HYDROLOGY & HYDRAULIC REPORT

DATED: 10/22/20

For

Superstar Car Wash

Prepared for:
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Project Location:
6270 Miramar Road, San Diego, CA 92121
APN 343-252-34

Prepared By:
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CIVIL ENGINEERING AND LAND SURVEYING
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San Marcos, CA 92078
Phone: (760) 736-2040

Danny Abada, PE

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 THIS PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONAL CODE AND THAT THE DESIGN IS CONSISTENT WITH CURRENT DESIGN 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 RESPONSIBILITIES FOR PROJECT DESIGN.

10/22/20

Danny Abada
REGISTERED CIVIL ENGINEER
Spear & Associates Inc.

DATE

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I. INTRODUCTION

This hydrology report was prepared for Superstar Car Wash located at 6270 Miramar Road, San Diego, CA 92121. The site encompasses approximately 0.71 acres.

The site is currently developed with a commercial building and parking lot. The project will re-develop the site with a car wash facility, parking lot and landscaping. The runoff will be directed to a biofiltration basin for treatment.

The existing topography slopes in a southerly direction with elevations ranging from approximately 405 to 400. The site drains south towards Miramar Road then continues west, then north to Miramar Mall, then northwest to Carrol Canyon Creek, Los Penasquitos Creek, Los Penasquitos Lagoon and The Pacific Ocean approximately 6.2 miles west.

The development will maintain existing drainage patterns; post development runoff will be directed to biofiltration/Detention basin for stormwater treatment. The outlet flows will be directed to the same drainage system as in pre-development.

We have used the County of San Diego Hydrology Manual to determine the run-off from the site for the 100yr, flow. Based on the soil hydrologic group map of the County Hydrology Manual, the project soil uniformly consists of type D across all sub areas. Peak flow rates were calculated using the rational method. Times of concentrations were calculated using the Manning's equation to obtain velocities using average overland flow rates.

The existing site's impervious area of 24,516 square feet will be reduced to 22,560 square feet. Water quality will be addressed with biofiltration basins to treat the projects anticipated and expected pollutants. Refer to the Storm Water Quality Management Plan for more detailed information.

II. DISCUSSION/CONCLUSION

Post development peak flows, flow volumes and velocities for the 100yr event will not exceed pre-development rates with reduced site imperviousness, the use of a detention basin, an efficient site design and maximizing onsite times of concentration. No increased negative impact to any adjacent properties is anticipated from this development.

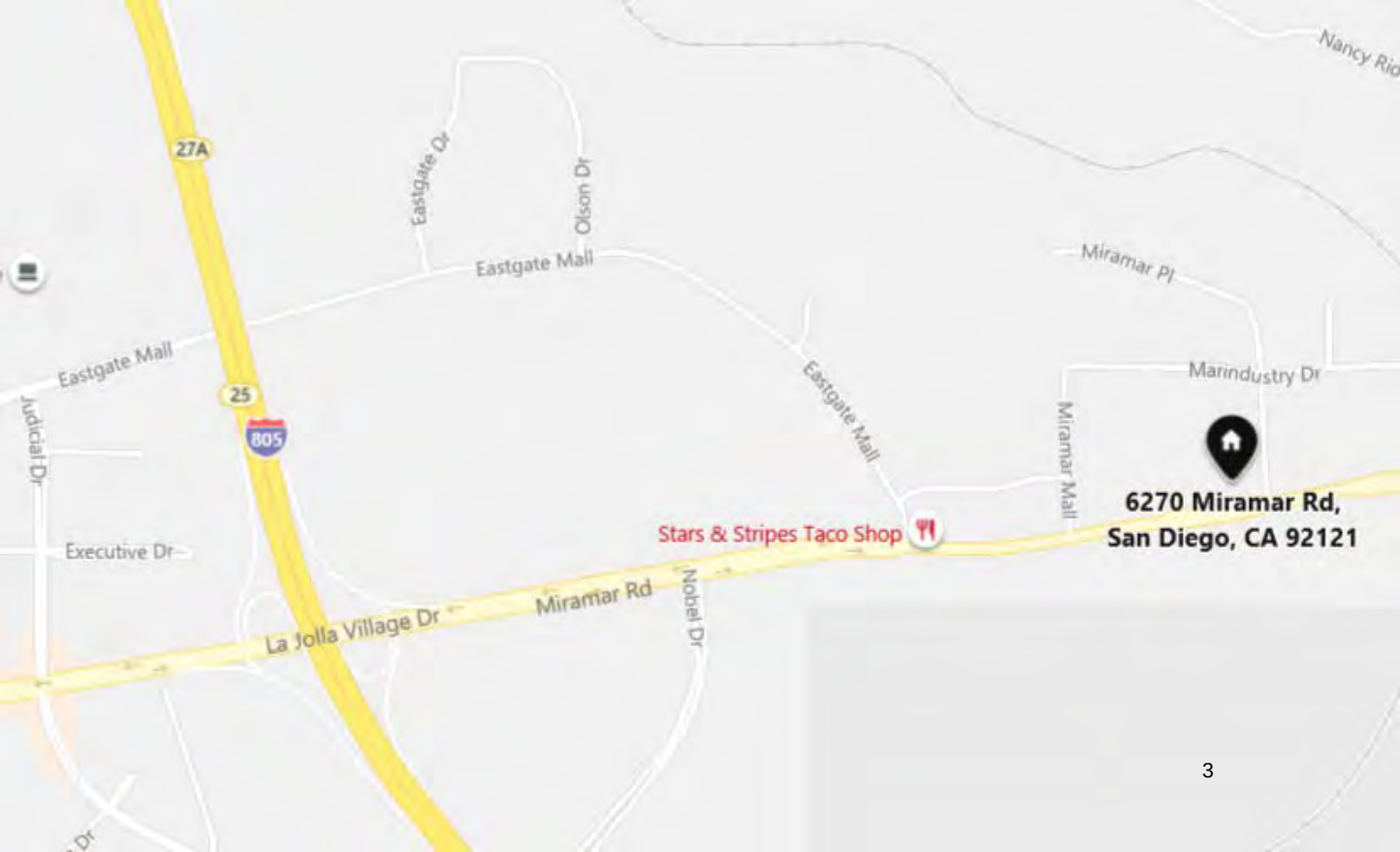
No increased peak runoff flow into the existing stormdrain system is anticipated as a result of this development.

The project will not conduct activities that would trigger a Clean Water Act Section 401 or 404 Certification.

Summary of flow rates

Storm Event	***100-yr cfs***
Pre-Development	2.9
Post-Development	2.4

ATTACHMENT A


Nancy Rio
27A
Eastgate Dr
Olson Dr
Eastgate Mall
Miramar Pl
Eastgate Mall
Marindustry Dr
25
805
Judicial Dr
Eastgate Mall
Miramar Mall
6270 Miramar Rd,
San Diego, CA 92121
Executive Dr
Stars & Stripes Taco Shop
La Jolla Village Dr
Miramar Rd
Nobel Dr


6270 Miramar Rd
Miramar Pl
amar Rd

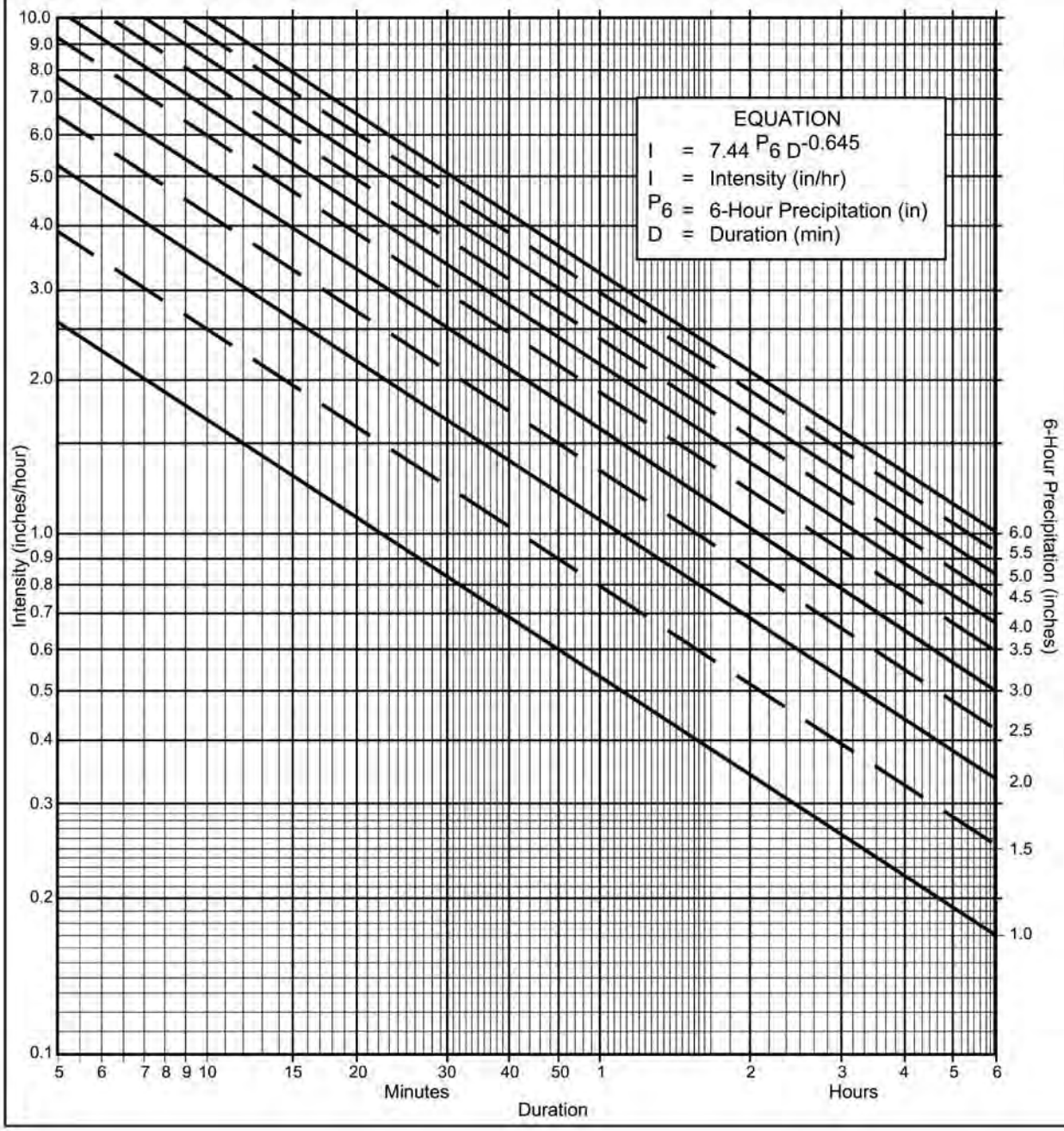
ATTACHMENT B

Post-Development **Rational Method, 100yr Event**

REACH	TC	C	A	CA	∑CA	P_6	I	**Q cfs**
Site	7.8	0.75	0.71	0.53	0.53	2.32	4.59	**2.4**

Pre-Development

REACH	TC	C	A	CA	∑CA	P_6	I	**Q cfs**
Site	6.4	0.78	0.71	0.55	0.55	2.32	5.21	**2.9**



Directions for Application:

(1) From precipitation maps determine 6 hr and 24 hr amounts for the selected frequency. These maps are included in the County Hydrology Manual (10, 50, and 100 yr maps included in the Design and Procedure Manual).

(2) Adjust 6 hr precipitation (if necessary) so that it is within the range of 45% to 65% of the 24 hr precipitation (not applicaple to Desert).

(3) Plot 6 hr precipitation on the right side of the chart.

(4) Draw a line through the point parallel to the plotted lines.

(5) This line is the intensity-duration curve for the location being analyzed.

Application Form:

(a) Selected frequency 100 year

(b) P_6 = 2.32 in., P_{24} = 3.93, $\frac{P_6}{P_{24}}$ = 59 %(2)

(c) Adjusted $P_6^{(2)}$ = _____ in.

(d) t_x = _____ min.

(e) I = _____ in./hr.

Note: This chart replaces the Intensity-Duration-Frequency curves used since 1965.

P6	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6
Duration	I	I	I	I	I	I	I	I	I	I	I
5	2.63	3.95	5.27	6.59	7.90	9.22	10.54	11.86	13.17	14.49	15.81
7	2.12	3.18	4.24	5.30	6.36	7.42	8.48	9.54	10.60	11.66	12.72
10	1.68	2.53	3.37	4.21	5.05	5.90	6.74	7.58	8.42	9.27	10.11
15	1.30	1.95	2.59	3.24	3.89	4.54	5.19	5.84	6.49	7.13	7.78
20	1.08	1.62	2.15	2.69	3.23	3.77	4.31	4.85	5.39	5.93	6.46
25	0.93	1.40	1.87	2.33	2.80	3.27	3.73	4.20	4.67	5.13	5.60
30	0.83	1.24	1.66	2.07	2.49	2.90	3.32	3.73	4.15	4.56	4.98
40	0.69	1.03	1.38	1.72	2.07	2.41	2.76	3.10	3.45	3.79	4.13
50	0.60	0.90	1.19	1.49	1.79	2.09	2.39	2.69	2.98	3.28	3.58
60	0.53	0.80	1.06	1.33	1.59	1.86	2.12	2.39	2.65	2.92	3.18
90	0.41	0.61	0.82	1.02	1.23	1.43	1.63	1.84	2.04	2.25	2.45
120	0.34	0.51	0.68	0.85	1.02	1.19	1.36	1.53	1.70	1.87	2.04
150	0.29	0.44	0.59	0.73	0.88	1.03	1.18	1.32	1.47	1.62	1.76
180	0.26	0.39	0.52	0.65	0.78	0.91	1.04	1.18	1.31	1.44	1.57
240	0.22	0.33	0.43	0.54	0.65	0.76	0.87	0.98	1.08	1.19	1.30
300	0.19	0.28	0.38	0.47	0.56	0.66	0.75	0.85	0.94	1.03	1.13
360	0.17	0.25	0.33	0.42	0.50	0.58	0.67	0.75	0.84	0.92	1.00

Intensity-Duration Design Chart - Template

FIGURE 3-1

NOAA Atlas 14, Volume 6, Version 2
Location name: San Diego, California, USA*
Latitude: 32.8781°, Longitude: -117.1792°
Elevation: 406.24 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	**0.110** (0.092-0.132)	**0.139** (0.116-0.167)	**0.176** (0.147-0.213)	**0.207** (0.171-0.252)	**0.248** (0.198-0.313)	**0.279** (0.219-0.361)	**0.311** (0.237-0.412)	**0.344** (0.255-0.469)	**0.388** (0.275-0.553)	**0.422** (0.289-0.624)
10-min	**0.158** (0.132-0.190)	**0.199** (0.167-0.240)	**0.253** (0.211-0.305)	**0.296** (0.246-0.361)	**0.355** (0.284-0.449)	**0.400** (0.313-0.517)	**0.446** (0.340-0.591)	**0.493** (0.365-0.673)	**0.556** (0.394-0.793)	**0.605** (0.414-0.895)
15-min	**0.191** (0.160-0.229)	**0.241** (0.202-0.290)	**0.306** (0.255-0.369)	**0.358** (0.297-0.437)	**0.430** (0.344-0.543)	**0.484** (0.379-0.625)	**0.540** (0.411-0.715)	**0.596** (0.441-0.814)	**0.673** (0.477-0.959)	**0.732** (0.500-1.08)
30-min	**0.263** (0.221-0.317)	**0.332** (0.279-0.401)	**0.422** (0.353-0.511)	**0.495** (0.410-0.604)	**0.594** (0.475-0.750)	**0.669** (0.524-0.864)	**0.746** (0.569-0.988)	**0.824** (0.610-1.13)	**0.930** (0.659-1.33)	**1.01** (0.691-1.50)
60-min	**0.373** (0.313-0.449)	**0.471** (0.395-0.568)	**0.598** (0.500-0.723)	**0.702** (0.581-0.856)	**0.841** (0.673-1.06)	**0.948** (0.742-1.22)	**1.06** (0.805-1.40)	**1.17** (0.864-1.59)	**1.32** (0.933-1.88)	**1.43** (0.979-2.12)
2-hr	**0.514** (0.431-0.619)	**0.646** (0.542-0.779)	**0.818** (0.683-0.989)	**0.956** (0.792-1.17)	**1.14** (0.913-1.44)	**1.28** (1.00-1.66)	**1.43** (1.09-1.89)	**1.57** (1.16-2.14)	**1.77** (1.25-2.52)	**1.91** (1.31-2.83)
3-hr	**0.617** (0.518-0.743)	**0.776** (0.650-0.935)	**0.980** (0.819-1.19)	**1.15** (0.949-1.40)	**1.37** (1.09-1.73)	**1.53** (1.20-1.98)	**1.70** (1.30-2.26)	**1.87** (1.39-2.56)	**2.10** (1.49-3.00)	**2.28** (1.56-3.36)
6-hr	**0.840** (0.704-1.01)	**1.06** (0.886-1.27)	**1.34** (1.12-1.62)	**1.56** (1.30-1.91)	**1.86** (1.49-2.35)	**2.09** (1.63-2.70)	**2.32** (1.77-3.07)	**2.54** (1.88-3.47)	**2.85** (2.02-4.06)	**3.08** (2.10-4.55)
12-hr	**1.12** (0.940-1.35)	**1.42** (1.19-1.71)	**1.81** (1.51-2.18)	**2.11** (1.75-2.58)	**2.52** (2.02-3.18)	**2.83** (2.21-3.65)	**3.13** (2.38-4.14)	**3.43** (2.54-4.69)	**3.84** (2.72-5.47)	**4.14** (2.83-6.12)
24-hr	**1.38** (1.21-1.60)	**1.77** (1.55-2.05)	**2.26** (1.98-2.63)	**2.65** (2.30-3.11)	**3.16** (2.67-3.82)	**3.55** (2.93-4.37)	**3.93** (3.17-4.95)	**4.31** (3.40-5.58)	**4.81** (3.65-6.48)	**5.19** (3.81-7.22)
2-day	**1.67** (1.47-1.94)	**2.16** (1.89-2.51)	**2.77** (2.43-3.23)	**3.26** (2.84-3.83)	**3.91** (3.30-4.73)	**4.39** (3.63-5.42)	**4.87** (3.94-6.15)	**5.36** (4.22-6.94)	**5.99** (4.54-8.07)	**6.48** (4.75-9.00)
3-day	**1.87** (1.64-2.17)	**2.42** (2.13-2.81)	**3.13** (2.74-3.64)	**3.69** (3.21-4.33)	**4.43** (3.74-5.36)	**4.99** (4.13-6.16)	**5.54** (4.48-6.99)	**6.10** (4.81-7.90)	**6.84** (5.18-9.20)	**7.40** (5.43-10.3)
4-day	**2.04** (1.80-2.37)	**2.66** (2.33-3.09)	**3.44** (3.02-4.01)	**4.07** (3.54-4.77)	**4.90** (4.13-5.93)	**5.52** (4.56-6.81)	**6.14** (4.96-7.74)	**6.76** (5.33-8.75)	**7.58** (5.75-10.2)	**8.21** (6.03-11.4)
7-day	**2.42** (2.13-2.81)	**3.17** (2.79-3.69)	**4.14** (3.63-4.82)	**4.91** (4.27-5.76)	**5.93** (5.00-7.18)	**6.69** (5.54-8.26)	**7.46** (6.03-9.41)	**8.23** (6.48-10.7)	**9.25** (7.01-12.4)	**10.0** (7.36-13.9)
10-day	**2.68** (2.35-3.11)	**3.53** (3.10-4.10)	**4.62** (4.05-5.39)	**5.50** (4.78-6.45)	**6.66** (5.61-8.06)	**7.53** (6.23-9.29)	**8.40** (6.79-10.6)	**9.28** (7.31-12.0)	**10.5** (7.92-14.1)	**11.3** (8.32-15.8)
20-day	**3.20** (2.81-3.72)	**4.27** (3.75-4.96)	**5.64** (4.94-6.57)	**6.74** (5.86-7.91)	**8.21** (6.92-9.94)	**9.32** (7.71-11.5)	**10.4** (8.44-13.2)	**11.6** (9.11-15.0)	**13.1** (9.91-17.6)	**14.2** (10.4-19.8)
30-day	**3.83** (3.37-4.45)	**5.13** (4.51-5.96)	**6.82** (5.97-7.94)	**8.17** (7.11-9.59)	**9.99** (8.43-12.1)	**11.4** (9.41-14.0)	**12.8** (10.3-16.1)	**14.2** (11.2-18.4)	**16.1** (12.2-21.6)	**17.5** (12.9-24.3)
45-day	**4.45** (3.91-5.16)	**5.97** (5.24-6.94)	**7.96** (6.98-9.28)	**9.58** (8.33-11.2)	**11.8** (9.93-14.2)	**13.5** (11.1-16.6)	**15.2** (12.3-19.1)	**16.9** (13.3-21.9)	**19.2** (14.6-25.9)	**21.0** (15.4-29.2)
60-day	**5.15** (4.52-5.97)	**6.89** (6.05-8.01)	**9.20** (8.06-10.7)	**11.1** (9.64-13.0)	**13.7** (11.5-16.6)	**15.7** (13.0-19.4)	**17.7** (14.3-22.4)	**19.9** (15.6-25.7)	**22.7** (17.2-30.6)	**25.0** (18.3-34.7)

[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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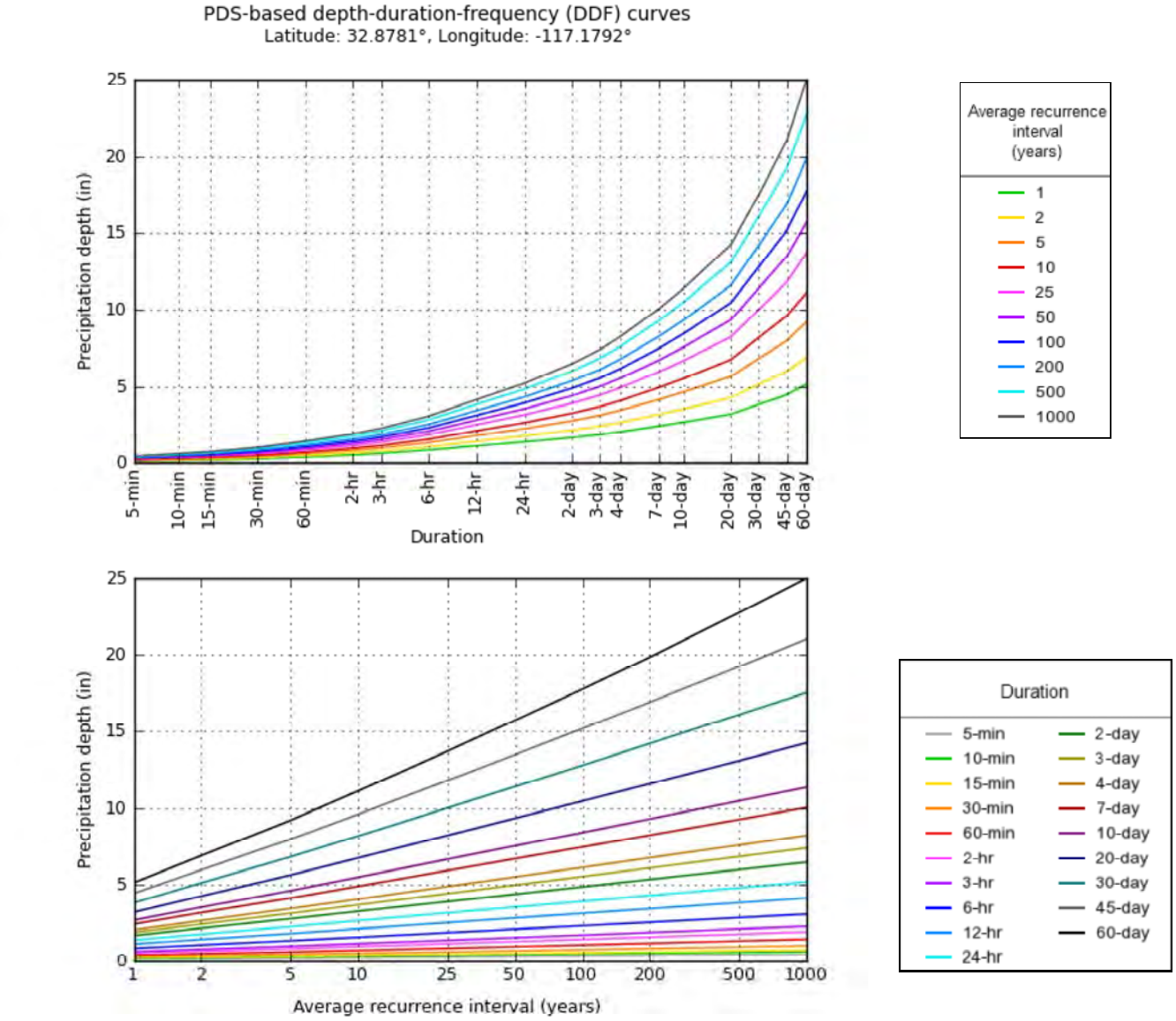
PF graphical



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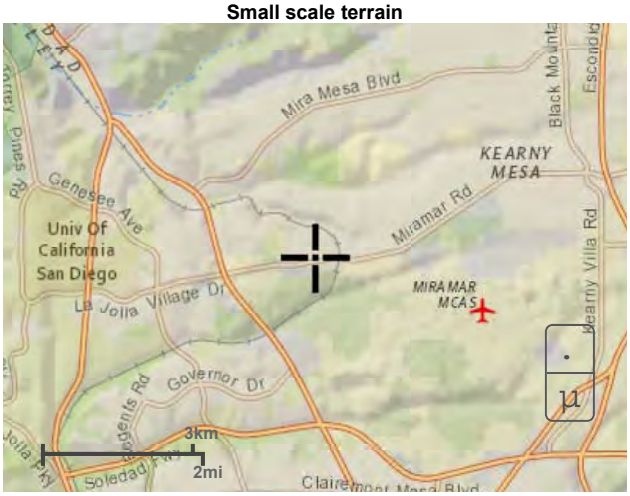
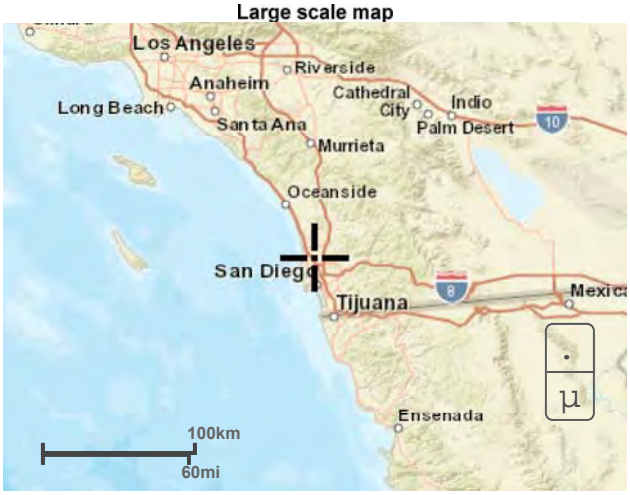
Maps & aerials

Small scale terrain

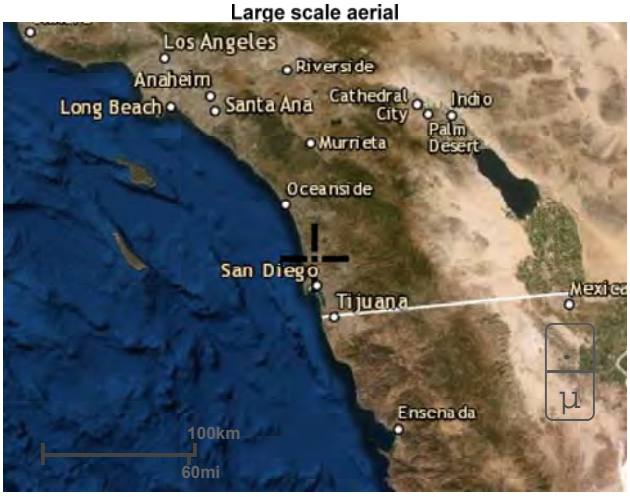


Large scale terrain

Large scale map



Large scale aerial



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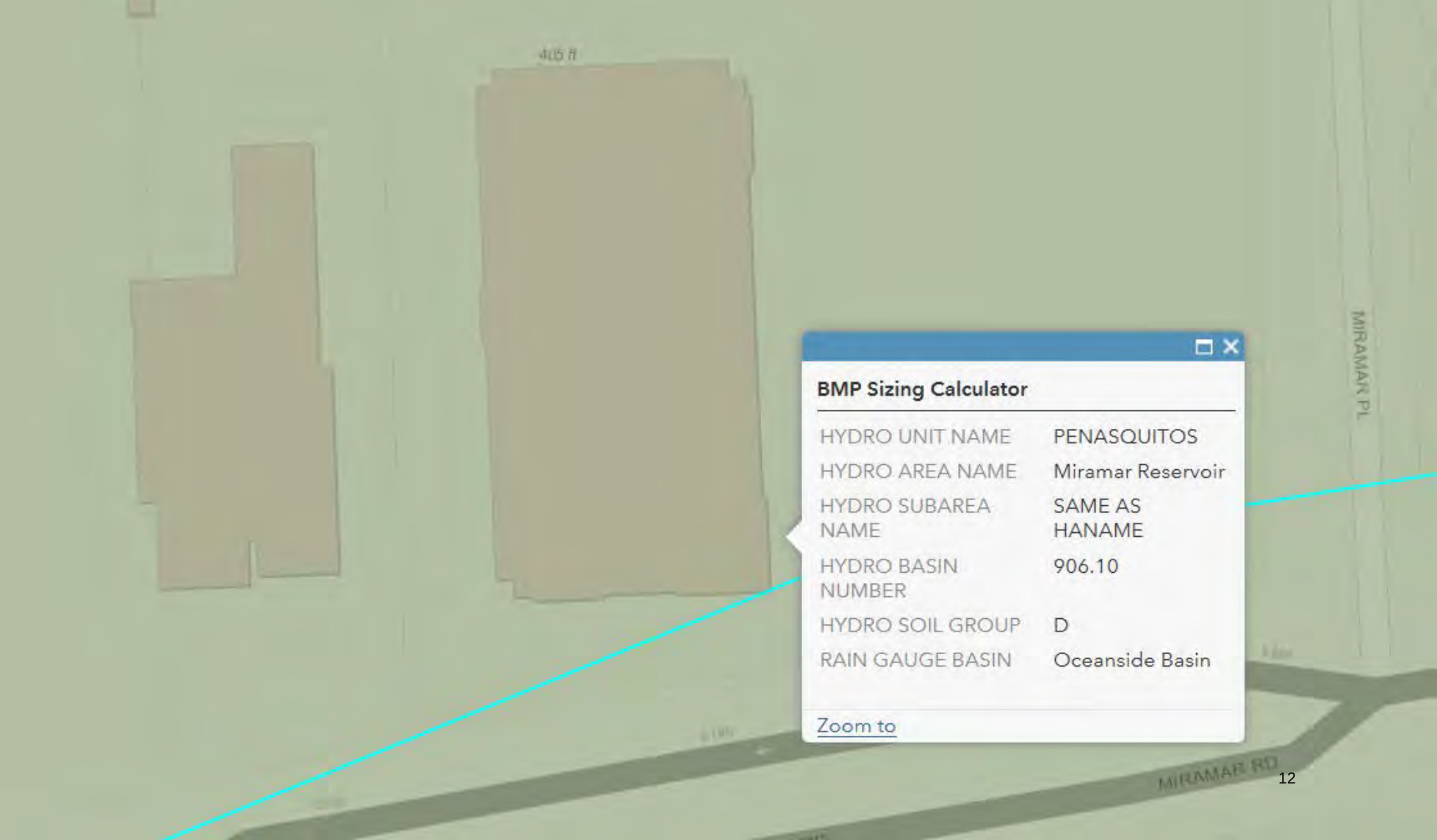

BMP Sizing Calculator
HYDRO UNIT NAME
PENASQUITOS
HYDRO AREA NAME
Miramar Reservoir
HYDRO SUBAREA NAME
SAME AS HANAME
HYDRO BASIN NUMBER
906.10
HYDRO SOIL GROUP
D
RAIN GAUGE BASIN
Oceanside Basin
Zoom to
MIRAMAR PL
MIRAMAR RD

Table 3-1
RUNOFF COEFFICIENTS FOR URBAN AREAS

Land Use		Runoff Coefficient "C"				
			Soil Type			
NRCS Elements	County Elements	% IMPER.	A	B	C	D
Undisturbed Natural Terrain (Natural)	Permanent Open Space	0*	0.20	0.25	0.30	0.35
Low Density Residential (LDR)	Residential, 1.0 DU/A or less	10	0.27	0.32	0.36	0.41
Low Density Residential (LDR)	Residential, 2.0 DU/A or less	20	0.34	0.38	0.42	0.46
Low Density Residential (LDR)	Residential, 2.9 DU/A or less	25	0.38	0.41	0.45	0.49
Medium Density Residential (MDR)	Residential, 4.3 DU/A or less	30	0.41	0.45	0.48	0.52
Medium Density Residential (MDR)	Residential, 7.3 DU/A or less	40	0.48	0.51	0.54	0.57
Medium Density Residential (MDR)	Residential, 10.9 DU/A or less	45	0.52	0.54	0.57	0.60
Medium Density Residential (MDR)	Residential, 14.5 DU/A or less	50	0.55	0.58	0.60	0.63
High Density Residential (HDR)	Residential, 24.0 DU/A or less	65	0.66	0.67	0.69	0.71
High Density Residential (HDR)	Residential, 43.0 DU/A or less	80	0.76	0.77	0.78	0.79
Commercial/Industrial (N. Com)	Neighborhood Commercial	80	0.76	0.77	0.78	0.79
Commercial/Industrial (G. Com)	General Commercial	85	0.80	0.80	0.81	0.82
Commercial/Industrial (O.P. Com)	Office Professional/Commercial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (Limited I.)	Limited Industrial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (General I.)	General Industrial	95	0.87	0.87	0.87	0.87

*The values associated with 0% impervious may be used for direct calculation of the runoff coefficient as described in Section 3.1.2 (representing the pervious runoff coefficient, Cp, for the soil type), or for areas that will remain undisturbed in perpetuity. Justification must be given that the area will remain natural forever (e.g., the area is located in Cleveland National Forest).
DU/A = dwelling units per acre
NRCS = National Resources Conservation Service

Runoff Coefficient Adjustment

Post Development Area

Total Area	31008	
Impervious	22560	72.76%

C = 0.90 × (% Impervious) + Cp × (1 - % Impervious)

% impervious = 72.76%

Cp = 0.35 (Table 3.1, soil type D, 0% impervious, County Hydrology Manual)

C = 0.75

Pre Development Area

Total Area	31008	
Impervious	24516	79.06%

C = 0.90 × (% Impervious) + Cp × (1 - % Impervious)

% impervious = 79.06%

Cp = 0.35 (Table 3.1, soil type D, 0% impervious, County Hydrology Manual)

C = 0.78

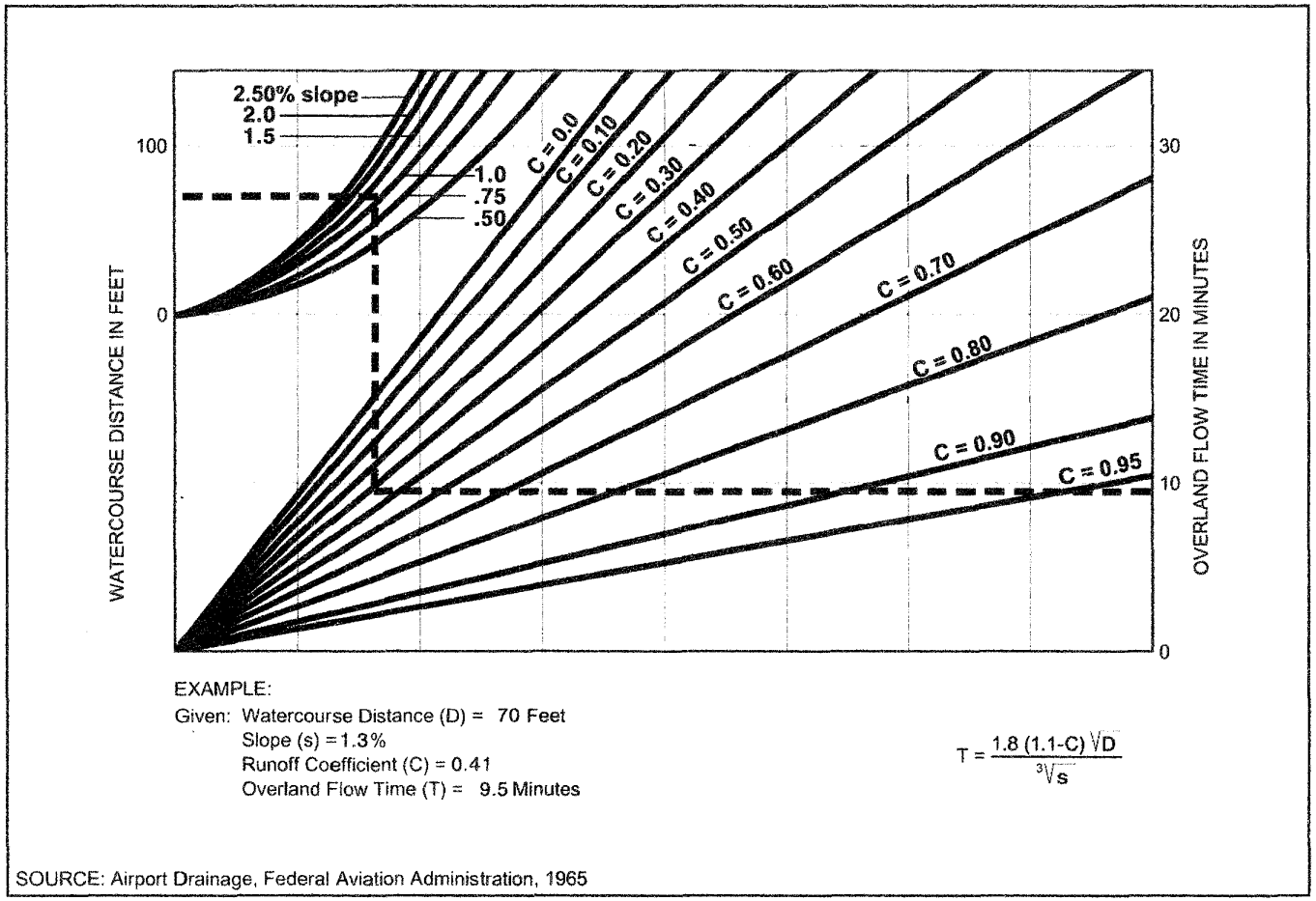
Time of Concentration

Location	Initial Average slope %	Initial L (ft)	**Initial Travel Time T (min)**	Add'l L (ft)	Average slope %	Notes	**Average Q Mannings Eq. V (ft/s)**	**Additional TC (travel time) T (min)**	**Total TC T (min)**
									(5 minutes min)
Pre Dev.									
Site	1.25	50	3.8	190	1.25		1.2	2.6	6.4
Post Dev.									
Site	1	50	4.5	215	0.6		1.1	3.3	7.8

Initial Travel Time
(Figure 3-3)

$$T\ min = \frac{1.8(1.1-C)D^{1/2}}{S^{1/3}}$$

Initial TC	Pre-Dev Site	Post-Dev Site
C =	0.78	0.75
D ft =	50	50
S % =	1.25	1
T =	**3.78**	**4.45**



EXAMPLE:
Given: Watercourse Distance (D) = 70 Feet
Slope (s) = 1.3%
Runoff Coefficient (C) = 0.41
Overland Flow Time (T) = 9.5 Minutes

$$T = \frac{1.8\,(1.1-C)\sqrt{D}}{\sqrt[3]{s}}$$

SOURCE: Airport Drainage, Federal Aviation Administration, 1965

FIGURE

Rational Formula - Overland Time of Flow Nomograph

3-3

Channel Report

Pre Dev TC Flow Path Velocity Average Q

Triangular

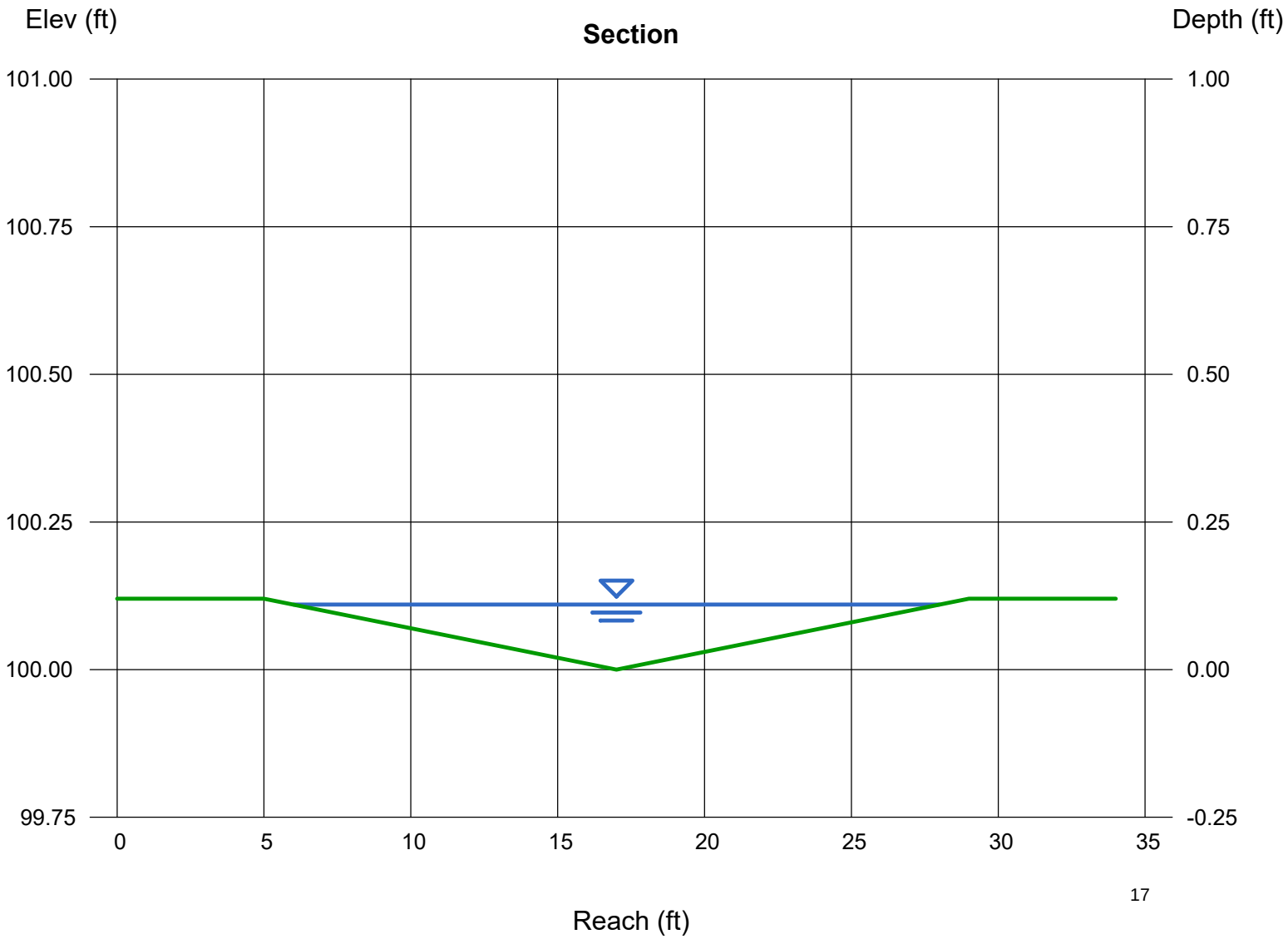
Side Slopes (z:1)	= 100.00, 100.00
Total Depth (ft)	= 0.12
Invert Elev (ft)	= 100.00
Slope (%)	= 1.25
N-Value	= 0.016

Calculations

Compute by:	Known Q
Known Q (cfs)	= 1.50

Highlighted

Depth (ft)	= 0.11
Q (cfs)	= 1.500
Area (sqft)	= 1.21
Velocity (ft/s)	= 1.24
Wetted Perim (ft)	= 22.00
Crit Depth, Yc (ft)	= 0.11
Top Width (ft)	= 22.00
EGL (ft)	= 0.13



Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. Friday, Jan 17 2020

Post Dev TC Flow Path Velocity Average Q

Gutter

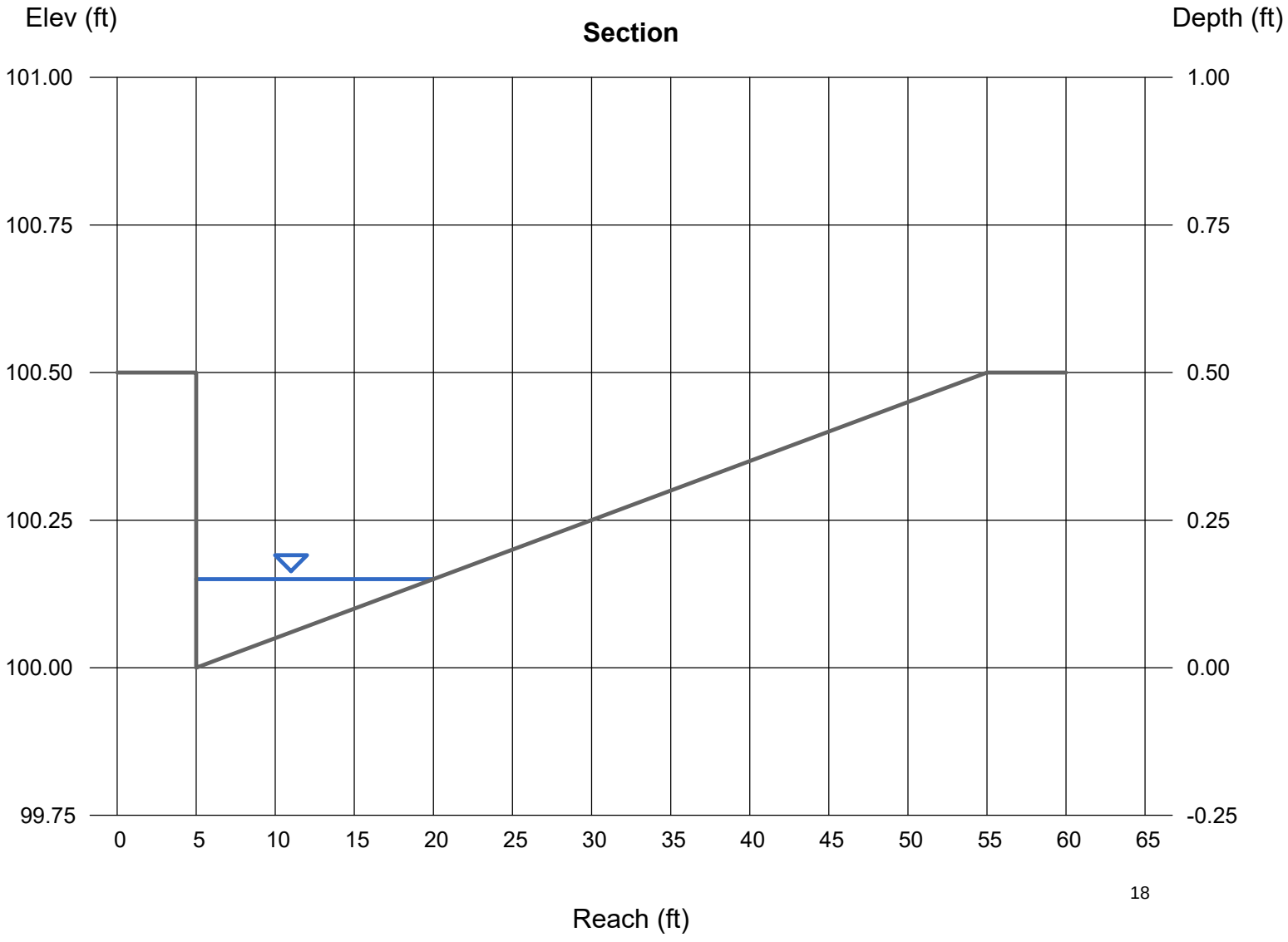
Cross Sl, Sx (ft/ft)	= 0.01
Cross Sl, Sw (ft/ft)	= 0.01
Gutter Width (ft)	= 1.50
Invert Elev (ft)	= 100.00
Slope (%)	= 0.60
N-Value	= 0.016

Calculations

Compute by:	Known Q
Known Q (cfs)	= 1.20

Highlighted

Depth (ft)	= 0.15
Q (cfs)	= 1.200
Area (sqft)	= 1.13
Velocity (ft/s)	= 1.07
Wetted Perim (ft)	= 15.15
Crit Depth, Yc (ft)	= 0.13
Spread Width (ft)	= 15.00
EGL (ft)	= 0.17



Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. Friday, Jan 17 2020

Pre Dev Q100 Outlet Flow

Circular

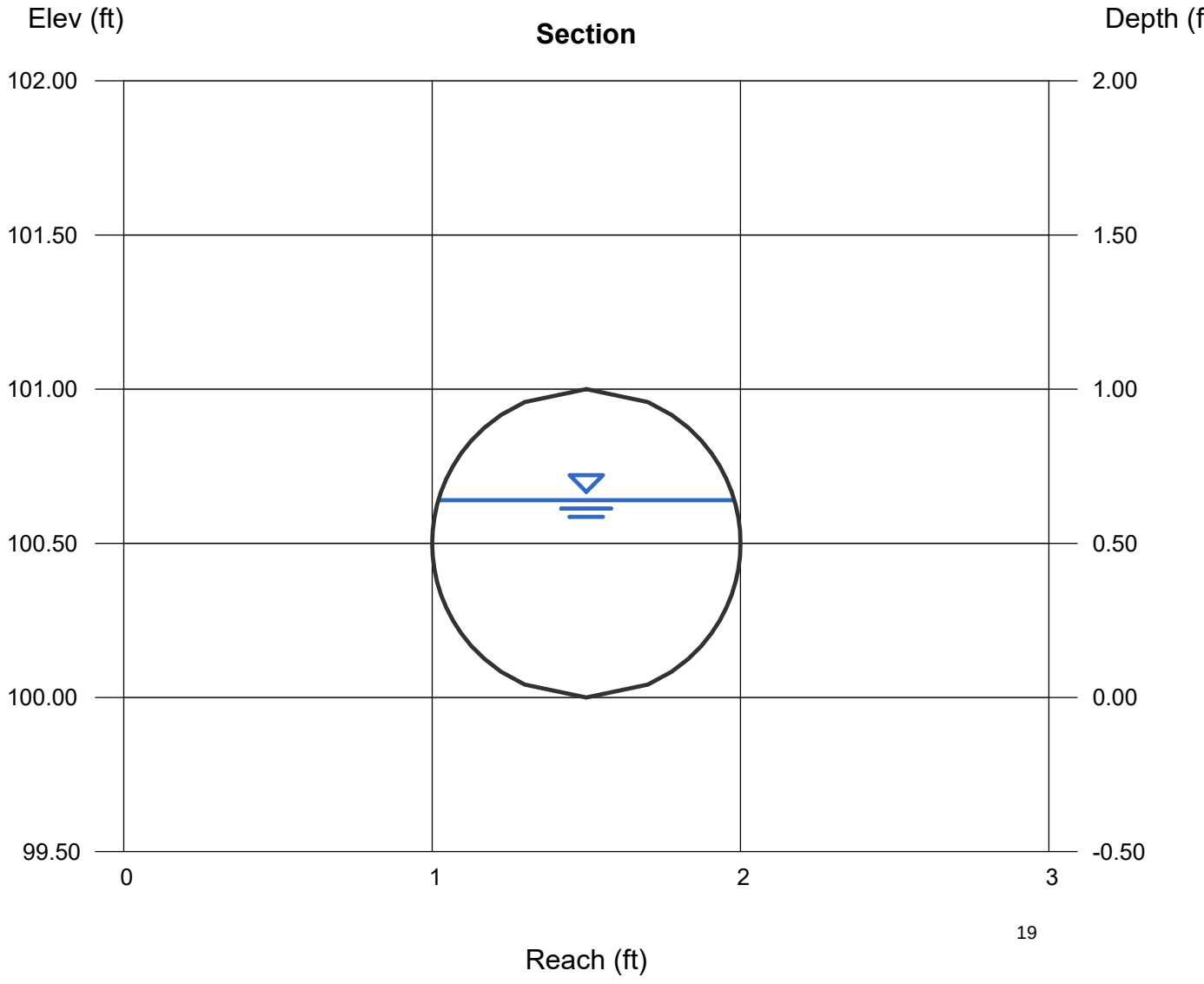
Diameter (ft)	= 1.00
Invert Elev (ft)	= 100.00
Slope (%)	= 0.60
N-Value	= 0.009

Calculations

Compute by:	Known Q
Known Q (cfs)	= 2.90

Highlighted

Depth (ft)	= 0.64
Q (cfs)	= 2.900
Area (sqft)	= 0.53
Velocity (ft/s)	= 5.46
Wetted Perim (ft)	= 1.85
Crit Depth, Yc (ft)	= 0.73
Top Width (ft)	= 0.96
EGL (ft)	= 1.10



Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. Wednesday, Oct 21 2020

Q100 (2) 10in Pipes exiting the Biofiltration Basin. 1.2 cfs each (2.4 cfs total)

Circular

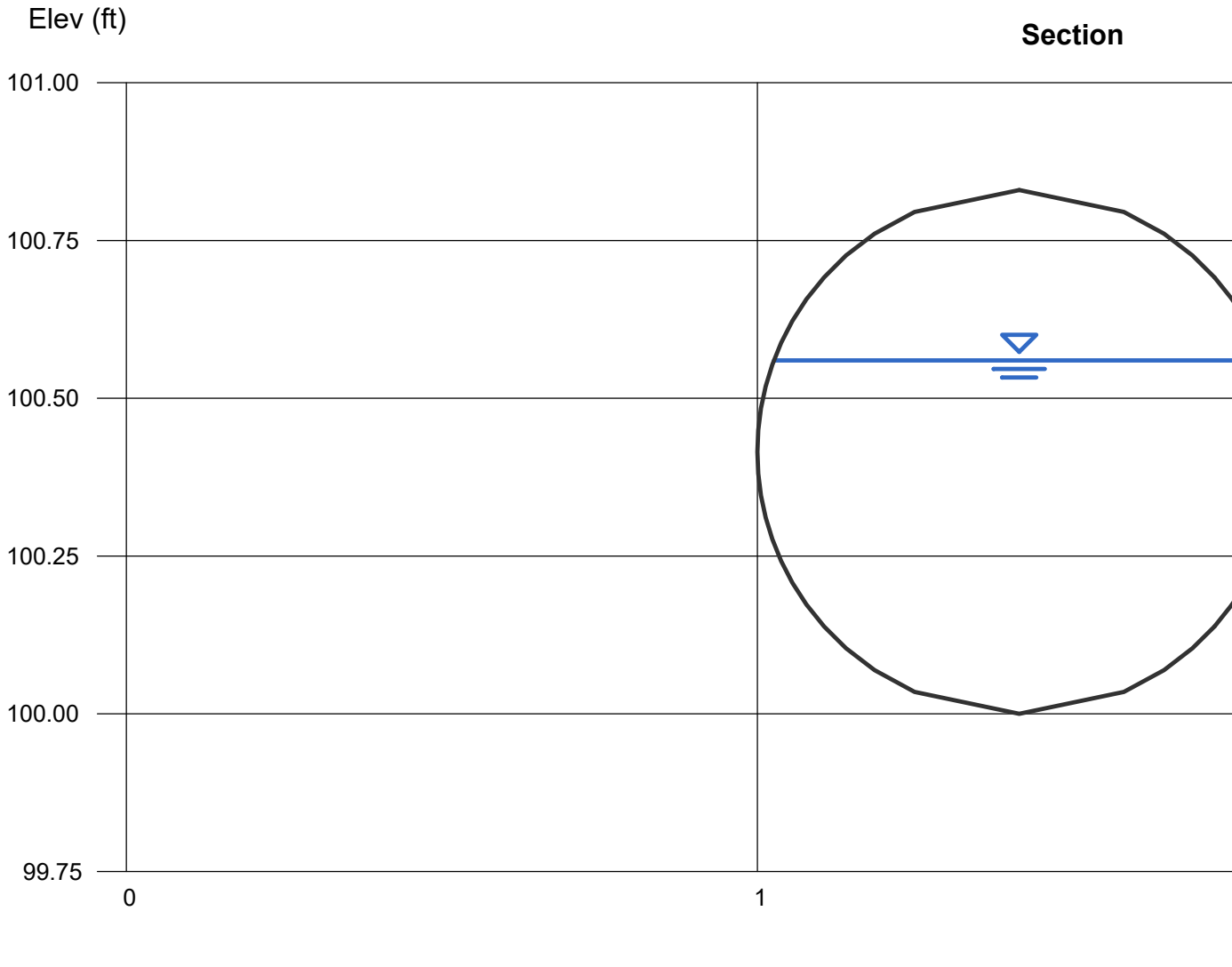
Diameter (ft)	= 0.83
Invert Elev (ft)	= 100.00
Slope (%)	= 0.50
N-Value	= 0.013

Calculations

Compute by:	Known Q
Known Q (cfs)	= 1.20

Highlighted

Depth (ft)	= 0.56
Q (cfs)	= 1.200
Area (sqft)	= 0.39
Velocity (ft/s)	= 3.08
Wetted Perim (ft)	= 1.60
Crit Depth, Yc (ft)	= 0.49
Top Width (ft)	= 0.78
EGL (ft)	= 0.71



Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. Friday, Jan 17 2020

Post Dev Q100 Outlet Flow (exist 12in pipe)

Circular

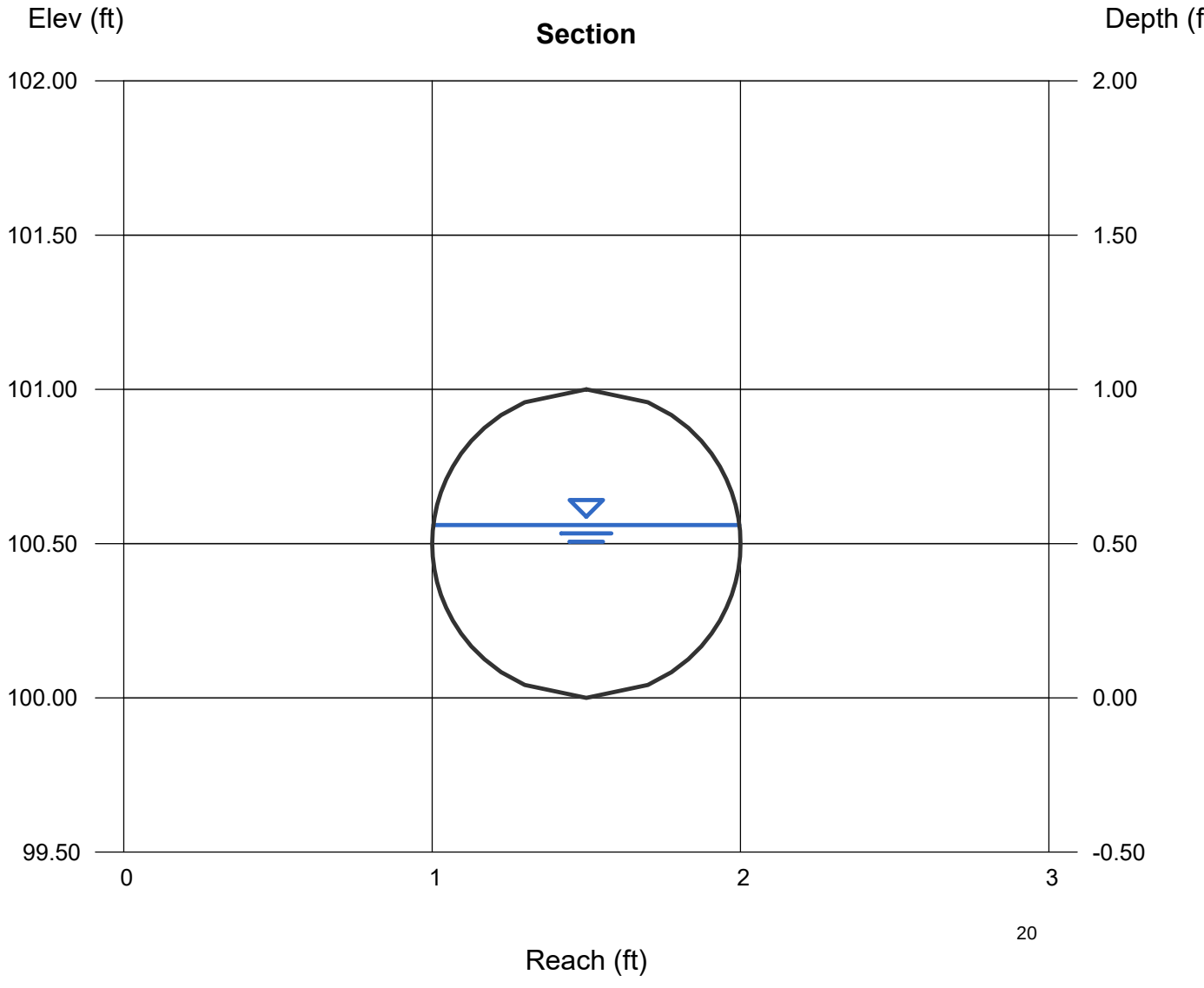
Diameter (ft)	= 1.00
Invert Elev (ft)	= 100.00
Slope (%)	= 0.60
N-Value	= 0.009

Calculations

Compute by:	Known Q
Known Q (cfs)	= 2.40

Highlighted

Depth (ft)	= 0.56
Q (cfs)	= 2.400
Area (sqft)	= 0.45
Velocity (ft/s)	= 5.28
Wetted Perim (ft)	= 1.69
Crit Depth, Yc (ft)	= 0.67
Top Width (ft)	= 0.99
EGL (ft)	= 0.99



ATTACHMENT C

LEGEND:

380 — EXISTING CONTOURS

EXISTING DIRECTION OF DRAINAGE

DRAINAGE AREA

"A" — DRAINAGE MANAGEMENT AREA DESIGNATION

EXISTING IMPERVIOUS AREAS

EX. ROOFTOP = 910 sf
EX. PAVEMENT = 23,606 sf
EXISTING LANDSCAPE = 6,492 sf

EX. WALL
GATE
EX. A.C. BERM
EX. A.C. BERM
EX. A.C. PAVING
EXISTING DRIVEWAY (PROTECT IN PLACE)
AT&T
N88°13'50"E 224.72'
EX. S/L
EX. 4" SEWER LATERAL (PROTECT IN PLACE)
EX. BACKFLOW DEVICE
EX. WATER SERVICE (PROTECT IN PLACE)
EX. SIDEWALK, CURB & GUTTER
AT&T
EX. BUILDING
DRAINAGE AREA "A"
0.71 ACRES
31,008 SQUARE FEET
S10°45'57"E 108.63'
PLACE
MIRAMAR
EX. 10" PVC SEWER
EX. 12" A.C. WATER
EX. CURB
N1°44'59"W 153.57'
TC FLOW PATH
L=240'
EX. CURB
EX. A.C. PAVING
EX. 12" STORM DRAIN PIPE
EXISTING DRIVEWAY (PROTECT IN PLACE)
Q100 = 2.9 cfs
V100 = 5.5 ft/s
S80°40'06"W 207.93'
EX. S/L
EX. BUS STOP ROUTE 31
EX. SIDEWALK, CURB & GUTTER
EX. SIDEWALK
EX. TRAFFIC SIGNAL
EX. PED. BARRICADE
EX. REC. WTR. B.O.
EX. S/L
R=20.00
Δ=90°45'03"
MIRAMAR ROAD

10 5 0 10 20 30
SCALE: 1" = 10'

PLANS PREPARED BY:
SPEAR & ASSOCIATES, INC.
CIVIL ENGINEERING & LAND SURVEYING
475 PRODUCTION STREET, SAN MARCOS, CA 92078
PHONE (760) 736-2040 FAX (760) 736-4866
WWW.SPEARINC.NET

PRE DEVELOPMENT PLAN FOR:
6270 MIRAMAR ROAD

PLOT DATE: 11/21/2020 10:51 AM C:\Users\Josh\Desktop\Work\19-222 SSCW Miramar\CAD\19-222Pre Dev.dwg

DRAINAGE AREA DMA BREAKDOWN

DRAINAGE AREA SURFACE	SYMBOL	SOIL TYPE	DRAINAGE AREA 'A'
BUILDING ROOFTOP		TYPE D	3,945 SQ FT
PARKING/DRIVE AISLE IMPERVIOUS AREA		TYPE D	14,750 SQ FT
HARSCAPING/SIDEWALK		TYPE D	1,525 SQ FT
EXSIT. IMPERVIOUS AREA		TYPE D	2,340 SQ FT
LANDSCAPING AREA		TYPE D	8,448 SQ FT
			TOTAL LOT AREA = 31,008 SQ FT

LEGEND:

- 380 — EXISTING CONTOURS
- EXISTING DIRECTION OF DRAINAGE
- DRAINAGE AREA
- "A" — DRAINAGE MANAGEMENT AREA DESIGNATION

DRAINAGE AREA "A"
0.71 ACRES
31,008 SQUARE FEET

TC FLOW PATH
L=265'

PARCEL A

PROPOSED BUILDING

BIOFILTRATION BASIN
401.25 TG
400.25 FG
400.25 INV OUT

(2) 29'-10" PVC @ 0.50% INSTALLED PARALLEL

21'-6" SOILD PVC @ 0.50%

POC
Q100 = 2.4 cfs
V100 = 5.3 ft/s

N88°13'50"E 224.72'
N1°44'59"W 153.57'
S1°04'59"E 106.63'
S80°40'06"W 207.93'
R=40.00' L=28.54'
Δ=41°05'05"

STOP
DO NOT ENTER
DO NOT ENTER
NO PARKING

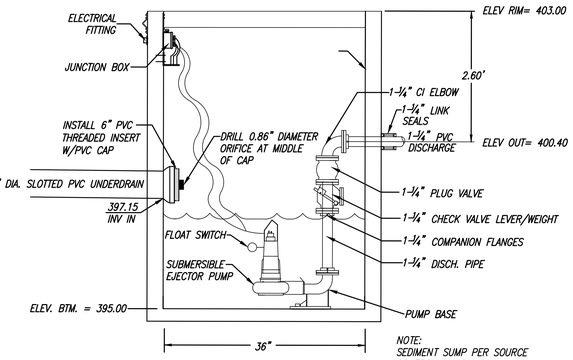
EX. 4" SEWER LATERAL (PROTECT IN PLACE)
EX. WATER SERVICE (PROTECT IN PLACE)
EX. SIDEWALK, CURB & GUTTER
EX. BACKFLOW DEVICE
EX. S/L
EX. SIDEWALK
EX. TRAFFIC SIGNAL
EX. PED. BARRICADE
EX. REC. WTR. B.O.
EX. S/L
EX. BUS STOP ROUTE 31
EX. SIDEWALK, CURB & GUTTER
EX. CONCRETE HEAD WALL OUTLET
EX. 12" STORM DRAIN PIPE
EXISTING DRIVEWAY (PROTECT IN PLACE)
FUTURE RIGHT OF WAY
FUTURE RIGHT OF WAY
F.F.E.

MIRAMAR ROAD
MIRAMAR PLACE
EX. 10" PVC SEWER
EX. 12" A.C. WATER

SCALE: 1" = 10'

6" DIA. SLOTTED PVC UNDERDRAIN CONNECTION (EXTERIOR)
3"
0.86" DIA. ORIFICE DRILLED THROUGH PVC MAINTENANCE CAP @ UNDERDRAIN CONNECTION.

MAINTENANCE CAP DETAIL
ATTACH TO INTERIOR INLET WALL OF BIOFILTRATION BASIN SUMP PUMP BASIN
NOT-TO-SCALE



SUMP PUMP SYSTEM DETAIL
(BIOFILTRATION HMP OUTLET)
NOT-TO-SCALE

NOTE:
SEDIMENT SUMP PER SOURCE CONTROL GUIDELINES INCLUDED.

BIOFILTRATION BASIN MEDIA

AMENDED SOIL LAYER
COMPOSITION AND TEXTURE:
65% SAND, 20% SANDY LOAM, & 15% COMPOST (FROM VEGETATION-BASED FEEDSTOCK). ANIMAL WASTES OR BY-PRODUCTS SHOULD NOT BE APPLIED. AMENDED SOIL LAYER DEPTH 18"

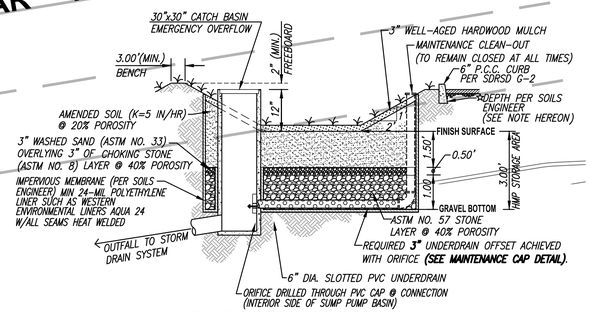
PERMEABILITY:
5 IN/HR INFILTRATION RATE FOR THE FLOW-BASED SUSMP METHOD (1-6IN/HR FOR ALTERNATIVE DESIGNS, AS APPROVED BY LOCAL JURISDICTION).

CHEMICAL COMPOSITION: TOTAL PHOSPHORUS < 15 PARTS PER MILLION (PPM); PH 6-8; CATION EXCHANGE CAPACITY > 5 MILLIEQUIVALENTS PER 100 GRAMS (MEQ/100 G) OF SOIL; ORGANIC MATTER CONTENT < 5 PERCENT BY WEIGHT.

DRAINAGE LAYER
SEPARATE SOIL MEDIA FROM UNDERDRAIN LAYER WITH 3 INCH OF WASHED SAND, FOLLOWED BY 3 INCHES OF CHOKING STONE (ASTM NO. 8) OVER A 1.00-FOOT ENVELOPE OF ASTM NO. 57 STONE. TOTAL COMBINED DRAINAGE LAYER 18".

SURFACE VEGETATION
AS SPECIFIED BY THE LANDSCAPE ARCHITECT PLANS.

NOTE:
SOIL MIX WILL BE TESTED IN FIELD TO MEET REQUIRED INFILTRATION RATE.



BIOFILTRATION BASIN SECTION
TYPICAL BASIN SECTION & OUTLET CONNECTION
NOT-TO-SCALE

PLANS PREPARED BY:
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POST DEVELOPMENT PLAN FOR:
6270 MIRAMAR ROAD