
Appendix H1

Drainage Concept/Hydrology Report

DRAINAGE CONCEPT/HYDROLOGY REPORT

FOR “ELEPHANT HILL” VTTM NO. 72653

**City of Pomona
County of Los Angeles, California**

March 29, 2022

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DRAINAGE CONCEPT/HYDROLOGY REPORT

FOR

“ELEPHANT HILL”

VTTM NO. 72653

CITY OF POMONA

COUNTY OF LOS ANGELES

Prepared Date: 03/29/2022



PREPARED UNDER THE SUPERVISION OF:

A handwritten signature in black ink, appearing to read "Jianhua Guan".

1/07/2022

Jianhua “Gary” Guan, R.C.E. 64519, Exp. 06/30/23 Date:

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SECTION 1

INTRODUCTION & DISCUSSION

A. INTRODUCTION

The proposed residential development for Elephant Hill – Vesting Tentative Tract Map (VTTM) No. 72653 is located at just west of the intersection of West Mission Boulevard and Humane Way, in the City of Pomona. Specifically, the site is bound to the north by Metrolink Railroad right of way; to the east by the Pomona Police Heliport and Inland Valley Humane Society, and Humane Way beyond; to the south by West Mission Boulevard and an existing residential subdivision; and to the west by State Route 57 Freeway. The general location can be found from the vicinity map attached.

The site presently is vacant and the surrounding land use includes commercial/industrial and residential uses.

The overall property is approximately +/-120.60 gross acres and the development is proposed on approximately 43.24 acres in the southern and western portions of the tract.

The project site is not within Special Flood Hazard Areas (SFHAs). Per FIRM Map 06037C1725F dated September 26, 2008, the project site is located within Flood Zone “D” and Zone “D” designated as “Areas in which flood hazards are undetermined, but possible”.

Trumark Homes proposes Vesting Tentative Tract Map No. 72653 for a 227-unit multi-family residential development with common landscaping areas, private drives, curb, gutter, sidewalk and storm drain improvements, wet and dry utilities and related infrastructure improvements and open space areas.

B. DRAINAGE PATTERNS

The overall property is approximately +/-120.6 gross acres in size and the studied tributary areas (including off-site areas) is approximately 91.8 acres.

The project site lies within the eastern-central of the San Gabriel River Watershed and is tributary to San Jose Creek. The watershed is completely urbanized, characterized by industrial, commercial and residential land uses, impervious surfaces, and underground storm drains and engineered concrete-lined channels.

Existing Drainage

The topography of the project site is hilly and consists of a large rocky hill that slopes steeply outward from the center of the tract.

Drainage within the development area of the project site is generally divided by an existing hill into two drainage areas: a western drainage area and an eastern drainage area.

There is an existing 24” storm drain along Sorrento Drive which discharges into the incised channel. Drainage from the western area (including the off-site areas)

is generally conveyed southerly and westerly via natural sheet flow, rills, gullies and incised channels to a flat area just east of SR-57. Runoff is then conveyed westerly under SR-57 via 2 existing culverts prior to discharging to an existing city storm drain line (MTD 0822) and San Jose Creek. The off-site existing 24" pipe along Sorrento Drive and two existing culvert storm drain plans which were obtained from Caltrans can be found in Reference Section 5.

Drainage from the eastern area is generally conveyed southerly toward Mission Boulevard and then easterly to a low area prior to discharging to the existing storm drain line (MTD 62 and MTD 67) in Mission Boulevard. The existing storm drain plans for MTD 62 can be found in Reference Section 5. Runoff is then conveyed northeasterly to San Jose Creek Drain – South Fork Unit 1 and then northerly to San Jose Creek Drain – South Fork Unit 1 & 2.

Proposed Drainage

In the developed condition, stormwater and surface water onsite will be conveyed as surface flow to the project's backbone storm drain system. The off-site 24" storm drain along Sorrento Drive (about 22.0 acres of tributary areas) is proposed to join the on-site backbone storm drain systems. The on-site storm drain systems include catch basins. Storm drain pipe sizes varies and will be determined during the final design to meet the flood protection requirements. Runoff from the project's western development area is conveyed westerly to a proposed concrete channel located at the project's western limits. Runoff is then conveyed northerly along SR-57 prior to discharging to the two existing culverts, as in pre-project conditions.

Runoff from the eastern development area will be conveyed as surface flow to the project's backbone storm drain system and conveyed southerly and then easterly prior to discharging to the existing storm drain line in Mission Boulevard, as in pre-project conditions.

The proposed water quality basin and Modular Wetland Systems (MWS) are provided for the treatment of the water quality flows.

C. STUDY PURPOSE

The purpose of this study is to analyze pre-project and post-project hydrology of the project site to determine the peak flow rates of storm runoff and to analyze the negative impacts, if any, due to the project developments.

D. HYDROLOGIC INFORMATION

A 25-year storm was analyzed for the project site. The project site encompasses the No. 090 and 003 soil group with majority of Soil 090. The 50-year 24-hour isohyet is approximately 6.7 inches. The project falls into DPA zone 6. The 85th Percentile, 24-hr Rainfall is approximately 1.0 inches. The reference Los Angeles County Hydrology Map GIS information can be found in this Section.

The area averaged of 1% of impervious percentage (vacant Land Use) and a uniform 55% of impervious area (Duplexes Residential) was applied for the existing and proposed residential developments for the hydrology analysis.

E. METHODOLOGY

The project site has been divided into three (3) watersheds for analysis purposes, which including some offsite areas, cover a total of approximately 91.8± acres. The Modified Rational Methods included in the Los Angeles County 2006 Hydrology Manual was the hydrologic method used.

The time of concentration (Tc) for each subarea was computed using the Los Angeles County approved HydroCalc calculator. The calculator evaluates several hydrologic parameters such as soil type, land use, imperviousness, storm frequency, length and slope of each reach to calculate a time of concentration. This data was used with the Los Angeles County approved LAR04 software application to determine peak flow rates for 25-year storm events.

Using the times of concentrations for each subarea, the Modified Rational Method was then used to calculate the 25-Year, 24-Hour peak runoff flow for each subarea. The undeveloped tributary areas were analyzed using a burned coefficient to calculate peak runoff rates via LAR04 program. Unburned conditions were applied for all developed conditions.

The project's land use and imperviousness were determined from the Land Use and Imperviousness Table provided in the Los Angeles County Hydrology Manual.

The project site is located within DPA-6 debris potential areas. Bulking effects occur when debris is considered with the peak burned flows. Within the DPA-6, the bulking factor is 1.68. The burned and bulked peak runoff rates were calculated by factoring the peak burned runoff rates by the appropriate bulking factor.

The debris production rate for Debris Potential Zones DPA-6 has a debris potential of 48,000 cy/mi² for areas less than or equal to 0.1 mi².

F. HYDROLOGY CALCULATION RESULTS

The summary of the hydrology study results for 25-year burned and bulked flows and the comparisons between the existing and proposed conditions can be found in the following Hydrology Summary Table. The existing condition hydrology calculations and hydrology map can be found in Section 2 and the proposed condition hydrology calculations and hydrology map can be found in Section 3.

Hydrology Summary Table
Elephant Hill - VTTM 72653
City of Pomona, County Of Los Angeles

Drainage Area	Existing Condition (1)		Proposed Condition (2)			Differences (3) = (2) - (1)	
	Area	25-yr Storm Burn and Bulk Flow	Drainage Area	Area	25-yr Storm Burn and Bulk Flow	Area	25-yr Storm Burn and Bulk Flow
	(acre)	(cfs)		(acre)	(cfs)	(acre)	(cfs)
A	20.8	93.2	A	21.0	61.8	0.2	-31.4
B	49.4	154.7	B	59.2	96.9	9.8	-57.8
C	21.6	92.1	C	11.6	26.1	-10.0	-66.0
Total	91.80	340.00	Total	91.80	184.80	0.00	-155.20

As indicated from the summary table, the overall and each drainage area burned and bulked flows decreases due to the project development. The overall burned and bulked flow rate decreases 155.2 cfs for 25-year storm. Overall, it is concluded that there will have no adverse impacts to the existing drainage systems due to the project developments.

G. LID/WATER QUALITY

This will require all filtration water quality devices to be sized per Adjusted Design Intensity to Provide Additional Capture In Lieu of Volume Reduction (see attached below).

July 2018

Table 6: Adjusted Design Intensity to Provide Additional Capture In Lieu of Volume Reduction (Option B)

Adjusted Time of Concentration (min)	Reliable Infiltration Rate at Site			
	0 in/hr (ET only)	0.01 in/hr	0.05 in/hr	0.15 in/hr
	Capture Efficiency Target = 93.8%	Capture Efficiency Target = 94.1%	Capture Efficiency Target = 95.4%	Capture Efficiency Target = 98.1%
	Adjusted MWS Design Precipitation Intensities, in/hr			
5	0.55	0.57	0.66	N/A
7.5	0.51	0.53	0.60	0.96
10	0.48	0.49	0.57	0.90
15	0.44	0.45	0.52	0.79
20	0.41	0.42	0.48	0.74
30	0.37	0.38	0.43	0.64
60	0.31	0.31	0.35	0.50

NA = additional capture is not a viable option to offset volume reduction in these cases.

The design storm is determined using the 0.75 inch storm or the 85th percentile storm, whichever is greater. The 85th Percentile, 24-hr Rainfall is approximately 1.0 inches per Los Angeles County Hydrology Map GIS information. The 85th percentile storm (1.0 inches) was selected as the project design storm. The Time of Concentration (TC) calculations from the 85th percentile storm can be found in Section 4 by applying the LACDPW HydroCalc computer program.

There are 2 Modular Wetland Systems (MWS) provided for the eastern project developments. The water quality peak flow calculations can be found in Section 4. The total calculated water quality flow rate is about 1.032 cfs and the total provided treatment capacity is about 1.054 cfs with 0.268 cfs treatment capacity for the proposed MWS-4-21 and 0.786 cfs treatment capacity for the proposed MWS-12-24.

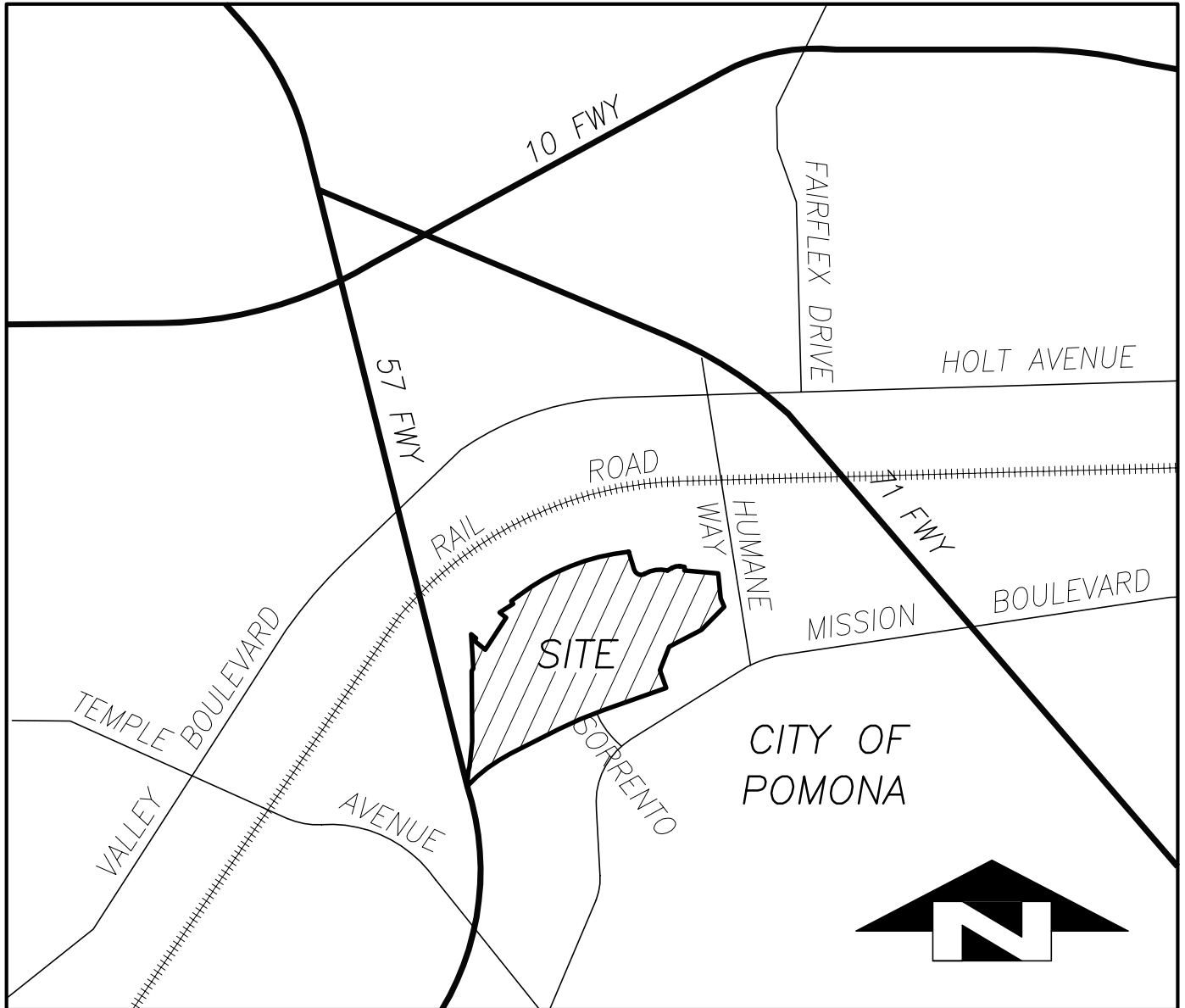
There is one Proprietary BioFiltration water quality basin provided for the western project site. The water quality volume calculations can be found in Section 4. The calculated water quality volume is about 1.4981 ac-ft and WQ flow rate is about 2.1144 cfs. The preliminary design and details can be found in separate LID report.

H. LID REPORT

The detailed Low Impact Development (LID) can be found from the separate LID report.

I. DOWNSTREAM STORM DRAIN CAPACITIES

As indicated from the summary table above, the overall and each drainage area burned and bulked flows decreases due to the project development. The downstream existing storm drain system capacities will be verified during the final design phase when the detailed existing storm drain information are available. Again, the burned and bulked flows are reduced due to the project developments and provided debris basin, there will have no adverse impacts to the existing downstream drainage systems due to the project developments.



VICINITY MAP

National Flood Hazard Layer FIRMMette



117°48'17"W 34°3'12"N



0 250 500 1,000 1,500 2,000 Feet 1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
OTHER FEATURES		Levee, Dike, or Floodwall
		Cross Sections with 1% Annual Chance Water Surface Elevation
OTHER FEATURES		Coastal Transect
		Base Flood Elevation Line (BFE)
OTHER FEATURES		Limit of Study
		Jurisdiction Boundary
OTHER FEATURES		Coastal Transect Baseline
		Profile Baseline
OTHER FEATURES		Hydrographic Feature
		Digital Data Available
MAP PANELS		No Digital Data Available
		Unmapped

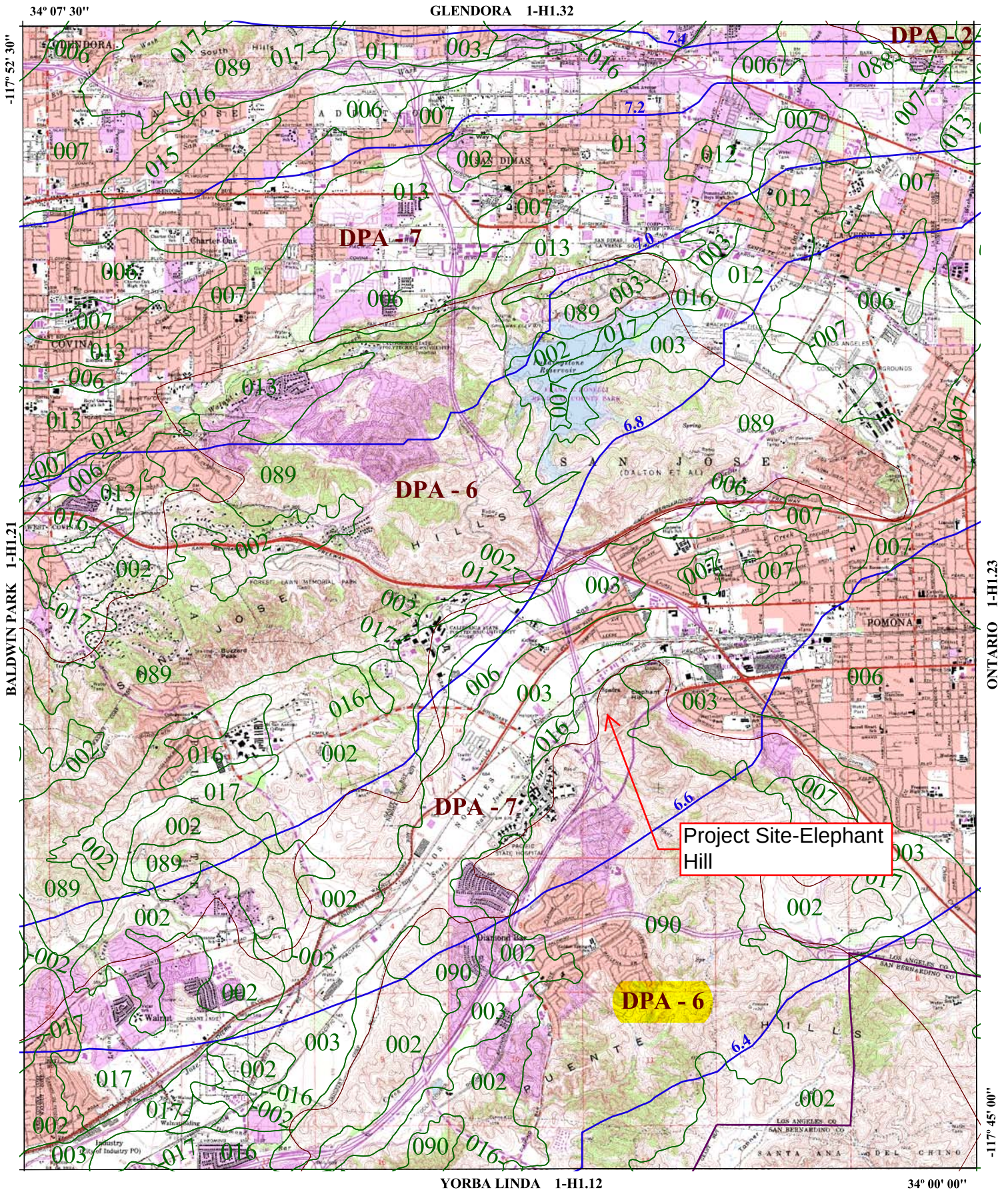


Zone D Areas in which flood hazards are undetermined, but possible

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **4/5/2022 at 11:37 AM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



016

SOIL
CLASSIFICATION
AREA

7.2

INCHES OF
RAINFALL

DPA - 6

DEBRIS
POTENTIAL
AREA

1 0 1 2 Miles

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

SAN DIMAS 50-YEAR 24-HOUR ISOHYET

1-H1.22



SECTION 2

EXISTING CONDITION

HYDROLOGY CALCULATIONS AND MAP

· **TC CALCULATIONS**

Peak Flow Hydrologic Analysis

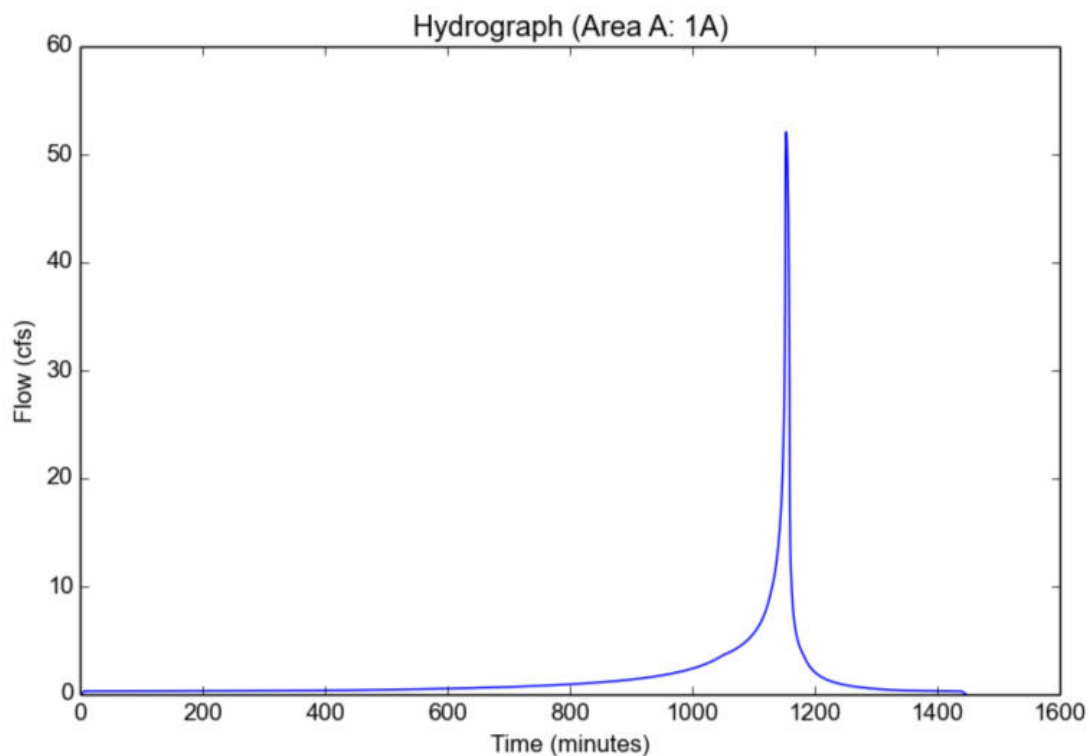
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	Area A
Subarea ID	1A
Area (ac)	20.8
Flow Path Length (ft)	1140.0
Flow Path Slope (vft/hft)	0.3127
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.01
Soil Type	90
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.8826
Peak Intensity (in/hr)	2.9963
Undeveloped Runoff Coefficient (Cu)	0.8348
Developed Runoff Coefficient (Cd)	0.8355
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	52.0709
Burned Peak Flow Rate (cfs)	52.0709
24-Hr Clear Runoff Volume (ac-ft)	3.1137
24-Hr Clear Runoff Volume (cu-ft)	135634.4882



Peak Flow Hydrologic Analysis

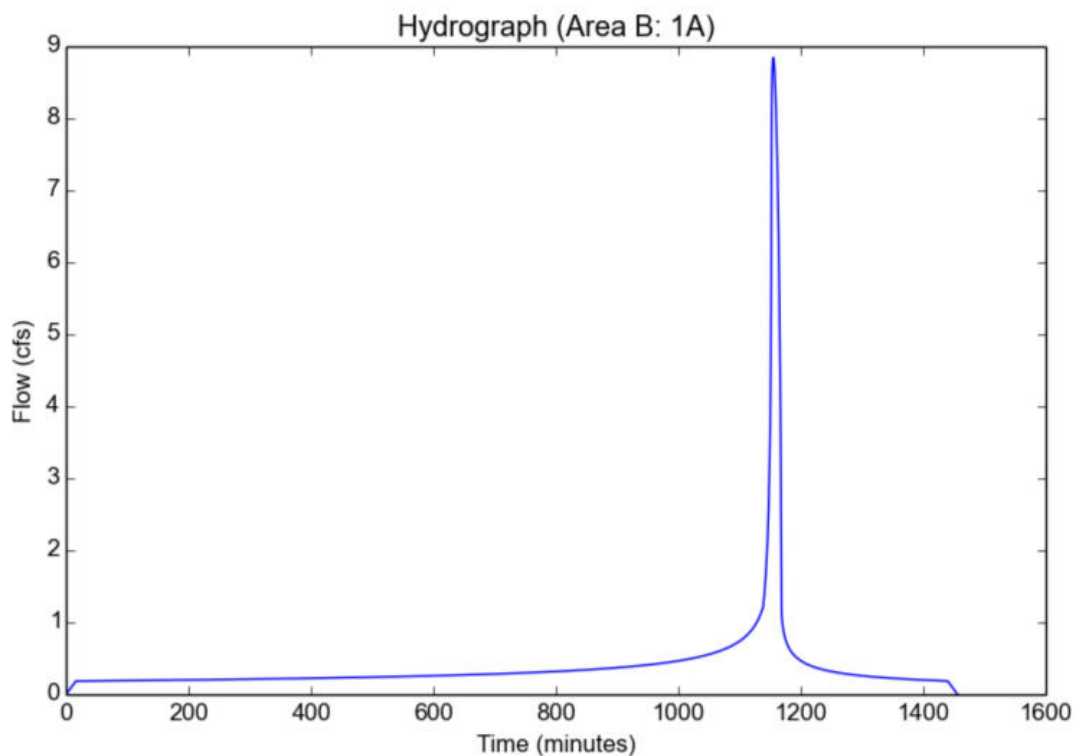
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	Area B
Subarea ID	1A
Area (ac)	13.1
Flow Path Length (ft)	1180.0
Flow Path Slope (vft/hft)	0.089
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.01
Soil Type	3
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.8826
Peak Intensity (in/hr)	2.0317
Undeveloped Runoff Coefficient (Cu)	0.3266
Developed Runoff Coefficient (Cd)	0.3323
Time of Concentration (min)	16.0
Clear Peak Flow Rate (cfs)	8.8448
Burned Peak Flow Rate (cfs)	8.8448
24-Hr Clear Runoff Volume (ac-ft)	0.8068
24-Hr Clear Runoff Volume (cu-ft)	35145.8566



Peak Flow Hydrologic Analysis

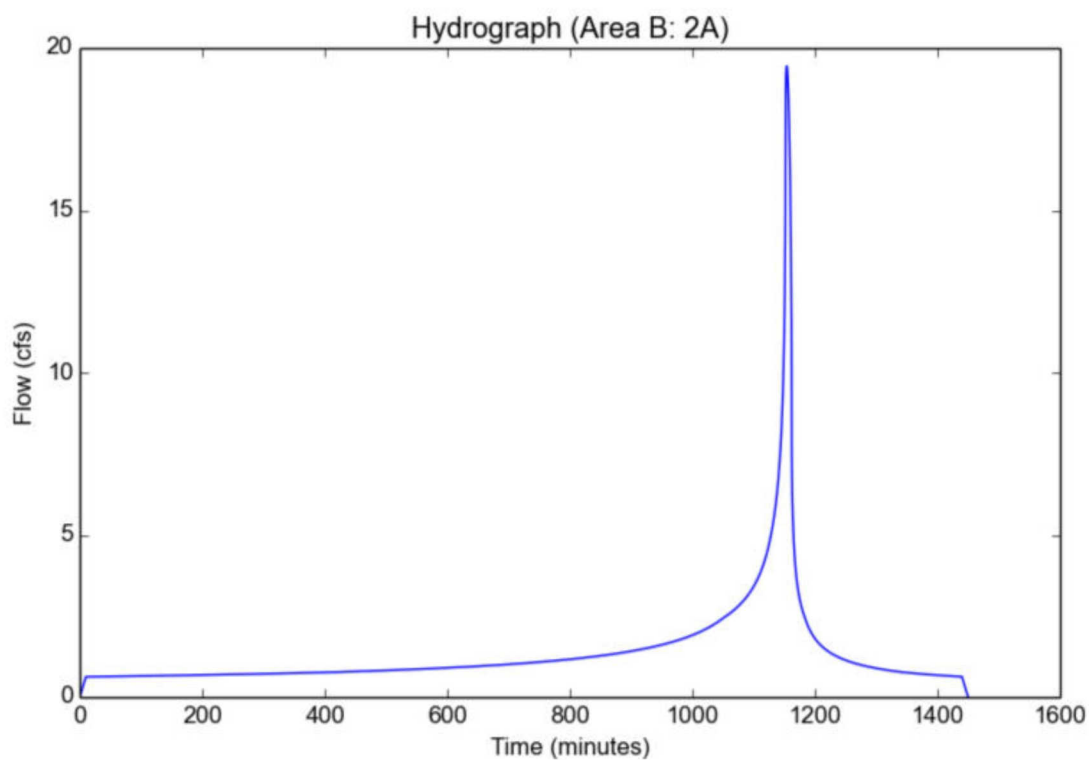
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	Area B
Subarea ID	2A
Area (ac)	8.9
Flow Path Length (ft)	1010.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.55
Soil Type	90
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.8826
Peak Intensity (in/hr)	2.5339
Undeveloped Runoff Coefficient (Cu)	0.8164
Developed Runoff Coefficient (Cd)	0.8624
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	19.4484
Burned Peak Flow Rate (cfs)	19.4484
24-Hr Clear Runoff Volume (ac-ft)	2.7293
24-Hr Clear Runoff Volume (cu-ft)	118888.3822



Peak Flow Hydrologic Analysis

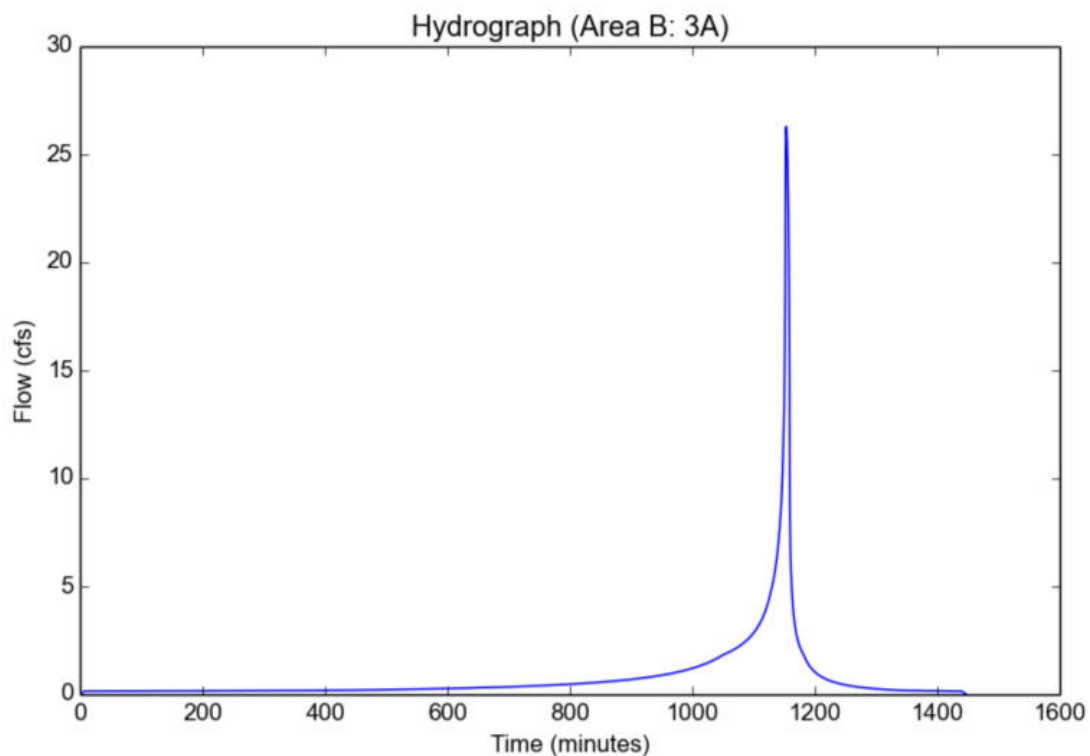
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	Area B
Subarea ID	3A
Area (ac)	10.5
Flow Path Length (ft)	1250.0
Flow Path Slope (vft/hft)	0.28
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.01
Soil Type	90
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.8826
Peak Intensity (in/hr)	2.9963
Undeveloped Runoff Coefficient (Cu)	0.8348
Developed Runoff Coefficient (Cd)	0.8355
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	26.2858
Burned Peak Flow Rate (cfs)	26.2858
24-Hr Clear Runoff Volume (ac-ft)	1.5718
24-Hr Clear Runoff Volume (cu-ft)	68469.333



Peak Flow Hydrologic Analysis

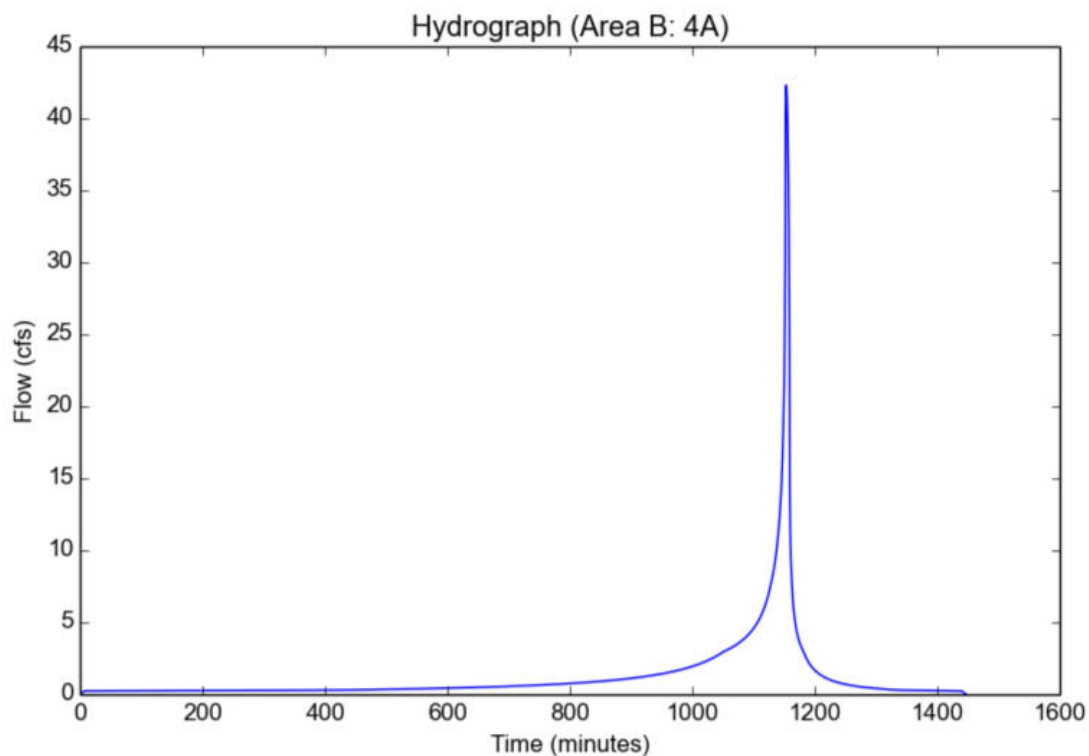
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	Area B
Subarea ID	4A
Area (ac)	16.9
Flow Path Length (ft)	1100.0
Flow Path Slope (vft/hft)	0.209
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.01
Soil Type	90
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.8826
Peak Intensity (in/hr)	2.9963
Undeveloped Runoff Coefficient (Cu)	0.8348
Developed Runoff Coefficient (Cd)	0.8355
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	42.3076
Burned Peak Flow Rate (cfs)	42.3076
24-Hr Clear Runoff Volume (ac-ft)	2.5299
24-Hr Clear Runoff Volume (cu-ft)	110203.0217



Peak Flow Hydrologic Analysis

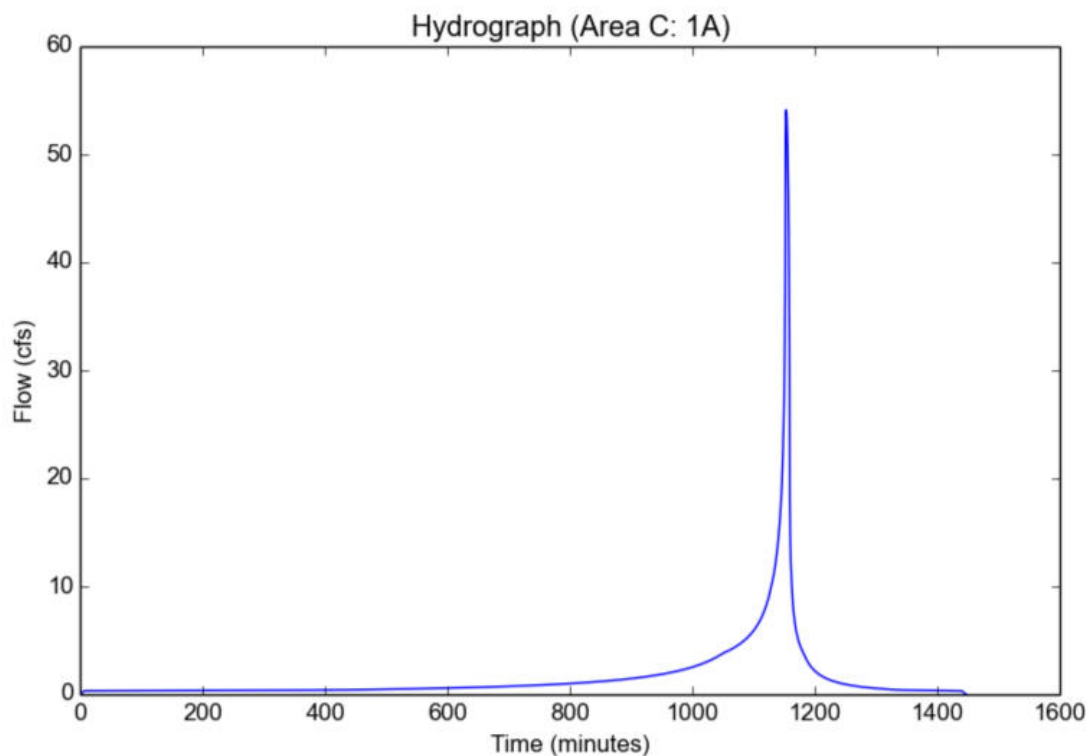
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	Area C
Subarea ID	1A
Area (ac)	21.6
Flow Path Length (ft)	1170.0
Flow Path Slope (vft/hft)	0.338
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.02
Soil Type	90
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.8826
Peak Intensity (in/hr)	2.9963
Undeveloped Runoff Coefficient (Cu)	0.8348
Developed Runoff Coefficient (Cd)	0.8361
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	54.1158
Burned Peak Flow Rate (cfs)	54.1158
24-Hr Clear Runoff Volume (ac-ft)	3.2963
24-Hr Clear Runoff Volume (cu-ft)	143586.9259



· **LAR04 PROGRAM CALCULATIONS**

Program Package Serial Number: 2222

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LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\LAR04\sgr_soilx_71.dat
Elephant Hill Existing Condition Hydrology Study (Area "A") - 25 STORM DAY 4

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	CONV	TYPE	CONV	LNTH(Ft)	SLOPE	SIZE(Ft)	CONV	Z	CONTROL	SOIL	Q(CFS)	NAME	TC	ZONE	RAIN	PCT	IMPV
5	1A	20.8		55.50	20.8		55.50	4		100.		.01000	2.75	.00		0.	290	7	A30				.01	
5	2A	.0		.00	20.8		55.35	0		0.		.00000	.00	.00		0.	290	99	A30				.01	

Program Package Serial Number: 2222

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LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\LAR04\sgr_soilx_71.dat
Elephant Hill Existing Condition Hydrology Study (Area "A") - 25 STORM DAY 3

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	CONV	TYPE	CONV	LNTH(Ft)	SLOPE	SIZE(Ft)	CONV	Z	CONTROL	SOIL	Q(CFS)	NAME	TC	ZONE	RAIN	PCT	IMPV
5	1A	20.8		16.43	20.8		16.43	4		100.		.01000	2.75	.00		0.	290	7	A30			.01		
5	2A	.0		.00	20.8		16.38	0		0.		.00000	.00	.00		0.	290	99	A30			.01		

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LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

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Elephant Hill Existing Condition Hydrology Study (Area "A") - 25 STORM DAY 2

LOCATION	SUBAREA	SUBAREA	TOTAL	TOTAL	CONV	CONV	CONV	CONV	CONV	CONTROL	SOIL	RAIN	PCT	
	AREA(Ac)	Q(CFS)	AREA(Ac)	Q(CFS)	TYPE	LNTH(Ft)	SLOPE	SIZE(Ft)	Z	Q(CFS)	NAME	TC	ZONE	IMPV
5 1A	20.8	19.36	20.8	19.36	4	100.	.01000	2.75	.00	0.	290	7	A30	.01
5 2A	.0	.00	20.8	19.30	0	0.	.00000	.00	.00	0.	290	99	A30	.01

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LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

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Elephant Hill Existing Condition Hydrology Study (Area "A") - 25

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	DAY 1 PCT IMPV
5	1A	20.8	2.96	20.8	2.96	4	100.	.01000	2.75	.00	0.	290	7	A30	.01
5	2A	.0	.00	20.8	2.95	0	0.	.00000	.00	.00	0.	290	99	A30	.01

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LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\LAR04\sgr_soilx_71.dat																
Elephant Hill Existing Condition Hydrology Study (Area "B") - 25																
LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	STORM DAY 4	PCT IMPV
5	1A	13.1	14.12	13.1	14.12	4	750.	.03500	2.00	.00	0.	203	16	A30		.01
5	2A	8.9	19.88	22.0	33.19	4	100.	.40000	2.00	.00	0.	90	10	A30		.55
5	3A	10.5	28.02	32.5	60.61	2	1090.	.04680	.00	.00	0.	290	7	A30		.01
5	4A	16.9	45.09	49.4	95.41	2	100.	.01000	.00	.00	0.	290	7	A30		.01

Program Package Serial Number: 2222

04/20/21 FILE: ehxb INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 2
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\LAR04\sgr_soilx_71.dat
Elephant Hill Existing Condition Hydrology Study (Area "B") - 25 STORM DAY 3

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	CONV	TYPE	CONV	LNTH(Ft)	SLOPE	CONV	SIZE(Ft)	CONV	Z	CONTROL	SOIL	Q(CFS)	NAME	TC	ZONE	RAIN	PCT
5	1A	13.1		2.90	13.1		2.90	4		750.		.03500		2.00	.00		0.	203	16	A30		.01		
5	2A	8.9		6.30	22.0		8.91	4		100.		.40000		2.00	.00		0.	90	10	A30		.55		
5	3A	10.5		8.29	32.5		17.06	2		1090.		.04680		.00	.00		0.	290	7	A30		.01		
5	4A	16.9		13.35	49.4		25.50	2		100.		.01000		.00	.00		0.	290	7	A30		.01		

Program Package Serial Number: 2222

04/20/21 FILE: ehxb INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 3
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\LAR04\sgr_soilx_71.dat
Elephant Hill Existing Condition Hydrology Study (Area "B") - 25 STORM DAY 2

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	CONV	TYPE	CONV	LNTH(Ft)	SLOPE	CONV	SIZE(Ft)	CONV	Z	CONTROL	SOIL	Q(CFS)	NAME	TC	ZONE	RAIN	PCT
5	1A	13.1		3.32	13.1		3.32	4		750.		.03500		2.00	.00		0.	203	16	A30		.01		
5	2A	8.9		7.31	22.0		10.33	4		100.		.40000		2.00	.00		0.	90	10	A30		.55		
5	3A	10.5		9.77	32.5		19.96	2		1090.		.04680		.00	.00		0.	290	7	A30		.01		
5	4A	16.9		15.73	49.4		30.31	2		100.		.01000		.00	.00		0.	290	7	A30		.01		

Program Package Serial Number: 2222

04/20/21 FILE: ehxb INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 4
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\LAR04\sgr_soilx_71.dat
Elephant Hill Existing Condition Hydrology Study (Area "B") - 25

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	TYPE	CONV	CONV	CONV	CONV	CONV	CONTROL	SOIL	TC	RAIN	PCT
5	1A	13.1		.82	13.1		.82	4	750.	.03500	2.00	.00	0.	203	16	A30	.01	
5	2A	8.9		1.46	22.0		2.14	4	100.	.40000	2.00	.00	0.	90	10	A30	.55	
5	3A	10.5		1.49	32.5		3.58	2	1090.	.04680	.00	.00	0.	290	7	A30	.01	
5	4A	16.9		2.40	49.4		4.16	2	100.	.01000	.00	.00	0.	290	7	A30	.01	

Program Package Serial Number: 2222

04/20/21 FILE: ehexc INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\LAR04\sgr_soilx_71.dat
Elephant Hill Existing Condition Hydrology Study (Area "C") - 25 STORM DAY 4

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	CONV	TYPE	CONV	LNTH(Ft)	SLOPE	SIZE(Ft)	CONV	Z	CONTROL	SOIL	Q(CFS)	NAME	TC	ZONE	RAIN	PCT	IMPV
5	1A	21.6		57.64	21.6		57.64	4		100.		.01000	3.00	.00		0.	290	7	A30			.02		
5	2A	.0		.00	21.6		57.49	0		0.		.00000	.00	.00		0.	290	99	A30			.02		

Program Package Serial Number: 2222

04/20/21 FILE: ehexc INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 3
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\LAR04\sgr_soilx_71.dat
Elephant Hill Existing Condition Hydrology Study (Area "C") - 25 STORM DAY 3

LOCATION	SUBAREA	SUBAREA	TOTAL	TOTAL	CONV	CONV	CONV	CONV	CONV	CONTROL	SOIL	RAIN	PCT	
	AREA(Ac)	Q(CFS)	AREA(Ac)	Q(CFS)	TYPE	LNTH(Ft)	SLOPE	SIZE(Ft)	Z	Q(CFS)	NAME	TC	ZONE	IMPV
5 1A	21.6	17.10	21.6	17.10	4	100.	.01000	3.00	.00	0.	290	7	A30	.02
5 2A	.0	.00	21.6	17.05	0	0.	.00000	.00	.00	0.	290	99	A30	.02

Program Package Serial Number: 2222

04/20/21 FILE: ehexc INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 5
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\LAR04\sgr_soilx_71.dat
Elephant Hill Existing Condition Hydrology Study (Area "C") - 25 STORM DAY 2

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	CONV	TYPE	CONV	LNTH(Ft)	SLOPE	SIZE(Ft)	CONV	Z	CONTROL	SOIL	Q(CFS)	NAME	TC	ZONE	RAIN	PCT	IMPV
5	1A	21.6		20.14	21.6		20.14	4		100.		.01000	3.00	.00		0.	290	7	A30			.02		
5	2A	.0		.00	21.6		20.08	0		0.		.00000	.00	.00		0.	290	99	A30			.02		

Program Package Serial Number: 2222

04/20/21 FILE: ehexc INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 7
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\LAR04\sgr_soilx_71.dat
Elephant Hill Existing Condition Hydrology Study (Area "C") - 25 STORM DAY 1

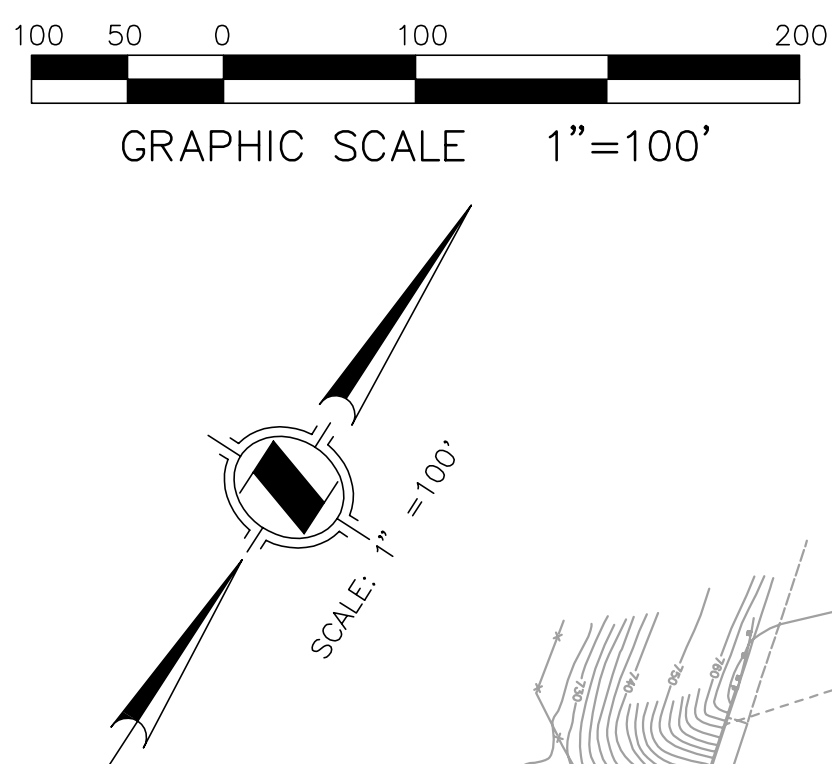
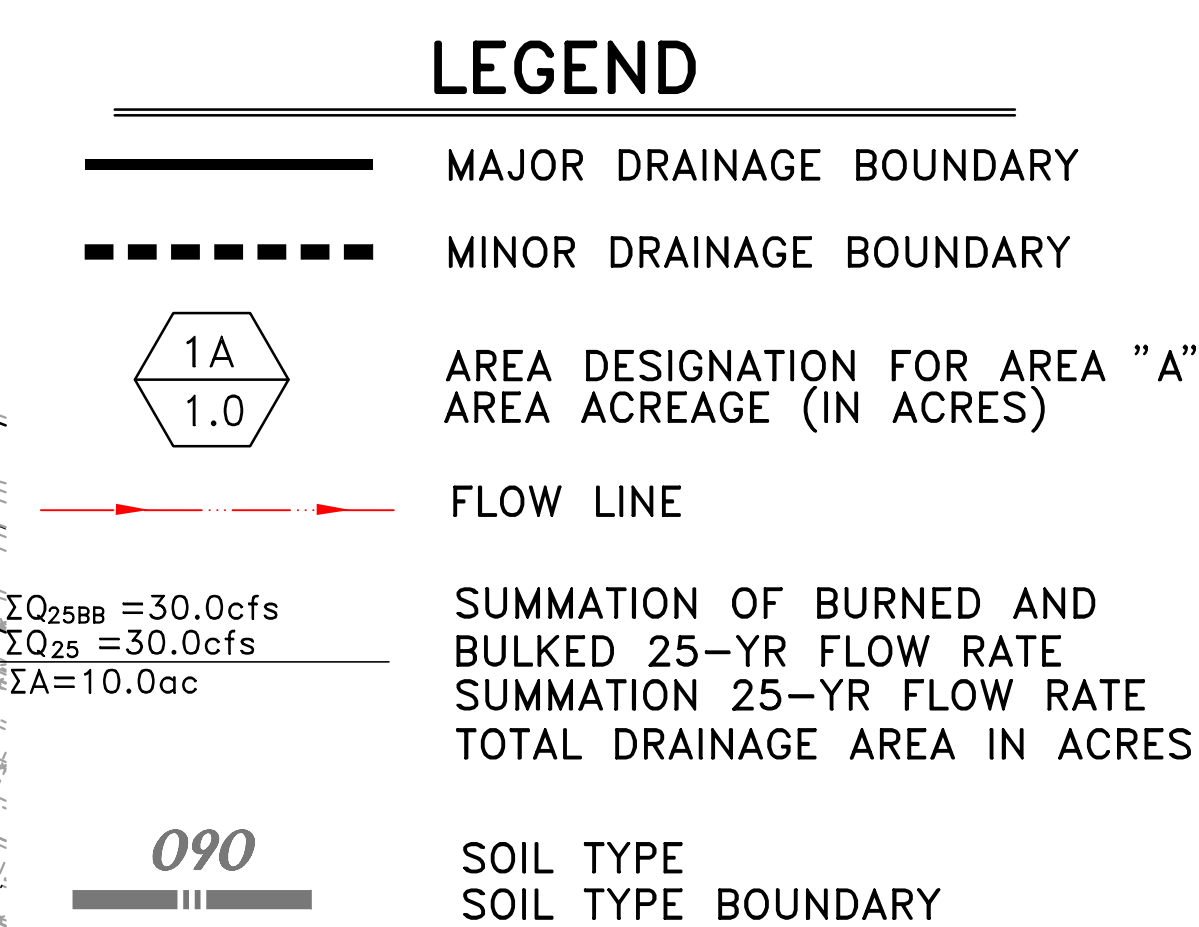
LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	CONV	TYPE	CONV	LNTH(Ft)	SLOPE	SIZE(Ft)	CONV	Z	CONTROL	SOIL	Q(CFS)	NAME	TC	ZONE	RAIN	PCT	IMPV
5	1A	21.6		3.10	21.6		3.10	4		100.		.01000	3.00	.00		0.	290	7	A30			.02		
5	2A	.0		.00	21.6		3.09	0		0.		.00000	.00	.00		0.	290	99	A30			.02		

- **BURNED AND BULKED FLOW CALCULATIONS**

Elephant Hill - VTTM 72653

Hydrologic Burned and Bulked Flows Table (Existing Condition)

Area	SUBARE	Node	AREA (Ac)	% IMPERVIOUSN	SOIL TYP	25-Yr ISOHY	25-YR TC	Q _{25B} (cfs)	Q25BB (cfs)	Σ Area	ΣQ25B (CFS)	ΣQ25B B (CFS)	NOTE
Area A	1A		20.8	0.01	90	5.88	7	55.5	93.2	20.8	55.5	93.2	
Area B	1A		13.1	0.01	3	5.88	16	14.1	23.7	13.1	14.1	23.7	
	2A		8.9	0.55	90	5.88	10	19.9	-	22.0	33.2	42.8	Ex. Developed Area, no burn and bulking
	3A		10.5	0.01	90	5.88	7	28.0	47.0	32.5	60.6	89.2	
	4A		16.9	0.01	90	5.88	7	45.1	75.8	49.4	95.4	154.7	
									TOTAL:	49.4	95.4	154.7	
Area C	1A		21.6	0.02	90	5.88	7	57.6	92.1	21.6	57.6	92.1	with 2.6 acre Spadra Cemetery developed area, the rest of 19.0 acres are burned and bulked in the calculation

**VICINITY MAP**

NOTE:

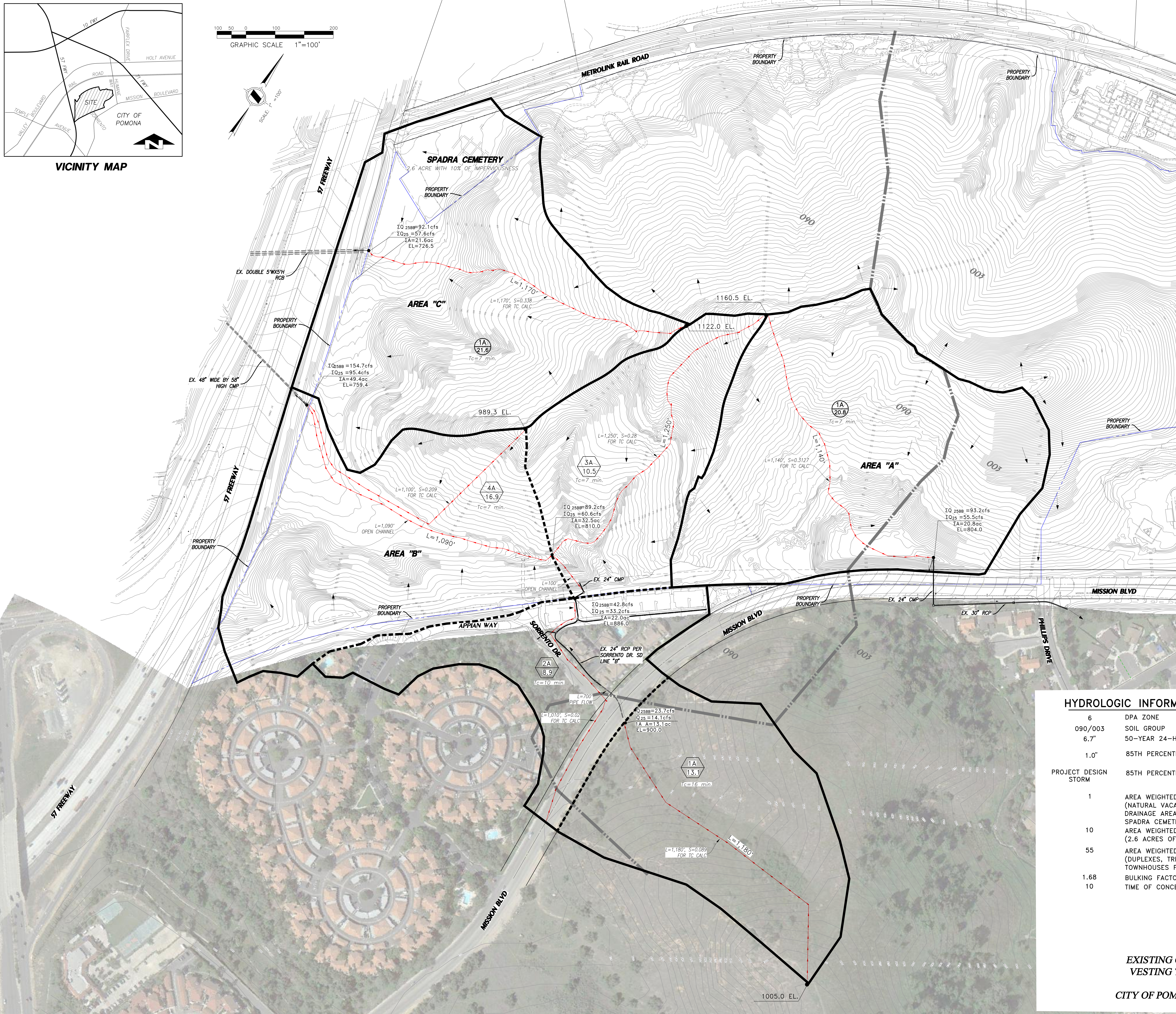
- NOT WITHIN COUNTY ADOPTED FLOODWAY
- NOT WITHIN FEMA FLOOD ZONE A

PREPARED BY:



PREPARED FOR:

TRUMARK HOMES
NEWPORT BEACH, CA 92660
CONTACT: JOE MARTIN
PH: (949) 999-9800



HYDROLOGIC INFORMATION

6	DPA ZONE
090/003	SOIL GROUP
6.7"	50-YEAR 24-HOUR ISOHYET
1.0"	85TH PERCENTILE STORM
PROJECT DESIGN STORM	85TH PERCENTILE STORM
1	AREA WEIGHTED AVERAGE % IMPERVIOUSNESS (NATURAL VACANT LAND FOR ALL THE AREAS EXCEPT DRAINAGE AREA "B" AREA 2A AND 2.6 ACRES OF SPADRA CEMETERY IN DRAINAGE AREA "C")
10	AREA WEIGHTED AVERAGE % IMPERVIOUSNESS (2.6 ACRES OF SPADRA CEMETERY IN DRAINAGE AREA "C")
55	AREA WEIGHTED AVERAGE % IMPERVIOUSNESS (DUPLEXES, TRIPLEXES AND 2-OR 3-UNIT CONDOMINIUMS AND TOWNHOUSES FOR DRAINAGE AREA "B" AREA 2A)
1.68	BULKING FACTOR FOR NATURAL AREAS
10	TIME OF CONCENTRATION (TC) IN MINUTE

450 NEWPORT CENTER DRIVE, SUITE 300

EXHIBIT 1
EXISTING CONDITION HYDROLOGY MAP
VESTING TENTATIVE TRACT MAP 72653
ELEPHANT HILL
CITY OF POMONA, COUNTY OF LOS ANGELES

SECTION 3

PROPOSED CONDITION

HYDROLOGY CALCULATIONS AND MAP

- **TC CALCULATIONS**

Peak Flow Hydrologic Analysis

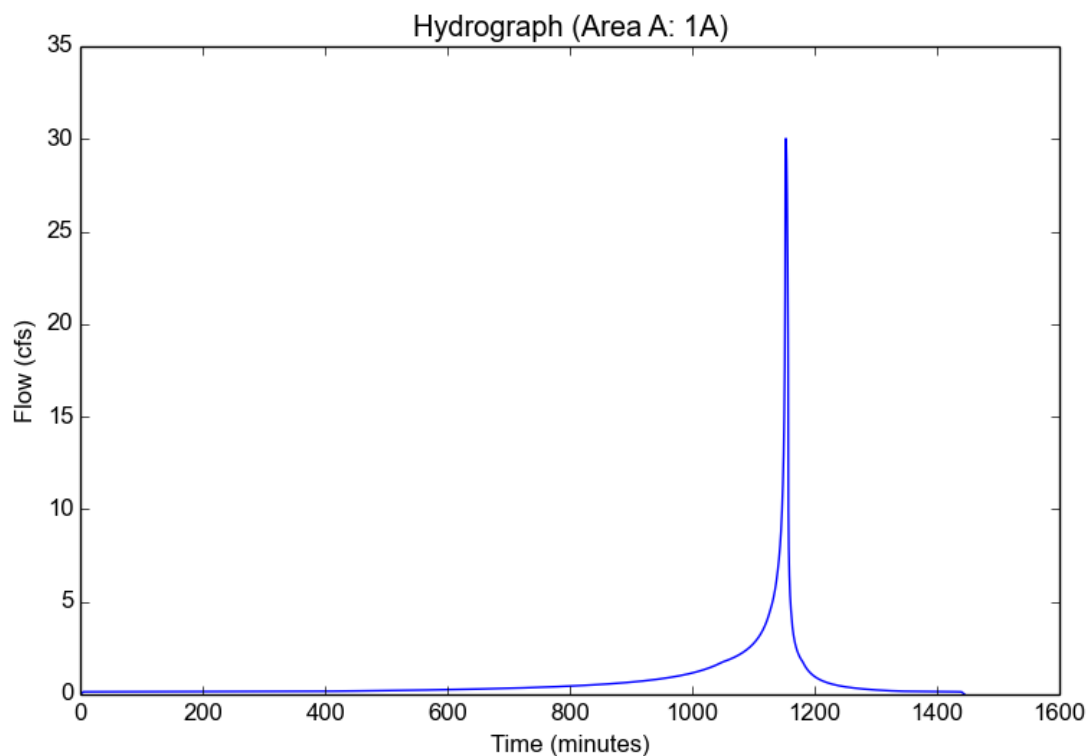
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	Area A
Subarea ID	1A
Area (ac)	10.0
Flow Path Length (ft)	750.0
Flow Path Slope (vft/hft)	0.414
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.01
Soil Type	90
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.8826
Peak Intensity (in/hr)	3.5097
Undeveloped Runoff Coefficient (Cu)	0.8551
Developed Runoff Coefficient (Cd)	0.8556
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	30.0279
Burned Peak Flow Rate (cfs)	30.0279
24-Hr Clear Runoff Volume (ac-ft)	1.4981
24-Hr Clear Runoff Volume (cu-ft)	65259.1755



Peak Flow Hydrologic Analysis

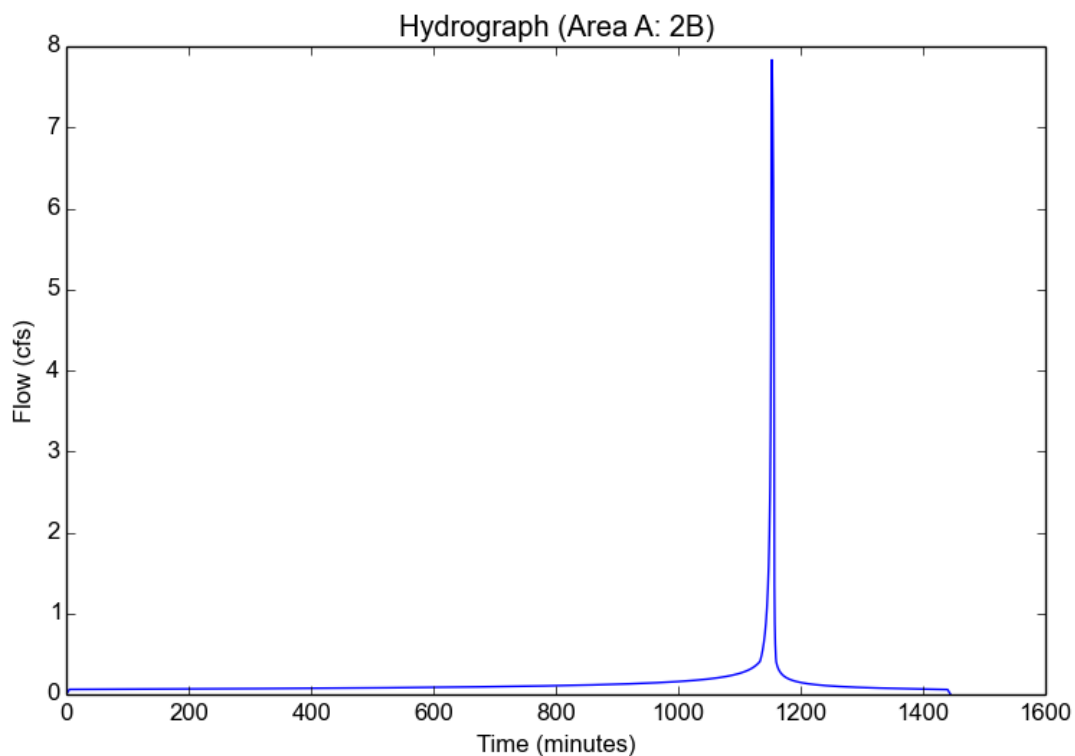
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	Area A
Subarea ID	2B
Area (ac)	4.4
Flow Path Length (ft)	525.0
Flow Path Slope (vft/hft)	0.4876
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.01
Soil Type	3
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.8826
Peak Intensity (in/hr)	3.5097
Undeveloped Runoff Coefficient (Cu)	0.5033
Developed Runoff Coefficient (Cd)	0.5073
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	7.8339
Burned Peak Flow Rate (cfs)	7.8339
24-Hr Clear Runoff Volume (ac-ft)	0.2823
24-Hr Clear Runoff Volume (cu-ft)	12298.6627



Peak Flow Hydrologic Analysis

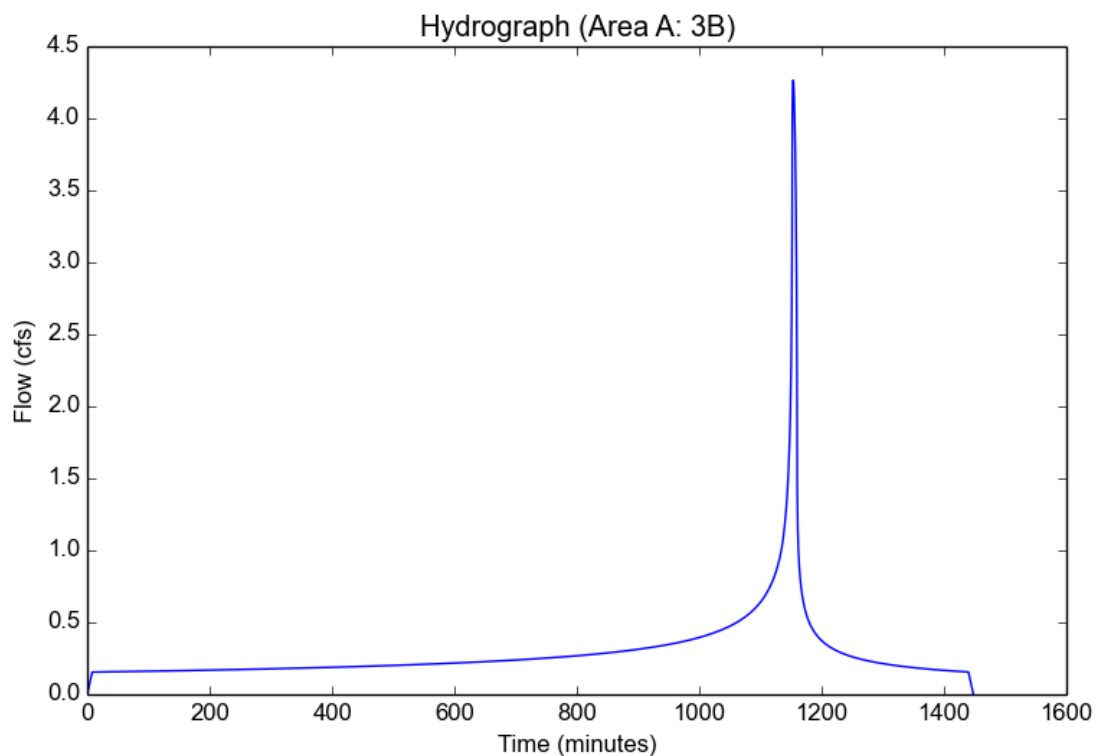
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	Area A
Subarea ID	3B
Area (ac)	2.2
Flow Path Length (ft)	485.0
Flow Path Slope (vft/hft)	0.0103
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.55
Soil Type	3
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.8826
Peak Intensity (in/hr)	2.8141
Undeveloped Runoff Coefficient (Cu)	0.4306
Developed Runoff Coefficient (Cd)	0.6888
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	4.2641
Burned Peak Flow Rate (cfs)	4.2641
24-Hr Clear Runoff Volume (ac-ft)	0.5884
24-Hr Clear Runoff Volume (cu-ft)	25632.2464



Peak Flow Hydrologic Analysis

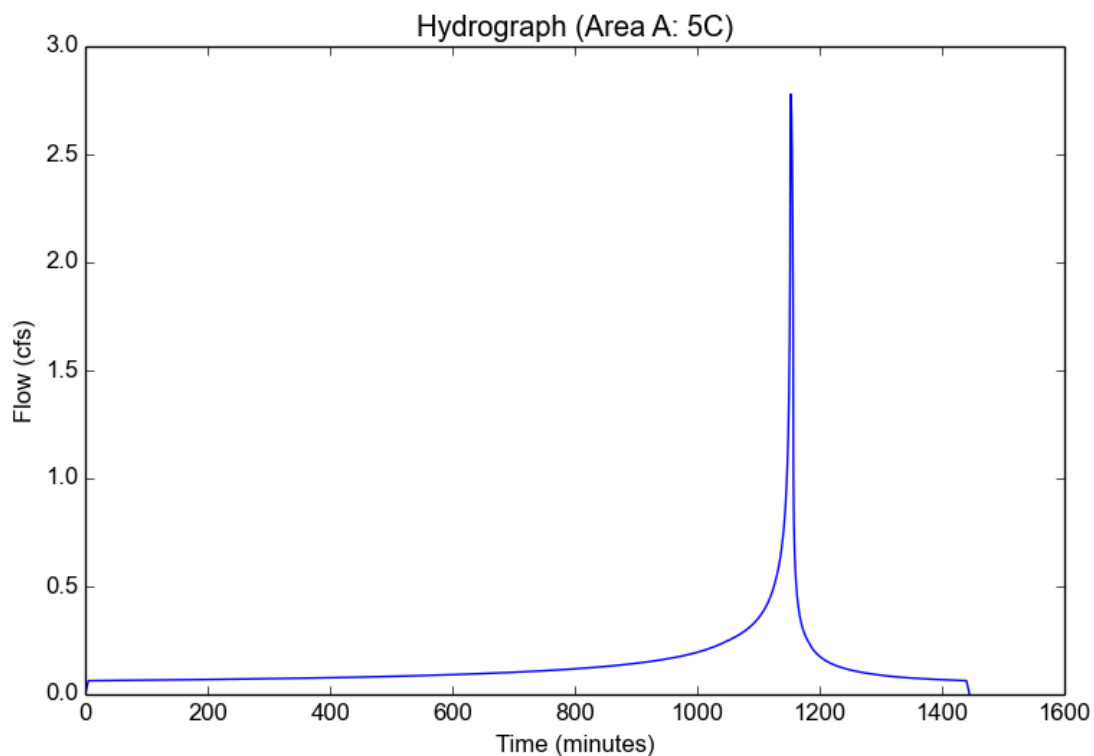
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	Area A
Subarea ID	5C
Area (ac)	0.9
Flow Path Length (ft)	475.0
Flow Path Slope (vft/hft)	0.04
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.55
Soil Type	90
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.8826
Peak Intensity (in/hr)	3.5097
Undeveloped Runoff Coefficient (Cu)	0.8551
Developed Runoff Coefficient (Cd)	0.8798
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.7791
Burned Peak Flow Rate (cfs)	2.7791
24-Hr Clear Runoff Volume (ac-ft)	0.2761
24-Hr Clear Runoff Volume (cu-ft)	12026.2392



Peak Flow Hydrologic Analysis

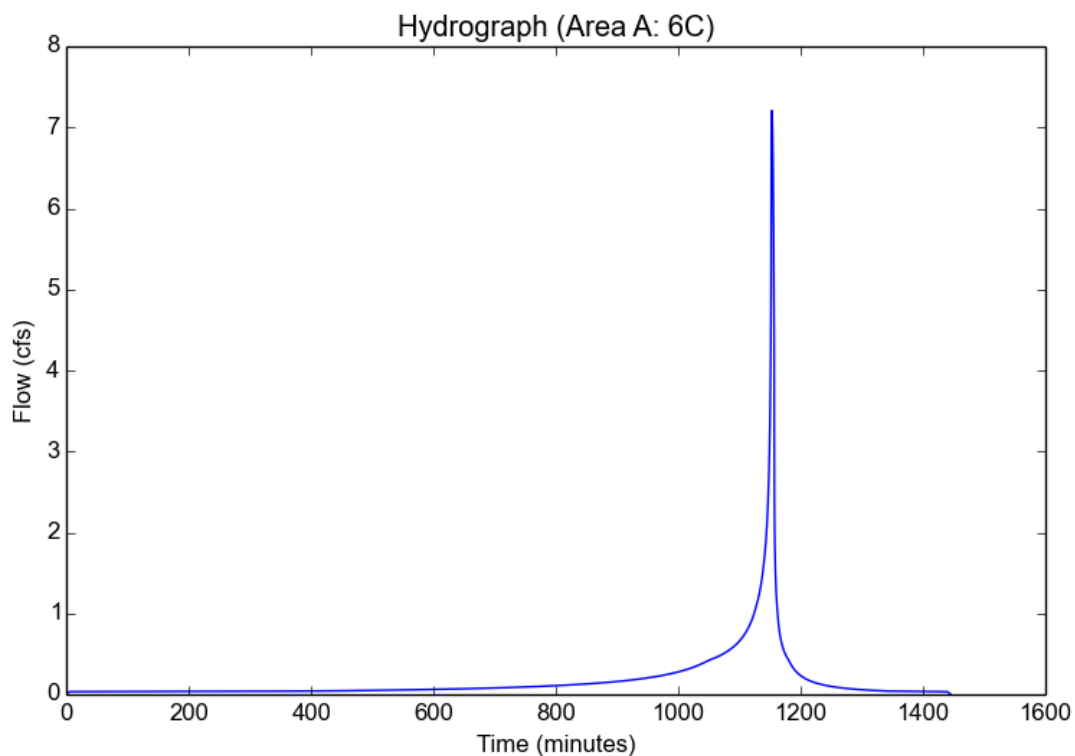
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	Area A
Subarea ID	6C
Area (ac)	2.4
Flow Path Length (ft)	485.0
Flow Path Slope (vft/hft)	0.3134
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.01
Soil Type	90
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.8826
Peak Intensity (in/hr)	3.5097
Undeveloped Runoff Coefficient (Cu)	0.8551
Developed Runoff Coefficient (Cd)	0.8556
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	7.2067
Burned Peak Flow Rate (cfs)	7.2067
24-Hr Clear Runoff Volume (ac-ft)	0.3596
24-Hr Clear Runoff Volume (cu-ft)	15662.2021



Peak Flow Hydrologic Analysis

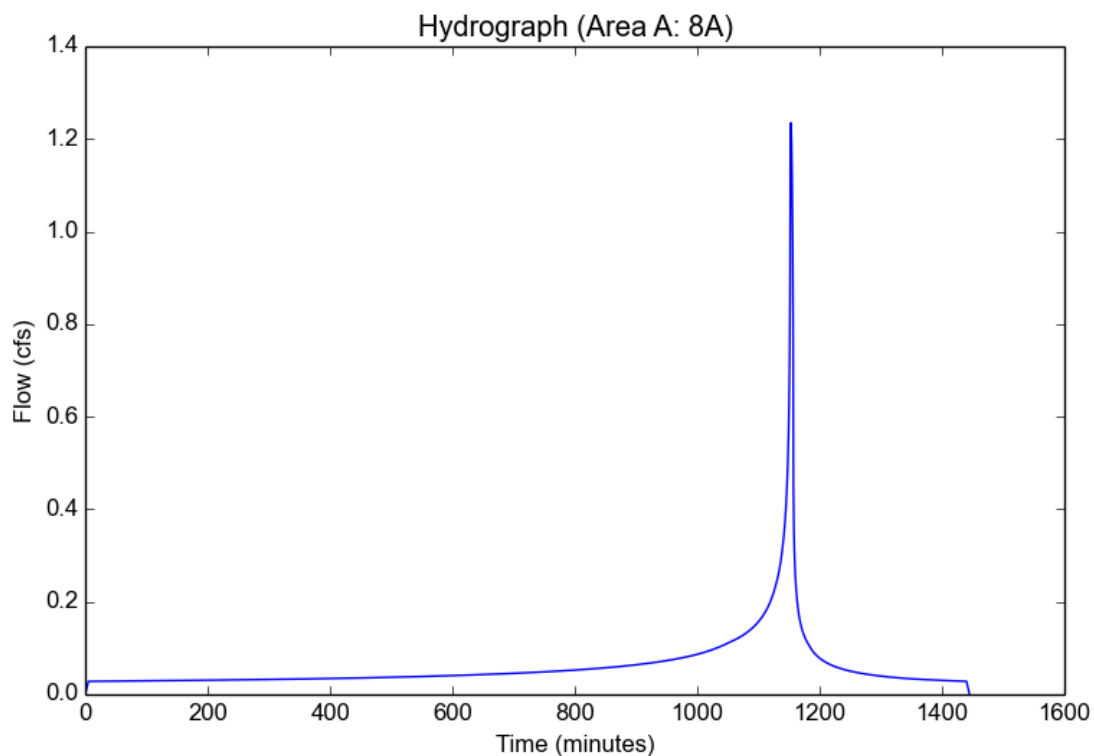
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	Area A
Subarea ID	8A
Area (ac)	0.4
Flow Path Length (ft)	200.0
Flow Path Slope (vft/hft)	0.0175
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.55
Soil Type	90
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.8826
Peak Intensity (in/hr)	3.5097
Undeveloped Runoff Coefficient (Cu)	0.8551
Developed Runoff Coefficient (Cd)	0.8798
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.2351
Burned Peak Flow Rate (cfs)	1.2351
24-Hr Clear Runoff Volume (ac-ft)	0.1227
24-Hr Clear Runoff Volume (cu-ft)	5344.9952



Peak Flow Hydrologic Analysis

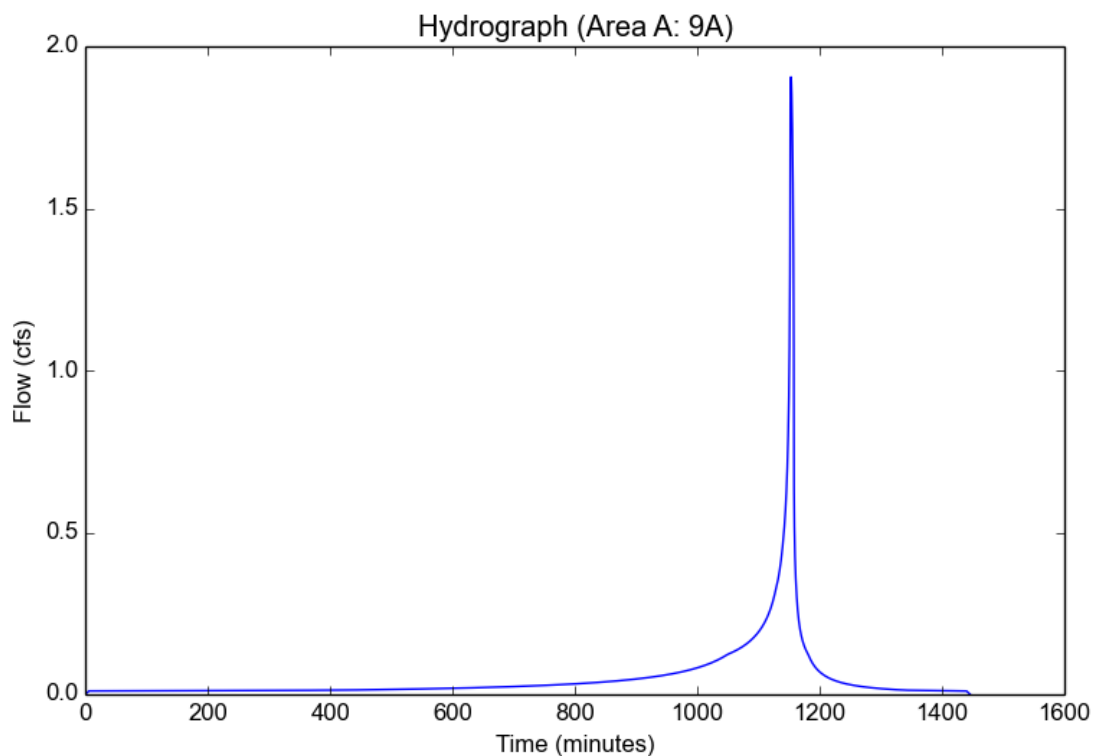
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	Area A
Subarea ID	9A
Area (ac)	0.7
Flow Path Length (ft)	560.0
Flow Path Slope (vft/hft)	0.0571
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.02
Soil Type	90
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.8826
Peak Intensity (in/hr)	3.2215
Undeveloped Runoff Coefficient (Cu)	0.8438
Developed Runoff Coefficient (Cd)	0.8449
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	1.9053
Burned Peak Flow Rate (cfs)	1.9053
24-Hr Clear Runoff Volume (ac-ft)	0.1069
24-Hr Clear Runoff Volume (cu-ft)	4654.7618



Peak Flow Hydrologic Analysis

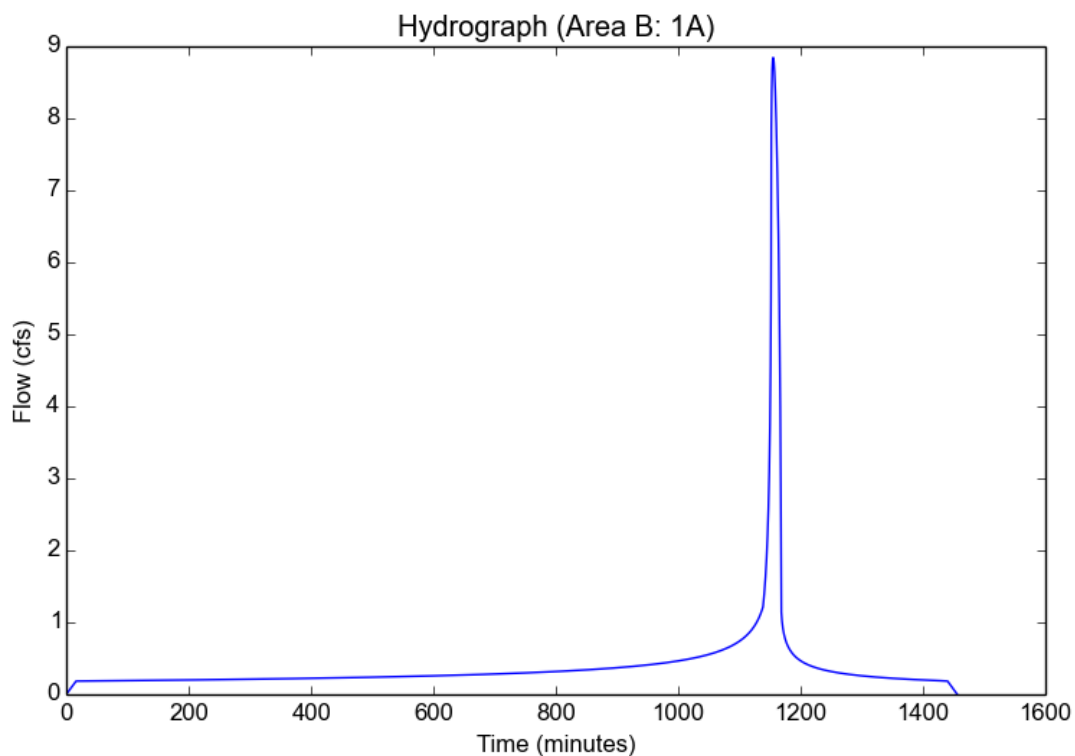
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	Area B
Subarea ID	1A
Area (ac)	13.1
Flow Path Length (ft)	1180.0
Flow Path Slope (vft/hft)	0.089
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.01
Soil Type	3
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.8826
Peak Intensity (in/hr)	2.0317
Undeveloped Runoff Coefficient (Cu)	0.3266
Developed Runoff Coefficient (Cd)	0.3323
Time of Concentration (min)	16.0
Clear Peak Flow Rate (cfs)	8.8448
Burned Peak Flow Rate (cfs)	8.8448
24-Hr Clear Runoff Volume (ac-ft)	0.8068
24-Hr Clear Runoff Volume (cu-ft)	35145.8566



Peak Flow Hydrologic Analysis

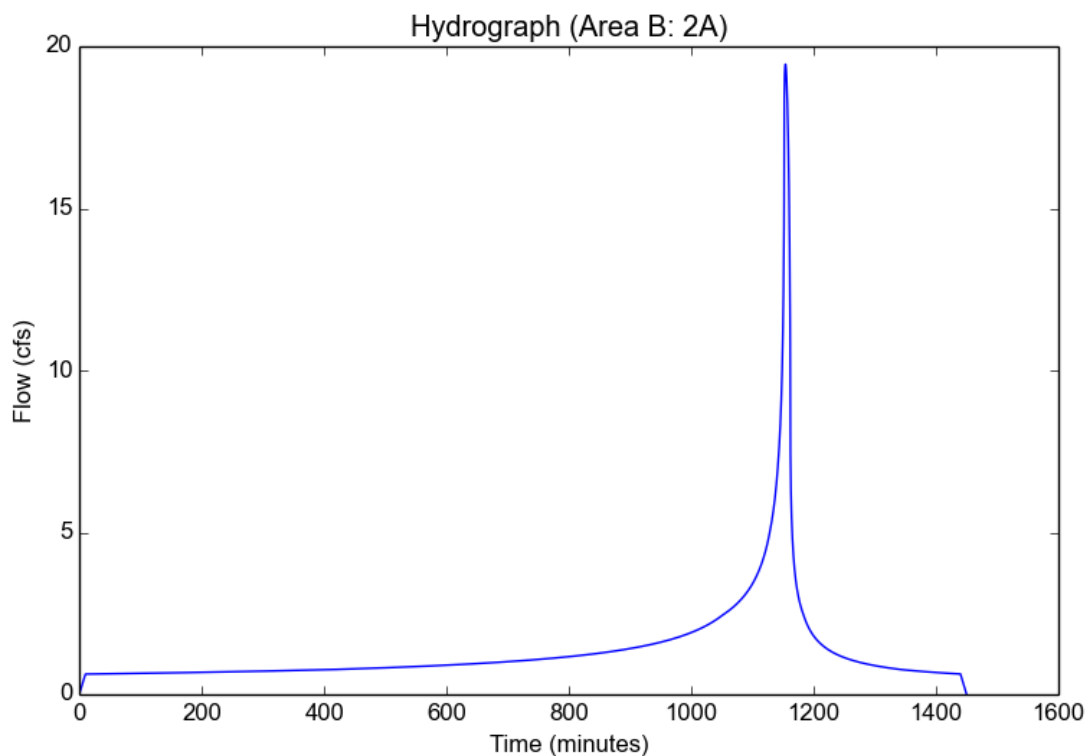
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	Area B
Subarea ID	2A
Area (ac)	8.9
Flow Path Length (ft)	1010.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.55
Soil Type	90
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.8826
Peak Intensity (in/hr)	2.5339
Undeveloped Runoff Coefficient (Cu)	0.8164
Developed Runoff Coefficient (Cd)	0.8624
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	19.4484
Burned Peak Flow Rate (cfs)	19.4484
24-Hr Clear Runoff Volume (ac-ft)	2.7293
24-Hr Clear Runoff Volume (cu-ft)	118888.3822



Peak Flow Hydrologic Analysis

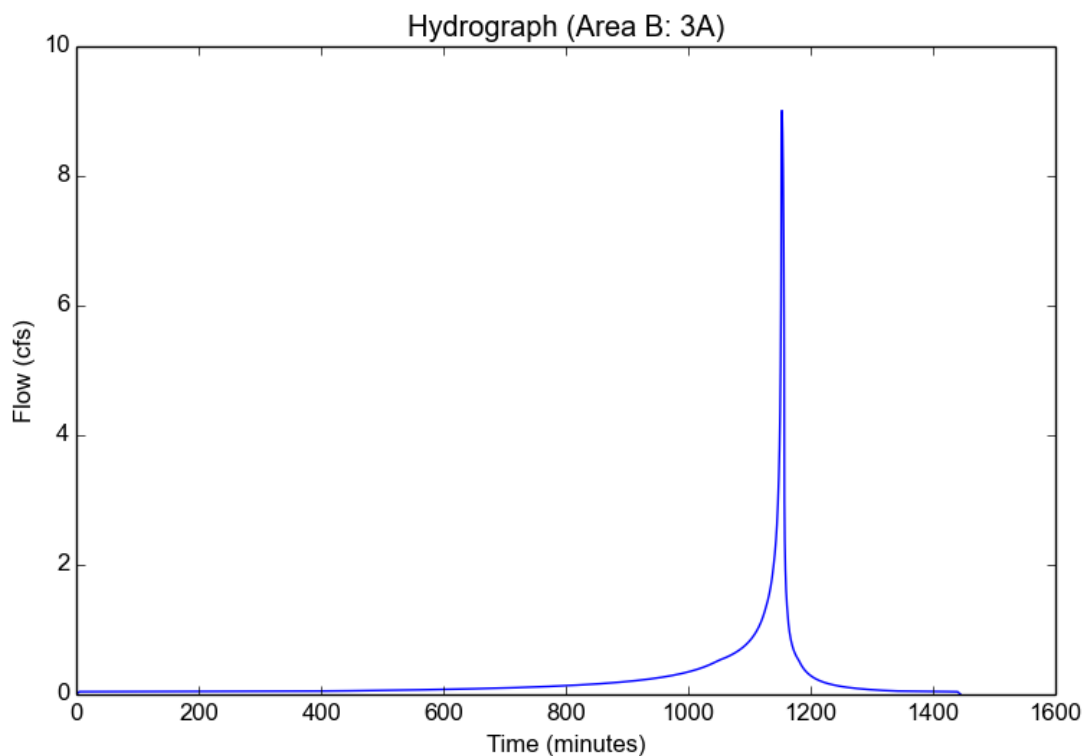
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	Area B
Subarea ID	3A
Area (ac)	3.0
Flow Path Length (ft)	680.0
Flow Path Slope (vft/hft)	0.3971
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.01
Soil Type	90
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.8826
Peak Intensity (in/hr)	3.5097
Undeveloped Runoff Coefficient (Cu)	0.8551
Developed Runoff Coefficient (Cd)	0.8556
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	9.0084
Burned Peak Flow Rate (cfs)	9.0084
24-Hr Clear Runoff Volume (ac-ft)	0.4494
24-Hr Clear Runoff Volume (cu-ft)	19577.7526



Peak Flow Hydrologic Analysis

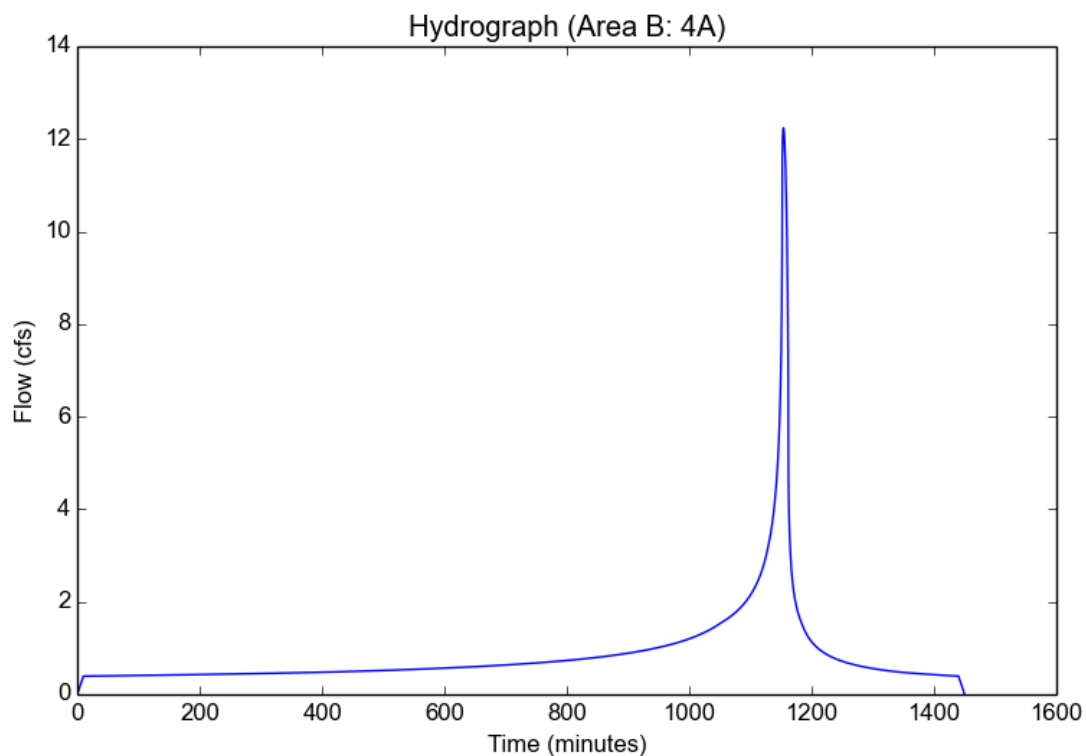
File location: F:/0054/Engineering/SY_Hydrology/Hydrology Calculations/Proposed Area B Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Area B
Subarea ID	4A
Area (ac)	5.6
Flow Path Length (ft)	1100.0
Flow Path Slope (vft/hft)	0.025
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.55
Soil Type	90
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.8826
Peak Intensity (in/hr)	2.5339
Undeveloped Runoff Coefficient (Cu)	0.8164
Developed Runoff Coefficient (Cd)	0.8624
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	12.2372
Burned Peak Flow Rate (cfs)	12.2372
24-Hr Clear Runoff Volume (ac-ft)	1.7173
24-Hr Clear Runoff Volume (cu-ft)	74806.1731



Peak Flow Hydrologic Analysis

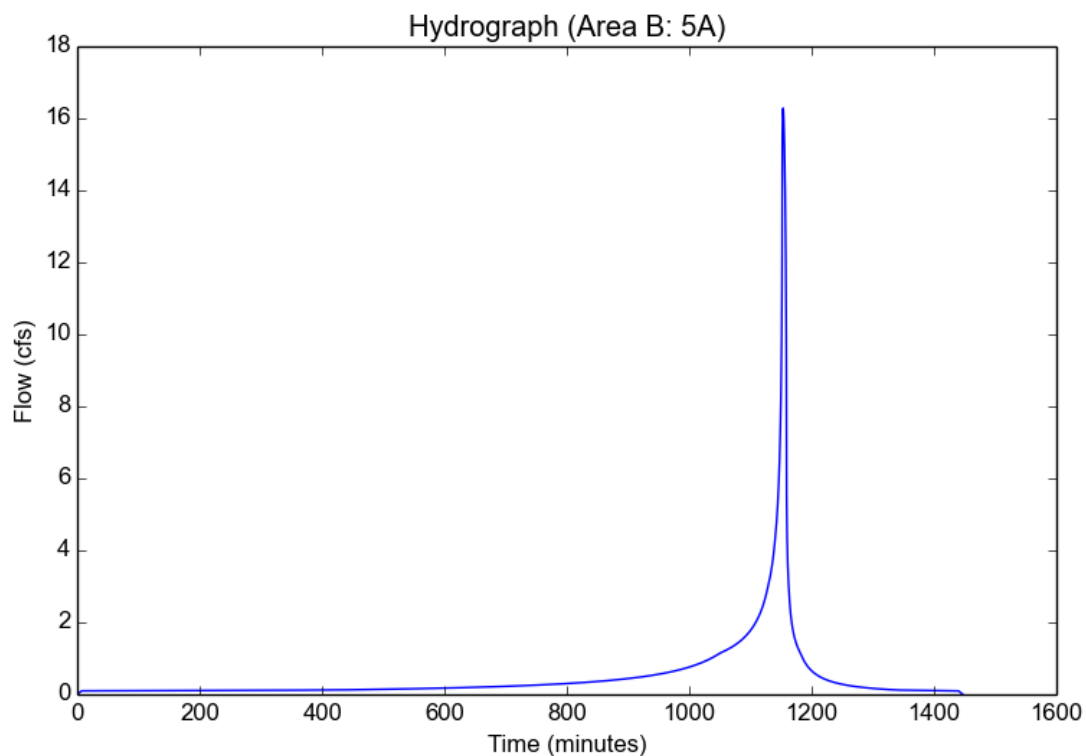
File location: F:/0054/Engineering/SY_Hydrology/Hydrology Calculations/Proposed Area B Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Area B
Subarea ID	5A
Area (ac)	6.5
Flow Path Length (ft)	1110.0
Flow Path Slope (vft/hft)	0.2635
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.02
Soil Type	90
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.8826
Peak Intensity (in/hr)	2.9963
Undeveloped Runoff Coefficient (Cu)	0.8348
Developed Runoff Coefficient (Cd)	0.8361
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	16.2848
Burned Peak Flow Rate (cfs)	16.2848
24-Hr Clear Runoff Volume (ac-ft)	0.9919
24-Hr Clear Runoff Volume (cu-ft)	43209.0286



Peak Flow Hydrologic Analysis

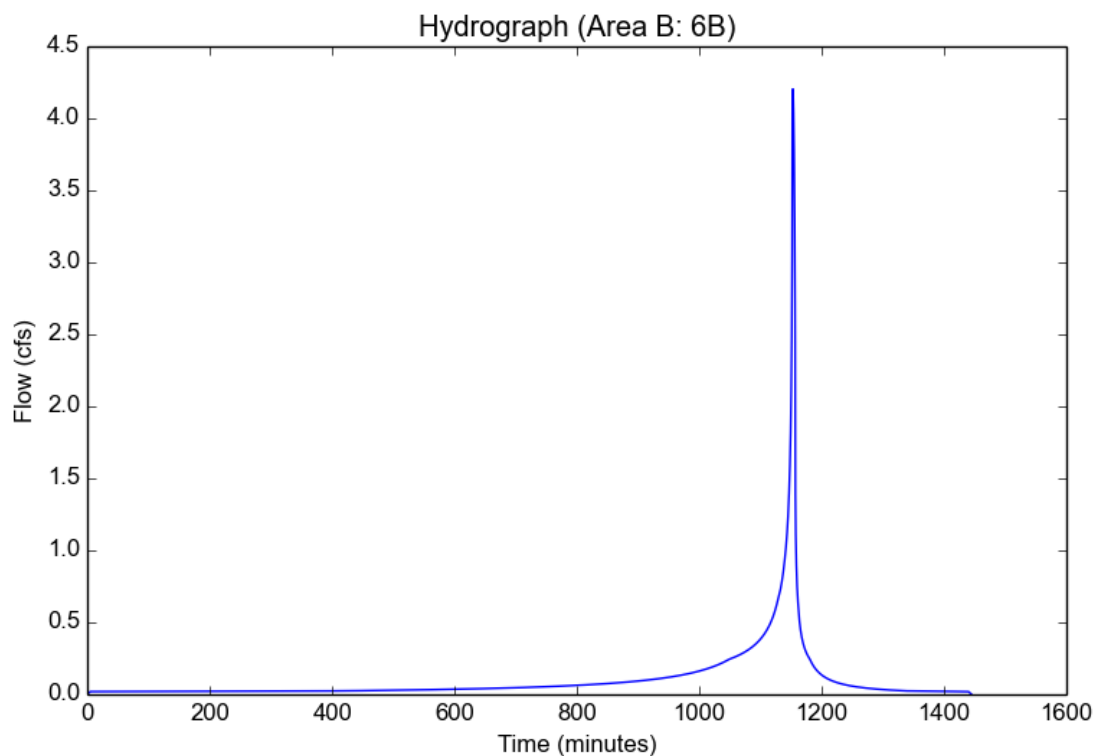
File location: F:/0054/Engineering/SY_Hydrology/Hydrology Calculations/Proposed Area B Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Area B
Subarea ID	6B
Area (ac)	1.4
Flow Path Length (ft)	565.0
Flow Path Slope (vft/hft)	0.4903
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.01
Soil Type	90
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.8826
Peak Intensity (in/hr)	3.5097
Undeveloped Runoff Coefficient (Cu)	0.8551
Developed Runoff Coefficient (Cd)	0.8556
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	4.2039
Burned Peak Flow Rate (cfs)	4.2039
24-Hr Clear Runoff Volume (ac-ft)	0.2097
24-Hr Clear Runoff Volume (cu-ft)	9136.2846



Peak Flow Hydrologic Analysis

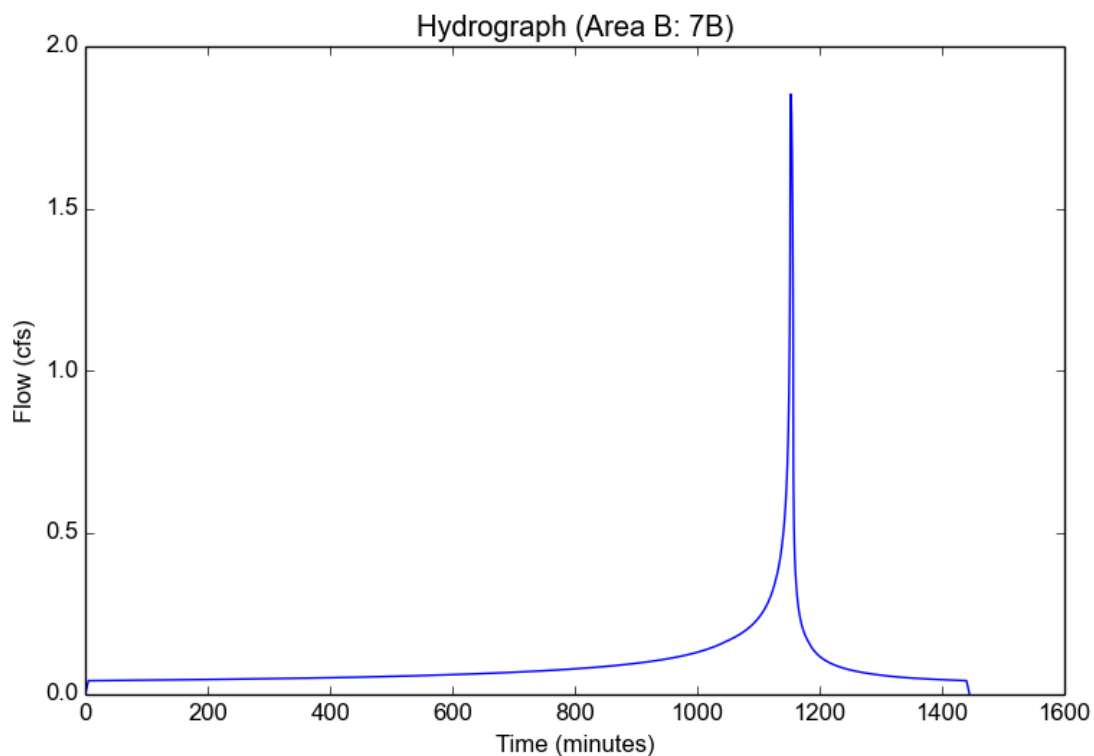
File location: F:/0054/Engineering/SY_Hydrology/Hydrology Calculations/Proposed Area B Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Area B
Subarea ID	7B
Area (ac)	0.6
Flow Path Length (ft)	240.0
Flow Path Slope (vft/hft)	0.0125
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.55
Soil Type	90
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.8826
Peak Intensity (in/hr)	3.5097
Undeveloped Runoff Coefficient (Cu)	0.8551
Developed Runoff Coefficient (Cd)	0.8798
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.8527
Burned Peak Flow Rate (cfs)	1.8527
24-Hr Clear Runoff Volume (ac-ft)	0.1841
24-Hr Clear Runoff Volume (cu-ft)	8017.4928



Peak Flow Hydrologic Analysis

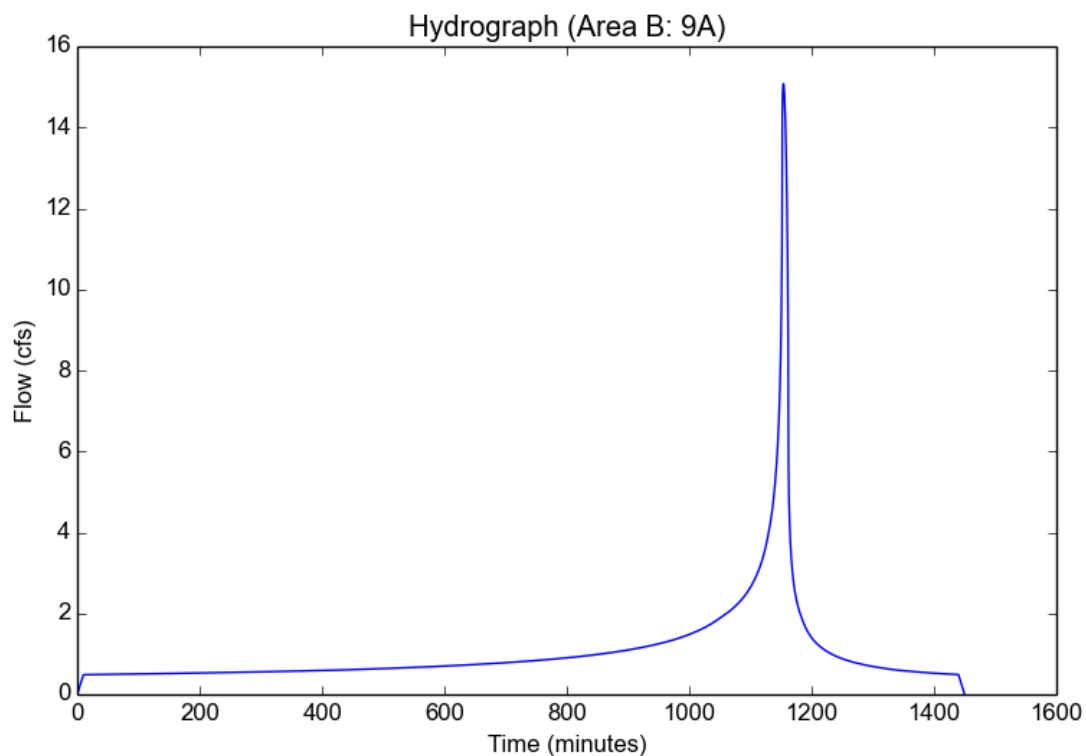
File location: F:/0054/Engineering/SY_Hydrology/Hydrology Calculations/Proposed Area B Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Area B
Subarea ID	9A
Area (ac)	6.9
Flow Path Length (ft)	850.0
Flow Path Slope (vft/hft)	0.0106
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.55
Soil Type	90
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.8826
Peak Intensity (in/hr)	2.5339
Undeveloped Runoff Coefficient (Cu)	0.8164
Developed Runoff Coefficient (Cd)	0.8624
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	15.078
Burned Peak Flow Rate (cfs)	15.078
24-Hr Clear Runoff Volume (ac-ft)	2.116
24-Hr Clear Runoff Volume (cu-ft)	92171.8918



Peak Flow Hydrologic Analysis

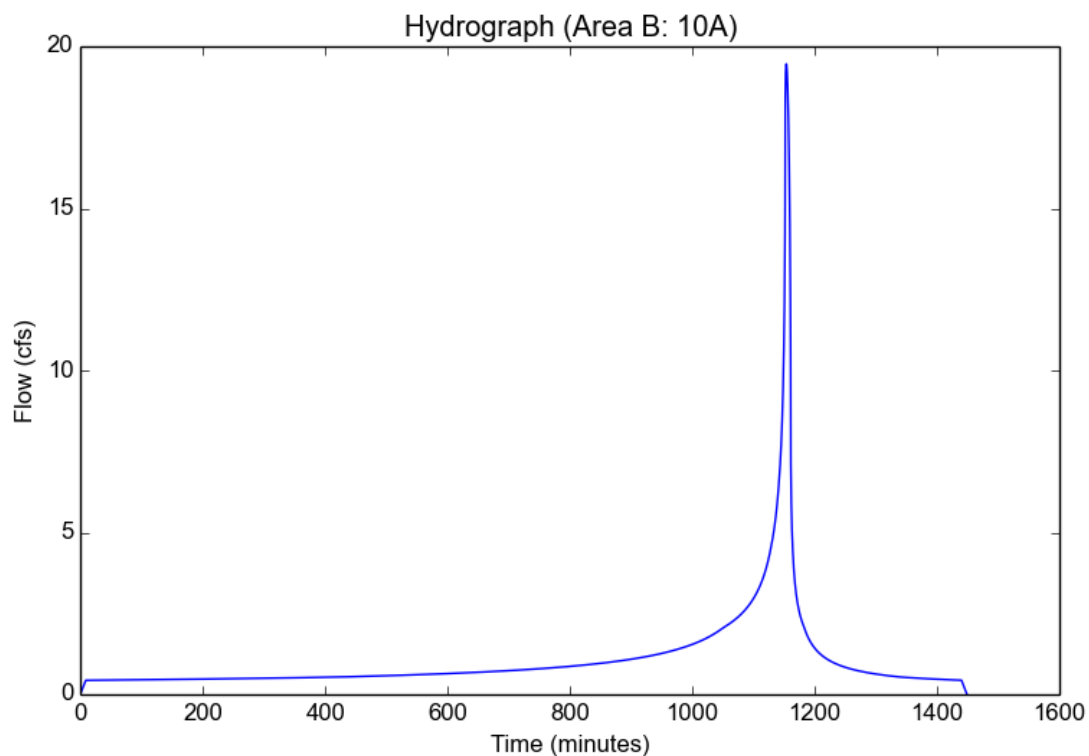
File location: F:/0054/Engineering/SY_Hydrology/Hydrology Calculations/Proposed Area B Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Area B
Subarea ID	10A
Area (ac)	8.6
Flow Path Length (ft)	730.0
Flow Path Slope (vft/hft)	0.0096
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.36
Soil Type	90
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.8826
Peak Intensity (in/hr)	2.6625
Undeveloped Runoff Coefficient (Cu)	0.8215
Developed Runoff Coefficient (Cd)	0.8498
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	19.4583
Burned Peak Flow Rate (cfs)	19.4583
24-Hr Clear Runoff Volume (ac-ft)	2.1622
24-Hr Clear Runoff Volume (cu-ft)	94186.7544



Peak Flow Hydrologic Analysis

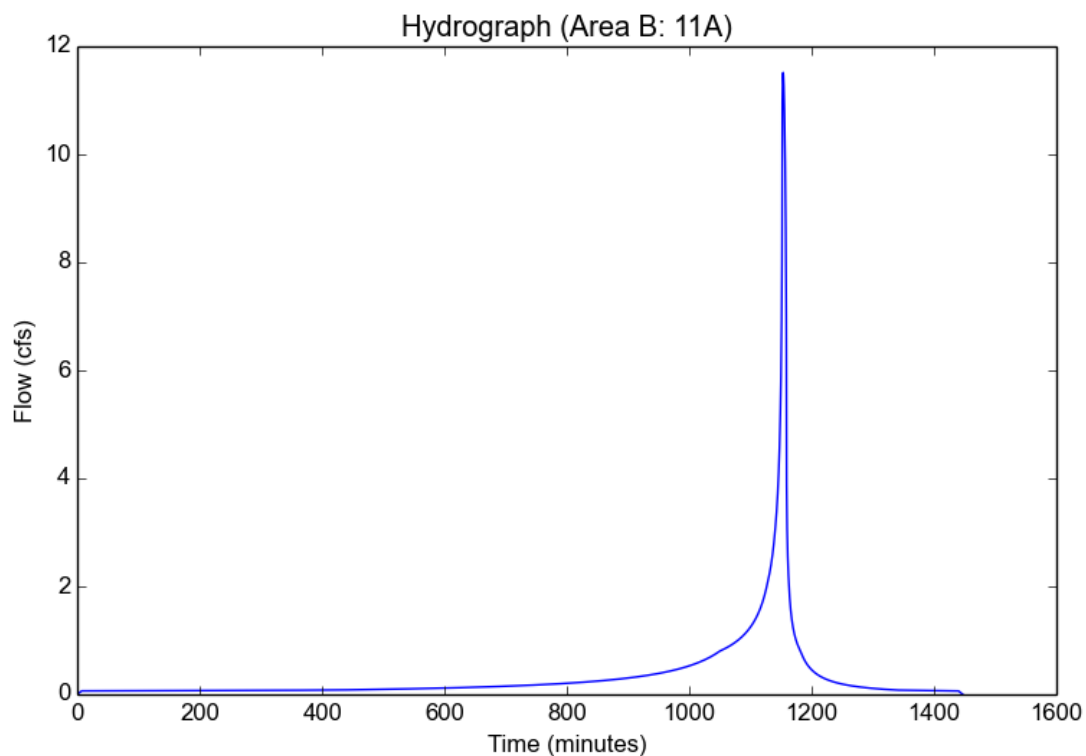
File location: F:/0054/Engineering/SY_Hydrology/Hydrology Calculations/Proposed Area B Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Area B
Subarea ID	11A
Area (ac)	4.6
Flow Path Length (ft)	1025.0
Flow Path Slope (vft/hft)	0.1469
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.01
Soil Type	90
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.8826
Peak Intensity (in/hr)	2.9963
Undeveloped Runoff Coefficient (Cu)	0.8348
Developed Runoff Coefficient (Cd)	0.8355
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	11.5157
Burned Peak Flow Rate (cfs)	11.5157
24-Hr Clear Runoff Volume (ac-ft)	0.6886
24-Hr Clear Runoff Volume (cu-ft)	29996.0887



Peak Flow Hydrologic Analysis

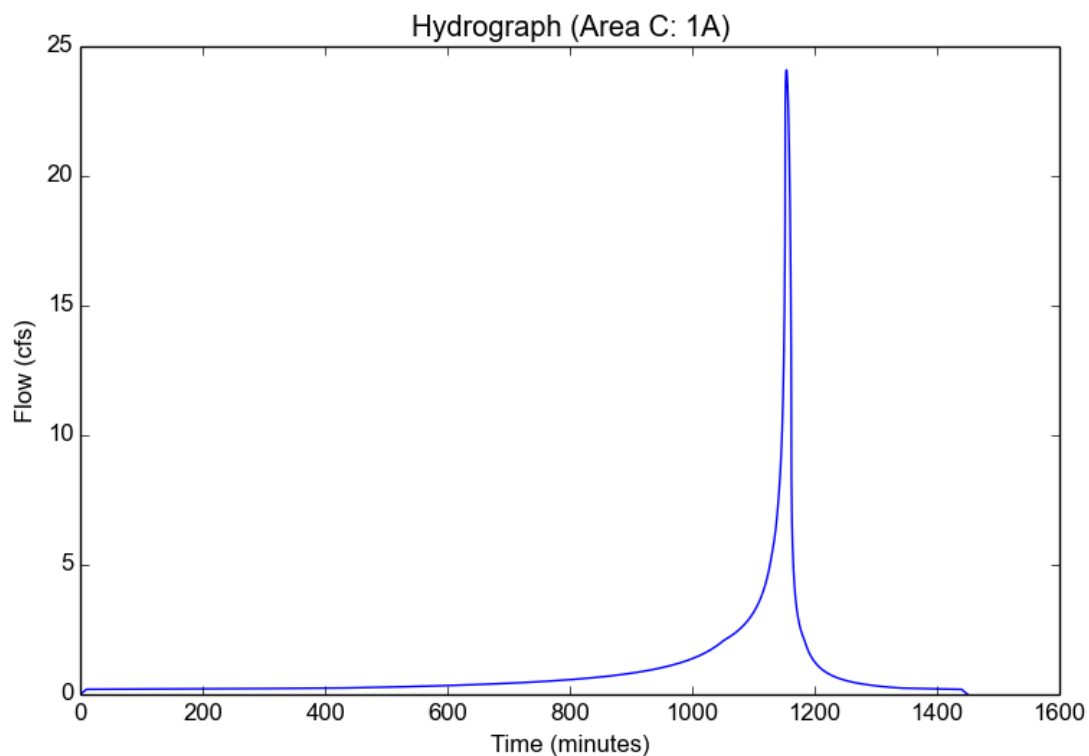
File location: F:/0054/Engineering/SY_Hydrology/Hydrology Calculations/Proposed Area C Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Area C
Subarea ID	1A
Area (ac)	11.6
Flow Path Length (ft)	1500.0
Flow Path Slope (vft/hft)	0.094
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.038
Soil Type	90
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.8826
Peak Intensity (in/hr)	2.5339
Undeveloped Runoff Coefficient (Cu)	0.8164
Developed Runoff Coefficient (Cd)	0.8196
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	24.0908
Burned Peak Flow Rate (cfs)	24.0908
24-Hr Clear Runoff Volume (ac-ft)	1.8298
24-Hr Clear Runoff Volume (cu-ft)	79707.263



· **LAR04 PROGRAM CALCULATIONS**

Program Package Serial Number: 2222

04/21/21 FILE: ehpra INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\LAR04\sgr_soilx_71.dat
Elephant Hill Proposed Condition Hydrology Study (Area "A") - 25 STORM DAY 4

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	CONV	CONV	CONV	CONV	CONV	CONTROL	SOIL	TC	RAIN	PCT
								TYPE	LNTH(Ft)	SLOPE	SIZE(Ft)	Z	Q(CFS)	NAME		ZONE	IMPV
5	1A	10.0		32.26	10.0		32.26	4	185.	.00100	3.50	.00	0.	290	5	A30	.01
5	2B	4.4		10.34	4.4		10.34	4	390.	.00100	2.25	.00	0.	203	5	A30	.01
5	3B	2.2		4.33	6.6		12.37	4	65.	.00100	2.50	.00	0.	3	8	A30	.55

* CONFLUENCE Q'S *

5	4A	TA	1154	QA	29.70	QAB	39.42	QB	9.72	5	4B	TB	1157	QB	12.03	QBA	32.63	QA	20.60
					5	4AB	TAB	1155	QAB	40.27	QA	29.30	QB	10.96					

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	CONV	CONV	CONV	CONV	CONV	CONTROL	SOIL	TC	RAIN	PCT
								TYPE	LNTH(Ft)	SLOPE	SIZE(Ft)	Z	Q(CFS)	NAME		ZONE	IMPV
5	4AB	6.6		12.03	16.6		40.27	0	0.	.00000	.00	.00	0.	3	0	A30	.00
5	5C	.9		2.84	.9		2.84	4	60.	.00100	2.00	.00	0.	90	5	A30	.55
5	6C	2.4		7.74	3.3		10.35	4	55.	.00100	2.25	.00	0.	290	5	A30	.01

* CONFLUENCE Q'S *

5	7A	TA	1155	QA	40.27	QAC	49.22	QC	8.96	5	7C	TC	1154	QC	9.91	QCA	49.33	QA	39.42
					5	7AC	TAC	1154	QAC	49.33	QA	39.42	QC	9.91					

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	CONV	CONV	CONV	CONV	CONV	CONTROL	SOIL	TC	RAIN	PCT
								TYPE	LNTH(Ft)	SLOPE	SIZE(Ft)	Z	Q(CFS)	NAME		ZONE	IMPV
5	7AC	3.3		9.91	19.9		49.33	4	120.	.00100	4.25	.00	0.	90	0	A30	.00
5	8A	.4		1.26	20.3		49.58	4	450.	.00100	4.25	.00	0.	90	5	A30	.55
5	9A	.7		1.93	21.0		46.95	0	0.	.00000	.00	.00	0.	90	6	A30	.02

Program Package Serial Number: 2222

04/21/21 FILE: ehpra INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 3
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\LAR04\sgr_soilx_71.dat
Elephant Hill Proposed Condition Hydrology Study (Area "A") - 25 STORM DAY 3

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	TYPE	CONV	CONV	CONV	CONV	CONV	CONV	CONTROL	SOIL	RAIN	PCT
5	1A	10.0		9.76	10.0		9.76	4	185.	.00100	3.50	.00	0.	290	5	A30	.01	
5	2B	4.4		2.16	4.4		2.16	4	390.	.00100	2.25	.00	0.	203	5	A30	.01	
5	3B	2.2		1.22	6.6		2.61	4	65.	.00100	2.50	.00	0.	3	8	A30	.55	

* CONFLUENCE Q'S *

* 5 4A TA 1155 QA 8.79 QAB 11.01 QB 2.23 5 4B TB 1157 QB 2.57 QBA 8.94 QA 6.37 *

* 5 4AB TAB 1155 QAB 11.01 QA 8.79 QB 2.23 *

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	TYPE	CONV	CONV	CONV	CONV	CONV	CONV	CONTROL	SOIL	RAIN	PCT
5	4AB	6.6		2.57	16.6		11.01	0	0.	.00000	.00	.00	0.	3	0	A30	.00	
5	5C	.9		.92	.9		.92	4	60.	.00100	2.00	.00	0.	90	5	A30	.55	
5	6C	2.4		2.34	3.3		3.15	4	55.	.00100	2.25	.00	0.	290	5	A30	.01	

* CONFLUENCE Q'S *

* 5 7A TA 1155 QA 11.01 QAC 13.74 QC 2.73 5 7C TC 1154 QC 3.02 QCA 13.77 QA 10.75 *

* 5 7AC TAC 1154 QAC 13.77 QA 10.75 QC 3.02 *

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	TYPE	CONV	CONV	CONV	CONV	CONV	CONV	CONTROL	SOIL	RAIN	PCT
5	7AC	3.3		3.02	19.9		13.77	4	120.	.00100	4.25	.00	0.	90	0	A30	.00	
5	8A	.4		.41	20.3		13.75	4	450.	.00100	4.25	.00	0.	90	5	A30	.55	
5	9A	.7		.55	21.0		12.47	0	0.	.00000	.00	.00	0.	90	6	A30	.02	

Program Package Serial Number: 2222

04/21/21 FILE: ehpra INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 5
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\LAR04\sgr_soilx_71.dat

Elephant Hill Proposed Condition Hydrology Study (Area "A") - 25

STORM DAY 2

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	CONV	CONV	CONV	CONV	CONV	CONTROL	SOIL	RAIN	PCT	
								TYPE	LNTH(Ft)	SLOPE	SIZE(Ft)	Z	Q(CFS)	NAME	TC	ZONE	IMPV
5	1A	10.0		11.44	10.0		11.44	4	185.	.00100	3.50	.00	0.	290	5	A30	.01
5	2B	4.4		2.68	4.4		2.68	4	390.	.00100	2.25	.00	0.	203	5	A30	.01
5	3B	2.2		1.43	6.6		3.20	4	65.	.00100	2.50	.00	0.	3	8	A30	.55

* CONFLUENCE Q'S *

5	4A	TA	1154	QA	10.31	QAB	12.73	QB	2.42	5	4B	TB	1157	QB	3.14	QBA	10.58	QA	7.44
					5	4AB	TAB	1155	QAB	13.00	QA	10.30	QB	2.71					

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	CONV	CONV	CONV	CONV	CONV	CONTROL	SOIL	RAIN	PCT	
								TYPE	LNTH(Ft)	SLOPE	SIZE(Ft)	Z	Q(CFS)	NAME	TC	ZONE	IMPV
5	4AB	6.6		3.14	16.6		13.00	0	0.	.00000	.00	.00	0.	3	0	A30	.00
5	5C	.9		1.06	.9		1.06	4	60.	.00100	2.00	.00	0.	90	5	A30	.55
5	6C	2.4		2.75	3.3		3.69	4	55.	.00100	2.25	.00	0.	290	5	A30	.01

* CONFLUENCE Q'S *

5	7A	TA	1155	QA	13.00	QAC	16.19	QC	3.18	5	7C	TC	1154	QC	3.54	QCA	16.26	QA	12.73
					5	7AC	TAC	1154	QAC	16.26	QA	12.73	QC	3.54					

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	CONV	CONV	CONV	CONV	CONV	CONTROL	SOIL	RAIN	PCT	
								TYPE	LNTH(Ft)	SLOPE	SIZE(Ft)	Z	Q(CFS)	NAME	TC	ZONE	IMPV
5	7AC	3.3		3.54	19.9		16.26	4	120.	.00100	4.25	.00	0.	90	0	A30	.00
5	8A	.4		.47	20.3		16.27	4	450.	.00100	4.25	.00	0.	90	5	A30	.55
5	9A	.7		.65	21.0		14.80	0	0.	.00000	.00	.00	0.	90	6	A30	.02

Program Package Serial Number: 2222

04/21/21 FILE: ehpra INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 7
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\LAR04\sgr_soilx_71.dat

Elephant Hill Proposed Condition Hydrology Study (Area "A") - 25

STORM DAY 1

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	CONV	TYPE	CONV	LNTH(Ft)	CONV	SLOPE	CONV	SIZE(Ft)	CONV	Z	CONTROL	SOIL	Q(CFS)	NAME	TC	ZONE	RAIN	PCT	IMPV
5	1A	10.0		1.85	10.0		1.85	4		185.		.00100		3.50		.00		0.	290	5	A30			.01		
5	2B	4.4		.48	4.4		.48	4		390.		.00100		2.25		.00		0.	203	5	A30			.01		
5	3B	2.2		.34	6.6		.58	4		65.		.00100		2.50		.00		0.	3	8	A30			.55		

* CONFLUENCE Q'S *

5	4A	TA	1155	QA	1.52	QAB	2.04	QB	.51	5	4B	TB	1158	QB	.58	QBA	1.62	QA	1.05
5	4AB	TAB	1155	QAB	2.04	QA	1.52	QB	.51										

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	CONV	TYPE	CONV	LNTH(Ft)	CONV	SLOPE	CONV	SIZE(Ft)	CONV	Z	CONTROL	SOIL	Q(CFS)	NAME	TC	ZONE	RAIN	PCT	IMPV
5	4AB	6.6		.58	16.6		2.04	0		0.		.00000		.00		.00		0.	3	0	A30			.00		
5	5C	.9		.22	.9		.22	4		60.		.00100		2.00		.00		0.	90	5	A30			.55		
5	6C	2.4		.44	3.3		.62	4		55.		.00100		2.25		.00		0.	290	5	A30			.01		

* CONFLUENCE Q'S *

5	7A	TA	1155	QA	2.04	QAC	2.60	QC	.56	5	7C	TC	1154	QC	.58	QCA	2.38	QA	1.80
5	7AC	TAC	1155	QAC	2.60	QA	2.04	QC	.56										

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	CONV	TYPE	CONV	LNTH(Ft)	CONV	SLOPE	CONV	SIZE(Ft)	CONV	Z	CONTROL	SOIL	Q(CFS)	NAME	TC	ZONE	RAIN	PCT	IMPV
5	7AC	3.3		.58	19.9		2.60	4		120.		.00100		4.25		.00		0.	90	0	A30			.00		
5	8A	.4		.10	20.3		2.52	4		450.		.00100		4.25		.00		0.	90	5	A30			.55		
5	9A	.7		.09	21.0		1.98	0		0.		.00000		.00		.00		0.	90	6	A30			.02		

Program Package Serial Number: 2222

04/21/21 FILE: ehprb INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\LAR04\sgr_soilx_71.dat

Elephant Hill Proposed Condition Hydrology Study (Area "B") - 25

STORM DAY 4

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	CONV	CONV	CONV	CONV	CONV	CONTROL	SOIL	RAIN	PCT
								TYPE	LNTH(Ft)	SLOPE	SIZE(Ft)	Z	Q(CFS)	NAME	TC	ZONE
5	1A	13.1		14.12	13.1	14.12	4		750.	.03500	2.00	.00	0.	203	16	A30
5	2A	8.9		19.88	22.0	33.19	4		350.	.00100	3.50	.00	0.	90	10	A30
5	3A	3.0		9.68	25.0	35.80	4		750.	.00100	3.75	.00	0.	290	5	A30
5	4A	5.6		12.51	30.6	41.34	4		50.	.00100	4.00	.00	0.	90	10	A30
5	5A	6.5		17.34	37.1	50.50	4		45.	.00100	4.25	.00	0.	290	7	A30
5	6B	1.4		4.52	1.4	4.52	4		75.	.00100	2.00	.00	0.	290	5	A30
5	7B	.6		1.90	2.0	5.96	4		65.	.00100	2.00	.00	0.	90	5	A30

* CONFLUENCE Q'S *

* 5 8A TA 1156 QA 50.49 QAB 55.46 QB 4.96 5 8B TB 1154 QB 5.88 QBA 53.69 QA 47.81 *

* 5 8AB TAB 1156 QAB 55.46 QA 50.49 QB 4.96 *

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	CONV	CONV	CONV	CONV	CONV	CONTROL	SOIL	RAIN	PCT
								TYPE	LNTH(Ft)	SLOPE	SIZE(Ft)	Z	Q(CFS)	NAME	TC	ZONE
5	8AB	2.0		5.88	39.1	55.46	4		625.	.00100	4.25	.00	0.	90	0	A30
5	9A	6.9		15.41	46.0	64.59	4		300.	.00100	4.50	.00	0.	90	10	A30
5	10A	8.6		19.79	54.6	75.19	4		610.	.00500	3.50	.00	0.	90	9	A30
5	11A	4.6		12.28	59.2	77.70	0		0.	.00000	.00	.00	0.	290	7	A30

Program Package Serial Number: 2222

04/21/21 FILE: ehprb INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 3
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\LAR04\sgr_soilx_71.dat
Elephant Hill Proposed Condition Hydrology Study (Area "B") - 25 STORM DAY 3

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	CONV	CONV	CONV	CONV	CONV	CONTROL	SOIL	RAIN	PCT
								TYPE	LNTH(Ft)	SLOPE	SIZE(Ft)	Z	Q(CFS)	NAME	TC	ZONE
5	1A	13.1		2.90	13.1		2.90	4	750.	.03500	2.00	.00	0.	203	16	A30
5	2A	8.9		6.30	22.0		8.91	4	350.	.00100	3.50	.00	0.	90	10	A30
5	3A	3.0		2.93	25.0		9.69	4	750.	.00100	3.75	.00	0.	290	5	A30
5	4A	5.6		3.96	30.6		10.99	4	50.	.00100	4.00	.00	0.	90	10	A30
5	5A	6.5		5.13	37.1		13.96	4	45.	.00100	4.25	.00	0.	290	7	A30
5	6B	1.4		1.37	1.4		1.37	4	75.	.00100	2.00	.00	0.	290	5	A30
5	7B	.6		.61	2.0		1.81	4	65.	.00100	2.00	.00	0.	90	5	A30

* CONFLUENCE Q'S *																
5	8A	TA	1155	QA	13.83	QAB	15.58	QB	1.75	5	8B	TB	1155	QB	1.75	QBA
* 5 8AB TAB 1155 QAB 15.58 QA 13.83 QB 1.75 *																

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	CONV	CONV	CONV	CONV	CONV	CONTROL	SOIL	RAIN	PCT
5	8AB	2.0		1.75	39.1		15.58	4	625.	.00100	4.25	.00	0.	90	0	A30
5	9A	6.9		4.88	46.0		18.08	4	300.	.00100	4.50	.00	0.	90	10	A30
5	10A	8.6		5.99	54.6		20.95	4	610.	.00500	3.50	.00	0.	90	9	A30
5	11A	4.6		3.64	59.2		21.38	0	0.	.00000	.00	.00	0.	290	7	A30

Program Package Serial Number: 2222

04/21/21 FILE: ehprb INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 5
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\LAR04\sgr_soilx_71.dat

Elephant Hill Proposed Condition Hydrology Study (Area "B") - 25

STORM DAY 2

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	CONV	CONV	CONV	CONV	CONV	CONTROL	SOIL	RAIN	PCT
								TYPE	LNTH(Ft)	SLOPE	SIZE(Ft)	Z	Q(CFS)	NAME	TC	ZONE
5	1A	13.1		3.32	13.1		3.32	4	750.	.03500	2.00	.00	0.	203	16	A30
5	2A	8.9		7.31	22.0		10.33	4	350.	.00100	3.50	.00	0.	90	10	A30
5	3A	3.0		3.43	25.0		11.36	4	750.	.00100	3.75	.00	0.	290	5	A30
5	4A	5.6		4.60	30.6		13.07	4	50.	.00100	4.00	.00	0.	90	10	A30
5	5A	6.5		6.05	37.1		16.54	4	45.	.00100	4.25	.00	0.	290	7	A30
5	6B	1.4		1.60	1.4		1.60	4	75.	.00100	2.00	.00	0.	290	5	A30
5	7B	.6		.71	2.0		2.11	4	65.	.00100	2.00	.00	0.	90	5	A30

* CONFLUENCE Q'S *

* 5 8A TA 1156 QA 16.41 QAB 18.24 QB 1.83 5 8B TB 1154 QB 2.06 QBA 17.97 QA 15.92 *

* 5 8AB TAB 1155 QAB 18.43 QA 16.38 QB 2.05 *

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	CONV	CONV	CONV	CONV	CONV	CONTROL	SOIL	RAIN	PCT
								TYPE	LNTH(Ft)	SLOPE	SIZE(Ft)	Z	Q(CFS)	NAME	TC	ZONE
5	8AB	2.0		2.06	39.1		18.43	4	625.	.00100	4.25	.00	0.	90	0	A30
5	9A	6.9		5.67	46.0		21.53	4	300.	.00100	4.50	.00	0.	90	10	A30
5	10A	8.6		7.02	54.6		25.03	4	610.	.00500	3.50	.00	0.	90	9	A30
5	11A	4.6		4.29	59.2		25.62	0	0.	.00000	.00	.00	0.	290	7	A30

Program Package Serial Number: 2222

04/21/21 FILE: ehprb INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 7
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\LAR04\sgr_soilx_71.dat
Elephant Hill Proposed Condition Hydrology Study (Area "B") - 25

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	CONV	CONV	CONV	CONV	CONV	CONTROL	SOIL	RAIN	PCT
								TYPE	LNTH(Ft)	SLOPE	SIZE(Ft)	Z	Q(CFS)	NAME	TC	ZONE
5	1A	13.1		.82	13.1		.82	4	750.	.03500	2.00	.00	0.	203	16	A30
5	2A	8.9		1.46	22.0		2.14	4	350.	.00100	3.50	.00	0.	90	10	A30
5	3A	3.0		.55	25.0		2.10	4	750.	.00100	3.75	.00	0.	290	5	A30
5	4A	5.6		.92	30.6		2.04	4	50.	.00100	4.00	.00	0.	90	10	A30
5	5A	6.5		.92	37.1		2.61	4	45.	.00100	4.25	.00	0.	290	7	A30
5	6B	1.4		.26	1.4		.26	4	75.	.00100	2.00	.00	0.	290	5	A30
5	7B	.6		.15	2.0		.35	4	65.	.00100	2.00	.00	0.	90	5	A30

CONFLUENCE Q'S																
5	8A	TA	1155	QA	2.60	QAB	2.93	QB	.33	5	8B	TB	1155	QB	.33	QBA

5	8AB	TAB	1155	QAB	2.93	QA	2.60	QB	.33	*****						

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	CONV	CONV	CONV	CONV	CONV	CONTROL	SOIL	RAIN	PCT
5	8AB	2.0		.33	39.1		2.93	4	625.	.00100	4.25	.00	0.	90	0	A30
5	9A	6.9		1.13	46.0		2.94	4	300.	.00100	4.50	.00	0.	90	10	A30
5	10A	8.6		1.24	54.6		3.28	4	610.	.00500	3.50	.00	0.	90	9	A30
5	11A	4.6		.66	59.2		3.24	0	0.	.00000	.00	.00	0.	290	7	A30

Program Package Serial Number: 2222

04/21/21 FILE: ehprc INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\LAR04\sgr_soilx_71.dat
Elephant Hill Proposed Condition Hydrology Study (Area "C") - 25 STORM DAY 4

LOCATION	SUBAREA	AREA(Ac)	SUBAREA	Q(CFS)	TOTAL	AREA(Ac)	Q(CFS)	CONV	TYPE	CONV	LNTH(Ft)	SLOPE	SIZE(Ft)	CONV	Z	CONTROL	SOIL	Q(CFS)	NAME	TC	ZONE	RAIN	PCT	IMPV
5	1A	11.6		26.10	11.6	26.10	4	100.		.01000			2.25	.00		0.	290	10	A30			.04		
5	2A	.0		.00	11.6	26.03	0	0.		.00000			.00	.00		0.	290	99	A30			.02		

Program Package Serial Number: 2222

04/21/21 FILE: ehprc INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 3
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\LAR04\sgr_soilx_71.dat
Elephant Hill Proposed Condition Hydrology Study (Area "C") - 25 STORM DAY 3

LOCATION	SUBAREA	SUBAREA	TOTAL	TOTAL	CONV	CONV	CONV	CONV	CONV	CONTROL	SOIL		RAIN	PCT
	AREA(Ac)	Q(CFS)	AREA(Ac)	Q(CFS)	TYPE	LNTH(Ft)	SLOPE	SIZE(Ft)	Z	Q(CFS)	NAME	TC	ZONE	IMPV
5 1A	11.6	7.62	11.6	7.62	4	100.	.01000	2.25	.00	0.	290	10	A30	.04
5 2A	.0	.00	11.6	7.60	0	0.	.00000	.00	.00	0.	290	99	A30	.02

Program Package Serial Number: 2222

04/21/21 FILE: ehprc INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 5
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\LAR04\sgr_soilx_71.dat
Elephant Hill Proposed Condition Hydrology Study (Area "C") - 25 STORM DAY 2

LOCATION	SUBAREA	SUBAREA	TOTAL	TOTAL	CONV	CONV	CONV	CONV	CONV	CONTROL	SOIL		RAIN	PCT
	AREA(Ac)	Q(CFS)	AREA(Ac)	Q(CFS)	TYPE	LNTH(Ft)	SLOPE	SIZE(Ft)	Z	Q(CFS)	NAME	TC	ZONE	IMPV
5 1A	11.6	8.99	11.6	8.99	4	100.	.01000	2.25	.00	0.	290	10	A30	.04
5 2A	.0	.00	11.6	8.96	0	0.	.00000	.00	.00	0.	290	99	A30	.02

Program Package Serial Number: 2222

04/21/21 FILE: ehprc INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 7
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

Version 11.3, MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: C:\LAR04\sgr_soilx_71.dat
Elephant Hill Proposed Condition Hydrology Study (Area "C") - 25 STORM DAY 1

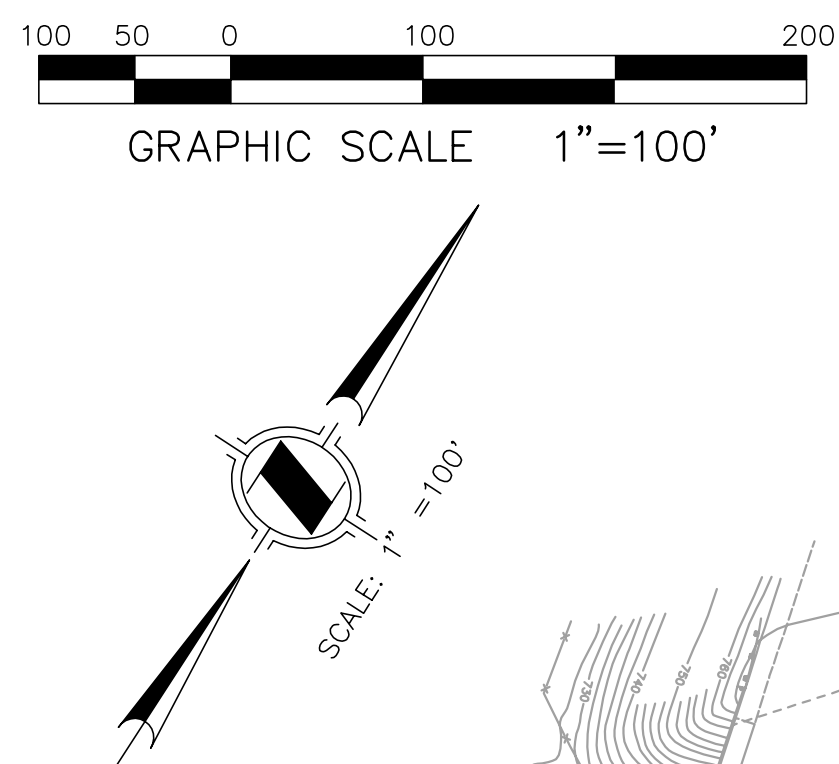
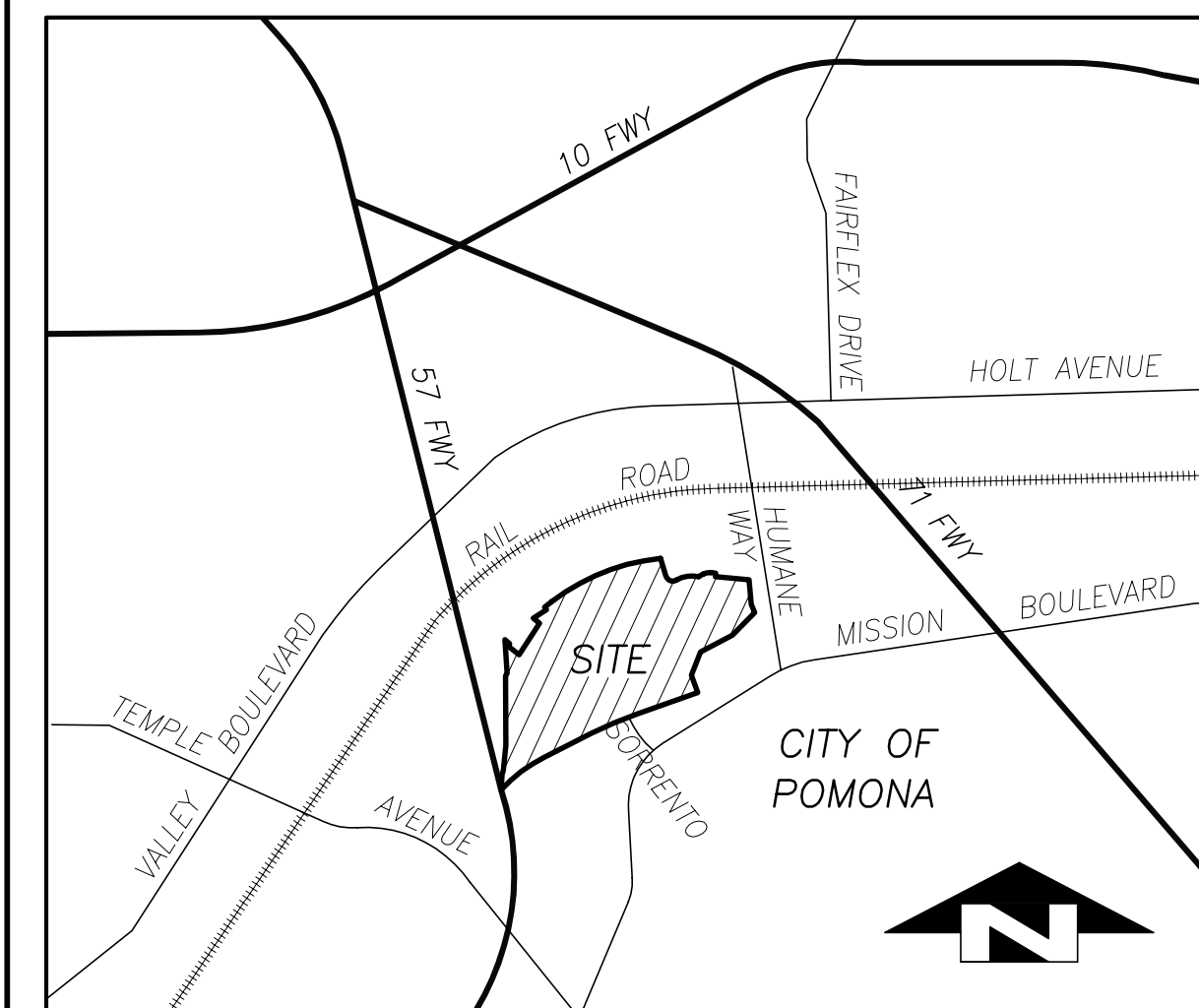
LOCATION	SUBAREA	SUBAREA	TOTAL	TOTAL	CONV	CONV	CONV	CONV	CONV	CONTROL	SOIL		RAIN	PCT
	AREA(Ac)	Q(CFS)	AREA(Ac)	Q(CFS)	TYPE	LNTH(Ft)	SLOPE	SIZE(Ft)	Z	Q(CFS)	NAME	TC	ZONE	IMPV
5 1A	11.6	1.32	11.6	1.32	4	100.	.01000	2.25	.00	0.	290	10	A30	.04
5 2A	.0	.00	11.6	1.30	0	0.	.00000	.00	.00	0.	290	99	A30	.02

- **BURNED AND BULKED FLOW CALCULATIONS**

Elephant Hill - VTTM 72653

Hydrologic Burned and Bulked Flows Table (Proposed Condition)

	SUBAREA	Node	AREA (Ac)	% IMPERVIOUSNESS	SOIL TYPE	25-Yr ISOHYET	25-YR TC (min)	Q _{25B} (cfs)	Q _{25BB} (cfs)	Σ Area	ΣQ _{25B} (CFS)	ΣQ _{25BB} (CFS)	NOTE
Area A	1A		10.0	0.01	90	5.88	5	32.3	-	10.0	32.3	32.3	Drain to proposed Debris Basin, no bulking
	2B		4.4	0.01	3	5.88	5	10.3	17.3	4.4	10.3	17.3	
	3B		2.2	0.86	3	5.88	7	4.3	-	6.6	12.4	19.4	Developed area, no bulking
		4AB								16.6	40.3	47.3	
	5C		0.9	0.86	90	5.88	5	2.8	-	0.9	2.8	2.8	Developed area, no bulking
	6C		2.4	0.01	90	5.88	5	7.7	12.9	3.3	10.4	15.6	
		7AC								19.9	49.3	61.5	
	8A		0.4	0.86	90	5.88	5	1.3	-	20.3	49.6	61.8	Developed area, no bulking
	9A		0.7	0.02	90	5.88	6	1.9	-	21.0	49.6	61.8	Developed area, no bulking
									TOTAL:	21.0	49.6	61.8	
Area B	1A		13.1	0.01	3	5.88	16	14.1	23.7	13.1	14.1	23.7	
	2A		8.9	0.55	90	5.88	10	19.9	-	22.0	33.2	42.8	Ex. Developed Area, no burn and bulking
	3A		3.0	0.01	3	5.88	5	9.7	16.3	25.0	35.8	52.0	
	4A		5.6	0.86	90	5.88	10	12.5	-	30.6	41.3	57.5	Developed area, no bulking
	5A		6.5	0.01	90	5.88	7	17.3	-	37.1	50.5	66.7	Developed area, no bulking
	6B		1.4	0.01	90	5.88	5	4.5	7.6	1.4	4.5	7.6	
	7B		0.6	0.86	90	5.88	5	1.9	-	2.0	6.0	9.1	Developed area, no bulking
		8AB								39.1	55.5	74.7	
	9A		6.9	0.86	90	5.88	10	15.4	-	46.0	64.6	83.8	Developed area, no bulking
	10A		8.6	0.56	90	5.88	9	19.8	-	54.6	75.2	94.4	Developed area, no bulking
	11A		4.6	0.02	90	5.88	7	12.3	-	59.2	77.7	96.9	Developed area, no bulking
Area C													
	1A		11.6	0.04	90	5.88	10	26.1	-	11.6	26.1	26.1	Developed area with landscaped slope, no bulking



- LEGEND**
- MAJOR DRAINAGE BOUNDARY
 - MINOR DRAINAGE BOUNDARY
 - AREA DESIGNATION FOR AREA "A" AREA ACREAGE (IN ACRES)
 - FLOW LINE
 - SUMMATION OF BURNED AND BULKED 25-YR FLOW RATE
 - SUMMATION 25-YR FLOW RATE
 - TOTAL DRAINAGE AREA IN ACRES
 - 090
 - SOIL TYPE
 - SOIL TYPE BOUNDARY

NOTE:

- NOT WITHIN COUNTY ADOPTED FLOODWAY
- NOT WITHIN FEMA FLOOD ZONE A

PREPARED BY:

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PREPARED FOR:

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NEWPORT BEACH, CA 92660
CONTACT: JOE MARTIN
PH: (949) 999-9800

HYDROLOGIC INFORMATION	
6	DPA ZONE
090/003	SOIL GROUP
6.7"	50-YEAR 24-HOUR ISOHYET
1.0"	85TH PERCENTILE STORM
PROJECT DESIGN STORM	85TH PERCENTILE STORM
1	AREA WEIGHTED AVERAGE % IMPERVIOUSNESS (NATURAL VACANT LAND)
2	AREA WEIGHTED AVERAGE % IMPERVIOUSNESS (LANDSCAPED SLOPES)
10	AREA WEIGHTED AVERAGE % IMPERVIOUSNESS (2.6 ACRES OF SPADRA CEMETERY IN DRAINAGE AREA "C")
55	AREA WEIGHTED AVERAGE % IMPERVIOUSNESS (DUPLEXES, TRIPLEXES AND 2-OR 3-UNIT CONDOMINIUMS AND TOWNHOUSES FOR DRAINAGE AREA "B" AREA 2A AND PROPOSED RESIDENTIAL AREAS)
1.68	BULKING FACTOR FOR NATURAL AREAS
10	TIME OF CONCENTRATION (TC) IN MINUTE

EXHIBIT 2
PROPOSED CONDITION HYDROLOGY MAP
VESTING TENTATIVE TRACT MAP 72653
ELEPHANT HILL
CITY OF POMONA, COUNTY OF LOS ANGELES

SECTION 4

LID AND DEBRIS BASIN CALCUALTIONS

The project will be required to comply with the newly adopted MS4 Permit. This will require all filtration water quality devices to be sized per Adjusted Design Intensity to Provide Additional Capture In Lieu of Volume Reduction (see attached below).

July 2018

Table 6: Adjusted Design Intensity to Provide Additional Capture In Lieu of Volume Reduction (Option B)

Adjusted Time of Concentration (min)	Reliable Infiltration Rate at Site			
	0 in/hr (ET only)	0.01 in/hr	0.05 in/hr	0.15 in/hr
	Capture Efficiency Target = 93.8%	Capture Efficiency Target = 94.1%	Capture Efficiency Target = 95.4%	Capture Efficiency Target = 98.1%
	Adjusted MWS Design Precipitation Intensities, in/hr			
5	0.55	0.57	0.66	N/A
7.5	0.51	0.53	0.60	0.96
10	0.48	0.49	0.57	0.90
15	0.44	0.45	0.52	0.79
20	0.41	0.42	0.48	0.74
30	0.37	0.38	0.43	0.64
60	0.31	0.31	0.35	0.50

NA = additional capture is not a viable option to offset volume reduction in these cases.

Per SUSMP flow rate calculations,

$$Q_{PM} = C_D * I_X * A_{Total} * (1.008333 \text{ ft}^3\text{-hour} / \text{acre-inches-seconds})$$

Where:

QPM =Peak Mitigation Flow Rate (cfs)

$$C_D = (0.9 * \text{Imp.}) + [(1.0 - \text{Imp.}) * C_U]$$

DMA #2:

Imp=0.55 for Duplexes Residential, Cu=0.1 per below

$$=0.9*0.55+ (1-0.55)*0.1$$

$$=0.54$$

DMA #3:

Imp=0.55 for Duplexes Residential (2.4 acres) and 0.1 for off-site slope areas with an average impervious percentage of 20%, Cu=0.1 per below

$$=0.9*0.20+ (1-0.20)*0.1$$

$$=0.26$$

C_U = Undeveloped Runoff Coefficient, (0.1 for Soil 90)

I_x = Rainfall Intensity (inches / hour) (per above Table 6 using Infiltration Rate at 0 in/hour, TC per 85th Percentile HydroCalc Calculations)

A_{Total} = Total Area in acres

The LID flow rate calculations can be found from the following table.

LID Modular Wetland Systems Summary Table
Elephant Hill - VTTM 72653
City of Pomona, County Of Los Angeles

DMA	Area	TC Calculated	*TC Used	C_D	I_x	Q_{PM}	MWS #	MWS Size	Provided MWS Capacity
	(acre)	(Min)	(Min)		(in/hr)	(cfs)			(cfs)
#2	1.1	30	30	0.54	0.37	0.246	#1	MWS 4x21	0.268
#3	6.8	49	30	0.26	0.37	0.786	#2	MWS 12x24	0.786

Note: * the maximum applicable TC is 30 minutes for conservative approach, 30 minutes were applied for the TC over 30 minutes.

Peak Flow Hydrologic Analysis

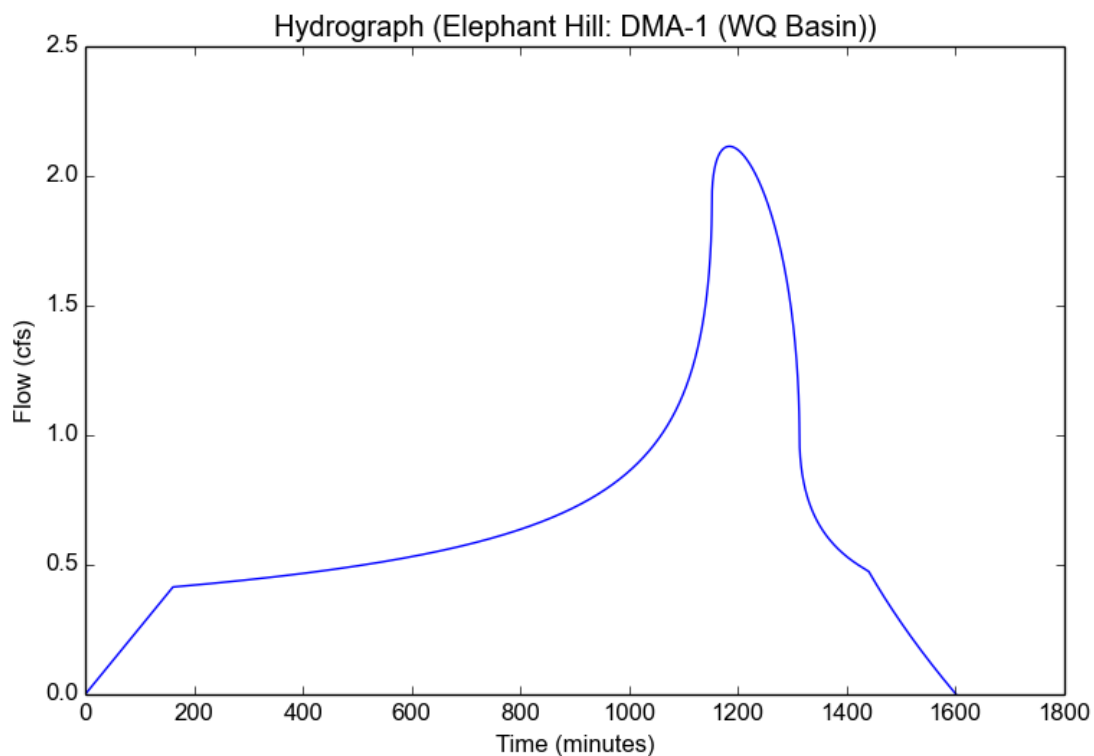
File location: C:/SD/Elephant Hill/Updated/Elephant Hill - DMA-1 (WQ Basin).pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Elephant Hill
Subarea ID	DMA-1 (WQ Basin)
Area (ac)	57.2
Flow Path Length (ft)	4840.0
Flow Path Slope (vft/hft)	0.037
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.271
Soil Type	90
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.1167
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.3168
Time of Concentration (min)	161.0
Clear Peak Flow Rate (cfs)	2.1144
Burned Peak Flow Rate (cfs)	2.1144
24-Hr Clear Runoff Volume (ac-ft)	1.4981
24-Hr Clear Runoff Volume (cu-ft)	65259.0418



Peak Flow Hydrologic Analysis

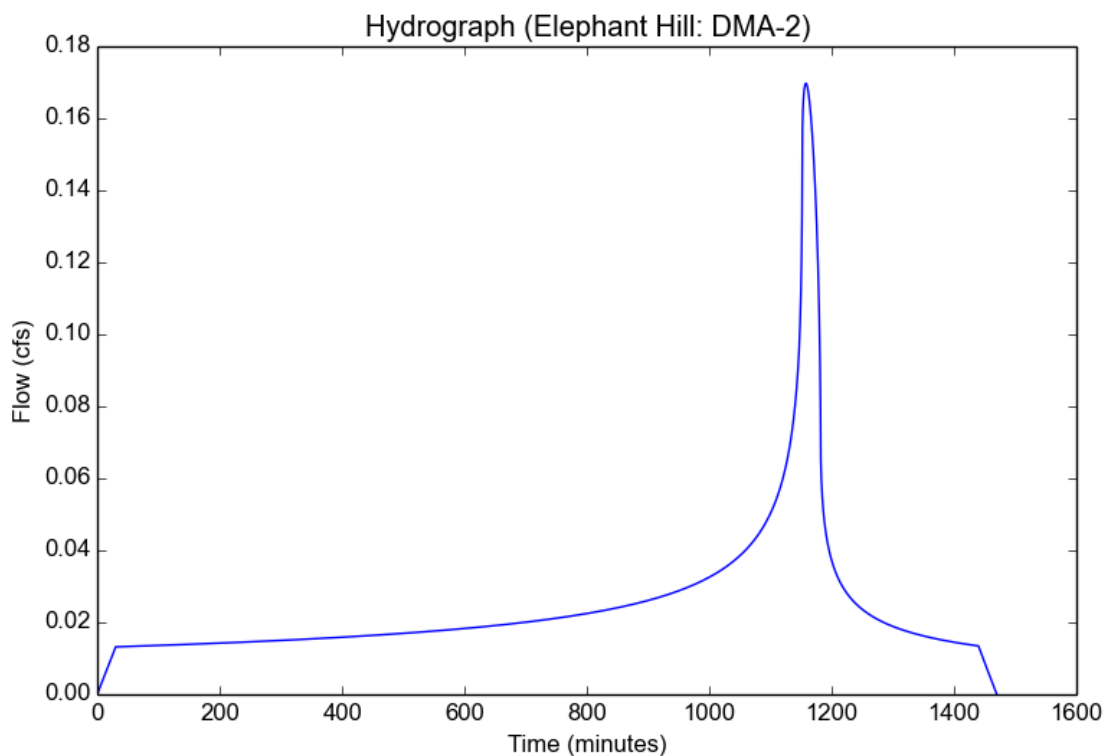
File location: F:/0054/Engineering/SY_Hydrology/Hydrology Calculations/Elephant Hill - DMA-2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Elephant Hill
Subarea ID	DMA-2
Area (ac)	1.1
Flow Path Length (ft)	670.0
Flow Path Slope (vft/hft)	0.034
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.55
Soil Type	90
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.257
Undeveloped Runoff Coefficient (Cu)	0.2341
Developed Runoff Coefficient (Cd)	0.6004
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.1697
Burned Peak Flow Rate (cfs)	0.1697
24-Hr Clear Runoff Volume (ac-ft)	0.0496
24-Hr Clear Runoff Volume (cu-ft)	2160.4207



Peak Flow Hydrologic Analysis

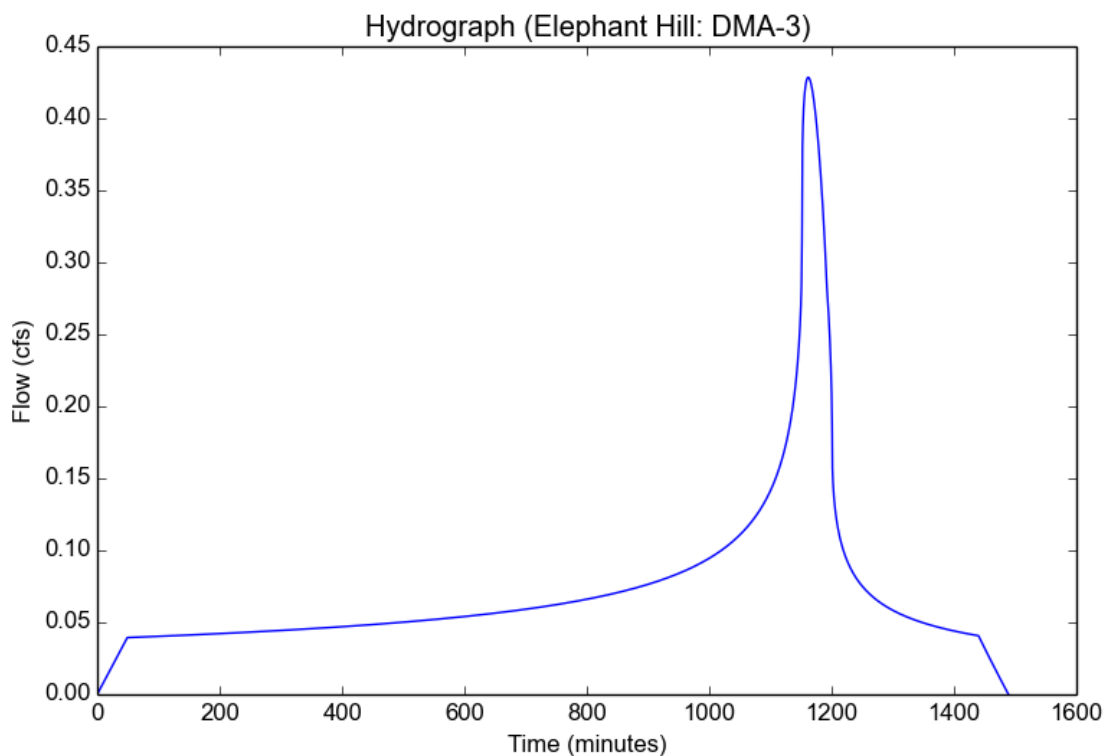
File location: C:/SD/Elephant Hill/Updated/Elephant Hill - DMA-3.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Elephant Hill
Subarea ID	DMA-3
Area (ac)	6.8
Flow Path Length (ft)	1070.0
Flow Path Slope (vft/hft)	0.145
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.2
Soil Type	90
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.2041
Undeveloped Runoff Coefficient (Cu)	0.1609
Developed Runoff Coefficient (Cd)	0.3088
Time of Concentration (min)	49.0
Clear Peak Flow Rate (cfs)	0.4285
Burned Peak Flow Rate (cfs)	0.4285
24-Hr Clear Runoff Volume (ac-ft)	0.1488
24-Hr Clear Runoff Volume (cu-ft)	6480.6927



Provided Debris Basin - Elephant Hill

Designer: Gary Guan

Project: VTTM 72653 - Elephant Hill

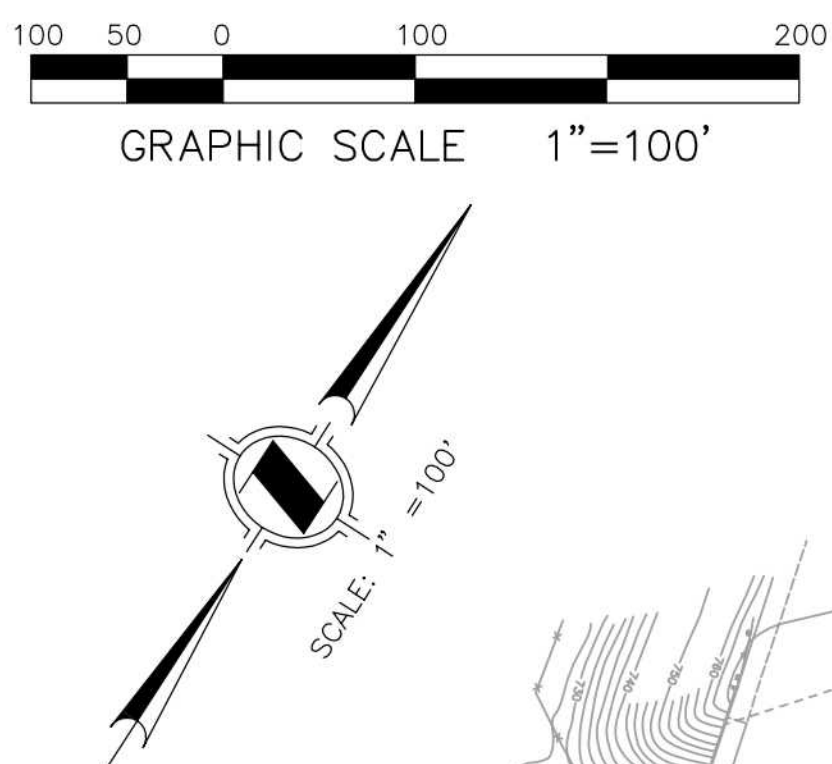
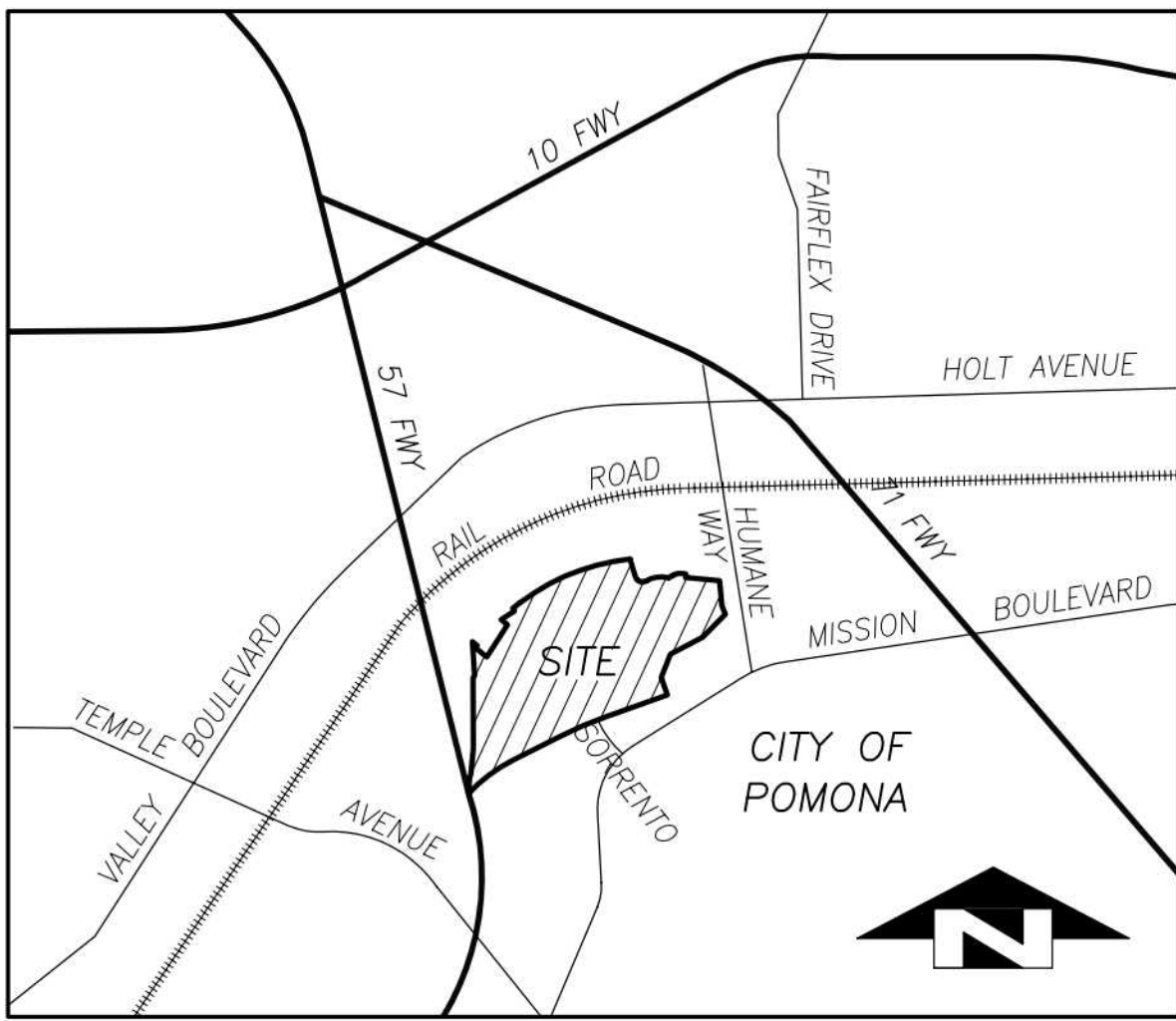
Location: Pomona, Los Angeles County

Date: 4/22/2021

Elevation	Depth _{incremental}	Depth _{cumulative}	Area	Area _{average}	Volume _{incremental}		Volume _{cumulative}	
(ft)	(ft)	(ft)	(ft ²)	(ft ²)	(ft ³)	(ac-ft)	(ft ³)	(ac-ft)
850.00			7100				0	0
	1.00			7750	7750	0.178		
851.00		1.00	8400				7750	0.18
	1.00			9035	9035	0.207		
852.00		2.00	9670				16785	0.39
	1.00			10335	10335	0.237		
853.00		3.00	11000				27120	0.62
	1.00			11740	11740	0.270		
854.00		4.00	12480				38860	0.89
	1.00			13445	13445	0.309		
855.00		5.00	14410				52305	1.20

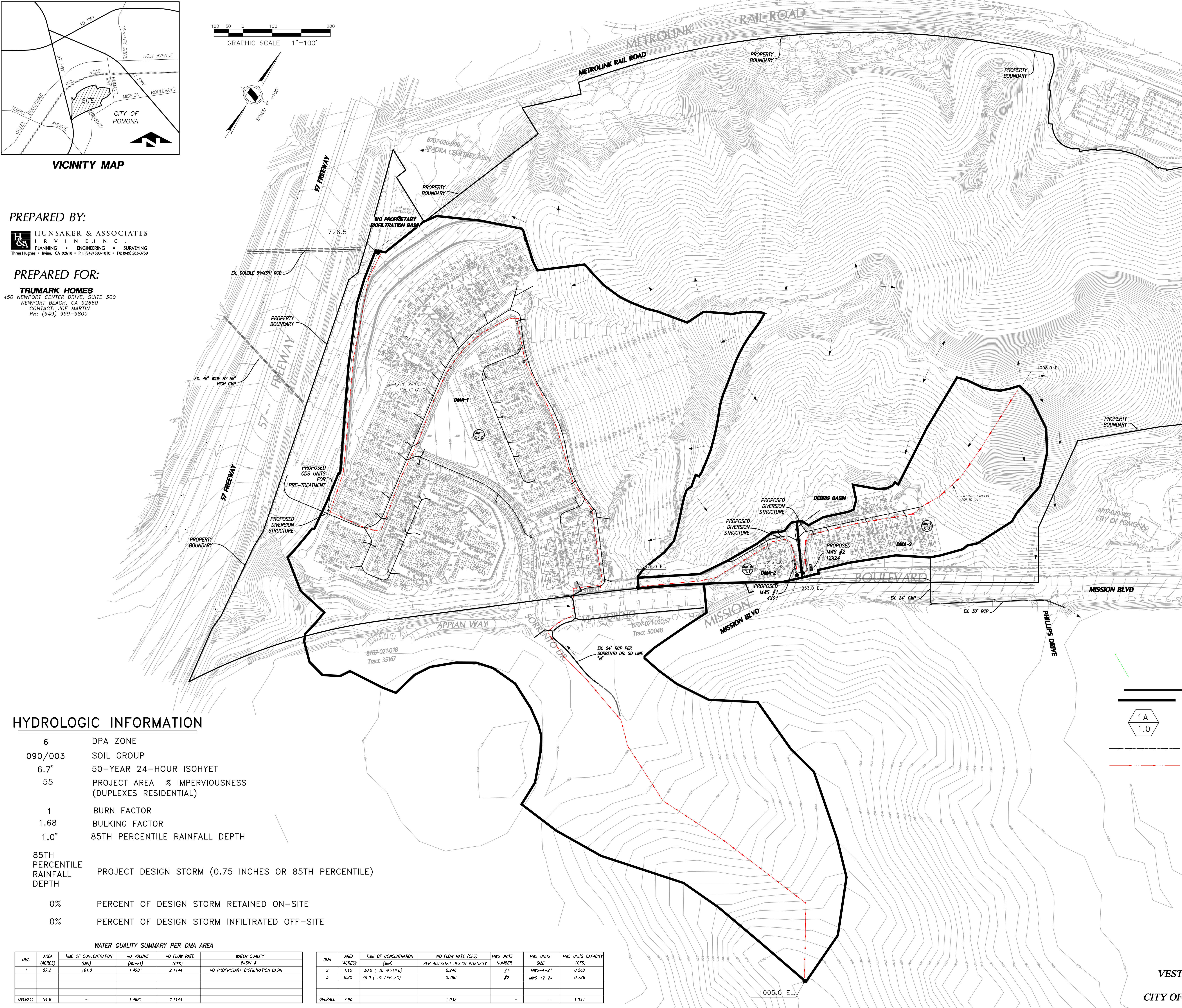
Note:

The debris production rate for Debris Potential Zones DPA-6 has a debris potential of 48,000 cy / mi² for areas less than or equal to 0.1 mi². The tributary area to debris basin is 10 acre which the debris production volume is about 0.46 ac-ft.



PREPARED BY:
HUNSAKER & ASSOCIATES
PLANNING • ENGINEERING • SURVEYING
Three Hughes • Irvine, CA 92618 • PH: (949) 583-1010 • FX: (949) 583-0759

PREPARED FOR:
TRUMARK HOMES
450 NEWPORT CENTER DRIVE, SUITE 300
NEWPORT BEACH, CA 92660
CONTACT: JOE MARTIN
PH: (949) 999-9800



HYDROLOGIC INFORMATION

- | | |
|--------------------------------|---|
| 6 | DPA ZONE |
| 090/003 | SOIL GROUP |
| 6.7" | 50-YEAR 24-HOUR ISOHYET |
| 55 | PROJECT AREA % IMPERVIOUSNESS (DUPLEXES RESIDENTIAL) |
| 1 | BURN FACTOR |
| 1.68 | BULKING FACTOR |
| 1.0" | 85TH PERCENTILE RAINFALL DEPTH |
| 85TH PERCENTILE RAINFALL DEPTH | PROJECT DESIGN STORM (0.75 INCHES OR 85TH PERCENTILE) |
| 0% | PERCENT OF DESIGN STORM RETAINED ON-SITE |
| 0% | PERCENT OF DESIGN STORM INFILTRATED OFF-SITE |

WATER QUALITY SUMMARY PER DMA AREA

DMA	AREA (ACRES)	TIME OF CONCENTRATION (MIN)	WQ VOLUME (AC-FT)	WQ FLOW RATE (CFS)	WATER QUALITY BASIN #
1	57.2	161.0	1.4981	2.1144	WQ PROPRIETARY BIOFILTRATION BASIN
OVERALL	54.6	-	1.4981	2.1144	

DMA	AREA (ACRES)	TIME OF CONCENTRATION (MIN)	WQ FLOW RATE (CFS)	MWS UNITS NUMBER	MWS UNITS SIZE	MWS UNITS CAPACITY (CFS)
2	1.10	30.0 (30 APPLIED)	0.246	#1	MWS-4-21	0.268
3	6.80	49.0 (30 APPLIED)	0.786	#2	MWS-12-24	0.786
OVERALL	7.90	-	1.032	-	-	1.054

LEGEND

- DRAINAGE BOUNDARY
- AREA DESIGNATION FOR AREA "A"
AREA ACREAGE (IN ACRES)
- FLOW DIRECTION
- LONGEST FLOW PATH AND DIRECTION

EXHIBIT 3
WATER QUALITY MAP
VESTING TENTATIVE TRACT MAP 72653
ELEPHANT HILL
CITY OF POMONA, COUNTY OF LOS ANGELES

SECTION 5

REFERENCES

- **EXISTING STORM DRAIN PLANS FOR SORRENTO
DRIVE STORM DRAIN LINE “B”**

GENERAL NOTES:

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE CITY OF POMONA STANDARDS AND SPECIFICATIONS, AND THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1985 EDITION, INCLUDING LATEST REVISIONS AND SUPPLEMENTS.
2. STATIONS SHOWN ON THESE DRAWINGS ARE ALONG CENTERLINE OF CONDUIT (EXCEPT STREET C.L. STATIONS WHERE SO INDICATED) AND ARE APPROXIMATE. ALL CONSTRUCTION SHALL BE BASED ON DIMENSIONS SHOWN FROM EXISTING IMPROVEMENTS.
3. ALL EXISTING UTILITIES SHALL BE MAINTAINED IN PLACE BY THE CONTRACTOR, UNLESS OTHERWISE NOTED.
4. ALL PIPE SHALL BE PLACED IN A TRENCH IN NATURAL GROUND AND/OR COMPACTED FILL. THE GROUND LEVEL BEFORE THE TRENCHING SHALL BE AT LEAST 3 FEET ABOVE TOP -OF PIPE ELEVATION, OR AT FINISH SURFACE ELEVATION, WHICHEVER IS LESS. ALL BACKFILL IN EASEMENTS SHALL BE COMPACTED TO THE DENSITY REQUIRED BY THE GRADING PLAN.
5. ALL PIPE IN OPEN TRENCH SHALL BE BEDDED ACCORDING TO STANDARD DRAWING NO. 2-D177, CASE III.
6. ALL BACKFILL AND FILL AROUND CLOSED CONDUIT IN STREET RIGHTS OF WAY SHALL BE BROUGHT UP TO SUBGRADE OF THE ROAD OR TO 2 FEET ABOVE THE TOP OF THE CONDUIT, WHICHEVER IS LESS. THE CITY ENGINEER SHALL INSPECT ALL BACKFILL AND FILL ABOVE AFOREMENTIONED LIMITS. APPLICATION FOR AN ENGINEER OR INSPECTOR IN CONNECTION WITH THE WORK, SHALL BE MADE BY THE CONTRACTOR AT LEAST 24 HOURS BEFORE HIS SERVICE IS REQUIRED. CALL (714) 620-2311.
7. ALL BACKFILLS AND FILLS TO BE USED AS SUBGRADE SHALL BE COMPACTED TO A RELATIVE DENSITY OF 90% UNLESS OTHERWISE SPECIFIED.
8. A PERMIT SHALL BE OBTAINED FROM THE CITY OF POMONA, PUBLIC WORKS, AND SHALL BE SUBMITTED TO THE INSPECTOR PRIOR TO COMMENCING CONSTRUCTION WITHIN THEIR RIGHTS OF WAY.
9. THE CONTRACTOR SHALL NOTIFY THE CITY OF POMONA PUBLIC WORKS AT (714) 620-2296 PRIOR TO STARTING CONSTRUCTION.
10. THIS STORM DRAIN WILL NOT BE ACCEPTED FOR MAINTENANCE UNTIL THE STREETS HAVE BEEN PAVED, MANHOLES BROUGHT TO GRADE, AND THE SYSTEM IS CLEANED TO THE SATISFACTION OF THE CITY ENGINEER.
11. THE CONTRACTOR'S ATTENTION IS DIRECTED TO SECTION 7-10. 4.1 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION IN REGARD TO SAFETY ORDERS.
12. THE CONTRACTOR SHALL CONFORM TO THE "MINIMUM PUBLIC SAFETY REQUIREMENTS" AS SHOWN ON LOS ANGELES COUNTY ENGINEER STANDARD S-2.
13. APPROVAL OF THIS PLAN BY THE CITY OF POMONA DOES NOT CONSTITUTE A REPRESENTATION AS TO THE ACCURACY OF THE LOCATION, OR THE EXISTENCE OR NON-EXISTENCE OF ANY UNDERGROUND UTILITY PIPE OR STRUCTURE WITHIN THE LIMITS OF THIS PROJECT. THIS NOTE APPLIES TO ALL SHEETS.

- A. EXISTING UNDERGROUND STRUCTURES- THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES, CONDUITS, OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE THERE ARE NO EXISTING UTILITIES EXCEPT AS SHOWN ON THESE PLANS. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER LINES NOT OF RECORD OR NOT SHOWN ON THESE DRAWINGS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE OWNERS OF THE UTILITIES OR STRUCTURES CONCERNED BEFORE STARTING WORK. CONTRACTOR FURTHER ASSUMES ALL LIABILITY AND RESPONSIBILITY FOR THE UNDERGROUND UTILITY PIPES, CONDUITS, OR STRUCTURES SHOWN OR NOT SHOWN ON THESE DRAWINGS.
- B. HOLD HARMLESS AND INDEMNIFICATION CLAUSE- CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD THE OWNER, THE CITY OF POMONA, AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER, THE CITY OF POMONA, OR THE ENGINEER.

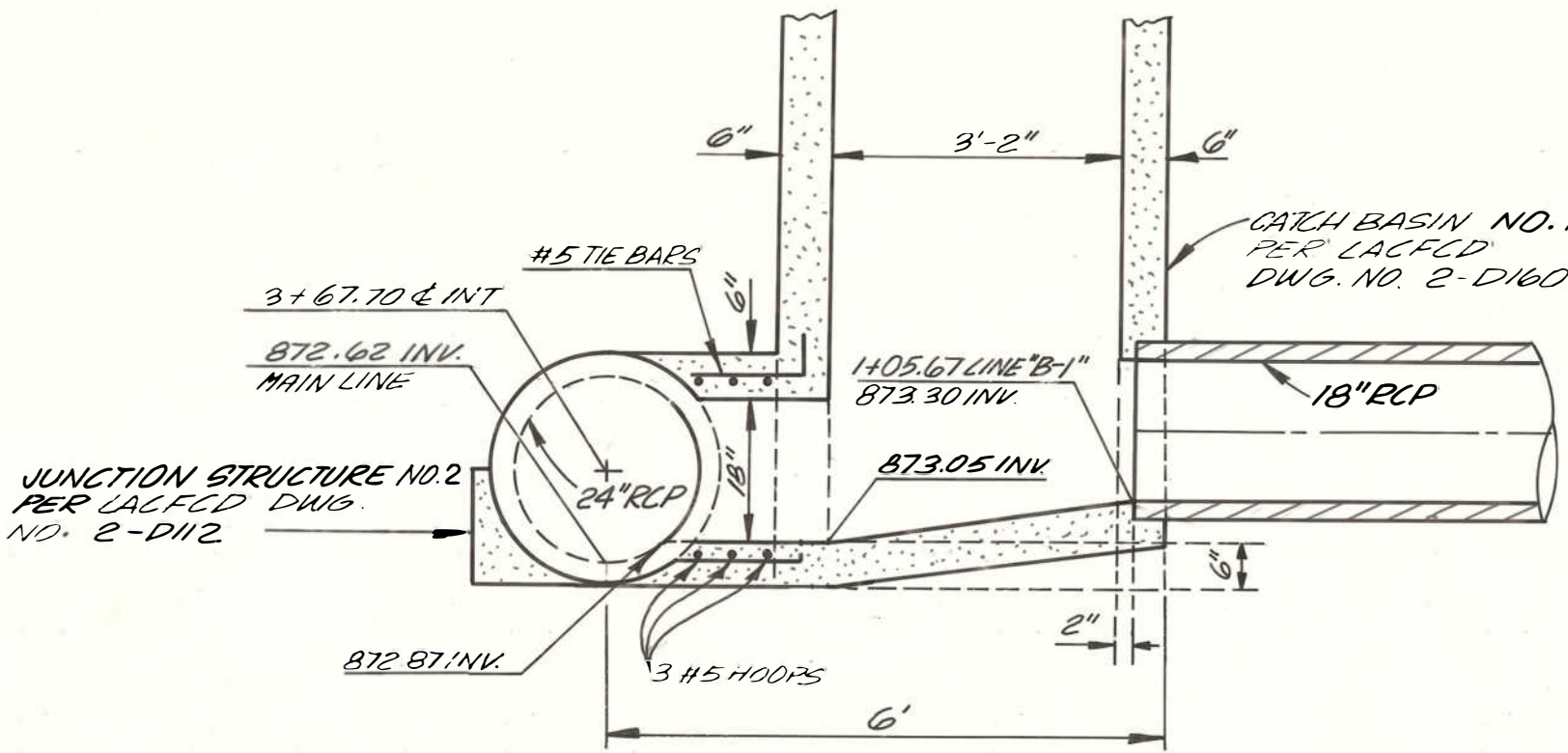
ENGINEERS NOTE

THE PRIVATE ENGINEER SIGNING THESE PLANS IS RESPONSIBLE FOR ASSURING THE ACCURACY AND ACCEPTABILITY OF THE WORK HEREON. IN THE EVENT OF DISCREPANCIES ARISING DURING CONSTRUCTION AS A RESULT OF ERRORS OR OMISSIONS THE PRIVATE ENGINEER SHALL BE RESPONSIBLE FOR DETERMINING AN ACCEPTABLE SOLUTION AND REVISING THE PLANS FOR APPROVAL BY THE CITY.

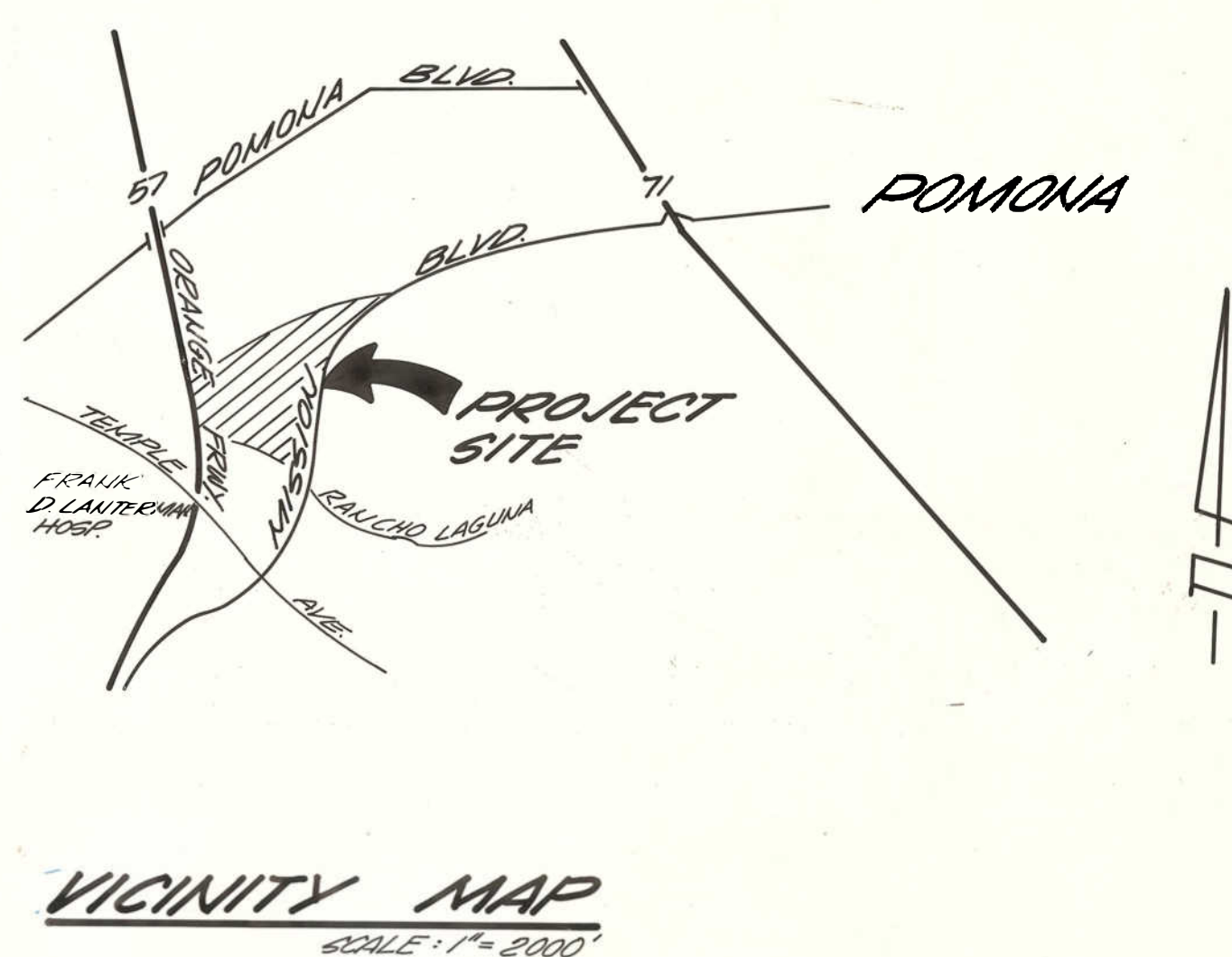
NOTICE TO CONTRACTOR

1. THE EXISTENCE AND LOCATIONS OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. APPROVAL OF THESE PLANS BY THE "CITY OF POMONA" DOES NOT CONSTITUTE A REPRESENTATION AS TO THE ACCURACY OR COMPLETENESS OF THE LOCATION OR EXISTENCE OR NON-EXISTENCE OF ANY UNDERGROUND UTILITY PIPE OR STRUCTURE WITHIN THE LIMITS OF THIS PROJECT. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEANS TO PROTECT THE UTILITY LINES NOT OF RECORD OR NOT SHOWN ON THESE PLANS.
2. THE CONTRACTOR SHALL CALL IN A LOCATION REQUEST TO UNDERGROUND SERVICE ALERT (U.S.A.) TELEPHONE NO. 1-800-422-4133 TWO WORKING DAYS BEFORE DIGGING. NO CONSTRUCTION PERMIT ISSUED BY THE PUBLIC WORKS DEPARTMENT INVOLVING EXCAVATION FOR UNDERGROUND FACILITIES WILL BE VALID UNLESS THE APPLICANT HAS BEEN PROVIDED AN INQUIRY IDENTIFICATION NUMBER BY U.S.A.
3. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE NATURE OF EXISTING GROUND AND/OR THE FINISHED GRADE IN THE VICINITY OF THE PROPOSED CONSTRUCTION AREA IMMEDIATELY PRIOR TO CONSTRUCTION.
4. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES OR STRUCTURES FOUND AT THE SITE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE OWNERS OF THE UTILITIES OR STRUCTURES CONCERNED BEFORE STARTING WORK.
5. THE CONTRACTOR SHALL UNCOVER ALL UTILITIES THAT HE MAY BE JOINING, CROSSING OR PARALLELING PRIOR TO ANY CONSTRUCTION TO VERIFY BOTH HORIZONTAL AND VERTICAL LOCATIONS. ANY CONFLICT OR DISCREPANCY SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION PRIOR TO CONSTRUCTION OTHERWISE THE CONTRACTOR ACCEPTS FULL RESPONSIBILITY FOR ANY COSTS OF RELOCATION OR ADDITIONAL COSTS OF CONSTRUCTION.

14. THE FOLLOWING COMPANIES ARE KNOWN TO OR MAY HAVE FACILITIES WITHIN PROJECT LIMITS:
- A. SOUTHERN CALIFORNIA GAS COMPANY (714) 984-1281
- B. SOUTHERN CALIFORNIA EDISON COMPANY (714) 967-8411
- C. CITY OF POMONA, SEWER DEPARTMENT (714) 620-2257
- D. CITY OF POMONA, WATER DEPARTMENT (714) 620-2231
- E. GENERAL TELEPHONE COMPANY (714) 629-9759
- F. PACIFIC TELEPHONE COMPANY (714) 999-5637



CATCH BASIN / JUNCTION STRUCTURE DETAIL (B) 2



CONSTRUCTION NOTES & ESTIMATED QUANTITIES

NO.	ITEM	QUANTITY	UNIT
1.	CONSTRUCT 18" RCP (2000-D)	99	L.F.
1A.	CONST 18" RCP (2000-D) W/ CONC. BACKFILL PER LACFD STD DWG NO 2-D2132	41	L.F.
2.	CONSTRUCT 24" RCP (2000-D)	710	L.F.
3.	CONSTRUCT CATCH BASIN NO. 1 PER LACFD STD. DWG. NO. 2-D160	1	EA.
4.	CONSTRUCT CATCH BASIN NO. 2 PER LACFD STD. DWG. NO. 2-D162	1	EA.
5.	CONSTRUCT CONCRETE COLLAR PER LACFD STD DWG NO 2-D393	1	EA.
6.	CONSTRUCT MANHOLE NO. 1 PER LACFD STD. DWG. NO. 2-D102	2	EA.
7.	CONSTRUCT JUNCTION STRUCTURE NO. 2 PER LACFD STD. DWG. NO. 2-D112	1	EA.
8.	CONSTRUCT SINGLE HEADWALL PER CALTRANS STD DWG NO. D89	1	EA.
9.	CONSTRUCT TRASH RACK (INCLINED) PLAN CASE "B" PER LACFD STD DWG NO 2-DTR11	1	EA.

PRIVATE ENGINEER'S NOTICE TO CONTRACTOR

1. ALL UNDERGROUND UTILITIES OR STRUCTURES REPORTED BY THE OWNER OR OTHERS, AND THOSE SHOWN ON THE RECORDS EXAMINED ARE SHOWN WITH THEIR APPROXIMATE LOCATION AND EXTENT.
2. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE NATURE OF EXISTING GROUND AND/OR THE FINISHED GRADE IN THE VICINITY OF THE PROPOSED CONSTRUCTION AREA IMMEDIATELY PRIOR TO CONSTRUCTION.
3. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES OR STRUCTURES FOUND AT THE SITE. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO NOTIFY THE OWNERS OF THE UTILITIES OR STRUCTURES CONCERNED BEFORE STARTING WORK.
4. THE CONTRACTOR SHALL UNCOVER ALL UTILITIES THAT HE MAY BE JOINING, CROSSING OR PARALLELING PRIOR TO ANY CONSTRUCTION TO VERIFY BOTH HORIZONTAL AND VERTICAL LOCATIONS. ANY CONFLICT OR DISCREPANCY SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION PRIOR TO CONSTRUCTION OTHERWISE THE CONTRACTOR ACCEPTS FULL RESPONSIBILITY FOR ANY COSTS OF RELOCATION OR ADDITIONAL COSTS OF CONSTRUCTION.
5. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONAL.

APPROVED FOR GRADING AND HYDROSEEDING:

CITY BUILDING OFFICIAL DATE

RECOMMEND APPROVAL:

COMMUNITY ENGINEERING SERVICES, INC. DATE

OWNER/DEVELOPER

WILMORE CITY DEVELOPMENT
3700 SOUTH SUSAN ST. #200
SANTA ANA, CALIFORNIA
TEL. (714) 641-8810

BENCH MARK:

L.A.-C.R.D. CG 3751
RD. DEPT. BM. TAG IN N. EDGE CONC.
HEADWALL 155' S. & 47' E/O C.L. INT.
2ND ST. & HWY. 71. ELEV. 809.929

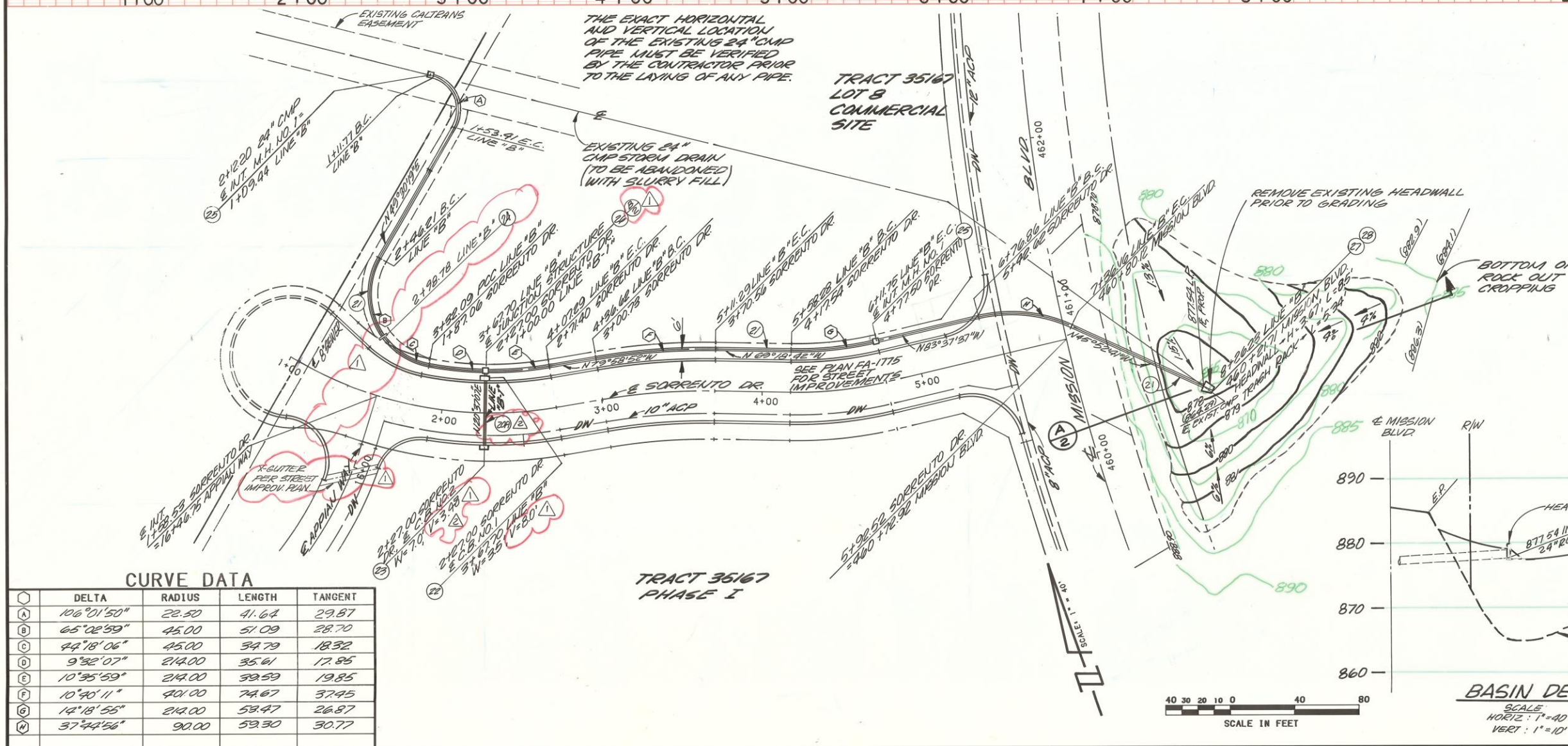
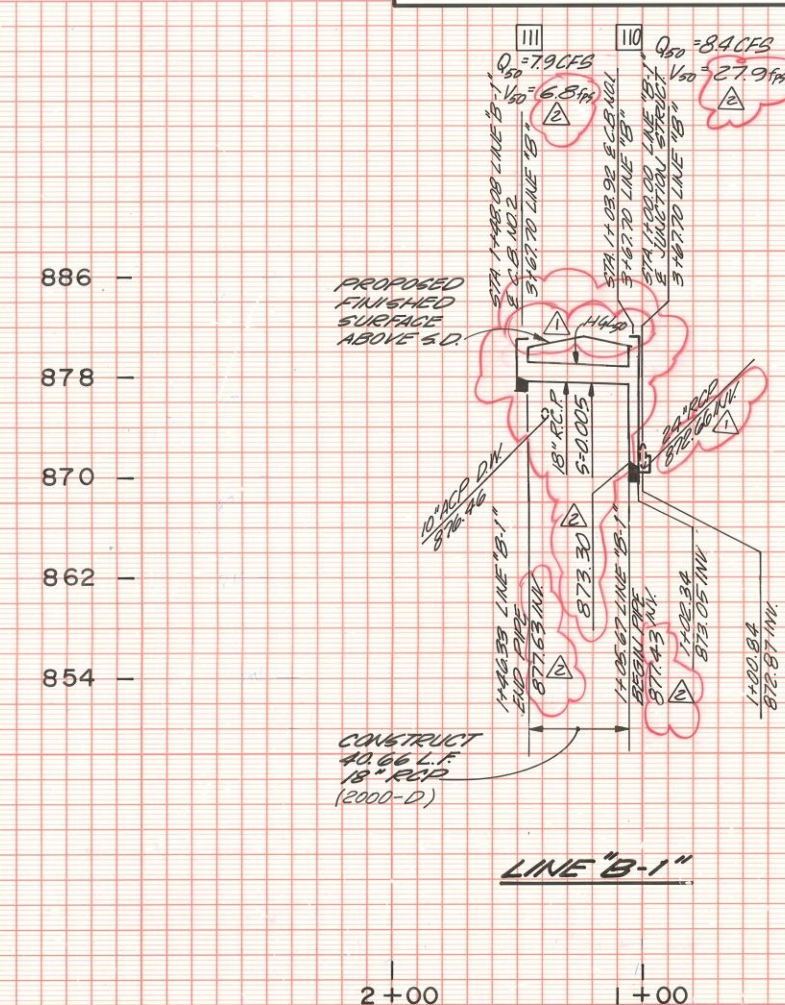
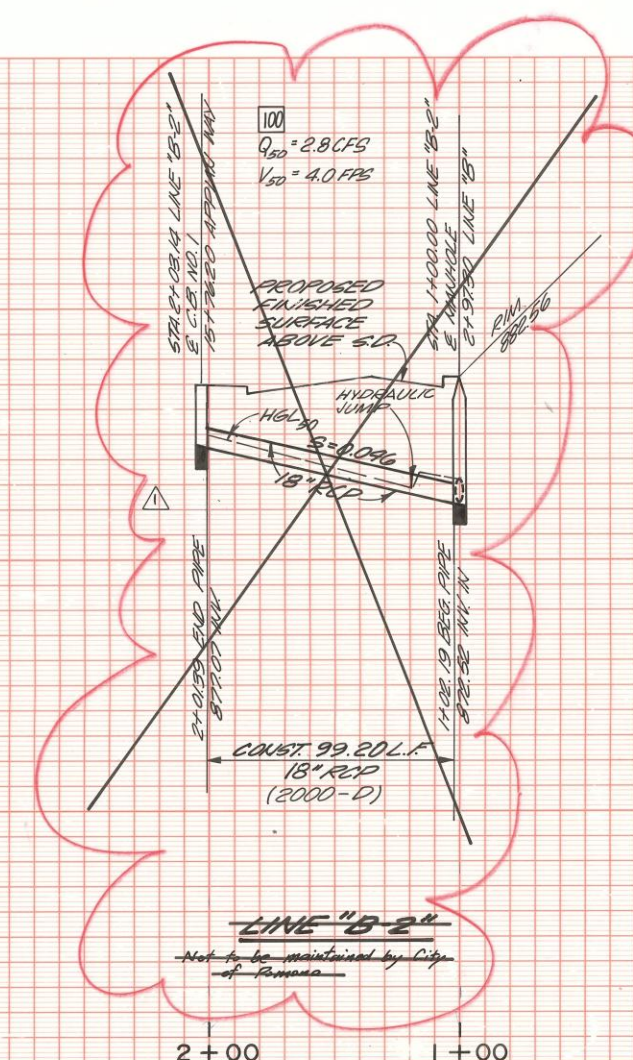
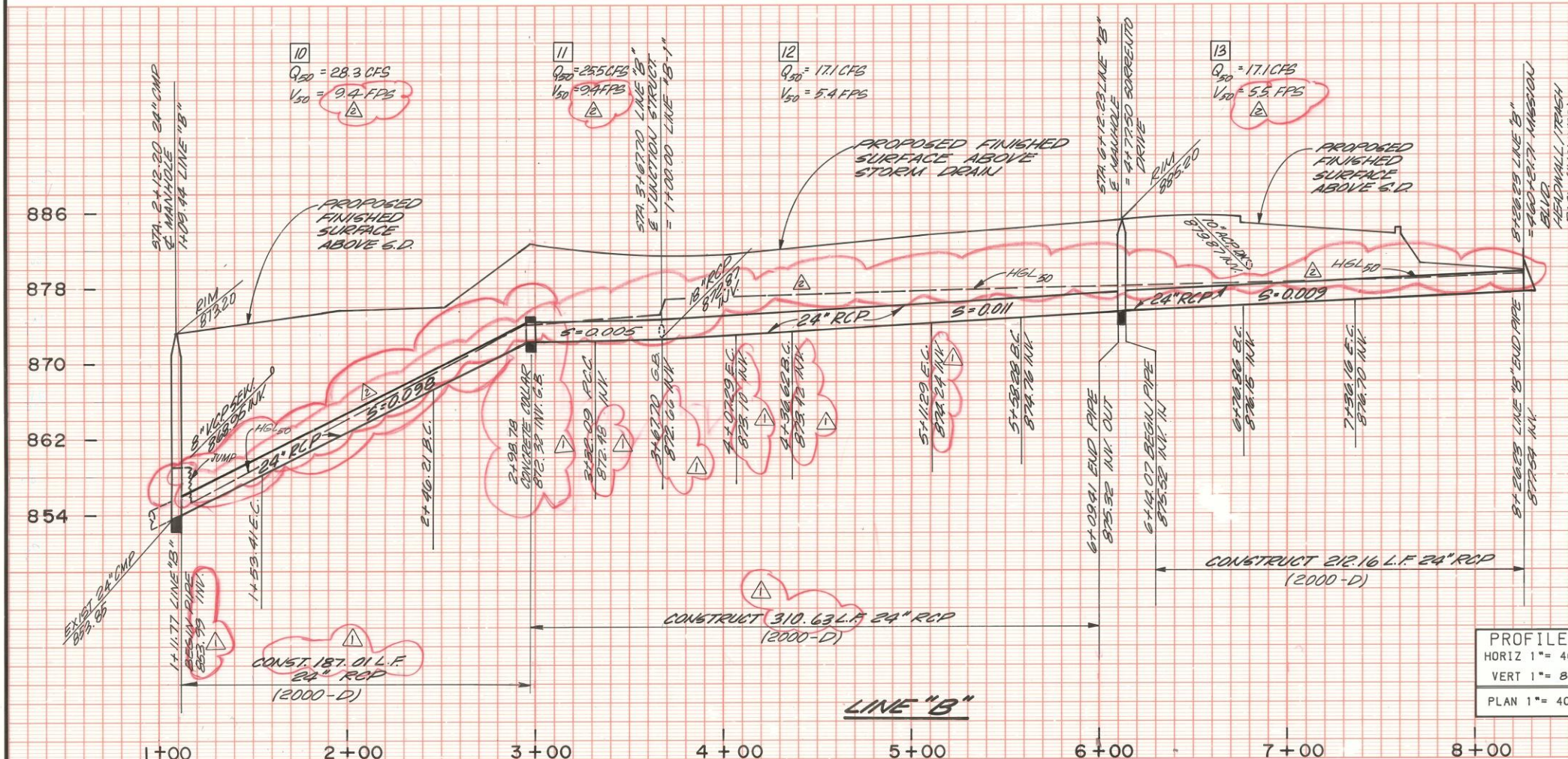
BASIS OF BEARINGS:

C.L. OF MISSION BLVD. N 18 06'50" E
N. OF TEMPLE PER PARCEL MAP
8528 PMB 92 SHEETS 28-39



CITY OF POMONA	
PLAN AND PROFILE OF STORM DRAIN IMPROVEMENTS FOR:	
SORRENTO DRIVE	
STORM DRAIN	
LINE "B"	
FROM STA. 1+00 TO 8+26.23	
RECOMMENDED:	APPROVED: 10-16-87
CHECKED:	CITY ENGINEER CE 24941
DESIGNED:	P.L.S. PREPARED BY:
DRAWN:	YAN DELL AND ASSOCIATES, INC.
STORM DRAIN TYPE SHEET LINE "B" - 117C26.1873PF - 4501 485	

BENCHMARK:
L.A.C.R.D. C.G. 3751
RD. DEPT. BM TAG IN N. EDGE CONC. HEADWALL
155' S. & 47' E/O C.L. INT. 2ND ST. AND
HWY. 71. ELEV. 809.929



HYDROSEED MIX			
TYPE	NAME	RATE OF APPLICATION	PURITY/GERMINATION
SHRUB	MIMULUS LONGIFLORUS (MONKEY FLOWERS)	3 LBS./ACRE	5% / 70%
SHRUB	ENCELIA FARINOSA (BRITTLE BUSH)	3 LBS./ACRE	40% / 60%
SHRUB	ERIODACTYLON TRACHOCLITX (YERBA SANTA)	2 LBS./ACRE	35% / 25%
SHRUB	ERODONUM RESCUTICULATUM (BUCKWHEAT)	6 LBS./ACRE	10% / 65%
SHRUB	10MONEIS ABOREOA (BLADDER POD)	4 LBS./ACRE	70% / 65%
SHRUB	SALVIA ARVANA (WHITE SAGE)	2 LBS./ACRE	70% / 60%
GRASS	BROMUS MOLLIS (BROME)	12 LBS./ACRE	95% / 65%
GRASS	FESTUCA MESALURA (TODD GRASS)	6 LBS./ACRE	85% / 60%
FLOWER	ESCHSCHOLZIA CALIFORNICA (CALIFORNIA POPPY)	2 LBS./ACRE	95% / 75%
FLOWER	PHACELIA CAMPANULACIA (CALIFORNIA EUSBELL)	1 1/2 LBS./ACRE	95% / 75%

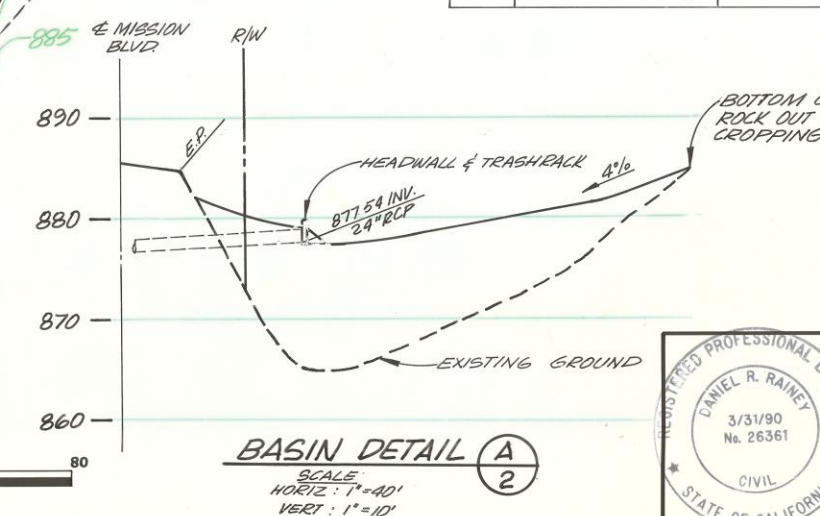
CONSTRUCTION NOTES

- ~~(19)~~ CONSTRUCT 18" R.C.P. (2000-D) WITH CONCRETE BACKFILL PER LACFD STD DWG. NO. 2-D213.2
- ~~(20)~~ CONSTRUCT 18" RCP (2000-D)
- (21) CONSTRUCT 24" RCP (2000-D)
- (22) CONSTRUCT CATCH BASIN NO. 1 PER LACFD STD. DWG. NO. 2-D160
- (23) CONSTRUCT CATCH BASIN NO. 2 PER LACFD STD. DWG. NO. 2-D162
-  (24) CONSTRUCT CONCRETE COLLAR PER LACFD STD DWG. NO. 2-D393.
- (25) CONSTRUCT MANHOLE NO. 1 PER LACFD STD. DWG. NO. 2-D102
- ~~(26)~~ CONSTRUCT JUNCTION STRUCTURE NO. 2 PER LACFD STD DWG. NO. 2-D112.
- ~~(27)~~ CONSTRUCT SINGLE HEADWALL PER CALTRANS STD. DWG. NO. 089
- ~~(28)~~ CONSTRUCT TRASH RACK (OBLIQUE) PLAN CASE "B" PER LACFD STD. DWG. NO. 2-D391.1

NOTES

HYDROSEED APPLICATION:
6-20-20 BEST GROWTHMAKER @ 300*/AC. UREA FORMAL DEHYDRIDE OR 18-0-0
31-0-0 @ 300*/AC. FIBER @ 2000*/AC.
TERRAPAK III @ 100*/AC. TEREX502B @ 30*/AC.

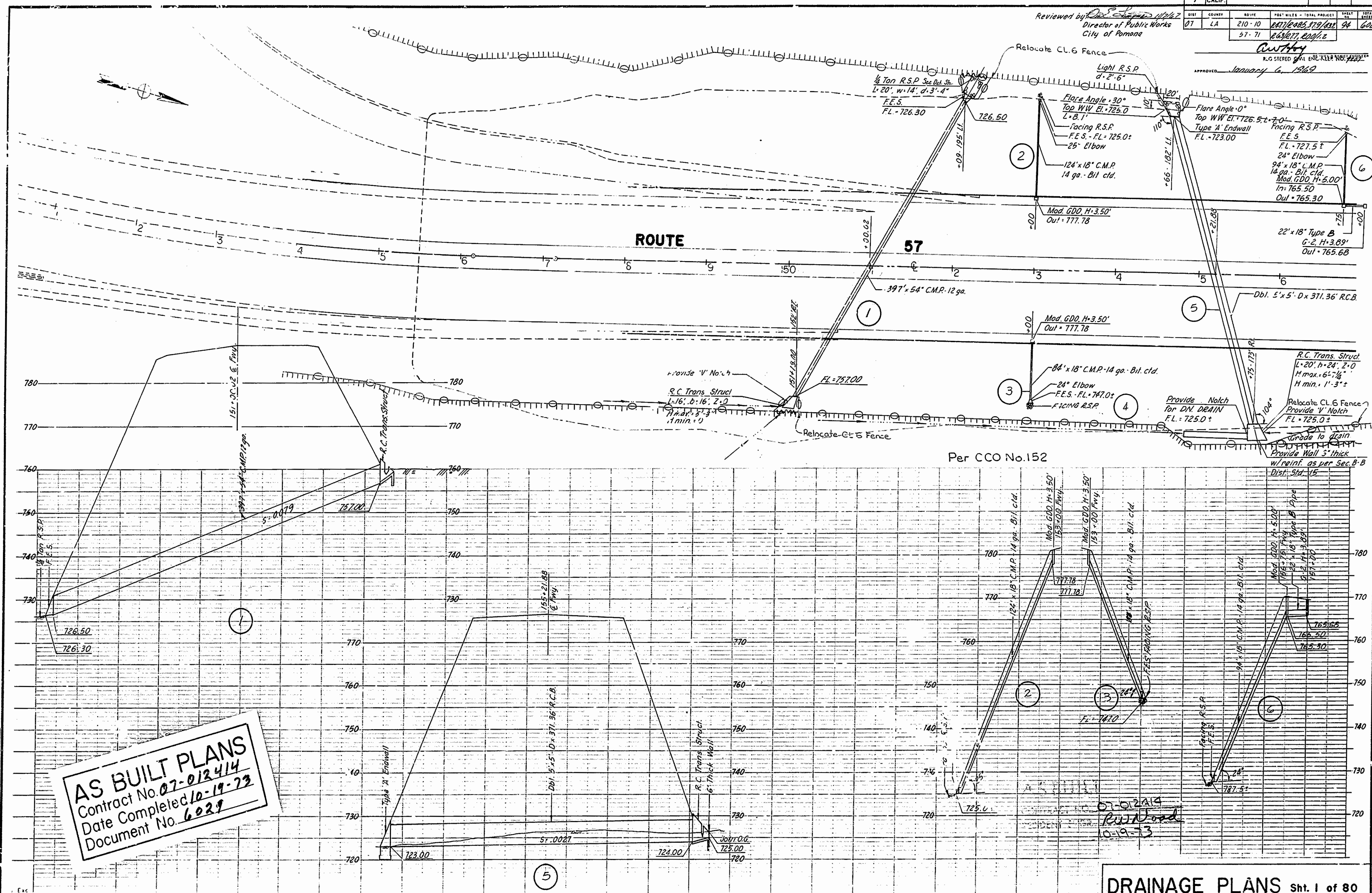
IRRIGATION:
NO IRRIGATION SYSTEM TO BE INSTALLED



11						CITY OF POMONA PLAN AND PROFILE OF STORM DRAIN IMPROVEMENTS FOR: SORRENTO DRIVE STORM DRAIN LINE "B" FROM STA. 1+00 TO 8+26.23																								
10																														
9																														
8																														
7																														
6																														
5																														
4																														
3																														
2	N.G.	LINE "B" REV. & "PRO" WILL CHANGE	<i>PL</i>	11/2/89																										
1	D.C.	LINE 10-2 REMOVAL & PROFILE SLOPE CHANGES	<i>PL</i>	3/28/88																										
<table><tr><td>NO</td><td>BY</td><td>REVISION</td><td>APP</td><td>DATE</td></tr><tr><td colspan="5">PLANS PREPARED BY: VAN DELL & ASSOCIATES, INC.</td></tr><tr><td colspan="5">EXPIRATION DATE:</td></tr><tr><td colspan="5"><i>D.R.R.</i></td></tr><tr><td colspan="5">DANIEL R. RAINEY R.C.E. NO. 26361 DATE 8/31/87</td></tr></table>						NO	BY	REVISION	APP	DATE	PLANS PREPARED BY: VAN DELL & ASSOCIATES, INC.					EXPIRATION DATE:					<i>D.R.R.</i>					DANIEL R. RAINEY R.C.E. NO. 26361 DATE 8/31/87				
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- **EXISTING STORM DRAIN PLANS FOR MTD 62 IN MISSION BLVD**

- **EXISTING 54" CMP AND DOUBLE 5X5 RCB CROSSING
57 FREEWAY PER CALTRANS**



DESIGN Dept	Initial	DATE
Designed by	T.M.	10-67
Drawn by	S.F.T.	10-67
Checked by	T.S.K.	10-67
Supervised by	I. S. Kawahigashi	
Right of Way		

AS BUILT PLANS
 Contract No. 07-012414
 Date Completed 10-19-73
 Document No. 6029

NOTE: THIS PLAN ACCURATE FOR DRAINAGE ONLY.