26	Q V
7+20	0.0926	0.28	Q V
7+25	0.0946	0.29	Q V

7+30	0.0965	0.29	Q	V				
7+35	0.0986	0.30	Q	V				
7+40	0.1008	0.31	Q	V				
7+45	0.1030	0.31	Q	V				
7+50	0.1052	0.33	Q	V				
7+55	0.1076	0.34	Q	V				
8+ 0	0.1099	0.34	Q	V				
8+ 5	0.1125	0.37	Q	V				
8+10	0.1152	0.39	Q	V				
8+15	0.1179	0.39	Q	V				
8+20	0.1206	0.39	Q	V				
8+25	0.1233	0.39	Q	V				
8+30	0.1260	0.39	Q	V				
8+35	0.1288	0.41	Q	V				
8+40	0.1317	0.42	Q	V				
8+45	0.1346	0.42	Q	V				
8+50	0.1376	0.43	Q	V				
8+55	0.1406	0.44	Q	V				
9+ 0	0.1437	0.45	Q	V				
9+ 5	0.1470	0.48	Q	V				
9+10	0.1504	0.50	Q	V				
9+15	0.1538	0.50	Q	V				
9+20	0.1573	0.51	Q	V				
9+25	0.1609	0.52	Q	V				
9+30	0.1646	0.52	Q	V				
9+35	0.1683	0.54	Q	V				
9+40	0.1721	0.55	Q	V				
9+45	0.1758	0.55	Q	V				
9+50	0.1797	0.57	Q	V				
9+55	0.1837	0.58	Q	V				
10+ 0	0.1877	0.58	Q	V				
10+ 5	0.1909	0.47	Q	V				
10+10	0.1937	0.40	Q	V				
10+15	0.1964	0.39	Q	V				
10+20	0.1991	0.39	Q	V				
10+25	0.2018	0.39	Q	V				
10+30	0.2045	0.39	Q	V				
10+35	0.2078	0.47	Q	V				
10+40	0.2113	0.52	Q	V				
10+45	0.2149	0.52	Q	V				
10+50	0.2185	0.52	Q	V				
10+55	0.2222	0.52	Q	V				
11+ 0	0.2258	0.52	Q	V				
11+ 5	0.2293	0.51	Q	V				
11+10	0.2327	0.50	Q	V				
11+15	0.2361	0.50	Q	V				
11+20	0.2396	0.50	Q	V				
11+25	0.2430	0.50	Q	V				
11+30	0.2464	0.50	Q	V				
11+35	0.2497	0.47	Q	V				
11+40	0.2528	0.45	Q	V				
11+45	0.2558	0.45	Q	V				
11+50	0.2590	0.46	Q	V				
11+55	0.2622	0.47	Q	V				
12+ 0	0.2655	0.47	Q	V				
12+ 5	0.2695	0.58	Q	V				
12+10	0.2739	0.64	Q	V				
12+15	0.2784	0.66	Q	V				
12+20	0.2830	0.67	Q	V				
12+25	0.2877	0.68	Q	V				
12+30	0.2924	0.68	Q	V				
12+35	0.2973	0.71	Q	V				
12+40	0.3024	0.73	Q	V				

12+45	0.3074	0.73	Q	V		
12+50	0.3126	0.75	Q	V		
12+55	0.3178	0.76	Q	V		
13+ 0	0.3230	0.76	Q	V		
13+ 5	0.3288	0.84	Q	V		
13+10	0.3349	0.88	Q	V		
13+15	0.3410	0.89	Q	V		
13+20	0.3472	0.89	Q	V		
13+25	0.3533	0.89	Q	V		
13+30	0.3594	0.89	Q	V		
13+35	0.3644	0.72	Q	V		
13+40	0.3687	0.62	Q	V		
13+45	0.3728	0.60	Q	V		
13+50	0.3770	0.60	Q	V		
13+55	0.3811	0.60	Q	V		
14+ 0	0.3853	0.60	Q	V		
14+ 5	0.3899	0.66	Q	V		
14+10	0.3947	0.70	Q	V		
14+15	0.3996	0.71	Q	V		
14+20	0.4043	0.69	Q	V		
14+25	0.4091	0.68	Q	V		
14+30	0.4137	0.68	Q	V		
14+35	0.4184	0.68	Q	V		
14+40	0.4231	0.68	Q	V		
14+45	0.4278	0.68	Q	V		
14+50	0.4324	0.67	Q	V		
14+55	0.4369	0.66	Q	V		
15+ 0	0.4415	0.66	Q	V		
15+ 5	0.4459	0.64	Q	V		
15+10	0.4502	0.63	Q	V		
15+15	0.4545	0.63	Q	V		
15+20	0.4588	0.61	Q	V		
15+25	0.4629	0.60	Q	V		
15+30	0.4671	0.60	Q	V		
15+35	0.4708	0.54	Q	V		
15+40	0.4743	0.50	Q	V		
15+45	0.4777	0.50	Q	V		
15+50	0.4812	0.50	Q	V		
15+55	0.4846	0.50	Q	V		
16+ 0	0.4880	0.50	Q	V		
16+ 5	0.4899	0.27	Q	V		
16+10	0.4908	0.13	Q	V		
16+15	0.4915	0.10	Q	V		
16+20	0.4922	0.10	Q	V		
16+25	0.4929	0.10	Q	V		
16+30	0.4937	0.10	Q	V		
16+35	0.4943	0.09	Q	V		
16+40	0.4948	0.08	Q	V		
16+45	0.4954	0.08	Q	V		
16+50	0.4959	0.08	Q	V		
16+55	0.4964	0.08	Q	V		
17+ 0	0.4970	0.08	Q	V		
17+ 5	0.4977	0.11	Q	V		
17+10	0.4986	0.13	Q	V		
17+15	0.4995	0.13	Q	V		
17+20	0.5004	0.13	Q	V		
17+25	0.5013	0.13	Q	V		
17+30	0.5022	0.13	Q	V		
17+35	0.5031	0.13	Q	V		
17+40	0.5040	0.13	Q	V		
17+45	0.5049	0.13	Q	V		
17+50	0.5057	0.12	Q	V		
17+55	0.5065	0.11	Q	V		

18+ 0	0.5072	0.10	Q	V
18+ 5	0.5079	0.10	Q	V
18+10	0.5086	0.10	Q	V
18+15	0.5094	0.10	Q	V
18+20	0.5101	0.10	Q	V
18+25	0.5108	0.10	Q	V
18+30	0.5115	0.10	Q	V
18+35	0.5121	0.09	Q	V
18+40	0.5127	0.08	Q	V
18+45	0.5132	0.08	Q	V
18+50	0.5137	0.06	Q	V
18+55	0.5140	0.05	Q	V
19+ 0	0.5144	0.05	Q	V
19+ 5	0.5149	0.07	Q	V
19+10	0.5154	0.08	Q	V
19+15	0.5159	0.08	Q	V
19+20	0.5166	0.09	Q	V
19+25	0.5173	0.10	Q	V
19+30	0.5180	0.10	Q	V
19+35	0.5186	0.09	Q	V
19+40	0.5192	0.08	Q	V
19+45	0.5197	0.08	Q	V
19+50	0.5202	0.06	Q	V
19+55	0.5205	0.05	Q	V
20+ 0	0.5209	0.05	Q	V
20+ 5	0.5214	0.07	Q	V
20+10	0.5219	0.08	Q	V
20+15	0.5224	0.08	Q	V
20+20	0.5230	0.08	Q	V
20+25	0.5235	0.08	Q	V
20+30	0.5241	0.08	Q	V
20+35	0.5246	0.08	Q	V
20+40	0.5252	0.08	Q	V
20+45	0.5257	0.08	Q	V
20+50	0.5261	0.06	Q	V
20+55	0.5265	0.05	Q	V
21+ 0	0.5269	0.05	Q	V
21+ 5	0.5273	0.07	Q	V
21+10	0.5279	0.08	Q	V
21+15	0.5284	0.08	Q	V
21+20	0.5288	0.06	Q	V
21+25	0.5292	0.05	Q	V
21+30	0.5296	0.05	Q	V
21+35	0.5300	0.07	Q	V
21+40	0.5306	0.08	Q	V
21+45	0.5311	0.08	Q	V
21+50	0.5315	0.06	Q	V
21+55	0.5319	0.05	Q	V
22+ 0	0.5323	0.05	Q	V
22+ 5	0.5327	0.07	Q	V
22+10	0.5333	0.08	Q	V
22+15	0.5338	0.08	Q	V
22+20	0.5343	0.06	Q	V
22+25	0.5346	0.05	Q	V
22+30	0.5350	0.05	Q	V
22+35	0.5354	0.05	Q	V
22+40	0.5357	0.05	Q	V
22+45	0.5361	0.05	Q	V
22+50	0.5364	0.05	Q	V
22+55	0.5368	0.05	Q	V
23+ 0	0.5372	0.05	Q	V
23+ 5	0.5375	0.05	Q	V
23+10	0.5379	0.05	Q	V

23+15	0.5382	0.05	Q				V
23+20	0.5386	0.05	Q				V
23+25	0.5390	0.05	Q				V
23+30	0.5393	0.05	Q				V
23+35	0.5397	0.05	Q				V
23+40	0.5400	0.05	Q				V
23+45	0.5404	0.05	Q				V
23+50	0.5408	0.05	Q				V
23+55	0.5411	0.05	Q				V
24+ 0	0.5415	0.05	Q				V
24+ 5	0.5416	0.02	Q				V
24+10	0.5417	0.00	Q				V

**Post-developed conditions
100 year 1 hour**

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

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863post1100.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MoVal (APN 488-310-012)
Post-developed conditions
100 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 750.00(Ft.)
Length along longest watercourse measured to centroid = 410.00(Ft.)
Length along longest watercourse = 0.142 Mi.
Length along longest watercourse measured to centroid = 0.078 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 105.6000 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.027 Hr.
Lag time = 1.61 Min.
25% of lag time = 0.40 Min.
40% of lag time = 0.64 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	0.50	1.44

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.20	3.46

STORM EVENT (YEAR) = 100.00

Area Averaged 2-Year Rainfall = 0.500(In)
 Area Averaged 100-Year Rainfall = 1.200(In)

Point rain (area averaged) = 1.200(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 1.200(In)

Sub-Area Data:
 Area(Ac.) Runoff Index Impervious %
 2.880 56.00 0.820
 Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
56.0	74.8	0.305	0.820	0.080	1.000	0.080
						Sum (F) = 0.080

Area averaged mean soil loss (F) (In/Hr) = 0.080
 Minimum soil loss rate ((In/Hr)) = 0.040
 (for 24 hour storm duration)
 Soil loss rate (decimal) = 0.240

 Slope of intensity-duration curve for a 1 hour storm =0.5000

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

 Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	311.052	57.787
2	0.167	622.104	36.528
3	0.250	933.156	5.685
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	4.20	0.605	(0.145)	0.525
2	0.17	4.30	0.619	(0.149)	0.539
3	0.25	5.00	0.720	(0.173)	0.640
4	0.33	5.00	0.720	(0.173)	0.640
5	0.42	5.80	0.835	(0.200)	0.755
6	0.50	6.50	0.936	(0.225)	0.856
7	0.58	7.40	1.066	(0.256)	0.986
8	0.67	8.60	1.238	(0.297)	1.158
9	0.75	12.30	1.771	(0.425)	1.691
10	0.83	29.10	4.190	(1.006)	4.110
11	0.92	6.80	0.979	(0.235)	0.899
12	1.00	5.00	0.720	(0.173)	0.640

(Loss Rate Not Used)

Sum = 100.0 Sum = 13.4

Flood volume = Effective rainfall 1.12(In)
 times area 2.9(Ac.)/[(In)/(Ft.)] = 0.3(Ac.Ft)
 Total soil loss = 0.08(In)
 Total soil loss = 0.019(Ac.Ft)

Total rainfall = 1.20(In)
 Flood volume = 11708.6 Cubic Feet
 Total soil loss = 836.4 Cubic Feet

 Peak flow rate of this hydrograph = 8.883(CFS)

+++++

1 - H O U R S T O R M
 R u n o f f H y d r o g r a p h

 Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0061	0.88	V Q				
0+10	0.0161	1.46	V Q				
0+15	0.0281	1.73	V Q				
0+20	0.0407	1.84	VQ				
0+25	0.0549	2.05	Q				
0+30	0.0710	2.34	QV				
0+35	0.0895	2.69	Q	V			
0+40	0.1111	3.13		Q	V		
0+45	0.1402	4.23			Q		
0+50	0.2014	8.88			V		
0+55	0.2437	6.15			Q	V	Q
1+ 0	0.2624	2.71		Q			V
1+ 5	0.2681	0.83	Q				V
1+10	0.2688	0.11	Q				V

**Post-developed conditions
100 year 3 hour**

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

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863post3100.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MoVal (APN 488-310-012)
Post-developed conditions
100 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 750.00(Ft.)
Length along longest watercourse measured to centroid = 410.00(Ft.)
Length along longest watercourse = 0.142 Mi.
Length along longest watercourse measured to centroid = 0.078 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 105.6000 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.027 Hr.
Lag time = 1.61 Min.
25% of lag time = 0.40 Min.
40% of lag time = 0.64 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	0.81	2.33

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.86	5.36

STORM EVENT (YEAR) = 100.00

Area Averaged 2-Year Rainfall = 0.810(In)
 Area Averaged 100-Year Rainfall = 1.860(In)

Point rain (area averaged) = 1.860(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 1.860(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 2.880 56.00 0.820
 Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
56.0	74.8	0.305	0.820	0.080	1.000	0.080
						Sum (F) = 0.080

Area averaged mean soil loss (F) (In/Hr) = 0.080
 Minimum soil loss rate ((In/Hr)) = 0.040
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.240

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	311.052	1.677
2	0.167	622.104	1.060
3	0.250	933.156	0.165
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	1.30	0.290	(0.080)	0.221
2	0.17	1.30	0.290	(0.080)	0.221
3	0.25	1.10	0.246	(0.080)	0.187
4	0.33	1.50	0.335	0.080 (0.080)	0.255
5	0.42	1.50	0.335	0.080 (0.080)	0.255
6	0.50	1.80	0.402	0.080 (0.096)	0.322
7	0.58	1.50	0.335	0.080 (0.080)	0.255
8	0.67	1.80	0.402	0.080 (0.096)	0.322
9	0.75	1.80	0.402	0.080 (0.096)	0.322
10	0.83	1.50	0.335	0.080 (0.080)	0.255
11	0.92	1.60	0.357	0.080 (0.086)	0.277
12	1.00	1.80	0.402	0.080 (0.096)	0.322
13	1.08	2.20	0.491	0.080 (0.118)	0.411
14	1.17	2.20	0.491	0.080 (0.118)	0.411
15	1.25	2.20	0.491	0.080 (0.118)	0.411
16	1.33	2.00	0.446	0.080 (0.107)	0.366
17	1.42	2.60	0.580	0.080 (0.139)	0.500
18	1.50	2.70	0.603	0.080 (0.145)	0.523
19	1.58	2.40	0.536	0.080 (0.129)	0.456
20	1.67	2.70	0.603	0.080 (0.145)	0.523

21	1.75	3.30	0.737	0.080	(0.177)	0.657
22	1.83	3.10	0.692	0.080	(0.166)	0.612
23	1.92	2.90	0.647	0.080	(0.155)	0.567
24	2.00	3.00	0.670	0.080	(0.161)	0.590
25	2.08	3.10	0.692	0.080	(0.166)	0.612
26	2.17	4.20	0.937	0.080	(0.225)	0.857
27	2.25	5.00	1.116	0.080	(0.268)	1.036
28	2.33	3.50	0.781	0.080	(0.187)	0.701
29	2.42	6.80	1.518	0.080	(0.364)	1.438
30	2.50	7.30	1.629	0.080	(0.391)	1.549
31	2.58	8.20	1.830	0.080	(0.439)	1.750
32	2.67	5.90	1.317	0.080	(0.316)	1.237
33	2.75	2.00	0.446	0.080	(0.107)	0.366
34	2.83	1.80	0.402	0.080	(0.096)	0.322
35	2.92	1.80	0.402	0.080	(0.096)	0.322
36	3.00	0.60	0.134	(0.080)	0.032	0.102

(Loss Rate Not Used)

Sum = 100.0 Sum = 19.5

Flood volume = Effective rainfall 1.63(In)
times area 2.9(Ac.)/[(In)/(Ft.)] = 0.4(Ac.Ft)
Total soil loss = 0.23(In)
Total soil loss = 0.056(Ac.Ft)
Total rainfall = 1.86(In)
Flood volume = 17013.9 Cubic Feet
Total soil loss = 2431.1 Cubic Feet

Peak flow rate of this hydrograph = 4.818(CFS)

+++++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0025	0.37	VQ				
0+10	0.0067	0.60	V Q				
0+15	0.0107	0.58	VQ				
0+20	0.0153	0.66	VQ				
0+25	0.0203	0.73	Q				
0+30	0.0262	0.85	VQ				
0+35	0.0318	0.81	Q				
0+40	0.0377	0.86	Q				
0+45	0.0441	0.92	QV				
0+50	0.0497	0.82	Q V				
0+55	0.0552	0.79	Q V				
1+ 0	0.0612	0.88	Q V				
1+ 5	0.0686	1.08	Q V				
1+10	0.0767	1.18	Q V				
1+15	0.0849	1.19	Q V				
1+20	0.0926	1.12	Q V				
1+25	0.1016	1.30	Q V				
1+30	0.1117	1.47	Q V				
1+35	0.1213	1.40	Q V				
1+40	0.1313	1.45	Q V				
1+45	0.1432	1.73	Q V				
1+50	0.1557	1.81	Q V				
1+55	0.1675	1.71	Q V				
2+ 0	0.1791	1.69	Q V				
2+ 5	0.1911	1.75	Q V				
2+10	0.2062	2.19	Q V				

**Post-developed conditions
100 year 6 hour**

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

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863post6100.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independant Plaza, MoVal (APN 488-310-012)
Post-developed conditions
100 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 750.00(Ft.)
Length along longest watercourse measured to centroid = 410.00(Ft.)
Length along longest watercourse = 0.142 Mi.
Length along longest watercourse measured to centroid = 0.078 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 105.6000 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.027 Hr.
Lag time = 1.61 Min.
25% of lag time = 0.40 Min.
40% of lag time = 0.64 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.40	4.03

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	2.50	7.20

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.400(In)

Area Averaged 100-Year Rainfall = 2.500(In)

Point rain (area averaged) = 2.500(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.500(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
2.880 56.00 0.820
Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
56.0	74.8	0.305	0.820	0.080	1.000	0.080
						Sum (F) = 0.080

Area averaged mean soil loss (F) (In/Hr) = 0.080
Minimum soil loss rate ((In/Hr)) = 0.040
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.240

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

Unit Hydrograph Data

Unit time period	Time	% of lag	Distribution	Unit Hydrograph
(hrs)			Graph %	(CFS)
1	0.083	311.052	57.787	1.677
2	0.167	622.104	36.528	1.060
3	0.250	933.156	5.685	0.165
			Sum = 100.000	Sum= 2.902

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

Unit Time	Pattern	Storm Rain	Loss rate(In./Hr)		Effective
(Hr.)	Percent	(In/Hr)	Max	Low	(In/Hr)
1	0.08	0.150	(0.080)	0.036	0.114
2	0.17	0.180	(0.080)	0.043	0.137
3	0.25	0.180	(0.080)	0.043	0.137
4	0.33	0.180	(0.080)	0.043	0.137
5	0.42	0.180	(0.080)	0.043	0.137
6	0.50	0.210	(0.080)	0.050	0.160
7	0.58	0.210	(0.080)	0.050	0.160
8	0.67	0.210	(0.080)	0.050	0.160
9	0.75	0.210	(0.080)	0.050	0.160
10	0.83	0.210	(0.080)	0.050	0.160
11	0.92	0.210	(0.080)	0.050	0.160
12	1.00	0.240	(0.080)	0.058	0.182
13	1.08	0.240	(0.080)	0.058	0.182
14	1.17	0.240	(0.080)	0.058	0.182
15	1.25	0.240	(0.080)	0.058	0.182
16	1.33	0.240	(0.080)	0.058	0.182
17	1.42	0.240	(0.080)	0.058	0.182
18	1.50	0.240	(0.080)	0.058	0.182
19	1.58	0.240	(0.080)	0.058	0.182
20	1.67	0.240	(0.080)	0.058	0.182
21	1.75	0.240	(0.080)	0.058	0.182

22	1.83	0.80	0.240	(0.080)	0.058	0.182
23	1.92	0.80	0.240	(0.080)	0.058	0.182
24	2.00	0.90	0.270	(0.080)	0.065	0.205
25	2.08	0.80	0.240	(0.080)	0.058	0.182
26	2.17	0.90	0.270	(0.080)	0.065	0.205
27	2.25	0.90	0.270	(0.080)	0.065	0.205
28	2.33	0.90	0.270	(0.080)	0.065	0.205
29	2.42	0.90	0.270	(0.080)	0.065	0.205
30	2.50	0.90	0.270	(0.080)	0.065	0.205
31	2.58	0.90	0.270	(0.080)	0.065	0.205
32	2.67	0.90	0.270	(0.080)	0.065	0.205
33	2.75	1.00	0.300	(0.080)	0.072	0.228
34	2.83	1.00	0.300	(0.080)	0.072	0.228
35	2.92	1.00	0.300	(0.080)	0.072	0.228
36	3.00	1.00	0.300	(0.080)	0.072	0.228
37	3.08	1.00	0.300	(0.080)	0.072	0.228
38	3.17	1.10	0.330	(0.080)	0.079	0.251
39	3.25	1.10	0.330	(0.080)	0.079	0.251
40	3.33	1.10	0.330	(0.080)	0.079	0.251
41	3.42	1.20	0.360	0.080	(0.086)	0.280
42	3.50	1.30	0.390	0.080	(0.094)	0.310
43	3.58	1.40	0.420	0.080	(0.101)	0.340
44	3.67	1.40	0.420	0.080	(0.101)	0.340
45	3.75	1.50	0.450	0.080	(0.108)	0.370
46	3.83	1.50	0.450	0.080	(0.108)	0.370
47	3.92	1.60	0.480	0.080	(0.115)	0.400
48	4.00	1.60	0.480	0.080	(0.115)	0.400
49	4.08	1.70	0.510	0.080	(0.122)	0.430
50	4.17	1.80	0.540	0.080	(0.130)	0.460
51	4.25	1.90	0.570	0.080	(0.137)	0.490
52	4.33	2.00	0.600	0.080	(0.144)	0.520
53	4.42	2.10	0.630	0.080	(0.151)	0.550
54	4.50	2.10	0.630	0.080	(0.151)	0.550
55	4.58	2.20	0.660	0.080	(0.158)	0.580
56	4.67	2.30	0.690	0.080	(0.166)	0.610
57	4.75	2.40	0.720	0.080	(0.173)	0.640
58	4.83	2.40	0.720	0.080	(0.173)	0.640
59	4.92	2.50	0.750	0.080	(0.180)	0.670
60	5.00	2.60	0.780	0.080	(0.187)	0.700
61	5.08	3.10	0.930	0.080	(0.223)	0.850
62	5.17	3.60	1.080	0.080	(0.259)	1.000
63	5.25	3.90	1.170	0.080	(0.281)	1.090
64	5.33	4.20	1.260	0.080	(0.302)	1.180
65	5.42	4.70	1.410	0.080	(0.338)	1.330
66	5.50	5.60	1.680	0.080	(0.403)	1.600
67	5.58	1.90	0.570	0.080	(0.137)	0.490
68	5.67	0.90	0.270	(0.080)	0.065	0.205
69	5.75	0.60	0.180	(0.080)	0.043	0.137
70	5.83	0.50	0.150	(0.080)	0.036	0.114
71	5.92	0.30	0.090	(0.080)	0.022	0.068
72	6.00	0.20	0.060	(0.080)	0.014	0.046

(Loss Rate Not Used)

Sum = 100.0 Sum = 25.3

Flood volume = Effective rainfall 2.11(In)
times area 2.9(Ac.)/[(In)/(Ft.)] = 0.5(Ac.Ft)
Total soil loss = 0.39(In)
Total soil loss = 0.094(Ac.Ft)
Total rainfall = 2.50(In)
Flood volume = 22027.1 Cubic Feet
Total soil loss = 4108.7 Cubic Feet

Peak flow rate of this hydrograph = 4.291(CFS)

+++++

6 - H O U R S T O R M
 R u n o f f H y d r o g r a p h

 Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume	Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0013		0.19	Q				
0+10	0.0037		0.35	VQ				
0+15	0.0064		0.39	VQ				
0+20	0.0092		0.40	VQ				
0+25	0.0119		0.40	VQ				
0+30	0.0149		0.44	Q				
0+35	0.0181		0.46	Q				
0+40	0.0213		0.46	Q				
0+45	0.0245		0.46	Q				
0+50	0.0277		0.46	QV				
0+55	0.0308		0.46	QV				
1+ 0	0.0343		0.50	Q				
1+ 5	0.0379		0.53	Q				
1+10	0.0416		0.53	QV				
1+15	0.0452		0.53	QV				
1+20	0.0489		0.53	QV				
1+25	0.0525		0.53	Q V				
1+30	0.0562		0.53	Q V				
1+35	0.0598		0.53	Q V				
1+40	0.0635		0.53	Q V				
1+45	0.0671		0.53	Q V				
1+50	0.0708		0.53	Q V				
1+55	0.0744		0.53	Q V				
2+ 0	0.0783		0.57	Q V				
2+ 5	0.0821		0.55	Q V				
2+10	0.0861		0.57	Q V				
2+15	0.0901		0.59	Q V				
2+20	0.0942		0.60	Q V				
2+25	0.0984		0.60	Q V				
2+30	0.1025		0.60	Q V				
2+35	0.1066		0.60	Q V				
2+40	0.1107		0.60	Q V				
2+45	0.1150		0.63	Q V				
2+50	0.1196		0.66	Q V				
2+55	0.1241		0.66	Q V				
3+ 0	0.1287		0.66	Q V				
3+ 5	0.1332		0.66	Q V				
3+10	0.1381		0.70	Q V				
3+15	0.1431		0.72	Q V				
3+20	0.1481		0.73	Q V				
3+25	0.1534		0.78	Q V				
3+30	0.1593		0.86	Q V				
3+35	0.1659		0.95	Q V				
3+40	0.1726		0.98	Q V				
3+45	0.1798		1.04	Q V				
3+50	0.1871		1.07	Q V				
3+55	0.1949		1.12	Q V				
4+ 0	0.2028		1.16	Q V				
4+ 5	0.2112		1.21	Q V				
4+10	0.2201		1.29	Q V				
4+15	0.2296		1.38	Q V				
4+20	0.2397		1.47	Q V				
4+25	0.2504		1.56	Q V				
4+30	0.2614		1.59	Q V				

4+35	0.2728	1.65		Q		V		
4+40	0.2847	1.73		Q		V		
4+45	0.2972	1.82		Q		V		
4+50	0.3099	1.85		Q		V		
4+55	0.3231	1.91		Q		V		
5+ 0	0.3368	1.99		Q		V		
5+ 5	0.3525	2.28			Q			
5+10	0.3711	2.70			Q			
5+15	0.3919	3.03				Q		
5+20	0.4147	3.30			Q			
5+25	0.4399	3.66			Q			
5+30	0.4695	4.29				Q		
5+35	0.4883	2.74			Q			
5+40	0.4961	1.13		Q				V
5+45	0.4997	0.53		Q				V
5+50	0.5023	0.37		Q				V
5+55	0.5041	0.26		Q				V
6+ 0	0.5052	0.17	Q					V
6+ 5	0.5056	0.06	Q					V
6+10	0.5057	0.01	Q					V

**Post-developed conditions
100 year 24 hour**

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012, Version 8.2
Study date 04/09/21 File: 863post24100.out

+++++

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

Program License Serial Number 6311

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

English Units used in output format

Independent Plaza, MoVal (APN 488-310-012)
Post-developed conditions
100 year
(Job 863)

Drainage Area = 2.88(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.88(Ac.) = 0.004 Sq. Mi.
Length along longest watercourse = 750.00(Ft.)
Length along longest watercourse measured to centroid = 410.00(Ft.)
Length along longest watercourse = 0.142 Mi.
Length along longest watercourse measured to centroid = 0.078 Mi.
Difference in elevation = 15.00(Ft.)
Slope along watercourse = 105.6000 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.027 Hr.
Lag time = 1.61 Min.
25% of lag time = 0.40 Min.
40% of lag time = 0.64 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	1.90	5.47

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
2.88	4.50	12.96

STORM EVENT (YEAR) = 100.00

Area Averaged 2-Year Rainfall = 1.900(In)
 Area Averaged 100-Year Rainfall = 4.500(In)

Point rain (area averaged) = 4.500(In)
 Areal adjustment factor = 100.00 %
 Adjusted average point rain = 4.500(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 2.880 56.00 0.820
 Total Area Entered = 2.88(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-3	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
56.0	74.8	0.305	0.820	0.080	1.000	0.080
						Sum (F) = 0.080

Area averaged mean soil loss (F) (In/Hr) = 0.080
 Minimum soil loss rate ((In/Hr)) = 0.040
 (for 24 hour storm duration)
 Soil low loss rate (decimal) = 0.240

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	311.052	1.677
2	0.167	622.104	1.060
3	0.250	933.156	0.165
		Sum = 100.000	Sum= 2.902

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	0.036	(0.142)	0.009	0.027
2	0.17	0.036	(0.141)	0.009	0.027
3	0.25	0.036	(0.141)	0.009	0.027
4	0.33	0.054	(0.140)	0.013	0.041
5	0.42	0.054	(0.140)	0.013	0.041
6	0.50	0.054	(0.139)	0.013	0.041
7	0.58	0.054	(0.139)	0.013	0.041
8	0.67	0.054	(0.138)	0.013	0.041
9	0.75	0.054	(0.137)	0.013	0.041
10	0.83	0.072	(0.137)	0.017	0.055
11	0.92	0.072	(0.136)	0.017	0.055
12	1.00	0.072	(0.136)	0.017	0.055
13	1.08	0.054	(0.135)	0.013	0.041
14	1.17	0.054	(0.135)	0.013	0.041
15	1.25	0.054	(0.134)	0.013	0.041
16	1.33	0.054	(0.134)	0.013	0.041
17	1.42	0.054	(0.133)	0.013	0.041
18	1.50	0.054	(0.133)	0.013	0.041
19	1.58	0.054	(0.132)	0.013	0.041
20	1.67	0.054	(0.132)	0.013	0.041

21	1.75	0.10	0.054	(0.131)	0.013	0.041
22	1.83	0.13	0.072	(0.131)	0.017	0.055
23	1.92	0.13	0.072	(0.130)	0.017	0.055
24	2.00	0.13	0.072	(0.129)	0.017	0.055
25	2.08	0.13	0.072	(0.129)	0.017	0.055
26	2.17	0.13	0.072	(0.128)	0.017	0.055
27	2.25	0.13	0.072	(0.128)	0.017	0.055
28	2.33	0.13	0.072	(0.127)	0.017	0.055
29	2.42	0.13	0.072	(0.127)	0.017	0.055
30	2.50	0.13	0.072	(0.126)	0.017	0.055
31	2.58	0.17	0.090	(0.126)	0.022	0.068
32	2.67	0.17	0.090	(0.125)	0.022	0.068
33	2.75	0.17	0.090	(0.125)	0.022	0.068
34	2.83	0.17	0.090	(0.124)	0.022	0.068
35	2.92	0.17	0.090	(0.124)	0.022	0.068
36	3.00	0.17	0.090	(0.123)	0.022	0.068
37	3.08	0.17	0.090	(0.123)	0.022	0.068
38	3.17	0.17	0.090	(0.122)	0.022	0.068
39	3.25	0.17	0.090	(0.122)	0.022	0.068
40	3.33	0.17	0.090	(0.121)	0.022	0.068
41	3.42	0.17	0.090	(0.121)	0.022	0.068
42	3.50	0.17	0.090	(0.120)	0.022	0.068
43	3.58	0.17	0.090	(0.120)	0.022	0.068
44	3.67	0.17	0.090	(0.119)	0.022	0.068
45	3.75	0.17	0.090	(0.119)	0.022	0.068
46	3.83	0.20	0.108	(0.118)	0.026	0.082
47	3.92	0.20	0.108	(0.118)	0.026	0.082
48	4.00	0.20	0.108	(0.117)	0.026	0.082
49	4.08	0.20	0.108	(0.117)	0.026	0.082
50	4.17	0.20	0.108	(0.116)	0.026	0.082
51	4.25	0.20	0.108	(0.116)	0.026	0.082
52	4.33	0.23	0.126	(0.115)	0.030	0.096
53	4.42	0.23	0.126	(0.115)	0.030	0.096
54	4.50	0.23	0.126	(0.114)	0.030	0.096
55	4.58	0.23	0.126	(0.114)	0.030	0.096
56	4.67	0.23	0.126	(0.113)	0.030	0.096
57	4.75	0.23	0.126	(0.113)	0.030	0.096
58	4.83	0.27	0.144	(0.112)	0.035	0.109
59	4.92	0.27	0.144	(0.112)	0.035	0.109
60	5.00	0.27	0.144	(0.111)	0.035	0.109
61	5.08	0.20	0.108	(0.111)	0.026	0.082
62	5.17	0.20	0.108	(0.110)	0.026	0.082
63	5.25	0.20	0.108	(0.110)	0.026	0.082
64	5.33	0.23	0.126	(0.109)	0.030	0.096
65	5.42	0.23	0.126	(0.109)	0.030	0.096
66	5.50	0.23	0.126	(0.108)	0.030	0.096
67	5.58	0.27	0.144	(0.108)	0.035	0.109
68	5.67	0.27	0.144	(0.107)	0.035	0.109
69	5.75	0.27	0.144	(0.107)	0.035	0.109
70	5.83	0.27	0.144	(0.107)	0.035	0.109
71	5.92	0.27	0.144	(0.106)	0.035	0.109
72	6.00	0.27	0.144	(0.106)	0.035	0.109
73	6.08	0.30	0.162	(0.105)	0.039	0.123
74	6.17	0.30	0.162	(0.105)	0.039	0.123
75	6.25	0.30	0.162	(0.104)	0.039	0.123
76	6.33	0.30	0.162	(0.104)	0.039	0.123
77	6.42	0.30	0.162	(0.103)	0.039	0.123
78	6.50	0.30	0.162	(0.103)	0.039	0.123
79	6.58	0.33	0.180	(0.102)	0.043	0.137
80	6.67	0.33	0.180	(0.102)	0.043	0.137
81	6.75	0.33	0.180	(0.101)	0.043	0.137
82	6.83	0.33	0.180	(0.101)	0.043	0.137
83	6.92	0.33	0.180	(0.101)	0.043	0.137

84	7.00	0.33	0.180	(0.100)	0.043	0.137
85	7.08	0.33	0.180	(0.100)	0.043	0.137
86	7.17	0.33	0.180	(0.099)	0.043	0.137
87	7.25	0.33	0.180	(0.099)	0.043	0.137
88	7.33	0.37	0.198	(0.098)	0.048	0.150
89	7.42	0.37	0.198	(0.098)	0.048	0.150
90	7.50	0.37	0.198	(0.097)	0.048	0.150
91	7.58	0.40	0.216	(0.097)	0.052	0.164
92	7.67	0.40	0.216	(0.096)	0.052	0.164
93	7.75	0.40	0.216	(0.096)	0.052	0.164
94	7.83	0.43	0.234	(0.096)	0.056	0.178
95	7.92	0.43	0.234	(0.095)	0.056	0.178
96	8.00	0.43	0.234	(0.095)	0.056	0.178
97	8.08	0.50	0.270	(0.094)	0.065	0.205
98	8.17	0.50	0.270	(0.094)	0.065	0.205
99	8.25	0.50	0.270	(0.093)	0.065	0.205
100	8.33	0.50	0.270	(0.093)	0.065	0.205
101	8.42	0.50	0.270	(0.092)	0.065	0.205
102	8.50	0.50	0.270	(0.092)	0.065	0.205
103	8.58	0.53	0.288	(0.092)	0.069	0.219
104	8.67	0.53	0.288	(0.091)	0.069	0.219
105	8.75	0.53	0.288	(0.091)	0.069	0.219
106	8.83	0.57	0.306	(0.090)	0.073	0.233
107	8.92	0.57	0.306	(0.090)	0.073	0.233
108	9.00	0.57	0.306	(0.089)	0.073	0.233
109	9.08	0.63	0.342	(0.089)	0.082	0.260
110	9.17	0.63	0.342	(0.089)	0.082	0.260
111	9.25	0.63	0.342	(0.088)	0.082	0.260
112	9.33	0.67	0.360	(0.088)	0.086	0.274
113	9.42	0.67	0.360	(0.087)	0.086	0.274
114	9.50	0.67	0.360	(0.087)	0.086	0.274
115	9.58	0.70	0.378	0.087 (0.091)		0.291
116	9.67	0.70	0.378	0.086 (0.091)		0.292
117	9.75	0.70	0.378	0.086 (0.091)		0.292
118	9.83	0.73	0.396	0.085 (0.095)		0.311
119	9.92	0.73	0.396	0.085 (0.095)		0.311
120	10.00	0.73	0.396	0.084 (0.095)		0.312
121	10.08	0.50	0.270	(0.084)	0.065	0.205
122	10.17	0.50	0.270	(0.084)	0.065	0.205
123	10.25	0.50	0.270	(0.083)	0.065	0.205
124	10.33	0.50	0.270	(0.083)	0.065	0.205
125	10.42	0.50	0.270	(0.082)	0.065	0.205
126	10.50	0.50	0.270	(0.082)	0.065	0.205
127	10.58	0.67	0.360	0.082 (0.086)		0.278
128	10.67	0.67	0.360	0.081 (0.086)		0.279
129	10.75	0.67	0.360	0.081 (0.086)		0.279
130	10.83	0.67	0.360	0.080 (0.086)		0.280
131	10.92	0.67	0.360	0.080 (0.086)		0.280
132	11.00	0.67	0.360	0.080 (0.086)		0.280
133	11.08	0.63	0.342	0.079 (0.082)		0.263
134	11.17	0.63	0.342	0.079 (0.082)		0.263
135	11.25	0.63	0.342	0.078 (0.082)		0.263
136	11.33	0.63	0.342	0.078 (0.082)		0.264
137	11.42	0.63	0.342	0.078 (0.082)		0.264
138	11.50	0.63	0.342	0.077 (0.082)		0.265
139	11.58	0.57	0.306	(0.077)	0.073	0.233
140	11.67	0.57	0.306	(0.077)	0.073	0.233
141	11.75	0.57	0.306	(0.076)	0.073	0.233
142	11.83	0.60	0.324	0.076 (0.078)		0.248
143	11.92	0.60	0.324	0.075 (0.078)		0.249
144	12.00	0.60	0.324	0.075 (0.078)		0.249
145	12.08	0.83	0.450	0.075 (0.108)		0.375
146	12.17	0.83	0.450	0.074 (0.108)		0.376

147	12.25	0.83	0.450	0.074	(0.108)	0.376
148	12.33	0.87	0.468	0.074	(0.112)	0.394
149	12.42	0.87	0.468	0.073	(0.112)	0.395
150	12.50	0.87	0.468	0.073	(0.112)	0.395
151	12.58	0.93	0.504	0.072	(0.121)	0.432
152	12.67	0.93	0.504	0.072	(0.121)	0.432
153	12.75	0.93	0.504	0.072	(0.121)	0.432
154	12.83	0.97	0.522	0.071	(0.125)	0.451
155	12.92	0.97	0.522	0.071	(0.125)	0.451
156	13.00	0.97	0.522	0.071	(0.125)	0.451
157	13.08	1.13	0.612	0.070	(0.147)	0.542
158	13.17	1.13	0.612	0.070	(0.147)	0.542
159	13.25	1.13	0.612	0.070	(0.147)	0.542
160	13.33	1.13	0.612	0.069	(0.147)	0.543
161	13.42	1.13	0.612	0.069	(0.147)	0.543
162	13.50	1.13	0.612	0.069	(0.147)	0.543
163	13.58	0.77	0.414	0.068	(0.099)	0.346
164	13.67	0.77	0.414	0.068	(0.099)	0.346
165	13.75	0.77	0.414	0.067	(0.099)	0.347
166	13.83	0.77	0.414	0.067	(0.099)	0.347
167	13.92	0.77	0.414	0.067	(0.099)	0.347
168	14.00	0.77	0.414	0.066	(0.099)	0.348
169	14.08	0.90	0.486	0.066	(0.117)	0.420
170	14.17	0.90	0.486	0.066	(0.117)	0.420
171	14.25	0.90	0.486	0.065	(0.117)	0.421
172	14.33	0.87	0.468	0.065	(0.112)	0.403
173	14.42	0.87	0.468	0.065	(0.112)	0.403
174	14.50	0.87	0.468	0.064	(0.112)	0.404
175	14.58	0.87	0.468	0.064	(0.112)	0.404
176	14.67	0.87	0.468	0.064	(0.112)	0.404
177	14.75	0.87	0.468	0.063	(0.112)	0.405
178	14.83	0.83	0.450	0.063	(0.108)	0.387
179	14.92	0.83	0.450	0.063	(0.108)	0.387
180	15.00	0.83	0.450	0.062	(0.108)	0.388
181	15.08	0.80	0.432	0.062	(0.104)	0.370
182	15.17	0.80	0.432	0.062	(0.104)	0.370
183	15.25	0.80	0.432	0.062	(0.104)	0.370
184	15.33	0.77	0.414	0.061	(0.099)	0.353
185	15.42	0.77	0.414	0.061	(0.099)	0.353
186	15.50	0.77	0.414	0.061	(0.099)	0.353
187	15.58	0.63	0.342	0.060	(0.082)	0.282
188	15.67	0.63	0.342	0.060	(0.082)	0.282
189	15.75	0.63	0.342	0.060	(0.082)	0.282
190	15.83	0.63	0.342	0.059	(0.082)	0.283
191	15.92	0.63	0.342	0.059	(0.082)	0.283
192	16.00	0.63	0.342	0.059	(0.082)	0.283
193	16.08	0.13	0.072	(0.058)	0.017	0.055
194	16.17	0.13	0.072	(0.058)	0.017	0.055
195	16.25	0.13	0.072	(0.058)	0.017	0.055
196	16.33	0.13	0.072	(0.058)	0.017	0.055
197	16.42	0.13	0.072	(0.057)	0.017	0.055
198	16.50	0.13	0.072	(0.057)	0.017	0.055
199	16.58	0.10	0.054	(0.057)	0.013	0.041
200	16.67	0.10	0.054	(0.056)	0.013	0.041
201	16.75	0.10	0.054	(0.056)	0.013	0.041
202	16.83	0.10	0.054	(0.056)	0.013	0.041
203	16.92	0.10	0.054	(0.056)	0.013	0.041
204	17.00	0.10	0.054	(0.055)	0.013	0.041
205	17.08	0.17	0.090	(0.055)	0.022	0.068
206	17.17	0.17	0.090	(0.055)	0.022	0.068
207	17.25	0.17	0.090	(0.054)	0.022	0.068
208	17.33	0.17	0.090	(0.054)	0.022	0.068
209	17.42	0.17	0.090	(0.054)	0.022	0.068

210	17.50	0.17	0.090	(0.054)	0.022	0.068
211	17.58	0.17	0.090	(0.053)	0.022	0.068
212	17.67	0.17	0.090	(0.053)	0.022	0.068
213	17.75	0.17	0.090	(0.053)	0.022	0.068
214	17.83	0.13	0.072	(0.053)	0.017	0.055
215	17.92	0.13	0.072	(0.052)	0.017	0.055
216	18.00	0.13	0.072	(0.052)	0.017	0.055
217	18.08	0.13	0.072	(0.052)	0.017	0.055
218	18.17	0.13	0.072	(0.052)	0.017	0.055
219	18.25	0.13	0.072	(0.051)	0.017	0.055
220	18.33	0.13	0.072	(0.051)	0.017	0.055
221	18.42	0.13	0.072	(0.051)	0.017	0.055
222	18.50	0.13	0.072	(0.051)	0.017	0.055
223	18.58	0.10	0.054	(0.050)	0.013	0.041
224	18.67	0.10	0.054	(0.050)	0.013	0.041
225	18.75	0.10	0.054	(0.050)	0.013	0.041
226	18.83	0.07	0.036	(0.050)	0.009	0.027
227	18.92	0.07	0.036	(0.049)	0.009	0.027
228	19.00	0.07	0.036	(0.049)	0.009	0.027
229	19.08	0.10	0.054	(0.049)	0.013	0.041
230	19.17	0.10	0.054	(0.049)	0.013	0.041
231	19.25	0.10	0.054	(0.048)	0.013	0.041
232	19.33	0.13	0.072	(0.048)	0.017	0.055
233	19.42	0.13	0.072	(0.048)	0.017	0.055
234	19.50	0.13	0.072	(0.048)	0.017	0.055
235	19.58	0.10	0.054	(0.048)	0.013	0.041
236	19.67	0.10	0.054	(0.047)	0.013	0.041
237	19.75	0.10	0.054	(0.047)	0.013	0.041
238	19.83	0.07	0.036	(0.047)	0.009	0.027
239	19.92	0.07	0.036	(0.047)	0.009	0.027
240	20.00	0.07	0.036	(0.046)	0.009	0.027
241	20.08	0.10	0.054	(0.046)	0.013	0.041
242	20.17	0.10	0.054	(0.046)	0.013	0.041
243	20.25	0.10	0.054	(0.046)	0.013	0.041
244	20.33	0.10	0.054	(0.046)	0.013	0.041
245	20.42	0.10	0.054	(0.045)	0.013	0.041
246	20.50	0.10	0.054	(0.045)	0.013	0.041
247	20.58	0.10	0.054	(0.045)	0.013	0.041
248	20.67	0.10	0.054	(0.045)	0.013	0.041
249	20.75	0.10	0.054	(0.045)	0.013	0.041
250	20.83	0.07	0.036	(0.045)	0.009	0.027
251	20.92	0.07	0.036	(0.044)	0.009	0.027
252	21.00	0.07	0.036	(0.044)	0.009	0.027
253	21.08	0.10	0.054	(0.044)	0.013	0.041
254	21.17	0.10	0.054	(0.044)	0.013	0.041
255	21.25	0.10	0.054	(0.044)	0.013	0.041
256	21.33	0.07	0.036	(0.043)	0.009	0.027
257	21.42	0.07	0.036	(0.043)	0.009	0.027
258	21.50	0.07	0.036	(0.043)	0.009	0.027
259	21.58	0.10	0.054	(0.043)	0.013	0.041
260	21.67	0.10	0.054	(0.043)	0.013	0.041
261	21.75	0.10	0.054	(0.043)	0.013	0.041
262	21.83	0.07	0.036	(0.043)	0.009	0.027
263	21.92	0.07	0.036	(0.042)	0.009	0.027
264	22.00	0.07	0.036	(0.042)	0.009	0.027
265	22.08	0.10	0.054	(0.042)	0.013	0.041
266	22.17	0.10	0.054	(0.042)	0.013	0.041
267	22.25	0.10	0.054	(0.042)	0.013	0.041
268	22.33	0.07	0.036	(0.042)	0.009	0.027
269	22.42	0.07	0.036	(0.042)	0.009	0.027
270	22.50	0.07	0.036	(0.041)	0.009	0.027
271	22.58	0.07	0.036	(0.041)	0.009	0.027
272	22.67	0.07	0.036	(0.041)	0.009	0.027

273	22.75	0.07	0.036	(0.041)	0.009	0.027
274	22.83	0.07	0.036	(0.041)	0.009	0.027
275	22.92	0.07	0.036	(0.041)	0.009	0.027
276	23.00	0.07	0.036	(0.041)	0.009	0.027
277	23.08	0.07	0.036	(0.041)	0.009	0.027
278	23.17	0.07	0.036	(0.041)	0.009	0.027
279	23.25	0.07	0.036	(0.041)	0.009	0.027
280	23.33	0.07	0.036	(0.040)	0.009	0.027
281	23.42	0.07	0.036	(0.040)	0.009	0.027
282	23.50	0.07	0.036	(0.040)	0.009	0.027
283	23.58	0.07	0.036	(0.040)	0.009	0.027
284	23.67	0.07	0.036	(0.040)	0.009	0.027
285	23.75	0.07	0.036	(0.040)	0.009	0.027
286	23.83	0.07	0.036	(0.040)	0.009	0.027
287	23.92	0.07	0.036	(0.040)	0.009	0.027
288	24.00	0.07	0.036	(0.040)	0.009	0.027

(Loss Rate Not Used)

Sum = 100.0 Sum = 43.3

Flood volume = Effective rainfall 3.61(In)
times area 2.9(Ac.)/[(In)/(Ft.)] = 0.9(Ac.Ft)
Total soil loss = 0.89(In)
Total soil loss = 0.214(Ac.Ft)
Total rainfall = 4.50(In)
Flood volume = 37710.4 Cubic Feet
Total soil loss = 9334.1 Cubic Feet

Peak flow rate of this hydrograph = 1.578(CFS)

+++++

24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0003	0.05	Q				
0+10	0.0008	0.07	Q				
0+15	0.0014	0.08	Q				
0+20	0.0021	0.10	Q				
0+25	0.0029	0.12	Q				
0+30	0.0037	0.12	Q				
0+35	0.0045	0.12	Q				
0+40	0.0054	0.12	Q				
0+45	0.0062	0.12	Q				
0+50	0.0072	0.14	Q				
0+55	0.0082	0.16	Q				
1+ 0	0.0093	0.16	Q				
1+ 5	0.0103	0.14	Q				
1+10	0.0111	0.12	Q				
1+15	0.0119	0.12	Q				
1+20	0.0127	0.12	Q				
1+25	0.0136	0.12	Q				
1+30	0.0144	0.12	Q				
1+35	0.0152	0.12	Q				
1+40	0.0160	0.12	Q				
1+45	0.0168	0.12	Q				
1+50	0.0178	0.14	Q				
1+55	0.0189	0.16	Q				
2+ 0	0.0200	0.16	Q				
2+ 5	0.0211	0.16	Q				
2+10	0.0222	0.16	QV				

2+15	0.0233	0.16	QV
2+20	0.0244	0.16	QV
2+25	0.0255	0.16	QV
2+30	0.0266	0.16	QV
2+35	0.0278	0.18	QV
2+40	0.0292	0.20	QV
2+45	0.0305	0.20	QV
2+50	0.0319	0.20	QV
2+55	0.0333	0.20	QV
3+ 0	0.0346	0.20	QV
3+ 5	0.0360	0.20	QV
3+10	0.0374	0.20	QV
3+15	0.0387	0.20	QV
3+20	0.0401	0.20	QV
3+25	0.0415	0.20	QV
3+30	0.0428	0.20	QV
3+35	0.0442	0.20	Q V
3+40	0.0456	0.20	Q V
3+45	0.0470	0.20	Q V
3+50	0.0485	0.22	Q V
3+55	0.0501	0.24	Q V
4+ 0	0.0517	0.24	Q V
4+ 5	0.0534	0.24	Q V
4+10	0.0550	0.24	Q V
4+15	0.0567	0.24	Q V
4+20	0.0585	0.26	QV
4+25	0.0604	0.28	QV
4+30	0.0623	0.28	QV
4+35	0.0642	0.28	QV
4+40	0.0661	0.28	Q V
4+45	0.0680	0.28	Q V
4+50	0.0701	0.30	Q V
4+55	0.0723	0.32	Q V
5+ 0	0.0745	0.32	Q V
5+ 5	0.0763	0.27	Q V
5+10	0.0780	0.24	Q V
5+15	0.0797	0.24	Q V
5+20	0.0815	0.26	Q V
5+25	0.0834	0.28	Q V
5+30	0.0853	0.28	Q V
5+35	0.0873	0.30	Q V
5+40	0.0895	0.32	Q V
5+45	0.0917	0.32	Q V
5+50	0.0939	0.32	Q V
5+55	0.0961	0.32	Q V
6+ 0	0.0983	0.32	Q V
6+ 5	0.1006	0.34	Q V
6+10	0.1031	0.36	Q V
6+15	0.1055	0.36	Q V
6+20	0.1080	0.36	Q V
6+25	0.1104	0.36	Q V
6+30	0.1129	0.36	Q V
6+35	0.1155	0.38	Q V
6+40	0.1183	0.40	Q V
6+45	0.1210	0.40	Q V
6+50	0.1237	0.40	Q V
6+55	0.1265	0.40	Q V
7+ 0	0.1292	0.40	Q V
7+ 5	0.1319	0.40	Q V
7+10	0.1347	0.40	Q V
7+15	0.1374	0.40	Q V
7+20	0.1403	0.42	Q V
7+25	0.1433	0.43	Q V

7+30	0.1463	0.44	Q	V					
7+35	0.1495	0.46	Q	V					
7+40	0.1527	0.47	Q	V					
7+45	0.1560	0.48	Q	V					
7+50	0.1595	0.50	Q	V					
7+55	0.1630	0.51	Q	V					
8+ 0	0.1666	0.52	Q	V					
8+ 5	0.1704	0.56	Q	V					
8+10	0.1745	0.59	Q	V					
8+15	0.1786	0.60	Q	V					
8+20	0.1827	0.60	Q	V					
8+25	0.1868	0.60	Q	V					
8+30	0.1909	0.60	Q	V					
8+35	0.1952	0.62	Q	V					
8+40	0.1995	0.63	Q	V					
8+45	0.2039	0.64	Q	V					
8+50	0.2085	0.66	Q	V					
8+55	0.2131	0.67	Q	V					
9+ 0	0.2177	0.68	Q	V					
9+ 5	0.2227	0.72	Q	V					
9+10	0.2279	0.75	Q	V					
9+15	0.2331	0.75	Q	V					
9+20	0.2384	0.78	Q	V					
9+25	0.2439	0.79	Q	V					
9+30	0.2494	0.79	Q	V					
9+35	0.2550	0.82	Q	V					
9+40	0.2609	0.84	Q	V					
9+45	0.2667	0.85	Q	V					
9+50	0.2728	0.88	Q	V					
9+55	0.2790	0.90	Q	V					
10+ 0	0.2852	0.90	Q	V					
10+ 5	0.2902	0.73	Q	V					
10+10	0.2944	0.61	Q	V					
10+15	0.2985	0.60	Q	V					
10+20	0.3026	0.60	Q	V					
10+25	0.3067	0.60	Q	V					
10+30	0.3108	0.60	Q	V					
10+35	0.3158	0.72	Q	V					
10+40	0.3213	0.80	Q	V					
10+45	0.3268	0.81	Q	V					
10+50	0.3324	0.81	Q	V					
10+55	0.3380	0.81	Q	V					
11+ 0	0.3436	0.81	Q	V					
11+ 5	0.3490	0.78	Q	V					
11+10	0.3543	0.77	Q	V					
11+15	0.3596	0.76	Q	V					
11+20	0.3648	0.77	Q	V					
11+25	0.3701	0.77	Q	V					
11+30	0.3754	0.77	Q	V					
11+35	0.3803	0.71	Q	V					
11+40	0.3850	0.68	Q	V					
11+45	0.3897	0.68	Q	V					
11+50	0.3945	0.70	Q	V					
11+55	0.3995	0.72	Q	V					
12+ 0	0.4044	0.72	Q	V					
12+ 5	0.4109	0.93	Q	V					
12+10	0.4182	1.07	Q	V					
12+15	0.4258	1.09	Q	V					
12+20	0.4335	1.12	Q	V					
12+25	0.4414	1.14	Q	V					
12+30	0.4493	1.15	Q	V					
12+35	0.4576	1.21	Q	V					
12+40	0.4662	1.25	Q	V					

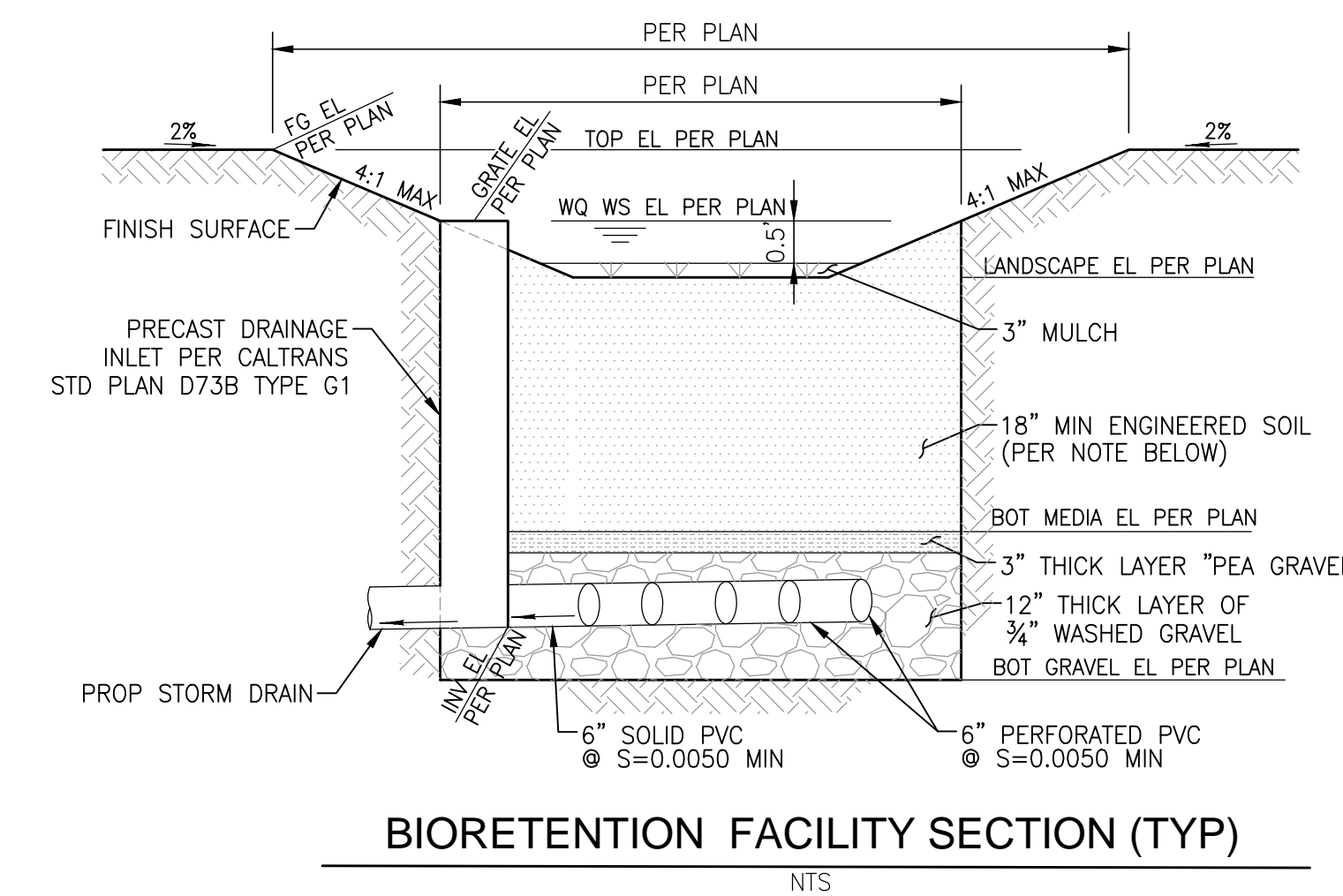
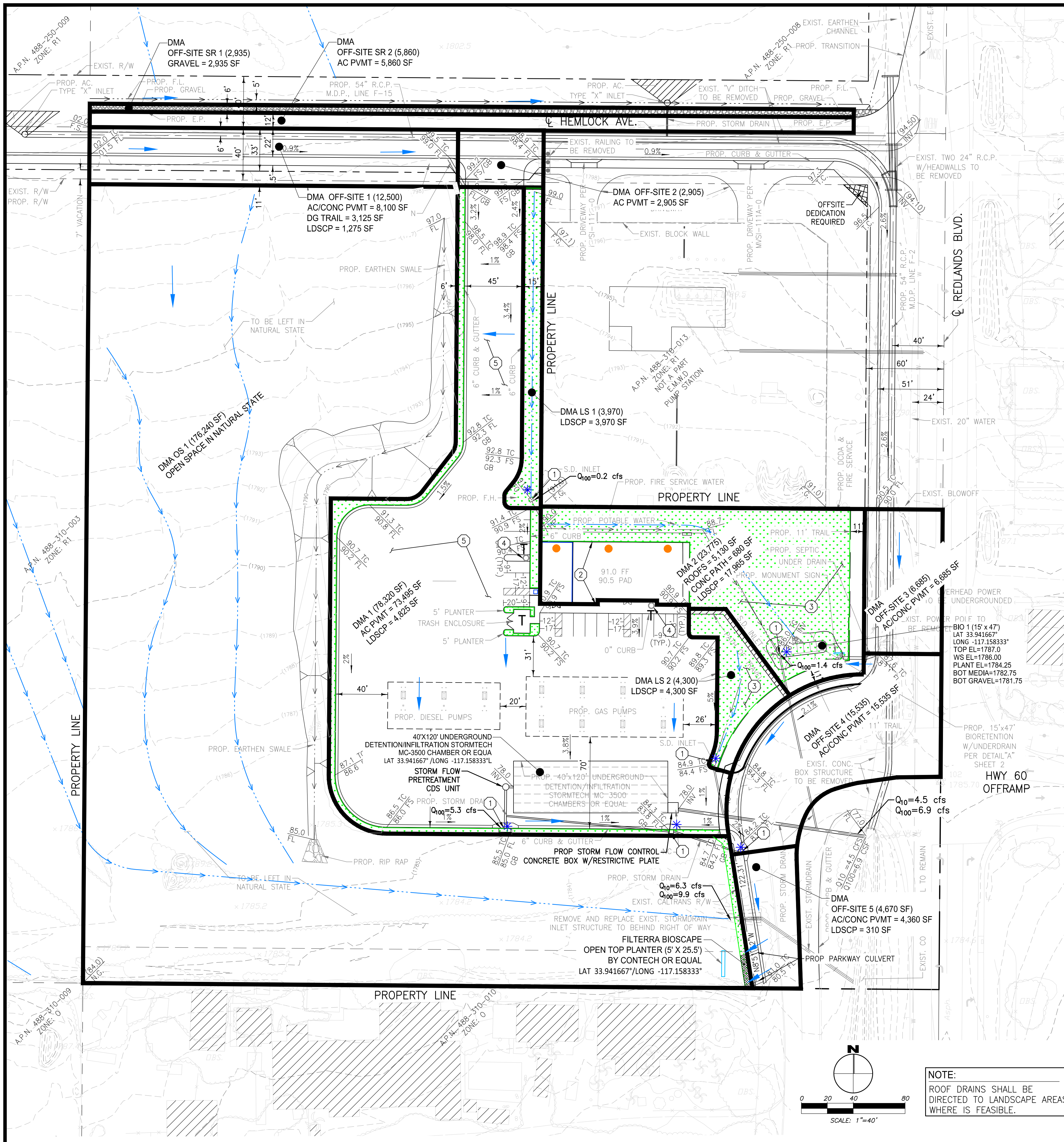
12+45	0.4748	1.25	Q	V
12+50	0.4837	1.29	Q	V
12+55	0.4927	1.31	Q	V
13+ 0	0.5017	1.31	Q	V
13+ 5	0.5118	1.46	Q	V
13+10	0.5225	1.56	Q	V
13+15	0.5333	1.57	Q	V
13+20	0.5442	1.58	Q	V
13+25	0.5551	1.58	Q	V
13+30	0.5659	1.58	Q	V
13+35	0.5745	1.25	Q	V
13+40	0.5817	1.04	Q	V
13+45	0.5886	1.01	Q	V
13+50	0.5955	1.01	Q	V
13+55	0.6025	1.01	Q	V
14+ 0	0.6094	1.01	Q	V
14+ 5	0.6172	1.13	Q	V
14+10	0.6255	1.21	Q	V
14+15	0.6339	1.22	Q	V
14+20	0.6421	1.19	Q	V
14+25	0.6502	1.17	Q	V
14+30	0.6583	1.17	Q	V
14+35	0.6663	1.17	Q	V
14+40	0.6744	1.17	Q	V
14+45	0.6825	1.17	Q	V
14+50	0.6904	1.15	Q	V
14+55	0.6982	1.13	Q	V
15+ 0	0.7059	1.12	Q	V
15+ 5	0.7135	1.10	Q	V
15+10	0.7209	1.08	Q	V
15+15	0.7283	1.08	Q	V
15+20	0.7355	1.05	Q	V
15+25	0.7426	1.03	Q	V
15+30	0.7496	1.03	Q	V
15+35	0.7559	0.91	Q	V
15+40	0.7616	0.83	Q	V
15+45	0.7672	0.82	Q	V
15+50	0.7729	0.82	Q	V
15+55	0.7785	0.82	Q	V
16+ 0	0.7842	0.82	Q	V
16+ 5	0.7872	0.44	Q	V
16+10	0.7886	0.20	Q	V
16+15	0.7897	0.16	Q	V
16+20	0.7908	0.16	Q	V
16+25	0.7919	0.16	Q	V
16+30	0.7930	0.16	Q	V
16+35	0.7939	0.14	Q	V
16+40	0.7947	0.12	Q	V
16+45	0.7956	0.12	Q	V
16+50	0.7964	0.12	Q	V
16+55	0.7972	0.12	Q	V
17+ 0	0.7980	0.12	Q	V
17+ 5	0.7992	0.17	Q	V
17+10	0.8005	0.19	Q	V
17+15	0.8019	0.20	Q	V
17+20	0.8032	0.20	Q	V
17+25	0.8046	0.20	Q	V
17+30	0.8060	0.20	Q	V
17+35	0.8073	0.20	Q	V
17+40	0.8087	0.20	Q	V
17+45	0.8101	0.20	Q	V
17+50	0.8113	0.18	Q	V
17+55	0.8124	0.16	Q	V

18+ 0	0.8135	0.16	Q	V
18+ 5	0.8146	0.16	Q	V
18+10	0.8157	0.16	Q	V
18+15	0.8168	0.16	Q	V
18+20	0.8179	0.16	Q	V
18+25	0.8190	0.16	Q	V
18+30	0.8200	0.16	Q	V
18+35	0.8210	0.14	Q	V
18+40	0.8218	0.12	Q	V
18+45	0.8226	0.12	Q	V
18+50	0.8233	0.10	Q	V
18+55	0.8239	0.08	Q	V
19+ 0	0.8244	0.08	Q	V
19+ 5	0.8251	0.10	Q	V
19+10	0.8259	0.12	Q	V
19+15	0.8267	0.12	Q	V
19+20	0.8277	0.14	Q	V
19+25	0.8288	0.16	Q	V
19+30	0.8299	0.16	Q	V
19+35	0.8308	0.14	Q	V
19+40	0.8317	0.12	Q	V
19+45	0.8325	0.12	Q	V
19+50	0.8332	0.10	Q	V
19+55	0.8337	0.08	Q	V
20+ 0	0.8343	0.08	Q	V
20+ 5	0.8350	0.10	Q	V
20+10	0.8358	0.12	Q	V
20+15	0.8366	0.12	Q	V
20+20	0.8374	0.12	Q	V
20+25	0.8382	0.12	Q	V
20+30	0.8391	0.12	Q	V
20+35	0.8399	0.12	Q	V
20+40	0.8407	0.12	Q	V
20+45	0.8415	0.12	Q	V
20+50	0.8422	0.10	Q	V
20+55	0.8427	0.08	Q	V
21+ 0	0.8433	0.08	Q	V
21+ 5	0.8440	0.10	Q	V
21+10	0.8448	0.12	Q	V
21+15	0.8456	0.12	Q	V
21+20	0.8463	0.10	Q	V
21+25	0.8468	0.08	Q	V
21+30	0.8474	0.08	Q	V
21+35	0.8481	0.10	Q	V
21+40	0.8489	0.12	Q	V
21+45	0.8497	0.12	Q	V
21+50	0.8504	0.10	Q	V
21+55	0.8509	0.08	Q	V
22+ 0	0.8515	0.08	Q	V
22+ 5	0.8522	0.10	Q	V
22+10	0.8530	0.12	Q	V
22+15	0.8538	0.12	Q	V
22+20	0.8545	0.10	Q	V
22+25	0.8551	0.08	Q	V
22+30	0.8556	0.08	Q	V
22+35	0.8561	0.08	Q	V
22+40	0.8567	0.08	Q	V
22+45	0.8572	0.08	Q	V
22+50	0.8578	0.08	Q	V
22+55	0.8583	0.08	Q	V
23+ 0	0.8589	0.08	Q	V
23+ 5	0.8594	0.08	Q	V
23+10	0.8600	0.08	Q	V

23+15	0.8605	0.08	Q				V
23+20	0.8611	0.08	Q				V
23+25	0.8616	0.08	Q				V
23+30	0.8622	0.08	Q				V
23+35	0.8627	0.08	Q				V
23+40	0.8633	0.08	Q				V
23+45	0.8638	0.08	Q				V
23+50	0.8644	0.08	Q				V
23+55	0.8649	0.08	Q				V
24+ 0	0.8655	0.08	Q				V
24+ 5	0.8657	0.03	Q				V
24+10	0.8657	0.00	Q				V

APPENDIX C

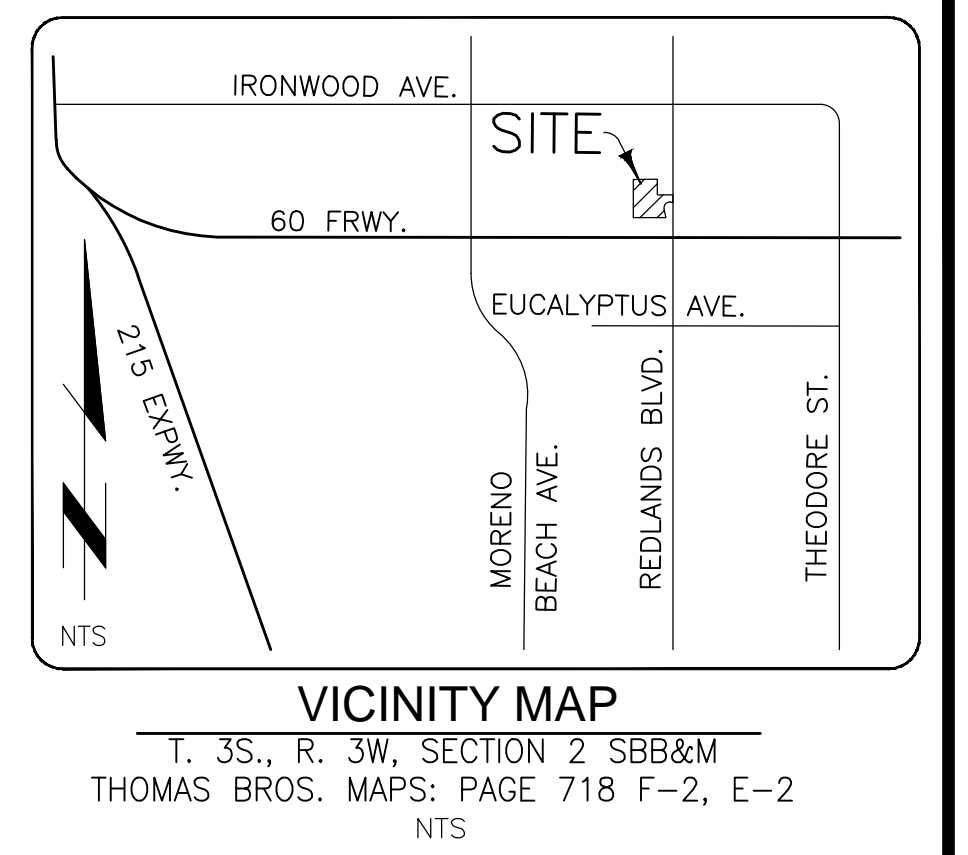
Water Quality Facility Sizing Calculations



BIORETENTION CLEAN-OUTS:
 INSTALL 6" CLEAN-OUTS EVERY 50 FT OF UNDERDRAIN LATERAL, AT THE COLLECTOR DRAIN LINE CONNECTION, AND AT ANY BENDS.
 EACH CLEAN-OUT SHALL BE EXTENDED 6" ABOVE THE MEDIA AND SHALL HAVE A LOCKABLE SCREW CAP.
 INSPECT MONTHLY, OR AS NEEDED AFTER STORM EVENTS. MAINTAIN IF NEEDED.

ENGINEERED SOIL MEDIA NOTE:
 ENGINEERED SOIL MEDIA SHALL COMPRISED OF: 15% ORGANIC COMPONENT (NITROGEN STABILIZED COMPOST) AND 85% MINERAL COMPONENT (SEE TABLE BELOW), BY VOLUME, DRUM MIXED PRIOR TO PLACEMENT.
MINERAL COMPONENT RANGE REQUIREMENTS:

PERCENTAGE RANGE	COMPONENT
70-80	SAND
15-20	SILT
5-10	CLAY

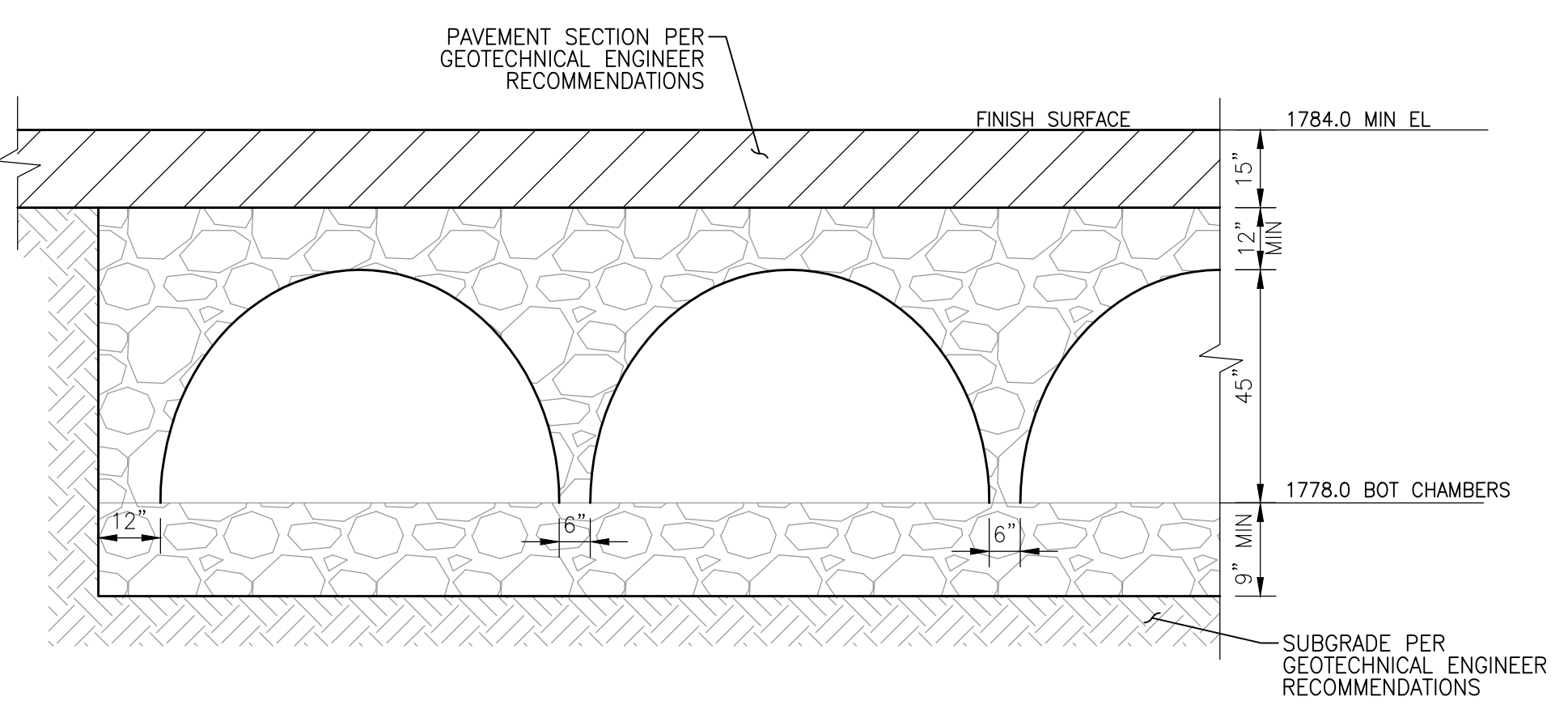


PROJECT AREAS:

TOTAL PROJECT SITE AREA (NET):	286,605 SF
IMPERVIOUS AREA PROPOSED:	79,305 SF
PERVIOUS AREA:	207,300 SF

OFF-SITE ROAD IMPROVEMENTS AREAS:

TOTAL OFF-SITE AREA:	51,090 SF
IMPERVIOUS AREA PROPOSED:	43,755 SF
PERVIOUS AREA PROPOSED:	7,335 SF

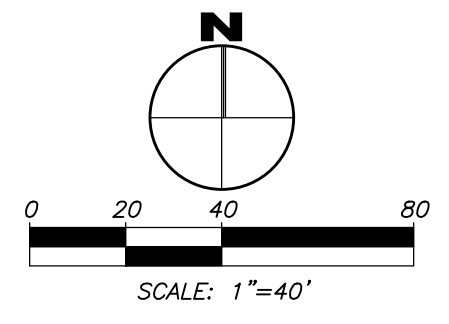


DETENTION/INFILTRATION UNDERGROUND CHAMBERS DETAIL
 STORMTECH MC-3500 CHAMBER OR EQUAL
 NTS

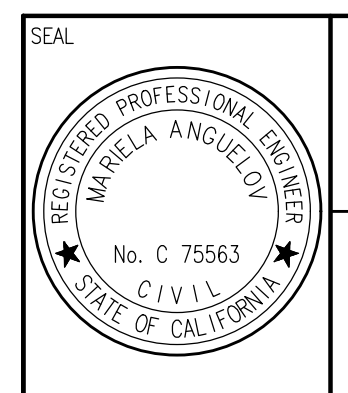
- LEGEND**
- PROPERTY LINE
 - - - RIGHT OF WAY
 - - - EASEMENT
 - - - EXISTING BLOCK WALL
 - - - DAYLIGHT LINE
 - - - EXISTING BLOCK WALL
 - - - DAYLIGHT LINE
 - - - PROPOSED CONTOUR
 - - - RETAINING WALL
 - - - GRADING LIMITS
 - - - EXISTING CONTOUR
 - - - 3 FT WIDE RIBBON GUTTER
 - - - FLOWLINE
 - - - EXISTING STORM DRAIN
 - - - PROPOSED STORM DRAIN
 - - - EXISTING SEWER LINE
 - - - EXISTING WATER LINE
 - - - EXISTING UTILITIES
 - - - EXISTING STREET LIGHT
 - - - PROPOSED STREET LIGHT

- TRASH ENCLOSURE
- EXISTING POWER POLES
- EXISTING MANHOLES
- STREET GRADE
- FENCE
- DMA OFFSITE REMOVE & REPLACE EXIST OR INSTALL NEW PAVEMENT
- CONCRETE
- LANDSCAPE AREA
- No 2 BACKING CLASS RIP-RAP DISSIPATOR PER PLAN
- ROOF DRAIN/ DOWNSPOUT
- STENCIL INLET STRUCTURE
- TRASH RECEPTACLE

- PERMANENT SOURCE CONTROL BMPs NOTES:**
- STENCIL STORM DRAIN INLET STRUCTURE PER CITY OF MORENO VALLEY STD MVFE-300B-0, NOTE 13.
 - INCORPORATE BUILDING DESIGN FEATURES THAT DISCOURAGE ENTRY OF PESTS. APPLICABLE FOR ALL BUILDINGS.
 - DESIGN LANDSCAPING TO MINIMIZE IRRIGATION AND RUNOFF, TO MINIMIZE THE USE OF FERTILIZER AND PESTICIDES. APPLICABLE FOR ALL LANDSCAPED AREAS.
 - TRASH ENCLOSURES AND TRASH RECEPTACLES PER PLAN.
 - SWEEP DRIVEWAYS AND PARKING STALLS REGULARLY.



NOTE:
 ROOF DRAINS SHALL BE DIRECTED TO LANDSCAPE AREAS WHERE IS FEASIBLE.

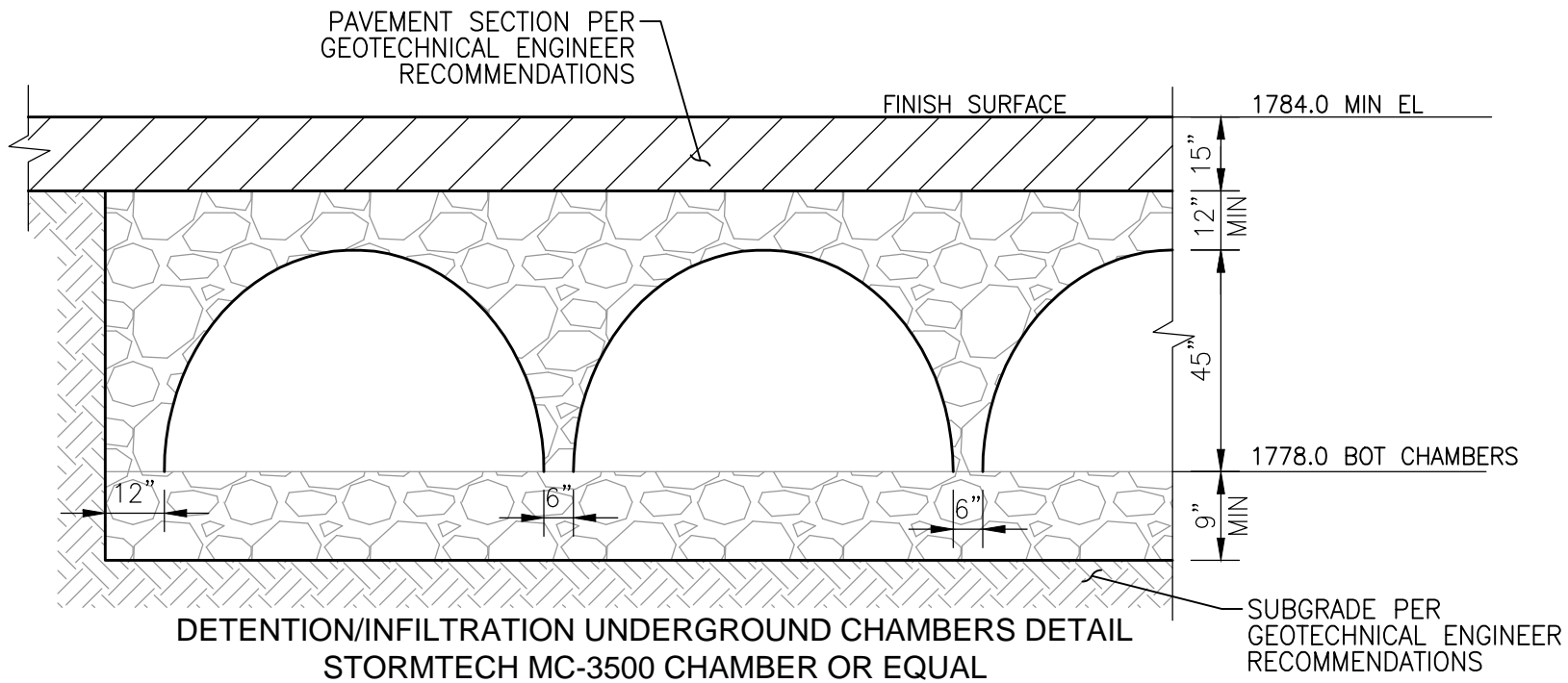


Winchester Associates, Inc.
 ENGINEERING • LAND SURVEYING
 23640 TOWER ST., SUITE 3
 MORENO VALLEY, CA. 92553 (951) 924-5425
 UNDER THE SUPERVISION OF:
 MARIELA ANGUELOV
 R.C.E. #75563 (EXP. 09/30/2022)

CITY OF MORENO VALLEY
 APN 488-310-012
 INDEPENDENT PLAZA
 REDLANDS BLVD AND HEMLOCK AVE
 P-WQMP SITE PLAN
 DATE OF PLAN PREPARATION: 04-13-2021

ACCT. NO.
 SHEET 1 of 1
 CITY I. D. NO.
 LWQ20-0024

C:\Users\mariea.anguelov\Documents\WMP-Jobs\863_Chandresh\04-FREEDMAY\DESIGN\WQMP-P\Site Plan\16-037-WQMP-Apex.dwg 4/22/21



**DETENTION/INFILTRATION UNDERGROUND CHAMBERS DETAIL
STORMTECH MC-3500 CHAMBER OR EQUAL**

NTS

PRELIMINARY UNDERGROUND STORAGE SYSTEM (MIN DIMENSIONS: 36 lf x 119 lf)

1. PROPOSED ARE 80 CHAMBERS (5 ROWS X 16 CHAMBERS = 80) and 10 END CAPS
2. PROPOSED MIN STORAGE VOLUME IS 14450 cf
 $V_{\text{chamber}} = 175 \text{ cf W/9" STONE LAYER}$
 $V_{\text{endcap}} = 45 \text{ cf W/9" STONE LAYER}$
 $80 \times 175 + 10 \times 45 = 14000 + 450 = 14450 \text{ cf}$

DURING POST DEVELOPED CONDITION THE 2 YEAR 24 HOUR STORM EVENT FLOOD VOLUME IS 14500 cf, THEREFOR EVEN IF WE DO NOT TAKE INTO CONSIDERATION ANY INFILTRATION AND FLOW DISCHARGE THE PROPOSED UNDERGROUND STORAGE IS SUFFICIENT TO MEET THE HCOC MITIGATION.

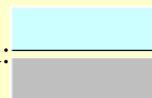
3. At 2.5 in/h INFILTRATION RATE THE DESIGNED $V_{\text{BMP}} = 5070 \text{ cf}$ WILL INFILTRATE WITHIN 14 hours.
 $5070 / (36 \times 119 \times 0.4 \times 2.5 / 12) = 5070 / 375 = 14.2 \text{ hours}$

Bioretention Facility - Design Procedure		BMP ID Bio 1	Legend:	Required Entries
				Calculated Cells
Company Name:	WAI	Date: 4/6/2021		
Designed by:	MSA	County/City Case No.: LWQ20-0024		
Design Volume				
Enter the area tributary to this feature		$A_T =$	0.7	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook		$V_{BMP} =$	755	ft ³
Type of Bioretention Facility Design				
<input checked="" type="radio"/> Side slopes required (parallel to parking spaces or adjacent to walkways) <input type="radio"/> No side slopes required (perpendicular to parking space or Planter Boxes)				
Bioretention Facility Surface Area				
Depth of Soil Filter Media Layer		$d_S =$	1.5	ft
Top Width of Bioretention Facility, excluding curb		$w_T =$	15.0	ft
Total Effective Depth, d_E $d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$		$d_E =$	1.30	ft
Minimum Surface Area, A_m $A_M (ft^2) = \frac{V_{BMP} (ft^3)}{d_E (ft)}$		$A_M =$	580	ft ²
Proposed Surface Area		$A =$	630	ft ²
Bioretention Facility Properties				
Side Slopes in Bioretention Facility		$z =$	4	:1
Diameter of Underdrain			6	inches
Longitudinal Slope of Site (3% maximum)			0.9	%
6" Check Dam Spacing			0	feet
Describe Vegetation:				
Notes:	Dimentions - 15' x 42'			

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend:



Required Entries

Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name **WAI** Date **4/6/2021**
 Designed by **MSA** Case No **LWQ20-0024**
 Company Project Number/Name **Job # 863**

BMP Identification

BMP NAME / ID **Filterra Bioscape Open Top Planter**

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth,
 from the Isohyetal Map in Handbook Appendix E

$D_{85} =$ **0.69** inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	Design Storm Depth (in)	Design Capture Volume, V_{BMP} (cubic feet)	Proposed Volume on Plans (cubic feet)
DMA Off-Site 5 AC/CONC PVMT	4360	Concrete or Asphalt	1	0.89	3889.1			
DMA Off-Site 5 LDSCP	310	Ornamental Landscaping	0.1	0.11	34.2			
4670	Total				3923.3	0.69	225.6	229.5

Notes:

Bioretention Facility - Design Procedure		BMP ID Filtrerra Bioscape	Legend:	Required Entries
				Calculated Cells
Company Name:	WAI	Date:	4/6/2021	
Designed by:	MSA	County/City Case No.:	LWQ20-0024	
Design Volume				
Enter the area tributary to this feature		$A_T =$	0.11	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook		$V_{BMP} =$	226	ft ³
Type of Bioretention Facility Design				
<input type="radio"/> Side slopes required (parallel to parking spaces or adjacent to walkways) <input checked="" type="radio"/> No side slopes required (perpendicular to parking space or Planter Boxes)				
Bioretention Facility Surface Area				
Depth of Soil Filter Media Layer		$d_S =$	3.0	ft
Top Width of Bioretention Facility, excluding curb		$w_T =$	5.0	ft
Total Effective Depth, d_E				
$d_E = [(0.3) \times d_S + (0.4) \times 1] + 0.5$		$d_E =$	1.80	ft
Minimum Surface Area, A_m				
$A_M (ft^2) = \frac{V_{BMP} (ft^3)}{d_E (ft)}$		$A_M =$	126	ft ²
Proposed Surface Area		$A =$	128	ft ²
Minimum Required Length of Bioretention Facility, L		$L =$	25.2	ft
Bioretention Facility Properties				
Side Slopes in Bioretention Facility		$z =$	4	:1
Diameter of Underdrain			6	inches
Longitudinal Slope of Site (3% maximum)			2	%
6" Check Dam Spacing			25	feet
Describe Vegetation:				
Notes:	Dimentions - 5' x 25.5'			

APPENDIX D

Reference Materials and Plans

LEGAL DESCRIPTION

LOT 1 IN BLOCK 30 OF MAP NO. 1 OF BEAR VALLEY AND ALESSANDRO DEVELOPMENT CO., IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 11 PAGE 10 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAN BERNARDINO COUNTY, CALIFORNIA, TOGETHER WITH THOSE PORTIONS OF HEMLOCK AVENUE AND REDLANDS BOULEVARD WITHIN SAID BLOCK LYING EASTERLY OF THE NORTHERLY PROLONGATION OF THE WEST LINE OF SAID LOT AND NORTHERLY OF THE EASTERLY PROLONGATION OF THE SOUTH LINE OF SAID LOT.

EXCEPT THOSE PORTIONS OF LOT 1 AND OF REDLANDS BOULEVARD IN SAID BLOCK DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE SOUTH LINE OF SAID LOT 1, WITH THE WEST LINE OF REDLANDS BOULEVARD, 120 FEET WIDE AS SHOWN ON SAID MAP; THENCE ALONG SAID SOUTH LINE SOUTH 89°51'40" WEST, 83.78 FEET; THENCE NORTH 9°26'38" WEST, 122.31 FEET; THENCE NORTHERLY 182.01 FEET ALONG A TANGENT CURVE, CONCAVE SOUTHEASTERLY WITH A RADIUS OF 105 FEET, THROUGH AN ANGLE OF 99°18'57" TO A POINT ON SAID WEST LINE OF REDLANDS BOULEVARD, DISTANT ALONG SAID WEST LINE NORTH 0°07'41" WEST 243.28 FEET FROM THE POINT OF BEGINNING; THENCE NORTH 89°52'19" EAST 60.00 FEET TO THE CENTER LINE OF SAID REDLANDS BOULEVARD; THENCE SOUTH 0°07'41" EAST 243.28 FEET ON SAID CENTERLINE; THENCE SOUTH 89°52'19" WEST 60.00 FEET TO THE POINT OF BEGINNING.

ALSO EXCEPT THEREFROM, THAT PORTION OF SAID LAND, DESCRIBED AS FOLLOWS:

COMMENCING AT THE CENTERLINE INTERSECTION OF HEMLOCK AVENUE AND REDLANDS BOULEVARD AS SHOWN ON PARCEL MAP NO. 9355, FILED IN BOOK 47, PAGE 39 OF PARCEL MAPS, RECORDS OF SAID RIVERSIDE COUNTY;

THENCE SOUTH 89°52'19" WEST, ALONG SAID CENTERLINE OF HEMLOCK AVENUE, A DISTANCE OF 60.00 FEET TO THE INTERSECTION WITH THE NORTHERLY PROLONGATION OF THE WESTERLY RIGHT OF WAY OF SAID REDLANDS BOULEVARD AND THE TRUE POINT OF BEGINNING;

THENCE SOUTH 0°07'41" EAST, ALONG SAID PROLONGATION AND WESTERLY RIGHT OF WAY, A DISTANCE OF 290.00 FEET;

THENCE LEAVING SAID RIGHT OF WAY, AND PARALLEL WITH SAID CENTERLINE OF HEMLOCK AVENUE SOUTH 89°52'19" WEST, A DISTANCE OF 250.00 FEET;

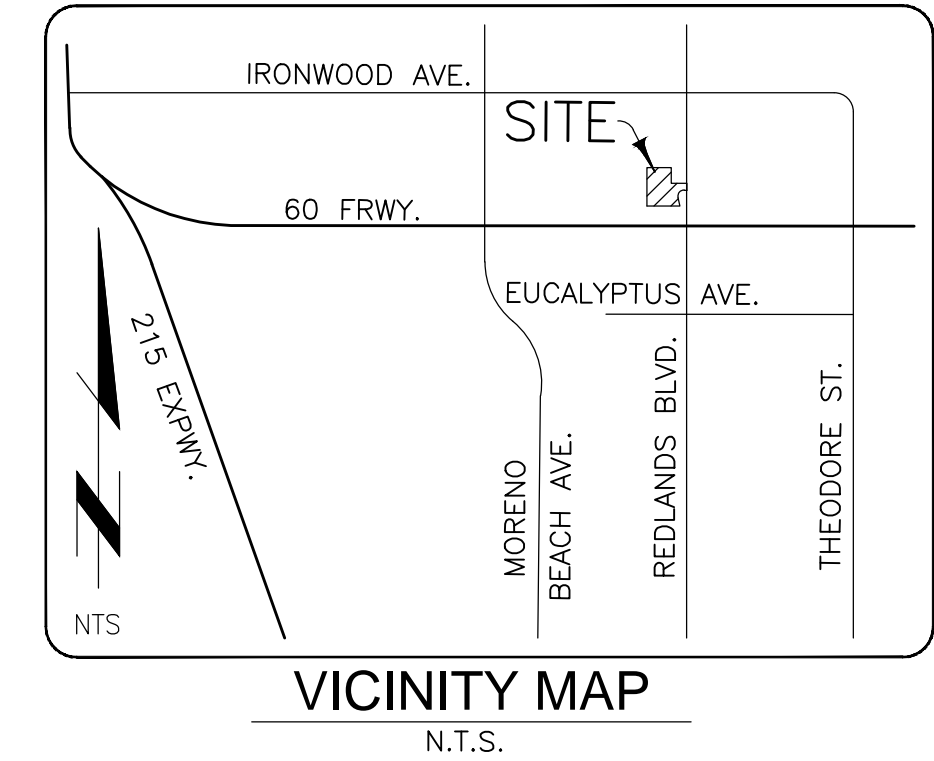
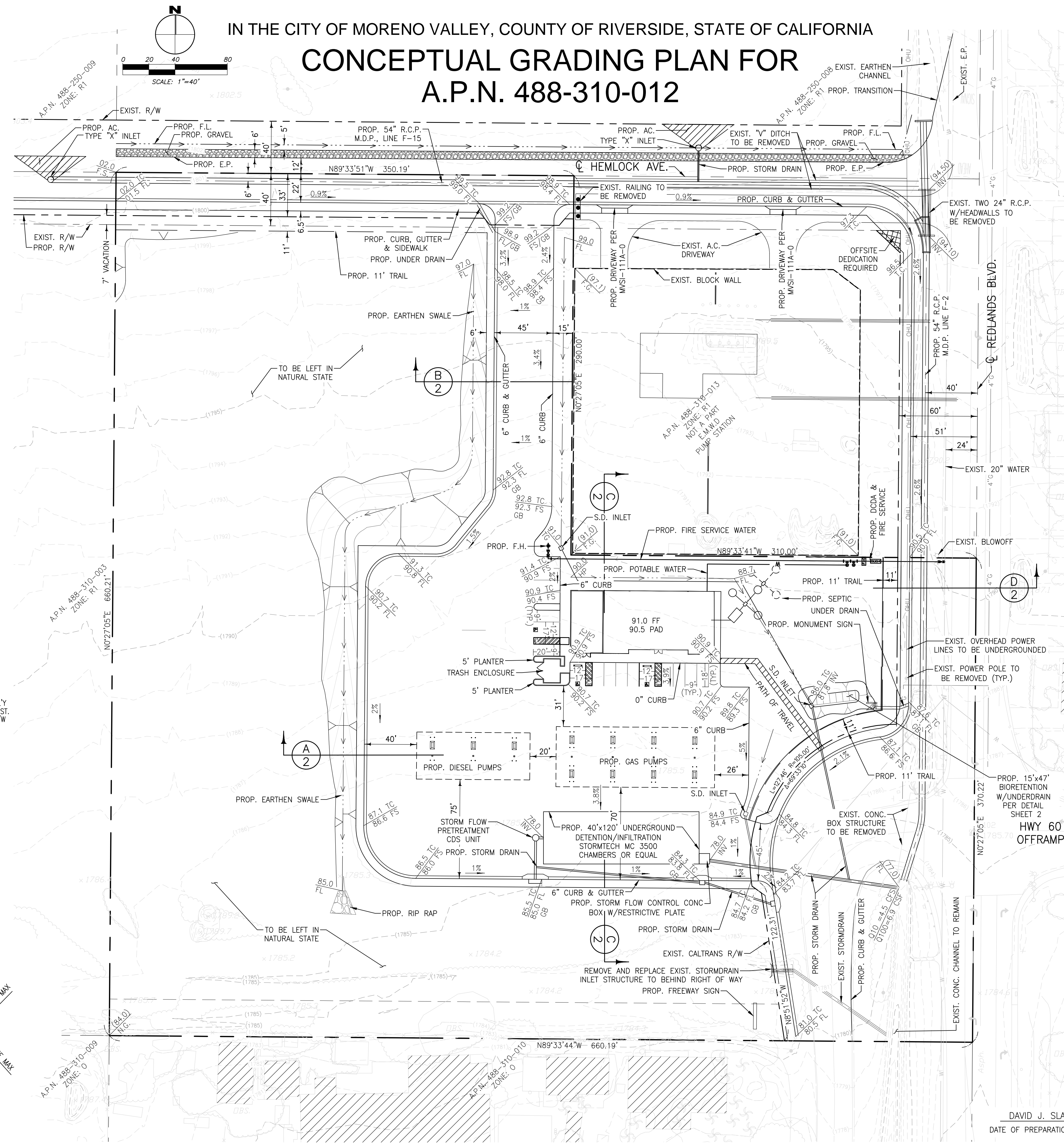
THENCE PARALLEL WITH SAID WESTERLY RIGHT OF WAY, NORTH 0°07'41" WEST, A DISTANCE OF 290.00 FEET TO SAID CENTERLINE OF HEMLOCK AVENUE;

THENCE NORTH 89°52'19" EAST, ALONG SAID CENTERLINE OF HEMLOCK AVENUE, A DISTANCE OF 250.00 FEET TO THE TRUE POINT OF BEGINNING.

A.P.N. 488-310-012

IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

CONCEPTUAL GRADING PLAN FOR A.P.N. 488-310-012



GENERAL NOTES

OWNER/APPLICANT

ANTHEM ENERGY, LLC
2640 CAMINO DEL SOL
FULLERTON, CA 92833
PHONE: (909) 562-6388
CONTACT: CHANDRESH RAVALIYA

ENGINEER

WINCHESTER ASSOCIATES, INC.
DAVID J. SLAWSON
23640 TOWER STREET, SUITE 3
PO BOX 280
MORENO VALLEY, CA. 92556-0280
PHONE: (951) 924-5425

ASSESSOR'S PARCEL No.

488-310-012

LAND USE AND ZONING

CURRENT GENERAL PLAN R1
CURRENT ZONING R1
PROPOSED ZONING CC
EXISTING USE OS
PROPOSED LAND USE GAS / COMMERCIAL

AREA AND DENSITY

GROSS ACREAGE 7.11 ACRES
NET ACREAGE 6.67 ACRES

FLOOD HAZARD

THE SUBJECT TRACT IS WITHIN THE 500 YEAR FLOOD PLAIN, ZONE X. FEMA FLOOD INSURANCE PANEL NO. 065074 0030 B.

THOMAS BROTHERS GUIDE

PAGE 718 F-2, E-2

TOPOGRAPHY

OBTAINED FROM AERIAL SURVEY CONDUCTED INLAND AERIAL SURVEYS, INC. ON 5-4-2016.

SCHOOL

MORENO VALLEY UNIFIED SCHOOL DISTRICT

PUBLIC UTILITIES

WATER
EASTERN MUNICIPAL WATER DISTRICT (951) 928-3777
2270 TRUMBLE RD., PERRIS, CA 92572

ELECTRICITY
MORENO VALLEY ELECTRIC UTILITY (951) 413-3500
14331 FREDERICK ST., SUITE 2
MORENO VALLEY, CA 92553

GAS
SOUTHERN CALIFORNIA GAS COMPANY (800) 427-2200
4495 HOWARD AVE., RIVERSIDE, CA 91756

TELEPHONE
VERIZON (951) 748-6656

SEWER
PRIVATE SEPTIC SYSTEM

EARTHWORK ESTIMATE (RAW)

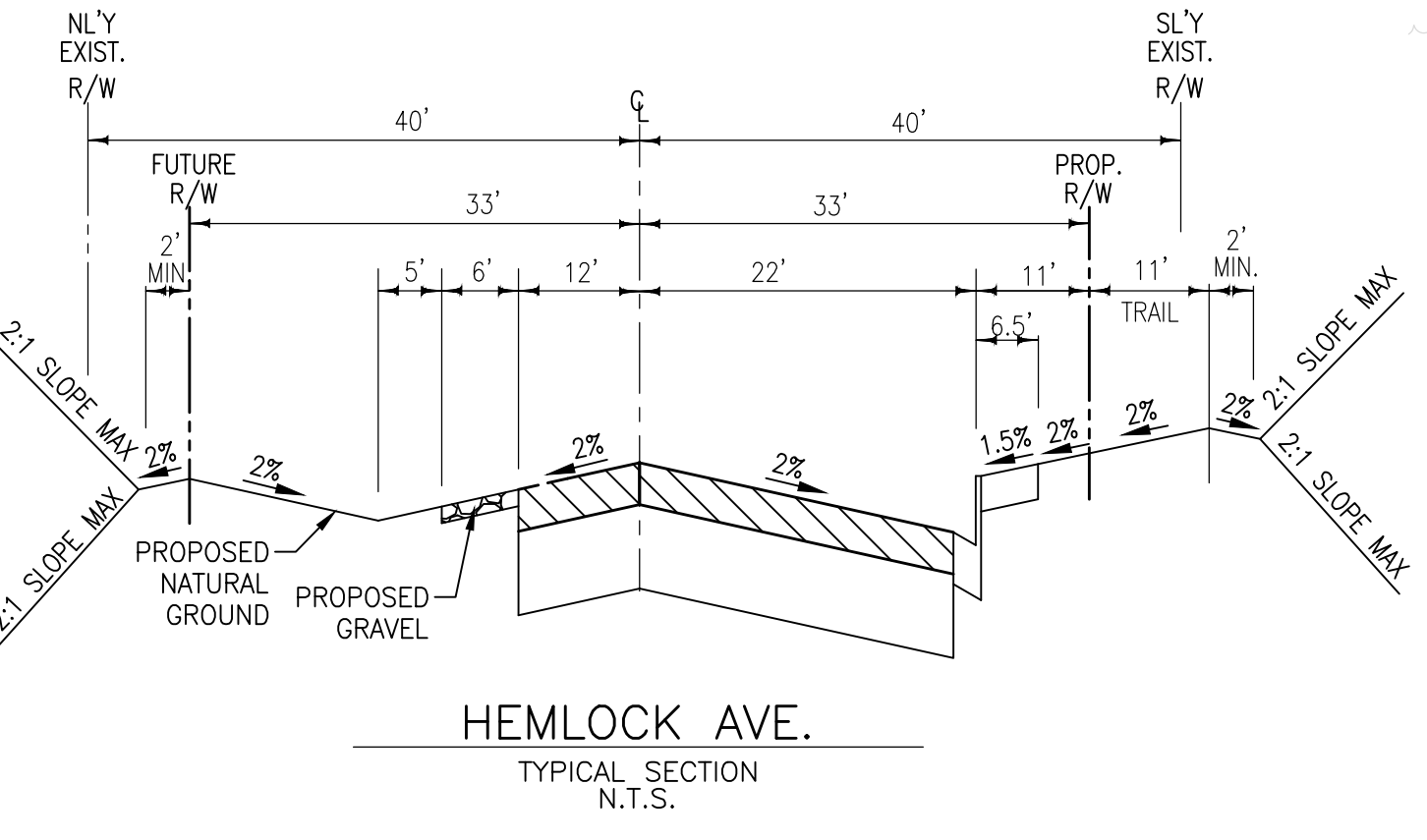
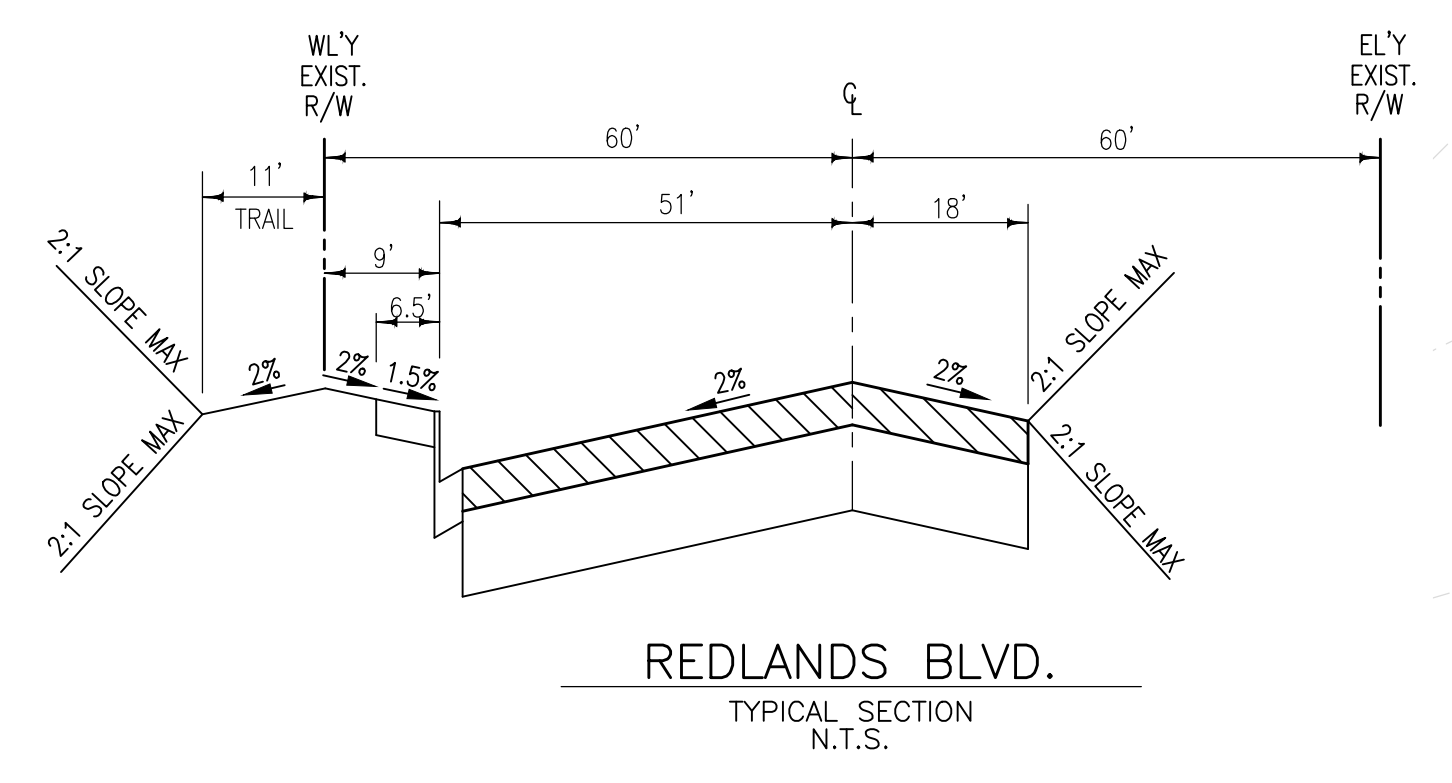
EXCAVATION 20,000 C.Y.
EMBANKMENT 16,000 C.Y.

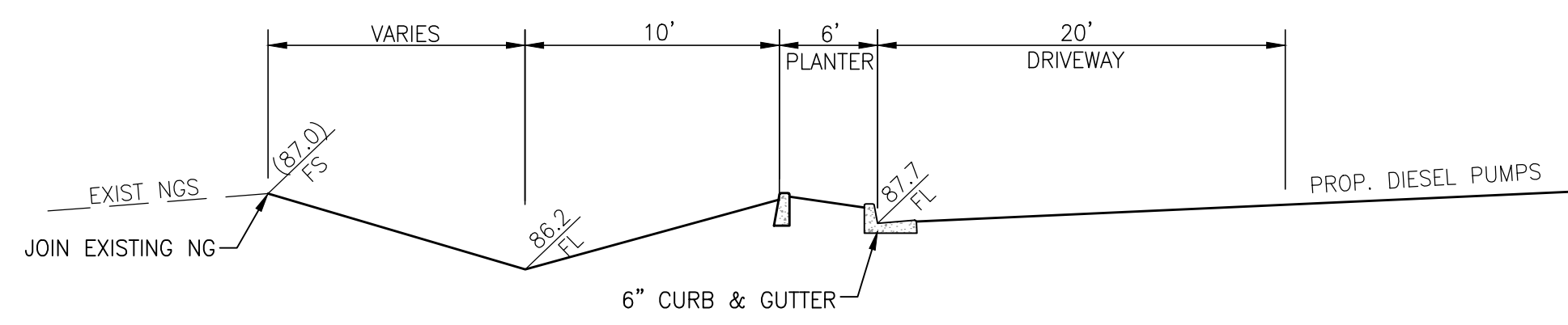
PREPARED BY:

Winchester Associates, Inc.
ENGINEERING • LAND SURVEYING

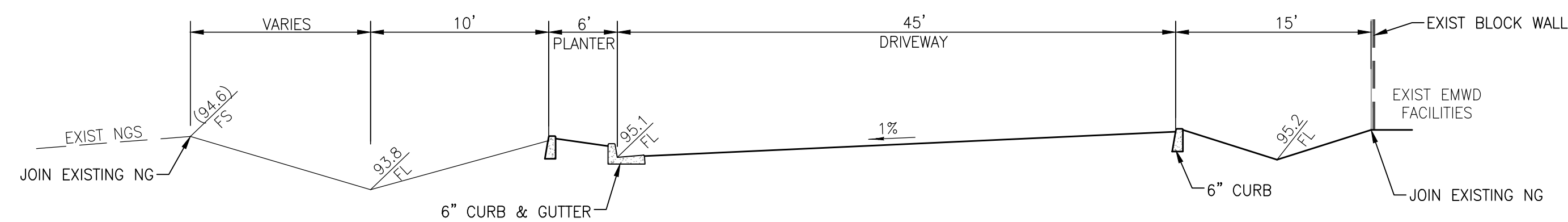
23640 TOWER ST., SUITE 3
PO BOX 280
MORENO VALLEY, CA 92556-0280 PH:(951)924-5425

DATE OF PREPARATION: APRIL 16, 2021

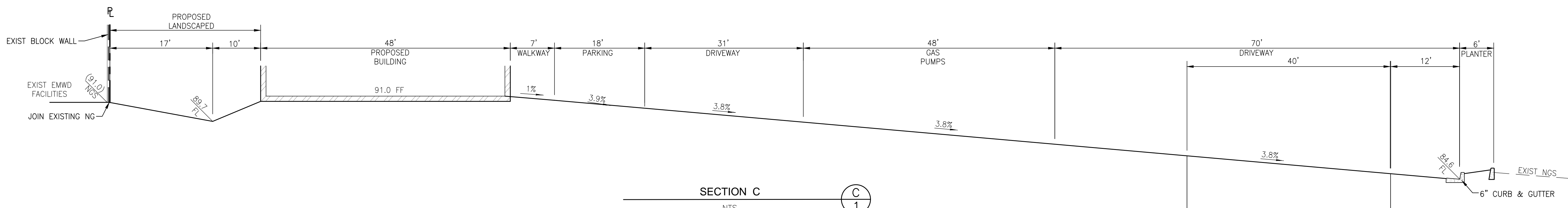




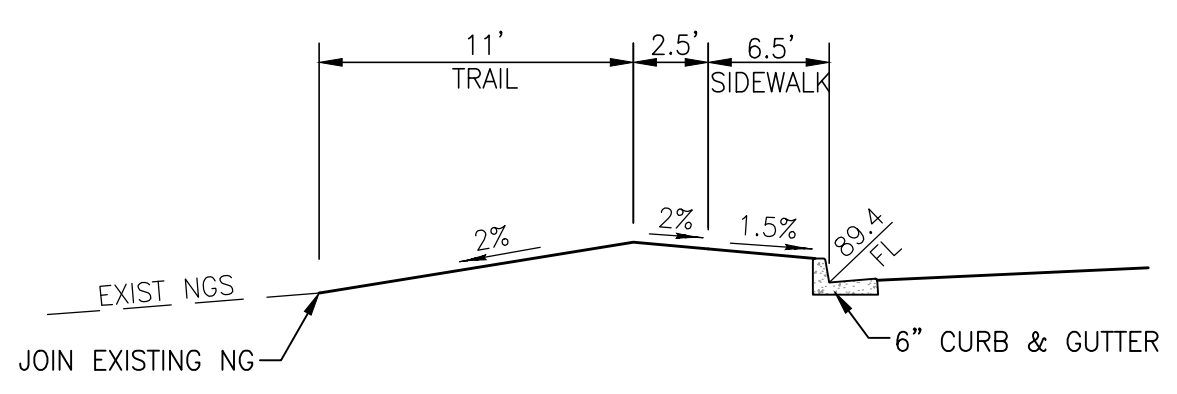
SECTION A
NTS



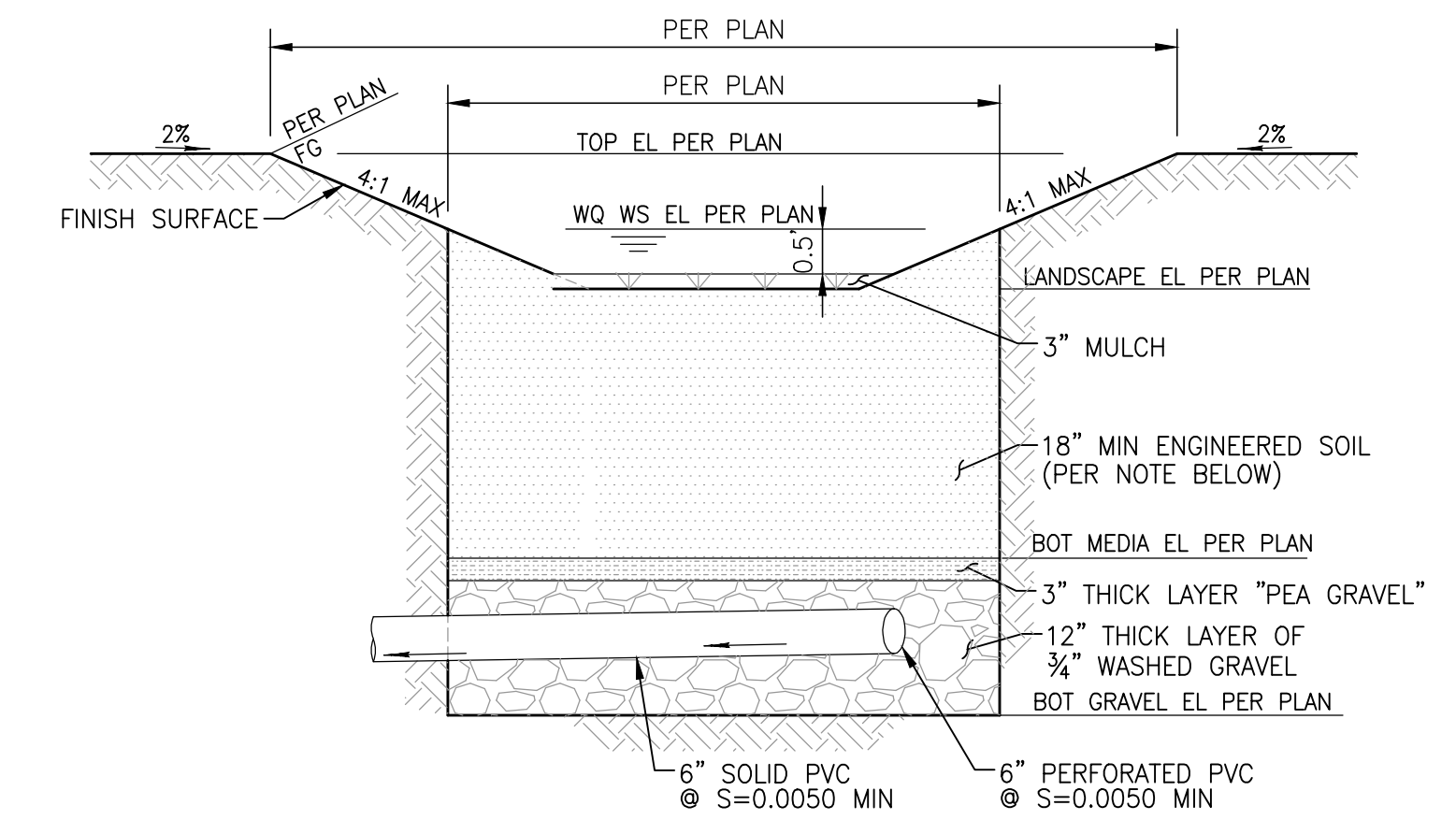
SECTION B
NTS



SECTION C
NTS



SECTION D
NTS



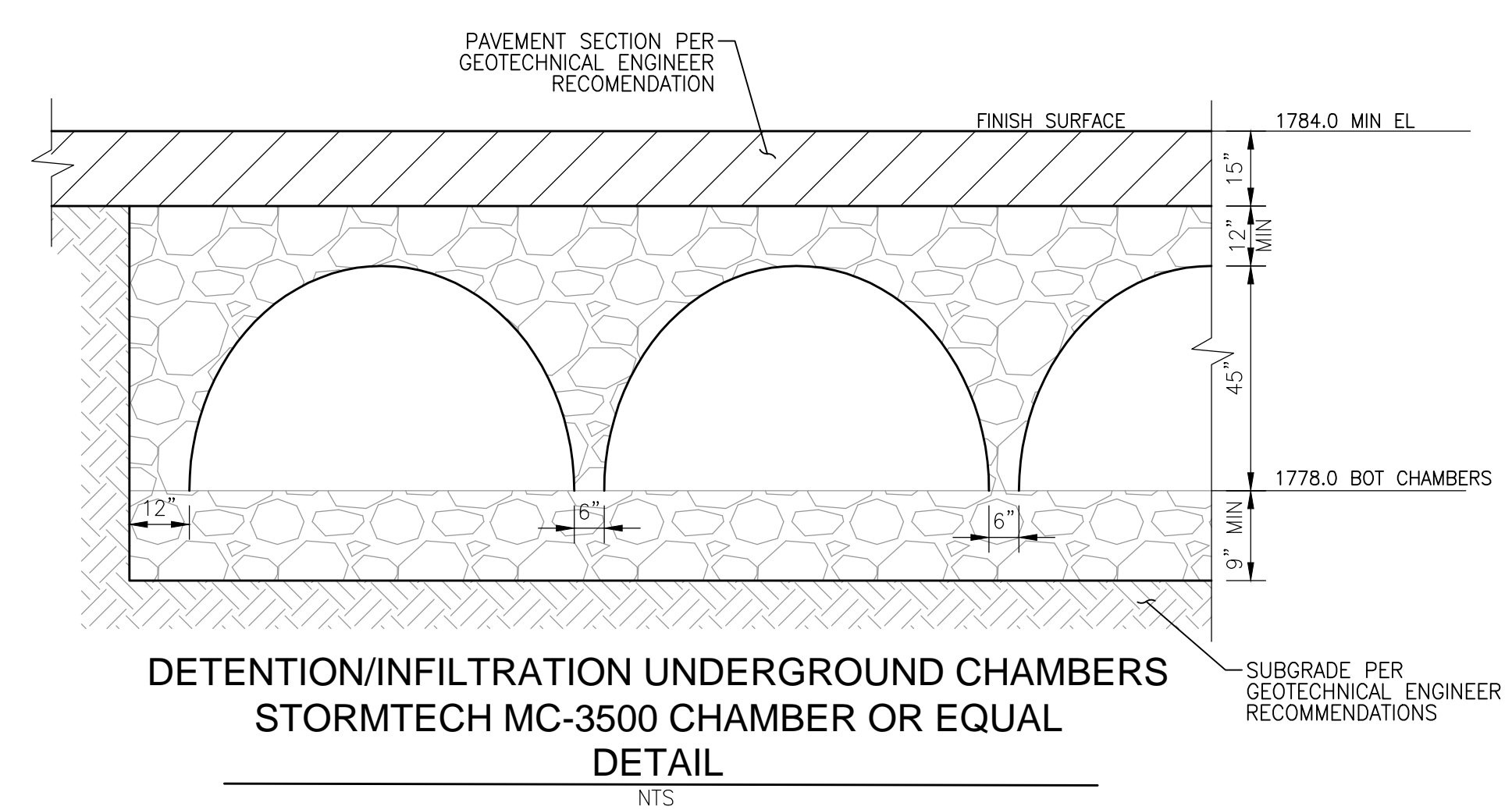
BIORETENTION FACILITY DETAIL (TYP)
NTS

BIORETENTION CLEAN-OUTS:
INSTALL 6" CLEAN-OUTS EVERY 50 FT OF UNDERDRAIN LATERAL, AT THE COLLECTOR DRAIN LINE CONNECTION, AND AT ANY BENDS.
EACH CLEAN-OUT SHALL BE EXTENDED 6" ABOVE THE MEDIA AND SHALL HAVE A LOCKABLE SCREW CAP.
INSPECT MONTHLY, OR AS NEEDED AFTER STORM EVENTS. MAINTAIN IF NEEDED.

ENGINEERED SOIL MEDIA NOTE:
ENGINEERED SOIL MEDIA SHALL COMPRISE OF: 15% ORGANIC COMPONENT (NITROGEN STABILIZED COMPOST) AND 85% MINERAL COMPONENT (SEE TABLE BELOW), BY VOLUME, DRUM MIXED PRIOR TO PLACEMENT.

MINERAL COMPONENT RANGE REQUIREMENTS:

PERCENTAGE RANGE	COMPONENT
70-80	SAND
15-20	SILT
5-10	CLAY



DETENTION/INFILTRATION UNDERGROUND CHAMBERS
STORMTECH MC-3500 CHAMBER OR EQUAL
DETAIL
NTS

PREPARED BY:
Winchester Associates, Inc.
ENGINEERING • LAND SURVEYING

23640 TOWER ST., SUITE 3
PO BOX 280
MORENO VALLEY, CA 92556-0280 PH:(951)924-5425

DAVID J. SLAWSON PLS 4724
DATE OF PREPARATION: APRIL 16, 2021

LEGAL DESCRIPTION

LOT 1 IN BLOCK 30 OF MAP NO. 1 OF BEAR VALLEY AND ALESSANDRO DEVELOPMENT CO., IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 11 PAGE 10 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAN BERNARDINO COUNTY, CALIFORNIA, TOGETHER WITH THOSE PORTIONS OF HEMLOCK AVENUE AND REDLANDS BOULEVARD WITHIN SAID BLOCK LYING EASTERLY OF THE NORTHERLY PROLONGATION OF THE WEST LINE OF SAID LOT AND NORTHERLY OF THE EASTERLY PROLONGATION OF THE SOUTH LINE OF SAID LOT.

EXCEPT THOSE PORTIONS OF LOT 1 AND OF REDLANDS BOULEVARD IN SAID BLOCK DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE SOUTH LINE OF SAID LOT 1, WITH THE WEST LINE OF REDLANDS BOULEVARD, 120 FEET WIDE AS SHOWN ON SAID MAP; THENCE ALONG SAID SOUTH LINE SOUTH 89°51'40" WEST, 83.78 FEET; THENCE NORTH 9°26'38" WEST, 122.31 FEET; THENCE NORTHERLY 182.01 FEET ALONG A TANGENT CURVE, CONCAVE SOUTHEASTERLY WITH A RADIUS OF 105 FEET, THROUGH AN ANGLE OF 99°18'57" TO A POINT ON SAID WEST LINE OF REDLANDS BOULEVARD, DISTANT ALONG SAID WEST LINE NORTH 0°07'41" WEST 243.28 FEET FROM THE POINT OF BEGINNING; THENCE NORTH 89°52'19" EAST 60.00 FEET TO THE CENTER LINE OF SAID REDLANDS BOULEVARD; THENCE SOUTH 0° 07'41" EAST 243.28 FEET ON SAID CENTERLINE; THENCE SOUTH 89°52'19" WEST 60.00 FEET TO THE POINT OF BEGINNING.

ALSO EXCEPT THEREFROM, THAT PORTION OF SAID LAND, DESCRIBED AS FOLLOWS:

COMMENCING AT THE CENTERLINE INTERSECTION OF HEMLOCK AVENUE AND REDLANDS BOULEVARD AS SHOWN ON PARCEL MAP NO. 9355, FILED IN BOOK 47, PAGE 39 OF PARCEL MAPS, RECORDS OF SAID RIVERSIDE COUNTY;

THENCE SOUTH 89°52'19" WEST, ALONG SAID CENTERLINE OF HEMLOCK AVENUE, A DISTANCE OF 60.00 FEET TO THE INTERSECTION WITH WITH THE NORTHERLY PROLONGATION OF THE WESTERLY RIGHT OF WAY OF SAID REDLANDS BOULEVARD AND THE TRUE POINT OF BEGINNING;

THENCE SOUTH 0°07'41" EAST, ALONG SAID PROLONGATION AND WESTERLY RIGHT OF WAY, A DISTANCE OF 290.00 FEET;

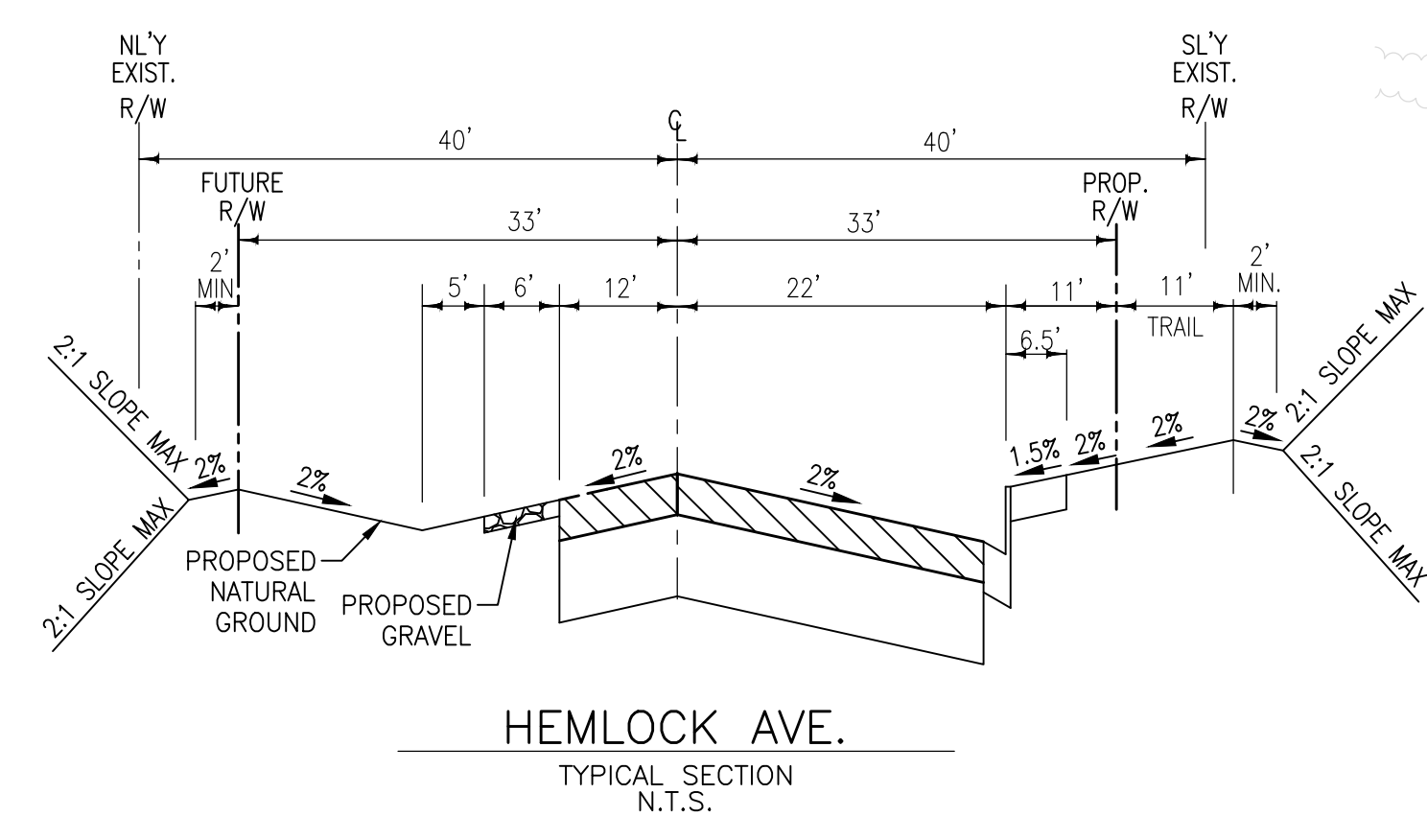
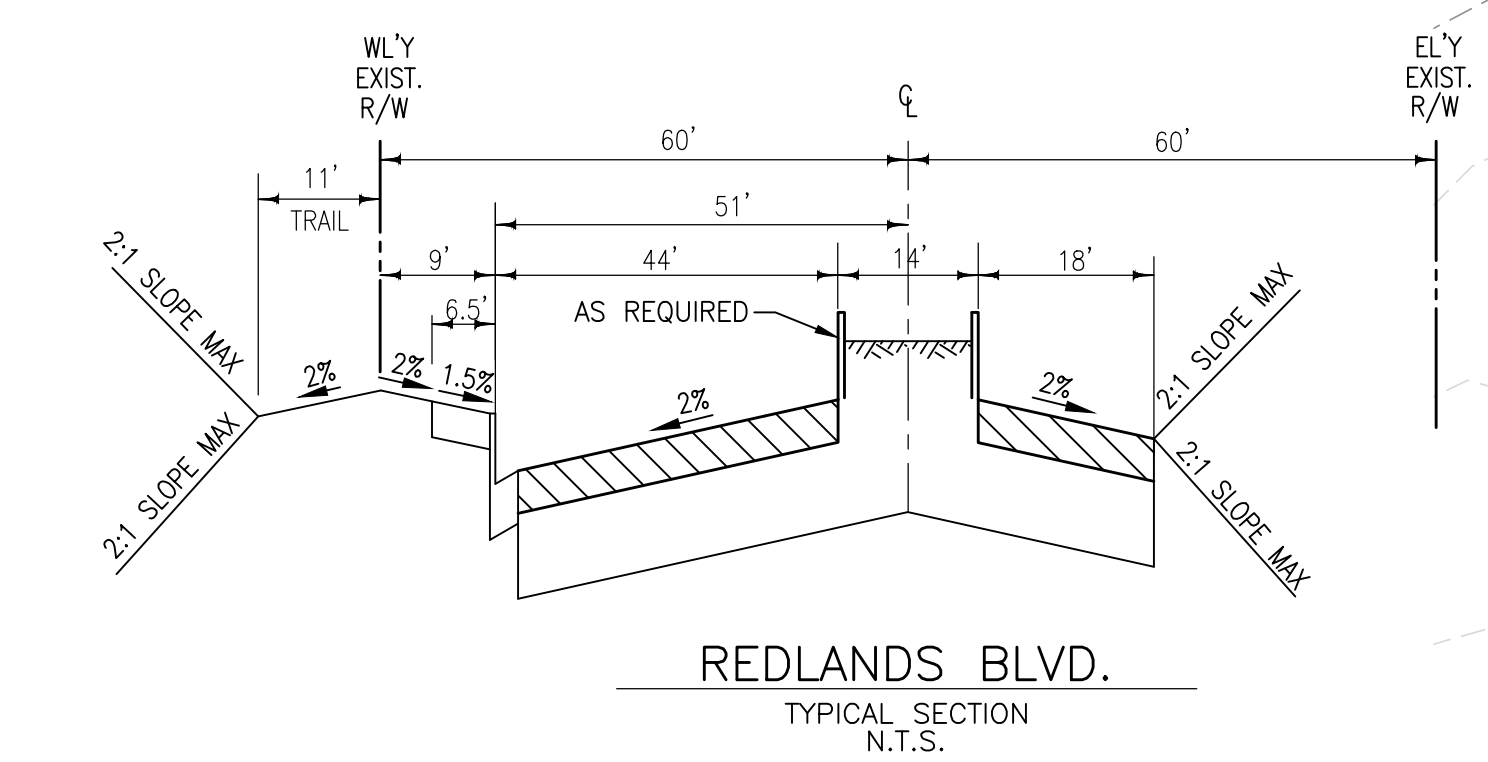
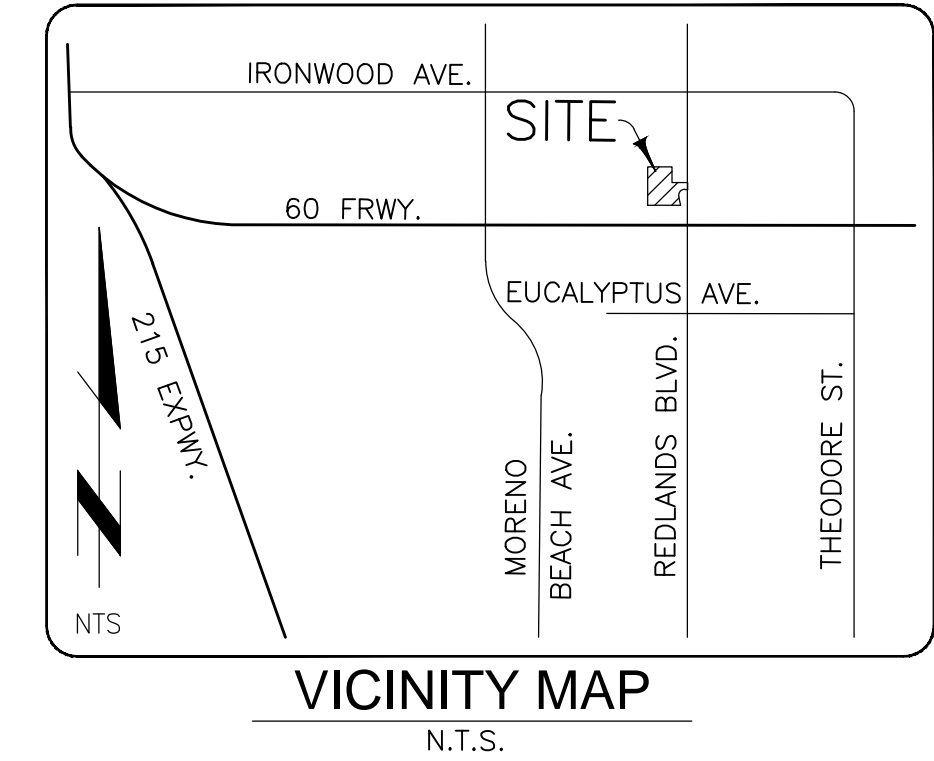
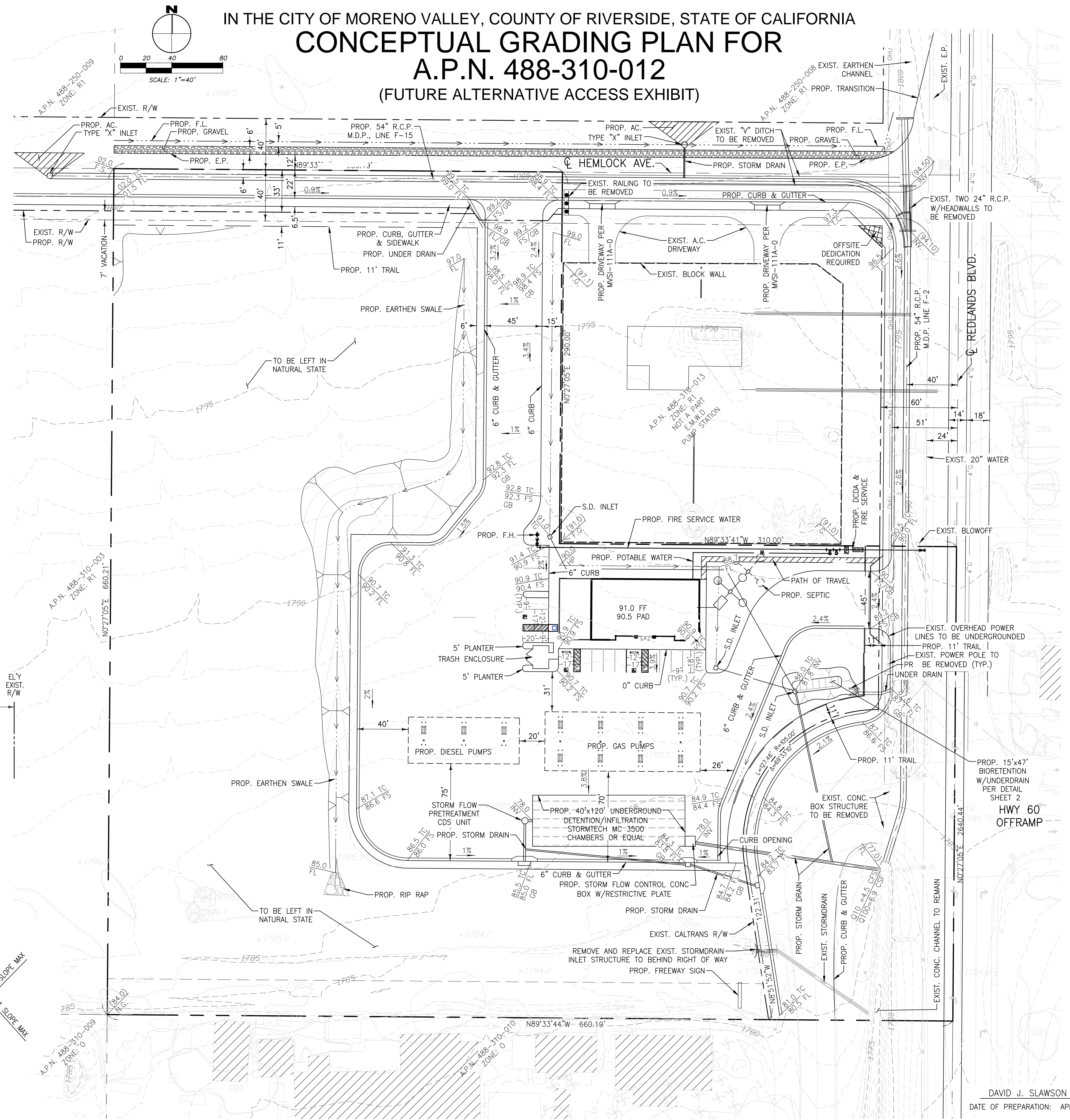
THENCE LEAVING SAID RIGHT OF WAY, AND PARALLEL WITH SAID CENTERLINE OF HEMLOCK AVENUE SOUTH 89°52'19" WEST, A DISTANCE OF 250.00 FEET;

THENCE PARALLEL WITH SAID WESTERLY RIGHT OF WAY, NORTH 0°07'41" WEST, A DISTANCE OF 290.00 FEET TO SAID CENTERLINE OF HEMLOCK AVENUE;

THENCE NORTH 89°52'19" EAST, ALONG SAID CENTERLINE OF HEMLOCK AVENUE, A DISTANCE OF 250.00 FEET TO THE TRUE POINT OF BEGINNING.

A.P.N. 488-310-012

IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA
CONCEPTUAL GRADING PLAN FOR
A.P.N. 488-310-012
 (FUTURE ALTERNATIVE ACCESS EXHIBIT)



- GENERAL NOTES**
- OWNER/APPLICANT**
 ANTHEM ENERGY, LLC
 2640 CAMINO DEL SOL
 FULLERTON, CA 92833
 PHONE: (909) 562-6388
 CONTACT: CHANDRESH RAVALIYA
- ENGINEER**
 WINCHESTER ASSOCIATES, INC.
 DAVID J. SLAWSON
 23640 TOWER STREET, SUITE 3
 PO BOX 280
 MORENO VALLEY, CA. 92556-0280
 PHONE: (951) 924-5425
- ASSESSOR'S PARCEL No.**
 488-310-012
- LAND USE AND ZONING**
 CURRENT GENERAL PLAN R1
 CURRENT ZONING R1
 PROPOSED ZONING CC
 EXISTING USE OS
 PROPOSED LAND USE GAS / COMMERCIAL
- AREA AND DENSITY**
 GROSS ACREAGE 7.11 ACRES
 NET ACREAGE 6.67 ACRES
- FLOOD HAZARD**
 THE SUBJECT TRACT IS WITHIN THE 500 YEAR FLOOD PLAIN, ZONE X. FEMA FLOOD INSURANCE PANEL NO. 065074 0030 B.
- THOMAS BROTHERS GUIDE**
 PAGE 718 F-2, E-2
- TOPOGRAPHY**
 OBTAINED FROM AERIAL SURVEY CONDUCTED INLAND AERIAL SURVEYS, INC. ON 5-4-2016.
- SCHOOL**
 MORENO VALLEY UNIFIED SCHOOL DISTRICT
- PUBLIC UTILITIES**
 WATER
 EASTERN MUNICIPAL WATER DISTRICT (951) 928-3777
 2270 TRUMBUE RD., PERRIS, CA 92572
 ELECTRICITY
 MORENO VALLEY ELECTRIC UTILITY (951) 413-3500
 14331 FREDERICK ST., SUITE 2
 MORENO VALLEY, CA 92553
 GAS
 SOUTHERN CALIFORNIA GAS COMPANY (800) 427-2200
 4495 HOWARD AVE., RIVERSIDE, CA 91756
 TELEPHONE
 VERIZON (951) 748-6656
 SEWER
 PRIVATE SEPTIC SYSTEM
- EARTHWORK ESTIMATE (RAW)**
 EXCAVATION 20,000 C.Y.
 EMBANKMENT 18,000 C.Y.

PREPARED BY:
 Winchester Associates, Inc.
 ENGINEERING • LAND SURVEYING
 23640 TOWER ST., SUITE 3
 PO BOX 280
 MORENO VALLEY, CA 92556-0280 PH:(951)924-5425
 DAVID J. SLAWSON PLS 4724
 DATE OF PREPARATION: APRIL 16, 2021

STORMTECH MC-3500 CHAMBER

Designed to meet the most stringent industry performance standards for superior structural integrity while providing designers with a cost-effective method to save valuable land and protect water resources. The StormTech system is designed primarily to be used under parking lots, thus maximizing land usage for private (commercial) and public applications. StormTech chambers can also be used in conjunction with Green Infrastructure, thus enhancing the performance and extending the service life of these practices.



STORMTECH MC-3500 CHAMBER (not to scale)

Nominal Chamber Specifications

Size (L x W x H)
90" x 77" x 45"
2,286 mm x 1,956 mm x 1,143 mm

Chamber Storage
109.9 ft³ (3.11 m³)

Min. Installed Storage*
175.0 ft³ (4.96 m³)

Weight
134 lbs (60.8 kg)

Shipping
15 chambers/pallet
7 end caps/pallet
7 pallets/truck

*Assumes a minimum of 12" (300 mm) of stone above, 9" (230 mm) of stone below chambers, 6" (150 mm) of stone between chambers/end caps and 40% stone porosity.

STORMTECH MC-3500 END CAP (not to scale)

Nominal End Cap Specifications

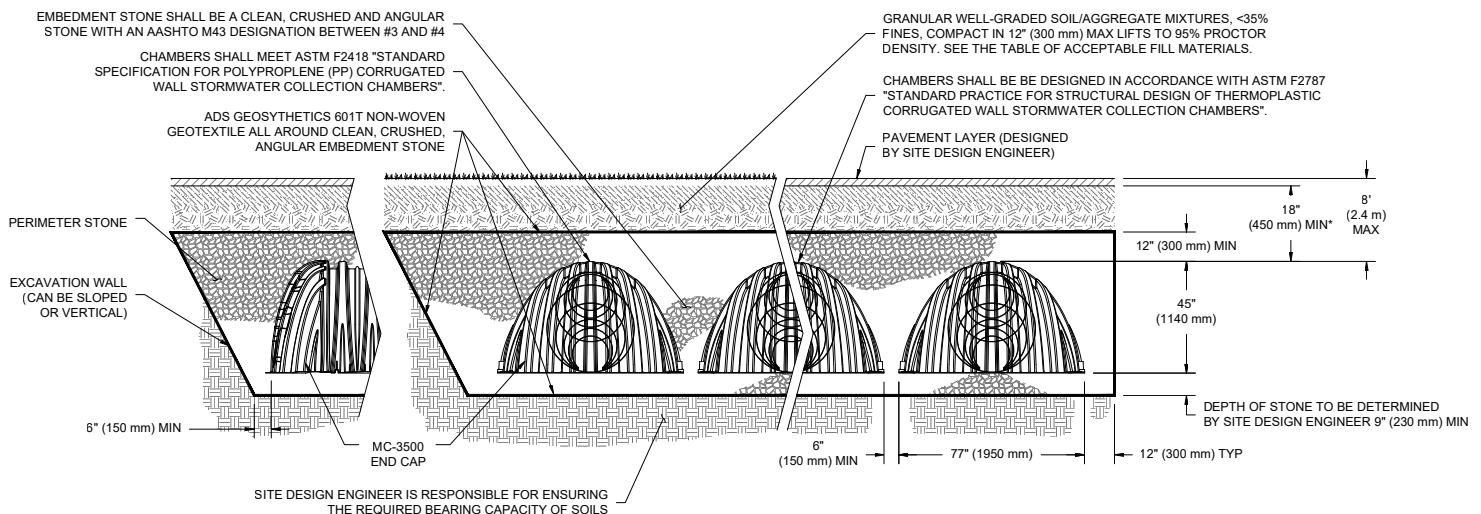
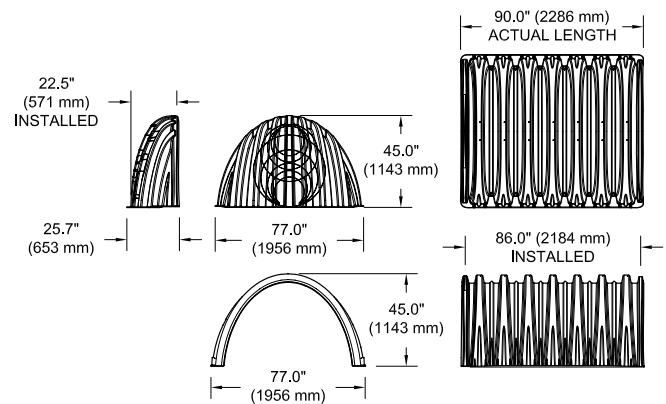
Size (L x W x H)
26.5" x 71" x 45.1"
673 mm x 1,803 mm x 1,145 mm

End Cap Storage
14.9 ft³ (0.42 m³)

Min. Installed Storage*
45.1 ft³ (1.28 m³)

Weight
49 lbs (22.2 kg)

*Assumes a minimum of 12" (300 mm) of stone above, 9" (230 mm) of stone below, 6" (150 mm) of stone perimeter, 6" (150 mm) of stone between chambers/end caps and 40% stone porosity.



*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 24" (600 mm).

MC-3500 CHAMBER SPECIFICATION

STORAGE VOLUME PER CHAMBER FT³ (M³)

	Bare Chamber Storage ft ³ (m ³)	Chamber and Stone Foundation Depth in. (mm)			
		9" (230 mm)	12" (300 mm)	15" (375 mm)	18" (450 mm)
MC-3500 Chamber	109.9 (3.11)	175.0 (4.96)	179.9 (5.09)	184.9 (5.24)	189.9 (5.38)
MC-3500 End Cap	14.9 (.42)	45.1 (1.28)	46.6 (1.32)	48.3 (1.37)	49.9 (1.41)

Note: Assumes 6" (150 mm) row spacing, 40% stone porosity, 12" (300 mm) stone above and includes the bare chamber/end cap volume.

AMOUNT OF STONE PER CHAMBER

ENGLISH TONS (yds ³)	Stone Foundation Depth			
	9"	12"	15"	18"
MC-3500 Chamber	8.5 (6.0)	9.1 (6.5)	9.7 (6.9)	10.4 (7.4)
MC-3500 End Cap	3.9 (2.8)	4.1 (2.9)	4.3 (3.1)	4.5 (3.2)
METRIC KILOGRAMS (m ³)	230 mm	300 mm	375 mm	450 mm
MC-3500 Chamber	7711 (4.6)	8255 (5.0)	8800 (5.3)	9435 (5.7)
MC-3500 End Cap	3538 (2.1)	3719 (2.2)	3901 (2.4)	4082 (2.5)

Note: Assumes 12" (300 mm) of stone above and 6" (150 mm) row spacing and 6" (150 mm) of perimeter stone in front of end caps.

VOLUME EXCAVATION PER CHAMBER YD³ (M³)

	Stone Foundation Depth			
	9" (230 mm)	12" (300 mm)	15" (375mm)	18" (450 mm)
MC-3500 Chamber	11.9 (9.1)	12.4 (9.5)	12.8(9.8)	13.3 (10.2)
MC-3500 End Cap	4.0 (3.1)	4.1 (3.2)	4.3 (3.3)	4.4 (3.4)

Note: Assumes 6" (150 mm) of separation between chamber rows and 24" (600 mm) of cover. The volume of excavation will vary as depth of cover increases.



Working on a project?
 Visit us at www.stormtech.com
 and utilize the **StormTech Design Tool**

For more information on the StormTech MC-3500 Chamber and other ADS products, please contact our Customer Service Representatives at 1-800-821-6710



CDS[®]
Hydrodynamic Separator



The experts you need to solve your stormwater management challenges

Contech is the leader in stormwater management solutions, helping engineers, contractors and owners with infrastructure and land development projects throughout North America.

With our responsive team of stormwater experts, local regulatory expertise and flexible solutions, Contech is the trusted partner you can count on for stormwater management solutions.

Your Contech Team



STORMWATER CONSULTANT

It's my job to recommend the best solution to meet permitting requirements.



STORMWATER DESIGN ENGINEER

I work with consultants to design the best approved solution to meet your project's needs.



REGULATORY MANAGER

I understand the local stormwater regulations and what solutions will be approved.



SALES ENGINEER

I make sure our solutions meet the needs of the contractor during construction.

Contech is your partner in stormwater management solutions



Unique screening technology for stormwater runoff – CDS®



The CDS hydrodynamic separator uses swirl concentration and continuous deflective separation to screen, separate and trap trash, debris, sediment, and hydrocarbons from stormwater runoff.

At the heart of the CDS system is a unique screening technology used to capture and retain trash and debris. The screen face is louvered so that it is smooth in the downstream direction. The effect created is called “Continuous Deflective Separation.” The power of the incoming flow is harnessed to continually shear debris off the screen and to direct trash and sediment toward the center of the separation cylinder. This results in a screen that is self-cleaning and provides 100% removal of floatables and neutrally buoyant material debris 4.7 mm or larger, without blinding.

CDS is used to meet trash Total Maximum Daily Load (TMDL) requirements, for stormwater quality control, inlet and outlet pollution control, and as pretreatment for filtration, detention/infiltration, bioretention, rainwater harvesting systems, and a variety of green infrastructure practices.

CDS[®] Features and Benefits

FEATURE	BENEFIT
Captures and retains 100% of floatables and neutrally buoyant debris 4.7mm or larger	Superior pollutant removal
Self-cleaning screen	Ease of maintenance
Isolated storage sump eliminates scour potential	Excellent pollutant retention
Internal bypass	Eliminates the need for additional structures
Multiple pipe inlets and 90-180° angles	Design flexibility
Clear access to sump and stored pollutants	Fast, easy maintenance



APPLICATION TIPS

- Because of its internal peak bypass weirs, CDS systems can provide cost savings by eliminating the need for additional structures.
- Pretreating detention, infiltration, and green infrastructure practices with CDS can protect downstream structures and provide for easy maintenance.
- The CDS an ideal solution for retrofit applications due to its compact footprint and configuration flexibility.

The CDS[®] Screen

A fundamentally different approach to trash control ...

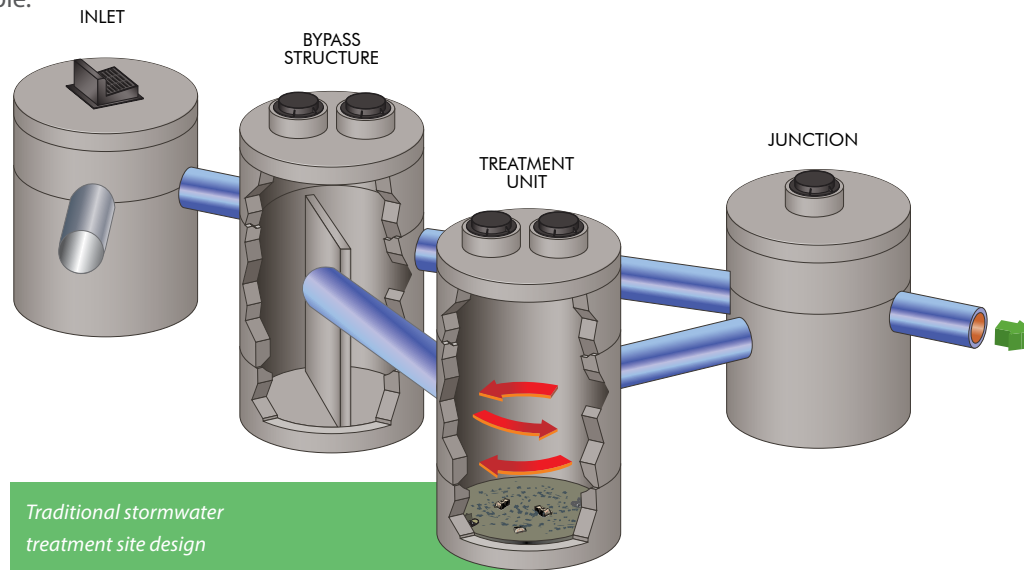
Traditional approaches to trash control typically involve “direct screening” that can easily become clogged, as trash is pinned to the screen as water passes through. Clogged screens can lead to flooding as water backs up. The design of the CDS screen is fundamentally different. Flow is introduced to the screen face which is louvered so that it is smooth in the downstream direction. The effect created is called “Continuous Deflective Separation.” The power of the incoming flow is harnessed to continually shear debris off the screen and to direct trash and sediment toward the center of the separation cylinder.



CDS® Design Configuration

Why use traditional stormwater design when ONE system can do it all ...

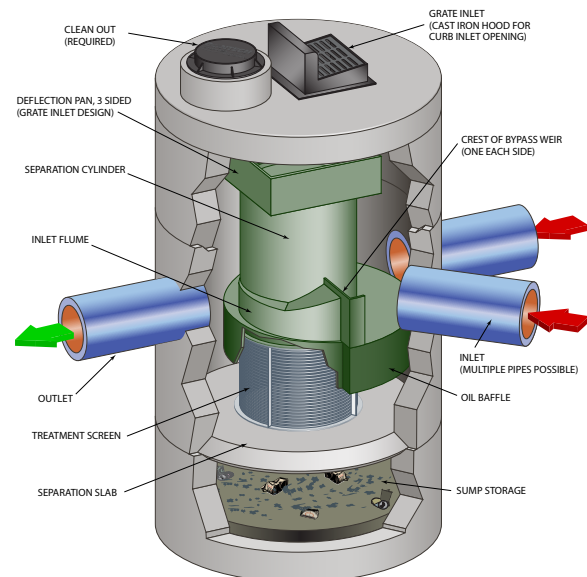
The CDS effectively treats stormwater runoff while reducing the number of structures on your site. Inline, offline, grate inlet, and drop inlet configurations available. Internal and external peak bypass options also available.



A Traditional Stormwater Treatment Site Design would require several structures on your site. With CDS, one system can do it all!

CDS® Advantages

- Grate inlet option available
- Internal bypass weir
- Accepts multiple inlets at a variety of angles
- Advanced hydrodynamic separator
- Captures and retains 100% of floatables and neutrally buoyant debris 4.7 mm or larger
- Indirect screening capability keeps screen from clogging
- Retention of all captured pollutants, even at high flows
- Performance verified by NJCAT, WA Ecology, and ETV Canada



Learn More:

www.ContechES.com/cds

CDS[®] Applications

CDS is commonly used in the following stormwater applications:

- Stormwater quality control – trash, debris, sediment, and hydrocarbon removal
- Urban retrofit and redevelopment
- Inlet and outlet protection
- Pretreatment for filtration, detention/infiltration, bioretention, rainwater harvesting systems, and Low Impact Development designs



CDS[®] provides trash control



CDS[®] pretreats a bioswale

Select CDS[®] Certifications and Verifications

CDS has been verified by some of the most stringent stormwater technology evaluation organizations in North America, including:

- Washington State Department of Ecology (GULD) - Pretreatment
- New Jersey Department of Environmental Protection (NJDEP)
- Canadian Environmental Technology Verification (ETV)
- California Statewide Trash Amendments Full Capture System Certified*

**The CDS System has been certified by the California State Water Resources Control Board as a Full Capture System provided that it is sized to treat the peak flow rate from the region specific 1-year, 1-hour design storm, or the peak flow capacity of the corresponding storm drain, whichever is less.*

Save time, space and money with CDS

CDS® Maintenance

Select a cost-effective and easy-to-access treatment system ...

Systems vary in their maintenance needs, and the selection of a cost-effective and easy-to-access treatment system can mean a huge difference in maintenance expenses for years to come.

A CDS unit is designed to minimize maintenance and make it as easy and inexpensive as possible to keep our systems working properly.

INSPECTION

Inspection is the key to effective maintenance. Pollutant deposition and transport may vary from year to year and site to site. Semi-annual inspections will help ensure that the system is cleaned out at the appropriate time. Inspections should be performed more frequently where site conditions may cause rapid accumulation of pollutants.

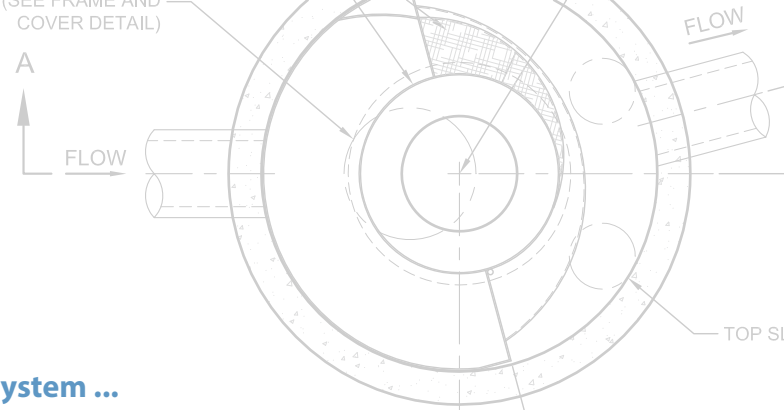
RECOMMENDATIONS FOR CDS MAINTENANCE

The recommended cleanout of solids within the CDS unit's sump should occur at 75% of the sump capacity. Access to the CDS unit is typically achieved through two manhole access covers – one allows inspection and cleanout of the separation chamber and sump, and another allows inspection and cleanout of sediment captured and retained behind the screen. A vacuum truck is recommended for cleanout of the CDS unit and can be easily accomplished in less than 30 minutes for most installations.

Design Your Own Hydrodynamic Separator (DYOHDS™)

Quickly prepare designs for estimates and project meetings ...

- Multiple sizing methods available.
- Site-specific questions ensure the selected unit will comply with site constraints.
- Multiple treatment options may be available based on regulations and site parameters.
- Follow up reports contain a site-specific design, sizing summary, standard detail, and specification.



Most CDS® units can easily be cleaned within thirty minutes.



Learn More:
www.ContechES.com/dyohds

A partner you can rely on



STORMWATER
SOLUTIONS



PIPE
SOLUTIONS



STRUCTURES
SOLUTIONS

Few companies offer the wide range of high-quality stormwater resources you can find with us — state-of-the-art products, decades of expertise, and all the maintenance support you need to operate your system cost-effectively.

THE CONTECH WAY

Contech® Engineered Solutions provides innovative, cost-effective site solutions to engineers, contractors, and developers on projects across North America. Our portfolio includes bridges, drainage, erosion control, retaining wall, sanitary sewer and stormwater management products.

TAKE THE NEXT STEP

For more information: www.ContechES.com

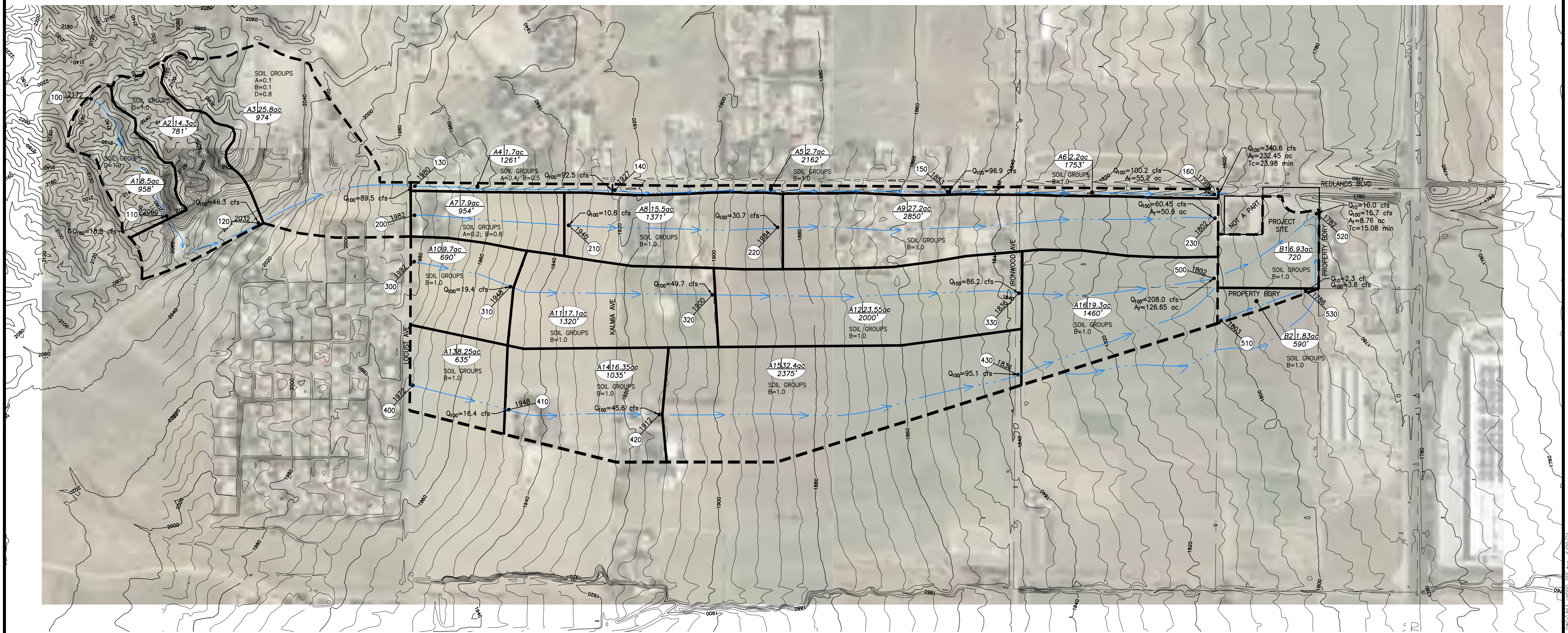
NOTHING IN THIS CATALOG SHOULD BE CONSTRUED AS A WARRANTY. APPLICATIONS SUGGESTED HEREIN ARE DESCRIBED ONLY TO HELP READERS MAKE THEIR OWN EVALUATIONS AND DECISIONS, AND ARE NEITHER GUARANTEES NOR WARRANTIES OF SUITABILITY FOR ANY APPLICATION. CONTECH MAKES NO WARRANTY WHATSOEVER, EXPRESS OR IMPLIED, RELATED TO THE APPLICATIONS, MATERIALS, COATINGS, OR PRODUCTS DISCUSSED HEREIN. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND ALL IMPLIED WARRANTIES OF FITNESS FOR ANY PARTICULAR PURPOSE ARE DISCLAIMED BY CONTECH. SEE CONTECH'S CONDITIONS OF SALE (AVAILABLE AT WWW.CONTECHES.COM/COS) FOR MORE INFORMATION.

CONTECH[®]
ENGINEERED SOLUTIONS

Get social with us: [f](#) [in](#) [t](#) [v](#)

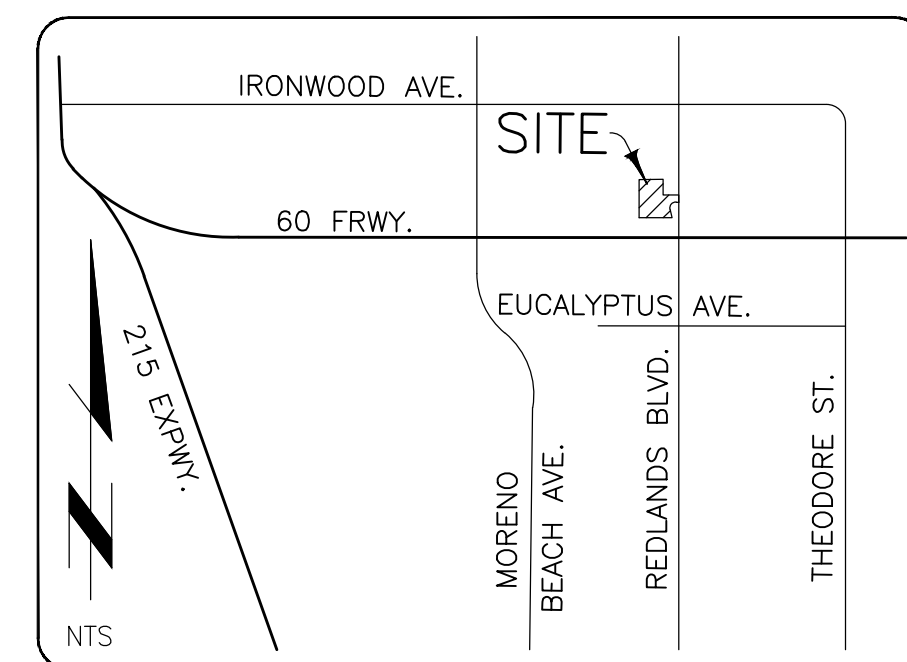
800-338-1122 | www.ContechES.com

ATTACHED EXHIBITS

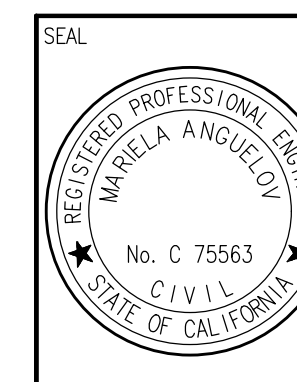
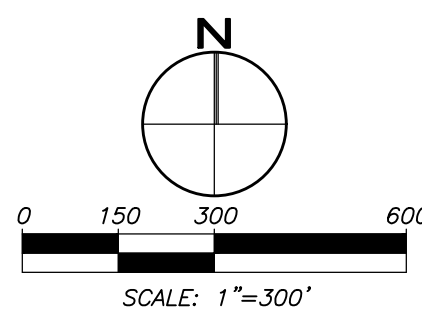


LEGEND:

- SUB. AREA BOUNDARY
- DRAINAGE AREA BOUNDARY
- NODE
ELEVATION
- HYDROLOGY SUBAREA/ACREAGE
WATER COURSE LENGTH



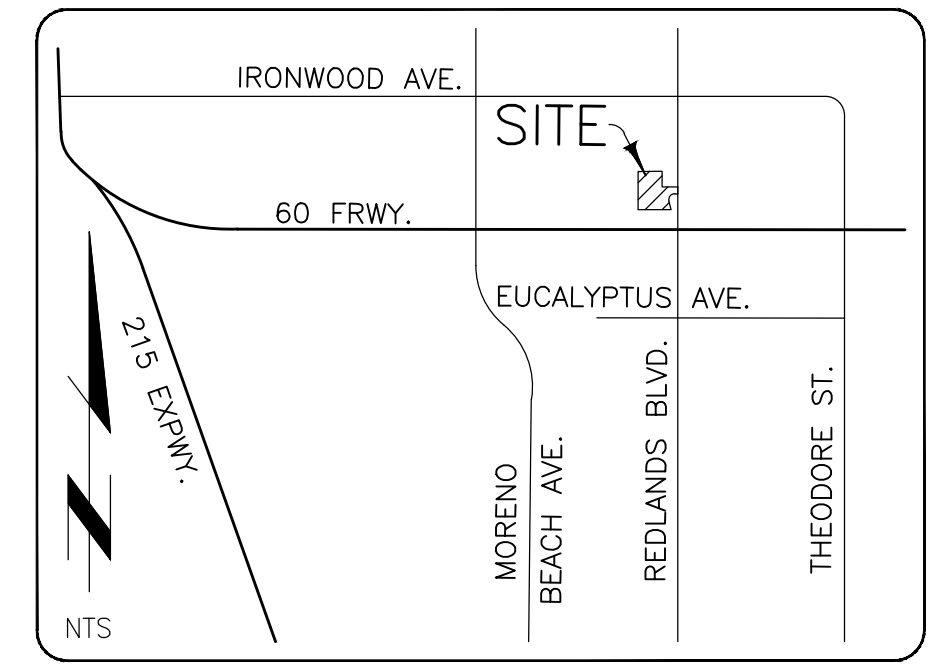
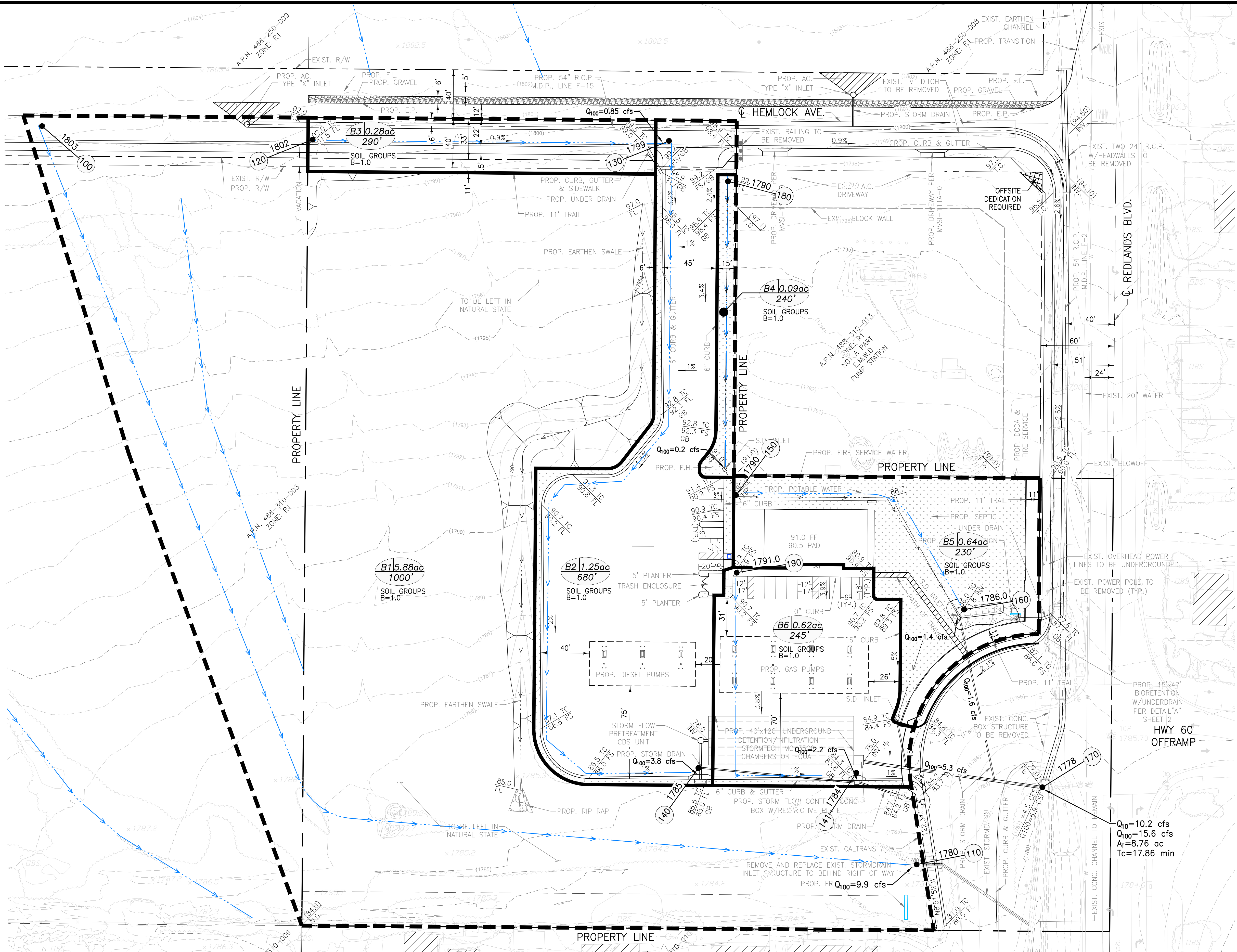
VICINITY MAP
N.T.S.



Winchester Associates, Inc.
ENGINEERING • LAND SURVEYING
23640 TOWER ST., SUITE 3
MORENO VALLEY, CA. 92553 (951) 924-5425
UNDER THE SUPERVISION OF:
MARIELA ANGUELOV DATE

CITY OF MORENO VALLEY
APN 488-310-012
REDLANDS BLVD AND HEMLOCK AVE PLAZA
PRE-DEVELOPED CONDITIONS
DATE OF PLAN PREPARATION: 06-06-2021

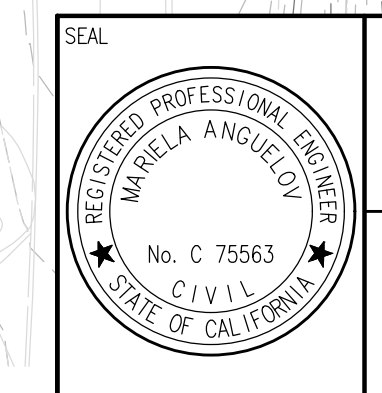
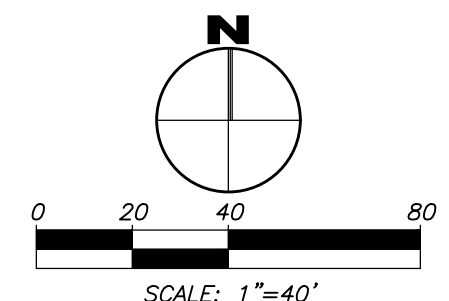
ACCT. NO.
SHEET 1 of 3
CITY I. D. NO.
LST21-0032



VICINITY MAP
N.T.S.

LEGEND:

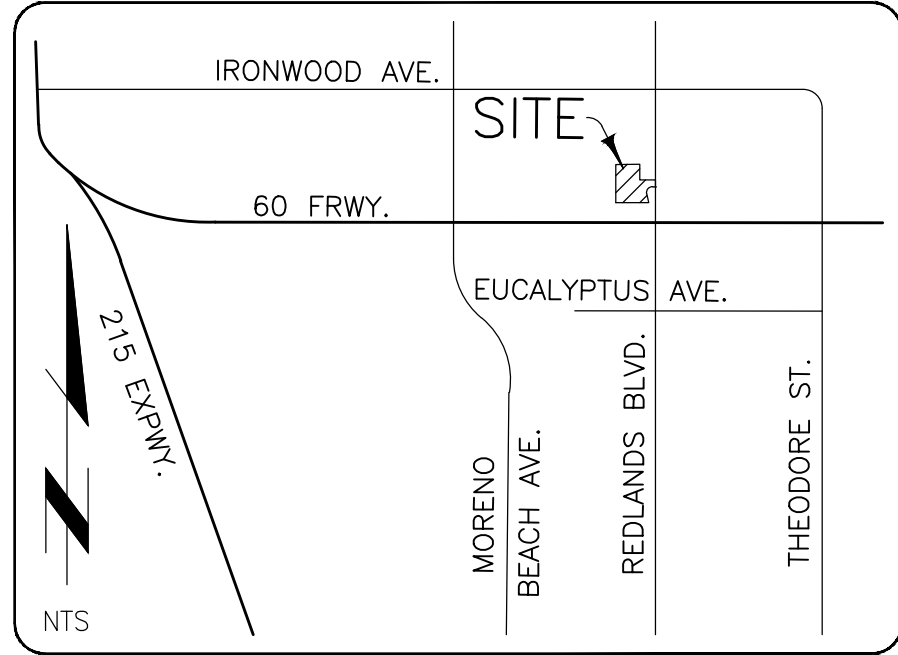
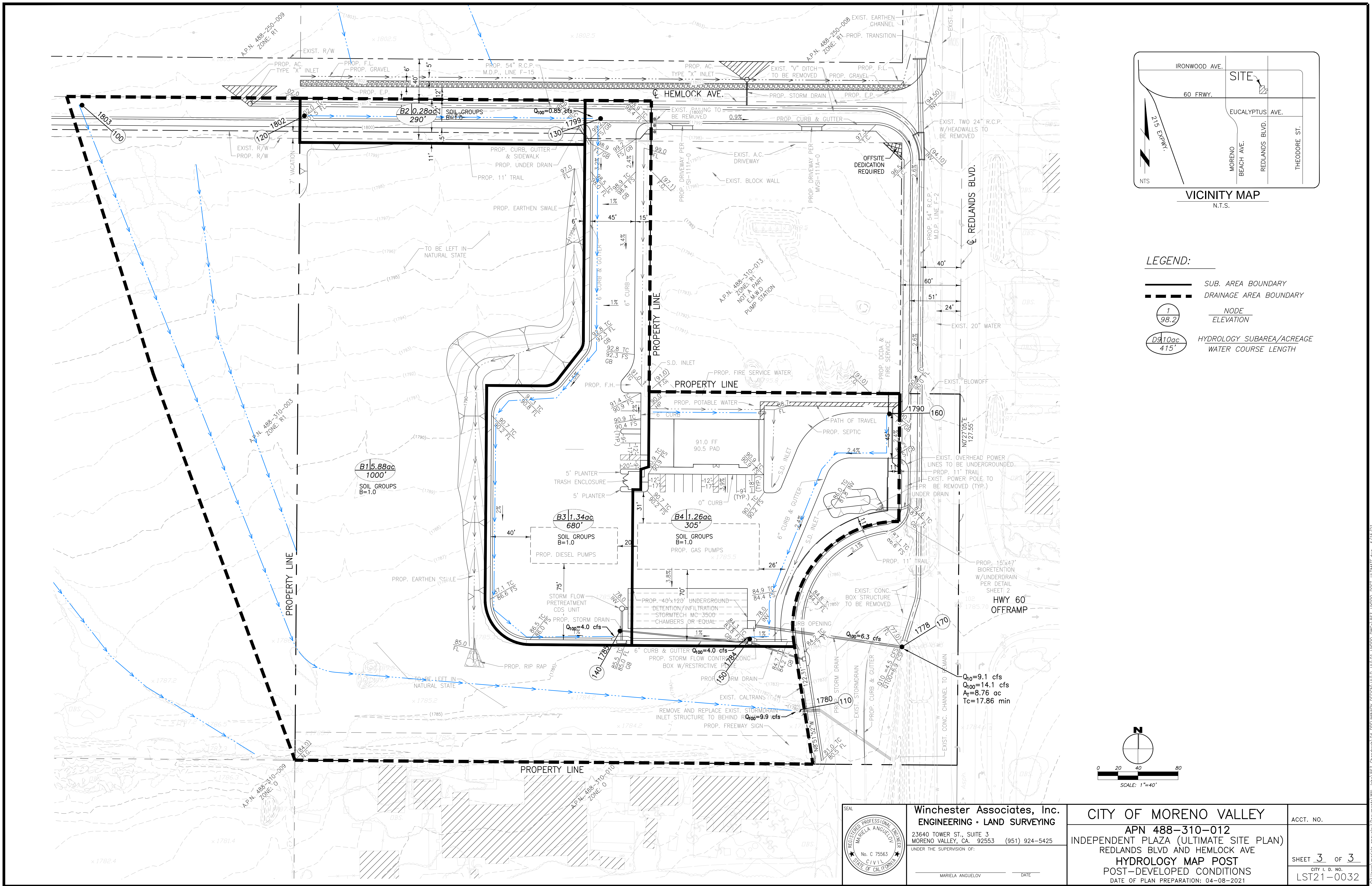
- SUB. AREA BOUNDARY
- DRAINAGE AREA BOUNDARY
- NODE
ELEVATION
- HYDROLOGY SUBAREA/ACREAGE
WATER COURSE LENGTH



Winchester Associates, Inc.
ENGINEERING • LAND SURVEYING
23640 TOWER ST., SUITE 3
MORENO VALLEY, CA. 92553 (951) 924-5425
UNDER THE SUPERVISION OF:
MARIELA ANGUELOV DATE

CITY OF MORENO VALLEY
APN 488-310-012
INDEPENDENT PLAZA (INTERIM SITE PLAN)
REDLANDS BLVD AND HEMLOCK AVE
HYDROLOGY MAP POST
POST-DEVELOPED CONDITIONS
DATE OF PLAN PREPARATION: 04-08-2021

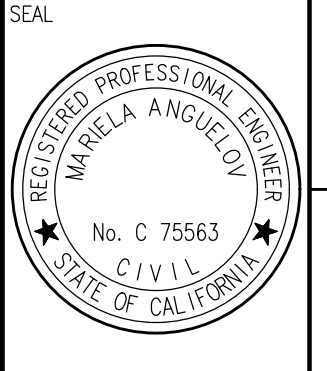
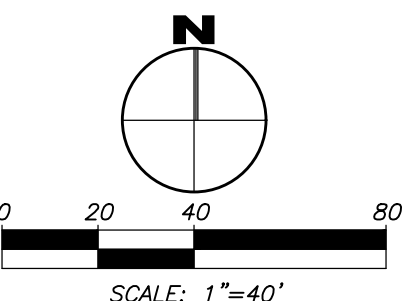
ACCT. NO.
SHEET 2 of 3
CITY I. D. NO.
LST21-0032



VICINITY MAP
N.T.S.

LEGEND:

- SUB. AREA BOUNDARY
- DRAINAGE AREA BOUNDARY
- NODE ELEVATION
- HYDROLOGY SUBAREA/ACREAGE WATER COURSE LENGTH



Winchester Associates, Inc.
ENGINEERING • LAND SURVEYING
23640 TOWER ST., SUITE 3
MORENO VALLEY, CA. 92553 (951) 924-5425
UNDER THE SUPERVISION OF:
MARIELA ANGUELOV DATE

CITY OF MORENO VALLEY
APN 488-310-012
INDEPENDENT PLAZA (ULTIMATE SITE PLAN)
REDLANDS BLVD AND HEMLOCK AVE
HYDROLOGY MAP POST
POST-DEVELOPED CONDITIONS
DATE OF PLAN PREPARATION: 04-08-2021

ACCT. NO.
SHEET 3 of 3
CITY I. D. NO.
LST21-0032

C:\Users\mariea\onepoint\Documents\Map-Jobs\863-Chandresh\04- PRELIMINARY DESIGN\HYDRO-POST-DEVELOPED-CONDITIONS\HYDRO-POST-ULTIMATE.dwg 4/15/21