Snipes-Dye associates

HYDROLOGY/DRAINAGE STUDY

For

TORREYANA CAMPUS

11085 Torreyana Rd, San Diego, CA 92121
APN: 430-010-30

City of San Diego
PRJ-1056938

Applicant:
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Job No. LJ458x

Dated: August 8, 2024

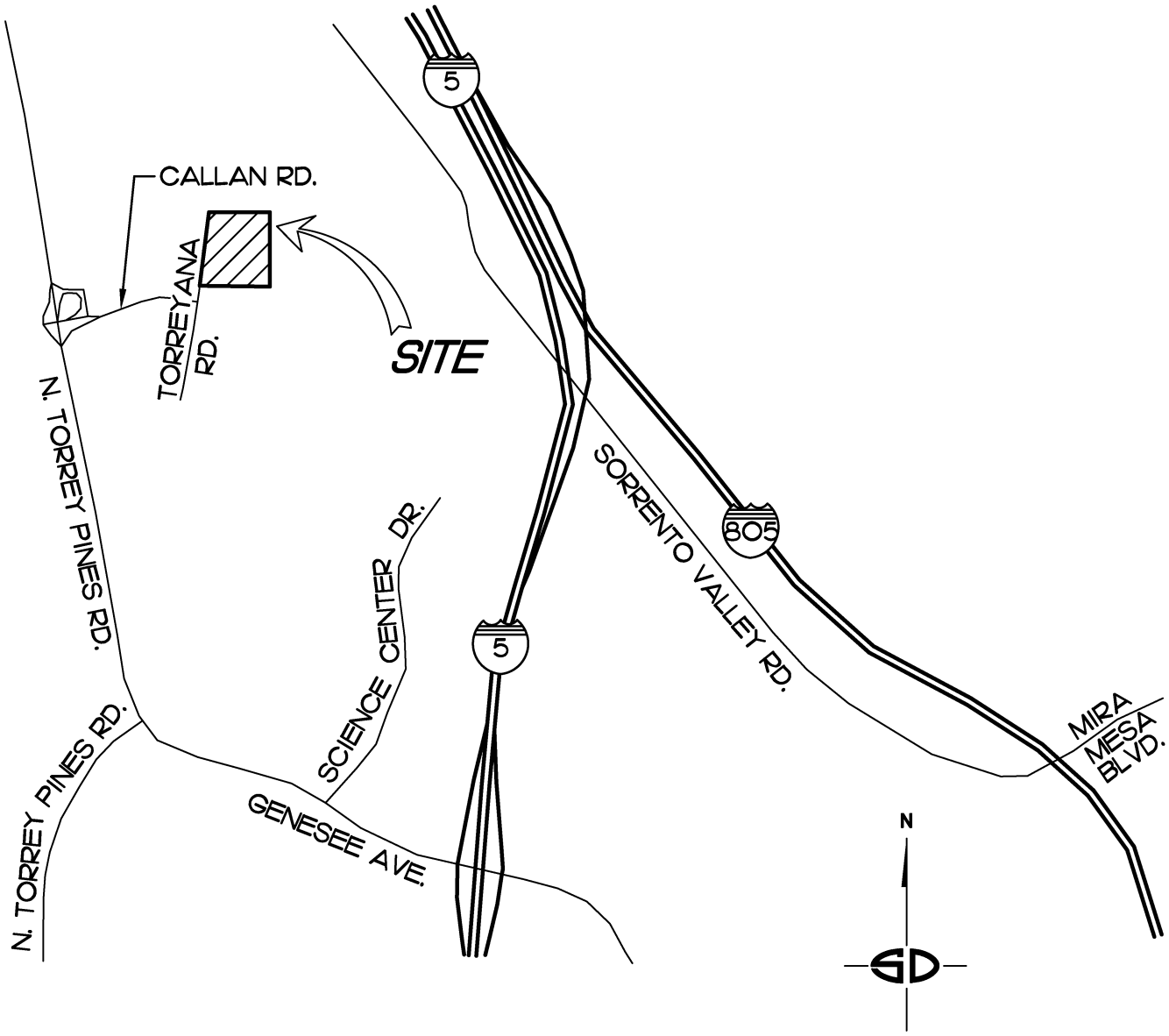
DECLARATION OF RESPONSIBLE CHARGE

I, HEREBY DECLARE THAT I AM THE CIVIL ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITY FOR PROJECT DESIGN.

WILLIAM A. SNIPES
R.C.E. 50477
EXP. 06-30-25

8/8/24
DATE



VICINITY MAP

NO SCALE

HYDROLOGY/DRAINAGE STUDY
FOR
TORREYANA CAMPUS CDP

INTRODUCTION: The project proposes to demolish two existing buildings and construct two new buildings, parking lot, and subsurface parking structure in La Jolla. The site is located at 11085-11095 Torreyana Rd, Assessor's Parcel No. 430-010-30.

PRE-DEVELOPMENT CONDITIONS: The existing site sits upon a graded mesa at the end of Torreyana Road. The drainage conveyance on the site is mostly impervious surfaces, with various small planters for trees scattered amongst the parking lot. The site has existing downward slopes along the north and south property boundaries and an upward slope to the east. The drainage area includes approximately 4.5 acres which consists several basins that sheet-flow and collect in a storm drain system on the site. The existing storm drain system confluences at a single point in an existing storm drain cleanout on the adjacent property to the north, which then flows down the hill towards Los Peñasquitos Lagoon. There are eight basins that make up the pre-development site. The runoff coefficient of the pre-construction site varies per basin and each has been weighted per the City of San Diego Drainage Design Manual (2017 Edition) for an Industrial site. The calculated peak discharge for the pre-construction site in the 100-year storm is approximately 13.07 cubic feet per second (cfs). See the attached calculations.

POST-DEVELOPMENT CONDITIONS: The proposed improvements consist of constructing two new buildings, parking lot, and a subsurface parking structure. The post-development site is divided into 5 basins. Basin A consists of undisturbed slopes to the east that flows downhill from the east towards the site, and is collected into an existing drainage ditch. A Type F Catch Basin will be constructed at the termination point of the ditch where it meets the proposed site to prevent run-on. Basin B consists of the upper easterly portion of the new site. Basin C consists of the lower easterly portion. Basin D is the upper westerly portion, while Basin E is the lower easterly portion. Basins B-E will each contain a Modular Wetlands System and an underground detention basin for hydromodification. All five basins will then connect to a main storm drain system in the driveway. This new main storm drain line will connect to the existing storm drain system on the site that runs down the northerly slope towards Los Peñasquitos Lagoon as described in the previous section. The runoff coefficient of the post-construction site varies per basin and each has been weighted per the City of San Diego Drainage Design Manual (2017 Edition) for an Industrial site.

The total peak discharge from post-construction site in the 100-year storm is 12.45 cfs, a decrease of 0.62 cfs from the pre-development condition. See the attached calculations. The following Summary Table 1 is a summary of the discharges for the pre and post-development conditions.

It should be noted that the proposed project does not discharge runoff directly into the Pacific Ocean, a navigable water, and is therefore not required to obtain approval from the Regional Water Quality Control Board under Federal Clean Water Act (CWA) section 401. There are no dredged or fill materials being discharged into the navigable waters of the United States and is not subject to CWA section 404 as a result.

PRE & POST DEVELOPMENT 100-YR. PEAK DISCHARGES						
	PRE-DEVELOPMENT			POST-DEVELOPMENT		
BASIN	AREA (ACRE)	TIME OF CONCENTRATION (MIN.)	DISCHARGE (CFS)	AREA (ACRE)	TIME OF CONCENTRATION (MIN.)	DISCHARGE (CFS)
A	1.44	15.66	2.02	0.51	14.07	0.76
B	0.04	1.78	0.09	0.84	8.67	1.88
C	0.81	2.77	3.39	1.02	3.02	4.17
D	0.51	6.56	1.79	0.76	6.17	2.55
E	0.97	3.59	3.71	1.31	7.20	3.09
F	0.35	2.65	1.40	--	--	--
G	0.30	7.67	0.63	--	--	--
H	0.02	3.59	0.04	--	--	--
TOTAL	4.44	--	13.07	4.44	--	12.45

CONCLUSION: The proposed construction will cause a decrease in 0.62 cfs for the overall site peak runoff in the 100-year storm. A decrease is expected as a result of altered flow paths and proposed detention facilities. It should be noted that the runoff discharge from the post-development condition are at the same locations as in the pre-development condition. The proposed project will not substantially alter the existing drainage pattern of the site or drainage basin areas.

Site runoff will be significantly less in the post-development condition due to lengthened flow paths and proposed detention systems for hydromodification.

In summary, the decrease in the peak 100-year discharge due to the construction of this project will not cause significant impacts to downstream facilities, streams, rivers, and/or adjacent properties.

PRE-DEVELOPMENT DRAINAGE CALCULATIONS

THE PEAK 100-YEAR DISCHARGES (Q)

BASIN A: Q_{100}

COMBINED RUNOFF COEFFICIENT (C):

Land Use	Coefficient (C)	Tributary Area
INDUSTRIAL	0.50	1.44 AC

City of San Diego Drainage Design Manual - January 2017 Edition
Table A-1: Runoff Coefficient for Rational Method. (See Enclosed Calculations)

C= Runoff Factor = **0.50**

RAINFALL INTENSITY (I):

ΔE= Change in elevation along the Effective Slope = 36.7 Feet

D= Water Course Distance = 660 Feet

S= Slope = (ΔE/D) X 100% = 5.56 %

Tc = Time of Concentration
T_c= [1.8(1.1-C)(D^1/2)]/[S^(1/3)] = 15.66 Minutes
Urban Areas Overland Time of Flow Curves Pg. A-8
City of San Diego- Drainage Design Manual 2017

Intensity = Intensity-Duration-Frequency Curves Pg. A-4 = 2.80 Inches/Hour
City of San Diego- Drainage Design Manual 2017

PEAK DISCHARGES (Q):

A = Area of the basin = 1.44 Acres

Q = CIA = **2.02 ft^3/sec**

Prepared by:
Snipes-Dye Associates

THE PEAK 100-YEAR DISCHARGES (Q)

BASIN B: Q_{100}

COMBINED RUNOFF COEFFICIENT (C):

Land Use	Coefficient (C)	Tributary Area
INDUSTRIAL	0.50	0.04 AC

City of San Diego Drainage Design Manual - January 2017 Edition
Table A-1: Runoff Coefficient for Rational Method. (See Enclosed Calculations)

C= Runoff Factor = **0.50**

RAINFALL INTENSITY (I):

ΔE= Change in elevation along the Effective Slope = 15 Feet

D= Water Course Distance = 34 Feet

S= Slope = (ΔE/D) X 100% = 44.12 %

Tc = Time of Concentration
T_c= [1.8(1.1-C)(D^1/2)]/[S^(1/3)] = 1.78 Minutes
Urban Areas Overland Time of Flow Curves Pg. A-8
City of San Diego- Drainage Design Manual 2017

Intensity = Intensity-Duration-Frequency Curves Pg. A-4 = 4.40 Inches/Hour
City of San Diego- Drainage Design Manual 2017

PEAK DISCHARGES (Q):

A = Area of the basin = 0.04 Acres

Q = CIA = 0.09 ft^3/sec

Prepared by:
Snipes-Dye Associates

THE PEAK 100-YEAR DISCHARGES (Q)

BASIN C: Q_{100}

COMBINED RUNOFF COEFFICIENT (C):

Land Use	Coefficient (C)	Tributary Area
INDUSTRIAL	0.95	0.81 AC

City of San Diego Drainage Design Manual - January 2017 Edition
Table A-1: Runoff Coefficient for Rational Method. (See Enclosed Calculations)

C= Runoff Factor = **0.95**

RAINFALL INTENSITY (I):

ΔE= Change in elevation along the Effective Slope = 3.1 Feet

D= Water Course Distance = 162 Feet

S= Slope = (ΔE/D) X 100% = 1.91 %

Tc = Time of Concentration
T_c= [1.8(1.1-C)(D^1/2)]/[S^(1/3)] = 2.77 Minutes
Urban Areas Overland Time of Flow Curves Pg. A-8
City of San Diego- Drainage Design Manual 2017

Intensity = Intensity-Duration-Frequency Curves Pg. A-4 = 4.40 Inches/Hour
City of San Diego- Drainage Design Manual 2017

PEAK DISCHARGES (Q):

A = Area of the basin = 0.81 Acres

Q = CIA = **3.39 ft^3/sec**

Prepared by:
Snipes-Dye Associates

THE PEAK 100-YEAR DISCHARGES (Q)

BASIN D: Q_{100}

COMBINED RUNOFF COEFFICIENT (C):

Land Use	Coefficient (C)	Tributary Area
INDUSTRIAL	0.87	0.51 AC

City of San Diego Drainage Design Manual - January 2017 Edition
Table A-1: Runoff Coefficient for Rational Method. (See Enclosed Calculations)

C= Runoff Factor = **0.87**

RAINFALL INTENSITY (I):

ΔE= Change in elevation along the Effective Slope = 2.2 Feet

D= Water Course Distance = 238 Feet

S= Slope = (ΔE/D) X 100% = 0.92 %

Tc = Time of Concentration
T_c= [1.8(1.1-C)(D^1/2)]/[S^(1/3)] = 6.56 Minutes
Urban Areas Overland Time of Flow Curves Pg. A-8
City of San Diego- Drainage Design Manual 2017

Intensity = Intensity-Duration-Frequency Curves Pg. A-4 = 4.03 Inches/Hour
City of San Diego- Drainage Design Manual 2017

PEAK DISCHARGES (Q):

A = Area of the basin = 0.51 Acres

Q = CIA = 1.79 ft^3/sec

Prepared by:
Snipes-Dye Associates

THE PEAK 100-YEAR DISCHARGES (Q)

BASIN E: Q_{100}

COMBINED RUNOFF COEFFICIENT (C):

Land Use	Coefficient (C)	Tributary Area
INDUSTRIAL	0.87	0.97 AC

City of San Diego Drainage Design Manual - January 2017 Edition
Table A-1: Runoff Coefficient for Rational Method. (See Enclosed Calculations)

C= Runoff Factor = **0.87**

RAINFALL INTENSITY (I):

ΔE= Change in elevation along the Effective Slope	=	7.5 Feet
D= Water Course Distance	=	189 Feet
S= Slope = (ΔE/D) X 100%	=	3.97 %
Tc = Time of Concentration T_c= [1.8(1.1-C)(D^1/2)]/[S^(1/3)] = Urban Areas Overland Time of Flow Curves Pg. A-8 City of San Diego- Drainage Design Manual 2017	=	3.59 Minutes
Intensity = Intensity-Duration-Frequency Curves Pg. A-4 City of San Diego- Drainage Design Manual 2017	=	4.40 Inches/Hour

PEAK DISCHARGES (Q):

A = Area of the basin	=	0.97 Acres
Q = CIA	=	**3.71 ft^3/sec**

Prepared by:
Snipes-Dye Associates

THE PEAK 100-YEAR DISCHARGES (Q)

BASIN F: Q_{100}

COMBINED RUNOFF COEFFICIENT (C):

Land Use	Coefficient (C)	Tributary Area
INDUSTRIAL	0.91	0.35 AC

City of San Diego Drainage Design Manual - January 2017 Edition
Table A-1: Runoff Coefficient for Rational Method. (See Enclosed Calculations)

C= Runoff Factor = **0.91**

RAINFALL INTENSITY (I):

ΔE= Change in elevation along the Effective Slope = 3.1 Feet

D= Water Course Distance = 116 Feet

S= Slope = (ΔE/D) X 100% = 2.67 %

Tc = Time of Concentration
T_c= [1.8(1.1-C)(D^1/2)]/[S^(1/3)] = 2.65 Minutes
Urban Areas Overland Time of Flow Curves Pg. A-8
City of San Diego- Drainage Design Manual 2017

Intensity = Intensity-Duration-Frequency Curves Pg. A-4 = 4.40 Inches/Hour
City of San Diego- Drainage Design Manual 2017

PEAK DISCHARGES (Q):

A = Area of the basin = 0.35 Acres

Q = CIA = **1.40 ft^3/sec**

Prepared by:
Snipes-Dye Associates

THE PEAK 100-YEAR DISCHARGES (Q)

BASIN G: Q_{100}

COMBINED RUNOFF COEFFICIENT (C):

Land Use	Coefficient (C)	Tributary Area
INDUSTRIAL	0.55	0.30 AC

City of San Diego Drainage Design Manual - January 2017 Edition
Table A-1: Runoff Coefficient for Rational Method. (See Enclosed Calculations)

C= Runoff Factor = **0.55**

RAINFALL INTENSITY (I):

ΔE= Change in elevation along the Effective Slope	=	19.6 Feet
D= Water Course Distance	=	242 Feet
S= Slope = (ΔE/D) X 100%	=	8.10 %
Tc = Time of Concentration T_c= [1.8(1.1-C)(D^1/2)]/[S^(1/3)] = Urban Areas Overland Time of Flow Curves Pg. A-8 City of San Diego- Drainage Design Manual 2017	=	7.67 Minutes
Intensity = Intensity-Duration-Frequency Curves Pg. A-4 City of San Diego- Drainage Design Manual 2017	=	3.84 Inches/Hour

PEAK DISCHARGES (Q):

A = Area of the basin	=	0.30 Acres
Q = CIA	=	**0.63 ft^3/sec**

Prepared by:
Snipes-Dye Associates

THE PEAK 100-YEAR DISCHARGES (Q)

BASIN H: Q_{100}

COMBINED RUNOFF COEFFICIENT (C):

Land Use	Coefficient (C)	Tributary Area
INDUSTRIAL	0.50	0.02 AC

City of San Diego Drainage Design Manual - January 2017 Edition
Table A-1: Runoff Coefficient for Rational Method. (See Enclosed Calculations)

C= Runoff Factor = **0.50**

RAINFALL INTENSITY (I):

ΔE= Change in elevation along the Effective Slope	=	3.9 Feet
D= Water Course Distance	=	46 Feet
S= Slope = (ΔE/D) X 100%	=	8.48 %
Tc = Time of Concentration T_c= [1.8(1.1-C)(D^1/2)]/[S^(1/3)] = Urban Areas Overland Time of Flow Curves Pg. A-8 City of San Diego- Drainage Design Manual 2017	=	3.59 Minutes
Intensity = Intensity-Duration-Frequency Curves Pg. A-4 City of San Diego- Drainage Design Manual 2017	=	4.40 Inches/Hour

PEAK DISCHARGES (Q):

A = Area of the basin	=	0.02 Acres
Q = CIA	=	**0.04 ft^3/sec**

Prepared by:
Snipes-Dye Associates

POST-DEVELOPMENT DRAINAGE CALCULATIONS

THE PEAK 100-YEAR DISCHARGES (Q)

BASIN A: Q_{100}

COMBINED RUNOFF COEFFICIENT (C):

Land Use	Coefficient (C)	Tributary Area
INDUSTRIAL	0.50	0.51 AC

City of San Diego Drainage Design Manual - January 2017 Edition
Table A-1: Runoff Coefficient for Rational Method. (See Enclosed Calculations)

C= Runoff Factor = **0.50**

RAINFALL INTENSITY (I):

ΔE= Change in elevation along the Effective Slope = 34 Feet

D= Water Course Distance = 563 Feet

S= Slope = (ΔE/D) X 100% = 6.04 %

Tc = Time of Concentration
T_c= [1.8(1.1-C)(D^1/2)]/[S^(1/3)] = 14.07 Minutes
Urban Areas Overland Time of Flow Curves Pg. A-8
City of San Diego- Drainage Design Manual 2017

Intensity = Intensity-Duration-Frequency Curves Pg. A-4 = 2.98 Inches/Hour
City of San Diego- Drainage Design Manual 2017

PEAK DISCHARGES (Q):

A = Area of the basin = 0.51 Acres

Q = CIA = **0.76 ft^3/sec**

Prepared by:
Snipes-Dye Associates

THE PEAK 100-YEAR DISCHARGES (Q)

BASIN B: Q_{100}

COMBINED RUNOFF COEFFICIENT (C):

Land Use	Coefficient (C)	Tributary Area
INDUSTRIAL	0.62	0.84 AC

City of San Diego Drainage Design Manual - January 2017 Edition
Table A-1: Runoff Coefficient for Rational Method. (See Enclosed Calculations)

C= Runoff Factor = **0.62**

RAINFALL INTENSITY (I):

ΔE= Change in elevation along the Effective Slope	=	28.4 Feet
D= Water Course Distance	=	383 Feet
S= Slope = (ΔE/D) X 100%	=	7.42 %
Tc = Time of Concentration T_c= [1.8(1.1-C)(D^1/2)]/[S^(1/3)] = Urban Areas Overland Time of Flow Curves Pg. A-8 City of San Diego- Drainage Design Manual 2017	=	8.67 Minutes
Intensity = Intensity-Duration-Frequency Curves Pg. A-4 City of San Diego- Drainage Design Manual 2017	=	3.61 Inches/Hour

PEAK DISCHARGES (Q):

A = Area of the basin	=	0.84 Acres
Q = CIA	=	**1.88 ft^3/sec**

Prepared by:
Snipes-Dye Associates

THE PEAK 100-YEAR DISCHARGES (Q)

BASIN C: Q_{100}

COMBINED RUNOFF COEFFICIENT (C):

Land Use	Coefficient (C)	Tributary Area
INDUSTRIAL	0.93	1.02 AC

City of San Diego Drainage Design Manual - January 2017 Edition
Table A-1: Runoff Coefficient for Rational Method. (See Enclosed Calculations)

C= Runoff Factor = **0.93**

RAINFALL INTENSITY (I):

ΔE= Change in elevation along the Effective Slope = 13.6 Feet

D= Water Course Distance = 280 Feet

S= Slope = (ΔE/D) X 100% = 4.86 %

Tc = Time of Concentration
T_c= [1.8(1.1-C)(D^1/2)]/[S^(1/3)] = 3.02 Minutes
Urban Areas Overland Time of Flow Curves Pg. A-8
City of San Diego- Drainage Design Manual 2017

Intensity = Intensity-Duration-Frequency Curves Pg. A-4 = 4.40 Inches/Hour
City of San Diego- Drainage Design Manual 2017

PEAK DISCHARGES (Q):

A = Area of the basin = 1.02 Acres

Q = CIA = **4.17 ft^3/sec**

Prepared by:
Snipes-Dye Associates

THE PEAK 100-YEAR DISCHARGES (Q)

BASIN D: Q_{100}

COMBINED RUNOFF COEFFICIENT (C):

Land Use	Coefficient (C)	Tributary Area
INDUSTRIAL	0.80	0.76 AC

City of San Diego Drainage Design Manual - January 2017 Edition
Table A-1: Runoff Coefficient for Rational Method. (See Enclosed Calculations)

C= Runoff Factor = **0.80**

RAINFALL INTENSITY (I):

ΔE= Change in elevation along the Effective Slope = 12.3 Feet

D= Water Course Distance = 320 Feet

S= Slope = (ΔE/D) X 100% = 3.84 %

Tc = Time of Concentration
T_c= [1.8(1.1-C)(D^1/2)]/[S^(1/3)] = 6.17 Minutes
Urban Areas Overland Time of Flow Curves Pg. A-8
City of San Diego- Drainage Design Manual 2017

Intensity = Intensity-Duration-Frequency Curves Pg. A-4 = 4.20 Inches/Hour
City of San Diego- Drainage Design Manual 2017

PEAK DISCHARGES (Q):

A = Area of the basin = 0.76 Acres

Q = CIA = 2.55 ft^3/sec

Prepared by:
Snipes-Dye Associates

THE PEAK 100-YEAR DISCHARGES (Q)

BASIN E: Q_{100}

COMBINED RUNOFF COEFFICIENT (C):

Land Use	Coefficient (C)	Tributary Area
INDUSTRIAL	0.67	1.31 AC

City of San Diego Drainage Design Manual - January 2017 Edition
Table A-1: Runoff Coefficient for Rational Method. (See Enclosed Calculations)

C= Runoff Factor = **0.67**

RAINFALL INTENSITY (I):

ΔE= Change in elevation along the Effective Slope = 13 Feet

D= Water Course Distance = 256 Feet

S= Slope = (ΔE/D) X 100% = 5.08 %

Tc = Time of Concentration

T_c= [1.8(1.1-C)(D^1/2)]/[S^(1/3)] = 7.20 Minutes

Urban Areas Overland Time of Flow Curves Pg. A-8
City of San Diego- Drainage Design Manual 2017

Intensity = Intensity-Duration-Frequency Curves Pg. A-4 = 3.52 Inches/Hour

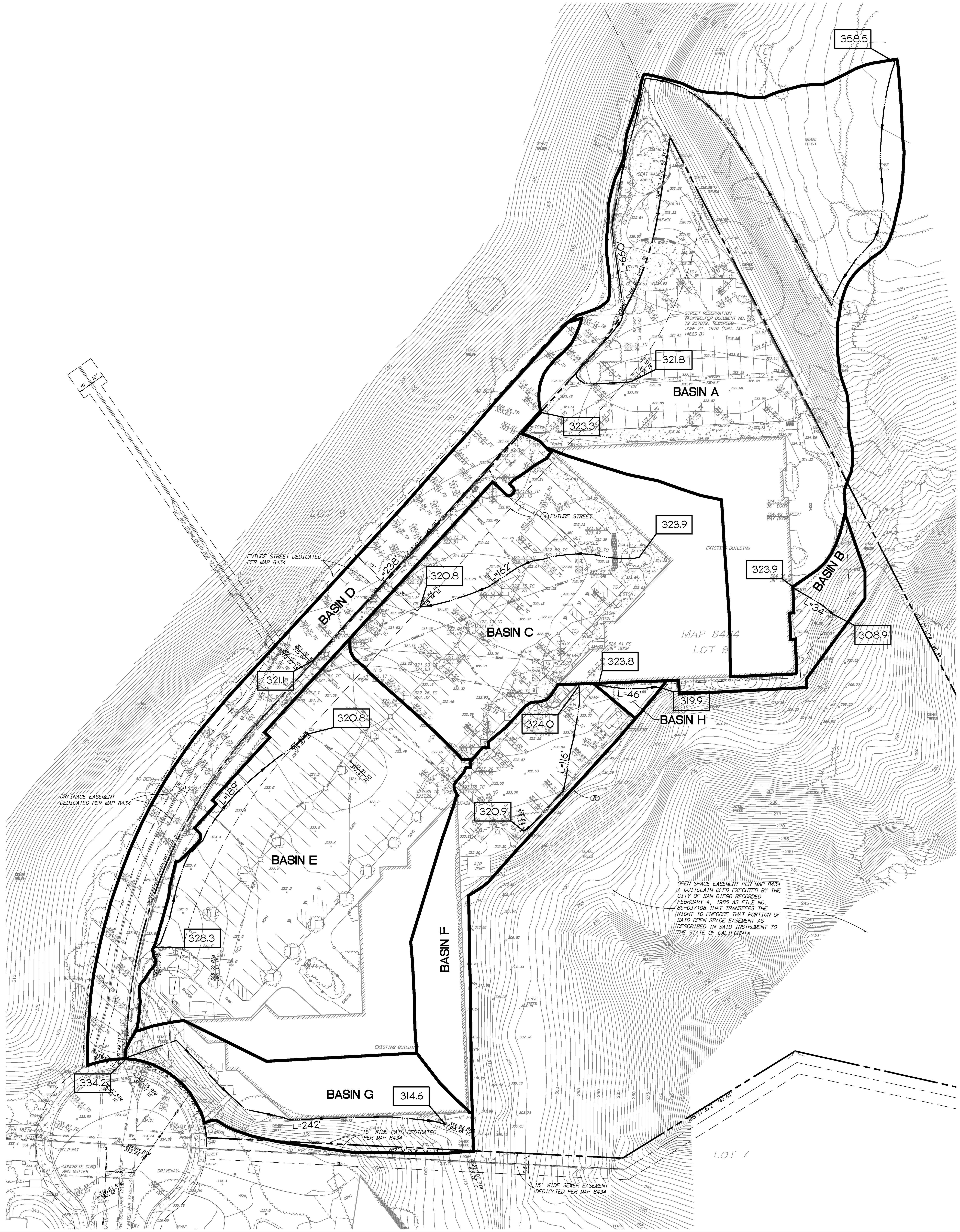
City of San Diego- Drainage Design Manual 2017

PEAK DISCHARGES (Q):

A = Area of the basin = 1.31 Acres

Q = CIA = **3.09 ft^3/sec**

DRAINAGE EXHIBITS



PRE & POST DEVELOPMENT 100-YR. PEAK DISCHARGES						
	PRE-DEVELOPMENT			POST-DEVELOPMENT		
BASIN	AREA (ACRE)	TIME OF CONCENTRATION (MIN)	DISCHARGE (CFS)	AREA (ACRE)	TIME OF CONCENTRATION (MIN)	DISCHARGE (CFS)
A	1.44	15.66	2.02	0.51	14.07	0.76
B	0.04	1.78	0.09	0.84	8.67	1.88
C	0.81	2.77	3.39	1.02	3.02	4.17
D	0.51	6.56	1.79	0.76	6.17	2.55
E	0.97	3.59	3.71	1.31	7.20	3.09
F	0.35	2.65	1.40	--	--	--
G	0.30	7.67	0.63	--	--	--
H	0.02	3.59	0.04	--	--	--
TOTAL	4.44	--	13.07	4.44	--	12.45

BASIN A - 63,000 SF
IMPERVIOUS - 28,170 SF
PERVIOUS - 34,830 SF
SEMI-PERVIOUS - 0

BASIN B - 1,910 SF
IMPERVIOUS - 0
PERVIOUS - 1,910 SF
SEMI-PERVIOUS - 0

BASIN C - 35,500 SF
IMPERVIOUS - 34,920 SF
PERVIOUS - 580 SF
SEMI-PERVIOUS - 0

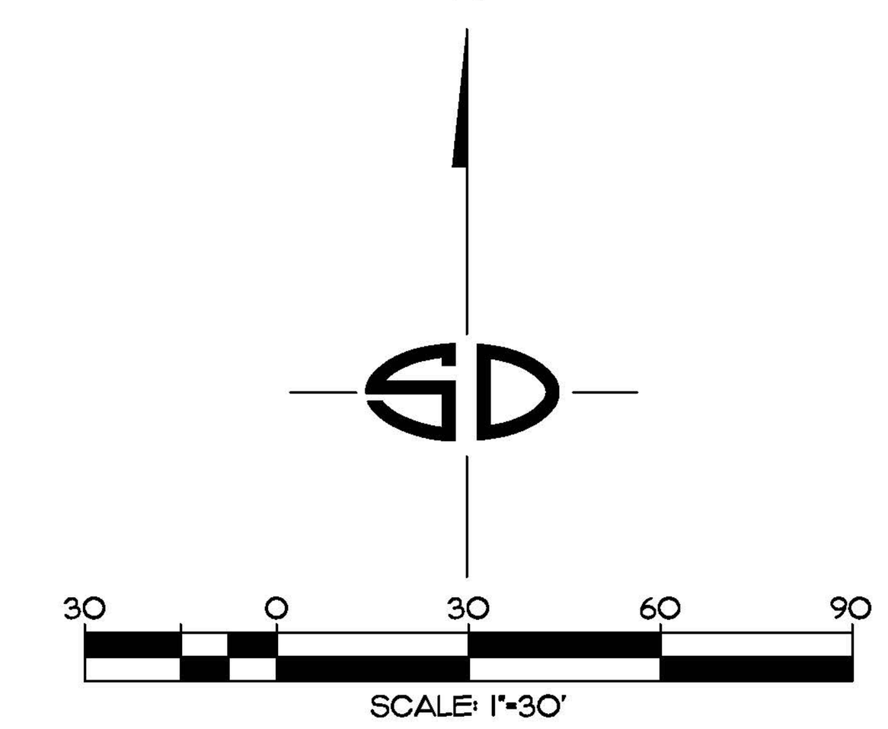
BASIN D - 22,085 SF
IMPERVIOUS - 18,155 SF
PERVIOUS - 3,930 SF
SEMI-PERVIOUS - 0

BASIN E - 42,210 SF
IMPERVIOUS - 39,800 SF
PERVIOUS - 2,410 SF
SEMI-PERVIOUS - 0

BASIN F - 15,040 SF
IMPERVIOUS - 12,915 SF
PERVIOUS - 2,125 SF
SEMI-PERVIOUS - 0

BASIN G - 12,985 SF
IMPERVIOUS - 6,825 SF
PERVIOUS - 6,160 SF
SEMI-PERVIOUS - 0

BASIN H - 710 SF
IMPERVIOUS - 0
PERVIOUS - 710 SF
SEMI-PERVIOUS - 0



SHEET TITLE: HYDROLOGY - PRE DEVELOPMENT

JOB NAME: HEALTHPEAK PROPERTIES, INC. TORREYANA CAMPUS

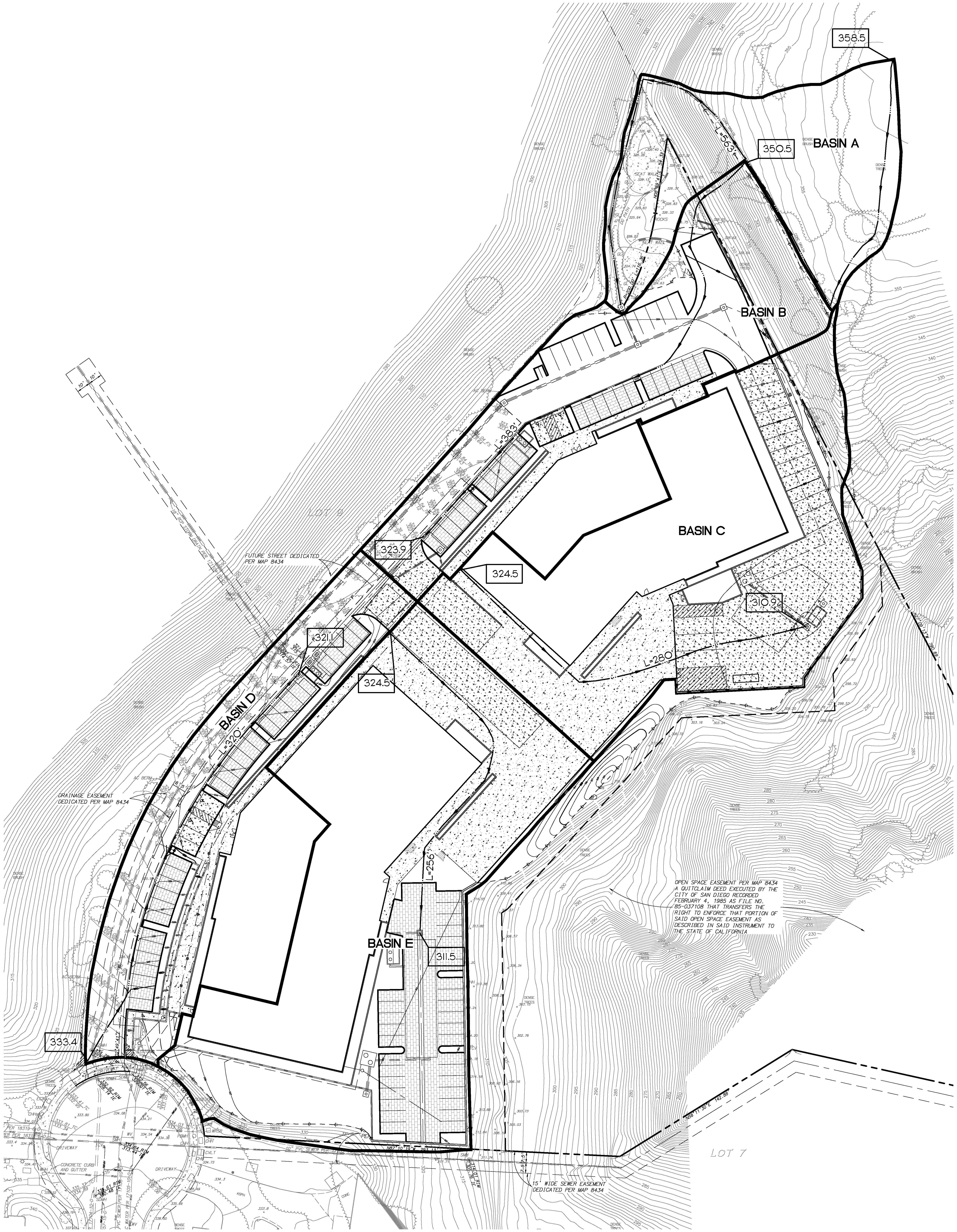
DESIGNER: TPS
DRAWN: BMW
CHECKED: WAS
DATE: 03/28/22

NO	DATE	REVISION DESCRIPTION	BY

NO	DATE	REVISION DESCRIPTION	BY

SHEET 1 OF 2 SHEETS
JOB NO. LJ4584

SNIPES-DYE ASSOCIATES
8348 CENTER DRIVE, SUITE G, LA MESA, CA 91942-2910 (619) 697-9234, FAX (619) 460-2033



PRE & POST DEVELOPMENT 100-YR. PEAK DISCHARGES						
PRE-DEVELOPMENT				POST-DEVELOPMENT		
BASIN	AREA (ACRE)	TIME OF CONCENTRATION (MIN)	DISCHARGE (CFS)	AREA (ACRE)	TIME OF CONCENTRATION (MIN)	DISCHARGE (CFS)
A	1.44	15.66	2.02	0.51	14.07	0.76
B	0.04	1.78	0.09	0.84	8.67	1.88
C	0.81	2.77	3.39	1.02	3.02	4.17
D	0.51	6.56	1.79	0.76	6.17	2.55
E	0.97	3.59	3.71	1.31	7.20	3.09
F	0.35	2.65	1.40	--	--	--
G	0.30	7.67	0.63	--	--	--
H	0.02	3.59	0.04	--	--	--
TOTAL	4.44	--	13.07	4.44	--	12.45

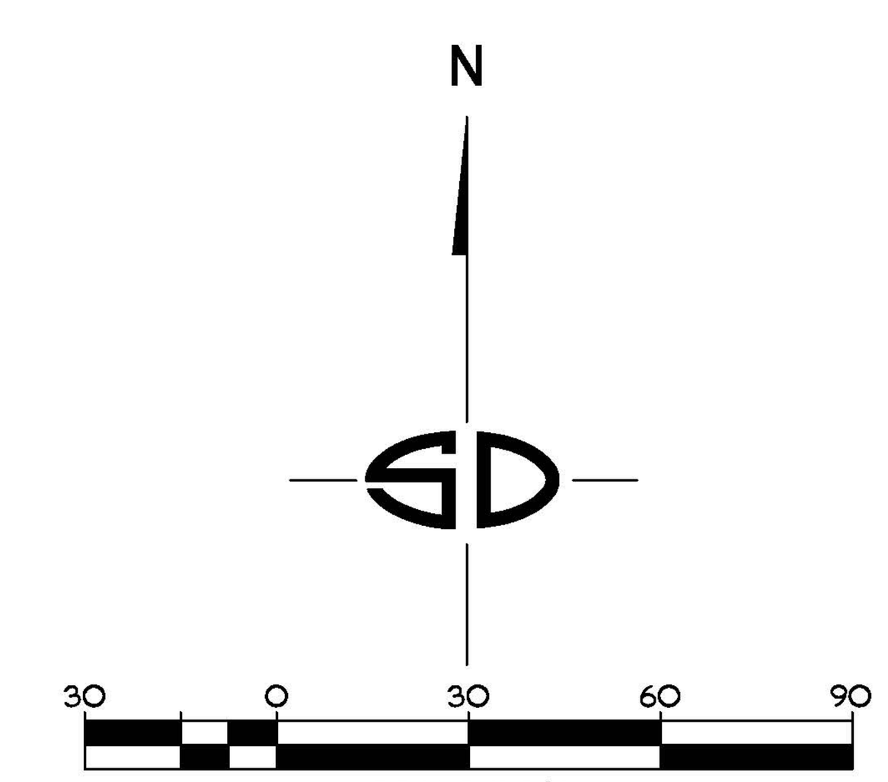
BASIN A - 22,084 SF
IMPERVIOUS - 0
PERVIOUS - 22,084 SF
SEMI-PERVIOUS - 0

BASIN B - 36,448 SF
IMPERVIOUS - 21,364 SF
PERVIOUS - 11,056 SF
SEMI-PERVIOUS - 4,028 SF

BASIN C - 44,416 SF
IMPERVIOUS - 39,016 SF
PERVIOUS - 5,400 SF
SEMI-PERVIOUS - 0

BASIN D - 33,276 SF
IMPERVIOUS - 25,340 SF
PERVIOUS - 3,752 SF
SEMI-PERVIOUS - 4,184 SF

BASIN E - 57,216 SF
IMPERVIOUS - 36,256 SF
PERVIOUS - 11,724 SF
SEMI-PERVIOUS - 9,236



SHEET TITLE: HYDROLOGY - POST DEVELOPMENT
JOB NAME: HEALTHPEAK PROPERTIES, INC. TORREYANA CAMPUS

DESIGNER: TPS
DRAWN: BMW
CHECKED: WAS
DATE: 03/28/22

NO	DATE	REVISION DESCRIPTION	BY

NO	DATE	REVISION DESCRIPTION	BY

SNIPES-DYE ASSOCIATES
8348 CENTER DRIVE, SUITE G, LA MESA, CA 91942-2910 (619) 697-9234, FAX (619) 460-2033

SHEET 2 OF 2 SHEETS
JOB NO. LJ4584

REFERENCES

APPENDIX A: RATIONAL METHOD AND MODIFIED RATIONAL METHOD

Table A-1. Runoff Coefficients for Rational Method

Land Use	Runoff Coefficient (C) Soil Type [1]
Residential:	
Single Family	0.55
Multi-Units	0.70
Mobile Homes	0.65
Rural (lots greater than ½ acre)	0.45
Commercial [2]	
80% Impervious	0.85
Industrial [2]	
90% Impervious	0.95

Note:

[1] Type D soil to be used for all areas.

[2] Where actual conditions deviate significantly from the tabulated imperviousness values of 80% or 90%, the values given for coefficient C, may be revised by multiplying 80% or 90% by the ratio of actual imperviousness to the tabulated imperviousness. However, in case shall the final coefficient be less than 0.50. For example: Consider commercial property on D soil.

Actual imperviousness = 35%

Tabulated imperviousness (For Commercial) = 80%

Revised C = (35/80) x 0.85 = 0.37

The values in Table A–1 are typical for urban areas. However, if the basin contains rural or agricultural land use, parks, golf courses, or other types of nonurban land use that are expected to be permanent, the appropriate value should be selected based upon the soil and cover and approved by the City.

Pre-Development

Basin	A	B	C	D	E	F	G	H
Impervious Area (SF)	28,170	0	34,920	18,155	39,800	12,915	6,825	0
Total Basin Area (SF)	63,000	1,910	35,500	22,085	42,210	15,040	12,985	710
Actual imperviousness **(AI)** = Imp. Area/Total Area	45%	0%	98%	82%	94%	86%	53%	0%
Tabulated imperviousness =	90%	90%	90%	90%	90%	90%	90%	90%
For Commercial: Revised C = (**AI**/80) x 0.85, 0.50 Minimum 0.95 Maximum	0.47	0.00	1.04	0.87	1.00	0.91	0.55	0.00
Use	**0.50**	**0.50**	**0.95**	**0.87**	**0.95**	**0.91**	**0.55**	**0.50**

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Post-Development

Basin	A	B	C	D	E
Impervious Area (SF)	0	21,364	39,016	25,340	36,256
Total Basin Area (SF)	22,084	36,448	44,416	33,276	57,216
Actual imperviousness **(AI)** = Imp. Area/Total Area	0%	59%	88%	76%	63%
Tabulated imperviousness =	90%	90%	90%	90%	90%
For Commercial: Revised C = (**AI**/80) x 0.85, 0.50 Minimum 0.95 Maximum	0.00	0.62	0.93	0.80	0.67
Use	**0.50**	**0.62**	**0.93**	**0.80**	**0.67**

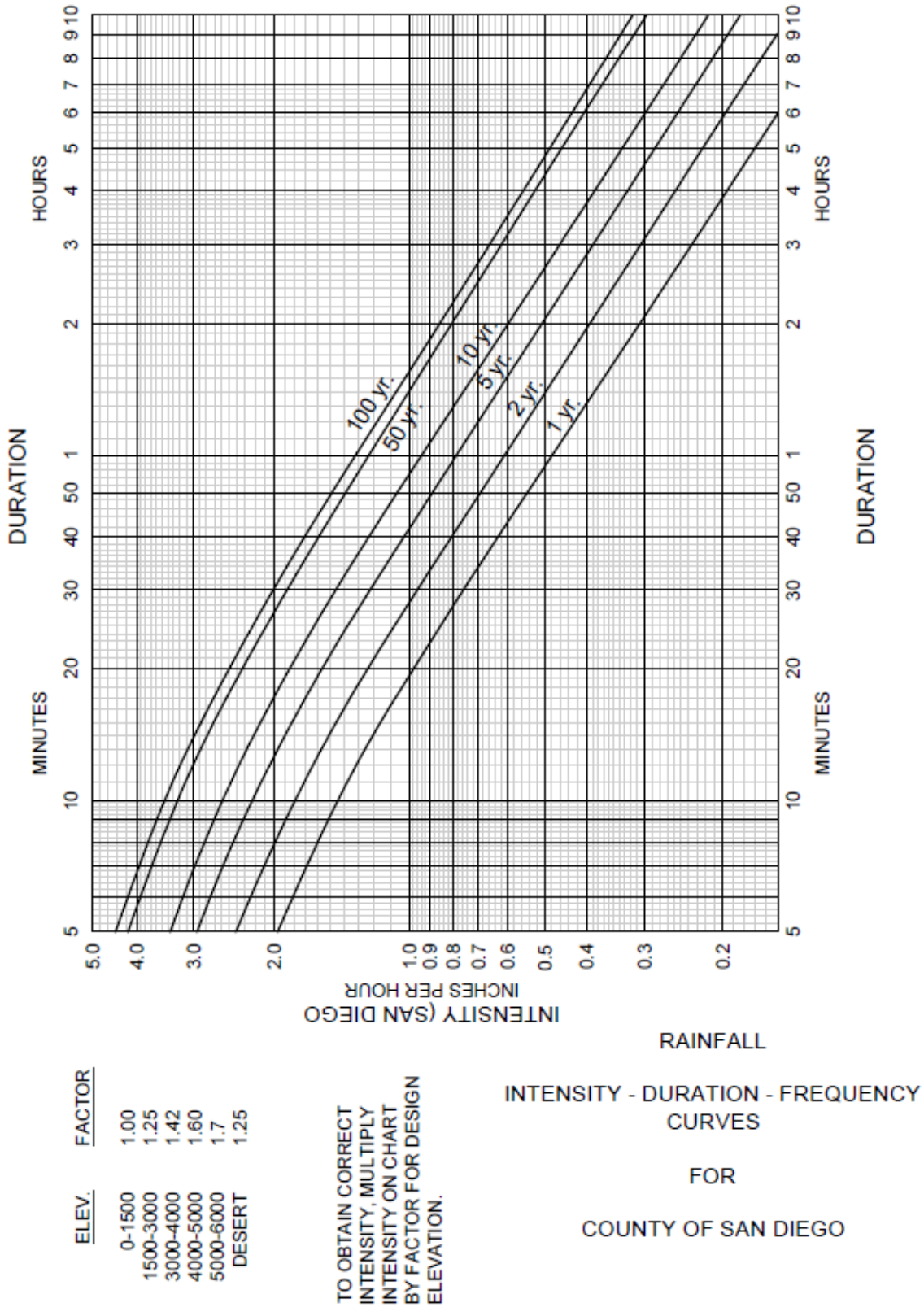


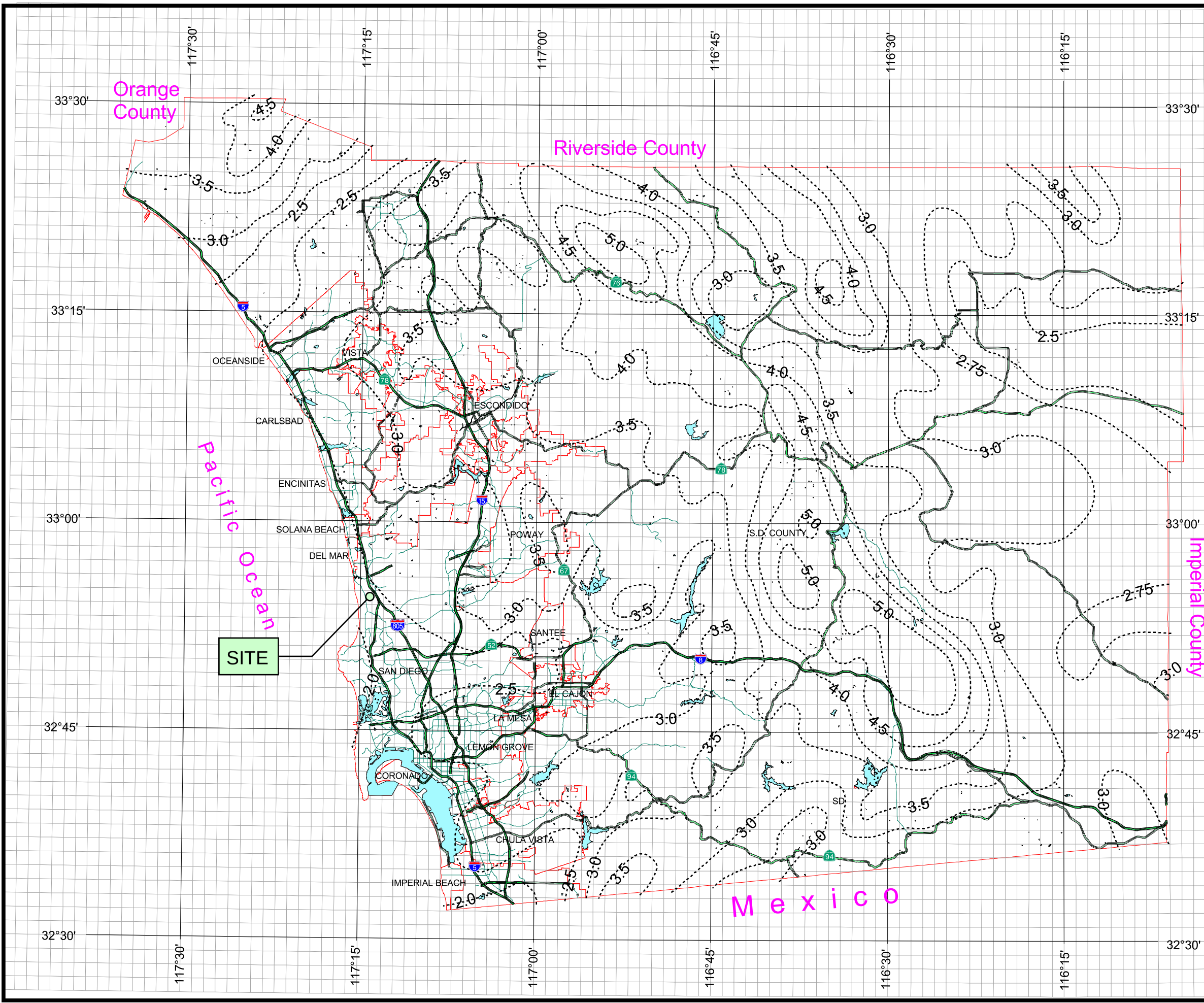
Figure A-1. Intensity-Duration-Frequency Design Chart

County of San Diego Hydrology Manual

Rainfall Isopluvials

100 Year Rainfall Event - 6 Hours

2.4 ..... Isopluvial (inches)



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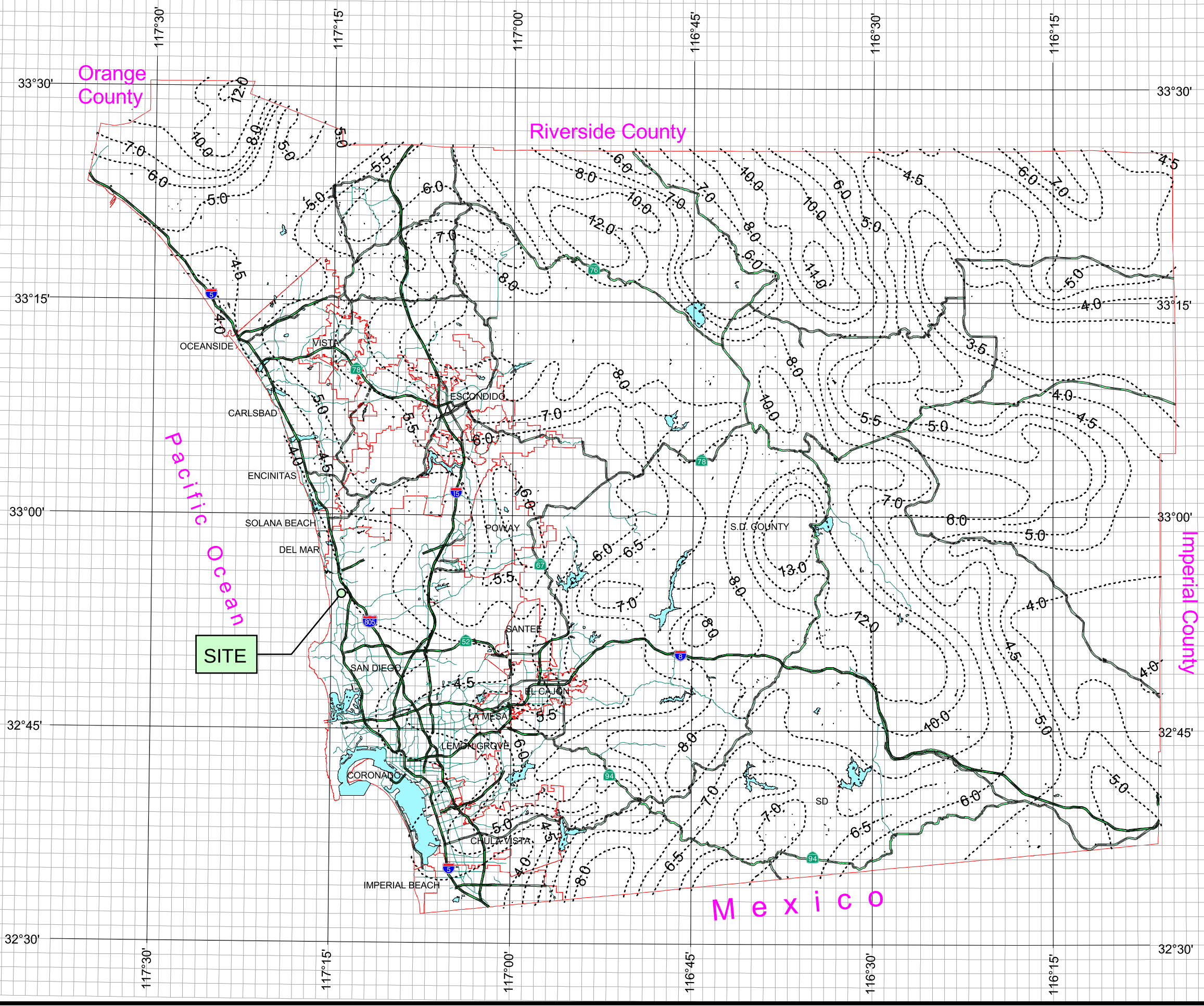
County of San Diego Hydrology Manual

Rainfall Isopluvials

100 Year Rainfall Event - 24 Hours

3.9 Isopluvial (inches)



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