

APPENDIX R

Preliminary Hydromodification Management Study

PRELIMINARY
HYDROMODIFICATION MANAGEMENT STUDY

FOR

Warner Ranch

(Tract No. 5508 rpl4)

*3810-06-002 (SP), 3800-06-009 (GPA), 3600-06-011(R), 3100-5508 (TM),
3300-06-016 (MUP), 3500-11-007 (S), 3000-06-040 (AD), 3910-0602020 (ER)*

Prepared By:

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RCE No. C52794
Expires 12/31/2014

March 21, 2013

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 County of San Diego is confined to a review only and does not relieve me, as engineer of work, of my responsibilities for project design.

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R.C.E. No: C52794

Expires: 12/31/2014



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Maps

Pre-Project Land Use Area Breakdown (Gomez Creek - Full Size)	Attached
Post-Project Land Use Area Breakdown (Gomez Creek - Full Size - Sheets 2)	Attached
Pre-Project Slope Analysis (Gomez Creek - Full Size)	Attached
Post-Project Slope Analysis (Gomez Creek - Full Size)	Attached

SECTION 1

PROJECT DESCRIPTION

Purpose

This Hydromodification Management Plan has been prepared to demonstrate that the proposed project, TM 5508 RPL4, will comply with the County of San Diego's Hydromodification Management Plan (HMP). The HMP was developed by the County of San Diego, and its NPDES Co-permittees, to address the hydromodification requirements issued by the Regional Water Quality Control Board in Order R9-2007-0001, Provision D. 1 .g (6). Provision D. 1 .g (6) states, "Each Co-permittee shall collaborate with the other Co-permittees to develop and implement a Hydromodification Management Plan (HMP) to manage increases in runoff discharge rates and durations from all Priority Development Projects, where such increased rates and durations are likely to cause increased erosion of channel beds and banks, sediment pollutant generation, or other impacts to beneficial uses and stream habitat due to increased erosive force. "As required by Permit Order No. R9-2007-0001, each Copermittee shall incorporate the approved HMP into

its local Standard Urban Storm Water Mitigation Plan (SUSMP) and implement the HMP for all applicable PDPs by January 14, 2011", so that post-project runoff discharge rates and durations shall not exceed estimated pre-project discharge rates and durations where the increased discharge rates and durations will result in increased potential for erosion or other significant adverse impacts to beneficial uses, attributable to changes in the discharge rates and durations.

" Per final hydromodification management criteria developed for San Diego County, which will be applicable to all Priority Development Projects, results of a hydromodification management analysis must adhere to the following criteria: "

- "For flow rates between the pre-project lower flow thresholds (see below) and the pre-project 10-year runoff event, the post-project discharge rates, and durations may not deviate above the pre-project discharge rates and durations by more than 10 percent over more than 10 percent of the length of the flow duration curve.
- Lower flow thresholds may be determined using the HMP Decision Matrix (located in Chapter 6) along with a critical flow calculator and channel screening tools developed by the Southern California Coastal Water Research Project (SCCWRP), detailed in Chapter 5. These methods identify lower flow thresholds for a range of channel conditions. The critical flow calculator recommends a lower flow value of $0.1Q_2$, $0.3Q_2$, or $0.5Q_2$ dependent on the receiving channel material and dimensions. This value will be compared to the channel susceptibility rating (High, Medium, or Low) as determined

from the SCCWRP screening tools located in Appendix B to determine the final lower flow threshold.

- The lower flow threshold may alternately be determined as 10 percent of the pre-project 2-year runoff event, or 0.1Q2. This approach, which is outlined in the HMP Decision Matrix, is available if the project applicant chooses not to complete the channel screening analysis. "

This report has been prepared in accordance with the, "Hydromodification Management Plan" (HMP)", prepared by Brown and Caldwell for the County of San Diego, dated March, 2011.

Project Description

The project area consists of 780 residential units (534 single family detached, with lot size ranging from 3,000 sq. ft. 8,000 sq. ft., and 246 multi-family and attached townhomes)

- 7.7 acres of Private community parks, including a clubhouse
- 14.54 acres of Landscaped areas
- 4.23 acres of Public recreational park
- 359.05 acres of Preserved open space
- 10,000 sq. ft. On-site fire station

The proposed Warner Ranch Project is located in the unincorporated area in the northwestern portion of San Diego County, approximately five miles east of Interstate 15 on Pala Road (State Route (SR) 76). It is just west of Pala Temecula Road in the Pala Pauma Subregional Planning Area (Figures 1.38 and 1.39). It includes Assessor's Parcel Numbers (APNs) 110-021-09 and 10; 110-090-01, -17, -18; 110-021-32; and 110-040-22. Mostly agricultural areas are located along the western and southern boundary of the site. The project site consists of 513.49 acres situated between two small bodies (Gomez and Pala Creek) of intermittently flowing water on both sides. Gomez Creek runs through the western portion of the Project, and Pala Creek traverses through the eastern side, however, no disturbance is proposed within the Pala Creek basin. This Hydromodification Management Plan accompanies the Tentative Map for "Warner Ranch Tract 5508 rpl4", and assesses the need for hydromodification Best Management Practices (BMPs) for Gomez Creek to comply with the HMP.

Project completion and permanent post construction BMPs will be implemented. Water quality and erosion control BMPs will be incorporated as needed to address this level of development.

Should a project propose alternative BMPs, or any variation to the assumptions made within this report, then that project will need to provide additional modeling and analysis to demonstrate that the subdivision as a whole will still be in compliance with the HMP upon completion of the project.

Method of Analysis

The hydromodification analysis within this report utilizes continuous modeling software called San Diego Hydrology Model (SDHM), version dated 10/11/2011, developed by Clear Creek Solutions, Inc. Using rain gauge data specific to the project of interest; SDHM calculates pre-project runoff rates for each water year to compute the pre-project 2- through 25-year flood frequency values. The software then calculates the post-project 2- through 25-year flood frequency values, routing runoff through project BMPs as applicable. The maximum flow value for each water year is selected by the model to compute the pre- and post-project 2- through 25-year flood frequencies. The pre-project 2-year peak flow is multiplied by 10%, or 0.1Q₂ to set the lower limit of the erosive flows, in accordance with the IHC, and the 10-year peak flow is used as the upper limit. The model counts the number of hours that pre project flows exceed each of the flow levels during the entire simulation period. The model does the same analysis for the post-project mitigated flows. A comparison of the pre-project and post-project flow duration curves is conducted for 100 flow levels between the lower limit and the upper limit. If the comparison of the pre-project and post-project flow duration curves yields compliance with the IHC, the software issues a "pass" for the model, otherwise it issues a "fail".

A basin is modeled within SDHM using land use type and slope, for the pre- and post-project condition. In the post-project condition, the basin can be broken down into multiple sub-basins, if necessary, and each sub-basin can be routed to a different BMP or to no BMP at all. Additionally, the software contains an "auto-pond" component that can automatically size a BMP for the specific basin of interest. This component calculates, through an iterative process, the optimal size of the BMP and the BMP outlet structure. Though this may not ultimately be the detention volume required, it provides a starting point for sizing BMP facilities and assessing the feasibility of satisfying the IHC.

The pre- and post-project land use and slope values for Warner Ranch are calculated within Section 3 and are illustrated on Exhibits "A" and "B", also included within that section.

Ridges running through Gomez Creek basin divide the site into two pre-drainage basins labeled Basins "1" and "2" that converge at the Lower Point of Gomez Creek, on the north side of the bridge before SR76. In Section 4, the pre- and post-project land uses are used to model each basin within SDHM. In the post-project condition, the portion of each basin anticipated to be detained, or routed through a BMP before merge into Gomez Creek.

Rainfall Data

The SDHM models within Sections 4 utilize rainfall data from the Fallbrook gauge (dated April 2009). Per the Rainfall Station Map prepared by Brown & Caldwell, the Fallbrook rain gauge is located west off the Project site. According to the 85th Percentile Precipitation Isopluvial Map found in Appendix E of the San Diego Hydrology Manual, dated June 2003, the Warner Ranch project is located relatively close to the isopluvial contour, therefore no scaling was consider for this analysis report.

Maintenance of Hvdromodification Facilities

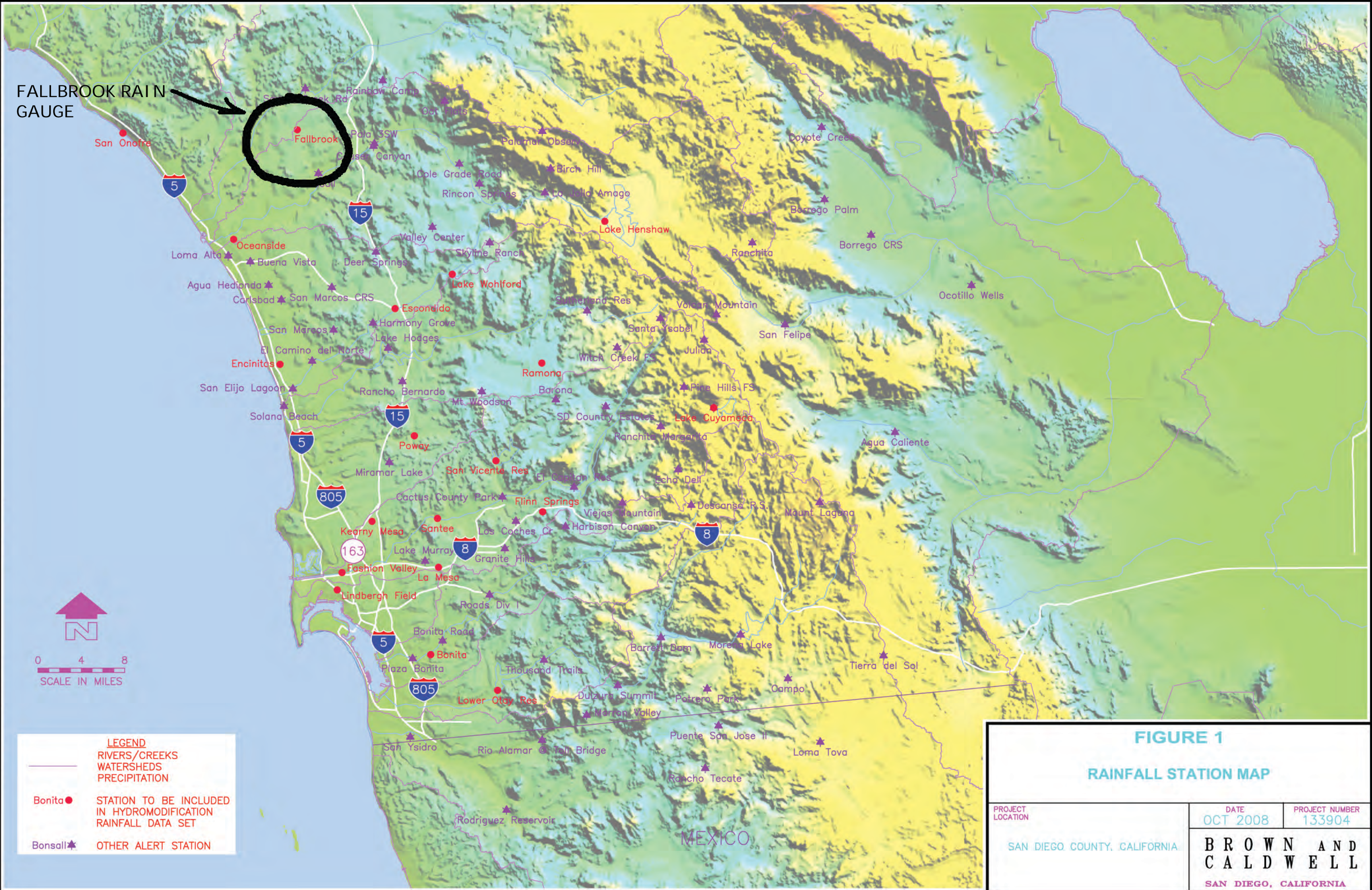
The proposed hydromodification facilities at Warner Ranch will fall under second maintenance mechanisms, as defined within the County of San Diego "Standard Urban Storm Water Mitigation Plan Requirements for Development Applications", dated January 8, 2011. The on-site BMPs constructed during the ultimate build-out will fall under the second category maintenance mechanisms, requiring that a Stormwater Facilities Maintenance Agreement, with Easement and Covenants be entered into between the owner and the County of San Diego, obliging the owner/HOA to maintain the project category two BMPs into perpetuity. Prior to recordation of the agreement, the owner/ developer will provide the County with security to back up the maintenance agreement, which shall remain in place for an interim period of 5 years. The amount of the security shall equal the estimated cost of 2 years of maintenance activities.

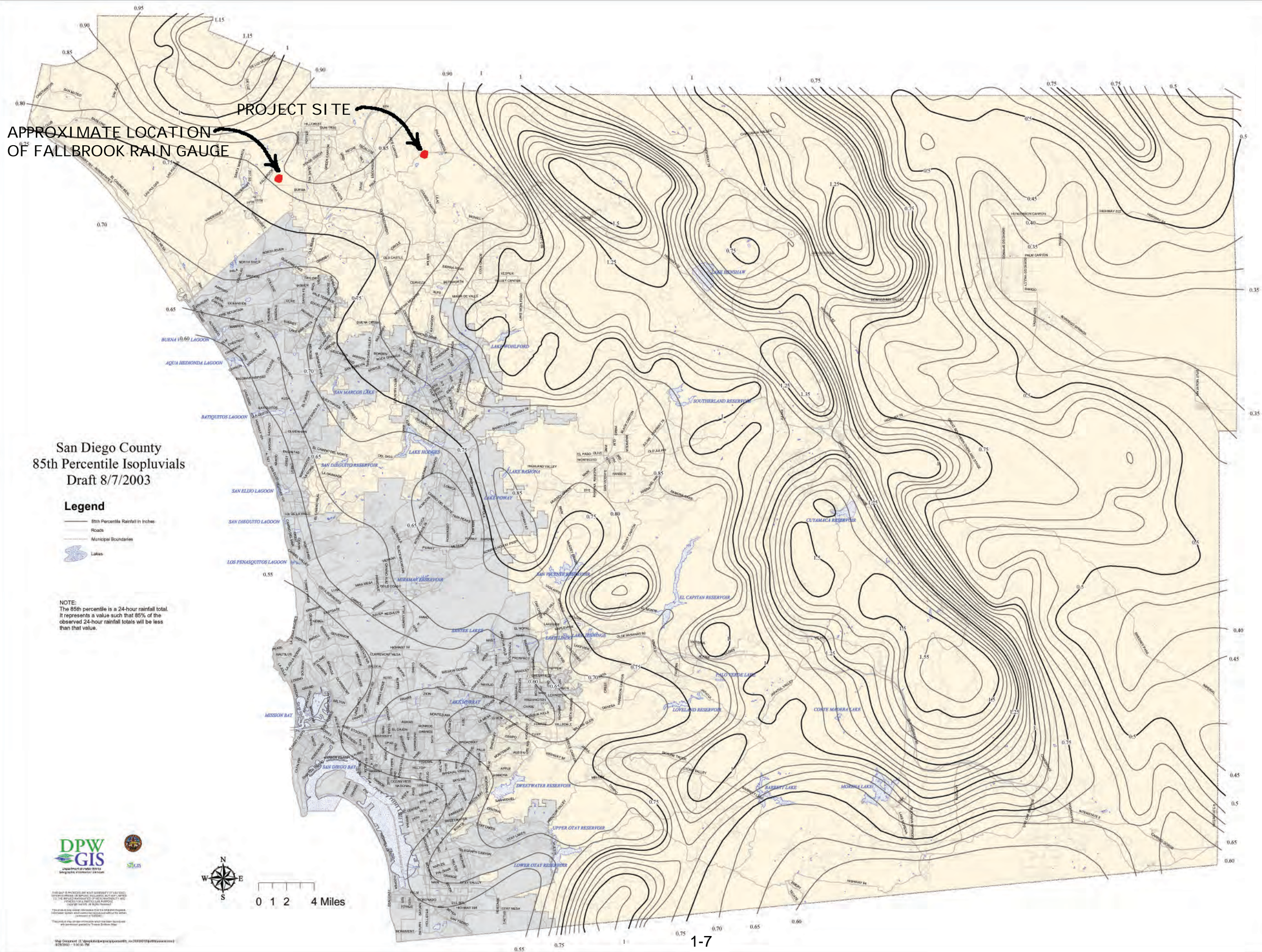
The BMPs (swale) servicing the public right-of-way (SR76) will ultimately be maintained by Caltrans or the owner/HOA. Agreements for maintenance will be secured prior to issuance of building permit.

Conclusion

The calculations within this report assess the feasibility of satisfying the IHC and establish detention facility sizes and locations for the project. Based on the detention requirements and the anticipated facility sizes, as illustrated on Exhibit B within Section 3, the Warner Ranch project will comply with the IHC. Should a project propose alternative BMPs, or any variation to the assumptions made within this report, then that project will need to provide additional modeling and analysis to demonstrate that the subdivision as a whole will still be in compliance with the IHC upon completion of the project.

Layout: B landscape | Ref Files : San Diego County - Aerial Transportation.dwg : Water_Sheds.dwg : DFO/2/2/2009 4:52:26 PM Aerial
Project\San Diego County\133904 - SDC - Rainfall Stations - Hourly Alerts.dwg
bbennett





San Diego County
85th Percentile Isopluvials
Draft 8/7/2003

Legend

- 85th Percentile Rainfall in Inches
- Roads
- Municipal Boundaries
- Lakes

NOTE:
The 85th percentile is a 24-hour rainfall total.
It represents a value such that 85% of the
observed 24-hour rainfall totals will be less
than that value.



0 1 2 4 Miles

SECTION 2

VICINITY MAP

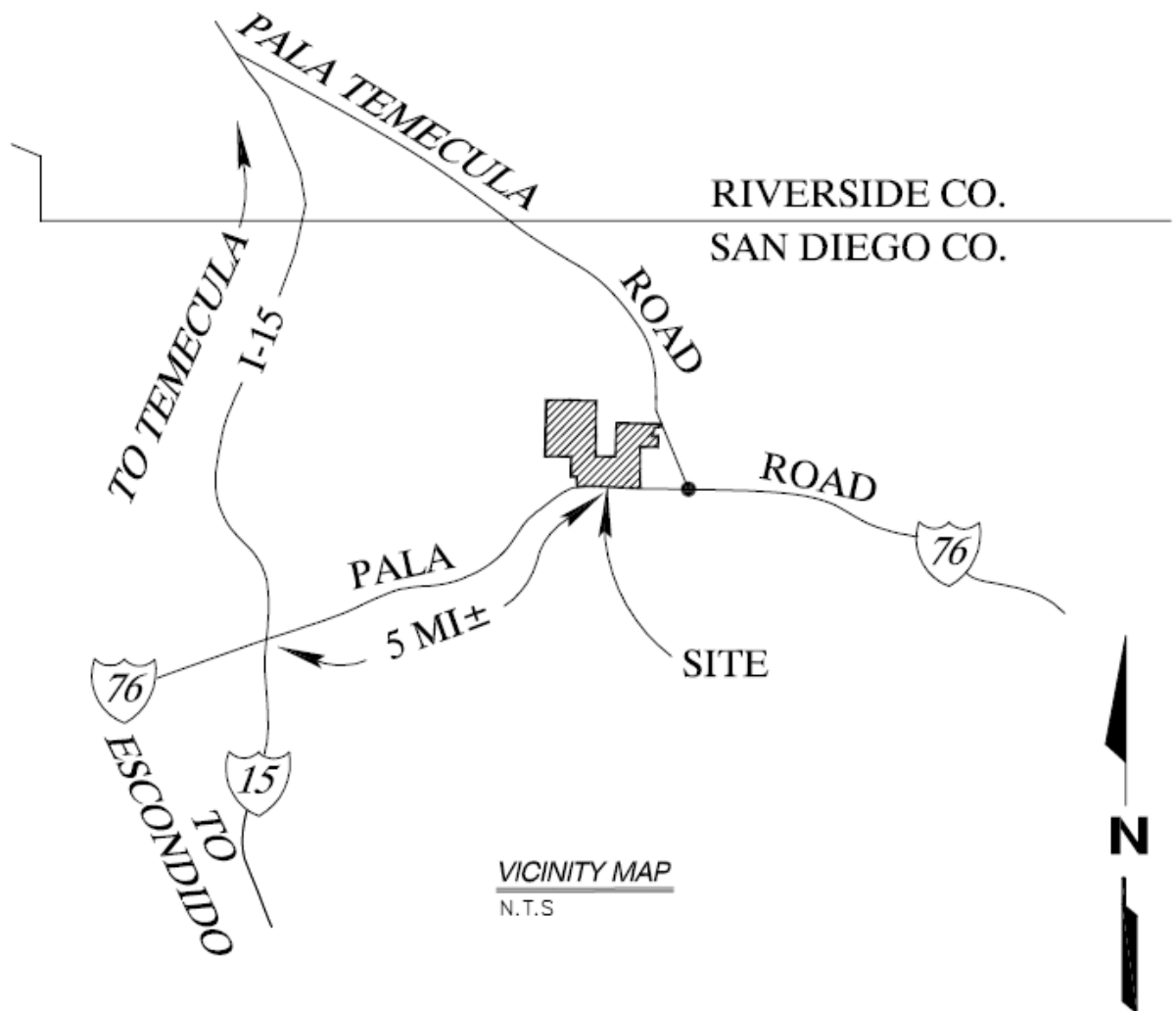


Figure 2-1 - Vicinity map

SECTION 3

LAND USE AREA CALCULATIONS

Pre-Project Condition:

The Site is characterized by diverse topography with elevation ranging 350 feet to 1,000 feet above mean sea level; however, the entire basin study reaches a high elevation of 1,950. The northern portion of the site is generally depicted as moderate to steep slopes. The area contains a variety of vegetation types, including Chaparral and Coastal Sage Scrub, as well as habitats supporting a wide range of sensitive plants and animals. The southern portion of the site is relatively flat and presently contains orchards, as well as a network of unimproved roads.

For the purpose of this report, the pervious land use was based on soil types: A (well infiltrating soils), B (moderate infiltrating soils), and C/D (poor infiltrating soils), the slope categories used are flat (0-5%), moderate (5-10%), steep (10-20%), and very steep (>20%). The pre-project condition was considered to have no impervious surfaces.

Ridge lines within the project basin divide the site into two drainage basins (See Exhibit "A") labeled Basin "1" and "2". Both Basin flows converge to Gomez Creek along the south west side of the project set as Point of Compliance 1 (POC1) and eventually outflows to the San Luis Rey River further south.

Post-Project Condition:

In the post-project condition, Basins were broken down into appropriate sub-basins labeled "1" thru "17" and routed into proposed BMP's. Flow will generally maintain existing drainage patterns and outfall at the same Point of Compliance 1 (Gomez Creek- POC 1). The site will be graded into 780 residential units (534 single family detached and 246 multi-family and attached townhomes). In the post-project condition, the portion of each new developed basin anticipated to be detained, or routed through BMP facilities and assessing the feasibility to satisfying the IHC.

For the purpose of this report, the impervious areas within each basin are individually categorized into five types: roads, roofs, driveways, sidewalks, and parking. The slope categories are the same as for the pervious land use (flat, moderate, steep, and very steep).

Bio retentions, Detention ponds, and Bio swales where design and proposed along the development area. Bioretention/Detention facilities area labeled as BMP 1 thru 8, Bio swales areas are labeled 1 thru 3.

Though various BMP areas are proposed within the project, drainage flows in this study are directed to the same Point of Compliance (POC1), as described below.

Basin 1 is part of the detached single family units located within the north eastern side of the proposed project with a basin area of 37.82 acres. Rainfall flows from this basin are routed through streets and landscape areas. These flows are collected through street curb inlets and into the proposed storm drain system, which then travel to a Detention Basin labeled as “BMP 1”. This basin (BMP 1) is approximately 49,100 sq. ft. in size, which detains and treats receiving waters before being routed to Gomez Creek (POC1).

Basin 2 is located within the south eastern portion of the project; it mainly consists of detached single family and multi-family units. The basin area is 29.48 acres in size. Flows are collected at curb inlets in different locations of the basin and into a storm drain system that directs to a Detention Basin labeled “BMP 2”. The basin area (BMP 2) is approximately 82,700 sq. ft., where water is collected thru a riser pipe and into a reinforced concrete pipe that outflows to Bio swale 2. Flow from this swale runs parallel along the north part of SR76 from east to west and eventually connects to Gomez Creek (POC1).

Basin 3 is located within the multi-family units north east of Basin 2 with an area of 2.45 acres. Flows are routed through streets and landscape areas, which redirect to curb cuts and into a Bioretention (BMP 3). After water treatment, flow from this basin gets collected through a storm drain system that drains to Bio swale 2 and then travels to Gomez Creek (POC 1).

The majority of Basin 4 is within the multi-family units, some single family and part of Club House/Recreational area. This basin is located in the mid portion of the project and has an area of 14.04 acres. Flows are collected through street curb inlets and into the proposed storm drain system, which is then directs to a Detention Basin labeled as “BMP 4”. This treatment facility is approximately 37,500 sq. ft. in size, where runoff flow is collected thru a riser pipe and into a 66” reinforced concrete pipe that runs in the main entry road. This flow merges with upstream receiving waters and into Bio swale 1 and eventually connects to Gomez Creek (POC 1).

Basin 5 is located in the eastern side of the development, being part of the detached single family units, with an area of 40.82 acres in size. Runoff from this area is routed through street flow and landscape areas. Flows gets collected through curb inlets and into a storm drain system that flows to a Detention Basin labeled “BMP 5”. This basin (BMP) is approximately 71,600 sq. ft. in area.

After water treatment, flow from this basin gets collected through a riser pipe and into a reinforced concrete pipe that outflows to Bio swale 3 and into Gomez Creek (POC 1).

Basin 6 is located within the multi-family units in the mid portion of the project and has an area of 4.12 acres. Flows from this basin are collected through curb inlets, curb-cuts and into a Bioretention labeled “BMP 6”. This treatment facility is approximately 10,500 sq. ft. in area. After water is treated, flow from this BMP is collected thru a riser pipe and into a 66” reinforced concrete pipe, which outflows into Bio swale 1.

Basin 7 is located within the public park area just east of the main entry and has an area of 4.16 acres. Flows are collected through curb-cuts and into a Bioretention labeled “BMP 7”. This Basin (BMP) has an area of approximately 7,900 sq. ft. in size, and outflows directly to Bio swale 1, than travels to Gomez Creek (POC 1).

Basin 8 is located within the attached townhomes in the mid east side of the project with an area of 1.42 acres in size. Flows from this area are routed through street flow, landscape areas, curb-cuts and into a Bioretention labeled “BMP 8”. After water treatment, flow from this basin gets collected through a storm drain system that drains to Bio swale 2 and then routed to Gomez Creek (POC 1).

Basin 9 and 10 are part of the swale areas. This areas are located parallel to SR76 and are self-treated.

Basin 11, 12, 13 and 14 are undisturbed or side slope landscape areas, that are self-treated. Flows from these basins are collected into a 66” reinforced concrete pipe storm drain system that outflows into Bio swale 1. This swale runs parallel through the southeast portion of the development along SR76, with a flow direction running west and into Gomez Creek (POC1).

Basin 15 is part of a portion of SR76 and has an area of 3.31 acres. Flows from this basin are captured through proposed drain inlets and into Bio swale 3.

Basin 17 is located southeast of the project with an area of 2.08 acres of undisturbed land. Flows from this basin are self-treated, and drain through a 24” reinforced concrete pipe to Bio swale 2. Finally, Basin 16 is relatively equal to Basin 1 of the pre-project condition, and has an area of 3,564.51 acres. It flows from north to south along the west side of the development area. The majority of this Basin compare to the pre-condition was left undeveloped, no impervious areas are proposed within this Basin, and outflows directly into Gomez Creek (POC 1).

Project Soils Conditions:

Per Geocon Incorporated, "site soils and geologic condition study", dated March 3, 2011 and included for reference at the end of this report, top soils at the majority of the site consist of, "loose, silty, fine to coarse sands" and "gravelly medium to coarse sands". Soils Groups A, B, C and D were found on site. For the purpose of this report, no infiltration rates were utilized. Actual percolation rates will be determined after the proposed grading is completed.

PRE-PROJECT LAND USE AREA BREAKDOWN - TABLE 3-1

Basin No.	Basin 1 (ac.)	Basin 2 (ac.)	Total Land Use Area (ac.)
A-Forest (0-5%)	0.16	0.07	0.23
A-Forest (5-10%)	0.02	0	0.02
A-Forest (10-20%)	0.01	0.04	0.05
A-Forest (>20%)	0.1	2.45	2.55
A-Shrubs (0-5%)	0	0	0.00
A-Shrubs (5-10%)	0	0.01	0.01
A-Shrubs (10-20%)	0	1.32	1.32
A-Shrubs (>20%)	0	34.39	34.39
A-Grass (0-5%)	12.03	1.58	13.61
A-Grass (5-10%)	0.54	0.02	0.56
A-Grass (10-20%)	0.12	0	0.12
A-Grass (>20%)	0.19	0	0.19
B-Forest (0-5%)	4.93	0	4.93
B-Forest (5-10%)	5.3	0	5.30
B-Forest (10-20%)	1.2	0.01	1.21
B-Forest (>20%)	5.76	3.99	9.75
B-Grass (0-5%)	6.56	9.4	15.96
B-Grass (5-10%)	2.07	2.08	4.15
B-Grass (10-20%)	1.63	2.18	3.81
B-Grass (>20%)	1.58	3.63	5.21
B-Shrubs (0-5%)	0.66	3.24	3.90
B-Shrubs (5-10%)	6.7	8.54	15.24
B-Shrubs (10-20%)	8.63	29	37.63

Basin No.	Basin 1 (ac.)	Basin 2 (ac.)	Total Land Use Area (ac.)
B-Shrubs (>20%)	10.4	106.46	116.86
C/D-Forest (0-5%)	4.12	9.95	14.07
C/D-Forest (5-10%)	6.8	8.96	15.76
C/D-Forest (10-20%)	2.38	28.97	31.35
C/D-Forest (>20%)	3.7	51.67	55.37
C/D-Shrubs (0-5%)	0.83	9.85	10.68
C/D-Shrubs (5-10%)	16.64	111.68	128.32
C/D-Shrubs (10-20%)	43.7	482.84	526.54
C/D-Shrubs (>20%)	354.98	2680.24	3035.22
C/D-Grass (0-5%)	5.02	10.33	15.35
C/D-Grass (5-10%)	1.37	1.3	2.67
C/D-Grass (10-20%)	0.25	0.04	0.29
C/D-Grass (>20%)	0.02	0	0.02
Total Basin Area (ac.)	508.40	3604.24	4112.64

POST PROJECT LAND USE AREA BREAKDOWN (TREATED) - TABLE 3-2 (LID/BMP SUMMARY SIZING CALCULATIONS)

Sub-Basin No.	Basin 1 (ac.)	Basin 2 (ac.)	Basin 3 (ac.)	Basin 4 (ac.)	Basin 5 (ac.)	Basin 6 (ac.)	Basin 7 (ac.)	Basin 8 (ac.)	Basin 9 (ac.)	Basin 10 (ac.)	Basin 15 (ac.)	Total Land Use Area (ac.)
A,Urban Flat (0-5%)	0.00	2.80	0.00	0.00	1.37	0.00	1.71	0.00	0.00	0.26	0.62	6.76
A,Urban Very Steep (>20%)	0.00	0.66	0.00	0.00	0.51	0.00	0.05	0.00	1.44	0.98	0.00	3.63
B,Urban Flat (0-5%)	5.98	3.43	0.25	1.04	8.52	1.45	0.79	0.17	0.00	0.16	0.00	21.78
B,Urban Moderate (5-10%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B,Urban Very Steep (>20%)	1.84	1.56	0.05	0.43	1.39	0.28	0.39	0.00	0.00	0.00	0.00	5.94
C,Urban Flat (0-5%)	9.89	2.63	0.50	2.05	0.00	0.00	0.00	0.39	0.00	0.00	0.00	15.46
C,Urban Moderate (5-10%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C,Urban Very Steep (>20%)	1.96	1.97	0.08	0.04	0.00	0.00	0.00	0.11	0.00	0.00	0.00	4.16
D,Urban Flat (0-5%)	0.00	1.57	0.00	1.22	3.97	0.00	0.07	0.00	0.00	0.02	0.03	6.89
D,Urban Very Steep (>20%)	0.00	0.00	0.00	0.79	0.29	0.00	0.06	0.00	0.00	0.00	0.00	1.14
Roads Flat (0-5%)	4.48	3.16	0.46	3.39	7.64	1.07	0.39	0.27	0.00	0.50	2.59	23.93
Roads Moderate (5-10%)	1.70	2.00	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.00	0.00	3.96
Dwy Flat (0-5%)	2.07	2.07	0.23	1.33	2.51	0.27	0.00	0.00	0.00	0.00	0.00	8.48
Sidewalk Flat (0-5%)	0.70	0.62	0.03	0.91	1.37	0.20	0.07	0.00	0.00	0.07	0.07	4.02
Sidewalk Moderate (5-10%)	0.46	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.82
Parking Lots Flat (0-5%)	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.00	0.00	0.00	0.35
Roof Area	8.74	6.66	0.85	2.84	8.55	0.85	0.02	0.49	0.00	0.00	0.00	29.00
B-Shrubs (>20%)	0.00	0.00	0.00	0.00	3.91	0.00	0.00	0.00	0.00	0.00	0.00	3.91
B-Forest (>20%)	0.00	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.80
Total Basin Area (ac.)	37.82	29.48	2.45	14.04	40.82	4.12	4.16	1.42	1.44	1.99	3.31	141.06
Drains to LID/BMP Type	Detention Pond (BMP 1)	Detention Pond (BMP 2)	Bioretention (BMP 3)	Detention Pond (BMP 4)	Detention Pond (BMP 5)	Bioretention (BMP 6)	Bioretention (BMP 7)	Bioretention (BMP 8)	Bioswale 2 Self-treated	Bioswale 1 Self-treated	Bioswale 3	N/A
Minimum LID/BMP Area (sqft.)*	45,963	36,674	7,760	28,547	67,713	10,048	4,480	3,877	N/A	N/A	N/A	205,062
Proposed LID/BMP Area (sqft.)	49,100	82,700	6,500	37,500	71,600	10,500	7,900	4,850	N/A	N/A	N/A	270,650

* Minimum Area/Volume Based on the County of San Diego SUSMP “Standard Urban Stormwater Management Plan” and Hydromodification Workgroup, BMP Sizing calculator (Version 3.0). Set to Low Flow Threshold of 0.1Q2. (See section 4 for summary of calculations).

CONTINUE...

POST PROJECT LAND USE AREA BREAKDOWN (TREATED) - TABLE 3-2 (LID/BMP SUMMARY SIZING CALCULATIONS)

Sub-Basin No.	Basin 1 (ac.)	Basin 2 (ac.)	Basin 3 (ac.)	Basin 4 (ac.)	Basin 5 (ac.)	Basin 6 (ac.)	Basin 7 (ac.)	Basin 8 (ac.)	Basin 9 (ac.)	Basin 10 (ac.)	Basin 15 (ac.)	Total Volume (Cu. Ft.)
Minimum Volume 1 (cu. Ft.)	199,908	156,436	6,469	119,642	301,782	8,373	3,734	3,231	N/A	N/A	N/A	799,575
Minimum Volume 2 (cu. Ft.)	N/A	N/A	4,183	N/A	N/A	N/A	114	2,095	N/A	N/A	N/A	6,392
Minimum Volume Total *	199,908	156,436	10,652	119,642	301,782	8,373	3,848	5,326	N/A	N/A	N/A	805,967
Proposed Volume 1 (cu. Ft.)	206,150	354,400	8,550	155,200	304,300	12,475	10,200	6,190	N/A	N/A	N/A	1,057,465
Proposed Volume 2 (cu. Ft.)	N/A	N/A	3,035	N/A	N/A	3,700	3,420	2,100	N/A	N/A	N/A	12,255
Proposed Volume Total	206,150	354,400	11,585	155,200	304,300	16,175	13,620	8,290	N/A	N/A	N/A	1,069,720

* Minimum Area/Volume Based on the County of San Diego SUSMP “Standard Urban Stormwater Management Plan” and Hydromodification Workgroup, BMP Sizing calculator (Version 3.0). Set to Low Flow Threshold of 0.1Q2. (See section 4 for summary of calculations).

POST-PROJECT LAND USE AREA BREAKDOWN (SELF-TREATED) - TABLE 3-3

Sub-Basin No.	Basin 11 (ac.)	Basin 12 (ac.)	Basin 13 (ac.)	Basin 14 (ac.)	Basin 16 (ac.)	Basin 17 (ac.)	Total Land Use Area (ac.)
A-Forest (0-5%)	0.00	0.00	0.00	0.00	0.13	0.00	0.13
A-Forest (5-10%)	0.00	0.00	0.00	0.00	0.01	0.00	0.01
A-Forest (10-20%)	0.00	0.00	0.00	0.00	0.05	0.00	0.05
A-Forest (>20%)	0.00	0.00	0.00	0.00	2.41	0.00	2.41
A-Shrubs (0-5%)	0.00	0.00	0.00	0.00	0.15	0.00	0.15
A-Shrubs (5-10%)	0.00	0.00	0.00	0.00	0.14	0.00	0.14
A-Shrubs (10-20%)	0.00	0.00	0.00	0.00	1.45	0.00	1.45
A-Shrubs (>20%)	0.00	0.00	0.00	0.00	33.98	0.00	33.98
A-Grass (0-5%)	0.00	0.00	0.00	0.00	0.11	0.61	0.72
B-Forest (0-5%)	0.00	0.08	0.00	0.00	0	0.00	0.08
B-Forest (5-10%)	0.00	0.00	0.01	0.00	0	0.00	0.01
B-Forest (10-20%)	0.00	0.00	0.01	0.00	0	0.00	0.01
B-Forest (>20%)	0.00	0.00	1.40	0.00	0.11	0.00	1.51
B-Grass (0-5%)	0.00	0.00	0.00	0.00	0	0.00	0
B-Grass (5-10%)	0.00	0.00	0.00	0.00	0	0.35	0.35
B-Grass (10-20%)	0.00	0.00	0.00	0.00	0	0.34	0.34
B-Grass (>20%)	0.00	0.00	0.00	0.00	0	0.35	0.35
B-Shrubs (0-5%)	0.04	0.31	0.01	0.00	14.1	0.00	14.46
B-Shrubs (5-10%)	0.23	1.41	0.00	0.00	8.85	0.00	10.49
B-Shrubs (10-20%)	1.81	0.77	0.07	0.00	27.2	0.43	30.28
B-Shrubs (>20%)	0.77	4.16	1.53	0.00	92.68	0.00	99.14
C/D-Forest (0-5%)	0.00	0.00	0.00	0.00	17.49	0.00	17.49
C/D-Forest (5-10%)	0.00	0.00	0.00	0.00	9.02	0.00	9.02

CONTINUE... POST-PROJECT LAND USE AREA BREAKDOWN (SELF-TREATED) - TABLE 3-3

Sub-Basin No.	Basin 11 (ac.)	Basin 12 (ac.)	Basin 13 (ac.)	Basin 14 (ac.)	Basin 16 (ac.)	Basin 17 (ac.)	Total Land Use Area (ac.)
C/D-Forest (10-20%)	0.00	0.00	0.01	0.00	26.56	0.00	26.57
C/D-Forest (>20%)	0.00	0.60	0.30	0.00	46.4	0.00	47.31
C/D-Shrubs (0-5%)	0.03	3.23	0.00	0.00	47.64	0.00	50.90
C/D-Shrubs (5-10%)	0.09	10.44	0.00	0.00	128.81	0.00	139.34
C/D-Shrubs (10-20%)	2.10	34.49	0.00	0.00	481.29	0.00	517.87
C/D-Shrubs (>20%)	7.68	325.79	1.32	0.00	2623.92	0.00	2958.70
C/D-Grass (0-5%)	0.00	0.00	0.00	0.00	0.84	0.00	0.84
C/D-Grass (5-10%)	0.00	0.00	0.00	0.00	0.04	0.00	0.04
B,Urban (0-5%)	0.00	0.15	0.00	0.14	0	0.00	0.29
B,Urban (5-10%)	0.00	0.06	0.00	0.08	0	0.00	0.13
B,Urban (10-20%)	0.01	0.03	0.05	0.05	0	0.00	0.14
B,Urban (>20%)	0.65	1.04	1.26	0.19	0	0.00	3.14
C,Urban (0-5%)	0.00	0.36	0.01	0.00	0	0.00	0.37
C,Urban (5-10%)	0.00	0.06	0.00	0.02	0	0.00	0.08
C,Urban (10-20%)	0.00	0.11	0.00	0.00	0	0.00	0.11
C,Urban (>20%)	0.78	3.00	0.17	0.00	0	0.00	3.95
D,Urban (0-5%)	0.00	0.00	0.00	0.00	0.04	0.00	0.04
D,Urban (5-10%)	0.00	0.00	0.00	0.00	0.01	0.00	0.01
D,Urban (10-20%)	0.00	0.00	0.00	0.00	0.05	0.00	0.05
D,Urban (>20%)	0.00	0.00	0.00	0.00	1.03	0.00	1.03
Sidewalks Flat (0-5%)	0.00	0.00	0.00	0.03	0	0.00	0.03
Total Basin Area (ac.)	14.18	386.09	6.15	0.52	3564.51	2.08	3973.54
Drains Through	Bioswale 1	Bioswale 1	Bioswale 1	Bioswale 1	Gomez Creek	Bioswale 2	