HYDROLOGY STUDY

For

TAMARISK & HUERTA
VICTORVILLE, CA

MONK CAPITAL GROUP

December 2, 2021

Prepared by:

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SECTION 1

DISCUSSION

INTRODUCTION

The purpose of this study was to determine the impact, if any, of the 100-year storm runoff flow tributary to the project site as delineated on the map contained in this study. The project site encompasses approximately 10 acres of residential property located on the west side of Tamarisk Road between Pahute Avenue and Huerta Street.in the City of Victorville, County of San Bernardino. Future development of the site will be a residential subdivision.

METHODOLOGY

The method in determining these peak runoff flows was the rational method as specified in the 1986 San Bernardino County Hydrology Manual and the 2010 San Bernardino County Hydrology Manual Addendum for Arid Regions. The existing offsite flow was examined and delineated from U.S.G.S. Map: Hesperia and an examination of the project site. As the project site is located immediately east of Endeavor School of Exploration and between two existing, improved streets, the tributary watershed area is minimal and limited to the athletic areas of the adjacent school. Runoff from the existing athletic area outlets onto the property at approximately 100' intervals through 4" PVC pipes. As the 100-year offsite runoff is approximately 12 cubic feet per second (cfs), the runoff will be approximately 1.5 cfs at each pipe location.

Point rainfalls for the 100-year storm were obtained from the NOAA Atlas 14 per the 2010 Addendum to the County Hydrology Manual. The 100-year 1-hour point rainfall for the site is 1.2". Per the aforementioned addendum, AMC II was used for the project site and the soil types were determined to be Soil Type C in the watershed per the Natural Resources Conservation Service's "Web Soil Survey". Rainfall and soils maps are included as exhibits in Section 3 of this report.

The offsite (athletic area) and onsite tributary areas examined in this study are shown in Table A.

Table A

Sub-area	Elevation Difference (ft.)	Length (ft)	Area (Acres)	Avg. Slope (ft/ft)
Node 11–12 Offsite	25.0	690	3.5	0.0362
Node 21 – 22 Onsite Undeveloped	30.1	933	10.0	0.0323
Node 111–112 Onsite Developed	26.9	995	10.0	0.0271

EXISTING CONDITIONS

The site is located along the west side of Tamarisk Road and bordered by Pahute Avenue to the north, Huerta Street to the south and Endeavor School of Exploration to the west. The property is currently a vacant, 10-acre parcel. Tamarisk Road, Pahute Avenue, and Huerta Street are all improved, paved streets. From our investigation it was determined that the offsite tributary area is limited to the athletic areas of the adjacent Endeavor School of Exploration. This offsite flow enters the property as minimal 1.5 cfs flows at eight locations along the western boundary of the project.

The results of the offsite and onsite flow analysis are summarized in Table B.

Table B

Sub-Area	Q_{100} (cfs)
Node 11 – 12 Offsite	11.4
Node 21 – 22 Onsite Undeveloped	24.8
Node 221 – 222 Onsite Developed	29.6

CONCLUSIONS AND RECOMMENDATIONS

During our field investigation of the site, we observed the existing conditions as stated previously. Development of the project is being performed in conjunction with engineered improvement plans. An onsite storm runoff flows will be conveyed through

the proposed project as street flows within the improved paved streets, curbs, and gutters. The runoff flows will be captured within a designed retention basin at the downstream end of the street system and infiltrated into the ground.

The basin shall be designed to capture the increased storm runoff volume due to the development of the project and to mitigate the Design Capture Volume (DCV) from the street runoff in the Water Quality Management Plan (WQMP). This increased storm runoff volume was calculated using the San Bernardino Small-Area Hydrograph method as outlined in the San Bernardino County Hydrology Manual and the DCV was calculated from the preliminary WQMP for the project.

SECTION 2

EXHIBITS

VICINITY MAP


Monk Capital Group
Vicinity Map
Legend
Monk Project Site
PROJECT SITE
Ridgecrest Rd
Garden Glen Rd
Sunburst Rd
Pahute Ave
Pahute Ave
Tamarisk Rd
Industrial Blvd
Huerta Rd
Huerta St
Huerta St
Ridgecrest Rd
Lindero St
Rudder Rd
Francesca Rd
Francesca Rd
Tamarisk Rd
Bear Valley Rd
Bear Valley Rd
Bear Valley Rd
Google Earth
N
1000 ft

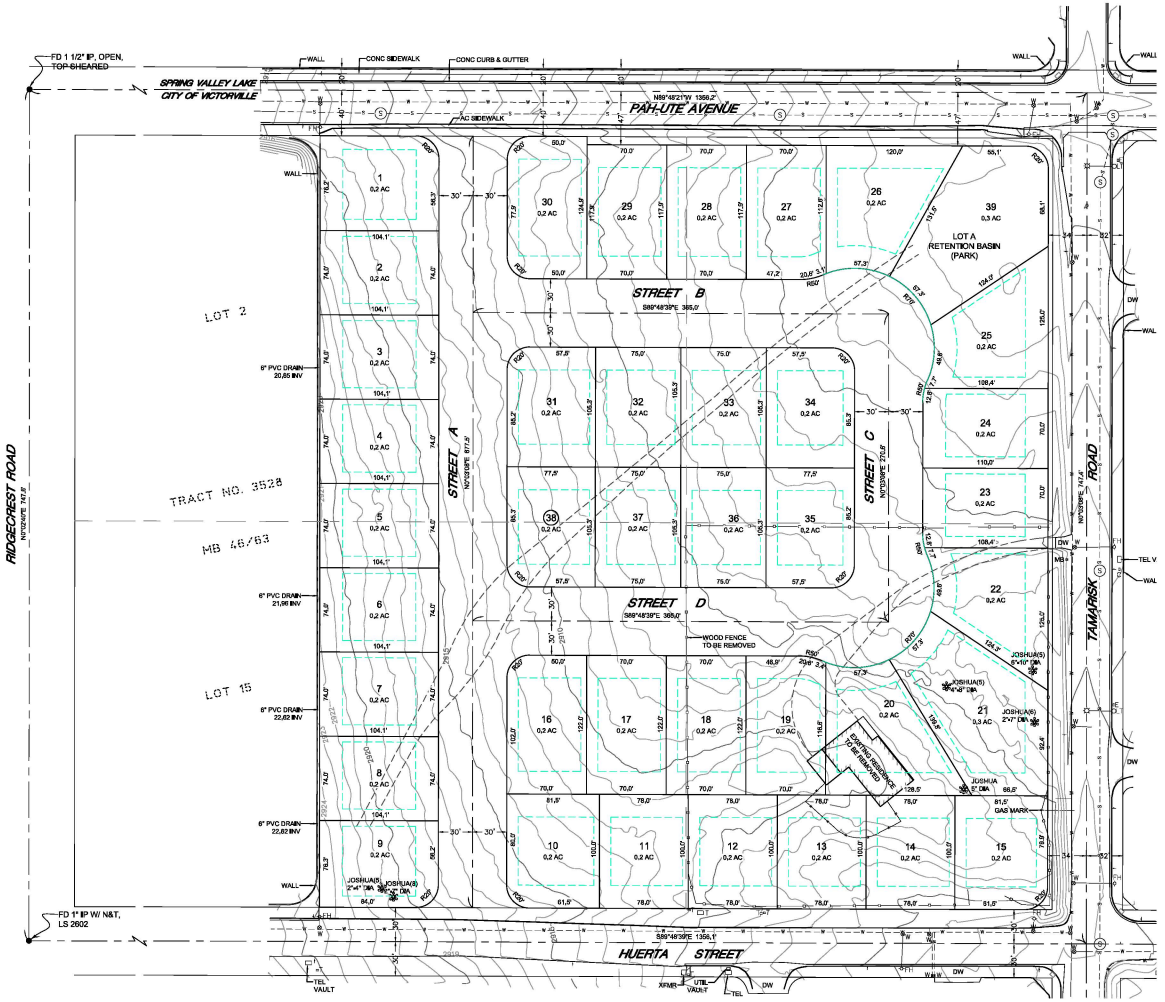
PROPOSED DEVELOPMENT PLAN

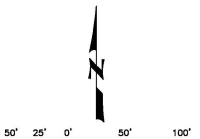
IN THE CITY OF VICTORVILLE

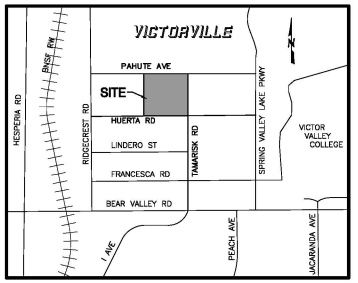
TENTATIVE TRACT MAP NO. 20489

BEING A SUBDIVISION OF LOTS 3, 4, 13, & 14 OF TRACT NO. 3528, MB 46/63, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA

MERRELL JOHNSON COMPANIES — NOVEMBER 2021



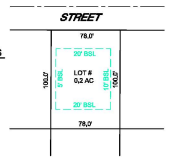




VICINITY MAP
N.T.S.

BUILDING SETBACKS

FRONT:	20'
STREET-SIDE:	10'
STREET-INTERIOR:	5'/10'
REAR:	20'



NOTES:

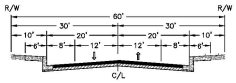
1. THERE ARE 11.8 GROSS ACRES TO THIS LAND DIVISION.
2. THERE ARE 38 NUMBERED LOTS AND 1 LETTERED LOT TO THIS MAP.
3. EXISTING ZONING: R-1 (7,200)
   PROPOSED ZONING: R-1 (7,200)
4. PARCELS ARE FOR PURPOSE OF LAND SALES.
5. THERE ARE +/-1678 FT OF NEW STREETS ON THIS MAP.
6. THE AVERAGE SLOPE OF ALL FEASIBLE ACCESS ROUTES AND BUILDING SITES DOES NOT EXCEED (15%.)
7. THERE IS NO GRADING PROPOSED.
8. THERE ARE NO WATER COURSES TRAVERSING THE PROPERTY OTHER THAN SHOWN ON THIS MAP.
9. THERE ARE NO PROTECTED OR ENDANGERED TREES EXISTING ON THIS SITE OTHER THAN SHOWN ON THIS MAP.

LEGAL DESCRIPTION

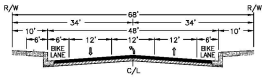
THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF VICTORVILLE, IN THE COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

LOTS 3, 4, 13 AND 14 OF TRACT NO. 3528, TAMARISK TREE SUBDIVISION, IN THE CITY OF VICTORVILLE, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, AS PER PLAT THEREOF RECORDED IN BOOK 46, PAGE 63 OF MAPS, RECORDS OF SAN BERNARDINO COUNTY.

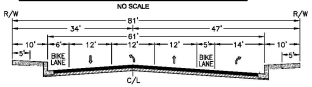
APN: 0482-031-01, 02, 07 & 08



TYPICAL SECTION - STREETS A, B, & C
NO SCALE



TYPICAL SECTION - PAHUTE RD & TAMARISK RD
NO SCALE



TYPICAL SECTION - INTX PAHUTE/TAMARISK
NO SCALE

TRACT MAP NO. 20489

APN: 0482-031-01, 02, 07 & 08

OWNER/APPLICANT:
MONK CAPITAL GROUP, LLC
FAHIM MEMON
9779 KATELLA AVE., SUITE 211
ANAHEIM, CA 92804
(818) 519-3112

PREPARED BY:
MERRELL JOHNSON COMPANIES
22221 HIGHWAY 18
APPLE VALLEY, CA 92307
(760) 240-8000

MAP PREPARATION DATE: NOVEMBER 19, 2021

UTILITY PURVEYORS:

ELECTRIC: SOUTHERN CALIFORNIA EDISON COMPANY, 12353 HESPERIA ROAD, VICTORVILLE, CALIFORNIA 92395, (760) 951-4190

GAS: SOUTHWEST GAS, 13471 MARIPOSA ROAD, VICTORVILLE, CALIFORNIA 92392, (760) 951-4055

WATER: CITY OF VICTORVILLE, 14343 CIVIC DRIVE • P.O. BOX 5001, VICTORVILLE, CALIFORNIA 92393-5001, (760) 955-5097

SEWER: CITY OF VICTORVILLE, 14343 CIVIC DRIVE • P.O. BOX 5001, VICTORVILLE, CALIFORNIA 92393-5001, (760) 955-5097

TELEPHONE: FRONTIER COMMUNICATIONS, 9 SOUTH 4TH STREET, REDLANDS, CALIFORNIA 92373, (909) 748-6040

CABLE: CHARTER SPECTRUM, 12490 BUSINESS CENTER DR, VICTORVILLE, CALIFORNIA 92395, (760) 843-0300

EASEMENTS

(4) AN EASEMENT FOR ELECTRIC POLE LINES OR UNDERGROUND CONDUITS FOR THE TRANSMISSION OF ELECTRIC ENERGY AND INCIDENTAL PURPOSES, RECORDED JULY 13, 1950 AS BOOK 2605, PAGE 401 OF OFFICIAL RECORDS, IN FAVOR OF: CALIFORNIA ELECTRIC POWER COMPANY, AFFECTS: AS DESCRIBED THEREIN

(5) THE FACT THAT THE LAND LIES WITHIN THE BOUNDARIES OF THE VICTOR VALLEY REDEVELOPMENT PROJECT AREA, AS DISCLOSED BY THE DOCUMENT RECORDED AUGUST 22, 2005 AS INSTRUMENT NO. 2005-0619845 OF OFFICIAL RECORDS,

DOCUMENT(S) DECLARING MODIFICATIONS THEREOF RECORDED DECEMBER 29, 2006 AS INSTRUMENT NO. 2006-0892250 OF OFFICIAL RECORDS,

LEGEND

BSL	INDICATES BUILDING SETBACK LINE
CONC	INDICATES CONCRETE
DW	INDICATES DRIVEWAY
E	INDICATES ELECTRIC BOX
FH	INDICATES FIRE HYDRANT
LT	INDICATES LIGHT STANDARD
	INDICATES SIGN
S	INDICATES SEWER MANHOLE
T	INDICATES TELEPHONE BOX
W	INDICATES WATER METER
	INDICATES WATER VALVE
	INDICATES JOSHUA TREE
2920	INDICATES EXISTING CONTOUR
	INDICATES PROPERTY LINE

BENCHMARK

CITY OF HESPERIA BENCHMARK "H-M", LOCATED AT THE SW CORNER, INTERSECTION JACARANDA AVE & OUTER BEAR VALLEY RD SOUTH, ELEV.=2867.68

BASIS OF BEARINGS

TAKEN FROM THE CENTERLINE OF RIDGECREST ROAD AS SHOWN ON RECORD OF SURVEY 103/67 BEING: N0°02'40"E

REGISTERED PROFESSIONAL ENGINEER E. CARY PACKER No. C-51752 CIVIL STATE OF CALIFORNIA

E. CARY PACKER R.C.E. 51752

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TENTATIVE
TRACT MAP NO. 20489

APN 0482-031-01, 02, 07 & 08
VICTORVILLE, CALIFORNIA

FOR:
MONK CAPITAL GROUP

DRAWN BY: MM
DATE: 11/19/21

JOB NO. 3785.001

SHEET 1 OF 1

Version: 2 December 2021 - C:\Users\Vmoon\Appdata\Local\Temp\AcPublish_23632\NV 20489 - TM 20489 - Merrell Johnson Companies

SECTION 3

HYDROLOGY CALCULATIONS

RATIONAL CALCULATIONS – Q_{100}

OFFSITE RATIONAL CALCULATIONS

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2004 Version 7.0
Rational Hydrology Study Date: 10/14/21

MONK CAPITAL GROUP
OFF-SITE TRIBUTARY RUNOFF FLOW
NODES 11 - NODE 12
100-YEAR STORM EVENT - AMC II

MERRELL JOHNSON ENGINEERING
22221 HIGHWAY 18
APPLE VALLEY, CA 92397
(760) 240-8000 * FAX (760) 240-1400

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.200 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 11.000 to Point/Station 12.000
**** INITIAL AREA EVALUATION ****

SCHOOL subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.329(In/Hr)
Initial subarea data:
Initial area flow distance = 690.000(Ft.)
Top (of initial area) elevation = 2946.000(Ft.)
Bottom (of initial area) elevation = 2921.000(Ft.)
Difference in elevation = 25.000(Ft.)
Slope = 0.03623 s(%)= 3.62
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.930 min. T_c
Rainfall intensity = 3.952(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.825
Subarea runoff = 11.414(CFS) Q_{100}
Total initial stream area = 3.500(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.329(In/Hr)
End of computations, Total Study Area = 3.50 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.600
Area averaged SCS curve number = 69.0

ONSITE RATIONAL CALCULATIONS

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2004 Version 7.0
Rational Hydrology Study Date: 10/15/21

MONK CAPITAL GROUP
ON SITE TRIBUTARY RUNOFF FLOWS
NODE 21 - NODE 22
100-YEAR STORM EVENT - AMC II

MERRELL JOHNSON ENGINEERING
22221 HIGHWAY 18
APPLE VALLEY, CA 92307
(760) 240-8000 * FAX (760) 240-1400

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.200 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 21.000 to Point/Station 22.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.265(In/Hr)
Initial subarea data:
Initial area flow distance = 933.000(Ft.)
Top (of initial area) elevation = 2924.740(Ft.)
Bottom (of initial area) elevation = 2894.630(Ft.)
Difference in elevation = 30.110(Ft.)
Slope = 0.03227 s(%)= 3.23
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 16.082 min. T_c
Rainfall intensity = 3.016(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.821
Subarea runoff = 24.759(CFS) Q_{100}
Total initial stream area = 10.000(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.265(In/Hr)
End of computations, Total Study Area = 10.00 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number = 86.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2004 Version 7.0
Rational Hydrology Study Date: 10/15/21

MONK CAPITAL GROUP
ON-SITE DEVELOPED RUNOFF FLOWS
NODE 221 - NODE 222
100-YEAR STORM EVENT - AMC II

MERRELL JOHNSON ENGINEERING
22221 HIGHWAY 18
APPLE VALLEY, CA 92307
(760) 240-8000 * FAX (760) 240-1400

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

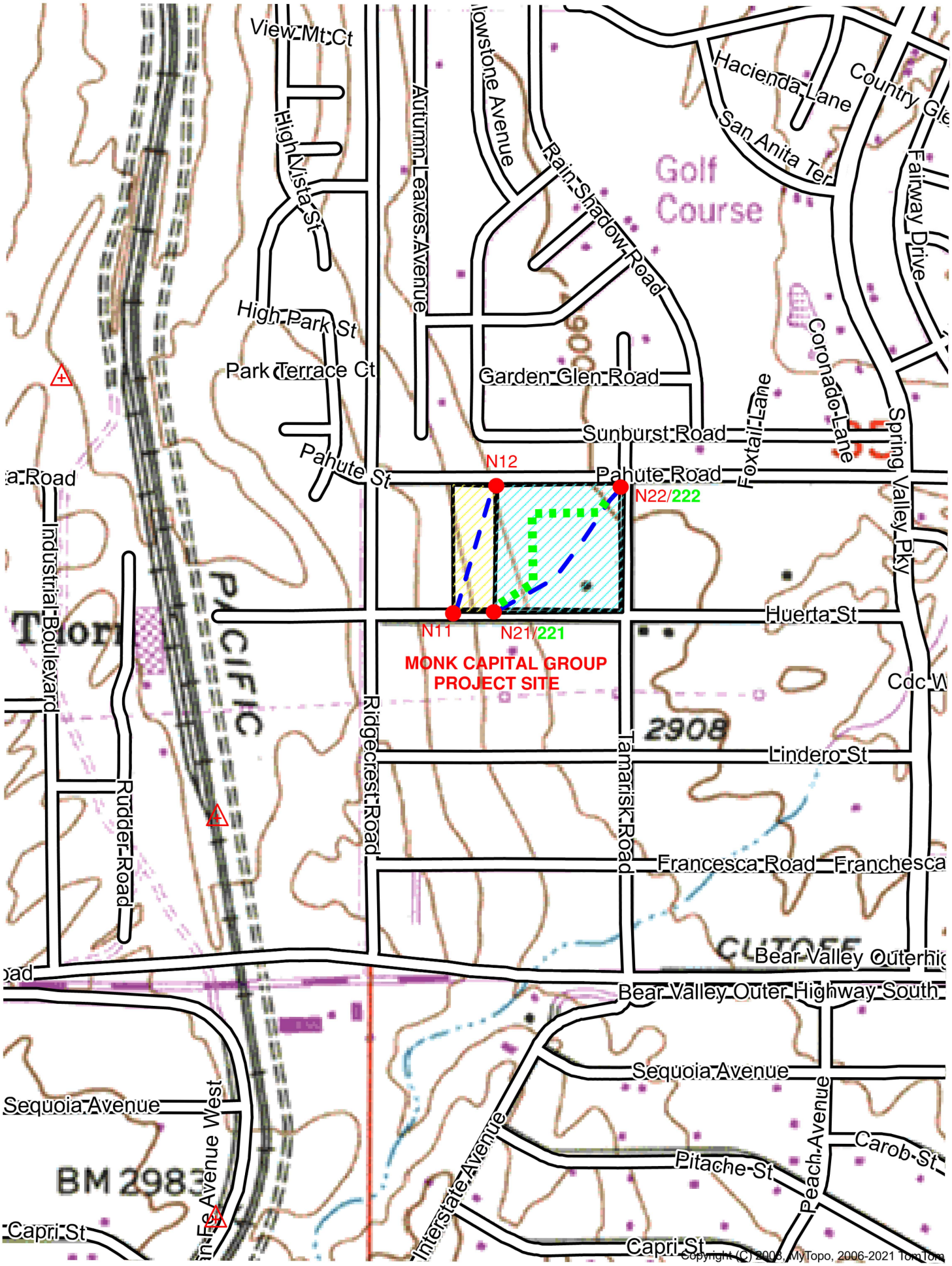
Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.200 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 221.000 to Point/Station 222.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.5000 Max loss rate(Fm)= 0.274(In/Hr)
Initial subarea data:
Initial area flow distance = 995.000(Ft.)
Top (of initial area) elevation = 2924.740(Ft.)
Bottom (of initial area) elevation = 2897.800(Ft.)
Difference in elevation = 26.940(Ft.)
Slope = 0.02708 s(%)= 2.71
TC = k(0.389)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.664 min. T_c
Rainfall intensity = 3.565(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.831
Subarea runoff = 29.622(CFS) Q_{100}
Total initial stream area = 10.000(Ac.)
Pervious area fraction = 0.500
Initial area Fm value = 0.274(In/Hr)
End of computations, Total Study Area = 10.00 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

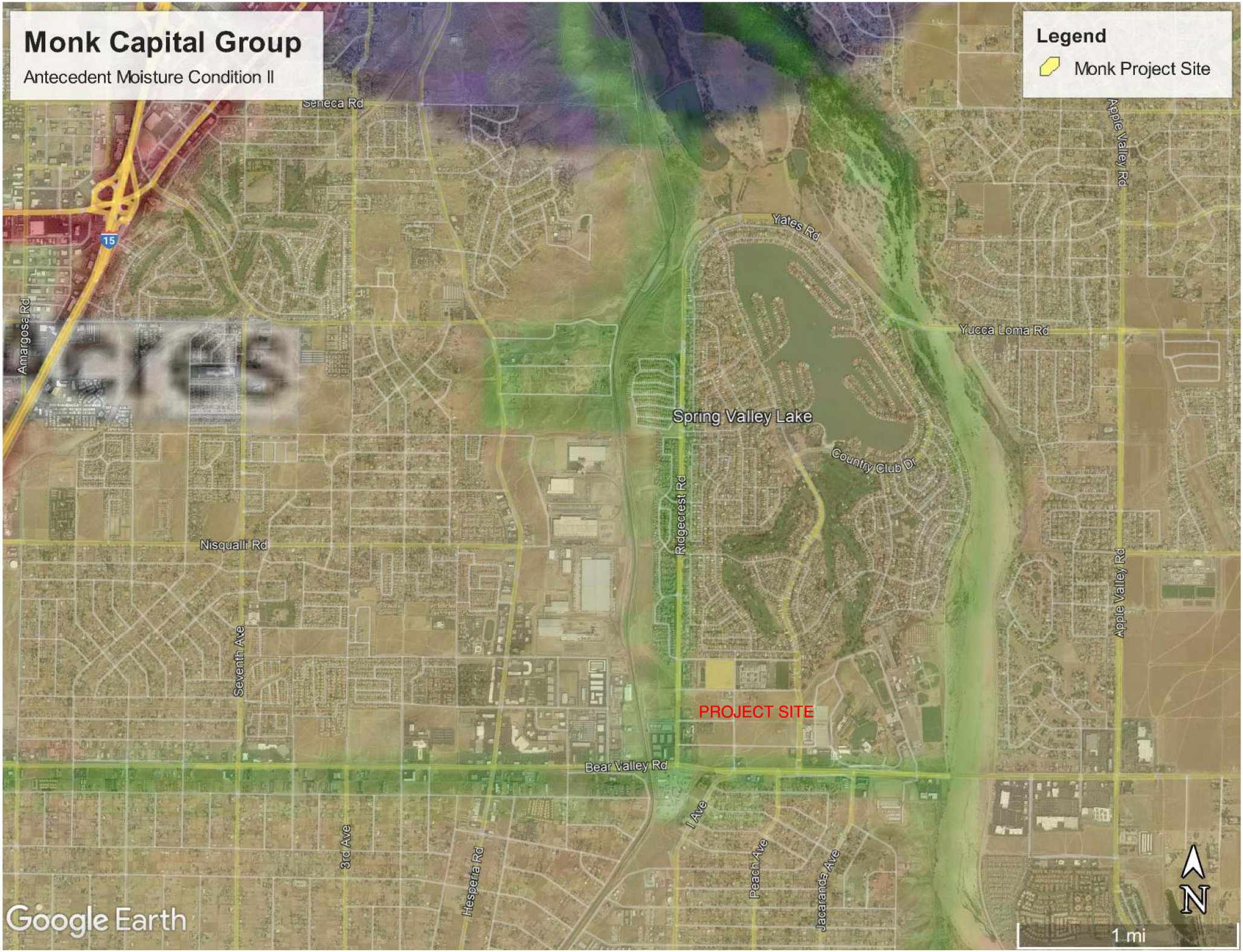
Area averaged pervious area fraction(Ap) = 0.500
Area averaged SCS curve number = 69.0

TRIBUTARY DRAINAGE MAP


View Mt Ct
High Vista St
Autumn Leaves Avenue
Yellowstone Avenue
Hacienda Lane
Country Gle
San Anita Ter
Fairway Drive
Golf Course
Rain Shadow Road
High Park St
Park Terrace Ct
Garden Glen Road
Coronado Lane
Foxtail Lane
Spring Valley Pky
Sunburst Road
Pahute St
Pahute Road
N12
N22/222
N11
N21/221
MONK CAPITAL GROUP
PROJECT SITE
Huerta St
Industrial Boulevard
Rudder Road
Ridgecrest Road
Tamarisk Road
2908
Lindero St
Francesca Road
Franchesca
Bear Valley Outer Highway South
Sequoia Avenue
Interstate Avenue
Peach Avenue
Carob St
Pitache St
Capri St
BM 2983
Copyright (C) 2008 MyTopo, 2006-2021 TomTom

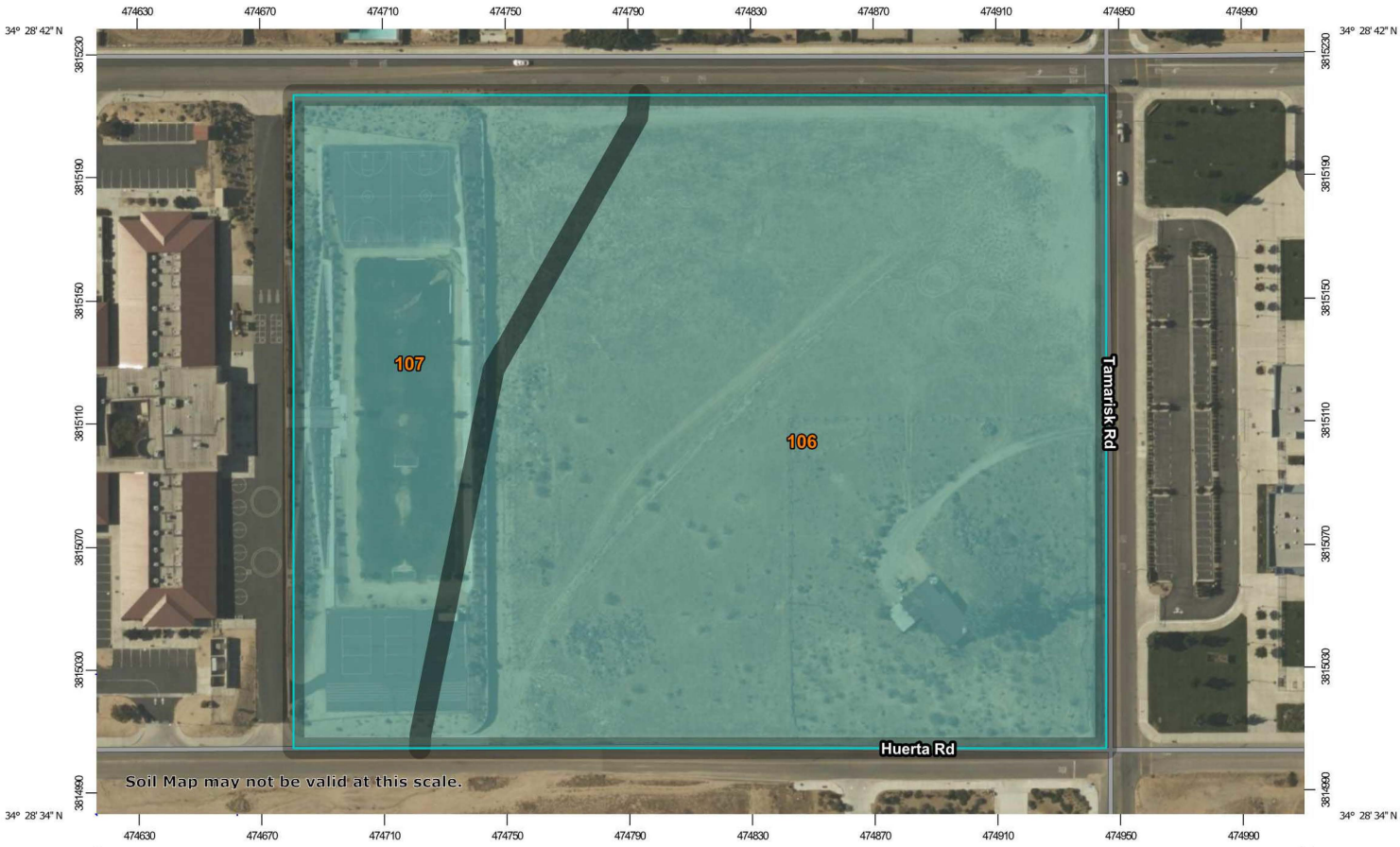
2010 ANTECEDENT MOISTURE CONDITION (AMC) MAP


Figure ADD-1
Antecedent Moisture Condition (AMC)
5-day Rainfall - NOAA Atlas 14
(50% of Total Rainfall Prior to Peak)*
*1/2 (11-day - 1-day) =
1/2 ([10-day] + (1/10 ([20-day] - [10-day])) - [1-day])
5 0 5 10 15
Miles
Growing Season
AMC I
AMC II
AMC III
SOUTH HWY 127
US HWY 283
I-40
STATE HWY 152
STATE HWY 62


Monk Capital Group
Antecedent Moisture Condition II
Legend
Monk Project Site
Seneca Rd
Apple Valley Rd
Yates Rd
15
Amargosa Rd
Yucca Loma Rd
Spring Valley Lake
Country Club Dr
Ridgecrest Rd
Nisqualli Rd
Seventh Ave
Apple Valley Rd
PROJECT SITE
Bear Valley Rd
I Ave
3rd Ave
Hesperia Rd
Peach Ave
Jacaranda Ave
N
Google Earth
1 mi

SOILS MAP

Hydrologic Soil Group—San Bernardino County, California, Mojave River Area



Map Scale: 1:1,800 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Bernardino County, California, Mojave River Area
Survey Area Data: Version 13, Sep 13, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 26, 2019—Jul 8, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
106	BRYMAN LOAMY FINE SAND, 2 TO 5 PERCENT SLOPES	C	10.3	74.0%
107	BRYMAN LOAMY FINE SAND, 5 TO 9 PERCENT SLOPES	C	3.6	26.0%
Totals for Area of Interest			**14.0**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

NOAA ATLAS 14 POINT RAINFALLS

NOAA Atlas 14, Volume 6, Version 2
Location name: Victorville, California, USA*
Latitude: 34.4773°, Longitude: -117.2745°
Elevation: 2919.95 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.086 (0.071-0.105)	0.121 (0.100-0.148)	0.168 (0.139-0.207)	0.209 (0.171-0.259)	0.268 (0.212-0.343)	0.315 (0.244-0.412)	0.366 (0.276-0.490)	0.421 (0.309-0.579)	0.498 (0.351-0.715)	0.562 (0.383-0.834)
10-min	0.123 (0.102-0.151)	0.173 (0.143-0.212)	0.241 (0.199-0.296)	0.300 (0.245-0.371)	0.384 (0.303-0.491)	0.452 (0.350-0.591)	0.525 (0.396-0.702)	0.603 (0.443-0.830)	0.715 (0.503-1.02)	0.806 (0.548-1.20)
15-min	0.149 (0.123-0.182)	0.209 (0.173-0.256)	0.292 (0.240-0.358)	0.363 (0.296-0.449)	0.464 (0.367-0.594)	0.547 (0.423-0.714)	0.635 (0.479-0.849)	0.729 (0.535-1.00)	0.864 (0.609-1.24)	0.974 (0.663-1.45)
30-min	0.205 (0.169-0.251)	0.287 (0.237-0.351)	0.401 (0.330-0.492)	0.498 (0.407-0.617)	0.638 (0.504-0.816)	0.751 (0.581-0.981)	0.872 (0.658-1.17)	1.00 (0.735-1.38)	1.19 (0.836-1.70)	1.34 (0.911-1.99)
60-min	0.253 (0.209-0.310)	0.355 (0.293-0.434)	0.496 (0.408-0.608)	0.616 (0.502-0.762)	0.788 (0.622-1.01)	0.928 (0.718-1.21)	1.08 (0.813-1.44)	1.24 (0.908-1.70)	1.47 (1.03-2.10)	1.65 (1.13-2.45)
2-hr	0.359 (0.297-0.439)	0.484 (0.399-0.593)	0.656 (0.540-0.806)	0.803 (0.656-0.994)	1.01 (0.800-1.30)	1.18 (0.915-1.55)	1.36 (1.03-1.82)	1.55 (1.14-2.14)	1.83 (1.29-2.62)	2.05 (1.39-3.04)
3-hr	0.437 (0.361-0.534)	0.581 (0.480-0.712)	0.780 (0.642-0.957)	0.949 (0.774-1.17)	1.19 (0.939-1.52)	1.38 (1.07-1.81)	1.59 (1.20-2.13)	1.81 (1.33-2.49)	2.11 (1.49-3.03)	2.36 (1.61-3.51)
6-hr	0.599 (0.495-0.732)	0.789 (0.651-0.966)	1.05 (0.863-1.29)	1.27 (1.04-1.57)	1.58 (1.25-2.02)	1.83 (1.41-2.39)	2.09 (1.58-2.80)	2.37 (1.74-3.26)	2.76 (1.94-3.96)	3.07 (2.09-4.56)
12-hr	0.771 (0.637-0.942)	1.03 (0.848-1.26)	1.38 (1.13-1.69)	1.67 (1.36-2.06)	2.07 (1.64-2.65)	2.39 (1.85-3.13)	2.73 (2.06-3.65)	3.08 (2.26-4.24)	3.58 (2.52-5.13)	3.97 (2.70-5.89)
24-hr	1.02 (0.901-1.17)	1.38 (1.22-1.59)	1.87 (1.65-2.16)	2.27 (1.99-2.65)	2.84 (2.40-3.41)	3.28 (2.72-4.03)	3.73 (3.03-4.70)	4.21 (3.32-5.46)	4.88 (3.69-6.59)	5.41 (3.95-7.55)
2-day	1.18 (1.05-1.36)	1.63 (1.44-1.87)	2.22 (1.96-2.57)	2.72 (2.38-3.17)	3.41 (2.89-4.10)	3.94 (3.27-4.85)	4.50 (3.65-5.67)	5.09 (4.01-6.59)	5.90 (4.46-7.96)	6.54 (4.78-9.14)
3-day	1.28 (1.14-1.47)	1.78 (1.58-2.05)	2.45 (2.16-2.83)	3.00 (2.63-3.50)	3.77 (3.19-4.54)	4.37 (3.63-5.37)	4.99 (4.05-6.29)	5.65 (4.45-7.32)	6.56 (4.96-8.86)	7.29 (5.32-10.2)
4-day	1.36 (1.21-1.57)	1.90 (1.68-2.19)	2.62 (2.31-3.02)	3.21 (2.81-3.74)	4.03 (3.42-4.85)	4.68 (3.88-5.75)	5.34 (4.33-6.73)	6.05 (4.76-7.83)	7.02 (5.31-9.47)	7.79 (5.69-10.9)
7-day	1.48 (1.31-1.70)	2.05 (1.81-2.36)	2.81 (2.48-3.25)	3.45 (3.02-4.01)	4.33 (3.67-5.21)	5.01 (4.16-6.16)	5.73 (4.64-7.21)	6.47 (5.10-8.38)	7.51 (5.68-10.1)	8.33 (6.08-11.6)
10-day	1.56 (1.39-1.80)	2.16 (1.91-2.49)	2.96 (2.61-3.42)	3.63 (3.18-4.22)	4.55 (3.86-5.48)	5.28 (4.38-6.49)	6.03 (4.89-7.60)	6.82 (5.37-8.83)	7.92 (5.99-10.7)	8.78 (6.42-12.3)
20-day	1.80 (1.59-2.07)	2.49 (2.21-2.87)	3.44 (3.04-3.98)	4.24 (3.71-4.93)	5.35 (4.54-6.45)	6.24 (5.18-7.67)	7.16 (5.80-9.01)	8.12 (6.40-10.5)	9.46 (7.15-12.8)	10.5 (7.68-14.7)
30-day	2.04 (1.81-2.34)	2.84 (2.51-3.27)	3.94 (3.48-4.55)	4.87 (4.27-5.67)	6.19 (5.25-7.46)	7.25 (6.02-8.91)	8.35 (6.76-10.5)	9.51 (7.49-12.3)	11.1 (8.41-15.0)	12.4 (9.06-17.3)
45-day	2.40 (2.13-2.76)	3.34 (2.96-3.85)	4.66 (4.12-5.38)	5.79 (5.07-6.74)	7.42 (6.28-8.93)	8.73 (7.25-10.7)	10.1 (8.19-12.7)	11.6 (9.12-15.0)	13.6 (10.3-18.4)	15.3 (11.2-21.4)
60-day	2.63 (2.33-3.02)	3.65 (3.23-4.21)	5.10 (4.50-5.89)	6.35 (5.57-7.40)	8.18 (6.93-9.85)	9.67 (8.03-11.9)	11.3 (9.12-14.2)	13.0 (10.2-16.8)	15.4 (11.6-20.8)	17.3 (12.7-24.2)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

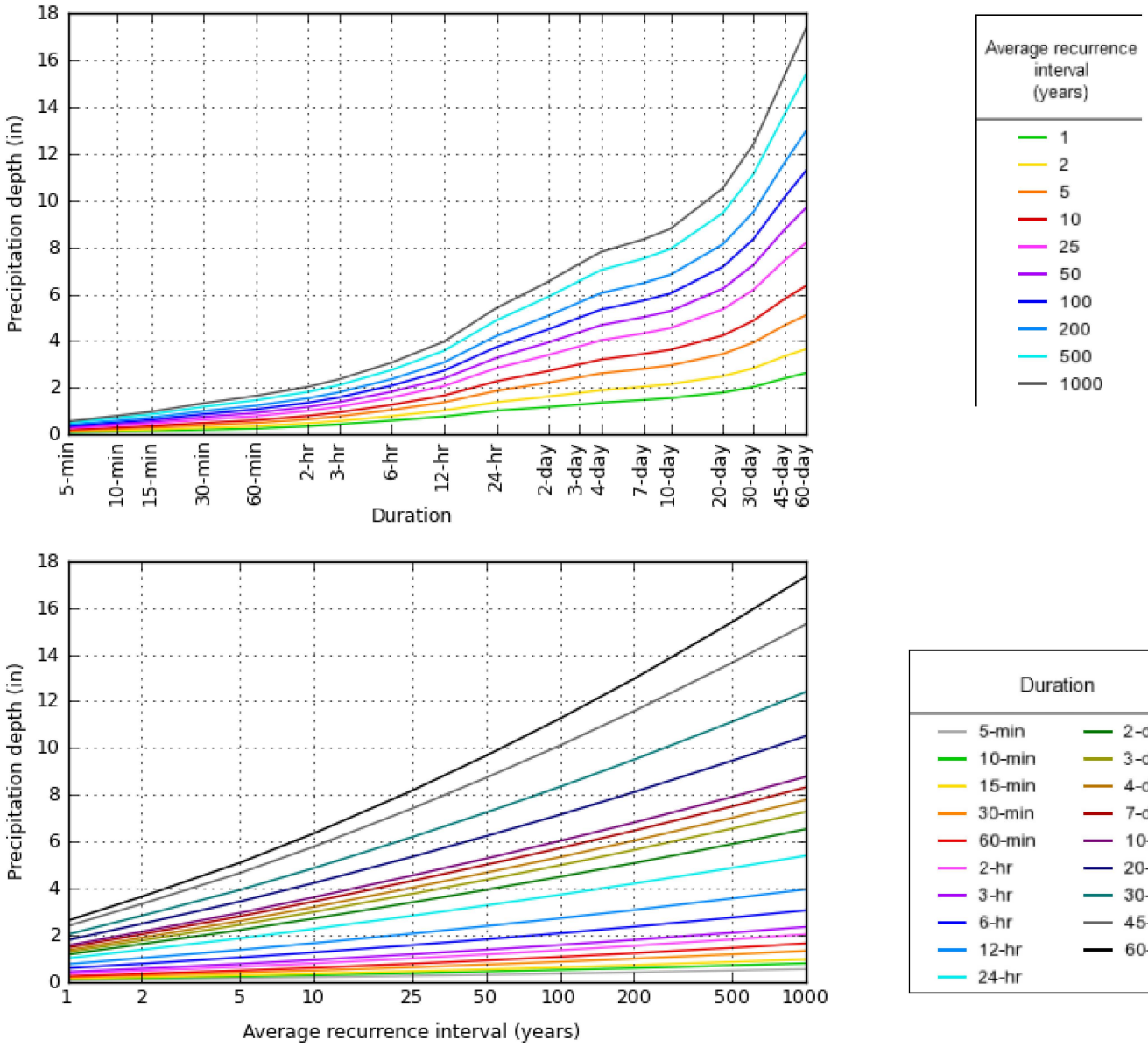
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 34.4773°, Longitude: -117.2745°



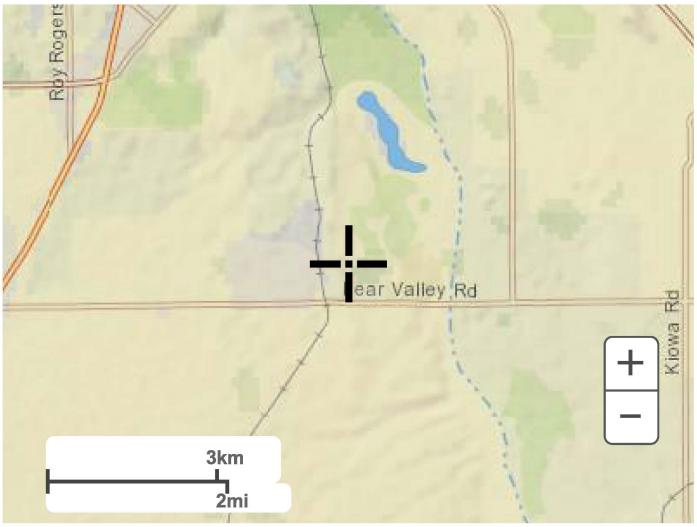
NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Fri Dec 3 01:34:07 2021

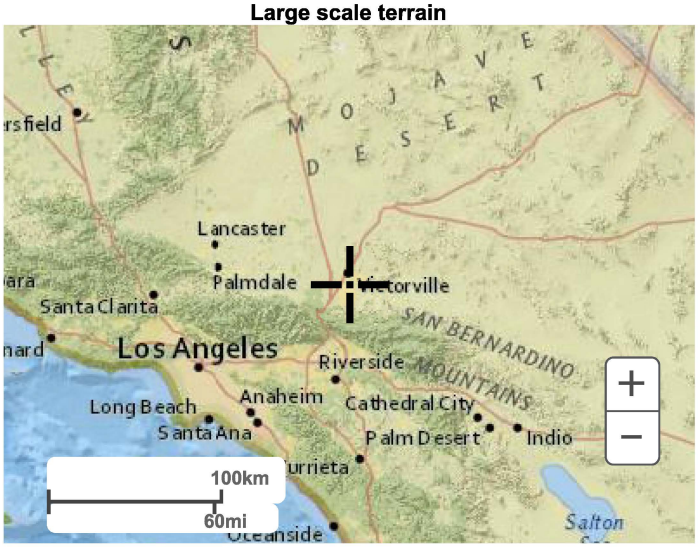
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Maps & aerials

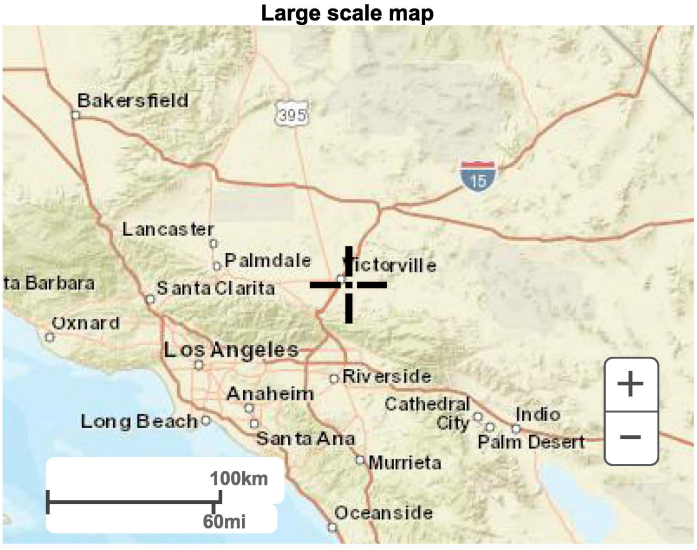
Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

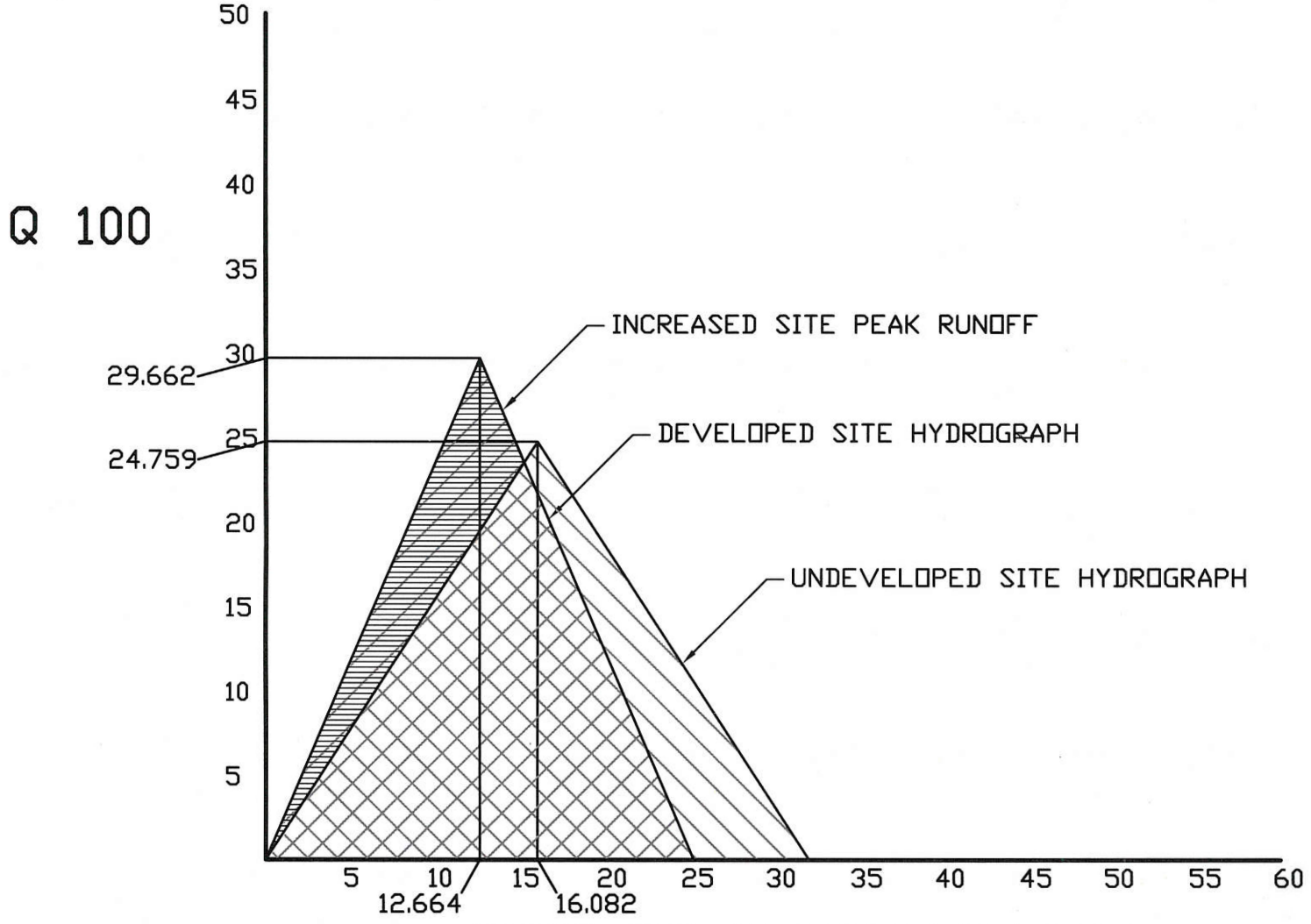


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RETENTION VOLUMES



SITE RUNOFF PARAMETERS
UNDEVELOPED SITE RUNOFF = 23,870 CF
DEVELOPED SITE RUNOFF = 22,546 CF
INCREASED STORM PEAK RUNOFF = 4,676 CF