PRELIMINARY DRAINAGE STUDY

For

ISKCON KRISHNA TEMPLE & RESIDENTIAL
ESCONDIDO, CA

Prepared for:

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CHAPTER 1 - EXECUTIVE SUMMARY

1.1 – Introduction

The Iskcon Krishna Temple & Residential project site is located south of Rincon Ave. and east of Conway Dr. in Escondido, California. The site is split into two parcels, one parcel will have a religious temple while the other parcel will be residential and split into 10 lots.

For drainage analysis, one (1) points of discharge (POD) has been designated within the project site for hydrologic analysis purposes.

This study analyzes existing and developed condition 50-year peak flowrates from the development to the POD-from the project site in accordance with section 1.B of the City of Escondido's Drainage Design Standards.

The project site lies outside any FEMA 100-year floodplain zones. Therefore, no Letters of Map Revision will be required.

Treatment of storm water runoff from the site has been addressed in a separate report - the "Storm Water Quality Management Plan for Iskcon Krishna Temple & Residential" by REC. Hydromodification (HMP) analysis has been presented within the "Technical Memorandum: SWMM Modeling for Hydromodification Compliance of: Iskcon Krishna Temple and Residential Development, Escondido, CA", by REC.

Methodology used for the computation of design rainfall events, runoff coefficients, and rainfall intensity values are consistent with criteria set forth in the "City of Escondido Design Standards and Standard Drawings". A more detailed explanation of methodology used for this analysis is listed in Chapter 4 of this report.

Per Chapter 6 of the County of San Diego Hydrology Design Manual (see chapter 2.3 of this report), hydrographs were developed for each drainage basin assuming the minimum time of concentration for the City of Escondido of 10 min (see chapter 2.1 of this report). The hydrographs for each basin can be found in chapter 4.1 of this report. Modified-Puls detention basin routing was performed using the Army Corps of Engineers HEC-HMS software. The software requires the inflow hydrograph and stage-storage-discharge relationship of each basin to be inputted. In turn, the software generates an outflow hydrograph and calculates the peak depth, volume, and flow rate out from the basin.

1.2 – Summary of Existing Conditions

In existing conditions, the Iskcon Krishna Temple & Residential project site is mostly undisturbed vegetated landscape with just over 14,000 sf of existing impervious features. Generally the site flows from south-east to north-west with some steep and some flat areas.

Runoff from the existing site flows to one (1) POD. POD 1 is a cleanout located at the north-west corner of the property. Runoff from the existing site reaches POD 1 either via sheet flow or an existing brow ditch located along the western property boundary.

Per Figure 1 in the City of Escondido Design Standards and Standard Drawings, the Runoff Coefficient for *undeveloped land, open space* is 0.35 which was used for the entire existing project site. The intensity (inches/hour) was estimated based on the Run-Off Intensity Duration Curve also on Figure 1 in the City of Escondido Design Standards and Standard Drawings (see chapter 2.2 of this report).

Table 1 below summarizes the existing condition design 50-year peak flow from the project site.

Table 1– SUMMARY OF EXISTING CONDITIONS FLOWS

Discharge Location	Drainage Area (Ac)	Rainfall Intensity (in/hr)	Runoff Coefficient (C)	50-Year Peak Flow (cfs)
POD-1	25.19	3.16	0.35	27.86

1.3 – Summary of Developed Conditions

The Iskcon Krishna Temple & Residential project proposes the construction of a religious temple, hall and living area, patio, detached restrooms, parking lot, and driveway. The intended use of the new development will be for religious purposes and practices for area under APN: 224-100-85. For the proposed residential area under APN: 224-100-84, 10 lots are proposed for future residential construction.

The tributary area draining to POD-1 includes both developed and undisturbed/bypass areas. Developed flow runoff is conveyed via street flow, brow ditches, and storm drains to one (1) of five (5) BMPs (BMPs 1-5), for both treatment and detention. Runoff from the bypass area is conveyed directly to POD-1 via a series of brow ditches, swales, and storm drains.

Per Figure 1 in the City of Escondido Design Standards and Standard Drawings, the Runoff Coefficient for *undeveloped land, open space* is 0.35, *Single Family* is 0.55, and *Commercial* is 0.85. The intensity (inches/hour) was calculated using the Run-Off Intensity Duration Curve also on Figure 1 in the City of Escondido Design Standards and Standard Drawings (see chapter 2.2 of this report).

Table 2 below summarizes the unmitigated condition design 50-year peak flow rates to each BMP and to the POD.

Table 2– SUMMARY OF DEVELOPED CONDITIONS FLOWS-UNMITIGATED

Discharge Location	Drainage Area (Ac)	Rainfall Intensity (in/hr)	Runoff Coefficient (C)	50-Year Peak Flow (cfs)
BMP-1	1.385	3.16	0.85	3.72
BMP-2	0.622	3.16	0.85	1.67
BMP-3	0.691	3.16	0.55	1.20
BMP-4	0.862	3.16	0.85	2.32
BMP-5	4.307	3.16	0.55	7.49
Bypass	17.323	3.16	0.35	19.16
POD-1	25.190	3.16	-	35.56

Five (5) biofiltration basins are located within the project site and are responsible for addressing water quality, hydromodification flow control, and 50-year peak flow rate attenuation for the project. The basins will have surface ponding for water treatment and a riser with an outlet structure to control flow rates (see dimensions in Tables 3 and 4). Flows will discharge from the basin via the outlet structures or infiltrate through the

amended soil to the low flow orifice. The riser structure will act as an overflow such that peak flows can be safely discharged to the receiving storm drain systems.

Beneath the basins' invert lies a 3-inch layer of mulch, an 18-inch layer of amended soil (a highly sandy, organic rich composite with an infiltration capacity of at least 5 inches/hr) and an 15"-18" layer of gravel. The volume below the invert of the lowest surface orifice, including the soil layers, are not used in Q50 routing.

Table 3– SUMMARY OF BMP BASIN DIMENSIONS

BMP	Tributary Area (Ac)	DIMENSIONS				
		BMP Area[(1)], (ft^2)	Amended Soil (in)	Gravel Depth (in)	Total Surface Depth[(4)] (ft)	Total Detention Volume[(5)] (Ac-ft)
BMP-1	1.385	1,468	18	15	3.00	0.0674
BMP-2	0.622	650	18	15	2.50	0.0224
BMP-3	0.691	539	18	15	1.50	0.0156
BMP-4	0.862	1,202	18	15	3.00	0.0552
BMP-5	4.307	3,137	18	18	2.50	0.1764

Notes:
(1): Area of amended soil = area of gravel = area of the BMP
(2): Depth of ponding beneath riser structure's surface spillway to bottom of mulch layer.
(3): Overflow length, the internal perimeter of the square riser.
(4): Total surface depth of BMP from bottom of mulch layer to crest elevation.
(5): Total Detention Volume is the volume between the lowest surface outlet and crest of the basin used for Q50 routing.

Table 4– SUMMARY OF OUTLET DETAILS

Basin	Low Flow Orifice (in)	Slot			Riser
		B x H (in)	Elev. (ft)[(1)]	Length[(2)] (ft)	Elev.[(1)] (ft)
BMP 1	1.375	12 x 6	1.00	8	2.167
BMP 2	0.875	8 x 4	1.00	8	1.833
BMP 3	0.875	-	-	8	0.750
BMP 4	1.25	13 x 4	1.00	8	2.250
BMP 5	2.25	66 x 1.5	0.833	16	1.750

Notes: (1): Lowest surface outlet elevation assumed to be 0.00 ft elevation. (1 ft above FG of basins 1,2&4, 0.75 ft above FG of basin 3, and 0.83 ft above FG of basin 5)
(2): Overflow length is the internal perimeter of the riser structure.

The hydrographs were generated using the (2/3, 1/3) rainfall distribution method from chapter 6 of The San Diego County Hydrology Design Manual, 2003 (see chapter 2.3 of this report for methodology). These hydrographs were then routed through the proposed on-site detention facilities in HEC-HMS. The HMS Modified-Puls results are summarized in Table 5.

Table 5– SUMMARY OF DETENTION BASIN ROUTING

Detention Basin	50-Year Peak Inflow (cfs)	50-Year Peak Outflow (cfs)	Peak Water Surface Elevation[(1)] (ft)	Peak Detention Volume (Ac-Ft)
BMP-1	3.72	2.34	1.13	0.038
BMP-2	1.67	1.38	0.88	0.013
BMP-3	1.20	1.15	0.12	0.002
BMP-4	2.32	1.46	0.82	0.023
BMP-5	7.49	4.18	0.98	0.096

Notes: (1): Lowest surface outlet elevation assumed to be 0.00 ft elevation. (1 ft above FG of basins 1,2&4, 0.75 ft above FG of basin 3, and 0.83 ft above FG of basin 5)

It should be noted that as a conservative design approach, it has been assumed that the water quality storm event volume was stored in the detention facilities prior to the routing of the 50-year event storm. Therefore, the detention basin routing begins at the elevation of the lowest surface and all volume below this is not utilized.

Rational method hydrographs, stage-storage, stage-discharge relationships and HEC-HMS model output is provided in Chapter 7 of this report.

1.4 – Summary of Results and Conclusion

Table 6 summarizes developed and existing condition drainage areas and resultant 50-year peak flow rates at the POD from the Iskcon Krishna Temple & Residential project.

Table 6– SUMMARY OF PEAK FLOWS

Discharge Location	Area (ac)			50 Year Peak Flow (cfs)			
	Existing	Developed	Difference	Existing	Unmitigated	Mitigated	Difference
POD-1	25.19	25.19	0.00	27.86	35.55	27.79	-0.07

As shown in the above table, the proposed Iskcon Krishna Temple & Residential project site will result in a net decrease of peak flow discharged from POD-1 by approximately 0.07 cfs.

1.5 – Hydraulic Sizing

The project will utilize the combination of storm drain pipes, grated inlets, rip raps, curb inlets, brow ditches and gutters to convey the runoff to the BMPs prior to reaching the point of compliance. All sizing calculations will be performed during final engineering.

1.6 – References

"*County of San Diego Hydrology Manual*", June 2003.

"City of Escondido Design Standards and Standard Drawings", April 2014.

"*Stormwater Quality Management Plan for Iskcon Krishna Temple & Residential*", by REC Consultants.

"*Technical Memorandum: SWMM Modeling for Hydromodification Compliance of: Iskcon Krishna Temple and Residential Development, Escondido, CA*", by REC Consultants

1.7 – Declaration of Responsible Charge

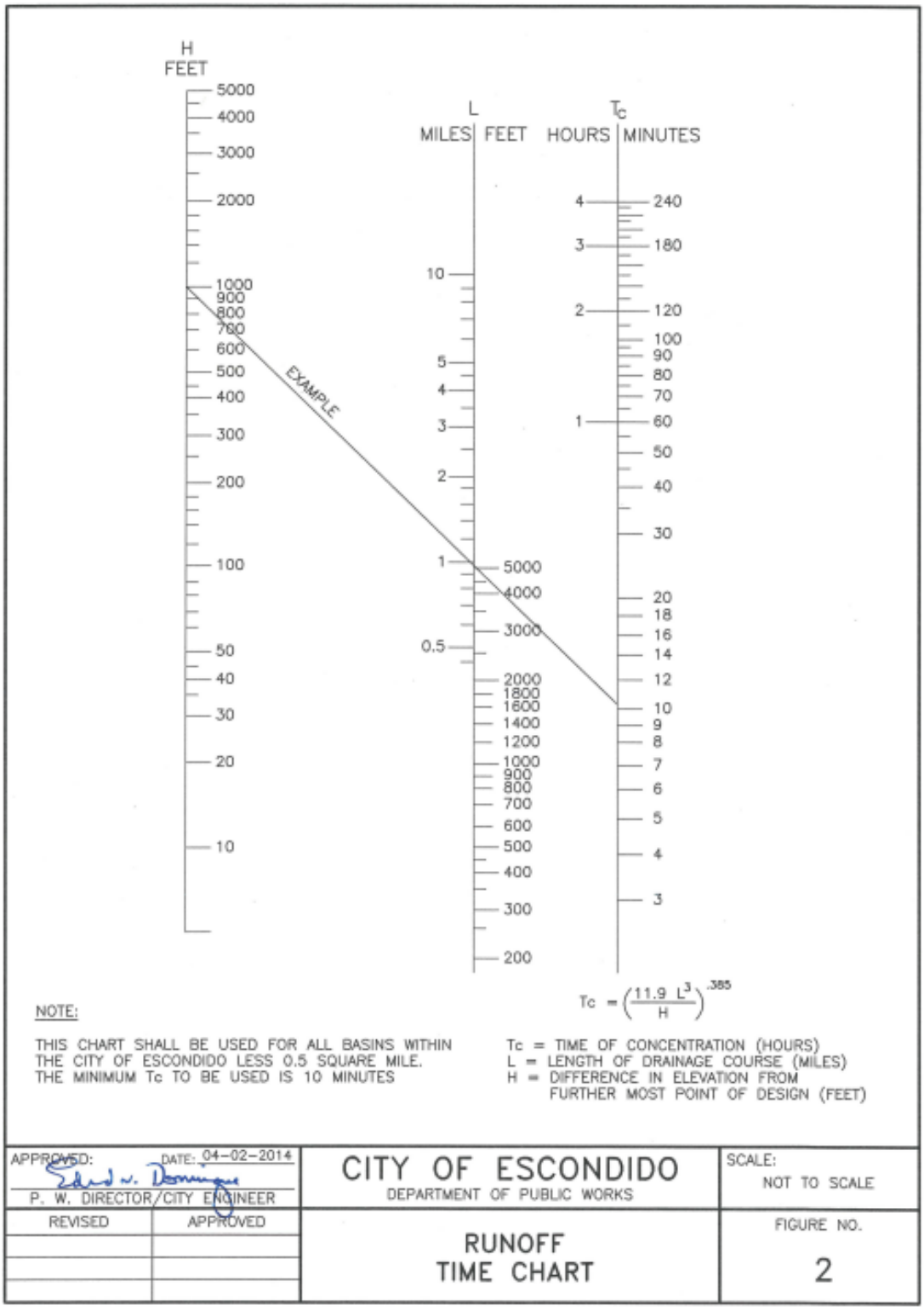
I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH THE CURRENT STANDARDS.

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

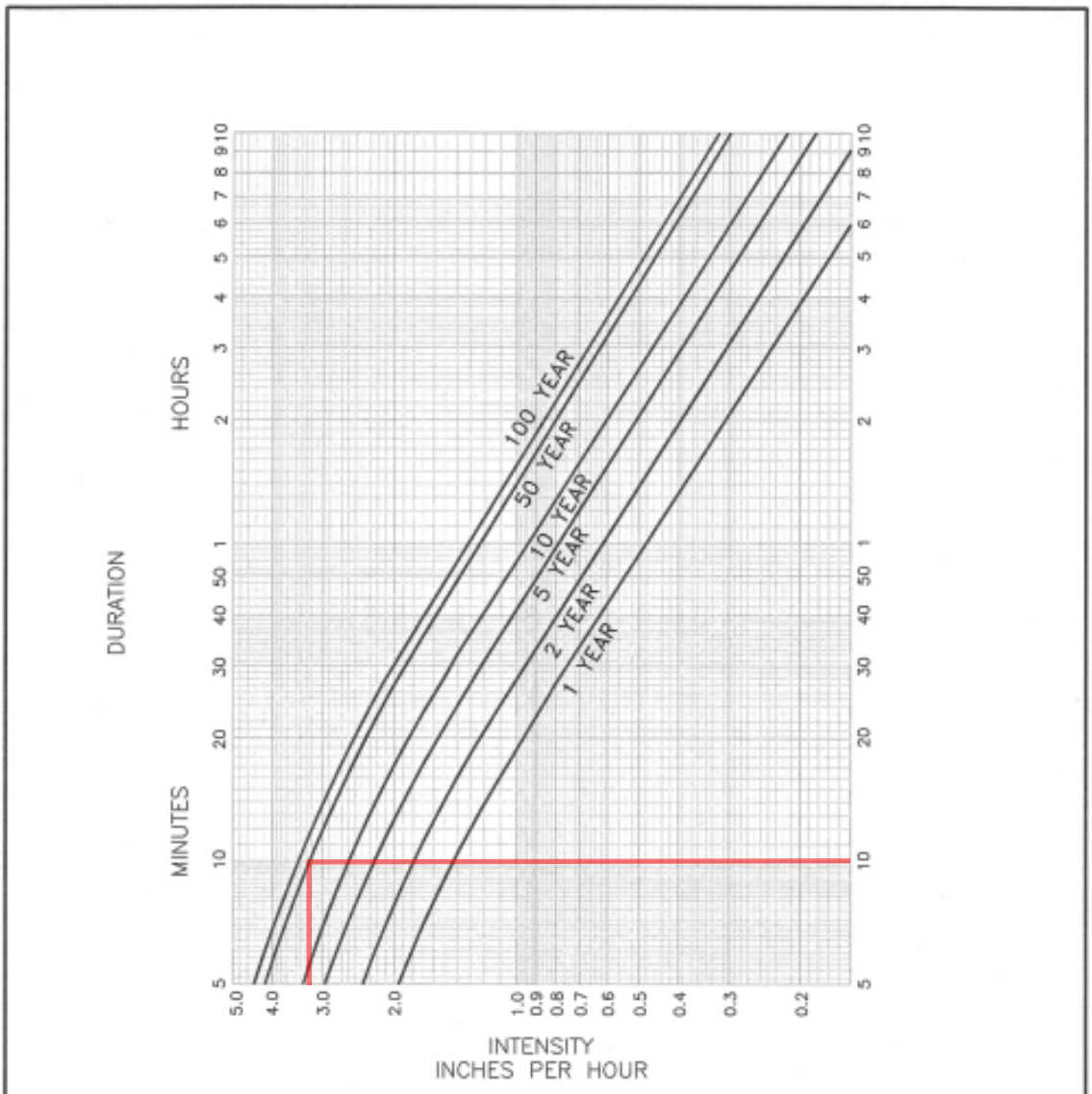
William O'Gorman R.C.E. 88286

CHAPTER 2 - METHODOLOGY

2.1 – Runoff Time of Concentration (hours) Determination



2.2 – City of Escondido Run-Off Intensity Duration Curve and Runoff Coefficients



ESCONDIDO RUNOFF COEFFICIENTS

PARKS, GOLF COURSES, CEMETERIES	0.25
UNDEVELOPED LAND, OPEN SPACE	0.35
RURAL – OVER 1/2 ACRE LOTS	0.45
SINGLE FAMILY	0.55
MOBILE HOME	0.65
MULTIPLE UNITS	0.70
COMMERCIAL	0.85
INDUSTRIAL	0.95

APPROVED: DATE: 04-02-2014 P. W. DIRECTOR/CITY ENGINEER	CITY OF ESCONDIDO DEPARTMENT OF PUBLIC WORKS	SCALE: NOT TO SCALE
REVISED / APPROVED	RUN-OFF INTENSITY DURATION CURVE	FIGURE NO. 1

2.3 –Rainfall Distribution - Construction of Hydrograph (from County of San Diego Hydrology Manual)

6.2.1 Rainfall Distribution

Figure 6-2 shows a 6-hour rainfall distribution consisting of blocks of rain over increments of time equal to T_c. The number of blocks is determined by rounding T_c to the nearest whole number of minutes, dividing 360 minutes (6 hours) by T_c, and rounding again to the nearest whole number. The blocks are distributed using a (2/3, 1/3) distribution in which the peak rainfall block is placed at the 4-hour time within the 6-hour rainfall duration. The additional blocks are distributed in a sequence alternating two blocks to the left and one block to the right of the 4-hour time (see Figure 6-2). The total amount of rainfall ($P_{T(N)}$) for any given block (N) is determined as follows:

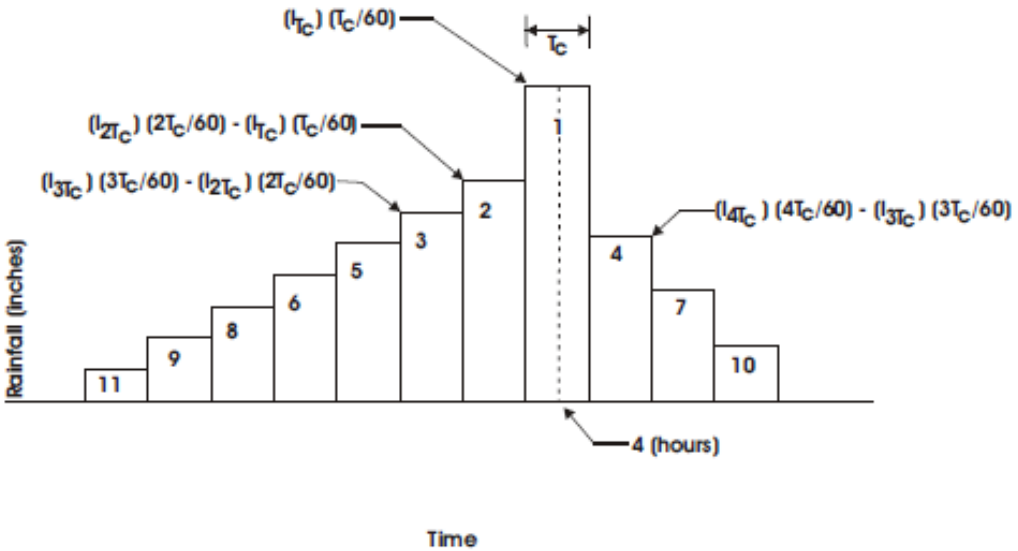
$$P_{T(N)} = (I_{T(N)}\ T_{T(N)}) / 60$$

Where: $P_{T(N)}$ = total amount of rainfall for any given block (N)
$I_{T(N)}$ = average rainfall intensity for a duration equal to $T_{T(N)}$ in inches per hour
$T_{T(N)}$ = NT_c in minutes (N is an integer representing the given block number of rainfall)

Intensity is calculated using the following equation (described in detail in Section 3):

$$I = 7.44\ P_6\ D^{-0.645}$$

Where: I = average rainfall intensity for a duration equal to D in inches per hour
P_6 = adjusted 6-hour storm rainfall
D = duration in minutes



Rainfall Distribution

FIGURE
6-2

Substituting the equation for I in the equation above for $P_{T(N)}$ and setting the duration (D) equal to $T_{T(N)}$ yields:

$$P_{T(N)} = [(7.44\ P_6/T_{T(N)}^{0.645})(T_{T(N)})] / 60$$
$$P_{T(N)} = 0.124\ P_6 T_{T(N)}^{0.355}$$

Substituting NT_c for T_T (where N equals the block number of rainfall) in the equation above yields:

$$P_{T(N)} = 0.124\ P_6\ (NT_c)^{0.355} \qquad \text{(Eq. 6-2)}$$

Equation 6-2 represents the total rainfall amount for a rainfall block with a time base equal to $T_{T(N)}$ (NT_c). The actual time base of each rainfall block in the rainfall distribution is T_c, as shown in Figure 6-2. The actual rainfall amount (P_N) for each block of rain is equal to P_T at N ($P_{T(N)}$) minus the previous P_T at N–1 ($P_{T(N-1)}$) at any given multiple of T_c (any NT_c). For example, the rainfall for block 2 is equal to $P_{T(N)}$ at $T_{T(N)} = 2T_c$ minus the $P_{T(N)}$ at $T_{T(N)} = 1T_c$, and the rainfall for block 3 equals $P_{T(N)}$ at $T_{T(N)} = 3T_c$ minus the $P_{T(N)}$ at $T_{T(N)} = 2T_c$, or P_N can be represented by the following equation:

$$P_N = P_{T(N)} - P_{T(N-1)} \qquad \text{(Eq. 6-3)}$$

For the rainfall distribution, the rainfall at block N = 1, ($1T_c$), is centered at 4 hours, the rainfall at block N = 2, ($2T_c$), is centered at 4 hours – $1T_c$, the rainfall at block N = 3, ($3T_c$), is centered at 4 hours – $2T_c$, and the rainfall at at block N = 4, ($4T_c$), is centered at 4 hours + $1T_c$. The sequence continues alternating two blocks to the left and one block to the right (see Figure 6-2).

2.4 –Storm Frequency Determination – 50-year storm (from City of Escondido Drainage Design Standards)

DRAINAGE - DESIGN STANDARDS

1. GENERAL

A. All drainage design and requirements shall be in accordance with the City adopted SUSMP, the latest Drainage Master Plan, Flood Insurance Rate Maps; the City's Floodplain Ordinance, and/or the requirements of the City Engineer.

B. All public and private drainage facilities shall be designed for a 50-year frequency storm, except that a 100-year frequency storm shall be used for all tributary areas over one square mile.

C. The use of underground storm drain systems, in addition to standard curb and gutter, shall be required:

(1) When the depth of flow in a public street exceeds 5 inches or more than 16 feet of roadway is flooded in a 50-year frequency storm.

(2) When existing drainage facilities discharge into the proposed development.

(3) When the depth-velocity product of flow in the street (expressed in feet and feet per second) exceeds six.

(4) To minimize the installation of cross gutters.

D. When the above conditions require an underground storm drain, the combined street and storm drain design shall be based on a 50-year frequency storm.

E. Permanent open drainage ditches will not be permitted in the right-of-way of a public street.

F. Open channels may be considered in lieu of underground systems when the design flow exceeds the capacity of a 48 inch diameter reinforced concrete pipe (R.C.P.)

G. The Developer shall be responsible for accepting all drainage flows tributary to his property, and providing permanent drainage facilities in conformance with these standards and the requirements of the City Engineer through the limits of the development to a point of satisfactory disposal as approved by the City Engineer.

H. Concentrated discharges into unimproved areas shall only be permitted into natural channels with "defined bed and banks". An energy dissipater shall be considered at these locations.

I. The type of drainage facility shall be selected on the basis of physical adaptability to the proposed land use. Environmental channels are encouraged in areas where substantial open space can be preserved. A low-flow pipe or swale shall be included in the design of the channel. Maximum design velocity shall be 6 F.P.S. in the channel.

J. Concentrated drainage over 10 C.F.S. shall not be discharged to city streets.

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CHAPTER 3 – HYDRAULIC SIZING

WILL BE COMPLETED IN FINAL ENGINEERING

CHAPTER 4 - MODIFIED-PULS DETENTION ROUTING

4.1 – Rational Method Hydrograph

ESCONDIDO HYDROGRAPHS PER FIGURE 1 and SDCHM Method

(valid for Tc ≤ 10 min) Description: **Pre-Dev. Area**

A: 25.19 acre

C: 0.35

POSITION	T (min)	I_{50} (in/hr)	Q_{50} (cfs)
	0	0	0.000
1	10	0.153	1.345
2	20	0.155	1.369
3	30	0.161	1.421
4	40	0.164	1.448
5	50	0.171	1.509
6	60	0.175	1.541
7	70	0.183	1.613
8	80	0.187	1.652
9	90	0.197	1.738
10	100	0.202	1.785
11	110	0.215	1.892
12	120	0.221	1.951
13	130	0.237	2.087
14	140	0.246	2.165
15	150	0.266	2.346
16	160	0.278	2.452
17	170	0.307	2.709
18	180	0.325	2.867
19	190	0.371	3.270
20	200	0.401	3.535
21	210	0.460	4.056
22	220	0.500	4.408
23	230	0.972	8.570
24	240	1.508	13.295
25	250	3.160	**27.860**
26	260	0.720	6.348
27	270	0.438	3.864
28	280	0.346	3.051
29	290	0.292	2.573
30	300	0.255	2.251
31	310	0.229	2.016
32	320	0.208	1.836
33	330	0.192	1.693
34	340	0.179	1.576
35	350	0.168	1.478
36	360	0.158	1.394

ESCONDIDO HYDROGRAPHS PER FIGURE 1 and SDCHM Method

(valid for Tc ≤ 10 min) Description: **Post-Dev. Area Basin-1**

A: 1.385 acre

C: 0.85

POSITION	T (min)	I_{50} (in/hr)	Q_{50} (cfs)
	0	0	0.000
1	10	0.153	0.180
2	20	0.155	0.183
3	30	0.161	0.190
4	40	0.164	0.193
5	50	0.171	0.201
6	60	0.175	0.206
7	70	0.183	0.215
8	80	0.187	0.221
9	90	0.197	0.232
10	100	0.202	0.238
11	110	0.215	0.253
12	120	0.221	0.261
13	130	0.237	0.279
14	140	0.246	0.289
15	150	0.266	0.313
16	160	0.278	0.327
17	170	0.307	0.362
18	180	0.325	0.383
19	190	0.371	0.437
20	200	0.401	0.472
21	210	0.460	0.542
22	220	0.500	0.589
23	230	0.972	1.144
24	240	1.508	1.775
25	250	3.160	**3.720**
26	260	0.720	0.848
27	270	0.438	0.516
28	280	0.346	0.407
29	290	0.292	0.344
30	300	0.255	0.301
31	310	0.229	0.269
32	320	0.208	0.245
33	330	0.192	0.226
34	340	0.179	0.210
35	350	0.168	0.197
36	360	0.158	0.186
37	370		0

ESCONDIDO HYDROGRAPHS PER FIGURE 1 and SDCHM Method

(valid for Tc ≤ 10 min) Description: **Post-Dev. Area Basin 2**

A: 0.622 acre

C: 0.85

POSITION	T (min)	I_{50} (in/hr)	Q_{50} (cfs)
	0	0	0.000
1	10	0.153	0.081
2	20	0.155	0.082
3	30	0.161	0.085
4	40	0.164	0.087
5	50	0.171	0.090
6	60	0.175	0.092
7	70	0.183	0.097
8	80	0.187	0.099
9	90	0.197	0.104
10	100	0.202	0.107
11	110	0.215	0.113
12	120	0.221	0.117
13	130	0.237	0.125
14	140	0.246	0.130
15	150	0.266	0.141
16	160	0.278	0.147
17	170	0.307	0.162
18	180	0.325	0.172
19	190	0.371	0.196
20	200	0.401	0.212
21	210	0.460	0.243
22	220	0.500	0.264
23	230	0.972	0.514
24	240	1.508	0.797
25	250	3.160	**1.671**
26	260	0.720	0.381
27	270	0.438	0.232
28	280	0.346	0.183
29	290	0.292	0.154
30	300	0.255	0.135
31	310	0.229	0.121
32	320	0.208	0.110
33	330	0.192	0.102
34	340	0.179	0.095
35	350	0.168	0.089
36	360	0.158	0.084
	370		0

ESCONDIDO HYDROGRAPHS PER FIGURE 1 and SDCHM Method

(valid for Tc ≤ 10 min) Description: **Post-Dev. Area Basin 3**

A: 0.691 acre

C: 0.55

POSITION	T (min)	I_{50} (in/hr)	Q_{50} (cfs)
	0	0	0.000
1	10	0.153	0.058
2	20	0.155	0.059
3	30	0.161	0.061
4	40	0.164	0.062
5	50	0.171	0.065
6	60	0.175	0.066
7	70	0.183	0.070
8	80	0.187	0.071
9	90	0.197	0.075
10	100	0.202	0.077
11	110	0.215	0.082
12	120	0.221	0.084
13	130	0.237	0.090
14	140	0.246	0.093
15	150	0.266	0.101
16	160	0.278	0.106
17	170	0.307	0.117
18	180	0.325	0.124
19	190	0.371	0.141
20	200	0.401	0.152
21	210	0.460	0.175
22	220	0.500	0.190
23	230	0.972	0.369
24	240	1.508	0.573
25	250	3.160	**1.201**
26	260	0.720	0.274
27	270	0.438	0.167
28	280	0.346	0.132
29	290	0.292	0.111
30	300	0.255	0.097
31	310	0.229	0.087
32	320	0.208	0.079
33	330	0.192	0.073
34	340	0.179	0.068
35	350	0.168	0.064
36	360	0.158	0.060
	370		0.000

ESCONDIDO HYDROGRAPHS PER FIGURE 1 and SDCHM Method

(valid for Tc ≤ 10 min) Description: **Post-Dev. Area Basin 4**

A: 0.862 acre

C: 0.85

POSITION	T (min)	I_{50} (in/hr)	Q_{50} (cfs)
	0	0	0.000
1	10	0.153	0.112
2	20	0.155	0.114
3	30	0.161	0.118
4	40	0.164	0.120
5	50	0.171	0.125
6	60	0.175	0.128
7	70	0.183	0.134
8	80	0.187	0.137
9	90	0.197	0.144
10	100	0.202	0.148
11	110	0.215	0.157
12	120	0.221	0.162
13	130	0.237	0.173
14	140	0.246	0.180
15	150	0.266	0.195
16	160	0.278	0.204
17	170	0.307	0.225
18	180	0.325	0.238
19	190	0.371	0.272
20	200	0.401	0.294
21	210	0.460	0.337
22	220	0.500	0.366
23	230	0.972	0.712
24	240	1.508	1.105
25	250	3.160	**2.315**
26	260	0.720	0.528
27	270	0.438	0.321
28	280	0.346	0.254
29	290	0.292	0.214
30	300	0.255	0.187
31	310	0.229	0.168
32	320	0.208	0.153
33	330	0.192	0.141
34	340	0.179	0.131
35	350	0.168	0.123
36	360	0.158	0.116
	370		0

ESCONDIDO HYDROGRAPHS PER FIGURE 1 and SDCHM Method

(valid for Tc ≤ 10 min) Description: **Post-Dev. Area Basin 5**

A: 4.307 acre

C: 0.55

POSITION	T (min)	I_{50} (in/hr)	Q_{50} (cfs)
	0	0	0.000
1	10	0.153	0.361
2	20	0.155	0.368
3	30	0.161	0.382
4	40	0.164	0.389
5	50	0.171	0.405
6	60	0.175	0.414
7	70	0.183	0.433
8	80	0.187	0.444
9	90	0.197	0.467
10	100	0.202	0.480
11	110	0.215	0.508
12	120	0.221	0.524
13	130	0.237	0.561
14	140	0.246	0.582
15	150	0.266	0.630
16	160	0.278	0.659
17	170	0.307	0.728
18	180	0.325	0.770
19	190	0.371	0.879
20	200	0.401	0.950
21	210	0.460	1.090
22	220	0.500	1.184
23	230	0.972	2.303
24	240	1.508	3.572
25	250	3.160	**7.486**
26	260	0.720	1.706
27	270	0.438	1.038
28	280	0.346	0.820
29	290	0.292	0.691
30	300	0.255	0.605
31	310	0.229	0.542
32	320	0.208	0.493
33	330	0.192	0.455
34	340	0.179	0.423
35	350	0.168	0.397
36	360	0.158	0.375
	370		0

ESCONDIDO HYDROGRAPHS PER FIGURE 1 and SDCHM Method

(valid for Tc ≤ 10 min) Description: **Post-Dev. Area Bypass**

A: 17.323 acre

C: 0.35

POSITION	T (min)	I_{50} (in/hr)	Q_{50} (cfs)
	0	0	0.000
1	10	0.153	0.925
2	20	0.155	0.941
3	30	0.161	0.977
4	40	0.164	0.996
5	50	0.171	1.038
6	60	0.175	1.060
7	70	0.183	1.109
8	80	0.187	1.136
9	90	0.197	1.195
10	100	0.202	1.228
11	110	0.215	1.301
12	120	0.221	1.342
13	130	0.237	1.435
14	140	0.246	1.489
15	150	0.266	1.613
16	160	0.278	1.686
17	170	0.307	1.863
18	180	0.325	1.972
19	190	0.371	2.249
20	200	0.401	2.431
21	210	0.460	2.789
22	220	0.500	3.032
23	230	0.972	5.893
24	240	1.508	9.143
25	250	3.160	**19.159**
26	260	0.720	4.365
27	270	0.438	2.658
28	280	0.346	2.098
29	290	0.292	1.769
30	300	0.255	1.548
31	310	0.229	1.387
32	320	0.208	1.263
33	330	0.192	1.164
34	340	0.179	1.084
35	350	0.168	1.016
36	360	0.158	0.959
37	370		0.000

4.2 – Stage-Storage & Stage-Discharge Relationships

Stage-Area for BMP 1

Elevation (ft)	Area (ft^2)	Volume (ft^3)	Q50 Detention Volume (Acre-ft)	
0.00	1468	**0**	0.0000	**BIOFILTRATION[1]**
0.08	1468	49	0.0000	
0.17	1468	98	0.0000	
0.25	1468	147	0.0000	**TOP OF MULCH[2]**
0.33	1468	269	0.0000	
0.42	1468	391	0.0000	
0.50	1468	514	0.0000	
0.58	1468	636	0.0000	
0.67	1468	758	0.0000	
0.75	1468	881	0.0000	
0.83	1468	1003	0.0000	
0.92	1468	1125	0.0000	
1.00	1468	1248	0.0000	**SURFACE DISCHARGE[3][5]**
1.08	1468	1370	0.0028	
1.17	1468	1492	0.0056	
1.25	1468	1615	0.0084	
1.33	1468	1737	0.0112	
1.42	1468	1859	0.0140	
1.50	1468	1982	0.0169	
1.58	1468	2104	0.0197	
1.67	1468	2226	0.0225	
1.75	1468	2349	0.0253	
1.83	1468	2471	0.0281	
1.92	1468	2593	0.0309	
2.00	1468	2716	0.0337	
2.08	1468	2838	0.0365	
2.17	1468	2960	0.0393	**EMERGENCY WEIR[4]**
2.25	1468	3083	0.0421	
2.33	1468	3205	0.0449	
2.42	1468	3327	0.0477	
2.50	1468	3450	0.0506	
2.58	1468	3572	0.0534	
2.67	1468	3694	0.0562	
2.75	1468	3817	0.0590	
2.83	1468	3939	0.0618	
2.92	1468	4061	0.0646	
3.00	1468	4184	0.0674	

(1): The area at this surface elevation corresponds to the area of gravel and amended soil (Bio-filtration layer)
(2): The volume for the first 3 inches of surface depth accounts for the voids of mulch
(3): Volume at this elevation coresponds with surface volume for WQ purposes (invert of lowest surface outlet)
(4): This elevation corresponds to the top of the riser elevation.
(5) Q50 detention begins at this elevation.

Stage-Area for BMP 2

Elevation (ft)	Area (ft^2)	Volume (ft^3)	Q50 Detention Volume (Acre-ft)	
0.00	650	**0**	0.0000	**BIOFILTRATION[1]**
0.08	650	22	0.0000	
0.17	650	43	0.0000	
0.25	650	65	0.0000	**TOP OF MULCH[2]**
0.33	650	119	0.0000	
0.42	650	173	0.0000	
0.50	650	228	0.0000	
0.58	650	282	0.0000	
0.67	650	336	0.0000	
0.75	650	390	0.0000	
0.83	650	444	0.0000	
0.92	650	498	0.0000	
1.00	650	553	0.0000	**SURFACE DISCHARGE[3][5]**
1.08	650	607	0.0012	
1.17	650	661	0.0025	
1.25	650	715	0.0037	
1.33	650	769	0.0050	
1.42	650	823	0.0062	
1.50	650	878	0.0075	
1.58	650	932	0.0087	
1.67	650	986	0.0099	
1.75	650	1040	0.0112	
1.83	650	1094	0.0124	**EMERGENCY WEIR[4]**
1.92	650	1148	0.0137	
2.00	650	1203	0.0149	
2.08	650	1257	0.0162	
2.17	650	1311	0.0174	
2.25	650	1365	0.0187	
2.33	650	1419	0.0199	
2.42	650	1473	0.0211	
2.50	650	1528	0.0224	

(1): The area at this surface elevation corresponds to the area of gravel and amended soil (Bio-filtration layer)
(2): The volume for the first 3 inches of surface depth accounts for the voids of mulch
(3): Volume at this elevation coresponds with surface volume for WQ purposes (invert of lowest surface outlet)
(4): This elevation corresponds to the top of the riser elevation.
(5) Q50 detention begins at this elevation.

Stage-Area for BMP 3

Elevation (ft)	Area (ft^2)	Volume (ft^3)	Q50 Detention Volume (Acre-ft)	
0.00	538	**0**	0.0000	**BIOFILTRATION(1)**
0.08	563	18	0.0000	
0.17	587	37	0.0000	
0.25	612	57	0.0000	**TOP OF MULCH(2)**
0.33	637	109	0.0000	
0.42	663	164	0.0000	
0.50	689	220	0.0000	
0.58	717	279	0.0000	
0.67	744	339	0.0000	
0.75	772	403	0.0000	**SURFACE DISCHARGE(3)(5)**
0.83	801	468	0.0015	
0.92	831	536	0.0031	
1.00	861	607	0.0047	
1.08	891	680	0.0064	
1.17	922	755	0.0081	
1.25	954	833	0.0099	
1.33	986	914	0.0117	
1.42	1019	998	0.0137	
1.50	1052	1084	0.0156	

(1): The area at this surface elevation corresponds to the area of gravel and amended soil (Bio-filtration layer)
(2): The volume for the first 3 inches of surface depth accounts for the voids of mulch
(3): Volume at this elevation coresponds with surface volume for WQ purposes (invert of lowest surface outlet)
(4): This elevation corresponds to the top of the riser elevation.
(5) Q50 detention begins at this elevation.

Stage-Area for BMP 4

Elevation (ft)	Area (ft^2)	Volume (ft^3)	Q50 Detention Volume (Acre-ft)	
0.00	1202	**0**	0.0000	**BIOFILTRATION[1]**
0.08	1202	40	0.0000	
0.17	1202	80	0.0000	
0.25	1202	120	0.0000	**TOP OF MULCH[2]**
0.33	1202	220	0.0000	
0.42	1202	321	0.0000	
0.50	1202	421	0.0000	
0.58	1202	521	0.0000	
0.67	1202	621	0.0000	
0.75	1202	721	0.0000	
0.83	1202	821	0.0000	
0.92	1202	922	0.0000	
1.00	1202	1022	0.0000	**SURFACE DISCHARGE[3][5]**
1.08	1202	1122	0.0023	
1.17	1202	1222	0.0046	
1.25	1202	1322	0.0069	
1.33	1202	1422	0.0092	
1.42	1202	1523	0.0115	
1.50	1202	1623	0.0138	
1.58	1202	1723	0.0161	
1.67	1202	1823	0.0184	
1.75	1202	1923	0.0207	
1.83	1202	2023	0.0230	
1.92	1202	2124	0.0253	
2.00	1202	2224	0.0276	
2.08	1202	2324	0.0299	
2.17	1202	2424	0.0322	
2.25	1202	2524	0.0345	**EMERGENCY WEIR[4]**
2.33	1202	2624	0.0368	
2.42	1202	2725	0.0391	
2.50	1202	2825	0.0414	
2.58	1202	2925	0.0437	
2.67	1202	3025	0.0460	
2.75	1202	3125	0.0483	
2.83	1202	3225	0.0506	
2.92	1202	3326	0.0529	
3.00	1202	3426	0.0552	

(1): The area at this surface elevation corresponds to the area of gravel and amended soil (Bio-filtration layer)
(2): The volume for the first 3 inches of surface depth accounts for the voids of mulch
(3): Volume at this elevation coresponds with surface volume for WQ purposes (invert of lowest surface outlet)
(4): This elevation corresponds to the top of the riser elevation.
(5) Q50 detention begins at this elevation.

Stage-Area for BMP 5

Elevation (ft)	Area (ft^2)	Volume (ft^3)	Q50 Detention Volume (Acre-ft)	
0.00	3137	**0**	0.0000	**BIOFILTRATION[1]**
0.08	3207	106	0.0000	
0.17	3277	214	0.0000	
0.25	3347	324	0.0000	**TOP OF MULCH[2]**
0.33	3418	606	0.0000	
0.42	3489	894	0.0000	
0.50	3561	1188	0.0000	
0.58	3633	1487	0.0000	
0.67	3705	1793	0.0000	
0.75	3778	2105	0.0000	
0.83	3851	2423	0.0000	**SURFACE DISCHARGE[3][5]**
0.92	3925	2747	0.0074	
1.00	3999	3077	0.0150	
1.08	4073	3413	0.0227	
1.17	4148	3756	0.0306	
1.25	4223	4105	0.0386	
1.33	4299	4460	0.0468	
1.42	4375	4821	0.0551	
1.50	4451	5189	0.0635	
1.58	4528	5563	0.0721	
1.67	4605	5943	0.0808	
1.75	4682	6330	0.0897	**EMERGENCY WEIR[4]**
1.83	4760	6724	0.0987	
1.92	4839	7124	0.1079	
2.00	4917	7530	0.1173	
2.08	4996	7943	0.1267	
2.17	5076	8363	0.1364	
2.25	5156	8789	0.1462	
2.33	5236	9222	0.1561	
2.42	5317	9662	0.1662	
2.50	5398	10108	0.1764	

(1): The area at this surface elevation corresponds to the area of gravel and amended soil (Bio-filtration layer)
(2): The volume for the first 3 inches of surface depth accounts for the voids of mulch
(3): Volume at this elevation coresponds with surface volume for WQ purposes (invert of lowest surface outlet)
(4): This elevation corresponds to the top of the riser elevation.
(5) Q50 detention begins at this elevation.

Stage Discharge

		BMP-1	BMP-2	BMP-3	BMP-4	BMP-5
SLOT	W (ft):	1.000	0.750	-	1.083	5.500
SLOT	h (in):	6	4	-	4	1.5
Inv slot:	(ft):	1.00	1.00	-	1.00	0.833
Weir	W (ft):	8	8	8	8	16
inv weir:	(ft):	2.167	1.833	0.750	2.250	1.750
$Q_{100,\ unrouted}$	(cfs):	3.72	1.67	1.20	2.32	7.49
h for $Q_{100,u}$	(in):	3.39	1.99	1.59	2.47	3.40
Dorif:	(in):	1.375	0.875	0.875	1.25	2.25
Qorif:	(cfs):	0.049	0.020	0.020	0.041	0.102

Discharges with h measured over invert of slot (and not including low orifice)

h	Q1	Q2	Q3	Q4	Q5
0.00	0	0	0	0	0
0.08	0.075	0.056	***0.597***	0.081	0.410
0.17	0.211	0.158	***1.687***	0.229	1.160
0.25	0.388	0.291	***3.100***	0.420	1.457
0.33	0.597	0.447	***4.773***	0.646	1.751
0.42	0.834	0.612	***6.670***	0.884	2.003
0.50	1.096	0.707	***8.768***	1.021	2.226
0.58	1.381	0.790	***11.049***	1.141	2.429
0.67	1.580	0.865	***13.499***	1.250	2.616
0.75	1.731	0.935	***16.108***	1.350	2.790
0.83	1.869	***0.999***		1.443	2.955
0.92	1.998	***1.656***		1.531	3.110
1.00	2.120	***2.805***		1.614	***4.452***
1.08	2.234	***4.272***		1.692	***6.775***
1.17	***2.343***	***5.997***		1.768	***9.736***
1.25	***3.044***	***7.944***		***1.840***	***13.213***
1.33	***4.235***	***10.090***		***2.506***	***17.134***
1.42	***5.744***	***12.417***		***3.664***	***21.453***
1.50	***7.509***	***14.913***		***5.141***	***26.133***
1.58	***9.496***			***6.877***	***31.149***
1.67	***11.681***			***8.835***	***36.479***
1.75	***14.047***			***10.992***	
1.83	***16.579***			***13.331***	
1.92	***19.268***			***15.838***	
2.00	***22.104***			***18.502***	

Discharges with 0 = surface elevation of BMP. For Q100 purposes, initial level is in blue bold. Includes low flow orifice.

BMP-1

h (ft)	Q (cfs)
0.000	0
0.001	0.0489
1.000	0.049
1.083	0.124
1.167	0.260
1.250	0.437
1.333	0.646
1.417	0.883
1.500	1.145
1.583	1.430
1.667	1.629
1.750	1.780
1.833	1.918
1.917	2.047
2.000	2.169
2.083	2.283
2.167	2.392
2.250	3.093
2.333	4.284
2.417	5.793
2.500	7.558
2.583	9.545
2.667	11.730
2.750	14.096
2.833	16.628
2.917	19.317
3.000	22.153

BMP-2

h (ft)	Q (cfs)
0.000	0
0.001	0.0199
1.000	0.020
1.083	0.076
1.167	0.178
1.250	0.311
1.333	0.467
1.417	0.632
1.500	0.727
1.583	0.810
1.667	0.885
1.750	0.955
1.833	1.019
1.917	1.676
2.000	2.825
2.083	4.292
2.167	6.017
2.250	7.964
2.333	10.110
2.417	12.437
2.500	14.933

BMP-3

h (ft)	Q (cfs)
0.000	0
0.001	0.0199
0.750	0.020
0.833	0.617
0.917	1.707
1.000	3.120
1.083	4.793
1.167	6.690
1.250	8.788
1.333	11.069
1.417	13.519
1.500	16.128

BMP-4

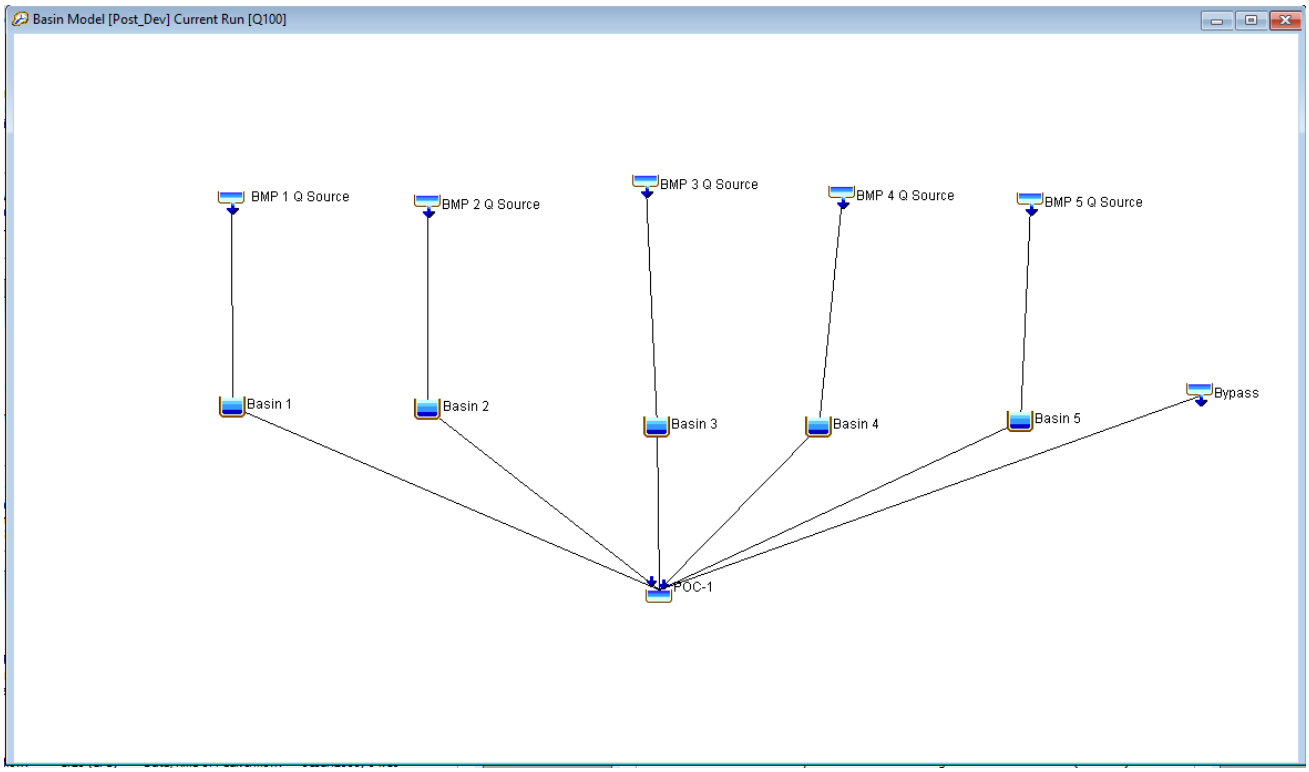
h (ft)	Q (cfs)
0.000	0
0.001	0.0409
1.000	0.041
1.083	0.122
1.167	0.270
1.250	0.461
1.333	0.687
1.417	0.925
1.500	1.062
1.583	1.182
1.667	1.291
1.750	1.391
1.833	1.484
1.917	1.572
2.000	1.655
2.083	1.733
2.167	1.809
2.250	1.881
2.333	2.547
2.417	3.705
2.500	5.182
2.583	6.918
2.667	8.876
2.750	11.033
2.833	13.372
2.917	15.879
3.000	18.543

BMP-5

h (ft)	Q (cfs)
0.000	0
0.001	0.1019
0.833	0.102
0.917	0.512
1.000	1.262
1.083	1.559
1.167	1.853
1.250	2.105
1.333	2.328
1.417	2.531
1.500	2.718
1.583	2.892
1.667	3.057
1.750	3.212
1.833	4.554
1.917	6.877
2.000	9.838
2.083	13.315
2.167	17.236
2.250	21.555
2.333	26.235
2.417	31.251
2.500	36.581

4.3 – HEC-HMS Modified-Puls Routing Results

HEC-HMS Post Development



HEC-HMS Post Development Results POC-1

Summary Results for Sink "POC-1"

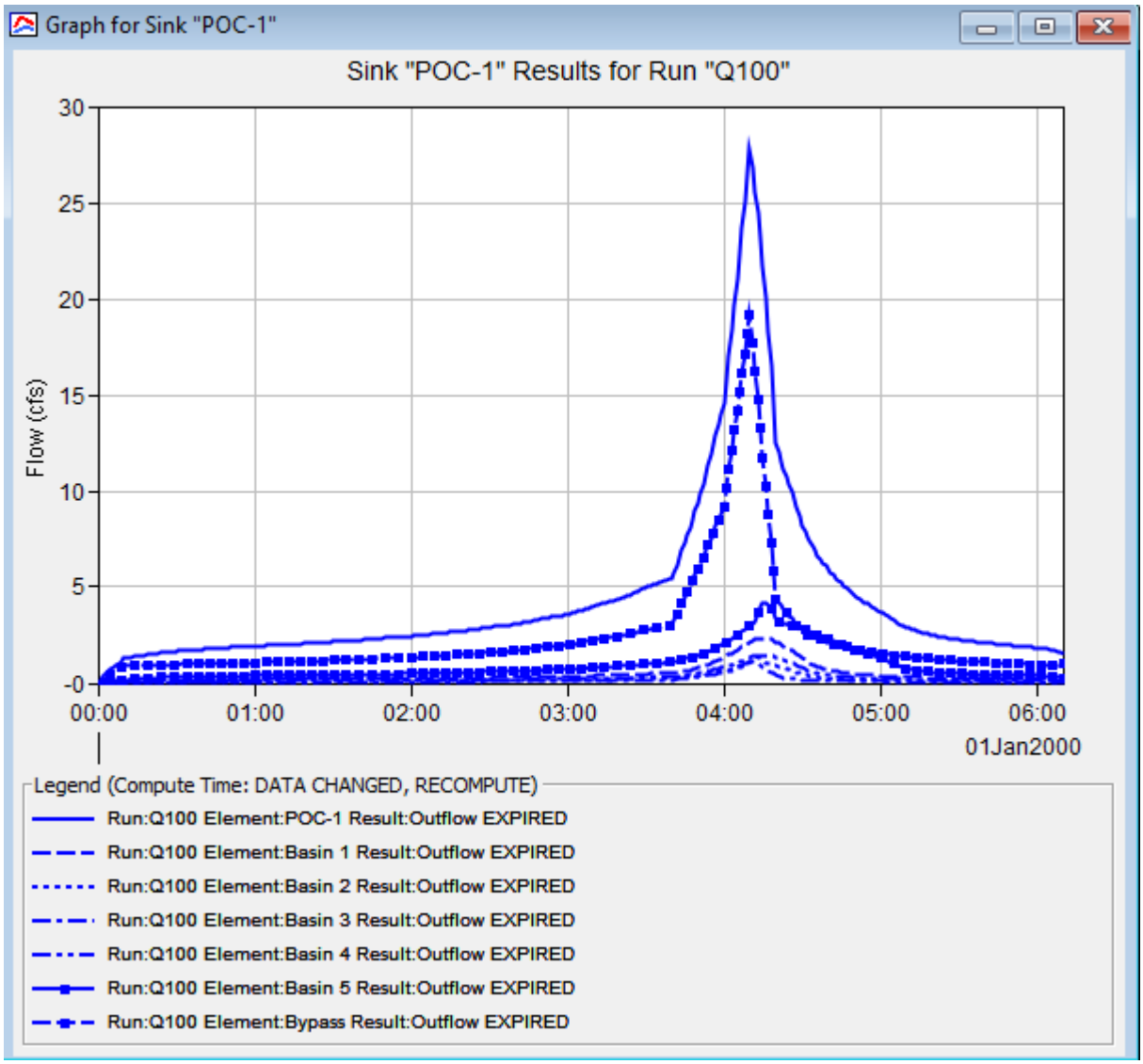
Project: 1829_All_basins Simulation Run: Q100
Sink: POC-1

Start of Run:	01Jan2000, 00:00	Basin Model:	Post_Dev
End of Run:	01Jan2000, 06:10	Meteorologic Model:	Met 1
Compute Time:	DATA CHANGED, RECOMPUTE	Control Specifications:	Control 1

Volume Units: (•) IN ( ) ACRE-FT

Computed Results

Peak Discharge: 27.79 (CFS) Date/Time of Peak Discharge 01Jan2000, 04:10
Volume: n/a



HEC-HMS Post Development Results Basin 1

Summary Results for Reservoir "Basin 1"

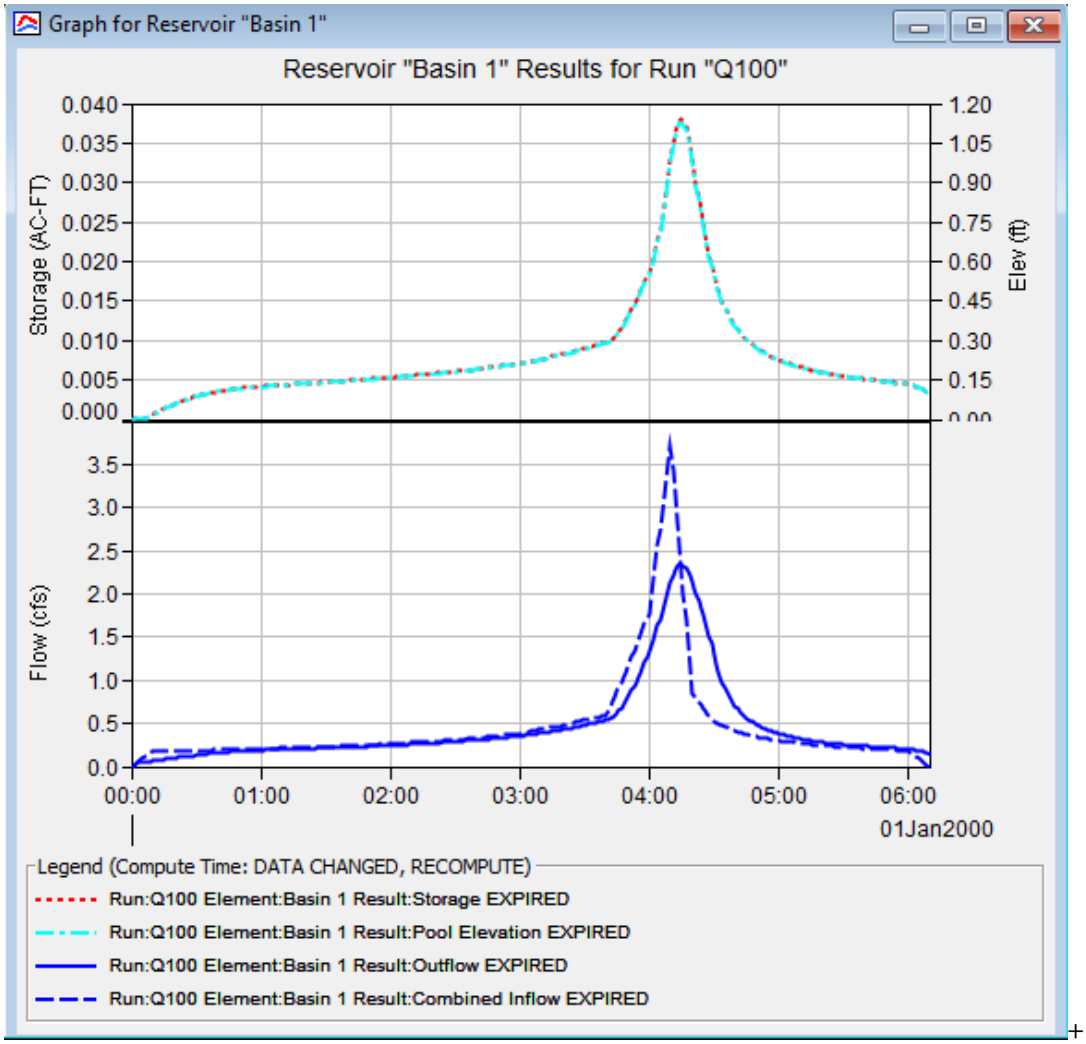
Project: 1829_All_basins Simulation Run: Q100
Reservoir: Basin 1

Start of Run:	01Jan2000, 00:00	Basin Model:	Post_Dev
End of Run:	01Jan2000, 06:10	Meteorologic Model:	Met 1
Compute Time:	DATA CHANGED, RECOMPUTE	Control Specifications:	Control 1

Volume Units: (•) IN ( ) ACRE-FT

Computed Results

Peak Inflow:	3.72 (CFS)	Date/Time of Peak Inflow:	01Jan2000, 04:10
Peak Discharge:	2.34 (CFS)	Date/Time of Peak Discharge:	01Jan2000, 04:15
Inflow Volume:	n/a	Peak Storage:	0.038 (ACRE-FT)
Discharge Volume:	n/a	Peak Elevation:	1.13 (FT)



HEC-HMS Post Development Results Basin 2

Summary Results for Reservoir "Basin 2"

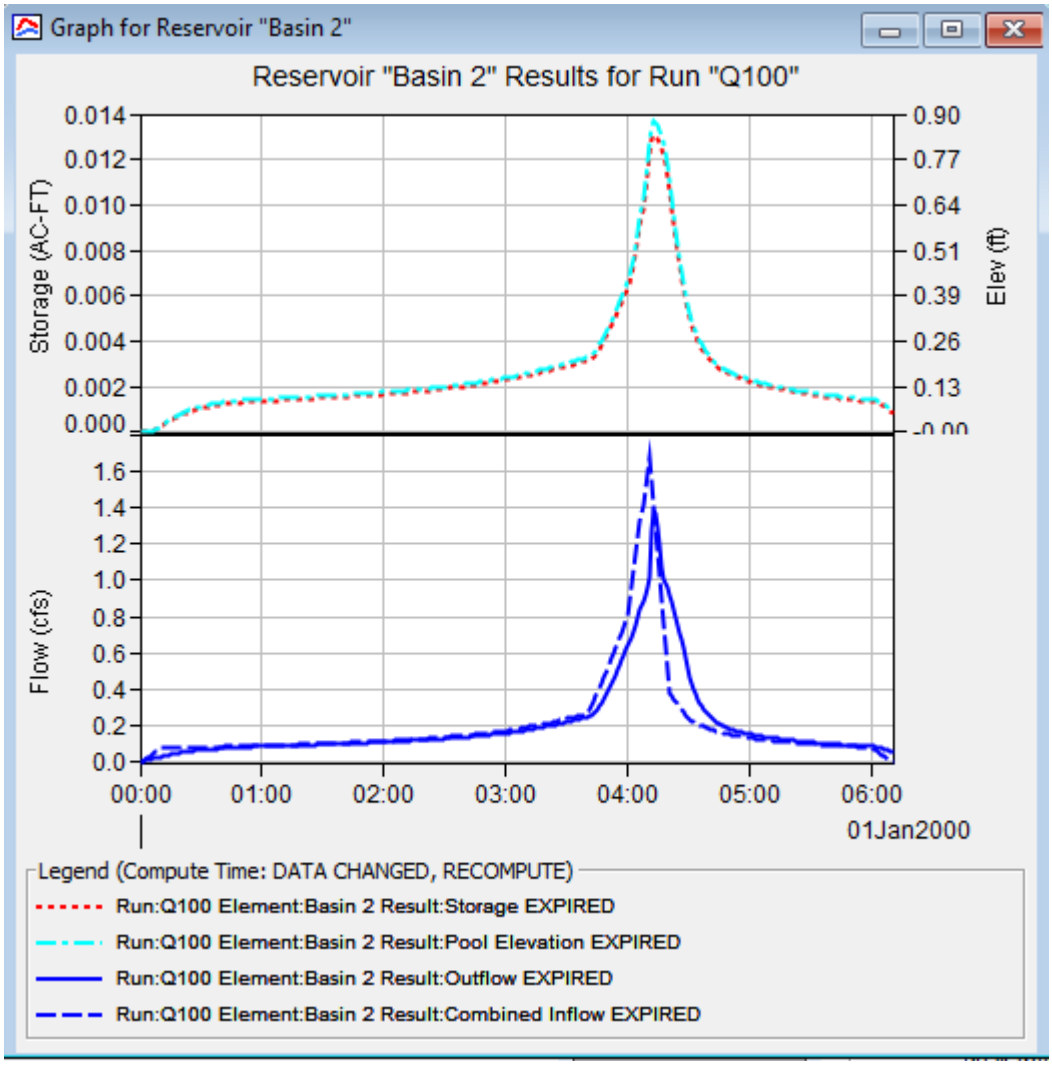
Project: 1829_All_basins Simulation Run: Q100
Reservoir: Basin 2

Start of Run:	01Jan2000, 00:00	Basin Model:	Post_Dev
End of Run:	01Jan2000, 06:10	Meteorologic Model:	Met 1
Compute Time:	DATA CHANGED, RECOMPUTE	Control Specifications:	Control 1

Volume Units: (•) IN ( ) ACRE-FT

Computed Results

Peak Inflow:	1.67 (CFS)	Date/Time of Peak Inflow:	01Jan2000, 04:10
Peak Discharge:	1.38 (CFS)	Date/Time of Peak Discharge:	01Jan2000, 04:12
Inflow Volume:	n/a	Peak Storage:	0.013 (ACRE-FT)
Discharge Volume:	n/a	Peak Elevation:	0.88 (FT)



HEC-HMS Post Development Results Basin 3

Summary Results for Reservoir "Basin 3"

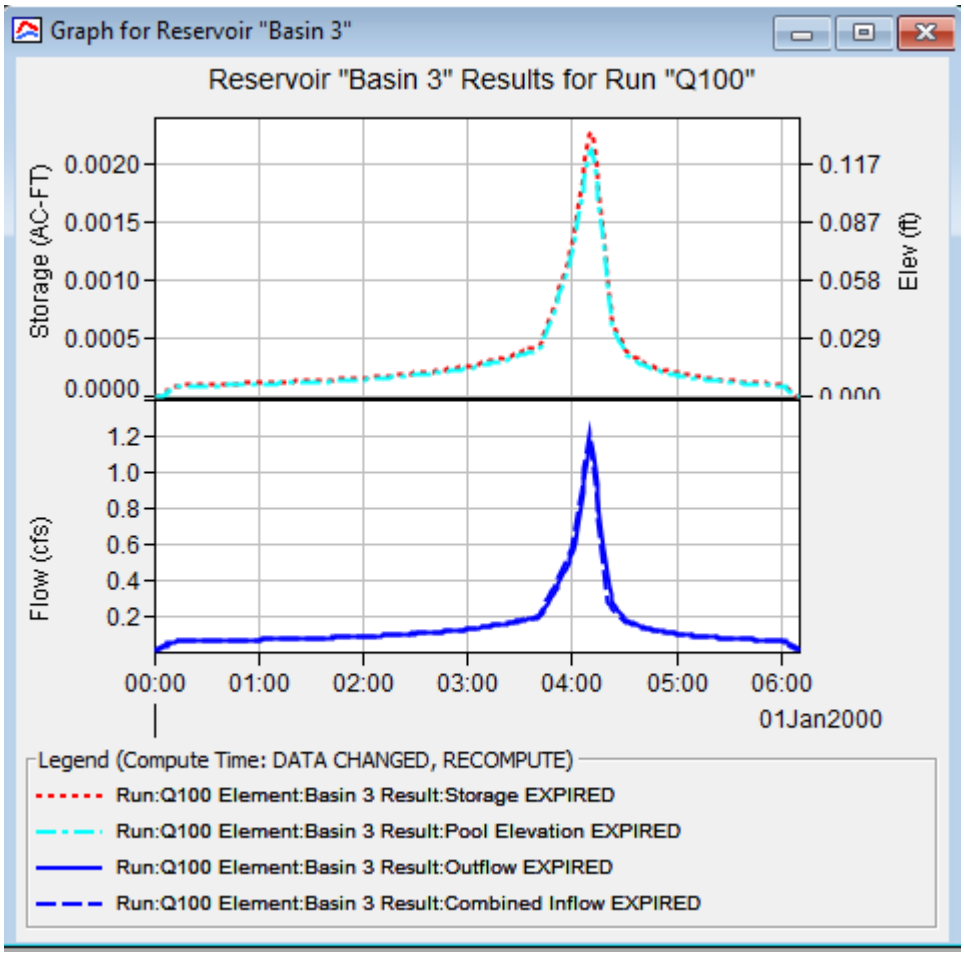
Project: 1829_All_basins Simulation Run: Q100
Reservoir: Basin 3

Start of Run:	01Jan2000, 00:00	Basin Model:	Post_Dev
End of Run:	01Jan2000, 06:10	Meteorologic Model:	Met 1
Compute Time:	DATA CHANGED, RECOMPUTE	Control Specifications:	Control 1

Volume Units: (•) IN ( ) ACRE-FT

Computed Results

Peak Inflow:	1.20 (CFS)	Date/Time of Peak Inflow:	01Jan2000, 04:10
Peak Discharge:	1.15 (CFS)	Date/Time of Peak Discharge:	01Jan2000, 04:11
Inflow Volume:	n/a	Peak Storage:	0.002 (ACRE-FT)
Discharge Volume:	n/a	Peak Elevation:	0.12 (FT)



HEC-HMS Post Development Results Basin 3

Summary Results for Reservoir "Basin 4"

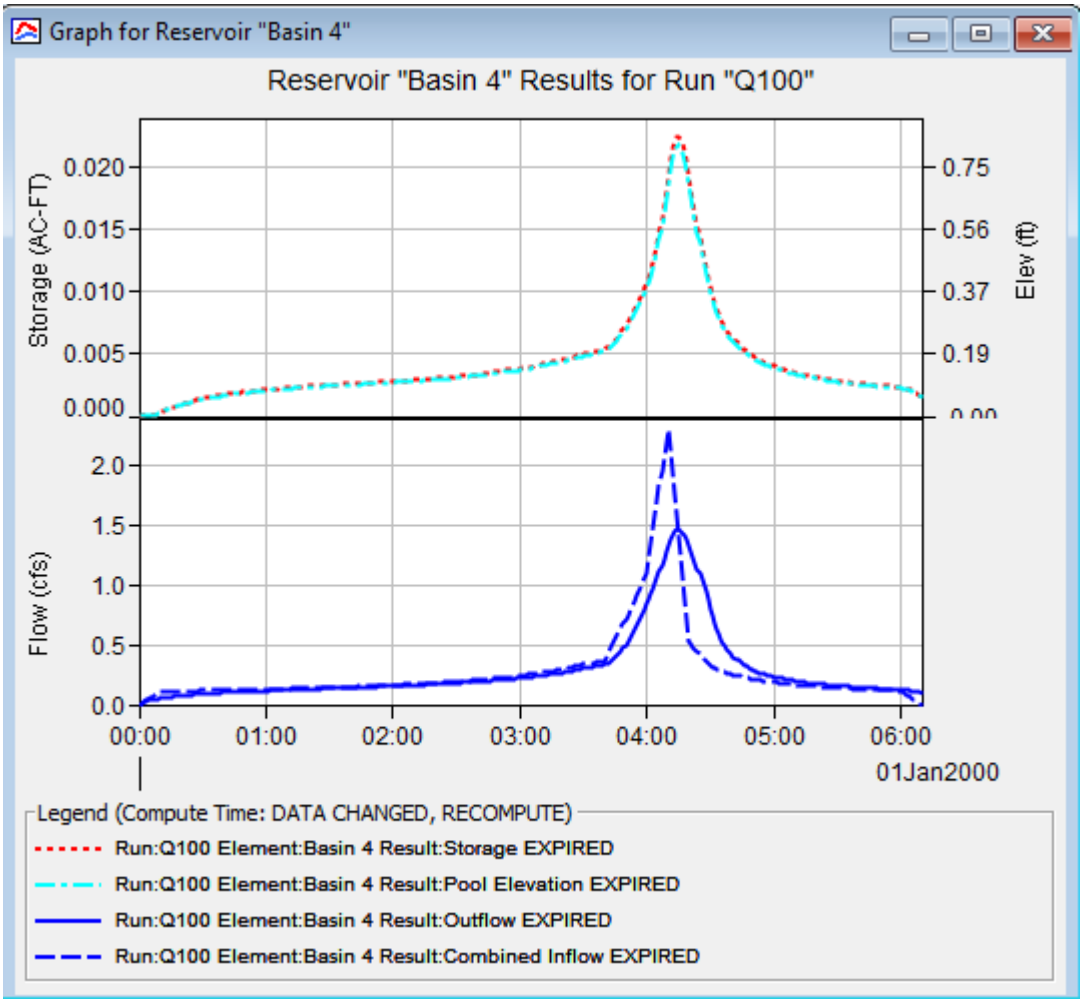
Project: 1829_All_basins Simulation Run: Q100
Reservoir: Basin 4

Start of Run:	01Jan2000, 00:00	Basin Model:	Post_Dev
End of Run:	01Jan2000, 06:10	Meteorologic Model:	Met 1
Compute Time:	DATA CHANGED, RECOMPUTE	Control Specifications:	Control 1

Volume Units: (•) IN ( ) ACRE-FT

Computed Results

Peak Inflow:	2.32 (CFS)	Date/Time of Peak Inflow:	01Jan2000, 04:10
Peak Discharge:	1.46 (CFS)	Date/Time of Peak Discharge:	01Jan2000, 04:15
Inflow Volume:	n/a	Peak Storage:	0.023 (ACRE-FT)
Discharge Volume:	n/a	Peak Elevation:	0.82 (FT)



HEC-HMS Post Development Results Basin 3

Summary Results for Reservoir "Basin 5"

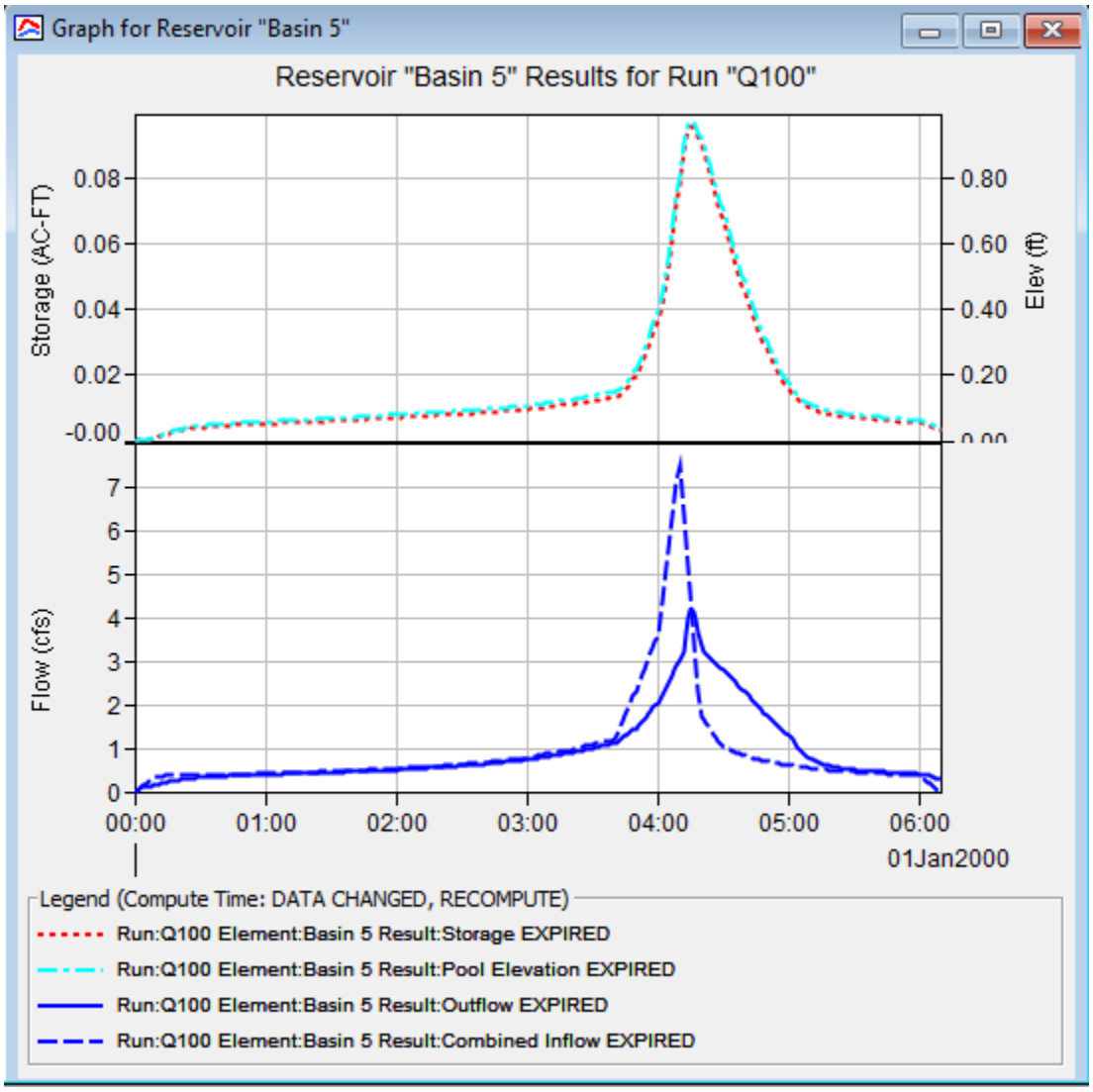
Project: 1829_All_basins Simulation Run: Q100
Reservoir: Basin 5

Start of Run:	01Jan2000, 00:00	Basin Model:	Post_Dev
End of Run:	01Jan2000, 06:10	Meteorologic Model:	Met 1
Compute Time:	DATA CHANGED, RECOMPUTE	Control Specifications:	Control 1

Volume Units: (•) IN ( ) ACRE-FT

Computed Results

Peak Inflow:	7.49 (CFS)	Date/Time of Peak Inflow:	01Jan2000, 04:10
Peak Discharge:	4.18 (CFS)	Date/Time of Peak Discharge:	01Jan2000, 04:16
Inflow Volume:	n/a	Peak Storage:	0.096 (ACRE-FT)
Discharge Volume:	n/a	Peak Elevation:	0.98 (FT)



CHAPTER 5 - HYDROLOGY MAPS

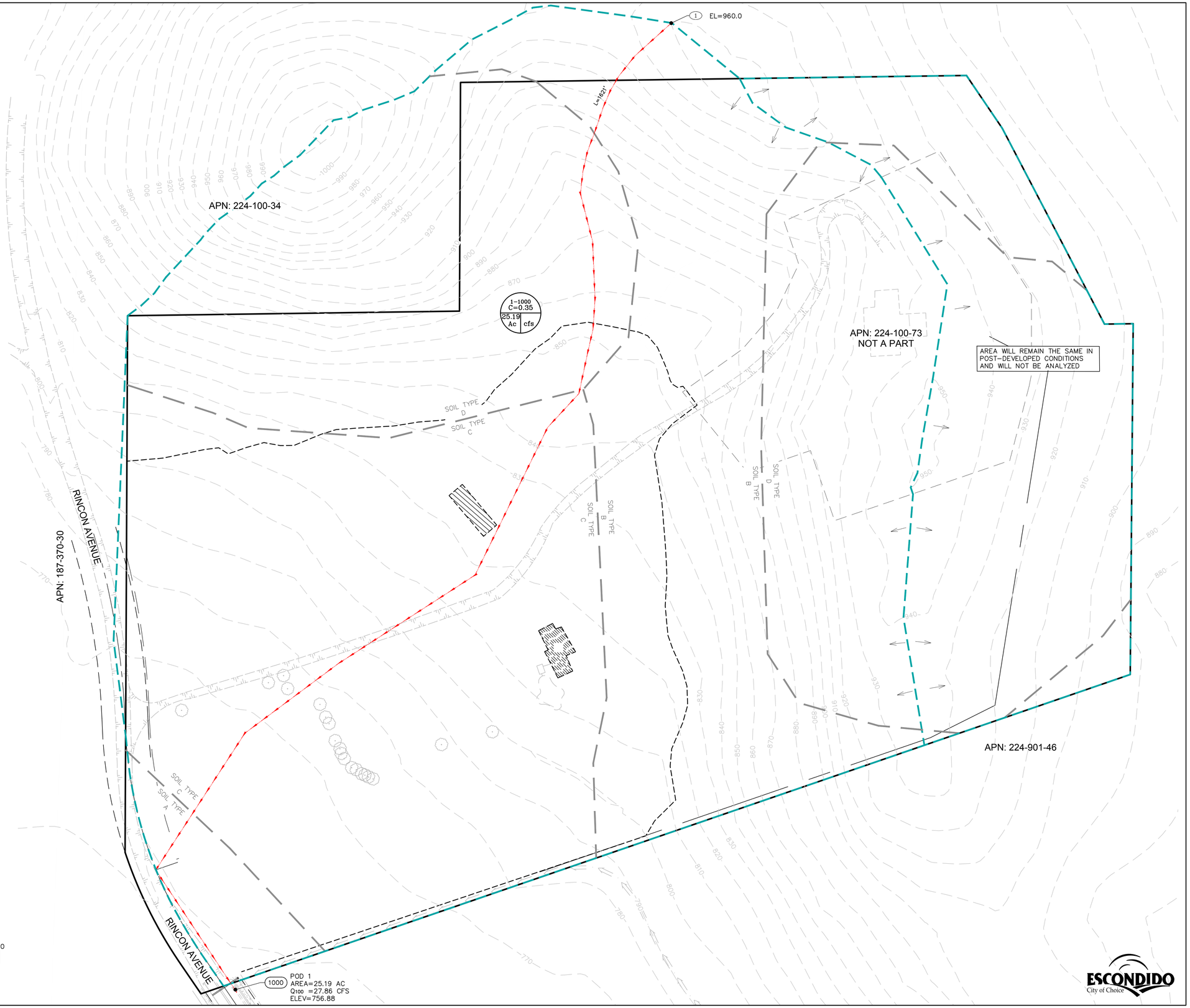
LEGEND

NODE NUMBER (XX)

FLOWPATH

BASIN BOUNDARY

SOIL TYPE BOUNDARY



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SCALE: 1" = 60'

ESCONDIDO City of Choice

REVISIONS			
NO.	DESCRIPTION	DATE	APP'D

R·E·C Consultants, Inc.

Civil Engineering · Environmental Land Surveying

2970 Fifth Avenue, Suite 340
San Diego, CA 92103
(619)232-9200 (619)232-9210 Fax

DATE: 2-1-2023
SCALE: 1" = 60'
DRAWN: JMW
CHECKED: J.R.R.

SHEET TITLE: PRE-DEVELOPED DRAINAGE EXHIBIT

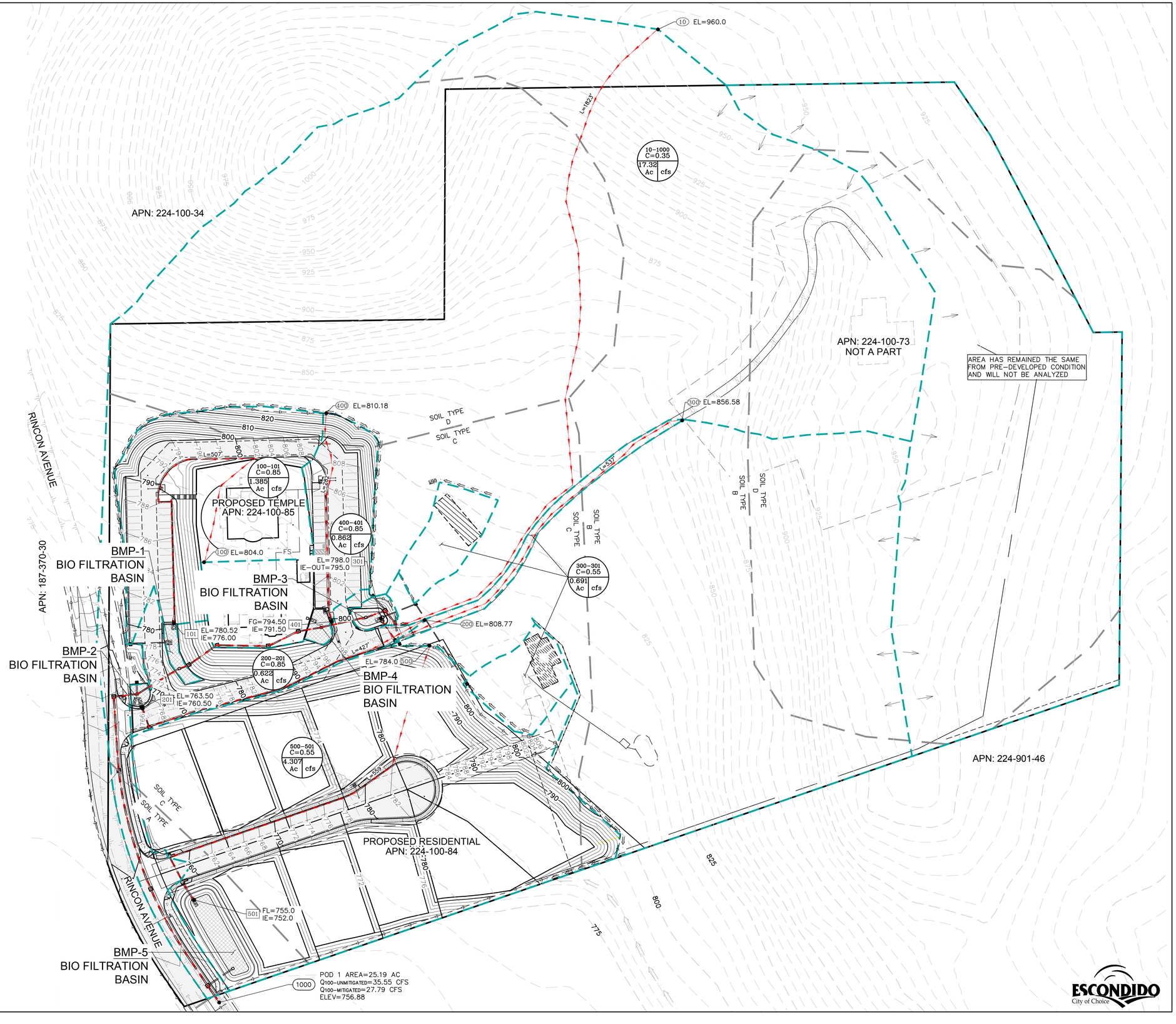
PROJECT: ISKCON KRISHNA TEMPLE
ISKCON OF ESCONDIDO INC
1365 RINCON AVE - ESCONDIDO, CA 92026

SHEET 1 OF 1 SHEETS

SAVE DATE: 3/13/2023 ~ PLOT DATE: 3/13/2023 ~ FILE NAME: P:\Acad\1829 Iskcon Temple - Residential\Reports\Drainage Study\1829-Drainage Pre.dwg

LEGEND

- STORMDRAIN NODE — XX
- NODE NUMBER — (XX)
- FLOWPATH
- BASIN BOUNDARY
- SOIL TYPE BOUNDARY



60 30 0 60 120 180

SCALE: 1" = 60'

ESCONDIDO City of Choice

NO.	DESCRIPTION	DATE	APP'D
	REVISIONS		

Civil Engineering · Environmental
Land Surveying
2970 Fifth Avenue, Suite 340
San Diego, CA 92103
(619)232-9200 (619)232-9210 Fax

R·E·C Consultants, Inc.

DATE: 2-1-2023
SCALE: 1" = 60'
DRAWN: JMW
CHECKED: J.R.R.

SHEET TITLE: POST-DEVELOPED DRAINAGE MAP

PROJECT: ISKCON KRISHNA TEMPLE
ISKCON OF ESCONDIDO,INC
1365 RINCON AVE - ESCONDIDO, CA 92026

SHEET 1 OF 1 SHEETS

SAVE_DATE: 3/13/2023 ~ PLOT_DATE: 3/13/2023 ~ FILE_NAME: P:\Accel\1829 Iskcon Temple - Residential\Reports\Drainage Study\1829-Drainage Post.dwg

TECHNICAL MEMORANDUM:

SWMM Modeling for Hydromodification Compliance of:

Iskcon Krishna Temple and Residential Development, Escondido, CA

Prepared For:

Iskcon of Escondido, Inc.

March 9, 2023

Prepared by:

Luis Parra, PhD, CPSWQ, ToR, D.WRE.
R.C.E. 66377

REC Consultants
2970 5th Ave, Suite 340, San Diego, CA 92103
Telephone: (619) 232-9200

TECHNICAL MEMORANDUM

TO: Iskcon of Escondido, Inc.

FROM: Luis Parra, PhD, PE, CFM.

DATE: March 9, 2023.

RE: Summary of SWMM Modeling for Hydromodification Compliance for Iskcon Krishna Temple and Residential Development, 1365 Rincon Ave, Escondido, CA, 92026.

INTRODUCTION

This memorandum summarizes the approach used to model the proposed religious and residential development project site in the City of Escondido using the Environmental Protection Agency (EPA) Storm Water Management Model 5.0 (SWMM). SWMM models were prepared for the pre and post-developed conditions at the site in order to determine if the proposed LID biofiltration facilities have sufficient volume to meet Order R9-2013-001 requirements of the California Regional Water Quality Control Board San Diego Region (SDRWQCB), as explained in the Final Hydromodification Management Plan (HMP), dated March 2011, prepared for the County of San Diego by Brown and Caldwell.

SWMM Model Development

The Iskcon Krishna Temple and Residential Development project comprises of (a) the development of a religious Temple and parking lots plus (b) the development of ten (10) adjacent residential area including including associated roads, landscape and parking lots. Two (2) SWMM models were prepared for this study: the first for the pre-development and the second for the post-developed conditions. The project site drains to one (1) Point of Compliance (POC-1) located at the NW corner of the property, a cleanout adjacent to Rincon Avenue, in Escondido, CA.

The SWMM model was used since it is an approved model for hydromodification compliance that provides a lot of flexibility for design. For both SWMM models, flow duration curves were prepared to determine if the proposed HMP facilities are sufficient to meet the current HMP requirements. The inputs required to develop SWMM models include rainfall, watershed characteristics, and BMP configurations.

In regards to the proper rainfall station to use for this project, two factors are taken into account to select the most appropriate rainfall location, in agreement with the County of San Diego BMP Manual: Proximity of the project with the rainfall station (in terms of distance), and difference in elevation between the project and the rainfall station selected. Unfortunately, section G.1.3.1 of the BMP Manual is not 100% reliable because (a) it includes rainfall stations in Figure G.1-1 whose data does not exists in the Project Clean Water web site (La Mesa) and it does not include rainfall stations in Figure G.1-1 whose data does exists (Borrego); (b) it assumes that all data sets are of the same quality, which is not the case (for example, data in Lindbergh is of much higher quality than data in the closed-by Fashion Valley station, and the later should never be used as a substitute of the former because most of its data is copied from Lindbergh and the elevation of both stations is the same; similarly quality of data for San Vicente and Santee is extremely poor and both should never be used) and (c) it lacks a methodological procedure on how to evaluate

scenarios when the station that is closer in location, is not the same that the station that is closer in elevation, as in the case of this project.

As a consequence, the author of this study has decided to use a statistical methodology to evaluate the most appropriate rainfall station among a group of "n" candidates (stations), using 2 parameters: (1) the distance D_i between the station "i" and the location of the project and (2) the absolute difference in elevation between the station "i" considered and the project location, Z_i. Assuming that the importance of D_i is identical to the importance of Z_i (distance is as important as difference in elevation) for each station considered the following parameter P_i is calculated:

$$P_i = \frac{D_i^{-1}}{2\sum_{i=1}^{n} D_i^{-1}} + \frac{Z_i^{-1}}{2\sum_{i=1}^{n} Z_i^{-1}}$$

The station whose parameter P_i is the highest is statistically more significant in terms of distance and difference in elevation respect to the location of the project. It should be noted that all P_i values added are equal to 1.

To evaluate the most appropriate rainfall station, the following stations were considered as potentially the most representative stations: Lake Wohlford (the closest in distance) and Fallbrook (the closest in elevation). The Escondido station was not considered because the data lacks the quality necessary for an unbiased continuous simulation: Escondido, Lake Cuyamaca, San Onofre (poor quality of data), Fashion Valley, Santee and San Vicente (very poor quality of data) are the six (6) rainfall stations that the author of this report does not recommend for continuous simulation as they present problems with precision, disaggregation of the data, proportion of the high intensity data coming from other stations, and overall quality. Consequently, only Lake Wohlford and Fallbrook are considered for further analysis. The distance of the project to each respective station is approximately 4.25 miles and 8.25 miles, while the absolute difference in elevation between each respective stations and the average elevation in the project is approximately 706 ft and 109 ft respectively. It seems evident that Fallbrook is the best station, because the distance is only double but the difference in elevation is about 7 times smaller. Applying the P_i equation we obtain the following values for Lake Wohlford and Fallbrook: 0.397 and 0.603. Therefore, it is clear that Fallbrook rain gauge is the most appropriate for this project.

In regards to evapotranspiration, per the California Irrigation Management Information System "Reference Evaporation Zones" (CIMIS ETo Zone Map), the project site is located within the Zone 9 Evapotranspiration Area. Thus evapotranspiration values for the site were modeled using Zone 9 average monthly values from Table G.1-1 from the City of San Diego 2016 BMP Design Manual. The site was modeled with Types A, B, C & D hydrologic soils as these are the existing soil determined from the NRCS Web Soil Survey. Soils have been assumed to be uncompacted in the existing condition to represent the natural condition of the site and fully compacted in the post developed conditions (except for areas in the property outside the development). Other SWMM inputs for the subareas are discussed in the appendices to this document, where the selection of the parameters is explained in detail.

HMP MODELING

EXISTING CONDITIONS

The current site is a mostly ungraded lot that drains in a NW direction to POC-1. The existing impervious areas within the project area (road, stable, houses) are not considered because the project exceeds the 50% rule and the entire area must be modeled as pervious for hydromodification compliance. Although the existing impervious area (less than 2% of the total area) can be modeled as compacted in pre-development conditions, for simplicity of modeling and conservatively all areas where modeled as uncompacted in pre-development conditions. It should be pointed out that the percentage of impervious area existing is very small (less than 2%) and this small percentage of compacted area will not make a difference in the comparison of pre and post-development conditions.

TABLE 1 – SUMMARY OF EXISTING CONDITIONS

DMA	Tributary Area, A (Ac)	Drainage Pattern
1-B-1	1.373	To 1-D-1 → 1-C-1 → POC-1
1-D-1	3.556	To 1-C-1 → POC-1
1-D-2	0.269	To 1-B-2 → 1-C-1 → POC-1
1-B-2	0.764	To 1-C-1 → POC-1
1-C-1	3.996	To POC-1
1-D-3	1.336	To 1-B-3 → 1-C-2 → POC-1
1-B-3	3.137	To 1-C-2 → POC-1
1-C-2	5.014	To POC-1
1-A	0.492	To POC-1
TOTAL	**19.94**	--

Notes: (1) – Per the 2013 RWQCB permit, existing condition impervious surfaces are not to be accounted for in existing conditions analysis. Therefore, all areas have 0% imperviousness

DEVELOPED CONDITIONS

Storm water runoff from the proposed project site is routed to POC-1, the same point than in pre-development conditions. For POC 1, the runoff from the developed project site is drained to five (5) onsite receiving biofiltration LID BMPs. Once flows are routed via the proposed LID BMPs, developed onsite flows are then conveyed to the aforementioned POC 1. Runoff from the offsite-slope previously described also drains to POC-1.

It should be pointed out that some off-site area will be treated, as it is composed by existing impervious areas: BMP-3 will receive runoff from the house, the stable and the existing road.

It is assumed all storm water quality requirements for the project will be met by the biofiltration LID BMPs. However, detailed water quality requirements are not discussed within this technical memo. For further information in regards to storm water quality requirements for the project, please refer to the site specific Storm Water Quality Management Plan (SWQMP).

TABLE 2 – SUMMARY OF DEVELOPED CONDITIONS

DMA	Tributary Area, A (Ac)[(1)]	Impervious Percentage %, Ip	Basin
1-D	0.153	5.9%	BMP-1
1-C-2	0.448	42.4%	
1-C-1	0.813	50.2%	
BMP-1	0.034	0%	
2-C	0.543	69.8%	BMP-2
BMP-2	0.015	0%	
3-B	0.042	100%	BMP-3
3-C-1	0.093	100%	
3-C-2	0.276	14.1%	
3-C-3	0.269	16.7%	
BMP-3	0.012	0%	
4-D	0.052	5.8%	BMP-4
4-C-1	0.409	71.4%	
4-C-2	0.373	42.1%	
BMP-4	0.052	0%	
5-A	0.388	20.1%	BMP-5
5-B	0.074	0%	
5-C	3.776	31.5%	
BMP-5	0.072	0%	
DM-A	0.031	87.1%	By-Pass
BP-D-1	2.502	0%	By-Pass
BP-D-3	0.268	0%	By-Pass
BP-B-2	2.169	0%	By-Pass
BP-C-1	1.060	0%	By-Pass
BP-D-2	1.334	0%	By-Pass
BP-B-1	2.989	0%	By-Pass
BP-C-2	0.667	0%	By-Pass
BP-D-4	0.849	0%	By-Pass
BP-C-3	0.054	0%	By-Pass
BP-C-4	0.118	0%	By-Pass
BP-C-5	0.024	0%	By-Pass
TOTAL	**19.94**	**--**	**To POC-1**

Notes: (1) – DMA areas do not include the area of the biofiltration.

Five (5) LID biofiltration basins with partial retention are located within the project site and are responsible for handling hydromodification requirements for the projects runoff to POC 1. In developed conditions, the basins will have a surface depth and a riser spillway structure (see dimensions in Table 3). Flows will then discharge from the basins via the outlet structure or infiltrate through the base of the facilities to the receiving amended soil and low flow orifice. The riser structure will act as a spillway such that peak flows can be safely discharged to the receiving storm drain systems.

Beneath the basins' invert lies the proposed LID biofiltration portion of the drainage facility. This portion of the basin is comprised of a 3-inch layer of mulch, an 18-inch layer of amended soil (a highly sandy, organic rich composite with an infiltration capacity of at least 5 inches/hr) and a layer of gravel. All BMPs will be unlined to allow for infiltration into the underlying soils.

The biofiltration basins were modeled using the biofiltration LID module within SWMM. The biofiltration module can model the amended soil layer, and a surface storage pond up to the elevation of the invert of the spillway. It should be noted that detailed outlet structure location and elevations will be shown on the construction plans based on the recommendations of this study.

BMP MODELING FOR HMP PURPOSES

Modeling of dual purpose Water Quality/HMP BMP

Five (5) LID BMP biofiltration basins are proposed for water quality treatment and hydromodification conformance for the project site. Tables 3 & 4 illustrate the dimensions required for HMP compliance according to the SWMM model that was undertaken for the project.

TABLE 3 – SUMMARY OF DEVELOPED DUAL PURPOSE BMP

BMP	Tributary Area (Ac)	DIMENSIONS					
		BMP Area[(1)], (ft^2)	Low Flow Orifice (in)	Gravel Depth [(5)](in)	Depth Riser Invert (ft)[(2)]	Top of riser: Weir Perimeter Length[(3)] (ft)	Total Surface Depth[(4)] (ft)
BMP-1	1.448	1,468	1.375	15	2.167	8.00	3.00
BMP-2	0.558	650	0.875	15	1.833	8.00	2.50
BMP-3	0.692	538	0.875	15	0.750	8.00	1.50
BMP-4	0.862	1202	1.25	15	2.250	8.00	3.00
BMP-5	4.310	3137	2.25	18	1.750	16.00	2.50

Notes:
(1): Area of amended soil = area of gravel = area of the BMP
(2): Depth of ponding beneath riser structure's surface spillway to bottom of mulch layer.
(3): Overflow length, the internal perimeter of the square riser
(4): Total surface depth of BMP from bottom of mulch layer to crest elevation.
(5): Gravel depth includes the dead storage below the LID orifice (6-inches for BMP 5 and 3-inches for all others) and 6 inches of gravel/sand filter layers. See Basin detail on Attachment 5.

TABLE 4 – SUMMARY OF SLOT DETAILS

Lower Slot			
Basin	**Width (in)**	**Height (in)**	**Elev. (in)** (from bottom of mulch)
BMP 1	12	6	12
BMP 2	9	4	12
BMP-3	N/A	N/A	No slot provided
BMP-4	13	4	12
BMP 5	66 (2 of 33)	1.50	10

FLOW DURATION CURVE COMPARISON

The Flow Duration Curve (FDC) for the site was compared at POC-1 by exporting the hourly runoff time series results from SWMM to a spreadsheet. The FDC was compared between 10% of the existing condition Q_2 up to the existing condition Q_{10} for POC-1. The Q_2 and Q_{10} were determined with a partial duration statistical analysis of the runoff time series in an Excel spreadsheet using the Cunnane plotting position method (which is the preferred plotting methodology in the HMP Permit). As the SWMM Model includes a statistical analysis based on the Weibull Plotting Position Method, the Weibull Method was also used within the spreadsheet to ensure that the results were similar to those obtained by the SWMM Model.

The range between 10% of Q_2 and Q_{10} was divided into 100 equal time intervals; the number of hours that each flow rate was exceeded was counted from the hourly series. Additionally, the intermediate peaks with a return period "i" were obtained (Q_i with i=3 to 9). For the purpose of the plot, the values were presented as percentage of time exceeded for each flow rate. FDC comparison at the POC is illustrated in Figures 1a and 1b in both normal and logarithmic scale. Attachment 5 provides a detailed drainage exhibit for the post-developed condition.

As can be seen in Figure 1, the FDC for the proposed condition with the HMP BMPs is within 110% of the curve for the existing condition in both peak flows and durations. The additional runoff volume generated from developing the site will be released to the existing point of discharge at a flow rate below the 10% Q_2 lower threshold for the POC. Additionally, the project will also not increase peak flow rates between the Q_2 and the Q_{10}, as shown in the graphic and also in the peak flow tables in Attachment 1.

Discussion of the Manning's coefficient (Pervious Areas) for Pre and Post-Development Conditions

Typically the Manning's coefficient is selected as n = 0.10 for pervious areas and n = 0.012 for impervious areas. However, due to the impact that n has in the continuous simulation a more accurate value of the Manning's coefficient has been chosen for pervious areas. Taken into consideration the study prepared by TRWE (Reference [6]) a value of n = 0.05 has been selected (see Table 1 of Reference [6] included in Attachment 7). An average n value between average grass plus pasture (0.04) and dense grass (0.06) has been selected per the reference cited, for light rain (<0.8 in/hr) as more than 99% of the rainfall has been measured with this intensity.

SUMMARY

This study has demonstrated that the proposed HMP BMPs provided for the Iskcon Krishna Temple and Residential Development project site is sufficient to meet the current HMP criteria if the cross-section areas and volumes recommended within this technical memorandum, and the respective orifice and outlet structure are incorporated as specified within the proposed project site.

KEY ASSUMPTIONS

1. Types A, B, C & D Soil are representative of the existing condition site.
2. All basins will be unlined to allow for infiltration.

ATTACHMENTS

1. Q_2 to Q_{10} Comparison Tables
2. Flow Duration Curve Analysis
3. List of the "n" largest Peaks: Pre-Development and Post-Development Conditions
4. Area Vs Elevation & Discharge Vs Elevation
5. Pre & Post Development Maps, Project Plan and Section Sketches
6. SWMM Input Data in Input Format (Existing and Proposed Models)
7. EPA SWMM Figures and Explanations
8. Soil Maps & Geotechnical Investigation
9. Summary files from the SWMM Model

REFERENCES

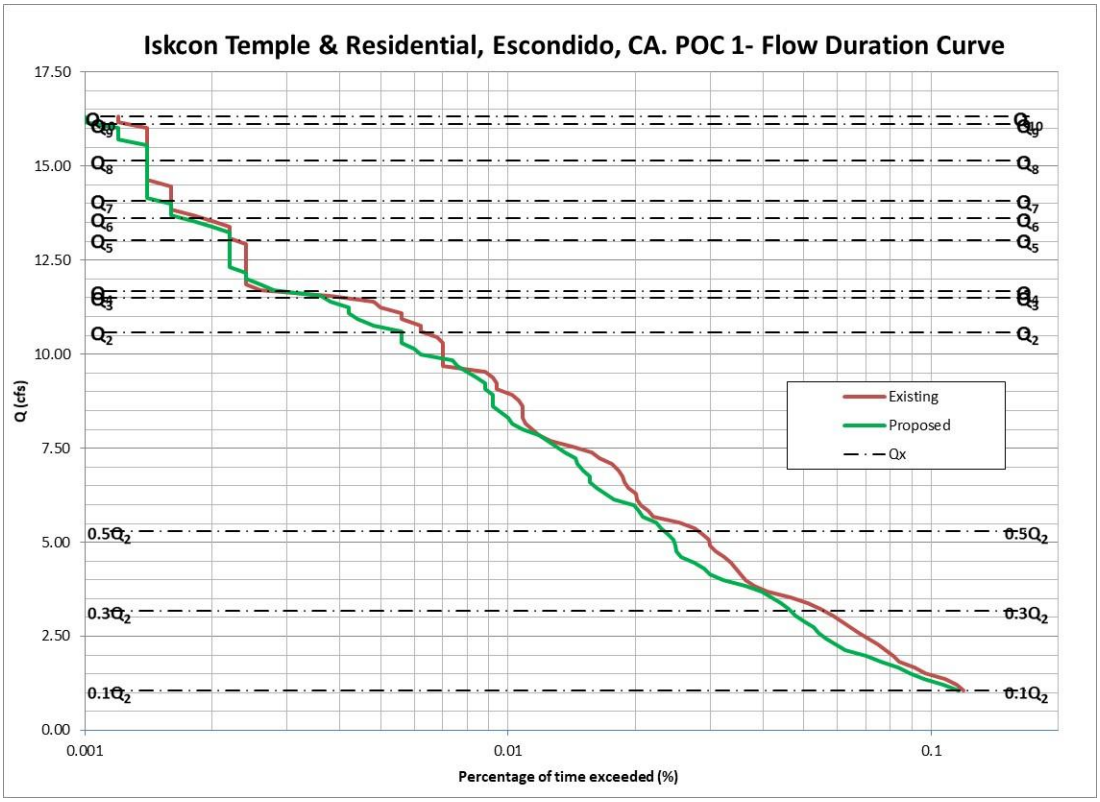
[1] – *"Review and Analysis of San Diego County Hydromodification Management Plan (HMP): Assumptions, Criteria, Methods, & Modeling Tools – Prepared for the Cities of San Marcos, Oceanside & Vista",* May 2012, TRW Engineering.

[2] – *"Final Hydromodification Management Plan (HMP) prepared for the County of San Diego",* March 2011, Brown and Caldwell.

[3] - Order R9-2013-001, California Regional Water Quality Control Board San Diego Region (SDRWQCB).

[4] – "*Handbook of Hydrology*", David R. Maidment, Editor in Chief. 1992, McGraw Hill.

[5] – "*City of Escondido BMP Design Manual*", February 2016.



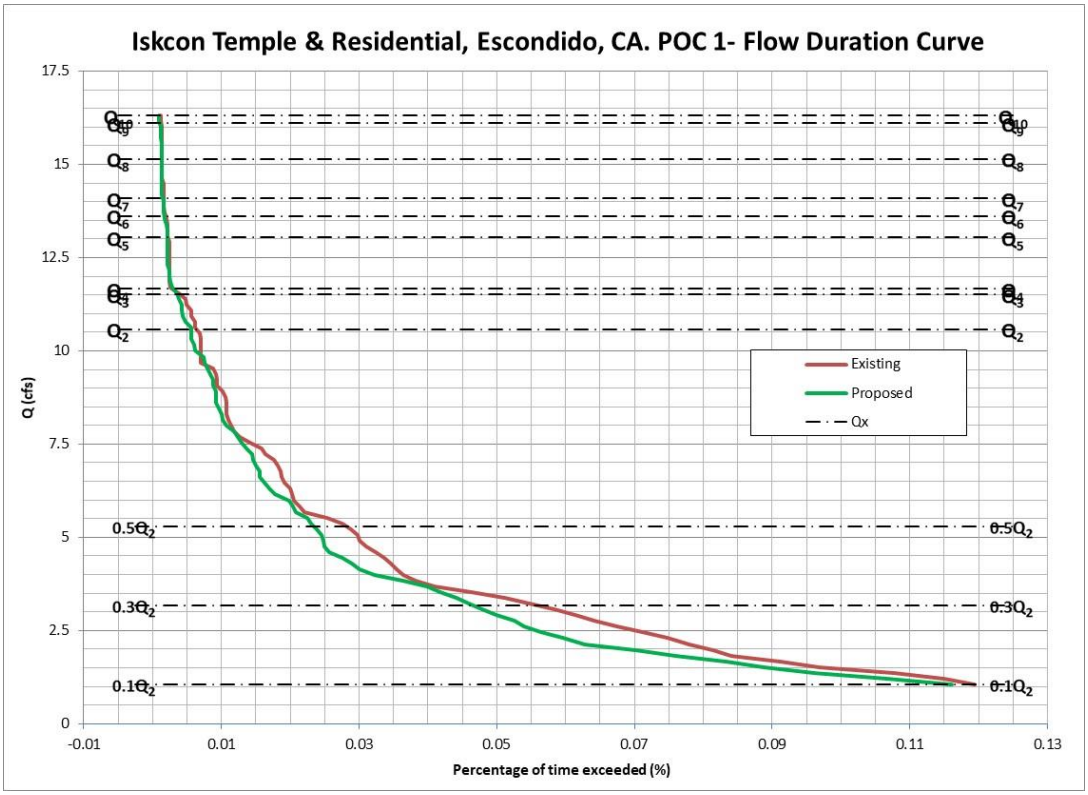


Figure 1a and 1b. Flow Duration Curve Comparison (logarithmic and normal "x" scale)

ATTACHMENT 1.

Q_2 to Q_{10} Comparison Table – POC 1

Return Period	Existing Condition (cfs)	Mitigated Condition (cfs)	Reduction, Exist - Mitigated (cfs)
2-year	10.58	9.94	0.65
3-year	11.51	10.95	0.56
4-year	11.66	11.63	0.03
5-year	13.03	12.46	0.58
6-year	13.61	13.43	0.18
7-year	14.09	13.80	0.28
8-year	15.14	14.70	0.44
9-year	16.11	15.69	0.42
10-year	16.32	16.07	0.25

ATTACHMENT 2

FLOW DURATION CURVE ANALYSIS

1) Flow duration curve shall not exceed the existing conditions by more than 10%, neither in peak flow nor duration.

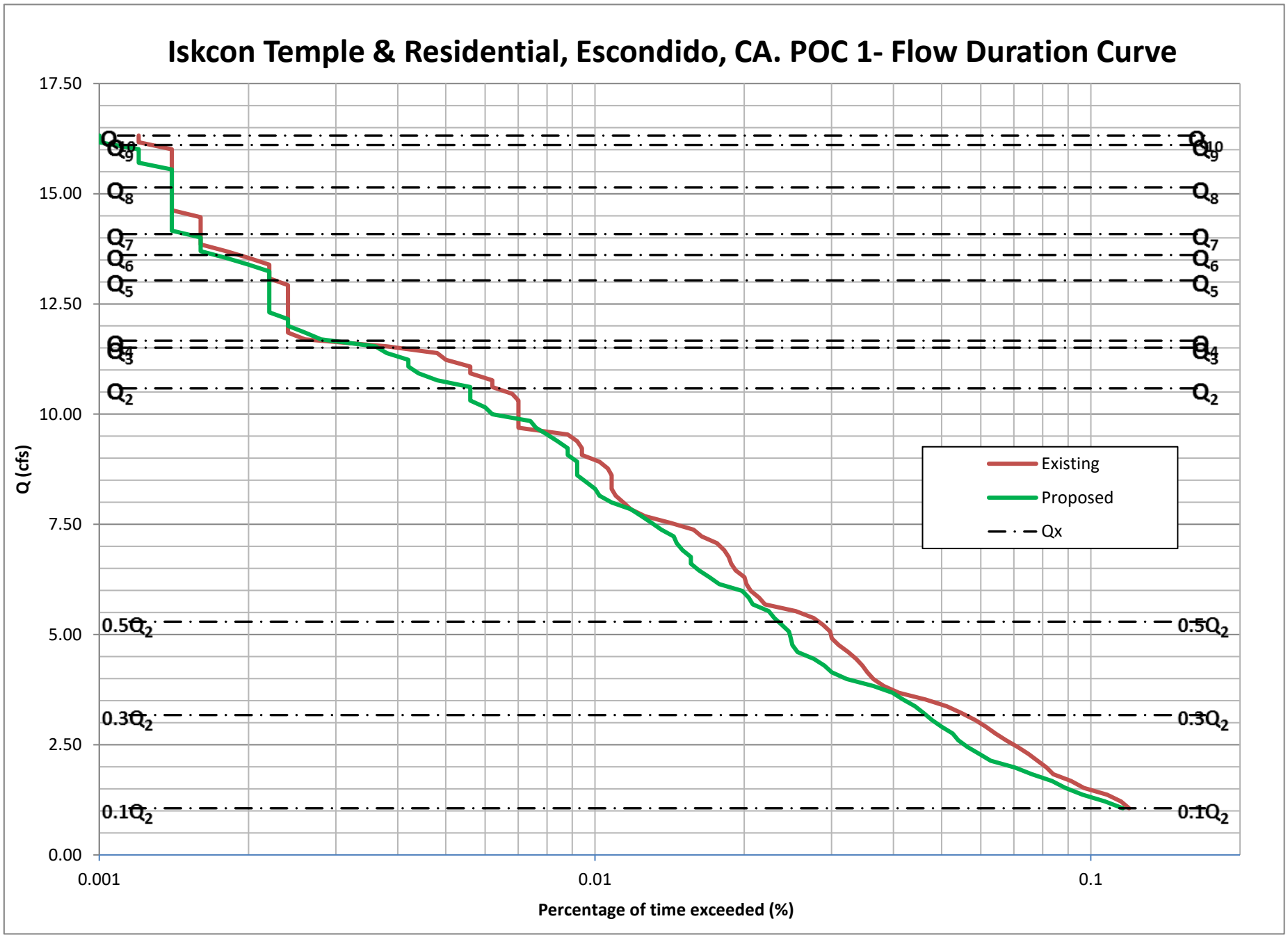
The figures on the following pages illustrate that the flow duration curve in post-development conditions after the proposed BMP is below the existing flow duration curve. The flow duration curve table following the curve shows that if the interval $0.10Q_2 - Q_{10}$ is divided in 100 sub-intervals, then a) the post development divided by pre-development durations are never larger than 110% (the permit allows up to 110%); and b) there are no more than 10 intervals in the range 101%-110% which would imply an excess over 10% of the length of the curve (the permit allows less than 10% of excesses measured as 101-110%).

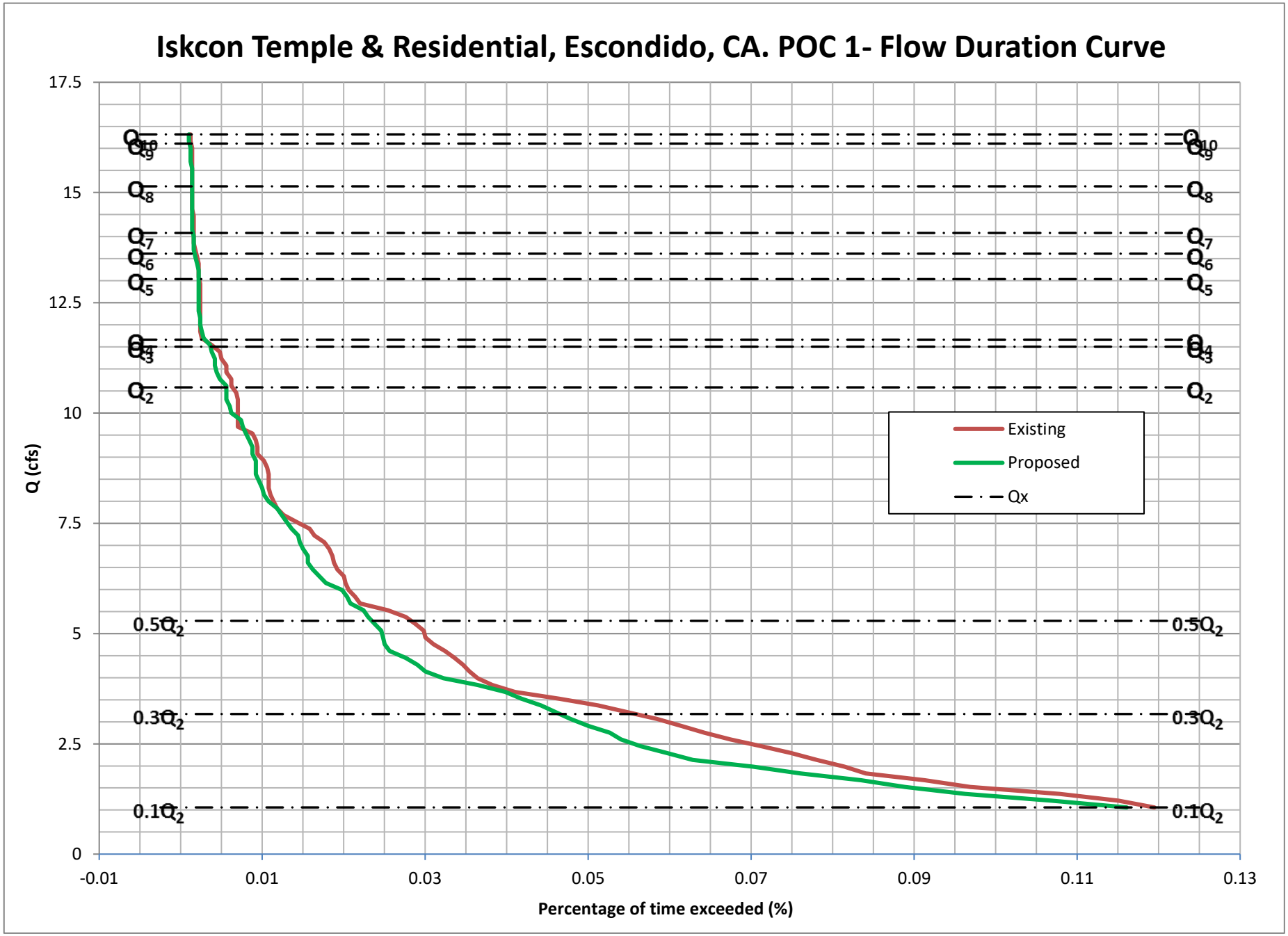
Consequently, the design passes the hydromodification test.

It is important to note that the flow duration curve can be expressed in the "x" axis as percentage of time, hours per year, total number of hours, or any other similar time variable. As those variables only differ by a multiplying constant, their plot in logarithmic scale is going to look exactly the same, and compliance can be observed regardless of the variable selected. However, in order to satisfy the City of Vista HMP example, % of time exceeded is the variable of choice in the flow duration curve. The selection of a logarithmic scale in lieu of the normal scale is preferred, as differences between the pre-development and post-development curves can be seen more clearly in the entire range of analysis. Both graphics are presented just to prove the difference.

In terms of the "y" axis, the peak flow value is the variable of choice. As an additional analysis performed by REC, not only the range of analysis is clearly depicted (10% of Q_2 to Q_{10}) but also all intermediate flows are shown (Q_2, Q_3, Q_4, Q_5, Q_6, Q_7, Q_8 and Q_9) in order to demonstrate compliance at any range $Q_x - Q_{x+1}$. It must be pointed out that one of the limitations of both the SWMM and SDHM models is that the intermediate analysis is not performed (to obtain Q_i from i = 2 to 10). REC performed the analysis using the Cunnane Plotting position Method (the preferred method in the HMP permit) from the "n" largest independent peak flows obtained from the continuous time series.

The largest "n" peak flows are attached in this appendix, as well as the values of Q_i with a return period "i", from i=2 to 10. The Q_i values are also added into the flow-duration plot.


Iskcon Temple & Residential, Escondido, CA. POC 1- Flow Duration Curve
17.50
15.00
12.50
10.00
7.50
5.00
2.50
0.00
Q (cfs)
0.001
0.01
0.1
Percentage of time exceeded (%)
Existing
Proposed
Qx
Q_{10}
Q_9
Q_8
Q_7
Q_6
Q_5
Q_4
Q_3
Q_2
$0.5Q_2$
$0.3Q_2$
$0.1Q_2$


Iskcon Temple & Residential, Escondido, CA. POC 1- Flow Duration Curve
Q (cfs)
17.5
15
12.5
10
7.5
5
2.5
0
-0.01
0.01
0.03
0.05
0.07
0.09
0.11
0.13
Percentage of time exceeded (%)
Existing
Proposed
Qx
Q_{10}
Q_9
Q_8
Q_7
Q_6
Q_5
Q_4
Q_3
Q_2
$0.5Q_2$
$0.3Q_2$
$0.1Q_2$

Flow Duration Curve Data for Iscon Temple & Residential - POC-1 , Escondido, CA

Q2 =	10.58	cfs	Fraction	10 %
Q10 =	16.32	cfs		
Step =	0.1541	cfs		
Count =	499679	hours		
	57.00	years		

	Existing Condition			Detention Optimized			Pass or
Interval	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	Fail?
1	1.058	597	1.19E-01	580	1.16E-01	97%	Pass
2	1.212	575	1.15E-01	534	1.07E-01	93%	Pass
3	1.367	539	1.08E-01	481	9.63E-02	89%	Pass
4	1.521	484	9.69E-02	444	8.89E-02	92%	Pass
5	1.675	456	9.13E-02	417	8.35E-02	91%	Pass
6	1.829	420	8.41E-02	380	7.60E-02	90%	Pass
7	1.983	407	8.15E-02	351	7.02E-02	86%	Pass
8	2.137	390	7.81E-02	314	6.28E-02	81%	Pass
9	2.291	374	7.48E-02	298	5.96E-02	80%	Pass
10	2.446	356	7.12E-02	282	5.64E-02	79%	Pass
11	2.600	337	6.74E-02	270	5.40E-02	80%	Pass
12	2.754	321	6.42E-02	263	5.26E-02	82%	Pass
13	2.908	307	6.14E-02	250	5.00E-02	81%	Pass
14	3.062	292	5.84E-02	239	4.78E-02	82%	Pass
15	3.216	274	5.48E-02	230	4.60E-02	84%	Pass
16	3.371	256	5.12E-02	221	4.42E-02	86%	Pass
17	3.525	232	4.64E-02	209	4.18E-02	90%	Pass
18	3.679	205	4.10E-02	199	3.98E-02	97%	Pass
19	3.833	191	3.82E-02	182	3.64E-02	95%	Pass
20	3.987	182	3.64E-02	161	3.22E-02	88%	Pass
21	4.141	177	3.54E-02	150	3.00E-02	85%	Pass
22	4.295	173	3.46E-02	145	2.90E-02	84%	Pass
23	4.450	168	3.36E-02	138	2.76E-02	82%	Pass
24	4.604	162	3.24E-02	128	2.56E-02	79%	Pass
25	4.758	155	3.10E-02	125	2.50E-02	81%	Pass
26	4.912	150	3.00E-02	124	2.48E-02	83%	Pass
27	5.066	149	2.98E-02	123	2.46E-02	83%	Pass
28	5.220	144	2.88E-02	119	2.38E-02	83%	Pass
29	5.374	138	2.76E-02	115	2.30E-02	83%	Pass
30	5.529	127	2.54E-02	112	2.24E-02	88%	Pass
31	5.683	110	2.20E-02	104	2.08E-02	95%	Pass
32	5.837	107	2.14E-02	102	2.04E-02	95%	Pass
33	5.991	103	2.06E-02	99	1.98E-02	96%	Pass
34	6.145	101	2.02E-02	89	1.78E-02	88%	Pass
35	6.299	100	2.00E-02	85	1.70E-02	85%	Pass
36	6.453	96	1.92E-02	81	1.62E-02	84%	Pass

Interval	Existing Condition			Detention Optimized			Pass or
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	Fail?
37	6.608	94	1.88E-02	78	1.56E-02	83%	Pass
38	6.762	93	1.86E-02	78	1.56E-02	84%	Pass
39	6.916	91	1.82E-02	75	1.50E-02	82%	Pass
40	7.070	88	1.76E-02	73	1.46E-02	83%	Pass
41	7.224	82	1.64E-02	72	1.44E-02	88%	Pass
42	7.378	79	1.58E-02	68	1.36E-02	86%	Pass
43	7.532	71	1.42E-02	65	1.30E-02	92%	Pass
44	7.687	63	1.26E-02	62	1.24E-02	98%	Pass
45	7.841	59	1.18E-02	59	1.18E-02	100%	Pass
46	7.995	57	1.14E-02	54	1.08E-02	95%	Pass
47	8.149	55	1.10E-02	51	1.02E-02	93%	Pass
48	8.303	54	1.08E-02	50	1.00E-02	93%	Pass
49	8.457	54	1.08E-02	48	9.61E-03	89%	Pass
50	8.612	54	1.08E-02	46	9.21E-03	85%	Pass
51	8.766	53	1.06E-02	46	9.21E-03	87%	Pass
52	8.920	51	1.02E-02	46	9.21E-03	90%	Pass
53	9.074	47	9.41E-03	44	8.81E-03	94%	Pass
54	9.228	47	9.41E-03	44	8.81E-03	94%	Pass
55	9.382	46	9.21E-03	42	8.41E-03	91%	Pass
56	9.536	44	8.81E-03	40	8.01E-03	91%	Pass
57	9.691	35	7.00E-03	38	7.60E-03	109%	Pass
58	9.845	35	7.00E-03	37	7.40E-03	106%	Pass
59	9.999	35	7.00E-03	31	6.20E-03	89%	Pass
60	10.153	35	7.00E-03	30	6.00E-03	86%	Pass
61	10.307	35	7.00E-03	28	5.60E-03	80%	Pass
62	10.461	34	6.80E-03	28	5.60E-03	82%	Pass
63	10.615	31	6.20E-03	28	5.60E-03	90%	Pass
64	10.770	31	6.20E-03	24	4.80E-03	77%	Pass
65	10.924	28	5.60E-03	22	4.40E-03	79%	Pass
66	11.078	28	5.60E-03	21	4.20E-03	75%	Pass
67	11.232	25	5.00E-03	21	4.20E-03	84%	Pass
68	11.386	24	4.80E-03	19	3.80E-03	79%	Pass
69	11.540	19	3.80E-03	18	3.60E-03	95%	Pass
70	11.694	13	2.60E-03	14	2.80E-03	108%	Pass
71	11.849	12	2.40E-03	13	2.60E-03	108%	Pass
72	12.003	12	2.40E-03	12	2.40E-03	100%	Pass
73	12.157	12	2.40E-03	12	2.40E-03	100%	Pass
74	12.311	12	2.40E-03	11	2.20E-03	92%	Pass
75	12.465	12	2.40E-03	11	2.20E-03	92%	Pass
76	12.619	12	2.40E-03	11	2.20E-03	92%	Pass
77	12.773	12	2.40E-03	11	2.20E-03	92%	Pass
78	12.928	12	2.40E-03	11	2.20E-03	92%	Pass
79	13.082	11	2.20E-03	11	2.20E-03	100%	Pass
80	13.236	11	2.20E-03	11	2.20E-03	100%	Pass
81	13.390	11	2.20E-03	10	2.00E-03	91%	Pass

Interval	Existing Condition			Detention Optimized			Pass or
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	Fail?
82	13.544	10	2.00E-03	9	1.80E-03	90%	Pass
83	13.698	9	1.80E-03	8	1.60E-03	89%	Pass
84	13.853	8	1.60E-03	8	1.60E-03	100%	Pass
85	14.007	8	1.60E-03	8	1.60E-03	100%	Pass
86	14.161	8	1.60E-03	7	1.40E-03	88%	Pass
87	14.315	8	1.60E-03	7	1.40E-03	88%	Pass
88	14.469	8	1.60E-03	7	1.40E-03	88%	Pass
89	14.623	7	1.40E-03	7	1.40E-03	100%	Pass
90	14.777	7	1.40E-03	7	1.40E-03	100%	Pass
91	14.932	7	1.40E-03	7	1.40E-03	100%	Pass
92	15.086	7	1.40E-03	7	1.40E-03	100%	Pass
93	15.240	7	1.40E-03	7	1.40E-03	100%	Pass
94	15.394	7	1.40E-03	7	1.40E-03	100%	Pass
95	15.548	7	1.40E-03	7	1.40E-03	100%	Pass
96	15.702	7	1.40E-03	6	1.20E-03	86%	Pass
97	15.856	7	1.40E-03	6	1.20E-03	86%	Pass
98	16.011	7	1.40E-03	6	1.20E-03	86%	Pass
99	16.165	6	1.20E-03	5	1.00E-03	83%	Pass
100	16.319	6	1.20E-03	5	1.00E-03	83%	Pass

Peak Flows calculated with Cunnane Plotting Position

Return Period (years)	Pre-dev. Q (cfs)	Post-Dev. Q (cfs)	Reduction (cfs)
10	16.32	16.07	0.25
9	16.11	15.69	0.42
8	15.14	14.70	0.44
7	14.09	13.80	0.28
6	13.61	13.43	0.18
5	13.03	12.46	0.58
4	11.66	11.63	0.03
3	11.51	10.95	0.56
2	10.58	9.94	0.65

ATTACHMENT 3

List of the "n" Largest Peaks: Pre & Post-Developed Conditions

Basic Probabilistic Equation:

R = 1/P R: Return period (years).

P: Probability of a flow to be equaled or exceeded any given year (dimensionless).

Cunnane Equation:

$$P = \frac{i-0.4}{n+0.2}$$

Weibull Equation:

$$P = \frac{i}{n+1}$$

i: Position of the peak whose probability is desired (sorted from large to small)

n: number of years analyzed.

Explanation of Variables for the Tables in this Attachment

Peak: Refers to the peak flow at the date given, taken from the continuous simulation hourly results of the n year analyzed.

Posit: If all peaks are sorted from large to small, the position of the peak in a sorting analysis is included under the variable Posit.

Date: Date of the occurrence of the peak at the outlet from the continuous simulation

Note: all peaks are not annual maxima; instead they are defined as event maxima, with a threshold to separate peaks of at least 12 hours. In other words, any peak P in a time series is defined as a value where dP/dt = 0, and the peak is the largest value in 25 hours (12 hours before, the hour of occurrence and 12 hours after the occurrence, so it is in essence a daily peak).

List of Peak events and Determination of Q2 and Q10 (Pre-Development)
Iscon Temple & Residential, Escondido, CA

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
10	**16.32**	**16.42**					
9	**16.11**	**16.21**	7.571	1/6/1977	57	1.02	1.01
8	**15.14**	**15.61**	7.628	2/6/1969	56	1.04	1.03
7	**14.09**	**14.29**	7.661	1/29/1983	55	1.05	1.05
6	**13.61**	**13.66**	7.688	2/15/1986	54	1.07	1.07
5	**13.03**	**13.15**	7.706	12/29/1965	53	1.09	1.09
4	**11.66**	**11.67**	7.71	1/25/1969	52	1.12	1.11
3	**11.51**	**11.51**	7.808	1/22/1964	51	1.14	1.13
2	**10.58**	**10.58**	7.85	10/20/2004	50	1.16	1.15
			7.866	1/11/2001	49	1.18	1.18
			8.09	11/15/1952	48	1.21	1.20
			8.113	1/16/1993	47	1.23	1.23
			8.301	4/1/1982	46	1.26	1.25
			8.694	6/1/1996	45	1.29	1.28
			8.781	3/11/1995	44	1.32	1.31
			8.845	1/29/1981	43	1.35	1.34
			8.948	1/15/1979	42	1.38	1.38
			9.042	11/14/1972	41	1.41	1.41
			9.05	11/30/2007	40	1.45	1.44
			9.054	2/14/1980	39	1.49	1.48
			9.249	12/6/1997	38	1.53	1.52
			9.52	2/15/1992	37	1.57	1.56
			9.603	12/5/1966	36	1.61	1.61
			9.641	2/25/1969	35	1.66	1.65
			9.648	3/24/1983	34	1.71	1.70
			9.663	11/22/1965	33	1.76	1.75
			9.671	12/6/1966	32	1.81	1.81
			10.407	2/12/1992	31	1.87	1.87
			10.509	1/14/1993	30	1.93	1.93
			10.583	6/10/1990	29	2.00	2.00
			10.609	2/22/2004	28	2.07	2.07
			10.777	1/18/1955	27	2.15	2.15
			10.778	2/11/1973	26	2.23	2.23
			10.817	1/9/1998	25	2.32	2.33
			11.228	2/12/1978	24	2.42	2.42
			11.369	2/19/1980	23	2.52	2.53
			11.462	9/10/1976	22	2.64	2.65
			11.478	1/29/1980	21	2.76	2.78
			11.48	11/24/1983	20	2.90	2.92
			11.529	3/17/1982	19	3.05	3.08
			11.614	1/4/1978	18	3.22	3.25
			11.628	2/20/1980	17	3.41	3.45
			11.641	2/16/1980	16	3.63	3.67
			11.661	2/18/1980	15	3.87	3.92
			11.673	2/23/1998	14	4.14	4.21
			11.695	1/11/1980	13	4.46	4.54
			12.962	2/11/1959	12	4.83	4.93
			13.454	3/5/1995	11	5.27	5.40
			13.6	3/16/1986	10	5.80	5.96
			13.809	2/10/1963	9	6.44	6.65
			14.502	2/10/1978	8	7.25	7.53
			16.038	1/4/1995	7	8.29	8.67
			16.364	1/20/1982	6	9.67	10.21
			16.695	4/5/1967	5	11.60	12.43
			17.682	1/10/1978	4	14.50	15.89
			21.196	10/1/1983	3	19.33	22.00
			25.746	1/1/1982	2	29.00	35.75
			25.751	1/16/1978	1	58.00	95.33

Note:
Cunnane is the preferred method by the HMP permit.

List of Peak events and Determination of Q2 and Q10 (Post-Development)
Iscon Temple & Residential, Escondido, CA

T (Year)	Cunnane (cfs)	Weibull (cfs)
10	**16.07**	**16.20**
9	**15.69**	**15.86**
8	**14.70**	**15.16**
7	**13.80**	**13.94**
6	**13.43**	**13.48**
5	**12.46**	**12.69**
4	**11.63**	**11.63**
3	**10.95**	**10.97**
2	**9.94**	**9.94**

Note:
Cunnane is the preferred method by the HMP permit.

Peaks (cfs)	Date	Posit	Period of Return (Years)	
			Weibull	Cunnane
7.069	1/22/1964	57	1.02	1.01
7.217	6/1/1996	56	1.04	1.03
7.225	2/6/1969	55	1.05	1.05
7.298	1/11/2001	54	1.07	1.07
7.301	1/15/1979	53	1.09	1.09
7.366	11/15/1952	52	1.12	1.11
7.403	2/27/1983	51	1.14	1.13
7.575	1/11/2005	50	1.16	1.15
7.591	1/9/2005	49	1.18	1.18
7.669	3/8/1968	48	1.21	1.20
7.701	11/14/1972	47	1.23	1.23
7.915	1/15/1978	46	1.26	1.25
7.969	1/29/1981	45	1.29	1.28
8.055	2/15/1986	44	1.32	1.31
8.084	1/25/1969	43	1.35	1.34
8.369	2/14/1980	42	1.38	1.38
8.482	1/16/1993	41	1.41	1.41
8.562	3/24/1983	40	1.45	1.44
8.93	12/6/1997	39	1.49	1.48
8.995	2/12/1992	38	1.53	1.52
9.31	3/11/1995	37	1.57	1.56
9.364	2/15/1992	36	1.61	1.61
9.394	1/18/1955	35	1.66	1.65
9.479	11/30/2007	34	1.71	1.70
9.67	6/10/1990	33	1.76	1.75
9.889	12/5/1966	32	1.81	1.81
9.901	2/11/1973	31	1.87	1.87
9.926	11/22/1965	30	1.93	1.93
9.936	1/14/1993	29	2.00	2.00
9.972	2/25/1969	28	2.07	2.07
9.98	12/6/1966	27	2.15	2.15
10.226	11/24/1983	26	2.23	2.23
10.628	2/12/1978	25	2.32	2.33
10.652	9/10/1976	24	2.42	2.42
10.73	2/19/1980	23	2.52	2.53
10.766	3/17/1982	22	2.64	2.65
10.839	2/16/1980	21	2.76	2.78
10.864	2/22/2004	20	2.90	2.92
11.024	1/9/1998	19	3.05	3.08
11.327	1/11/1980	18	3.22	3.25
11.355	2/23/1998	17	3.41	3.45
11.6	1/4/1978	16	3.63	3.67
11.625	2/20/1980	15	3.87	3.92
11.643	1/29/1980	14	4.14	4.21
11.79	2/18/1980	13	4.46	4.54
12.304	2/11/1959	12	4.83	4.93
13.33	3/16/1986	11	5.27	5.40
13.421	3/5/1995	10	5.80	5.96
13.607	2/10/1978	9	6.44	6.65
14.096	2/10/1963	8	7.25	7.53
15.562	4/5/1967	7	8.29	8.67
16.146	1/20/1982	6	9.67	10.21
16.482	1/4/1995	5	11.60	12.43
16.999	1/10/1978	4	14.50	15.89
19.694	10/1/1983	3	19.33	22.00
25.952	1/1/1982	2	29.00	35.75
26.118	1/16/1978	1	58.00	95.33

ATTACHMENT 4

AREA VS ELEVATION

The storage provided by the LID BMP is entered into the LID Module within SWMM – please refer to Attachment 7 for further information. A stage-storage calculation is provided on the following page for reference.

DISCHARGE VS ELEVATION

The orifices have been selected to maximize their size while still restricting flows to conform with the required 10% of the Q2 event flow as mandated in the Final Hydromodification Management Plan by Brown & Caldwell, dated March 2011. While REC acknowledges that these orifices are small, to increase the size of these outlets would impact the basin's ability to restrict flows beneath the HMP thresholds, thus preventing the BMP from conformance with HMP requirements.

In order to further reduce the risk of blockage of the orifices, regular maintenance of the riser and orifices must be performed to ensure potential blockages are minimized. A detail of the orifice and riser structure is provided in Attachment 5 of this memorandum.

The LID low flow orifice discharge relationship is addressed within the LID Module within SWMM – please refer to Attachment 7 for further information.

Important note: Only BMP-5 elevation vs area table and elevation vs discharge table is used in the SWMM model because the slot of all other BMPs work as weirs for Q10 continuous, and the detention capabilities of BMPs 1 to 4 is negligible for the hydromodification point of view.

Stage-Area for BMP 1

Elevation (ft)	Area (ft^2)	Volume (ft^3)	Q50 Detention Volume (Acre-ft)	
0.00	1468	**0**	0.0000	**BIOFILTRATION[1]**
0.08	1468	49	0.0000	
0.17	1468	98	0.0000	
0.25	1468	147	0.0000	**TOP OF MULCH[2]**
0.33	1468	269	0.0000	
0.42	1468	391	0.0000	
0.50	1468	514	0.0000	
0.58	1468	636	0.0000	
0.67	1468	758	0.0000	
0.75	1468	881	0.0000	
0.83	1468	1003	0.0000	
0.92	1468	1125	0.0000	
1.00	1468	1248	0.0000	**SURFACE DISCHARGE[3][5]**
1.08	1468	1370	0.0028	
1.17	1468	1492	0.0056	
1.25	1468	1615	0.0084	
1.33	1468	1737	0.0112	
1.42	1468	1859	0.0140	
1.50	1468	1982	0.0169	
1.58	1468	2104	0.0197	
1.67	1468	2226	0.0225	
1.75	1468	2349	0.0253	
1.83	1468	2471	0.0281	
1.92	1468	2593	0.0309	
2.00	1468	2716	0.0337	
2.08	1468	2838	0.0365	
2.17	1468	2960	0.0393	**EMERGENCY WEIR[4]**
2.25	1468	3083	0.0421	
2.33	1468	3205	0.0449	
2.42	1468	3327	0.0477	
2.50	1468	3450	0.0506	
2.58	1468	3572	0.0534	
2.67	1468	3694	0.0562	
2.75	1468	3817	0.0590	
2.83	1468	3939	0.0618	
2.92	1468	4061	0.0646	
3.00	1468	4184	0.0674	

(1): The area at this surface elevation corresponds to the area of gravel and amended soil (Bio-filtration layer)
(2): The volume for the first 3 inches of surface depth accounts for the voids of mulch
(3): Volume at this elevation coresponds with surface volume for WQ purposes (invert of lowest surface outlet)
(4): This elevation corresponds to the top of the riser elevation.
(5) Q50 detention begins at this elevation.

Stage-Area for BMP 2

Elevation (ft)	Area (ft^2)	Volume (ft^3)	Q50 Detention Volume (Acre-ft)	
0.00	650	**0**	0.0000	**BIOFILTRATION[1]**
0.08	650	22	0.0000	
0.17	650	43	0.0000	
0.25	650	65	0.0000	**TOP OF MULCH[2]**
0.33	650	119	0.0000	
0.42	650	173	0.0000	
0.50	650	228	0.0000	
0.58	650	282	0.0000	
0.67	650	336	0.0000	
0.75	650	390	0.0000	
0.83	650	444	0.0000	
0.92	650	498	0.0000	
1.00	650	553	0.0000	**SURFACE DISCHARGE[3][5]**
1.08	650	607	0.0012	
1.17	650	661	0.0025	
1.25	650	715	0.0037	
1.33	650	769	0.0050	
1.42	650	823	0.0062	
1.50	650	878	0.0075	
1.58	650	932	0.0087	
1.67	650	986	0.0099	
1.75	650	1040	0.0112	
1.83	650	1094	0.0124	**EMERGENCY WEIR[4]**
1.92	650	1148	0.0137	
2.00	650	1203	0.0149	
2.08	650	1257	0.0162	
2.17	650	1311	0.0174	
2.25	650	1365	0.0187	
2.33	650	1419	0.0199	
2.42	650	1473	0.0211	
2.50	650	1528	0.0224	

(1): The area at this surface elevation corresponds to the area of gravel and amended soil (Bio-filtration layer)
(2): The volume for the first 3 inches of surface depth accounts for the voids of mulch
(3): Volume at this elevation coresponds with surface volume for WQ purposes (invert of lowest surface outlet)
(4): This elevation corresponds to the top of the riser elevation.
(5) Q50 detention begins at this elevation.

Stage-Area for BMP 3

Elevation (ft)	Area (ft^2)	Volume (ft^3)	Q50 Detention Volume (Acre-ft)	
0.00	538	**0**	0.0000	**BIOFILTRATION(1)**
0.08	563	18	0.0000	
0.17	587	37	0.0000	
0.25	612	57	0.0000	**TOP OF MULCH(2)**
0.33	637	109	0.0000	
0.42	663	164	0.0000	
0.50	689	220	0.0000	
0.58	717	279	0.0000	
0.67	744	339	0.0000	
0.75	772	403	0.0000	**SURFACE DISCHARGE(3)(5)**
0.83	801	468	0.0015	
0.92	831	536	0.0031	
1.00	861	607	0.0047	
1.08	891	680	0.0064	
1.17	922	755	0.0081	
1.25	954	833	0.0099	
1.33	986	914	0.0117	
1.42	1019	998	0.0137	
1.50	1052	1084	0.0156	

(1): The area at this surface elevation corresponds to the area of gravel and amended soil (Bio-filtration layer)
(2): The volume for the first 3 inches of surface depth accounts for the voids of mulch
(3): Volume at this elevation coresponds with surface volume for WQ purposes (invert of lowest surface outlet)
(4): This elevation corresponds to the top of the riser elevation.
(5) Q50 detention begins at this elevation.

Stage-Area for BMP 4

Elevation (ft)	Area (ft^2)	Volume (ft^3)	Q50 Detention Volume (Acre-ft)	
0.00	1202	**0**	0.0000	**BIOFILTRATION[1]**
0.08	1202	40	0.0000	
0.17	1202	80	0.0000	
0.25	1202	120	0.0000	**TOP OF MULCH[2]**
0.33	1202	220	0.0000	
0.42	1202	321	0.0000	
0.50	1202	421	0.0000	
0.58	1202	521	0.0000	
0.67	1202	621	0.0000	
0.75	1202	721	0.0000	
0.83	1202	821	0.0000	
0.92	1202	922	0.0000	
1.00	1202	1022	0.0000	**SURFACE DISCHARGE[3][5]**
1.08	1202	1122	0.0023	
1.17	1202	1222	0.0046	
1.25	1202	1322	0.0069	
1.33	1202	1422	0.0092	
1.42	1202	1523	0.0115	
1.50	1202	1623	0.0138	
1.58	1202	1723	0.0161	
1.67	1202	1823	0.0184	
1.75	1202	1923	0.0207	
1.83	1202	2023	0.0230	
1.92	1202	2124	0.0253	
2.00	1202	2224	0.0276	
2.08	1202	2324	0.0299	
2.17	1202	2424	0.0322	
2.25	1202	2524	0.0345	**EMERGENCY WEIR[4]**
2.33	1202	2624	0.0368	
2.42	1202	2725	0.0391	
2.50	1202	2825	0.0414	
2.58	1202	2925	0.0437	
2.67	1202	3025	0.0460	
2.75	1202	3125	0.0483	
2.83	1202	3225	0.0506	
2.92	1202	3326	0.0529	
3.00	1202	3426	0.0552	

(1): The area at this surface elevation corresponds to the area of gravel and amended soil (Bio-filtration layer)
(2): The volume for the first 3 inches of surface depth accounts for the voids of mulch
(3): Volume at this elevation coresponds with surface volume for WQ purposes (invert of lowest surface outlet)
(4): This elevation corresponds to the top of the riser elevation.
(5) Q50 detention begins at this elevation.

Stage-Area for BMP 5

Elevation (ft)	Area (ft^2)	Volume (ft^3)	Q50 Detention Volume (Acre-ft)	
0.00	3137	**0**	0.0000	**BIOFILTRATION[1]**
0.08	3207	106	0.0000	
0.17	3277	214	0.0000	
0.25	3347	324	0.0000	**TOP OF MULCH[2]**
0.33	3418	606	0.0000	
0.42	3489	894	0.0000	
0.50	3561	1188	0.0000	
0.58	3633	1487	0.0000	
0.67	3705	1793	0.0000	
0.75	3778	2105	0.0000	
0.83	3851	2423	0.0000	**SURFACE DISCHARGE[3][5]**
0.92	3925	2747	0.0074	
1.00	3999	3077	0.0150	
1.08	4073	3413	0.0227	
1.17	4148	3756	0.0306	
1.25	4223	4105	0.0386	
1.33	4299	4460	0.0468	
1.42	4375	4821	0.0551	
1.50	4451	5189	0.0635	
1.58	4528	5563	0.0721	
1.67	4605	5943	0.0808	
1.75	4682	6330	0.0897	**EMERGENCY WEIR[4]**
1.83	4760	6724	0.0987	
1.92	4839	7124	0.1079	
2.00	4917	7530	0.1173	
2.08	4996	7943	0.1267	
2.17	5076	8363	0.1364	
2.25	5156	8789	0.1462	
2.33	5236	9222	0.1561	
2.42	5317	9662	0.1662	
2.50	5398	10108	0.1764	

(1): The area at this surface elevation corresponds to the area of gravel and amended soil (Bio-filtration layer)
(2): The volume for the first 3 inches of surface depth accounts for the voids of mulch
(3): Volume at this elevation coresponds with surface volume for WQ purposes (invert of lowest surface outlet)
(4): This elevation corresponds to the top of the riser elevation.
(5) Q50 detention begins at this elevation.

DISCHARGE EQUATIONS

1) Weir:

$$Q_W = C_W \cdot L \cdot H^{3/2} \quad (1)$$

2) Slot:

As an orifice: $$Q_s = B_s \cdot h_s \cdot c_g \cdot \sqrt{2g\left(H - \frac{h_s}{2}\right)} \quad (2.a)$$

As a weir: $$Q_s = C_W \cdot B_s \cdot H^{3/2} \quad (2.b)$$

For H > h_s slot works as weir until orifice equation provides a smaller discharge. The elevation such that equation (2.a) = equation (2.b) is the elevation at which the behavior changes from weir to orifice.

3) Vertical Orifices

As an orifice: $$Q_o = 0.25 \cdot \pi D^2 \cdot c_g \cdot \sqrt{2g\left(H - \frac{D}{2}\right)} \quad (3.a)$$

As a weir: Critical depth and geometric family of circular sector must be solved to determined Q as a function of H:

$$\frac{Q_O^2}{g} = \frac{A_{cr}^3}{T_{cr}}; \quad H = y_{cr} + \frac{A_{cr}}{2 \cdot T_{cr}}; \; T_{cr} = 2\sqrt{y_{cr}(D - y_{cr})}\,; \quad A_{cr} = \frac{D^2}{8}[\alpha_{cr} - sin(\alpha_{cr})]\,;$$

$$y_{cr} = \frac{D}{2}[1 - sin(0.5 \cdot \alpha_{cr})] \quad \text{(3.b.1, 3.b.2, 3.b.3, 3.b.4 and 3.b.5)}$$

There is a value of H (approximately H = 110% D) from which orifices no longer work as weirs as critical depth is not possible at the entrance of the orifice. This value of H is obtained equaling the discharge using critical equations and equations (3.b).

A mathematical model is prepared with the previous equations depending on the type o discharge.

The following are the variables used above:

Q_W, Q_s, Q_O = Discharge of weir, slot or orifice (cfs)

C_W, c_g : Coefficients of discharge of weir (typically 3.1) and orifice (0.61 to 0.62)

L, B_s, D, h_s : Length of weir, width of slot, diameter of orifice and height of slot, respectively; (ft)

H: Level of water in the pond over the invert of slot, weir or orifice (ft)

A_{cr}, T_{cr}, y_{cr}, α_{cr}: Critical variables for circular sector: area (sq-ft), top width (ft), critical depth (ft), and angle to the center, respectively.

Stage Discharge

		BMP-1	BMP-2	BMP-3	BMP-4	BMP-5
SLOT	W (ft):	1.000	0.750	-	1.083	5.500
SLOT	h (in):	6	4	-	4	1.5
Inv slot:	(ft):	1.00	1.00	-	1.00	0.833
Weir	W (ft):	8	8	8	8	16
inv weir:	(ft):	2.167	1.833	0.750	2.250	1.750
$Q_{100,\ unrouted}$	(cfs):	3.72	1.67	1.20	2.32	7.49
h for $Q_{100,u}$	(in):	3.39	1.99	1.59	2.47	3.40
Dorif:	(in):	1.375	0.875	0.875	1.25	2.25
Qorif:	(cfs):	0.049	0.020	0.020	0.041	0.102

Discharges with h measured over invert of slot (and not including low orifice)

h	Q1	Q2	Q3	Q4	Q5
0.00	0	0	0	0	0
0.08	0.075	0.056	***0.597***	0.081	0.410
0.17	0.211	0.158	***1.687***	0.229	1.160
0.25	0.388	0.291	***3.100***	0.420	1.457
0.33	0.597	0.447	***4.773***	0.646	1.751
0.42	0.834	0.612	***6.670***	0.884	2.003
0.50	1.096	0.707	***8.768***	1.021	2.226
0.58	1.381	0.790	***11.049***	1.141	2.429
0.67	1.580	0.865	***13.499***	1.250	2.616
0.75	1.731	0.935	***16.108***	1.350	2.790
0.83	1.869	***0.999***		1.443	2.955
0.92	1.998	***1.656***		1.531	3.110
1.00	2.120	***2.805***		1.614	***4.452***
1.08	2.234	***4.272***		1.692	***6.775***
1.17	***2.343***	***5.997***		1.768	***9.736***
1.25	***3.044***	***7.944***		***1.840***	***13.213***
1.33	***4.235***	***10.090***		***2.506***	***17.134***
1.42	***5.744***	***12.417***		***3.664***	***21.453***
1.50	***7.509***	***14.913***		***5.141***	***26.133***
1.58	***9.496***			***6.877***	***31.149***
1.67	***11.681***			***8.835***	***36.479***
1.75	***14.047***			***10.992***	
1.83	***16.579***			***13.331***	
1.92	***19.268***			***15.838***	
2.00	***22.104***			***18.502***	

Discharges with 0 = surface elevation of BMP. For Q100 purposes, initial level is in blue bold. Includes low flow orifice.

BMP-1

h (ft)	Q (cfs)
0.000	0
0.001	0.0489
1.000	0.049
1.083	0.124
1.167	0.260
1.250	0.437
1.333	0.646
1.417	0.883
1.500	1.145
1.583	1.430
1.667	1.629
1.750	1.780
1.833	1.918
1.917	2.047
2.000	2.169
2.083	2.283
2.167	2.392
2.250	3.093
2.333	4.284
2.417	5.793
2.500	7.558
2.583	9.545
2.667	11.730
2.750	14.096
2.833	16.628
2.917	19.317
3.000	22.153

BMP-2

h (ft)	Q (cfs)
0.000	0
0.001	0.0199
1.000	0.020
1.083	0.076
1.167	0.178
1.250	0.311
1.333	0.467
1.417	0.632
1.500	0.727
1.583	0.810
1.667	0.885
1.750	0.955
1.833	1.019
1.917	1.676
2.000	2.825
2.083	4.292
2.167	6.017
2.250	7.964
2.333	10.110
2.417	12.437
2.500	14.933

BMP-3

h (ft)	Q (cfs)
0.000	0
0.001	0.0199
0.750	0.020
0.833	0.617
0.917	1.707
1.000	3.120
1.083	4.793
1.167	6.690
1.250	8.788
1.333	11.069
1.417	13.519
1.500	16.128

BMP-4

h (ft)	Q (cfs)
0.000	0
0.001	0.0409
1.000	0.041
1.083	0.122
1.167	0.270
1.250	0.461
1.333	0.687
1.417	0.925
1.500	1.062
1.583	1.182
1.667	1.291
1.750	1.391
1.833	1.484
1.917	1.572
2.000	1.655
2.083	1.733
2.167	1.809
2.250	1.881
2.333	2.547
2.417	3.705
2.500	5.182
2.583	6.918
2.667	8.876
2.750	11.033
2.833	13.372
2.917	15.879
3.000	18.543

BMP-5

h (ft)	Q (cfs)
0.000	0
0.001	0.1019
0.833	0.102
0.917	0.512
1.000	1.262
1.083	1.559
1.167	1.853
1.250	2.105
1.333	2.328
1.417	2.531
1.500	2.718
1.583	2.892
1.667	3.057
1.750	3.212
1.833	4.554
1.917	6.877
2.000	9.838
2.083	13.315
2.167	17.236
2.250	21.555
2.333	26.235
2.417	31.251
2.500	36.581

ATTACHMENT 5

Pre & Post-Developed Maps, Project Plan and Detention

Section Sketches

LEGEND

POTENTIAL CRITICAL COARSE SEDIMENT YIELD AREA PER CARLSBAD WMAA

DMA BOUNDARY

SOIL TYPE BOUNDARY

AREA NOT BEING ANALYZED

APN: 224-100-34

DMA-1-B-1

DMA-1-D-2

RIDGE LINE

AREA WILL REMAIN THE SAME IN POST-DEVELOPED CONDITION AND WILL NOT BE ANALYZED

(4.047 ACRES)

APN: 224-100-73
NOT A PART

DMA-1-D-1

DMA-1-B-2

SOIL TYPE D

SOIL TYPE C

EXISTING BUILDING

PROPOSED TEMPLE
APN: 224-100-85

DMA-1-C-1

SOIL TYPE C

SOIL TYPE B

SOIL TYPE D

DMA-1-B-3

DMA-1-D-3

RINCON AVENUE

EXISTING BUILDING

DMA-1-C-2

R/W

SOIL TYPE C

SOIL TYPE A

PROPOSED RESIDENTIAL
APN: 224-100-84

DMA-1-A

POC-1

EXISTING STORM DRAIN

RINCON AVENUE

APN: 224-901-46

RIDGE LINE

60 30 0 60 120 180

SCALE: 1" = 60'

BASIN PRE-DEVELOPED AREAS

DMA	SOIL TYPE	PERVIOUS (AC)	IMPERVIOUS (AC)	TOTAL AREA (AC)	POC
DMA-1-A	A	0.492	0.000	0.492	POC-1
DMA-1-B-1	B	1.373	0.000	1.373	
DMA-1-B-2	B	0.764	0.000	0.764	
DMA-1-B-3	B	3.093	0.044	3.136	
DMA-1-C-1	C	3.901	0.095	3.996	
DMA-1-C-2	C	4.827	0.187	5.014	
DMA-1-D-1	D	3.556	0.000	3.556	
DMA-1-D-2	D	0.269	0.000	0.269	
DMA-1-D-3	D	1.336	0.000	1.336	
TOTAL		19.611	0.326	19.936	

ESCONDIDO City of Choice

REVISIONS

NO.	DESCRIPTION	DATE	APP'D

Civil Engineering · Environmental
Land Surveying
2970 Fifth Avenue, Suite 340
San Diego, CA 92103
(619)232-9200 (619)232-9210 Fax

R·E·C Consultants, Inc.

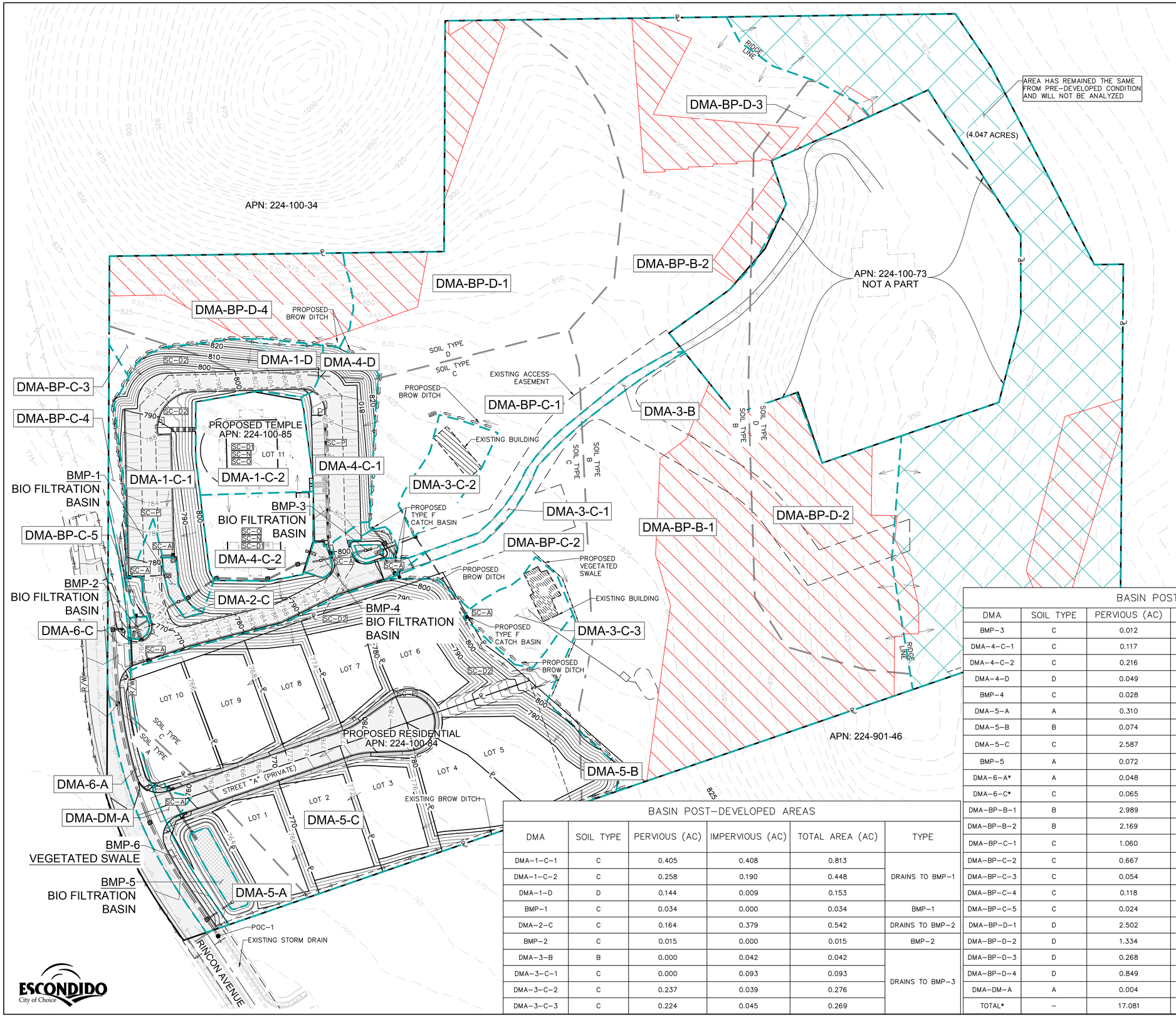
DATE: 2-1-2023
SCALE: 1" = 60'
DRAWN: JMW
CHECKED: J.R.R.

SHEET TITLE: PRE-DEVELOPED DMA EXHIBIT

PROJECT:
ISKCON KRISHNA TEMPLE
ISKCON OF ESCONDIDO, INC
1365 RINCON AVE - ESCONDIDO, CA 92026

SHEET 1 OF 1 SHEETS

SAVE DATE: 3/1/2023 ~ PLOT DATE: 3/13/2023 ~ FILE NAME: P:\Acad\1829 Iskcon Temple - Residential\Reports\SWQMP\1829-DMAPre.dwg



LEGEND

- POTENTIAL CRITICAL COARSE SEDIMENT YIELD AREA PER CARLSBAD WMAA
- PROJECT AREA ENCROACHING INTO PCCSYA
- DMA BOUNDARY
- SOIL TYPE BOUNDARY
- AREA NOT BEING ANALYZED
- BMP BASIN
- RETAILING WALL

PCCSYA CALCS		
EXISTING PCCSYA	225,262	SF
PROJECT AREA IN PCCSYA	1,221	SF
PERCENT OF ENCROACHED AREA	0.54	%

SOURCE CONTROL BMP'S

SC-A: ON-SITE STORM DRAIN INLETS
SC-D1: NEED FOR FUTURE INDOOR & STRUCTURAL PEST CONTROL
SC-D2: LANDSCAPE/OUTDOOR PESTICIDE USE
SC-O: REFUSE AREAS
SC-N: FIRE SPRINKLER TEST WATER
SC-O: MISCELLANEOUS DRAIN OR WASH WATER
SC-P: PLAZAS, SIDEWALKS, AND PARKING LOTS

NOTE:
1. DEPTH TO GROUNDWATER > 20 FT
2. THE AVERAGE ASSUMED IMPERVIOUS AREA FOR THE PADS IN THE RESIDENTIAL AREA IS 25% FOR LOW DENSITY RESIDENTIAL (LDR) RESIDENTIAL, 2.9 DU/A OR LESS.

60 30 0 60 120 180
SCALE: 1" = 60'

* FOR WATER QUALITY ONLY BECAUSE AREA IS WITHIN PUBLIC RIGHT OF WAY (NOT INCLUDED IN HMP MODEL)

BASIN POST-DEVELOPED AREAS

DMA	SOIL TYPE	PERVIOUS (AC)	IMPERVIOUS (AC)	TOTAL AREA (AC)	TYPE
DMA-1-C-1	C	0.405	0.408	0.813	DRAINS TO BMP-1
DMA-1-C-2	C	0.258	0.190	0.448	
DMA-1-D	D	0.144	0.009	0.153	
BMP-1	C	0.034	0.000	0.034	BMP-1
DMA-2-C	C	0.164	0.379	0.542	DRAINS TO BMP-2
BMP-2	C	0.015	0.000	0.015	BMP-2
DMA-3-B	B	0.000	0.042	0.042	DRAINS TO BMP-3
DMA-3-C-1	C	0.000	0.093	0.093	
DMA-3-C-2	C	0.237	0.039	0.276	
DMA-3-C-3	C	0.224	0.045	0.269	

BASIN POST-DEVELOPED AREAS

DMA	SOIL TYPE	PERVIOUS (AC)	IMPERVIOUS (AC)	TOTAL AREA (AC)	TYPE
BMP-3	C	0.012	0.000	0.012	BMP-3
DMA-4-C-1	C	0.117	0.292	0.409	DRAINS TO BMP-4
DMA-4-C-2	C	0.216	0.157	0.374	
DMA-4-D	D	0.049	0.003	0.053	
BMP-4	C	0.028	0.000	0.028	BMP-4
DMA-5-A	A	0.310	0.078	0.388	DRAINS TO BMP-5
DMA-5-B	B	0.074	0.000	0.074	
DMA-5-C	C	2.587	1.189	3.776	
BMP-5	A	0.072	0.000	0.072	BMP-5
DMA-6-A*	A	0.048	0.184	0.231	GREENSTREET / DRAINS TO BMP-6
DMA-6-C*	C	0.065	0.066	0.130	
DMA-BP-B-1	B	2.989	0.000	2.989	BYPASS
DMA-BP-B-2	B	2.169	0.000	2.169	
DMA-BP-C-1	C	1.060	0.000	1.060	
DMA-BP-C-2	C	0.667	0.000	0.667	
DMA-BP-C-3	C	0.054	0.000	0.054	
DMA-BP-C-4	C	0.118	0.000	0.118	
DMA-BP-C-5	C	0.024	0.000	0.024	
DMA-BP-D-1	D	2.502	0.000	2.502	
DMA-BP-D-2	D	1.334	0.000	1.334	
DMA-BP-D-3	D	0.268	0.000	0.268	
DMA-BP-D-4	D	0.849	0.000	0.849	
DMA-DM-A	A	0.004	0.027	0.031	DE-MINIMIS
TOTAL*	–	17.081	3.213	19.936	–

NO.	DESCRIPTION	DATE	APP'D
	REVISIONS		

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DATE: 2-1-2023
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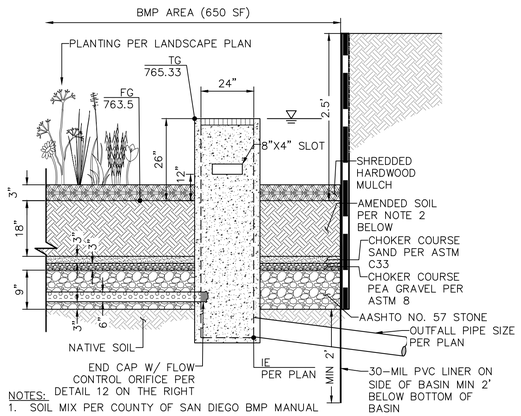
SHEET TITLE: POST-DEVELOPED DMA EXHIBIT

PROJECT: ISKCON KRISHNA TEMPLE
ISKCON OF ESCONDIDO INC
1365 RINCON AVE - ESCONDIDO, CA 92026

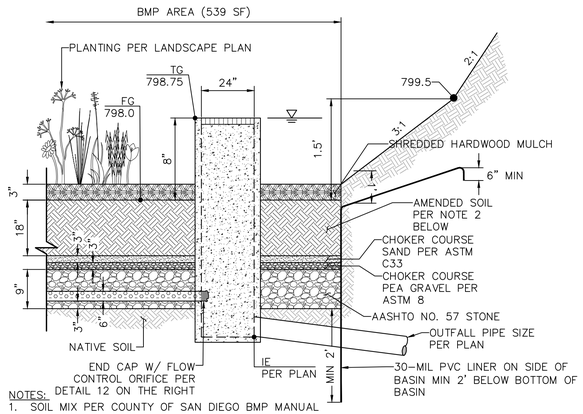
SHEET 1 OF 1 SHEETS

SAVE DATE: 3/10/2023 ~ PLOT DATE: 3/13/2023 ~ FILE NAME: P:\Acad\1829 Iskcon Temple - Residential\Reports\SWQMP\1829-DMAPst.dwg



NOTES:
1. SOIL MIX PER COUNTY OF SAN DIEGO BMP MANUAL
2. "WELL DRAINED SOIL" SHALL BE "SANDY LOAM" SOIL MIX WITH NO MORE THAN 5% CLAY CONTENT. THE MIX SHALL CONTAIN 50–60% SAND, 20–30% COMPOST OR HARDWOOD MULCH, AND 20–30% TOPSOIL.

1 BMP-2 BASIN DETAIL
NOT TO SCALE



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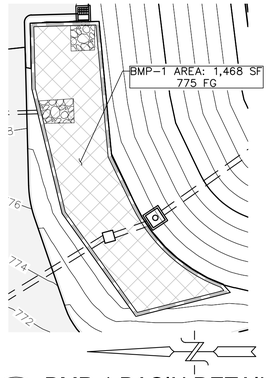
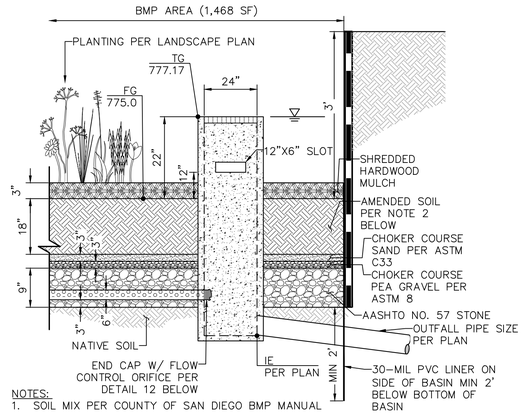
3 BMP-3 BASIN DETAIL
NOT TO SCALE



5 BMP-1 BASIN DETAIL
SCALE: 1" = 20'



NOTES:
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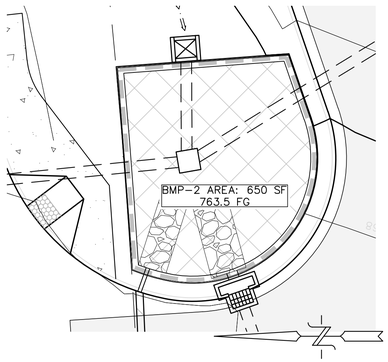
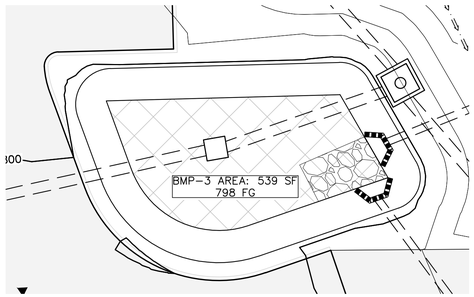
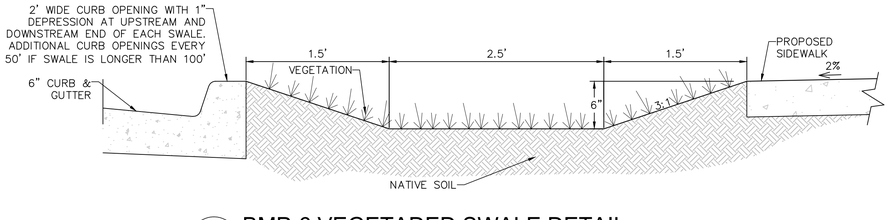
6 BMP-1 BASIN DETAIL
NOT TO SCALE



2 BMP-2 BASIN PLAN VIEW
SCALE: 1" = 10'

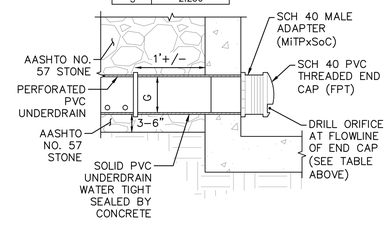


4 BMP-3 BASIN PLAN VIEW
SCALE: 1" = 10'

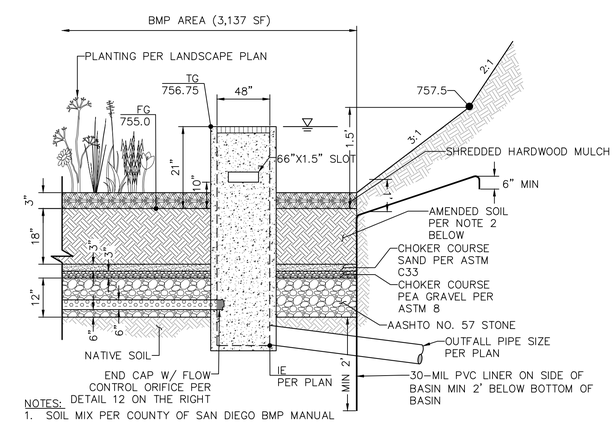


11 BMP-6 VEGETADED SWALE DETAIL
NOT TO SCALE

BMP	ORIFICE SIZE
1	1.375"
2	0.875"
3	0.875"
4	1.250"
5	2.250"



12 BMP ORIFICE DETAIL
NOT TO SCALE



NOTES:
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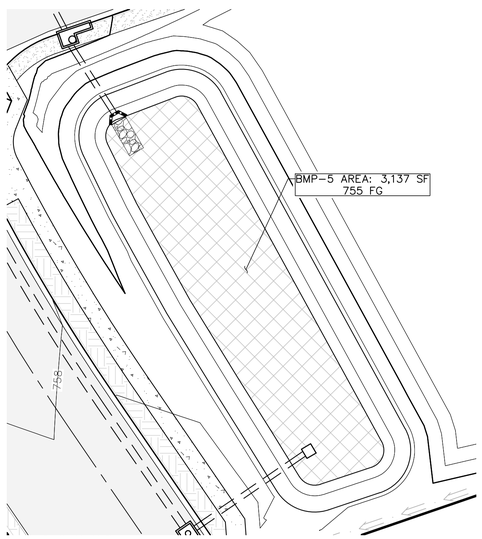
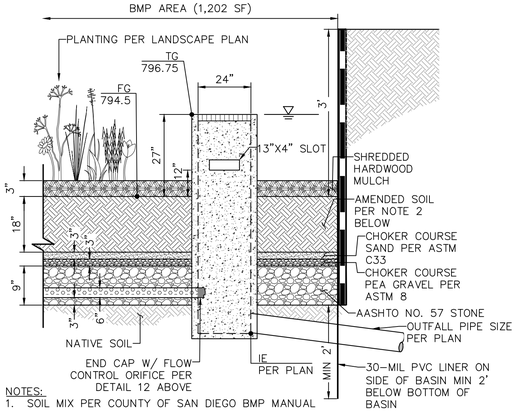
7 BMP-5 BASIN DETAIL
NOT TO SCALE



8 BMP-5 BASIN DETAIL
SCALE: 1" = 20'



NOTES:
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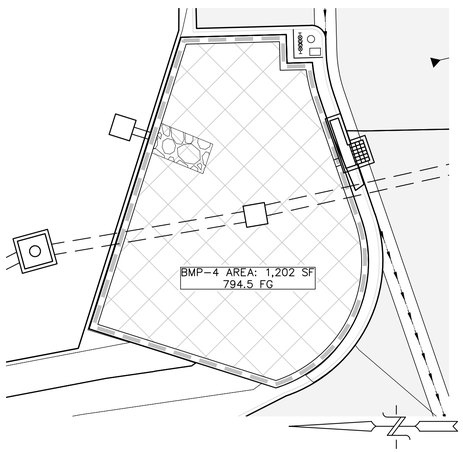
9 BMP-4 BASIN DETAIL
NOT TO SCALE



10 BMP-4 BASIN PLAN VIEW
SCALE: 1" = 10'

ESCONDIDO City of Choice

NO.	DESCRIPTION	DATE	APP'D
	REVISIONS		

R·E·C Consultants, Inc.
Civil Engineering · Environmental
Land Surveying
2970 Fifth Avenue, Suite 340
San Diego, CA 92103
(619)232-9200 (619)232-9210 Fax

DATE: 2-1-2023
SCALE: N/A
DRAWN: JMW
CHECKED: J.R.R.

SHEET TITLE: POST-DEVELOPED DMA EXHIBIT DETAILS

PROJECT
ISKCON KRISHNA TEMPLE
ISKCON OF ESCONDIDO,INC
1365 RINCON AVE – ESCONDIDO, CA 92026

SHEET 2 OF 2 SHEETS

SAVE DATE: 3/10/2023 ~ PLOT DATE: 3/10/2023 ~ FILE NAME: P:\Acad\1829 Iskcon Temple – Residential\Reports\SWQMP\1829-DMAPst.dwg

ATTACHMENT 6

SWMM Input Data in Input Format (Existing & Proposed Models)

PRE_DEV

```
[TITLE]

[OPTIONS]
FLOW_UNITS           CFS
INFILTRATION         GREEN_AMPT
FLOW_ROUTING         KINWAVE
START_DATE           07/26/1951
START_TIME           00:00:00
REPORT_START_DATE    07/26/1951
REPORT_START_TIME    00:00:00
END_DATE             07/25/2008
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             00:05:00
DRY_STEP             01:00:00
ROUTING_STEP         0:00:30
ALLOW_PONDING        NO
INERTIAL_DAMPING     PARTIAL
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         0
NORMAL_FLOW_LIMITED  BOTH
SKIP_STEADY_STATE    NO
FORCE_MAIN_EQUATION  H-W
LINK_OFFSETS         DEPTH
MIN_SLOPE            0

[EVAPORATION]
;;Type       Parameters
;;---------- ----------
MONTHLY      0.07   0.10   0.13   0.17   0.19   0.22   0.24   0.22   0.19   0.13   0.09   0.06
DRY_ONLY     NO

[RAINGAGES]
;;               Rain      Time   Snow   Data
;;Name           Type      Intrvl Catch  Source
;;-------------- --------- ------ ------ ----------
Fallbrook        INTENSITY 1:00   1.0    TIMESERIES Fallbrook

[SUBCATCHMENTS]
;;                                          Total     Pcnt.             Pcnt.    Curb     Snow
;;Name           Raingage         Outlet     Area      Imperv   Width    Slope    Length   Pack
;;-------------- ---------------- ---------- --------- -------- -------- -------- -------- --------
DMA-1-D-2        Fallbrook        DMA-1-B-2  0.269     0        52.4     40       0
DMA-1-C-1        Fallbrook        POC-1      3.996     0        778      12       0
DMA-1-A          Fallbrook        POC-1      0.492     0        95.8     5        0
DMA-1-B-2        Fallbrook        DMA-1-C-1  0.764     0        148.8    22       0
DMA-1-D-1        Fallbrook        DMA-1-C-1  3.556     0        692.7    26       0
DMA-1-C-2        Fallbrook        POC-1      5.014     0        977      9.3      0
DMA-1-B-3        Fallbrook        DMA-1-C-2  3.137     0        611      27       0
DMA-1-D-3        Fallbrook        DMA-1-B-3  1.336     0        260.3    47       0
DMA-1-B-1        Fallbrook        DMA-1-D-1  1.373     0        267.5    40       0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
DMA-1-D-2        0.012      0.05       0.05       0.1        25         OUTLET
DMA-1-C-1        0.012      0.05       0.05       0.1        25         OUTLET
DMA-1-A          0.012      0.05       0.05       0.1        25         OUTLET
DMA-1-B-2        0.012      0.05       0.05       0.1        25         OUTLET
DMA-1-D-1        0.012      0.05       0.05       0.1        25         OUTLET
DMA-1-C-2        0.012      0.05       0.05       0.1        25         OUTLET
DMA-1-B-3        0.012      0.05       0.05       0.1        25         OUTLET
DMA-1-D-3        0.012      0.05       0.05       0.1        25         OUTLET
DMA-1-B-1        0.012      0.05       0.05       0.1        25         OUTLET

[INFILTRATION]
;;Subcatchment   Suction    HydCon     IMDmax
```

```
;;-------------- ---------- ---------- ----------
DMA-1-D-2        9          0.025      0.3
DMA-1-C-1        6          0.1        0.31
DMA-1-A          1.5        0.3        0.33
DMA-1-B-2        3          0.2        0.32
DMA-1-D-1        9          0.025      0.3
DMA-1-C-2        6          0.1        0.31
DMA-1-B-3        3          0.2        0.32
DMA-1-D-3        9          0.025      0.3
DMA-1-B-1        3          0.2        0.32

[OUTFALLS]
;;               Invert     Outfall    Stage/Table      Tide
;;Name           Elev.      Type       Time Series      Gate
;;-------------- ---------- ---------- ---------------- ----
POC-1            0          FREE                        NO

[TIMESERIES]
;;Name           Date       Time       Value
;;-------------- ---------- ---------- ----------
Fallbrook        FILE "Fallbrook.txt"

[REPORT]
INPUT      NO
CONTROLS   NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]

[MAP]
DIMENSIONS 0.000 0.000 10000.000 10000.000
Units      None

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
POC-1            5000.000           5000.000

[VERTICES]
;;Link           X-Coord            Y-Coord
;;-------------- ------------------ ------------------

[Polygons]
;;Subcatchment   X-Coord            Y-Coord
;;-------------- ------------------ ------------------
DMA-1-D-2        2000.000           8000.000
DMA-1-C-1        3500.000           6000.000
DMA-1-A          6500.000           5000.000
DMA-1-B-2        2000.000           7000.000
DMA-1-D-1        5000.000           7000.000
DMA-1-C-2        6500.000           7000.000
DMA-1-B-3        6500.000           8000.000
DMA-1-D-3        6500.000           9000.000
DMA-1-B-1        5000.000           8000.000

[SYMBOLS]
;;Gage           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
Fallbrook        3400.000           9000.000
```

POST_DEV

```
[TITLE]

[OPTIONS]
FLOW_UNITS           CFS
INFILTRATION         GREEN_AMPT
FLOW_ROUTING         KINWAVE
START_DATE           07/26/1951
START_TIME           00:00:00
REPORT_START_DATE    07/26/1951
REPORT_START_TIME    00:00:00
END_DATE             07/25/2008
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             00:05:00
DRY_STEP             01:00:00
ROUTING_STEP         0:00:30
ALLOW_PONDING        NO
INERTIAL_DAMPING     PARTIAL
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         0
NORMAL_FLOW_LIMITED  BOTH
SKIP_STEADY_STATE    NO
FORCE_MAIN_EQUATION  H-W
LINK_OFFSETS         DEPTH
MIN_SLOPE            0

[EVAPORATION]
;;Type       Parameters
;;---------- ----------
MONTHLY      0.07   0.10   0.13   0.17   0.19   0.22   0.24   0.22   0.19   0.13   0.09   0.06
DRY_ONLY     NO

[RAINGAGES]
;;               Rain      Time   Snow   Data
;;Name           Type      Intrvl Catch  Source
;;-------------- --------- ------ ------ ----------
Fallbrook        INTENSITY 1:00   1.0    TIMESERIES Fallbrook

[SUBCATCHMENTS]
;;                                                 Total    Pcnt.             Pcnt.    Curb     Snow
;;Name           Raingage         Outlet           Area     Imperv   Width    Slope    Length   Pack
;;-------------- ---------------- ---------------- -------- -------- -------- -------- -------- --------
DMA-BP-D-3       Fallbrook        DMA-BP-B-2       0.268    0        52       40       0
DMA-BP-B-2       Fallbrook        DMA-BP-C-1       2.169    0        423      32       0
DMA-BP-C-1       Fallbrook        POC-1            1.06     0        206.5    12       0
DMA-BP-C-3       Fallbrook        DMA-BP-C-4       0.054    0        10.5     25       0
DMA-BP-C-4       Fallbrook        POC-1            0.118    0        23       20       0
DMA-DM-A         Fallbrook        POC-1            0.031    87.1     6        7        0
BMP-1            Fallbrook        POC-1            0.0337   0        10       0        0
DMA-1-C-1        Fallbrook        BMP-1            0.813    50.2     219.2    8        0
DMA-1-D          Fallbrook        DMA-1-C-1        0.153    5.9      30.8     50       0
DMA-1-C-2        Fallbrook        DMA-1-C-1        0.448    42.4     114.0    2        0
BMP-3            Fallbrook        POC-1            0.01235  0        10       0        0
DMA-3-C-2        Fallbrook        BMP-3            0.276    14.1     58.3     12       0
DMA-3-C-3        Fallbrook        BMP-3            0.269    16.7     57.7     12       0
BMP-2            Fallbrook        POC-1            0.01492  0        10       0        0
DMA-2-C          Fallbrook        BMP-2            0.543    69.8     172.2    12.5     0
DMA-BP-C-2       Fallbrook        POC-1            0.667    0        129.9    9.3      0
DMA-BP-B-1       Fallbrook        DMA-BP-C-2       2.989    0        582      27       0
DMA-BP-D-2       Fallbrook        DMA-BP-B-1       1.334    0        260      47       0
DMA-3-C-1        Fallbrook        BMP-3            0.093    100      40.5     12       0
BMP-4            Fallbrook        POC-1            0.02759  0        10       0        0
DMA-4-C-1        Fallbrook        BMP-4            0.409    71.4     131.6    6        0
DMA-4-D          Fallbrook        DMA-4-C-1        0.052    5.8      10.5     50       0
BMP-5            Fallbrook        SURF-5           0.072    0        20       0        0
DMA-5-C          Fallbrook        BMP-5            3.776    31.5     890.6    4        0
DMA-5-B          Fallbrook        DMA-5-C          0.074    0        14.4     50       0
```

```
DMA-5-A          Fallbrook        BMP-5            0.388    20.1     85       3        0
DMA-BP-D-1       Fallbrook        DMA-BP-C-1       2.502    0        487.4    24       0
DMA-BP-D-4       Fallbrook        DMA-BP-C-3       0.849    0        165.4    28       0
DMA-3-B          Fallbrook        DMA-3-C-1        0.042    100      18.3     12       0
DMA-4-C-2        Fallbrook        BMP-4            0.373    42.1     94.7     2        0
CMA-BP-C-5       Fallbrook        POC-1            0.024    0        4.7      10       0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
DMA-BP-D-3       0.012      0.05       0.05       0.1        25         OUTLET
DMA-BP-B-2       0.012      0.05       0.05       0.1        25         OUTLET
DMA-BP-C-1       0.012      0.05       0.05       0.1        25         OUTLET
DMA-BP-C-3       0.012      0.05       0.05       0.1        25         OUTLET
DMA-BP-C-4       0.012      0.05       0.05       0.1        25         OUTLET
DMA-DM-A         0.012      0.05       0.05       0.1        25         OUTLET
BMP-1            0.012      0.05       0.05       0.1        25         OUTLET
DMA-1-C-1        0.012      0.05       0.05       0.1        25         OUTLET
DMA-1-D          0.012      0.05       0.05       0.1        25         OUTLET
DMA-1-C-2        0.012      0.05       0.05       0.1        25         OUTLET
BMP-3            0.012      0.05       0.05       0.1        25         OUTLET
DMA-3-C-2        0.012      0.05       0.05       0.1        25         OUTLET
DMA-3-C-3        0.012      0.05       0.05       0.1        25         OUTLET
BMP-2            0.012      0.05       0.05       0.1        25         OUTLET
DMA-2-C          0.012      0.05       0.05       0.1        25         OUTLET
DMA-BP-C-2       0.012      0.05       0.05       0.1        25         OUTLET
DMA-BP-B-1       0.012      0.05       0.05       0.1        25         OUTLET
DMA-BP-D-2       0.012      0.05       0.05       0.1        25         OUTLET
DMA-3-C-1        0.012      0.05       0.05       0.1        25         OUTLET
BMP-4            0.012      0.05       0.05       0.1        25         OUTLET
DMA-4-C-1        0.012      0.05       0.05       0.1        25         OUTLET
DMA-4-D          0.012      0.05       0.05       0.1        25         OUTLET
BMP-5            0.012      0.05       0.05       0.1        25         OUTLET
DMA-5-C          0.012      0.05       0.05       0.1        25         OUTLET
DMA-5-B          0.012      0.05       0.05       0.1        25         OUTLET
DMA-5-A          0.012      0.05       0.05       0.1        25         OUTLET
DMA-BP-D-1       0.012      0.05       0.05       0.1        25         OUTLET
DMA-BP-D-4       0.012      0.05       0.05       0.1        25         OUTLET
DMA-3-B          0.012      0.05       0.05       0.1        25         OUTLET
DMA-4-C-2        0.012      0.05       0.05       0.1        25         OUTLET
CMA-BP-C-5       0.012      0.05       0.05       0.1        25         OUTLET

[INFILTRATION]
;;Subcatchment   Suction    HydCon     IMDmax
;;-------------- ---------- ---------- ----------
DMA-BP-D-3       9          0.025      0.30
DMA-BP-B-2       3          0.20       0.32
DMA-BP-C-1       6          0.10       0.31
DMA-BP-C-3       6          0.10       0.31
DMA-BP-C-4       6          0.10       0.31
DMA-DM-A         1.5        0.225      0.33
BMP-1            6          0.075      0.31
DMA-1-C-1        6          0.075      0.31
DMA-1-D          9          0.01875    0.30
DMA-1-C-2        6          0.075      0.31
BMP-3            6          0.075      0.31
DMA-3-C-2        6          0.10       0.31
DMA-3-C-3        6          0.10       0.31
BMP-2            6          0.075      0.31
DMA-2-C          6          0.075      0.31
DMA-BP-C-2       6          0.10       0.31
DMA-BP-B-1       3          0.20       0.32
DMA-BP-D-2       9          0.025      0.30
DMA-3-C-1        6          0.075      0.31
BMP-4            6          0.075      0.31
DMA-4-C-1        6          0.075      0.31
DMA-4-D          9          0.01875    0.30
BMP-5            1.5        0.225      0.33
DMA-5-C          6          0.075      0.31
DMA-5-B          3          0.15       0.32
DMA-5-A          1.5        0.225      0.33
```

```
DMA-BP-D-1       9          0.025      0.30
DMA-BP-D-4       9          0.025      0.30
DMA-3-B          3          0.15       0.32
DMA-4-C-2        6          0.075      0.31
CMA-BP-C-5       6          0.075      0.31

[LID_CONTROLS]
;;               Type/Layer Parameters
;;-------------- ---------- ----------
BMP-1            BC
BMP-1            SURFACE    10.2       0.0        0.1        0          5
BMP-1            SOIL       24         0.4        0.2        0.1        5          5          1.5
BMP-1            STORAGE    15         0.67       0.075      0
BMP-1            DRAIN      0.4288     0.5        3          6

BMP-2            BC
BMP-2            SURFACE    10.2       0.0        0.1        0          5
BMP-2            SOIL       24         0.4        0.2        0.1        5          5          1.5
BMP-2            STORAGE    15         0.67       0.075      0
BMP-2            DRAIN      0.3922     0.5        3          6

BMP-3            BC
BMP-3            SURFACE    8.98       0.0        0.1        0          5
BMP-3            SOIL       24         0.4        0.2        0.1        5          5          1.5
BMP-3            STORAGE    15         0.67       0.075      0
BMP-3            DRAIN      0.4738     0.5        3          6

BMP-4            BC
BMP-4            SURFACE    10.2       0.0        0.1        0          5
BMP-4            SOIL       24         0.4        0.2        0.1        5          5          1.5
BMP-4            STORAGE    15         0.67       0.075      0
BMP-4            DRAIN      0.4328     0.5        3          6

BMP-5            BC
BMP-5            SURFACE    9.27       0.0        0.1        0          5
BMP-5            SOIL       24         0.4        0.2        0.1        5          5          1.5
BMP-5            STORAGE    18         0.67       0.225      0
BMP-5            DRAIN      0.4246     0.5        6          6

[LID_USAGE]
;;Subcatchment   LID Process      Number  Area       Width      InitSatur  FromImprv  ToPerv     Report File
;;-------------- ---------------- ------- ---------- ---------- ---------- ---------- ---------- -----------
BMP-1            BMP-1            1       1468       0          0          100        0
BMP-3            BMP-3            1       538        0          0          100        0
BMP-2            BMP-2            1       650        0          0          100        0
BMP-4            BMP-4            1       1202       0          0          100        0
BMP-5            BMP-5            1       3137       0          0          100        0

[OUTFALLS]
;;               Invert     Outfall    Stage/Table      Tide
;;Name           Elev.      Type       Time Series      Gate
;;-------------- ---------- ---------- ---------------- ----
POC-1            0          FREE                        NO

[STORAGE]
;;               Invert   Max.     Init.    Storage    Curve                    Ponded   Evap.
;;Name           Elev.    Depth    Depth    Curve      Params                   Area     Frac.    Infiltration
Parameters
;;-------------- -------- -------- -------- ---------- -------- -------- -------- -------- -------- ----------------
------
SURF-5           0        2.5      0        TABULAR    SURF-4                    5398     1

[OUTLETS]
;;               Inlet            Outlet           Outflow    Outlet          Qcoeff/                     Flap
;;Name           Node             Node             Height     Type            QTable           Qexpon     Gate
;;-------------- ---------------- ---------------- ---------- --------------- ---------------- ---------- ----
OUT-5            SURF-5           POC-1            0          TABULAR/DEPTH   OUT-5                       NO

[CURVES]
;;Name           Type       X-Value    Y-Value
;;-------------- ---------- ---------- ----------
```

```
OUT-5            Rating     0          0
OUT-5                       0.1        0.1019
OUT-5                       0.83       0.102
OUT-5                       0.92       0.512
OUT-5                       1.00       1.188
OUT-5                       1.08       1.559
OUT-5                       1.17       1.853
OUT-5                       1.25       2.105
OUT-5                       1.33       2.328
OUT-5                       1.42       2.531
OUT-5                       1.50       2.718
OUT-5                       1.58       2.892
OUT-5                       1.67       3.057
OUT-5                       1.75       3.212
OUT-5                       1.83       4.554
OUT-5                       1.92       6.877
OUT-5                       2.00       9.838
OUT-5                       2.08       13.315
OUT-5                       2.17       17.236
OUT-5                       2.25       21.555
OUT-5                       2.33       26.235
OUT-5                       2.42       31.251
OUT-5                       2.50       36.581

SURF-4           Storage    0          10
SURF-4                      0.75       10
SURF-4                      0.83       10
SURF-4                      0.8301     3851
SURF-4                      0.92       3925
SURF-4                      1.00       3999
SURF-4                      1.08       4073
SURF-4                      1.17       4148
SURF-4                      1.25       4223
SURF-4                      1.33       4299
SURF-4                      1.42       4375
SURF-4                      1.50       4451
SURF-4                      1.58       4528
SURF-4                      1.67       4605
SURF-4                      1.75       4682
SURF-4                      1.83       4760
SURF-4                      1.92       4839
SURF-4                      2.00       4917
SURF-4                      2.08       4996
SURF-4                      2.17       5076
SURF-4                      2.25       5156
SURF-4                      2.33       5236
SURF-4                      2.42       5317
SURF-4                      2.50       5398

[TIMESERIES]
;;Name            Date       Time       Value
;;--------------- ---------- ---------- ----------
Fallbrook        FILE "Fallbrook.txt"

[REPORT]
INPUT      NO
CONTROLS   NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]

[MAP]
DIMENSIONS 0.000 0.000 10000.000 10000.000
Units      None

[COORDINATES]
;;Node            X-Coord            Y-Coord
;;--------------- ------------------ ------------------
POC-1            5000.000           5000.000
```

```
SURF-5           6039.290           6032.953

[VERTICES]
;;Link           X-Coord            Y-Coord
;;-------------- ------------------ ------------------

[Polygons]
;;Subcatchment   X-Coord            Y-Coord
;;-------------- ------------------ ------------------
DMA-BP-D-3       3000.000           9000.000
DMA-BP-B-2       3000.000           8000.000
DMA-BP-C-1       3000.000           7000.000
DMA-BP-C-3       3000.000           5000.000
DMA-BP-C-4       3000.000           4250.000
DMA-DM-A         5000.000           7000.000
BMP-1            8000.000           4000.000
DMA-1-C-1        8000.000           2500.000
DMA-1-D          7000.000           1500.000
DMA-1-C-2        9000.000           1500.000
BMP-3            8000.000           5000.000
DMA-3-C-2        9500.000           4500.000
DMA-3-C-3        9500.000           5500.000
BMP-2            5000.000           4000.000
DMA-2-C          5000.000           2500.000
DMA-BP-C-2       6000.000           4000.000
DMA-BP-B-1       6000.000           3000.000
DMA-BP-D-2       6000.000           2000.000
DMA-3-C-1        9500.000           3500.000
BMP-4            8000.000           6000.000
DMA-4-C-1        9500.000           6000.000
DMA-4-D          10500.000          6000.000
BMP-5            7000.000           7000.000
DMA-5-C          8000.000           9000.000
DMA-5-B          9500.000           9000.000
DMA-5-A          8000.000           7000.000
DMA-BP-D-1       5000.000           9000.000
DMA-BP-D-4       3000.000           5750.000
DMA-3-B          9500.000           2500.000
DMA-4-C-2        10000.000          7000.000
CMA-BP-C-5       3000.000           3500.000

[SYMBOLS]
;;Gage           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
Fallbrook        6250.000           8250.000
```

ATTACHMENT 7

EPA SWMM FIGURES AND EXPLANATIONS

Per the attached, the reader can see the screens associated with the EPA-SWMM Model in both pre-development and post-development conditions. Each portion, i.e., sub-catchments, outfalls, storage units, weir as a discharge, and outfalls (point of compliance), are also shown.

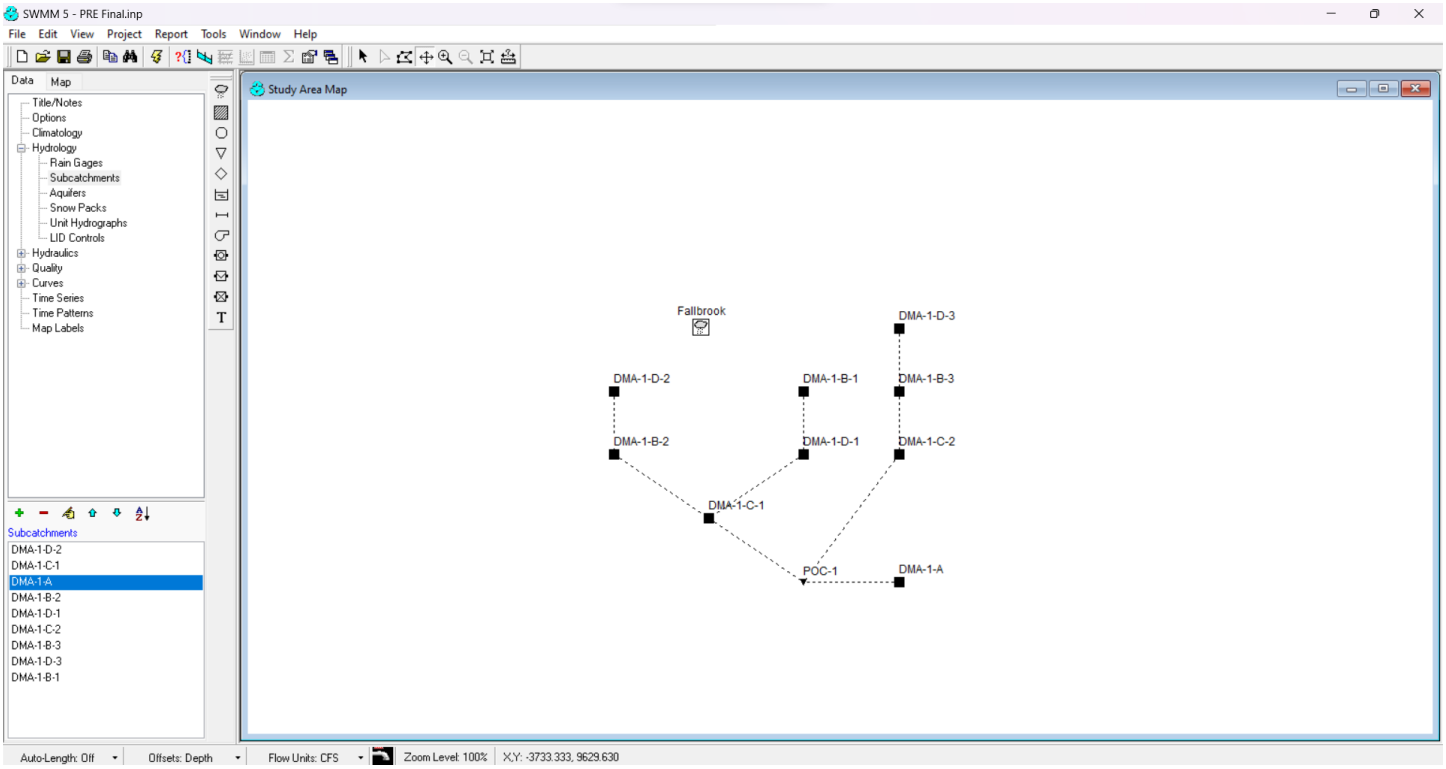
Variables for modeling are associated with typical recommended values by the EPA-SWMM model, typical values found in technical literature (such as Maidment's Handbook of Hydrology). Recommended values for the SWMM model have been attained from Appendix G of the 2021 City of Vista BMP Design Manual.

Soil characteristics of the existing soils were determined from the site specific NRCS WebSoil Survey investigation (located in Attachment 8 of this report).

A Technical document prepared by Tory R Walker Engineering for the Cities of San Marcos, Oceanside and Vista (Reference [1]) can also be consulted for additional information regarding typical values for SWMM parameters.

Manning's roughness coefficients have been based upon the findings of the "*Improving Accuracy in Continuous Hydrologic Modeling: Guidance for Selecting Pervious Overland Flow Manning's n Values in the San Diego Region*" date 2016 by TRW Engineering (Reference [6]).

PRE-DEVELOPED CONDITIONS



Rain Gage Fallbrook

Property	Value
Name	Fallbrook
X-Coordinate	3400.000
Y-Coordinate	9000.000
Description	
Tag	
Rain Format	INTENSITY
Time Interval	1:00
Snow Catch Factor	1.0
Data Source	TIMESERIES
TIME SERIES:	
- Series Name	Fallbrook
DATA FILE:	
- File Name	*
- Station ID	*
- Rain Units	IN

User-assigned name of rain gage

Outfall POC-1

Property	Value
Name	S
X-Coordinate	5000.000
Y-Coordinate	5000.000
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Tide Gate	NO
Type	FREE
Fixed Outfall	
Fixed Stage	0
Tidal Outfall	
Curve Name	*
Time Series Outfall	
Series Name	*

User-assigned name of outfall

Subcatchment DMA-1-A

Property	Value
Name	DMA-1-A
X-Coordinate	6500.000
Y-Coordinate	5000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	S
Area	0.492
Width	95.8
% Slope	5
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

User-assigned name of subcatchment

Subcatchment DMA-1-B-2

Property	Value
Name	DMA-1-B-2
X-Coordinate	2000.000
Y-Coordinate	7000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	DMA-1-C-1
Area	0.764
Width	148.8
% Slope	22
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	1.5
Conductivity	0.3
Initial Deficit	0.33

Soil capillary suction head (inches or mm)

OK Cancel Help

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	3
Conductivity	0.2
Initial Deficit	0.32

Soil capillary suction head (inches or mm)

OK Cancel Help

Subcatchment DMA-1-D-2

Property	Value
Name	DMA-1-D-2
X-Coordinate	2000.000
Y-Coordinate	8000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	DMA-1-B-2
Area	0.269
Width	52.4
% Slope	40
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Subcatchment DMA-1-C-1

Property	Value
Name	DMA-1-C-1
X-Coordinate	3500.000
Y-Coordinate	6000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	S
Area	3.996
Width	778
% Slope	12
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	0.025
Initial Deficit	0.3

Soil capillary suction head (inches or mm)

OK Cancel Help

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	6
Conductivity	0.1
Initial Deficit	0.31

Soil capillary suction head (inches or mm)

OK Cancel Help

Subcatchment DMA-1-B-1

Property	Value
Name	DMA-1-B-1
X-Coordinate	5000.000
Y-Coordinate	8000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	DMA-1-D-1
Area	1.373
Width	267.5
% Slope	40
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	3
Conductivity	0.2
Initial Deficit	0.32

Soil capillary suction head (inches or mm)

OK Cancel Help

Subcatchment DMA-1-D-1

Property	Value
Name	DMA-1-D-1
X-Coordinate	5000.000
Y-Coordinate	7000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	DMA-1-C-1
Area	3.556
Width	692.7
% Slope	26
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	0.025
Initial Deficit	0.3

Soil capillary suction head (inches or mm)

OK Cancel Help

Subcatchment DMA-1-D-3

Property	Value
Name	DMA-1-D-3
X-Coordinate	6500.000
Y-Coordinate	9000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	DMA-1-B-3
Area	1.336
Width	260.3
% Slope	47
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Subcatchment DMA-1-B-3

Property	Value
Name	DMA-1-B-3
X-Coordinate	6500.000
Y-Coordinate	8000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	DMA-1-C-2
Area	3.137
Width	611
% Slope	27
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	0.025
Initial Deficit	0.3

Soil capillary suction head (inches or mm)

OK Cancel Help

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	3
Conductivity	0.2
Initial Deficit	0.32

Soil capillary suction head (inches or mm)

OK Cancel Help

Subcatchment DMA-1-C-2

Property	Value
Name	DMA-1-C-2
X-Coordinate	6500.000
Y-Coordinate	7000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	S
Area	5.014
Width	977
% Slope	9.3
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Infiltration Editor

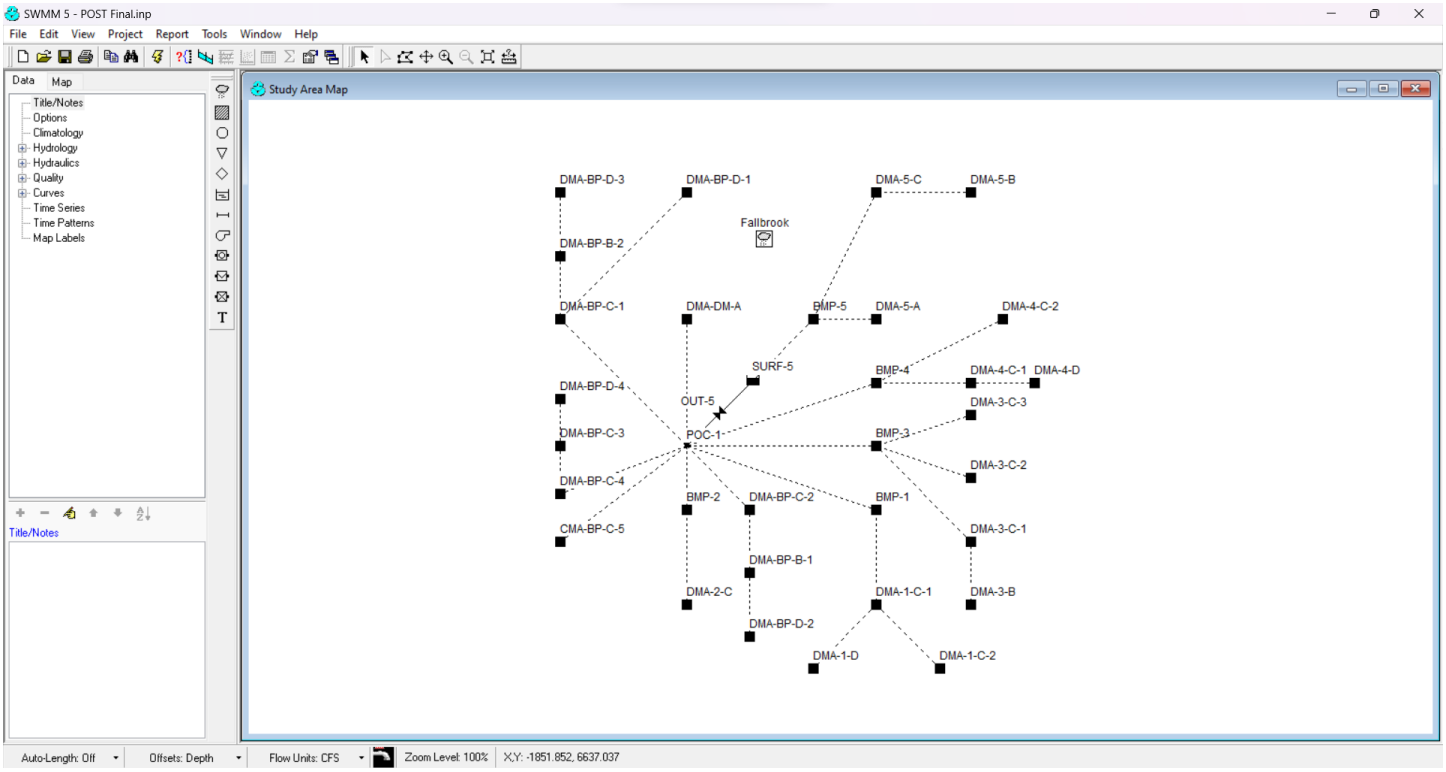
Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	6
Conductivity	0.1
Initial Deficit	0.31

Soil capillary suction head (inches or mm)

OK Cancel Help

POST-DEVELOPED CONDITIONS



Outfall POC-1

Property	Value
Name	POC-1
X-Coordinate	5000.000
Y-Coordinate	5000.000
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Tide Gate	NO
Type	FREE
Fixed Outfall	
Fixed Stage	0
Tidal Outfall	
Curve Name	*
Time Series Outfall	
Series Name	*

Name of time series for a TIMESERIES boundary condition (after specifing a time series, you can double-click to edit it)

Rain Gage Fallbrook

Property	Value
Name	Fallbrook
X-Coordinate	6250.000
Y-Coordinate	8250.000
Description	
Tag	
Rain Format	INTENSITY
Time Interval	1:00
Snow Catch Factor	1.0
Data Source	TIMESERIES
TIME SERIES:	
- Series Name	Fallbrook
DATA FILE:	
- File Name	*
- Station ID	*
- Rain Units	IN

User-assigned name of rain gage

Subcatchment DMA-1-C-1

Property	Value
Name	DMA-1-C-1
X-Coordinate	8000.000
Y-Coordinate	2500.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	BMP-1
Area	0.813
Width	219.2
% Slope	8
% Imperv	50.2
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Percent of impervious area with no depression storage (%)

Subcatchment DMA-1-C-2

Property	Value
Name	DMA-1-C-2
X-Coordinate	9000.000
Y-Coordinate	1500.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	DMA-1-C-1
Area	0.448
Width	114.0
% Slope	2
% Imperv	42.4
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Subcatchment DMA-1-D

Property	Value
Name	DMA-1-D
X-Coordinate	7000.000
Y-Coordinate	1500.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	DMA-1-C-1
Area	0.153
Width	30.8
% Slope	50
% Imperv	5.9
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	6
Conductivity	0.075
Initial Deficit	0.31

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	6
Conductivity	0.075
Initial Deficit	0.31

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	0.01875
Initial Deficit	0.30

Subcatchment BMP-1

Property	Value
Name	BMP-1
X-Coordinate	8000.000
Y-Coordinate	4000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	POC-1
Area	0.0337
Width	10
% Slope	0
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	1
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Subcatchment DMA-2-C

Property	Value
Name	DMA-2-C
X-Coordinate	5000.000
Y-Coordinate	2500.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	BMP-2
Area	0.543
Width	172.2
% Slope	12.5
% Imperv	69.8
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Subcatchment BMP-2

Property	Value
Name	BMP-2
X-Coordinate	5000.000
Y-Coordinate	4000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	POC-1
Area	0.01492
Width	10
% Slope	0
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	1
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	6
Conductivity	0.075
Initial Deficit	0.31

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	6
Conductivity	0.075
Initial Deficit	0.31

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	6
Conductivity	0.075
Initial Deficit	0.31

Subcatchment DMA-BP-C-2

Property	Value
Name	DMA-BP-C-2
X-Coordinate	6000.000
Y-Coordinate	4000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	POC-1
Area	0.667
Width	129.9
% Slope	9.3
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Subcatchment DMA-BP-B-1

Property	Value
Name	DMA-BP-B-1
X-Coordinate	6000.000
Y-Coordinate	3000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	DMA-BP-C-2
Area	2.989
Width	582
% Slope	27
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Subcatchment DMA-BP-D-2

Property	Value
Name	DMA-BP-D-2
X-Coordinate	6000.000
Y-Coordinate	2000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	DMA-BP-B-1
Area	1.334
Width	260
% Slope	47
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Name of node or another subcatchment that receives runoff

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	6
Conductivity	0.075
Initial Deficit	0.31

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	3
Conductivity	0.20
Initial Deficit	0.32

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	0.025
Initial Deficit	0.30

Subcatchment DMA-3-B

Property	Value
Name	DMA-3-B
X-Coordinate	9500.000
Y-Coordinate	2500.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	DMA-3-C-1
Area	0.042
Width	18.3
% Slope	12
% Imperv	100
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Subcatchment DMA-3-C-1

Property	Value
Name	DMA-3-C-1
X-Coordinate	9500.000
Y-Coordinate	3500.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	BMP-3
Area	0.093
Width	40.5
% Slope	12
% Imperv	100
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Subcatchment DMA-3-C-2

Property	Value
Name	DMA-3-C-2
X-Coordinate	9500.000
Y-Coordinate	4500.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	BMP-3
Area	0.276
Width	58.3
% Slope	12
% Imperv	14.1
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	3
Conductivity	0.15
Initial Deficit	0.32

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	6
Conductivity	0.075
Initial Deficit	0.31

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	6
Conductivity	0.075
Initial Deficit	0.31

Subcatchment DMA-3-C-3

Property	Value
Name	DMA-3-C-3
X-Coordinate	9500.000
Y-Coordinate	5500.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	BMP-3
Area	0.269
Width	57.7
% Slope	12
% Imperv	16.7
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Subcatchment BMP-3

Property	Value
Name	BMP-3
X-Coordinate	8000.000
Y-Coordinate	5000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	POC-1
Area	0.01235
Width	10
% Slope	0
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	1
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Subcatchment DMA-4-C-1

Property	Value
Name	DMA-4-C-1
X-Coordinate	9500.000
Y-Coordinate	6000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	BMP-4
Area	0.409
Width	131.6
% Slope	6
% Imperv	71.4
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	6
Conductivity	0.075
Initial Deficit	0.31

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	6
Conductivity	0.075
Initial Deficit	0.31

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	6
Conductivity	0.075
Initial Deficit	0.31

Subcatchment DMA-4-D

Property	Value
Name	DMA-4-D
X-Coordinate	10500.000
Y-Coordinate	6000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	DMA-4-C-1
Area	0.052
Width	10.5
% Slope	50
% Imperv	5.8
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Subcatchment DMA-4-C-2

Property	Value
Name	DMA-4-C-2
X-Coordinate	10000.000
Y-Coordinate	7000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	BMP-4
Area	0.373
Width	94.7
% Slope	2
% Imperv	42.1
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Subcatchment BMP-4

Property	Value
Name	BMP-4
X-Coordinate	8000.000
Y-Coordinate	6000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	POC-1
Area	0.02759
Width	10
% Slope	0
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	1
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	0.01875
Initial Deficit	0.30

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	6
Conductivity	0.075
Initial Deficit	0.31

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	6
Conductivity	0.075
Initial Deficit	0.31

Subcatchment DMA-5-A

Property	Value
Name	DMA-5-A
X-Coordinate	8000.000
Y-Coordinate	7000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	BMP-5
Area	0.388
Width	85
% Slope	3
% Imperv	20.1
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Subcatchment DMA-5-B

Property	Value
Name	DMA-5-B
X-Coordinate	9500.000
Y-Coordinate	9000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	DMA-5-C
Area	0.074
Width	14.4
% Slope	50
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Subcatchment DMA-5-C

Property	Value
Name	DMA-5-C
X-Coordinate	8000.000
Y-Coordinate	9000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	BMP-5
Area	3.776
Width	890.6
% Slope	4
% Imperv	31.5
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	1.5
Conductivity	0.225
Initial Deficit	0.33

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	3
Conductivity	0.15
Initial Deficit	0.32

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	6
Conductivity	0.075
Initial Deficit	0.31

Subcatchment BMP-5

Property	Value
Name	BMP-5
X-Coordinate	7000.000
Y-Coordinate	7000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	SURF-5
Area	0.072
Width	20
% Slope	0
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	1
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Subcatchment DMA-DM-A

Property	Value
Name	DMA-DM-A
X-Coordinate	5000.000
Y-Coordinate	7000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	POC-1
Area	0.031
Width	6
% Slope	7
% Imperv	87.1
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Subcatchment DMA-BP-D-1

Property	Value
Name	DMA-BP-D-1
X-Coordinate	5000.000
Y-Coordinate	9000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	DMA-BP-C-1
Area	2.502
Width	487.4
% Slope	24
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Percent of runoff routed between sub-areas

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	1.5
Conductivity	0.225
Initial Deficit	0.33

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	1.5
Conductivity	0.225
Initial Deficit	0.33

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	0.025
Initial Deficit	0.30

Subcatchment DMA-BP-D-3

Property	Value
Name	DMA-BP-D-3
X-Coordinate	3000.000
Y-Coordinate	9000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	DMA-BP-B-2
Area	0.268
Width	52
% Slope	40
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Subcatchment DMA-BP-B-2

Property	Value
Name	DMA-BP-B-2
X-Coordinate	3000.000
Y-Coordinate	8000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	DMA-BP-C-1
Area	2.169
Width	423
% Slope	32
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Subcatchment DMA-BP-C-1

Property	Value
Name	DMA-BP-C-1
X-Coordinate	3000.000
Y-Coordinate	7000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	POC-1
Area	1.06
Width	206.5
% Slope	12
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	0.025
Initial Deficit	0.30

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	3
Conductivity	0.20
Initial Deficit	0.32

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	6
Conductivity	0.10
Initial Deficit	0.31

Subcatchment DMA-BP-D-4

Property	Value
Name	DMA-BP-D-4
X-Coordinate	3000.000
Y-Coordinate	5750.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	DMA-BP-C-3
Area	0.849
Width	165.4
% Slope	28
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Subcatchment DMA-BP-C-3

Property	Value
Name	DMA-BP-C-3
X-Coordinate	3000.000
Y-Coordinate	5000.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	DMA-BP-C-4
Area	0.054
Width	10.5
% Slope	25
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Subcatchment DMA-BP-C-4

Property	Value
Name	DMA-BP-C-4
X-Coordinate	3000.000
Y-Coordinate	4250.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	POC-1
Area	0.118
Width	23
% Slope	20
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	9
Conductivity	0.025
Initial Deficit	0.30

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	6
Conductivity	0.10
Initial Deficit	0.31

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	6
Conductivity	0.10
Initial Deficit	0.31

Subcatchment CMA-BP-C-5

Property	Value
Name	CMA-BP-C-5
X-Coordinate	3000.000
Y-Coordinate	3500.000
Description	
Tag	
Rain Gage	Fallbrook
Outlet	POC-1
Area	0.024
Width	4.7
% Slope	10
% Imperv	0
N-Imperv	0.012
N-Perv	0.05
Dstore-Imperv	0.05
Dstore-Perv	0.1
%Zero-Imperv	25
Subarea Routing	OUTLET
Percent Routed	100
Infiltration	GREEN_AMPT ...
Groundwater	NO
Snow Pack	
LID Controls	0
Land Uses	0
Initial Buildup	NONE
Curb Length	0

Infiltration parameters (click to edit)

Infiltration Editor

Infiltration Method: GREEN_AMPT

Property	Value
Suction Head	6
Conductivity	0.075
Initial Deficit	0.31

EXPLANATION OF SELECTED VARIABLES

Sub Catchment Areas:

Please refer to the attached diagrams that indicate the DMA and Bio-Retention BMPs (BMP) sub areas modeled within the project site at both the pre and post developed conditions draining to the POC.

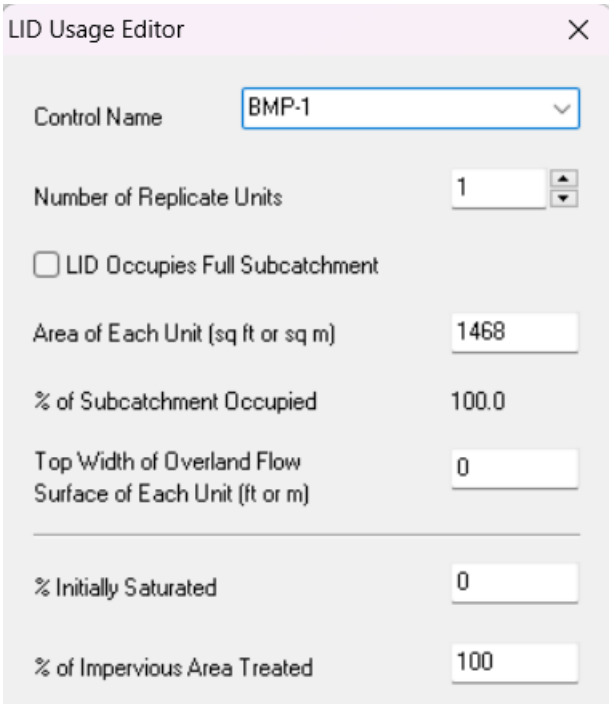
Parameters for the pre- and post-developed models include soil type C as determined from the site specific geotechnical investigation (attached at the end of this appendix). Suction head, conductivity and initial deficit corresponds to average values expected for these soils types, according to Appendix G of the 2021 City of Vista BMP Design Manual.

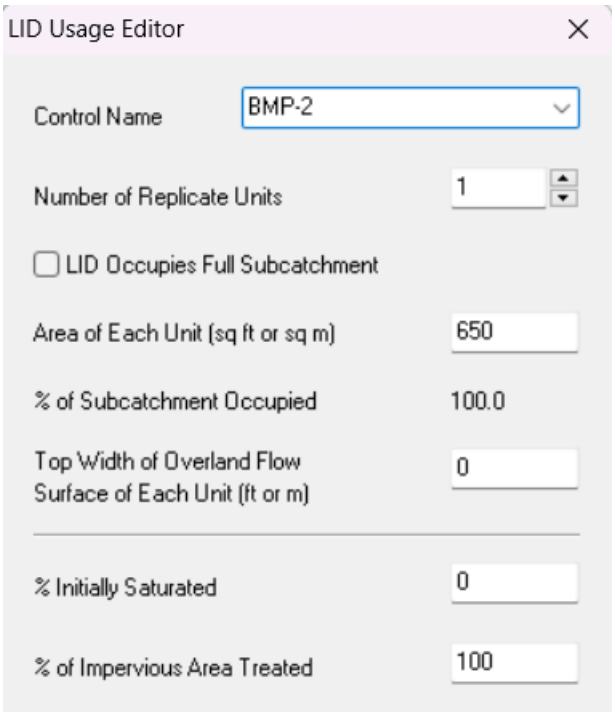
For surface runoff infiltration values, REC selected infiltration values per Appendix G of 2021 City of Vista BMP Design Manual corresponding to hydrologic soil type.

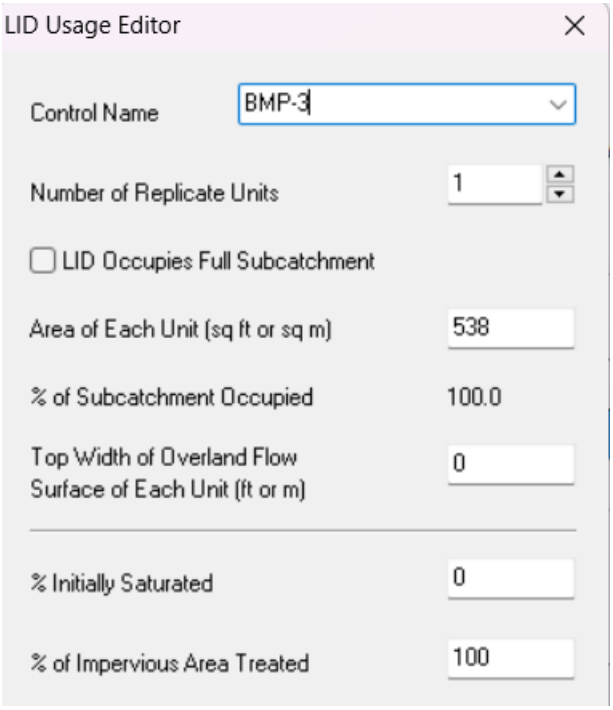
Selection of a Kinematic Approach: As the continuous model is based on hourly rainfall, and the time of concentration for the pre-development and post-development conditions is significantly smaller than 60 minutes, precise routing of the flows through the impervious surfaces, the underdrain pipe system, and the discharge pipe was considered unnecessary. The truncation error of the precipitation into hourly steps is much more significant than the precise routing in a system where the time of concentration is much smaller than 1 hour.

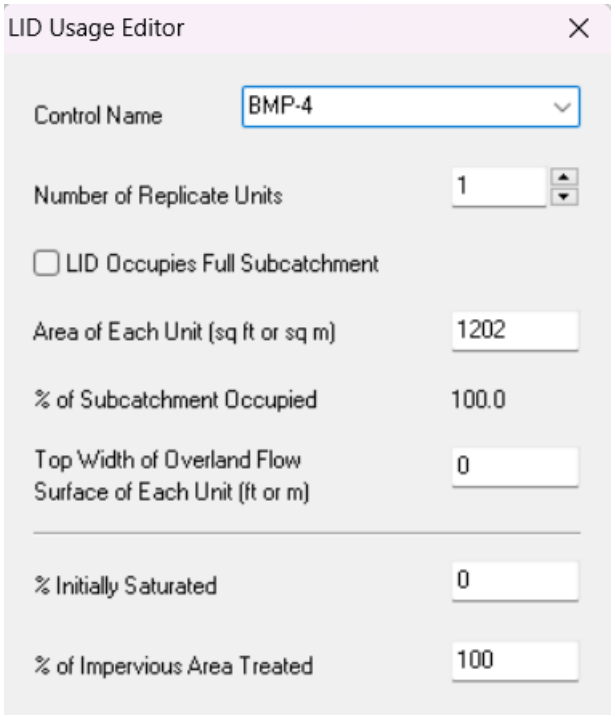
Sub-catchment BMP:

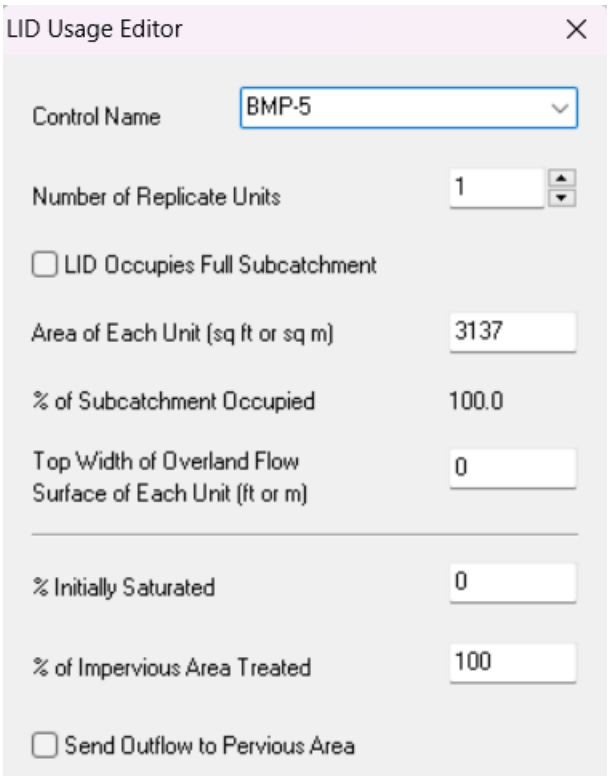
The area of biofiltration must be equal to the area of the development tributary to the biofiltration facility (area that drains into the biofiltration, equal external area plus bio-retention itself). Five (5) decimal places were given regarding the areas of the biofiltration to insure that the area used by the program for the LID subroutine corresponds exactly with this tributary.


LID Usage Editor
Control Name
BMP-1
Number of Replicate Units
1
LID Occupies Full Subcatchment
Area of Each Unit (sq ft or sq m)
1468
% of Subcatchment Occupied
100.0
Top Width of Overland Flow Surface of Each Unit (ft or m)
0
% Initially Saturated
0
% of Impervious Area Treated
100


LID Usage Editor
Control Name
BMP-2
Number of Replicate Units
1
LID Occupies Full Subcatchment
Area of Each Unit (sq ft or sq m)
650
% of Subcatchment Occupied
100.0
Top Width of Overland Flow Surface of Each Unit (ft or m)
0
% Initially Saturated
0
% of Impervious Area Treated
100


LID Usage Editor
Control Name
BMP-3
Number of Replicate Units
1
LID Occupies Full Subcatchment
Area of Each Unit (sq ft or sq m)
538
% of Subcatchment Occupied
100.0
Top Width of Overland Flow Surface of Each Unit (ft or m)
0
% Initially Saturated
0
% of Impervious Area Treated
100


LID Usage Editor
Control Name
BMP-4
Number of Replicate Units
1
LID Occupies Full Subcatchment
Area of Each Unit (sq ft or sq m)
1202
% of Subcatchment Occupied
100.0
Top Width of Overland Flow Surface of Each Unit (ft or m)
0
% Initially Saturated
0
% of Impervious Area Treated
100


LID Usage Editor
Control Name
BMP-5
Number of Replicate Units
1
LID Occupies Full Subcatchment
Area of Each Unit (sq ft or sq m)
3137
% of Subcatchment Occupied
100.0
Top Width of Overland Flow Surface of Each Unit (ft or m)
0
% Initially Saturated
0
% of Impervious Area Treated
100
Send Outflow to Pervious Area

Surface Storage and Rating curves

Outlet OUT-5

Property	Value
Name	OUT-5
Inlet Node	SURF-5
Outlet Node	POC-1
Description	
Tag	
Inlet Offset	0
Flap Gate	NO
Rating Curve	TABULAR/DEPTH
Functional Curve	
Coefficient	10.0
Exponent	0.5
Tabular Curve	
Curve Name	OUT-5

Optional comment or description

Storage Unit SURF-5

Property	Value
Name	SURF-5
X-Coordinate	6039.290
Y-Coordinate	6032.953
Description	
Tag	
Inflows	NO
Treatment	NO
Invert El.	0
Max. Depth	2.5
Initial Depth	0
Ponded Area	5398
Evap. Factor	1
Infiltration	NO
Storage Curve	TABULAR
Functional Curve	
Coefficient	1000
Exponent	0
Constant	0
Tabular Curve	
Curve Name	SURF-4

Click to specify infiltration through the bottom of the storage unit

Rating Curve Editor

Curve Name: OUT-5

Description:

	Head (ft)	Outflow (CFS)
1	0	0
2	0.1	0.1019
3	0.83	0.102
4	0.92	0.512
5	1.00	1.188
6	1.08	1.559
7	1.17	1.853
8	1.25	2.105
9	1.33	2.328

View... Load... Save... OK Cancel Help

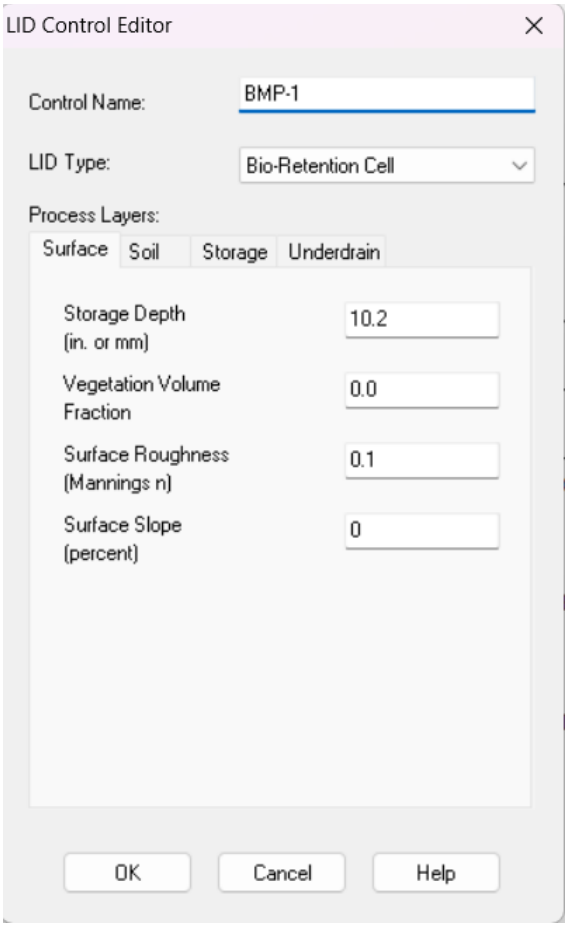
Storage Curve Editor

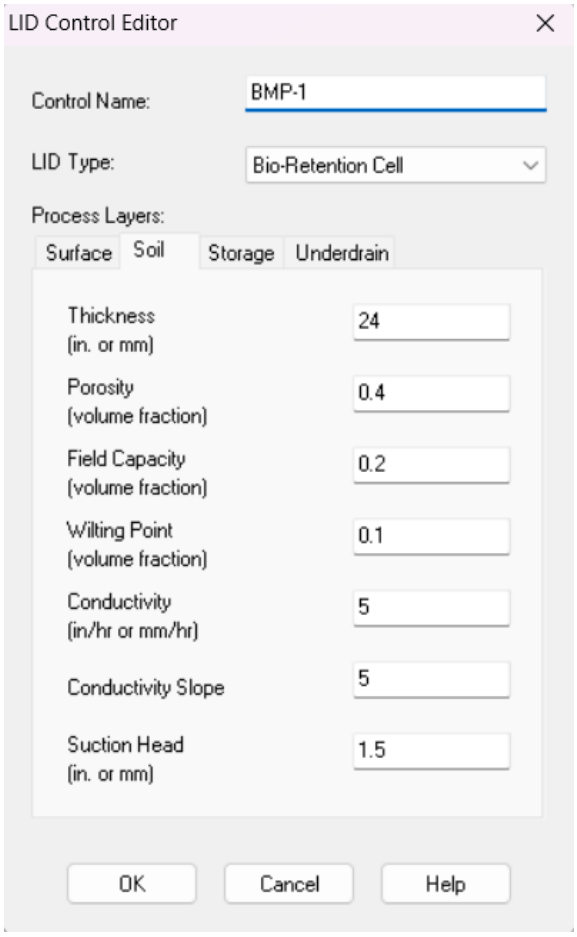
Curve Name: SURF-4

Description:

	Depth (ft)	Area (ft2)
1	0	10
2	0.75	10
3	0.83	10
4	0.8301	3851
5	0.92	3925
6	1.00	3999
7	1.08	4073
8	1.17	4148
9	1.25	4223

View... Load... Save... OK Cancel Help


LID Control Editor
Control Name:
BMP-1
LID Type:
Bio-Retention Cell
Process Layers:
Surface
Soil
Storage
Underdrain
Storage Depth
(in. or mm)
10.2
Vegetation Volume
Fraction
0.0
Surface Roughness
(Mannings n)
0.1
Surface Slope
(percent)
0
OK
Cancel
Help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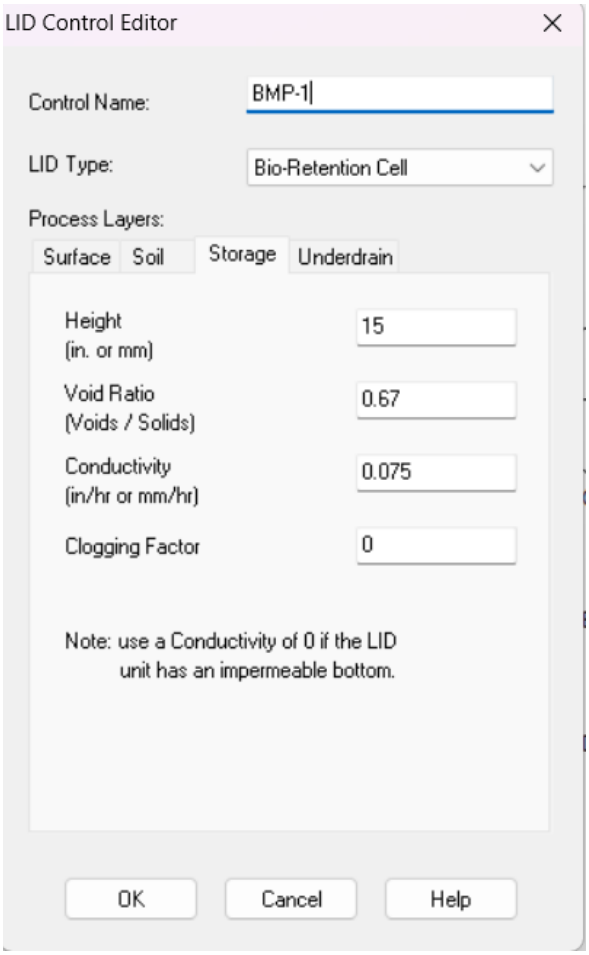
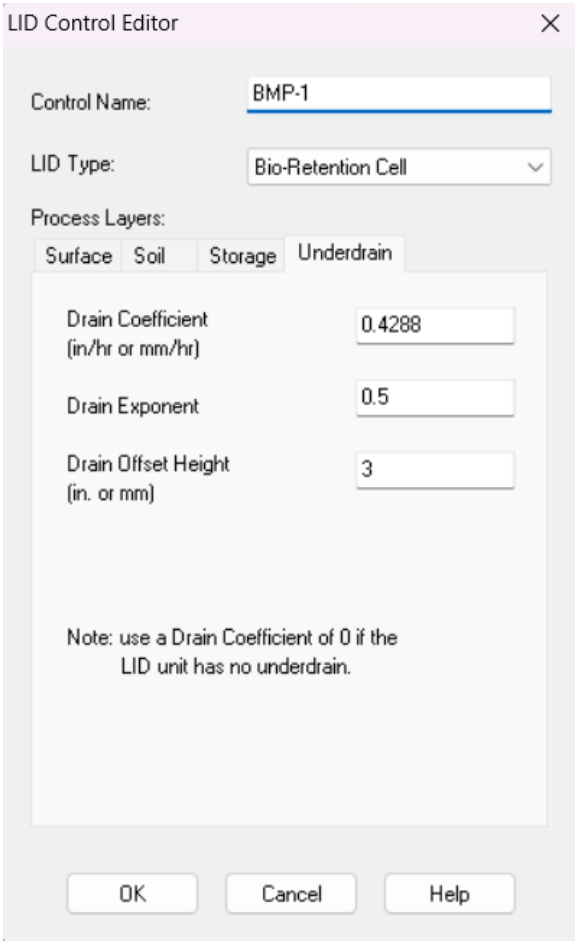
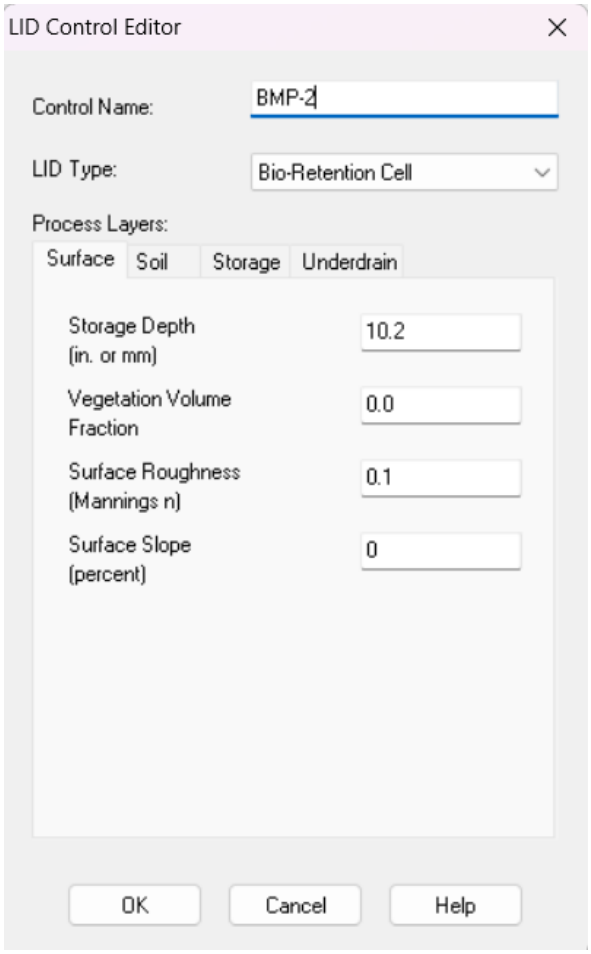
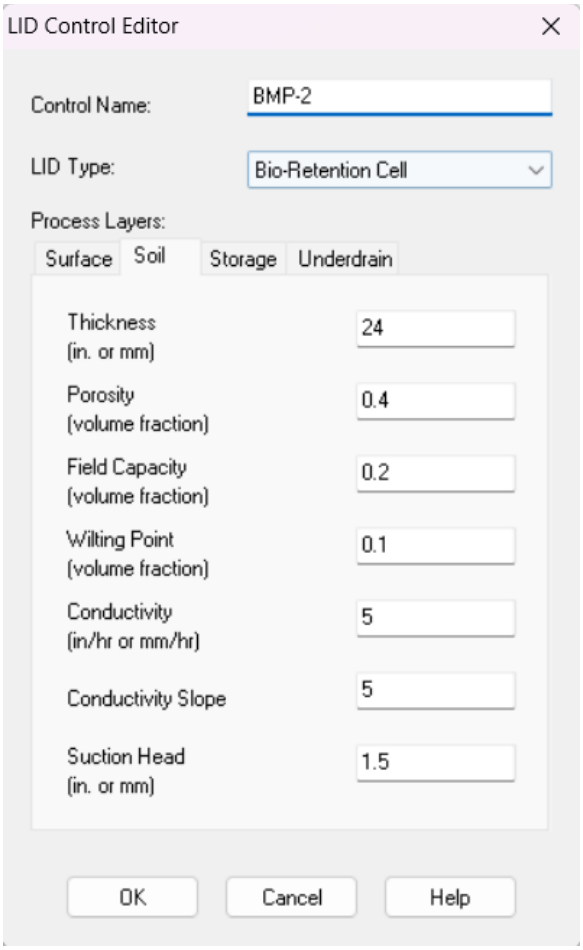
Control Name:
BMP-1
LID Type:
Bio-Retention Cell
Process Layers:
Surface
Soil
Storage
Underdrain
Thickness
(in. or mm)
24
Porosity
(volume fraction)
0.4
Field Capacity
(volume fraction)
0.2
Wilting Point
(volume fraction)
0.1
Conductivity
(in/hr or mm/hr)
5
Conductivity Slope
5
Suction Head
(in. or mm)
1.5
OK
Cancel
Help


LID Control Editor
Control Name:
BMP-1
LID Type:
Bio-Retention Cell
Process Layers:
Surface
Soil
Storage
Underdrain
Height
(in. or mm)
15
Void Ratio
(Voids / Solids)
0.67
Conductivity
(in/hr or mm/hr)
0.075
Clogging Factor
0
Note: use a Conductivity of 0 if the LID
unit has an impermeable bottom.
OK
Cancel
Help


LID Control Editor
Control Name:
BMP-1
LID Type:
Bio-Retention Cell
Process Layers:
Surface
Soil
Storage
Underdrain
Drain Coefficient
(in/hr or mm/hr)
0.4288
Drain Exponent
0.5
Drain Offset Height
(in. or mm)
3
Note: use a Drain Coefficient of 0 if the
LID unit has no underdrain.
OK
Cancel
Help


LID Control Editor
Control Name:
BMP-2
LID Type:
Bio-Retention Cell
Process Layers:
Surface
Soil
Storage
Underdrain
Storage Depth
(in. or mm)
10.2
Vegetation Volume
Fraction
0.0
Surface Roughness
(Mannings n)
0.1
Surface Slope
(percent)
0
OK
Cancel
Help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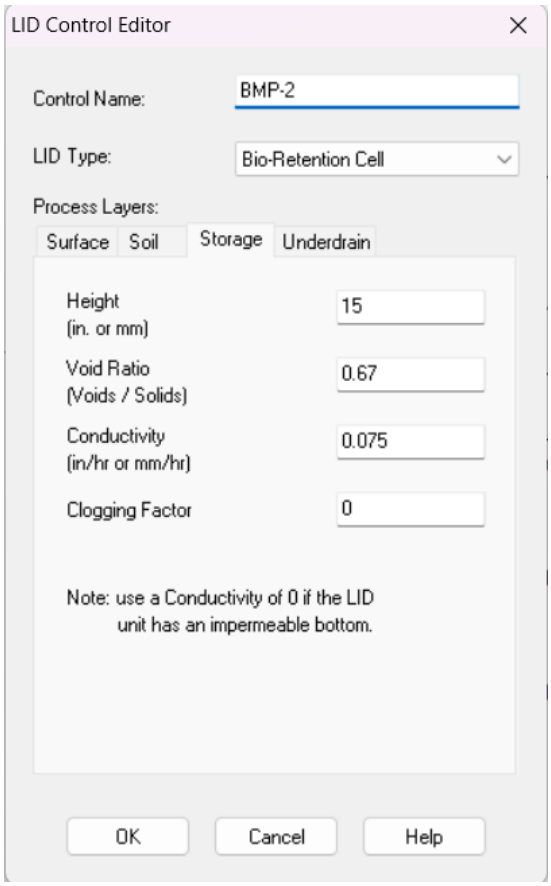
Control Name:
BMP-2
LID Type:
Bio-Retention Cell
Process Layers:
Surface
Soil
Storage
Underdrain
Thickness
(in. or mm)
24
Porosity
(volume fraction)
0.4
Field Capacity
(volume fraction)
0.2
Wilting Point
(volume fraction)
0.1
Conductivity
(in/hr or mm/hr)
5
Conductivity Slope
5
Suction Head
(in. or mm)
1.5
OK
Cancel
Help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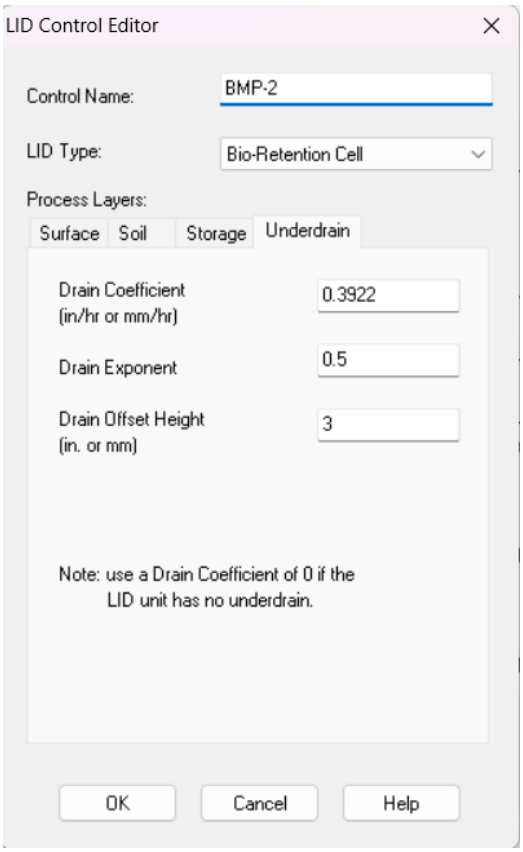
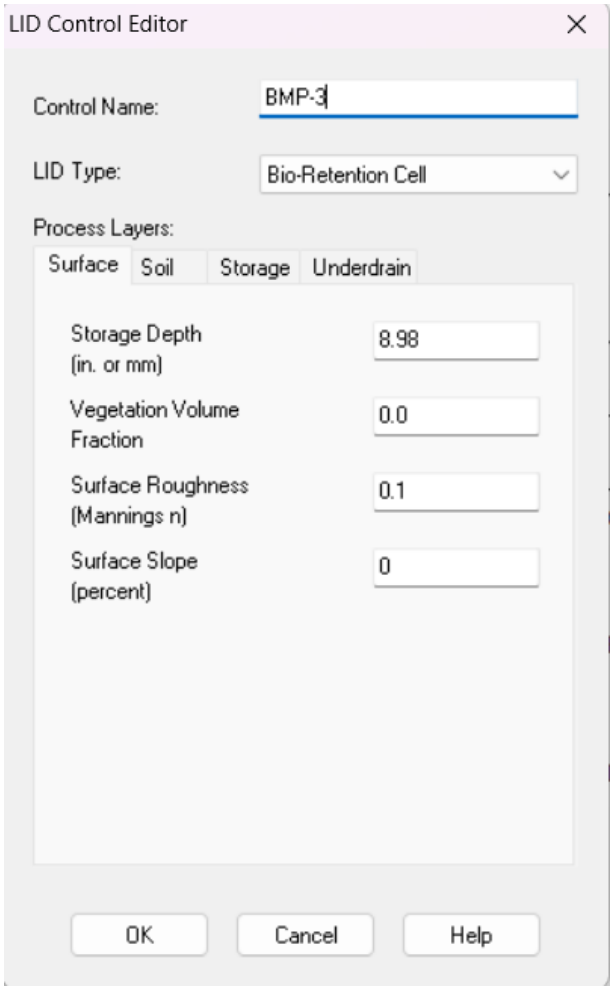
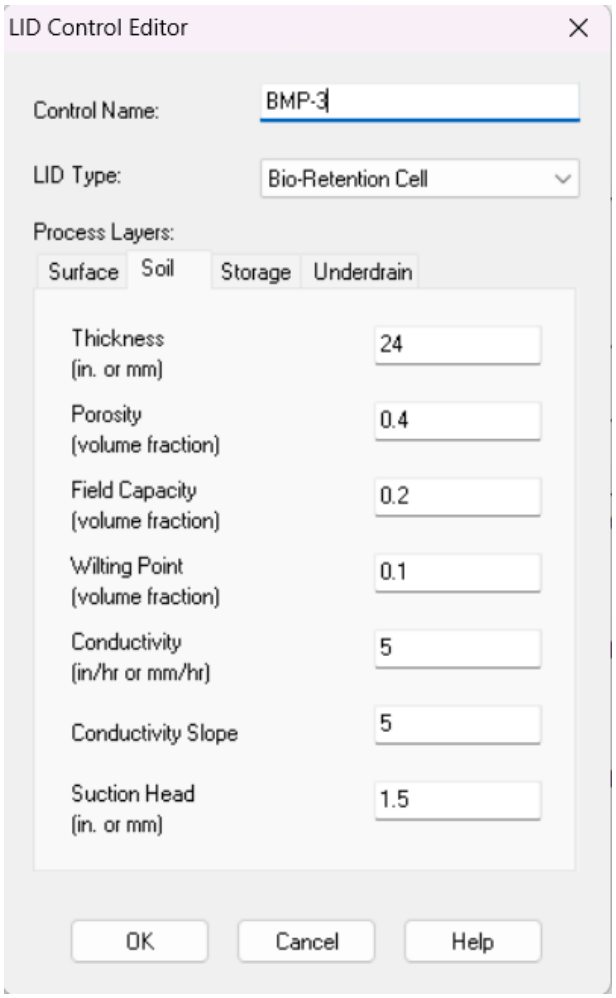
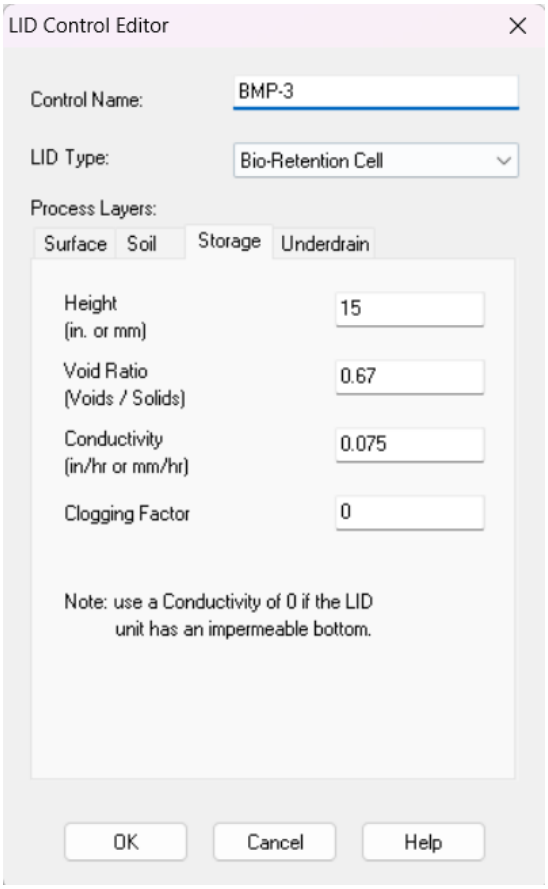
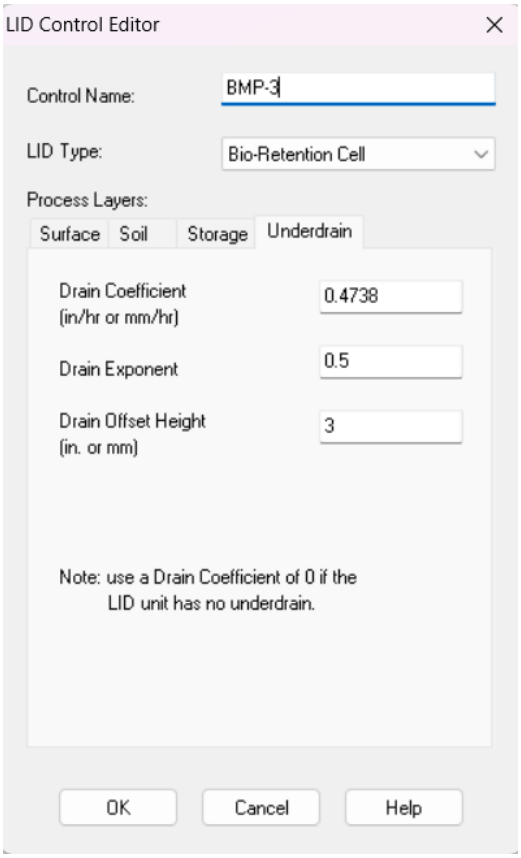
Control Name:
BMP-2
LID Type:
Bio-Retention Cell
Process Layers:
Surface
Soil
Storage
Underdrain
Height
(in. or mm)
15
Void Ratio
(Voids / Solids)
0.67
Conductivity
(in/hr or mm/hr)
0.075
Clogging Factor
0
Note: use a Conductivity of 0 if the LID
unit has an impermeable bottom.
OK
Cancel
Help

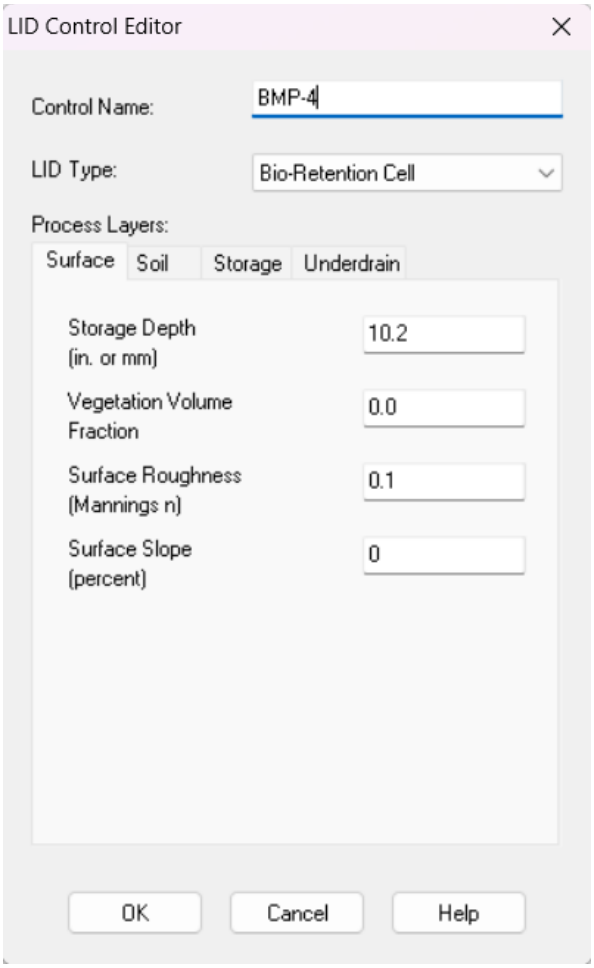

LID Control Editor
Control Name:
BMP-2
LID Type:
Bio-Retention Cell
Process Layers:
Surface
Soil
Storage
Underdrain
Drain Coefficient
(in/hr or mm/hr)
0.3922
Drain Exponent
0.5
Drain Offset Height
(in. or mm)
3
Note: use a Drain Coefficient of 0 if the
LID unit has no underdrain.
OK
Cancel
Help

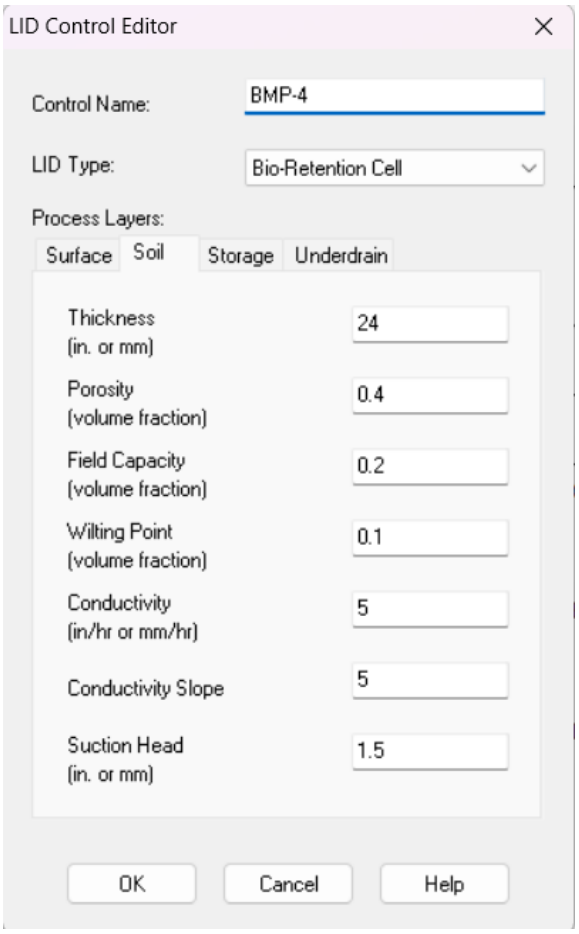

LID Control Editor
Control Name:
BMP-3
LID Type:
Bio-Retention Cell
Process Layers:
Surface
Soil
Storage
Underdrain
Storage Depth
(in. or mm)
8.98
Vegetation Volume
Fraction
0.0
Surface Roughness
(Mannings n)
0.1
Surface Slope
(percent)
0
OK
Cancel
Help


LID Control Editor
Control Name:
BMP-3
LID Type:
Bio-Retention Cell
Process Layers:
Surface
Soil
Storage
Underdrain
Thickness
(in. or mm)
24
Porosity
(volume fraction)
0.4
Field Capacity
(volume fraction)
0.2
Wilting Point
(volume fraction)
0.1
Conductivity
(in/hr or mm/hr)
5
Conductivity Slope
5
Suction Head
(in. or mm)
1.5
OK
Cancel
Help


LID Control Editor
Control Name:
BMP-3
LID Type:
Bio-Retention Cell
Process Layers:
Surface
Soil
Storage
Underdrain
Height
(in. or mm)
15
Void Ratio
(Voids / Solids)
0.67
Conductivity
(in/hr or mm/hr)
0.075
Clogging Factor
0
Note: use a Conductivity of 0 if the LID
unit has an impermeable bottom.
OK
Cancel
Help


LID Control Editor
Control Name:
BMP-3
LID Type:
Bio-Retention Cell
Process Layers:
Surface
Soil
Storage
Underdrain
Drain Coefficient
(in/hr or mm/hr)
0.4738
Drain Exponent
0.5
Drain Offset Height
(in. or mm)
3
Note: use a Drain Coefficient of 0 if the
LID unit has no underdrain.
OK
Cancel
Help


LID Control Editor
Control Name:
BMP-4
LID Type:
Bio-Retention Cell
Process Layers:
Surface
Soil
Storage
Underdrain
Storage Depth
(in. or mm)
10.2
Vegetation Volume
Fraction
0.0
Surface Roughness
(Mannings n)
0.1
Surface Slope
(percent)
0
OK
Cancel
Help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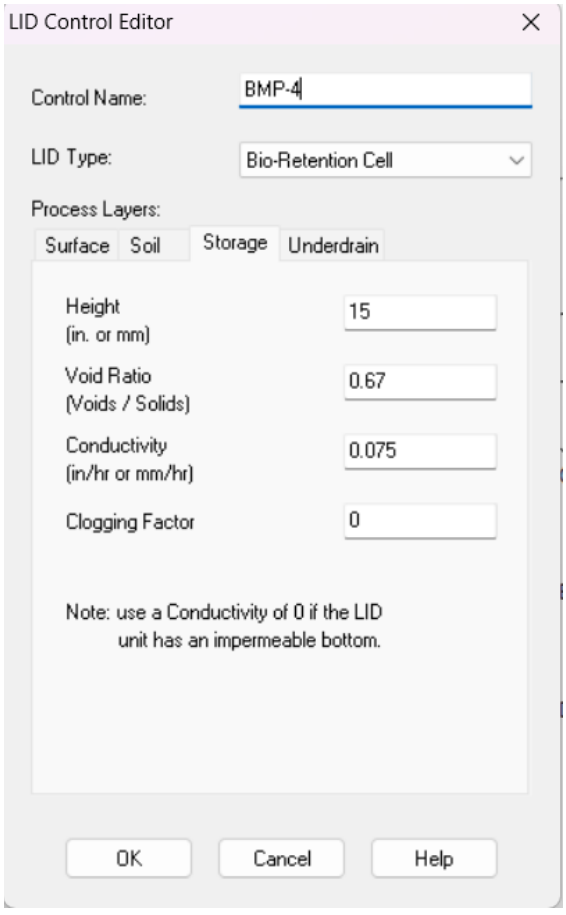
Control Name:
BMP-4
LID Type:
Bio-Retention Cell
Process Layers:
Surface
Soil
Storage
Underdrain
Thickness
(in. or mm)
24
Porosity
(volume fraction)
0.4
Field Capacity
(volume fraction)
0.2
Wilting Point
(volume fraction)
0.1
Conductivity
(in/hr or mm/hr)
5
Conductivity Slope
5
Suction Head
(in. or mm)
1.5
OK
Cancel
Help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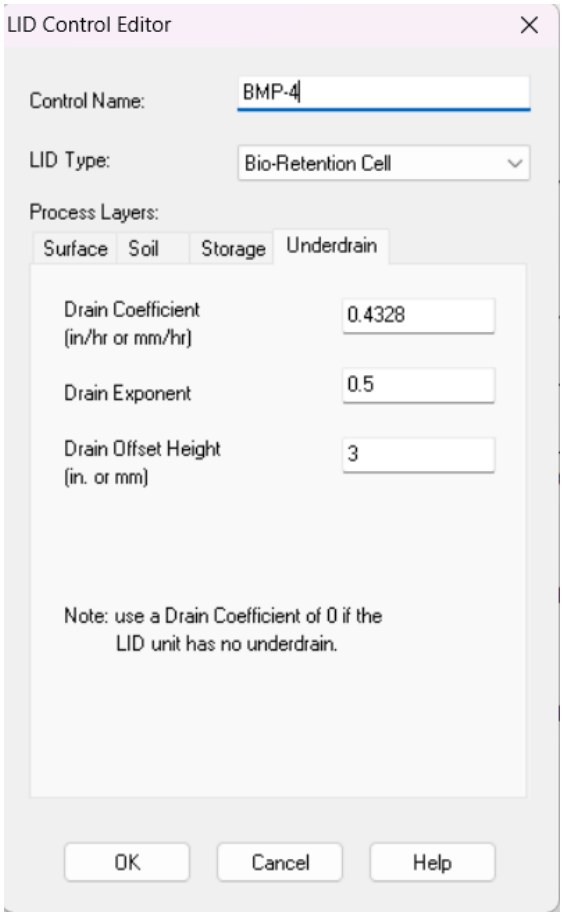
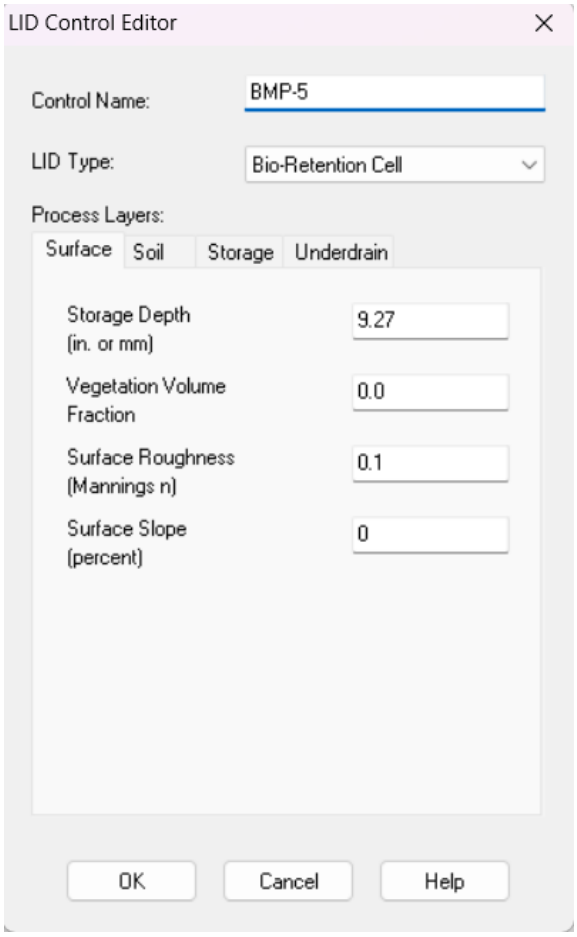
Control Name:
BMP-4
LID Type:
Bio-Retention Cell
Process Layers:
Surface
Soil
Storage
Underdrain
Height
(in. or mm)
15
Void Ratio
(Voids / Solids)
0.67
Conductivity
(in/hr or mm/hr)
0.075
Clogging Factor
0
Note: use a Conductivity of 0 if the LID
unit has an impermeable bottom.
OK
Cancel
Help


LID Control Editor
Control Name:
BMP-4
LID Type:
Bio-Retention Cell
Process Layers:
Surface
Soil
Storage
Underdrain
Drain Coefficient
(in/hr or mm/hr)
0.4328
Drain Exponent
0.5
Drain Offset Height
(in. or mm)
3
Note: use a Drain Coefficient of 0 if the
LID unit has no underdrain.
OK
Cancel
Help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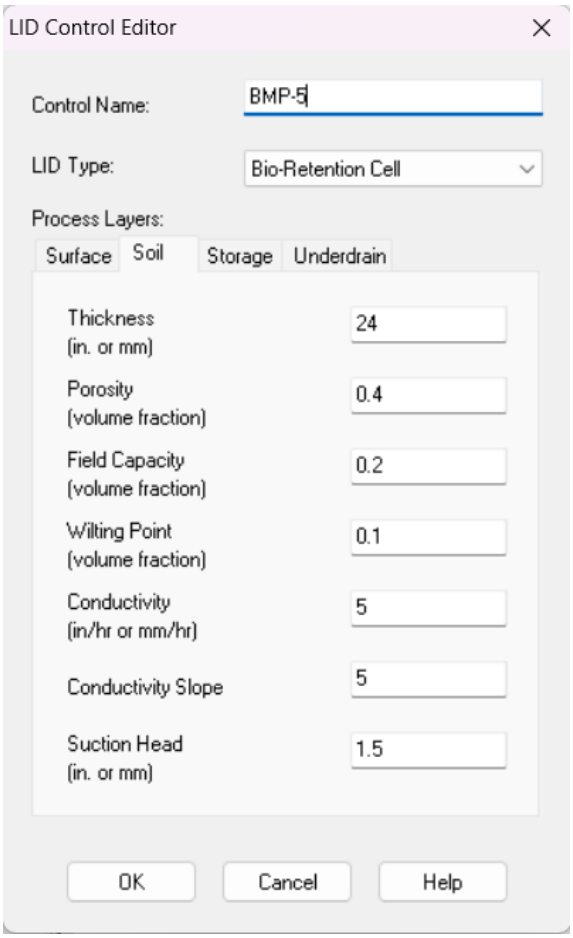
Control Name:
BMP-5
LID Type:
Bio-Retention Cell
Process Layers:
Surface
Soil
Storage
Underdrain
Storage Depth
(in. or mm)
9.27
Vegetation Volume
Fraction
0.0
Surface Roughness
(Mannings n)
0.1
Surface Slope
(percent)
0
OK
Cancel
Help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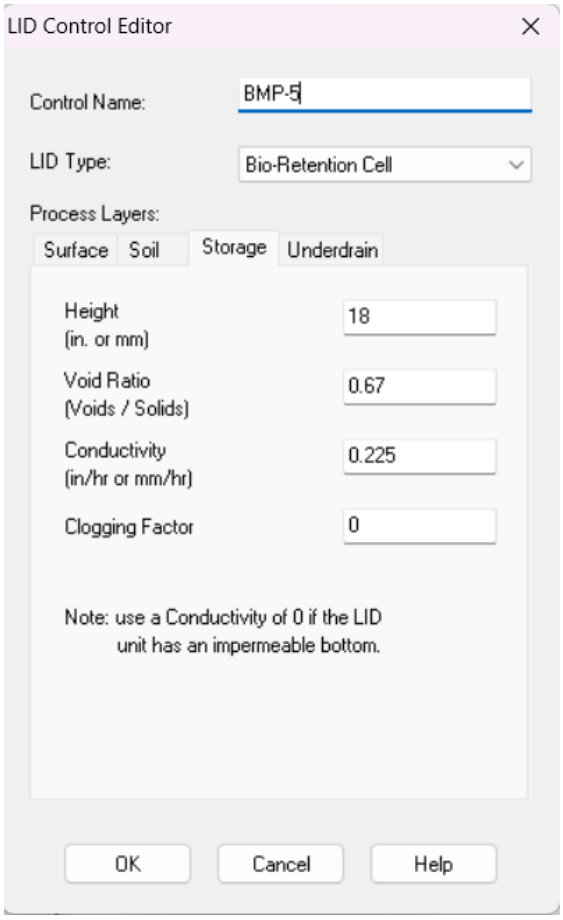
Control Name:
BMP-5
LID Type:
Bio-Retention Cell
Process Layers:
Surface
Soil
Storage
Underdrain
Thickness
(in. or mm)
24
Porosity
(volume fraction)
0.4
Field Capacity
(volume fraction)
0.2
Wilting Point
(volume fraction)
0.1
Conductivity
(in/hr or mm/hr)
5
Conductivity Slope
5
Suction Head
(in. or mm)
1.5
OK
Cancel
Help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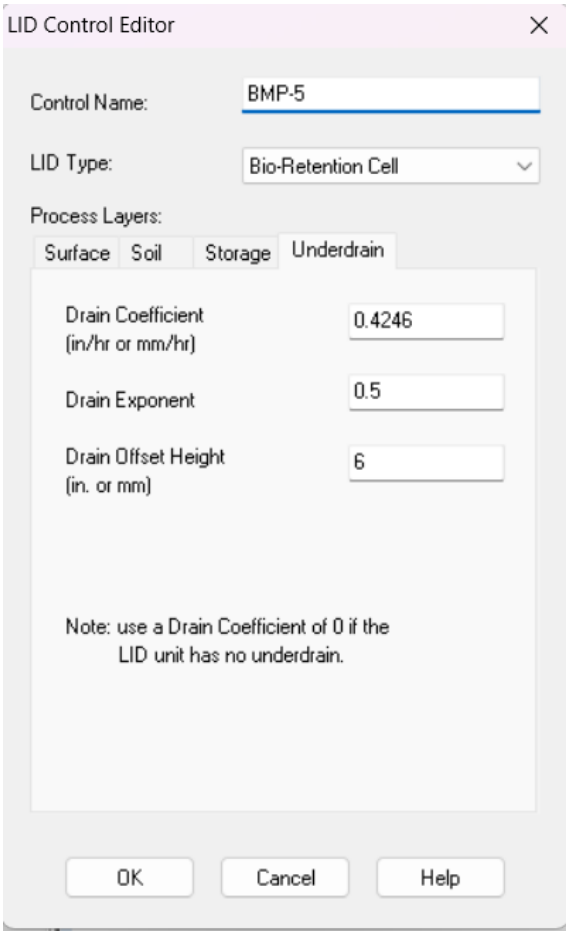
BMP-5
LID Type:
Bio-Retention Cell
Process Layers:
Surface
Soil
Storage
Underdrain
Height
(in. or mm)
18
Void Ratio
(Voids / Solids)
0.67
Conductivity
(in/hr or mm/hr)
0.225
Clogging Factor
0
Note: use a Conductivity of 0 if the LID
unit has an impermeable bottom.
OK
Cancel
Help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Control Name:
BMP-5
LID Type:
Bio-Retention Cell
Process Layers:
Surface
Soil
Storage
Underdrain
Drain Coefficient
(in/hr or mm/hr)
0.4246
Drain Exponent
0.5
Drain Offset Height
(in. or mm)
6
Note: use a Drain Coefficient of 0 if the
LID unit has no underdrain.
OK
Cancel
Help

LID Control Editor: Explanation of Significant Variables

Storage Depth:

The storage depth variable within the SWMM model is representative of the storage volume provided beneath the surface riser outlet and the surface of the bio filtration facility.

In those cases where the surface storage has a variable area that is also different to the area of the gravel and amended soil, the SWMM model needs to be calibrated as the LID module will use the storage depth multiplied by the BMP area as the amount of volume stored at the surface.

Let A_{BMP} be the area of the BMP (area of amended soil and area of gravel). The proper value of the storage depth S_D to be included in the LID module can be calculated by using geometric properties of the surface volume. Let A_0 be the surface area at the bottom of the surface pond, and let A_i be the surface area at the elevation of the invert of the first row of orifices (or at the invert of the riser if not surface orifices are included). Finally, let h_i be the difference in elevation between A_0 and A_i. By volumetric definition:

$$A_{BMP} \cdot S_D = \frac{(A_0 + A_i)}{2} h_i \qquad (1)$$

Equation (1) allows the determination of S_D to be included as Storage Depth in the LID module.

Porosity: A porosity value of 0.4 has been selected for the model. The amended soil is to be highly sandy in content in order to have a saturated hydraulic conductivity of approximately 5 in/hr.

REC considers such a value to be slightly high; however, in order to comply with the HMP Permit, the value recommended by the Copermittees for the porosity of amended soil is 0.4, per Appendix A of the Final Hydromodification Management Plan by Brown & Caldwell, dated March 2011. Such porosity is equal to the porosity of the gravel per the same document.

Void Ratio: The ratio of the void volume divided by the soil volume is directly related to porosity as n/(1-n). As the underdrain layer is composed of gravel, a porosity value of 0.4 has been selected (also per Appendix A of the Final HMP document), which results in a void ratio of 0.4/(1-0.4) = 0.67 for the gravel detention layer.

Conductivity: Per the site specific geotechnical investigation for the project site, infiltration is allowable and the basins will be unlined. Please refer to Attachment 8.

Clogging factor: A clogging factor was not used (0 indicates that there is no clogging assumed within the model). The reason for this is related to the fairness of a comparison with the SDHM model and the HMP sizing tables: a clogging factor was not considered, and instead, a conservative value of infiltration was recommended.

Drain (Flow) coefficient: The flow coefficient C in the SWMM Model is the coefficient needed to transform the orifice equation into a general power law equation of the form:

$$q = C(H - H_D)^n \quad (2)$$

where q is the peak flow in in/hr, n is the exponent (typically 0.5 for orifice equation), H_D is the elevation of the centroid of the orifice in inches (assumed equal to the invert of the orifice for small orifices and in our design equal to 0) and H is the depth of the water in inches.

The general orifice equation can be expressed as:

$$Q = \frac{\pi}{4} c_g \frac{D^2}{144} \sqrt{2g \frac{(H - H_D)}{12}} \quad (3)$$

where Q is the peak flow in cfs, D is the diameter in inches, c_g is the typical discharge coefficient for orifices (0.61-0.63 for thin walls and around 0.75-0.8 for thick walls), g is the acceleration of gravity in ft/s^2, and H and H_D are defined above and are also used in inches in Equation (3).

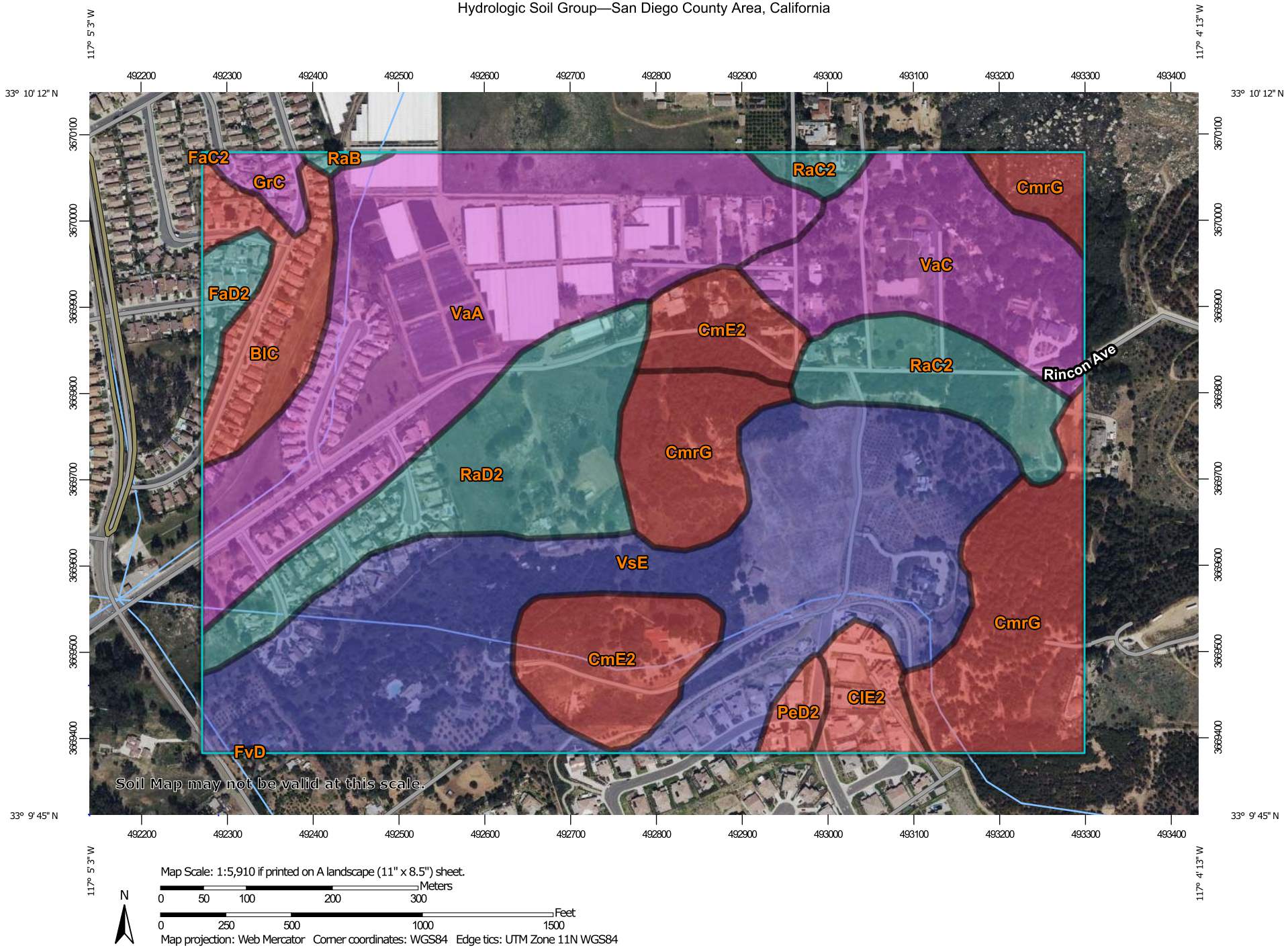
It is clear that:

$$q \left(\frac{in}{hr}\right) X \frac{A_{BMP}}{12 \, X \, 3600} = Q \; (cfs) \quad (4)$$

Cut-Off Flow: Q (cfs) and q (in/hr) are also the cutoff flow. For numerical reasons to insure the LID is full, the model uses cut-off = 1.01 Q.

ATTACHMENT 8

Geotechnical Documentation and/or NRCS Soil Types


117° 5' 3" W
117° 4' 13" W
33° 10' 12" N
33° 9' 45" N
492200
492300
492400
492500
492600
492700
492800
492900
493000
493100
493200
493300
493400
3670100
3670000
3669900
3669800
3669700
3669600
3669500
3669400
FaC2
GrC
RaB
RaC2
CmrG
VaC
FaD2
VaA
CmE2
BIC
RaC2
Rincon Ave
CmrG
RaD2
VsE
CmrG
CmE2
ClE2
PeD2
FvD
Soil Map may not be valid at this scale.
Map Scale: 1:5,910 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 50 100 200 300
Feet
0 250 500 1000 1500
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 Diego County Area, California
Survey Area Data: Version 18, Sep 14, 2022

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

Date(s) aerial images were photographed: Mar 14, 2022—Mar 17, 2022

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
BIC	Bonsall sandy loam, 2 to 9 percent slopes	D	7.8	4.4%
CIE2	Cieneba coarse sandy loam, 15 to 30 percent slopes, eroded	D	3.4	1.9%
CmE2	Cieneba rocky coarse sandy loam, 9 to 30 percent slopes, eroded	D	12.6	7.1%
CmrG	Cieneba-Rock outcrop complex, 30 to 75 percent slopes, very stony	D	22.4	12.6%
FaC2	Fallbrook sandy loam, 5 to 9 percent slopes, eroded	C	0.0	0.0%
FaD2	Fallbrook sandy loam, 9 to 15 percent slopes, eroded	C	2.1	1.2%
FvD	Fallbrook-Vista sandy loams, 9 to 15 percent slopes	C	0.0	0.0%
GrC	Greenfield sandy loam, 5 to 9 percent slopes	A	1.5	0.8%
PeD2	Placentia sandy loam, 9 to 15 percent slopes, eroded	D	1.5	0.8%
RaB	Ramona sandy loam, 2 to 5 percent slopes	C	0.4	0.2%
RaC2	Ramona sandy loam, 5 to 9 percent slopes, eroded	C	8.8	5.0%
RaD2	Ramona sandy loam, 9 to 15 percent slopes, eroded	C	16.6	9.3%
VaA	Visalia sandy loam, 0 to 2 percent slopes	A	38.2	21.5%
VaC	Visalia sandy loam, 5 to 9 percent slopes	A	15.7	8.8%
VsE	Vista coarse sandy loam, 15 to 30 percent slopes, MLRA 20	B	46.7	26.3%
Totals for Area of Interest			**177.8**	**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

ATTACHMENT 9

Summary Files from the SWMM Model

PRE_DEV

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.0 (Build 5.0.022)

****
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
****

****
Analysis Options
****
Flow Units ..... CFS
Process Models:
  Rainfall/Runoff ..... YES
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... NO
  Water Quality ..... NO
Infiltration Method ..... GREEN_AMPT
Starting Date JUL-26-1951 00:00:00
Ending Date JUL-25-2008 23:00:00
Antecedent Dry Days 0.0
Report Time Step 01:00:00
Wet Time Step 00:05:00
Dry Time Step 01:00:00

********** Runoff Quantity Continuity **********	Volume acre-feet	Depth inches
Total Precipitation	1447.227	871.080
Evaporation Loss	21.468	12.921
Infiltration Loss	1255.102	755.441
Surface Runoff	175.373	105.556
Final Surface Storage	0.000	0.000
Continuity Error (%)	-0.326	

********** Flow Routing Continuity **********	Volume acre-feet	Volume 10^6 gal
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	175.373	57.148
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	175.373	57.148
Internal Outflow	0.000	0.000
Storage Losses	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff
DMA-1-D-2	871.08	0.00	29.38	601.82	245.95	1.80	0.37	0.282
DMA-1-C-1	871.08	250.91	10.35	798.07	316.24	34.31	13.04	0.282
DMA-1-A	871.08	0.00	1.24	850.20	19.86	0.27	0.54	0.023
DMA-1-B-2	871.08	86.60	4.45	864.01	90.27	1.87	1.29	0.094
DMA-1-D-1	871.08	17.66	29.47	602.67	262.56	25.35	6.53	0.295
DMA-1-C-2	871.08	63.71	8.35	762.60	165.74	22.56	12.17	0.177

DMA-1-B-3	871.08	104.90	4.64	870.65	101.83	8.67	5.62	0.104
DMA-1-D-3	871.08	0.00	29.35	601.55	246.30	8.93	1.83	0.283
DMA-1-B-1	871.08	0.00	2.84	823.16	45.75	1.71	1.66	0.053

Analysis begun on: Tue Mar 07 11:18:45 2023
Analysis ended on: Tue Mar 07 11:20:11 2023
Total elapsed time: 00:01:26

POST_DEV

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.0 (Build 5.0.022)
  --------------------------------------------------------------

  ***********************************************************
  NOTE: The summary statistics displayed in this report are
  based on results found at every computational time step,
  not just on results from each reporting time step.
  ***********************************************************

  ****************
  Analysis Options
  ****************
  Flow Units ............... CFS
  Process Models:
    Rainfall/Runoff ........ YES
    Snowmelt ............... NO
    Groundwater ............ NO
    Flow Routing ........... YES
    Ponding Allowed ........ NO
    Water Quality .......... NO
  Infiltration Method ...... GREEN_AMPT
  Flow Routing Method ...... KINWAVE
  Starting Date ............ JUL-26-1951 00:00:00
  Ending Date .............. JUL-25-2008 23:00:00
  Antecedent Dry Days ...... 0.0
  Report Time Step ......... 01:00:00
  Wet Time Step ............ 00:05:00
  Dry Time Step ............ 01:00:00
  Routing Time Step ........ 30.00 sec


  *************************        Volume         Depth
  Runoff Quantity Continuity     acre-feet        inches
  *************************     ---------       -------
  Total Precipitation ......      1447.050       871.080
  Evaporation Loss .........        61.574        37.066
  Infiltration Loss ........      1093.070       657.995
  Surface Runoff ...........       294.731       177.419
  Final Surface Storage ....         0.000         0.000
  Continuity Error (%) .....        -0.161


  *************************        Volume        Volume
  Flow Routing Continuity        acre-feet      10^6 gal
  *************************     ---------      ---------
  Dry Weather Inflow .......         0.000         0.000
  Wet Weather Inflow .......       294.731        96.042
  Groundwater Inflow .......         0.000         0.000
  RDII Inflow ..............         0.000         0.000
  External Inflow ..........         0.000         0.000
  External Outflow .........       294.637        96.012
  Internal Outflow .........         0.000         0.000
  Storage Losses ...........         0.087         0.028
  Initial Stored Volume ....         0.000         0.000
  Final Stored Volume ......         0.000         0.000
  Continuity Error (%) .....         0.002


  *******************************
  Highest Flow Instability Indexes
  *******************************
  All links are stable.


  ************************
  Routing Time Step Summary
  ************************
  Minimum Time Step           :    30.00 sec
  Average Time Step           :    30.00 sec
```

Maximum Time Step : 30.00 sec
Percent in Steady State : 0.00
Average Iterations per Step : 1.00

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff
DMA-BP-D-3	871.08	0.00	26.90	599.83	245.89	1.79	0.37	0.282
DMA-BP-B-2	871.08	30.38	3.61	838.85	59.67	3.51	2.99	0.066
DMA-BP-C-1	871.08	699.77	10.88	824.78	737.49	21.23	7.80	0.469
DMA-BP-C-3	871.08	3853.54	12.28	860.59	3863.54	5.67	1.23	0.818
DMA-BP-C-4	871.08	1768.06	11.44	842.66	1790.44	5.74	1.39	0.678
DMA-DM-A	871.08	0.00	101.03	106.87	665.49	0.56	0.04	0.764
BMP-1	871.08	15886.65	1108.55	2158.27	13496.23	12.35	1.97	0.805
DMA-1-C-1	871.08	273.89	64.16	424.94	658.52	14.54	1.92	0.575
DMA-1-D	871.08	0.00	38.00	517.05	318.24	1.32	0.21	0.365
DMA-1-C-2	871.08	0.00	54.18	430.26	388.36	4.72	0.61	0.446
BMP-3	871.08	17440.68	1129.06	2217.66	14973.05	5.02	0.93	0.818
DMA-3-C-2	871.08	0.00	22.25	651.95	198.26	1.49	0.36	0.228
DMA-3-C-3	871.08	0.00	24.97	632.10	215.50	1.57	0.36	0.247
BMP-2	871.08	20682.59	1170.08	2527.14	17877.51	7.24	0.77	0.829
DMA-2-C	871.08	0.00	81.75	224.24	568.29	8.38	0.75	0.652
DMA-BP-C-2	871.08	470.33	7.90	765.74	569.52	10.31	6.31	0.425
DMA-BP-B-1	871.08	109.91	4.44	872.46	104.96	8.52	5.44	0.107
DMA-BP-D-2	871.08	0.00	26.87	599.55	246.26	8.92	1.83	0.283
DMA-3-C-1	871.08	344.05	114.58	0.00	1104.35	2.79	0.19	0.909
BMP-4	871.08	14329.60	1119.18	2186.60	11901.20	8.92	1.18	0.783
DMA-4-C-1	871.08	40.40	84.21	215.85	614.23	6.82	0.64	0.674
DMA-4-D	871.08	0.00	37.93	517.60	317.73	0.45	0.07	0.365
BMP-5	871.08	17787.07	1129.14	4888.83	12578.73	24.59	5.71	0.674
DMA-5-C	871.08	1.34	42.33	511.45	320.38	32.85	5.15	0.367
DMA-5-B	871.08	0.00	5.07	798.38	68.39	0.14	0.09	0.079
DMA-5-A	871.08	0.00	24.67	664.74	182.78	1.93	0.48	0.210
DMA-BP-D-1	871.08	0.00	27.00	600.76	244.73	16.63	3.43	0.281
DMA-BP-D-4	871.08	0.00	26.97	600.46	245.10	5.65	1.16	0.281
DMA-3-B	871.08	0.00	113.10	0.00	761.83	0.87	0.06	0.875
DMA-4-C-2	871.08	0.00	53.86	432.51	386.41	3.91	0.50	0.444
CMA-BP-C-5	871.08	0.00	9.79	747.01	115.02	0.07	0.03	0.132

****
LID Performance Summary
****

Subcatchment	LID Control	Total Inflow in	Evap Loss in	Infil Loss in	Surface Outflow in	Drain Outflow in	Init. Storage in	Final Storage in	Pcnt. Error
BMP-1	BMP-1	16757.73	1108.57	2158.31	3075.84	10420.63	0.00	0.00	-0.03
BMP-3	BMP-3	18311.76	1129.03	2217.60	3833.38	11139.28	0.00	0.00	-0.04
BMP-2	BMP-2	21553.67	1169.97	2526.91	3629.13	14246.70	0.00	0.00	-0.09
BMP-4	BMP-4	15200.68	1119.06	2186.36	1633.16	10266.70	0.00	0.00	-0.03
BMP-5	BMP-5	18658.15	1128.94	4887.95	4061.85	8514.62	0.00	0.00	0.35

****
Node Depth Summary
****

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min

POC-1	OUTFALL	0.00	0.00	0.00	0	00:00
SURF-5	STORAGE	0.01	1.87	1.87	9671	21:00

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal
POC-1	OUTFALL	20.40	26.12	9671 21:00	71.443	96.005
SURF-5	STORAGE	5.71	5.71	9671 21:00	24.592	24.592

****
Node Surcharge Summary
****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Feet	Min. Depth Below Rim Feet
SURF-5	STORAGE	499679.01	1.875	0.625

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 ft3	Avg Pcnt Full	E&I Pcnt Loss	Maximum Volume 1000 ft3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
SURF-5	0.001	0	0	4.521	59	9671 21:00	5.71

****
Outfall Loading Summary
****

Outfall Node	Flow Freq. Pcnt.	Avg. Flow CFS	Max. Flow CFS	Total Volume 10^6 gal
POC-1	3.21	0.22	26.12	96.005
System	3.21	0.22	26.12	96.005

****
Link Flow Summary
****

	Maximum |Flow|	Time of Max Occurrence	Maximum |Veloc|	Max/ Full	Max/ Full

POST_DEV

Link	Type	CFS	days	hr:min	ft/sec	Flow	Depth
OUT-5	DUMMY	5.71	9671	21:00			

****
Conduit Surcharge Summary
****

No conduits were surcharged.

Analysis begun on: Tue Mar 07 14:41:12 2023
Analysis ended on: Tue Mar 07 14:42:57 2023
Total elapsed time: 00:01:45

City of Escondido
PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

ISKCON KRISHNA TEMPLE & RESIDENTIAL

[INSERT RECORD ID (PERMIT) NUMBERS]

1365 Rincon Avenue, Escondido, CA 92026

224-100-84,85

ENGINEER OF WORK:

William O'gorman, PE, R.C.E 88286

PREPARED FOR:

Iskcon of Escondido, Inc.
10707 El Caballo Avenue
San Diego, CA, 52127
(858) 344-0892

PDP SWQMP PREPARED BY:

REC Consultants
2970 Fifth Avenue
Suite 340, San
Diego, CA 92013
(619) 232-9200

DATE OF SWQMP:
March 08, 2023

PLANS PREPARED BY:
REC Consultants
2970 Fifth Avenue, Suite 340
San Diego, CA 92013
(619) 232-9200

SWQMP APPROVED BY:

APPROVAL DATE:

ESCONDIDO
City of Choice

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TABLE OF CONTENTS

ATTACHMENTS

Attachment 1: Backup for PDP Pollutant Control BMPs
- Attachment 1a: Storm Water Pollutant Control Worksheet Calculations (Worksheet B.2-1 DCV, Form I-4)
- Attachment 1b: Form I-5, Categorization of Infiltration Feasibility Condition
- Attachment 1c: Form I-6, Factor of Safety and Design Infiltration Rate Worksheet
- Attachment 1d: Drainage Management Area (DMA) Exhibit
- Attachment 1e: Individual Structural BMP DMA Mapbook

Attachment 2: Backup for PDP Hydromodification Control Measures
- Attachment 2a: Flow Control Facility Design
- Attachment 2b: Hydromodification Management Exhibit
- Attachment 2c: Management of Critical Coarse Sediment Yield Areas
- Attachment 2d: Geomorphic Assessment of Receiving Channels (optional)
- Attachment 2e: Vector Control Plan (if applicable)

Attachment 3: Structural BMP Maintenance Plan
- Attachment 3a: Structural BMP Maintenance Thresholds and Actions
- Attachment 3b: Draft Maintenance Agreements / Notifications (when applicable)

Attachment 4: City of Escondido PDP Structural BMP Verification

Attachment 5: Copy of Plan Sheets Showing Permanent Storm Water BMPs

ACRONYMS

ACP	Alternative Compliance Project
APN	Assessor's Parcel Number
BMP	Best Management Practice
DMA	Drainage Management Area
EOW	Engineer of Work
HMP	Hydromodification Management Plan
HSG	Hydrologic Soil Group
MS4	Municipal Separate Storm Sewer System
N/A	Not Applicable
PDP	Priority Development Project
PE	Professional Engineer
SC	Source Control
SD	Site Design
SDRWQCB	San Diego Regional Water Quality Control Board
SIC	Standard Industrial Classification
SWDM	Storm Water Design Manual
SWQMP	Storm Water Quality Management Plan
WMAA	Watershed Management Area Analysis
WQIP	Water Quality Improvement Plan

PDP SWQMP PREPARER'S CERTIFICATION PAGE

Project Name: Iskcon Krishna Temple & Residential
Permit Application Number: [Insert Permit Application Number]

PREPARER'S CERTIFICATION

I hereby declare that I am the Engineer in Responsible Charge of design of storm water best management practices (BMPs) for this project, and that I have exercised responsible charge over the design of the BMPs as defined in Section 6703 of the Business and Professions Code, and that the design is consistent with the PDP requirements of the City of Escondido Storm Water Design Manual, which is a design manual for compliance with the City of Escondido Municipal Code (Chapter 22, Article 2) and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2013-0001 as amended by R9-2015-0001 and R9-2015-0100) requirements for storm water management.

I have read and understand that the City of Escondido has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the Storm Water Design Manual. I certify that this PDP SWQMP has been completed to the best of my ability and accurately reflects the project being proposed and the applicable BMPs proposed to minimize the potentially negative impacts of this project's land development activities on water quality. I understand and acknowledge that the plan check review of this PDP SWQMP by City staff is confined to a review and does not relieve me, as the Engineer in Responsible Charge of design of storm water BMPs for this project, of my responsibilities for project design.

_____
Engineer of Work's Signature, PE Number & Expiration Date

William O'gorman, PE, R.C.E 88286
Print Name

REC Consultants
Company

_____
Date

Engineer's Seal:

SUBMITTAL RECORD

Use this Table to keep a record of submittals of this PDP SWQMP. Each time the PDP SWQMP is re-submitted, provide the date and status of the project. In column 4 summarize the changes that have been made or indicate if response to plancheck comments is included. When applicable, insert response to plancheck comments behind this page.

Preliminary Design / Planning / CEQA

Submittal Number	Date	Summary of Changes
1	3/08/2023	Initial Submittal
2		
3		
4		

Final Design

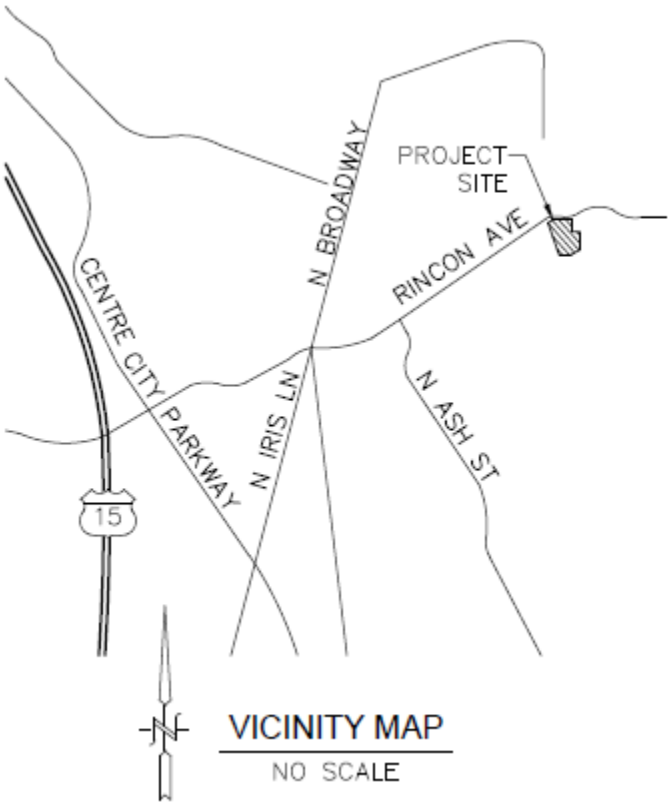
Submittal Number	Date	Summary of Changes
1		Initial Submittal
2		
3		
4		

Plan Changes

Submittal Number	Date	Summary of Changes
1		Initial Submittal
2		
3		
4		

PROJECT VICINITY **MAP**

Project Name: Iskcon Krishna Temple & Residential
Record ID: TBD



Step 1: Project type determination (Standard or Priority Development Project) (Form I-2a)

Project Summary Information	
Project Name	Iskcon Krishna Temple & Residential
Project Address	1365 Rincon Avenue, Escondido, CA 92026
Assessor's Parcel Number(s)	224-100-84,85
Permit Application Number	
Project Watershed (Hydrologic Unit)	Select One: ☒ Carlsbad 904 San Dieguito 905
Parcel Area (total area of Assessor's Parcel(s) associated with the project)	23.98 Acres (1,044,718 Square Feet)
Area to be disturbed by the project (Project Area)	7.619 Acres (331,904 Square Feet)
Project Proposed Impervious Area (subset of Project Area)	2.982 Acres (129,888 Square Feet)
Project Proposed Pervious Area (subset of Project Area)	4.638 Acres (202,016 Square Feet)
Note: Proposed Impervious Area + Proposed Pervious Area = Area to be Disturbed by the Project. This may be less than the Parcel Area.	
Confirmation of Priority Development Project Determination	
The project is (select one): ☐ New Development ☒ Redevelopment[1]	
The total proposed newly created or replaced impervious area is: 129,888 ft^2	

[1] Redevelopment is defined as: The creation and/or replacement of impervious surface on an already developed site. Examples include the expansion of a building footprint, road widening, the addition to or replacement of a structure, and creation or addition of impervious surfaces. Replacement of impervious surfaces includes any activity that is not part of a routine maintenance activity where impervious material(s) are removed, exposing underlying soil during construction. Redevelopment does not include routine maintenance activities, such as trenching and resurfacing associated with utility work; pavement grinding; resurfacing existing roadways; new sidewalks construction; pedestrian ramps; or bike lanes on existing roads; and routine replacement of damaged pavement, such as pothole repair.

Solar energy farms that are not also one of the categories listed in Step 2b of Table 1-1. City staff must also determine that appropriate BMPs are provided to mitigate for downstream impacts due to significant changes to the existing hydrology

Is the project in any of the following categories, (a) through (f)?			
Yes ☒	No ☐	(a)	New development projects that create 10,000 square feet or more of impervious surfaces (collectively over the entire project site). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.
Yes ☒	No ☐	(b)	Redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site on an existing site of 10,000 square feet or more of impervious surfaces). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.
Yes ☒	No ☐	(c)	New and redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site), and support one or more of the following uses: (i) Restaurants. This category is defined as a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (Standard Industrial Classification (SIC) code 5812). (ii) Hillside development projects. This category includes development on any natural slope that is twenty-five percent or greater. (iii) Parking lots. This category is defined as a land area or facility for the temporary parking or storage of motor vehicles used personally, for business, or for commerce. (iv) Streets, roads, highways, freeways, and driveways. This category is defined as any paved impervious surface used for the transportation of automobiles, trucks, motorcycles, and other vehicles.
Yes ☐	No ☒	(d)	New or redevelopment projects that create and/or replace 2,500 square feet or more of impervious surface (collectively over the entire project site), and discharging directly to an Environmentally Sensitive Area (ESA). "Discharging directly to" includes flow that is conveyed overland a distance of 200 feet or less from the project to the ESA, or conveyed in a pipe or open channel any distance as an isolated flow from the project to the ESA (i.e. not commingled with flows from adjacent lands). *Note: ESAs are areas that include but are not limited to all Clean Water Act Section 303(d) impaired water bodies; areas designated as Areas of Special Biological Significance by the State Water Board and San Diego Water Board; State Water Quality Protected Areas; water bodies designated with the RARE beneficial use by the State Water Board and San Diego Water Board; and any other equivalent environmentally sensitive areas which have been identified by the Copermittees.*
Yes ☐	No ☒	(e)	New development projects, or redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface, that support one or more of the following uses: (i) Automotive repair shops. This category is defined as a facility that is categorized in any one of the following SIC codes: 5013, 5014, 5541, 7532-7534, or 7536-7539. (ii) Retail gasoline outlets (RGOs). This category includes RGOs that meet the following criteria: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day.

Yes ☐	No ☒	(e)	New development projects, or redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface, that support one or more of the following uses: (iii) Automotive repair shops. This category is defined as a facility that is categorized in any one of the following SIC codes: 5013, 5014, 5541, 7532-7534, or 7536-7539. (iv) Retail gasoline outlets (RGOs). This category includes RGOs that meet the following criteria: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day.
Yes ☒	No ☐	(f)	New or redevelopment projects that result in the disturbance of one or more acres of land and are expected to generate pollutants post construction. *Note: See Storm Water Design Manual Section 1.4.2 for additional guidance.*

Does the project meet the definition of one or more of the Priority Development Project categories (a) through (f) listed above?

☐ No – the project is not a Priority Development Project (Standard Project).

☒ Yes – the project is a Priority Development Project (PDP).

Further guidance may be found in Chapter 1 and Table 1-2 of the Storm Water Design Manual.

The following is for **redevelopment PDPs only**:

The area of existing (pre-project) impervious area at the project site is: 14,177 ft^2 (A)
The total proposed newly created or replaced impervious area is 129,888 ft^2 (B)
Percent impervious surface created or replaced (B/A)*100: 916 %
The percent impervious surface created or replaced is (select one based on the above calculation):

☐ less than or equal to fifty percent (50%) – **only newly created or replaced impervious areas are considered a PDP and subject to stormwater requirements**

OR

☒ greater than fifty percent (50%) – **the entire project site is considered a PDP and subject to stormwater requirements**

Step 1.1: Storm Water Quality Management Plan requirements

Step	Answer	Progression
Is the project a Standard Project, Priority Development Project (PDP), or exception to PDP definitions? To answer this item, complete Step 1 Project Type Determination Checklist on Pages 1 and 2, and see PDP exemption information below. For further guidance, see Section 1.4 of the Storm Water Design Manual *in its entirety*.	☐ Standard Project	Standard Project requirements apply, including Standard Project SWQMP. **Complete Form I-1.**
	☒ PDP	Standard and PDP requirements apply, including PDP SWQMP. **SWQMP Required.**
	☐ PDP with ACP	If participating in offsite alternative compliance, **complete Step 6.3 and an ACP SWQMP.**
	☐ PDP Exemption	**Go to Step 1.2 below.**

Step 1.2: Exemption to PDP definitions

Is the project exempt from PDP definitions based on either of the following:	If so:
☐ Projects that are only new or retrofit paved sidewalks, bicycle lanes, or trails that meet the following criteria: (i) Designed and constructed to direct storm water runoff to adjacent vegetated areas, or other non-erodible permeable areas; OR (ii) Designed and constructed to be hydraulically disconnected from paved streets or roads [i.e., runoff from the new improvement does not drain directly onto paved streets or roads]; OR (iii) Designed and constructed with permeable pavements or surfaces in accordance with County of San Diego Green Streets Infrastructure;	Standard Project requirements apply, AND any additional requirements specific to the type of project. City concurrence with the exemption is required. *Provide discussion and list any additional requirements below in this form.*
☐ Projects that are only retrofitting or redeveloping existing paved alleys, streets or roads that are designed and constructed in accordance with the City of Escondido Guidance on Green Infrastructure.	**PDP Exempt.**
Discussion / justification, and additional requirements for exceptions to PDP definitions, if applicable:	

Step 2: Construction Storm Water BMPs

Construction storm water BMPs shall be shown on the Grading Plan and (if applicable) included in the Storm Water Pollution Prevention Plan (SWPPP).

Step 3: City of Escondido PDP SWQMP Site Information Checklist (Form I-2a)

Step 3.1: Description of Existing Site Condition

Current Status of the Site (select all that apply):
☒Existing development
☒Previously graded but not built out
☐Demolition completed without new construction
☒Agricultural or other non-impervious use
☒Vacant, undeveloped/natural

Description / Additional Information:
Existing project site has an existing building, stable, driveway, a graded pad (not built out), and the rest of the area is undeveloped/natural.

Existing Land Cover Includes (select all that apply and provide each area on site):
☒Vegetative Cover 23.658 Acres (1,030,541 Square Feet)
☐Non-Vegetated Pervious Areas _____ Acres (_____ Square Feet)
☒Impervious Areas 0.325 Acres (14,177 Square Feet)

Description / Additional Information:
Most of the project site consists of vegetative cover. The impervious area consists of an existing building, stable, and driveway.

Underlying Soil belongs to Hydrologic Soil Group (select all that apply):
☒NRCS Type A
☒NRCS Type B
☒NRCS Type C
☒NRCS Type D

Approximate Depth to Groundwater (GW) (or N/A for no infiltration BMPs):
☐GW Depth < 5 feet
☐5 feet < GW Depth < 10 feet
☐10 feet < GW Depth < 20 feet
☒GW Depth > 20 feet

Existing Natural Hydrologic Features (select all that apply):
☒Watercourses
☐Seeps
☐Springs
☐Wetlands
☐None
☐Other

Description / Additional Information:

Step 3.2: Description of Existing Site Drainage Patterns

How is storm water runoff conveyed from the site? At a minimum, this description should answer:

(1) Whether existing drainage conveyance is natural or urban;
(2) Is runoff from offsite conveyed through the site? if yes, quantify all offsite drainage areas, design flows, and locations where offsite flows enter the project site, and summarize how such flows are conveyed through the site;
(3) Provide details regarding existing project site drainage conveyance network, including any existing storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, natural or constructed channels; and
(4) Identify all discharge locations from the existing project site along with a summary of conveyance system size and capacity for each of the discharge locations. Provide summary of the pre-project drainage areas and design flows to each of the existing runoff discharge locations.

Describe existing site drainage patterns:

Existing drainage conveyance is natural, with no constructed storm water conveyance systems. Runoff on site sheet flows from the south-east end to the north-west end. Runoff from off site is conveyed through the site by sheet flowing from the south-east end to the north-west end. There is one discharge location, POC-1, which is a cleanout located at the north-west corner of the property.

Step 3.3: Description of Proposed Site Development

Project Description / Proposed Land Use and/or Activities:

Proposed re-development including the construction of a religious temple, hall and living area, patio, detached restrooms, parking lot, and driveway. The intended use of the new development will be for religious purposes and practices for area under APN: 224-100-85. For the proposed residential area under APN: 224-100-84, 10 lots are proposed for future residential construction.

List/describe proposed impervious features of the project (e.g., buildings, roadways, parking lots, courtyards, athletic courts, other impervious features):

Proposed impervious features include a temple, hall, patio area, detached restrooms, parking lot, driveway, and future residential impervious areas with about 25% of each lot is expected to be impervious.

List/describe proposed pervious features of the project (e.g., landscape areas):

Proposed pervious features include landscaped areas and vegetated sloped areas.

Does the project include grading and changes to site topography?

☒Yes

☐No

Description / Additional Information:

Site grading will be performed for the building pads, parking lot, drive isles, and driveway.

Insert acreage or square feet for the different land cover types in the table below:

Change in Land Cover Type Summary			
Land Cover Type	Existing (acres or ft^2)	Proposed (acres or ft^2)	Percent Change
Vegetation	23.658 ac	21.032 ac	- 11.10 %
Pervious (non-vegetated)	0 ac	0 ac	
Impervious	0.325 ac	2.951 ac	+ 808 %

Step 3.4: Description of Proposed Site Drainage Patterns

Does the project include changes to site drainage (e.g., installation of new storm water conveyance systems)?

☒Yes

☐No

If yes, provide details regarding the proposed project site drainage conveyance network, including storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, natural or constructed channels, and the method for conveying offsite flows through or around the proposed project site. Identify all discharge locations from the proposed project site along with a summary of the conveyance system size and capacity for each of the discharge locations. Provide a summary of pre- and post-project drainage areas and design flows to each of the runoff discharge locations. Reference the drainage study for detailed calculations.

Describe proposed site drainage patterns:

Proposed storm drain conveyance system along with concrete brow ditches and vegetated swales will be proposed to convey storm water flow. Storm water will flow through the conveyance system and into 5 proposed bio-filtration basins for treatment and hydromodification flow control prior to confluencing with bypass flows at POC-1.

Step 3.5: Potential Pollutant Source Areas

Identify whether any of the following features, activities, and/or pollutant source areas will be present (select all that apply).

☒On-site storm drain inlets
☐Interior floor drains and elevator shaft sump pumps
☐Interior parking garages
☒Need for future indoor & structural pest control
☒Landscape/Outdoor Pesticide Use
☐Pools, spas, ponds, decorative fountains, and other water features
☐Food service
☒Refuse areas
☐Industrial processes
☐Outdoor storage of equipment or materials
☐Vehicle and Equipment Cleaning
☐Vehicle/Equipment Repair and Maintenance
☐Fuel Dispensing Areas
☐Loading Docks
☒Fire Sprinkler Test Water
☒Miscellaneous Drain or Wash Water
☒Plazas, sidewalks, and parking lots
☐Other (provide description)

Description / Additional Information:

Step 3.6: Identification and Narrative of Receiving Water and Pollutants of Concern

Describe flow path of storm water from the project site discharge location(s), through urban storm conveyance systems as applicable, to receiving creeks, rivers, and lagoons as applicable, and ultimate discharge to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable):

Water will be collected and conveyed through the proposed storm drain system and discharged to Rincon Street. It then flows to a natural drainage course to the Escondido Creek, then released to the Pacific Ocean.

List any 303(d) impaired water bodies[2] within the path of storm water from the project site to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable), identify the pollutant(s)/stressor(s) causing impairment, and identify any TMDLs and/or Highest Priority Pollutants from the WQIP for the impaired water bodies:

303(d) Impaired Water Body	Pollutant(s)/Stressor(s)	TMDLs / WQIP Highest Priority Pollutant
Escondido Creek	Benthic Community Effects, Bifenthrin, indicator Bacteria, Toxicity	-
Escondido Creek	DDT (Dichlorodiphenyltrichloroethane), Malathion, Manganese	-
Escondido Creek	Nitrogen, Phosphate, Selenium, Sulfates, Total Dissolved Solids.	-
Reidy Canyon Creek	Indicator Bacteria, Phosphorus	-

Identification of Project Site Pollutants*

*Identification of project site pollutants below is only required if flow-thru treatment BMPs are implemented onsite in lieu of retention or biofiltration BMPs. Note the project must also participate in an alternative compliance program (unless prior lawful approval to meet earlier PDP requirements is demonstrated).

Identify pollutants expected from the project site based on all proposed use(s) of the site (see Storm Water Design Manual Appendix B.6):

Pollutant	Not Applicable to the Project Site	Anticipated from the Project Site	Also a Receiving Water Pollutant of Concern
Sediment			
Nutrients			
Heavy Metals			
Organic Compounds			
Trash & Debris			
Oxygen Demanding Substances			
Oil & Grease			
Bacteria & Viruses			
Pesticides			

[2] The current list of Section 303(d) impaired water bodies can be found at

http://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/#impaired

Step 3.7: Hydromodification Management Requirements

Do hydromodification management requirements apply (see Section 1.6 of the Storm Water Design Manual)?

☒Yes, hydromodification management requirements for flow control and preservation of critical coarse sediment yield areas are applicable.

☐No, the project will discharge runoff directly to existing underground storm drains discharging directly to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.

☐No, the project will discharge runoff directly to conveyance channels whose bed and bank are concrete-lined all the way from the point of discharge to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.

☐No, the project will discharge runoff directly to an area identified as appropriate for an exemption by the WMAA[3] for the watershed in which the project resides.

Description / Additional Information (to be provided if a 'No' answer has been selected above):

[3]The Watershed Management Area Analysis (WMAA) is an optional element for inclusion in the Water Quality Improvement Plans (WQIPs) described in the 2013 MS4 Permit [Provision B.3.b.(4)]. It is available online at the Project Clean Water website: http://www.projectcleanwater.org/index.php?option=com_content&view=article&id=248

Step 3.7.1: Critical Coarse Sediment Yield Areas*

***This Section only required if hydromodification management requirements apply**

Based on the maps provided within the WMAA, do potential critical coarse sediment yield areas exist within the project drainage boundaries?

☒ Yes

No, no critical coarse sediment yield areas to be protected based on WMAA maps

If yes, have any of the optional analyses presented in Section 6.2 of the manual been performed?

☐6.2.1 Verification of GLUs (classification that provides an estimate of sediment yield based on geology, hillslope, and land cover) Onsite

☐6.2.2 Downstream Systems Sensitivity to Coarse Sediment

☐6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite

☒No optional analyses performed, the project will avoid critical coarse sediment yield areas identified based on WMAA maps

If optional analyses were performed, what is the final result?

☐No critical coarse sediment yield areas to be protected based on verification of GLUs onsite.

☐ Critical coarse sediment yield areas exist but additional analysis has determined that protection is not required. Documentation attached in Attachment 8 of the SWQMP.

☒Critical coarse sediment yield areas exist and require protection. The project will implement management measures described in Sections 6.2.4 and 6.2.5 as applicable, and the areas are identified on the SWQMP Exhibit.

Discussion / Additional Information:

Critical coarse sediment yield areas exist on site and partially in project site. However, area of project site encroaching into PCCSYA is less than 5% of total PCCSYA on entire site.

Flow Control for Post-Project Runoff*

***This Section only required if hydromodification management requirements apply**
List and describe point(s) of compliance (POCs) for flow control for hydromodification management (see Section 6.3.1). For each POC, provide a POC identification name or number correlating to the project's HMP Exhibit and a receiving channel identification name or number correlating to the project's HMP Exhibit. POC-1 located on the north-west property corner on Rincon Avenue.
Has a geomorphic assessment been performed for the receiving channel(s)? ☒No, the low flow threshold is 0.1Q2 (default low flow threshold) ☐Yes, the result is the low flow threshold is 0.1Q2 ☐Yes, the result is the low flow threshold is 0.3Q2 ☐Yes, the result is the low flow threshold is 0.5Q2 *If a geomorphic assessment has been performed, provide title, date, and preparer:* *Not Applicable* *Discussion / Additional Information: (optional)*

Step 3.8: Other Site Requirements and Constraints

When applicable, list other site requirements or constraints that will influence storm water management design, such as zoning requirements including setbacks and open space, or local codes governing minimum street width, sidewalk construction, allowable pavement types, and drainage requirements.

Existing open space limit located east of the project site. Setbacks located on the frontage and side of the property. Existing 60’ access easement along project site.

Optional Additional Information or Continuation of Previous Sections As Needed

This space provided for additional information or continuation of information from previous sections as needed.

Step 4: Source Control BMP Checklist (Form I-2b)

Source Control BMPs

All development projects must implement source control BMPs 4.2.1 through 4.2.6 where applicable and feasible. See Chapter 4.2 and Appendix E of the City Storm Water Design Manual for information to implement source control BMPs shown in this checklist. The following checklists serve as guides only. Mark what elements are included in your project. See Storm Water Design Manual Chapter 4 and Appendix E for more information on determining appropriate BMPs for your project.

Answer each category below pursuant to the following:

- "Yes" means the project will implement the source control BMP as described in Chapter 4.2 and/or Appendix E of the City Storm Water Design Manual. Discussion / justification is not required.
- "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided.
- "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project has no outdoor materials storage areas). Discussion / justification must be provided.

Source Control Requirement	Applied?		
SC-1 Prevention of Illicit Discharges into the MS4	☒Yes	☐No	☐N/A
□ Direct irrigation water away from impervious surfaces □ Direct vehicle wash water away from impervious surfaces □ Other: _____ *Discussion / justification if SC-1 not implemented:*			
SC-2 Storm Drain Stenciling or Signage	☒Yes	☐No	☐N/A
□ Stencil or stamp storm drains with anti-dumping message □ Post signs prohibiting illegal dumping □ Other *Discussion / justification if SC-2 not implemented:*			
SC-3 Protect Outdoor Materials Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐Yes	☐No	☒N/A
□ Store materials inside a covered enclosure □ Direct runoff from downspouts and roofs away from storage areas □ Other *Discussion / justification if SC-3 not implemented:*			

SC-4 Protect Materials Stored in Outdoor Work Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐Yes	☐No	☒N/A
□ Locate work area away from storm drains or catch basins □ Work over impermeable surfaces where spills and pollutants can be captured and removed *Discussion / justification if SC-4 not implemented:*			
SC-5 Protect Trash Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☒Yes	☐No	☐N/A
□ Locate trash containers in a roofed, walled enclosure □ Locate trash containers away from storm drains *Discussion / justification if SC-5 not implemented:*			
SC-6 Additional BMPs Based on Potential Sources of Runoff Pollutants (must answer for each source listed below):			
☒ A. On-site storm drain inlets	☒Yes	☐No	☐N/A
☐ B. Interior floor drains and elevator shaft sump pumps	☐Yes	☐No	☒N/A
☐ C. Interior parking garages	☐Yes	☐No	☒N/A
☒ D. Need for future indoor & structural pest control	☒Yes	☐No	☐N/A
☒ E. Landscape/outdoor pesticide use	☒Yes	☐No	☐N/A
☐ F. Pools, spas, ponds, fountains, and other water features	☐Yes	☐No	☒N/A
☐ G. Food service	☐Yes	☐No	☒N/A
☒ H. Refuse areas	☒Yes	☐No	☐N/A
☐ I. Industrial processes	☐Yes	☐No	☒N/A
☐ J. Outdoor storage of equipment or materials	☐Yes	☐No	☒N/A
☐ K. Vehicle and equipment cleaning	☐Yes	☐No	☒N/A
☐ L. Vehicle/equipment repair and maintenance	☐Yes	☐No	☒N/A
☐ M. Fuel dispensing areas	☐Yes	☐No	☒N/A
☐ N. Loading docks	☐Yes	☐No	☒N/A
☒ O. Fire sprinkler test water	☒Yes	☐No	☐N/A
☐ P. Miscellaneous drain or wash water	☒Yes	☐No	☐N/A
☒ Q. Plazas, sidewalks, and parking lots	☒Yes	☐No	☐N/A
Discussion / justification if SC-6 not implemented. Clearly identify which sources of runoff pollutants are discussed. Justification must be provided for <u>all</u> "No" answers shown above.			

Note: Show all source control measures described above that are included in design capture volume calculations in the plan sheets of Attachment 5.

Step 5: Site Design BMP Checklist (Form I-2c)

Site Design BMPs			
All development projects must implement site design BMPs SD-A through SD-H where applicable and feasible. See Chapter 4.3 and Appendix E of the City Storm Water Design Manual for information to implement site design BMPs shown in this checklist. The following checklists serve as guides only. Mark what elements are included in your project. See Storm Water Design Manual Chapter 4 and Appendix E for more information on determining appropriate BMPs for your project. Answer each category below pursuant to the following: • "Yes" means the project will implement the site design BMP as described in Chapter 4.3 and/or Appendix E of the City Storm Water Design Manual. Discussion / justification is not required. • "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided. • "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project site has no existing natural areas to conserve). Discussion / justification must be provided.			
Site Design Requirement	**Applied?**		
SD-1 Maintain Natural Drainage Pathways and Hydrologic Features	☒Yes	☐No	☐N/A
□ Maintain existing drainage patterns *Discussion / justification if SD-1 not implemented:*			
SD-2 Conserve Natural Areas, Soils, and Vegetation	☒Yes	☐No	☐N/A
□ Preserve trees (see Zoning Code Art. 55 Grading & Erosion Control; Art. 62 Landscape Regulations) □ Avoid sensitive areas such as wetlands and waterways *Discussion / justification if SD-2 not implemented:*			
SD-3 Minimize Impervious Area	☒Yes	☐No	☐N/A
□ Install parking and driving aisles to minimum width required to meet standards *Discussion / justification if SD-3 not implemented:*			

SD-4 Minimize Soil Compaction	☒Yes	☐No	☐N/A
□ Avoid compaction in planned landscaped spaces □ Till and amend soil for improved infiltration capacity *Discussion / justification if SD-4 not implemented:*			
SD-5 Impervious Area Dispersion	☐Yes	☒No	☐N/A
□ Drain rooftops, roads or sidewalks into adjacent landscape areas □ Drain impervious surfaces through pervious areas *Discussion / justification if SD-5 not implemented:* Impervious Area Dispersion is not feasible because topography limits the potential areas for development and therefore dispersion area.			
SD-6 Runoff Collection			
Discussion / justification if SD-6 not implemented:	☐Yes	☐No	☐N/A
SD-7 Landscaping with Native or Drought Tolerant Species			
Discussion / justification if SD-7 not implemented: Landscape areas within proposed development envelope will include native or drought tolerant species to minimized required resources and pollutants generated by landscape areas.	☒Yes	☐No	☐N/A
SD-8 Harvesting and Using Precipitation			
Discussion / justification if SD-8 not implemented: Harvest and use of precipitation is not implemented because the 36 hour demand is less than ¼ DCV per	☐Yes	☒No	☐N/A

Note: Show all site design measures described above that are included in design capture volume calculations in the plan sheets of Attachment 5.

Step 6: PDP Structural BMPs (Form I-3)

All PDPs must implement structural BMPs for storm water pollutant control (see Chapter 5 of the Storm Water Design Manual). Selection of PDP structural BMPs for storm water pollutant control must be based on the selection process described in Chapter 5. PDPs subject to hydromodification management requirements must also implement structural BMPs for flow control for hydromodification management (see Chapter 6 of the Storm Water Design Manual). Both storm water pollutant control and flow control for hydromodification management can be achieved within the same structural BMP(s).

PDP structural BMPs must be verified by the City at the completion of construction. This may include requiring the project owner or project owner's representative and engineer of record to certify construction of the structural BMPs (see Section 8.2.3.2 of the Storm Water Design Manual). PDP structural BMPs must be maintained into perpetuity, and the City must confirm the maintenance (see Section 7 of the Storm Water Design Manual).

Use this section to provide narrative description of the general strategy for structural BMP implementation at the project site in the box below. Then complete the PDP structural BMP summary information sheet (Step 6.2) for each structural BMP within the project (copy the BMP summary information sheet [Step 6.2] as many times as needed to provide summary information for each individual structural BMP).

Step 6.1: Description of structural BMP strategy

Describe the general strategy for structural BMP implementation at the site. This information must describe how the steps for selecting and designing storm water pollutant control BMPs presented in Section 5.1 of the Storm Water D*esign Manual were followed, and the results (type of BMPs selected). For projects requiring hydromodification flow control BMPs, indicate whether pollutant control and flow control BMPs are integrated or separate. At the end of this discussion provide a summary of all the structural BMPs within the project including the type and number.*

The project site was delineated by DMA per Section 3.3.3. There were a total of twenty eight (28) DMAs delineated Of these, twelve (12) DMAs were determined to qualify, per section 5.2, as self-mitigating DMAs. The remaining DMAs drain to one (1) of six (6) BMPs. Five (5) of which are Biofiltration Basins and one (1) vegetated swale for areas within the ROW.

After filling out worksheet I-4, it was determined that the implementation of Harvest and Use BMPs is infeasible. As the project has HMP requirements, the Biofiltration Basins are to be for both pollutant and hydromodification control, while the vegetated swale serves only pollutant control purposes.

All proposed BMPs have been sized adequately to treat their respective DCV. The DCV was calculated based on the contributing impervious and pervious areas. The Biofiltration Basins were designed per Fact Sheet BF-1 and the vegetated swale was designed per fact sheet FT-1.

(Continue on following page as necessary.)

Description of structural **BMP** strategy continued (Page reserved for continuation of description of general strategy for structural **BMP** implementation at the site)
(Continued from previous page)

Step 6.2: Structural BMP Checklist

(Copy this page as needed to provide information for each individual proposed structural BMP)	
Structural BMP ID No. BMP-1	
Construction Plan Sheet No.	
Type of structural BMP: ☐Retention by harvest and use (HU-1) ☐Retention by infiltration basin (INF-1) ☐Retention by bioretention (INF-2) ☐Retention by permeable pavement (INF-3) ☐Partial retention by biofiltration with partial retention (PR-1) ☒Biofiltration (BF-1) ☐Biofiltration with Nutrient Sensitive Media Design (BF-2) ☐Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F ☐Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) ☐Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) ☐Detention pond or vault for hydromodification management ☐Other (describe in discussion section below)	
Purpose: ☐Pollutant control only ☐Hydromodification control only ☒Combined pollutant control and hydromodification control ☐Pre-treatment/forebay for another structural BMP ☐Other (describe in discussion section below)	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms (See Section 8.2.3.2 of the Storm Water Design Manual)	Jonathan Raab Rydeen REC Consultants, Inc. (619) 232-9200
Who will be the final owner of this BMP?	☐HOA ☒Property Owner ☐City ☐Other (describe)
Who will maintain this BMP into perpetuity?	☐HOA ☒Property Owner ☐City ☐Other (describe)
Discussion (as needed): *(Continue on subsequent pages as necessary)*	

(Copy this page as needed to provide information for each individual proposed structural BMP)	
Structural BMP ID No. BMP-2	
Construction Plan Sheet No.	
Type of structural BMP: ☐Retention by harvest and use (HU-1) ☐Retention by infiltration basin (INF-1) ☐Retention by bioretention (INF-2) ☐Retention by permeable pavement (INF-3) ☐Partial retention by biofiltration with partial retention (PR-1) ☒Biofiltration (BF-1) ☐Biofiltration with Nutrient Sensitive Media Design (BF-2) ☐Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F ☐Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) ☐Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) ☐Detention pond or vault for hydromodification management ☐Other (describe in discussion section below)	
Purpose: ☐Pollutant control only ☐Hydromodification control only ☒Combined pollutant control and hydromodification control ☐Pre-treatment/forebay for another structural BMP ☐Other (describe in discussion section below)	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms (See Section 8.2.3.2 of the Storm Water Design Manual)	Jonathan Raab Rydeen REC Consultants, Inc. (619) 232-9200
Who will be the final owner of this BMP?	☐HOA ☒Property Owner ☐City ☐Other (describe)
Who will maintain this BMP into perpetuity?	☐HOA ☒Property Owner ☐City ☐Other (describe)
Discussion (as needed): *(Continue on subsequent pages as necessary)*	

(Copy this page as needed to provide information for each individual proposed structural BMP)	
Structural BMP ID No. BMP-3	
Construction Plan Sheet No.	
Type of structural BMP: ☐Retention by harvest and use (HU-1) ☐Retention by infiltration basin (INF-1) ☐Retention by bioretention (INF-2) ☐Retention by permeable pavement (INF-3) ☐Partial retention by biofiltration with partial retention (PR-1) ☒Biofiltration (BF-1) ☐Biofiltration with Nutrient Sensitive Media Design (BF-2) ☐Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F ☐Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) ☐Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) ☐Detention pond or vault for hydromodification management ☐Other (describe in discussion section below)	
Purpose: ☐Pollutant control only ☐Hydromodification control only ☒Combined pollutant control and hydromodification control ☐Pre-treatment/forebay for another structural BMP ☐Other (describe in discussion section below)	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms (See Section 8.2.3.2 of the Storm Water Design Manual)	Jonathan Raab Rydeen REC Consultants, Inc. (619) 232-9200
Who will be the final owner of this BMP?	☐HOA ☒Property Owner ☐City ☐Other (describe)
Who will maintain this BMP into perpetuity?	☐HOA ☒Property Owner ☐City ☐Other (describe)
Discussion (as needed): *(Continue on subsequent pages as necessary)*	

(Copy this page as needed to provide information for each individual proposed structural BMP)

Structural BMP ID No. BMP-4

Construction Plan Sheet No.

Type of structural BMP:
☐Retention by harvest and use (HU-1)
☐Retention by infiltration basin (INF-1)
☐Retention by bioretention (INF-2)
☐Retention by permeable pavement (INF-3)
☐Partial retention by biofiltration with partial retention (PR-1)
☒Biofiltration (BF-1)
☐Biofiltration with Nutrient Sensitive Media Design (BF-2)
☐Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F
☐Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)
☐Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below)
☐Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)
☐Detention pond or vault for hydromodification management
☐Other (describe in discussion section below)

Purpose:
☐Pollutant control only
☐Hydromodification control only
☒Combined pollutant control and hydromodification control
☐Pre-treatment/forebay for another structural BMP
☐Other (describe in discussion section below)

Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms (See Section 8.2.3.2 of the Storm Water Design Manual)	Jonathan Raab Rydeen REC Consultants, Inc. (619) 232-9200
Who will be the final owner of this BMP?	☐HOA ☒Property Owner ☐City ☐Other (describe)
Who will maintain this BMP into perpetuity?	☐HOA ☒Property Owner ☐City ☐Other (describe)
Discussion (as needed): *(Continue on subsequent pages as necessary)*	

(Copy this page as needed to provide information for each individual proposed structural BMP)

Structural BMP ID No. BMP-5

Construction Plan Sheet No.

Type of structural BMP:
☐Retention by harvest and use (HU-1)
☐Retention by infiltration basin (INF-1)
☐Retention by bioretention (INF-2)
☐Retention by permeable pavement (INF-3)
☐Partial retention by biofiltration with partial retention (PR-1)
☒Biofiltration (BF-1)
☐Biofiltration with Nutrient Sensitive Media Design (BF-2)
☐Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F
☐Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)
☐Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below)
☐Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)
☐Detention pond or vault for hydromodification management
☐Other (describe in discussion section below)

Purpose:
☐Pollutant control only
☐Hydromodification control only
☒Combined pollutant control and hydromodification control
☐Pre-treatment/forebay for another structural BMP
☐Other (describe in discussion section below)

Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms (See Section 8.2.3.2 of the Storm Water Design Manual)	Jonathan Raab Rydeen REC Consultants, Inc. (619) 232-9200
Who will be the final owner of this BMP?	☐HOA ☒Property Owner ☐City ☐Other (describe)
Who will maintain this BMP into perpetuity?	☐HOA ☒Property Owner ☐City ☐Other (describe)
Discussion (as needed): *(Continue on subsequent pages as necessary)*	

(Copy this page as needed to provide information for each individual proposed structural BMP)

Structural BMP ID No. BMP-6

Construction Plan Sheet No.

Type of structural BMP:
☐Retention by harvest and use (HU-1)
☐Retention by infiltration basin (INF-1)
☐Retention by bioretention (INF-2)
☐Retention by permeable pavement (INF-3)
☐Partial retention by biofiltration with partial retention (PR-1)
☐Biofiltration (BF-1)
☐Biofiltration with Nutrient Sensitive Media Design (BF-2)
☐Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F
☐Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)
☐Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below)
☐Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)
☐Detention pond or vault for hydromodification management
☒Other (describe in discussion section below)

Purpose:
☒Pollutant control only
☐Hydromodification control only
☐Combined pollutant control and hydromodification control
☐Pre-treatment/forebay for another structural BMP
☐Other (describe in discussion section below)

Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms (See Section 8.2.3.2 of the Storm Water Design Manual)	Jonathan Raab Rydeen REC Consultants, Inc. (619) 232-9200
Who will be the final owner of this BMP?	☐HOA ☒Property Owner ☐City ☐Other (describe)
Who will maintain this BMP into perpetuity?	☐HOA ☒Property Owner ☐City ☐Other (describe)
Discussion (as needed): *(Continue on subsequent pages as necessary)*	Greenstreet / Vegetated Swale

Step 6.3: Offsite Alternative Compliance Participation Form

THIS FORM IS NOT APPLICABLE AT THIS TIME: An Alternative Compliance Program is under consideration by the City of Escondido.	
PDP INFORMATION	
Record ID:	
Assessor's Parcel Number(s) [APN(s)]	
What are your PDP Pollutant Control Debits? *See Attachment 1 of the PDP SWQMP	
What are your PDP HMP Debits? (if applicable) *See Attachment 2 of the PDP SWQMP	
ACP Information	
Record ID:	
Assessor's Parcel Number(s) [APN(s)]	
Project Owner/Address	
What are your ACP Pollutant Control Credits? *See Attachment 1 of the ACP SWQMP	
What are your ACP HMP Debits? (if applicable) *See Attachment 2 of the ACP SWQMP	
Is your ACP in the same watershed as your PDP? ☐Yes ☐No	Will your ACP project be completed prior to the completion of the PDP? ☐Yes ☐No
Does your ACP account for all Deficits generated by the PDP? ☐Yes ☐No (PDP and/or ACP must be redesigned to account for all deficits generated by the PDP.)	What is the difference between your PDP debits and ACP Credits? *(ACP Credits -Total PDP Debits = Total Earned Credits)

ATTACHMENT 1

BACKUP FOR PDP POLLUTANT CONTROL BMPS

This is the cover sheet for Attachment 1.

Indicate which Items are Included behind this cover sheet:

Attachment Sequence	Contents	Checklist
Attachment 1a	Storm Water Pollutant Control Worksheet Calculations -Worksheet B.2-1 (Required) -Worksheet B.3-1 (Form I-4; Required) -Worksheet B.4-1 (if applicable) -Worksheet B.5-1 (if applicable) -Worksheet B.5-2 (if applicable) -Worksheet B.5-3 (if applicable) -Worksheet B.6-1 (if applicable) -Summary Worksheet (optional)	☒Included
Attachment 1b	Form I-5, Categorization of Infiltration Feasibility Condition (Required unless the project will use harvest and use BMPs) Refer to Appendices C and D of the Storm Water Design Manual to complete Form I-5.	☒Included ☐Not included because the entire project will use harvest and use BMPs
Attachment 1c	Form I-6, Factor of Safety and Design Infiltration Rate Worksheet (Required unless the project will use harvest and use BMPs) Refer to Appendices C and D of the Storm Water Design Manual to complete Form I-6.	☒Included ☐Not included because the entire project will use harvest and use BMPs
Attachment 1d	DMA Exhibit (Required) See DMA Exhibit Checklist on the back of this Attachment cover sheet.	☒Included
Attachment 1e	Individual Structural BMP DMA Mapbook (Required) -Place each map on 8.5”x11” paper. -Show at a minimum the DMA, Structural BMP, and any existing hydrologic features within the DMA.	☒Included

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Use this checklist to ensure the required information has been included on the DMA Exhibit:

The DMA Exhibit must identify:

☒Underlying hydrologic soil group
☒Approximate depth to groundwater
☒Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
☒Critical coarse sediment yield areas to be protected
☒Existing topography and impervious areas
☒Existing and proposed site drainage network and connections to drainage offsite
☒Proposed demolition
☒Proposed grading
☒Proposed impervious features
☒Proposed design features and surface treatments used to minimize imperviousness
☒Drainage management area (DMA) boundaries, DMA ID numbers, and DMA areas (square footage or acreage), and DMA type (i.e., drains to BMP, self-retaining, or self-mitigating)
☒Potential pollutant source areas and corresponding required source controls (see Chapter 4, Appendix E.1, and Step 3.5)
☒Structural BMPs (identify location, structural BMP ID#, type of BMP, and size/detail)

Worksheet B.2-1. DCV: BMP-1

Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.7	inches
2	Area tributary to BMP (s)	A=	1.414	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.525	unitless
4	Street trees volume reduction	TCV=	0	cubic-feet
5	Rain barrels volume reduction	RCV=	0	cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=	1,886	cubic-feet

Worksheet B.2-1. DCV: BMP-2

Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.7	inches
2	Area tributary to BMP (s)	A=	0.542	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.698	unitless
4	Street trees volume reduction	TCV=	0	cubic-feet
5	Rain barrels volume reduction	RCV=	0	cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=	961	cubic-feet

Worksheet B.2-1. DCV: BMP-3

Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.7	inches
2	Area tributary to BMP (s)	A=	0.679	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.446	unitless
4	Street trees volume reduction	TCV=	0	cubic-feet
5	Rain barrels volume reduction	RCV=	0	cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=	770	cubic-feet

Worksheet B.2-1. DCV: BMP-4

Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.7	inches
2	Area tributary to BMP (s)	A=	0.835	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.598	unitless
4	Street trees volume reduction	TCV=	0	cubic-feet
5	Rain barrels volume reduction	RCV=	0	cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=	1,269	cubic-feet

Worksheet B.2-1. DCV: BMP-5

Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.7	inches
2	Area tributary to BMP (s)	A=	4.238	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.419	unitless
4	Street trees volume reduction	TCV=	0	cubic-feet
5	Rain barrels volume reduction	RCV=	0	cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=	4,512	cubic-feet

ESCONDIDO City of Choice	**Project Name**	Iskcon Krishna Temple & Residential	
	BMP ID	BMP-1	
Sizing Method for Pollutant Removal Criteria		**Worksheet B.5-1**	
1	Area draining to the BMP	61585	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)	0.525	
3	85th percentile 24-hour rainfall depth	0.7	inches
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]	1886	cu. ft.
BMP Parameters			
5	Surface ponding [6 inch minimum, 12 inch maximum]	6	inches
6	Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations	18	inches
7	Aggregate storage (also add ASTM No 8 stone) above underdrain invert (12 inches typical) – use 0 inches if the aggregate is not over the entire bottom surface area	12	inches
8	Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area	3	inches
9	Freely drained pore storage of the media	0.2	in/in
10	Porosity of aggregate storage	0.4	in/in
11	Media filtration rate to be used for sizing (maximum filtration rate of 5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate (includes infiltration into the soil and flow rate through the outlet structure) which will be less than 5 in/hr.)	1.517	in/hr.
Baseline Calculations			
12	Allowable routing time for sizing	6	hours
13	Depth filtered during storm [Line 11 x Line 12]	9.102	inches
14	Depth of Detention Storage [Line 5 + (Line 6 x Line 9) + (Line 7 x Line 10) + (Line 8 x Line 10)]	15.6	inches
15	Total Depth Treated [Line 13 + Line 14]	24.702	inches
Option 1 – Biofilter 1.5 times the DCV			
16	Required biofiltered volume [1.5 x Line 4]	2829	cu. ft.
17	Required Footprint [Line 16/ Line 15] x 12	1374	sq. ft.
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
18	Required Storage (surface + pores) Volume [0.75 x Line 4]	1415	cu. ft.
19	Required Footprint [Line 18/ Line 14] x 12	1088	sq. ft.
Footprint of the BMP			
20	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Line 11 in Worksheet B.5-4)	0.03	
21	Minimum BMP Footprint [Line 1 x Line 2 x Line 20]	970	sq. ft.
22	Footprint of the BMP = Maximum(Minimum(Line 17, Line 19), Line 21)	1088	sq. ft.
23	Provided BMP Footprint	1468	sq. ft.
24	Is Line 23 ≥ Line 22?	**Yes, Performance Standard is Met**	

ESCONDIDO City of Choice	**Project Name**	Iskcon Krishna Temple & Residential	
	BMP ID	BMP-2	
Sizing Method for Pollutant Removal Criteria		**Worksheet B.5-1**	
1	Area draining to the BMP	23622	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)	0.698	
3	85th percentile 24-hour rainfall depth	0.7	inches
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]	962	cu. ft.
BMP Parameters			
5	Surface ponding [6 inch minimum, 12 inch maximum]	6	inches
6	Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations	18	inches
7	Aggregate storage (also add ASTM No 8 stone) above underdrain invert (12 inches typical) – use 0 inches if the aggregate is not over the entire bottom surface area	12	inches
8	Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area	3	inches
9	Freely drained pore storage of the media	0.2	in/in
10	Porosity of aggregate storage	0.4	in/in
11	Media filtration rate to be used for sizing (maximum filtration rate of 5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate (includes infiltration into the soil and flow rate through the outlet structure) which will be less than 5 in/hr.)	1.409	in/hr.
Baseline Calculations			
12	Allowable routing time for sizing	6	hours
13	Depth filtered during storm [Line 11 x Line 12]	8.454	inches
14	Depth of Detention Storage [Line 5 + (Line 6 x Line 9) + (Line 7 x Line 10) + (Line 8 x Line 10)]	15.6	inches
15	Total Depth Treated [Line 13 + Line 14]	24.054	inches
Option 1 – Biofilter 1.5 times the DCV			
16	Required biofiltered volume [1.5 x Line 4]	1443	cu. ft.
17	Required Footprint [Line 16/ Line 15] x 12	720	sq. ft.
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
18	Required Storage (surface + pores) Volume [0.75 x Line 4]	721	cu. ft.
19	Required Footprint [Line 18/ Line 14] x 12	555	sq. ft.
Footprint of the BMP			
20	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Line 11 in Worksheet B.5-4)	0.03	
21	Minimum BMP Footprint [Line 1 x Line 2 x Line 20]	495	sq. ft.
22	Footprint of the BMP = Maximum(Minimum(Line 17, Line 19), Line 21)	555	sq. ft.
23	Provided BMP Footprint	650	sq. ft.
24	Is Line 23 ≥ Line 22?	**Yes, Performance Standard is Met**	

ESCONDIDO City of Choice	**Project Name**	Iskcon Krishna Temple & Residential	
	BMP ID	BMP-3	
Sizing Method for Pollutant Removal Criteria		**Worksheet B.5-1**	
1	Area draining to the BMP	29576	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)	0.446	
3	85th percentile 24-hour rainfall depth	0.7	inches
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]	769	cu. ft.
BMP Parameters			
5	Surface ponding [6 inch minimum, 12 inch maximum]	6	inches
6	Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations	18	inches
7	Aggregate storage (also add ASTM No 8 stone) above underdrain invert (12 inches typical) – use 0 inches if the aggregate is not over the entire bottom surface area	12	inches
8	Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area	3	inches
9	Freely drained pore storage of the media	0.2	in/in
10	Porosity of aggregate storage	0.4	in/in
11	Media filtration rate to be used for sizing (maximum filtration rate of 5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate (includes infiltration into the soil and flow rate through the outlet structure) which will be less than 5 in/hr.)	1.686	in/hr.
Baseline Calculations			
12	Allowable routing time for sizing	6	hours
13	Depth filtered during storm [Line 11 x Line 12]	10.116	inches
14	Depth of Detention Storage [Line 5 + (Line 6 x Line 9) + (Line 7 x Line 10) + (Line 8 x Line 10)]	15.6	inches
15	Total Depth Treated [Line 13 + Line 14]	25.716	inches
Option 1 – Biofilter 1.5 times the DCV			
16	Required biofiltered volume [1.5 x Line 4]	1154	cu. ft.
17	Required Footprint [Line 16/ Line 15] x 12	539	sq. ft.
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
18	Required Storage (surface + pores) Volume [0.75 x Line 4]	577	cu. ft.
19	Required Footprint [Line 18/ Line 14] x 12	444	sq. ft.
Footprint of the BMP			
20	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Line 11 in Worksheet B.5-4)	0.03	
21	Minimum BMP Footprint [Line 1 x Line 2 x Line 20]	396	sq. ft.
22	Footprint of the BMP = Maximum(Minimum(Line 17, Line 19), Line 21)	444	sq. ft.
23	Provided BMP Footprint	539	sq. ft.
24	Is Line 23 ≥ Line 22?	**Yes, Performance Standard is Met**	

ESCONDIDO City of Choice	**Project Name**	Iskcon Krishna Temple & Residential	
	BMP ID	BMP-4	
Sizing Method for Pollutant Removal Criteria		**Worksheet B.5-1**	
1	Area draining to the BMP	36369	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)	0.598	
3	85th percentile 24-hour rainfall depth	0.7	inches
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]	1269	cu. ft.
BMP Parameters			
5	Surface ponding [6 inch minimum, 12 inch maximum]	6	inches
6	Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations	18	inches
7	Aggregate storage (also add ASTM No 8 stone) above underdrain invert (12 inches typical) – use 0 inches if the aggregate is not over the entire bottom surface area	12	inches
8	Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area	3	inches
9	Freely drained pore storage of the media	0.2	in/in
10	Porosity of aggregate storage	0.4	in/in
11	Media filtration rate to be used for sizing (maximum filtration rate of 5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate (includes infiltration into the soil and flow rate through the outlet structure) which will be less than 5 in/hr.)	1.535	in/hr.
Baseline Calculations			
12	Allowable routing time for sizing	6	hours
13	Depth filtered during storm [Line 11 x Line 12]	9.21	inches
14	Depth of Detention Storage [Line 5 + (Line 6 x Line 9) + (Line 7 x Line 10) + (Line 8 x Line 10)]	15.6	inches
15	Total Depth Treated [Line 13 + Line 14]	24.81	inches
Option 1 – Biofilter 1.5 times the DCV			
16	Required biofiltered volume [1.5 x Line 4]	1903	cu. ft.
17	Required Footprint [Line 16/ Line 15] x 12	920	sq. ft.
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
18	Required Storage (surface + pores) Volume [0.75 x Line 4]	952	cu. ft.
19	Required Footprint [Line 18/ Line 14] x 12	732	sq. ft.
Footprint of the BMP			
20	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Line 11 in Worksheet B.5-4)	0.03	
21	Minimum BMP Footprint [Line 1 x Line 2 x Line 20]	652	sq. ft.
22	Footprint of the BMP = Maximum(Minimum(Line 17, Line 19), Line 21)	732	sq. ft.
23	Provided BMP Footprint	1202	sq. ft.
24	Is Line 23 ≥ Line 22?	**Yes, Performance Standard is Met**	

ESCONDIDO City of Choice	**Project Name**	Iskcon Krishna Temple & Residential	
	BMP ID	BMP-5	
Sizing Method for Pollutant Removal Criteria		**Worksheet B.5-1**	
1	Area draining to the BMP	184603	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)	0.419	
3	85th percentile 24-hour rainfall depth	0.7	inches
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]	4512	cu. ft.
BMP Parameters			
5	Surface ponding [6 inch minimum, 12 inch maximum]	6	inches
6	Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations	18	inches
7	Aggregate storage (also add ASTM No 8 stone) above underdrain invert (12 inches typical) – use 0 inches if the aggregate is not over the entire bottom surface area	12	inches
8	Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area	6	inches
9	Freely drained pore storage of the media	0.2	in/in
10	Porosity of aggregate storage	0.4	in/in
11	Media filtration rate to be used for sizing (maximum filtration rate of 5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate (includes infiltration into the soil and flow rate through the outlet structure) which will be less than 5 in/hr.)	1.997	in/hr.
Baseline Calculations			
12	Allowable routing time for sizing	6	hours
13	Depth filtered during storm [Line 11 x Line 12]	11.982	inches
14	Depth of Detention Storage [Line 5 + (Line 6 x Line 9) + (Line 7 x Line 10) + (Line 8 x Line 10)]	16.8	inches
15	Total Depth Treated [Line 13 + Line 14]	28.782	inches
Option 1 – Biofilter 1.5 times the DCV			
16	Required biofiltered volume [1.5 x Line 4]	6768	cu. ft.
17	Required Footprint [Line 16/ Line 15] x 12	2822	sq. ft.
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
18	Required Storage (surface + pores) Volume [0.75 x Line 4]	3384	cu. ft.
19	Required Footprint [Line 18/ Line 14] x 12	2417	sq. ft.
Footprint of the BMP			
20	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Line 11 in Worksheet B.5-4)	0.03	
21	Minimum BMP Footprint [Line 1 x Line 2 x Line 20]	2320	sq. ft.
22	Footprint of the BMP = Maximum(Minimum(Line 17, Line 19), Line 21)	2417	sq. ft.
23	Provided BMP Footprint	3137	sq. ft.
24	Is Line 23 ≥ Line 22?	**Yes, Performance Standard is Met**	

ESCONDIDO City of Choice	**Project Name**	Iskcon Krishna Temple & Residential	
	BMP ID	BMP-1	
Sizing Method for Volume Retention Criteria		**Worksheet B.5-2**	
1	Area draining to the BMP	61585	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)	0.525	
3	85th percentile 24-hour rainfall depth	0.7	inches
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]	1886	cu. ft.
Volume Retention Requirement			
5	Measured infiltration rate in the DMA Note: When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30 When in no infiltration condition and the actual measured infiltration rate is unknown enter 0.0 if there are geotechnical and/or groundwater hazards identified in Appendix C or enter 0.05	0.1	in/hr.
6	Factor of safety	2	
7	Reliable infiltration rate, for biofiltration BMP sizing [Line 5 / Line 6]	0.05	in/hr.
8	Average annual volume reduction target (Figure B.5-2) When Line 7 > 0.01 in/hr. = Minimum (40, 166.9 x Line 7 +6.62) When Line 7 ≤ 0.01 in/hr. = 3.5%	15.0	%
9	Fraction of DCV to be retained (Figure B.5-3) When Line 8 > 8% = $0.0000013 \times \text{Line } 8^3 - 0.000057 \times \text{Line } 8^2 + 0.0086 \times \text{Line } 8 - 0.014$ When Line 8 ≤ 8% = 0.023	0.106	
10	Target volume retention [Line 9 x Line 4]	200	cu. ft.

ESCONDIDO City of Choice	**Project Name**	Iskcon Krishna Temple & Residential	
	BMP ID	BMP-2	
Sizing Method for Volume Retention Criteria		**Worksheet B.5-2**	
1	Area draining to the BMP	23622	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)	0.698	
3	85th percentile 24-hour rainfall depth	0.7	inches
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]	962	cu. ft.
Volume Retention Requirement			
5	Measured infiltration rate in the DMA Note: When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30 When in no infiltration condition and the actual measured infiltration rate is unknown enter 0.0 if there are geotechnical and/or groundwater hazards identified in Appendix C or enter 0.05	0.1	in/hr.
6	Factor of safety	2	
7	Reliable infiltration rate, for biofiltration BMP sizing [Line 5 / Line 6]	0.05	in/hr.
8	Average annual volume reduction target (Figure B.5-2) When Line 7 > 0.01 in/hr. = Minimum (40, 166.9 x Line 7 +6.62) When Line 7 ≤ 0.01 in/hr. = 3.5%	15.0	%
9	Fraction of DCV to be retained (Figure B.5-3) When Line 8 > 8% = $0.0000013 \times \text{Line } 8^3 - 0.000057 \times \text{Line } 8^2 + 0.0086 \times \text{Line } 8 - 0.014$ When Line 8 ≤ 8% = 0.023	0.106	
10	Target volume retention [Line 9 x Line 4]	102	cu. ft.

ESCONDIDO City of Choice	**Project Name**	Iskcon Krishna Temple & Residential	
	BMP ID	BMP-3	
Sizing Method for Volume Retention Criteria		**Worksheet B.5-2**	
1	Area draining to the BMP	29576	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)	0.446	
3	85th percentile 24-hour rainfall depth	0.7	inches
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]	769	cu. ft.
Volume Retention Requirement			
5	Measured infiltration rate in the DMA Note: When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30 When in no infiltration condition and the actual measured infiltration rate is unknown enter 0.0 if there are geotechnical and/or groundwater hazards identified in Appendix C or enter 0.05	0.1	in/hr.
6	Factor of safety	2	
7	Reliable infiltration rate, for biofiltration BMP sizing [Line 5 / Line 6]	0.05	in/hr.
8	Average annual volume reduction target (Figure B.5-2) When Line 7 > 0.01 in/hr. = Minimum (40, 166.9 x Line 7 +6.62) When Line 7 ≤ 0.01 in/hr. = 3.5%	15.0	%
9	Fraction of DCV to be retained (Figure B.5-3) When Line 8 > 8% = 0.0000013 x Line 8^3 - 0.000057 x Line 8^2 + 0.0086 x Line 8 - 0.014 When Line 8 ≤ 8% = 0.023	0.106	
10	Target volume retention [Line 9 x Line 4]	82	cu. ft.

ESCONDIDO City of Choice	**Project Name**	Iskcon Krishna Temple & Residential	
	BMP ID	BMP-4	
Sizing Method for Volume Retention Criteria		**Worksheet B.5-2**	
1	Area draining to the BMP	36369	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)	0.598	
3	85^{th} percentile 24-hour rainfall depth	0.7	inches
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]	1269	cu. ft.
Volume Retention Requirement			
5	Measured infiltration rate in the DMA Note: When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30 When in no infiltration condition and the actual measured infiltration rate is unknown enter 0.0 if there are geotechnical and/or groundwater hazards identified in Appendix C or enter 0.05	0.1	in/hr.
6	Factor of safety	2	
7	Reliable infiltration rate, for biofiltration BMP sizing [Line 5 / Line 6]	0.05	in/hr.
8	Average annual volume reduction target (Figure B.5-2) When Line 7 > 0.01 in/hr. = Minimum (40, 166.9 x Line 7 +6.62) When Line 7 ≤ 0.01 in/hr. = 3.5%	15.0	%
9	Fraction of DCV to be retained (Figure B.5-3) When Line 8 > 8% = $0.0000013 \times \text{Line } 8^3 - 0.000057 \times \text{Line } 8^2 + 0.0086 \times \text{Line } 8 - 0.014$ When Line 8 ≤ 8% = 0.023	0.106	
10	Target volume retention [Line 9 x Line 4]	134	cu. ft.

ESCONDIDO City of Choice	**Project Name**	Iskcon Krishna Temple & Residential	
	BMP ID	BMP-5	
Sizing Method for Volume Retention Criteria		**Worksheet B.5-2**	
1	Area draining to the BMP	184603	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)	0.419	
3	85th percentile 24-hour rainfall depth	0.7	inches
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]	4512	cu. ft.
Volume Retention Requirement			
5	Measured infiltration rate in the DMA Note: When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30 When in no infiltration condition and the actual measured infiltration rate is unknown enter 0.0 if there are geotechnical and/or groundwater hazards identified in Appendix C or enter 0.05	0.3	in/hr.
6	Factor of safety	2	
7	Reliable infiltration rate, for biofiltration BMP sizing [Line 5 / Line 6]	0.15	in/hr.
8	Average annual volume reduction target (Figure B.5-2) When Line 7 > 0.01 in/hr. = Minimum (40, 166.9 x Line 7 +6.62) When Line 7 ≤ 0.01 in/hr. = 3.5%	31.7	%
9	Fraction of DCV to be retained (Figure B.5-3) When Line 8 > 8% = $0.0000013 \times \text{Line } 8^3 - 0.000057 \times \text{Line } 8^2 + 0.0086 \times \text{Line } 8 - 0.014$ When Line 8 ≤ 8% = 0.023	0.242	
10	Target volume retention [Line 9 x Line 4]	1092	cu. ft.

ESCONDIDO City of Choice	**Project Name**	Iskcon Krishna Temple & Residential	
	BMP ID	BMP-1	
Volume Retention from Biofiltration with Partial Retention BMPs		**Worksheet B.5-3**	
1	Area draining to the BMP	61585	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)	0.525	
3	85th percentile 24-hour rainfall depth	0.7	inches
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]	1886	cu. ft.
BMP Parameters			
5	Footprint of the BMP	1468	sq. ft.
6	Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations	18	inches
7	Media retained pore space [50% of (Field Capacity-Wilting Point)]	0.05	in/in
8	Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area	3	inches
9	Porosity of aggregate storage	0.4	in/in
10	Measured infiltration rate in the DMA Note: When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30	0.1	in/hr.
11	Factor of safety	2	
12	Reliable infiltration rate, for biofiltration BMP sizing [Line 10/ Line 11]	0.05	in/hr.
Evapotranspiration: Average Annual Volume Retention			
13	Effective evapotranspiration depth [Line 6 x Line 7]	0.9	inches
14	Retained Pore Volume [(Line 13 x Line 5)/12]	110	cu. ft.
15	Fraction of DCV retained in pore spaces [Line 14/Line 4]	0.06	
16	Evapotranspiration average annual capture [ET nomographs in Figure B.5-5]	4.5	%
Infiltration: Average Annual Volume Retention			
17	Drawdown for infiltration storage [(Line 8 x Line 9)/Line 12]	24	hours
18	Equivalent DCV fraction from evapotranspiration (use Line 16 and Line 17 in Figure B.4-1; Refer to Appendix B.4.2.2)	0.02	
19	Infiltration volume storage [(Line 5 x Line 8 x Line 9)/12]	147	cu. ft.
20	Infiltration Storage Fraction of DCV [Line 19/Line 4]	0.08	
21	Total Equivalent Fraction of DCV [Line 18 + Line 20]	0.10	
22	Biofiltration BMP average annual capture [use Line 21 and 17 in Figure B.4-1]	18.83	%
23	Fraction of DCV retained (Figure B.5-3) $0.0000013 \times \text{Line } 22^3 - 0.000057 \times \text{Line } 22^2 + 0.0086 \times \text{Line } 22 - 0.014$	0.136	
24	Volume retention achieved by biofiltration BMP [Line 23 x Line 4]	257	cu. ft.
Volume Retention = 257 cubic feet			

ESCONDIDO City of Choice	**Project Name**	Iskcon Krishna Temple & Residential	
	BMP ID	BMP-2	
Volume Retention from Biofiltration with Partial Retention BMPs		**Worksheet B.5-3**	
1	Area draining to the BMP	23622	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)	0.698	
3	85th percentile 24-hour rainfall depth	0.7	inches
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]	962	cu. ft.
BMP Parameters			
5	Footprint of the BMP	650	sq. ft.
6	Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations	18	inches
7	Media retained pore space [50% of (Field Capacity-Wilting Point)]	0.05	in/in
8	Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area	3	inches
9	Porosity of aggregate storage	0.4	in/in
10	Measured infiltration rate in the DMA Note: When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30	0.1	in/hr.
11	Factor of safety	2	
12	Reliable infiltration rate, for biofiltration BMP sizing [Line 10/ Line 11]	0.05	in/hr.
Evapotranspiration: Average Annual Volume Retention			
13	Effective evapotranspiration depth [Line 6 x Line 7]	0.9	inches
14	Retained Pore Volume [(Line 13 x Line 5)/12]	49	cu. ft.
15	Fraction of DCV retained in pore spaces [Line 14/Line 4]	0.05	
16	Evapotranspiration average annual capture [ET nomographs in Figure B.5-5]	3.8	%
Infiltration: Average Annual Volume Retention			
17	Drawdown for infiltration storage [(Line 8 x Line 9)/Line 12]	24	hours
18	Equivalent DCV fraction from evapotranspiration (use Line 16 and Line 17 in Figure B.4-1; Refer to Appendix B.4.2.2)	0.02	
19	Infiltration volume storage [(Line 5 x Line 8 x Line 9)/12]	65	cu. ft.
20	Infiltration Storage Fraction of DCV [Line 19/Line 4]	0.07	
21	Total Equivalent Fraction of DCV [Line 18 + Line 20]	0.09	
22	Biofiltration BMP average annual capture [use Line 21 and 17 in Figure B.4-1]	16.49	%
23	Fraction of DCV retained (Figure B.5-3) 0.0000013 x Line 22^3 - 0.000057 x Line 22^2 + 0.0086 x Line 22 - 0.014	0.118	
24	Volume retention achieved by biofiltration BMP [Line 23 x Line 4]	113	cu. ft.
Volume Retention = 113 cubic feet			

ESCONDIDO City of Choice	**Project Name**	Iskcon Krishna Temple & Residential	
	BMP ID	BMP-3	
Volume Retention from Biofiltration with Partial Retention BMPs		**Worksheet B.5-3**	
1	Area draining to the BMP	29576	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)	0.446	
3	85th percentile 24-hour rainfall depth	0.7	inches
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]	769	cu. ft.
BMP Parameters			
5	Footprint of the BMP	539	sq. ft.
6	Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations	18	inches
7	Media retained pore space [50% of (Field Capacity-Wilting Point)]	0.05	in/in
8	Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area	3	inches
9	Porosity of aggregate storage	0.4	in/in
10	Measured infiltration rate in the DMA Note: When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30	0.1	in/hr.
11	Factor of safety	2	
12	Reliable infiltration rate, for biofiltration BMP sizing [Line 10/ Line 11]	0.05	in/hr.
Evapotranspiration: Average Annual Volume Retention			
13	Effective evapotranspiration depth [Line 6 x Line 7]	0.9	inches
14	Retained Pore Volume [(Line 13 x Line 5)/12]	40	cu. ft.
15	Fraction of DCV retained in pore spaces [Line 14/Line 4]	0.05	
16	Evapotranspiration average annual capture [ET nomographs in Figure B.5-5]	3.8	%
Infiltration: Average Annual Volume Retention			
17	Drawdown for infiltration storage [(Line 8 x Line 9)/Line 12]	24	hours
18	Equivalent DCV fraction from evapotranspiration (use Line 16 and Line 17 in Figure B.4-1; Refer to Appendix B.4.2.2)	0.02	
19	Infiltration volume storage [(Line 5 x Line 8 x Line 9)/12]	54	cu. ft.
20	Infiltration Storage Fraction of DCV [Line 19/Line 4]	0.07	
21	Total Equivalent Fraction of DCV [Line 18 + Line 20]	0.09	
22	Biofiltration BMP average annual capture [use Line 21 and 17 in Figure B.4-1]	16.49	%
23	Fraction of DCV retained (Figure B.5-3) $0.0000013 \times \text{Line } 22^3 - 0.000057 \times \text{Line } 22^2 + 0.0086 \times \text{Line } 22 - 0.014$	0.118	
24	Volume retention achieved by biofiltration BMP [Line 23 x Line 4]	91	cu. ft.
Volume Retention = 91 cubic feet			

ESCONDIDO City of Choice	**Project Name**	Iskcon Krishna Temple & Residential	
	BMP ID	BMP-4	
Volume Retention from Biofiltration with Partial Retention BMPs		**Worksheet B.5-3**	
1	Area draining to the BMP	36369	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)	0.598	
3	85th percentile 24-hour rainfall depth	0.7	inches
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]	1269	cu. ft.
BMP Parameters			
5	Footprint of the BMP	1202	sq. ft.
6	Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations	18	inches
7	Media retained pore space [50% of (Field Capacity-Wilting Point)]	0.05	in/in
8	Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area	3	inches
9	Porosity of aggregate storage	0.4	in/in
10	Measured infiltration rate in the DMA Note: When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30	0.1	in/hr.
11	Factor of safety	2	
12	Reliable infiltration rate, for biofiltration BMP sizing [Line 10/ Line 11]	0.05	in/hr.
Evapotranspiration: Average Annual Volume Retention			
13	Effective evapotranspiration depth [Line 6 x Line 7]	0.9	inches
14	Retained Pore Volume [(Line 13 x Line 5)/12]	90	cu. ft.
15	Fraction of DCV retained in pore spaces [Line 14/Line 4]	0.07	
16	Evapotranspiration average annual capture [ET nomographs in Figure B.5-5]	5.2	%
Infiltration: Average Annual Volume Retention			
17	Drawdown for infiltration storage [(Line 8 x Line 9)/Line 12]	24	hours
18	Equivalent DCV fraction from evapotranspiration (use Line 16 and Line 17 in Figure B.4-1; Refer to Appendix B.4.2.2)	0.03	
19	Infiltration volume storage [(Line 5 x Line 8 x Line 9)/12]	120	cu. ft.
20	Infiltration Storage Fraction of DCV [Line 19/Line 4]	0.09	
21	Total Equivalent Fraction of DCV [Line 18 + Line 20]	0.12	
22	Biofiltration BMP average annual capture [use Line 21 and 17 in Figure B.4-1]	20.82	%
23	Fraction of DCV retained (Figure B.5-3) $0.0000013 \times \text{Line } 22^3 - 0.000057 \times \text{Line } 22^2 + 0.0086 \times \text{Line } 22 - 0.014$	0.152	
24	Volume retention achieved by biofiltration BMP [Line 23 x Line 4]	193	cu. ft.
Volume Retention = 193 cubic feet			

ESCONDIDO City of Choice	**Project Name**	Iskcon Krishna Temple & Residential	
	BMP ID	BMP-5	
Volume Retention from Biofiltration with Partial Retention BMPs		**Worksheet B.5-3**	
1	Area draining to the BMP	184603	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)	0.419	
3	85th percentile 24-hour rainfall depth	0.7	inches
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]	4512	cu. ft.
BMP Parameters			
5	Footprint of the BMP	3137	sq. ft.
6	Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations	21	inches
7	Media retained pore space [50% of (Field Capacity-Wilting Point)]	0.05	in/in
8	Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area	6	inches
9	Porosity of aggregate storage	0.4	in/in
10	Measured infiltration rate in the DMA Note: When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30	0.3	in/hr.
11	Factor of safety	2	
12	Reliable infiltration rate, for biofiltration BMP sizing [Line 10/ Line 11]	0.15	in/hr.
Evapotranspiration: Average Annual Volume Retention			
13	Effective evapotranspiration depth [Line 6 x Line 7]	1.05	inches
14	Retained Pore Volume [(Line 13 x Line 5)/12]	274	cu. ft.
15	Fraction of DCV retained in pore spaces [Line 14/Line 4]	0.06	
16	Evapotranspiration average annual capture [ET nomographs in Figure B.5-5]	4.3	%
Infiltration: Average Annual Volume Retention			
17	Drawdown for infiltration storage [(Line 8 x Line 9)/Line 12]	16	hours
18	Equivalent DCV fraction from evapotranspiration (use Line 16 and Line 17 in Figure B.4-1; Refer to Appendix B.4.2.2)	0.02	
19	Infiltration volume storage [(Line 5 x Line 8 x Line 9)/12]	627	cu. ft.
20	Infiltration Storage Fraction of DCV [Line 19/Line 4]	0.14	
21	Total Equivalent Fraction of DCV [Line 18 + Line 20]	0.16	
22	Biofiltration BMP average annual capture [use Line 21 and 17 in Figure B.4-1]	32.97	%
23	Fraction of DCV retained (Figure B.5-3) 0.0000013 x Line 22^3 - 0.000057 x Line 22^2 + 0.0086 x Line 22 - 0.014	0.254	
24	Volume retention achieved by biofiltration BMP [Line 23 x Line 4]	1146	cu. ft.
Volume Retention = 1146 cubic feet			

Harvest and Use Feasibility Checklist

Form I-4

1. Is there a demand for harvested water (check all that apply) at the project site that is reliably present during the wet season?

- [x] Toilet and urinal flushing
- [x] Landscape irrigation
- [ ] Other:_____

2. If there is a demand; estimate the anticipated average wet season demand over a period of 36 hours. Guidance for planning level demand calculations for toilet/urinal flushing and landscape irrigation is provided in Section B.3.2.

[Provide a summary of calculations here]

Irrigated Landscaped Area:
Hydrozone: Moderate plant water use, 36-hour planning level irrigation demand: 1470 gallons/acre
Planning level irrigation demand: (2.951)x(1470)= gallons
4,338 gallons = 580 cubic feet
DCV = 9,398 cubic feet
(0.25)x(9,398) = 2,350 cubic feet > 580 cubic feet

3. Calculate the DCV using worksheet B-2.1.

DCV = 9,398 (cubic feet)

3a. Is the 36 hour demand greater than or equal to the DCV?	3b. Is the 36 hour demand greater than 0.25DCV but less than the full DCV?	3c. Is the 36 hour demand less than 0.25DCV?
☐ Yes / ☑ No ⇨ ⇩	☐ Yes / ☑ No ⇨ ⇩	☑ Yes ⇩
Harvest and use appears to be feasible. Conduct more detailed evaluation and sizing calculations to confirm that DCV can be used at an adequate rate to meet drawdown criteria.	Harvest and use may be feasible. Conduct more detailed evaluation and sizing calculations to determine feasibility. Harvest and use may only be able to be used for a portion of the site, or (optionally) the storage may need to be upsized to meet long term capture targets while draining in longer than 36 hours.	Harvest and use is considered to be infeasible. 0.25*(9,398) > 580 2,350 > 580

Is harvest and use feasible based on further evaluation?

- [ ] Yes, refer to Appendix E to select and size harvest and use BMPs.
- [x] No, select alternate BMPs.

Categorization of Infiltration Feasibility Condition		Form I-5	
Part 1 - Full Infiltration Feasibility Screening Criteria **Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?**			
Criteria	Screening Question	**Yes**	**No**
1	**Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		
Provide basis: Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
2	**Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		
Provide basis: Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			

Form I-5			
Criteria	Screening Question	**Yes**	**No**
3	**Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.		
Provide basis: Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
4	**Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.		
Provide basis: Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
Part 1 Result*	If all answers to rows 1 - 4 are "**Yes**" a full infiltration design is potentially feasible. The feasibility screening category is **Full Infiltration** If any answer from row 1-4 is "**No**", infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a "full infiltration" design. Proceed to Part 2		

Form I-5

Part 2 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria

Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?

Criteria	Screening Question	Yes	No
5	**Do soil and geologic conditions allow for infiltration in any appreciable rate or volume?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		

Provide basis:

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

6	**Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level**? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		

Provide basis:

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

Form I-5			
Criteria	Screening Question	**Yes**	**No**
7	**Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.		
Provide basis: Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			
8	**Can infiltration be allowed without violating downstream water rights**? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.		
Provide basis: Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			
Part 2 Result*	If all answers from row 5-8 are yes then partial infiltration design is potentially feasible. The feasibility screening category is **Partial Infiltration.** If any answer from row 5-8 is no, then infiltration of any volume is considered to be **infeasible** within the drainage area. The feasibility screening category is **No Infiltration.**		

Form I-5 Certification

The Geotechnical Engineer certifies they completed Form I-5 except Criteria 4 & 8 (see Appendix C.4.3).

Professional Geotechnical Engineer's Printed Name:

_____

Professional Geotechnical Engineer's Signed Name:

_____

Date: _____

[SEAL]

The Project Design Engineer certifies they completed Criteria 4 & 8 (see Appendix C.4.4).

Professional Project Design Engineer's Printed Name:

_____

Professional Project Design Engineer's Signed Name:

_____

Date: _____

[SEAL]

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Factor of Safety and Design Infiltration Rate Worksheet				Form I-6	
Factor Category		Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) p = w x v
A	Suitability Assessment	Soil assessment methods	0.25		
		Predominant soil texture	0.25		
		Site soil variability	0.25		
		Depth to groundwater / impervious layer	0.25		
		Suitability Assessment Safety Factor, $S_A = \Sigma p$			
B	Design	Level of pretreatment/ expected sediment loads	0.5		
		Redundancy/resiliency	0.25		
		Compaction during construction	0.25		
		Design Safety Factor, $S_B = \Sigma p$			
Combined Safety Factor, $S_{total} = S_A \times S_B$					
Observed Infiltration Rate, inch/hr, $K_{observed}$ (corrected for test-specific bias)					
Design Infiltration Rate, in/hr, $K_{design} = K_{observed} / S_{total}$					
Supporting Data					
Briefly describe infiltration test and provide reference to test forms:					

Factor of Safety and Design Infiltration Rate Worksheet	Form I-6 Certification

The Geotechnical Engineer certifies they completed Form I-6 (see Appendix C.4.3).

Professional Geotechnical Engineer's Printed Name:

_____

Professional Geotechnical Engineer's Signed Name:

_____

Date: _____

[SEAL]

LEGEND

POTENTIAL CRITICAL COARSE SEDIMENT YIELD AREA PER CARLSBAD WMAA

DMA BOUNDARY

SOIL TYPE BOUNDARY

AREA NOT BEING ANALYZED

APN: 224-100-34

DMA-1-B-1

DMA-1-D-2

RIDGE LINE

AREA WILL REMAIN THE SAME IN POST-DEVELOPED CONDITION AND WILL NOT BE ANALYZED

(4.047 ACRES)

APN: 224-100-73
NOT A PART

DMA-1-D-1

DMA-1-B-2

SOIL TYPE D

SOIL TYPE C

EXISTING BUILDING

PROPOSED TEMPLE
APN: 224-100-85

DMA-1-C-1

SOIL TYPE C

SOIL TYPE B

SOIL TYPE D

DMA-1-B-3

DMA-1-D-3

RINCON AVENUE

EXISTING BUILDING

DMA-1-C-2

R/W

SOIL TYPE C

SOIL TYPE A

PROPOSED RESIDENTIAL
APN: 224-100-84

DMA-1-A

POC-1

EXISTING STORM DRAIN

RINCON AVENUE

APN: 224-901-46

RIDGE LINE

60 30 0 60 120 180

SCALE: 1" = 60'

BASIN PRE-DEVELOPED AREAS

DMA	SOIL TYPE	PERVIOUS (AC)	IMPERVIOUS (AC)	TOTAL AREA (AC)	POC
DMA-1-A	A	0.492	0.000	0.492	POC-1
DMA-1-B-1	B	1.373	0.000	1.373	
DMA-1-B-2	B	0.764	0.000	0.764	
DMA-1-B-3	B	3.093	0.044	3.136	
DMA-1-C-1	C	3.901	0.095	3.996	
DMA-1-C-2	C	4.827	0.187	5.014	
DMA-1-D-1	D	3.556	0.000	3.556	
DMA-1-D-2	D	0.269	0.000	0.269	
DMA-1-D-3	D	1.336	0.000	1.336	
TOTAL		19.611	0.326	19.936	

ESCONDIDO City of Choice

REVISIONS

NO.	DESCRIPTION	DATE	APP'D

Civil Engineering · Environmental
Land Surveying
2970 Fifth Avenue, Suite 340
San Diego, CA 92103
(619)232-9200 (619)232-9210 Fax

R·E·C Consultants, Inc.

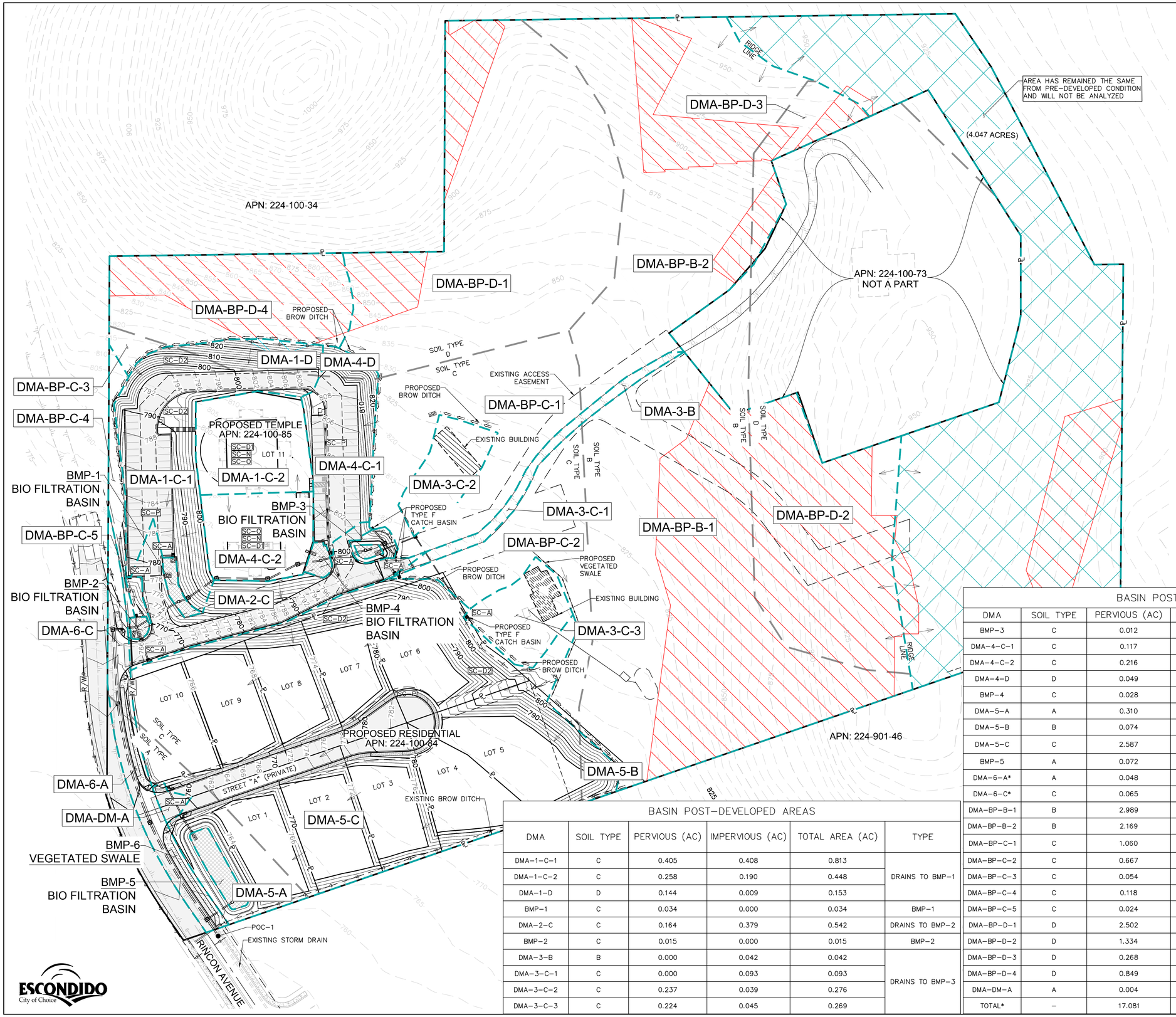
DATE: 2-1-2023
SCALE: 1" = 60'
DRAWN: JMW
CHECKED: J.R.R.

SHEET TITLE: PRE-DEVELOPED DMA EXHIBIT

PROJECT:
ISKCON KRISHNA TEMPLE
ISKCON OF ESCONDIDO, INC
1365 RINCON AVE - ESCONDIDO, CA 92026

SHEET 1 OF 1 SHEETS

SAVE DATE: 3/1/2023 ~ PLOT DATE: 3/13/2023 ~ FILE NAME: P:\Acad\1829 Iskcon Temple - Residential\Reports\SWQMP\1829-DMAPre.dwg



LEGEND

- POTENTIAL CRITICAL COARSE SEDIMENT YIELD AREA PER CARLSBAD WMAA
- PROJECT AREA ENCROACHING INTO PCCSYA
- DMA BOUNDARY
- SOIL TYPE BOUNDARY
- AREA NOT BEING ANALYZED
- BMP BASIN
- RETAILING WALL

PCCSYA CALCS		
EXISTING PCCSYA	225,262	SF
PROJECT AREA IN PCCSYA	1,221	SF
PERCENT OF ENCROACHED AREA	0.54	%

SOURCE CONTROL BMP'S

SC-A: ON-SITE STORM DRAIN INLETS
SC-D1: NEED FOR FUTURE INDOOR & STRUCTURAL PEST CONTROL
SC-D2: LANDSCAPE/OUTDOOR PESTICIDE USE
SC-O: REFUSE AREAS
SC-N: FIRE SPRINKLER TEST WATER
SC-O: MISCELLANEOUS DRAIN OR WASH WATER
SC-P: PLAZAS, SIDEWALKS, AND PARKING LOTS

NOTE:
1. DEPTH TO GROUNDWATER > 20 FT
2. THE AVERAGE ASSUMED IMPERVIOUS AREA FOR THE PADS IN THE RESIDENTIAL AREA IS 25% FOR LOW DENSITY RESIDENTIAL (LDR) RESIDENTIAL, 2.9 DU/A OR LESS.

60 30 0 60 120 180
SCALE: 1" = 60'

* FOR WATER QUALITY ONLY BECAUSE AREA IS WITHIN PUBLIC RIGHT OF WAY (NOT INCLUDED IN HMP MODEL)

BASIN POST-DEVELOPED AREAS

DMA	SOIL TYPE	PERVIOUS (AC)	IMPERVIOUS (AC)	TOTAL AREA (AC)	TYPE
DMA-1-C-1	C	0.405	0.408	0.813	DRAINS TO BMP-1
DMA-1-C-2	C	0.258	0.190	0.448	
DMA-1-D	D	0.144	0.009	0.153	
BMP-1	C	0.034	0.000	0.034	BMP-1
DMA-2-C	C	0.164	0.379	0.542	DRAINS TO BMP-2
BMP-2	C	0.015	0.000	0.015	BMP-2
DMA-3-B	B	0.000	0.042	0.042	DRAINS TO BMP-3
DMA-3-C-1	C	0.000	0.093	0.093	
DMA-3-C-2	C	0.237	0.039	0.276	
DMA-3-C-3	C	0.224	0.045	0.269	

BASIN POST-DEVELOPED AREAS

DMA	SOIL TYPE	PERVIOUS (AC)	IMPERVIOUS (AC)	TOTAL AREA (AC)	TYPE
BMP-3	C	0.012	0.000	0.012	BMP-3
DMA-4-C-1	C	0.117	0.292	0.409	DRAINS TO BMP-4
DMA-4-C-2	C	0.216	0.157	0.374	
DMA-4-D	D	0.049	0.003	0.053	
BMP-4	C	0.028	0.000	0.028	BMP-4
DMA-5-A	A	0.310	0.078	0.388	DRAINS TO BMP-5
DMA-5-B	B	0.074	0.000	0.074	
DMA-5-C	C	2.587	1.189	3.776	
BMP-5	A	0.072	0.000	0.072	BMP-5
DMA-6-A*	A	0.048	0.184	0.231	GREENSTREET / DRAINS TO BMP-6
DMA-6-C*	C	0.065	0.066	0.130	
DMA-BP-B-1	B	2.989	0.000	2.989	BYPASS
DMA-BP-B-2	B	2.169	0.000	2.169	
DMA-BP-C-1	C	1.060	0.000	1.060	
DMA-BP-C-2	C	0.667	0.000	0.667	
DMA-BP-C-3	C	0.054	0.000	0.054	
DMA-BP-C-4	C	0.118	0.000	0.118	
DMA-BP-C-5	C	0.024	0.000	0.024	
DMA-BP-D-1	D	2.502	0.000	2.502	
DMA-BP-D-2	D	1.334	0.000	1.334	
DMA-BP-D-3	D	0.268	0.000	0.268	
DMA-BP-D-4	D	0.849	0.000	0.849	
DMA-DM-A	A	0.004	0.027	0.031	DE-MINIMIS
TOTAL*	–	17.081	3.213	19.936	–

NO.	DESCRIPTION	DATE	APP'D
	REVISIONS		

R.E.C Consultants, Inc.
Civil Engineering · Environmental
Land Surveying
2970 Fifth Avenue, Suite 340
San Diego, CA 92103
(619)232-9200 (619)232-9210 Fax

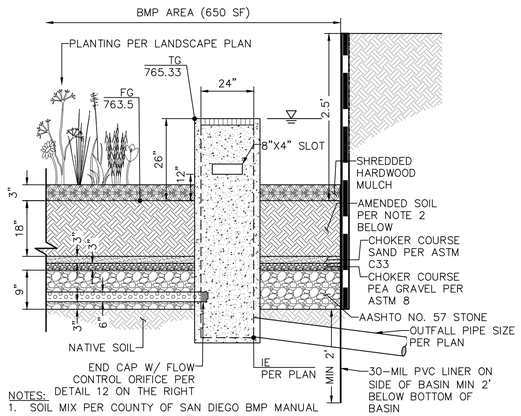
DATE: 2-1-2023
SCALE: 1" = 60'
DRAWN: JMW
CHECKED: J.R.R.

SHEET TITLE: POST-DEVELOPED DMA EXHIBIT

PROJECT: ISKCON KRISHNA TEMPLE
ISKCON OF ESCONDIDO INC
1365 RINCON AVE - ESCONDIDO, CA 92026

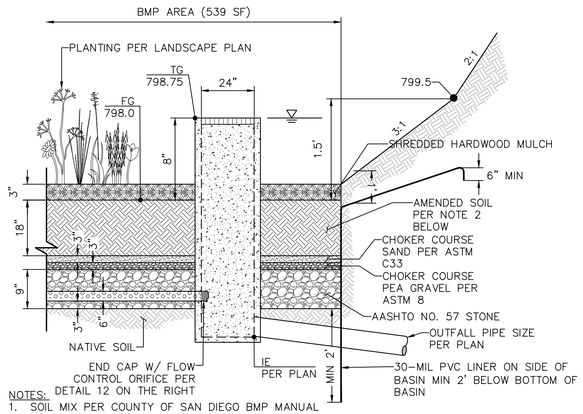
SHEET 1 OF 1 SHEETS

SAVE DATE: 3/10/2023 ~ PLOT DATE: 3/13/2023 ~ FILE NAME: P:\Acad\1829 Iskcon Temple - Residential\Reports\SWQMP\1829-DMAPst.dwg



NOTES:
1. SOIL MIX PER COUNTY OF SAN DIEGO BMP MANUAL
2. "WELL DRAINED SOIL" SHALL BE "SANDY LOAM" SOIL MIX WITH NO MORE THAN 5% CLAY CONTENT. THE MIX SHALL CONTAIN 50–60% SAND, 20–30% COMPOST OR HARDWOOD MULCH, AND 20–30% TOPSOIL.

1 BMP-2 BASIN DETAIL
NOT TO SCALE



NOTES:
1. SOIL MIX PER COUNTY OF SAN DIEGO BMP MANUAL
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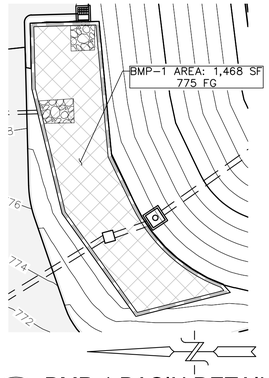
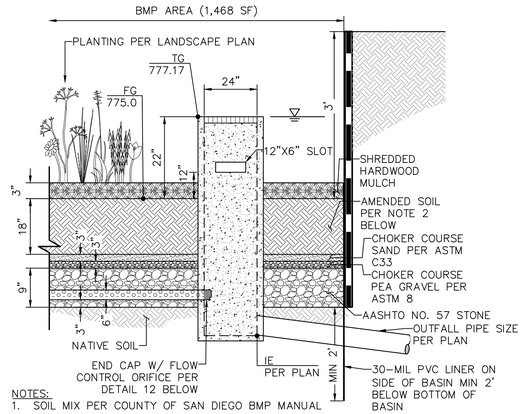
3 BMP-3 BASIN DETAIL
NOT TO SCALE

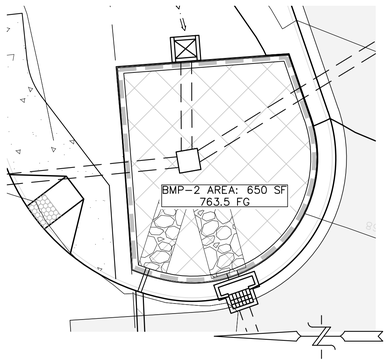


5 BMP-1 BASIN DETAIL
SCALE: 1" = 20'

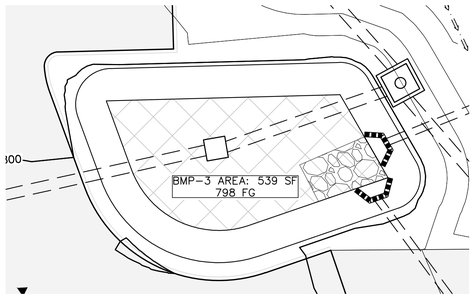


NOTES:
1. SOIL MIX PER COUNTY OF SAN DIEGO BMP MANUAL
2. "WELL DRAINED SOIL" SHALL BE "SANDY LOAM" SOIL MIX WITH NO MORE THAN 5% CLAY CONTENT. THE MIX SHALL CONTAIN 50–60% SAND, 20–30% COMPOST OR HARDWOOD MULCH, AND 20–30% TOPSOIL.

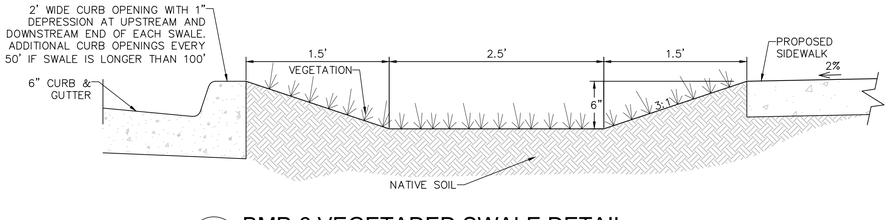
6 BMP-1 BASIN DETAIL
NOT TO SCALE



2 BMP-2 BASIN PLAN VIEW
SCALE: 1" = 10'

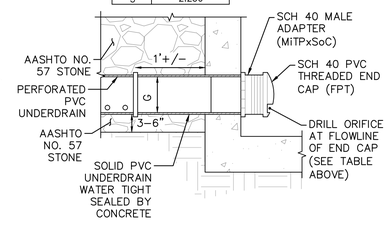


4 BMP-3 BASIN PLAN VIEW
SCALE: 1" = 10'

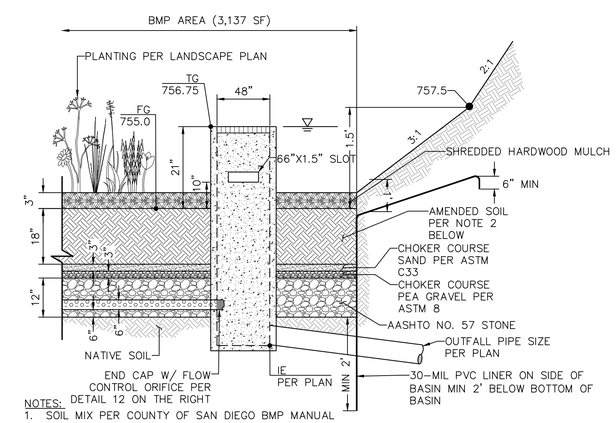


11 BMP-6 VEGETADED SWALE DETAIL
NOT TO SCALE

BMP	ORIFICE SIZE
1	1.375"
2	0.875"
3	0.875"
4	1.250"
5	2.250"

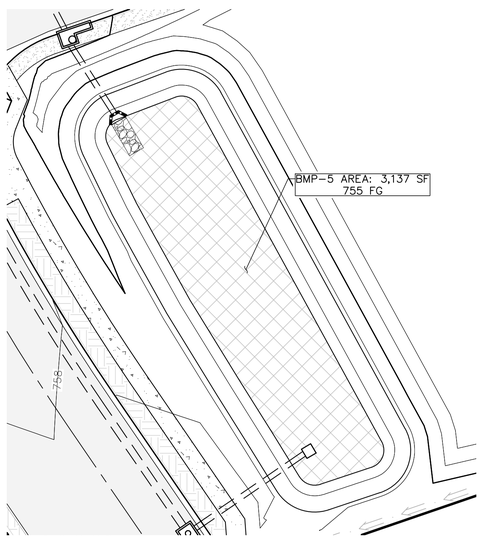


12 BMP ORIFICE DETAIL
NOT TO SCALE

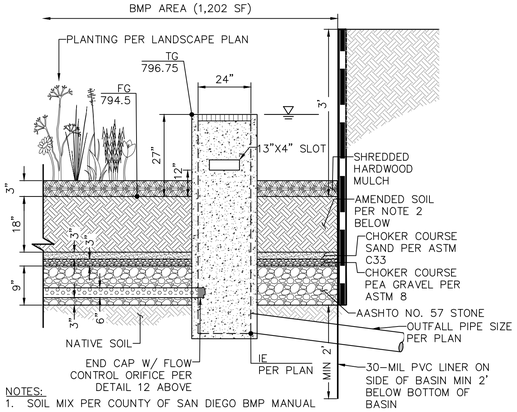


NOTES:
1. SOIL MIX PER COUNTY OF SAN DIEGO BMP MANUAL
2. "WELL DRAINED SOIL" SHALL BE "SANDY LOAM" SOIL MIX WITH NO MORE THAN 5% CLAY CONTENT. THE MIX SHALL CONTAIN 50–60% SAND, 20–30% COMPOST OR HARDWOOD MULCH, AND 20–30% TOPSOIL.

7 BMP-5 BASIN DETAIL
NOT TO SCALE

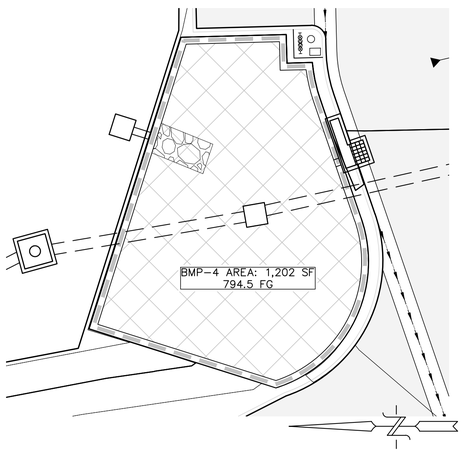


8 BMP-5 BASIN DETAIL
SCALE: 1" = 20'



NOTES:
1. SOIL MIX PER COUNTY OF SAN DIEGO BMP MANUAL
2. "WELL DRAINED SOIL" SHALL BE "SANDY LOAM" SOIL MIX WITH NO MORE THAN 5% CLAY CONTENT. THE MIX SHALL CONTAIN 50–60% SAND, 20–30% COMPOST OR HARDWOOD MULCH, AND 20–30% TOPSOIL.

9 BMP-4 BASIN DETAIL
NOT TO SCALE



10 BMP-4 BASIN PLAN VIEW
SCALE: 1" = 10'

ESCONDIDO City of Choice

NO.	DESCRIPTION	DATE	APP'D
	REVISIONS		

R·E·C Consultants, Inc.
Civil Engineering · Environmental
Land Surveying
2970 Fifth Avenue, Suite 340
San Diego, CA 92103
(619)232-9200 (619)232-9210 Fax

DATE: 2-1-2023
SCALE: N/A
DRAWN: JMW
CHECKED: J.R.R.

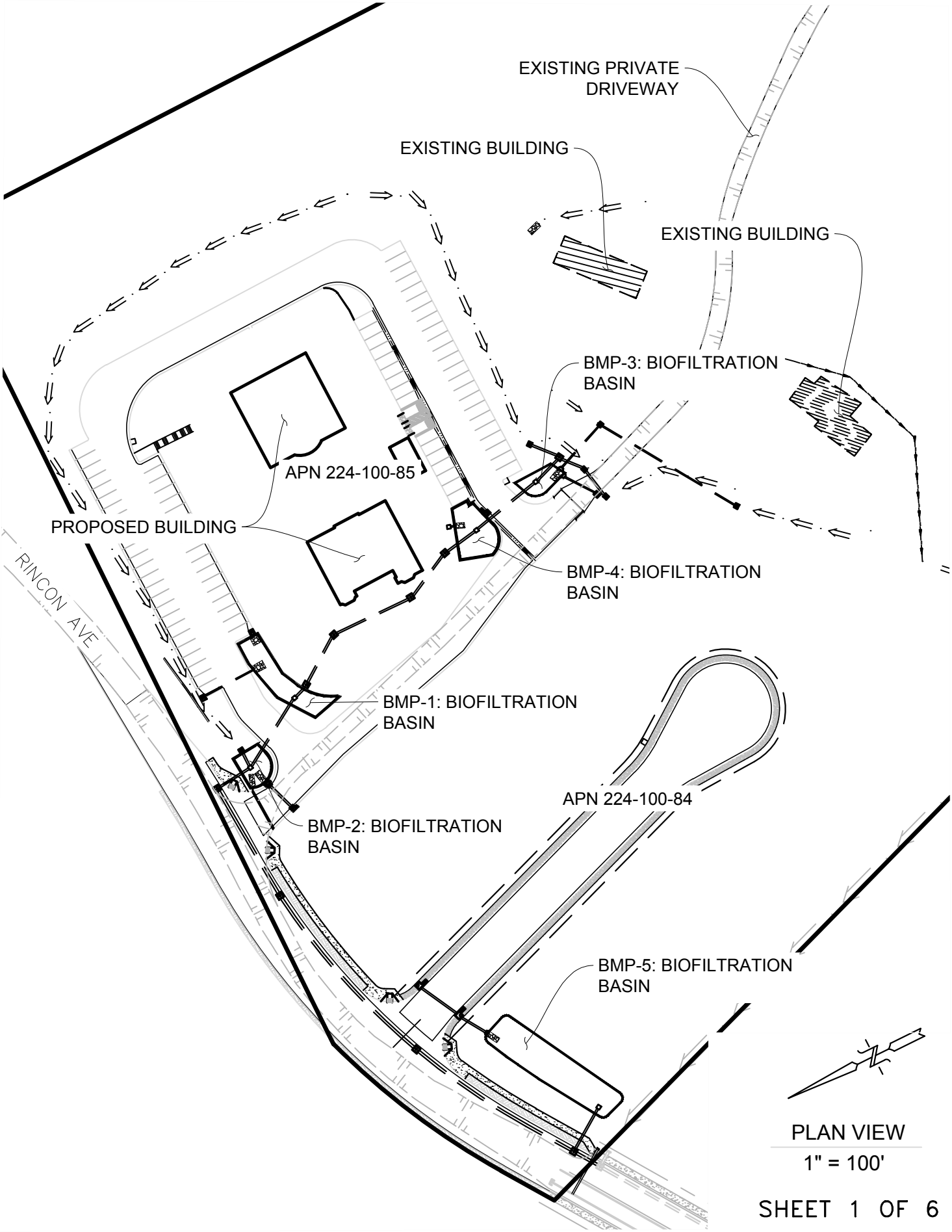
SHEET TITLE: POST-DEVELOPED DMA EXHIBIT DETAILS

PROJECT
ISKCON KRISHNA TEMPLE
ISKCON OF ESCONDIDO,INC
1365 RINCON AVE – ESCONDIDO, CA 92026

SHEET 2 OF 2 SHEETS

SAVE DATE: 3/10/2023 ~ PLOT DATE: 3/10/2023 ~ FILE NAME: P:\Acad\1829 Iskcon Temple – Residential\Reports\SWQMP\1829-DMAPst.dwg

SITE PLAN - EXHIBIT A-1

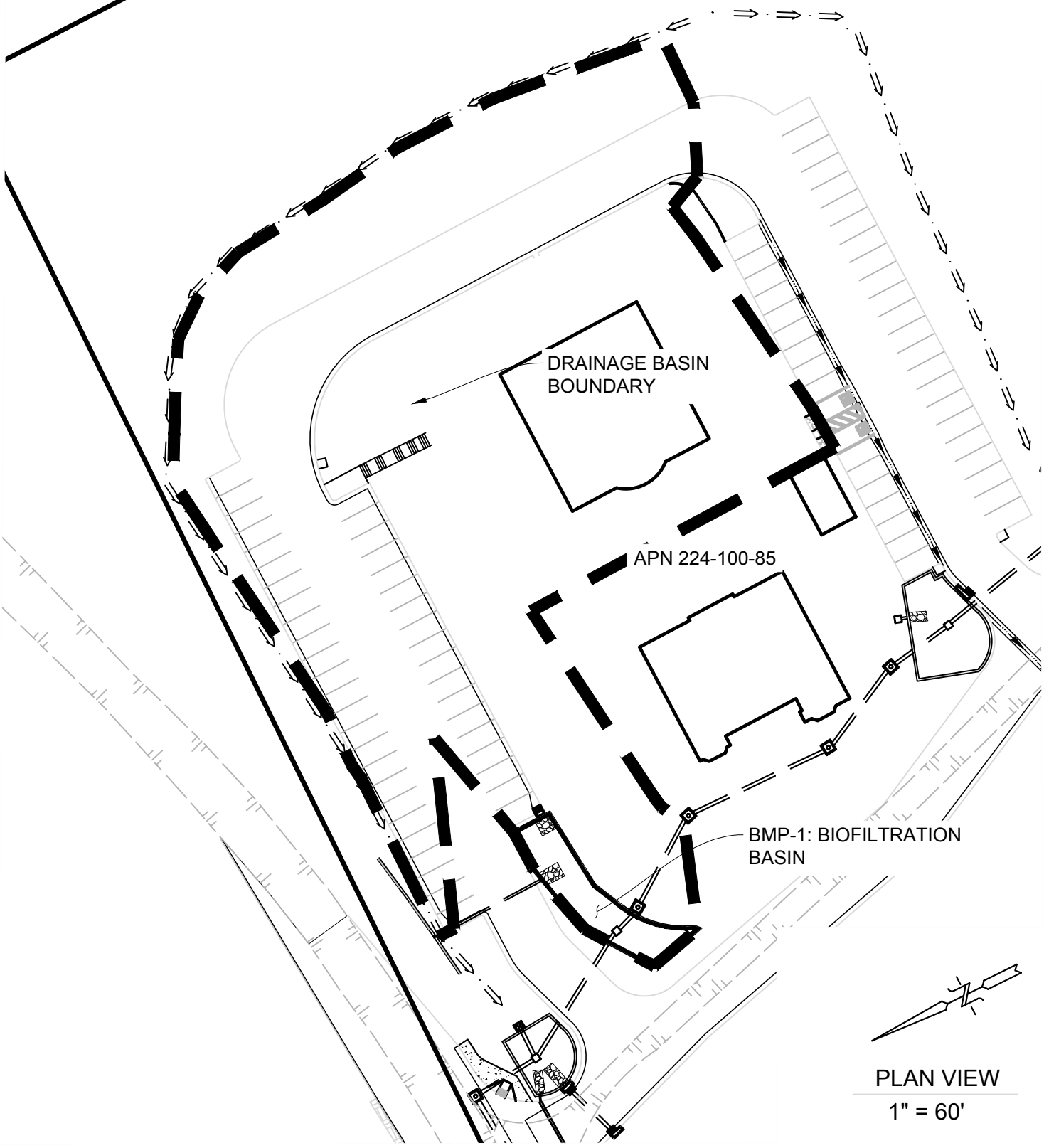


PLAN VIEW

1" = 100'

SHEET 1 OF 6

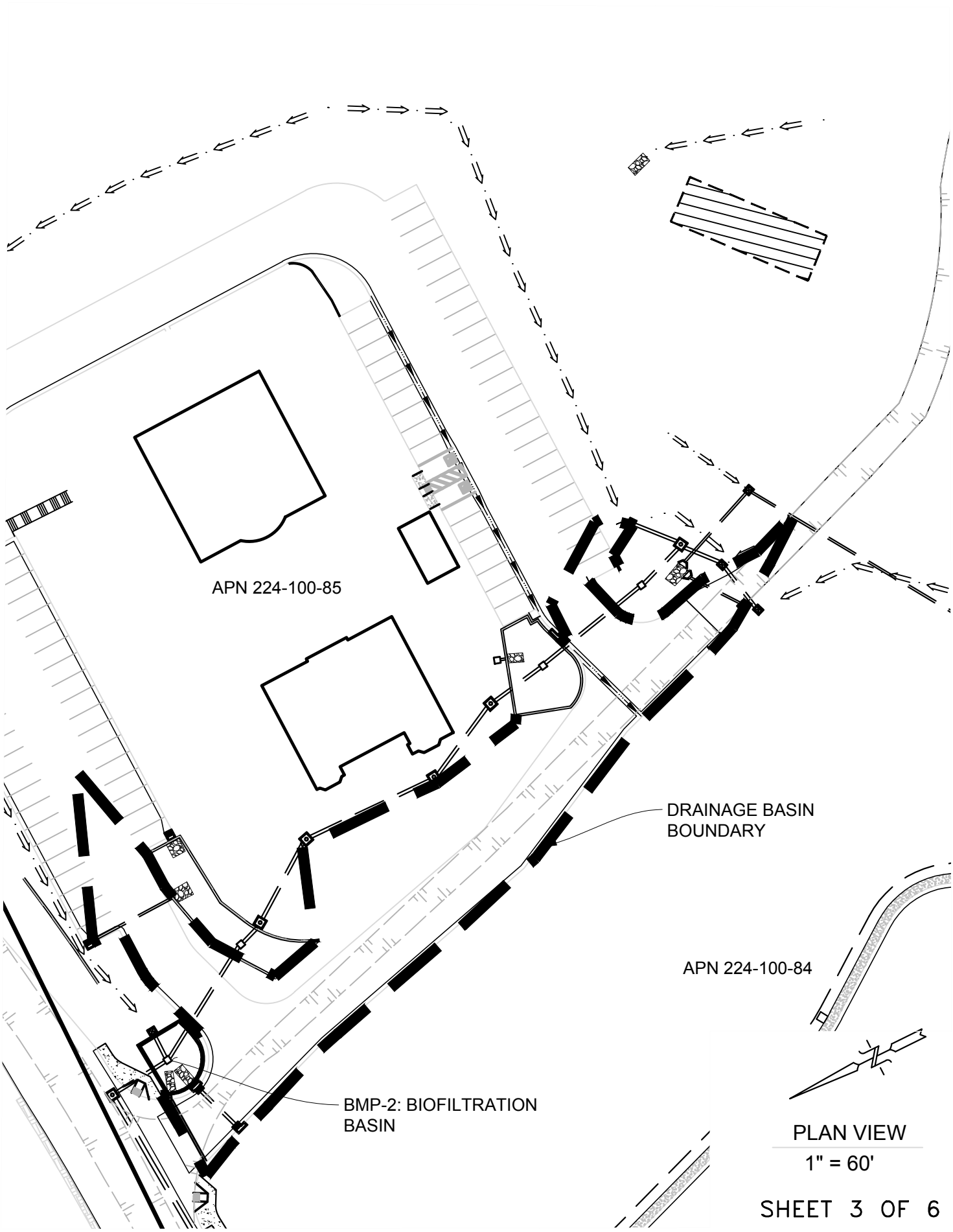
DMA MAP FOR BMP 1 - EXHIBIT A-2



PLAN VIEW

1" = 60'

DMA MAP FOR BMP 2 - EXHIBIT A-3

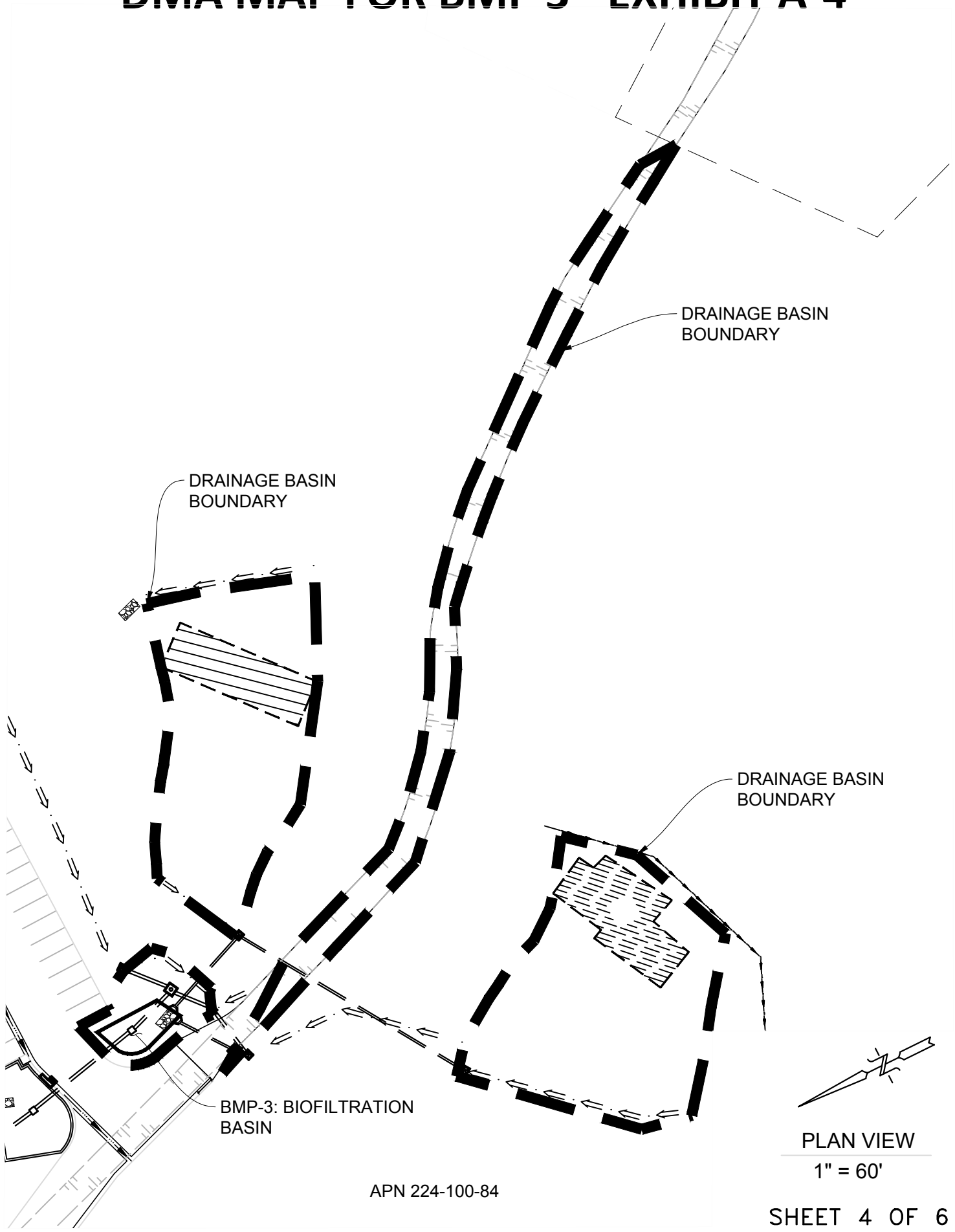


PLAN VIEW

1" = 60'

SHEET 3 OF 6

DMA MAP FOR BMP 3 - EXHIBIT A-4

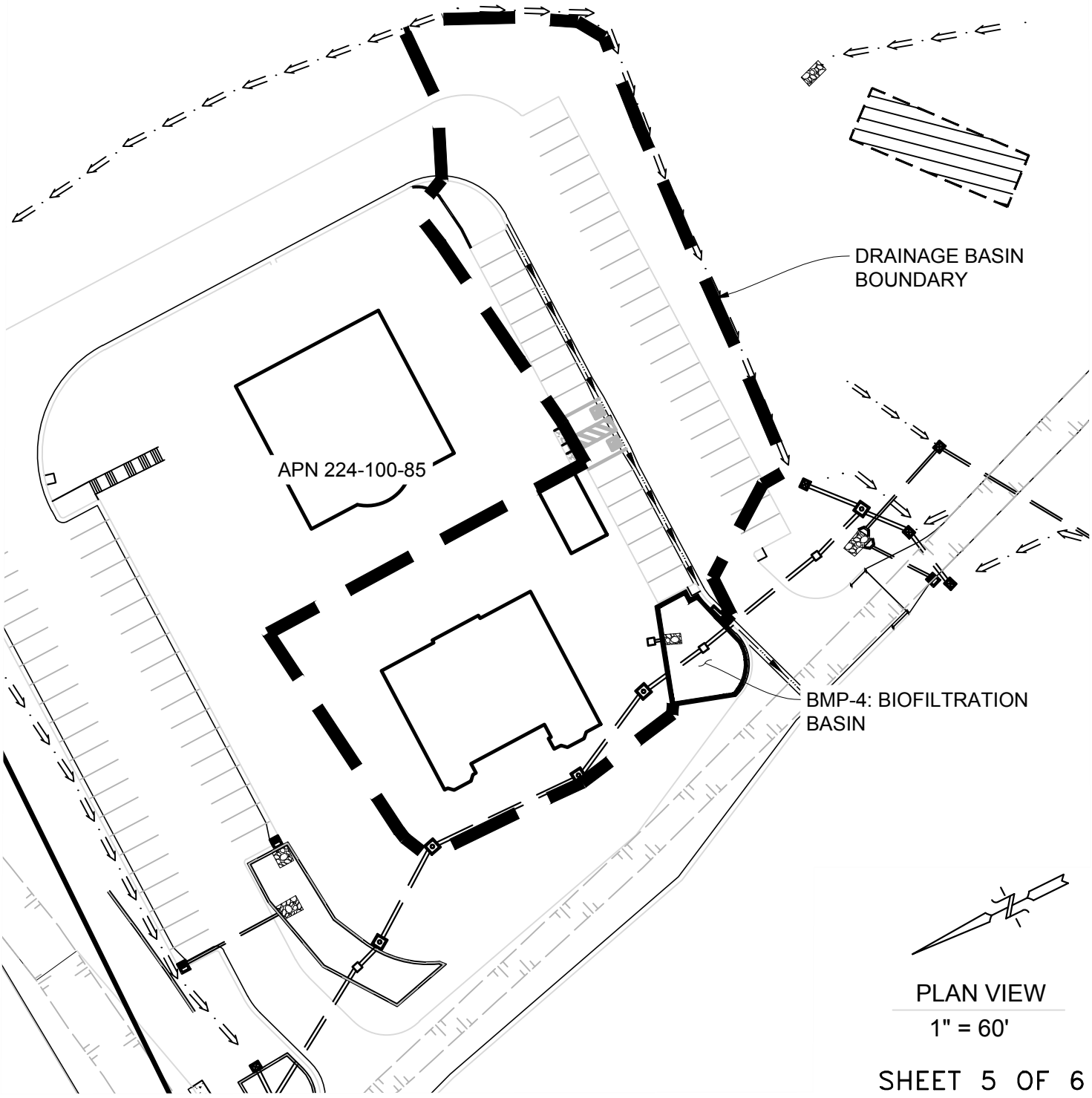


PLAN VIEW

1" = 60'

APN 224-100-84

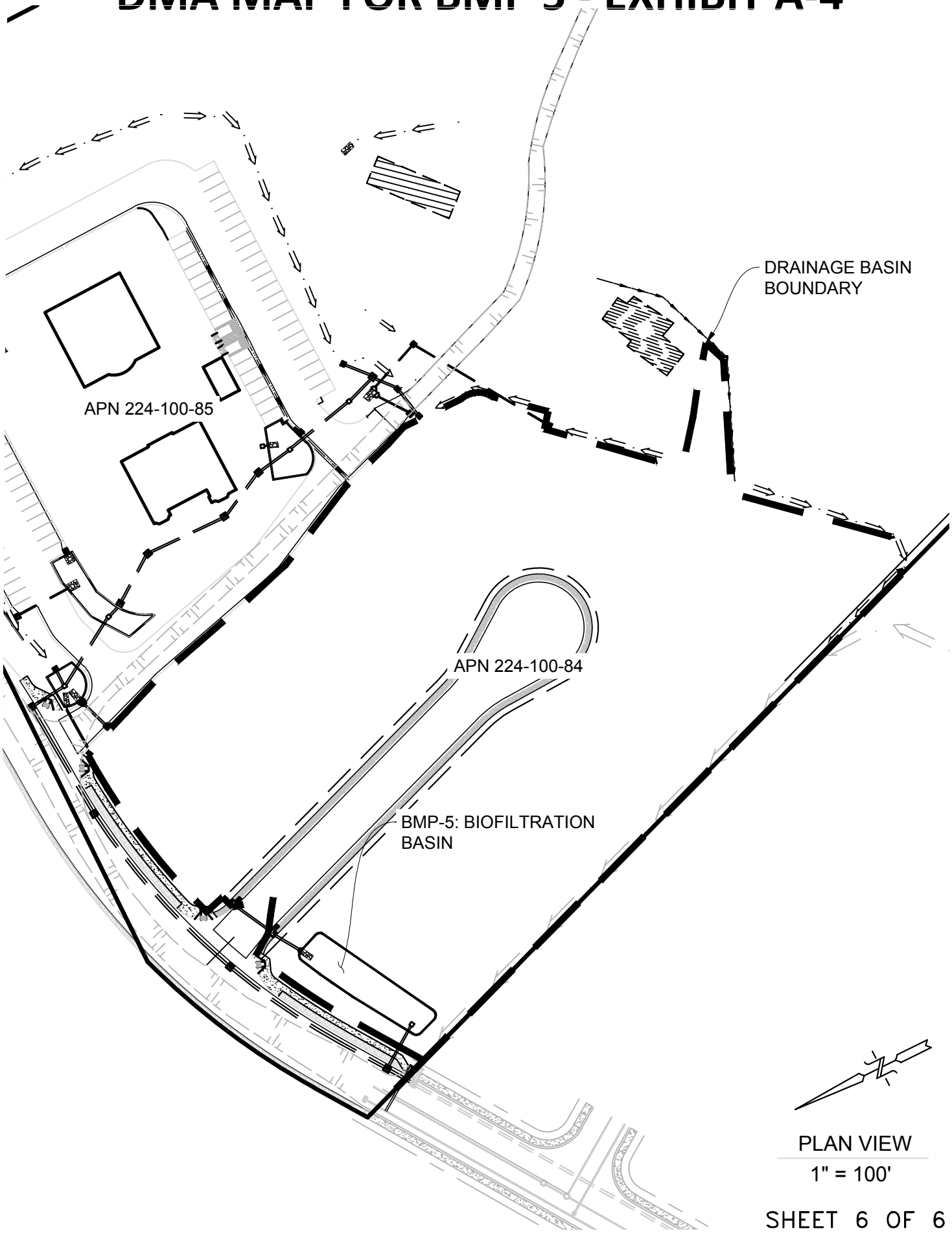
DMA MAP FOR BMP 4 - EXHIBIT A-4



PLAN VIEW

1" = 60'

DMA MAP FOR BMP 5 - EXHIBIT A-4



PLAN VIEW

1" = 100'

SHEET 6 OF 6

ATTACHMENT 2

BACKUP FOR PDP HYDROMODIFICATION CONTROL MEASURES

This is the cover sheet for Attachment 2.

☐Mark this box if this attachment is empty because the project is exempt from PDP hydromodification management requirements.

Indicate which Items are Included behind this cover sheet:

Attachment Sequence	Contents	Checklist
Attachment 2a	Flow Control Facility Design, including Structural BMP Drawdown Calculations and Overflow Design Summary (Required) See Chapter 6 and Appendix G of the Storm Water Design Manual	☐Included ☒Submitted as separate stand-alone document
Attachment 2b	Hydromodification Management Exhibit (Required)	☒Included See Hydromodification Management Exhibit Checklist on the back of this Attachment cover sheet.
Attachment 2c	Management of Critical Coarse Sediment Yield Areas See Section 6.2 and Appendix H of the Storm Water Design Manual.	☒Exhibit depicting onsite and/or upstream sources of critical coarse sediment as mapped in the WMAA AND, ☐Demonstration that the project effectively avoids and bypasses sources of mapped critical coarse sediment OR, ☒Demonstration that project does not generate a net impact on the receiving water.
Attachment 2d	Geomorphic Assessment of Receiving Channels (Optional) See Section 6.3.4 of the Storm Water Design Manual.	☒Not performed ☐Included ☐Submitted as separate stand-alone document
Attachment 2e	Vector Control Plan (Required when structural BMPs will not drain in 96 hours)	☐Included ☒Not required because BMPs will drain in less than 96 hours

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Use this checklist to ensure the required information has been included on the Hydromodification Management Exhibit:

The Hydromodification Management Exhibit must identify:

☒Underlying hydrologic soil group
☒Approximate depth to groundwater
☒Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
☒Critical coarse sediment yield areas to be protected
☒Existing topography
☒Existing and proposed site drainage network and connections to drainage offsite
☒Proposed grading
☒Proposed impervious features
☒Proposed design features and surface treatments used to minimize imperviousness
☒Point(s) of Compliance (POC) for Hydromodification Management
☒Existing and proposed drainage boundary and drainage area to each POC (when necessary, create separate exhibits for pre-development and post-project conditions)
☒Structural BMPs for hydromodification management (identify location, type of BMP, and size/detail)

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ATTACHMENT 3

Structural BMP Maintenance Information

This is the cover sheet for Attachment 3.

Indicate which Items are Included behind this cover sheet:

Attachment Sequence	Contents	Checklist
Attachment 3a	Structural BMP Maintenance Plan (Required)	☒Included See Structural BMP Maintenance Information Checklist on the back of this Attachment cover sheet.
Attachment 3b	Draft Storm Water Control Facilities Maintenance Agreement (SWCFMA) (when applicable)	☐Included ☐Not Applicable

This page was left intentionally blank.

Use this checklist to ensure the required information has been included in the Structural BMP Maintenance Information Attachment:

Attachment 3a must identify:

- ☐Specific maintenance indicators and actions for proposed structural BMP(s). This must be based on Section 7.7 of the Storm Water Design Manual and enhanced to reflect actual proposed components of the structural BMP(s)
- ☐How to access the structural BMP(s) to inspect and perform maintenance
- ☐Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)
- ☐Manufacturer and part number for proprietary parts of structural BMP(s) when applicable
- ☐Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)
- ☐Recommended equipment to perform maintenance
- ☐When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management

Attachment 3b: For all Structural BMPs, Attachment 3b must include a draft maintenance agreement in the City's standard format (PDP applicant to contact City staff to obtain the current maintenance agreement forms or download from City's website).

FREE RECORDING REQUESTED
PURSUANT TO GOVERNMENT
CODE SECTION 27383
RECORDING REQUESTED BY:

CITY OF ESCONDIDO

WHEN RECORDED MAIL TO:

CITY ENGINEER
CITY OF ESCONDIDO
201 N. BROADWAY
ESCONDIDO, CA 92025

(SPACE ABOVE FOR RECORDER'S USE ONLY)

Documentary Transfer Tax $_____
Signature _____

STORM WATER CONTROL FACILITY MAINTENANCE AGREEMENT
APN NO. 224-100-84,85

THIS AGREEMENT for the design, construction, maintenance and repair of the Storm Water Control Facilities (SWCF(s)), installed on the property as identified in the San Diego County Assessor Tax Roll for 20__, as APN No. 224-100-84,85, and commonly known as Iskcon Krishna Temple & Residential, Escondido, California, ("Property") is entered into between the **CITY OF ESCONDIDO**, a municipal corporation ("CITY") and Iskcon of Escondido, Inc., Developer and/or Property Owner ("LOT OWNER(s)"), and in accordance with the CITY of Escondido Grading Plan No. GP__-_____ ("Grading Plan"). ("Agreement")

WHEREAS, installation and maintenance of Storm Water Control Facilities is required pursuant to the Escondido Municipal Code, the California Regional Water Quality Control Board ("RWQCB") and by the CITY as a condition of approval of property development; and

WHEREAS, LOT OWNER(s) is the owner of certain real property being developed that provides benefit to the general public and the CITY and meets the requirements of the California RWQCB Order R9-2013-0001 and National Pollution Discharge Elimination System No. CAS0109266 and subsequent amendments; and

WHEREAS, the current and future subdivision LOT OWNER(s) will use the SWCF(s) as installed per the Grading Plan and the provisions of the Storm Water Quality Management Plan ("Storm Water Plan") prepared by the LOT OWNER(s) and approved by the CITY on _____, 201__; and

WHEREAS, it is the mutual desire of the parties to this Agreement that the SWCF(s) be maintained in a safe and usable condition by the LOT OWNER(s); and

WHEREAS, it is the mutual desire of the parties to this Agreement to establish a method for the maintenance and repair of the SWCF(s); and

WHEREAS, the CITY shall have the right but not the obligation to enforce full compliance with the

terms and conditions of this Agreement; and

WHEREAS, it is the mutual intention of the parties that this Agreement constitute a covenant running with the land, binding upon each successive LOT OWNER of all or any portion of the property.

NOW, THEREFORE, IT IS HEREBY AGREED AS FOLLOWS:

1. The Property is benefited by this Agreement, and present and successive LOT OWNER(s) of all or any portion of the property are expressly bound hereby for the benefit of the land. In the event any of the herein described parcels of land are subdivided further, the LOT OWNER(s), heirs, assigns and successors in interest of each such newly created parcel shall be liable under this Agreement for their then pro rata share of expenses and such pro rata shares of expenses shall be computed to reflect such newly created parcels.

2. The cost and expense of maintaining the SWCF(s) shall be the responsibility of and paid by the LOT OWNER(s) or their heirs, assigns and successors in interest. The SWCF(s) shall be constructed and maintained by the LOT OWNER(s) in accordance with the CITY- approved Grading Plan and Storm Water Plan, on file with the CITY.

3. Repair and maintenance responsibilities for all structural SWCF(s) and required Best Management Practices associated with the project are set forth in the Storm Water Plan. LOT OWNER(s) shall, as changes occur, provide the CITY with the name, title, and phone number the persons or entities responsible for maintenance and reporting activity, the persons or entities responsible for funding, schedules and procedures for inspection and maintenance of the SWCF(s) and implementation of worker training requirements, and any other activities necessary to ensure BMP maintenance. The Storm Water Plan shall provide for the servicing of all SWCF(s) as needed and at least once during August or September of each year, and for the retention of inspection and maintenance records for at least three (3) years. LOT OWNER(s) shall submit annual certification to the CITY's Department of Engineering Services between September 1 and October 1 of each year until the property is redeveloped. The certification shall document all maintenance performed and compliance with applicable permits.

4. CITY shall have the right to inspect the SWCF(s) and records as needed to ensure the SWCF(s) are being properly maintained.

5. Should any LOT OWNER(s) fail to pay their share of costs and expenses as required to use, maintain or repair the SWCF(s) in this Agreement, then the CITY or any other LOT OWNER shall be entitled without further notice to institute legal action for the collection of funds advanced on behalf of the LOT OWNER who did not pay their share of costs and expenses and shall be entitled to recover in such action in addition to the funds advanced, interest thereon at the current prime rate of interest, until paid, all costs and disbursements of such action, including such sum or sums as the court may fix as and for a reasonable attorney's fees.

6. Any liability of the LOT OWNER(s) to any worker employed to make repairs or provide maintenance under this Agreement, or to third persons, as well as any liability of the LOT OWNER(s) for damage to the property of agent, or any such worker, or any third persons, as a result of or arising out of repairs and maintenance under this Agreement, shall be borne, as between the LOT OWNER(s) in the same percentages as they bear the costs and expenses of

such repairs and maintenance. Each LOT OWNER shall be responsible for and maintain his own insurance, if any. By this Agreement, the parties do not intend to provide for the sharing of liability with respect to personal injury or property damage other than that attributable to the repairs and maintenance undertaken under this Agreement. Each of the LOT OWNER(s) agrees to indemnify the others from any and all liability for injury to him or damage to their property when such injury or damage results from, arises out of, or is attributable to any maintenance or repairs undertaken pursuant to this Agreement.

7. CITY Indemnification.

a) To the fullest extent permitted by law, LOT OWNER(s) shall jointly and severally indemnify, defend with legal counsel reasonably satisfactory to the CITY, and hold harmless the CITY and the CITY's officers, directors, employees, and council members (hereinafter referred to as "Indemnitees") from all actions, fines, sanctions, levies, penalties, orders and assessments of any kind harmless against any and all liability, loss, damage, fine, penalty, expense, claim, or cost (including without limitation costs and fees of litigation) of every nature (collectively referred to as "RWQCB Orders") that may arise out of or relate to LOT OWNER(s)'s obligations for implementation of storm water management in accordance with the RWQCB Order R9-2013-0001 and subsequent amendments, including any reasonable attorney's fees, costs and expenses incurred by the Indemnitees in responding to any RWQCB Orders arising out of or relating to implementation of storm water management. LOT OWNER(s) obligations shall include but not be limited to design, construction, maintenance and required documentation of the maintenance activities related to all storm water treatment measures proposed for the project and included in the STORM WATER PLAN, approved _____, arising out of or in connection with this Agreement or its performance (including acts of omission) except for liability caused by the Indemnitiees' willful misconduct.

b) LOT OWNER(s) obligation to defend shall apply whether or not Indemnitees were negligent or otherwise at fault and whether or not the RWQCB's Orders have any merit. LOT OWNER(s) obligation to defend shall apply with full force and effect regardless of any concurrent negligence or fault by the Indemnitees, or any of them. However LOT OWNER(s) shall not be obligated under this Agreement to indemnify any Indemnitee after entry of a non-appealable final judgment after trial or award in a judicial proceeding for that portion of the final judgment that arises from the willful misconduct of that Indemnitee.

c) LOT OWNER(s) duty to defend the Indemnitees is separate, independent and free standing from LOT OWNER(s) duty to indemnify and hold harmless the Indemnitees. LOT OWNER(s) defense obligation shall arise immediately upon receipt by CITY or LOT OWNER(s) of any written Notice of Violation or equivalent notice of intent to levy any fines, penalties or sanctions against Indemnitees by the RWQCB or other enforcement agency, and shall continue until the entry of any final and non-appealable RWQCB or other enforcement orders.

d) LOT OWNER(s) obligation to indemnify, defend and hold harmless shall be carried on to future property OWNERS and shall continue until the time that the site is redeveloped.

e) It is expressly understood and agreed that the foregoing provisions will survive termination of this Agreement, unless the property is properly redeveloped.

(f) The indemnity protections provided by this Agreement are not intended to exceed the indemnity available under applicable law. If the indemnity protections are found by a court to be unlawful in any way, the protection shall be curtailed or adjusted, but only to the minimum extent required to conform to applicable law.

(g) Nothing in the Agreement, the specifications or other contract documents or CITY approval of the plans and specifications or inspection of the work is intended to include a review, inspection, acknowledgment of any responsibility for any such matter, and CITY, CITY's engineer, and their consultants, and each of their officials, directors, officers, employees and agents, shall have absolutely no responsibility or liability thereof.

8. If, in the CITY's sole judgment said SWCF(s) are not being maintained to standards set forth in paragraph 3 of this Agreement, the CITY may thereupon provide written notice to all LOT OWNER(s) to initiate repairs or construction within ninety (90) days. Upon failure to demonstrate good faith to make repairs or construction within ninety (90), the LOT OWNER(s) agree that the CITY may make all needed repairs to said SWCF(s) and/or construct SWCF(s) to meet the standards set forth in paragraph 3 and to then assess costs to all LOT OWNER(s) equally.

9. If the CITY elects to make necessary maintenance or repairs in accordance with this Agreement, said work shall be without warranty. Said repairs shall be accepted "as is" by the LOT OWNER(s) without any warranty of workmanship and be guaranteed and indemnified by them in accordance this Agreement.

10. The foregoing covenants shall run with the land and shall be deemed to be for the benefit of the land of each of the LOT OWNER(s) and each and every person who shall at any time own all or any portion of the property referred to herein.

11. It is understood and agreed that the covenants herein contained shall be binding on the heirs, executors, administrators, successors, and assigns of each of the LOT OWNER(s).

12. This Agreement shall be recorded and that all obligations created shall constitute a covenant running with the land and any subsequent purchaser of all or any portion thereof, by acceptance of delivery of a deed and/or conveyance regardless of form shall be deemed to have consented to and become bound by this Agreement.

13. The terms of this Agreement may be amended in writing upon majority approval of the LOT OWNER(s) and consent of the CITY.

14. This Agreement shall be governed by the laws of the State of California. In the event that any of the provisions of this Agreement are held to be unenforceable or invalid by any court of competent jurisdiction, the validity, and enforceability of the remaining provisions shall not be affected thereby.

SIGNATURE PAGE FOLLOWS ON PAGE 5:

SIGNATURE PAGE

LOT OWNER(s): _____

_____
PRINT NAME AND TITLE

_____ _____
SIGNATURE DATE SIGNED

_____
PRINT NAME AND TITLE

_____ _____
SIGNATURE DATE SIGNED

_____
PRINT NAME AND TITLE

_____ _____
SIGNATURE DATE SIGNED

ATTACH CALIFORNIA ALL PURPOSE NOTARY ACKNOWLEDGMENT FOR ABOVE SIGNATURES

CITY OF ESCONDIDO,
a municipal Corporation

Date Signed: _____ By: _____
Director of Public Works / City Engineer

APPROVED AS TO FORM:
Jeffrey Epp, City Attorney

By: _____

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ATTACHMENT 4

City of Escondido PDP Structural BMP Verification for Permitted Land Development Projects

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City of Escondido Storm Water Structural BMP Verification Form Page 1 of 4	
Project Summary Information	
Project Name	Iskcon Krishna Temple & Residential
Record ID (e.g., grading/improvement plan number)	TBD
Project Address	1365 Rincon Avenue, Escondido, CA 92026
Assessor's Parcel Number(s) (APN(s))	224-100-84,85
Project Watershed (Complete Hydrologic Unit, Area, and Subarea Name with Numeric Identifier)	Carlsbad 904,
Maintenance Notification / Agreement No.	N/A
Responsible Party for Construction Phase	
Developer's Name	
Address	
Email Address	
Phone Number	
Engineer of Work	
Engineer's Phone Number	
Responsible Party for Ongoing Maintenance	
Owner's Name(s)*	
Address	
Email Address	
Phone Number	
*Note: If a corporation or LLC, provide information for principal partner or Agent for Service of Process. If an HOA, provide information for the Board or property manager at time of project closeout.	

City of Escondido Storm Water Structural BMP Verification Form Page 2 of 4				
Stormwater Structural Pollutant Control & Hydromodification Control BMPs* (List all from SWQMP)				
Description/Type of Structural BMP	**Plan Sheet #**	**Structural BMP ID#**	**Maintenance Agreement Recorded Doc #**	**Revisions**
Bio-Filtration Basin		BMP-1	N/A	
Bio-Filtration Basin		BMP-2	N/A	
Bio-Filtration Basin		BMP-3	N/A	
Bio-Filtration Basin		BMP-4	N/A	
Bio-Filtration Basin		BMP-5	N/A	
Vegetated Swale		BMP-6	N/A	
*All Priority Development Projects (PDPs) require a Structural BMP				

Note: If this is a partial verification of Structural BMPs, provide a list and map denoting Structural BMPs that have already been submitted, those for this submission, and those anticipated in future submissions.

City of Escondido Storm Structural BMP Verification Form Page 3 of 4

Checklist for Engineer of Work (EOW) to submit to Field Engineering:

- ☐ Copy of the final accepted SWQMP and any accepted addendum.
- ☐ Copy of the most current plan showing the Storm Water Structural BMP Table, plans/cross-section sheets of the Structural BMPs and the location of each verified as-built Structural BMP.
- ☐ Photograph of each Structural BMP.
- ☐ Photograph(s) of each Structural BMP during the construction process to illustrate proper construction.
- ☐ Copy of the approved Structural BMP maintenance agreement and associated security

By signing below, I certify that the Structural BMP(s) for this project have been constructed and all BMPs are in substantial conformance with the approved plans and applicable regulations. I understand the City reserves the right to inspect the above BMPs to verify compliance with the approved plans and Storm Water Ordinance. Should it be determined that the BMPs were not constructed to plan or code, corrective actions may be necessary before permits can be closed.

Please sign your name and seal.

Professional Engineer's Printed Name:

_____

Professional Engineer's Signed Name:

_____

Date: _____

[SEAL]

City of Escondido Storm Water Structural BMP Verification Form Page 4 of 4

CITY - OFFICIAL USE ONLY:

Permit #:_____

City Inspector: _____

Date Project has/expects to close: _____

Date verification received from Engineer of Work (EOW): _____

By signing below, City Inspector concurs that every noted Structural BMP has been installed per plan.

City Inspector's Signature: _____Date: _____

FOR Environmental Programs:

Date Received from Field Engineering:_____

Environmental Programs Submittal Reviewer:_____

Environmental Programs Reviewer concurs that the information provided for the following Structural BMPs is acceptable to enter into the Structural BMP Maintenance verification inventory:

List **acceptable** Structural BMPs:

Environmental Programs Reviewer's Signature: _____

Date: _____

ATTACHMENT 5

Copy of Plan Sheets Showing Permanent Storm Water BMPs, Source Control, and Site Design

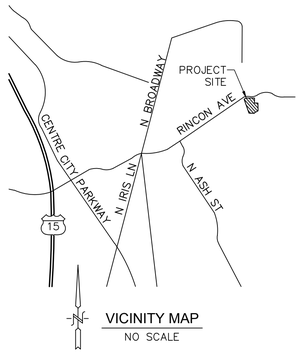
This is the cover sheet for Attachment 5.

Use this checklist to ensure the required information has been included on the plans:

The plans must identify:

☒Structural BMP(s) with ID numbers matching Step 6 Summary of PDP Structural BMPs
☒The grading and drainage design shown on the plans must be consistent with the delineation of DMAs shown on the DMA exhibit
☒Details and specifications for construction of structural BMP(s)
☒Signage indicating the location and boundary of structural BMP(s) as required by City staff
☒How to access the structural BMP(s) to inspect and perform maintenance
☒Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)
☒Manufacturer and part number for proprietary parts of structural BMP(s) when applicable
☒Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)
☒Recommended equipment to perform maintenance
☒When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management
☒Include landscaping plan sheets showing vegetation requirements for vegetated structural BMP(s)
☒All BMPs must be fully dimensioned on the plans
☒When proprietary BMPs are used, site-specific cross section with outflow, inflow, and model number must be provided. Photocopies of general brochures are not acceptable.
☒Include all source control and site design measures described in Steps 4 and 5 of the SWQMP. Can be included as a separate exhibit as necessary.

***Note: Plan sheets included in this attachment can be full size or half size.**



VICINITY MAP
NO SCALE

LEGAL DESCRIPTION

PARCELS A AND B OF CITY OF ESCONDIDO ADJUSTMENT PLAT NO. SUB14–0004, AS SHOWN ON CERTIFICATE OF COMPLIANCE NO. SUB14–0017, IN THE CITY OF ESCONDIDO, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY NOVEMBER 7, 2014 AS DOCUMENT NO. 2014–0487232 OF OFFICIAL RECORDS

OWNER / APPLICANT DEVELOPER:

ISKCON OF ESCONDIDO, INC.
ATTN: DHIRU TANTOD
10707 EL CABALLO AVENUE
SAN DIEGO, CA, 52127
(858) 344–0892

I (WE) HEREBY CERTIFY THAT I (WE) AM (ARE) THE RECORD OWNER OF THE PROPERTY SHOWN ON THE TENTATIVE SUBDIVISION MAP AND THAT SAID MAP SHOWS ALL MY (OUR) CONTIGUOUS OWNERSHIP IN WHICH I (WE) HAVE ANY DEED OR TRUST INTEREST. I (WE) UNDERSTAND THAT MY (OUR) PROPERTY IS CONSIDERED CONTIGUOUS EVEN IF IT IS SEPARATED BY ROADS, STREETS, UTILITY EASEMENTS, OR RAILROAD RIGHTS–OF–WAY.

(SIGNATURE)

SITE ADDRESS:

1315 & 1356 RINCON AVENUE ESCONDIDO, CA 92026

ASSESSOR'S PARCEL NO.:

224–100–84, 224–100–85

ZONING:

EXISTING: RE–20
PROPOSED: RE–20

SCOPE OF WORK:

PROPOSED SUBDIVISION OF EXISTING PARCELS INTO ELEVEN (11) PARCELS WITH TEN (10) LOTS FOR SINGLE FAMILY DWELLINGS WITH DRIVEWAY ACCESS, AN ACCESS ROAD AND CUL–DE–SAC. AND ONE (1) LOT FOR THE PROPOSED NEW DEVELOPMENT INCLUDING THE CONSTRUCTION OF A RELIGIOUS TEMPLE, HALL WITH LIVING AREA, PATIO, DETACHED RESTROOMS, PARKING LOT, AND DRIVEWAY.

GRADING QUANTITIES

CUT	30,000 CY	MAX CUT = 17.4'
FILL	30,000 CY	MAX FILL = 25.1'
NET	BALANCE	

TOPO SOURCE

TOPOGRAPHIC CONTOURS PROVIDED BY REC CONSULTANTS DATED 6–16–2022

SEWER NOTE

ALL LOTS ARE TO BE ON THE PROPOSED SANITARY SEWER SYSTEM THAT SHALL CONNECT TO THE EXISTING PUBLIC SEWER MAIN.

PROJECT AREA CALCULATIONS:

	RESIDENTIAL	TEMPLE
PARCEL AREA:	182,961 SF	885,575 SF
EXISTING PERVIOUS AREA:	181,046 SF	885,575 SF
EXISTING IMPERVIOUS AREA:	1,915 SF	0 SF
PROPOSED PERVIOUS AREA:	164,616 SF	821,300 SF
PROPOSED IMPERVIOUS AREA:	18,345 SF	64,275 SF
PROPOSED BUILDING AREA:	N/A	9,293 SF
ASSEMBLY AREA:	N/A	8,784 SF

PARKING INFORMATION (RESIDENTIAL):

REQUIRED: 2 CAR GARAGE OR CARPORT REQUIRED FOR EACH UNIT PER SINGLE FAMILY RESIDENCE
PROPOSED: 10 LOTS X 2 SPACES = 20 SPACES

PARKING INFORMATION (TEMPLE):

REQUIRED: PER CITY OF ESCONDIDO ORDINANCE, 1 PARKING SPACE FOR EVERY 100 S.F. OF ASSEMBLY AREA
PROPOSED: 8,784 S.F. OF ASSEMBLY AREA / 100 SF = 87.84 ~ 88 PARKING SPACES

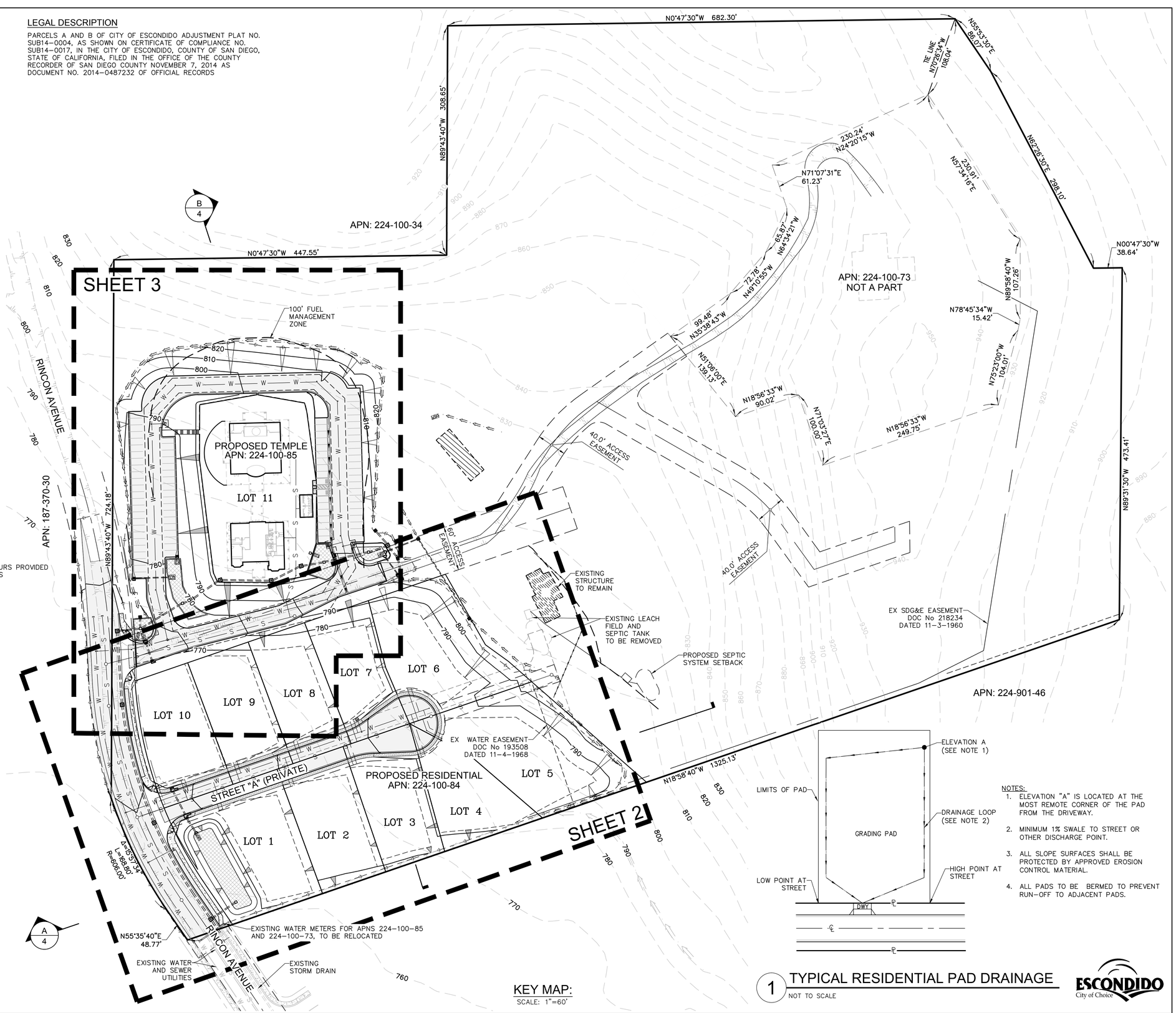
FOR EXISTING IMPROVEMENTS, UTILITIES, AND ALIGNMENT STATIONING, SEE CITY OF ESCONDIDO DWG. NO. P–1755, P–1865

REGISTERED PROFESSIONAL ENGINEER
JONATHAN RAAB RYDEEN
RCE ~ 64811
CIVIL
STATE OF CALIFORNIA

ENGINEER

JONATHAN RAAB RYDEEN

60 30 0 60 120 180
SCALE: 1" = 60'



NOTES:
1. ELEVATION "A" IS LOCATED AT THE MOST REMOTE CORNER OF THE PAD FROM THE DRIVEWAY.
2. MINIMUM 1% SWALE TO STREET OR OTHER DISCHARGE POINT.
3. ALL SLOPE SURFACES SHALL BE PROTECTED BY APPROVED EROSION CONTROL MATERIAL.
4. ALL PADS TO BE BERMED TO PREVENT RUN–OFF TO ADJACENT PADS.

1 TYPICAL RESIDENTIAL PAD DRAINAGE
NOT TO SCALE

ESCONDIDO City of Choice

REVISIONS			
NO.	DESCRIPTION	DATE	APP'D

R·E·C Consultants, Inc.
Civil Engineering · Environmental
Land Surveying
2970 Fifth Avenue, Suite 340
San Diego, CA 92103
(619)232–9200 (619)232–9210 Fax

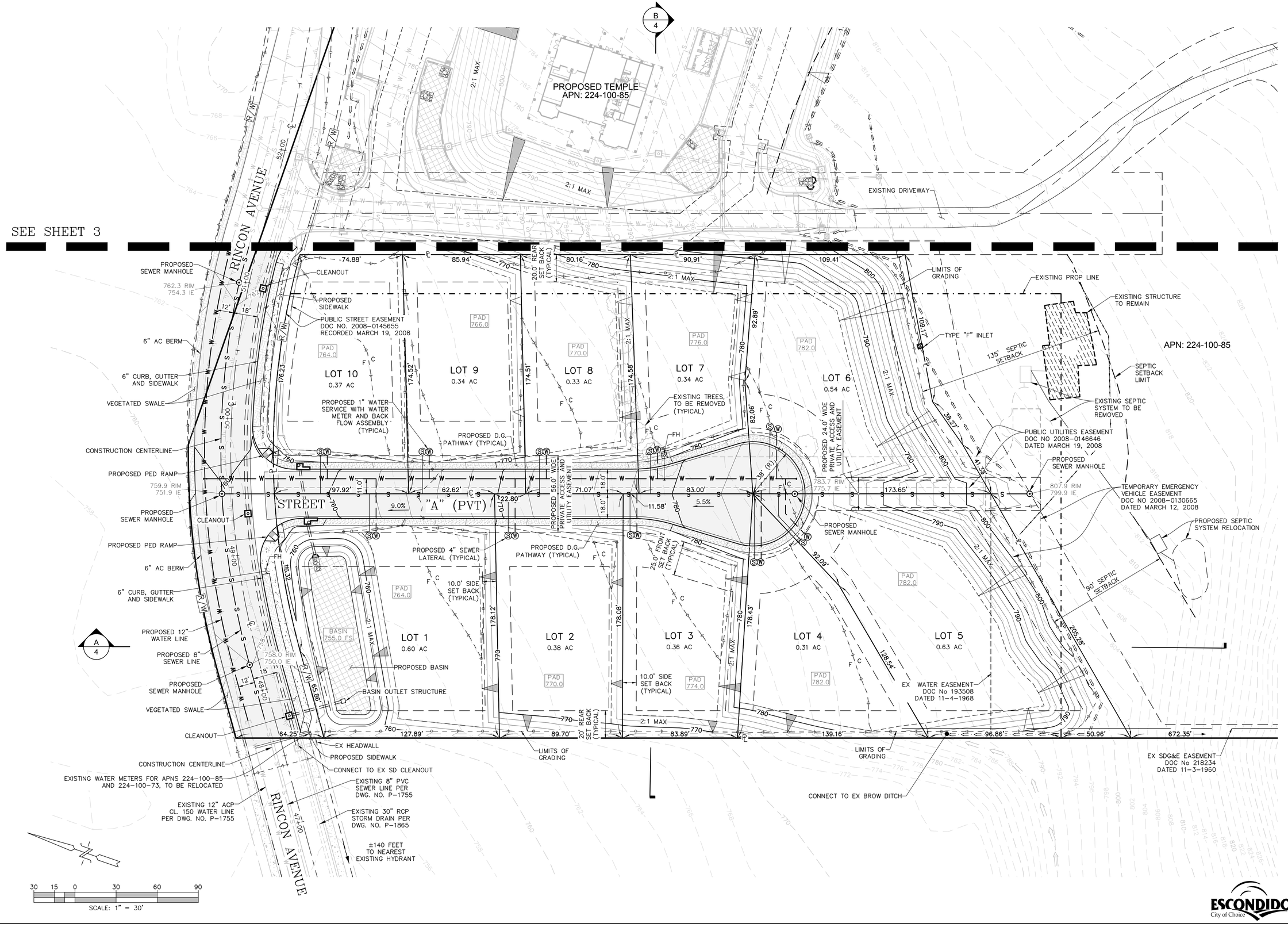
DATE: 2–19–2023
SCALE: 1" = 60'
DRAWN: JMW
CHECKED: J.R.R.

SHEET TITLE: TM - SITE PLAN

PROJECT: KRISHNA RESIDENTIAL
ISKCON OF ESCONDIDO,INC
1365 RINCON AVE ~ ESCONDIDO, CA 92026

SHEET 1 OF 4 SHEETS

SAVE DATE 3/9/2023 ~ PLOT DATE 3/9/2023 ~ FILE NAME P:\Acad\1829 Iskcon Temple ~ Residential\Civil\Site Plan\TM ~ Site Plan ~ 1st Submittal ~ 2023.dwg



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	REVISIONS		

R·E·C Consultants, Inc.
Civil Engineering · Environmental
Land Surveying
2970 Fifth Avenue, Suite 340
San Diego, CA 92103
(619)232-9200 (619)232-9210 Fax

DATE: 2-19-2023
SCALE: 1" = 30'
DRAWN: JMW
CHECKED: JRR

SHEET TITLE: TM - SITE PLAN

PROJECT: KRISHNA RESIDENTIAL
ISKCON OF ESCONDIDO,INC
1365 RINCON AVE - ESCONDIDO, CA 92026

SHEET 2 OF 4 SHEETS

SAVE DATE: 3/9/2023 ~ PLOT DATE: 3/9/2023 ~ FILE NAME: P:\Acad\1829 Iskcon Temple - Residential\Civil\Site Plan\TM - Site Plan - 1st Submittal - 2023.dwg

6" CURB, GUTTER AND SIDEWALK
PROPOSED SEWER MANHOLE
762.3 RIM
754.3 IE
6" AC BERM
CONSTRUCTION CENTERLINE
6" AC BERM
R/W
CAP 12" WATER LINE
CAP 8" SEWER LINE
54+00
4+08
EXISTING ROAD
53+00
RINCON AVENUE
62' PUBLIC RIGHT-OF-WAY
31.0'
12'
764.1 RIM
756.1 IE
PROPOSED SEWER MANHOLE
52+00
51+00
CLEAN OUT
18'
CLEAN OUT
PROPOSED PED RAMP
PROPOSED SIDEWALK
PROPOSED SIDEWALK
TRENCH DRAIN
CURB INLET
TYPE "F" INLET
BASIN OUTLET STRUCTURE
BASIN 763.5 FS
PUBLIC STREET EASEMENT DOC NO. 2008-0145655 RECORDED MARCH 19, 2008
PROPOSED CURB
25.0' FRONT SETBACK
25.0' FRONT SETBACK
1.5:1 MAX
PROPOSED AC PAVING
18.0'
2.0%
4.1%
7.3%
26.0'
4.0%
20' P.U.E.
4.3%
9.1%
0.8%
18.0' (TYP.)
5.0%
0.8%
PROPOSED FIRE HYDRANT
STAIRS
PROPOSED CURB
100' FUEL MANAGEMENT ZONE
PAD 764.0
LOT 10
0.37 AC
BASIN 775.0 FS
BASIN OUTLET STRUCTURE
9.0' (TYP.)
PROPOSED CURB
DOWN
2:1 MAX
EXISTING 60' ACCESS EASEMENT, COVERED BY VARIOUS DEEDS
PROPOSED CURB
CLEAN OUT
PAD LINE
LIMITS OF GRADING
1.5:1 MAX
1.9%
7.6%
26.0'
20' P.U.E.
PAD 766.0
LOT 9
0.34 AC
26'
12.5%
11'
31' P.U.E.
LANDSCAPED AREA
PAD 802.0
LOT 11
20.34 AC
BUILDING AREA 4,084 SF
PROPOSED RESIDENCES
BUILDING AREA 4,700 SF
HALL
252.0'
148.9'
CLEAN OUT
LANDSCAPED AREA
PROPOSED SEWER LATERAL WITH CLEANOUT
PAD LINE
100' FUEL MANAGEMENT ZONE
PROPOSED SEWER MANHOLE
788.6 RIM
780.6 IE
PROPOSED SEWER LATERAL WITH CLEANOUT
CLEAN OUT
PROPOSED WATER METER WITH 2" BACK FLOW ASSEMBLY AND FDC
RESTROOMS
5'
PROPOSED SEWER LATERAL WITH CLEANOUT
PROPOSED CURB
PROPOSED WALL
PROPOSED CURB
PAD 770.0
LOT 8
0.33 AC
2:1 MAX
BASIN OUTLET STRUCTURE
BASIN 794.5 FS
2.4%
2.2%
PROPOSED ADA RAMP
1.1%
0.3%
18.0'
4.7%
3' RIBBON GUTTER
20' P.U.E.
PROPOSED AC PAVING
PROPOSED ADA PARKING AND RAMP AREA
26.0'
5.0%
PROPOSED FIRE HYDRANT
2.8%
2.2%
PROPOSED CURB
1.8%
18.0'
9' TYP
18'
PAD 776.0
LOT 7
0.34 AC
EXISTING 60' ACCESS EASEMENT, COVERED BY VARIOUS DEEDS
BASIN 798.0 FS
PROPOSED CURB
PROPOSED GATE
1.5:1 MAX
LIMITS OF GRADING
TYPE "F" INLET
BASIN OUTLET STRUCTURE
100' FUEL MANAGEMENT ZONE
EXISTING DRIVEWAY
TYPE "F" INLET
SEE SHEET 2
B
4
20 10 0 20 40 60
SCALE: 1" = 20'
ESCONDIDO
City of Choice

NO.	DESCRIPTION	DATE	APP'D
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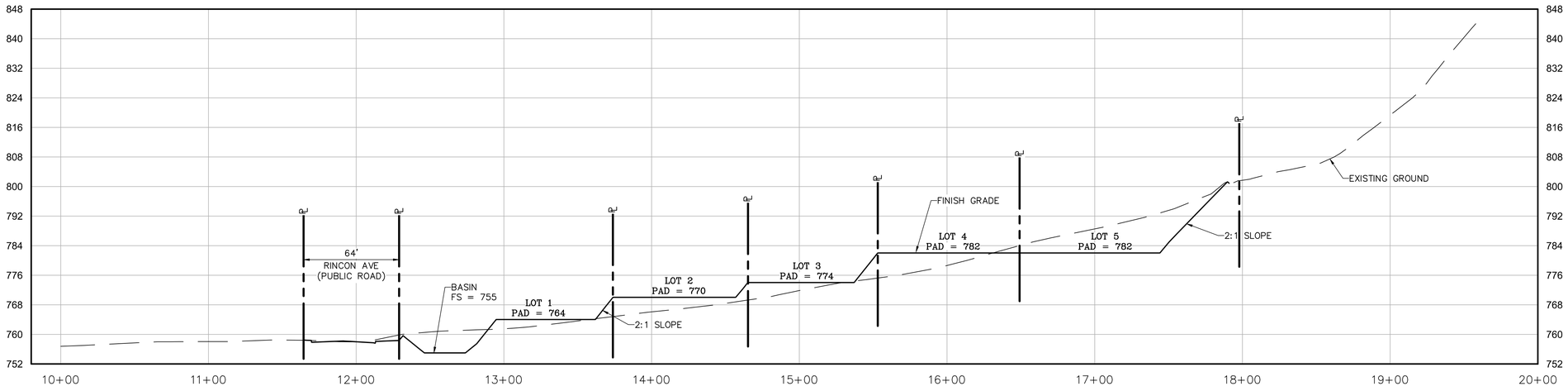
CHECKED: JRR

SHEET TITLE: TM - SITE PLAN

PROJECT:
KRISHNA TEMPLE
ISKCON OF ESCONDIDO,INC
1365 RINCON AVE - ESCONDIDO, CA 92026

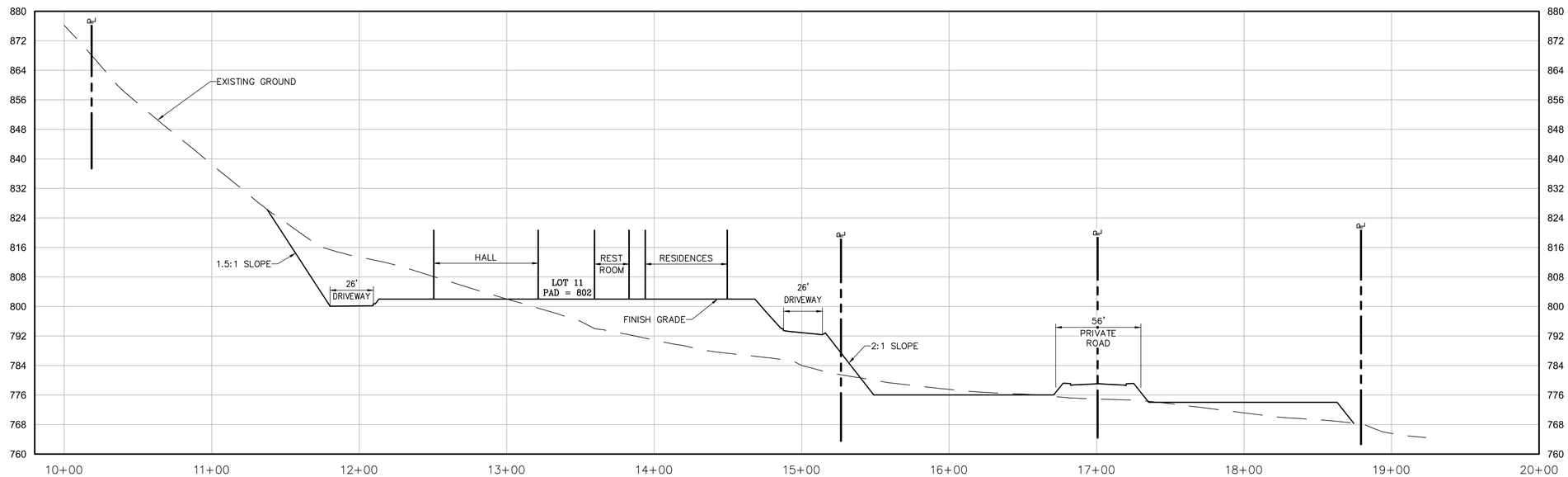
SHEET 3
OF 4 SHEETS

SAVE DATE: 3/9/2023 ~ PLOT DATE: 3/9/2023 ~ FILE NAME: P:\Acad\1829 Iskcon Temple - Residential\Civil\Site Plan\TM - Site Plan - 1st Submittal - 2023.dwg



SECTION A - CENTERLINE

SCALE: HORZ: 1" = 40'
VERT: 1" = 16'



SECTION B - CENTERLINE

SCALE: HORZ: 1" = 40'
VERT: 1" = 16'

ESCONDIDO
City of Choice

REVISIONS

NO.	DESCRIPTION	DATE	APP'D

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SHEET TITLE: TM - SITE PLAN

PROJECT: KRISHNA RESIDENTIAL
ISKCON OF ESCONDIDO,INC
1365 RINCON AVE - ESCONDIDO, CA 92026

SHEET 4 OF 4 SHEETS

SAVE DATE: 3/9/2023 ~ PLOT DATE: 3/9/2023 ~ FILE NAME: P:\Acad\1829 Iskcon Temple - Residential\Civil\Site Plan\TM - Site Plan - 1st Submittal - 2023.dwg