Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 — Tuesday, Apr 5, 2016

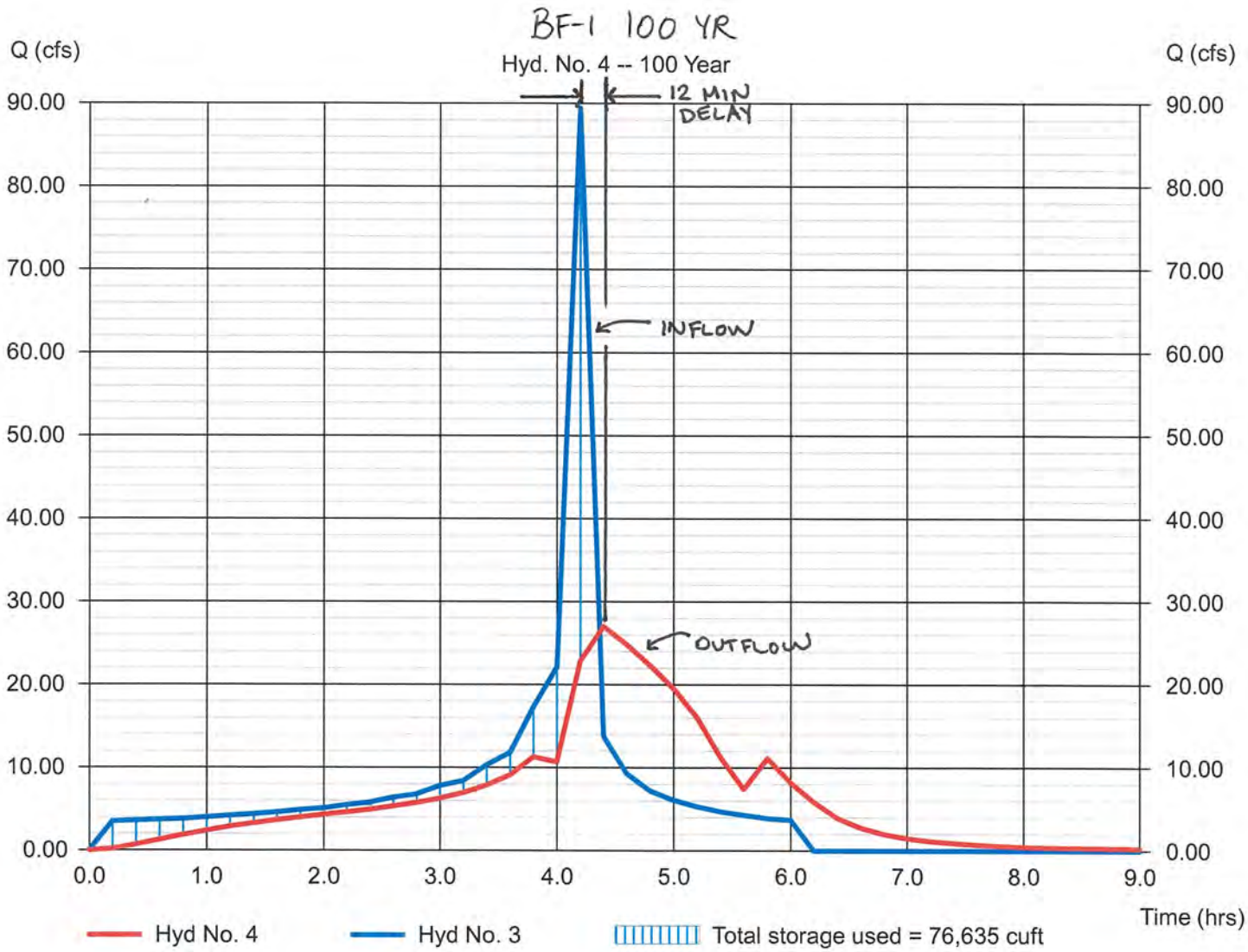
Hyd. No. 4

BF-1 100YR

Hydrograph type	= Reservoir	Peak discharge	= 27.01 cfs ← PEAK QOUT
Storm frequency	= 100 yrs	Time to peak	= 264 min
Time interval	= 12 min	Hyd. volume	= 210,047 cuft
Inflow hyd. No.	= 3 - Basin B2	Max. Elevation	= 528.96 ft
Reservoir name	= Pond 2	Max. Storage	= 76,635 cuft

Storage Indication method used.

12 MIN (IN) + 12 MIN DELAY = 24 MIN



Pond Report

Hydraflow Hydrographs by Intelisolve v9.23 — Tuesday, Apr 5, 2016

Pond No. 2 - BF-1

Pond Data

Contours - User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 526.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	526.00	25,455	0	0
1.00	527.00	26,788	26,116	26,116
2.00	528.00	28,146	27,461	53,578
3.00	529.00	29,529	28,832	82,409

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 11.00	0.00	0.00	0.00
Span (in)	= 48.00	0.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 526.00	0.00	0.00	0.00
Length (ft)	= 0.50	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

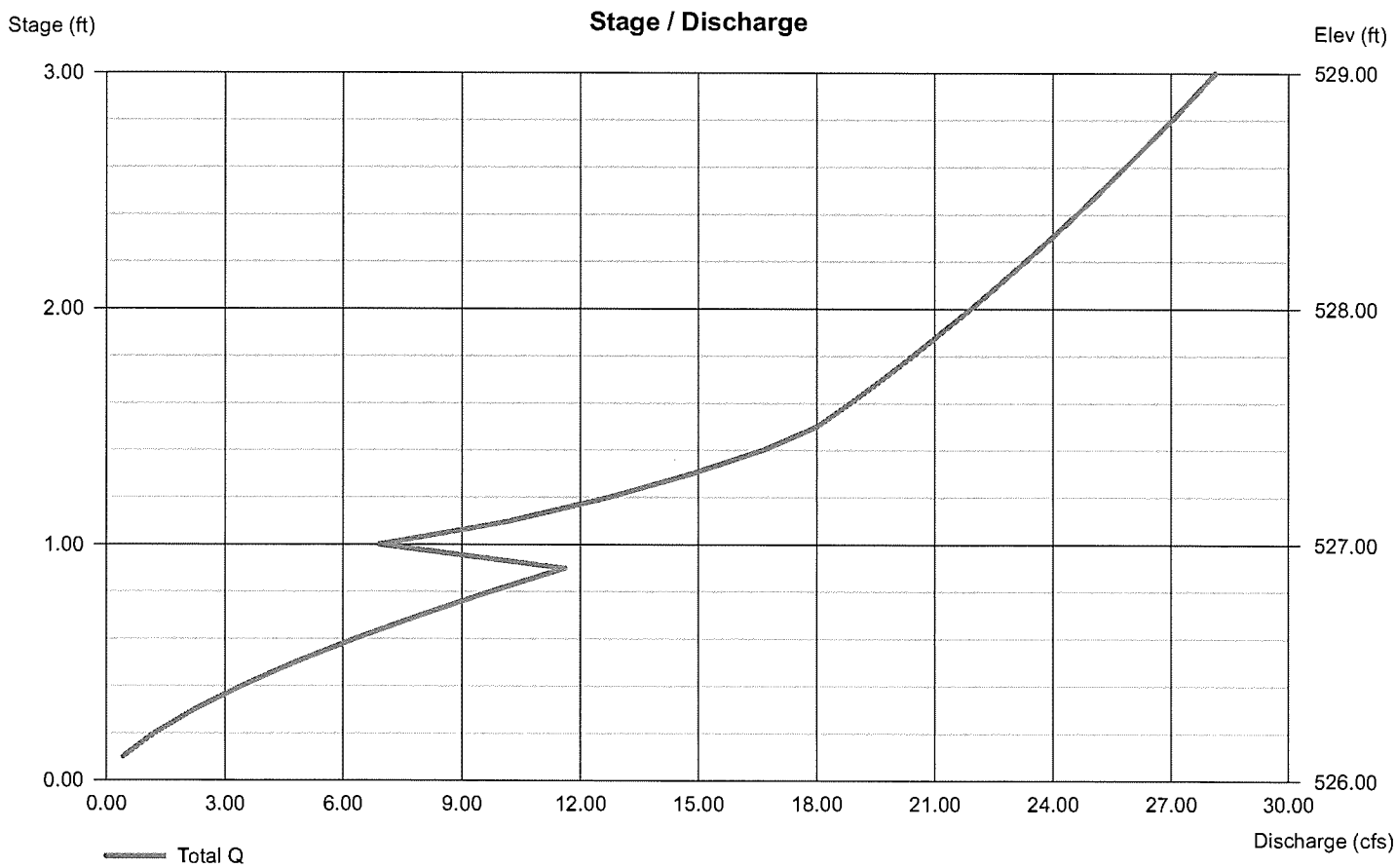
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



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RUN DATE 4/5/2016
HYDROGRAPH FILE NAME Text1
TIME OF CONCENTRATION 12 MIN.
6 HOUR RAINFALL 3 INCHES
BASIN AREA 46.8 ACRES
RUNOFF COEFFICIENT 0.41456
PEAK DISCHARGE 89.44 CFS

BF-1 INFLOW

100 YR STORM

TIME (MIN) = 0	DISCHARGE (CFS) = 0
TIME (MIN) = 12	DISCHARGE (CFS) = 3.5
TIME (MIN) = 24	DISCHARGE (CFS) = 3.6
TIME (MIN) = 36	DISCHARGE (CFS) = 3.7
TIME (MIN) = 48	DISCHARGE (CFS) = 3.8
TIME (MIN) = 60	DISCHARGE (CFS) = 4
TIME (MIN) = 72	DISCHARGE (CFS) = 4.2
TIME (MIN) = 84	DISCHARGE (CFS) = 4.4
TIME (MIN) = 96	DISCHARGE (CFS) = 4.6
TIME (MIN) = 108	DISCHARGE (CFS) = 4.9
TIME (MIN) = 120	DISCHARGE (CFS) = 5.1
TIME (MIN) = 132	DISCHARGE (CFS) = 5.5
TIME (MIN) = 144	DISCHARGE (CFS) = 5.8
TIME (MIN) = 156	DISCHARGE (CFS) = 6.4
TIME (MIN) = 168	DISCHARGE (CFS) = 6.8
TIME (MIN) = 180	DISCHARGE (CFS) = 7.8
TIME (MIN) = 192	DISCHARGE (CFS) = 8.4
TIME (MIN) = 204	DISCHARGE (CFS) = 10.3
TIME (MIN) = 216	DISCHARGE (CFS) = 11.8
TIME (MIN) = 228	DISCHARGE (CFS) = 17.3
TIME (MIN) = 240	DISCHARGE (CFS) = 22.1
TIME (MIN) = 252	DISCHARGE (CFS) = 89.44 ← PEAK Q_{100}
TIME (MIN) = 264	DISCHARGE (CFS) = 13.8
TIME (MIN) = 276	DISCHARGE (CFS) = 9.3
TIME (MIN) = 288	DISCHARGE (CFS) = 7.2
TIME (MIN) = 300	DISCHARGE (CFS) = 6.1
TIME (MIN) = 312	DISCHARGE (CFS) = 5.3
TIME (MIN) = 324	DISCHARGE (CFS) = 4.7
TIME (MIN) = 336	DISCHARGE (CFS) = 4.3
TIME (MIN) = 348	DISCHARGE (CFS) = 3.9
TIME (MIN) = 360	DISCHARGE (CFS) = 3.7
TIME (MIN) = 372	DISCHARGE (CFS) = 0

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 — Tuesday, Apr 5, 2016

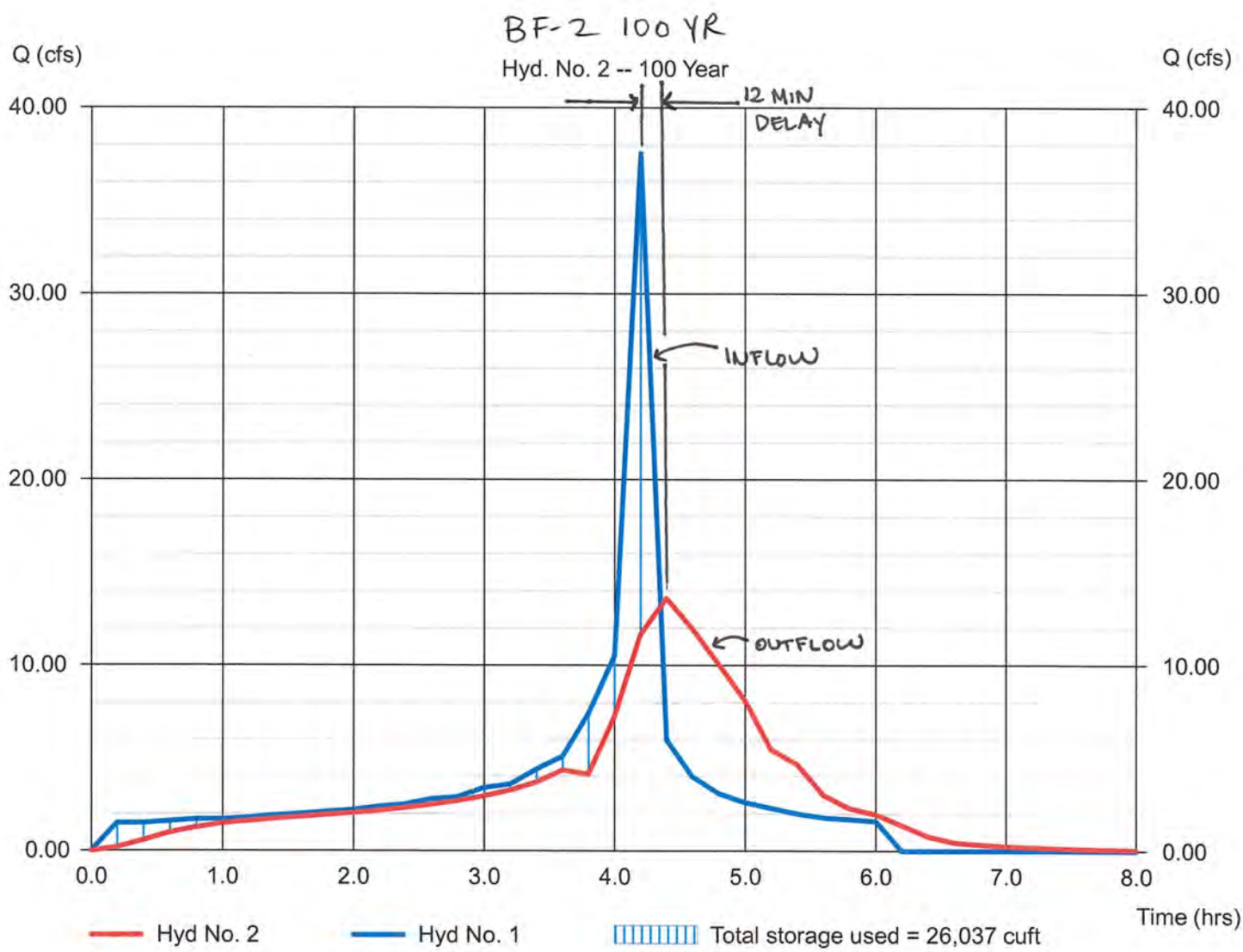
Hyd. No. 2

BF-2 100 YR

Hydrograph type	= Reservoir	Peak discharge	= 13.60 cfs ← PEAK QOUT
Storm frequency	= 100 yrs	Time to peak	= 264 min
Time interval	= 12 min	Hyd. volume	= 90,465 cuft
Inflow hyd. No.	= 1 - BASIN B1	Max. Elevation	= 586.46 ft
Reservoir name	= Pond 1	Max. Storage	= 26,037 cuft

Storage Indication method used.

12 MIN (IN) + 12 MIN DELAY = 24 MIN



Pond Report

Hydraflow Hydrographs by Intelisolve v9.23 — Tuesday, Apr 5, 2016

Pond No. 1 - BF-2

Pond Data

Contours - User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 584.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	584.00	10,536	0	0
1.00	585.00	11,447	10,987	10,987
2.00	586.00	12,383	11,911	22,898
3.00	587.00	13,345	12,860	35,758

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 6.00	0.00	0.00	0.00
Span (in)	= 48.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 584.00	0.00	0.00	0.00
Length (ft)	= 0.50	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

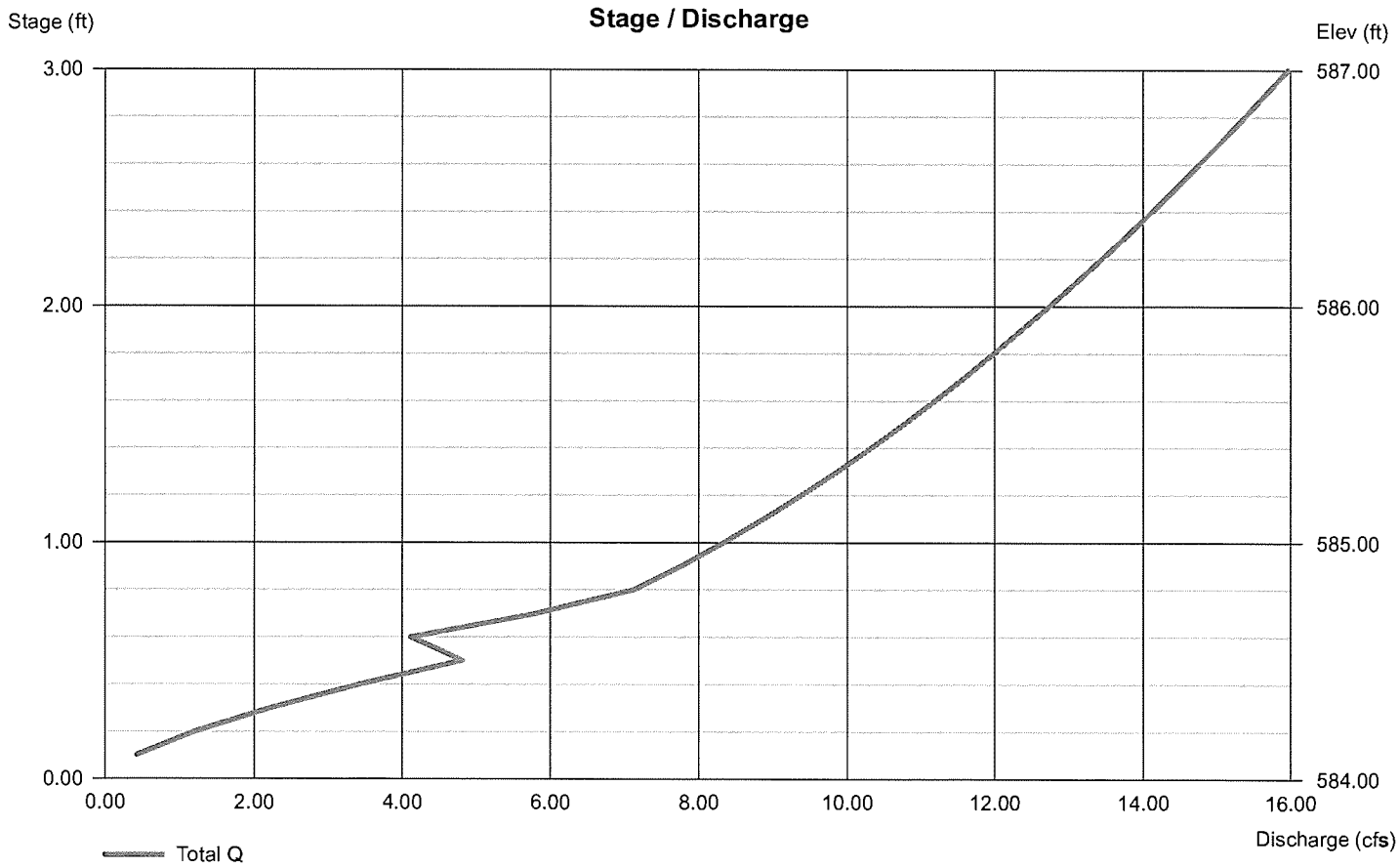
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



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RUN DATE 4/4/2016
HYDROGRAPH FILE NAME Text1
TIME OF CONCENTRATION 12 MIN.
6 HOUR RAINFALL 3 INCHES
BASIN AREA 19.36 ACRES
RUNOFF COEFFICIENT 0.432
PEAK DISCHARGE 37.55 CFS

BF-2 INFLOW

100 YR STORM

TIME (MIN) = 0	DISCHARGE (CFS) = 0
TIME (MIN) = 12	DISCHARGE (CFS) = 1.5
TIME (MIN) = 24	DISCHARGE (CFS) = 1.5
TIME (MIN) = 36	DISCHARGE (CFS) = 1.6
TIME (MIN) = 48	DISCHARGE (CFS) = 1.7
TIME (MIN) = 60	DISCHARGE (CFS) = 1.7
TIME (MIN) = 72	DISCHARGE (CFS) = 1.8
TIME (MIN) = 84	DISCHARGE (CFS) = 1.9
TIME (MIN) = 96	DISCHARGE (CFS) = 2
TIME (MIN) = 108	DISCHARGE (CFS) = 2.1
TIME (MIN) = 120	DISCHARGE (CFS) = 2.2
TIME (MIN) = 132	DISCHARGE (CFS) = 2.4
TIME (MIN) = 144	DISCHARGE (CFS) = 2.5
TIME (MIN) = 156	DISCHARGE (CFS) = 2.8
TIME (MIN) = 168	DISCHARGE (CFS) = 2.9
TIME (MIN) = 180	DISCHARGE (CFS) = 3.4
TIME (MIN) = 192	DISCHARGE (CFS) = 3.6
TIME (MIN) = 204	DISCHARGE (CFS) = 4.4
TIME (MIN) = 216	DISCHARGE (CFS) = 5.1
TIME (MIN) = 228	DISCHARGE (CFS) = 7.4
TIME (MIN) = 240	DISCHARGE (CFS) = 10.5
TIME (MIN) = 252	DISCHARGE (CFS) = 37.55 ← PEAK Q_{100}
TIME (MIN) = 264	DISCHARGE (CFS) = 6
TIME (MIN) = 276	DISCHARGE (CFS) = 4
TIME (MIN) = 288	DISCHARGE (CFS) = 3.1
TIME (MIN) = 300	DISCHARGE (CFS) = 2.6
TIME (MIN) = 312	DISCHARGE (CFS) = 2.3
TIME (MIN) = 324	DISCHARGE (CFS) = 2
TIME (MIN) = 336	DISCHARGE (CFS) = 1.8
TIME (MIN) = 348	DISCHARGE (CFS) = 1.7
TIME (MIN) = 360	DISCHARGE (CFS) = 1.6
TIME (MIN) = 372	DISCHARGE (CFS) = 0

SECTION 5-2C

BASIN C, PROPOSED DETENTION

On-lot runoff generated within Basin "C" will be detained within on-lot detention facilities in the ultimate condition. Discharge from those detention facilities, along with undetained runoff from the public right-of-way, will be collected within public storm drain systems and conveyed to a regional detention facility (see Exhibit "C"). Design specifications for the detention facilities are calculated within the Storm Water Quality Management Plan for **Sunroad Otay 250**. Routing calculations for each detention facility follow within this section.

Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.23 — Monday, Apr 4, 2016

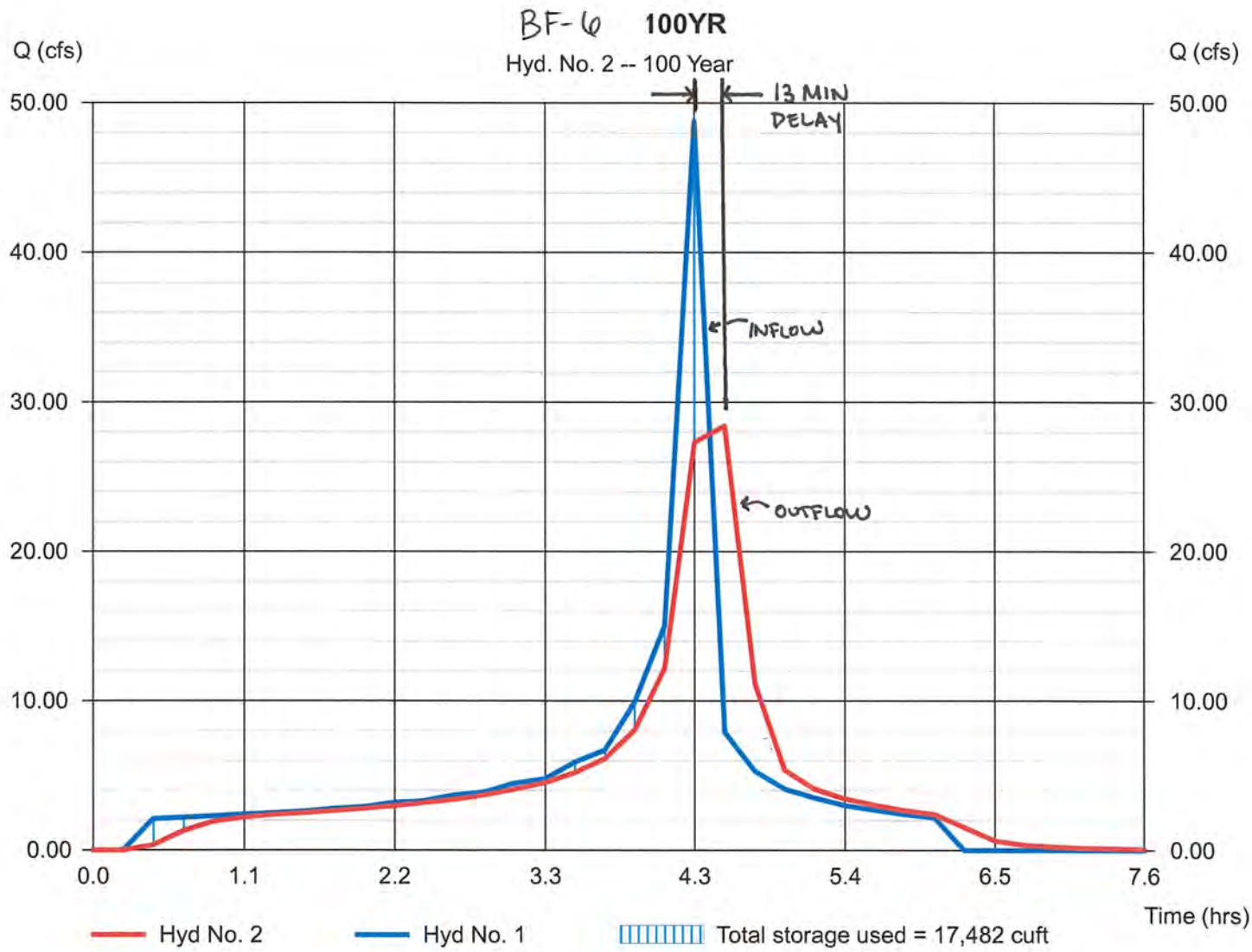
Hyd. No. 2

BF-6 100YR

Hydrograph type	= Reservoir	Peak discharge	= 28.41 cfs ← PEAK QOUT
Storm frequency	= 100 yrs	Time to peak	= 273 min
Time interval	= 13 min	Hyd. volume	= 125,259 cuft
Inflow hyd. No.	= 1 - POND C1 INFLOW, 100YR	Max. Elevation	= 536.84 ft
Reservoir name	= Pond C1	Max. Storage	= 17,482 cuft

Storage Indication method used.

13 MIN (IN) + 13 MIN DELAY = 26 MIN



Pond Report

Hydraflow Hydrographs by Intelisolve v9.23 — Monday, Apr 4, 2016

Pond No. 1 - BF-6

Pond Data

Contours - User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 534.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	534.00	7,819	0	0
1.00	535.00	8,616	8,213	8,213
2.00	536.00	9,438	9,023	17,236
3.00	537.00	10,285	9,857	27,094
4.00	538.00	11,157	10,717	37,811
5.00	539.00	12,055	11,602	49,413
6.00	540.00	12,977	12,512	61,925

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	0.00	Inactive	Inactive
Span (in)	= 48.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 534.00	0.00	0.00	0.00
Length (ft)	= 0.50	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

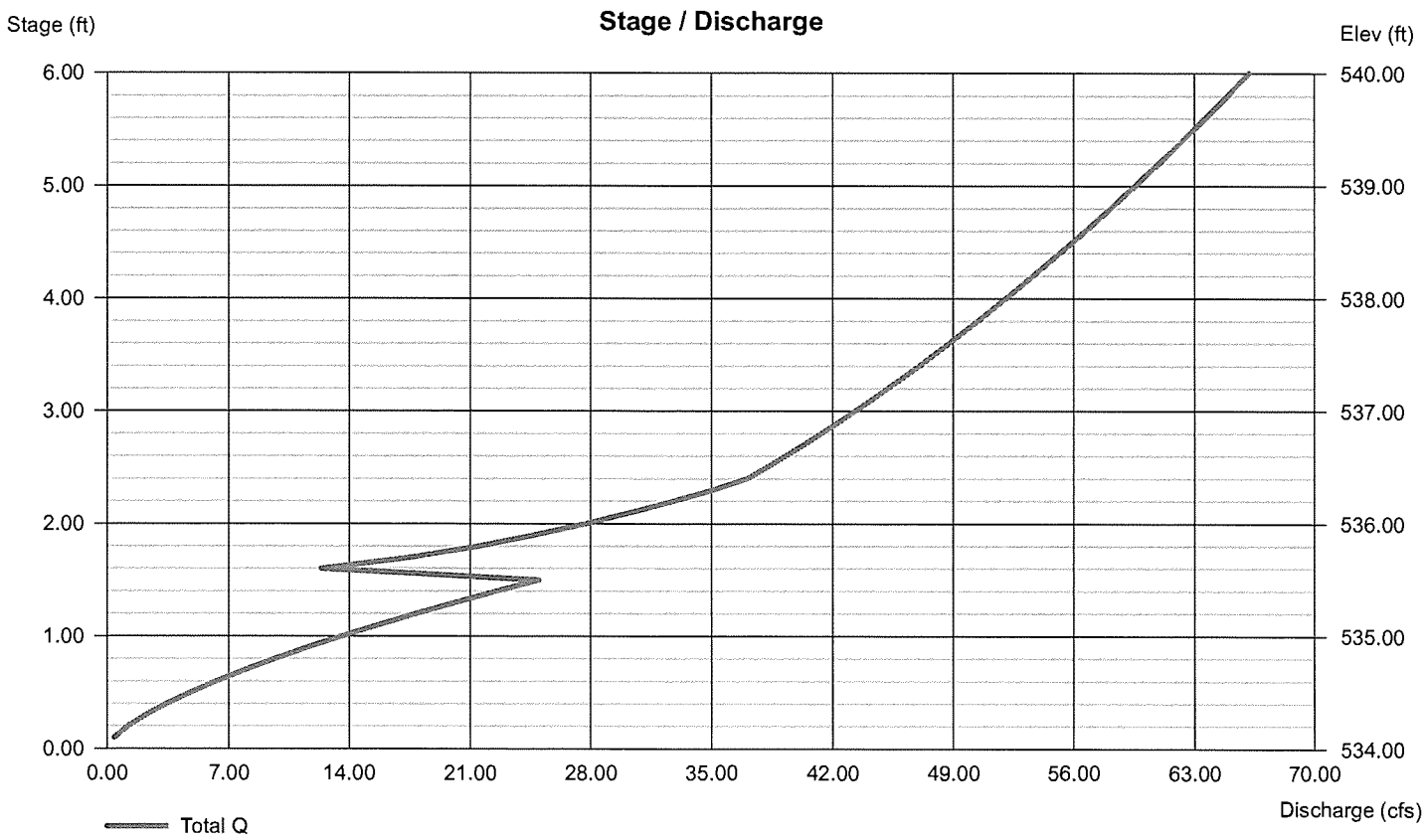
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



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RUN DATE 4/4/2016
HYDROGRAPH FILE NAME Text1
TIME OF CONCENTRATION 13 MIN.
6 HOUR RAINFALL 3 INCHES
BASIN AREA 24.18 ACRES
RUNOFF COEFFICIENT 0.4833
PEAK DISCHARGE 48.79 CFS

BF-6 INFLOW

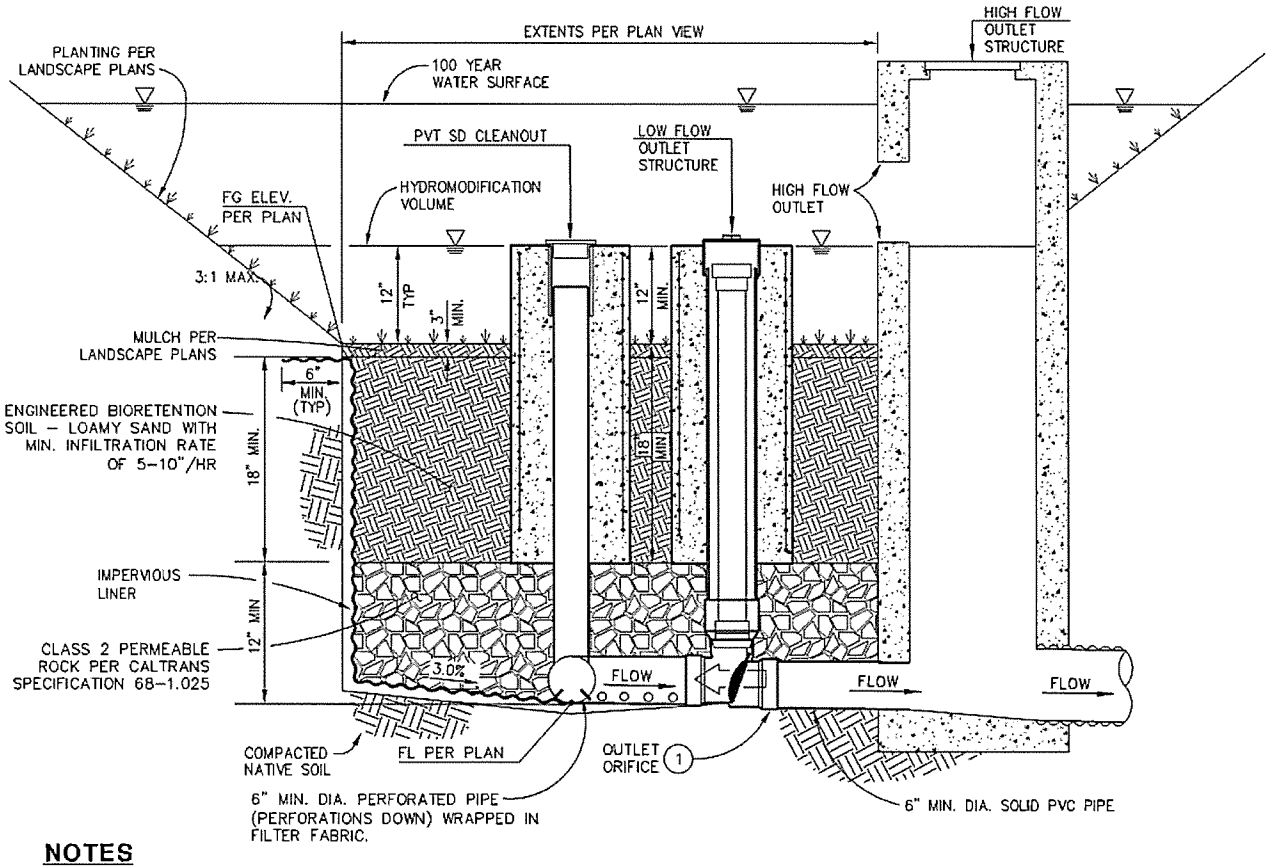
100 YR STORM

TIME (MIN) = 0	DISCHARGE (CFS) = 0
TIME (MIN) = 13	DISCHARGE (CFS) = 0
TIME (MIN) = 26	DISCHARGE (CFS) = 2.1
TIME (MIN) = 39	DISCHARGE (CFS) = 2.2
TIME (MIN) = 52	DISCHARGE (CFS) = 2.3
TIME (MIN) = 65	DISCHARGE (CFS) = 2.4
TIME (MIN) = 78	DISCHARGE (CFS) = 2.5
TIME (MIN) = 91	DISCHARGE (CFS) = 2.6
TIME (MIN) = 104	DISCHARGE (CFS) = 2.8
TIME (MIN) = 117	DISCHARGE (CFS) = 2.9
TIME (MIN) = 130	DISCHARGE (CFS) = 3.2
TIME (MIN) = 143	DISCHARGE (CFS) = 3.3
TIME (MIN) = 156	DISCHARGE (CFS) = 3.7
TIME (MIN) = 169	DISCHARGE (CFS) = 3.9
TIME (MIN) = 182	DISCHARGE (CFS) = 4.5
TIME (MIN) = 195	DISCHARGE (CFS) = 4.8
TIME (MIN) = 208	DISCHARGE (CFS) = 5.9
TIME (MIN) = 221	DISCHARGE (CFS) = 6.7
TIME (MIN) = 234	DISCHARGE (CFS) = 9.9
TIME (MIN) = 247	DISCHARGE (CFS) = 15
TIME (MIN) = 260	DISCHARGE (CFS) = 48.79 ← PEAK Q_{100}
TIME (MIN) = 273	DISCHARGE (CFS) = 7.9
TIME (MIN) = 286	DISCHARGE (CFS) = 5.3
TIME (MIN) = 299	DISCHARGE (CFS) = 4.1
TIME (MIN) = 312	DISCHARGE (CFS) = 3.5
TIME (MIN) = 325	DISCHARGE (CFS) = 3
TIME (MIN) = 338	DISCHARGE (CFS) = 2.7
TIME (MIN) = 351	DISCHARGE (CFS) = 2.4
TIME (MIN) = 364	DISCHARGE (CFS) = 2.2
TIME (MIN) = 377	DISCHARGE (CFS) = 0

SECTION 5-3

DUAL PURPOSE BIOFILTRATION SIZING CONFIRMATION

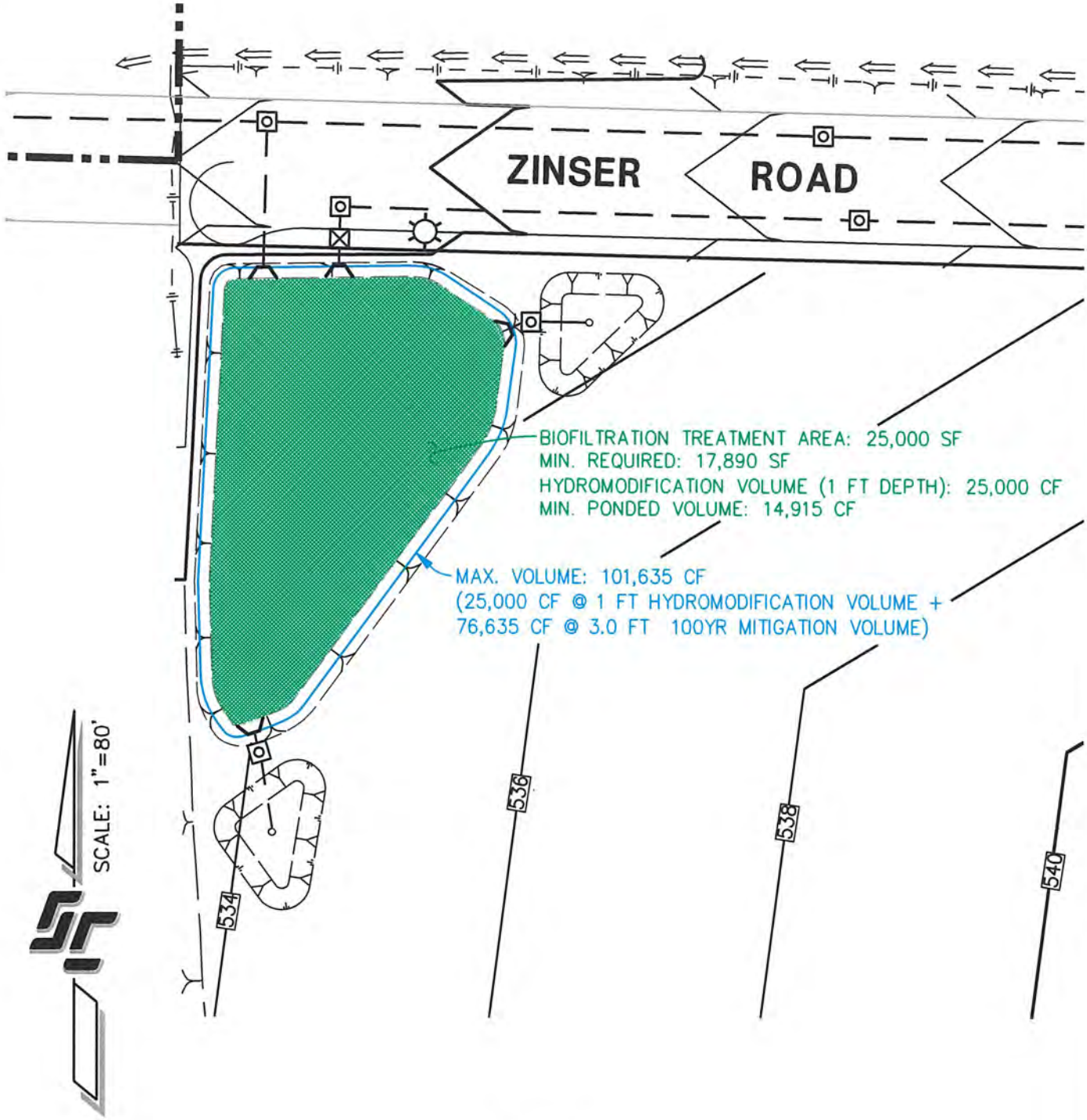
Sunroad Otay 250 proposes to use dual purpose biofiltration/ detention basins to provide pollutant control, hydromodification, and 100yr peak mitigation. It is anticipated that the basins will be constructed with a total ponded depth of 3-4 feet. The bottom of the basin will be constructed as a biofiltration planter. The facility will be designed to provide hydromodification storage within the biofiltration media and on the surface. Ponded depth for hydromodification purposes, storms up to a 10 year design storm, will be approximately 12". A hydromodification control structure, at the downstream end of the biofiltration underdrain system, will restrict low flows. Flows greater than those generated by a 10 year storm will enter the high flow outlet, a weir set above the hydromodification ponded depth. The high flow outlet will be sized for the peak design storm to ensure that post-project peak discharge rates do not exceed pre-project rates for storms up to a 100 year design storm. See Figure A below for a typical section of a dual purpose biofiltration facility. The calculations and exhibits within this section demonstrate that the basin sizes shown on the preliminary grading plan conservatively address both hydromodification and peak detention needs. It is anticipated that continuous simulation modeling will be used at final engineering to minimize treatment area and reduce ponded depths.



NOTES

(1) 6" PVC RECTORSEAL CLEAN CHECK EXTENDABLE BACKWATER VALVE, OR EQUIVALENT (HYDROMODIFICATION OUTLET CONTROL STRUCTURE), WITH LOW FLOW ORIFICE.

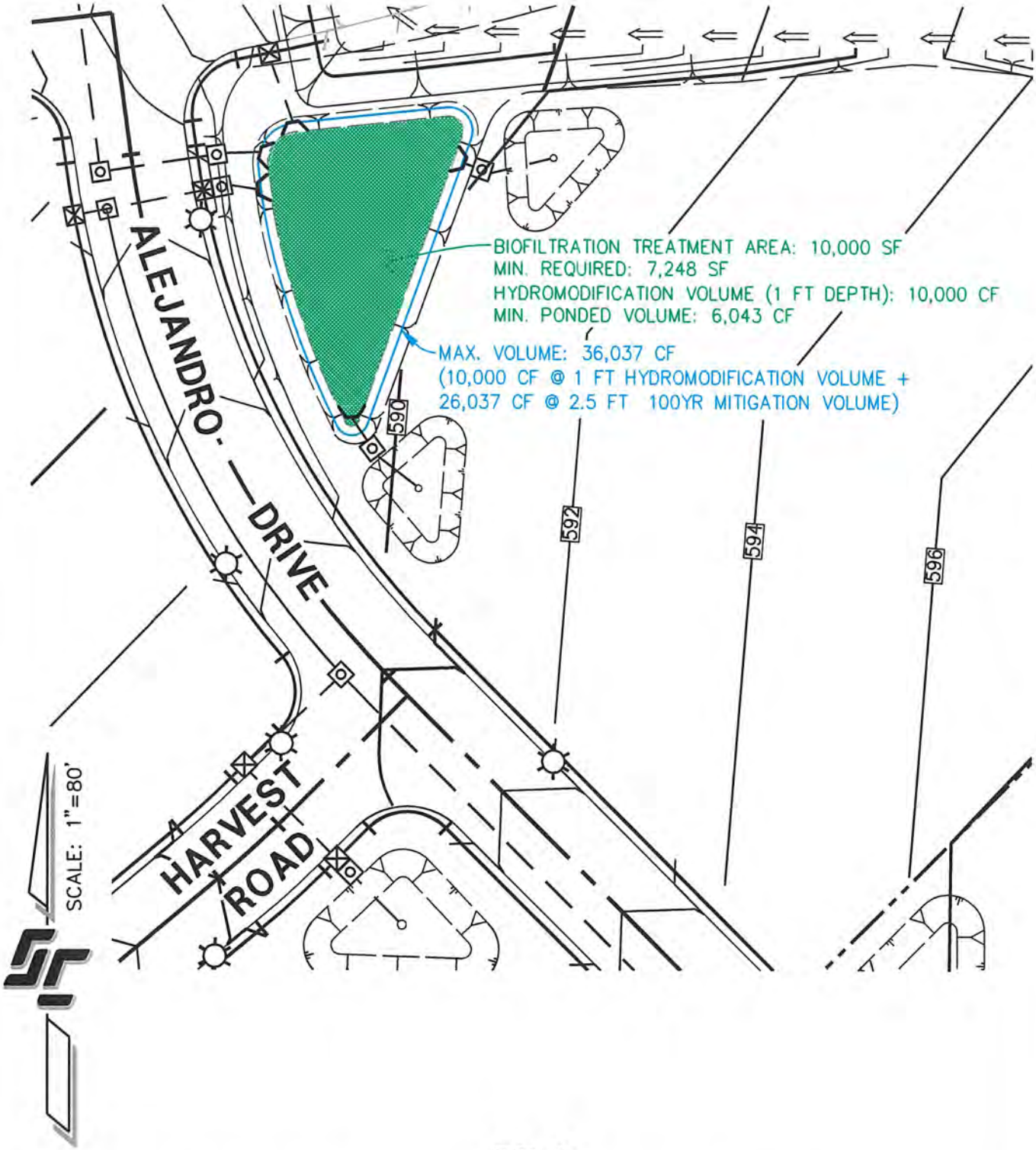
Figure A
Typical Section of a Biofiltration/Detention Basin



BF-1
DUAL PURPOSE BIOFILTRATION/DETENTION BASIN

SCALE: 1"=80'

5-30

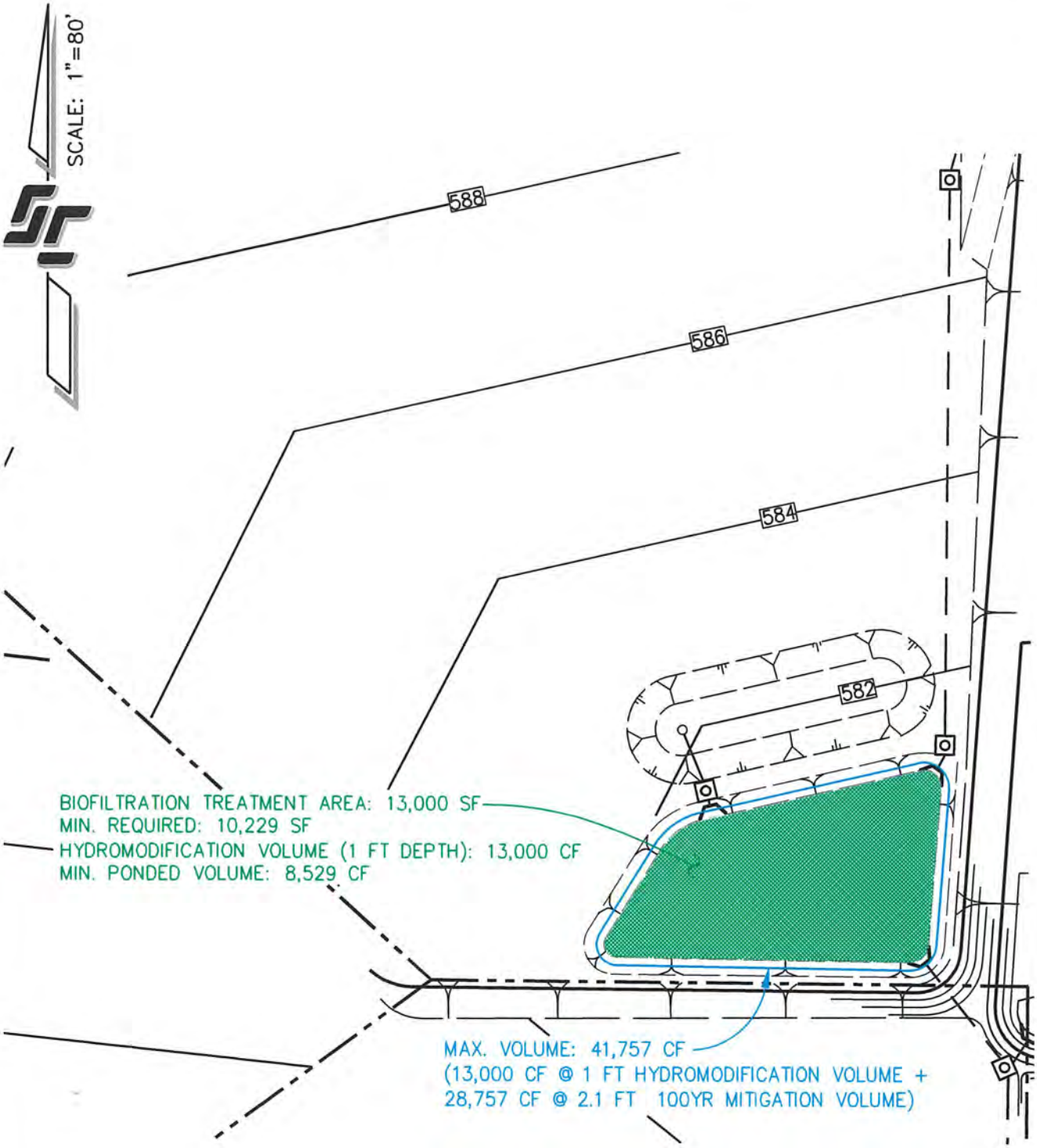


BF-2

DUAL PURPOSE BIOFILTRATION/DETENTION BASIN

SCALE: 1"=80'

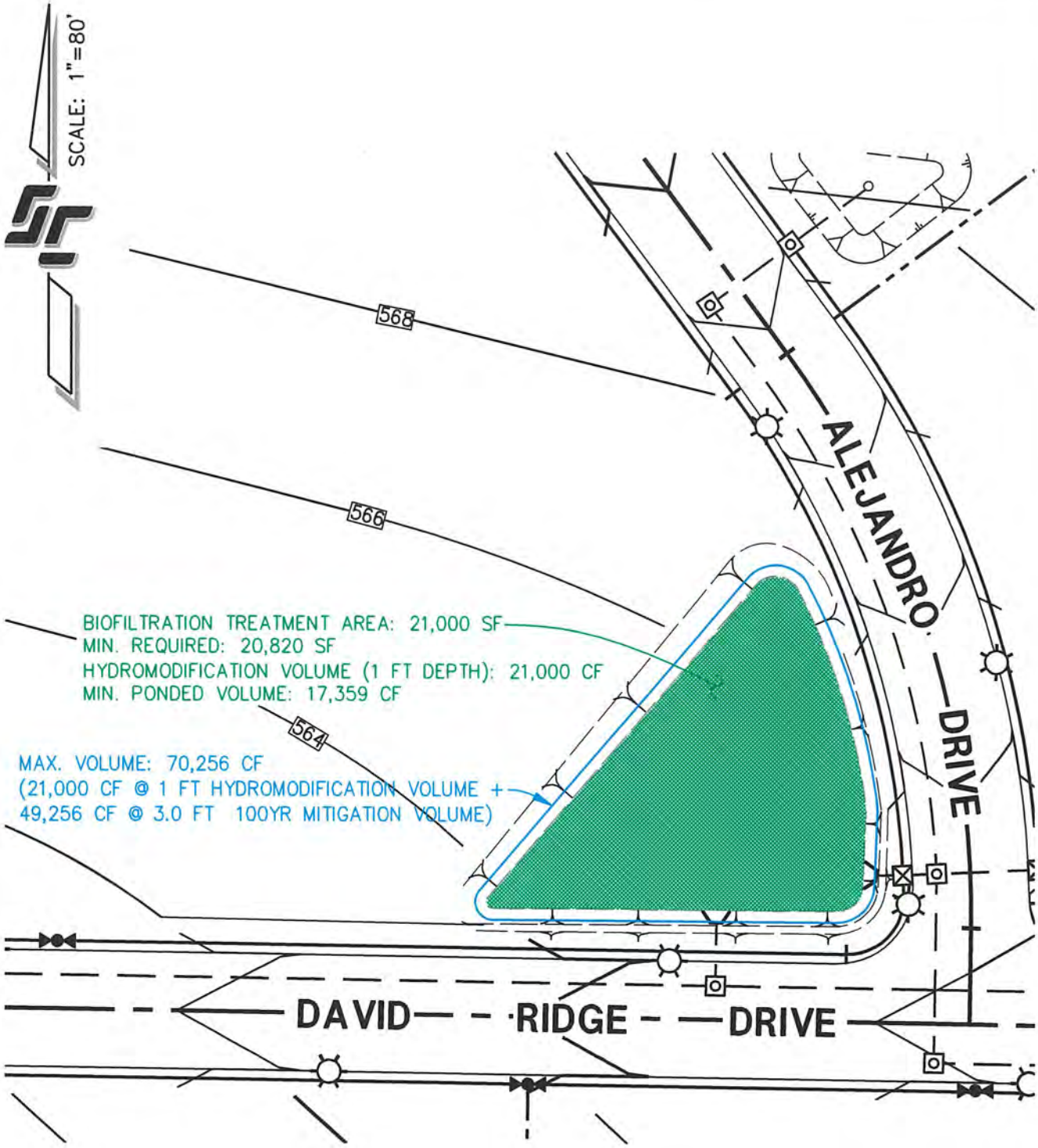
5-31



BF-3
DUAL PURPOSE BIOFILTRATION/DETENTION BASIN

SCALE: 1"=80'

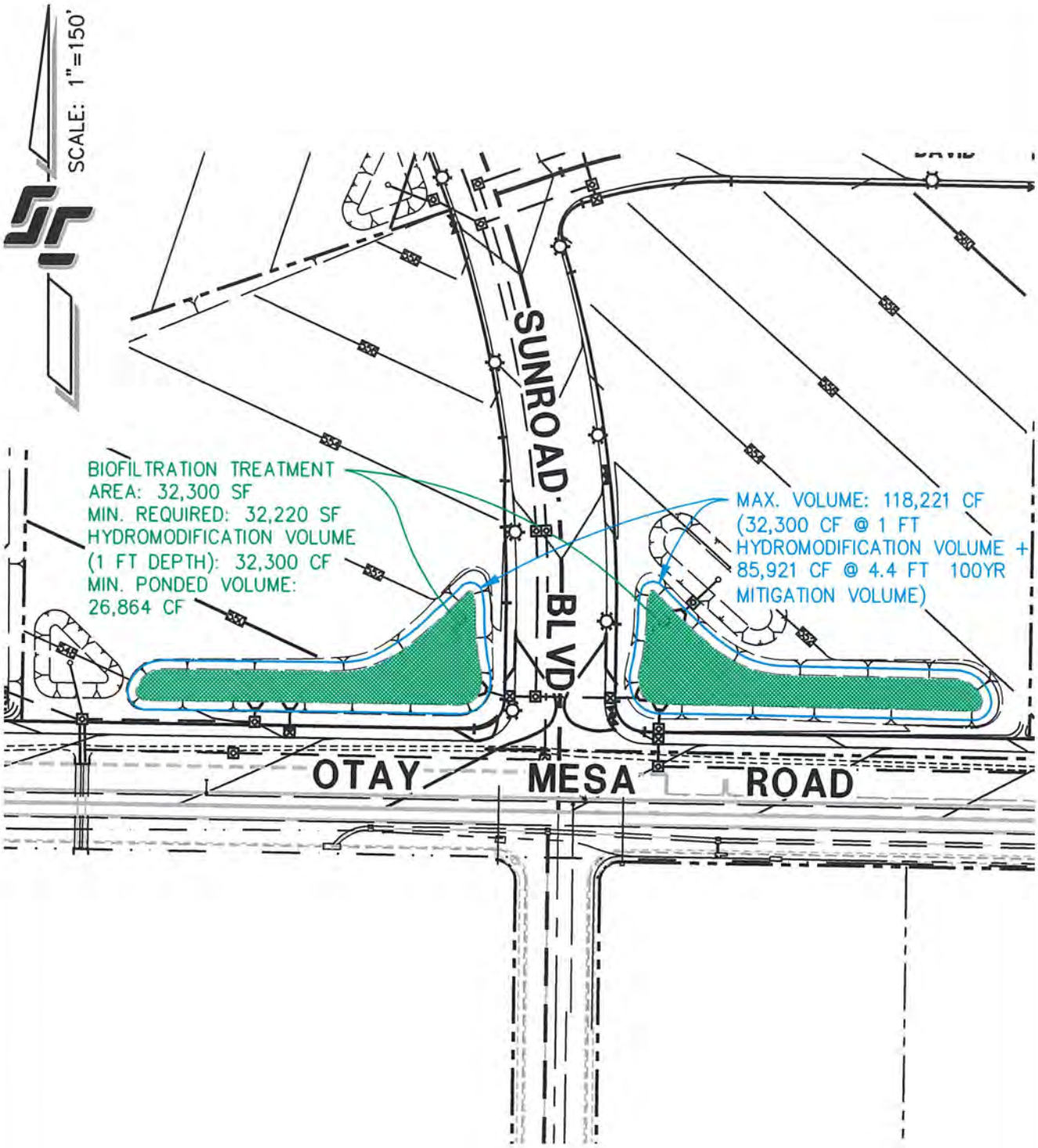
5-32



BF-4

DUAL PURPOSE BIOFILTRATION/DETENTION BASIN

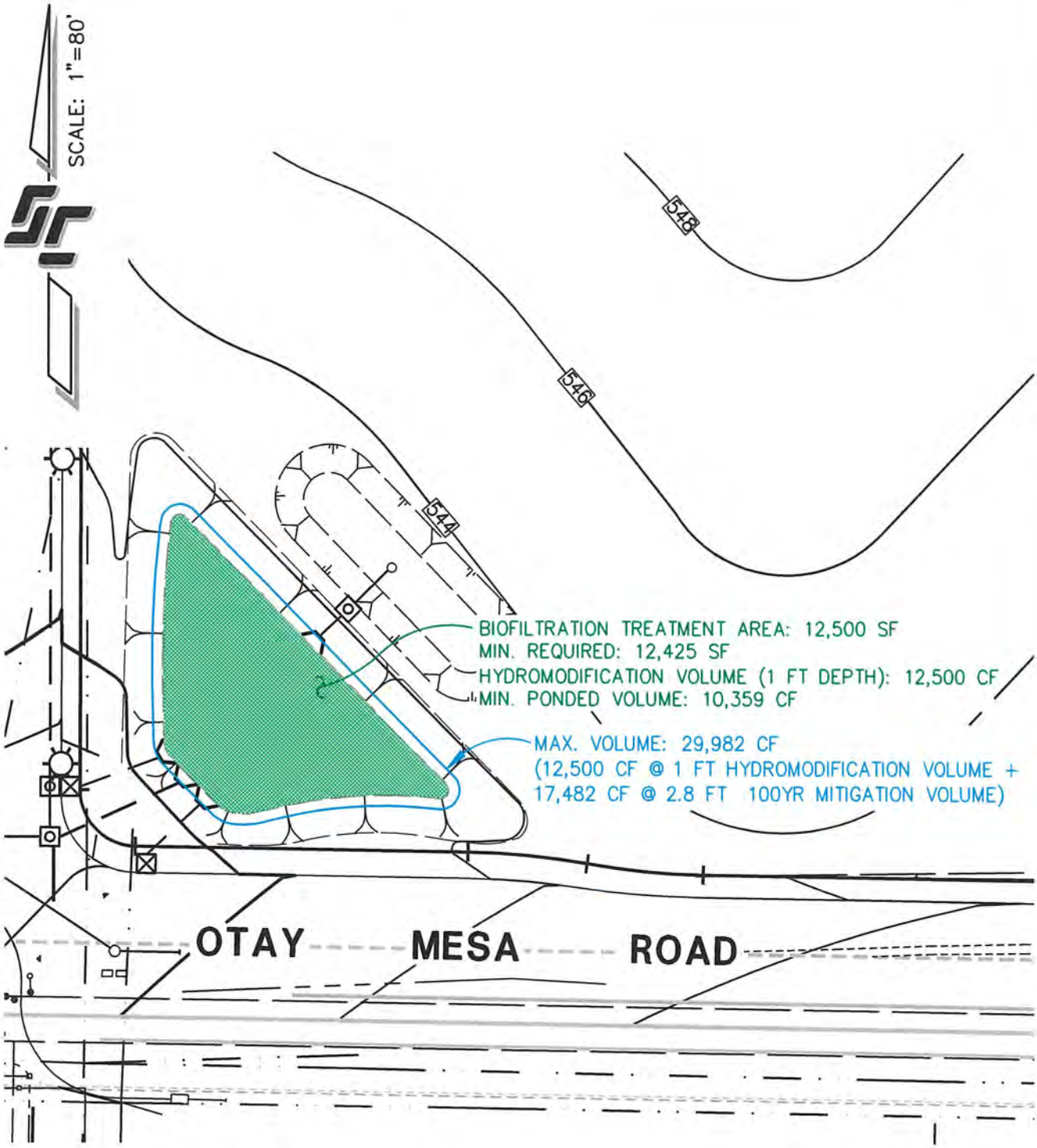
SCALE: 1"=80'



BF-5

DUAL PURPOSE BIOFILTRATION/DETENTION BASIN

SCALE: 1"=150'

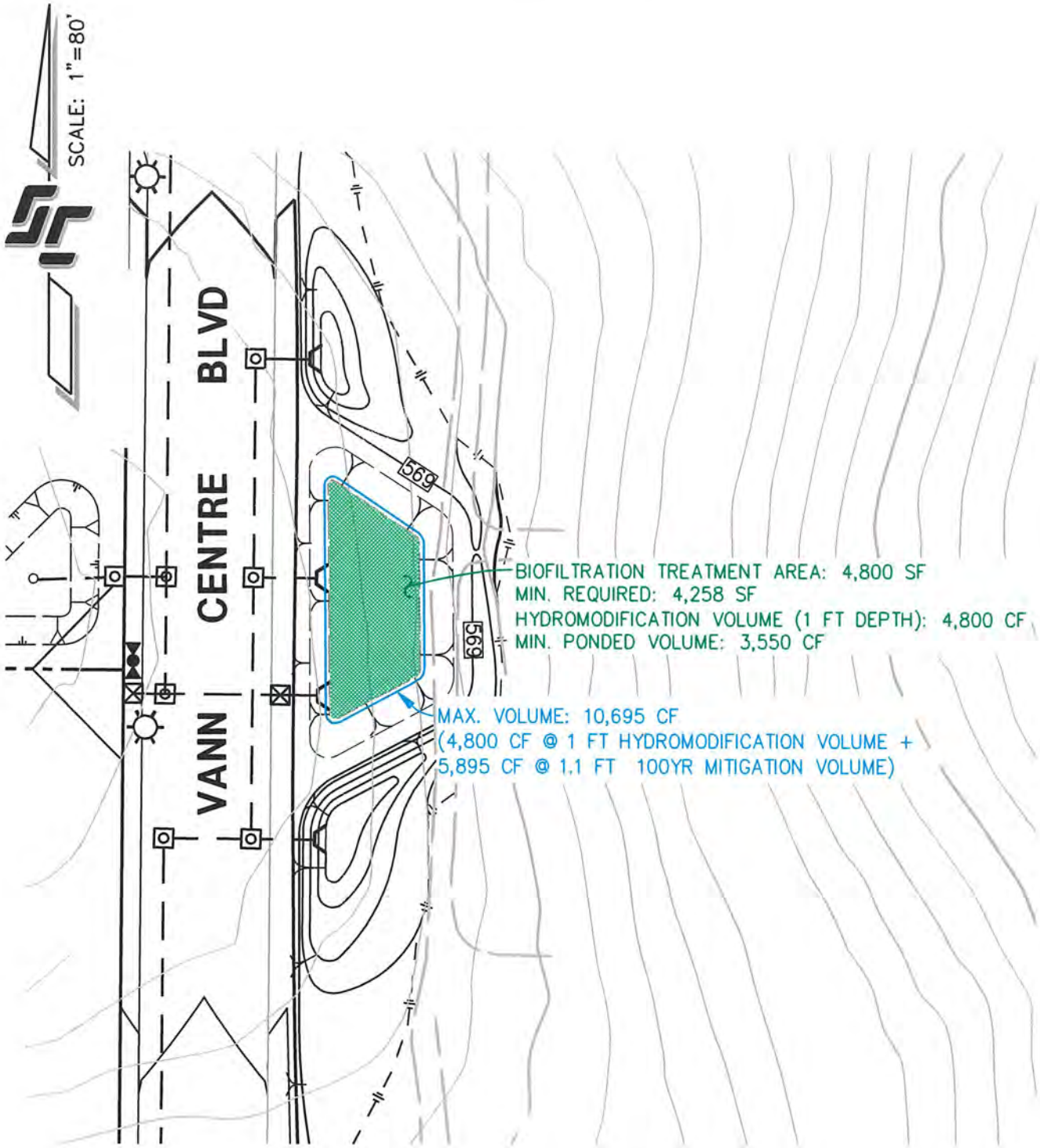


BF-6

DUAL PURPOSE BIOFILTRATION/DETENTION BASIN

SCALE: 1"=80'

5-35



BF-7

DUAL PURPOSE BIOFILTRATION/DETENTION BASIN

SCALE: 1"=80'

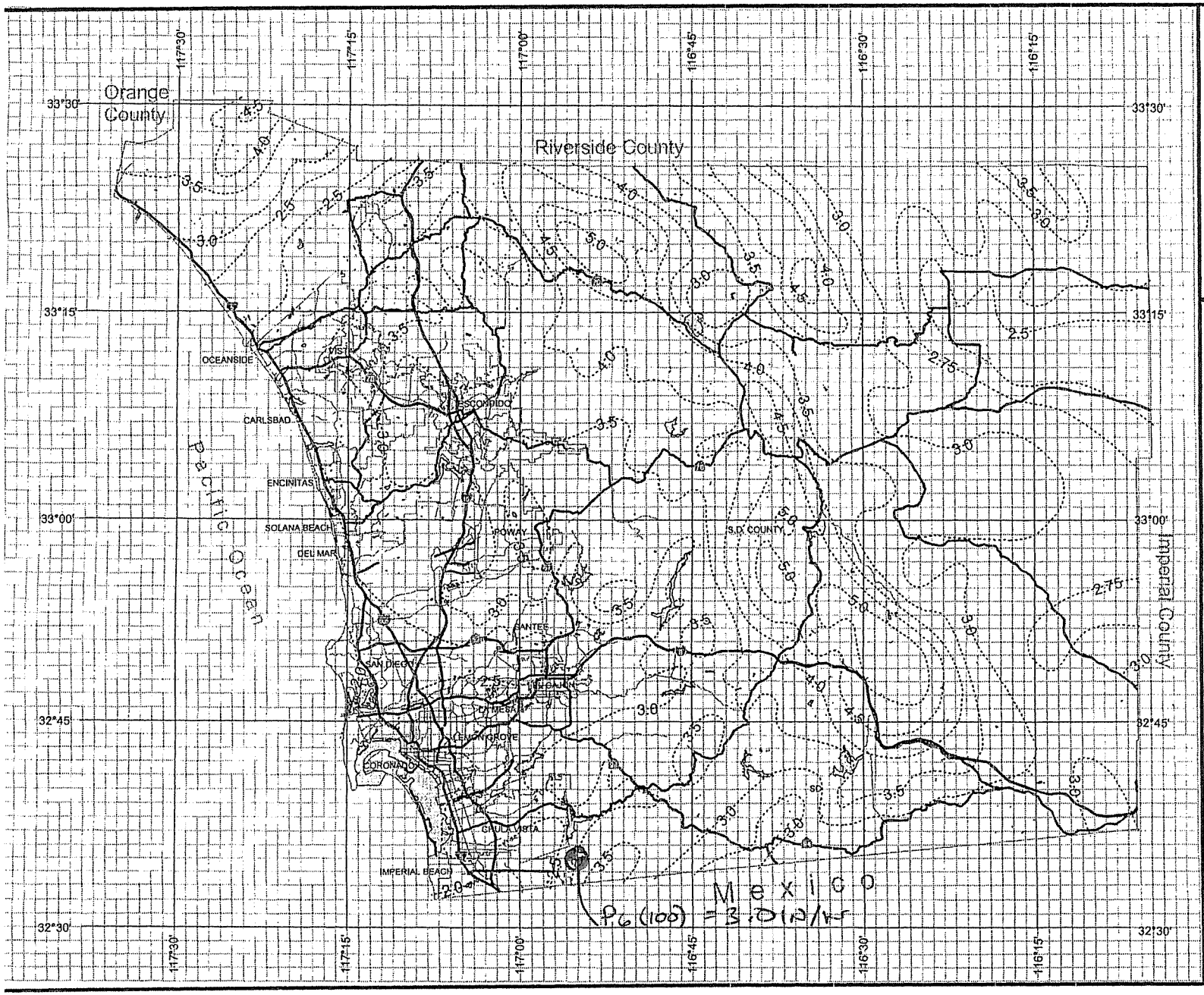
5-36

6

SECTION 6

APPENDIX A

(County Hydrology Figures/Tables)



County of San Diego Hydrology Manual

Rainfall Isopluvials

100 Year Rainfall Event - 6 Hours

Isopluvial (inches)

DPW GIS
Department of Public Works
Geographic Information Services

SanGIS
We Have San Diego Covered!

N
W E
S

3 0 3 Miles

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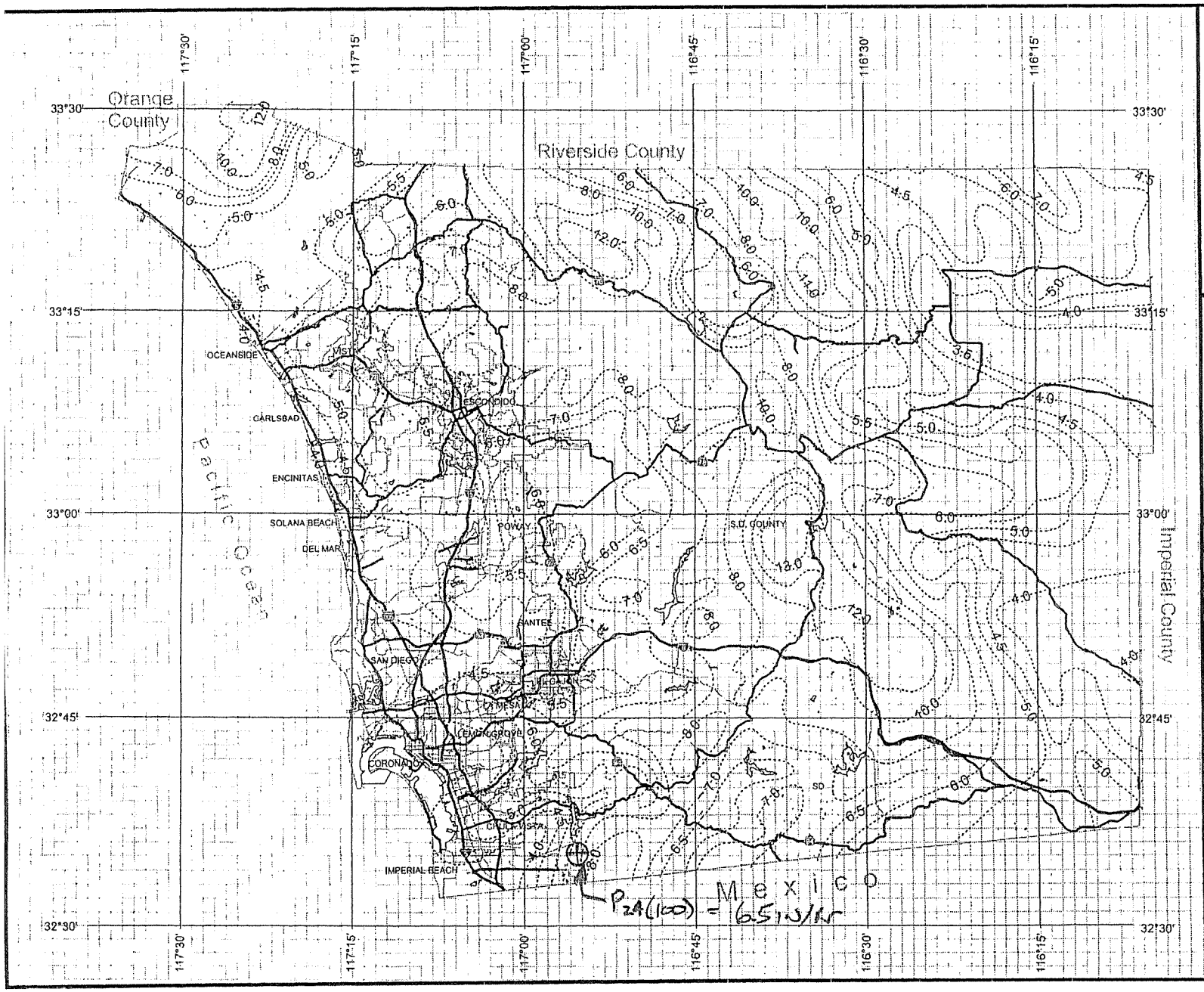
County of San Diego Hydrology Manual

Rainfall Isopluvials

100 Year Rainfall Event - 24 Hours

Isopluvial (inches)



DPW GIS

GIS

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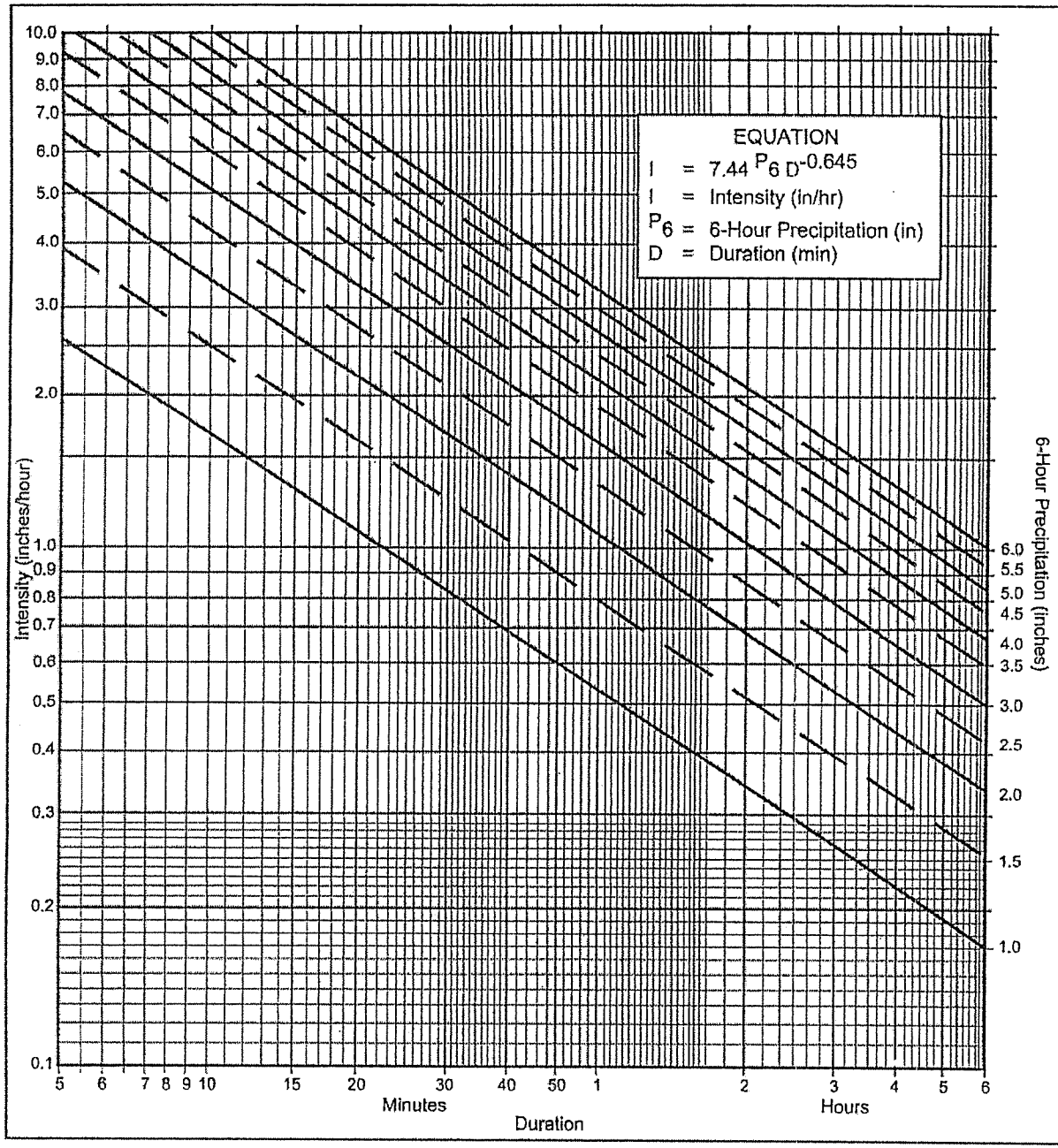
N W E S

3 0 3 Miles



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 = 3.0 in., P_{24} = 6.5, $\frac{P_6}{P_{24}}$ = 46 %(2)

(c) Adjusted P_6(2) = 3.0 in.

(d) t_x = 31.2 min.

(e) I = 2.43 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

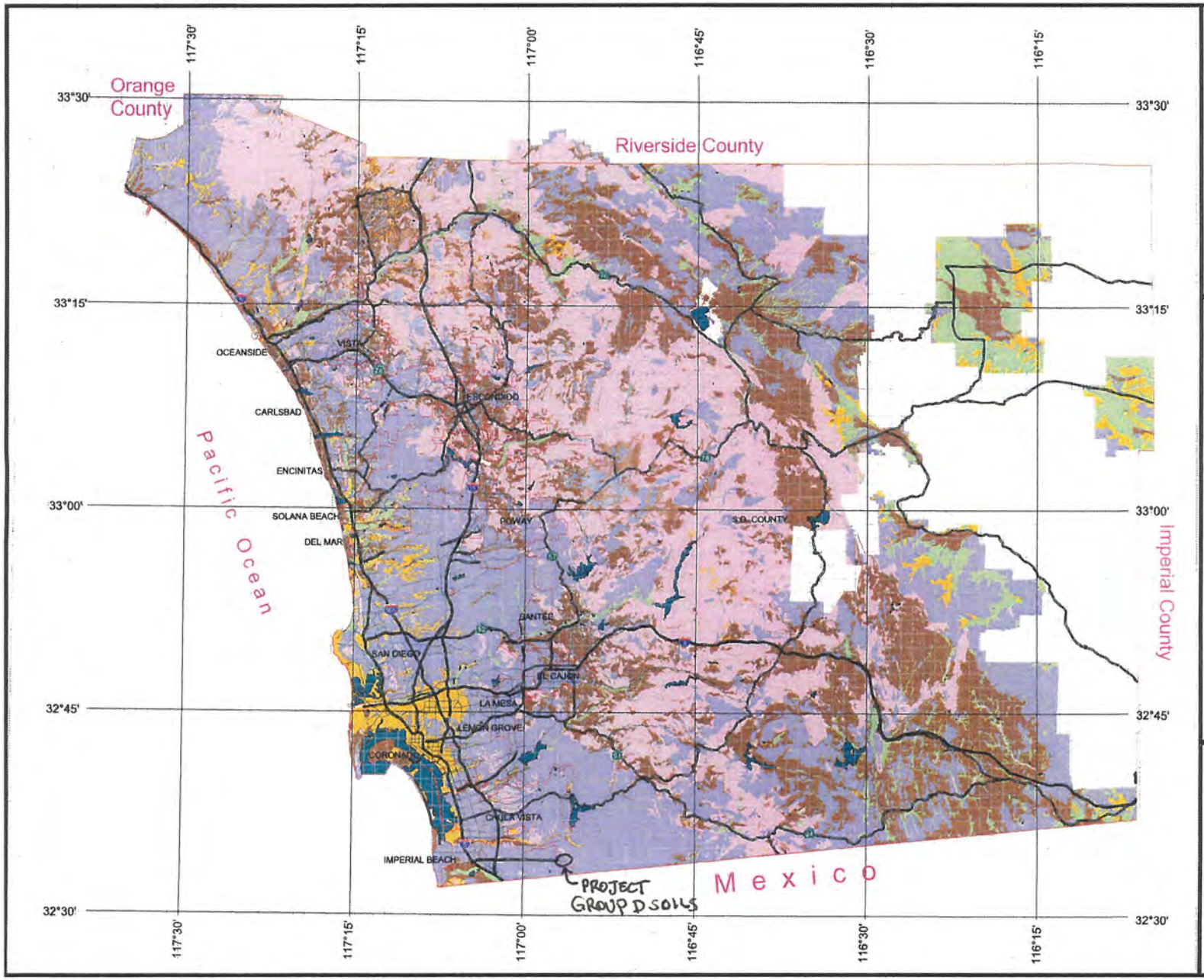
FIGURE 3-1

4-0

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



County of San Diego Hydrology Manual

Soil Hydrologic Groups

Legend

Soil Groups

- Group A
- Group B
- Group C
- Group D
- Undetermined
- Data Unavailable

DPW GIS

SanGIS

N W E S

3 0 3 Miles

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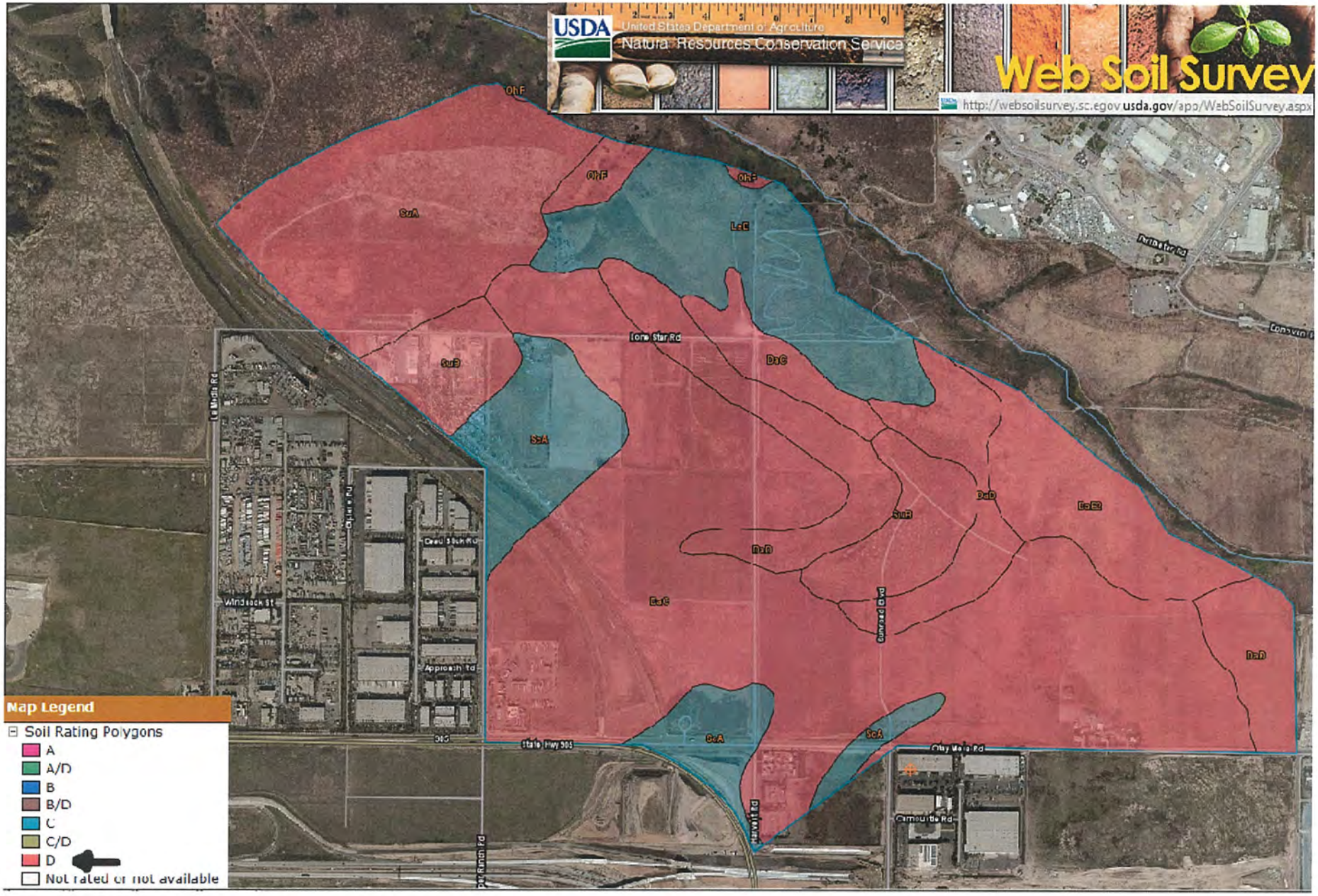
* NOTE: SEE NRCS EXHIBIT THAT FOLLOWS.



*Note: Per Geocon's "Updated Geotechnical Investigation", dated July 20, 2015 the site is dominated by highly expansive silty and clayey soils. As such, type D hydrologic soils group will be used for the entire project area.

L-9

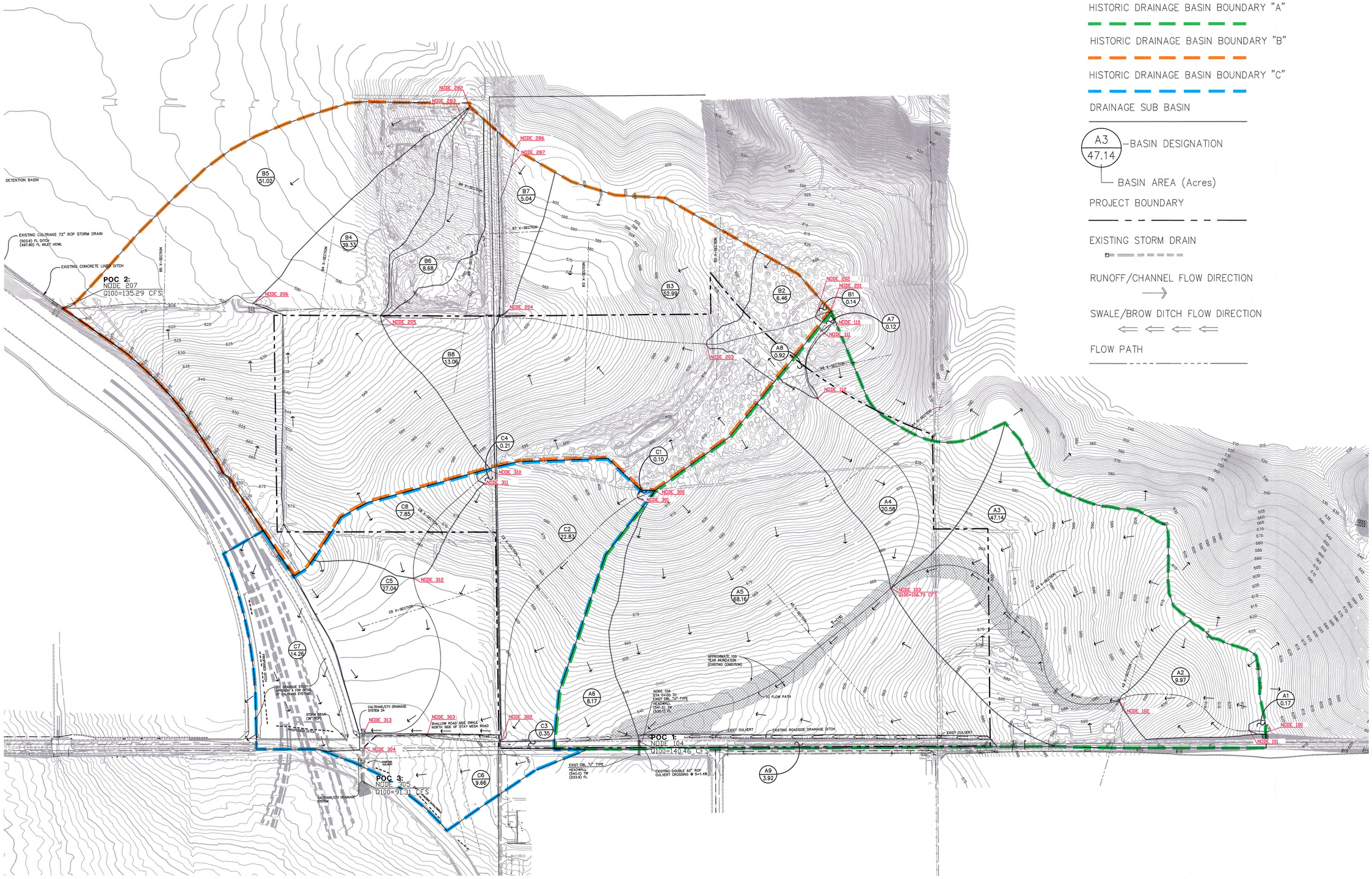
7

SECTION 7

DRAINAGE EXHIBITS

Exhibit "A" (Existing Drainage Basins)

Exhibit "C" (Post-Project Drainage Basins)



LEGEND

HISTORIC DRAINAGE BASIN BOUNDARY "A"

HISTORIC DRAINAGE BASIN BOUNDARY "B"

HISTORIC DRAINAGE BASIN BOUNDARY "C"

DRAINAGE SUB BASIN

A3 / 47.14 — BASIN DESIGNATION; BASIN AREA (Acres)

PROJECT BOUNDARY

EXISTING STORM DRAIN

RUNOFF/CHANNEL FLOW DIRECTION

SWALE/BROW DITCH FLOW DIRECTION

FLOW PATH

STEVENS-CRESTO ENGINEERING, INC.
CIVIL ENGINEERS - PLANNERS - LAND SURVEYORS
9660 CHESAPEAKE DRIVE
SUITE 230
SAN DIEGO, CA 92123-1352
PHONE: 858.694.9649
FAX: 858.694.5661
www.scengr.com

REVISIONS

SUNROAD OTAY 250

SAN DIEGO, CALIFORNIA

EXHIBIT "A"
EXISTING DRAINAGE BASINS

DATE: 04/06/16

SCE NO. 14009.01

SHEET

A

1 OF 1 SHEETS

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