Thienes Engineering, Inc.
CIVIL ENGINEERING LAND SURVEYING

PROPOSED SITE DRAINAGE MEMO

MACH 19, 2020
DUKE IRWINDALE INDUSTRIAL SITE
13131 LOS ANGELES STREET
IRWINDALE, CALIFORNIA

Luis Pimental, E.I.T.
Engineering Technician
Public Works/Engineering
City of Irwindale
5050 N. Irwindale Avenue
Irwindale, Ca 91706

The majority of the project site drains from north to south to Los Angeles Street under existing conditions. A smaller portion of the site appears to surface drain to River Grade Road located at the northerly portion of the project site. The existing condition 50-year peak flow rate to Los Angeles Street is approximately 43.5 cfs while the peak flow rate to River Grade Road is about 10.6 cfs.

Flow to Los Angeles Street is intercepted in existing catch basins. One catch basin is located adjacent to the project site and conveys runoff to the existing quarry located on the southerly side of Los Angeles Street. The other catch basin is located westerly of the project site and appears to an existing Los Angeles County Department of Public Works storm drain system.

The existing Los Angeles County Department of Public Works storm drain system (Project No. 445 Line "B") is located at the southerly property line of the project site. This storm drain system conveys runoff westerly, ultimately discharging into the San Gabriel River. Correspondence with the County indicates that the project site is not table to this storm drain system. The County has indicated that a hydraulic analysis of the existing system can be performed and that additional flow can be added such that "the extra input will not buck the present condition H.G.L. by more than 0.2 feet". There is no storm event indicated on the plans or calculations received from the County.

Thienes Engineering has established a hydraulic model for the entire existing storm drain system based on plans and peak flow rates provided by the County. A trial and error method was used to add various peak flow rates at one location to the County storm drain to determine the maximum peak flow rate that could be added such that the increase the H.G.L. no more than 0.20'. This amount is 6.5 cfs.

14349 Firestone Blvd., La Mirada, CA 90638 | Telephone: (714) 521-4811 | Fax: (714) 521-4173

The preliminary proposed condition 50-year peak flow rate for the site is approximately 77.5 cfs. This is a direct addition of individual subarea peak flow rates and does not include detention. To achieve only 6.5 cfs total discharge from the project site will required onsite detention. Truck yards at the northerly and westerly portion of the project site will be used for temporary storage. The easterly portion of the site is a vehicle parking area and does not have the ability to detain runoff on the surface. Therefore, additional storage volume is provided in the proposed underground storage system. The underground storage is intended to meet water quality volumes. However, this volume can be increased to accommodate some storage of peak flow rates.

Hydrographs were established for drainage areas tributary to the various detention areas. The hydraulic Toolbox program (accepted by Los Angeles County) was used to run "basins" to determine required volumes for storage. Preliminary analysis shows that between storage in the truck yards and additional underground storage, the discharge from the majority of the project site can be reduce to about 4.5 cfs. This leaves approximately 2.0 cfs for the parking areas adjacent to Los Angeles Street. Here, smaller individual storage areas will be necessary in the parking lots. Overall, a total discharge of no more than 6.5 cfs can be achieved for the project site.

It has been shown that the peak flow rate can be reduced to an amount acceptable to the County for a connection to the existing County storm drain system. As an alternative, this same reduced peak flow rate can be discharged to the existing City catch basin adjacent to the site. In either case, the overall 50-year peak flow rate can be reduced to approximately 15% (6.5 cfs/43.5 cfs) of the existing condition 50-year peak flow rate currently tributary to Los Angeles Street.

Reinhard Stenzel, R.C.E No. 56155
Director of Engineering
Thienes Enginering, Inc.
14349 Firestone Boulvard
La Mirada, Ca 90638

14349 Firestone Blvd., La Mirada, CA 90638 | Telephone: (714) 521-4811 | Fax: (714) 521-4173

PRELIMINARY HYDROLOGY CALCULATIONS

FOR

DUKE WAREHOUSE AT 13131 LOS ANGELES STREET
13131 LOS ANGELES STREET
IRWINDALE, CALIFORNIA

PREPARED FOR

DUKE REALTY 13131 LA STREET, LP
200 SPECTRUM CENTER DRIVE, SUITE 1600
IRVINE, CA 92168
PHONE: (949) 797-7000
FAX. (949) 797-7080

AUGUST 29, 2018
REVISED NOVEMBER 13, 2018
REVISED NOVEMBER 26, 2019

JOB NO. 3665

PREPARED BY

THIENES ENGINEERING
14349 FIRESTONE BLVD.
LA MIRADA, CALIFORNIA 90638
PHONE: (714) 521-4811
FAX: (714) 521-4173

PRELIMINARY HYDROLOGY CALCULATIONS

FOR

DUKE WAREHOUSE AT 13131 LOS ANGELES STREET

PREPARED BY RICKY HWA
UNDER THE SUPERVISION OF

REINHARD STENZEL, PE DATE:
R.C.E. 56155
EXP. 12/31/20

INTRODUCTION

A: PROJECT LOCATION

The project site is located at 13131 Los Angeles Street in the city of Irwindale, California. Please see following page for vicinity map.

B: STUDY PURPOSE

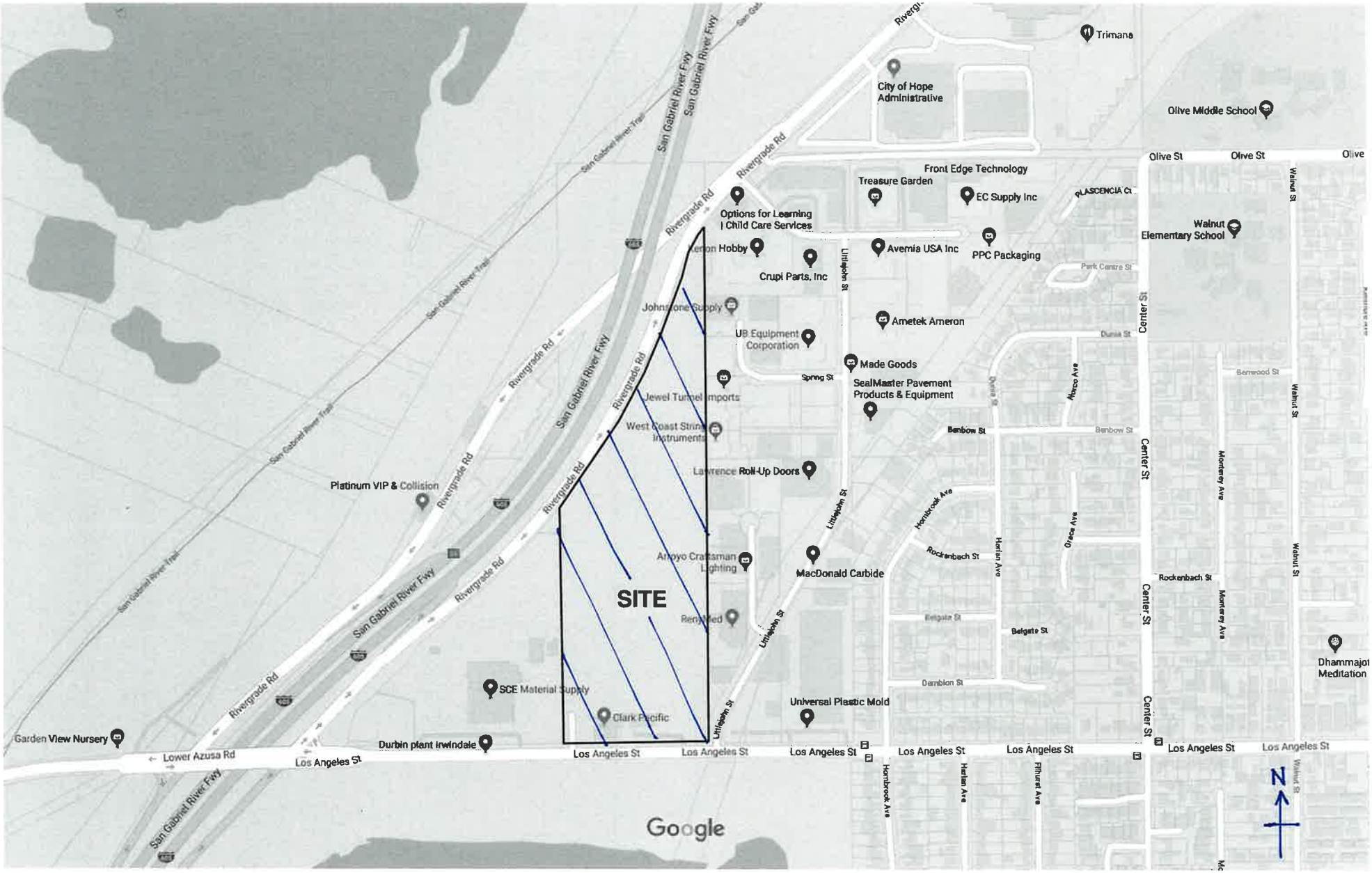
The purpose of this study is to determine the existing condition and proposed condition 25-year and 50-year peak flow rates from the project site, which drains to existing catch basins in Rivergrade Road and Los Angeles Street.

C: PROJECT STAFF:

Thienes Engineering staff involved in this study include:

Reinhard Stenzel
Ricky Hwa

Google Maps



VICINITY MAP

Map data ©2018 Google 200 ft

DISCUSSION

The project site encompasses approximately 24.90 acres. Proposed improvements consist of one commercial type building of 522,410 square feet. There will be truck yards on the north and west sides of the proposed building, a vehicle parking lot on the south side, and a drive aisle on the east side. There will be landscapes along the property lines and scattered throughout the site.

County Hydrology

Per Los Angeles County hydrology data, the project site is not tabled to the County maintained Project 445 – Line B, a reinforced concrete box system that traverses through the site near its southerly property line. However, the site is tributary to several City-maintained street catch basins in Rivergrade Road and Los Angeles Street.

Please see Appendix "A" for County hydrology, as-built storm drain plans, County storm drain index and other pertinent reference materials.

Existing Condition

The project site is currently developed with several warehouse type buildings, small office buildings, and paved parking lots.

The northerly portion of the site (Subarea 1A, 4.70 acres) surface drains south-westerly to Rivergrade Road. Runoff is then conveyed further south-westerly in Rivergrade Road to several City-maintained street catch basins approximately 500 feet from the site's westerly property line. The total existing condition 25-year and 50-year peak flow rates from this portion of the site are approximately 8.7 cfs and 10.6 cfs, respectively.

The south-easterly portion of the project site (Subarea 10B, 12.70 acres) surface drains southerly to a City-maintained catch basin in Los Angeles Street fronting the site. Runoff is then conveyed further south via a 36-inch storm drain to a detention basin within a quarry facility south of Los Angeles Street. The total existing condition 25-year and 50-year peak flow rates from this portion of the site are approximately 22.2 cfs (15.4 cfs from 8.90 acres with soil type 7 + 6.8 cfs from 3.80 acres with soil type 8) and 26.2 cfs (18.2 cfs from 8.90 acres with soil type 7 + 8.0 cfs from 3.80 acres with soil type 8), respectively.

The south-westerly portion of the project site (Subarea 20C, 7.50 acres) surface drains southerly to Los Angeles Street. Runoff is then conveyed westerly to a County-maintained street catch basin (approximately 600 feet from the site's westerly property line) in Los Angeles Street tributary to Project 445 – Line B. The total existing condition 25-year and 50-year peak flow rates from this portion of the site are approximately 14.6 cfs (8.3 cfs from 4.35 acres with soil type 7 + 6.3 cfs from 3.15 acres with soil type 8) and 17.3 cfs

(9.9 cfs from 4.35 acres with soil type 7 + 7.4 cfs from 3.15 acres with soil type 8), respectively.

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

Proposed Condition

The northerly entry driveway and adjacent frontage landscape (Subarea 1A, 0.50 acres) surface drain north-westerly to Rivergrade Road. Runoff is then conveyed south-westerly in Rivergrade Road to several existing City-maintained street catch basins. The total proposed condition 25-year and 50-year peak flow rates from this portion of the site are approximately 1.6 cfs and 1.8 cfs, respectively. This is less than the existing condition rates of 8.7 cfs (25-year) and 10.6 cfs (50-year) from the site tributary to the same catch basins.

Most of the project site's remaining areas are tributary to the existing City-maintained street catch basin in Los Angeles Street fronting the site, via the proposed onsite storm drain system (Subareas 10B-17B, 23.70 acres) and surface flow (Subarea 18B, 0.35 acres).

Specifically for the proposed onsite storm drain system, runoffs from the northeast quarter of the proposed building (Subarea 10A, 3.20 acres) and the northerly truck yard (Subareas 11B-12B, 4.30 acres) will be conveyed westerly via the proposed storm drain Line "B" to a catch basin in Subarea 13B, which accepts runoffs from the northwest corner of the proposed building and the north half of the westerly truck yard (Subarea 13B, 7.10 acres) via surface flow. Similarly, runoffs from the southwest corner of the proposed building and the south half of the westerly truck yard (Subarea 14B, 4.90 acres) will be conveyed northerly via the proposed storm drain Line "C" to the same catch basin in Subarea 13B. From there, runoffs will be conveyed southerly via the proposed storm drain Line "A" to the existing City-maintained catch basin in Los Angeles Street. Line "A" also accepts runoffs from the south-westerly parking lot (Subarea 15B, 0.40 acres), southerly parking lot (Subarea 16B, 0.65 acres), and the southeast corner of the proposed building (Subarea 17B, 3.15 acres).

The total proposed condition 25-year and 50-year peak flow rates from the project site (Subareas 10B-18B, 24.05 acres) tributary to the existing City-maintained drainage facilities in Los Angeles Street are approximately 61.9 cfs (25-year) and 74.5 cfs (50-year), respectively. This is more than the existing condition rates of 22.2 cfs (25-year) and 26.2 cfs (50-year) from the site tributary to the same existing drainage system. Detention in the site's westerly truck yard will be utilized to reduce proposed condition 50-year discharge to below existing condition 50-year runoff.

Lastly, the project site's south-westerly frontage driveway (Subarea 20C, 0.35 acres) will surface flow southerly to Los Angeles Street, then westerly to the existing County-maintained street catch basin. The proposed condition 25-year and 50-year peak flow rates from this portion of the site are approximately 1.1 cfs (25-year) and 1.2 cfs (50-year),

respectively. This is less than the existing condition rates of 14.6 cfs (25-year) and 17.3 cfs (50-year) from the site tributary to the same County-maintained catch basin.

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

Detention

As mentioned above, detention in the project site's westerly truck yard will be utilized to reduce proposed condition 50-year runoff (74.5 cfs from Subareas 10B-18B) tributary to the existing City-maintained drainage system in Los Angeles Street to below existing condition 50-year runoff (26.2 cfs).

Per hydrograph calculations in Appendix "C", approximately 32,513 cubic feet of proposed condition runoff tributary to the westerly truck yard (Subareas 10B-14B) can be temporarily detained at a depth of 1.98 ft (350.49 water surface elevation – 348.51 catch basin top of grate) in the truck yard, with the remaining 12.4 cfs discharging via the proposed onsite storm drain Line "A". With detention, the proposed condition 50-year discharge from the project site to the existing City-maintained drainage system in Los Angeles Street will be 26.1 cfs (12.4 cfs from Subareas 10B-14B + 1.4 cfs from undetained Subarea 15B + 2.3 cfs from undetained Subarea 16B + 8.8 cfs from undetained Subarea 17B + 1.2 cfs from undetained Subarea 18B). This is less than the existing 50-year discharge (26.2 cfs). Therefore, proposed site improvements will not impose any negative impacts on existing drainage facilities in Los Angeles Street.

The proposed onsite storm drains will be sized during the project site's final design phase to restrict outflow to the desirable discharge rates.

See Appendix "C" for detention calculations.

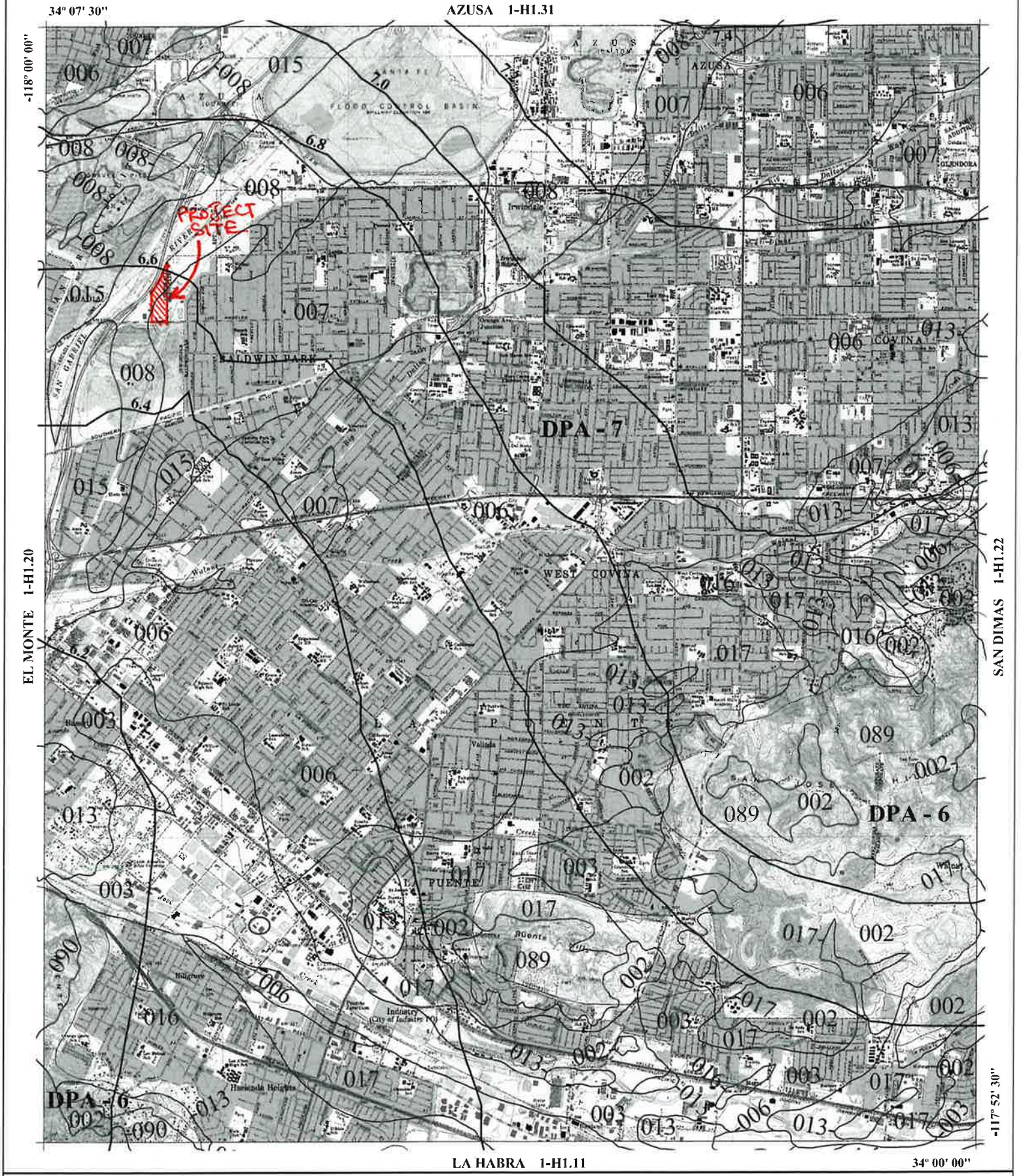
Methodology

Hydrology calculations and hydrographs were computed using Los Angeles County's HydroCalc spreadsheet. The soil type is "7" for the southerly portion of the site and "8" for the northerly portion of the site. To be conservative, for proposed condition Subareas 10B, 13B and 14B covered by both soil types, soil type "8" was used for the entire subareas, thus resulting in higher 50-year runoffs. The rainfall zone is 6.6 inches per Los Angeles County Hydrology Manual. See Appendix "A" for County hydrology reference materials.

APPENDIX	DESCRIPTION
A	REFERENCE MATERIALS
B	HYDROLOGY CALCULATIONS
C	DETENTION ANALYSIS
D	HYDROLOGY MAP

APPENDIX A

REFERENCE MATERIALS


34° 07' 30"
AZUSA 1-H1.31
-118° 00' 00"
EL MONTE 1-H1.20
SAN DIMAS 1-H1.22
-117° 52' 30"
LA HABRA 1-H1.11
34° 00' 00"
PROJECT SITE
DPA - 7
DPA - 6
DPA - 6
AZUSA
BALDWIN PARK
COVINA
WEST COVINA
LA PUENTE
Industry
Hacienda Heights
FLOOD CONTROL BASIN
SAN GABRIEL RIVER
016
SOIL CLASSIFICATION AREA
7.2
INCHES OF RAINFALL
DPA - 6
DEBRIS POTENTIAL AREA
N
S
E
W
1 0 1 2 Miles
25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714
BALDWIN PARK
50-YEAR 24-HOUR ISOHYET
1-H1.21
LOS ANGELES COUNTY
PUBLIC WORKS
Public Service That Works

Office Use Only
☐ Sent Initials: _____
☐ Fax ☒ Email ☐ Other: _____
Date: _____ Time: _____

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS
DESIGN DIVISION – HYDRAULIC ANALYSIS UNIT

INFORMATION REQUEST SUMMARY

INFORMATION REQUESTED BY

*Requester's Name: Angie Maldonado
Company: Thienes Engineering, Inc
*Phone Number: 714-521-4811 Fax Number: 714-521-4173
*Email: Angie@ThienesEng.com

Method of Contact: ☐ Walk-in ☐ Phone ☐ Fax ☒ Email ☐ Prelim. Mtg. Date: 4/20/18

Intended Use: Research

Proposed Project Type: Industrial Acreage Involved:

*Will information be used in any litigation? ☐ YES ☒ NO
Case Info. Name: _____ No: _____

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS DESIGN DIVISION Hydraulic Analysis Unit OFFICIAL RECORD DOCUMENT Issued By: Date: 05/23/2018 Location: Public Service That Works

INFORMATION REQUESTED (Attach Assessor Map)

LACFCD Facility: Name: _____
Unit: _____ Line: _____ Station: _____
City: Irwindale
*Street/Cross-street: NWC Los Angeles St & Littlejohn St
*Thomas Guide: Page: 597 Grid: J4 ☒ Site Map/Plans Submitted
Info. Requested:
- Hydrology Map
- Allowable 'Q'
- Hydraulic calcs

***Required Information. See Page 2 of 2 for Instructions.**

BELOW SECTION TO BE COMPLETED BY THE HYDRAULIC ANALYSIS UNIT

INFORMATION PROVIDED: Project 407 hydrology, Project 445 Line B hydraulic calculation. Project 407 and 445 as-built drawings.

REFERENCES SEARCHED: Projects 407 and 445 Line B.

COMMENTS, ETC: Allowable q per acre = 0
Our records show that your area of interest is not tabled to Project 445 Line B. Thus, to qualify to apply for connection permit for this area, you need to do the following hydraulic impact analysis on Project 445 line B: Run a present condition WSPS on this drainage system, based the data provided in the information stated above. Run another post development condition WSPG, with the data supplied and extra input from your area of interest. Show that this extra input will not buck the present condition HGL by >0.2ft. Submit your analysis with your application, to our Land Development Division.

INFORMATION PROVIDED BY: Ambrose C Ajaelo PE Date: 05/23/2018

INFORMATION REVIEWED BY: Date:

Print Save a Copy


PROJECT SITE
RIVERGRADE ROAD
CENTER ST.
MERCED AVE.
STEWART AVE.
OLIVE ST.
MAINE AVE.
HORNBERCK AVE.
PALM ST.
355
350
340
335
345
360
365

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

Sht 1 of 1

Hydraulic Calculation Sheet

PROJECT # 445 - Line "B"

CALCULATED BY HLH

DATE 8/3/82

STA.	ELEV. INV	D	ELEV W.S.	SECTION	A	W.P. k	R V	Q	$\frac{v^2}{2g}$	E.G.	S_f	Av. S_f	L	h_f	h_b	h_j	h_t	E.G.
~~0+00~~	~~325.81~~	~~9.0'~~	~~335.88~~	~~R.C.B. 7'6"x9'0"~~	~~66.94~~	~~12699~~	~~7.8~~	525	.96	~~336.84~~	~~.0017~~	—						
~~0+10~~												.0017	10	.02				
0+00	325.81	10'	335.88	Box 3'6"x12'0"	34.4	12699	6.2	0.6		336.48		—	—					
0+10			335.61	7'6"x9'0"	66.94	12699	7.8	96		336.57	.0017	.0013	10	.01			.03	
6+00	—	—	336.83							337.72		.0017	600	1.00	22'			
"			336.88							337.84			—	—	—	—	M.H. .05	
9+00			337.39							338.25			300	.51				
9+30			337.44							338.40			30	.05				
9+50			337.47							337.43			20	.03	—	—		
"			337.50	9'x7'6"	67.59	12743	7.6	94		338.44	.0017		—	—	—	—	.01	
10+90			337.74							338.68			140	.24				
11+10			337.76	7'6"x9'0"	66.94	12699		96		338.72			20	.03			.01	
16+80			339.07							340.03			570	.97	.34'			
16+90			339.89	14"x5'6"	59.45	11330		1.21		340.10		.0019	10	.02			.05	
15+60			339.30							340.51			170	.32	.29'			
26+60			341.06							342.27			660	1.16				
26+90	—	—	341.13							342.34			30	.07				
27+70			341.56	8'3"x4'0"	32.11	4669	3.1	1.02		342.58	.033		80	.22			.02	
31+50			342.81							343.83		.0033	380	1.25				
32+30			342.83	7'6"x8'6"	59.45	11330	8.84	1.21		344.09	.0022	.0028	80	.22			.04	
36+70			344.44							345.62		.0022	440	.97	.56'			
36+80			343.89	90° R.P.	44.18	7814	11.9		2.19	346.08	.0045	.0033	10	.03			.20	

DB-2

Department of Public Works
dpw.lacounty.gov

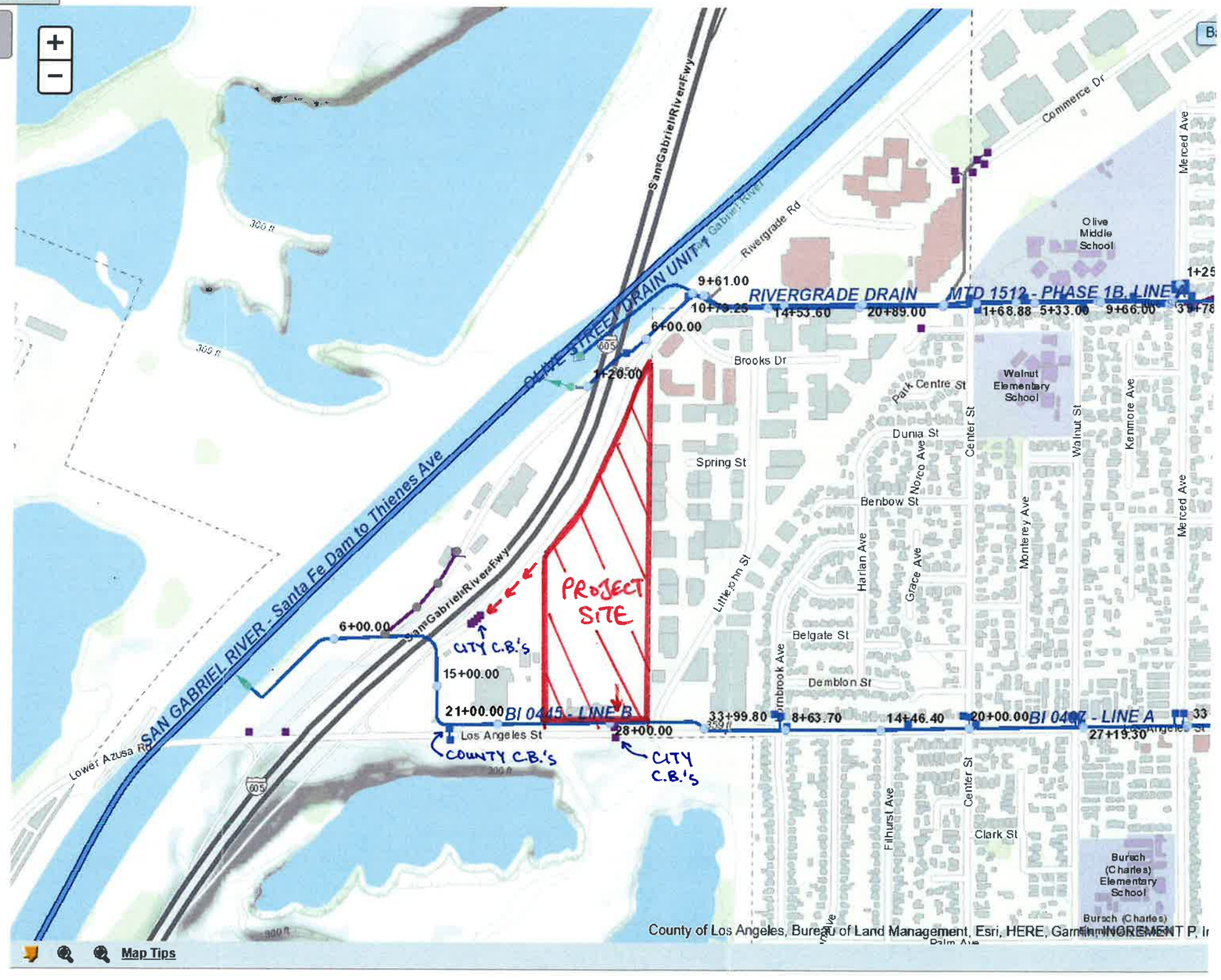
search our site..

Los Angeles County Storm Drain System

File Geodatabase Download | MS4 Outfalls Download

Search | Layers | Info

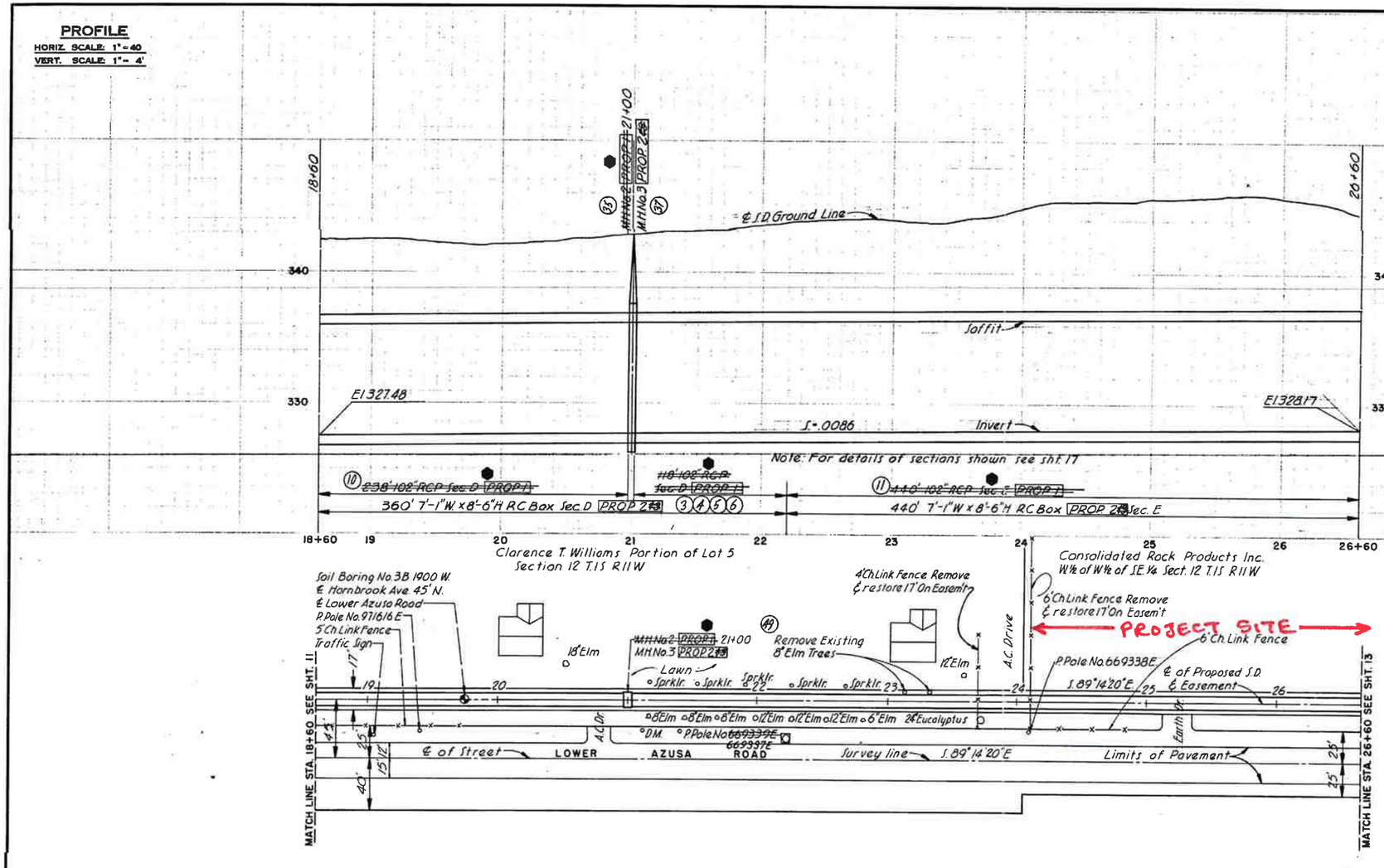
- Drains
  - Maintained by LACFCD
  - Maintained by City
  - Maintained by Road
  - Maintained by Metro/Parks & Recreation
  - Maintained by Private/Permittee/Others
  - Maintenance Unknown
- Channels
  - Maintained by LACFCD
  - Maintained by City
  - Maintenance Unknown
  - Maintained by Army Corp
- Catch Basins
  - Maintained by LACFCD
  - Maintained by City
  - Maintained by Road
  - Maintenance Unknown
- Maintenance Holes
  - Maintained by LACFCD
  - Maintained by City
  - Maintenance Unknown
- Laterals
  - Maintained by LACFCD
  - Maintained by City
  - Maintained by Road
  - Maintained by Metro/Parks & Recreation
  - Maintained by Private/Permittee/Others
  - Maintenance Unknown
- MS4 Outfalls
- MS4 Outfalls (CUA)
- Debris Basins
  - Maintained by LACFCD
  - Maintained by City
  - Maintenance Unknown
- Inlets/Outlets
  - Inlets
  - Outlets
- Low Flow Diversion
  - Maintained by LACFCD
  - Maintained by City
- Flood Right of Way Maps
- Flood Maintenance Districts Boundary
- Embankment
- Pseudoline

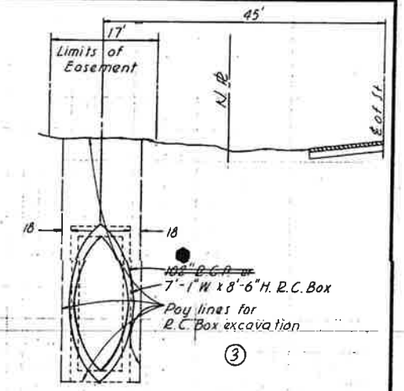


Map Tips

PROFILE

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





STA 20+00
CROSS SECTION
Horiz Scale 1"=10'-0"
Vert. Scale 1"= 4'-0"

PLAN

SCALE: 1' = 40'

25 0 50 100

REFERENCE

None

BENCH MARKS

S.D. 154
B+Spk. in N.E. corner concrete base
L.A. Dept. of Water & Power, Power tower No. 246 DI 700'± W. Centerline 126'± N. Centerline Hornbrook Ave. Centerline Lower Azusa Road
Elev. 344.638

PD026851

1958 STORM DRAIN BOND ISSUE

CITY OF IRWINDALE
APPROVED May 20, 1961
CITY MANAGER

WILSEY, HAM & BLAIR
ENGINEERS
MAY 26 61
CHIEF ENGINEER

REVISIONS		
MARK	DATE	DESCRIPTION
☐	4-25-62	Revised P.P. Number
⬢	8-5-69	"As Built"

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

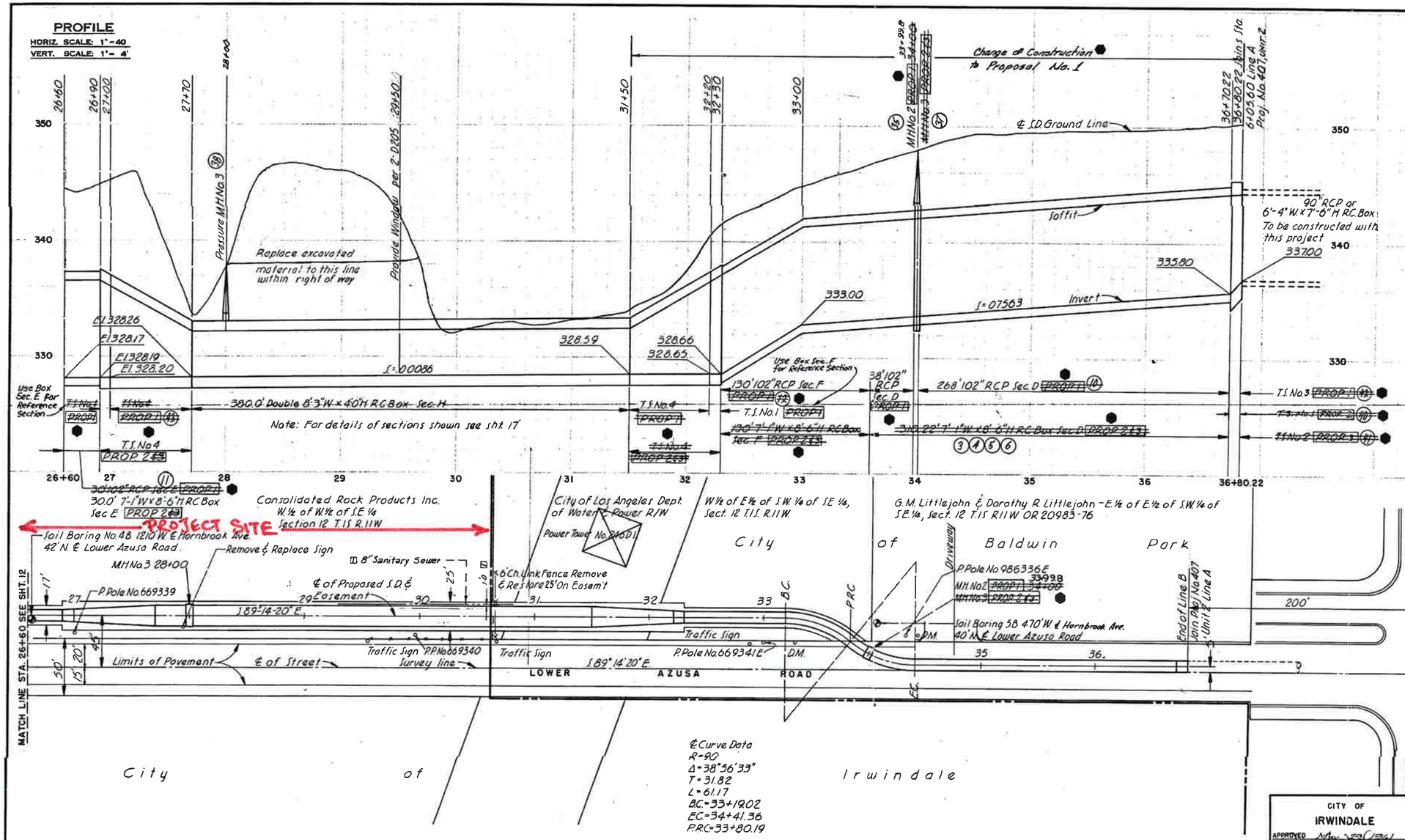
PROJECT NO 445
IRWINDALE
LINE B
STA. 18+60 TO STA. 26+60
PLAN AND PROFILE

DRAWN BY IRWINDALE
TRACED BY IRWINDALE
DESIGNED BY IRWINDALE
CHECKED BY
SUBMITTED BY C.W.H.
RECOMMENDED BY
(Asst.) DIVISION ENGINEER (Design)
APPROVED BY
CHIEF ENGINEER

SCALE AS SHOWN | DATE NOV., 1961 | NO. 275-445-D2.12 | SHEET 12 OF 18

PROFILE

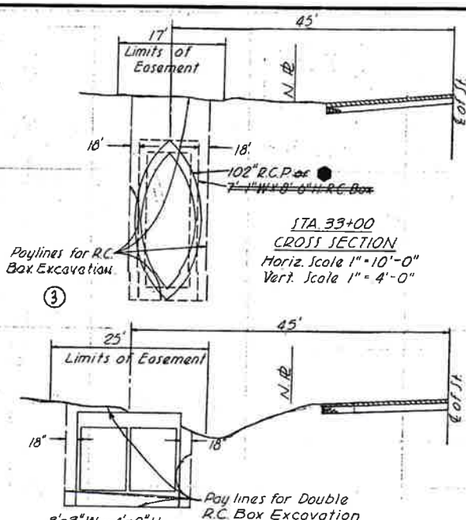
HORIZ. SCALE: 1"=40'
VERT. SCALE: 1"= 4'



PLAN

SCALE: 1" = 40'

25 0 50 100



REFERENCE

None

BENCH MARKS

SD155
B & Spk. in T.C. 5' W. of W. end curb return Hornbrook Ave & Lower Azusa Road
Elev. 350.371

1958 STORM DRAIN BOND ISSUE

CITY OF IRWINDALE
APPROVED May 29 1964
CITY MANAGER

WILSEY, HAM & BLAIR ENGINEERS
CHIEF ENGINEER

REVISIONS		
MARK	DATE	DESCRIPTION
●	8-5-64	"As Built"
◫	2-16-84	Permit 72872 Dwg 275-445-F15

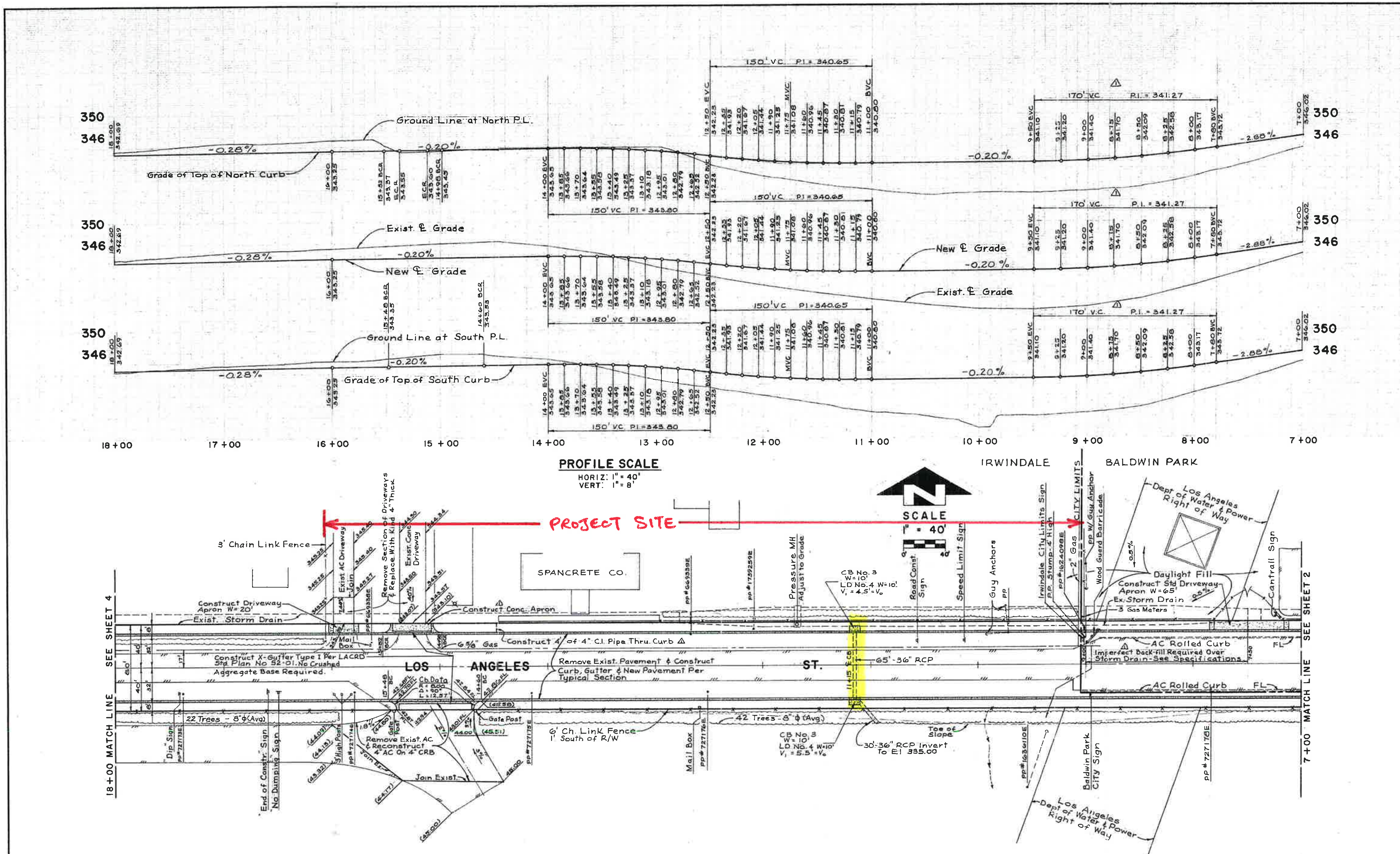
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

PROJECT NO 445
IRWINDALE
LINE B

STA. 26+00 TO STA. 36+80.22

PLAN AND PROFILE

DRAWN BY IRWINDALE
TRACED BY IRWINDALE
DESIGNED BY IRWINDALE
CHECKED BY
SUBMITTED BY C.W.H.
RECOMMENDED BY
Asst. DIVISION ENGINEER (Design)
APPROVED BY
CHIEF ENGINEER
SCALE AS SHOWN
DATE NOV., 1961
NO. 275-445-D2.13
SHEET 13 OF 18



Ground Line at North P.L.
Grade of Top of North Curb
Exist. ℄ Grade
New ℄ Grade
Ground Line at South P.L.
Grade of Top of South Curb
150' VC PI = 340.65
170' VC P.I. = 341.27
150' VC PI = 343.80
-0.28%
-0.20%
-2.88%
PROFILE SCALE
HORIZ: 1" = 40'
VERT: 1" = 8'
IRWINDALE
BALDWIN PARK
CITY LIMITS
PROJECT SITE
SCALE 1" = 40'
SPANCRETE CO.
LOS ANGELES ST.
SEE SHEET 4
18+00 MATCH LINE
SEE SHEET 2
7+00 MATCH LINE
3' Chain Link Fence
Construct Driveway Apron W=20'
Exist. Storm Drain
Construct X-Gutter Type I Per LACRD Std. Plan No 52-01. No Crushed Aggregate Base Required.
Remove Exist. Pavement & Construct Curb, Gutter & New Pavement Per Typical Section
Construct 4' of 4" C.I. Pipe Thru. Curb
6 5/8" Gas
Construct Conc. Apron
65'-36" RCP
30'-36" RCP Invert To El 335.00
CB No. 3 W=10' LD No. 4 W=10'
22 Trees - 8"φ (Avg)
42 Trees - 8"φ (Avg)
6' Ch. Link Fence 1' South of R/W
Remove Exist. AC & Reconstruct 4" AC On 4" CRB
Join Exist.
Gate Post
Mail Box
Pressure MH Adjust to Grade
Road Const. Sign
Speed Limit Sign
Guy Anchors
Irwindale City Limits Sign
Baldwin Park City Sign
Los Angeles Dept of Water & Power Right of Way
Daylight Fill
Construct Std Driveway Apron W=65'
Ex. Storm Drain
3 Gas Meters
AC Rolled Curb
Imperfect Back-fill Required Over Storm Drain - See Specifications.
Toe of Slope
End of Constr. Sign
No Dumping Sign
Dip Sign

NO.	REVISION	INITIAL	DATE
⚠	Removed Traffic Island	KAH	6-11-71
⚠	Changed Vert. Curves on Profile. Back-fill over Storm Drain. Changed AC Approach to Conc. Added 4' C.I. Drain	KAH	5-26-71

SURVEY REFERENCE

HORIZONTAL CONTROL	F.B. 7 PG. 112	CLIENT	F.B. 1 PG. 113
VERTICAL CONTROL	F.B. 7 PG. 111	"	F.B. 1 PG. 112
TOPOGRAPHY	F.B. 7 PG. 113-122	"	F.B. 1 PG. 114-122
CROSS SECTIONS	F.B. 7 PG. 113-122	"	F.B. 1 PG. 114-122

DESIGN JWB DATE 4-8 1971
DRAWN KAH DATE 4-12 1971
CHECKED ____ DATE ____ 19

PREPARED IN THE OFFICE OF
LOCKMAN & ASSOCIATES, CIVIL ENGINEERS
BY [signature] DATE 4-14 19

CITY OF IRWINDALE
LOS ANGELES ST. IMPROVEMENTS
From HORNBROOK AVE. To 605 FREEWAY

JOB NO. 71-311
SHEET 3 OF 5

APPENDIX B

HYDROLOGY CALCULATIONS

EXISTING CONDITION
25-YEAR

Peak Flow Hydrologic Analysis

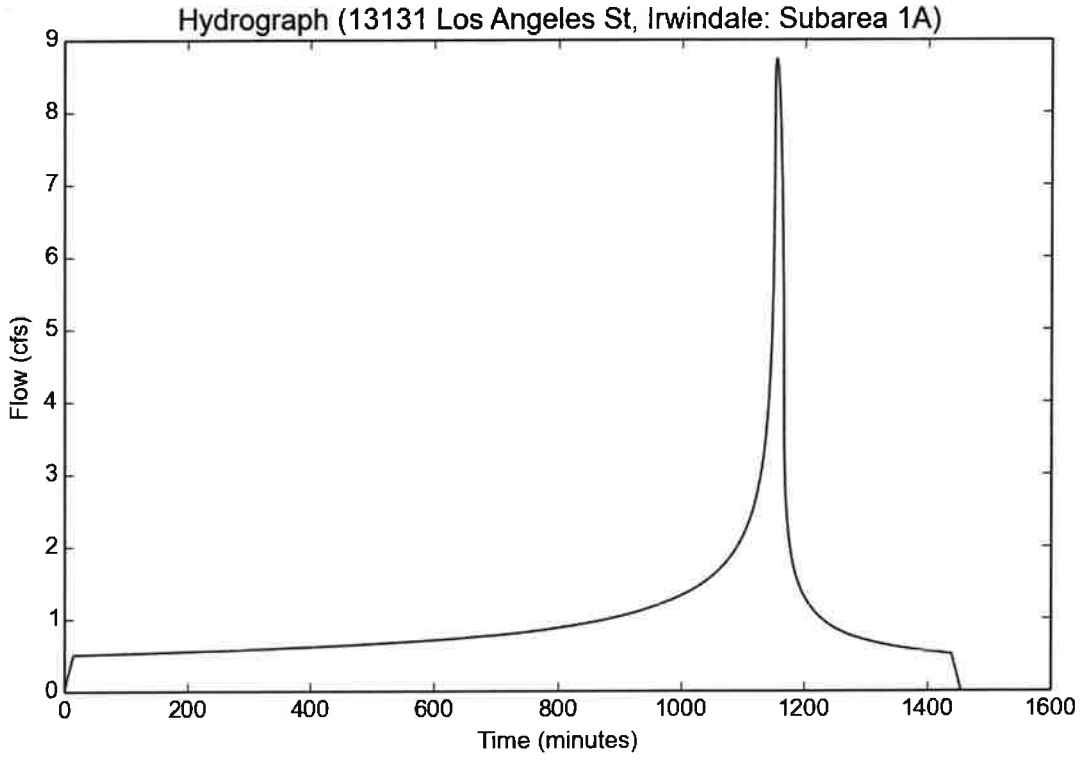
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3663 Existing 25 Subarea 1A.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 1A
Area (ac)	4.7
Flow Path Length (ft)	1420.0
Flow Path Slope (vft/hft) = (363.50-353.70)/1420 =	0.007
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	8
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.7948
Peak Intensity (in/hr)	2.063
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	8.7264
Burned Peak Flow Rate (cfs)	8.7264
24-Hr Clear Runoff Volume (ac-ft)	1.9145
24-Hr Clear Runoff Volume (cu-ft)	83394.7722



Peak Flow Hydrologic Analysis

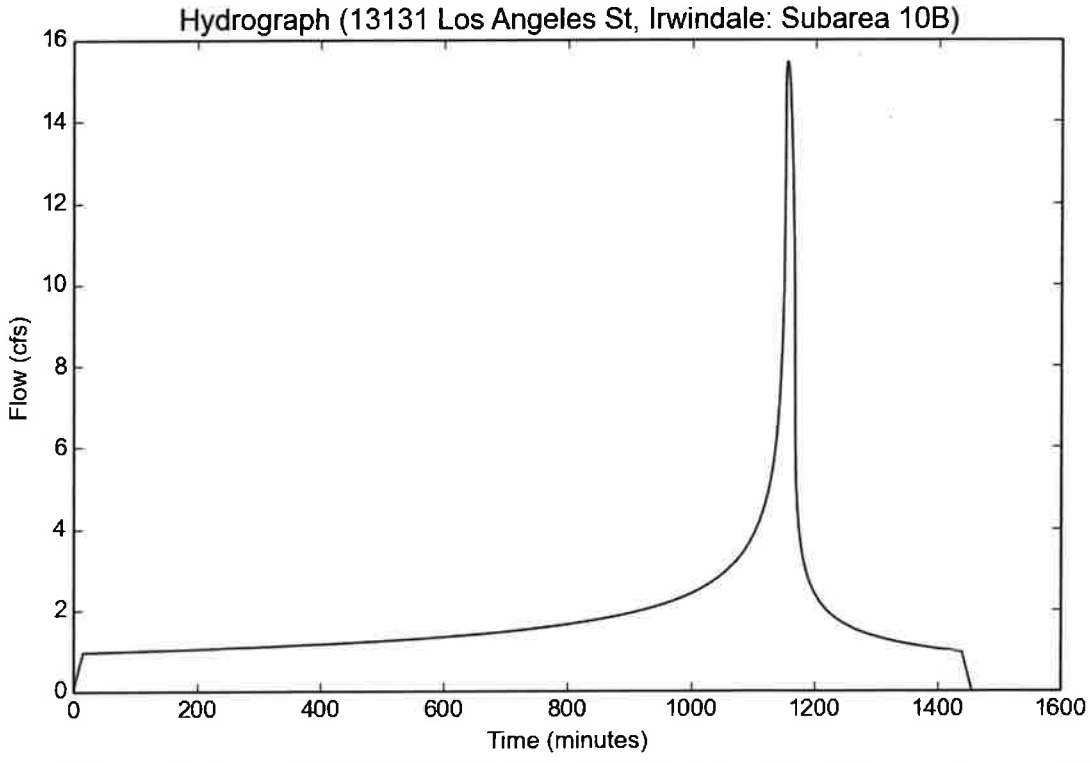
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3663 Existing 25 Subarea 10B-7.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 10B
Area (ac)	8.9
Flow Path Length (ft)	1760.0
Flow Path Slope (vft/hft) = (360.20-343.60)/1760 =	0.009
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	7
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.7948
Peak Intensity (in/hr)	2.0013
Undeveloped Runoff Coefficient (Cu)	0.5364
Developed Runoff Coefficient (Cd)	0.8673
Time of Concentration (min)	16.0
Clear Peak Flow Rate (cfs)	15.4479
Burned Peak Flow Rate (cfs)	15.4479
24-Hr Clear Runoff Volume (ac-ft)	3.5453
24-Hr Clear Runoff Volume (cu-ft)	154433.5466



Peak Flow Hydrologic Analysis

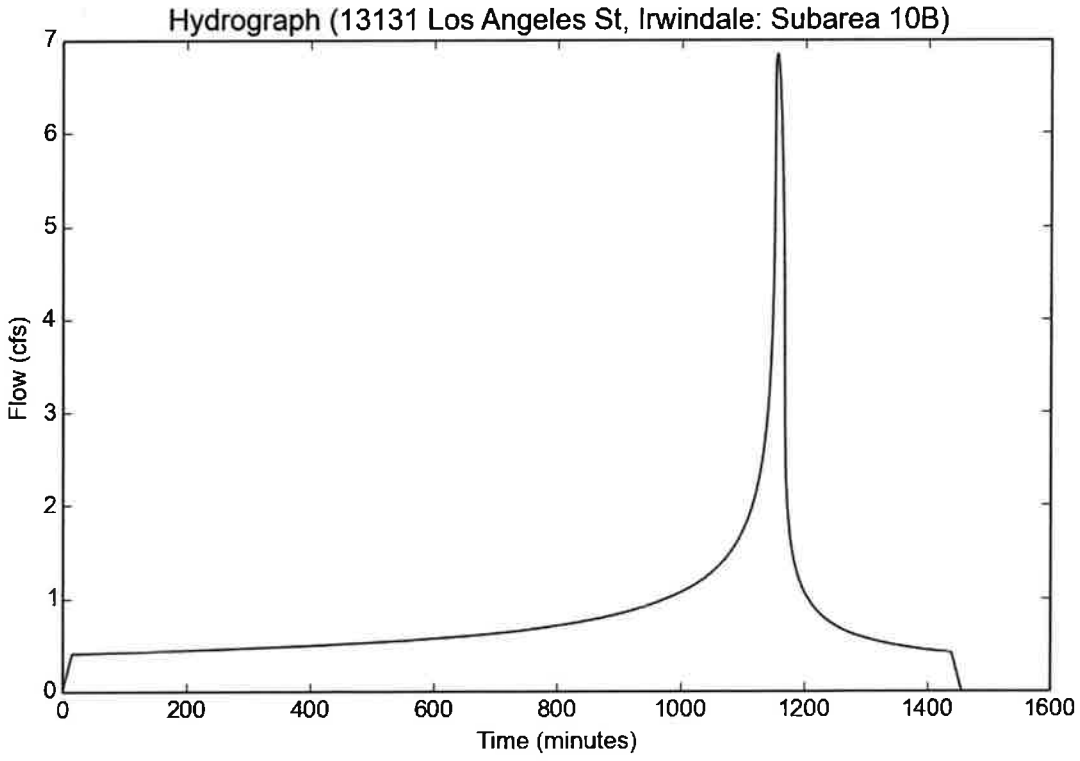
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3663 Existing 25 Subarea 10B-8.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 10B
Area (ac)	3.8
Flow Path Length (ft)	1760.0
Flow Path Slope (vft/hft) = (360.20-343.60)/1760 =	0.009
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	8
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.7948
Peak Intensity (in/hr)	2.0013
Undeveloped Runoff Coefficient (Cu)	0.8989
Developed Runoff Coefficient (Cd)	0.8999
Time of Concentration (min)	16.0
Clear Peak Flow Rate (cfs)	6.8439
Burned Peak Flow Rate (cfs)	6.8439
24-Hr Clear Runoff Volume (ac-ft)	1.5479
24-Hr Clear Runoff Volume (cu-ft)	67425.54



Peak Flow Hydrologic Analysis

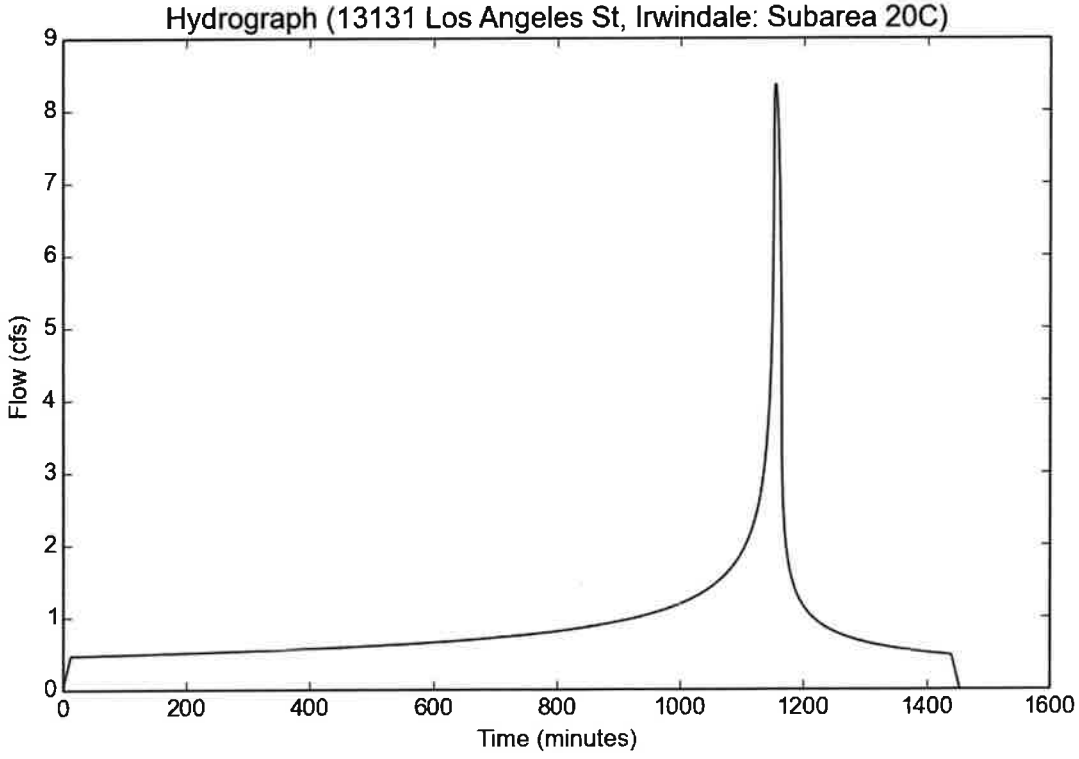
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3663 Existing 25 Subarea 20C-7.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 20C
Area (ac)	4.35
Flow Path Length (ft)	1260.0
Flow Path Slope (vft/hft) = (357.70-345.60)/1260 =	0.01
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	7
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.7948
Peak Intensity (in/hr)	2.2065
Undeveloped Runoff Coefficient (Cu)	0.5656
Developed Runoff Coefficient (Cd)	0.8699
Time of Concentration (min)	13.0
Clear Peak Flow Rate (cfs)	8.3495
Burned Peak Flow Rate (cfs)	8.3495
24-Hr Clear Runoff Volume (ac-ft)	1.733
24-Hr Clear Runoff Volume (cu-ft)	75488.658



Peak Flow Hydrologic Analysis

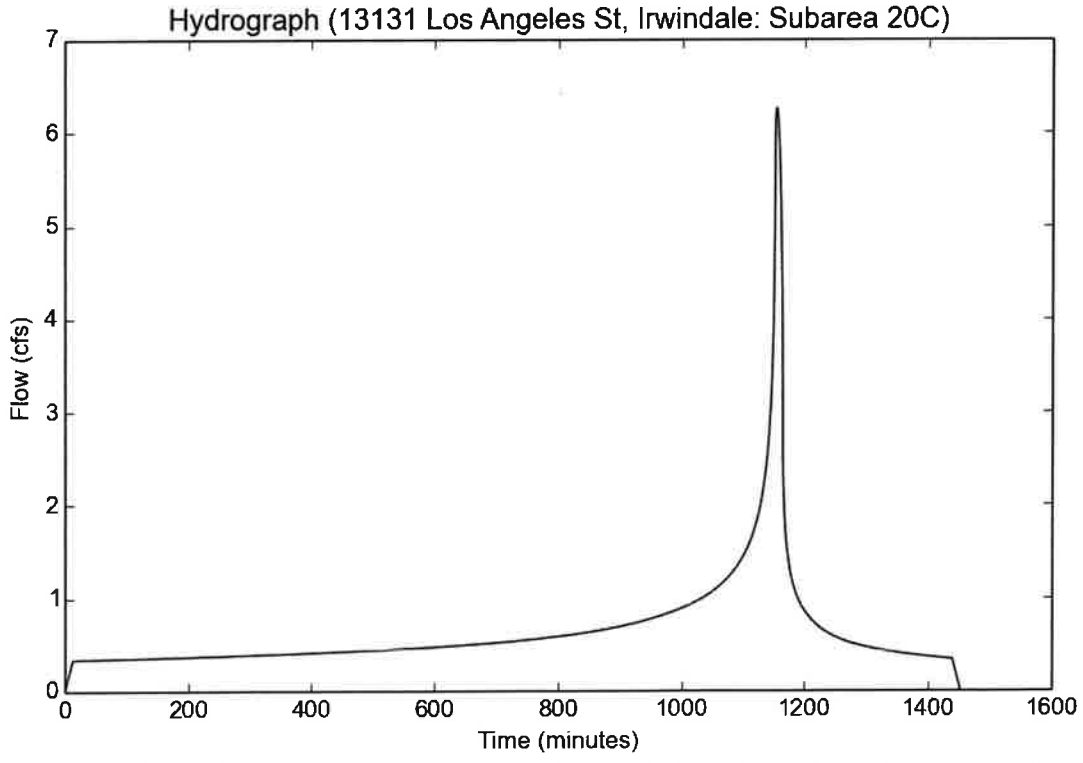
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3663 Existing 25 Subarea 20C-8.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 20C
Area (ac)	3.15
Flow Path Length (ft)	1260.0
Flow Path Slope (vft/hft) = (357.70−345.60)/1260 =	0.01
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	8
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.7948
Peak Intensity (in/hr)	2.2065
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	13.0
Clear Peak Flow Rate (cfs)	6.2554
Burned Peak Flow Rate (cfs)	6.2554
24-Hr Clear Runoff Volume (ac-ft)	1.2831
24-Hr Clear Runoff Volume (cu-ft)	55891.1245



EXISTING CONDITION
50-YEAR

Peak Flow Hydrologic Analysis

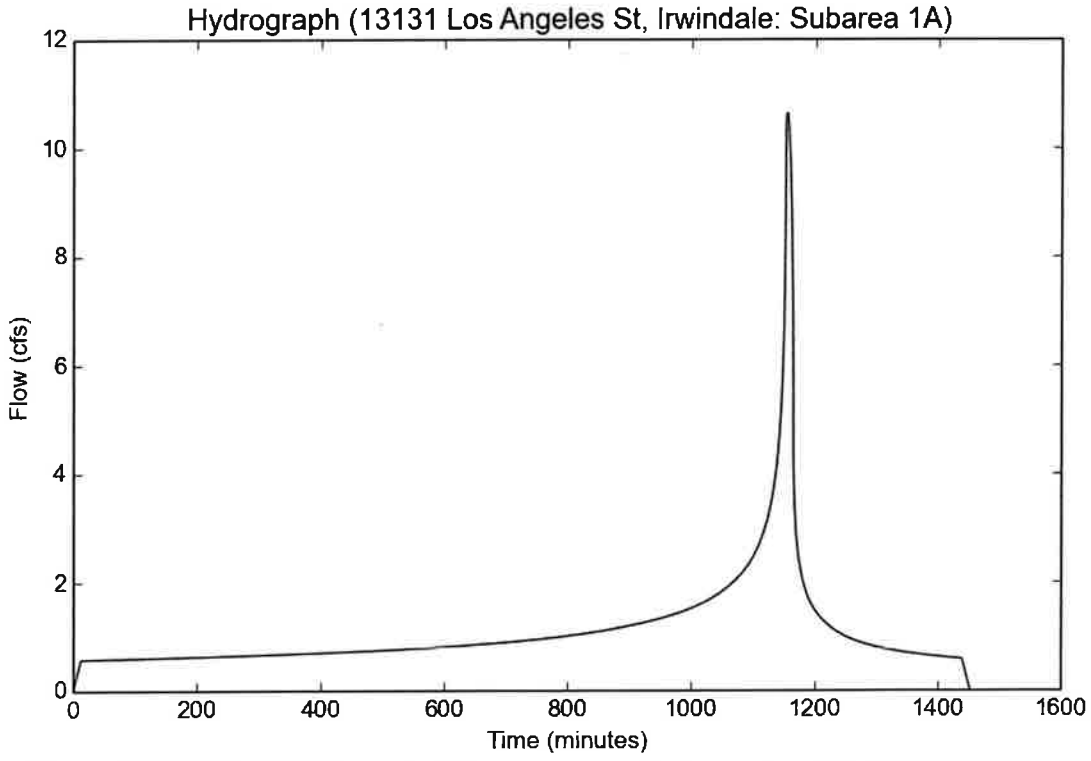
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3663 Existing Subarea 1A.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 1A
Area (ac)	4.7
Flow Path Length (ft)	1420.0
Flow Path Slope (vft/hft) = (363.50−353.70)/1420 =	0.007
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	8
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	2.5131
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	13.0
Clear Peak Flow Rate (cfs)	10.6304
Burned Peak Flow Rate (cfs)	10.6304
24-Hr Clear Runoff Volume (ac-ft)	2.1895
24-Hr Clear Runoff Volume (cu-ft)	95373.0297



Peak Flow Hydrologic Analysis

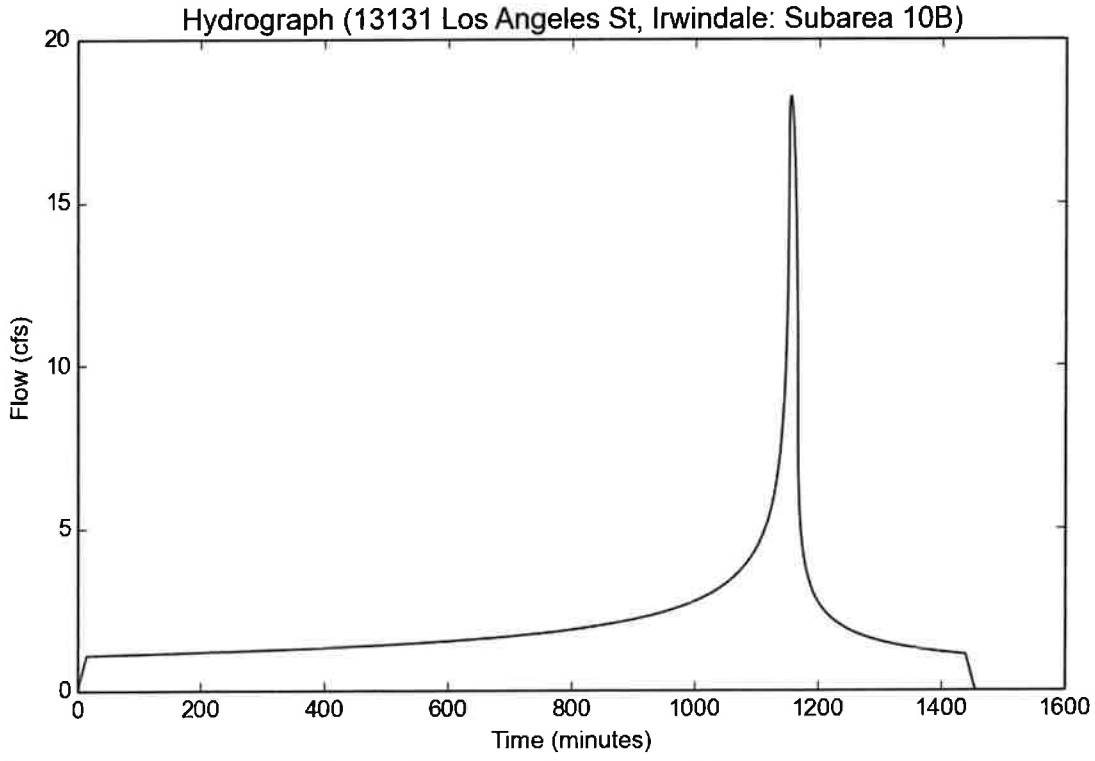
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3663 Existing Subarea 10B-7.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 10B
Area (ac)	8.9
Flow Path Length (ft)	1760.0
Flow Path Slope (vft/hft) = (360.20 - 343.60) / 1760 =	0.009
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	7
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	2.3496
Undeveloped Runoff Coefficient (Cu)	0.5859
Developed Runoff Coefficient (Cd)	0.8717
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	18.2293
Burned Peak Flow Rate (cfs)	18.2293
24-Hr Clear Runoff Volume (ac-ft)	4.0415
24-Hr Clear Runoff Volume (cu-ft)	176048.8438



Peak Flow Hydrologic Analysis

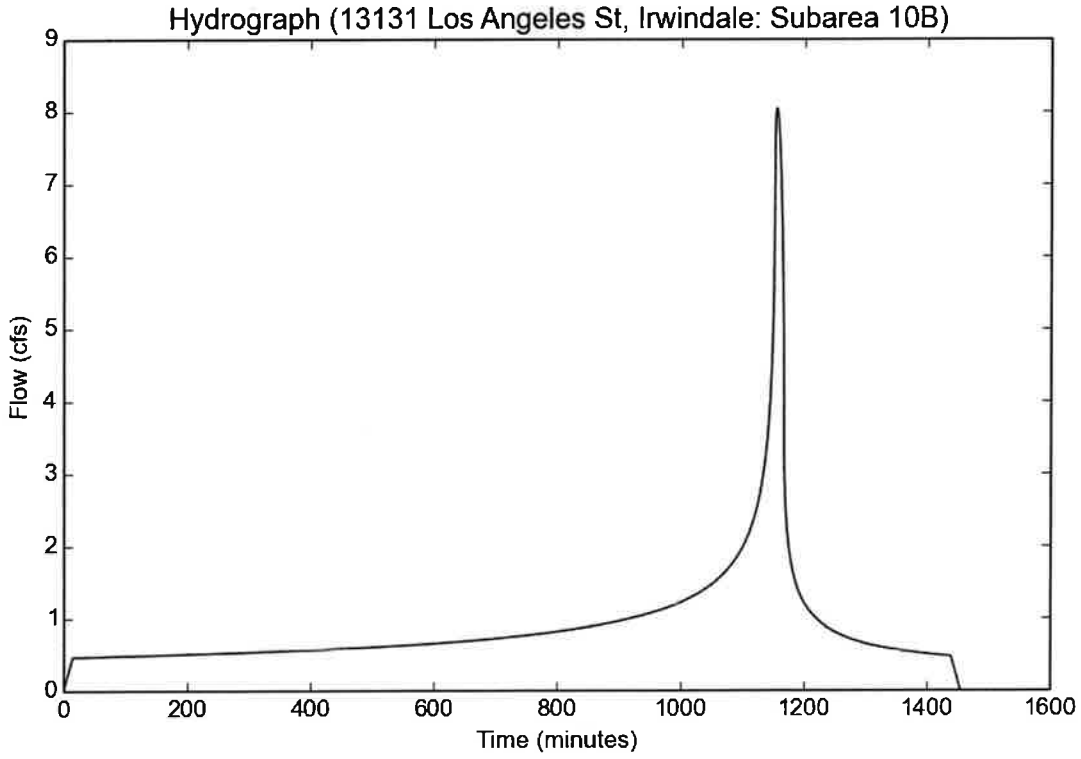
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3663 Existing Subarea 10B-8.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 10B
Area (ac)	3.8
Flow Path Length (ft)	1760.0
Flow Path Slope (vft/hft) = (360.20-343.60)/1760 =	0.009
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	8
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	2.3496
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	8.0357
Burned Peak Flow Rate (cfs)	8.0357
24-Hr Clear Runoff Volume (ac-ft)	1.7703
24-Hr Clear Runoff Volume (cu-ft)	77112.3814



Peak Flow Hydrologic Analysis

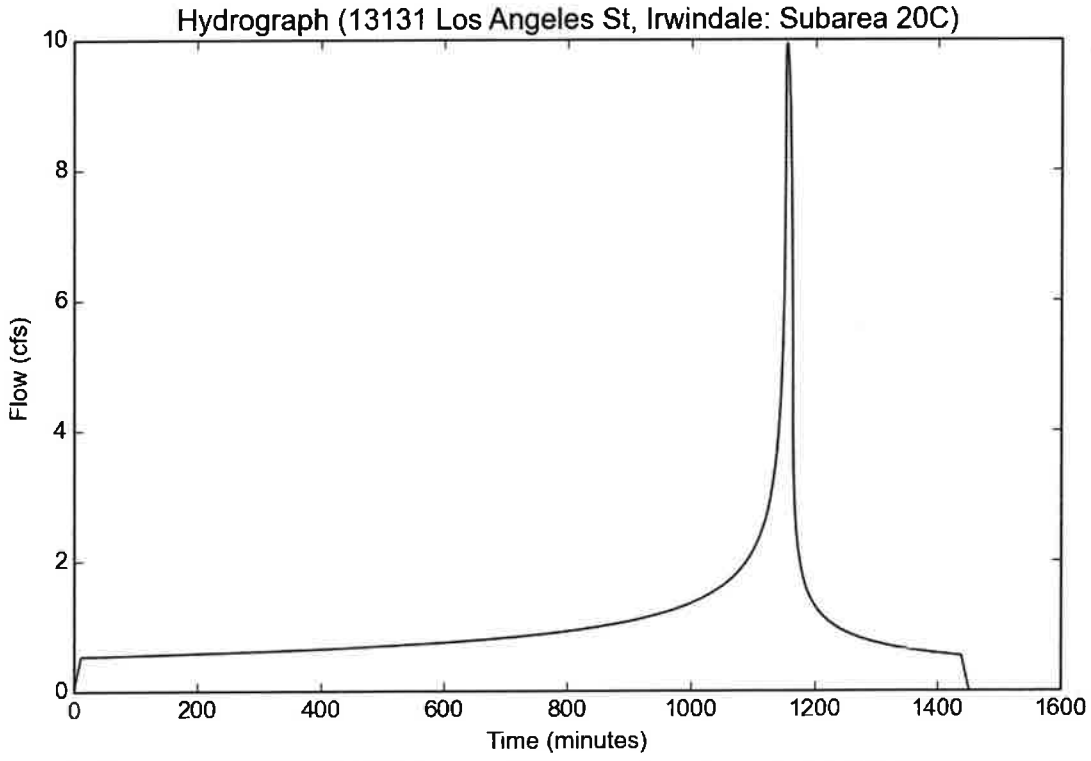
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3663 Existing Subarea 20C-7.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 20C
Area (ac)	4.35
Flow Path Length (ft)	1260.0
Flow Path Slope (vft/hft) = (357.70-345.60)/1260 =	0.01
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	7
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	2.6094
Undeveloped Runoff Coefficient (Cu)	0.6194
Developed Runoff Coefficient (Cd)	0.8748
Time of Concentration (min)	12.0
Clear Peak Flow Rate (cfs)	9.9294
Burned Peak Flow Rate (cfs)	9.9294
24-Hr Clear Runoff Volume (ac-ft)	1.9755
24-Hr Clear Runoff Volume (cu-ft)	86054.5537



Peak Flow Hydrologic Analysis

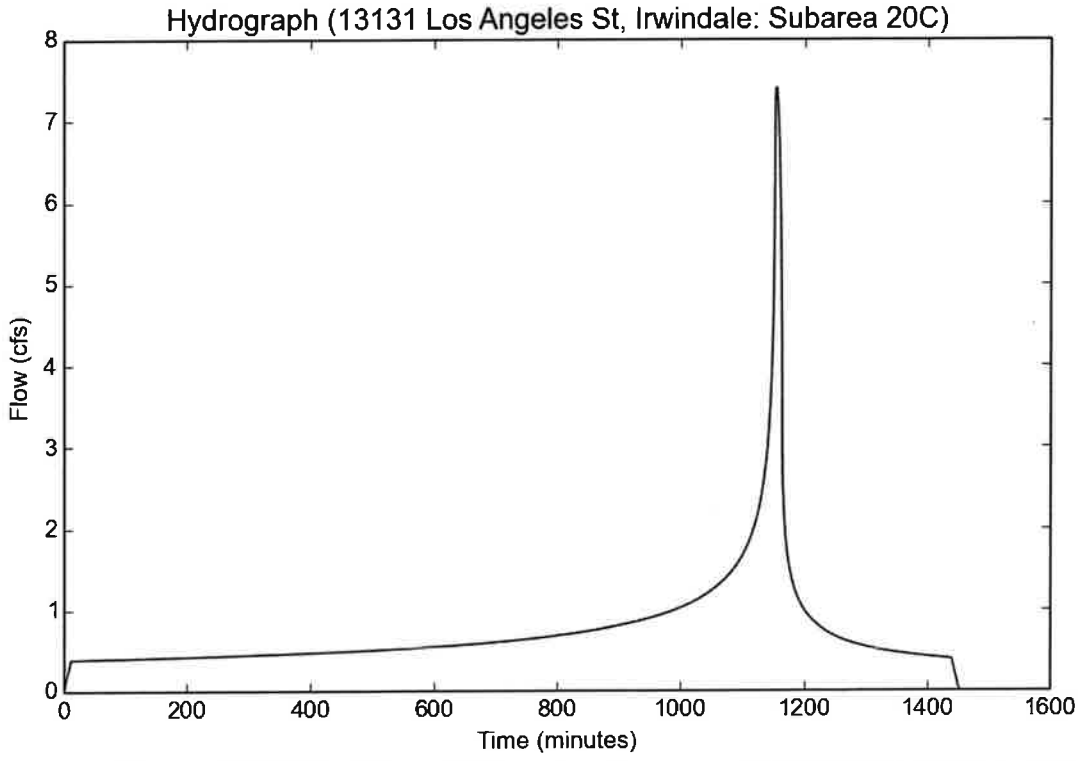
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3663 Existing Subarea 20C-8.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 20C
Area (ac)	3.15
Flow Path Length (ft)	1260.0
Flow Path Slope (vft/hft) = (357.70-345.60)/1260 =	0.01
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	8
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	2.6094
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	12.0
Clear Peak Flow Rate (cfs)	7.3978
Burned Peak Flow Rate (cfs)	7.3978
24-Hr Clear Runoff Volume (ac-ft)	1.4674
24-Hr Clear Runoff Volume (cu-ft)	63919.2279



PROPOSED CONDITION
25-YEAR

Peak Flow Hydrologic Analysis

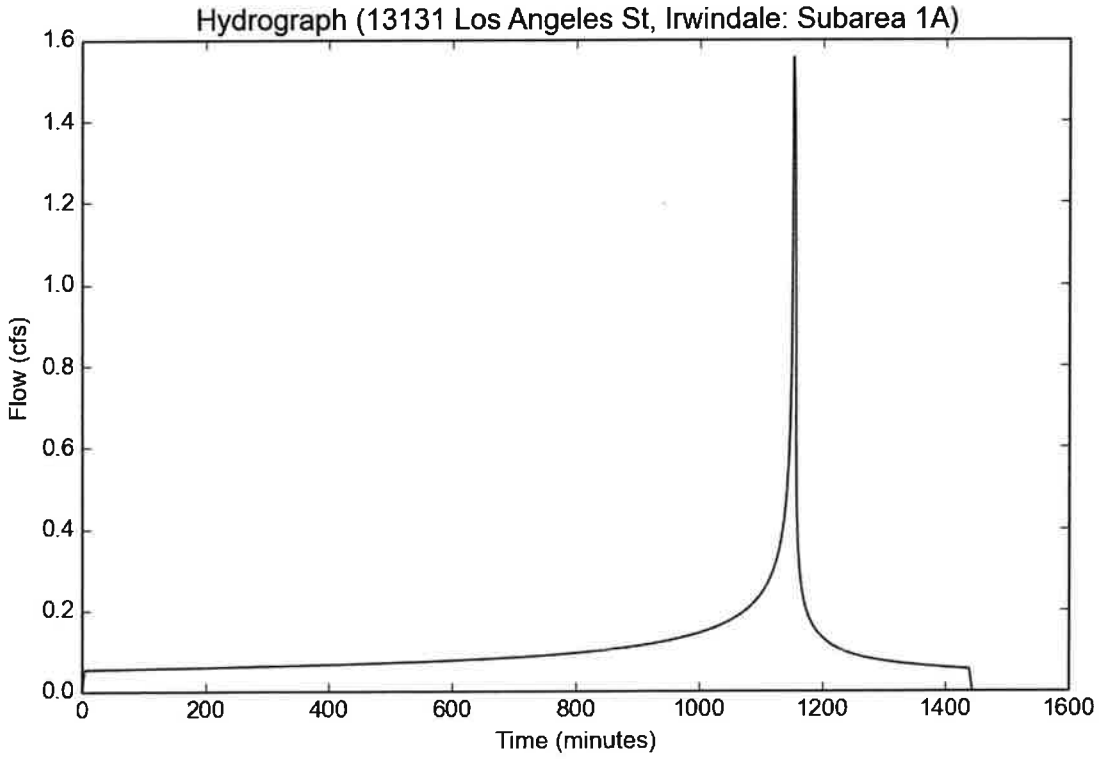
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3665 Proposed 25 Subarea 1A.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 1A
Area (ac)	0.5
Flow Path Length (ft)	60.0
Flow Path Slope (vft/hft) = (361.26-359.60)/ 60 =	0.028
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	8
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.7948
Peak Intensity (in/hr)	3.4573
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.5558
Burned Peak Flow Rate (cfs)	1.5558
24-Hr Clear Runoff Volume (ac-ft)	0.2036
24-Hr Clear Runoff Volume (cu-ft)	8870.3978



Peak Flow Hydrologic Analysis

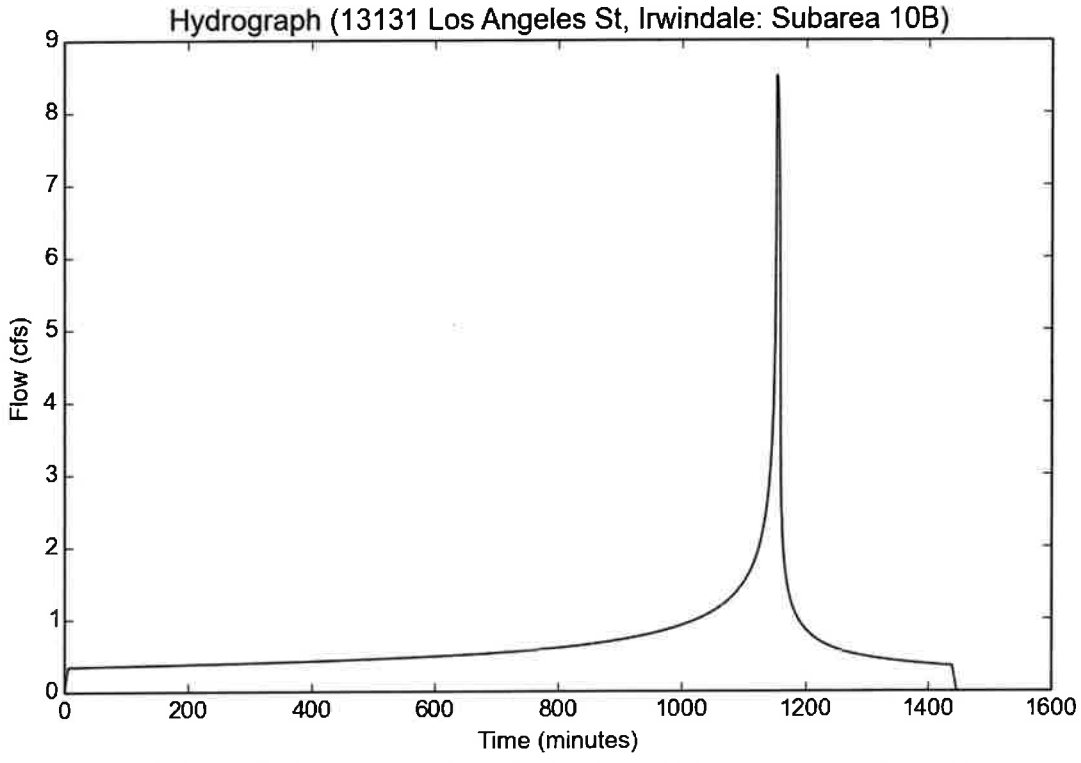
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3665 Proposed 25 Subarea 10B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 10B
Area (ac)	3.2
Flow Path Length (ft)	430.0
Flow Path Slope (vft/hft) = (353.42−350.58)/430 =	0.007
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	8
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.7948
Peak Intensity (in/hr)	2.9516
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	8.5007
Burned Peak Flow Rate (cfs)	8.5007
24-Hr Clear Runoff Volume (ac-ft)	1.3033
24-Hr Clear Runoff Volume (cu-ft)	56772.5389



Peak Flow Hydrologic Analysis

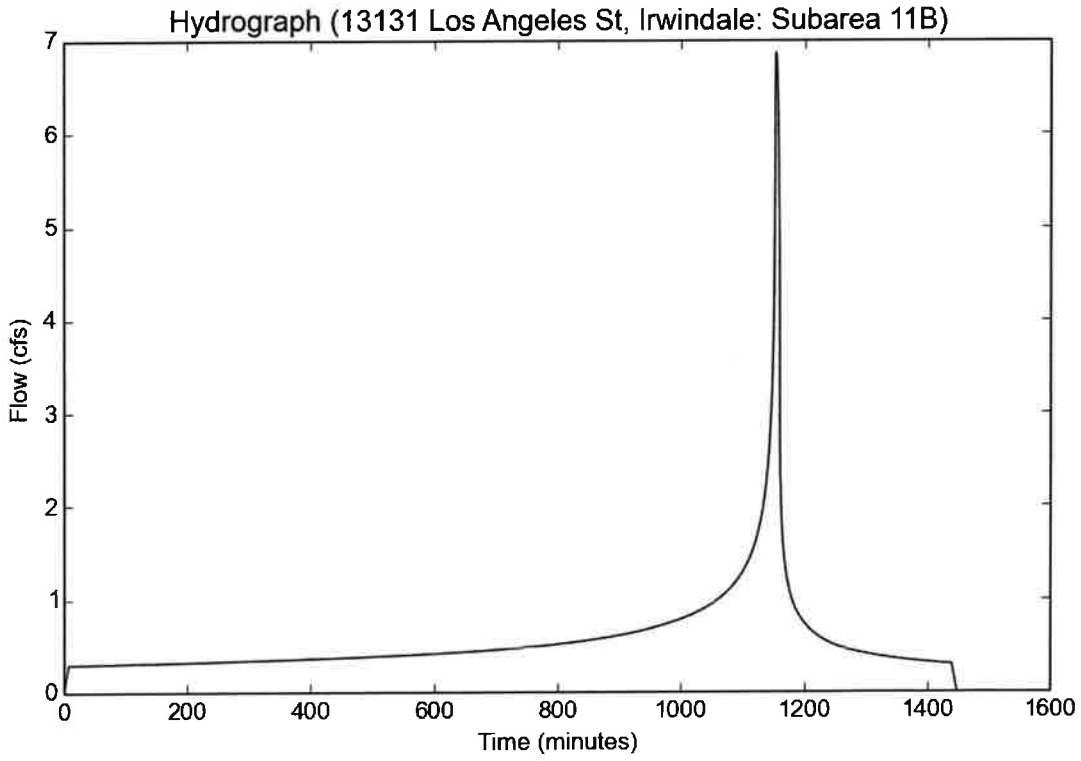
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3665 Proposed 25 Subarea 11B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 11B
Area (ac)	2.75
Flow Path Length (ft)	730.0
Flow Path Slope (vft/hft) = (361.26-351.11)/730 =	0.014
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	8
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.7948
Peak Intensity (in/hr)	2.7721
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	6.8609
Burned Peak Flow Rate (cfs)	6.8609
24-Hr Clear Runoff Volume (ac-ft)	1.1201
24-Hr Clear Runoff Volume (cu-ft)	48789.7869



Peak Flow Hydrologic Analysis

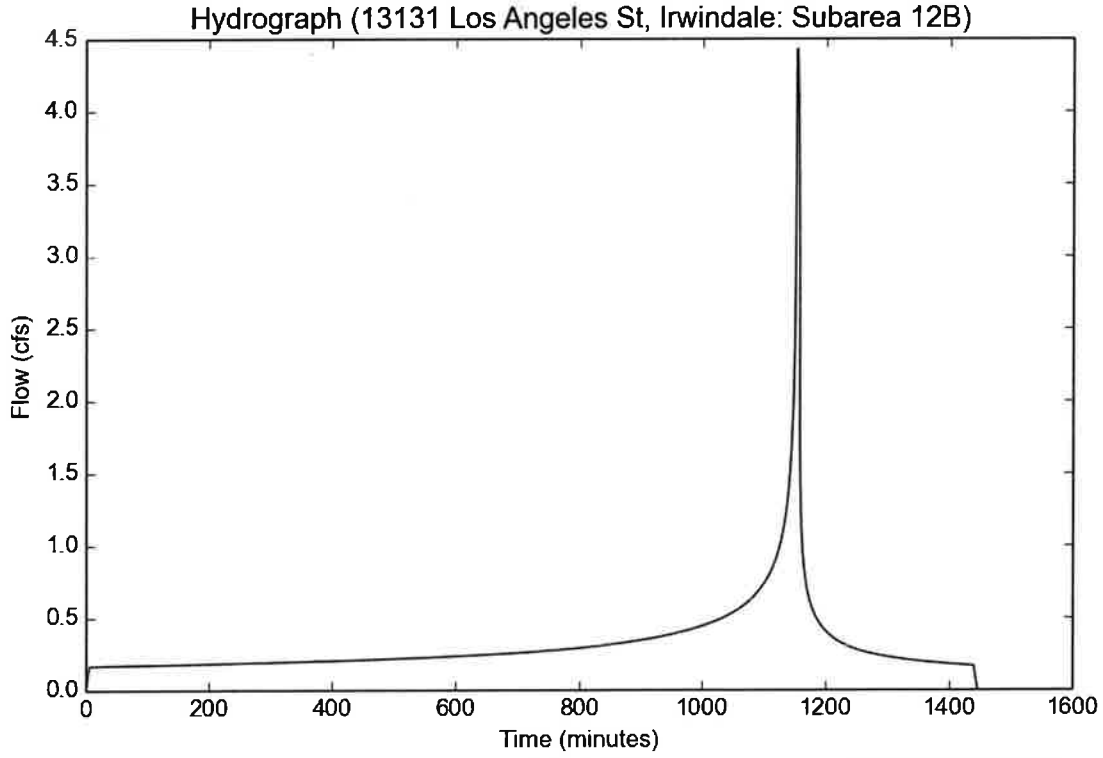
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3665 Proposed 25 Subarea 12B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 12B
Area (ac)	1.55
Flow Path Length (ft)	460.0
Flow Path Slope (vft/hft) = (358.22-351.11)|460 =	0.015
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	8
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.7948
Peak Intensity (in/hr)	3.1734
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	4.4269
Burned Peak Flow Rate (cfs)	4.4269
24-Hr Clear Runoff Volume (ac-ft)	0.6313
24-Hr Clear Runoff Volume (cu-ft)	27498.7112



Peak Flow Hydrologic Analysis

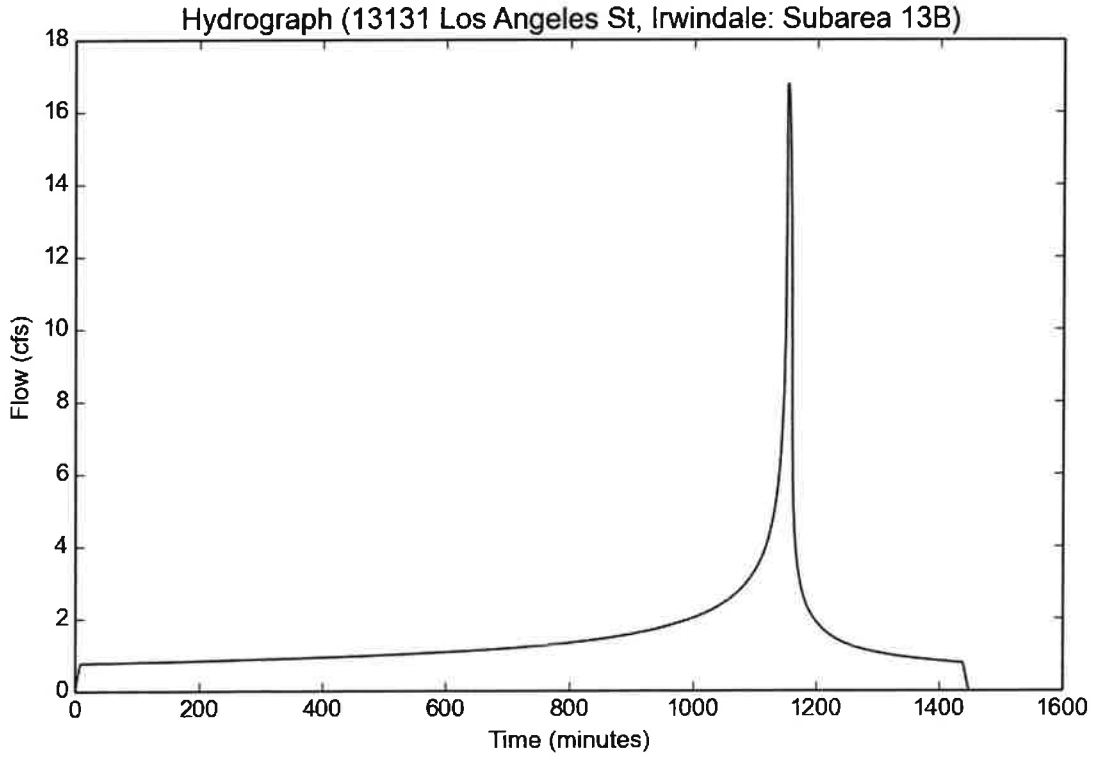
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3665 Proposed 25 Subarea 13B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 13B
Area (ac)	7.1
Flow Path Length (ft)	665.0
Flow Path Slope (vft/hft) = (354.63-348.81)/665 =	0.009
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	8
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.7948
Peak Intensity (in/hr)	2.6228
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	16.7596
Burned Peak Flow Rate (cfs)	16.7596
24-Hr Clear Runoff Volume (ac-ft)	2.8918
24-Hr Clear Runoff Volume (cu-ft)	125968.6553



Peak Flow Hydrologic Analysis

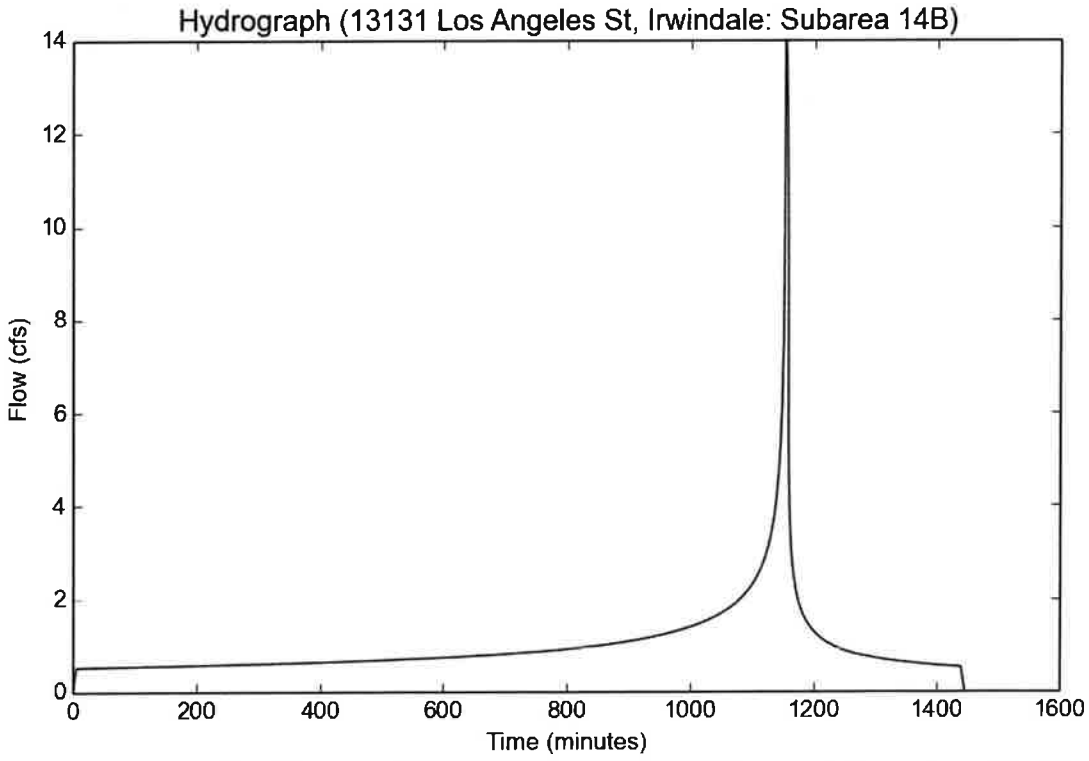
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3665 Proposed 25 Subarea 14B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 14B
Area (ac)	4.9
Flow Path Length (ft)	375.0
Flow Path Slope (vft/hft) = (351.92-348.51)/375 =	0.009
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	8
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.7948
Peak Intensity (in/hr)	3.1734
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	13.9947
Burned Peak Flow Rate (cfs)	13.9947
24-Hr Clear Runoff Volume (ac-ft)	1.9957
24-Hr Clear Runoff Volume (cu-ft)	86931.4097



Peak Flow Hydrologic Analysis

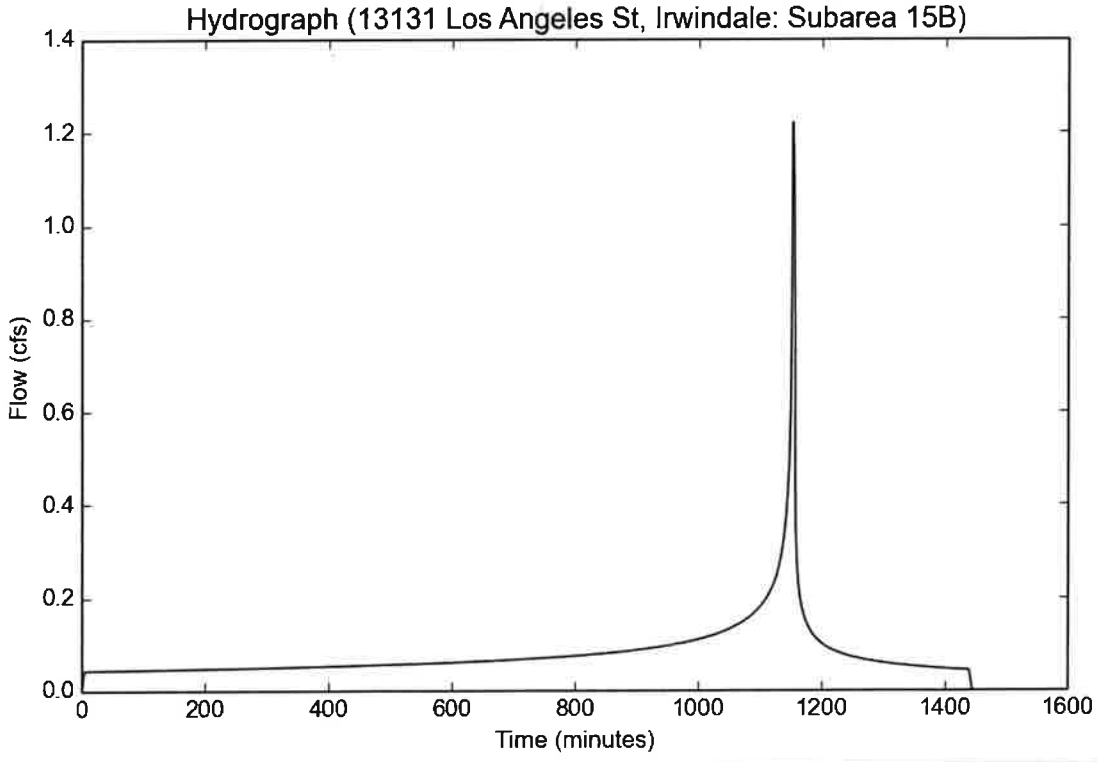
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3665 Proposed 25 Subarea 15B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 15B
Area (ac)	0.4
Flow Path Length (ft)	275.0
Flow Path Slope (vft/hft) = (350.38−346.50)/275 =	0.014
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	7
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.7948
Peak Intensity (in/hr)	3.4573
Undeveloped Runoff Coefficient (Cu)	0.701
Developed Runoff Coefficient (Cd)	0.8821
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.2199
Burned Peak Flow Rate (cfs)	1.2199
24-Hr Clear Runoff Volume (ac-ft)	0.1594
24-Hr Clear Runoff Volume (cu-ft)	6943.4642



Peak Flow Hydrologic Analysis

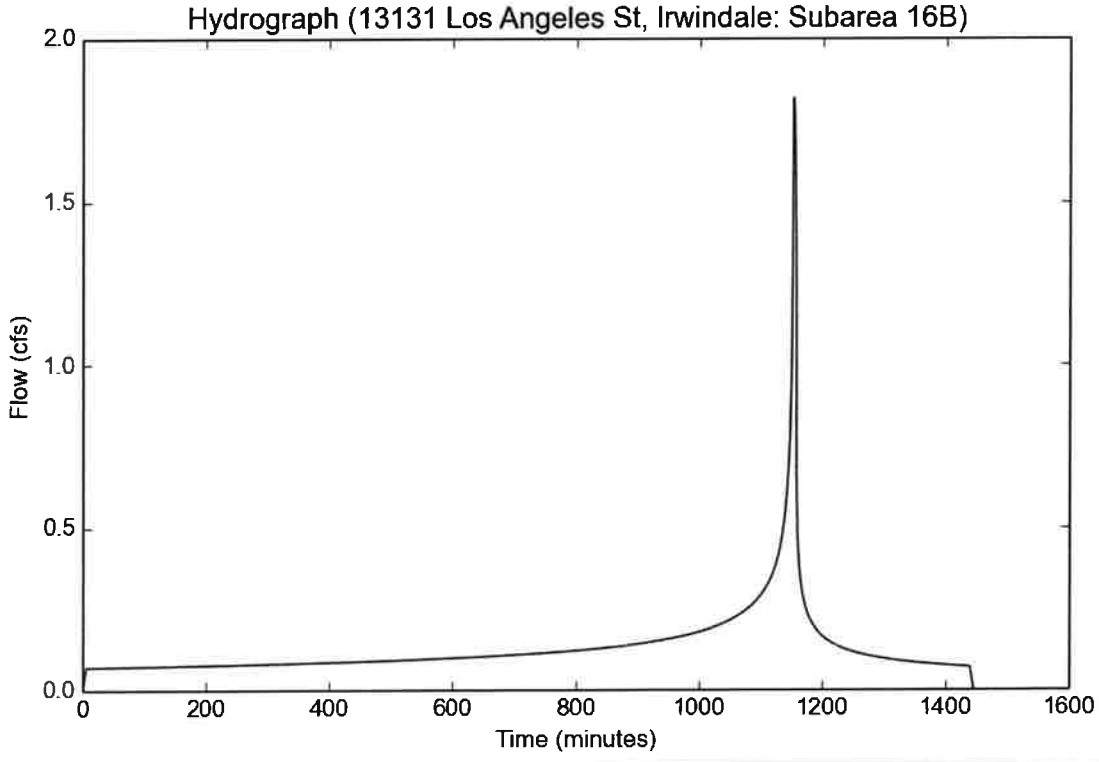
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3665 Proposed 25 Subarea 16B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 16B
Area (ac)	0.65
Flow Path Length (ft)	355.0
Flow Path Slope (vft/hft) = (349.78−345.57)/355 =	0.012
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	7
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.7948
Peak Intensity (in/hr)	3.1734
Undeveloped Runoff Coefficient (Cu)	0.6775
Developed Runoff Coefficient (Cd)	0.88
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	1.8151
Burned Peak Flow Rate (cfs)	1.8151
24-Hr Clear Runoff Volume (ac-ft)	0.259
24-Hr Clear Runoff Volume (cu-ft)	11282.7322



Peak Flow Hydrologic Analysis

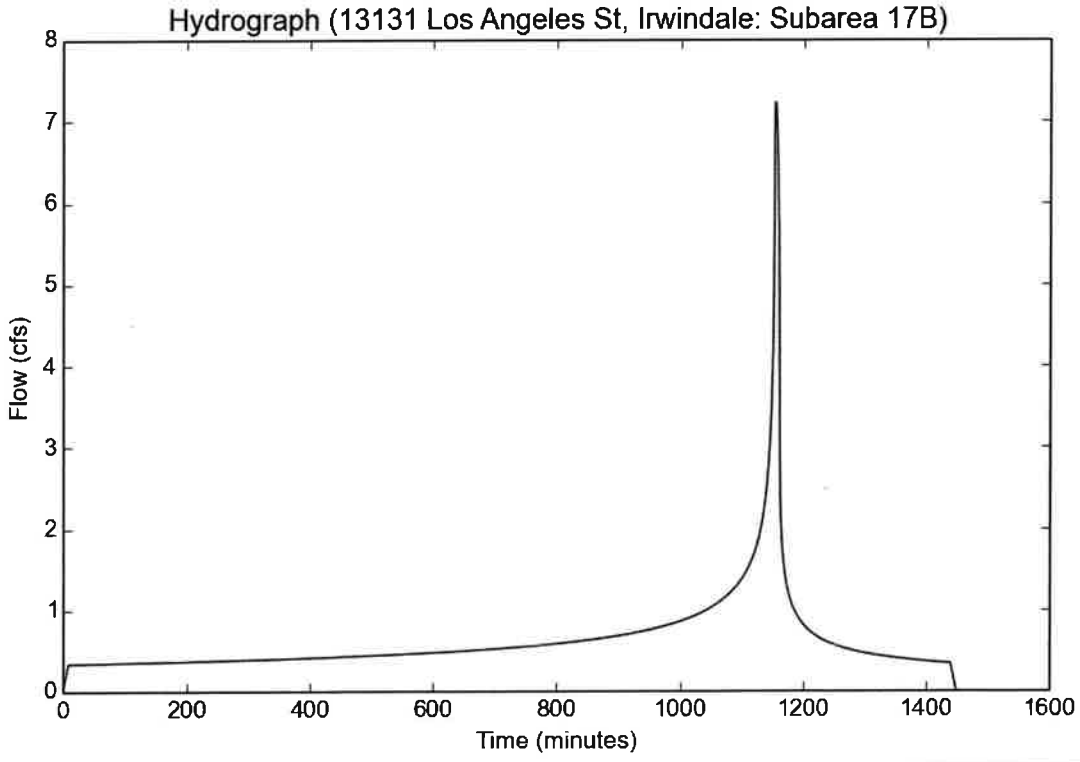
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3665 Proposed 25 Subarea 17B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 17B
Area (ac)	3.15
Flow Path Length (ft)	770.0
Flow Path Slope (vft/hft) = (354.00-345.42)/ 770 =	0.011
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	7
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.7948
Peak Intensity (in/hr)	2.6228
Undeveloped Runoff Coefficient (Cu)	0.6209
Developed Runoff Coefficient (Cd)	0.8749
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	7.2281
Burned Peak Flow Rate (cfs)	7.2281
24-Hr Clear Runoff Volume (ac-ft)	1.2551
24-Hr Clear Runoff Volume (cu-ft)	54671.7568



Peak Flow Hydrologic Analysis

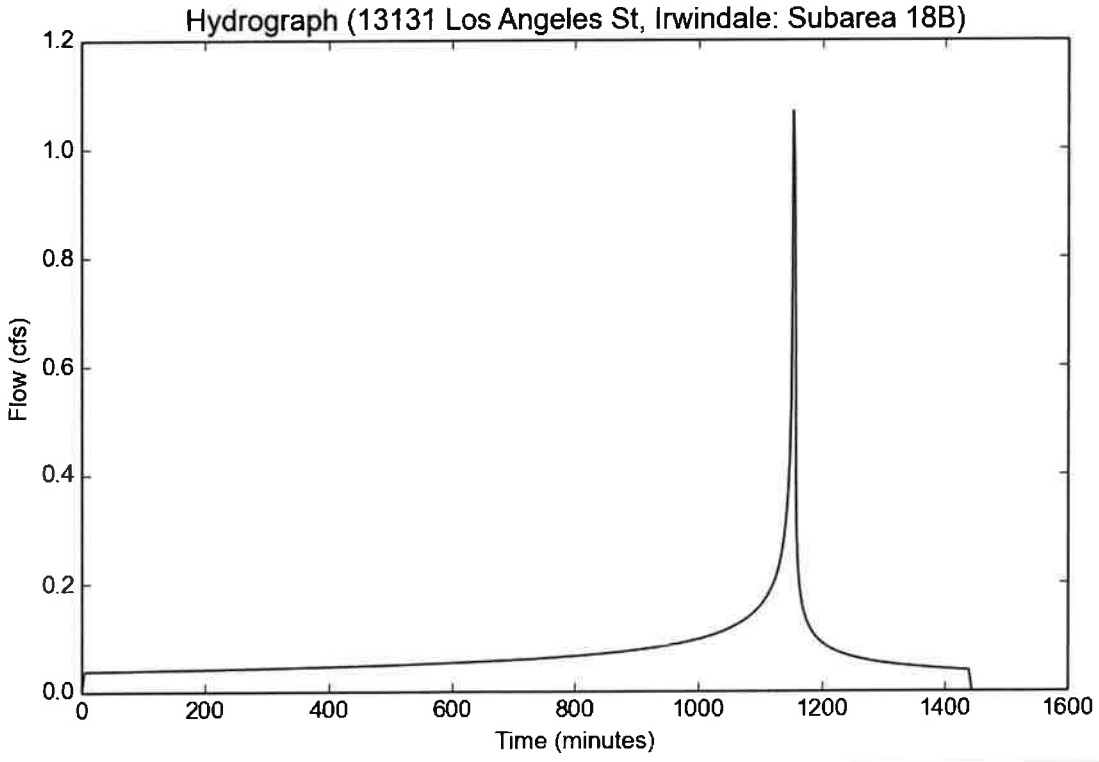
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3665 Proposed 25 Subarea 18B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 18B
Area (ac)	0.35
Flow Path Length (ft)	95.0
Flow Path Slope (vft/hft) = (347.58-343.32)/ 95 =	0.045
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	7
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.7948
Peak Intensity (in/hr)	3.4573
Undeveloped Runoff Coefficient (Cu)	0.701
Developed Runoff Coefficient (Cd)	0.8821
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.0674
Burned Peak Flow Rate (cfs)	1.0674
24-Hr Clear Runoff Volume (ac-ft)	0.1395
24-Hr Clear Runoff Volume (cu-ft)	6075.5312



Peak Flow Hydrologic Analysis

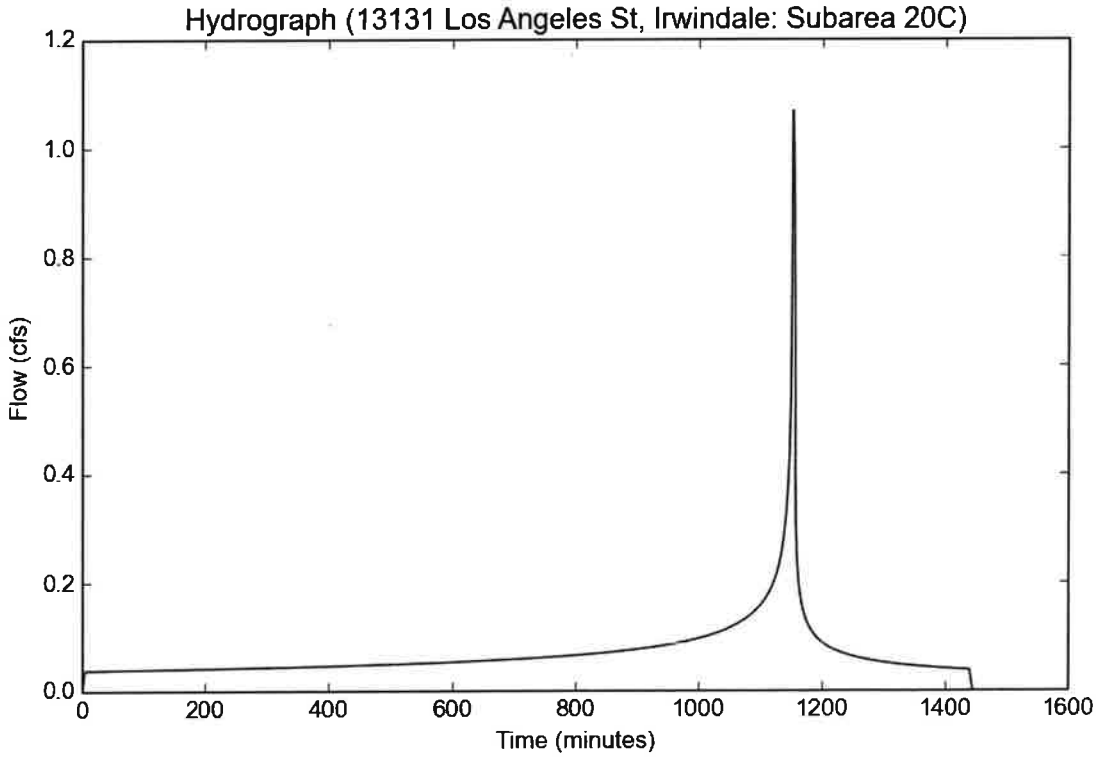
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3665 Proposed 25 Subarea 20C.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 20C
Area (ac)	0.35
Flow Path Length (ft)	195.0
Flow Path Slope (vft/hft) = (351.92-345.94)/195 =	0.036
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	7
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.7948
Peak Intensity (in/hr)	3.4573
Undeveloped Runoff Coefficient (Cu)	0.701
Developed Runoff Coefficient (Cd)	0.8821
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.0674
Burned Peak Flow Rate (cfs)	1.0674
24-Hr Clear Runoff Volume (ac-ft)	0.1395
24-Hr Clear Runoff Volume (cu-ft)	6075.5312



PROPOSED CONDITION
50-YEAR

Peak Flow Hydrologic Analysis

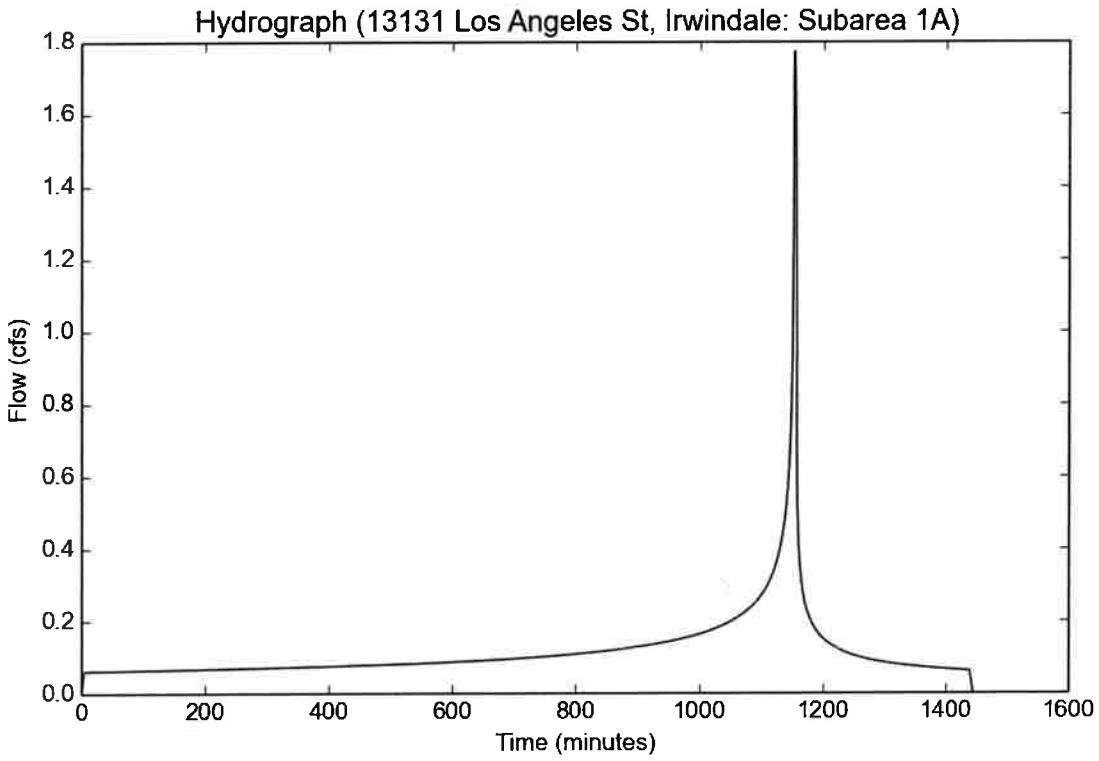
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3665 Proposed Subarea 1A.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 1A
Area (ac)	0.5
Flow Path Length (ft)	60.0
Flow Path Slope (vft/hft) = (361.26-359.60)/ 60 =	0.028
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	8
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	3.9377
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.772
Burned Peak Flow Rate (cfs)	1.772
24-Hr Clear Runoff Volume (ac-ft)	0.2329
24-Hr Clear Runoff Volume (cu-ft)	10144.833



Peak Flow Hydrologic Analysis

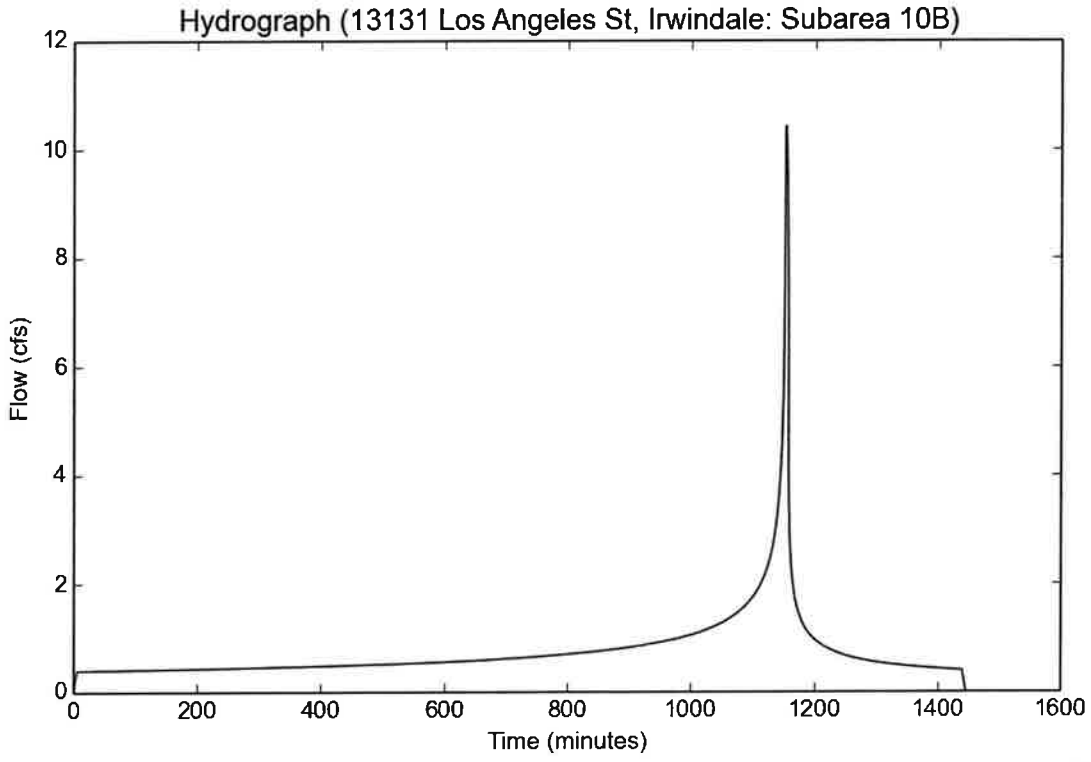
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3665 Proposed Subarea 10B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 10B
Area (ac)	3.2
Flow Path Length (ft)	430.0
Flow Path Slope (vft/hft) = (353.42-350.58)/430 =	0.007
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	8
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	3.6144
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	10.4094
Burned Peak Flow Rate (cfs)	10.4094
24-Hr Clear Runoff Volume (ac-ft)	1.4905
24-Hr Clear Runoff Volume (cu-ft)	64927.7589



Peak Flow Hydrologic Analysis

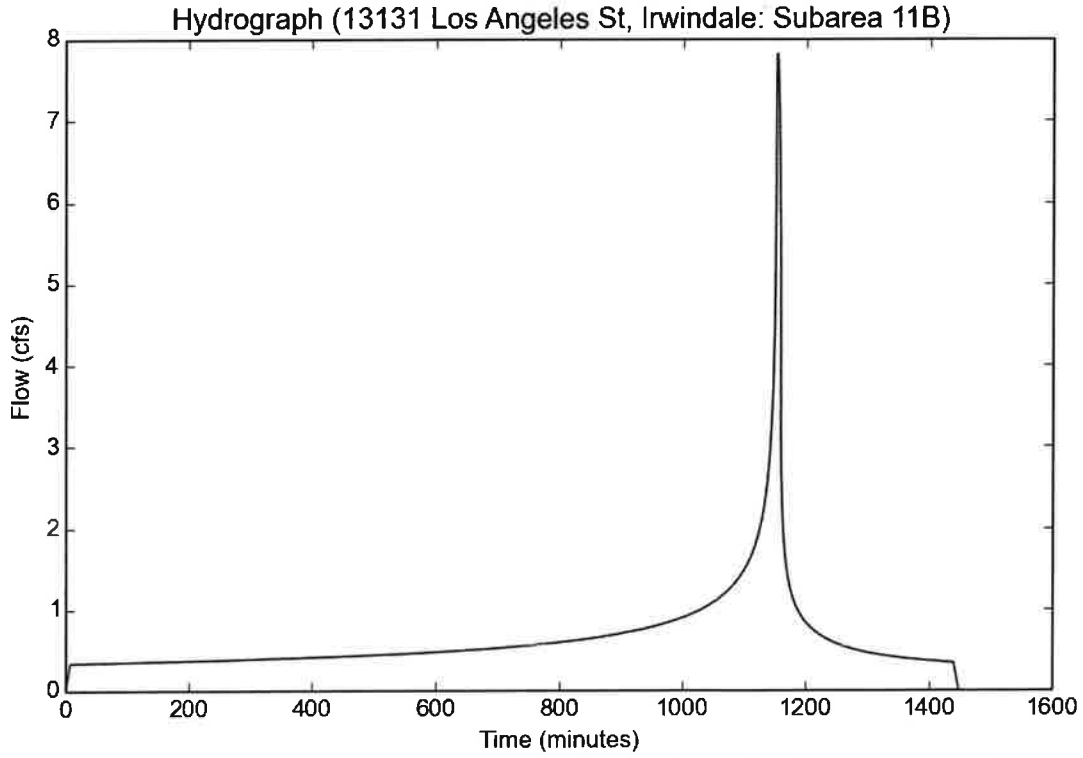
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3665 Proposed Subarea 11B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 11B
Area (ac)	2.75
Flow Path Length (ft)	730.0
Flow Path Slope (vft/hft) = (361.26-351.11) / 730 =	0.014
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	8
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	3.1573
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	7.8142
Burned Peak Flow Rate (cfs)	7.8142
24-Hr Clear Runoff Volume (ac-ft)	1.281
24-Hr Clear Runoff Volume (cu-ft)	55798.9578



Peak Flow Hydrologic Analysis

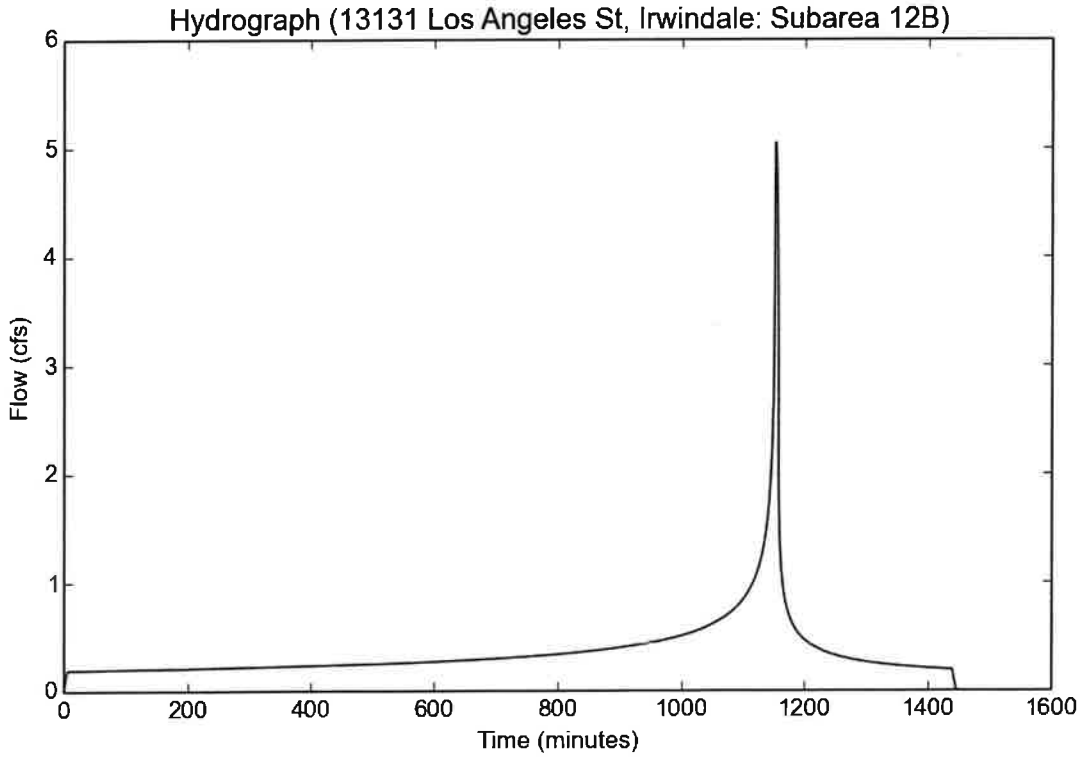
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3665 Proposed Subarea 12B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 12B
Area (ac)	1.55
Flow Path Length (ft)	460.0
Flow Path Slope (vft/hft) = (358.22-351.11)/460 =	0.015
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	8
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	3.6144
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	5.042
Burned Peak Flow Rate (cfs)	5.042
24-Hr Clear Runoff Volume (ac-ft)	0.722
24-Hr Clear Runoff Volume (cu-ft)	31449.3832



Peak Flow Hydrologic Analysis

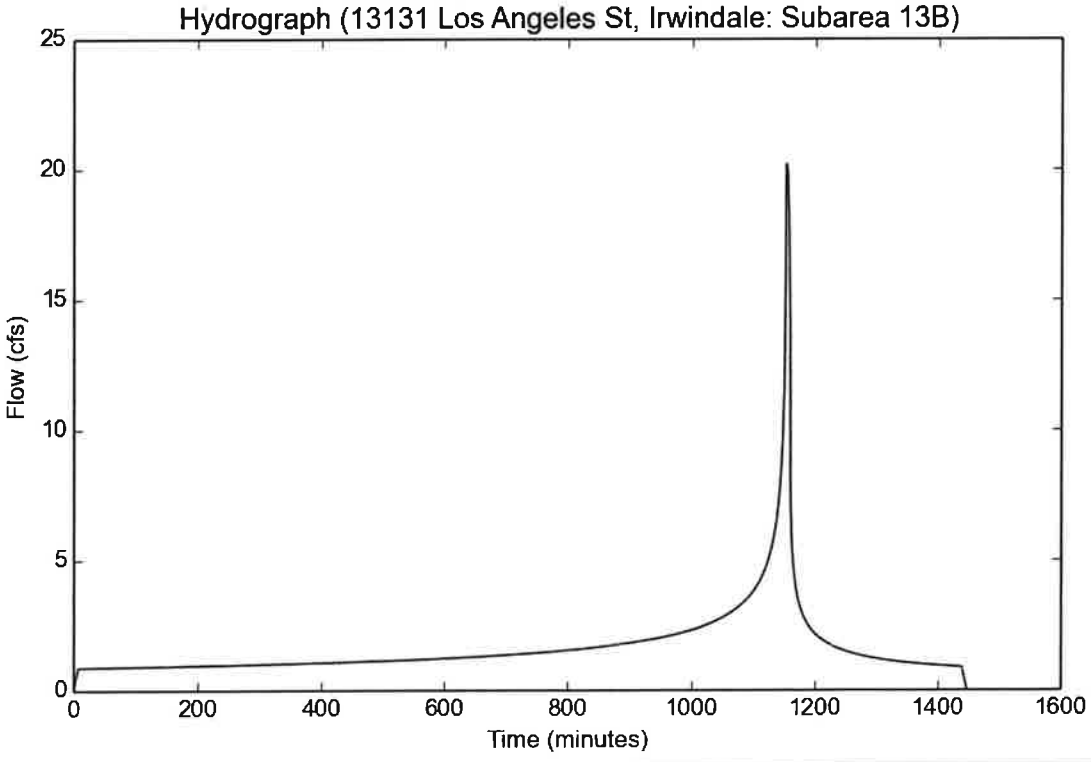
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3665 Proposed Subarea 13B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 13B
Area (ac)	7.1
Flow Path Length (ft)	665.0
Flow Path Slope (vft/hft) = (354.63-348.81)| 665 =	0.009
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	8
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	3.1573
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	20.1749
Burned Peak Flow Rate (cfs)	20.1749
24-Hr Clear Runoff Volume (ac-ft)	3.3072
24-Hr Clear Runoff Volume (cu-ft)	144062.7639



Peak Flow Hydrologic Analysis

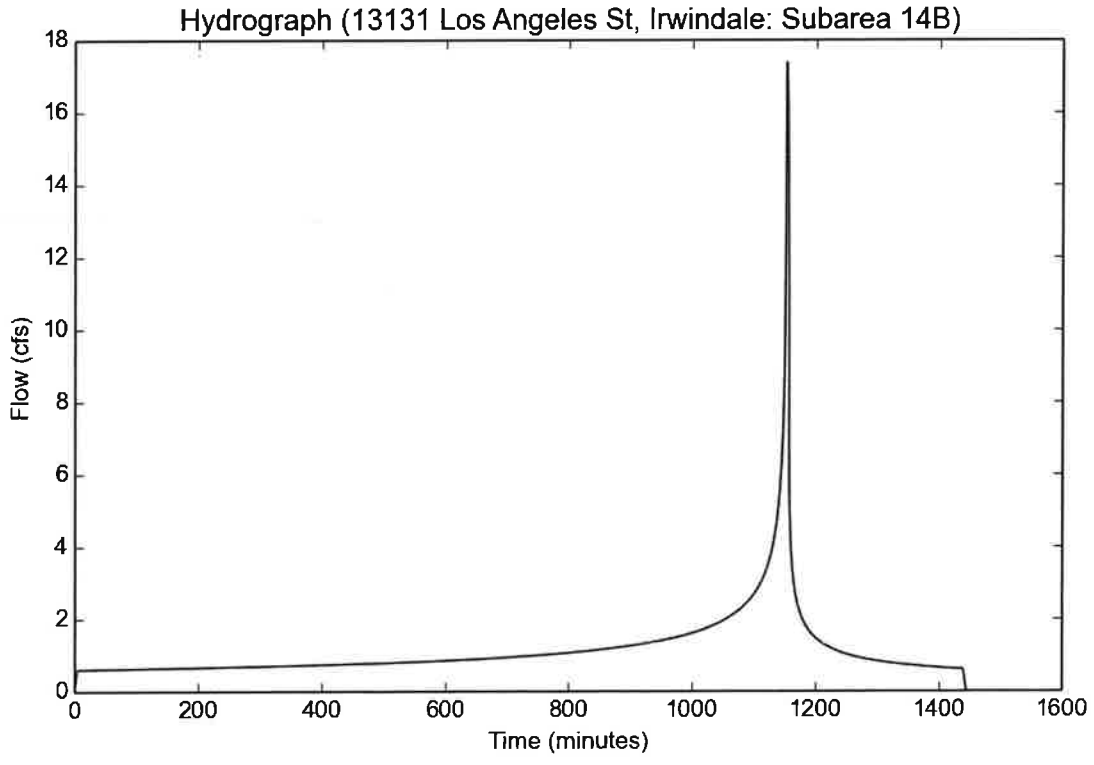
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3665 Proposed Subarea 14B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 14B
Area (ac)	4.9
Flow Path Length (ft)	375.0
Flow Path Slope (vft/hft) = (351.92-348.51)/375 =	0.009
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	8
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	3.9377
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	17.3654
Burned Peak Flow Rate (cfs)	17.3654
24-Hr Clear Runoff Volume (ac-ft)	2.2824
24-Hr Clear Runoff Volume (cu-ft)	99419.3631



Peak Flow Hydrologic Analysis

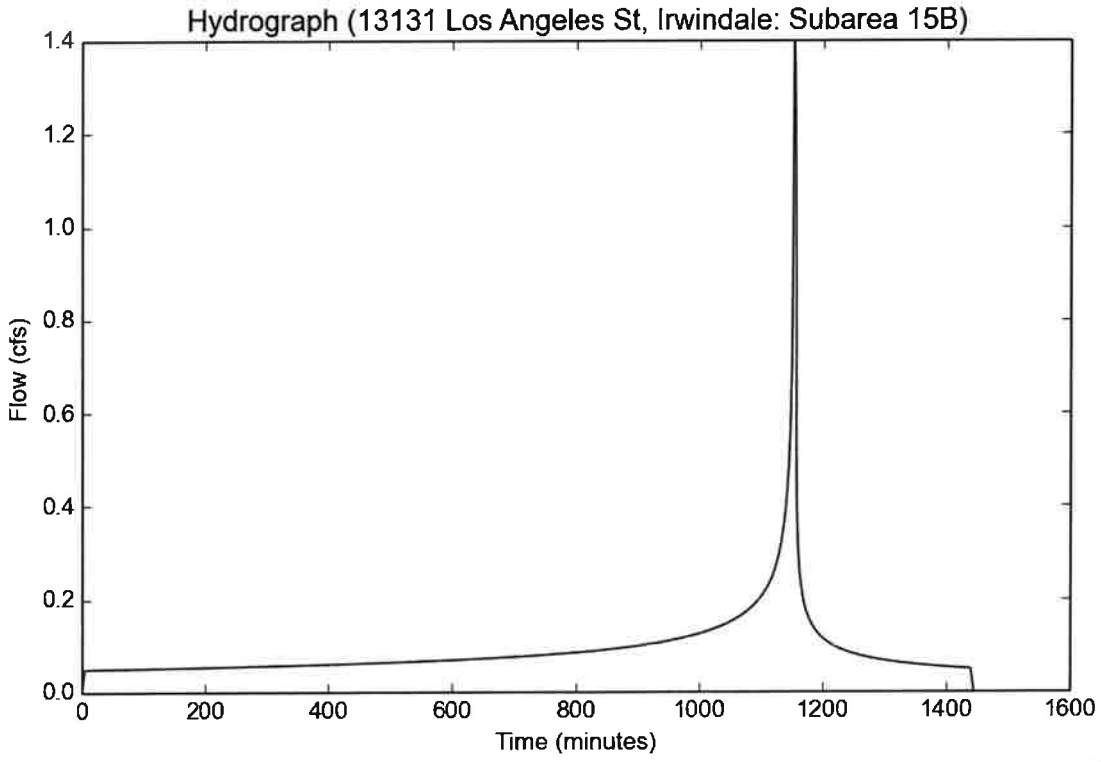
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3665 Proposed Subarea 15B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 15B
Area (ac)	0.4
Flow Path Length (ft)	275.0
Flow Path Slope (vft/hft) = (350.38-346.50)/275 =	0.014
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	7
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	3.9377
Undeveloped Runoff Coefficient (Cu)	0.7407
Developed Runoff Coefficient (Cd)	0.8857
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.395
Burned Peak Flow Rate (cfs)	1.395
24-Hr Clear Runoff Volume (ac-ft)	0.1817
24-Hr Clear Runoff Volume (cu-ft)	7914.9649



Peak Flow Hydrologic Analysis

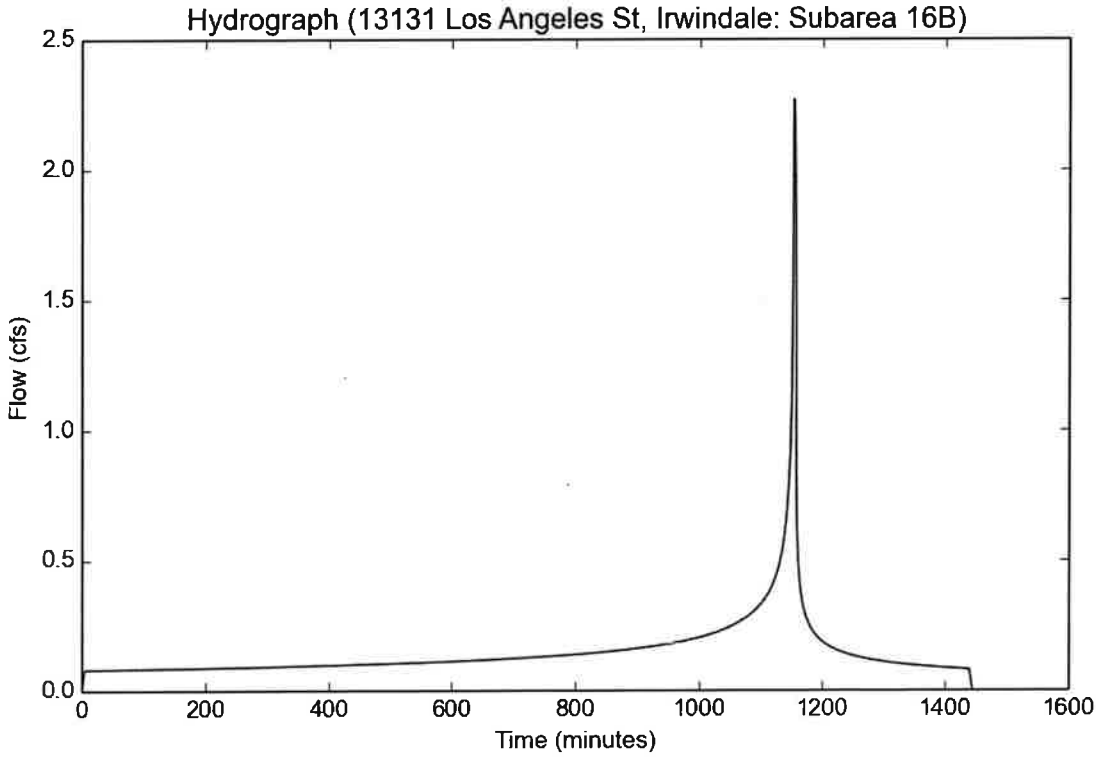
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3665 Proposed Subarea 16B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 16B
Area (ac)	0.65
Flow Path Length (ft)	355.0
Flow Path Slope (vft/hft) = (349.78-345.57)/355 =	0.012
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	7
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	3.9377
Undeveloped Runoff Coefficient (Cu)	0.7407
Developed Runoff Coefficient (Cd)	0.8857
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.2669
Burned Peak Flow Rate (cfs)	2.2669
24-Hr Clear Runoff Volume (ac-ft)	0.2953
24-Hr Clear Runoff Volume (cu-ft)	12861.8179



Peak Flow Hydrologic Analysis

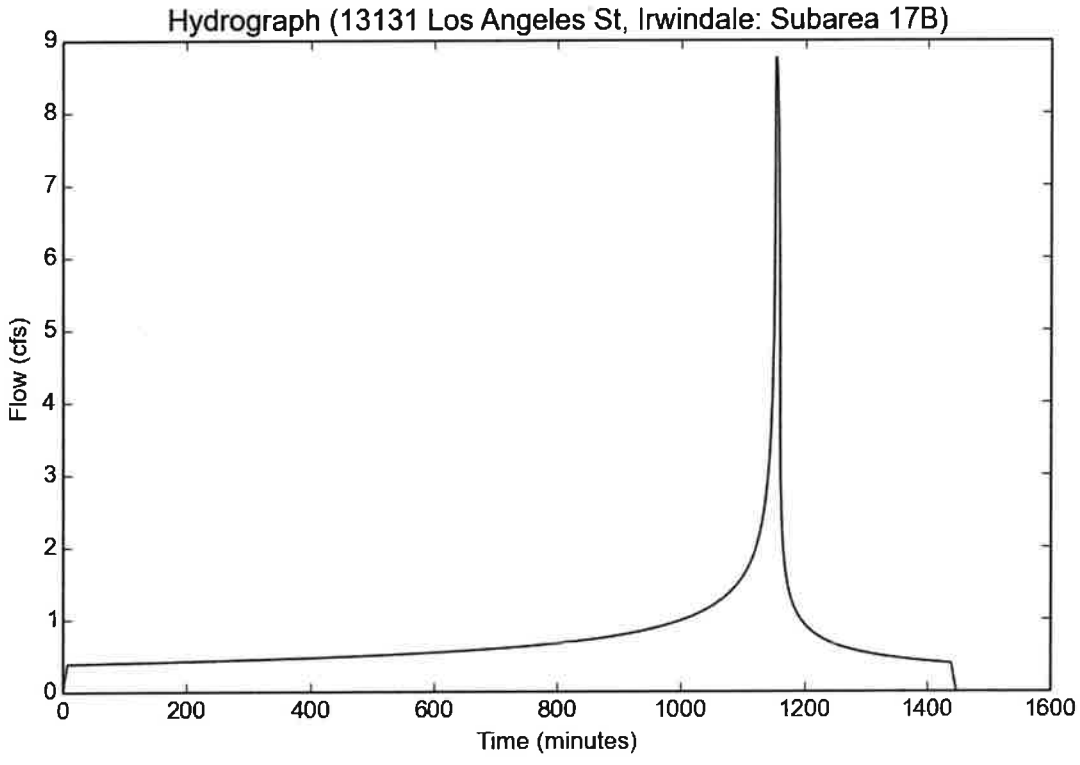
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3665 Proposed Subarea 17B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 17B
Area (ac)	3.15
Flow Path Length (ft)	770.0
Flow Path Slope (vft/hft) = (354.00 − 345.42) / 770 =	0.011
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	7
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	3.1573
Undeveloped Runoff Coefficient (Cu)	0.6762
Developed Runoff Coefficient (Cd)	0.8799
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	8.7505
Burned Peak Flow Rate (cfs)	8.7505
24-Hr Clear Runoff Volume (ac-ft)	1.4307
24-Hr Clear Runoff Volume (cu-ft)	62323.4509



Peak Flow Hydrologic Analysis

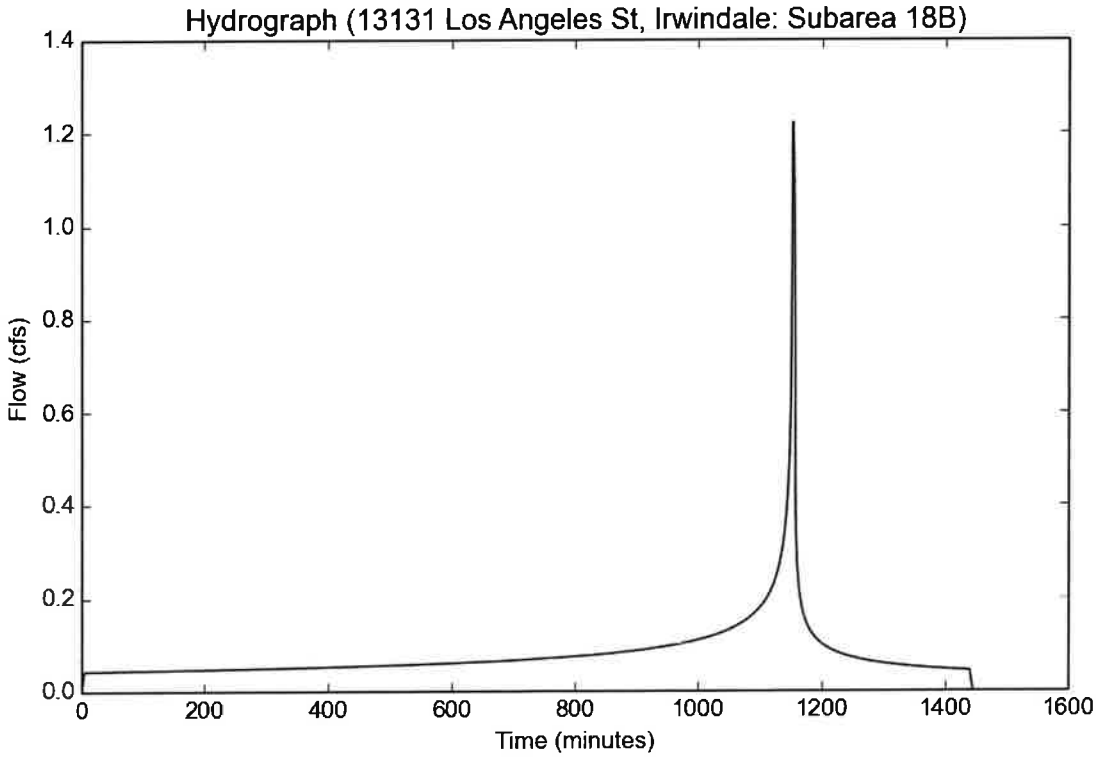
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3665 Proposed Subarea 18B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 18B
Area (ac)	0.35
Flow Path Length (ft)	95.0
Flow Path Slope (vft/hft) = (347.58-343.32)/95 =	0.045
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	7
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	3.9377
Undeveloped Runoff Coefficient (Cu)	0.7407
Developed Runoff Coefficient (Cd)	0.8857
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.2206
Burned Peak Flow Rate (cfs)	1.2206
24-Hr Clear Runoff Volume (ac-ft)	0.159
24-Hr Clear Runoff Volume (cu-ft)	6925.5943



Peak Flow Hydrologic Analysis

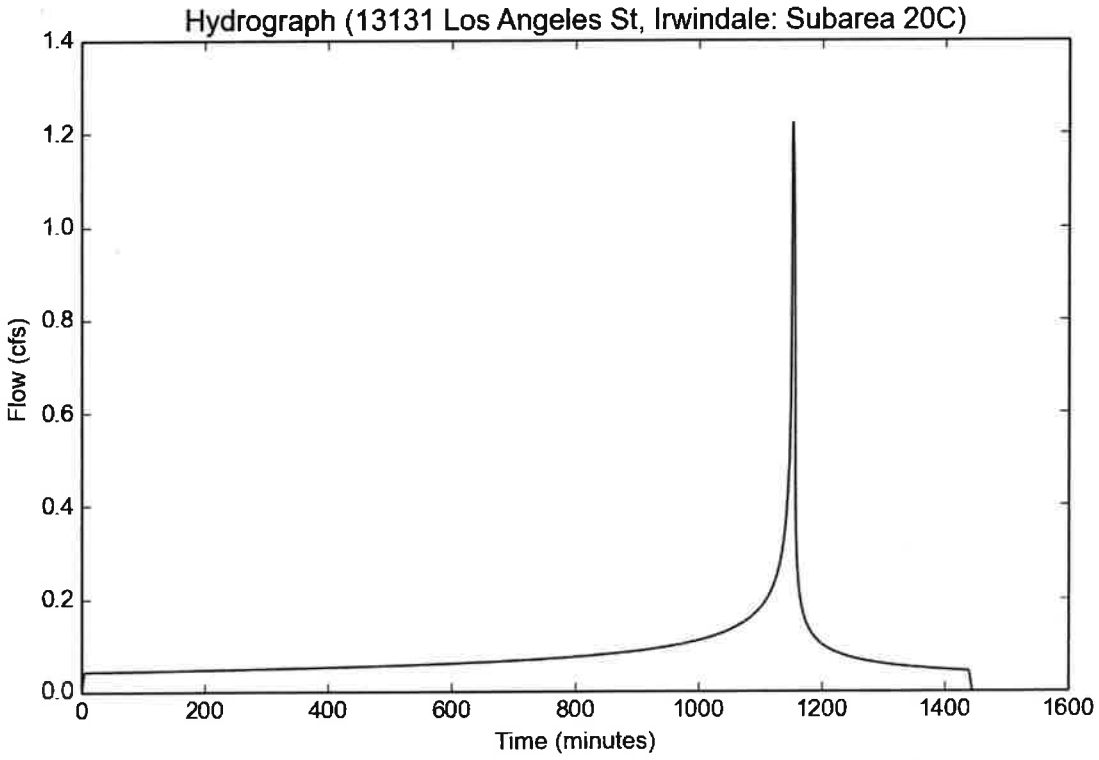
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3665 Proposed Subarea 20C.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subarea 20C
Area (ac)	0.35
Flow Path Length (ft)	195.0
Flow Path Slope (vft/hft) = (351.92-345.94)/195 =	0.036
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	7
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	3.9377
Undeveloped Runoff Coefficient (Cu)	0.7407
Developed Runoff Coefficient (Cd)	0.8857
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.2206
Burned Peak Flow Rate (cfs)	1.2206
24-Hr Clear Runoff Volume (ac-ft)	0.159
24-Hr Clear Runoff Volume (cu-ft)	6925.5943



APPENDIX C

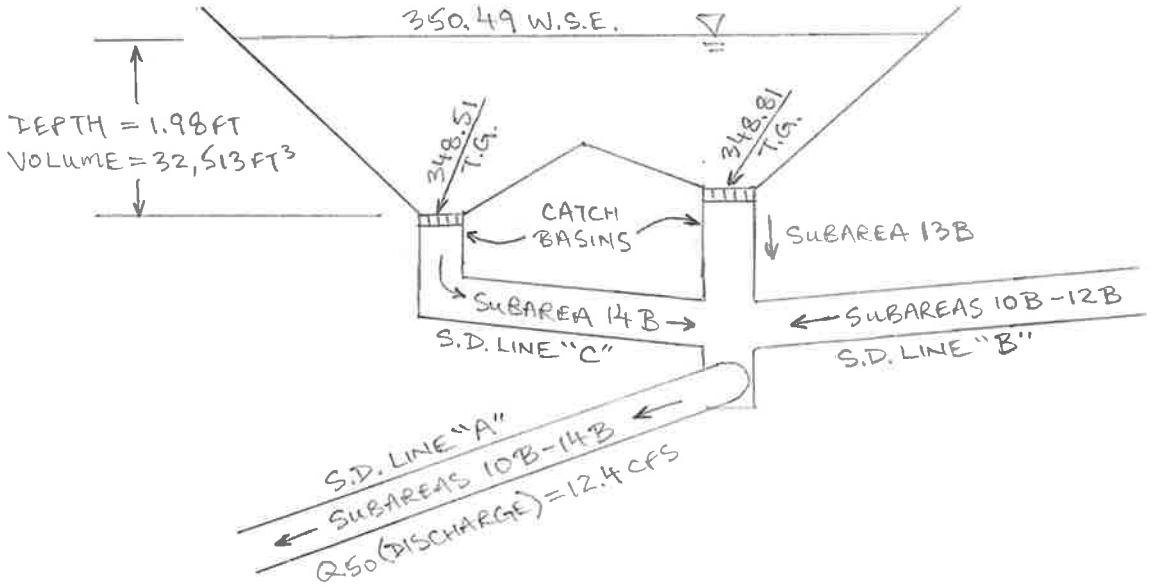
DETENTION ANALYSIS

Job #3665 - 13131 Los Angeles St, Irwindale
Volume in Westerly Truck Yard

Elevation	Depth (feet)	Area (sq. ft.)	Volume (c.f.)	Σ Volume (c.f.)	Σ Volume (ac-ft)
348.51	0.00	0			
			64	64	0.00
348.80	0.29	440			
			209	273	0.01
349.00	0.49	1650			
			598	871	0.02
349.20	0.69	4330			
			1321	2192	0.05
349.40	0.89	8880			
			2384	4576	0.11
349.60	1.09	14960			
			3684	8260	0.19
349.80	1.29	21880			
			5109	13369	0.31
350.00	1.49	29210			
			6618	19987	0.46
350.20	1.69	36970			
			8187	28174	0.65
350.40	1.89	44900			
			4697	32871	0.75
350.50	1.99	49040			

← 32,513 FT³ ≈ 350.49 W.S.E. 1.98 FT DEPTH

TRUCK YARD IN SUBAREAS 13B AND 14B



Peak Flow Hydrologic Analysis

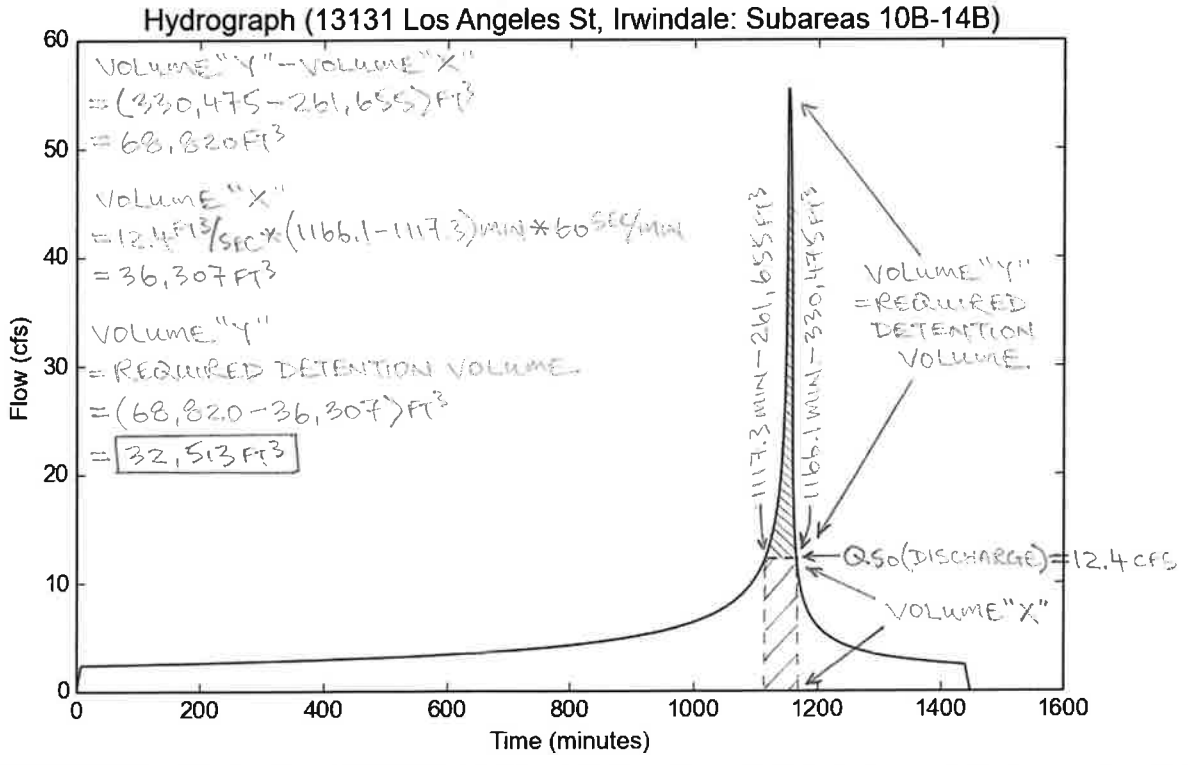
File location: O:/3600-3699/3665/HydroCalc/HydroCalc-2019-11-22/3665 Proposed Subareas 10B-14B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	13131 Los Angeles St, Irwindale
Subarea ID	Subareas 10B-14B
Area (ac)	19.5
Flow Path Length (ft)	665.0
Flow Path Slope (vft/hft) = (354.63-348.81)/665 =	0.009
50-yr Rainfall Depth (in)	6.6
Percent Impervious	0.91
Soil Type	8
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.6
Peak Intensity (in/hr)	3.1573
Undeveloped Runoff Coefficient (Cu)	0.9
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	55.41
Burned Peak Flow Rate (cfs)	55.41
24-Hr Clear Runoff Volume (ac-ft)	9.0832
24-Hr Clear Runoff Volume (cu-ft)	395665.3375



SUBAREAS 10B–14B HYDROGRAPH

TIME (MIN.)						Q50 (CFS)		VOLUME (FT3)	
1111.6	0.664512	4.385776	0.673951	0.706005	0.88254	11.59839	139.0291	257556	
1111.8	0.664867	4.388125	0.675388	0.706595	0.882594	11.62382	139.3332	257695.3	
1112	0.665224	4.39048	0.676835	0.707188	0.882647	11.64943	139.6395	257835	
1112.2	0.665582	4.39284	0.678292	0.707785	0.882701	11.67521	139.9479	257974.9	
1112.4	0.66594	4.395205	0.679759	0.708386	0.882755	11.70118	140.2583	258115.2	
1112.6	0.666299	4.397576	0.681235	0.708991	0.882809	11.72732	140.571	258255.7	
1112.8	0.66666	4.399953	0.682722	0.709601	0.882864	11.75364	140.8858	258396.6	
1113	0.667021	4.402336	0.684219	0.710214	0.882919	11.78015	141.2027	258537.8	
1113.2	0.667382	4.404724	0.685726	0.710832	0.882975	11.80684	141.522	258679.4	
1113.4	0.667745	4.407118	0.687244	0.711454	0.883031	11.83373	141.8434	258821.2	
1113.6	0.668109	4.409518	0.688773	0.712081	0.883087	11.8608	142.1672	258963.4	
1113.8	0.668473	4.411924	0.690312	0.712712	0.883144	11.88807	142.4932	259105.9	
1114	0.668839	4.414336	0.691862	0.713347	0.883201	11.91553	142.8216	259248.7	
1114.2	0.669205	4.416754	0.693422	0.713987	0.883259	11.94319	143.1524	259391.8	
1114.4	0.669572	4.419177	0.694994	0.714631	0.883317	11.97106	143.4855	259535.3	
1114.6	0.66994	4.421607	0.696578	0.71528	0.883375	11.99912	143.821	259679.1	
1114.8	0.67031	4.424043	0.698172	0.715934	0.883434	12.02739	144.159	259823.3	
1115	0.67068	4.426485	0.699778	0.716592	0.883493	12.05586	144.4995	259967.8	
1115.2	0.671051	4.428934	0.701396	0.717255	0.883553	12.08455	144.8425	260112.6	
1115.4	0.671422	4.431388	0.703026	0.717923	0.883613	12.11345	145.188	260257.8	
1115.6	0.671795	4.433849	0.704667	0.718596	0.883674	12.14257	145.5361	260403.4	
1115.8	0.672169	4.436316	0.706321	0.719274	0.883735	12.1719	145.8868	260549.3	
1116	0.672544	4.43879	0.707987	0.719957	0.883796	12.20146	146.2402	260695.5	
1116.2	0.67292	4.44127	0.709665	0.720645	0.883858	12.23124	146.5962	260842.1	
1116.4	0.673296	4.443757	0.711355	0.721338	0.88392	12.26124	146.9549	260989	
1116.6	0.673674	4.44625	0.713059	0.722036	0.883983	12.29148	147.3163	261136.4	
1116.8	0.674053	4.44875	0.714775	0.72274	0.884047	12.32195	147.6805	261284	
1117	0.674433	4.451256	0.716505	0.723449	0.88411	12.35265	148.0476	261432.1	
1117.2	0.674814	4.45377	0.718247	0.724163	0.884175	12.38359	148.4174	261580.5	2.4 CFS
1117.4	0.675195	4.45629	0.720003	0.724883	0.884239	12.41478	148.7902	261729.3	261,655FT3
1117.6	0.675578	4.458817	0.721773	0.725608	0.884305	12.4462	149.1659	261878.5	
1117.8	0.675962	4.461351	0.723556	0.726339	0.884371	12.47788	149.5445	262028	
1118	0.676347	4.463891	0.725353	0.727076	0.884437	12.50981	149.9262	262177.9	
1118.2	0.676733	4.466439	0.727164	0.727818	0.884504	12.542	150.3108	262328.2	
1118.4	0.67712	4.468994	0.72899	0.728566	0.884571	12.57444	150.6986	262478.9	
1118.6	0.677509	4.471556	0.730829	0.729321	0.884639	12.60714	151.0895	262630	
1118.8	0.677898	4.474126	0.732684	0.730081	0.884707	12.64011	151.4835	262781.5	
1119	0.678288	4.476702	0.734554	0.730847	0.884776	12.67335	151.8808	262933.4	
1119.2	0.67868	4.479286	0.736438	0.73162	0.884846	12.70686	152.2813	263085.7	
1119.4	0.679072	4.481878	0.738338	0.732398	0.884916	12.74065	152.6851	263238.4	
1119.6	0.679466	4.484477	0.740253	0.733183	0.884986	12.77472	153.0922	263391.5	
1119.8	0.679861	4.487083	0.742184	0.733975	0.885058	12.80908	153.5028	263545	
1120	0.680257	4.489697	0.744131	0.734773	0.88513	12.84372	153.9168	263698.9	
1120.2	0.680654	4.492319	0.746094	0.735577	0.885202	12.87865	154.3342	263853.2	
1120.4	0.681053	4.494948	0.748073	0.736389	0.885275	12.91388	154.7552	264008	
1120.6	0.681452	4.497586	0.750069	0.737207	0.885349	12.94942	155.1798	264163.1	
1120.8	0.681853	4.500231	0.752082	0.738032	0.885423	12.98525	155.608	264318.8	

1117.3 MIN →

1121	0.682255	4.502884	0.754112	0.738864	0.885498	13.0214	156.0399	264474.8
1121.2	0.682658	4.505545	0.756159	0.739703	0.885573	13.05786	156.4756	264631.3
1121.4	0.683063	4.508215	0.758223	0.74055	0.885649	13.09464	156.915	264788.2
1121.6	0.683469	4.510892	0.760306	0.741403	0.885726	13.13175	157.3583	264945.5
1121.8	0.683876	4.513578	0.762406	0.742264	0.885804	13.16918	157.8056	265103.3
1122	0.684284	4.516273	0.764525	0.743133	0.885882	13.20694	158.2567	265261.6
1122.2	0.684693	4.518975	0.766663	0.744009	0.885961	13.24505	158.712	265420.3
1122.4	0.685104	4.521687	0.768819	0.744893	0.88604	13.2835	159.1713	265579.5
1122.6	0.685516	4.524407	0.770995	0.745785	0.886121	13.32229	159.6347	265739.1
1122.8	0.68593	4.527135	0.77319	0.746684	0.886202	13.36144	160.1024	265899.2
1123	0.686344	4.529873	0.775405	0.747592	0.886283	13.40095	160.5744	266059.8
1123.2	0.68676	4.532619	0.77764	0.748508	0.886366	13.44083	161.0507	266220.8
1123.4	0.687178	4.535374	0.779895	0.749433	0.886449	13.48107	161.5314	266382.4
1123.6	0.687597	4.538139	0.782171	0.750366	0.886533	13.52169	162.0166	266544.4
1123.8	0.688017	4.540912	0.784468	0.751307	0.886618	13.5627	162.5064	266706.9
1124	0.688439	4.543695	0.786786	0.752258	0.886703	13.60409	163.0008	266869.9
1124.2	0.688862	4.546487	0.789126	0.753217	0.88679	13.64588	163.4998	267033.4
1124.4	0.689286	4.549289	0.791488	0.754185	0.886877	13.68807	164.0037	267197.4
1124.6	0.689712	4.5521	0.793873	0.755162	0.886965	13.73067	164.5124	267361.9
1124.8	0.690139	4.55492	0.79628	0.756149	0.887053	13.77368	165.0261	267526.9
1125	0.690568	4.557751	0.79871	0.757145	0.887143	13.81711	165.5448	267692.5
1125.2	0.690999	4.560592	0.801164	0.757933	0.887214	13.86067	166.0667	267858.6
1125.4	0.691431	4.563442	0.803641	0.758485	0.887264	13.90431	166.5899	268025.1
1125.6	0.691864	4.566302	0.806143	0.759043	0.887314	13.94839	167.1162	268192.3
1125.8	0.692299	4.569173	0.808669	0.759605	0.887364	13.9929	167.6477	268359.9
1126	0.692735	4.572054	0.811221	0.760174	0.887416	14.03786	168.1846	268528.1
1126.2	0.693174	4.574946	0.813798	0.760748	0.887467	14.08327	168.7268	268696.8
1126.4	0.693613	4.577848	0.816401	0.761328	0.887519	14.12915	169.2746	268866.1
1126.6	0.694055	4.58076	0.819031	0.761913	0.887572	14.1755	169.8279	269035.9
1126.8	0.694498	4.583684	0.821687	0.762505	0.887625	14.22233	170.387	269206.3
1127	0.694942	4.586618	0.82437	0.763103	0.887679	14.26964	170.9518	269377.3
1127.2	0.695388	4.589564	0.827082	0.763707	0.887734	14.31745	171.5225	269548.8
1127.4	0.695836	4.592521	0.829821	0.764317	0.887789	14.36576	172.0993	269720.9
1127.6	0.696286	4.595489	0.83259	0.764934	0.887844	14.41459	172.6821	269893.6
1127.8	0.696738	4.598468	0.835387	0.765557	0.8879	14.46394	173.2712	270066.8
1128	0.697191	4.601459	0.838215	0.766187	0.887957	14.51382	173.8666	270240.7
1128.2	0.697646	4.604462	0.841073	0.766823	0.888014	14.56425	174.4684	270415.2
1128.4	0.698102	4.607476	0.843961	0.767467	0.888072	14.61522	175.0768	270590.2
1128.6	0.698561	4.610503	0.846882	0.768117	0.888131	14.66676	175.6919	270765.9
1128.8	0.699022	4.613542	0.849834	0.768775	0.88819	14.71887	176.3138	270942.3
1129	0.699484	4.616593	0.852819	0.76944	0.88825	14.77157	176.9426	271119.2
1129.2	0.699948	4.619657	0.855837	0.770112	0.88831	14.82485	177.5785	271296.8
1129.4	0.700414	4.622733	0.85889	0.770792	0.888371	14.87875	178.2216	271475
1129.6	0.700882	4.625823	0.861976	0.77148	0.888433	14.93326	178.8721	271653.9
1129.8	0.701352	4.628925	0.865098	0.772175	0.888496	14.98841	179.53	271833.4
1130	0.701824	4.63204	0.868256	0.772878	0.888559	15.04419	180.1956	272013.6
1130.2	0.702298	4.635169	0.871451	0.77359	0.888623	15.10063	180.8689	272194.5

1130.4	0.702774	4.638311	0.874683	0.77431	0.888688	15.15774	181.5502	272376
1130.6	0.703253	4.641467	0.877953	0.775038	0.888753	15.21553	182.2396	272558.3
1130.8	0.703733	4.644637	0.881262	0.775775	0.88882	15.27402	182.9373	272741.2
1131	0.704215	4.647821	0.88461	0.776521	0.888887	15.33321	183.6434	272924.8
1131.2	0.7047	4.651019	0.887999	0.777276	0.888955	15.39313	184.3581	273109.2
1131.4	0.705187	4.654231	0.89143	0.77804	0.889024	15.45379	185.0815	273294.3
1131.6	0.705676	4.657459	0.894902	0.778814	0.889093	15.5152	185.814	273480.1
1131.8	0.706167	4.660701	0.898418	0.779597	0.889164	15.57739	186.5556	273666.6
1132	0.70666	4.663958	0.901977	0.78039	0.889235	15.64036	187.3065	273854
1132.2	0.707156	4.667231	0.905582	0.781193	0.889307	15.70414	188.067	274042
1132.4	0.707654	4.670519	0.909232	0.782006	0.889381	15.76874	188.8373	274230.9
1132.6	0.708155	4.673824	0.912929	0.782829	0.889455	15.83418	189.6175	274420.5
1132.8	0.708658	4.677144	0.916674	0.783664	0.88953	15.90048	190.408	274610.9
1133	0.709164	4.68048	0.920469	0.784509	0.889606	15.96766	191.2088	274802.1
1133.2	0.709672	4.683833	0.924313	0.785365	0.889683	16.03573	192.0203	274994.1
1133.4	0.710182	4.687203	0.928208	0.786233	0.889761	16.10473	192.8427	275187
1133.6	0.710695	4.69059	0.932156	0.787112	0.88984	16.17466	193.6763	275380.6
1133.8	0.711211	4.693994	0.936157	0.788004	0.88992	16.24555	194.5213	275575.1
1134	0.71173	4.697416	0.940213	0.788907	0.890002	16.31743	195.3779	275770.5
1134.2	0.712251	4.700856	0.944326	0.789823	0.890084	16.39032	196.2465	275966.8
1134.4	0.712775	4.704314	0.948495	0.790752	0.890168	16.46424	197.1273	276163.9
1134.6	0.713302	4.70779	0.952724	0.791694	0.890252	16.53921	198.0207	276361.9
1134.8	0.713831	4.711286	0.957013	0.792649	0.890338	16.61527	198.9269	276560.8
1135	0.714364	4.7148	0.961363	0.793618	0.890426	16.69244	199.8462	276760.7
1135.2	0.714899	4.718334	0.965777	0.794601	0.890514	16.77074	200.7791	276961.5
1135.4	0.715438	4.721888	0.970255	0.795599	0.890604	16.85021	201.7257	277163.2
1135.6	0.715979	4.725462	0.974801	0.796611	0.890695	16.93087	202.6865	277365.9
1135.8	0.716524	4.729056	0.979414	0.797639	0.890788	17.01277	203.6618	277569.5
1136	0.717072	4.732672	0.984097	0.798682	0.890881	17.09591	204.6521	277774.2
1136.2	0.717623	4.736309	0.988852	0.799741	0.890977	17.18036	205.6576	277979.9
1136.4	0.718177	4.739967	0.99368	0.800817	0.891074	17.26612	206.6789	278186.5
1136.6	0.718735	4.743648	0.998584	0.801909	0.891172	17.35325	207.7162	278394.3
1136.8	0.719296	4.747351	1.003566	0.802675	0.891241	17.44117	208.7665	278603
1137	0.71986	4.751077	1.008628	0.803315	0.891298	17.53027	209.8286	278812.8
1137.2	0.720428	4.754826	1.013771	0.803964	0.891357	17.62082	210.9065	279023.8
1137.4	0.721	4.7586	1.018999	0.804625	0.891416	17.71287	212.0021	279235.8
1137.6	0.721575	4.762398	1.024313	0.805296	0.891477	17.80645	213.1159	279448.9
1137.8	0.722155	4.76622	1.029717	0.805979	0.891538	17.90162	214.2484	279663.1
1138	0.722738	4.770068	1.035212	0.806673	0.891601	17.99841	215.4002	279878.5
1138.2	0.723325	4.773942	1.040801	0.807379	0.891664	18.09688	216.5718	280095.1
1138.4	0.723916	4.777843	1.046488	0.808098	0.891729	18.19708	217.7638	280312.9
1138.6	0.724511	4.78177	1.052275	0.808829	0.891795	18.29906	218.9768	280531.8
1138.8	0.72511	4.785725	1.058165	0.809573	0.891862	18.40287	220.2116	280752
1139	0.725713	4.789709	1.064162	0.810331	0.89193	18.50857	221.4686	280973.5
1139.2	0.726321	4.793721	1.070268	0.811102	0.891999	18.61622	222.7487	281196.3
1139.4	0.726934	4.797763	1.076487	0.811888	0.89207	18.72588	224.0526	281420.3
1139.6	0.727551	4.801835	1.082823	0.812688	0.892142	18.83762	225.381	281645.7

1139.8	0.728172	4.805938	1.08928	0.813504	0.892215	18.95151	226.7348	281872.4
1140	0.728799	4.810073	1.095861	0.814335	0.89229	19.06761	228.1147	282100.5
1140.2	0.72943	4.814241	1.102571	0.815183	0.892366	19.186	229.5217	282330.1
1140.4	0.730067	4.818441	1.109414	0.816048	0.892444	19.30677	230.9566	282561
1140.6	0.730709	4.822676	1.116395	0.81693	0.892524	19.42998	232.4205	282793.4
1140.8	0.731356	4.826946	1.123519	0.81783	0.892605	19.55574	233.9143	283027.4
1141	0.732008	4.831252	1.130791	0.818748	0.892687	19.68413	235.4392	283262.8
1141.2	0.732666	4.835595	1.138215	0.819686	0.892772	19.81524	236.9962	283499.8
1141.4	0.73333	4.839976	1.145798	0.820644	0.892858	19.94919	238.5866	283738.4
1141.6	0.733999	4.844396	1.153546	0.821623	0.892946	20.08606	240.2115	283978.6
1141.8	0.734675	4.848856	1.161465	0.822624	0.893036	20.22599	241.8723	284220.5
1142	0.735357	4.853358	1.169561	0.823646	0.893128	20.36908	243.5704	284464
1142.2	0.736046	4.857901	1.177842	0.824693	0.893222	20.51546	245.3072	284709.3
1142.4	0.736741	4.862489	1.186314	0.825763	0.893319	20.66526	247.0843	284956.4
1142.6	0.737443	4.867122	1.194987	0.826859	0.893417	20.81863	248.9033	285205.3
1142.8	0.738152	4.871801	1.203867	0.82798	0.893518	20.97571	250.766	285456.1
1143	0.738868	4.876529	1.212964	0.82913	0.893622	21.13666	252.6742	285708.8
1143.2	0.739592	4.881306	1.222287	0.830308	0.893728	21.30165	254.6298	285963.4
1143.4	0.740323	4.886134	1.231847	0.831515	0.893836	21.47085	256.635	286220
1143.6	0.741063	4.891016	1.241653	0.832754	0.893948	21.64447	258.6919	286478.7
1143.8	0.741811	4.895952	1.251717	0.834026	0.894062	21.8227	260.803	286739.5
1144	0.742567	4.900945	1.262051	0.835331	0.89418	22.00575	262.9707	287002.5
1144.2	0.743333	4.905998	1.272667	0.836672	0.894301	22.19387	265.1977	287267.7
1144.4	0.744108	4.911111	1.283581	0.838051	0.894425	22.3873	267.487	287535.2
1144.6	0.744892	4.916289	1.294806	0.839469	0.894552	22.5863	269.8416	287805
1144.8	0.745687	4.921532	1.306359	0.840929	0.894684	22.79117	272.2648	288077.3
1145	0.746492	4.926844	1.318256	0.842432	0.894819	23.0022	274.7602	288352.1
1145.2	0.747307	4.932229	1.330516	0.843981	0.894958	23.21975	277.3317	288629.4
1145.4	0.748135	4.937688	1.343159	0.845578	0.895102	23.44416	279.9835	288909.4
1145.6	0.748974	4.943225	1.356207	0.847227	0.89525	23.67583	282.7199	289192.1
1145.8	0.749825	4.948845	1.369683	0.848929	0.895404	23.91517	285.546	289477.6
1146	0.750689	4.95455	1.383612	0.850689	0.895562	24.16266	288.467	289766.1
1146.2	0.751567	4.960345	1.398023	0.852509	0.895726	24.41879	291.4887	290057.6
1146.4	0.75246	4.966236	1.412946	0.854395	0.895896	24.68411	294.6174	290352.2
1146.6	0.753367	4.972225	1.428413	0.856349	0.896071	24.95923	297.86	290650.1
1146.8	0.754291	4.97832	1.444463	0.858376	0.896254	25.24481	301.2242	290951.3
1147	0.755231	4.984527	1.461134	0.860483	0.896443	25.54157	304.7183	291256
1147.2	0.75619	4.990851	1.478473	0.862673	0.896641	25.85034	308.3515	291564.4
1147.4	0.757167	4.9973	1.496527	0.864954	0.896846	26.17201	312.1341	291876.5
1147.6	0.758164	5.003882	1.515354	0.866421	0.896978	26.50517	316.0631	292192.6
1147.8	0.759183	5.010607	1.535015	0.867739	0.897096	26.85261	320.1466	292512.7
1148	0.760225	5.017484	1.55558	0.869116	0.89722	27.21612	324.4123	292837.1
1148.2	0.761292	5.024524	1.577128	0.87056	0.89735	27.59711	328.8794	293166
1148.4	0.762385	5.031741	1.599749	0.872076	0.897487	27.9972	333.5659	293499.6
1148.6	0.763507	5.039149	1.623547	0.87367	0.89763	28.41823	338.4926	293838.1
1148.8	0.764661	5.046765	1.648641	0.875351	0.897782	28.86232	343.6833	294181.7
1149	0.76585	5.054608	1.675168	0.877128	0.897942	29.33196	349.1657	294530.9

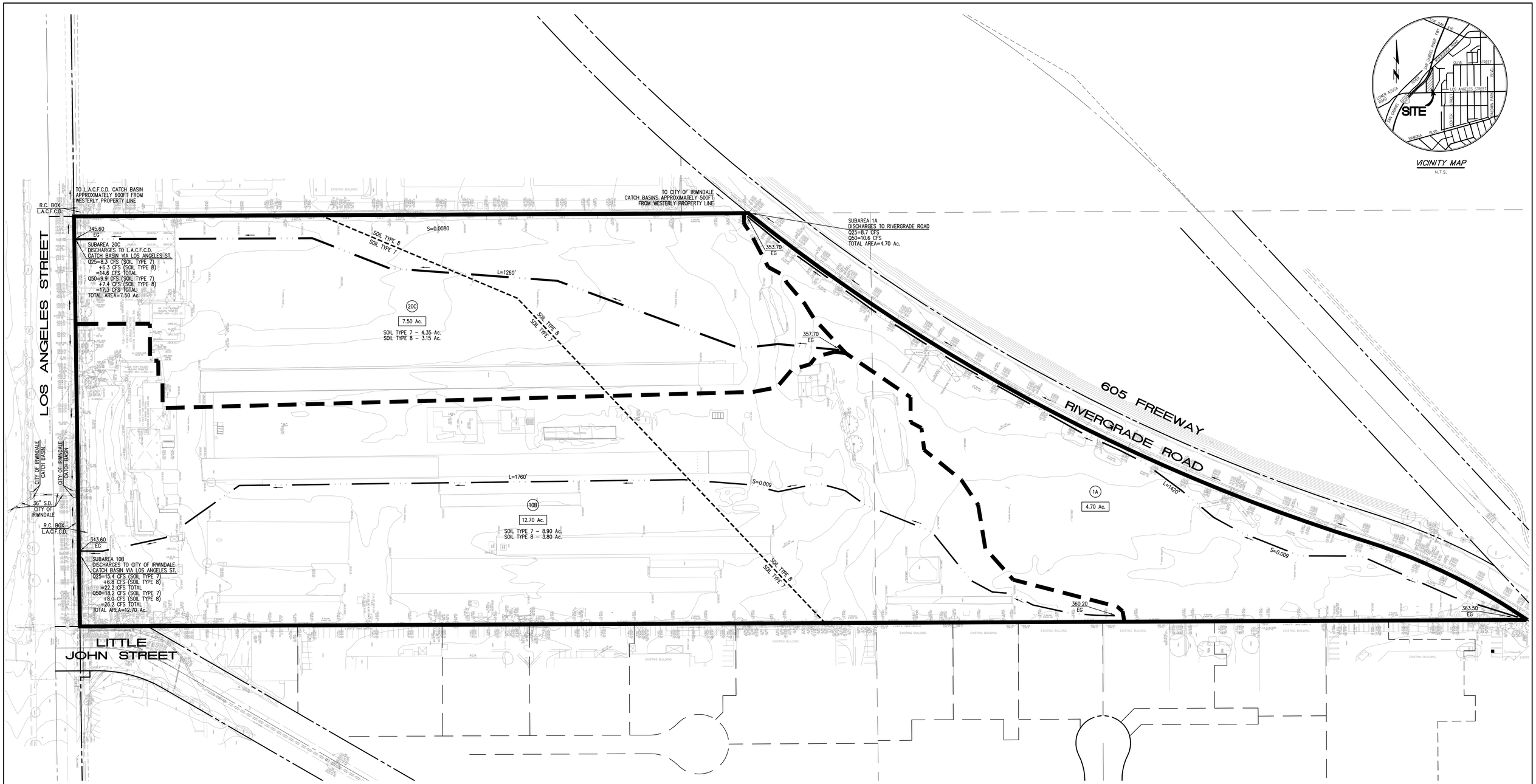
1149.2	0.767076	5.062701	1.703293	0.879013	0.898111	29.83005	354.9721	294885.9
1149.4	0.768344	5.07107	1.733207	0.881017	0.898292	30.36004	361.1405	295247
1149.6	0.769659	5.079748	1.765142	0.883156	0.898484	30.92607	367.7166	295614.7
1149.8	0.771026	5.088773	1.79938	0.88545	0.898691	31.53317	374.7554	295989.5
1150	0.772454	5.098193	1.836268	0.887922	0.898913	32.18758	382.3245	296371.8
1150.2	0.77395	5.108067	1.876244	0.8906	0.899154	32.89713	390.5083	296762.3
1150.4	0.775526	5.118472	1.919872	0.893523	0.899417	33.67194	399.4144	297161.7
1150.6	0.777198	5.129509	1.9679	0.89674	0.899707	34.52538	409.1839	297570.9
1150.8	0.778987	5.141315	2.021351	0.899638	0.899967	35.47343	419.9929	297990.9
1151	0.780923	5.154089	2.081701	0.9	0.9	36.53386	432.0437	298423
1151.2	0.78305	5.168133	2.151204	0.9	0.9	37.75364	445.725	298868.7
1151.4	0.785447	5.183953	2.23364	0.9	0.9	39.20039	461.7242	299330.4
1151.6	0.788262	5.202526	2.336328	0.9	0.9	41.00255	481.2176	299811.6
1151.8	0.79187	5.226345	2.477947	0.9	0.9	43.48798	506.9432	300318.6
1152	0.8	5.28	2.84291	0.9	0.9	49.89307	560.2862	300878.9
1152.2	0.804237	5.307967	3.014768	0.9	0.9	52.90917	616.8134	301495.7
1152.4	0.806118	5.320382	3.06953	0.9	0.9	53.87025	640.6765	302136.3
1152.6	0.807585	5.330063	3.103307	0.9	0.9	54.46304	649.9998	302786.3
1152.8	0.808835	5.338309	3.125825	0.9	0.9	54.85823	655.9276	303442.3
1153	0.809944	5.345629	3.140884	0.9	0.9	55.12252	659.8845	304102.2
1153.2	0.810953	5.352287	3.15044	0.9	0.9	55.29022	662.4765	304764.6
1153.4	0.811885	5.358441	3.15565	0.9	0.9	55.38166	664.0313	305428.7
1153.6	0.812757	5.364194	3.157263	0.9	0.9	55.40997	664.7497	306093.4
1153.8	0.813578	5.369617	3.155792	0.9	0.9	55.38415	664.7647	306758.2
1154	0.814358	5.374764	3.151602	0.9	0.9	55.31062	664.1686	307422.3
1154.2	0.815102	5.379674	3.144961	0.9	0.9	55.19407	663.0281	308085.4
1154.4	0.815815	5.384378	3.136067	0.9	0.9	55.03797	661.3922	308746.8
1154.6	0.8165	5.388901	3.125067	0.9	0.9	54.84493	659.2974	309406.1
1154.8	0.817161	5.393263	3.112072	0.9	0.9	54.61687	656.7708	310062.8
1155	0.8178	5.397482	3.097162	0.9	0.9	54.3552	653.8324	310716.7
1155.2	0.81842	5.40157	3.080392	0.9	0.9	54.06087	650.4964	311367.2
1155.4	0.819021	5.405539	3.061795	0.9	0.9	53.7345	646.7722	312013.9
1155.6	0.819606	5.409401	3.041386	0.9	0.9	53.37633	642.6649	312656.6
1155.8	0.820176	5.413162	3.019164	0.9	0.9	52.98633	638.1759	313294.8
1156	0.820732	5.416832	2.995111	0.9	0.9	52.56419	633.3031	313928.1
1156.2	0.821275	5.420416	2.96919	0.9	0.9	52.10929	628.0409	314556.1
1156.4	0.821806	5.423922	2.941352	0.9	0.9	51.62072	622.3801	315178.5
1156.6	0.822326	5.427353	2.911524	0.9	0.9	51.09725	616.3078	315794.8
1156.8	0.822835	5.430714	2.879617	0.9	0.9	50.53729	609.8072	316404.6
1157	0.823335	5.43401	2.845517	0.9	0.9	49.93883	602.8567	317007.5
1157.2	0.823825	5.437245	2.809083	0.9	0.9	49.2994	595.4294	317602.9
1157.4	0.824306	5.440422	2.770139	0.9	0.9	48.61594	587.492	318190.4
1157.6	0.824779	5.443544	2.72847	0.9	0.9	47.88465	579.0035	318769.4
1157.8	0.825245	5.446614	2.683808	0.9	0.9	47.10082	569.9128	319339.3
1158	0.825702	5.449635	2.635815	0.9	0.9	46.25855	560.1562	319899.5
1158.2	0.826153	5.452609	2.584063	0.9	0.9	45.35031	549.6532	320449.1
1158.4	0.826597	5.455538	2.527995	0.9	0.9	44.36631	538.2997	320987.4

TIME (MIN)						Q50 (CFS)		VOLUME (FT3)	
1158.6	0.827034	5.458424	2.466869	0.9	0.9	43.29355	525.9592	321513.4	
1158.8	0.827465	5.46127	2.399663	0.9	0.9	42.11409	512.4458	322025.8	
1159	0.82789	5.464076	2.324906	0.9	0.9	40.80209	497.4971	322523.3	
1159.2	0.82831	5.466845	2.240342	0.9	0.9	39.318	480.7206	323004	
1159.4	0.828724	5.469578	2.142191	0.9	0.9	37.59545	461.4807	323465.5	
1159.6	0.829133	5.472277	2.023132	0.8997	0.899973	35.5049	438.6021	323904.1	
1159.8	0.829537	5.474942	1.864479	0.889812	0.899083	32.68828	409.159	324313.3	
1160	0.829936	5.477576	1.481818	0.863096	0.896679	25.90993	351.5893	324664.9	
1160.2	0.83033	5.480178	1.291588	0.839063	0.894516	22.52923	290.635	324955.5	
1160.4	0.83072	5.482751	1.217771	0.829737	0.893676	21.22171	262.5057	325218	
1160.6	0.831105	5.485296	1.164247	0.822975	0.893068	20.27515	248.9812	325467	
1160.8	0.831487	5.487813	1.121278	0.817547	0.892579	19.51618	238.748	325705.7	
1161	0.831864	5.490303	1.085051	0.81297	0.892167	18.87692	230.3586	325936.1	
1161.2	0.832237	5.492767	1.053595	0.808996	0.89181	18.32232	223.1954	326159.3	
1161.4	0.832607	5.495206	1.025734	0.805476	0.891493	17.83147	216.9227	326376.2	
1161.6	0.832973	5.49762	1.000701	0.802313	0.891208	17.39074	211.3333	326587.6	
1161.8	0.833335	5.500012	0.97796	0.797315	0.890758	16.98696	206.2662	326793.8	
1162	0.833694	5.50238	0.957123	0.792674	0.890341	16.61723	201.6252	326995.4	
1162.2	0.834049	5.504726	0.937896	0.788391	0.889955	16.27637	197.3616	327192.8	
1162.4	0.834402	5.507051	0.92005	0.784416	0.889597	15.96025	193.4197	327386.2	
1162.6	0.834751	5.509355	0.903404	0.780708	0.889264	15.66561	189.7552	327576	
1162.8	0.835097	5.511638	0.887812	0.777235	0.888951	15.38982	186.3326	327762.3	
1163	0.83544	5.513902	0.873153	0.773969	0.888657	15.1307	183.1231	327945.4	
1163.2	0.83578	5.516146	0.859326	0.770889	0.88838	14.88645	180.1029	328125.5	
1163.4	0.836117	5.518372	0.846246	0.767976	0.888118	14.65554	177.252	328302.8	
1163.6	0.836451	5.52058	0.833842	0.765213	0.887869	14.43668	174.5533	328477.3	
1163.8	0.836783	5.522769	0.822051	0.762586	0.887633	14.22875	171.9926	328649.3	
1164	0.837112	5.524941	0.810819	0.760084	0.887408	14.03078	169.5572	328818.9	
1164.2	0.837439	5.527097	0.8001	0.757697	0.887193	13.84194	167.2364	328986.1	
1164.4	0.837763	5.529235	0.789852	0.753515	0.886816	13.65885	165.0048	329151.1	
1164.6	0.838085	5.531358	0.780039	0.749492	0.886454	13.48365	162.855	329314	
1164.8	0.838404	5.533465	0.770629	0.745635	0.886107	13.31576	160.7965	329474.8	
1165	0.838721	5.535556	0.761591	0.74193	0.885774	13.15465	158.8225	329633.6	
1165.2	0.839035	5.537632	0.752902	0.738368	0.885453	12.99985	156.927	329790.5	
1165.4	0.839348	5.539694	0.744536	0.734939	0.885145	12.85093	155.1047	329945.6	
1165.6	0.839658	5.541741	0.736474	0.731634	0.884847	12.7075	153.3506	330099	
1165.8	0.839966	5.543774	0.728696	0.728446	0.88456	12.56922	151.6603	330250.7	
1166	0.840272	5.545793	0.721184	0.725367	0.884283	12.43575	150.0298	330400.7	12.4 CFS
1166.2	0.840576	5.547799	0.713924	0.722391	0.884015	12.30683	148.4555	330549.1	330,475 FT3
1166.4	0.840877	5.549791	0.7069	0.719511	0.883756	12.18217	146.934	330696.1	
1166.6	0.841177	5.551771	0.700099	0.716724	0.883505	12.06155	145.4623	330841.5	
1166.8	0.841475	5.553738	0.693509	0.714022	0.883262	11.94472	144.0376	330985.6	
1167	0.841772	5.555692	0.687118	0.711403	0.883026	11.8315	142.6573	331128.2	
1167.2	0.842066	5.557634	0.680917	0.708861	0.882797	11.72168	141.3191	331269.5	
1167.4	0.842358	5.559564	0.674896	0.706393	0.882575	11.6151	140.0207	331409.6	
1167.6	0.842649	5.561483	0.669045	0.703994	0.882359	11.51159	138.7601	331548.3	

1166.1 MIN.

APPENDIX D

HYDROLOGY MAP



SUBAREA DATA SUMMARY

SUBAREA	AREA (ACRES)	LENGTH (FEET)	SLOPE	Tc25 (MINUTES)	Q25 (CFS)	Tc50 (MINUTES)	Q50 (CFS)
1A	4.70	1420	0.007	15.0	8.7	13.0	10.6
10B	12.70	1760	0.009	16.0	22.2	15.0	26.2
20C	7.50	1260	0.010	13.0	14.6	12.0	17.3

LEGEND

- PROJECT BOUNDARY
- SUBAREA BOUNDARY
- FLOW PATH
- FLOW ARROW
- 1.00 AC. — SUBAREA AREA
- 1A — SUBAREA NUMBER

0 30 60 120 180

SCALE: 1"=60'

Last Update:11/26/19
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CITY OF IRWINDALE
PUBLIC WORKS DEPARTMENT

EXISTING CONDITION HYDROLOGY MAP

DUKE WAREHOUSE AT 13131 LOS ANGELES STREET

3665/1 OF 1 SHEET

PREPARED FOR:

DUKE REALTY 13131 LA STREET, LP
200 SPECTRUM CENTER, DRIVE STE 1600
IRVINE, CA 92618
PHONE: (949) 797-7038

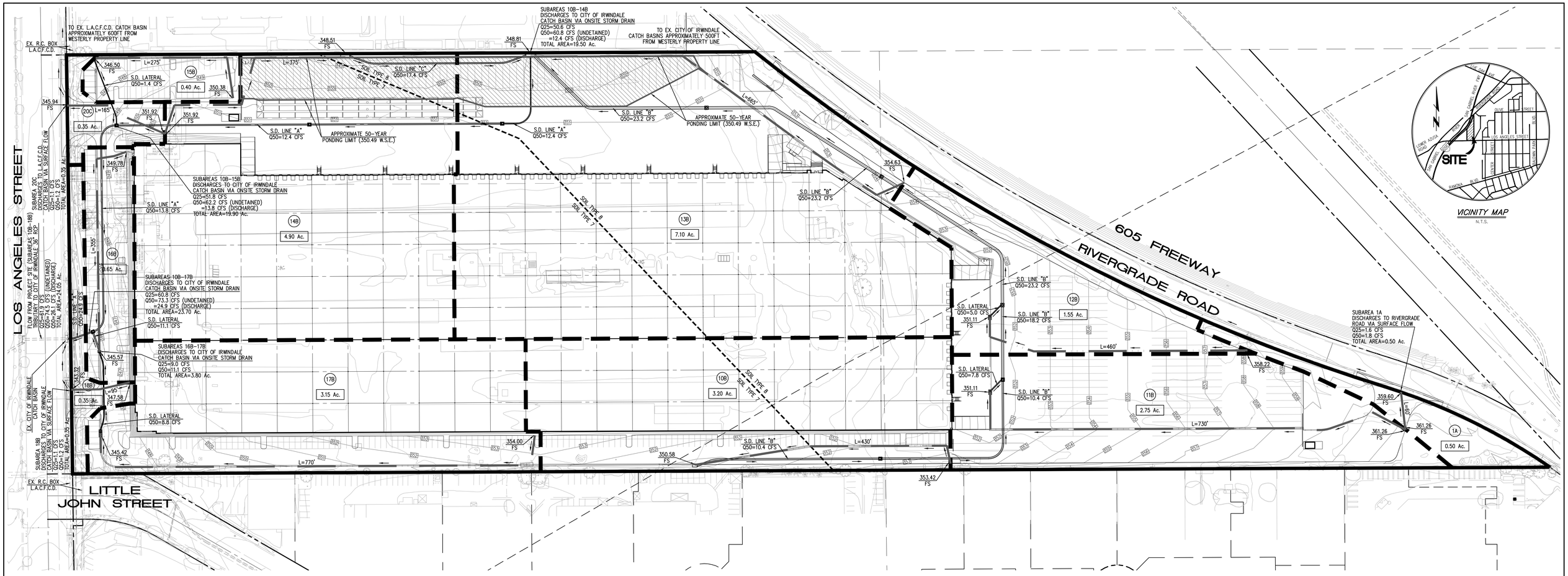
Thienes Engineering, Inc.
CIVIL ENGINEERING • LAND SURVEYING
14349 FIRESTONE BOULEVARD
LA MIRADA, CALIFORNIA 90638
PH.(714)521-4811 FAX(714)521-4173

Designed by _____ Date _____
Checked by _____ Date _____
Designed by _____ Date _____
Checked by _____ Date _____

Approved by _____ Date _____

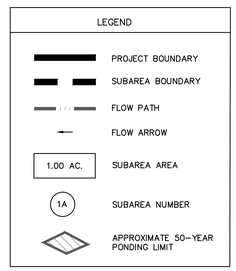
Public Works Director _____ R.C.E. XXXXX

Sheet 1 of 1 Sheets



SUBAREA DATA SUMMARY

SUBAREA	AREA (ACRES)	LENGTH (FEET)	SLOPE	Tc25 (MINUTES)	Q25 (CFS)	Tc50 (MINUTES)	Q50 (CFS)
1A	0.50	60	0.028	5.0	1.6	5.0	1.8
10B	3.20	430	0.007	7.0	8.5	6.0	10.4
11B	2.75	730	0.014	8.0	6.9	8.0	7.8
12B	1.55	460	0.015	6.0	4.4	6.0	5.0
13B	7.10	665	0.009	9.0	16.8	8.0	20.2
14B	4.90	375	0.009	6.0	14.0	5.0	17.4
15B	0.40	275	0.014	5.0	1.2	5.0	1.4
16B	0.65	355	0.012	6.0	1.8	5.0	2.3
17B	3.15	770	0.011	9.0	7.2	8.0	8.8
18B	0.35	95	0.045	5.0	1.1	5.0	1.2
20C	0.35	195	0.036	5.0	1.1	5.0	1.2



Last Update: 11/26/19
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CITY OF IRWINDALE
PUBLIC WORKS DEPARTMENT

PROPOSED CONDITION HYDROLOGY MAP
DUKE WAREHOUSE AT 13131 LOS ANGELES STREET

PREPARED FOR:
DUKE REALTY 13131 LA STREET, LP
200 SPECTRUM CENTER, DRIVE STE 1600
IRVINE, CA 92618
PHONE: (949) 797-7038

Thienes Engineering, Inc.
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14349 FIRESTONE BOULEVARD
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Designed by _____ Date _____
Checked by _____ Date _____
Designed by _____ Date _____
Checked by _____ Date _____

Approved by _____ Date _____
Public Works Director _____ R.C.E. XXXXX
Sheet 1 of 1 Sheets

3665/1 OF 1 SHEET