

**Appendix J2. Priority Development Project  
Stormwater Quality Management Plan for  
Fanita Commons, Orchard Village, and Vineyard Village**

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# CITY OF SANTEE

**PRIORITY DEVELOPMENT PROJECT (PDP)  
STORM WATER QUALITY MANAGEMENT PLAN (SWQMP)  
FOR  
VESTING TENTATIVE MAP for  
FANITA RANCH (FANITA COMMONS, ORCHARD VILLAGE AND VINEYARD VILLAGE)  
PERMIT APPLICATION NUMBERS: GPA2017-2/ TM 2017-3**

Northeast of Sycamore Canyon Road  
Santee, CA 92071

**ASSESSOR'S PARCEL NUMBER(S):  
26 Assessor's Parcels Listed Within  
ENGINEER OF WORK:**



ALISA S. VIALPANDO, RCE# 47945



PREPARED FOR:  
HomeFed Corporation  
1903 Wright Place, Ste 220  
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(760) 918-8200

PDP SWQMP PREPARED BY:  
Hunsaker & Associates San Diego, Inc.  
9707 Waples Street  
San Diego, CA 92121  
(858) 558-4500

DATE OF SWQMP:  
September, 2019

PLANS PREPARED BY:  
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## ACRONYMS

APN	Assessor's Parcel Number
BMP	Best Management Practice
HMP	Hydromodification Management Plan
HSG	Hydrologic Soil Group
MS4	Municipal Separate Storm Sewer System
N/A	Not Applicable
NRCS	Natural Resources Conservation Service
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
SWQMP	Storm Water Quality Management Plan

# SWQMP PREPARER'S CERTIFICATION PAGE

**Project Name: Vesting Tentative Map for Fanita Ranch (Fanita Commons, Orchard Village & Vineyard Village)**

**Permit Application Number: GPA2017-2/ TM 2017-3**

## 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 Santee BMP Design Manual, which is a design manual for compliance with local City of Santee and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2015-0100) requirements for storm water management.

I have read and understand that the City Engineer has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the BMP 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 the City Engineer 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.

Alisa S. Vialpando 47945 12/31/21

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

Alisa S. Vialpando  
Print Name

Hunsaker & Associates San Diego, Inc.  
Company

1/13/2020  
Date



Engineer's Seal:

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# SWQMP PROJECT OWNER'S CERTIFICATION PAGE

Project Name: Vesting Tentative Map for Fanita Ranch (Fanita Commons, Orchard Village & Vineyard Village)

Permit Application Number: GPA2017-2/ TM 2017-3

## PROJECT OWNER'S CERTIFICATION

This PDP SWQMP has been prepared for HomeFed Corporation by Hunsaker & Associates San Diego, Inc. The PDP SWQMP is intended to comply with the PDP requirements of the City of Santee BMP Design Manual, which is a design manual for compliance with local City of Santee and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2015-0100) requirements for storm water management.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan. Once the undersigned transfers its interests in the property, its successor-in-interest shall bear the aforementioned responsibility to implement the best management practices (BMPs) described within this plan, including ensuring on-going operation and maintenance of structural BMPs. A signed copy of this document shall be available on the subject property into perpetuity.

  
Project Owner's Signature

JEFF W. O'CONNOR  
Print Name

HOMEFED FANITA RANCHO, LLC  
Company

JANUARY 14, 2020  
Date

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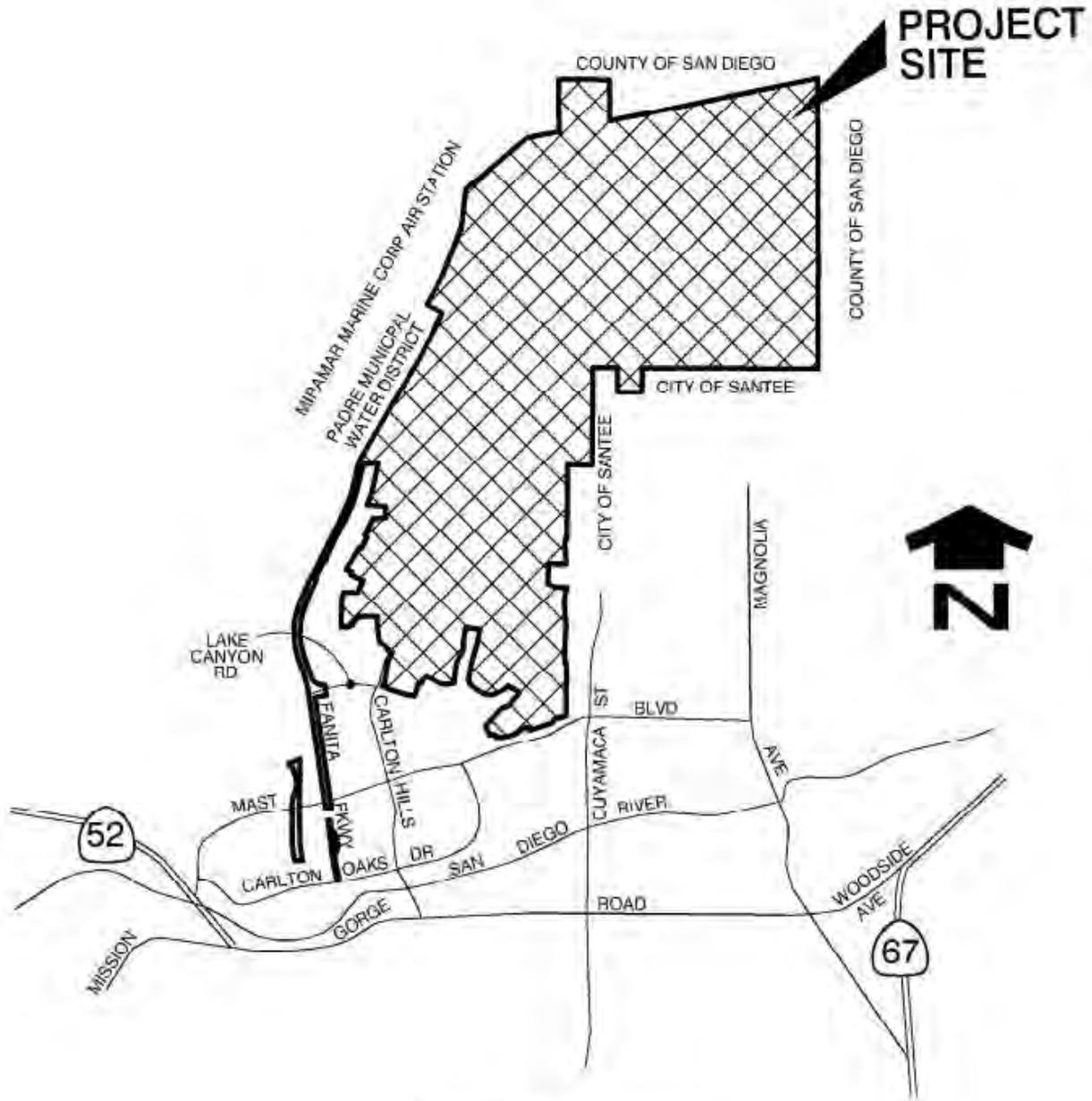
## SUBMITTAL RECORD

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.

Submittal Number	Date	Project Status	Summary of Changes
1	August 29, 2017	<input checked="" type="checkbox"/> Preliminary Design / Planning/ CEQA <input type="checkbox"/> Final Design	Initial Submittal
2	June 2018	<input checked="" type="checkbox"/> Preliminary Design / Planning/ CEQA <input type="checkbox"/> Final Design	Address initial plan check comments. Comments and responses are on following sheets.
3	February 2019	<input checked="" type="checkbox"/> Preliminary Design / Planning/ CEQA <input type="checkbox"/> Final Design	Address 2 <sup>nd</sup> round plan check comments. Comments and responses are on following sheets.
4	September 2019	<input checked="" type="checkbox"/> Preliminary Design / Planning/ CEQA <input type="checkbox"/> Final Design	Address 3 <sup>rd</sup> round plan check comments. Comments and responses are on following sheets.

# PROJECT VICINITY MAP

Project Name: Vesting Tentative Map for Fanita Ranch (Fanita Commons, Orchard Village & Vineyard Village)  
Permit Application Number: GPA2017-2/ TM 2017-3



## VICINITY MAP

NOT TO SCALE

Applicability of Permanent, Post-Construction Storm Water BMP Requirements (Storm Water Intake Form for all Development Permit Applications)		Form I-1 Model BMP Design Manual [August 31, 2015]
<b>Project Identification</b>		
Project Name: Vesting Tentative Map for Fanita Ranch (Fanita Commons, Orchard Village & Vineyard Village)		
Permit Application Number: GPA2017-2/ TM 2017-3		Date: January 2019
Project Address: Northeast of Sycamore Canyon Road APN's: 374-030-02, 374-050-02, 374-060-01, 376-010-06, 376-020-03, 376-030-01, 378-020-46, 378-020-50, 378-020-54, 378-030-08, 378-210-01, 378-210-03, 378-210-04, 378-210-10, 378-210-11, 378-220-01, 378-381-49, 378-382-58, 378-391-59, 378-392-61, 378-392-62, 380-031-18, 380-040-43, 380-040-44.		
<b>Determination of Requirements</b>		
<p>The purpose of this form is to identify permanent, post-construction requirements that apply to the project. This form serves as a short <u>summary</u> of applicable requirements, in some cases referencing separate forms that will serve as the backup for the determination of requirements.</p> <p>Answer each step below, starting with Step 1 and progressing through each step until reaching "Stop". Upon reaching a Stop, do not complete further Steps beyond the Stop.</p> <p>Refer to BMP Design Manual sections and/or separate forms referenced in each step below.</p>		
Step	Answer	Progression
Step 1: Is the project a "development project"? See Section 1.3 of the BMP Design Manual for guidance.	<input checked="" type="checkbox"/> Yes	Go to Step 2.
	<input type="checkbox"/> No	Stop. Permanent BMP requirements do not apply. No SWQMP will be required. Provide discussion below.
Discussion / justification if the project is <u>not</u> a "development project" (e.g., the project includes only interior remodels within an existing building):		
Step 2: Is the project a Standard Project, Priority Development Project (PDP), or exception to PDP definitions? To answer this item, see Section 1.4 of the BMP Design Manual in its entirety for guidance, AND complete Form I-2, Project Type Determination.	<input type="checkbox"/> Standard Project	Stop. <u>Only</u> Standard Project requirements apply, including <u>Standard Project SWQMP</u> .
	<input checked="" type="checkbox"/> PDP	<u>Standard and PDP</u> requirements apply, including <u>PDP SWQMP</u> . Go to Step 3.
	<input type="checkbox"/> Exception to PDP definitions	Stop. <u>Standard Project</u> requirements apply, <u>and any additional requirements specific to the type of project</u> . Provide discussion and list any additional requirements below. Prepare <u>Standard Project SWQMP</u> .

**[Step 2 Continued from Page 1]** Discussion / justification, and additional requirements for exceptions to PDP definitions, if applicable:

<b>Step 3 (PDPs only).</b> Is the project subject to earlier PDP requirements due to a prior lawful approval? See Section 1.10 of the BMP Design Manual for guidance.	<input type="checkbox"/> Yes	Consult the [City Engineer] to determine requirements. Provide discussion and identify requirements below. Go to Step 4.
	<input checked="" type="checkbox"/> No	BMP Design Manual PDP requirements apply. Go to Step 4.

Discussion / justification of prior lawful approval, and identify requirements (*not required if prior lawful approval does not apply*):

<b>Step 4 (PDPs only).</b> Do hydromodification control requirements apply? See Section 1.6 of the BMP Design Manual for guidance.	<input checked="" type="checkbox"/> Yes	PDP structural BMPs required for pollutant control (Chapter 5) and hydromodification control (Chapter 6). Go to Step 5.
	<input type="checkbox"/> No	Stop. PDP structural BMPs required for pollutant control (Chapter 5) only. Provide brief discussion of exemption to hydromodification control below.

Discussion / justification if hydromodification control requirements do not apply:

<b>Step 5 (PDPs subject to hydromodification control requirements only).</b> Does protection of critical coarse sediment yield areas apply based on review of WMAA Potential Critical Coarse Sediment Yield Area Map? See Section 6.2 of the BMP Design Manual for guidance.	<input checked="" type="checkbox"/> Yes	Management measures required for protection of critical coarse sediment yield areas (Chapter 6.2). Stop.
	<input type="checkbox"/> No	Management measures not required for protection of critical coarse sediment yield areas. Provide brief discussion below. Stop.

# Priority Determination Form

Form I-2  
Model BMP Design Manual  
[August 31, 2015]

## Project Information

Project Name: Vesting Tentative Map for Fanita Ranch (Fanita Commons, Orchard Village & Vineyard Village)

Permit Application Number: GPA2017-2/ TM 2017-3

Date: September 2019

Project Address:  
Northeast of Sycamore Canyon Road

## Project Type Determination: Standard Project or Priority Development Project (PDP)

The project is (select one):  New Development  Redevelopment

The total proposed newly created or replaced impervious area is: 18,436,134 ft<sup>2</sup> (423.24) acres

Is the project in any of the following categories, (a) through (f)?

Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	(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 <input type="checkbox"/>	No <input checked="" type="checkbox"/>	(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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	(c)	<p>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:</p> <ul style="list-style-type: none"> <li>(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).</li> <li>(ii) Hillside development projects. This category includes development on any natural slope that is twenty-five percent or greater.</li> <li>(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.</li> <li>(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.</li> </ul>

**Form I-2 Page 2, Form Template Date: August 31, 2015**

Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	(d)	<p>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).</p> <p><i>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. See BMP Design Manual Section 1.4.2 for additional guidance.</i></p>
Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	(e)	<p>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:</p> <p>(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.</p> <p>(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.</p>
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	(f)	<p>New or redevelopment projects that result in the disturbance of one or more acres of land and are expected to generate pollutants post construction.</p> <p><i>Note: See BMP Design Manual Section 1.4.2 for additional guidance.</i></p>

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).

The following is for redevelopment PDPs only:

The area of existing (pre-project) impervious area at the project site is: \_\_\_\_\_ ft<sup>2</sup> (A)

The total proposed newly created or replaced impervious area is \_\_\_\_\_ ft<sup>2</sup> (B)

Percent impervious surface created or replaced (B/A)\*100: \_\_\_\_\_%

The percent impervious surface created or replaced is (select one based on the above calculation):

less than or equal to fifty percent (50%) – only new impervious areas are considered PDP

OR

greater than fifty percent (50%) – the entire project site is a PDP

Site Design Checklist For PDPs		Form I-3B (PDPs) Model BMP Design Manual [August 31, 2015]
Project Summary Information		
Project Name	Vesting Tentative Map for Fanita Ranch (Fanita Commons, Orchard Village & Vineyard Village)	
Project Address	Northeast of Sycamore Canyon Road Santee, CA 92071	
Assessor's Parcel Number(s) (APN(s))	26 Assessor's Parcels listed in Form I-1	
Permit Application Number	GPA2017-2/ TM 2017-3	
Project Hydrologic Unit	Select One: <input type="checkbox"/> Santa Margarita 902 <input type="checkbox"/> San Luis Rey 903 <input type="checkbox"/> Carlsbad 904 <input type="checkbox"/> San Dieguito 905 <input type="checkbox"/> Penasquitos 906 <input checked="" type="checkbox"/> San Diego 907 <input type="checkbox"/> Pueblo San Diego 908 <input type="checkbox"/> Sweetwater 909 <input type="checkbox"/> Otay 910 <input type="checkbox"/> Tijuana 911	
Project Watershed (Complete Hydrologic Unit, Area, and Subarea Name with Numeric Identifier)	San Diego Hydrologic unit (907.00) Lower San Diego Hydrologic Area (907.10) Santee Hydrologic Sub-Area (907.12)	
Parcel Area (total area of Assessor's Parcel(s) associated with the project)	<u>2,636</u> Acres	
Area to be Disturbed by the Project (Project Area)	<u>937.4</u> Acres	
Project Proposed Impervious Area (subset of Project Area)	<u>423.2</u> Acres	
Project Proposed Pervious Area (subset of Project Area)	<u>490.6*</u> Acres	
Note: Proposed Impervious Area + Proposed Pervious Area = Area to be Disturbed by the Project. This may be less than the Parcel Area.		

\*Project Proposed Pervious Area takes into account the Overall Project Proposed Impervious Area including those Impervious Areas per Separate Off-Site SWQMP and Green Street PDP Exempt SWQMP. The Project Proposed Impervious Area listed hereon reflects DMA's 1-6 and 17-18 only. DMA's 10-16 addressed per Off-Site SWQMP.

**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:

The site is located within the northern portion of the City of Santee. The future areas which will be developed as residential are currently vacant, undeveloped, and in their natural condition. The future extension and improvement of Fanita Parkway between Mast Blvd and Ganley Road will provide access to the site from the southwest. The future extension and improvements of Cuyamaca Street and Magnolia Avenue will provide access to the site from the southeast.

Existing Land Cover Includes (select all that apply):

- Vegetative Cover
- Non-Vegetated Pervious Areas
- Impervious Areas

Description / Additional Information:

The site's land cover currently consists of brush, natural grasslands, and areas of dirt cover.

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):

- 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

Description / Additional Information:

The site is currently ungraded and drains via natural watercourses. Wetland areas are present along the western project boundary.

## 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:

The northern portion of the site where the residential development will occur consist of undeveloped, natural land. The proposed street extension of Fanita Parkway lies in areas which are currently partially developed or graded for access to/from Sycamore Canyon.

The portion of the project to be developed with residential development (Village) is located at the upper reaches of a watershed and therefore does not have offsite flow conveyed through those portions of the site. However, areas within the lower portions of the project area relative to Fanita Parkway and Sycamore Canyon Road do receive offsite runoff from both developed and undeveloped areas along the northern and eastern project boundary. Storm drain facilities currently collect and convey runoff across Fanita Parkway and Sycamore Canyon Road at various intervals along their length. This runoff is mostly from developed areas and is discharged into Sycamore Creek located parallel to the Santee Lakes Recreation Preserve and Fanita Parkway. Runoff from the proposed residential development portion of Fanita Ranch currently drains into Sycamore Canyon which transitions into Sycamore Creek. The Master Drainage Study for Fanita Ranch Vesting Tentative Map (January 2020) prepared by Hunsaker & Associates includes a detailed assessment of the existing site condition relative to runoff flows currently generated from the project area. The Existing Condition Hydrology Map within the drainage study includes the current storm drain infrastructure along Fanita Parkway and its associated flows. Along with the storm drain crossings along Fanita Parkway, the most notable drainage features is Sycamore Creek located on the western side of the Santee Lakes Recreation Preserve and the constructed open channel alongside the western side of Fanita Parkway. These latter two drainage channels are the existing major conveyance features which carry the existing site's runoff which empties into the San Diego River approximately 0.5 miles south of Mast Blvd.

Runoff relative to the southeastern portion of the site north of the current terminus of Cuyamaca Street and Magnolia Avenue consists almost entirely of undeveloped land with very few constructed lots. This area drains towards the existing developed residential communities. Numerous runoff collection points are located along the northern and western edges of development. This existing condition has been evaluated as part of the drainage study mentioned above. Runoff flowrates at each collection point were determined based on topography and preliminary investigation of existing infrastructure within the residential communities consisting of inlets, headwalls, ditches, and other open channels. Refer to the exhibits and calculations within the drainage study for specific area and flowrate information.

It is assumed that flushing of Padre Dam Municipal Water District Facilities would occur during the dry season and/or at a minimum would not coincide with peak stormwater events, thus be accommodated by the proposed biofiltration basins.

**Description of Proposed Site Development**

Project Description / Proposed Land Use and/or Activities:

Fanita Ranch is approximately 2,636 acres of land in the northwest quadrant of the City of Santee. The project will consist of up to 2,949 units varying in types and sizes. Additionally, an RV storage site is proposed within the southwest corner of the project site. Access to the site will be from either the southwest or southeast via extensions of Fanita Parkway and Cuyamaca Street, respectively. The site will include a Preserve area which is proposed to be dedicated to the City's MSCP for long term management. Along with the preserve and residential areas, other land uses of the site include a farming area, a town center, parks, open spaces, educational facilities, and other community facilities.

List/describe proposed impervious features of the project (e.g., buildings, roadways, parking lots, courtyards, athletic courts, other impervious features): overall, the site will include a variety of impervious surfaces including paved streets, roof (homes, buildings), sidewalks, athletic courts, and parking lots.

List/describe proposed pervious features of the project (e.g., landscape areas): Pervious features of the site will consist of parks, home landscaping, open spaces, preserve areas, and water quality facilities such as biofiltration basins.

Does the project include grading and changes to site topography?

- Yes
- No

Description / Additional Information:

The project proposes to perform grading activities which will alter the existing topography and drainage flow patterns. The addition of streets and the proposed land uses will increase the site's imperviousness and the overall unmitigated runoff from the project area. Therefore, proposed peak flow attenuation will be accomplished via the proposed basins which will also serve pollution control and flow control (hydromodification) purposes.



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:

The proposed development will consist of single and multi-family housing, a farm, parks, multi-use areas, a school, open space, and areas for water quality treatment facilities (Basins). The site drainage can essentially be divided into three general areas; 1) The primary developed areas associated with the Fanita Ranch Villages (Fanita Commons, Orchard Village & Vineyard Village), 2) The extension of Fanita Parkway (from Ganley Road to Orchard Village), the extension of Cuyamaca Street (located south of Orchard Village) and Magnolia Avenue, and 3) The widening of Fanita Parkway from Mast Boulevard to Ganley Road. Grading along the southern boundary will allow streets to be constructed for access to the site. Runoff from the developed portions of the site will generally be collected by inlets and conveyed towards one of the six proposed basins for water quality treatment and detention (peak flow and flow control). Flows will outlet these basins and discharge into downstream conveyance channels consisting of either storm drain pipe, constructed channels, or natural drainageways. The Master Drainage Study for Fanita Ranch Vesting Tentative Map (January 2020) prepared by Hunsaker & Associates includes calculations for expected flows generated from the developed site as well as along the exterior graded areas and discharge locations. Storm drain, which will be sized during the final engineering phase, is estimated to range in sizes between 18" and 84". Treatment of stormwater will be accomplished via biofiltration by either one of the proposed basins or by a proprietary modular treatment facility. The DMA exhibit included in Attachment 1a of this study identifies the location of each treatment BMP location and its respective tributary area. The following table summarizes the flows from the site in existing and proposed condition. Refer to the drainage study for hydrology map and node locations. Storm drain lines will be extended to the proposed water storage to be utilized during times in which the tanks will require maintenance.

Green Street Note: Although the drainage study covers the areas relative to Fanita Ranch (Villages), Fanita Ranch, Cuyamaca Street, and Magnolia Avenue, this SWQMP does not apply to the portions of Fanita Parkway, Cuyamaca Street, and Magnolia Avenue which currently exist. Discussion for those portions of existing roadway relative to stormwater treatment are included in the Green Street PDP Exempt SWQMP for Vesting Tentative Map for Fanita Ranch (Fanita Parkway from Mast Boulevard to Ganley Road, Cuyamaca Street South of Orchard Village, Magnolia Avenue and Summit Avenue) prepared by Hunsaker & Associates San Diego Inc. (January 2020) and the PDP SWQMP for Vesting Tentative Map for Fanita Ranch (Fanita Parkway from Mast Boulevard to Ganley Road, Cuyamaca Street South of Orchard Village, and Magnolia Avenue) prepared by Hunsaker & Associates San Diego Inc. (September 2019).

PRE-DEVELOPED			POST-DEVELOPED			DIFFERENCE	
Discharge Location Node	Drainage Area (ac)	100-Year Flow (cfs)	Discharge Location Node	Drainage Area (ac)	100-Year Flow (cfs)	Area (ac)	100-Year Flow (cfs)
103	151.1	182.7	103	146.7	174.8	-4.4	-7.9
108	382.5	332.1	108	343.1	291.3	-39.4	-40.9
113	58.8	61.5	113	55.3	58.6	-3.5	-3.0
117	25.7	34.1	117	25.7	34.0	0.0	-0.1
122	62.8	78.8	122	53.3	65.4	-9.5	-13.3
130	235.8	174.7	3310	290.9	174.6	55.1	-0.1
144	495.8	351.8	1061	565.7	291.7	69.9	-60.1
612	328.3	319.3	2241	333.6	213.2	5.3	-106.1
622	441.1	386.1	8277	451.2	321.5	10.1	-64.6
668	218.4	258.7	50	217.8	169.6	-0.6	-89.1
768	363.4	448.3	140	363.0	422.3	-0.4	-26.0
174	306.1	292.9	210	273.2	178.6	-32.9	-114.4
322	5.7	11.0	292	6.6	10.0	0.9	-1.0
272	6.6	9.2	283	6.8	8.6	0.2	-0.6
253	8.4	15.5	270	7.1	15.1	-1.3	-0.5
202	12.0	21.5	256	13.6	21.2	1.6	-0.3
192	32.4	45.7	239	29.7	43.5	-2.7	-2.2
153	94.2	109.5	153	65.4	76.6	-28.8	-32.9
162	20.6	33.3	162	19.4	29.0	-1.2	-4.3
157	85.0	114.2	157	62.0	90.4	-23.0	-23.8
152	55.6	76.2	152	38.6	55.2	-17.0	-21.0
177	22.9	37.5	339	23.3	34.8	0.4	-2.7
828	6.2	4.7	4028	4.7	5.1	-1.5	0.4
818	3.4	3.0	4018	3.0	2.3	-0.4	-0.7
822	4.6	3.5	4022	3.5	3.2	-1.1	-0.3
812	5.9	5.9	4012	5.9	5.1	0.0	-0.8
842	7.4	6.0	4042	6.0	5.5	-1.4	-0.5
852	5.6	4.1	4052	4.1	4.7	-1.5	0.6
Total:	3446.1	3421.8	Total:	3419.2	2805.8	-26.9	-616.0

\*-Increase in area is due to the area along Cuyamaca Street being routed towards the development

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

Description / Additional Information:

The above are expected for the Fanita Ranch project and is typical for a development consisting of multi-family housing, a farm, parks, multi-use areas and, a school, commercial, and an agricultural district.

**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):

Runoff from the site will enter the storm drain system at inlets and be conveyed through biofiltration facilities (basins, proprietary) via storm drain. Runoff is then directed towards Sycamore Creek which then empties into the San Diego River. The San Diego River empties into the Pacific Ocean.

List any 303(d) impaired water bodies 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:

<b>303(d) Impaired Water Body</b>	<b>Pollutant(s)/Stressor(s)</b>	<b>TMDLs / WQIP Highest Priority Pollutant</b>
Sycamore Canyon	Dissolved Oxygen	
San Diego River (Lower)	Benthic Community Effects, Cadmium, Indicator Bacteria, Nitrogen, Dissolved Oxygen, Phosphorus, Total Dissolved Solids, Toxicity.	Indicator bacteria
Pacific Ocean at San Diego River outlet at Dog Beach	Indicator Bacteria	Indicator bacteria

**Identification of Project Site Pollutants\***

**\*Identification of project site pollutants 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 BMP Design Manual Appendix B.6):

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

**Hydromodification Management Requirements**

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

- Yes, hydromodification management flow control structural BMPs required.
- 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 for the watershed in which the project resides.

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

**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 BMP Design Manual been performed?

- 6.2.1 Verification of Geomorphic Landscape Units (GLUs) 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 2.b 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:

The Potential Critical Coarse Sediment Yield Exhibit in Attachment 2c was derived from the WMAA Maps from the San Diego County website. It identifies the project as located within areas requiring protection/preservation of critical coarse sediment. The current City of Santee BMP Design Manual presents methods of determining and verifying whether onsite CCSYA actually exist and/or require protection. These methods include using the County WMAA maps, verifying geomorphic landscape units (GLUs), evaluating the downstream systems sensitivity to critical coarse, or performing an optional additional analysis. This project cannot feasibly avoid or effectively bypass CCSYAs in some areas and therefore will demonstrate that the project will not generate a net impact to the receiving water. Via stand-alone report separate from this SWQMP, calculations determine that implementing project features onsite will achieve management standards to achieve 'no net impact to receiving water'. Please refer to the *Technical Memorandum: Analysis of PCCSYAs for Fanita Ranch* (September 2019) prepared by REC Consultants for detailed CCSYSA discussion.

**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.

Due to the numerous amount of identified POCs for this site, only a brief general description of the site POCs are described below. Please refer to Attachment 2d for a full detailed discussion relative to flow control design proposed for the site. The POCs were identified and evaluated for conformance with City of Santee flow control requirements. See Attachment 2a for HMP-related maps. Some POCs were evaluated based on comparison of existing and proposed condition peak flows and impervious area. For example, a comparison of the Existing and Proposed maps finds that the areas associated with POC5 through POC9 are reduced in the proposed condition. In addition, hydrologic analysis included within the Drainage Study determined that unmitigated peak flows to POC5 through POC9 were also reduced since no impervious surfaces were being added to those respective areas. Therefore, POC5 through POC9 do not require flow control measures since factors related to potential erosive have been reduced with the proposed development. A SWMM continuous simulation analysis was performed at each of the remaining POCs for both the existing and proposed conditions to verify that flow control requirements have been met with the inclusion of any detention facilities such as basins or vaults.

Each RV parking site is an existing mass graded pad that discharges to existing overland drainage patterns. As such, as each pad has an individual point of discharge, each RV site has its own POC.

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:

Discussion / Additional Information: (optional)

**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.

The site grading will include varying street slopes throughout the site from flat to steep. Placement of the proposed treatment facilities will need to be situated in locations which are suitably sized for its respective function. The site's boundary footprint includes some areas which were determined to consist of critical coarse sediment. Wherever feasible, the site layout has been adjusted to minimize the impact to these areas by avoidance, by bypassing, or by providing alternative project features or treatment measures to achieve no net impact.

**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.

Source Control BMP Checklist for All Development Projects (Standard Projects and Priority Development Projects)		Form I-4 Model BMP Design Manual [August 31, 2015]	
Project Identification			
Project Name: Vesting Tentative Map for Fanita Ranch (Fanita Commons, Orchard Village & Vineyard Village)			
Permit Application Number: GPA2017-2/ TM 2017-3			
Source Control BMPs			
All development projects must implement source control BMPs SC-1 through SC-6 where applicable and feasible. See Chapter 4 and Appendix E of the Model BMP Design Manual for information to implement source control BMPs shown in this checklist.			
Answer each category below pursuant to the following.			
<ul style="list-style-type: none"> <li>• "Yes" means the project will implement the source control BMP as described in Chapter 4 and/or Appendix E of the Model BMP Design Manual. Discussion / justification is not required.</li> <li>• "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided.</li> <li>• "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 may be provided.</li> </ul>			
Source Control Requirement	Applied?		
SC-1 Prevention of Illicit Discharges into the MS4	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if SC-1 not implemented:			
SC-2 Storm Drain Stenciling or Signage	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if SC-2 not implemented:			
SC-3 Protect Outdoor Materials Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if SC-3 not implemented:			
SC-4 Protect Materials Stored in Outdoor Work Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if SC-4 not implemented: Farm areas will/may require protection of outdoor organic material. All work-related materials which will be stored outdoors shall be covered and/or protected from the elements to avoid runoff pollution or contamination. Materials shall be elevated to prevent contact with storm water runoff.			

Source Control Requirement	Applied?		
<b>SC-5</b> Protect Trash Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if SC-5 not implemented:			
<b>SC-6</b> Additional BMPs Based on Potential Sources of Runoff Pollutants (must answer for each source listed below)			
<input checked="" type="checkbox"/> On-site storm drain inlets	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Interior floor drains and elevator shaft sump pumps	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Interior parking garages	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
<input checked="" type="checkbox"/> Need for future indoor & structural pest control	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input checked="" type="checkbox"/> Landscape/Outdoor Pesticide Use	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input checked="" type="checkbox"/> Pools, spas, ponds, decorative fountains, and other water features	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input checked="" type="checkbox"/> Food service	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input checked="" type="checkbox"/> Refuse areas	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Industrial processes	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
<input checked="" type="checkbox"/> Outdoor storage of equipment or materials	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input checked="" type="checkbox"/> Vehicle and Equipment Cleaning	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input checked="" type="checkbox"/> Vehicle/Equipment Repair and Maintenance	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Fuel Dispensing Areas	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
<input checked="" type="checkbox"/> Loading Docks	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input checked="" type="checkbox"/> Fire Sprinkler Test Water	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
<input checked="" type="checkbox"/> Miscellaneous Drain or Wash Water	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input checked="" type="checkbox"/> Plazas, sidewalks, and parking lots	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> 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.			

Site Design BMP Checklist for All Development Projects (Standard Projects and Priority Development Projects)		Form I-5 Model BMP Design Manual [August 31, 2015]	
Project Identification			
Project Name: Vesting Tentative Map for Fanita Ranch (Fanita Commons, Orchard Village & Vineyard Village)			
Permit Application Number: GPA2017-2/ TM 2017-3			
Site Design BMPs			
All development projects must implement site design BMPs SD-1 through SD-8 where applicable and feasible. See Chapter 4 and Appendix E of the Model BMP Design Manual for information to implement site design BMPs shown in this checklist.			
Answer each category below pursuant to the following.			
<ul style="list-style-type: none"> <li>• "Yes" means the project will implement the site design BMP as described in Chapter 4 and/or Appendix E of the Model BMP Design Manual. Discussion / justification is not required.</li> <li>• "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided.</li> <li>• "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 may be provided.</li> </ul>			
Site Design Requirement	Applied?		
SD-1 Maintain Natural Drainage Pathways and Hydrologic Features	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if SD-1 not implemented: The project will generally maintain most of the existing drainage patterns. However, it will alter some areas due to the site design and the infeasibility of maintaining 100% of the existing drainage pathways. Project measures have been included within the site to offset the corresponding hydrologic revisions.			
SD-2 Conserve Natural Areas, Soils, and Vegetation	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if SD-2 not implemented:			
SD-3 Minimize Impervious Area	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if SD-3 not implemented:			
SD-4 Minimize Soil Compaction	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if SD-4 not implemented:			
SD-5 Impervious Area Dispersion	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if SD-5 not implemented: Where possible, rooftop downspouts will be required to drain onto adjacent landscaped areas.			

Site Design Requirement	Applied?		
<b>SD-6</b> Runoff Collection	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
<p>Discussion / justification if SD-6 not implemented:</p> <p>At this preliminary stage, runoff collection by means of permeable pavement or green roofs is not proposed. Due to the scale of the master plan community development, all developed runoff is collected and conveyed to one of five (5) onsite BMP treatment facilities. By limiting the number of treatment facilities to five (5), maintenance and effective treatment is ensured. Trying to incorporate many smaller treatment BMPs throughout the 937 Acre site is not a reliable BMP strategy given the amount of maintenance required. By centralizing the BMPs, maintenance and operation of the BMPs is ensured. As such this site design will not be implemented on the project site.</p>			
<b>SD-7</b> Landscaping with Native or Drought Tolerant Species	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<p>Discussion / justification if SD-7 not implemented:</p>			
<b>SD-8</b> Harvesting and Using Precipitation	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
<p>Discussion / justification if SD-8 not implemented:</p> <p>As other site design BMPs have been implemented, SD-8 will not be implemented on the project site. Additionally, per the Harvest and use feasibility analysis worksheet B.3.1 in Attachment 1c, this site design bmp is infeasible.</p>			

<p style="text-align: center;">Summary of PDP Structural BMPs</p>	<p style="text-align: center;">Form I-6 (PDPs) Model BMP Design Manual [August 31, 2015]</p>
<p>Project Identification</p>	
<p>Project Name: Vesting Tentative Map for Fanita Ranch (Fanita Commons, Orchard Village &amp; Vineyard Village)</p>	
<p>Permit Application Number: GPA2017-2/ TM 2017-3</p>	
<p>PDP Structural BMPs</p>	
<p>All PDPs must implement structural BMPs for storm water pollutant control (see Chapter 5 of the BMP 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 BMP Design Manual). Both storm water pollutant control and flow control for hydromodification management can be achieved within the same structural BMP(s).</p>	
<p>PDP structural BMPs must be verified by the local jurisdiction 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 1.12 of the BMP Design Manual). PDP structural BMPs must be maintained into perpetuity, and the local jurisdiction must confirm the maintenance (see Section 7 of the BMP Design Manual).</p>	
<p>Use this form 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 (page 3 of this form) for each structural BMP within the project (copy the BMP summary information page as many times as needed to provide summary information for each individual structural BMP).</p>	
<p>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 BMP Design 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.</p>	
<p>This site will include various methods for treatment control of pollutants. The development of Fanita Ranch consisting of residential, school, multi-use, parks, and associated streets will be treated by the proposed biofiltration facilities located throughout project including the portions of Fanita Parkway which are not being constructed per Green Street criteria. The biofiltration facilities will consist of basins and proprietary modular units. Areas which entirely consist of pervious areas such as the graded slopes will be considered self-mitigating as defined in the City of Santee BMP Design Manual. For the Village portion of the project, flow-control hydromodification will be addressed by the proposed biofiltration basins mentioned above. However, for the areas along Fanita Parkway which require flow control, vaults and basins are proposed to provide storage for attenuating flows.</p>	
<p>For discussion in regards to the water quality for the offsite improvements of Cuyamaca Street, and Magnolia Avenue, please refer to the specific SWQMP for these offsite improvements.</p>	
<p>(Continue on page 2 as necessary)</p>	

**(Page reserved for continuation of description of general strategy for structural BMP implementation at the site)**

(Continued from page 1)

In selection of the biofiltration BMPs, the following steps were taken in accordance with Section 5.1 of the BMP Design Manual:

1. The preliminary design site layout consists of building structures for residential, multi-use, school, streets, sidewalks, parking areas, parks, stormwater treatment facilities, and open space areas. The graded slope areas along the sites exterior will be vegetated and entirely pervious.
  - A. The vegetated slopes along the sites exterior will be completely pervious and considered self-mitigating DMAs and not included in the DCV calculations.
  - B. Worksheet B-2.1 from the City of Santee BMP Design Manual and the Automated Worksheet B.1-1 from the San Diego County website were utilized in calculating the DCV from each DMA for the project subareas described above which include impervious area. The DCV calculations for each DMA are included in Attachment 1b.
2. A Harvest and Use Feasibility Screening was performed using Worksheet B.3-1 of the City of Santee BMP Design Manual. See Attachment 1c. The analysis determined that harvest and use is considered to be infeasible for this project.
3. Various sources were referenced in determining the soil characteristics and classification. Per these sources, it was determined that the site consists of Hydrologic soil types A, C, and D. The sources include the NRCS WebSoil Survey, and the geotechnical studies "Fanita Ranch Off-site Improvements to Cuyamaca Street" and "Fanita Ranch Sage Hill" prepared by Geocon Incorporated. See Attachment 1d for data obtained from the NRCS website. A feasibility analysis was then completed using Worksheet C.4.1 based on this preliminary information and determined that infiltration would be infeasible. Specific infiltration information will be obtained during the final engineering phase to determine the actual rates expected at the proposed water quality basin locations.
4. After DCV and feasibility determination was completed per Steps 1-3 above, the sizes of each respective BMP was determined by the procedures detailed in the City of Santee DMP Design Manual. For example, the Simple Sizing Method for Biofiltration BMPs Worksheet (B.5-1) was completed to determine the minimum basin dimensions, ponding depths, and subsurface layer thicknesses needed to meet pollutant control standards. Similarly, The flow based proprietary biofiltration treatment units will be placed alongside the proposed curb inlets and will be sized based on the expected treatment flowrates and the respective unit's treatment capacity provided by the manufacturer. The treatment flow rate was based on the equation:  
$$Q(85^{\text{th}}) = C * I * A.$$
The above value was then multiplied by 1.5 to determine the design flow rate needed to size the respective biofiltration unit (Section F.2.2).

(Continue on page 3 as necessary)

**(Page reserved for continuation of description of general strategy for structural BMP implementation at the site)**

(Continued from page 2)

A. The BMP sizing results for the basins described above were then integrated into either local or regional flow control (HMP) calculations to determine compliance or make necessary adjustments to basin makeup. The Design Fact Sheet for Biofiltration Basins was referenced during the process of sizing and evaluating the project specifications, constraints, and pollutant removal effectiveness. The basins will consist of soil media per the BF-1 Fact Sheet. Due to the effectiveness and feasibility of providing regional BMP facility approach, tributary drainage areas for each basin exceed the 5 acre criteria recommended in the fact sheet. Design options to address this concern will be specifically addressed during the Final Engineering Phase and will include energy dissipation at the discharge points into the basins and proper underdrain placement and sizing, as well as acceptable drawdown. The drawdown concern is relative to the proposed basins' water quality ponding depth, underdrain size, and whether a vector plan will be required. At this phase, preliminary BMP sizing calculations and the flow control study indicate that drawdown for each basin will occur in less than 96 hours and a vector plan is not necessary. The ponding depth were also determined in coordination with the Critical Coarse Sediment Analysis and the need to comply with those hydromodification requirements. The following Step (4B) describes the design process and considerations in design of the portions of the site along Fanita Parkway.

B. The analysis for the proposed BMP improvements along Fanita Parkway required hydromodification analysis at numerous Points of Compliances (POCs) to identify any measures needed to comply with flow control (HMP) requirements. Attachment 2d includes the HMP analysis for these POCs which will utilize detention storage via vaults or basins placed along the roadway corridor. As described in Step 4 above, these roadway portions will receive stormwater treatment via proprietary biofiltration units place alongside the proposed curb inlets.

C. in order to meet the DCV retention requirement associated with the use of hard lined Modular Wetland treatment BMPs per Section B.5-2 and Appendix F of the BMPDM, vegetated retention areas were located throughout the roadway improvement to provide the minimum 3% required area to provide the required volumetric DCV reduction.

HMP FLOW CONTROL Note: This site is required to comply with flow control hydromodification requirements. The proposed HMP BMPs will route flows in compliance with flow control requirement flowrates (between 10%Q2 – Q10). Complete HMP analysis (including CCSYA) is included within Attachment 2 of this SWQMP.

5. Step 5 is not applicable to this project since Step 4B treats the entire DCV.

(Continue on page 4 as necessary)

(Continued from page 3)

6. This SWQMP is prepared as Step 6.
7. Maintenance Thresholds for the proposed site BMPs are included within Attachment 3. Maintenance agreements associated with this project will be processed during the final engineering phase and are therefore not included as part of this SWQMP.

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

Structural BMP ID No. BF-1-1

Construction Plan Sheet No.: TBD

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 if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	Engineer of Work for HomeFed Corporation, 1903 Wright Place, Suite 220 Carlsbad, CA 92008
Who will be the final owner of this BMP?	HomeFed Corporation
Who will maintain this BMP into perpetuity?	HomeFed Corporation
What is the funding mechanism for maintenance?	HOA or CFD fees collected from Fanita Ranch new homeowners.

**Structural BMP Summary Information**

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

Structural BMP ID No. BF-1-2

Construction Plan Sheet No.: TBD

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 if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	Engineer of Work for HomeFed Corporation, 1903 Wright Place, Suite 220 Carlsbad, CA 92008
Who will be the final owner of this BMP?	HomeFed Corporation
Who will maintain this BMP into perpetuity?	HomeFed Corporation
What is the funding mechanism for maintenance?	HOA or CFD fees collected from Fanita Ranch new homeowners.

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

Structural BMP ID No. BF-1-3	
Construction Plan Sheet No.: TBD	
Type of structural BMP: <input type="checkbox"/> Retention by harvest and use (HU-1) <input type="checkbox"/> Retention by infiltration basin (INF-1) <input type="checkbox"/> Retention by bioretention (INF-2) <input type="checkbox"/> Retention by permeable pavement (INF-3) <input type="checkbox"/> Partial retention by biofiltration with partial retention (PR-1) <input type="checkbox"/> Biofiltration (BF-1) <input checked="" type="checkbox"/> Biofiltration with Nutrient Sensitive Media Design (BF-2) <input type="checkbox"/> Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F <input type="checkbox"/> Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) <input type="checkbox"/> 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) <input type="checkbox"/> Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) <input type="checkbox"/> Detention pond or vault for hydromodification management <input type="checkbox"/> Other (describe in discussion section below)	
Purpose: <input type="checkbox"/> Pollutant control only <input type="checkbox"/> Hydromodification control only <input checked="" type="checkbox"/> Combined pollutant control and hydromodification control <input type="checkbox"/> Pre-treatment/forebay for another structural BMP <input type="checkbox"/> 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 if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	Engineer of Work for HomeFed Corporation, 1903 Wright Place, Suite 220 Carlsbad, CA 92008
Who will be the final owner of this BMP?	HomeFed Corporation
Who will maintain this BMP into perpetuity?	HomeFed Corporation
What is the funding mechanism for maintenance?	HOA or CFD fees collected from Fanita Ranch new homeowners.

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

Structural BMP ID No. BF-1-4

Construction Plan Sheet No.: TBD

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
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- 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 if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	Engineer of Work for HomeFed Corporation, 1903 Wright Place, Suite 220 Carlsbad, CA 92008
Who will be the final owner of this BMP?	HomeFed Corporation
Who will maintain this BMP into perpetuity?	HomeFed Corporation
What is the funding mechanism for maintenance?	HOA or CFD fees collected from Fanita Ranch new homeowners.

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

Structural BMP ID No. BF-1-5

Construction Plan Sheet No.: TBD

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 if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	Engineer of Work for HomeFed Corporation, 1903 Wright Place, Suite 220 Carlsbad, CA 92008
Who will be the final owner of this BMP?	HomeFed Corporation
Who will maintain this BMP into perpetuity?	HomeFed Corporation
What is the funding mechanism for maintenance?	HOA or CFD fees collected from Fanita Ranch new homeowners.

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

Structural BMP ID No. BF-1-6

Construction Plan Sheet No.: TBD

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
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- 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 if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	Engineer of Work for HomeFed Corporation, 1903 Wright Place, Suite 220 Carlsbad, CA 92008
Who will be the final owner of this BMP?	HomeFed Corporation
Who will maintain this BMP into perpetuity?	HomeFed Corporation
What is the funding mechanism for maintenance?	HOA or CFD fees collected from Fanita Ranch new homeowners.

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

Structural BMP ID No. BF-1-17

Construction Plan Sheet No.: TBD

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
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- 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 if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	Engineer of Work for HomeFed Corporation, 1903 Wright Place, Suite 220 Carlsbad, CA 92008
Who will be the final owner of this BMP?	HomeFed Corporation
Who will maintain this BMP into perpetuity?	HomeFed Corporation
What is the funding mechanism for maintenance?	HOA or CFD fees collected from Fanita Ranch new homeowners.

**Structural BMP Summary Information**

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

Structural BMP ID No. BF-3-6	
Construction Plan Sheet No.: TBD	
<p>Type of structural BMP:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Retention by harvest and use (HU-1)</li> <li><input type="checkbox"/> Retention by infiltration basin (INF-1)</li> <li><input type="checkbox"/> Retention by bioretention (INF-2)</li> <li><input type="checkbox"/> Retention by permeable pavement (INF-3)</li> <li><input type="checkbox"/> Partial retention by biofiltration with partial retention (PR-1)</li> <li><input type="checkbox"/> Biofiltration (BF-1)</li> <li><input type="checkbox"/> Biofiltration with Nutrient Sensitive Media Design (BF-2)</li> <li><input checked="" type="checkbox"/> Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F</li> <li><input type="checkbox"/> Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)</li> <li><input type="checkbox"/> 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)</li> <li><input type="checkbox"/> Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)</li> <li><input type="checkbox"/> Detention pond or vault for hydromodification management</li> <li><input type="checkbox"/> Other (describe in discussion section below)</li> </ul>	
<p>Purpose:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Pollutant control only</li> <li><input type="checkbox"/> Hydromodification control only</li> <li><input checked="" type="checkbox"/> Combined pollutant control and hydromodification control</li> <li><input type="checkbox"/> Pre-treatment/forebay for another structural BMP</li> <li><input type="checkbox"/> Other (describe in discussion section below)</li> </ul>	
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Who will be the final owner of this BMP?	HomeFed Corporation
Who will maintain this BMP into perpetuity?	HomeFed Corporation
What is the funding mechanism for maintenance?	HOA or CFD fees collected from Fanita Ranch new homeowners.

**Structural BMP Summary Information**

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

Structural BMP ID No. DET-1-17	
Construction Plan Sheet No.: TBD	
<p>Type of structural BMP:</p> <p><input type="checkbox"/> Retention by harvest and use (HU-1)</p> <p><input type="checkbox"/> Retention by infiltration basin (INF-1)</p> <p><input type="checkbox"/> Retention by bioretention (INF-2)</p> <p><input type="checkbox"/> Retention by permeable pavement (INF-3)</p> <p><input type="checkbox"/> Partial retention by biofiltration with partial retention (PR-1)</p> <p><input type="checkbox"/> Biofiltration (BF-1)</p> <p><input type="checkbox"/> Biofiltration with Nutrient Sensitive Media Design (BF-2)</p> <p><input type="checkbox"/> Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F</p> <p><input type="checkbox"/> Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)</p> <p><input type="checkbox"/> 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)</p> <p><input type="checkbox"/> Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)</p> <p><input checked="" type="checkbox"/> Detention pond or vault for hydromodification management</p> <p><input type="checkbox"/> Other (describe in discussion section below)</p>	
<p>Purpose:</p> <p><input type="checkbox"/> Pollutant control only</p> <p><input checked="" type="checkbox"/> Hydromodification control only</p> <p><input type="checkbox"/> Combined pollutant control and hydromodification control</p> <p><input type="checkbox"/> Pre-treatment/forebay for another structural BMP</p> <p><input type="checkbox"/> Other (describe in discussion section below)</p>	
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Who will be the final owner of this BMP?	HomeFed Corporation
Who will maintain this BMP into perpetuity?	HomeFed Corporation
What is the funding mechanism for maintenance?	HOA or CFD fees collected from Fanita Ranch new homeowners.

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

Structural BMP ID No. DET-1-18

Construction Plan Sheet No.: TBD

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)
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- 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 if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	Engineer of Work for HomeFed Corporation, 1903 Wright Place, Suite 220 Carlsbad, CA 92008
Who will be the final owner of this BMP?	HomeFed Corporation
Who will maintain this BMP into perpetuity?	HomeFed Corporation
What is the funding mechanism for maintenance?	HOA or CFD fees collected from Fanita Ranch new homeowners.

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

Structural BMP ID No. BF-RV-1

Construction Plan Sheet No.: TBD

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)
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- 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 if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	Engineer of Work for HomeFed Corporation, 1903 Wright Place, Suite 220 Carlsbad, CA 92008
Who will be the final owner of this BMP?	HomeFed Corporation
Who will maintain this BMP into perpetuity?	HomeFed Corporation
What is the funding mechanism for maintenance?	HOA or CFD fees collected from Fanita Ranch new homeowners.

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

Structural BMP ID No. BF-RV-2

Construction Plan Sheet No.: TBD

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)
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- 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 if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	Engineer of Work for HomeFed Corporation, 1903 Wright Place, Suite 220 Carlsbad, CA 92008
Who will be the final owner of this BMP?	HomeFed Corporation
Who will maintain this BMP into perpetuity?	HomeFed Corporation
What is the funding mechanism for maintenance?	HOA or CFD fees collected from Fanita Ranch new homeowners.

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

Structural BMP ID No. BF-RV-3

Construction Plan Sheet No.: TBD

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)
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- 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 if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	Engineer of Work for HomeFed Corporation, 1903 Wright Place, Suite 220 Carlsbad, CA 92008
Who will be the final owner of this BMP?	HomeFed Corporation
Who will maintain this BMP into perpetuity?	HomeFed Corporation
What is the funding mechanism for maintenance?	HOA or CFD fees collected from Fanita Ranch new homeowners.

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

Structural BMP ID No. BF-RV-4

Construction Plan Sheet No.: TBD

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
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- 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 if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	Engineer of Work for HomeFed Corporation, 1903 Wright Place, Suite 220 Carlsbad, CA 92008
Who will be the final owner of this BMP?	HomeFed Corporation
Who will maintain this BMP into perpetuity?	HomeFed Corporation
What is the funding mechanism for maintenance?	HOA or CFD fees collected from Fanita Ranch new homeowners.

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

Structural BMP ID No. BF-RV-5

Construction Plan Sheet No.: TBD

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)
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- 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)

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Who will be the final owner of this BMP?	HomeFed Corporation
Who will maintain this BMP into perpetuity?	HomeFed Corporation
What is the funding mechanism for maintenance?	HOA or CFD fees collected from Fanita Ranch new homeowners.

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

Structural BMP ID No. BF-RV-6

Construction Plan Sheet No.: TBD

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)
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- 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 if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	Engineer of Work for HomeFed Corporation, 1903 Wright Place, Suite 220 Carlsbad, CA 92008
Who will be the final owner of this BMP?	HomeFed Corporation
Who will maintain this BMP into perpetuity?	HomeFed Corporation
What is the funding mechanism for maintenance?	HOA or CFD fees collected from Fanita Ranch new homeowners.

Structural BMP ID No.

Construction Plan Sheet No.

Discussion (as needed):

## 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	DMA Exhibit (Required)  See DMA Exhibit Checklist on the back of this Attachment cover sheet.	<input checked="" type="checkbox"/> Included
Attachment 1b	Tabular Summary of DMAs Showing DMA ID matching DMA Exhibit, DMA Area, and DMA Type (Required)*  *Provide table in this Attachment OR on DMA Exhibit in Attachment 1a	<input type="checkbox"/> Included on DMA Exhibit in Attachment 1a <input checked="" type="checkbox"/> Included as Attachment 1b, separate from DMA Exhibit
Attachment 1c	Form I-7, Harvest and Use Feasibility Screening Checklist (Required unless the entire project will use infiltration BMPs)  Refer to Appendix B.3-1 of the BMP Design Manual to complete Form I-7.	<input checked="" type="checkbox"/> Included <input type="checkbox"/> Not included because the entire project will use infiltration BMPs
Attachment 1d	Form I-8, Categorization of Infiltration Feasibility Condition (Required unless the project will use harvest and use BMPs)  Refer to Appendices C and D of the BMP Design Manual to complete Form I-8.	<input checked="" type="checkbox"/> Included <input type="checkbox"/> Not included because the entire project will use harvest and use BMPs
Attachment 1e	Pollutant Control BMP Design Worksheets / Calculations (Required)  Refer to Appendices B and E of the BMP Design Manual for structural pollutant control BMP design guidelines	<input checked="" type="checkbox"/> Included

*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 Form I-3B)
- Structural BMPs (identify location, type of BMP, and size/detail)

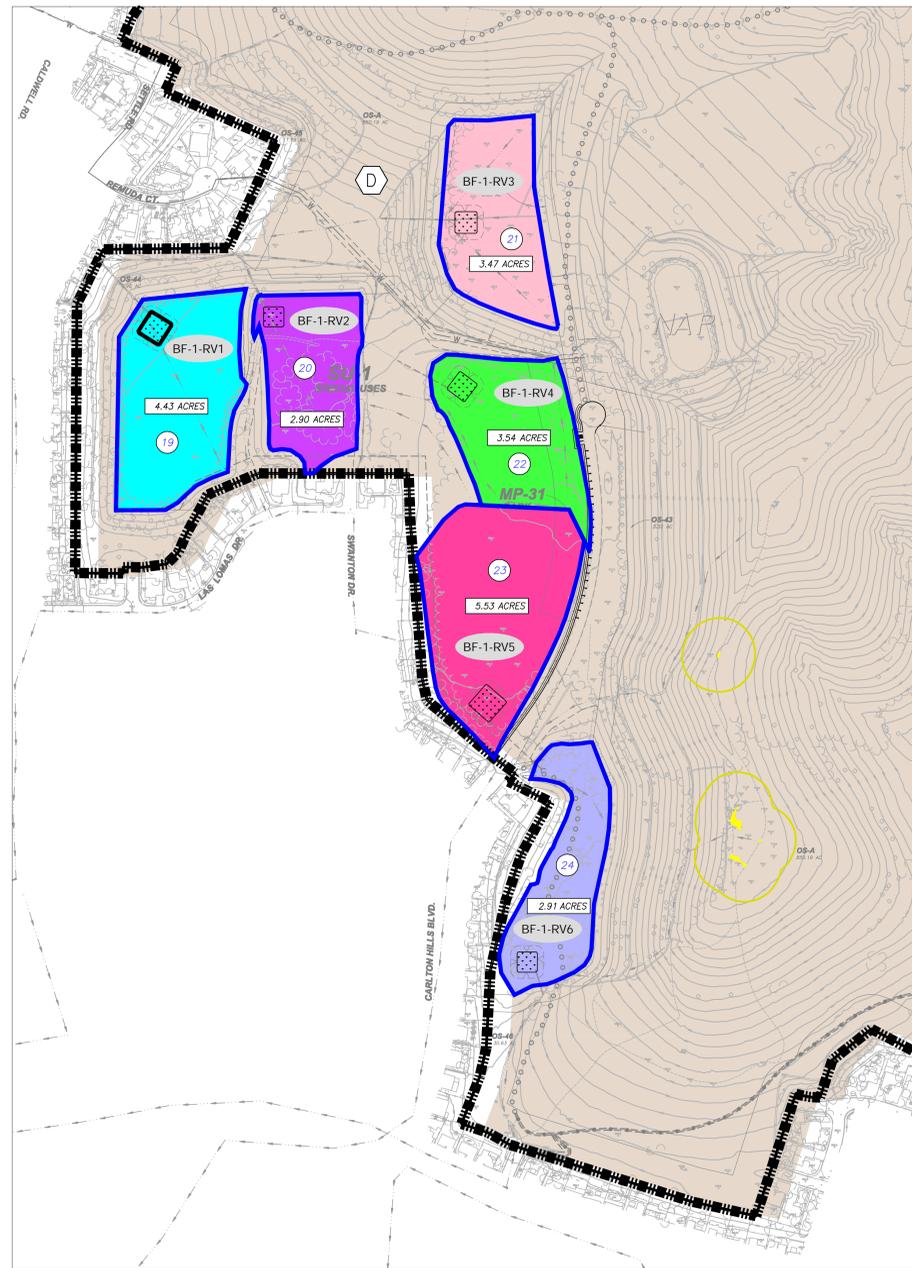
**ATTACHMENT 1a**  
**DMA EXHIBIT**





# LEGEND

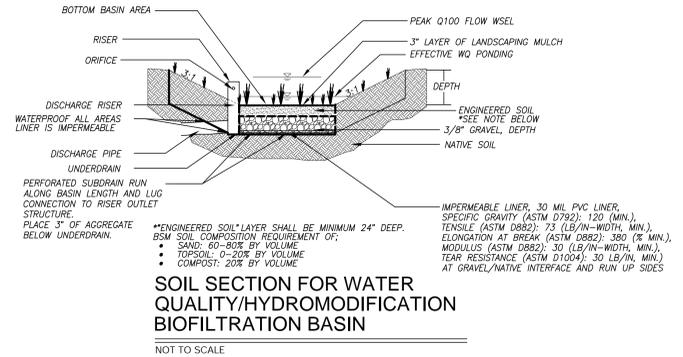
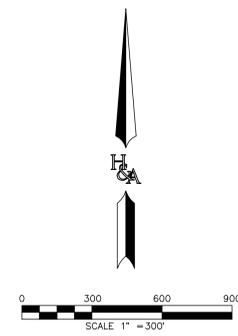
- PROJECT BOUNDARY
- DMA BOUNDARY
- FLOW DIRECTION
- SUBAREA ACREAGE
- DMA ID#
- STRUCTURAL BMP ID #
- BIOFILTRATION AREA
- HSG SOIL TYPE
- SELF-MITIGATING / NATURAL AREAS NOT TRIBUTARY TO PROJECT BMPs
- FARM AREAS TO BE SELF-MITIGATING
- CCSYA TO BE PROTECTED
- SELF-MITIGATING SLOPES
- PROPRIETARY BIOFILTRATION UNIT
- DE MINIMUS AREA



DMA ID	DMA Surface Type	DMA Area (ac)	DCV (cf)	DMA Type <sup>1</sup>	Structural BMP ID	Structural BMP Type <sup>2</sup>	Structural BMP Size	# Structural BMP	WQ Ponding Depth (in)	Media Thickness (in)	Gravel Thickness (in)
RV-1	Pvmt, Sdwb, LS	4.43	5,644	Drains to BMP	BF-1-RV1	Biofiltration Basin	4,950	--	12	21	15
RV-2	Pvmt, Sdwb, LS	2.90	3,695	Drains to BMP	BF-1-RV2	Biofiltration Basin	3,250	--	12	21	15
RV-3	Pvmt, Sdwb, LS	3.47	4,421	Drains to BMP	BF-1-RV3	Biofiltration Basin	3,900	--	12	21	15
RV-4	Pvmt, Sdwb, LS	3.54	4,510	Drains to BMP	BF-1-RV4	Biofiltration Basin	3,950	--	12	21	15
RV-5	Pvmt, Sdwb, LS	5.53	7,046	Drains to BMP	BF-1-RV5	Biofiltration Basin	6,200	--	12	21	15
RV-6	Pvmt, Sdwb, LS	2.91	3,708	Drains to BMP	BF-1-RV6	Biofiltration Basin	3,250	--	12	21	15

<sup>1</sup>DMA Type can only be: 1) Drains to BMP; 2) Self-Mitigating; 3) De Minimus; or 4) Self-Retaining.  
<sup>2</sup>BMP Type must be consistent with terminology in the BMP Design Manual and/or CASQA Fact Sheets.  
<sup>3</sup>Structural BMP size is typically presented as an area (s.f.) or size (e.g. proprietary devices).

- SITE DESIGN / LID BMPs:**
- SD-1 CONSERVE NATURAL DRAINAGE PATHWAYS
    - Existing drainage patterns will be maintained as much as possible
  - SD-2 CONSERVE NATURAL AREAS, SOILS, AND VEGETATION
    - Conserve Natural Areas Along Site's Exterior Where Possible
  - SD-3 MINIMIZE IMPERVIOUS AREA
    - Maximize the Amount of Open Space and Landscaping
  - SD-4 MINIMIZE SOIL COMPACTION
    - Where Feasible, Use Minimum Compaction
  - SD-5 IMPERVIOUS AREA DISPERSION
    - Use Splash Pads At Downspout Discharge Points
  - SD-6 RUNOFF COLLECTION
    - Where Possible, Direct Downspout Discharge to Biofiltration Areas
  - SD-7 LANDSCAPING WITH NATIVE OR DROUGHT TOLERANT SPECIES
- SOURCE CONTROL BMPs:**
- SC-1 PREVENTION OF ILLICIT DISCHARGES INTO THE MS4
    - Smart Irrigation Systems
  - SC-2 / SC-6a STORM DRAIN STENCILING OR SIGNAGE
  - SC-3 PROTECT OUTDOOR STORAGE AREAS
    - Direct Roof Downspouts Away from Storage Areas
  - SC-4 PROTECT MATERIAL STORED IN OUTDOOR WORK AREAS FROM RAINFALL
    - Farm areas will require protection of outdoor organic material
  - SC-5 PROTECT TRASH STORAGE AREAS FROM RAINFALL
    - Trash Storage Containers Will Be Required to Have Lids
  - SC-6 ON-SITE STORM DRAIN INLETS
    - Maintain Inlets
  - SC-6 NEED FOR FUTURE INDOOR & STRUCTURAL PEST CONTROL
    - Provide Integrated Pest Management Information to Owners
  - SC-6 LANDSCAPE/OUTDOOR PESTICIDE USE
    - Maintain Landscaping Using Minimum or No Pesticides
  - SC-6 POOLS, SPAS, PONDS, DECORATIVE FOUNTAINS
    - Maintain Onsite Pool
  - SC-6 FOOD SERVICE
    - Food service locations to connect floor sink to grease interceptor
  - SC-6 REFUSE AREAS
    - Refuse areas will be covered for protection from rainfall.
  - SC-6 VEHICLE AND EQUIPMENT CLEANING AND MAINTENANCE
    - Vehicle operations shall not discharge polluted stormwater to storm drain system
  - SC-6 LOADING DOCKS
    - Move loaded and unloaded items indoor as soon as possible
  - SC-6 FIRE SPRINKLER TEST WATER
    - Where possible, provide means to drain fire sprinkler test water to sanitary sewer
  - SC-6 PLAZAS, SIDEWALKS AND PARKING LOTS
    - Sweep Streets Regularly
  - BLENDED BSM SHALL CONSIST OF 60% TO 80% BY VOLUME SAND, UP TO 20% BY VOLUME TOPSOIL, AND UP TO 20% BY VOLUME COMPOST
  - UNDERLYING HYDROLOGIC SOIL GROUPS: A, B, C, & D
  - APPROXIMATE DEPTH TO GROUNDWATER: 5-10 FEET AT LOWER ELEVATIONS ALONG SYCAMORE CANYON



**SOIL SECTION FOR WATER QUALITY/HYDROMODIFICATION BIOFILTRATION BASIN**

NOT TO SCALE

\*ENGINEERED SOIL\* LAYER SHALL BE MINIMUM 24" DEEP.  
 BSM SOIL COMPOSITION REQUIREMENT OF:  
 • SAND: 60-80% BY VOLUME  
 • TOPSOIL: 0-20% BY VOLUME  
 • COMPOST: 20% BY VOLUME

BMP ID	POC-RV1	POC-RV2	POC-RV3	POC-RV4	POC-RV5	POC-RV6
Type	Bio-Basin	Bio-Basin	Bio-Basin	Bio-Basin	Bio-Basin	Bio-Basin
Bottom Basin Area (sf)	4,950	3,250	3,900	3,950	6,200	3,250
Total Basin Depth (ft)	5	5	5	5	5	5
WQ Ponding Depth (in)*	12	12	12	12	12	12
Amended Soil Depth (in)	21	21	21	21	21	21
Class 2 Perm. Depth (in)	15	15	15	15	15	15
Underdrain Orifice (in)	2.44	1.88	2.13	2.13	2.56	1.88
RISER:						
Riser Cross-Section Dimensions	3' x 3'	3' x 3'	3' x 3'	3' x 3'	3' x 3'	3' x 3'
Riser Height (ft)*	4.00	4.00	4.00	4.00	4.00	4.00
ORIFICE:						
Low Orifice Diameter (in)	Slot: 48" x 2.5"	Slot: 24" x 2"	Slot: 36" x 2"	Slot: 45" x 2"	Slot: 48" x 2.5"	Slot: 48" x 2"
Low Orifice Depth (ft)	1.00	1.00	1.00	1.00	1.00	1.00
Middle Orifice Diameter (in)	--	--	--	--	--	--
Middle Orifice Depth (ft)	--	--	--	--	--	--
*Relative to basin bottom						

PREPARED BY: **HUNSAKER & ASSOCIATES** SAN DIEGO, CA

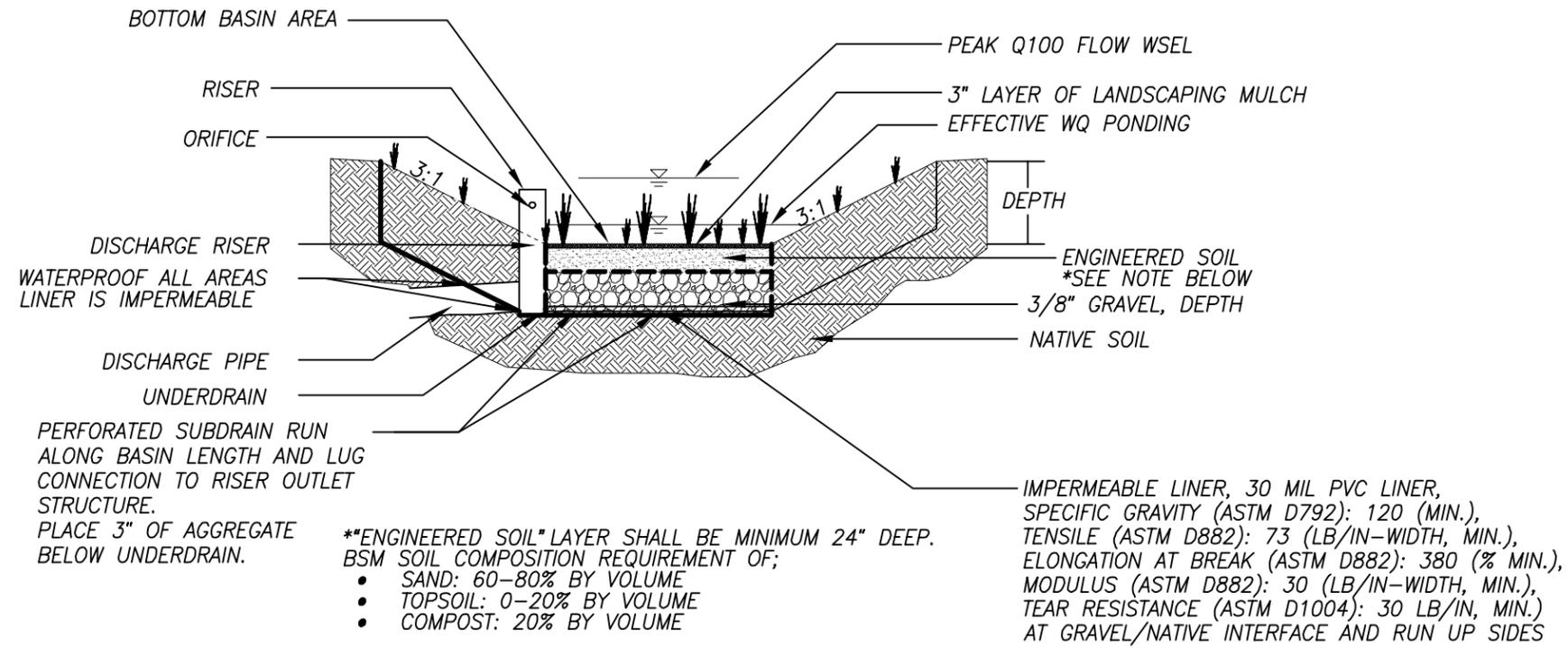
PLANNING 9707 Waples Street  
 ENGINEERING San Diego, Ca 92121  
 SURVEYING PH(858)558-4500 FX(858)558-1414

DMA EXHIBIT FOR:  
**FANITA RANCH SPECIAL USE AREA**

CITY OF SANTEE, CALIFORNIA

SHEET 3 OF 3

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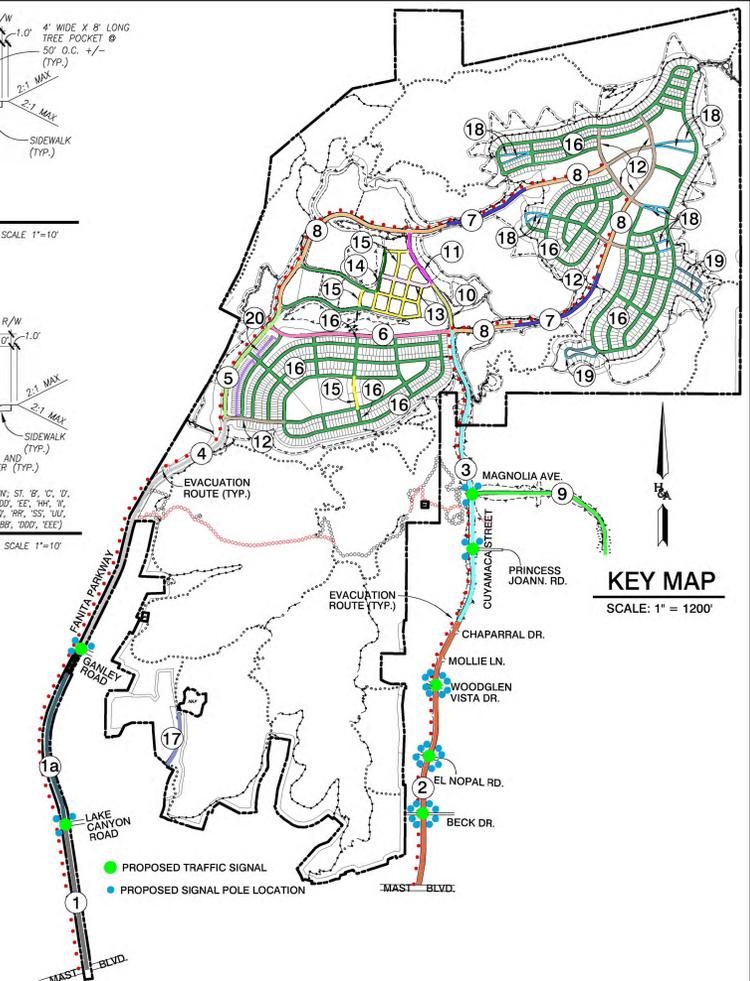
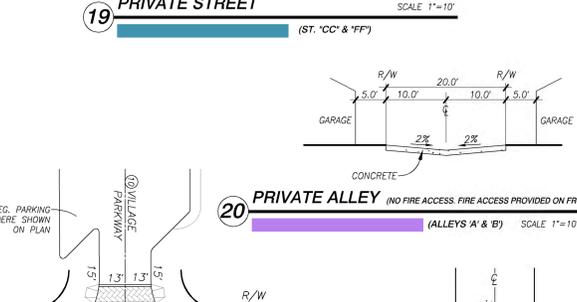
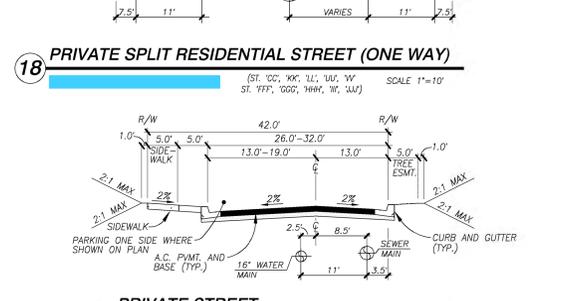
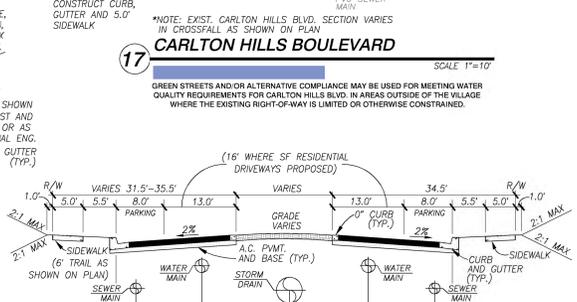
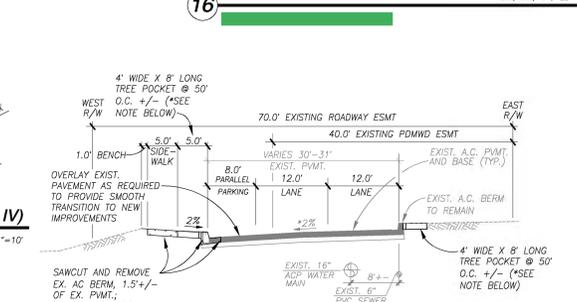
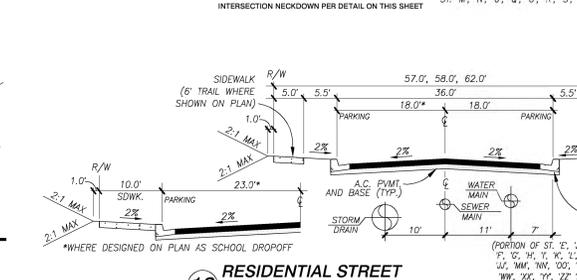
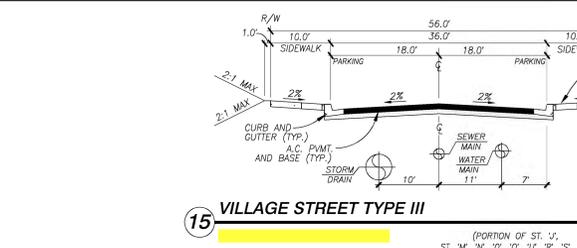
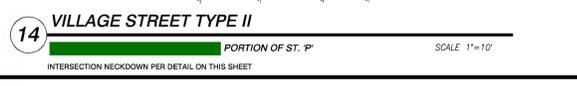
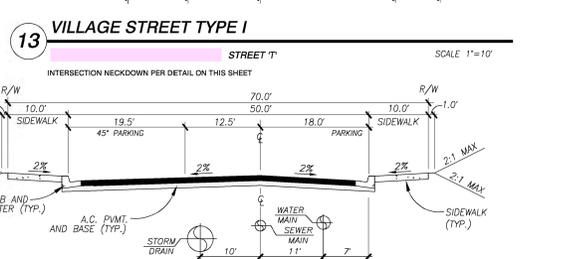
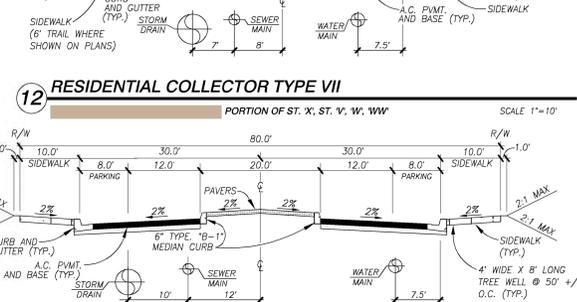
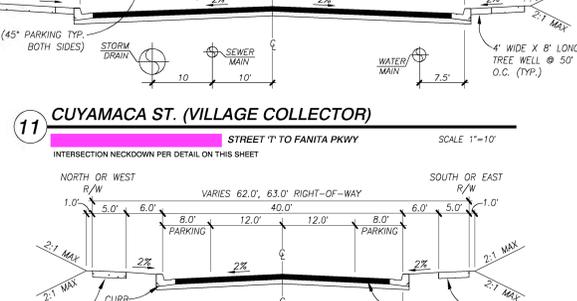
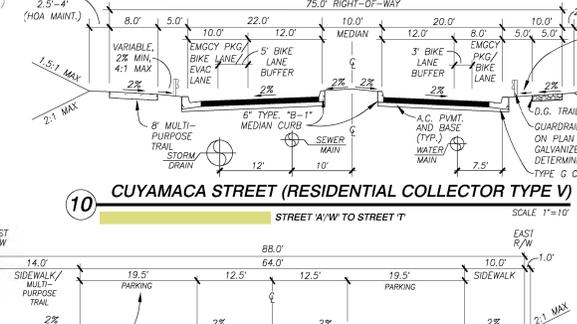
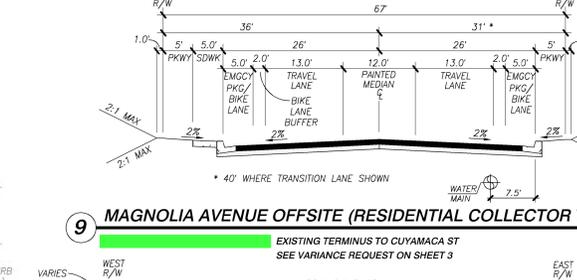
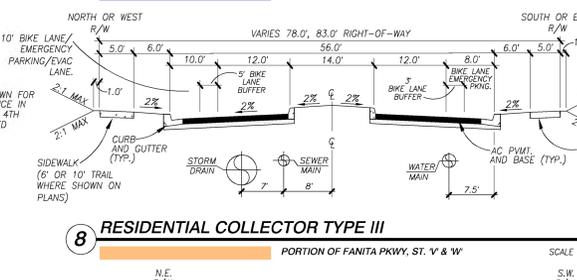
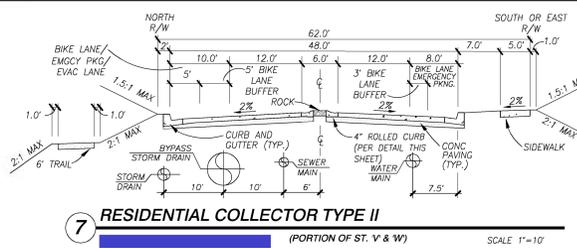
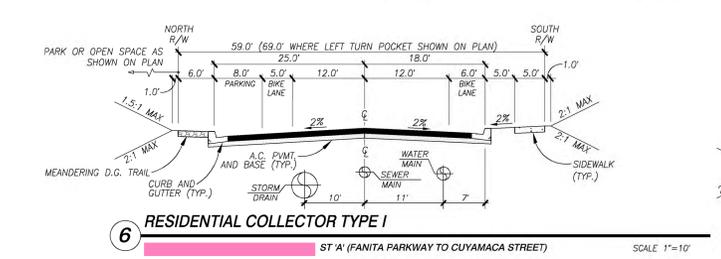
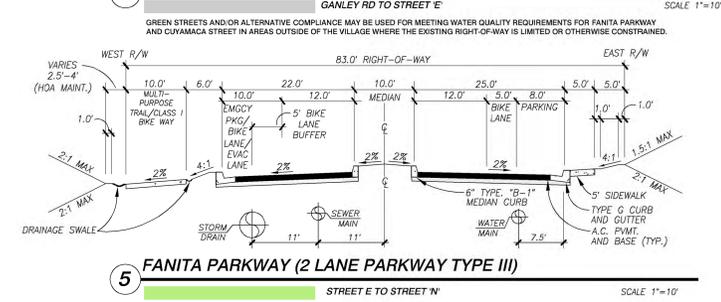
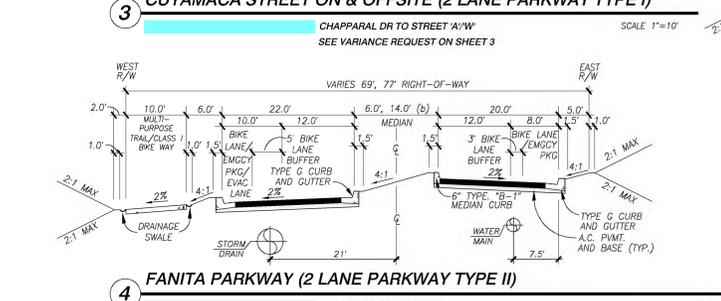
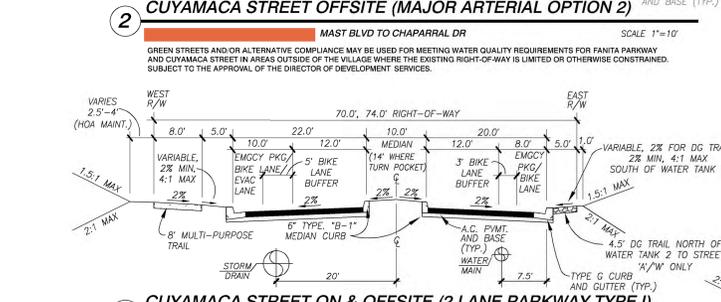
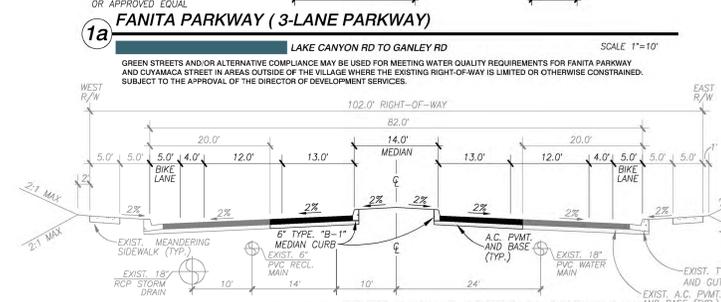
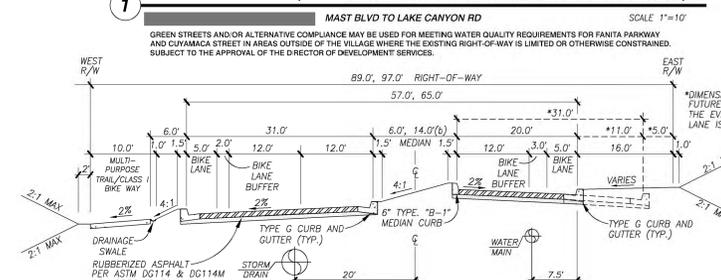
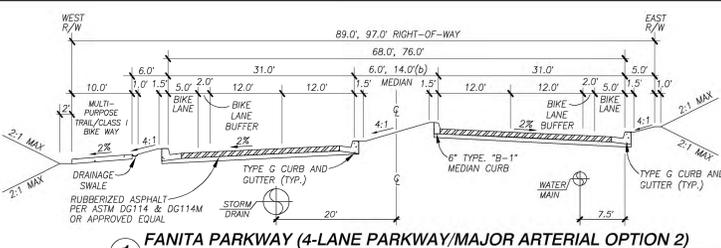
## SOIL SECTION FOR WATER QUALITY/HYDROMODIFICATION BIOFILTRATION BASIN

NOT TO SCALE



**HUNSAKER & ASSOCIATES**  
 SAN DIEGO, INC

PLANNING 9707 Waples Street  
 ENGINEERING San Diego, Ca 92121  
 SURVEYING PH(858)558-4500 · FX(858)558-1414



PROPOSED SECTION - FANITA SPECIFIC PLAN	ADIR RANGE (Square Footage)	ESTIMATED ADIR	DESIGN SPEED (MPH)	TRAVEL LANES	BIKE LANE	PARKING	MEDIAN WIDTH (FT)	CURB TO CURB (FT)	ROW (FT)	MAX GRADE (%)	MAX GRADE THROUGH INTERSECTION	MAX. CTR. LINE TO FULL PAVEMENT	MIN. CTR. LINE TO FULL PAVEMENT	MIN. TRAFFIC SIGNAL OFFSET	
1 FANITA PARKWAY 4-Lane Parkway	15,000-20,000	15,460	50*	4-3*	CLASS I & II	EMERGENCY BOTH SIDES	14"	RAISED	89', 7"	7	5	10	1400/850	8.5 430'	
1a FANITA PARKWAY 3-Lane Parkway	15,000-20,000	15,130	50*	2-1* + 1-1*	CLASS I & II	EMERGENCY BOTH SIDES	14"	RAISED	87', 60"	7	5	10	1400/850	8.5 430'	
2 CUYAMACA STREET Offsite	15,000-20,000	18,630	50	2-1* + 1-1*	CLASS II	EMERGENCY BOTH SIDES	14"	RAISED	82'	102'	7	5	10	1400/850	8.5 430'
3 CUYAMACA STREET On & Offsite	5,000-15,000	13,920	40*	2-1* + 1-1*	CLASS II	EMERGENCY BOTH SIDES	14"	RAISED	82', 50"	70', 12"	12	5	10	800/550	8.0 300'
4 FANITA PARKWAY 4-Lane Parkway	5,000-15,000	12,350	40*	2-1* + 1-1*	CLASS II	EMERGENCY BOTH SIDES	14"	RAISED	48', 50"	89', 17"	12	5	10	800/550	8.0 300'
5 FANITA PARKWAY 2-Lane Parkway	5,000-15,000	9,730	40*	2-1*	CLASS II	EMERGENCY BOTH SIDES	14"	RAISED	57'	89', 10"	10	5	10	800/550	8.0 300'
6 RESIDENTIAL COLLECTOR TYPE I	4,000-10,000	7,400	35*	2-1*	CLASS II	EMERGENCY BOTH SIDES	10"	PAINTED	57', 89'	13	5	10	610/400	7.5 250'	
7 RESIDENTIAL COLLECTOR TYPE II	4,000-10,000	6,480	35*	2-1*	CLASS II	EMERGENCY BOTH SIDES	10"	PAINTED	48'	62'	15	5	10	610/400	7.5 250'
8 MAGNOLIA AVENUE OFFSITE	4,000-10,000	6,480	35*	2-1*	CLASS II	EMERGENCY BOTH SIDES	14"	RAISED	56'	78', 82"	12*	5	10	610/400	7.5 250'
9 CUYAMACA STREET Offsite	4,000-10,000	6,310	35*	2-1*	CLASS II	EMERGENCY BOTH SIDES	12"	PAINTED	52'	67'	12	5	10	610/400	7.5 250'
10 CUYAMACA STREET Offsite	4,000-10,000	6,380	35*	2-1*	CLASS II	EMERGENCY BOTH SIDES	10"	RAISED	52'	75', 15*	10	5	10	610/400	7.5 250'
11 VILLAGE STREET	4,000-10,000	6,180	35*	2-1* + 1-1*	N/A	EMERGENCY BOTH SIDES	10"	RAISED	64'	84'	10	5	10	610/400	7.5 250'
12 RESIDENTIAL COLLECTOR TYPE I	4,000-10,000	4,300	25*	2-1*	N/A	EMERGENCY BOTH SIDES	N/A	RAISED	40'	62', 62"	12*	5	10	200	7.5 150'
13 VILLAGE STREET	3,200	25	2-1*	N/A	EMERGENCY BOTH SIDES	20"	RAISED	60'	80'	12	5	10	200	5.0 150'	
14 VILLAGE STREET	3,200	25	2-1* + 1-1*	N/A	EMERGENCY BOTH SIDES	10"	RAISED	50'	70'	12	5	10	200	5.0 150'	
15 VILLAGE STREET	3,200	25	2-1*	N/A	EMERGENCY BOTH SIDES	N/A	RAISED	36'	56'	12	5	10	200	5.0 150'	
16 RESIDENTIAL STREET	3,200	25	2-1*	N/A	EMERGENCY BOTH SIDES	N/A	RAISED	36'	56'	12*	5	10	200	5.0 150'	
17 RESIDENTIAL STREET	3,200	25	2-1*	N/A	EMERGENCY BOTH SIDES	N/A	RAISED	32'	45'	12	5	10	200	5.0 150'	
18, 19, 20 PHASE 2 RESIDENTIAL STREET	3,100	15	1 OR 2	N/A	EMERGENCY BOTH SIDES	N/A	RAISED	VARIES PER PLAN	VARIES PER PLAN	12	5	10	35	5.0 100'	

- NOTES:**
- THE STREETS WITH A GRADIENT EXCEEDING 12% SHALL BE PCC IN ACCORDANCE WITH PUBLIC WORKS STANDARDS, CITY OF SANTEE.
  - MEDIAN WIDTH MAY BE REDUCED TO 6' IN THE VICINITY OF WETLAND AND/OR BIOLOGICAL IMPACTS PROVIDED THE REQUIRED TURN POCKETS FUNCTION PROPERLY. PARKWAY AND MEDIAN MAY HAVE UP TO A 4:1 SLOPE WHERE SHOWN ON PLANS.
  - PARKING MAY BE ELIMINATED ON ONE SIDE WHERE SHOWN ON PLANS.
  - ENTRY DESIGN SPEED OF A ROUNDABOUT SHALL BE 20 MPH.
  - CURVE RADIUS SHOWN ARE PER CALTRANS TABLE 202.2 ASSUMING STANDARD CROWN SECTION. MINIMUM CENTERLINE RADIUS ON SUPER ELEVATED STREETS SHALL BE PER CITY OF SANTEE PUBLIC WORKS STANDARDS TABLE A.
  - LIGHTED SAG VERTICAL CURVES CALCULATED AS L=0.0215A<sup>2</sup> MAY BE USED ON ANY STREET PROVIDED THAT STREET LIGHTS ARE INSTALLED TO THE SATISFACTION OF THE DIRECTOR OF DEVELOPMENT SERVICES. SPONTANEOUS GRADE BREAKS OF 1% AT BVQ/EVC MAY BE USED IN DETERMINING VERTICAL CURVE LENGTHS.
  - PARKWAY - PARKWAY IS DEFINED BY THE CITY OF SANTEE MOBILITY ELEMENT AS "ROADWAYS REQUIRING UNIQUE DESIGN APPLICATIONS WHERE STANDARD DESIGNS CANNOT BE UTILIZED BECAUSE OF STEEP TERRAIN, RIGHT-OF-WAY CONSTRAINTS, SPECIAL DEVELOPMENT NEEDS AND/OR OTHER SPECIAL CONDITIONS. DUE TO SIGNIFICANT VARIATION ALONG PARKWAY CROSS-SECTIONS, A TYPICAL CROSS-SECTION IS NOT PROVIDED."
  - THE FANITA RANCH SPECIFIC PLAN USES CALTRANS STANDARDS FOR HORIZONTAL AND VERTICAL DESIGN GEOMETRY BASED ON THE ASSIGNED DESIGN SPEED FOR EACH ROADWAY TYPE. UNLESS OTHERWISE NOTED STREET DESIGN SHALL CONFORM TO CITY OF SANTEE STANDARDS.



**STREET CROSS SECTIONS AND STANDARDS**

PREPARED BY: **HUNSAKER & ASSOCIATES**

**VESTING TENTATIVE MAP/ PRELIMINARY GRADING PLAN FANITA RANCH**

City of Santee, California

**SHEET 2 OF 37**

PLANNING: 2019/03/20  
ENGINEERING: 2019/03/20  
SURVEYING: 2019/03/20

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**ATTACHMENT 1b**  
**TABULAR SUMMARY OF DMAs**

FANITA RANCH  
BIOFILTRATION BMP DMA CALCULATIONS

Fanita Ranch DMA Calcs

	Runoff Factor	DMA 1 BF-1-1	Sum RF x A	DMA 2 BF-1-2	Sum RF x A	BASIN 3 BF-1-3	Sum RF x A	DMA 4 BF-1-4	Sum RF x A	DMA 5 BF-1-5	Sum RF x A	DMA 6 BF-1-6	Sum RF x A	DMA 10a BF-1-10a	Sum RF x A	DMA 10b BF-1-10b	Sum RF x A	DMA 17 BF-1-17	Sum RF x A	DMA 18 BF-1-18	Sum RF x A	
		(ac.)		(ac.)		(ac.)		(ac.)		(ac.)		(ac.)		(ac.)		(ac.)		(ac.)		(ac.)		
RESID. ROOFS/SDWK	0.90	81.51	73.36	6.78	6.10	15.60	14.04	36.00	32.40	74.64	67.17	59.69	53.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ROAD	0.90	26.66	24.00	3.99	3.59	8.22	7.40	14.03	12.62	42.96	38.66	19.47	17.52	4.58	4.12	1.55	1.39	1.73	1.56	4.37	3.94	
LANDSCAPE	0.30	41.60	12.48	7.67	2.30	8.83	2.65	28.24	8.47	58.03	17.41	36.22	10.86	2.30	0.69	0.37	0.11	0.53	0.16	0.77	0.23	
AMENDED SOIL	0.10	6.46	0.65	1.01	0.10	1.93	0.19	3.11	0.31	6.95	0.70	2.72	0.27	0.15	0.01	0.05	0.00	0.05	0.01	0.00	0.00	
PARK	0.10	6.89	0.69	0.00	0.00	4.60	0.46	7.53	0.75	19.44	1.94	3.32	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
TOWN CENTER	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.66	11.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
FIRE STATION	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.81	1.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
SCHOOL	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.90	10.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
WATER TANK	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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>163.12</b>	111.17	<b>19.45</b>	12.09	<b>39.17</b>	24.74	<b>88.91</b>	54.56	<b>228.38</b>	149.62	<b>121.41</b>	82.71	<b>7.03</b>	4.83	<b>1.97</b>	1.51	<b>2.32</b>	1.73	<b>5.15</b>	4.17	
		Weight C	<b>0.68</b>	Weight C	<b>0.62</b>	Weight C	<b>0.63</b>	Weight C	<b>0.61</b>	Weight C	<b>0.66</b>	Weight C	<b>0.68</b>	Weight C	<b>0.69</b>	Weight C	<b>0.77</b>	Weight C	<b>0.74</b>	Weight C	<b>0.81</b>	

\*Weighted Runoff Coefficient

FANITA RANCH  
BIOFILTRATION BMP DMA CALCULATIONS

											LF Sub	Area	%Imp	Aimp	Aperv	
<b>Basin BF-1-1</b>																
Park	2.02	0.96	1.44	1.08	0.58	0.25	0.56					6.89	0%	0.00	6.89	
R-26 through R-29	11.11	6.75	9.35	8.3								35.51	80%	28.41	7.10	
Road	3652	367	568	9383	3256	1447	3064	694	3038			25469	33.33	80%	26.66	6.67
Slopes	5.07											5.07	0%	0.00	5.07	
SF Residential	75.86											75.86	70%	53.10	22.76	
Basin BF-1-1	6.46											6.46	0%	0.00	6.46	
Total												163.12		108.17		
<b>Basin BF-1-2</b>																
Park	0											0.00	0%	0.00	0.00	
MF	0											0.00	80%	0.00	0.00	
Road	3811											3811	4.99	80%	3.99	1.00
Slopes	3.02											3.02	0%	0.00	3.02	
SF Residential	10.43											10.43	65%	6.78	3.65	
Basin BF-1-2	1.01											1.01	0%	0.00	1.01	
Total												19.45				
<b>Basin BF-1-3</b>																
Park	4.6											4.60	0%	0.00	4.60	
MF	15.07											15.07	80%	12.06	3.01	
Road	7851											7851	10.27	80%	8.22	2.05
Slopes	1.85											1.85	0%	0.00	1.85	
SF Residential	5.45											5.45	65%	3.54	1.91	
Basin BF-1-3	1.93											1.93	0%	0.00	1.93	
Total												39.17				
<b>Basin BF-1-4</b>																
Park	0.25	0.87	1.7	0.88	1.78	1.88	0.17					7.53	0%	0.00	7.53	
MF	0											0.00	80%	0.00	0.00	
Road	13398											13398	17.53	80%	14.03	3.51
Slopes	2.07											2.07	0%	0.00	2.07	
SF Residential	55.39											55.39	65%	36.00	19.39	
Basin BF-1-4	3.11											3.11	0%	0.00	3.11	
North Basin to be removed	3.28											3.28	0%	0.00	3.28	
Total												88.91				

13.35	581526	C=0.10
41.60	1811897	C=0.30
108.17	4711962	C=0.90

Park and B

1.01	43996	C=0.10
7.67	334012	C=0.30
10.77	469097	C=0.90

6.53	284447	C=0.10
8.83	384468	C=0.30
23.82	1037476	C=0.90

10.64	463478	C=0.10
28.24	1230259	C=0.30
50.03	2179261	C=0.90

FANITA RANCH  
BIOFILTRATION BMP DMA CALCULATIONS

Basin BF-1-5													LF Sub	Area	%Imp	Aimp	Aperv
Park	15.59	0.5	3.18	0	0.17									19.44	0%	0.00	19.44
MF/Adult/ Assisted	14.72	15.85	3.45	5.61	3.51	3.95								47.09	80%	37.67	9.42
Road 46' conc or asph	1242	527	2568	2562	804	781	2995	2605	8072	1717	1972	25845	33.82	80%	27.06	6.76	
Road 50' conc or asph	6219	5230	3740									15189	19.88	80%	15.90	3.98	
Slopes	10.96	2.3	0	0									13.26	0%	0.00	13.26	
SF Residential	56.87												56.87	65%	36.97	19.90	
Town Center	2.31	1.58	1.49	2.03	1.57	1.5	2.02	1.57					14.07	90%	12.66	1.41	
Fire Station	2.01												2.01	90%	1.81	0.20	
School	9	5											14.00	85%	11.90	2.10	
Water Tank & Road	1												1.00	30%	0.30	0.70	
Basin BF-1-5	6.95												6.95	0%	0.00	6.95	
<b>Total</b>													<b>228.38</b>		<b>144.27</b>	<b>84.12</b>	

Basin BF-1-6													LF Sub	Area	%Imp	Aimp	Aperv
Park	2.54	0.78												3.32	0%	0.00	3.32
MF	10.46	8.87	6.25											25.58	80%	20.46	5.12
Road	3885	6844	920	722	2147	1722	957	428	310	662		18597	24.33	80%	19.47	4.87	
Slopes	5.11												5.11	0%	0.00	5.11	
SF Residential	60.35												60.35	65%	39.23	21.12	
Basin BF-1-6	2.72												2.72	0%	0.00	2.72	
<b>Total</b>													<b>121.41</b>				

26.39	1149548	C=0.10
57.03	2484202	C=0.30
143.97	6271124	C=0.90

6.04	263102	C=0.10
36.22	1577546	C=0.30
79.16	3448185	C=0.90

FANITA RANCH  
BIOFILTRATION BMP DMA CALCULATIONS

										LF Sub	Area	%Imp	Aimp	Aperv			
<b>Basin BF-1-10a</b>															0.15	6340	C=0.10
Road	5.39									5.39	85%	4.58	0.81	2.30	100049	C=0.30	
Slopes	1.49									1.49	0%	0.00	1.49	4.58	199644	C=0.90	
Basin BF-1-10	0.15									0.15	0%	0.00	0.15				
Total										7.03				Min 3%	Provided		
														6310	6340		
<b>Basin BF-1-10b</b>																	
Road	1.82									1.82	85%	1.55	0.27	0.05	1980	C=0.10	
Slopes	0.10									0.10	0%	0.00	0.10	0.37	16248	C=0.30	
Basin BF-1-10	0.05									0.05	0%	0.00	0.05	1.55	67387	C=0.90	
Total										1.97				Min 3%	Provided		
														1972	1980		
<b>Basin BF-1-17</b>																	
Road	2.04									2.04	85%	1.73	0.31	0.05	2260	C=0.10	
Slopes	0.23									0.23	0%	0.00	0.23	0.53	23174	C=0.30	
Basin BF-1-17	0.05									0.05	0%	0.00	0.05	1.73	75533	C=0.90	
Total										2.32				Min 3%	Provided		
														2255	2260		
<b>Basin BF-1-18</b>																	
Road	5.15									5.15	85%	4.37	0.77	0.00	0	C=0.10	
Slopes										0.00	0%	0.00	0.00	0.77	33621	C=0.30	
Basin BF-1-18										0.00	0%	0.00	0.00	4.37	190517	C=0.90	
Total										5.15							

**FANITA RANCH**  
**DMA CALCULATIONS- PROPRIETARY UNITS**

	Runoff Factor	DMA 11 BF	Summation	DMA 12 BF	Summation	DMA 13 BF	Summation	DMA 15 BF	Summation	DMA 16 BF	Summation	DMA 17 BF	Summation
		<b>3-1</b>	RF x A	<b>3-2</b>	RF x A	<b>3-3</b>	RF x A	<b>3-4</b>	RF x A	<b>3-5</b>	RF x A	<b>3-6</b>	RF x A
		(ac.)		(ac.)		(ac.)		(ac.)		(ac.)		(ac.)	
Roofs	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete or Asphalt	0.90	0.66	0.59	0.95	0.86	1.02	0.92	1.06	0.95	0.66	0.59	1.61	1.45
Unit Pavers (grouted)	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Decomposed Granite	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cobbles or Crushed Aggr.	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Much or Amended Soil	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compacted Soil	0.30	0.15	0.05	0.16	0.05	0.18	0.05	0.19	0.06	0.12	0.04	0.28	0.08
Natural (A Soil)	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural (B Soil)	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural (C Soil)	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural (D Soil)	0.30	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>0.81</b>	0.64	<b>1.11</b>	0.90	<b>1.20</b>	0.97	<b>1.25</b>	1.01	<b>0.78</b>	0.63	<b>1.89</b>	1.53
			<b>0.79</b>		<b>0.81</b>								

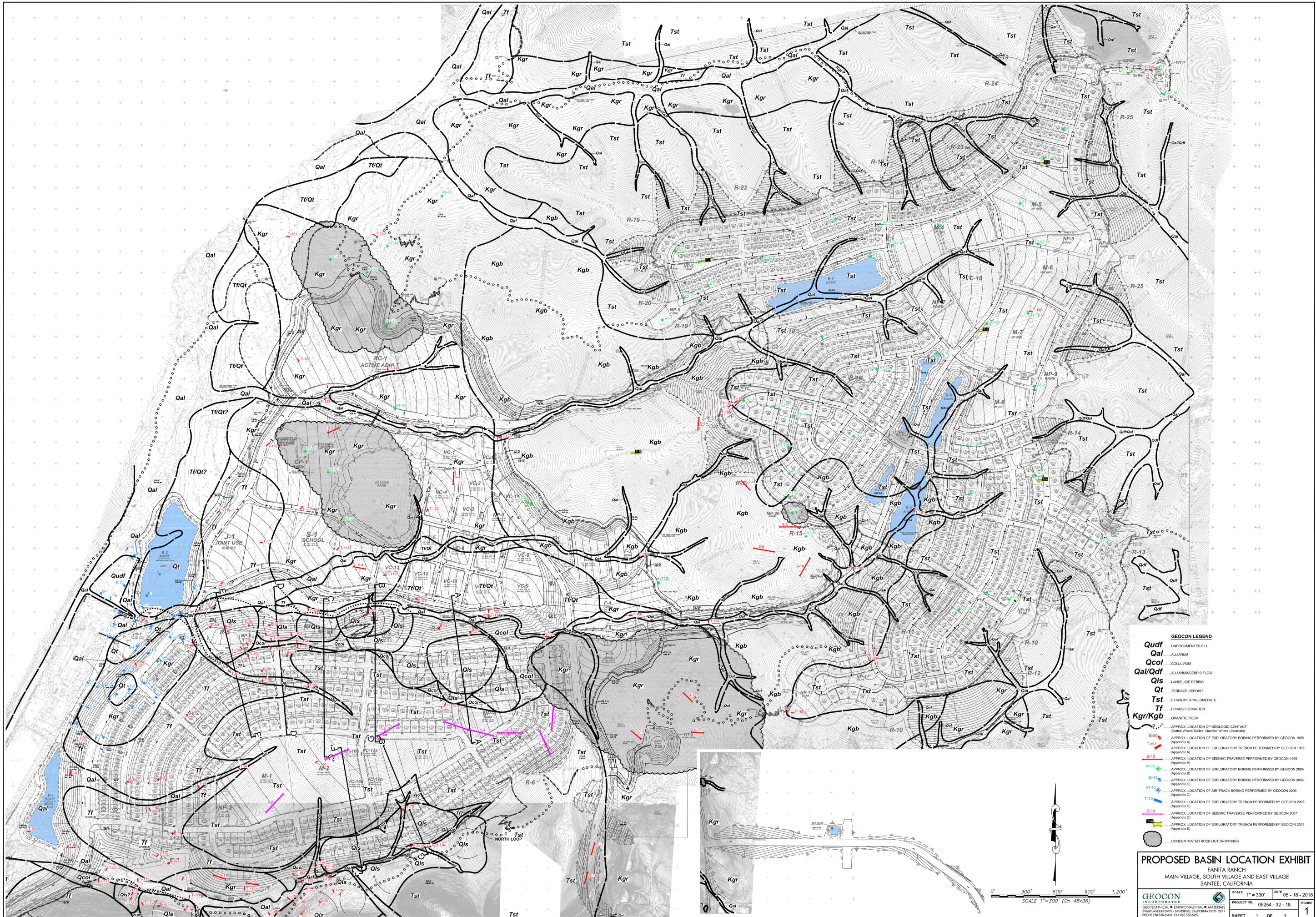
**ATTACHMENT 1c**  
**FORM I-7, HARVEST AND USE FEASIBILITY SCREENING CHECKLIST**

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet 0-1. Harvest and Use Feasibility Screening

Harvest and Use Feasibility Screening		Worksheet B.3-1
<p>1. Is there a demand for harvested water (check all that apply) at the project site that is reliably present during the wet season?</p> <p><input type="checkbox"/> Toilet and urinal flushing</p> <p><input type="checkbox"/> Landscape irrigation</p> <p><input type="checkbox"/> Other: _____</p>		
<p>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.</p> <p>[Provide a summary of calculations here]</p> $ET_{WU} = ET_{0, WET} \times [LZ(PF \times HAVIE) + SLA] \times 0.15$ $= 2.7 \frac{in}{mo} \times \left[ \frac{0.3 \times 278.4533}{90\%} \right] + 0.015$ $= 37,018$		
<p>3. Calculate the DCV using worksheet B-2.1.</p> <p>[Provide a results here] 847,948cf</p>		
<p>3a. Is the 36-hour demand greater than or equal to the DCV?</p> <p>Yes / <u>No</u> ⇒</p> <p>↓</p>	<p>3b. Is the 36-hour demand greater than 0.25DCV but less than the full DCV?</p> <p>Yes / <u>No</u> ⇒</p> <p>↓</p>	<p>3c. Is the 36-hour demand less than 0.25DCV?</p> <p><u>Yes</u></p> <p>↓</p>
<p>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.</p>	<p>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.</p>	<p>Harvest and use is considered to be infeasible.</p>

**ATTACHMENT 1d**  
**FORM I-8, CATEGORIZATION OF INFILTRATION FEASIBILITY CONDITION**



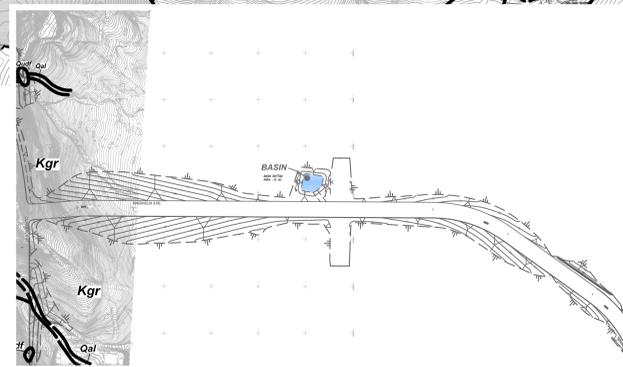
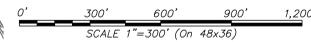
- GEOCON LEGEND**
- Qudf** ..... UNDOCUMENTED FILL
  - Qal** ..... ALLUVIUM
  - Qcol** ..... COLLUVIUM
  - Qal/Qdf** ..... ALLUVIUM/DEBRIS FLOW
  - Qls** ..... LANDSLIDE DEBRIS
  - Qt** ..... TERRACE DEPOSIT
  - Tst** ..... STADIUM CONGLOMERATE
  - Tf** ..... FRIARS FORMATION
  - Kgr/Kgb** ..... GRANITIC ROCK
  - 2-2** ..... APPROX. LOCATION OF GEOLOGIC CONTACT (Dotted Where Buried; Queried Where Uncertain)
  - B-45** ..... APPROX. LOCATION OF EXPLORATORY BORING PERFORMED BY GEOCON 1995 (Appendix A)
  - T-11** ..... APPROX. LOCATION OF EXPLORATORY TRENCH PERFORMED BY GEOCON 1995 (Appendix A)
  - S-13** ..... APPROX. LOCATION OF SEISMIC TRAVERSE PERFORMED BY GEOCON 1995 (Appendix A)
  - AT-24** ..... APPROX. LOCATION OF EXPLORATORY BORING PERFORMED BY GEOCON 2005 (Appendix B)
  - B-15** ..... APPROX. LOCATION OF EXPLORATORY BORING PERFORMED BY GEOCON 2006 (Appendix C)
  - AT-10** ..... APPROX. LOCATION OF AIR-TRACK BORING PERFORMED BY GEOCON 2006 (Appendix C)
  - T-10** ..... APPROX. LOCATION OF EXPLORATORY TRENCH PERFORMED BY GEOCON 2006 (Appendix C)
  - S-10** ..... APPROX. LOCATION OF SEISMIC TRAVERSE PERFORMED BY GEOCON 2007 (Appendix D)
  - 1-1** ..... APPROX. LOCATION OF EXPLORATORY TRENCH PERFORMED BY GEOCON 2014 (Appendix E)
  - CONCENTRATED ROCK OUTCROPPINGS** ..... CONCENTRATED ROCK OUTCROPPINGS

**PROPOSED BASIN LOCATION EXHIBIT**  
 FANITA RANCH  
 MAIN VILLAGE, SOUTH VILLAGE AND EAST VILLAGE  
 SANTEE, CALIFORNIA

**GEOCON**  
 GEOTECHNICAL • ENVIRONMENTAL • MATERIALS  
 4900 HARRIS DRIVE • SAN DIEGO, CALIFORNIA 92121-2974  
 PHONE 619 594-0000 • FAX 619 594-0400

SCALE 1" = 300'  
 PROJECT NO. 05254 - 32 - 18  
 SHEET 1 OF 1

DATE 05 - 18 - 2018  
 FIGURE 1



FANITA RANCH: BASINS 1 AND 2

Categorization of Infiltration Feasibility Condition		Worksheet C.4-1	
<p><b><u>Part 1 - Full Infiltration Feasibility Screening Criteria</u></b></p> <p>Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?</p>			
Criteria	Screening Question	Yes	No
1	<p><b>Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.</p>		X
<p>Provide basis:</p> <p>Based on information collected from the USDA NRCS website, Basins 1 and 2 are generally underlain with soils classified as Hydrologic Soil Group D, with corresponding saturated hydraulic conductivities ranging between 0.00 and 0.06 inches per hour (iph), which are not considered suitable for infiltration BMP's. These basins will be cut to grade and expose dense Terrace Deposits and Friars Formation. These formations contain clay layers that will impede the downward flow of water, cause lateral water migration and possible slope instability. Lateral water migration could result in distress to downgradient properties and improvements.</p>			
2	<p><b>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?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.</p>		X
<p>Provide basis:</p> <p>Infiltration of storm water into the terrace deposits and Friars Formation could potentially cause slope instability, daylight water seepage, groundwater mounding, and lateral water migration. The potential for lateral water migration to adversely impact existing and proposed utilities and to adversely impact existing and proposed foundations and improvements is high.</p>			

**Worksheet C.4-1 Page 2 of 4**

Criteria	Screening Question	Yes	No
3	<p><b>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?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</p>		X
<p>Provide basis:</p> <p>For Basins 1 and 2, moderate to heavy groundwater seepage was observed both above and below the proposed basin elevations. Since this perched groundwater is expected within 10 feet from bottom of proposed basins, there is an increased risk of groundwater contamination.</p>			
4	<p><b>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?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</p>	X	
<p>Provide basis:</p> <p>It is our opinion there are no adverse impacts to groundwater, water balance impacts to stream flow, or impacts on any downstream water rights. It should be noted that researching downstream water rights or evaluating water balance issues to stream flows is beyond the scope of the geotechnical consultant.</p>			
<b>Part 1 Result*</b>	<p>If all answers to rows 1 - 4 are “<b>Yes</b>” a full infiltration design is potentially feasible. The feasibility screening category is <b>Full Infiltration</b></p> <p>If any answer from row 1-4 is “<b>No</b>”, 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</p>		No Infiltration

\*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by the City to substantiate findings.

**Worksheet C.4-1 Page 3 of 4**

**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	<b>Do soil and geologic conditions allow for infiltration in any appreciable rate or volume?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X

Provide basis:  
 Based on information collected from the USDA NRCS website, Basins 1 and 2 are generally underlain with soils classified as Hydrologic Soil Group D, with corresponding saturated hydraulic conductivities ranging between 0.00 and 0.06 inches per hour (iph), which are not considered suitable for infiltration BMP's. These basins will be cut to grade and expose dense Terrace Deposits and Friars Formation. These formations contain clay layers that will impede the downward flow of water, cause lateral water migration and possible slope instability. Lateral water migration could result in distress to downgradient properties and improvements.

6	<b>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?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X
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Provide basis:  
 Infiltration of storm water into the terrace deposits and Friars Formation could potentially cause slope instability, daylight water seepage, groundwater mounding, and lateral water migration. The potential for lateral water migration to adversely impact existing and proposed utilities and to adversely impact existing and proposed foundations and improvements is high.

**Worksheet C.4-1 Page 4 of 4**

Criteria	Screening Question	Yes	No
7	<b>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)?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.		X
Provide basis:  For Basins 1 and 2, moderate to heavy groundwater seepage was observed both above and below the proposed basin elevations. Since this perched groundwater is expected within 10 feet from bottom of proposed basins, there is an increased risk of groundwater contamination.			
8	<b>Can infiltration be allowed without violating downstream water rights?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis:  Geocon is not aware of any downstream water rights that would be affected by incidental infiltration of storm water. Researching downstream water rights is beyond the scope of the geotechnical consultant.			
<b>Part 2 Result*</b>	If all answers from row 1-4 are yes then partial infiltration design is potentially feasible. The feasibility screening category is <b>Partial Infiltration</b> .  If any answer from row 5-8 is no, then infiltration of any volume is considered to be <b>infeasible</b> within the drainage area. The feasibility screening category is <b>No Infiltration</b> .	<b>No Infiltration</b>	

\*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by the City to substantiate findings.

FANITA RANCH: BASIN 3

Categorization of Infiltration Feasibility Condition		Worksheet C.4-1	
<p><b><u>Part 1 - Full Infiltration Feasibility Screening Criteria</u></b></p> <p>Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?</p>			
Criteria	Screening Question	Yes	No
1	<p><b>Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.</p>		X
<p>Provide basis:</p> <p>Based on information collected from the USDA NRCS website, Basin 3 is generally going to be underlain with soils classified as Hydrologic Soil Group C and D, which are not considered suitable for infiltration BMP's. This basin will be graded and result in compacted fill ranging from approximately 5 to 115 feet thick. Infiltration BMP's supported by compacted fill are not recommended due to the increased potential for soil saturation, settlement of granular fill soils, heaving of expansive soils, and lateral water migration. Lateral water migration could result in distress to downgradient properties and improvements. The underlying gabbroic/granitic rock is considered practically impermeable.</p>			
2	<p><b>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?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.</p>		X
<p>Provide basis:</p> <p>Infiltration BMP's supported by compacted fill ranging from 5 to 115 feet are not recommended. The potential for long-term settlement of the granular fill soils, heaving of the near surface expansive soils, and lateral water migration to adversely impact existing and proposed utilities and to adversely impact existing and proposed foundations and improvements is high. The underlying gabbroic/granitic rock is considered practically impermeable.</p>			

**Worksheet C.4-1 Page 2 of 4**

Criteria	Screening Question	Yes	No
3	<p><b>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?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</p>	X	
<p>Provide basis:</p> <p>Groundwater is not located within 10 feet from the bottom of Basin 3, therefore the risk of storm water infiltration BMP's adversely impacting groundwater is considered negligible.</p>			
4	<p><b>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?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</p>	X	
<p>Provide basis:</p> <p>It is our opinion there are no adverse impacts to groundwater, water balance impacts to stream flow, or impacts on any downstream water rights. It should be noted that researching downstream water rights or evaluating water balance issues to stream flows is beyond the scope of the geotechnical consultant.</p>			
<b>Part 1 Result*</b>	<p>If all answers to rows 1 - 4 are “<b>Yes</b>” a full infiltration design is potentially feasible. The feasibility screening category is <b>Full Infiltration</b></p> <p>If any answer from row 1-4 is “<b>No</b>”, 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</p>		<b>No Infiltration</b>

\*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by the City to substantiate findings.

**Worksheet C.4-1 Page 3 of 4**

**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	<b>Do soil and geologic conditions allow for infiltration in any appreciable rate or volume?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X

Provide basis:  
 Based on information collected from the USDA NRCS website, Basin 3 is generally going to be underlain with soils classified as Hydrologic Soil Group C and D, which are not considered suitable for infiltration BMP's. This basin will be graded and result in compacted fill ranging from approximately 5 to 115 feet thick. Infiltration BMP's supported by compacted fill are not recommended due to the increased potential for soil saturation, settlement of granular fill soils, heaving of expansive soils, and lateral water migration. Lateral water migration could result in distress to downgradient properties and improvements. The underlying gabbroic/granitic rock is considered practically impermeable.

6	<b>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?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X
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Provide basis:  
 Infiltration BMP's supported by compacted fill ranging from 5 to 115 feet are not recommended. The potential for long-term settlement of the granular fill soils, heaving of the near surface expansive soils, and lateral water migration to adversely impact existing and proposed utilities and to adversely impact existing and proposed foundations and improvements is high. The underlying gabbroic/granitic rock is considered practically impermeable.

**Worksheet C.4-1 Page 4 of 4**

Criteria	Screening Question	Yes	No
7	<p><b>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)?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</p>	X	
<p>Provide basis:</p> <p>Groundwater is not located within 10 feet from the bottom of Basin 3, therefore the risk of storm water infiltration BMP's adversely impacting groundwater is considered negligible.</p>			
8	<p><b>Can infiltration be allowed without violating downstream water rights?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</p>	X	
<p>Provide basis:</p> <p>Geocon is not aware of any downstream water rights that would be affected by incidental infiltration of storm water. Researching downstream water rights is beyond the scope of the geotechnical consultant.</p>			
<b>Part 2 Result*</b>	<p>If all answers from row 1-4 are yes then partial infiltration design is potentially feasible. The feasibility screening category is <b>Partial Infiltration</b>.</p> <p>If any answer from row 5-8 is no, then infiltration of any volume is considered to be <b>infeasible</b> within the drainage area. The feasibility screening category is <b>No Infiltration</b>.</p>		No Infiltration

\*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by the City to substantiate findings.

FANITA RANCH: BASINS 4 - 7

Categorization of Infiltration Feasibility Condition		Worksheet C.4-1	
<p><b><u>Part 1 - Full Infiltration Feasibility Screening Criteria</u></b></p> <p>Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?</p>			
Criteria	Screening Question	Yes	No
1	<p><b>Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.</p>		X
<p>Provide basis:</p> <p>Based on information collected from the USDA NRCS website, Basins 4 through 7 are generally going to be underlain with soils classified as Hydrologic Soil Group C and D, which are not considered suitable for infiltration BMP's. These basins will be graded and result in a cut/fill transition with compacted fill ranging from approximately 25 to 105 feet thick and cuts of approximately 10 to 95 feet exposing dense gabbroic/granitic rock. Infiltration BMP's supported by compacted fill are not recommended due to the increased potential for soil saturation, settlement of granular fill soils, heaving of expansive soils, and lateral water migration. Lateral water migration could result in distress to downgradient properties and improvements. The underlying gabbroic/granitic rock is considered practically impermeable.</p>			
2	<p><b>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?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.</p>		X
<p>Provide basis:</p> <p>Infiltration BMP's supported by compacted fill ranging from 25 to 105 feet are not recommended. The potential for long-term settlement of the granular fill soils, heaving of the near surface expansive soils, and lateral water migration to adversely impact existing and proposed utilities and to adversely impact existing and proposed foundations and improvements is high. The underlying gabbroic/granitic rock is considered practically impermeable.</p>			

**Worksheet C.4-1 Page 2 of 4**

Criteria	Screening Question	Yes	No
3	<p><b>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?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</p>	X	
<p>Provide basis:</p> <p>Groundwater is not located within 10 feet from the bottom of Basin 3, therefore the risk of storm water infiltration BMP's adversely impacting groundwater is considered negligible.</p>			
4	<p><b>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?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</p>	X	
<p>Provide basis:</p> <p>It is our opinion there are no adverse impacts to groundwater, water balance impacts to stream flow, or impacts on any downstream water rights. It should be noted that researching downstream water rights or evaluating water balance issues to stream flows is beyond the scope of the geotechnical consultant.</p>			
<b>Part 1 Result*</b>	<p>If all answers to rows 1 - 4 are "<b>Yes</b>" a full infiltration design is potentially feasible. The feasibility screening category is <b>Full Infiltration</b></p> <p>If any answer from row 1-4 is "<b>No</b>", 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</p>		<b>No Infiltration</b>

\*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by the City to substantiate findings.

**Worksheet C.4-1 Page 3 of 4**

**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	<b>Do soil and geologic conditions allow for infiltration in any appreciable rate or volume?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X

Provide basis:

Based on information collected from the USDA NRCS website, Basins 4 through 7 are generally going to be underlain with soils classified as Hydrologic Soil Group C and D, which are not considered suitable for infiltration BMP's. These basins will be graded and result in a cut/fill transition with compacted fill ranging from approximately 25 to 105 feet thick and cuts of approximately 10 to 95 feet exposing dense gabbroic/granitic rock. Infiltration BMP's supported by compacted fill are not recommended due to the increased potential for soil saturation, settlement of granular fill soils, heaving of expansive soils, and lateral water migration. Lateral water migration could result in distress to downgradient properties and improvements. The underlying gabbroic/granitic rock is considered practically impermeable.

6	<b>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?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X
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Provide basis:

Infiltration BMP's supported by compacted fill ranging from 25 to 105 feet are not recommended. The potential for long-term settlement of the granular fill soils, heaving of the near surface expansive soils, and lateral water migration to adversely impact existing and proposed utilities and to adversely impact existing and proposed foundations and improvements is high. The underlying gabbroic/granitic rock is considered practically impermeable.

**Worksheet C.4-1 Page 4 of 4**

Criteria	Screening Question	Yes	No
7	<p><b>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)?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</p>	X	
<p>Provide basis:</p> <p>Groundwater is not located within 10 feet from the bottom of Basin 3, therefore the risk of storm water infiltration BMP's adversely impacting groundwater is considered negligible.</p>			
8	<p><b>Can infiltration be allowed without violating downstream water rights?</b> The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</p>	X	
<p>Provide basis:</p> <p>Geocon is not aware of any downstream water rights that would be affected by incidental infiltration of storm water. Researching downstream water rights is beyond the scope of the geotechnical consultant.</p>			
<b>Part 2 Result*</b>	<p>If all answers from row 1-4 are yes then partial infiltration design is potentially feasible. The feasibility screening category is <b>Partial Infiltration</b>.</p> <p>If any answer from row 5-8 is no, then infiltration of any volume is considered to be <b>infeasible</b> within the drainage area. The feasibility screening category is <b>No Infiltration</b>.</p>		No Infiltration

\*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by the City to substantiate findings.

**ATTACHMENT 1e**  
**POLLUTION CONTROL BMP DESIGN WORKSHEETS**

**Automated Worksheet B.1-1: Calculation of Design Capture Volume (V1.3)**

Category	#	Description	<i>i</i>	<i>ii</i>	<i>iii</i>	<i>iv</i>	<i>v</i>	<i>vi</i>	<i>vii</i>	<i>viii</i>	<i>ix</i>	<i>x</i>	Units	
Standard Drainage Basin Inputs	0	Drainage Basin ID or Name	BF-1-1	BF-1-2	BF-1-3	BF-1-4	BF-1-5	BF-1-6	BF-1-10a	BF-1-10b	BF-1-17	BF-1-18	unitless	
	1	Basin Drains to the Following BMP Type	Biofiltration	n/a	unitless									
	2	85th Percentile 24-hr Storm Depth	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	inches
	3	Design Infiltration Rate Recommended by Geotechnical Engineer	0.000	0.000	0.000	0.000	0.000	0.025	0.150	0.000	0.000	0.000	0.000	in/hr
	4	Impervious Surfaces <u>Not Directed to Dispersion Area</u> (C=0.90)	4,751,145	471,506	1,041,716	2,186,407	6,271,124	3,448,185	170,426	74,719	75,533	190,517	190,517	sq-ft
	5	Semi-Pervious Surfaces <u>Not Serving as Dispersion Area</u> (C=0.30)	1,772,836	331,867	380,228	1,222,693	2,710,840	1,577,546	34,664	38,815	23,174	33,621	33,621	sq-ft
	6	Engineered Pervious Surfaces <u>Not Serving as Dispersion Area</u> (C=0.10)	581,526	43,996	284,447	463,478	1,149,548	263,102	2,190	3,210	2,260	0	0	sq-ft
	7	Natural Type A Soil <u>Not Serving as Dispersion Area</u> (C=0.10)												sq-ft
	8	Natural Type B Soil <u>Not Serving as Dispersion Area</u> (C=0.14)												sq-ft
	9	Natural Type C Soil <u>Not Serving as Dispersion Area</u> (C=0.23)												sq-ft
	10	Natural Type D Soil <u>Not Serving as Dispersion Area</u> (C=0.30)											sq-ft	
Dispersion Area, Tree Well & Rain Barrel Inputs (Optional)	11	Does Tributary Incorporate Dispersion, Tree Wells, and/or Rain Barrels?	No	Yes	yes/no									
	12	Impervious Surfaces <b>Directed to Dispersion Area</b> per SD-B (Ci=0.90)											sq-ft	
	13	Semi-Pervious Surfaces <b>Serving as Dispersion Area</b> per SD-B (Ci=0.30)											sq-ft	
	14	Engineered Pervious Surfaces <b>Serving as Dispersion Area</b> per SD-B (Ci=0.10)											sq-ft	
	15	Natural Type A Soil <b>Serving as Dispersion Area</b> per SD-B (Ci=0.10)											sq-ft	
	16	Natural Type B Soil <b>Serving as Dispersion Area</b> per SD-B (Ci=0.14)											sq-ft	
	17	Natural Type C Soil <b>Serving as Dispersion Area</b> per SD-B (Ci=0.23)											sq-ft	
	18	Natural Type D Soil <b>Serving as Dispersion Area</b> per SD-B (Ci=0.30)											sq-ft	
	19	Number of Tree Wells Proposed per SD-A										32	#	
	20	Average Mature Tree Canopy Diameter										25	ft	
	21	Number of Rain Barrels Proposed per SD-E											#	
	22	Average Rain Barrel Size											gal	
Treatment Train Inputs & Calculations	23	Does BMP Overflow to Stormwater Features in <u>Downstream</u> Drainage?	No	No	unitless									
	24	Identify Downstream Drainage Basin Providing Treatment in Series											unitless	
	25	Percent of Upstream Flows Directed to Downstream Dispersion Areas											percent	
	26	Upstream Impervious Surfaces Directed to Dispersion Area (Ci=0.90)	0	0	0	0	0	0	0	0	0	0	cubic-feet	
	27	Upstream Impervious Surfaces Not Directed to Dispersion Area (C=0.90)	0	0	0	0	0	0	0	0	0	0	cubic-feet	
Initial Runoff Factor Calculation	28	Total Tributary Area	7,105,507	847,369	1,706,391	3,872,578	10,131,513	5,288,834	207,280	116,744	100,967	224,138	sq-ft	
	29	Initial Runoff Factor for Standard Drainage Areas	0.68	0.62	0.63	0.61	0.65	0.68	0.79	0.68	0.74	0.81	unitless	
	30	Initial Runoff Factor for Dispersed & Dispersion Areas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless	
	31	Initial Weighted Runoff Factor	0.68	0.62	0.63	0.61	0.65	0.68	0.79	0.68	0.74	0.81	unitless	
	32	Initial Design Capture Volume	217,429	23,642	48,376	106,302	296,347	161,838	7,369	3,572	3,362	8,170	cubic-feet	
Dispersion Area Adjustments	33	Total Impervious Area Dispersed to Pervious Surface	0	0	0	0	0	0	0	0	0	0	sq-ft	
	34	Total Pervious Dispersion Area	0	0	0	0	0	0	0	0	0	0	sq-ft	
	35	Ratio of Dispersed Impervious Area to Pervious Dispersion Area	n/a	n/a	ratio									
	36	Adjustment Factor for Dispersed & Dispersion Areas	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	ratio	
	37	Runoff Factor After Dispersion Techniques	0.68	0.62	0.63	0.61	0.65	0.68	0.79	0.68	0.74	0.81	unitless	
	38	Design Capture Volume After Dispersion Techniques	217,429	23,642	48,376	106,302	296,347	161,838	7,369	3,572	3,362	8,170	cubic-feet	
Tree & Barrel Adjustments	39	Total Tree Well Volume Reduction	0	0	0	0	0	0	0	0	0	9,280	cubic-feet	
	40	Total Rain Barrel Volume Reduction	0	0	0	0	0	0	0	0	0	0	cubic-feet	
Results	41	Final Adjusted Runoff Factor	0.68	0.62	0.63	0.61	0.65	0.68	0.79	0.68	0.74	0.00	unitless	
	42	Final Effective Tributary Area	4,831,745	525,369	1,075,026	2,362,273	6,585,483	3,596,407	163,751	79,386	74,716	0	sq-ft	
	43	Initial Design Capture Volume Retained by Site Design Elements	0	0	0	0	0	0	0	0	0	9,280	cubic-feet	
	44	Final Design Capture Volume Tributary to BMP	217,429	23,642	48,376	106,302	296,347	161,838	7,369	3,572	3,362	0	cubic-feet	

**Worksheet B.1-1 General Notes:**

A. Applicants may use this worksheet to calculate design capture volumes for up to 10 drainage areas User input must be provided for yellow shaded cells, values for all other cells will be automatically generated, errors/notifications will be highlighted in red and summarized below. Upon completion of this worksheet, proceed to the appropriate BMP Sizing worksheet(s).

**Automated Worksheet B.1-1: Calculation of Design Capture Volume (V1.3)**

Category	#	Description	<i>i</i>	<i>ii</i>	<i>iii</i>	<i>iv</i>	<i>v</i>	<i>vi</i>	<i>vii</i>	<i>viii</i>	<i>ix</i>	<i>x</i>	Units
Standard Drainage Basin Inputs	0	Drainage Basin ID or Name	BF-RV-1	BF-RV-2	BF-RV-3	BF-RV-4	BF-RV-5	BF-RV-6					unitless
	1	Basin Drains to the Following BMP Type	Biofiltration	Biofiltration	Biofiltration	Biofiltration	Biofiltration	Biofiltration					unitless
	2	85th Percentile 24-hr Storm Depth	0.54	0.54	0.54	0.54	0.54	0.54					inches
	3	Design Infiltration Rate Recommended by Geotechnical Engineer	0.000	0.000	0.000	0.000	0.000	0.000					in/hr
	4	Impervious Surfaces <u>Not Directed to Dispersion Area</u> (C=0.90)	115,782	75,794	90,692	92,521	144,532	76,056					sq-ft
	5	Semi-Pervious Surfaces <u>Not Serving as Dispersion Area</u> (C=0.30)	72,238	47,280	56,561	57,731	90,155	47,454					sq-ft
	6	Engineered Pervious Surfaces <u>Not Serving as Dispersion Area</u> (C=0.10)	4,950	3,250	3,900	3,950	6,200	3,250					sq-ft
	7	Natural Type A Soil <u>Not Serving as Dispersion Area</u> (C=0.10)											sq-ft
	8	Natural Type B Soil <u>Not Serving as Dispersion Area</u> (C=0.14)											sq-ft
	9	Natural Type C Soil <u>Not Serving as Dispersion Area</u> (C=0.23)											sq-ft
	10	Natural Type D Soil <u>Not Serving as Dispersion Area</u> (C=0.30)										sq-ft	
Dispersion Area, Tree Well & Rain Barrel Inputs (Optional)	11	Does Tributary Incorporate Dispersion, Tree Wells, and/or Rain Barrels?	No	No	No	No	No	No	n/a	n/a	n/a	n/a	yes/no
	12	Impervious Surfaces <b>Directed to Dispersion Area</b> per SD-B (Ci=0.90)											sq-ft
	13	Semi-Pervious Surfaces <b>Serving as Dispersion Area</b> per SD-B (Ci=0.30)											sq-ft
	14	Engineered Pervious Surfaces <b>Serving as Dispersion Area</b> per SD-B (Ci=0.10)											sq-ft
	15	Natural Type A Soil <b>Serving as Dispersion Area</b> per SD-B (Ci=0.10)											sq-ft
	16	Natural Type B Soil <b>Serving as Dispersion Area</b> per SD-B (Ci=0.14)											sq-ft
	17	Natural Type C Soil <b>Serving as Dispersion Area</b> per SD-B (Ci=0.23)											sq-ft
	18	Natural Type D Soil <b>Serving as Dispersion Area</b> per SD-B (Ci=0.30)											sq-ft
	19	Number of Tree Wells Proposed per SD-A											#
	20	Average Mature Tree Canopy Diameter											ft
	21	Number of Rain Barrels Proposed per SD-E										#	
	22	Average Rain Barrel Size										gal	
Treatment Train Inputs & Calculations	23	Does BMP Overflow to Stormwater Features in <u>Downstream</u> Drainage?	No	No	No	No	No	No	No	No	No	No	unitless
	24	Identify Downstream Drainage Basin Providing Treatment in Series											unitless
	25	Percent of Upstream Flows Directed to Downstream Dispersion Areas											percent
	26	Upstream Impervious Surfaces Directed to Dispersion Area (Ci=0.90)	0	0	0	0	0	0	0	0	0	0	cubic-feet
	27	Upstream Impervious Surfaces Not Directed to Dispersion Area (C=0.90)	0	0	0	0	0	0	0	0	0	0	cubic-feet
Initial Runoff Factor Calculation	28	Total Tributary Area	192,970	126,324	151,153	154,202	240,887	126,760	0	0	0	0	sq-ft
	29	Initial Runoff Factor for Standard Drainage Areas	0.65	0.65	0.65	0.65	0.65	0.65	0.00	0.00	0.00	0.00	unitless
	30	Initial Runoff Factor for Dispersed & Dispersion Areas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless
	31	Initial Weighted Runoff Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.00	0.00	0.00	0.00	unitless
	32	Initial Design Capture Volume	5,644	3,695	4,421	4,510	7,046	3,708	0	0	0	0	cubic-feet
Dispersion Area Adjustments	33	Total Impervious Area Dispersed to Pervious Surface	0	0	0	0	0	0	0	0	0	0	sq-ft
	34	Total Pervious Dispersion Area	0	0	0	0	0	0	0	0	0	0	sq-ft
	35	Ratio of Dispersed Impervious Area to Pervious Dispersion Area	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	ratio
	36	Adjustment Factor for Dispersed & Dispersion Areas	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	ratio
	37	Runoff Factor After Dispersion Techniques	0.65	0.65	0.65	0.65	0.65	0.65	n/a	n/a	n/a	n/a	unitless
	38	Design Capture Volume After Dispersion Techniques	5,644	3,695	4,421	4,510	7,046	3,708	0	0	0	0	cubic-feet
Tree & Barrel Adjustments	39	Total Tree Well Volume Reduction	0	0	0	0	0	0	0	0	0	0	cubic-feet
	40	Total Rain Barrel Volume Reduction	0	0	0	0	0	0	0	0	0	0	cubic-feet
Results	41	Final Adjusted Runoff Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.00	0.00	0.00	0.00	unitless
	42	Final Effective Tributary Area	125,431	82,111	98,249	100,231	156,577	82,394	0	0	0	0	sq-ft
	43	Initial Design Capture Volume Retained by Site Design Elements	0	0	0	0	0	0	0	0	0	0	cubic-feet
	44	Final Design Capture Volume Tributary to BMP	5,644	3,695	4,421	4,510	7,046	3,708	0	0	0	0	cubic-feet

**Worksheet B.1-1 General Notes:**

A. Applicants may use this worksheet to calculate design capture volumes for up to 10 drainage areas User input must be provided for yellow shaded cells, values for all other cells will be automatically generated, errors/notifications will be highlighted in red and summarized below. Upon completion of this worksheet, proceed to the appropriate BMP Sizing worksheet(s).

**Automated Worksheet B.5-1: Sizing Lined or Unlined Biofiltration BMPs (V1.3)**

Category	#	Description	<i>i</i>	<i>ii</i>	<i>iii</i>	<i>iv</i>	<i>v</i>	<i>vi</i>	<i>vii</i>	<i>viii</i>	<i>ix</i>	<i>x</i>	Units
BMP Inputs	0	Drainage Basin ID or Name	BF-1-1	BF-1-2	BF-1-3	BF-1-4	BF-1-5	BF-1-6	BF-1-10a	BF-1-10b	BF-1-17	-	sq-ft
	1	Design Infiltration Rate Recommended by Geotechnical Engineer	0.000	0.000	0.000	0.000	0.000	0.025	0.150	0.000	0.000	-	in/hr
	2	Effective Tributary Area	4,831,745	525,369	1,075,026	2,362,273	6,585,483	3,596,407	163,751	79,386	74,716	-	sq-ft
	3	Minimum Biofiltration Footprint Sizing Factor	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	-	ratio
	4	Design Capture Volume Tributary to BMP	217,429	23,642	48,376	106,302	296,347	161,838	7,369	3,572	3,362	-	cubic-feet
	5	Is Biofiltration Basin Impermeably Lined or Unlined?	Lined	Lined	Lined	Lined	Lined	Unlined	Unlined	Lined	Lined	-	unitless
	6	Provided Biofiltration BMP Surface Area	249,599	44,124	83,668	135,127	338,354	134,075	6,775	3,210	2,260	-	sq-ft
	7	Provided Surface Ponding Depth	12.33	27.87	26.32	25.84	16.62	17.34	13.11	32.19	12	-	inches
	8	Provided Soil Media Thickness	27	27	27	30	27	30	27	27	18	-	inches
	9	Provided Depth of Gravel Above Underdrain Invert	24	21	21	21	24	21	18	27	12	-	inches
	10	Diameter of Underdrain or Hydromod Orifice (Select Smallest)	10.00	4.33	7.54	10.61	12.73	6.36	1.13	1.56	8.49	-	inches
11	Provided Depth of Gravel Below the Underdrain	3	3	3	3	3	6	12	12	3	-	inches	
Retention Calculations	12	Volume Infiltrated Over 6 Hour Storm	0	0	0	0	0	1,676	508	0	0	0	cubic-feet
	13	Soil Media Pore Space Available for Retention	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	unitless
	14	Gravel Pore Space Available for Retention	0.00	0.00	0.00	0.00	0.00	0.40	0.40	0.00	0.00	0.00	unitless
	15	Effective Retention Depth	1.35	1.35	1.35	1.50	1.35	3.90	6.15	1.35	0.90	0.00	inches
	16	Calculated Retention Storage Drawdown (Including 6 Hr Storm)	120	120	120	120	120	102	38	120	120	0	hours
	17	Volume Retained by BMP	28,080	4,964	9,413	16,891	38,065	45,250	3,980	361	170	0	cubic-feet
	18	Fraction of DCV Retained	0.13	0.21	0.19	0.16	0.13	0.28	0.54	0.10	0.05	0.00	ratio
	19	Portion of Retention Performance Standard Satisfied	0.15	0.23	0.21	0.18	0.15	0.31	0.71	0.12	0.06	0.00	ratio
	20	Fraction of DCV Retained (normalized to 36-hr drawdown)	0.07	0.12	0.11	0.09	0.07	0.17	0.52	0.06	0.03	0.00	ratio
21	Design Capture Volume Remaining for Biofiltration	202,209	20,805	43,055	96,735	275,603	134,326	3,537	3,358	3,261	0	cubic-feet	
Biofiltration Calculations	22	Max Hydromod Flow Rate through Underdrain	5.7900	1.2203	3.6201	7.2181	9.6152	2.4753	0.0728	0.1710	3.3576	n/a	CFS
	23	Max Soil Filtration Rate Allowed by Underdrain Orifice	1.00	1.19	1.87	2.31	1.23	0.80	0.46	2.30	64.18	n/a	in/hr
	24	Soil Media Filtration Rate per Specifications	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	in/hr
	25	Soil Media Filtration Rate to be used for Sizing	1.00	1.19	1.87	2.31	1.23	0.80	0.46	2.30	5.00	5.00	in/hr
	26	Depth Biofiltered Over 6 Hour Storm	6.01	7.17	11.21	13.85	7.37	4.79	2.78	13.81	30.00	30.00	inches
	27	Soil Media Pore Space Available for Biofiltration	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	unitless
	28	Effective Depth of Biofiltration Storage	27.33	41.67	40.12	40.24	31.62	31.74	25.71	48.39	20.40	0.00	inches
	29	Drawdown Time for Surface Ponding	12	23	14	11	14	21	21	14	2	0	hours
	30	Drawdown Time for Effective Biofiltration Depth	27	35	21	17	26	39	42	21	4	0	hours
	31	Total Depth Biofiltered	33.34	48.84	51.33	54.09	38.99	36.53	28.49	62.20	50.40	30.00	inches
	32	Option 1 - Biofilter 1.50 DCV: Target Volume	303,314	31,208	64,583	145,103	413,405	201,489	5,306	5,037	4,892	0	cubic-feet
	33	Option 1 - Provided Biofiltration Volume	303,314	31,208	64,583	145,103	413,405	201,489	5,306	5,037	4,892	0	cubic-feet
	34	Option 2 - Store 0.75 DCV: Target Volume	151,657	15,604	32,291	72,551	206,702	100,745	2,653	2,519	2,446	0	cubic-feet
	35	Option 2 - Provided Storage Volume	151,657	15,604	32,291	72,551	206,702	100,745	2,653	2,519	2,446	0	cubic-feet
	36	Portion of Biofiltration Performance Standard Satisfied	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	ratio
Result	37	Do Site Design Elements and BMPs Satisfy Annual Retention Requirements?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	-	yes/no
	38	Overall Portion of Performance Standard Satisfied	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	ratio
	39	This BMP Overflows to the Following Drainage Basin	-	-	-	-	-	-	-	-	-	-	unitless
	40	<b>Deficit of Effectively Treated Stormwater</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>n/a</b>

**Worksheet B.5-1 General Notes:**

A. Applicants may use this worksheet to size Lined or Unlined Biofiltration BMPs (BF-1, PR-1) for up to 10 basins. User input must be provided for yellow shaded cells, values for blue cells are automatically populated based on user inputs from previous worksheets, values for all other cells will be automatically generated, errors/notifications will be highlighted in red/orange and summarized below. BMPs fully satisfying the pollutant control performance standards will have a deficit treated volume of zero and be highlighted in green.

**Automated Worksheet B.5-1: Sizing Lined or Unlined Biofiltration BMPs (V1.3)**

Category	#	Description	<i>i</i>	<i>ii</i>	<i>iii</i>	<i>iv</i>	<i>v</i>	<i>vi</i>	<i>vii</i>	<i>viii</i>	<i>ix</i>	<i>x</i>	Units	
BMP Inputs	0	Drainage Basin ID or Name	BF-RV-1	BF-RV-2	BF-RV-3	BF-RV-4	BF-RV-5	BF-RV-6	-	-	-	-	sq-ft	
	1	Design Infiltration Rate Recommended by Geotechnical Engineer	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-	-	-	in/hr
	2	Effective Tributary Area	125,431	82,111	98,249	100,231	156,577	82,394	-	-	-	-	-	sq-ft
	3	Minimum Biofiltration Footprint Sizing Factor	0.030	0.030	0.030	0.030	0.030	0.030	-	-	-	-	-	ratio
	4	Design Capture Volume Tributary to BMP	5,644	3,695	4,421	4,510	7,046	3,708	-	-	-	-	-	cubic-feet
	5	Is Biofiltration Basin Impermeably Lined or Unlined?	Lined	Lined	Lined	Lined	Lined	Lined						unitless
	6	Provided Biofiltration BMP Surface Area	4,950	3,250	3,900	3,950	6,200	3,250						sq-ft
	7	Provided Surface Ponding Depth	12	12	12	12	12	12						inches
	8	Provided Soil Media Thickness	21	21	21	21	21	21						inches
	9	Provided Depth of Gravel Above Underdrain Invert	15	15	15	15	15	15						inches
	10	Diameter of Underdrain or Hydromod Orifice (Select Smallest)	2.44	1.88	2.13	2.13	2.56	1.88						inches
11	Provided Depth of Gravel Below the Underdrain	3	3	3	3	3	3						inches	
Retention Calculations	12	Volume Infiltrated Over 6 Hour Storm	0	0	0	0	0	0	0	0	0	0	0	cubic-feet
	13	Soil Media Pore Space Available for Retention	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	unitless
	14	Gravel Pore Space Available for Retention	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless
	15	Effective Retention Depth	1.05	1.05	1.05	1.05	1.05	1.05	0.00	0.00	0.00	0.00	0.00	inches
	16	Calculated Retention Storage Drawdown (Including 6 Hr Storm)	120	120	120	120	120	120	0	0	0	0	0	hours
	17	Volume Retained by BMP	433	284	341	346	543	284	0	0	0	0	0	cubic-feet
	18	Fraction of DCV Retained	0.08	0.08	0.08	0.08	0.08	0.08	0.00	0.00	0.00	0.00	0.00	ratio
	19	Portion of Retention Performance Standard Satisfied	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	ratio
	20	Fraction of DCV Retained (normalized to 36-hr drawdown)	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.00	0.00	0.00	0.00	ratio
	21	Design Capture Volume Remaining for Biofiltration	5,362	3,510	4,200	4,285	6,694	3,523	0	0	0	0	0	cubic-feet
Biofiltration Calculations	22	Max Hydromod Flow Rate through Underdrain	0.3081	0.1828	0.2345	0.2345	0.3403	0.1828	n/a	n/a	n/a	n/a	n/a	CFS
	23	Max Soil Filtration Rate Allowed by Underdrain Orifice	2.69	2.43	2.60	2.57	2.37	2.43	n/a	n/a	n/a	n/a	n/a	in/hr
	24	Soil Media Filtration Rate per Specifications	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	in/hr
	25	Soil Media Filtration Rate to be used for Sizing	2.69	2.43	2.60	2.57	2.37	2.43	5.00	5.00	5.00	5.00	5.00	in/hr
	26	Depth Biofiltered Over 6 Hour Storm	16.13	14.58	15.59	15.39	14.22	14.58	30.00	30.00	30.00	30.00	30.00	inches
	27	Soil Media Pore Space Available for Biofiltration	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	unitless
	28	Effective Depth of Biofiltration Storage	22.20	22.20	22.20	22.20	22.20	22.20	0.00	0.00	0.00	0.00	0.00	inches
	29	Drawdown Time for Surface Ponding	4	5	5	5	5	5	0	0	0	0	0	hours
	30	Drawdown Time for Effective Biofiltration Depth	8	9	9	9	9	9	0	0	0	0	0	hours
	31	Total Depth Biofiltered	38.33	36.78	37.79	37.59	36.42	36.78	30.00	30.00	30.00	30.00	30.00	inches
	32	Option 1 - Biofilter 1.50 DCV: Target Volume	8,043	5,265	6,300	6,428	10,041	5,285	0	0	0	0	0	cubic-feet
	33	Option 1 - Provided Biofiltration Volume	8,043	5,265	6,300	6,428	10,041	5,285	0	0	0	0	0	cubic-feet
	34	Option 2 - Store 0.75 DCV: Target Volume	4,022	2,633	3,150	3,214	5,021	2,642	0	0	0	0	0	cubic-feet
	35	Option 2 - Provided Storage Volume	4,022	2,633	3,150	3,214	5,021	2,642	0	0	0	0	0	cubic-feet
	36	Portion of Biofiltration Performance Standard Satisfied	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	ratio
	Result	37	Do Site Design Elements and BMPs Satisfy Annual Retention Requirements?	Yes	Yes	Yes	Yes	Yes	Yes	-	-	-	-	yes/no
38		Overall Portion of Performance Standard Satisfied	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	ratio	
39		This BMP Overflows to the Following Drainage Basin	-	-	-	-	-	-	-	-	-	-	unitless	
40		<b>Deficit of Effectively Treated Stormwater</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	cubic-feet

**Worksheet B.5-1 General Notes:**

A. Applicants may use this worksheet to size Lined or Unlined Biofiltration BMPs (BF-1, PR-1) for up to 10 basins. User input must be provided for yellow shaded cells, values for blue cells are automatically populated based on user inputs from previous worksheets, values for all other cells will be automatically generated, errors/notifications will be highlighted in red/orange and summarized below. BMPs fully satisfying the pollutant control performance standards will have a deficit treated volume of zero and be highlighted in green.

**Summary of Stormwater Pollutant Control Calculations (V1.3)**

Category	#	Description	<i>i</i>	<i>ii</i>	<i>iii</i>	<i>iv</i>	<i>v</i>	<i>vi</i>	<i>vii</i>	<i>viii</i>	<i>ix</i>	<i>x</i>	Units	
General Info	0	Drainage Basin ID or Name	BF-1-1	BF-1-2	BF-1-3	BF-1-4	BF-1-5	BF-1-6	BF-1-10a	BF-1-10b	BF-1-17	BF-1-18	unitless	
	1	85th Percentile Storm Depth	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	inches	
	2	Design Infiltration Rate Recommended by Geotechnical Engineer	0.000	0.000	0.000	0.000	0.000	0.025	0.150	0.000	0.000	0.000	0.000	in/hr
	3	Total Tributary Area	7,105,507	847,369	1,706,391	3,872,578	10,131,513	5,288,834	207,280	116,744	100,967	224,138	sq-ft	
	4	85th Percentile Storm Volume (Rainfall Volume)	319,748	38,132	76,788	174,266	455,918	237,998	9,328	5,253	4,544	10,086	cubic-feet	
Initial DCV	5	Initial Weighted Runoff Factor	0.68	0.62	0.63	0.61	0.65	0.68	0.79	0.68	0.74	0.81	unitless	
	6	Initial Design Capture Volume	217,429	23,642	48,376	106,302	296,347	161,838	7,369	3,572	3,362	8,170	cubic-feet	
Site Design Volume Reductions	7	Dispersion Area Reductions	0	0	0	0	0	0	0	0	0	0	cubic-feet	
	8	Tree Well and Rain Barrel Reductions	0	0	0	0	0	0	0	0	0	9,280	cubic-feet	
BMP Volume Reductions	9	Effective Area Tributary to BMP	4,831,745	525,369	1,075,026	2,362,273	6,585,483	3,596,407	163,751	79,386	74,716	0	square feet	
	10	Final Design Capture Volume Tributary to BMP	217,429	23,642	48,376	106,302	296,347	161,838	7,369	3,572	3,362	0	cubic-feet	
	11	Basin Drains to the Following BMP Type	Biofiltration	n/a	unitless									
	12	Volume Retained by BMP (normalized to 36 hour drawdown)	15,220	2,837	5,321	9,567	20,744	27,512	3,832	214	101	0.00	cubic-feet	
Total Volume Reductions	13	Total Fraction of Initial DCV Retained within DMA	0.07	0.12	0.11	0.09	0.07	0.17	0.52	0.06	0.03	1.14	fraction	
	14	Percent of Average Annual Runoff Retention Provided	10.7%	17.7%	16.5%	13.7%	10.7%	23.8%	55.8%	9.1%	4.6%	84.1%	%	
	15	Percent of Average Annual Runoff Retention Required	4.5%	4.5%	4.5%	4.5%	4.5%	11.1%	29.6%	4.5%	4.5%	4.5%	%	
Performance Standard	16	Percent of Pollution Control Standard Satisfied	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	%	
Treatment Train	17	Discharges to Secondary Treatment in Drainage Basin	-	-	-	-	-	-	-	-	-	-	unitless	
	18	Impervious Surface Area Still Requiring Treatment	0	0	0	0	0	0	0	0	0	0	square feet	
	19	Impervious Surfaces Directed to Downstream Dispersion Area	-	-	-	-	-	-	-	-	-	-	square feet	
	20	Impervious Surfaces Not Directed to Downstream Dispersion Area	-	-	-	-	-	-	-	-	-	-	square feet	
Result	21	Deficit of Effectively Treated Stormwater	0	0	0	0	0	0	0	0	0	0	cubic-feet	

**Summary Notes:**

All fields in this summary worksheet are populated based on previous user inputs. If applicable, drainage basin elements that require revisions and/or supplemental information outside the scope of these worksheets are highlighted in orange and summarized in the red text below. If all drainage basins achieve full compliance without a need for supplemental information, a green message will appear below.

-Congratulations, all specified drainage basins and BMPs are in compliance with stormwater pollutant control requirements. Include 11x17 color prints of this summary sheet and supporting worksheet calculations as part of the SWQMP submittal package.

False

**Summary of Stormwater Pollutant Control Calculations (V1.3)**

Category	#	Description	<i>i</i>	<i>ii</i>	<i>iii</i>	<i>iv</i>	<i>v</i>	<i>vi</i>	<i>vii</i>	<i>viii</i>	<i>ix</i>	<i>x</i>	Units
General Info	0	Drainage Basin ID or Name	BF-RV-1	BF-RV-2	BF-RV-3	BF-RV-4	BF-RV-5	BF-RV-6	-	-	-	-	unitless
	1	85th Percentile Storm Depth	0.54	0.54	0.54	0.54	0.54	0.54	-	-	-	-	inches
	2	Design Infiltration Rate Recommended by Geotechnical Engineer	0.000	0.000	0.000	0.000	0.000	0.000	-	-	-	-	in/hr
	3	Total Tributary Area	192,970	126,324	151,153	154,202	240,887	126,760	-	-	-	-	sq-ft
	4	85th Percentile Storm Volume (Rainfall Volume)	8,684	5,685	6,802	6,939	10,840	5,704	-	-	-	-	cubic-feet
Initial DCV	5	Initial Weighted Runoff Factor	0.65	0.65	0.65	0.65	0.65	0.65	-	-	-	-	unitless
	6	Initial Design Capture Volume	5,644	3,695	4,421	4,510	7,046	3,708	-	-	-	-	cubic-feet
Site Design Volume Reductions	7	Dispersion Area Reductions	0	0	0	0	0	0	-	-	-	-	cubic-feet
	8	Tree Well and Rain Barrel Reductions	0	0	0	0	0	0	-	-	-	-	cubic-feet
BMP Volume Reductions	9	Effective Area Tributary to BMP	125,431	82,111	98,249	100,231	156,577	82,394	-	-	-	-	square feet
	10	Final Design Capture Volume Tributary to BMP	5,644	3,695	4,421	4,510	7,046	3,708	-	-	-	-	cubic-feet
	11	Basin Drains to the Following BMP Type	Biofiltration	Biofiltration	Biofiltration	Biofiltration	Biofiltration	Biofiltration	-	-	-	-	unitless
	12	Volume Retained by BMP (normalized to 36 hour drawdown)	282	185	221	226	352	185	-	-	-	-	cubic-feet
Total Volume Reductions	13	Total Fraction of Initial DCV Retained within DMA	0.05	0.05	0.05	0.05	0.05	0.05	-	-	-	-	fraction
	14	Percent of Average Annual Runoff Retention Provided	7.6%	7.6%	7.6%	7.6%	7.6%	7.6%	-	-	-	-	%
	15	Percent of Average Annual Runoff Retention Required	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	-	-	-	-	%
Performance Standard	16	Percent of Pollution Control Standard Satisfied	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	-	-	-	-	%
Treatment Train	17	Discharges to Secondary Treatment in Drainage Basin	-	-	-	-	-	-	-	-	-	-	unitless
	18	Impervious Surface Area Still Requiring Treatment	0	0	0	0	0	0	-	-	-	-	square feet
	19	Impervious Surfaces Directed to Downstream Dispersion Area	-	-	-	-	-	-	-	-	-	-	square feet
	20	Impervious Surfaces Not Directed to Downstream Dispersion Area	-	-	-	-	-	-	-	-	-	-	square feet
Result	21	Deficit of Effectively Treated Stormwater	0	0	0	0	0	0	-	-	-	-	cubic-feet

**Summary Notes:**

All fields in this summary worksheet are populated based on previous user inputs. If applicable, drainage basin elements that require revisions and/or supplemental information outside the scope of these worksheets are highlighted in orange and summarized in the red text below. If all drainage basins achieve full compliance without a need for supplemental information, a green message will appear below.

-Congratulations, all specified drainage basins and BMPs are in compliance with stormwater pollutant control requirements. Include 11x17 color prints of this summary sheet and supporting worksheet calculations as part of the SWQMP submittal package.

False

FANITA RANCH  
DMA CALCULATIONS- PROPRIETARY UNITS

	Runoff Factor	DMA 11 BF 3-1 (ac.)	Summation RF x A	DMA 12 BF 3-2 (ac.)	Summation RF x A	DMA 13 BF 3-3 (ac.)	Summation RF x A	DMA 15 BF 3-4 (ac.)	Summation RF x A	DMA 16 BF 3-5 (ac.)	Summation RF x A	DMA 17 BF 3-6 (ac.)	Summation RF x A
Roofs	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete or Asphalt	0.90	0.79	0.71	1.02	0.92	1.15	1.04	1.12	1.01	0.78	0.70	1.89	1.70
Unit Pavers (grouted)	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Decomposed Granite	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cobbles or Crushed Aggr.	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Much or Amended Soil	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compacted Soil	0.30	0.30	0.09	0.10	0.03	0.16	0.05	0.29	0.09	0.52	0.16	0.00	0.00
Natural (A Soil)	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural (B Soil)	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural (C Soil)	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural (D Soil)	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1.09	0.80	1.12	0.95	1.31	1.08	1.41	1.10	1.30	0.86	1.89	1.70
			0.73		0.85		0.83		0.78		0.66		0.90

Automated Worksheet B.1-1: Calculation of Design Capture Volume (V1.3)

Category	#	Description	i	ii	iii	iv	v	vi	vii	viii	ix	x	Units
Standard Drainage Basin Inputs	0	Drainage Basin ID or Name	BF-3-1	BF-3-2	BF-3-3	BF-3-4	BF-3-5	BF-3-6					unitless
	1	Basin Drains to the Following BMP Type	Flow-Thru	Flow-Thru	Flow-Thru	Flow-Thru	Flow-Thru	Flow-Thru	n/a	n/a	n/a	n/a	unitless
	2	85th Percentile 24-hr Storm Depth	0.54	0.54	0.54	0.54	0.54	0.54					inches
	3	Design Infiltration Rate Recommended by Geotechnical Engineer	0.000	0.000	0.000	0.000	0.000	0.000					in/hr
	4	Impervious Surfaces <u>Not Directed to Dispersion Area</u> (C=0.90)	28,750	41,382	44,431	46,174	28,750	70,132					sq-ft
	5	Semi-Pervious Surfaces <u>Not Serving as Dispersion Area</u> (C=0.30)	6,534	6,970	7,841	8,276	5,227	12,197					sq-ft
	6	Engineered Pervious Surfaces <u>Not Serving as Dispersion Area</u> (C=0.10)											sq-ft
	7	Natural Type A Soil <u>Not Serving as Dispersion Area</u> (C=0.10)											sq-ft
	8	Natural Type B Soil <u>Not Serving as Dispersion Area</u> (C=0.14)											sq-ft
	9	Natural Type C Soil <u>Not Serving as Dispersion Area</u> (C=0.23)											sq-ft
	10	Natural Type D Soil <u>Not Serving as Dispersion Area</u> (C=0.30)										sq-ft	
Dispersion Area, Tree Well & Rain Barrel Inputs (Optional)	11	Does Tributary Incorporate Dispersion, Tree Wells, and/or Rain Barrels?	Yes	Yes	Yes	Yes	Yes	Yes	n/a	n/a	n/a	n/a	yes/no
	12	Impervious Surfaces Directed to Dispersion Area per SD-B (Ci=0.90)											sq-ft
	13	Semi-Pervious Surfaces Serving as Dispersion Area per SD-B (Ci=0.30)											sq-ft
	14	Engineered Pervious Surfaces Serving as Dispersion Area per SD-B (Ci=0.10)											sq-ft
	15	Natural Type A Soil Serving as Dispersion Area per SD-B (Ci=0.10)											sq-ft
	16	Natural Type B Soil Serving as Dispersion Area per SD-B (Ci=0.14)											sq-ft
	17	Natural Type C Soil Serving as Dispersion Area per SD-B (Ci=0.23)											sq-ft
	18	Natural Type D Soil Serving as Dispersion Area per SD-B (Ci=0.30)											sq-ft
	19	Number of Tree Wells Proposed per SD-A											#
	20	Average Mature Tree Canopy Diameter											ft
	21	Number of Rain Barrels Proposed per SD-E										#	
	22	Average Rain Barrel Size										gal	
Treatment Train Inputs & Calculations	23	Does BMP Overflow to Stormwater Features in <u>Downstream</u> Drainage?	No	No	No	No	No	No	No	No	No	No	unitless
	24	Identify Downstream Drainage Basin Providing Treatment in Series											unitless
	25	Percent of Upstream Flows Directed to Downstream Dispersion Areas											percent
	26	Upstream Impervious Surfaces Directed to Dispersion Area (Ci=0.90)	0	0	0	0	0	0	0	0	0	0	cubic-feet
	27	Upstream Impervious Surfaces Not Directed to Dispersion Area (C=0.90)	0	0	0	0	0	0	0	0	0	0	cubic-feet
Initial Runoff Factor Calculation	28	Total Tributary Area	35,284	48,352	52,272	54,450	33,977	82,328	0	0	0	0	sq-ft
	29	Initial Runoff Factor for Standard Drainage Areas	0.79	0.81	0.81	0.81	0.81	0.81	0.00	0.00	0.00	0.00	unitless
	30	Initial Runoff Factor for Dispersed & Dispersion Areas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless
	31	Initial Weighted Runoff Factor	0.79	0.81	0.81	0.81	0.81	0.81	0.00	0.00	0.00	0.00	unitless
	32	Initial Design Capture Volume	1,254	1,762	1,905	1,985	1,238	3,001	0	0	0	0	cubic-feet
Dispersion Area Adjustments	33	Total Impervious Area Dispersed to Pervious Surface	0	0	0	0	0	0	0	0	0	0	sq-ft
	34	Total Pervious Dispersion Area	0	0	0	0	0	0	0	0	0	0	sq-ft
	35	Ratio of Dispersed Impervious Area to Pervious Dispersion Area	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	ratio
	36	Adjustment Factor for Dispersed & Dispersion Areas	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	ratio
	37	Runoff Factor After Dispersion Techniques	0.79	0.81	0.81	0.81	0.81	0.81	n/a	n/a	n/a	n/a	unitless
	38	Design Capture Volume After Dispersion Techniques	1,254	1,762	1,905	1,985	1,238	3,001	0	0	0	0	cubic-feet
Tree & Barrel Adjustments	39	Total Tree Well Volume Reduction	0	0	0	0	0	0	0	0	0	0	cubic-feet
	40	Total Rain Barrel Volume Reduction	0	0	0	0	0	0	0	0	0	0	cubic-feet
Results	41	Final Adjusted Runoff Factor	0.79	0.81	0.81	0.81	0.81	0.81	0.00	0.00	0.00	0.00	unitless
	42	Final Effective Tributary Area	27,874	39,165	42,340	44,105	27,521	66,686	0	0	0	0	sq-ft
	43	Initial Design Capture Volume Retained by Site Design Elements	0	0	0	0	0	0	0	0	0	0	cubic-feet
	44	Final Design Capture Volume Tributary to BMP	1,254	1,762	1,905	1,985	1,238	3,001	0	0	0	0	cubic-feet

Worksheet B.1-1 General Notes:

A. Applicants may use this worksheet to calculate design capture volumes for up to 10 drainage areas. User input must be provided for yellow shaded cells, values for all other cells will be automatically generated, errors/notifications will be highlighted in red and summarized below. Upon completion of this worksheet, proceed to the appropriate BMP Sizing worksheet(s).

Automated Worksheet B.6-1: Sizing Flow-Thru BMPs (V1.3)

Category	#	Description	i	ii	iii	iv	v	vi	vii	viii	ix	x	Units
Flow-Thru BMP Inputs	0	Drainage Basin ID or Name	BF-3-1	BF-3-2	BF-3-3	BF-3-4	BF-3-5	BF-3-6	-	-	-	-	unitless
	1	Final Effective Tributary Area	27,874	39,165	42,340	44,105	27,521	66,686	-	-	-	-	sq-ft
	2	Final Adjusted Runoff Factor	0.79	0.81	0.81	0.81	0.81	0.81	-	-	-	-	unitless
	3	Final Design Capture Volume Tributary to BMP	1,254	1,762	1,905	1,985	1,238	3,001	-	-	-	-	cubic-feet
	4	Volume Effectively Retained and/or Biofiltered	0	0	0	0	0	0	-	-	-	-	cubic-feet
	5	Deficit of Effectively Treated Stormwater Requiring Flow-Thru Treatment	-1,254	-1,762	-1,905	-1,985	-1,238	-3,001	-	-	-	-	cubic-feet
Flow Rate Calculations	6	Maximum Rated Water Quality Flow Rate of Proposed BMP	0.230	0.288	0.350	0.350	0.230	0.474					CFS
	7	Adjustment Factor	1.00	1.00	1.00	1.00	1.00	1.00	-	-	-	-	unitless
	8	Design Rainfall Intensity for Flow-Thru BMPs	0.20	0.20	0.20	0.20	0.20	0.20	-	-	-	-	in/hr
Result	9	Water Quality Flow Rate Requiring Flow-Thru Treatment	0.128	0.180	0.194	0.203	0.126	0.306	-	-	-	-	CFS
	10	Is Flow-Thru BMP Adequately Sized?	Yes	Yes	Yes	Yes	Yes	Yes	-	-	-	-	unitless

Worksheet B.6-1 General Notes:

A. Applicants may use this worksheet to size flow-thru BMPs (FT-1 through FT-5) for up to 10 basins. Note that applicants proposing flow-thru BMPs must provide supplemental documentation to support the maximum water quality flow rate referenced above, demonstrate medium to high pollutant removal efficiency for project's most significant pollutants of concern, and must also implement an offsite alternative compliance project to offset the deficit of effectively treated stormwater volume. User input must be provided for yellow shaded cells, values for blue cells are automatically populated based on user inputs from previous worksheets, values for all other cells will be automatically generated, errors/notifications will be highlighted in red/orange and summarized below.

BF-3-1 THROUGH BF-3-5 ARE FOR OFFSITE CUYAMACA & MAGNOLIA

FANITA RANCH  
DMA CALCULATIONS- PROPRIETARY UNITS

	Runoff Factor	BF-3-1	Summation RF x A	BF-3-2	Summation RF x A	BF-3-3	Summation RF x A	BF-3-4	Summation RF x A	BF-3-5	Summation RF x A	BF-3-6	Summation RF x A
		(ac.)		(ac.)		(ac.)		(ac.)		(ac.)		(ac.)	
Roofs	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete or Asphalt	0.90	0.77	0.69	1.07	0.96	1.29	1.16	1.48	1.33	0.78	0.70	1.89	1.70
Unit Pavers (grouted)	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Decomposed Granite	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cobbles or Crushed Aggr.	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Much or Amended Soil	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compacted Soil	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural (A Soil)	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural (B Soil)	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural (C Soil)	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural (D Soil)	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.77	0.69	1.07	0.96	1.29	1.16	1.48	1.33	0.78	0.70	1.89	1.70
			0.90		0.90		0.90		0.90		0.90		0.90

# FANITA

## DCV CALCULATION- PROPRIETARY UNITS

BF-3-1: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.54	inches
2	Area tributary to BMP (s)	A=	0.81	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.79	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	1,253	cubic-feet

BF-3-2: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.54	inches
2	Area tributary to BMP (s)	A=	1.11	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.81	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	1,770	cubic-feet

BF-3-3: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.54	inches
2	Area tributary to BMP (s)	A=	1.20	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.90	unitless
4	Street trees volume reduction	TCV=	0.81	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	2,116	cubic-feet

BF-3-4: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.54	inches
2	Area tributary to BMP (s)	A=	1.25	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.81	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	1,982	cubic-feet

BF-3-1 THROUGH BF-3-5 ARE FOR  
OFFSITE CUYAMACA & MAGNOLIA

# FANITA

## DCV CALCULATION- PROPRIETARY UNITS

BF-3-5: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.54	inches
2	Area tributary to BMP (s)	A=	0.78	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.81	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= $(3630 \times C \times d \times A) - TCV - RCV$	DCV=	1,235	cubic-feet

BF-3-6: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.54	inches
2	Area tributary to BMP (s)	A=	1.89	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.81	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= $(3630 \times C \times d \times A) - TCV - RCV$	DCV=	3,005	cubic-feet

Description	Units	Modular Wetland Units					
		BF-3-1	BF-3-2	BF-3-3	BF-3-4	BF-3-5	BF-3-6
Drainage Basin ID or Name	unitless						
Total Tributary Area	Acres	0.81	1.11	1.20	1.25	0.78	1.89
Final Adjusted Runoff Factor	unitless	0.79	0.81	0.81	0.81	0.81	0.81
Design Capture Volume	cubic-feet	4,291	3,615	8,553	7,806	2,738	3,932
Volume Retained/Biofiltered	cubic-feet	0	0	0	0	0	0
Defecit of Effectively Treated Stormwater Requiring Flow-Thru Treatment	cubic-feet	4,291	3,615	8,553	7,806	2,738	3,932
Adjustment Factor	unitless	1.0	1.0	1.0	1.0	1.0	1.0
Design Rainfall Intensity	in/hr	0.2	0.2	0.2	0.2	0.2	0.2
WQ Flow Rate	CFS	0.128	0.181	0.194	0.202	0.126	0.307
Flow Rate x 1.5 Safety Factor	CFS	0.192	0.271	0.292	0.303	0.189	0.460
Modular Wetland Model	unitless	L-4-8	L-4-13	L-4-15	L-4-15	L-4-8	L-4-19
Modular Wetland Unit Flow Flow Rate	CFS	0.115	0.144	0.175	0.175	0.115	0.237
Number of Modular Wetland Units	unitless	2	2	2	2	2	2
Total MWS Treatment Flow Rate	CFS	0.230	0.288	0.350	0.350	0.230	0.474
Is Flow-Thru BMP Adequately Sized?	unitless	Yes	Yes	Yes	Yes	Yes	Yes

BF-3-1 THROUGH BF-3-5 ARE FOR OFFSITE CUYAMACA & MAGNOLIA

# SPECIFICATIONS

## FLOW-BASED DESIGNS

The Modular Wetlands® System Linear can be used in stand-alone applications to meet treatment flow requirements. Since the Modular Wetlands® is the only biofiltration system that can accept inflow pipes several feet below the surface, it can be used not only in decentralized design applications but also as a large central end-of-the-line application for maximum feasibility.

MODEL #	DIMENSIONS	WETLAND MEDIA SURFACE AREA (sq. ft.)	TREATMENT FLOW RATE (cfs)
MWS-L-4-4	4' x 4'	23	0.052
MWS-L-4-6	4' x 6'	32	0.073
MWS-L-4-8	4' x 8'	50	0.115
MWS-L-4-13	4' x 13'	63	0.144
MWS-L-4-15	4' x 15'	76	0.175
MWS-L-4-17	4' x 17'	90	0.206
MWS-L-4-19	4' x 19'	103	0.237
MWS-L-4-21	4' x 21'	117	0.268
MWS-L-6-8	7' x 9'	64	0.147
MWS-L-8-8	8' x 8'	100	0.230
MWS-L-8-12	8' x 12'	151	0.346
MWS-L-8-16	8' x 16'	201	0.462
MWS-L-8-20	9' x 21'	252	0.577
MWS-L-8-24	9' x 25'	302	0.693
MWS-L-10-20	10' x 20'	302	0.693

# VOLUME-BASED DESIGNS

## HORIZONTAL FLOW BIOFILTRATION ADVANTAGE



Modular Wetlands® with Box Culvert Prestorage

The Modular Wetlands® System Linear offers a unique advantage in the world of biofiltration due to its exclusive horizontal flow design: Volume-Based Design. No other biofilter has the ability to be placed downstream of detention ponds, extended dry detention basins, underground storage systems and permeable paver reservoirs. The systems horizontal flow configuration and built-in orifice control allows it to be installed with just 6" of fall between inlet and outlet pipe for a simple connection to projects with shallow downstream tie-in points. In the example above, the Modular Wetlands® is installed downstream of underground box culvert storage. Designed for the water quality volume, the Modular Wetlands® will treat and discharge the required volume within local draindown time requirements.



Modular Wetlands® with Arch Plastic Chambers

### DESIGN SUPPORT

Bio Clean engineers are trained to provide you with superior support for all volume sizing configurations throughout the country. Our vast knowledge of state and local regulations allow us to quickly and efficiently size a system to maximize feasibility. Volume control and hydromodification regulations are expanding the need to decrease the cost and size of your biofiltration system. Bio Clean will help you realize these cost savings with the Modular Wetlands®, the only biofilter than can be used downstream of storage BMPs.

## ADVANTAGES

- LOWER COST THAN FLOW-BASED DESIGN
- BUILT-IN ORIFICE CONTROL STRUCTURE
- MEETS LID REQUIREMENTS
- WORKS WITH DEEP INSTALLATIONS

## 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:**

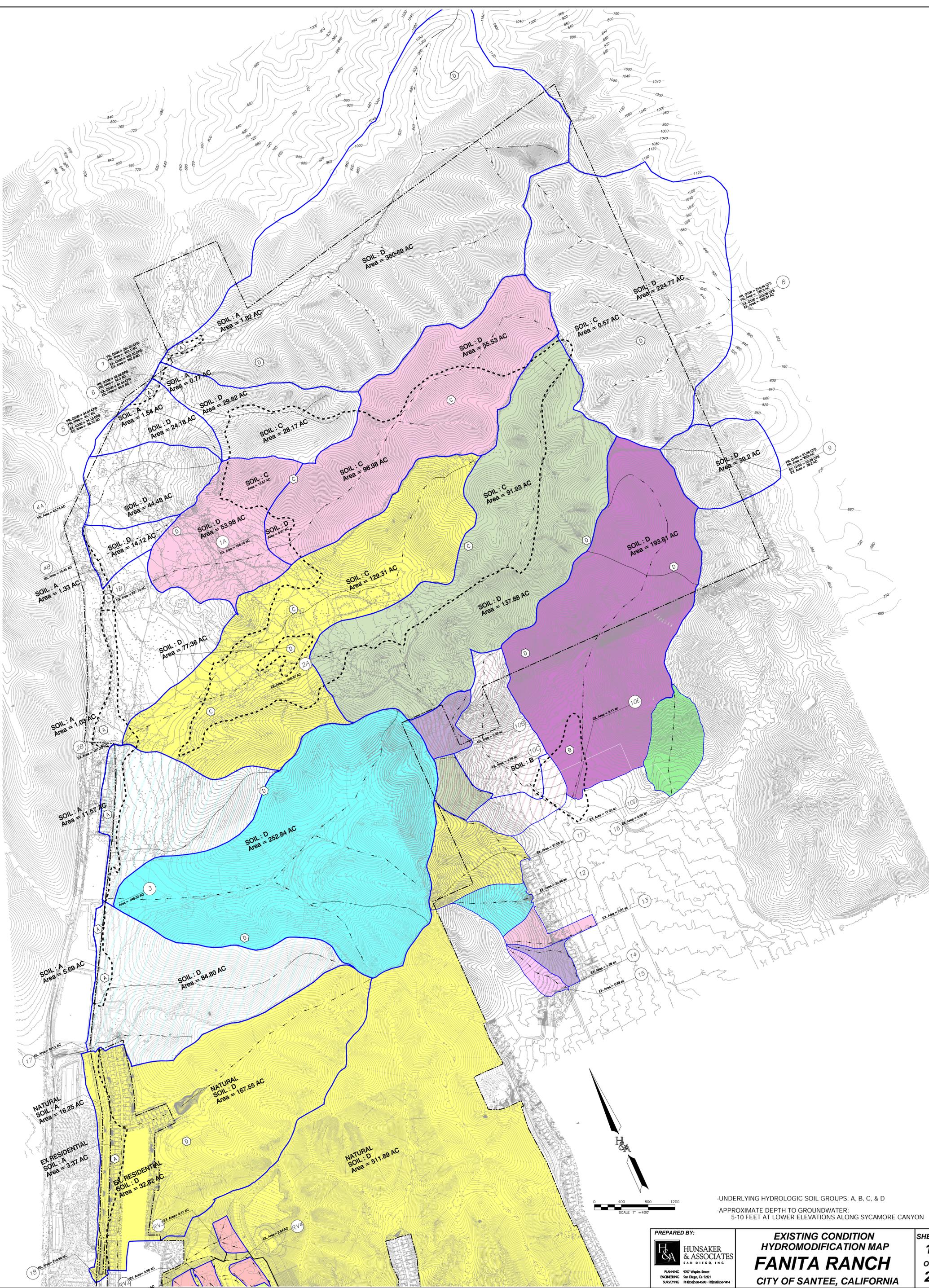
Attachment Sequence	Contents	Checklist
Attachment 2a	Hydromodification Management Exhibit (Required)	<input checked="" type="checkbox"/> Included See Hydromodification Management Exhibit Checklist on the back of this Attachment cover sheet.
Attachment 2b	Management of Critical Coarse Sediment Yield Areas (WMAA Exhibit is required, additional analyses are optional)  See Section 6.2 of the BMP Design Manual.	<input type="checkbox"/> Exhibit showing project drainage boundaries marked on WMAA Critical Coarse Sediment Yield Area Map (Required)  Optional analyses for Critical Coarse Sediment Yield Area Determination <input type="checkbox"/> 6.2.1 Verification of Geomorphic Landscape Units Onsite <input type="checkbox"/> 6.2.2 Downstream Systems Sensitivity to Coarse Sediment <input checked="" type="checkbox"/> 6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite
Attachment 2c	Geomorphic Assessment of Receiving Channels (Optional) See Section 6.3.4 of the BMP Design Manual.	<input checked="" type="checkbox"/> Not performed <input type="checkbox"/> Included <input type="checkbox"/> Submitted as separate stand-alone document
Attachment 2d	Flow Control Facility Design, including Structural BMP Drawdown Calculations and Overflow Design Summary (Required) See Chapter 6 and Appendix G of the BMP Design Manual	<input checked="" type="checkbox"/> Included <input type="checkbox"/> Submitted as separate stand-alone document
Attachment 2e	Vector Control Plan (Required when structural BMPs will not drain in 96 hours)	<input type="checkbox"/> Included <input checked="" type="checkbox"/> Not required because BMPs will drain in less than 96 hours

***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)

**ATTACHMENT 2a**  
**HYDROMODIFICATION MANAGEMENT EXHIBITS**

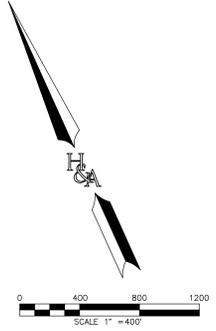
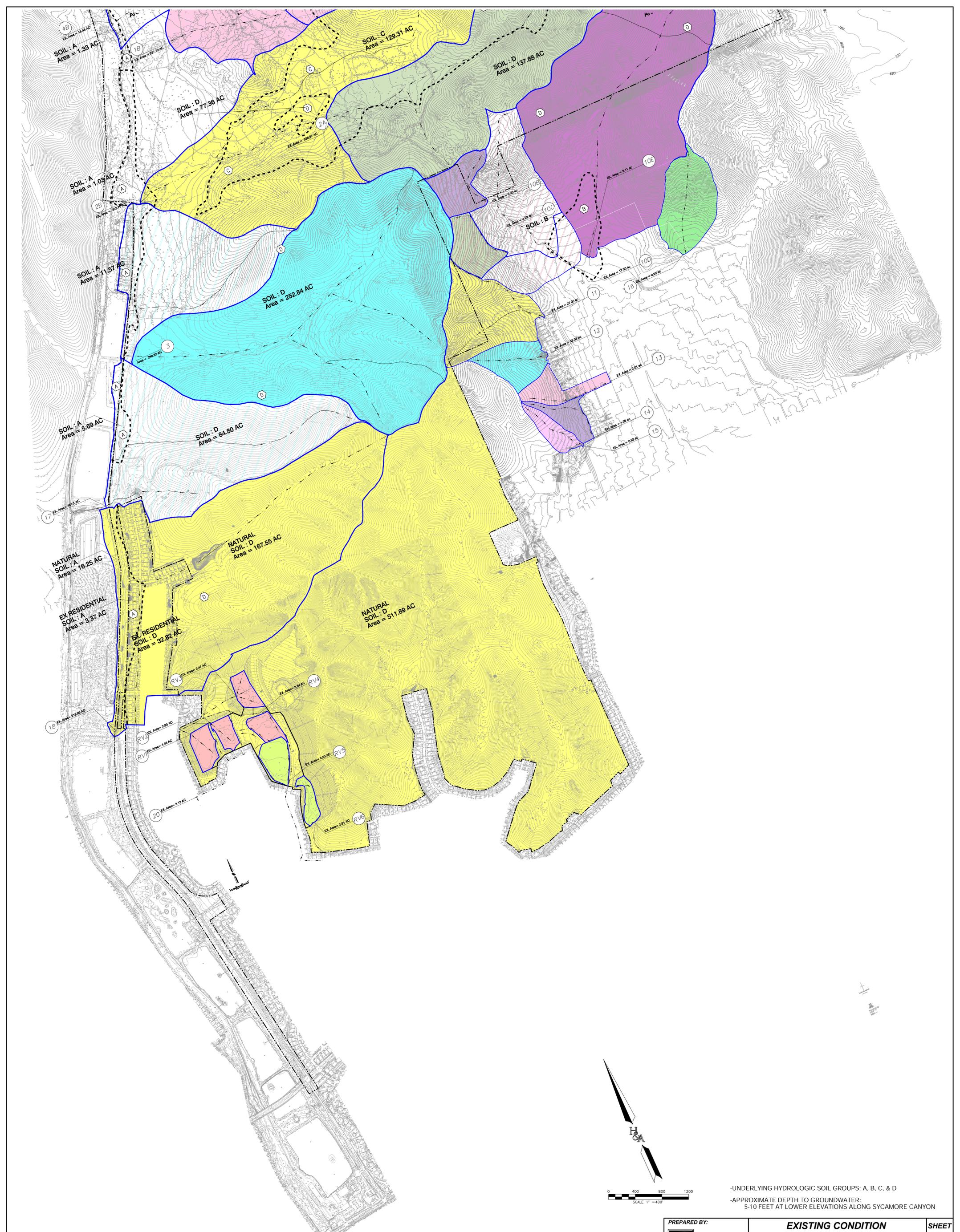


-UNDERLYING HYDROLOGIC SOIL GROUPS: A, B, C, & D  
 -APPROXIMATE DEPTH TO GROUNDWATER:  
 5-10 FEET AT LOWER ELEVATIONS ALONG SYCAMORE CANYON

PREPARED BY:  
**HUNSAKER & ASSOCIATES**  
 SAN DIEGO, INC.  
 PLANNING 9707 Winkle Street  
 ENGINEERING San Diego, CA 92121  
 SURVEYING PH083858-6000 PH083858-6114

**EXISTING CONDITION  
 HYDROMODIFICATION MAP  
 FANITA RANCH**  
 CITY OF SANTEE, CALIFORNIA

SHEET  
**1**  
 OF  
**2**

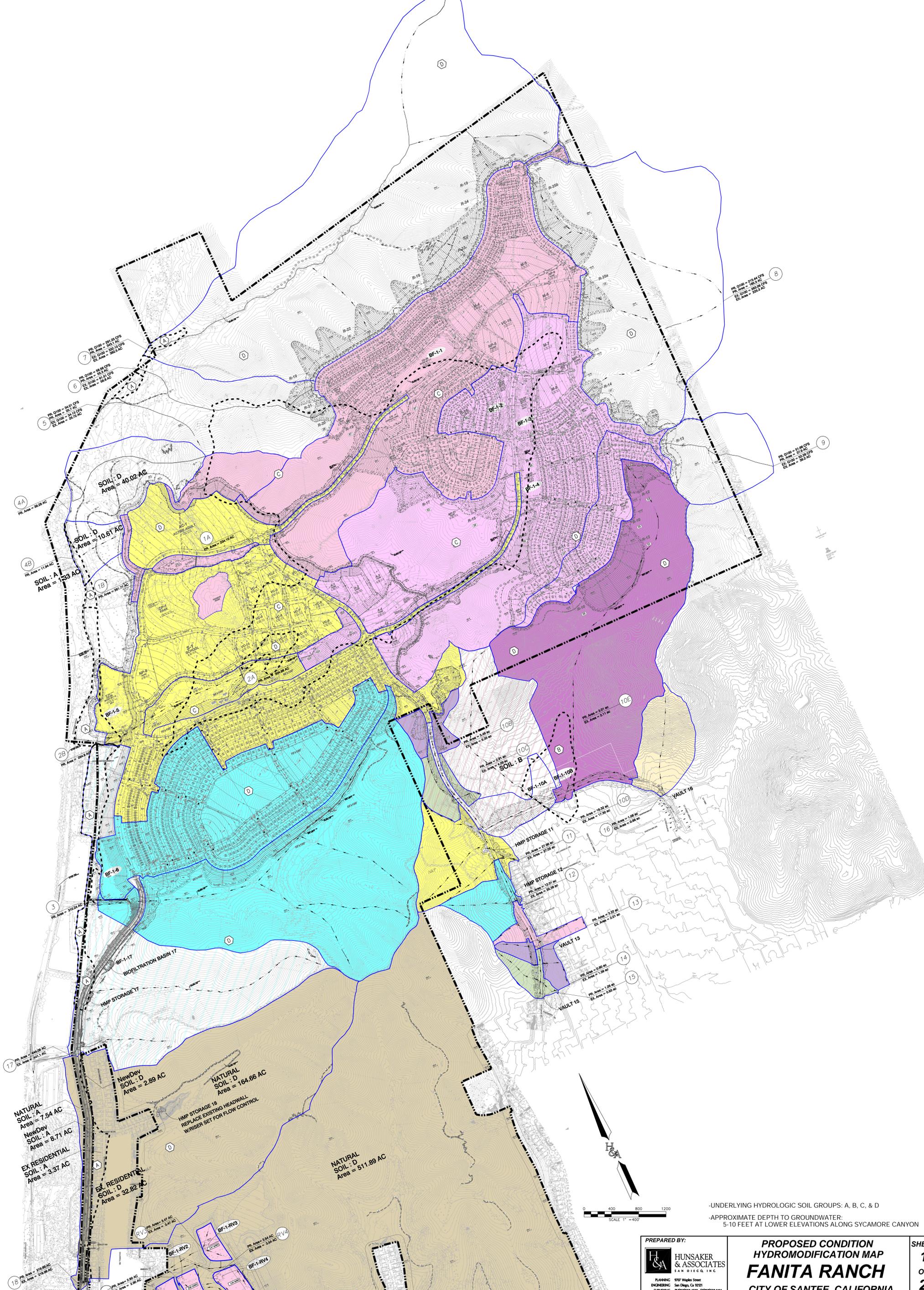


-UNDERLYING HYDROLOGIC SOIL GROUPS: A, B, C, & D  
 -APPROXIMATE DEPTH TO GROUNDWATER:  
 5-10 FEET AT LOWER ELEVATIONS ALONG SYCAMORE CANYON

PREPARED BY:  
 **HUNSAKER & ASSOCIATES**  
 SAN DIEGO, INC.  
 PLANNING 9707 Wagon Street  
 ENGINEERING San Diego, Ca 92121  
 SURVEYING PH: 619-558-4000 FAX: 619-558-4144

**EXISTING CONDITION  
 HYDROMODIFICATION MAP  
 FANITA RANCH  
 CITY OF SANTEE, CALIFORNIA**

SHEET  
**2**  
 OF  
**2**



7 PR. Area = 21.74 AC  
EX. Area = 28.2 AC  
SOIL: D  
Area = 38.9 AC

6 PR. Area = 28.2 AC  
EX. Area = 31.7 AC  
SOIL: D  
Area = 38.9 AC

5 PR. Area = 24.0 AC  
EX. Area = 24.0 AC  
SOIL: D  
Area = 38.9 AC

9 PR. Area = 17.4 AC  
EX. Area = 18.3 AC  
SOIL: D  
Area = 38.9 AC

8 PR. Area = 18.3 AC  
EX. Area = 19.2 AC  
SOIL: D  
Area = 38.9 AC

4A PR. Area = 29.25 AC  
SOIL: D  
Area = 40.02 AC

4B PR. Area = 11.94 AC  
SOIL: D  
Area = 10.61 AC

3B PR. Area = 33.3 AC  
SOIL: A  
Area = 33.3 AC

17 PR. Area = 140.8 AC  
EX. Area = 141.1 AC  
NATURAL SOIL: A  
Area = 7.54 AC  
NewDev SOIL: A  
Area = 8.71 AC  
EX. RESIDENTIAL SOIL: A  
Area = 3.37 AC

NewDev SOIL: D  
Area = 2.89 AC

NATURAL SOIL: D  
Area = 164.66 AC

NATURAL SOIL: D  
Area = 511.89 AC

EX. RESIDENTIAL SOIL: D  
Area = 32.82 AC

HMP STORAGE 18  
REPLACE EXISTING HEADWALL  
W/RISE SET FOR FLOW CONTROL

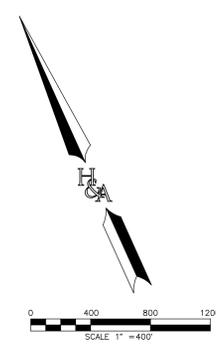
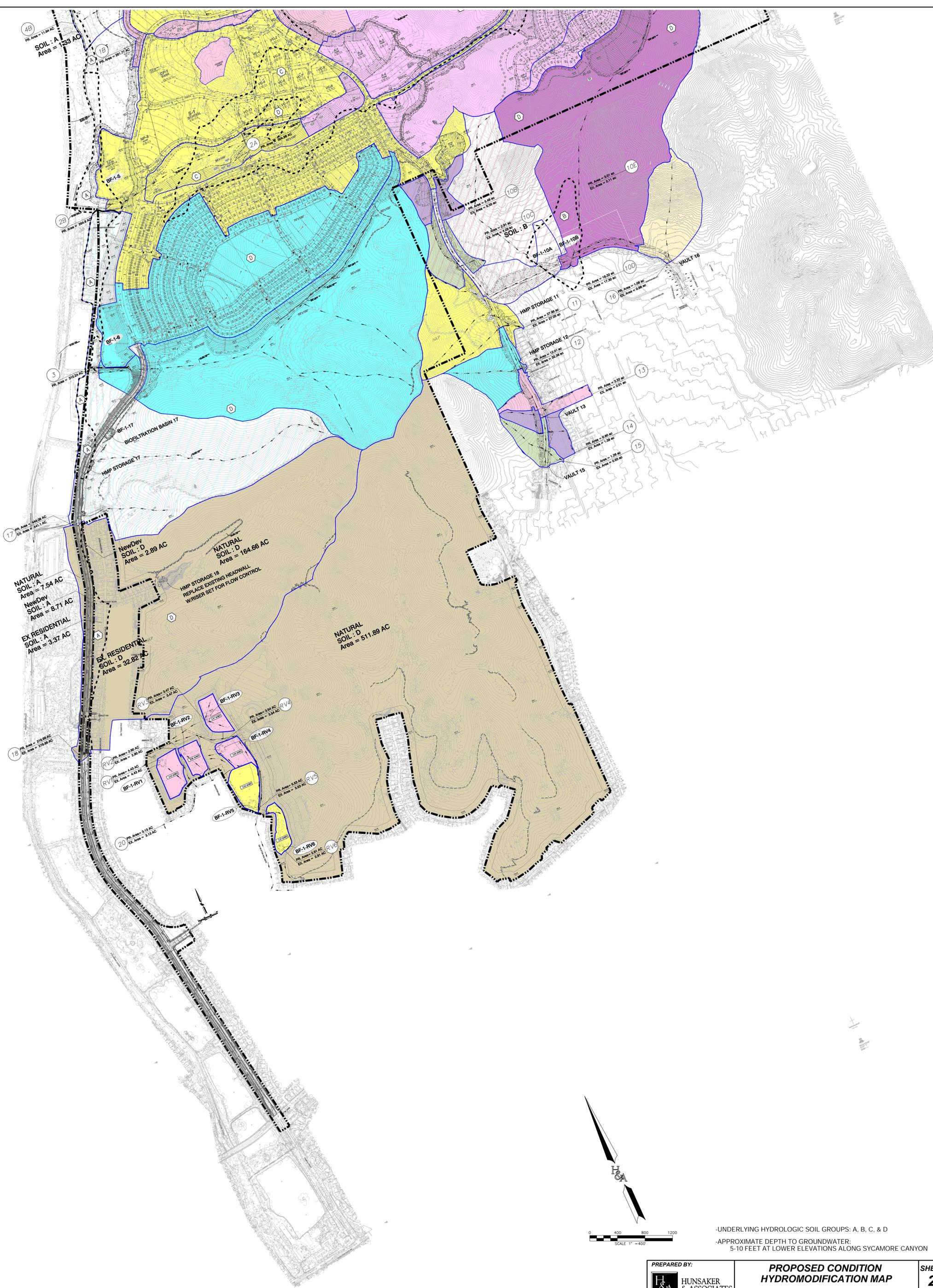


-UNDERLYING HYDROLOGIC SOIL GROUPS: A, B, C, & D  
-APPROXIMATE DEPTH TO GROUNDWATER:  
5-10 FEET AT LOWER ELEVATIONS ALONG SYCAMORE CANYON

PREPARED BY:  
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ENGINEERING San Diego, CA 92121  
SURVEYING PH083858-6000 PH083858-6114

**PROPOSED CONDITION  
HYDROMODIFICATION MAP  
FANITA RANCH**  
CITY OF SANTEE, CALIFORNIA

SHEET  
**1**  
OF  
**2**



-UNDERLYING HYDROLOGIC SOIL GROUPS: A, B, C, & D  
 -APPROXIMATE DEPTH TO GROUNDWATER:  
 5-10 FEET AT LOWER ELEVATIONS ALONG SYCAMORE CANYON

PREPARED BY:  
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 SAN DIEGO, INC.  
 PLANNING: 9707 Wiggins Street  
 ENGINEERING: San Diego, Ca 92121  
 SURVEYING: PH0838558-6000 PH0838558-6114

**PROPOSED CONDITION  
 HYDROMODIFICATION MAP  
 FANITA RANCH  
 CITY OF SANTEE, CALIFORNIA**

SHEET  
**2**  
 OF  
**2**

# Hydromodification Management Plan

# TECHNICAL MEMORANDUM:

## Hydromodification Management Plan for Fanita Ranch

Prepared For:

Hunsaker & Associates, Inc.

September 30, 2019

Prepared by:



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



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## **INTRODUCTION**

This report summarizes the approach used to model the proposed Fanita Ranch project site within the City of Santee, CA using the Environmental Protection Agency (EPA) Storm Water Management Model (SWMM). SWMM models were prepared for the pre and post developed conditions at the site in order to determine if the proposed biofiltration and detention facilities have sufficient footprints and storage volumes to meet the current Hydromodification Management Plan (HMP) requirements from the Regional Water Quality Control Board (RWQCB).

The Fanita Ranch project was divided into numerous areas with each draining to their respective Point of Compliance (POC). See Attachment 2a for maps related to this flow control hydromodification plan. A comparison of the Existing and Proposed maps finds that the areas associated with POC5 through POC9 are reduced in the proposed condition. In addition, hydrologic analysis included within the Drainage Study determined that unmitigated peak flows to POC5 through POC9 were also reduced since no impervious surfaces were being added to those respective areas. Therefore, POC5 through POC9 do not require HMP mitigation measures since factors related to potential erosive forces have been reduced with the proposed development. The remaining POCs require flow control analysis since their tributary areas either will increase the amount of imperviousness or are needed as part of the analysis required relating to the investigation of critical coarse sediment such as POCs 4A, 4B, and 10B as indication on the hydromodification maps.

The following HMP analysis details the HMP measures needed to address flow control HMP for the site at POC's 1A, 1B, 2A, 2B, 3, 4A, 4B, 10A, 10B, 10C, 10D, 10E, and 11-18.

Additionally, the RV site is located on existing mass graded pads that have individual discharge locations, as such each RV site will have its own POC (POC's RV-1, RV-2, RV-3, RV-4, RV-5 & RV-6).

### **SWMM Model Development**

Two (2) SWMM model were prepared for each POC for this study; one for each POC in existing condition and one for each POC in the proposed condition. The existing condition analysis was prepared by defining the respective area to each POC. The proposed condition analysis was prepared by defining the areas to each POC and routing them through the proposed basins or vaults. In some cases, the basins will function as treatment BMPs as well as peak flow attenuation. For all SWMM models, flow duration curves were prepared to demonstrate that the proposed detention basin or vaults storage capacity and its outlet structure are sufficient to meet current HMP requirements.

The inputs required to develop SWMM models include rainfall, watershed characteristics, and BMP configurations. The San Vicente Rain Gage from the Project Clean Water website was used for this study since it is the most representative of the project site precipitation.

Evaporation for the site was modeled using average monthly values from the San Diego County hourly dataset. The site was modeled with the hydrologic soil groups as determined from the USGS Survey web-based Soil Survey Map. Other SWMM inputs for the subareas are discussed in the following sections to this document where the selection of the parameters is explained in detail.

## **BASIN MODELING**

Developed storm water runoff is routed through the respective basins or vaults located throughout the project site as labeled on the Proposed Condition HMP map in Attachment 2a. In instances where the basins will function as treatment BMPs with engineered subsurface layers, the bioretention LID module within SWMM was utilized. The bioretention module can model the underground gravel storage layer, underdrain with an orifice plate, amended soil layer, and a surface storage pond up to the elevation of the invert of the bottom orifice (effective surface depth). In cases where flow control measures are utilizing the basin volume above the riser height, separate diversion and detention basin calculations were prepared to model the portion of the storage pond between the base orifice invert elevations and the spillway elevation of each biofiltration basin. Once runoff has been routed through the respective basin outlet structure, it is conveyed via a storm drain pipe to each POC.

### **Basin Discussion:**

Flow control in each basin or vault is achieved using single or dual orifices on a riser box. The size, number, and location of the orifices are presented in the following Basin Summary Table. Since the detention storage facilities will also be utilized for peak flow detention, hydrologic calculations within the Drainage Study for this project include a detention analysis to determine attenuated peak flows throughout the site.

<b>BASIN SUMMARY TABLE</b>								
	POC1-Basin-1	POC2-Basin-2	POC2-Basin-3	POC2-Basin-4	POC2-Basin-5	POC3-Basin-1	POC10D-Basin-10a	POC10E-Basin-10b
Bottom Basin Area (sf)	249,599	44,124	83,668	135,127	338,354	134,075	6775	3,210
Total Basin Depth (ft)	6	6	6	6	4.6	4.75	3	3.25
WQ Ponding Depth (in)*	15	33	30	28	19.2	21	15	36
Amended Soil Depth (in)	24	24	24	27	24	27	24	24
Class 2 Perm. Depth (in)	27	24	24	24	27	27	30	27
Underdrain Orifice (in)	1- 10"	1-4.33"	2- 5.3"	2- 7.5"	2- 9"	2- 6"	1-1"	1-1.5625"
RISER:								
Riser Cross-section Dimensions	4' x 4'	3'x3'	3' x 3'	6' x 6'	8' x 16'	5' x 5'	3'x3'	5' x 5'
Riser Height (ft)*	4.75	4.50	4.50	5.00	3.60	4.33	2.75	3.00
ORIFICE:								
Low Orifice Diameter (in)	slot: 22" x 2"	slot: 36" x 3"	slot: 27" x 6"	slot: 9' x 12"	slot: 22' x 1.25'	slot: 4.75' x 2"	0.875"	-
Low Orifice Depth (ft)*	1.25	0.75	0.75	1.83	1.60	0.75	1.25	-
Middle Orifice Diameter (in)	-	-	-	-	-	slot: 6'x 0.5'	-	-
Middle Orifice Depth (ft)	-	-	-	-	-	3.50'	-	-
*-Relative to basin bottom								

<b>BASIN SUMMARY TABLE</b>								
	POC11- Basin-11	POC12- Basin-12	POC13- Basin-13	POC15- Basin-15	POC16- Basin-16	POC17- Basin-17	POC18- Basin-18	
Bottom Basin Area (sf)	742	203	1,365	900	800	875	437	
Total Basin Depth (ft)	10	6	6	6	6	10	15	
WQ Ponding Depth (in)*	-	-	-	-	-	12	-	
Amended Soil Depth (in)	-	-	-	-	-	18	-	
Class 2 Perm. Depth (in)	-	-	-	-	-	12	-	
Underdrain Orifice (in)	-	-	-	-	-	2-6"	-	
<b>RISER:</b>								
Riser Cross-section Dimensions	4' x 4'	4' x 4'	4'	4'	4'	4' x 4'	3' x 3'	
Riser Height (ft)*	6.00	4.00	5.50	5.50	5.50	4.00	6.00	
<b>ORIFICE:</b>								
Low Orifice Diameter (in)	slot: 36" x 2"	slot: 6" x 2"	0.6875"	0.825"	0.625"	3"	10"	
Low Orifice Depth (ft)*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Middle Orifice Diameter (in)	-	slot: 15" x 6"	slot: 12" x 2.5"	slot: 4" x 1.5"	slot: 4" x 1.5"	-	-	
Middle Orifice Depth (ft)	-	2.00	4.00	3.00	4.00	-	-	
*-Relative to basin bottom								

<b>BASIN SUMMARY TABLE</b>						
	POCRV1-Basin-RV1	POCRV2-Basin-RV2	POCRV3-Basin-RV3	POCRV4-Basin-RV4	POCRV5-Basin-RV5	POCRV6-Basin-RV6
Bottom Basin Area (sf)	4950	3250	3900	3950	6200	3250
Total Basin Depth (ft)	5	5	5	5	5	5
WQ Ponding Depth (in)*	12	12	12	12	12	12
Amended Soil Depth (in)	18	18	18	18	18	18
Class 2 Perm. Depth (in)	18	18	18	18	18	12
Underdrain Orifice (in)	2.4375	1.875	2.125	2.125	2.5625	1.875
RISER:						
Riser Cross-section Dimensions	3' x 3'					
Riser Height (ft)*	4.00	4.00	4.00	4.00	4.00	4.00
ORIFICE:						
Low Orifice Diameter (in)	slot: 48" x 2.5"	slot: 24" x 2"	slot: 36" x 2"	slot: 45" x 2"	slot: 48" x 2.5"	slot: 48" x 2 "
Low Orifice Depth (ft)*	1.00	1.00	1.00	1.00	1.00	1.00
Middle Orifice Diameter (in)	-	-	-	-	-	-
Middle Orifice Depth (ft)	-	-	-	-	-	-
*-Relative to basin bottom						

In order to be conservative, it is assumed that the stage storage calculation for the RV site basins is constant as elevation increases (i.e. assumed vertical walls), this is conservative as it does not account for the volume that will be provided by the sloped embankments. This additional volume will be assessed in the final engineering HMP analysis for this portion of the project site.

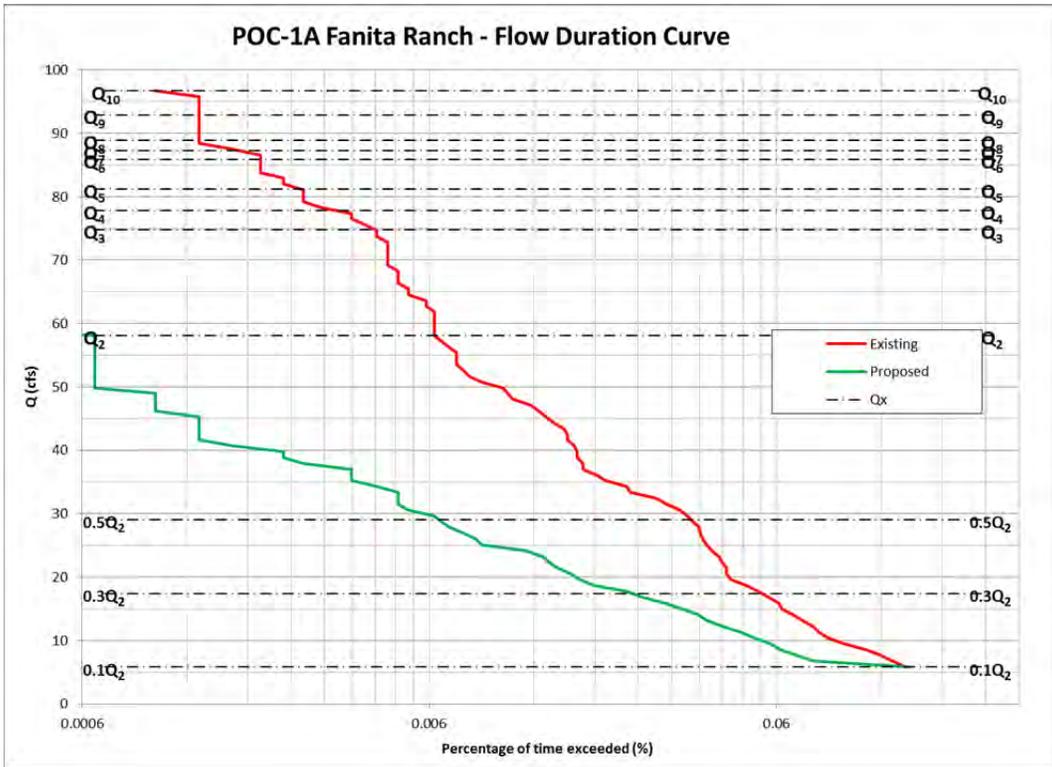
## **FLOW DURATION CURVE COMPARISON**

The Flow Duration Curves (FDC) for the site were compared at each POC by exporting the hourly runoff time series results from SWMM to a spreadsheet. The FDC was compared between 10% of the existing condition  $Q_2$  (based on accepting an assumption of high susceptibility for downstream channel erosion as required if no soils tests are completed) up to the existing condition  $Q_{10}$ . The  $Q_2$  and  $Q_{10}$  were determined using 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 is 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.

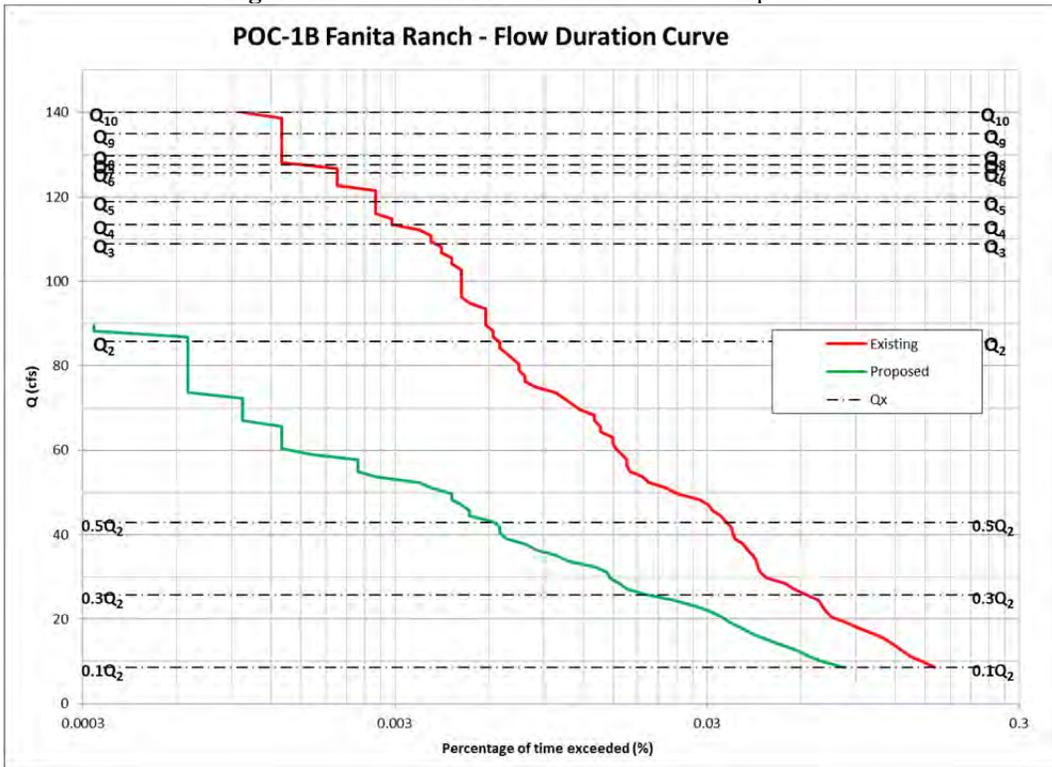
The range between 10% of  $Q_2$  and  $Q_{10}$  was divided into 100 equal time intervals; the number of hours that each flow rate was exceeded was counted from the hourly series. Additionally, the intermediate peaks with a return period “i” were obtained ( $Q_i$  with  $i=3$  to 9). For the purpose of the plot, the values were presented as percentage of time exceeded for each flow rate.

The FDC comparison at each POC is illustrated in the following Figures. Attachment 2a includes the proposed condition map delineating the respective drainage boundary areas.

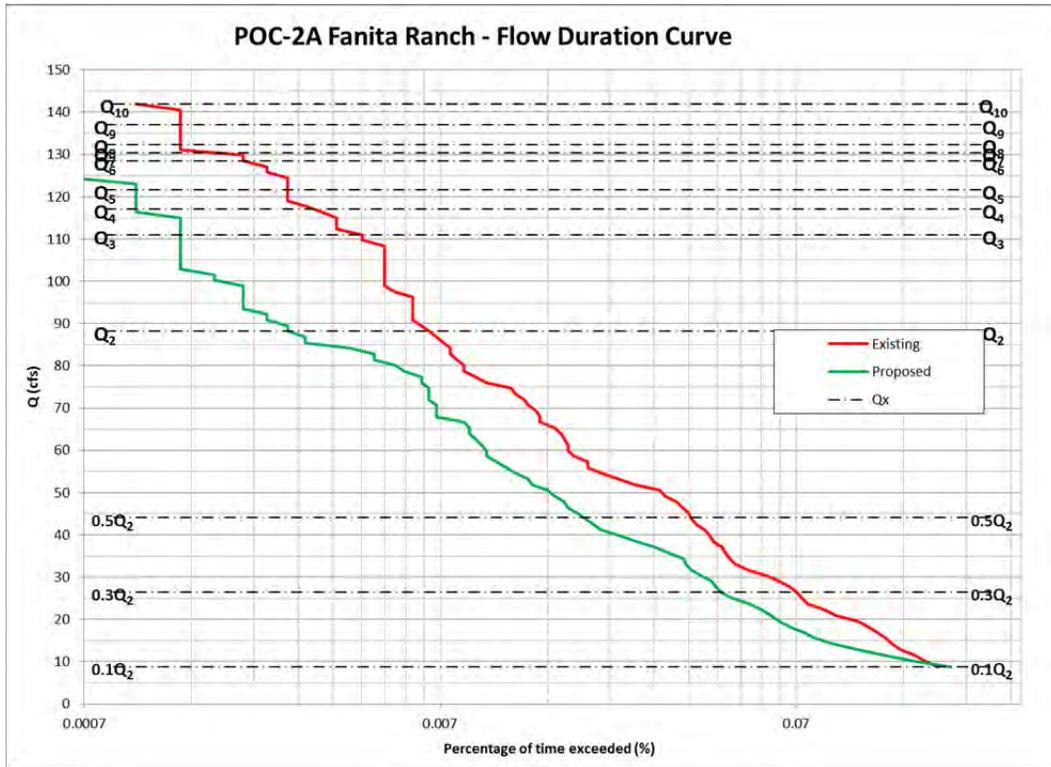
As can be seen in the following FDC Figures, which follow, the FDC for each proposed condition with the basin or vault is within 110% of the curve for the existing condition. The additional runoff volume generated from developing the site will be released to the downstream storm drain at a flow rate below the 10%  $Q_2$  lower threshold. Additionally, the project will not increase peak flow rates between the  $Q_2$  and the  $Q_{10}$ , as shown in the graphic and also in the attached table.



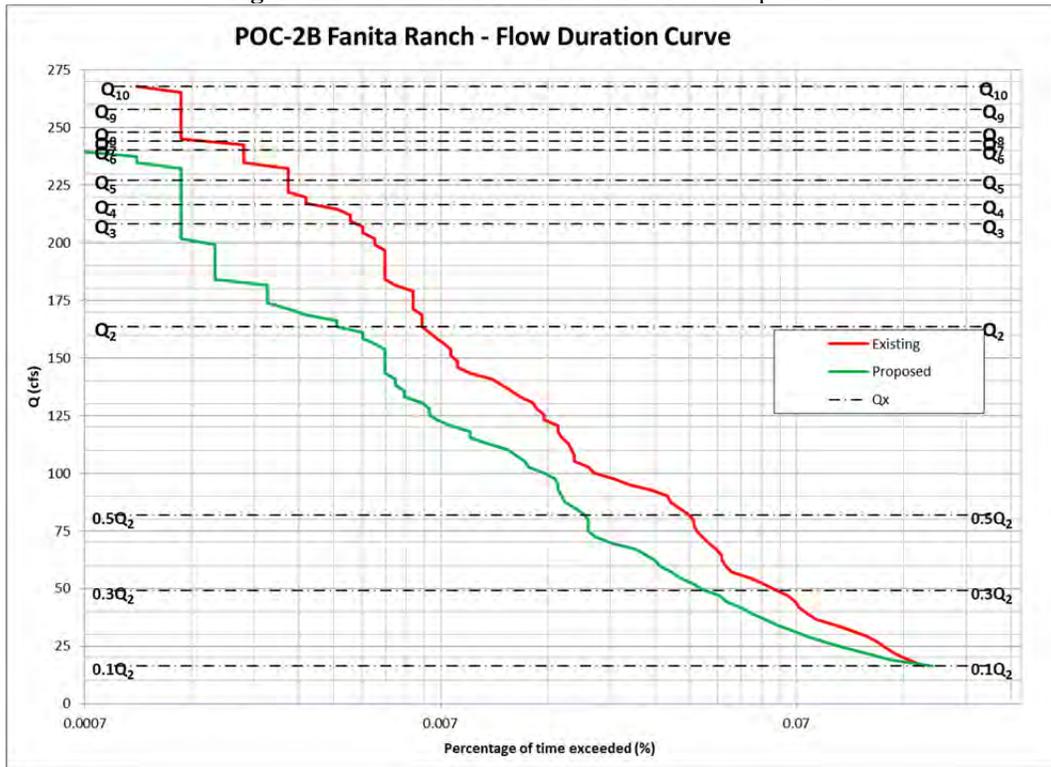
**Figure 1A.** - POC 1A Flow Duration Curve Comparison



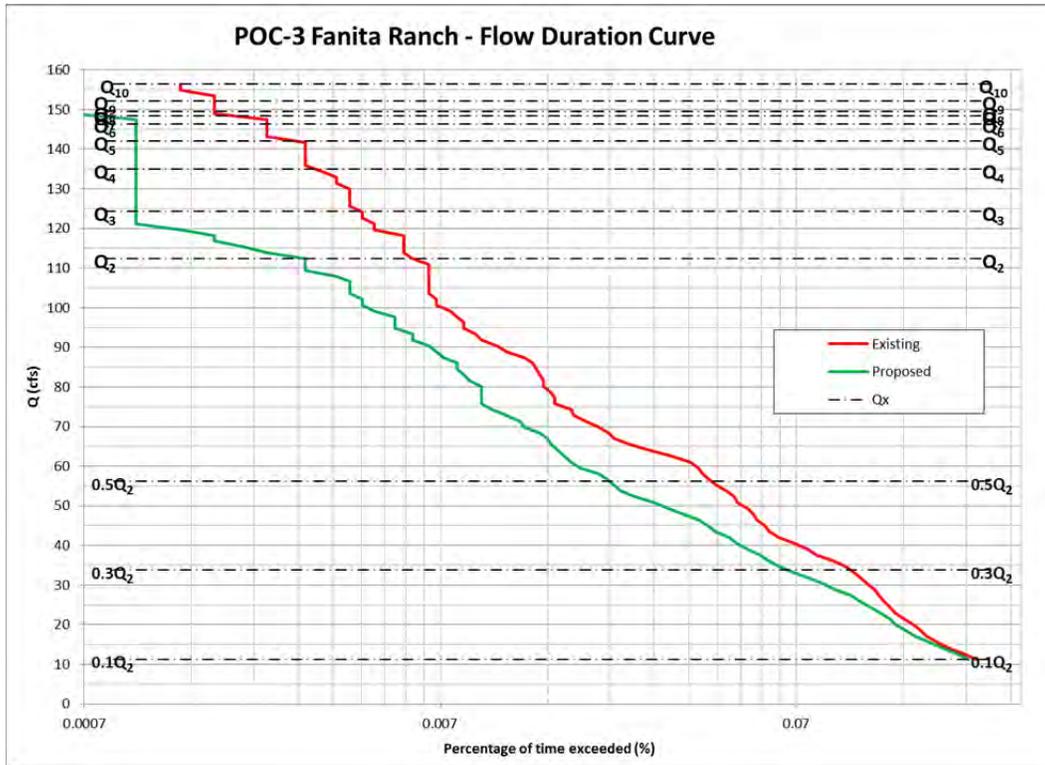
**Figure 1B.** - POC 1B Flow Duration Curve Comparison



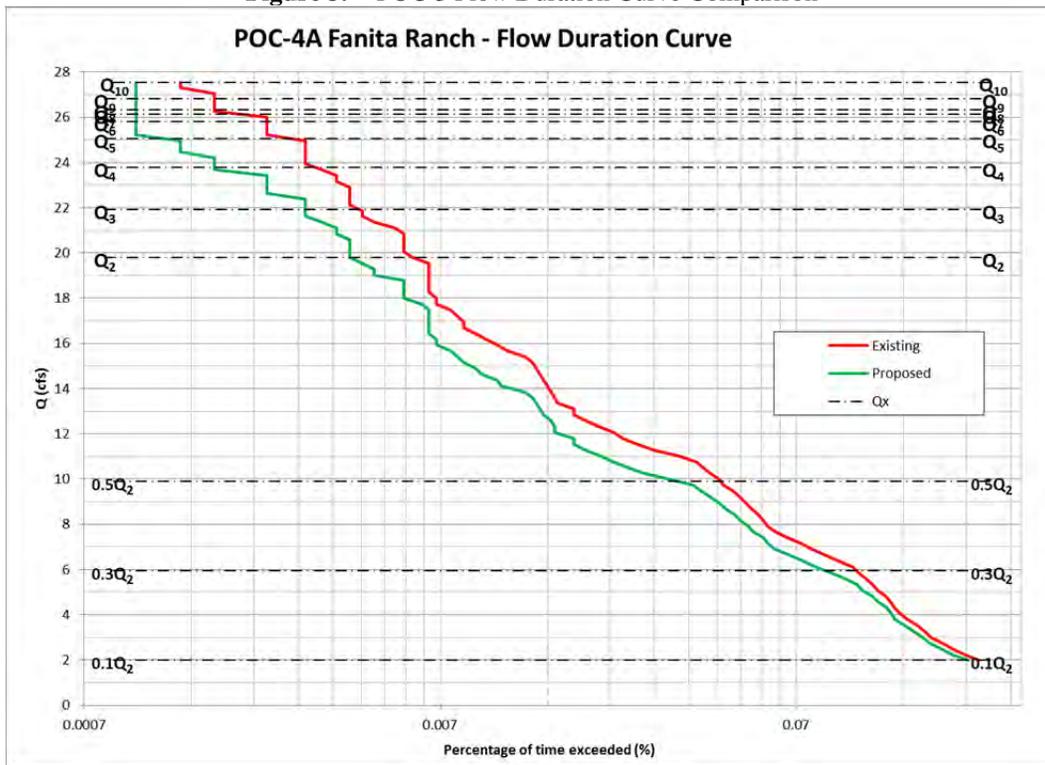
**Figure 2A.** - POC 1A Flow Duration Curve Comparison



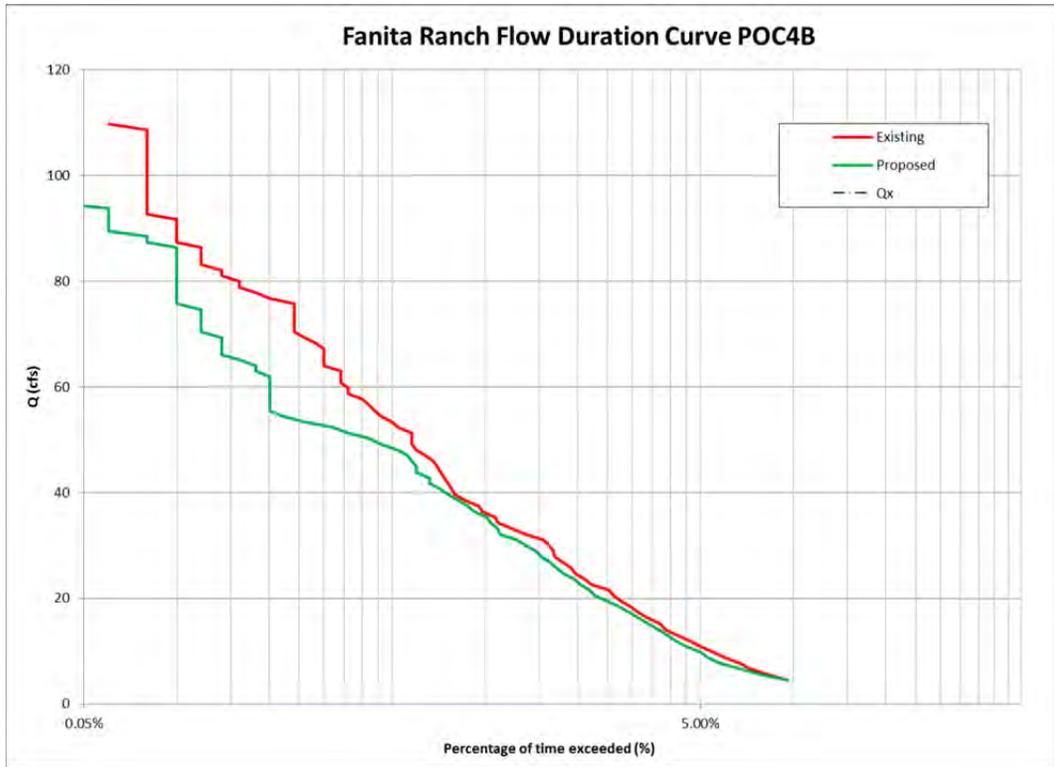
**Figure 2B.** - POC 1B Flow Duration Curve Comparison



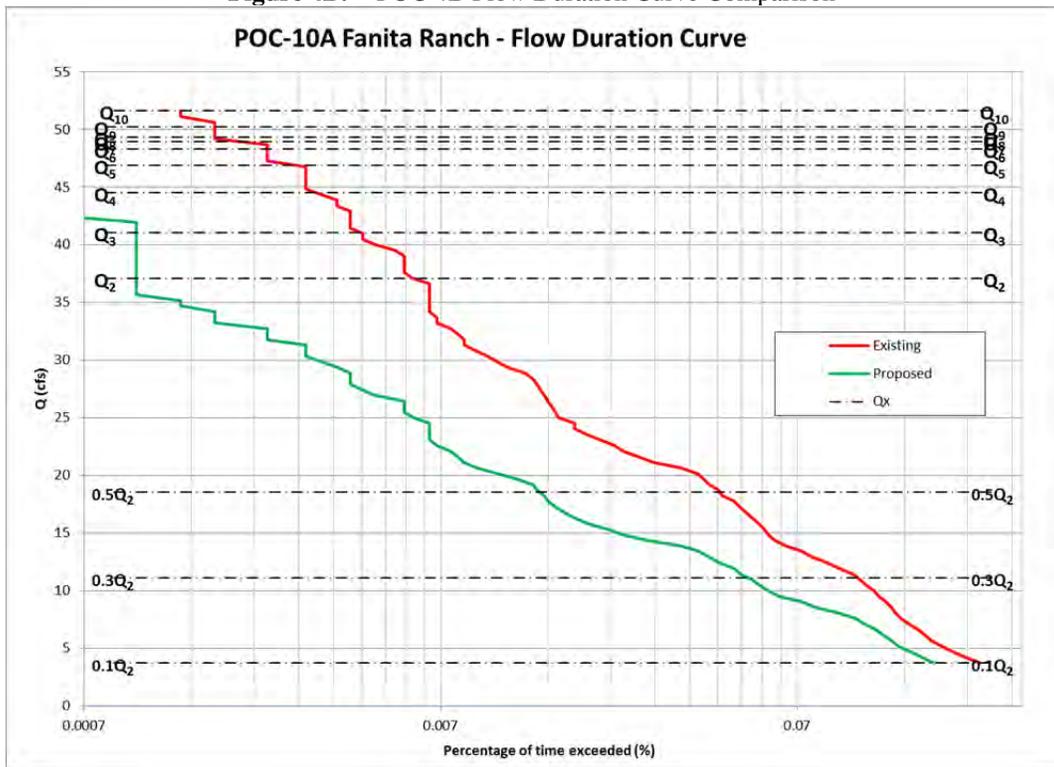
**Figure 3.** - POC 3 Flow Duration Curve Comparison



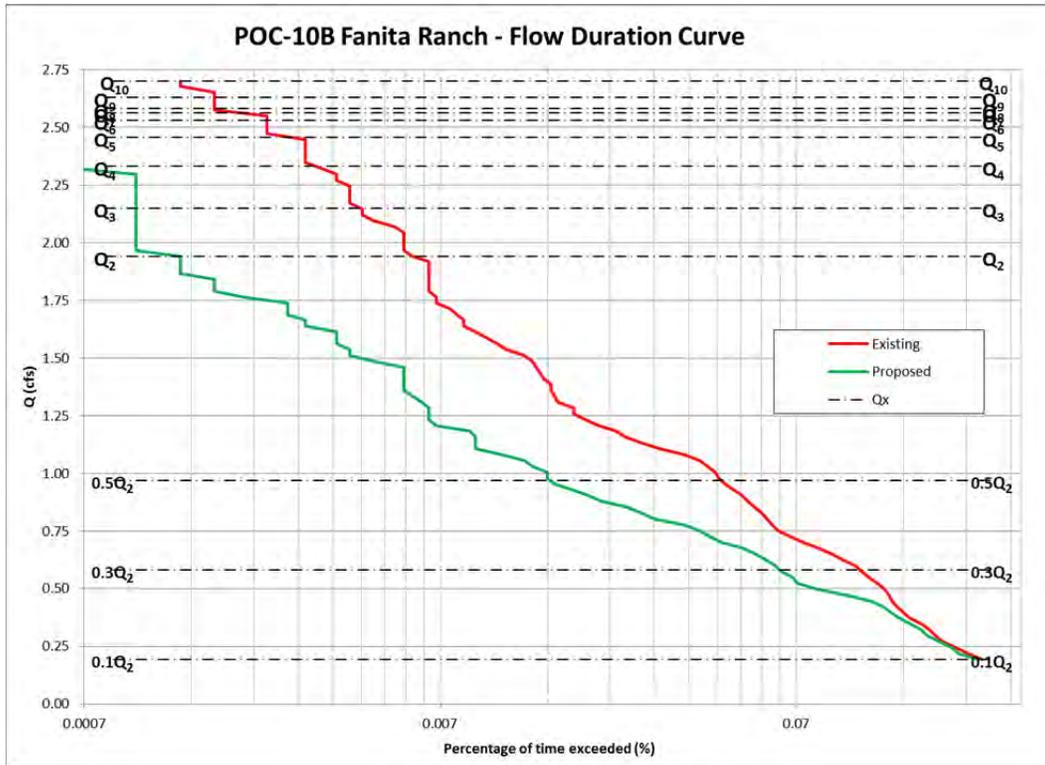
**Figure 4A.** - POC 4A Flow Duration Curve Comparison



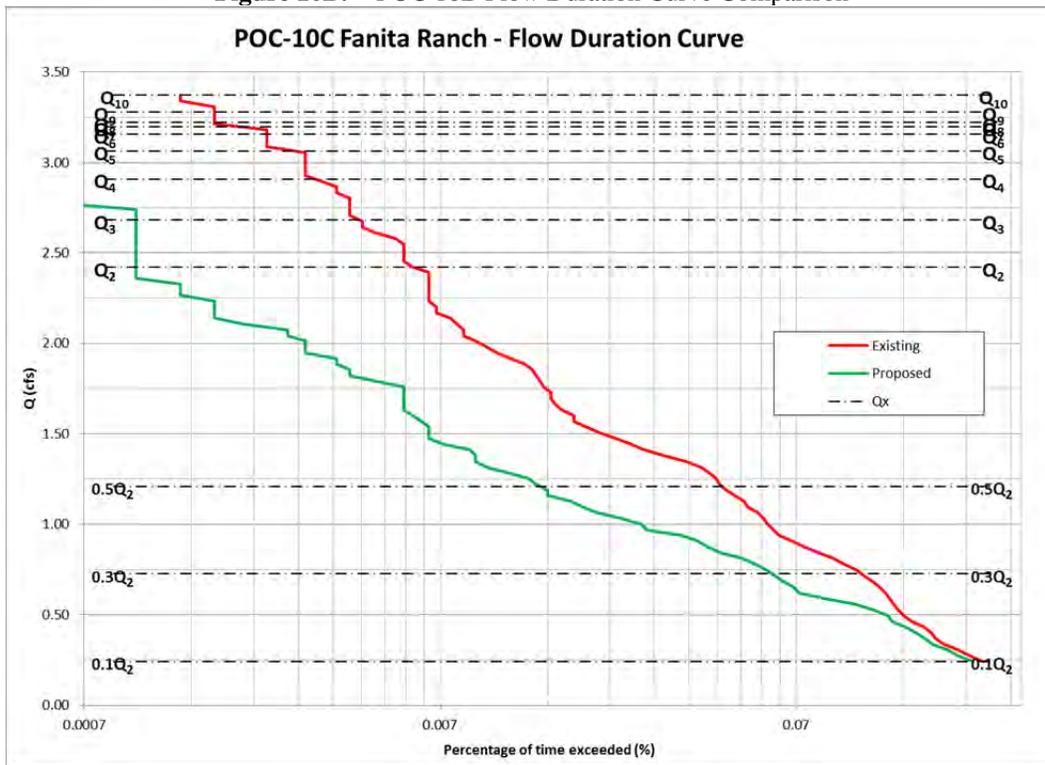
**Figure 4B.** - POC 4B Flow Duration Curve Comparison



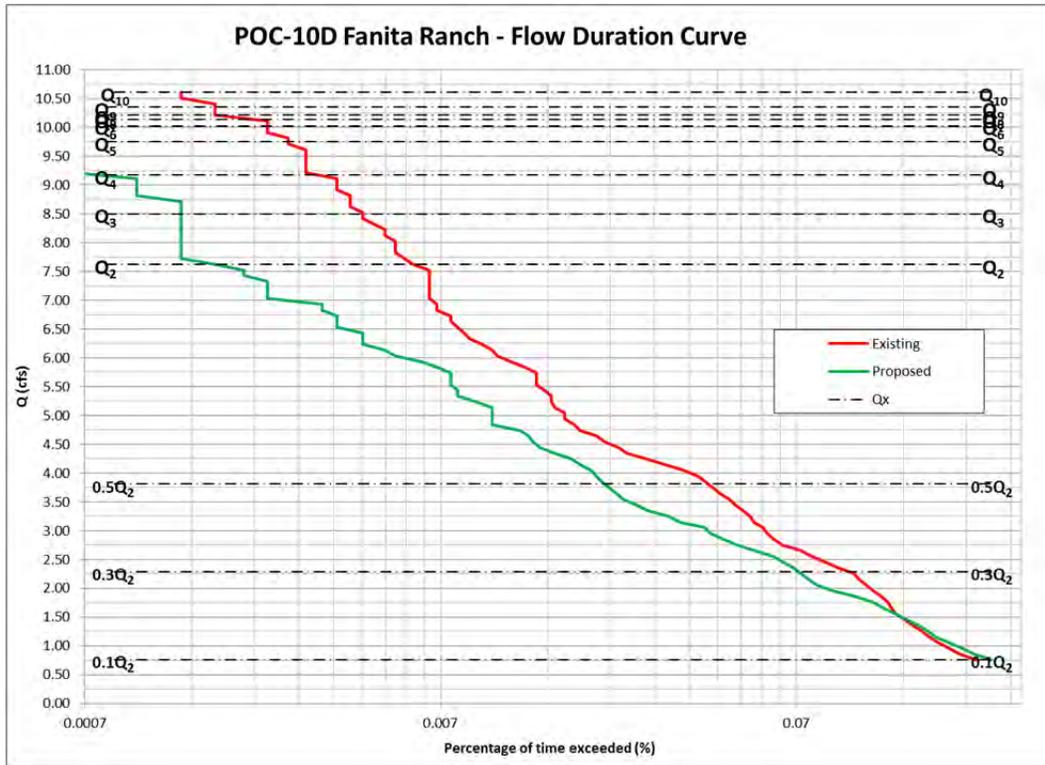
**Figure 10A.** - POC 10A Flow Duration Curve Comparison



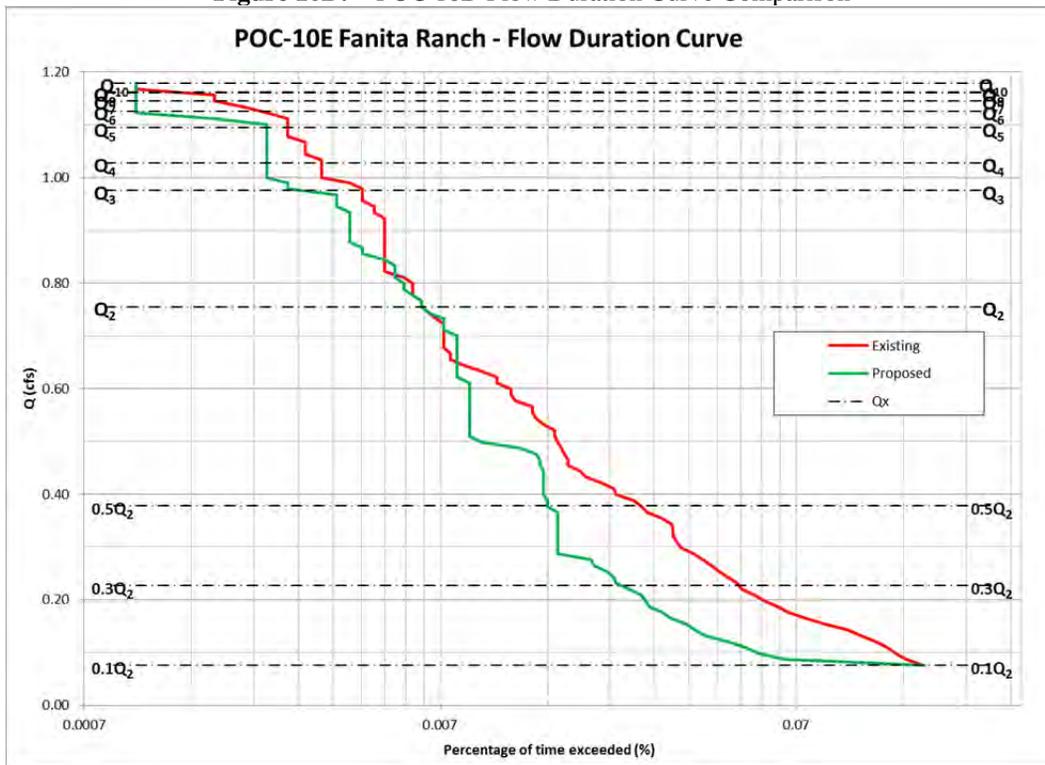
**Figure 10B.** - POC 10B Flow Duration Curve Comparison



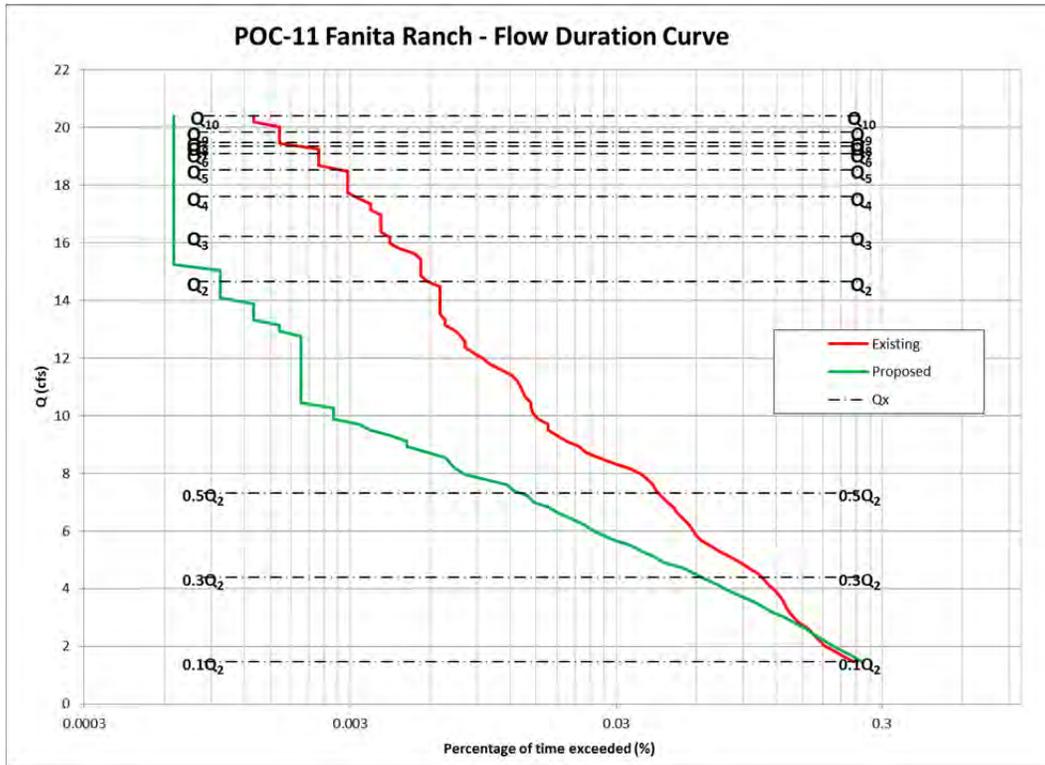
**Figure 10C.** - POC 10C Flow Duration Curve Comparison



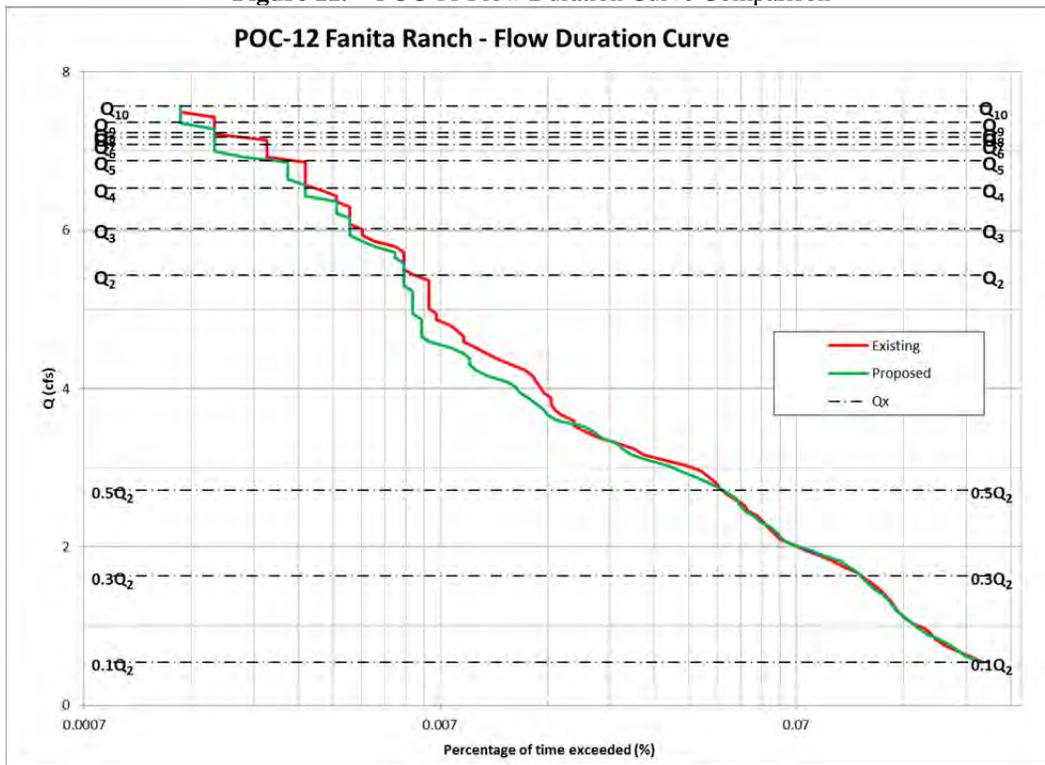
**Figure 10D.** - POC 10D Flow Duration Curve Comparison



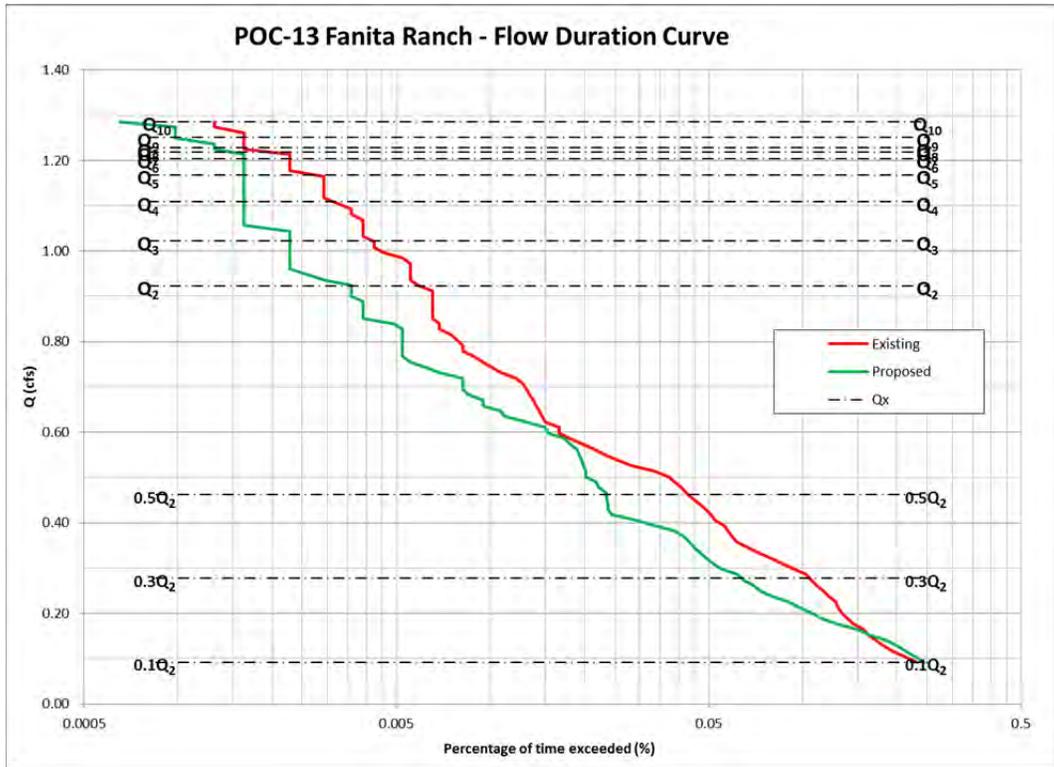
**Figure 10E.** - POC 10E Flow Duration Curve Comparison



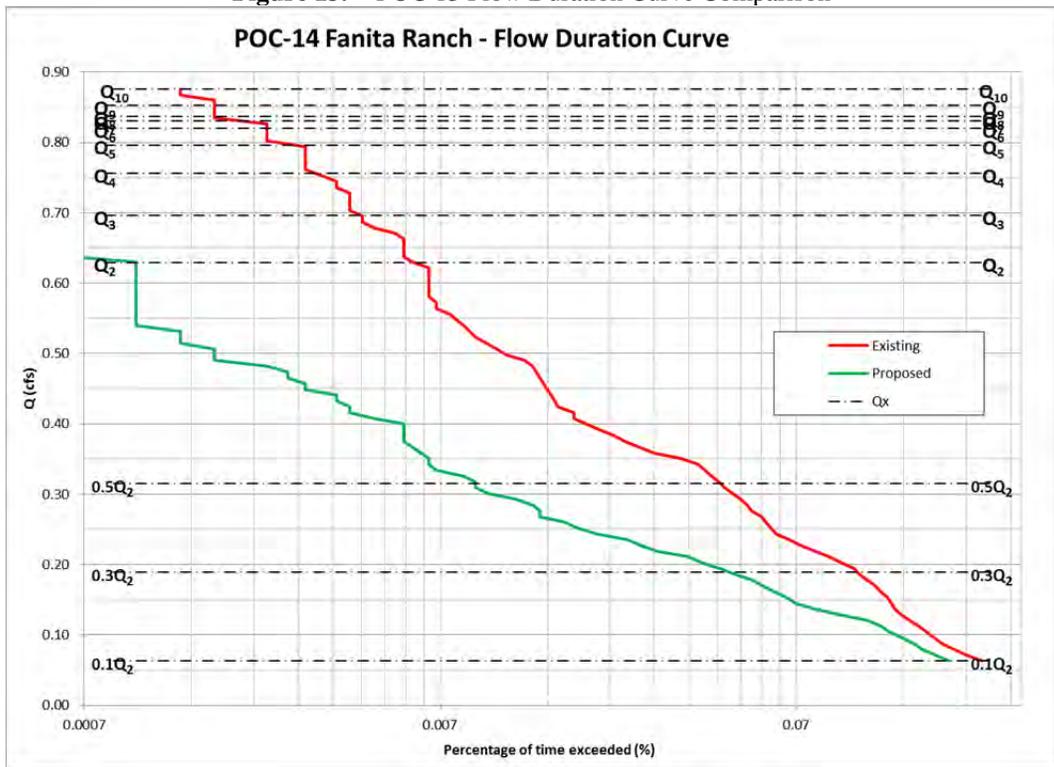
**Figure 11.** - POC 11 Flow Duration Curve Comparison



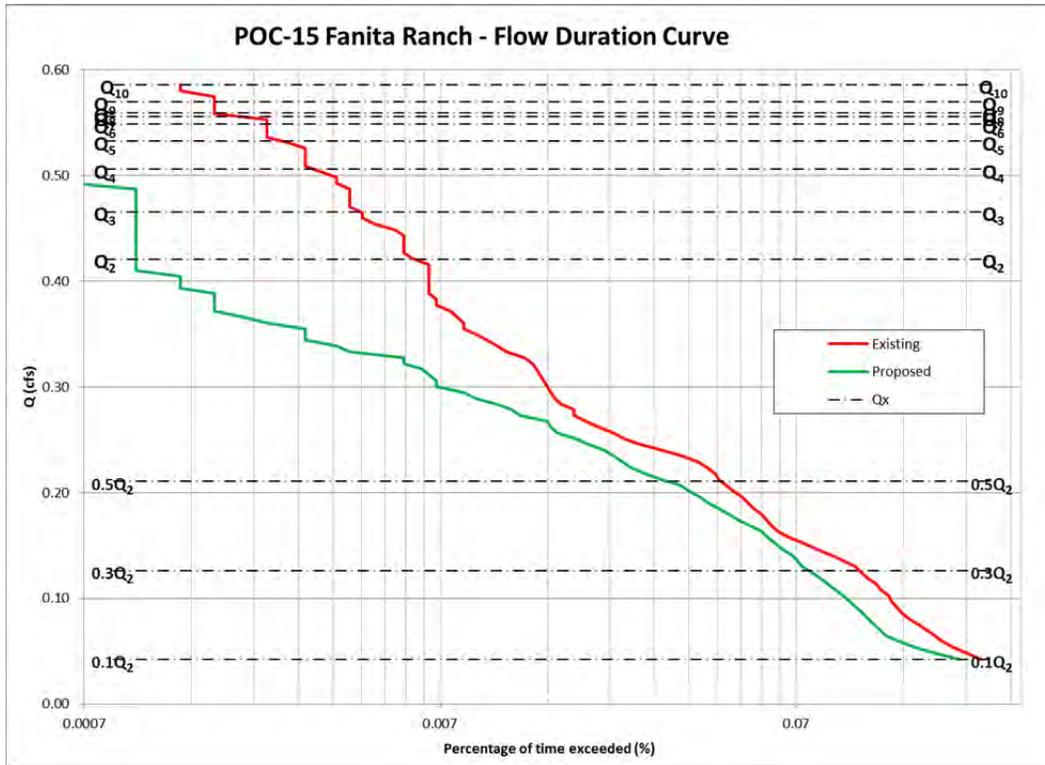
**Figure 12.** - POC 12 Flow Duration Curve Comparison



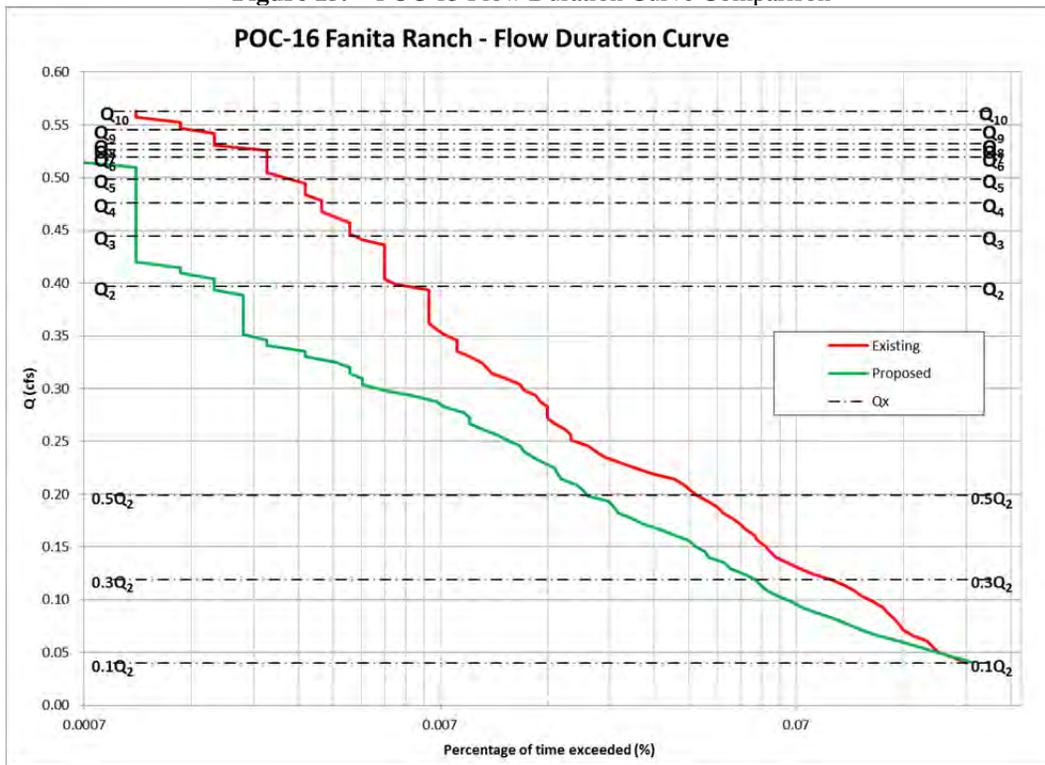
**Figure 13.** - POC 13 Flow Duration Curve Comparison



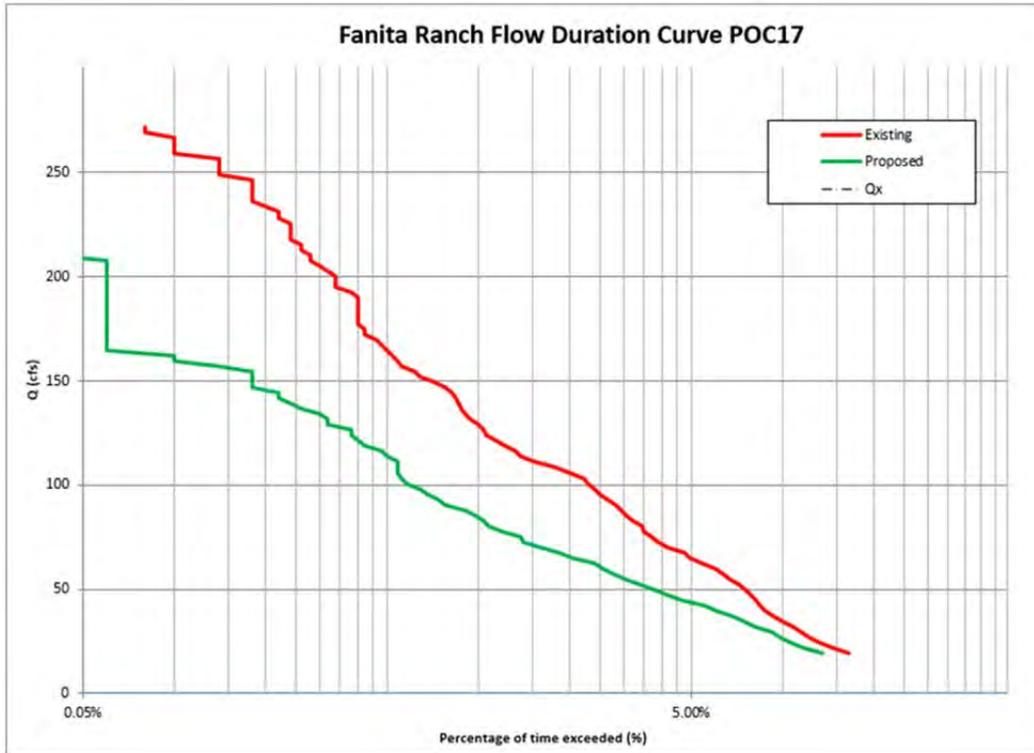
**Figure 14.** - POC 14 Flow Duration Curve Comparison



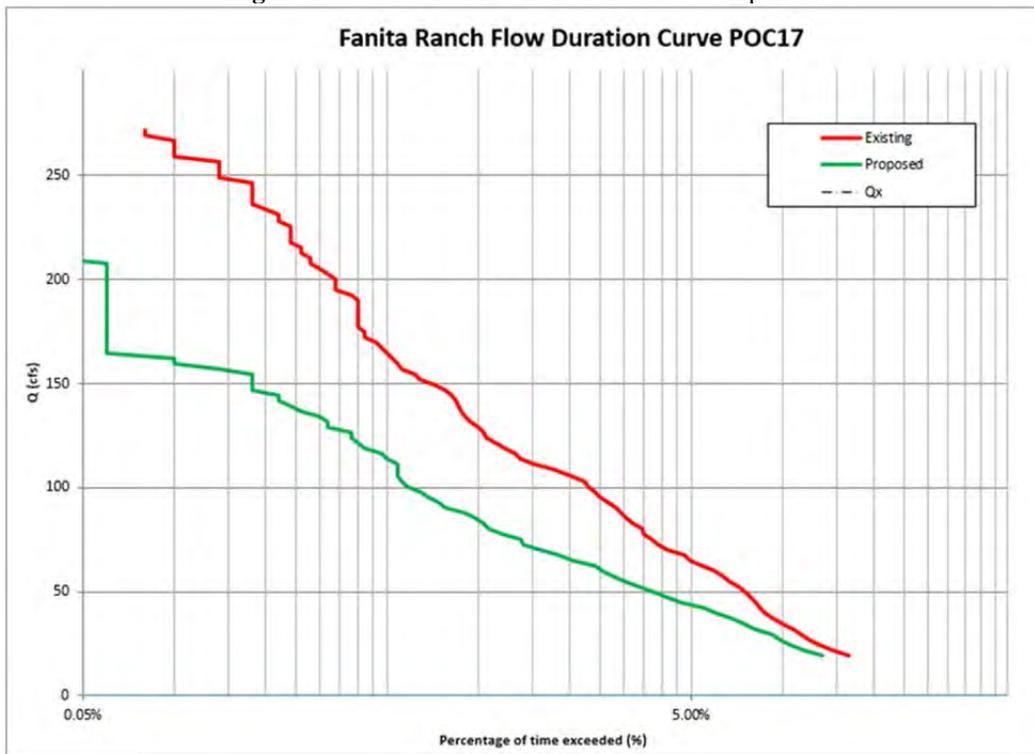
**Figure 15.** - POC 15 Flow Duration Curve Comparison



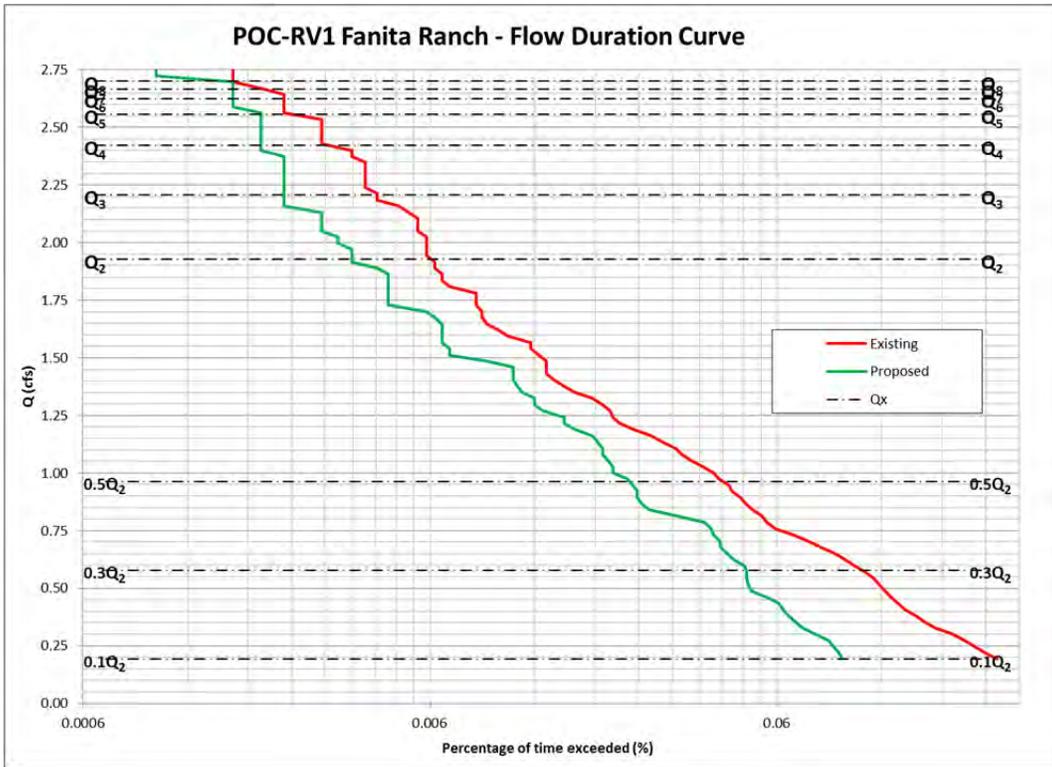
**Figure 16.** - POC 16 Flow Duration Curve Comparison



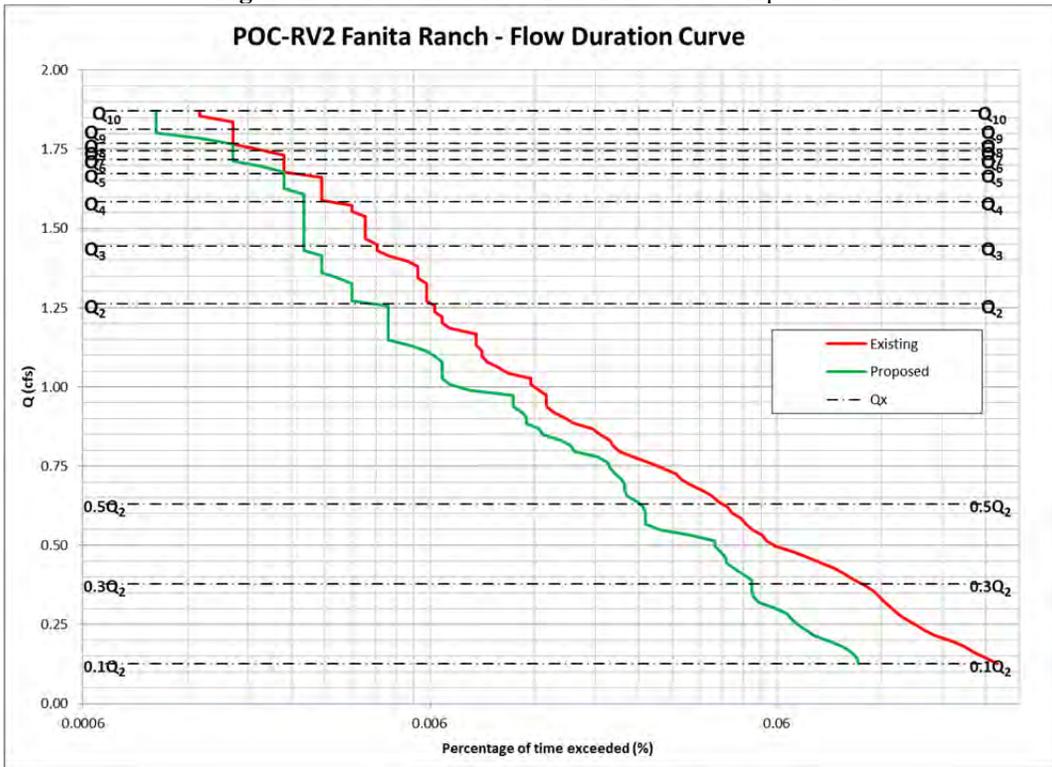
**Figure 17.** - POC 17 Flow Duration Curve Comparison



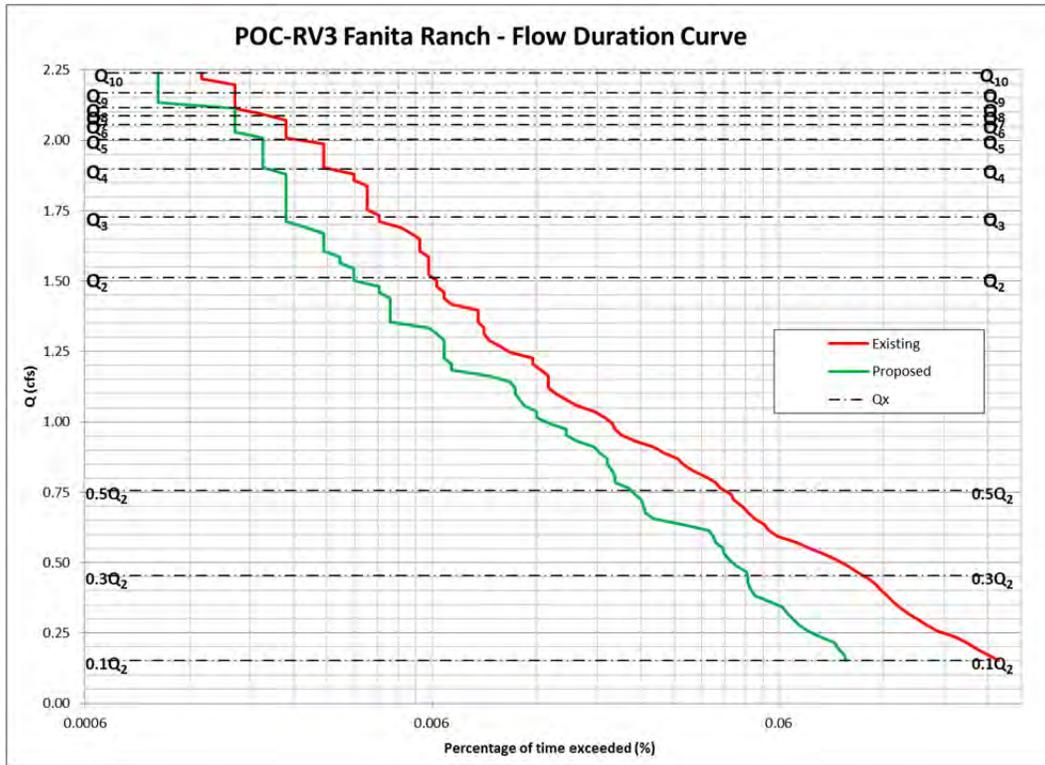
**Figure 18.** - POC 18 Flow Duration Curve Comparison



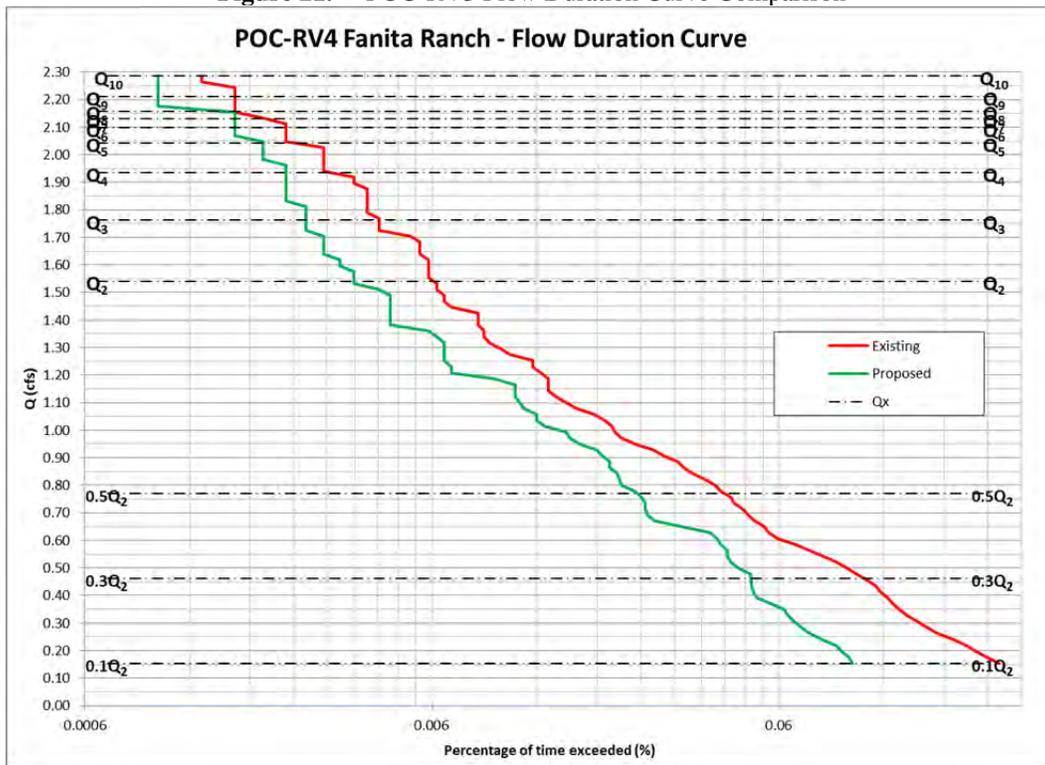
**Figure 19.** – POC-RV1 Flow Duration Curve Comparison



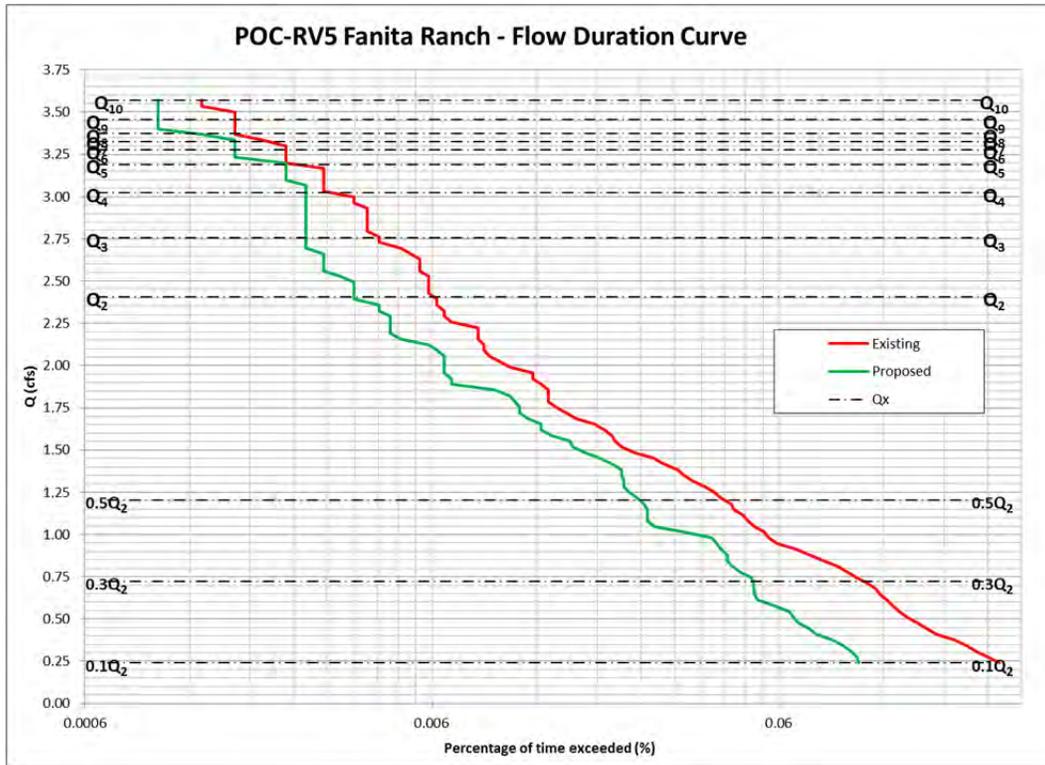
**Figure 20.** – POC-RV2 Flow Duration Curve Comparison



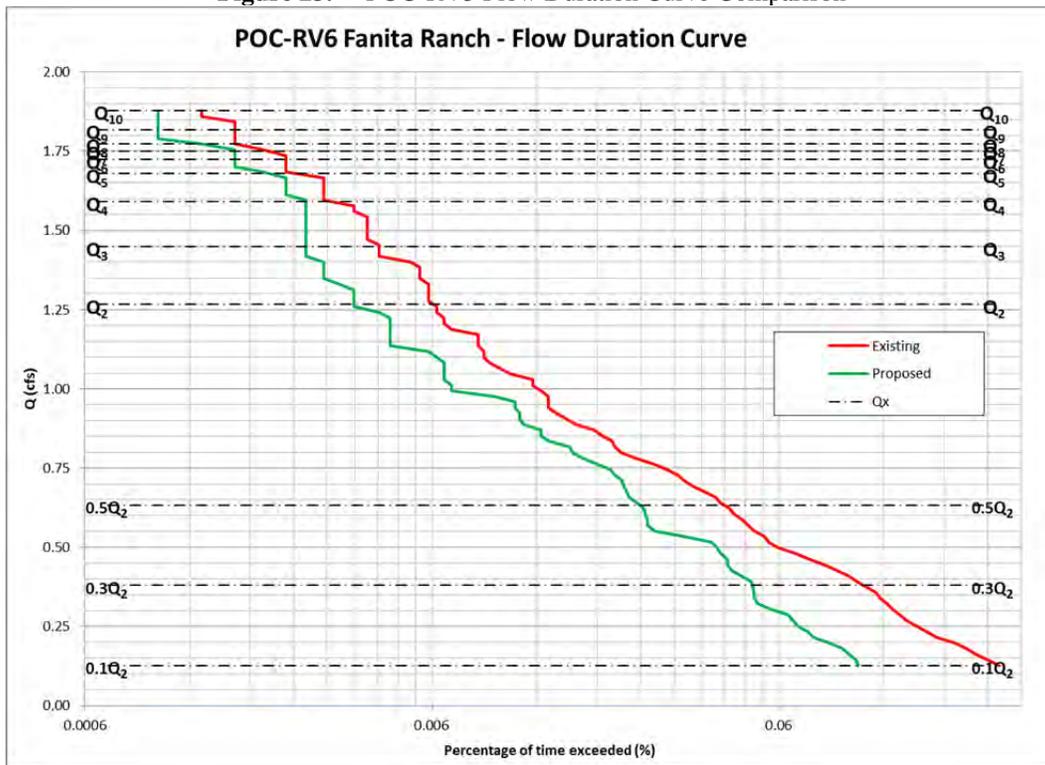
**Figure 21.** – POC-RV3 Flow Duration Curve Comparison



**Figure 22.** – POC-RV4 Flow Duration Curve Comparison



**Figure 23.** – POC-RV5 Flow Duration Curve Comparison



**Figure 24.** – POC-RV6 Flow Duration Curve Comparison

## SUMMARY & CONCLUSION

A summary of existing and proposed areas draining to each respective POC is shown in the tables below. The increase in areas draining to the POCs is attributed to grading and development of the property. The proposed biofiltration basins will mitigate increased flow frequencies as a result of development.

### **POC 1A Area Summary**

	Existing (AC)	Proposed (AC)
POC 1A	158.18	163.12
Bypass Basin	N/A	70.98
<b>TOTAL</b>	<b>158.18</b>	<b>234.10</b>

### **POC 1B Area Summary**

	Existing (AC)	Proposed (AC)
POC 1B	227.72	163.12
Bypass Basin	N/A	103.95
<b>TOTAL</b>	<b>227.72</b>	<b>267.07</b>

### **POC 2A Area Summary**

	Existing (AC)	Proposed (AC)
POC 2A	228.87	147.53
Bypass Basin	N/A	157.45
<b>TOTAL</b>	<b>228.87</b>	<b>304.98</b>

### **POC 2B Area Summary**

	Existing (AC)	Proposed (AC)
POC 2B	207.70	221.09
Bypass Basin	N/A	34.07
<b>TOTAL</b>	<b>207.70</b>	<b>255.16</b>

### **POC 3 Area Summary**

	Existing (AC)	Proposed (AC)
POC 3	248.32	121.42
Bypass Basin	N/A	188.82
<b>TOTAL</b>	<b>248.32</b>	<b>310.24</b>

### **POC 4A Area Summary**

	Existing (AC)	Proposed (AC)
POC 4A	43.74	39.28
Bypass Basin	N/A	N/A
<b>TOTAL</b>	<b>43.74</b>	<b>39.28</b>

**POC 4B Area Summary**

	Existing (AC)	Proposed (AC)
POC 4B	15.45	11.94
Bypass Basin	N/A	N/A
<b>TOTAL</b>	<b>15.45</b>	<b>11.94</b>

**POC 10A Area Summary**

	Existing (AC)	Proposed (AC)
POC 10A	81.96	55.25
Bypass Basin	N/A	N/A
<b>TOTAL</b>	<b>81.96</b>	<b>55.25</b>

**POC 10B Area Summary**

	Existing (AC)	Proposed (AC)
POC 10B	5.35	3.49
Bypass Basin	N/A	N/A
<b>TOTAL</b>	<b>5.35</b>	<b>3.49</b>

**POC 10C Area Summary**

	Existing (AC)	Proposed (AC)
POC 10C	4.29	2.91
Bypass Basin	N/A	N/A
<b>TOTAL</b>	<b>4.29</b>	<b>2.91</b>

**POC 10D Area Summary**

	Existing (AC)	Proposed (AC)
POC 10D	17.30	4.76
Bypass Basin	N/A	11.56
<b>TOTAL</b>	<b>17.30</b>	<b>16.32</b>

**POC 10E Area Summary**

	Existing (AC)	Proposed (AC)
POC 10E	2.11	2.66
Bypass Basin	N/A	0.14
<b>TOTAL</b>	<b>2.11</b>	<b>3.01</b>

**POC 11 Area Summary**

	Existing (AC)	Proposed (AC)
POC 11	27.05	20.91
Bypass Basin	N/A	7.05
<b>TOTAL</b>	<b>27.05</b>	<b>27.96</b>

**POC 12 Area Summary**

	Existing (AC)	Proposed (AC)
POC 12	32.38	12.01
Bypass Basin	N/A	N/A
<b>TOTAL</b>	<b>32.38</b>	<b>12.01</b>

**POC 13 Area Summary**

	Existing (AC)	Proposed (AC)
POC 13	2.01	1.29
Bypass Basin	N/A	0.93
<b>TOTAL</b>	<b>2.01</b>	<b>2.22</b>

**POC 14 Area Summary**

	Existing (AC)	Proposed (AC)
POC 14	1.39	0.80
Bypass Basin	N/A	N/A
<b>TOTAL</b>	<b>1.39</b>	<b>0.80</b>

**POC 15 Area Summary**

	Existing (AC)	Proposed (AC)
POC 15	0.93	1.15
Bypass Basin	N/A	0.11
<b>TOTAL</b>	<b>0.93</b>	<b>1.26</b>

**POC 16 Area Summary**

	Existing (AC)	Proposed (AC)
POC 16	0.93	0.78
Bypass Basin	N/A	0.30
<b>TOTAL</b>	<b>0.93</b>	<b>1.08</b>

**POC 17 Area Summary**

	Existing (AC)	Proposed (AC)
POC 17	441.10	196.83
Bypass Basin	N/A	247.25
<b>TOTAL</b>	<b>441.10</b>	<b>444.08</b>

**POC 18 Area Summary**

	Existing (AC)	Proposed (AC)
POC 18	219.99	212.45
Bypass Basin	N/A	7.54
<b>TOTAL</b>	<b>219.99</b>	<b>219.99</b>

**POC RV1 Area Summary**

	Existing (AC)	Proposed (AC)
POC RV1	4.43	4.43
<b>TOTAL</b>	<b>4.43</b>	<b>4.43</b>

**POC RV2 Area Summary**

	Existing (AC)	Proposed (AC)
POC RV2	2.9	2.9
<b>TOTAL</b>	<b>2.9</b>	<b>2.9</b>

**POC RV3 Area Summary**

	Existing (AC)	Proposed (AC)
POC RV3	3.47	3.47
<b>TOTAL</b>	<b>3.47</b>	<b>3.47</b>

**POC RV4 Area Summary**

	Existing (AC)	Proposed (AC)
POC RV4	3.54	3.54
<b>TOTAL</b>	<b>3.54</b>	<b>3.54</b>

**POC RV5 Area Summary**

	Existing (AC)	Proposed (AC)
POC RV5	5.53	5.53
<b>TOTAL</b>	<b>5.53</b>	<b>5.53</b>

**POC RV6 Area Summary**

	Existing (AC)	Proposed (AC)
POC RV6	2.91	2.91
<b>TOTAL</b>	<b>2.91</b>	<b>2.91</b>

This study has demonstrated that the proposed biofiltration basins and/or underground systems for the Fanita Ranch site are sufficiently large to meet the current HMP criteria if (a) the outlet structures of all facilities and (b) the biofiltration cross-section areas and volumes or the underground system volumes recommended within this attachment are incorporated within the proposed project site.

## **KEY ASSUMPTIONS**

1. San Vicente Rain Gauge was used in performing SWMM calculations.
2. SWMM 5.0 was utilized in running models.
3. An equivalent ponding depth was calculated for use as the surface ponding within the LID Control Editor module.

## **SECTIONS**

Information for each POC was organized on a POC-basis. The information provided follows the following format within each subsection.

1. Flow Duration Curve (Pass-Fail) Results Graphs: Flow duration curve shall not exceed the existing conditions by more than 10% in neither peak flow nor duration.

The figures included in the Flow Duration Curve discussion above illustrate that the flow duration curve in post-development conditions after the proposed BMPs is below the existing flow duration curve. The flow duration curve tables 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. 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.

In terms of the “y” axis, the peak flow value is the variable of choice. As an additional analysis performed by H&A, not only the range of analysis is clearly depicted (10% of  $Q_2$  to  $Q_{10}$ ) but also all intermediate flows are shown (30% of  $Q_2$ , 50% of  $Q_2$ ,  $Q_2$ ,  $Q_3$ ,  $Q_4$ ,  $Q_5$ ,  $Q_6$ ,  $Q_7$ ,  $Q_8$  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). H&A 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.

2. List of the “n” largest Peaks: Pre-Development and Post-Development Conditions
3. Elevation vs. Area Curves and Elevations vs. Discharge Curves to be used in SWMM

### **Elevation vs. Area**

For the portion of the flow diverted in the LID Control to the receiving detention basin, the effective ponding depth is determined based on the runoff collected below the lowest orifice above the basin bottom. This information is input as the storage depth within the LID Control editor.

### **Elevation vs Discharge**

For use in the SWMM models, the total basin stage–discharge flows are calculated beginning with the low-flow discharge through the biofiltration sections of each respective basin. The respective drain coefficients for each subdrain are input into the LID Control editor.

The orifices have been selected to maximize their size while still restricting flows to conform to the required 10% of the  $Q_2$  event flow as mandated in the Final Hydromodification Management Plan by Brown & Caldwell, dated March 2011.

In order to prevent blockage of the orifices, regular maintenance of the riser and orifices will be performed to ensure potential blockages are minimized. The stage-storage and stage-discharge calculations have been provided on the following pages.

4. DMA and SWMM Input Data (Existing and Proposed Models)

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).

Soil characteristics of the existing soils were determined from the USGS sources.

**Description of model parameters and assumptions:**

N-Imperv – Manning’s N for impervious surfaces  
0.012 (typical)

N-Perv – Manning’s N for pervious surfaces  
0.05 (representative value of the project site; see discussion at the end of this section); this value is per *Improving Accuracy in Continuous Simulation Modeling; Guidance for Selecting Pervious Overland Flow Manning’s n Values in San Diego Region* (TRWE, 2016).

Dstore-Imperv – Depth of depression storage on impervious area (in): 0.05 (typical)

Dstore-Perv – Depth of depression storage on pervious area (in): 0.1 (typical)

%Zero-Imperv – Percentage of impervious area with no depression storage (%):  
25 (typical)

Suction Head – Soil capillary suction head (in)

Conductivity – Soil saturated hydraulic conductivity (in/hr)  
-75% of these values if subcatchment is graded/compacted

Initial Deficit – Initial moisture deficit (fraction)

Soil Type	Suction Head	Conductivity	Initial Deficit
A	1.5	0.3	0.33
B	3	0.2	0.32
C	6	0.1	0.31
D	9	0.025	0.30

**NOTE** : These values are based on Maidment’s Handbook of Hydrology, Orange County calibrations for SWMM and recommended values from the EPA SWMM program.

Parameters for the pre- and post-developed models include soil types A, C & D in accordance with the USGS Soil Survey Map (attached as Section 8 of this Attachment). Suction head, conductivity and initial deficit corresponds to average values expected for the soil types, according to City of Santee BMP Design Manual.

H&A selected infiltration values, such that the percentage of total precipitation that becomes runoff, is realistic for each respective 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.

**Determination of n = 0.05**

The n = 0.05 has already been approved in many studies prepared by multiple San Diego consulting firms, among them REC, TRWE, Excel and others. The TRWE N-Perv paper establishes an n value as low as 0.017 to 0.038 for smooth, moderate, rough and gravel soil depending on the intensity of rain, 0.04 to 0.055 for pasture, and average grasses, with values as high as 0.08 to 0.12 for dense shrub and bushes. Values of n for heavy rain are not considered ( I > 1.2 in/hr) because those intensities are very rare and if they occur generate peaks larger than Q<sub>10</sub>.

In this regard, there are 16 potential values of n that can be used in the most common scenarios, depending on the combination of intensity and surface condition (LR = light rain; MR = moderate rain): smooth soil (0.017 LR, 0.021 MR); moderate bare soil (0.025 LR, 0.030 MR); rough soil (0.032 LR, 0.038 MR); gravel soil (0.025 LR; 0.032 MR); average grass (0.04 LR; 0.05 MR); pasture (0.04 LR; 0.055 MR); dense grass (0.06 LR, 0.09 MR); and shrubs an bushes (0.08 LR; 0.12 MR).

An average of those values corresponds to n = 0.047 as an arithmetic mean, with a geometric mean to 0.045. A weighted average of those values (giving soil values a 30% weight and vegetation values a 70% weight) would be 0.051 as arithmetic mean and 0.048 as geometric mean. Therefore, it is the opinion of REC that a conservative weighted average of n = 0.05 properly represents the conditions of the project based on TRWE – Board Approved paper, with Table 1 of such document included here.

Table 1: Manning’s n Values for Overland Flow (EPA, 2016; Yen 2001; Yen and Chow, 1983).

Overland Surface	Light Rain (< 0.8 in/hr)	Moderate Rain (0.8-1.2 in/hr)	Heavy Rain (> 1.2 in/hr)
Smooth asphalt pavement	0.010	0.012	0.015
Smooth impervious surface	0.011	0.013	0.015
Tar and sand pavement	0.012	0.014	0.016
Concrete pavement	0.014	0.017	0.020
Rough impervious surface	0.015	0.019	0.023
Smooth bare packed soil	0.017	0.021	0.025
Moderate bare packed soil	0.025	0.030	0.035
Rough bare packed soil	0.032	0.038	0.045
Gravel soil	0.025	0.032	0.045
Mowed poor grass	0.030	0.038	0.045
Average grass, closely clipped sod	0.040	0.050	0.060
Pasture	0.040	0.055	0.070
Timberland	0.060	0.090	0.120
Dense grass	0.060	0.090	0.120
Shrubs and bushes	0.080	0.120	0.180
<b>Land Use</b>			
Business	0.014	0.022	0.035
Semibusiness	0.022	0.035	0.050
Industrial	0.020	0.035	0.050
Dense residential	0.025	0.040	0.060
Suburban residential	0.030	0.055	0.080
Parks and lawns	0.040	0.075	0.120

## 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 engineered soil and mulch components of the biofiltration facility. This storage volume is comprised of a gravel located bed beneath a layer of engineered soil and a 0.25 foot (3-inch) layer of landscaping mulch.

### 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.

### 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, which results in a void ratio of  $0.4/(1-0.4) = 0.67$  for the gravel detention layer.

### Clogging factor:

A clogging factor was not used (0 indicates that there is not clogging assumed within the model).

### Drain (Flow) coefficient:

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

$$q = C(H - H_D)^n \quad (1)$$

where  $q$  is the peak flow in in/hr,  $n$  is the exponent (typically 0.5 for orifice equation),  $H$  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  $H_D$  is the depth of the water in inches.

The general orifice equation can be expressed as:

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

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  $\text{ft/s}^2$ , and  $H$  and  $H_D$  are defined above and are also used in inches in Equation (2).

## **POC 1A**

Flow Duration Curve (Pass-Fail) Results

List of the “n” largest Peaks: Pre-Development and Post-Development Conditions

Elevation vs. Area Curves and Elevations vs. Discharge Curves to be used in SWMM

SWMM Input Summary data



Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
37	38.850	49	1.60E-02	7	2.28E-03	14%	Pass
38	39.768	49	1.60E-02	7	2.28E-03	14%	Pass
39	40.685	48	1.56E-02	5	1.63E-03	10%	Pass
40	41.603	46	1.50E-02	4	1.30E-03	9%	Pass
41	42.521	46	1.50E-02	4	1.30E-03	9%	Pass
42	43.438	45	1.47E-02	4	1.30E-03	9%	Pass
43	44.356	42	1.37E-02	4	1.30E-03	10%	Pass
44	45.274	40	1.30E-02	4	1.30E-03	10%	Pass
45	46.192	38	1.24E-02	3	9.78E-04	8%	Pass
46	47.109	36	1.17E-02	3	9.78E-04	8%	Pass
47	48.027	32	1.04E-02	3	9.78E-04	9%	Pass
48	48.945	31	1.01E-02	3	9.78E-04	10%	Pass
49	49.863	30	9.78E-03	2	6.52E-04	7%	Pass
50	50.780	26	8.47E-03	2	6.52E-04	8%	Pass
51	51.698	24	7.82E-03	2	6.52E-04	8%	Pass
52	52.616	23	7.50E-03	2	6.52E-04	9%	Pass
53	53.533	22	7.17E-03	2	6.52E-04	9%	Pass
54	54.451	22	7.17E-03	2	6.52E-04	9%	Pass
55	55.369	22	7.17E-03	2	6.52E-04	9%	Pass
56	56.287	21	6.84E-03	2	6.52E-04	10%	Pass
57	57.204	20	6.52E-03	2	6.52E-04	10%	Pass
58	58.122	19	6.19E-03	2	6.52E-04	11%	Pass
59	59.040	19	6.19E-03	1	3.26E-04	5%	Pass
60	59.958	19	6.19E-03	1	3.26E-04	5%	Pass
61	60.875	19	6.19E-03	1	3.26E-04	5%	Pass
62	61.793	19	6.19E-03	1	3.26E-04	5%	Pass
63	62.711	18	5.87E-03	1	3.26E-04	6%	Pass
64	63.628	18	5.87E-03	0	0.00E+00	0%	Pass
65	64.546	16	5.21E-03	0	0.00E+00	0%	Pass
66	65.464	16	5.21E-03	0	0.00E+00	0%	Pass
67	66.382	15	4.89E-03	0	0.00E+00	0%	Pass
68	67.299	15	4.89E-03	0	0.00E+00	0%	Pass
69	68.217	15	4.89E-03	0	0.00E+00	0%	Pass
70	69.135	14	4.56E-03	0	0.00E+00	0%	Pass
71	70.053	14	4.56E-03	0	0.00E+00	0%	Pass
72	70.970	14	4.56E-03	0	0.00E+00	0%	Pass
73	71.888	14	4.56E-03	0	0.00E+00	0%	Pass
74	72.806	14	4.56E-03	0	0.00E+00	0%	Pass
75	73.723	13	4.24E-03	0	0.00E+00	0%	Pass
76	74.641	13	4.24E-03	0	0.00E+00	0%	Pass
77	75.559	12	3.91E-03	0	0.00E+00	0%	Pass
78	76.477	11	3.59E-03	0	0.00E+00	0%	Pass
79	77.394	11	3.59E-03	0	0.00E+00	0%	Pass
80	78.312	9	2.93E-03	0	0.00E+00	0%	Pass
81	79.230	8	2.61E-03	0	0.00E+00	0%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
82	80.147	8	2.61E-03	0	0.00E+00	0%	Pass
83	81.065	8	2.61E-03	0	0.00E+00	0%	Pass
84	81.983	7	2.28E-03	0	0.00E+00	0%	Pass
85	82.901	7	2.28E-03	0	0.00E+00	0%	Pass
86	83.818	6	1.96E-03	0	0.00E+00	0%	Pass
87	84.736	6	1.96E-03	0	0.00E+00	0%	Pass
88	85.654	6	1.96E-03	0	0.00E+00	0%	Pass
89	86.572	6	1.96E-03	0	0.00E+00	0%	Pass
90	87.489	5	1.63E-03	0	0.00E+00	0%	Pass
91	88.407	4	1.30E-03	0	0.00E+00	0%	Pass
92	89.325	4	1.30E-03	0	0.00E+00	0%	Pass
93	90.242	4	1.30E-03	0	0.00E+00	0%	Pass
94	91.160	4	1.30E-03	0	0.00E+00	0%	Pass
95	92.078	4	1.30E-03	0	0.00E+00	0%	Pass
96	92.996	4	1.30E-03	0	0.00E+00	0%	Pass
97	93.913	4	1.30E-03	0	0.00E+00	0%	Pass
98	94.831	4	1.30E-03	0	0.00E+00	0%	Pass
99	95.749	4	1.30E-03	0	0.00E+00	0%	Pass
100	96.667	3	9.78E-04	0	0.00E+00	0%	Pass

**Peak Flows calculated with Cunnane Plotting Position**

Return Period (years)	Pre-dev. Q (cfs)	Post-Dev. Q (cfs)	Reduction (cfs)
10	96.667	45.822	50.844
9	92.917	43.842	49.075
8	88.909	41.573	47.336
7	87.277	40.551	46.726
6	85.882	40.199	45.683
5	81.203	39.032	42.172
4	77.837	37.443	40.393
3	74.794	34.743	40.052
2	58.118	29.309	28.809

**List of Peak events and Determination of P2 and P10 (Pre-Development)**

**Fanita Ranch POC 1A - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>96.67</b>	<b>99.60</b>					
<b>9</b>	<b>92.92</b>	<b>96.04</b>	41.524	10/19/2004	35	1.03	1.02
<b>8</b>	<b>88.91</b>	<b>91.30</b>	44.214	10/10/1986	34	1.06	1.05
<b>7</b>	<b>87.28</b>	<b>87.43</b>	45.598	1/13/1993	33	1.09	1.08
<b>6</b>	<b>85.88</b>	<b>87.02</b>	45.967	10/28/1974	32	1.13	1.11
<b>5</b>	<b>81.20</b>	<b>82.29</b>	46.498	10/27/2004	31	1.16	1.15
<b>4</b>	<b>77.84</b>	<b>77.86</b>	47.032	1/9/1980	30	1.20	1.19
<b>3</b>	<b>74.79</b>	<b>75.13</b>	47.349	2/25/2003	29	1.24	1.23
<b>2</b>	<b>58.12</b>	<b>58.12</b>	47.625	2/12/2003	28	1.29	1.28
			47.65	12/4/1974	27	1.33	1.32
			48.4	1/18/1993	26	1.38	1.38
			50.367	3/4/1978	25	1.44	1.43
			50.393	2/18/1980	24	1.50	1.49
			50.43	2/16/1980	23	1.57	1.56
			51.941	3/6/1975	22	1.64	1.63
			53.076	4/18/1995	21	1.71	1.71
			55.485	2/15/1992	20	1.80	1.80
			56.489	2/21/2005	19	1.89	1.89
			58.118	3/2/1983	18	2.00	2.00
			62.057	8/17/1977	17	2.12	2.12
			64.438	3/1/1983	16	2.25	2.26
			65.648	1/31/1979	15	2.40	2.41
			69.048	2/19/1993	14	2.57	2.59
			72.816	2/13/1998	13	2.77	2.79
			75.125	10/20/2004	12	3.00	3.03
			75.632	2/6/1992	11	3.27	3.32
			77.747	2/2/1998	10	3.60	3.67
			77.862	10/18/2004	9	4.00	4.09
			78.957	1/29/1980	8	4.50	4.63
			83.236	1/9/2005	7	5.14	5.33
			87.016	2/7/1998	6	6.00	6.29
			87.515	10/31/1987	5	7.20	7.65
			96.035	9/10/1976	4	9.00	9.78
			106.722	10/22/1976	3	12.00	13.54
			130.956	2/20/1980	2	18.00	22.00
			135.009	1/4/1978	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

**List of Peak events and Determination of P2 and P10 (Post-Development)**

**Fanita Ranch POC 1A - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>45.82</b>	<b>46.82</b>					
9	43.84	45.61	20.54	1/11/2005	35	1.03	1.02
8	41.57	42.93	20.72	3/6/1975	34	1.06	1.05
7	40.55	40.70	21.18	3/5/1995	33	1.09	1.08
6	40.20	40.30	21.39	1/13/1993	32	1.13	1.11
5	39.03	39.53	21.58	10/19/2004	31	1.16	1.15
4	37.44	37.47	21.76	12/4/1974	30	1.20	1.19
3	34.74	34.90	23.12	2/12/2003	29	1.24	1.23
2	29.31	29.31	23.48	1/9/1980	28	1.29	1.28
			23.65	2/25/2003	27	1.33	1.32
			24.18	1/18/1993	26	1.38	1.38
			24.23	10/28/1974	25	1.44	1.43
			24.38	4/18/1995	24	1.50	1.49
			24.64	2/16/1980	23	1.57	1.56
			25.01	2/15/1992	22	1.64	1.63
			25.07	2/18/1980	21	1.71	1.71
			25.42	3/4/1978	20	1.80	1.80
			28.08	2/21/2005	19	1.89	1.89
			29.31	3/2/1983	18	2.00	2.00
			30.51	3/1/1983	17	2.12	2.12
			30.52	2/19/1993	16	2.25	2.26
			31.39	8/17/1977	15	2.40	2.41
			33.77	2/6/1992	14	2.57	2.59
			33.80	1/31/1979	13	2.77	2.79
			34.90	2/13/1998	12	3.00	3.03
			37.03	2/2/1998	11	3.27	3.32
			37.36	10/18/2004	10	3.60	3.67
			37.47	10/20/2004	9	4.00	4.09
			37.99	1/29/1980	8	4.50	4.63
			39.97	1/9/2005	7	5.14	5.33
			40.30	10/31/1987	6	6.00	6.29
			40.78	2/7/1998	5	7.20	7.65
			45.61	9/10/1976	4	9.00	9.78
			49.25	10/22/1976	3	12.00	13.54
			58.94	1/4/1978	2	18.00	22.00
			62.72	2/20/1980	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

## Basin 1A Stage Storage Discharge

<b>Elevation *</b> <b>(Feet)</b>	<b>Area</b> <b>(sq-ft)</b>
0.00	260983
0.25	263285
0.75	267913
1.25	272575
1.75	277270
2.25	281999
2.75	286760
3.25	291555
3.75	296384
4.25	301245
4.75	306140

**\* Elevation Measured above the first surface outlet.**

# Outlet structure for Discharge of Basin 1A

## Discharge vs Elevation Table

Low orifice	1.000 "	Lower slot		Lower Weir		
Number of orif:	0	Number of slots:	1	Number of weirs:	0	*Note: h = head above the invert of the lowest surface discharge opening. In this case h = 0 ft refers to 1.25' from the FG of the Basin
Cg-low:	0.62	Invert:	0.00 ft	Invert:	0.00 ft	
		B	1.833 ft	B:	0.00 ft	
Middle orifice	1 "	h <sub>slot</sub>	0.167 ft			
Number of orif:	0	Upper slot		Emergency weir		
Cg-middle:	0.62	Number of slots:	0	Invert:	3.500 ft	
invert elev:	1.750 ft	Invert:	0.00 ft	W:	16.00 ft	
		B:	0.00 ft			
		h <sub>slot</sub>	0.000 ft			

h* (ft)	H/D-low -	H/D-mid -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qslot-low (cfs)	Qslot-upp (cfs)	Qweir (cfs)	Qemerg (cfs)	Qtot (cfs)
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.042	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.048	0.000	0.000	0.000	0.048
0.083	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.137	0.000	0.000	0.000	0.137
0.125	1.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.251	0.000	0.000	0.000	0.251
0.167	2.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.387	0.000	0.000	0.000	0.387
0.208	2.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.529	0.000	0.000	0.000	0.529
0.250	3.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.611	0.000	0.000	0.000	0.611
0.292	3.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.683	0.000	0.000	0.000	0.683
0.333	4.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.748	0.000	0.000	0.000	0.748
0.375	4.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.808	0.000	0.000	0.000	0.808
0.417	5.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.864	0.000	0.000	0.000	0.864
0.458	5.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.916	0.000	0.000	0.000	0.916
0.500	6.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.966	0.000	0.000	0.000	0.966
0.542	6.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.013	0.000	0.000	0.000	1.013
0.583	7.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.058	0.000	0.000	0.000	1.058
0.625	7.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.101	0.000	0.000	0.000	1.101
0.667	8.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.142	0.000	0.000	0.000	1.142
0.708	8.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.183	0.000	0.000	0.000	1.183
0.750	9.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.221	0.000	0.000	0.000	1.221
0.792	9.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.259	0.000	0.000	0.000	1.259
0.833	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.295	0.000	0.000	0.000	1.295
0.875	10.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.331	0.000	0.000	0.000	1.331
0.917	11.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.365	0.000	0.000	0.000	1.365
0.958	11.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.399	0.000	0.000	0.000	1.399
1.000	12.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.432	0.000	0.000	0.000	1.432
1.042	12.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.464	0.000	0.000	0.000	1.464
1.083	13.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.496	0.000	0.000	0.000	1.496
1.125	13.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.527	0.000	0.000	0.000	1.527
1.167	14.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.557	0.000	0.000	0.000	1.557
1.208	14.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.586	0.000	0.000	0.000	1.586
1.250	15.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.616	0.000	0.000	0.000	1.616
1.292	15.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.644	0.000	0.000	0.000	1.644
1.333	16.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.672	0.000	0.000	0.000	1.672
1.375	16.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.700	0.000	0.000	0.000	1.700
1.417	17.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.727	0.000	0.000	0.000	1.727
1.458	17.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.754	0.000	0.000	0.000	1.754
1.500	18.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.780	0.000	0.000	0.000	1.780
1.542	18.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.806	0.000	0.000	0.000	1.806
1.583	19.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.832	0.000	0.000	0.000	1.832
1.625	19.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.857	0.000	0.000	0.000	1.857
1.667	20.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.882	0.000	0.000	0.000	1.882
1.708	20.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.907	0.000	0.000	0.000	1.907
1.750	21.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.931	0.000	0.000	0.000	1.931
1.792	21.500	0.500	0.000	0.000	0.000	0.000	0.000	0.000	1.955	0.000	0.000	0.000	1.955
1.833	22.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	1.979	0.000	0.000	0.000	1.979
1.875	22.500	1.500	0.000	0.000	0.000	0.000	0.000	0.000	2.002	0.000	0.000	0.000	2.002
1.917	23.000	2.000	0.000	0.000	0.000	0.000	0.000	0.000	2.025	0.000	0.000	0.000	2.025
1.958	23.500	2.500	0.000	0.000	0.000	0.000	0.000	0.000	2.048	0.000	0.000	0.000	2.048
2.000	24.000	3.000	0.000	0.000	0.000	0.000	0.000	0.000	2.071	0.000	0.000	0.000	2.071
2.042	24.500	3.500	0.000	0.000	0.000	0.000	0.000	0.000	2.093	0.000	0.000	0.000	2.093
2.083	25.000	4.000	0.000	0.000	0.000	0.000	0.000	0.000	2.115	0.000	0.000	0.000	2.115
2.125	25.500	4.500	0.000	0.000	0.000	0.000	0.000	0.000	2.137	0.000	0.000	0.000	2.137
2.167	26.000	5.000	0.000	0.000	0.000	0.000	0.000	0.000	2.159	0.000	0.000	0.000	2.159
2.208	26.500	5.500	0.000	0.000	0.000	0.000	0.000	0.000	2.180	0.000	0.000	0.000	2.180
2.250	27.000	6.000	0.000	0.000	0.000	0.000	0.000	0.000	2.202	0.000	0.000	0.000	2.202
2.292	27.500	6.500	0.000	0.000	0.000	0.000	0.000	0.000	2.223	0.000	0.000	0.000	2.223
2.333	28.000	7.000	0.000	0.000	0.000	0.000	0.000	0.000	2.244	0.000	0.000	0.000	2.244
2.375	28.500	7.500	0.000	0.000	0.000	0.000	0.000	0.000	2.264	0.000	0.000	0.000	2.264
2.417	29.000	8.000	0.000	0.000	0.000	0.000	0.000	0.000	2.285	0.000	0.000	0.000	2.285
2.458	29.500	8.500	0.000	0.000	0.000	0.000	0.000	0.000	2.305	0.000	0.000	0.000	2.305

2.250	27.000	6.000	0.000	0.000	0.000	0.000	0.000	0.000	2.202	0.000	0.000	0.000	2.202
2.292	27.500	6.500	0.000	0.000	0.000	0.000	0.000	0.000	2.223	0.000	0.000	0.000	2.223
2.333	28.000	7.000	0.000	0.000	0.000	0.000	0.000	0.000	2.244	0.000	0.000	0.000	2.244
2.375	28.500	7.500	0.000	0.000	0.000	0.000	0.000	0.000	2.264	0.000	0.000	0.000	2.264
2.417	29.000	8.000	0.000	0.000	0.000	0.000	0.000	0.000	2.285	0.000	0.000	0.000	2.285
2.458	29.500	8.500	0.000	0.000	0.000	0.000	0.000	0.000	2.305	0.000	0.000	0.000	2.305
2.500	30.000	9.000	0.000	0.000	0.000	0.000	0.000	0.000	2.325	0.000	0.000	0.000	2.325
2.542	30.500	9.500	0.000	0.000	0.000	0.000	0.000	0.000	2.345	0.000	0.000	0.000	2.345
2.583	31.000	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2.365	0.000	0.000	0.000	2.365
2.625	31.500	10.500	0.000	0.000	0.000	0.000	0.000	0.000	2.385	0.000	0.000	0.000	2.385
2.667	32.000	11.000	0.000	0.000	0.000	0.000	0.000	0.000	2.404	0.000	0.000	0.000	2.404
2.708	32.500	11.500	0.000	0.000	0.000	0.000	0.000	0.000	2.423	0.000	0.000	0.000	2.423
2.750	33.000	12.000	0.000	0.000	0.000	0.000	0.000	0.000	2.443	0.000	0.000	0.000	2.443
2.792	33.500	12.500	0.000	0.000	0.000	0.000	0.000	0.000	2.462	0.000	0.000	0.000	2.462
2.833	34.000	13.000	0.000	0.000	0.000	0.000	0.000	0.000	2.480	0.000	0.000	0.000	2.480
2.875	34.500	13.500	0.000	0.000	0.000	0.000	0.000	0.000	2.499	0.000	0.000	0.000	2.499
2.917	35.000	14.000	0.000	0.000	0.000	0.000	0.000	0.000	2.518	0.000	0.000	0.000	2.518
2.958	35.500	14.500	0.000	0.000	0.000	0.000	0.000	0.000	2.536	0.000	0.000	0.000	2.536
3.000	36.000	15.000	0.000	0.000	0.000	0.000	0.000	0.000	2.555	0.000	0.000	0.000	2.555
3.042	36.500	15.500	0.000	0.000	0.000	0.000	0.000	0.000	2.573	0.000	0.000	0.000	2.573
3.083	37.000	16.000	0.000	0.000	0.000	0.000	0.000	0.000	2.591	0.000	0.000	0.000	2.591
3.125	37.500	16.500	0.000	0.000	0.000	0.000	0.000	0.000	2.609	0.000	0.000	0.000	2.609
3.167	38.000	17.000	0.000	0.000	0.000	0.000	0.000	0.000	2.626	0.000	0.000	0.000	2.626
3.208	38.500	17.500	0.000	0.000	0.000	0.000	0.000	0.000	2.644	0.000	0.000	0.000	2.644
3.250	39.000	18.000	0.000	0.000	0.000	0.000	0.000	0.000	2.662	0.000	0.000	0.000	2.662
3.292	39.500	18.500	0.000	0.000	0.000	0.000	0.000	0.000	2.679	0.000	0.000	0.000	2.679
3.333	40.000	19.000	0.000	0.000	0.000	0.000	0.000	0.000	2.697	0.000	0.000	0.000	2.697
3.375	40.500	19.500	0.000	0.000	0.000	0.000	0.000	0.000	2.714	0.000	0.000	0.000	2.714
3.417	41.000	20.000	0.000	0.000	0.000	0.000	0.000	0.000	2.731	0.000	0.000	0.000	2.731
3.458	41.500	20.500	0.000	0.000	0.000	0.000	0.000	0.000	2.748	0.000	0.000	0.000	2.748
3.500	42.000	21.000	0.000	0.000	0.000	0.000	0.000	0.000	2.765	0.000	0.000	0.000	2.765
3.542	42.500	21.500	0.000	0.000	0.000	0.000	0.000	0.000	2.782	0.000	0.000	0.422	3.203
3.583	43.000	22.000	0.000	0.000	0.000	0.000	0.000	0.000	2.798	0.000	0.000	1.193	3.992
3.625	43.500	22.500	0.000	0.000	0.000	0.000	0.000	0.000	2.815	0.000	0.000	2.192	5.007
3.667	44.000	23.000	0.000	0.000	0.000	0.000	0.000	0.000	2.831	0.000	0.000	3.375	6.206
3.708	44.500	23.500	0.000	0.000	0.000	0.000	0.000	0.000	2.848	0.000	0.000	4.716	7.564
3.750	45.000	24.000	0.000	0.000	0.000	0.000	0.000	0.000	2.864	0.000	0.000	6.200	9.064
3.792	45.500	24.500	0.000	0.000	0.000	0.000	0.000	0.000	2.880	0.000	0.000	7.813	10.693
3.833	46.000	25.000	0.000	0.000	0.000	0.000	0.000	0.000	2.897	0.000	0.000	9.546	12.442
3.875	46.500	25.500	0.000	0.000	0.000	0.000	0.000	0.000	2.913	0.000	0.000	11.390	14.303
3.917	47.000	26.000	0.000	0.000	0.000	0.000	0.000	0.000	2.929	0.000	0.000	13.340	16.269
3.958	47.500	26.500	0.000	0.000	0.000	0.000	0.000	0.000	2.944	0.000	0.000	15.391	18.335
4.000	48.000	27.000	0.000	0.000	0.000	0.000	0.000	0.000	2.960	0.000	0.000	17.536	20.496
4.042	48.500	27.500	0.000	0.000	0.000	0.000	0.000	0.000	2.976	0.000	0.000	19.773	22.749
4.083	49.000	28.000	0.000	0.000	0.000	0.000	0.000	0.000	2.992	0.000	0.000	22.098	25.090
4.125	49.500	28.500	0.000	0.000	0.000	0.000	0.000	0.000	3.007	0.000	0.000	24.508	27.515
4.167	50.000	29.000	0.000	0.000	0.000	0.000	0.000	0.000	3.023	0.000	0.000	26.999	30.021
4.208	50.500	29.500	0.000	0.000	0.000	0.000	0.000	0.000	3.038	0.000	0.000	29.569	32.607
4.250	51.000	30.000	0.000	0.000	0.000	0.000	0.000	0.000	3.053	0.000	0.000	32.216	35.269
4.292	51.500	30.500	0.000	0.000	0.000	0.000	0.000	0.000	3.068	0.000	0.000	34.938	38.006
4.333	52.000	31.000	0.000	0.000	0.000	0.000	0.000	0.000	3.084	0.000	0.000	37.732	40.816
4.375	52.500	31.500	0.000	0.000	0.000	0.000	0.000	0.000	3.099	0.000	0.000	40.597	43.696
4.417	53.000	32.000	0.000	0.000	0.000	0.000	0.000	0.000	3.114	0.000	0.000	43.531	46.645
4.458	53.500	32.500	0.000	0.000	0.000	0.000	0.000	0.000	3.129	0.000	0.000	46.533	49.661
4.500	54.000	33.000	0.000	0.000	0.000	0.000	0.000	0.000	3.143	0.000	0.000	49.600	52.743
4.542	54.500	33.500	0.000	0.000	0.000	0.000	0.000	0.000	3.158	0.000	0.000	52.732	55.890
4.583	55.000	34.000	0.000	0.000	0.000	0.000	0.000	0.000	3.173	0.000	0.000	55.927	59.100
4.625	55.500	34.500	0.000	0.000	0.000	0.000	0.000	0.000	3.188	0.000	0.000	59.185	62.372
4.667	56.000	35.000	0.000	0.000	0.000	0.000	0.000	0.000	3.202	0.000	0.000	62.503	65.705
4.708	56.500	35.500	0.000	0.000	0.000	0.000	0.000	0.000	3.217	0.000	0.000	65.881	69.098
4.750	57.000	36.000	0.000	0.000	0.000	0.000	0.000	0.000	3.231	0.000	0.000	69.318	72.549

## BMP 1A

ABMP **249599** sq-ft

Cg **0.61**

Dorif **10** in

Aorifice 0.54542 sq-ft

C<sub>SWMM</sub> **0.1334**

3.775854

H-gravel **2** ft

**24** in

19 in

H-design 1.583 ft

Q<sub>orif-classic</sub> 3.35959 cfs

Q<sub>orif-SWMM</sub> 3.35959 cfs

Qdiversion **3.39319** cfs

Qinf: 28.8888 cfs

**0.1 Q2 EX** **0.109**

Fani ta Ranch POC1A EX

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          00:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   00:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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 0.06 0.08 .11 .16 .18 .21 .21 .2 .16 .12 .08 .06
DRY_ONLY NO
    
```

[RAINGAGES]

```

; Name Rain Type Time Intrvl Snow Catch Data Source
-----
SanVicente INTENSITY 1:00 1.0 TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

Name	Raingage	Outlet	Total Area	Pcnt. Imperv	Width	Pcnt. Slope	Curb Length	Snow Pack
POC1AExArea-C	SanVicente	POC1AEx	96.98	0	18859	9.6	0	
POC1AExArea-D	SanVicente	POC1AEx	61.20	0	11901	9.6	0	

[SUBAREAS]

Subcatchment	N-Imperv	N-Perv	S-Imperv	S-Perv	PctZero	RouteTo	PctRouted
POC1AExArea-C	0.012	0.05	0.05	0.10	25	OUTLET	
POC1AExArea-D	0.012	0.05	0.05	0.10	25	OUTLET	

[INFILTRATION]

Subcatchment	Suction	HydCon	IMDmax
POC1AExArea-C	6	0.10	0.32
POC1AExArea-D	9	0.025	0.33

[OUTFALLS]

Name	Invert Elev.	Outfall Type	Stage/Table Time Series	Tide Gate
POC1AEx	0	FREE		NO

[TIMESERIES]

```

; Name Date Time Value
-----
From County SanVicente
FILE "P:\Acad\7033 Hunsaker San Diego\03 Fani ta Ranch\REC SWMM\rainfall_sanvicente.dat"
    
```

[REPORT]

```

INPUT NO
CONTROLS NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL
    
```

[TAGS]

[MAP]

```

DIMENSIONS 816.269 3892.971 2458.654 5750.430
Units None
    
```

[COORDINATES]

```

; Node X-Coord Y-Coord
-----
    
```

Fani ta Ranch POC1A EX

POC1AEx	1740.113	3977.401
[VERTICES]		
:: Link	X-Coord	Y-Coord
-----		
[Polygons]		
:: Subcatchment	X-Coord	Y-Coord
-----		
POC1AExArea-C	1824.388	5545.795
POC1AExArea-D	2461.906	5551.698
[SYMBOLS]		
:: Gage	X-Coord	Y-Coord
-----		
SanViente	2384.000	5666.000

Fani ta Ranch POC1A PR

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          05:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   05:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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 0.06 .08 .11 .16 .18 .21 .21 .200 .16 .12 .08 .06
DRY_ONLY NO
    
```

[RAINGAGES]

```

:: Name Rain Type Time Intrvl Snow Catch Data Source
-----
SanVicente INTENSITY 1:00 1.0 TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

Name	Raingage	Outlet	Total Area	Pcnt. Imperv	Width	Pcnt. Slope	Curb Length	Snow Pack
POC1ADevArea-C	SanVicente	POC1APRBasin1	43.45	69.3	13665	1.2	0	
Developed Area	Tributary to Basin1							
POC1ADevArea-D	SanVicente	POC1APRBasin1	113.94	69.3	35959	1.2	0	
POC1APRBasin1	SanVicente	DIV-1	5.73	0	10	0.0	0	
POC1APRBypass-C	SanVicente	POC1APR	66.39	0	12940	9.0	0	
POC1APRBypass-D	SanVicente	POC1APR	4.59	0	893	9.0	0	

[SUBAREAS]

Subcatchment	N-Imperv	N-Perv	S-Imperv	S-Perv	PctZero	RouteTo	PctRouted
POC1ADevArea-C	0.012	0.05	0.05	0.10	25	OUTLET	
POC1ADevArea-D	0.012	0.05	0.05	0.10	25	OUTLET	
POC1APRBasin1	0.012	0.05	0.05	0.10	25	OUTLET	
POC1APRBypass-C	0.012	0.05	0.05	0.10	25	OUTLET	
POC1APRBypass-D	0.012	0.05	0.05	0.10	25	OUTLET	

[INFILTRATION]

Subcatchment	Suction	HydCon	IMDmax
POC1ADevArea-C	6	0.075	0.32
POC1ADevArea-D	9	0.01875	0.33
POC1APRBasin1	7.47	0.06	0.32
POC1APRBypass-C	6	0.10	0.32
POC1APRBypass-D	9	0.025	0.33

[LID\_CONTROLS]

LID	Type/Layer	Parameters
LID-1	BC	
LID-1	SURFACE	13.53 0.05 0 0 5
LID-1	SOIL	24 0.4 0.2 0.1 5 5 1.5
LID-1	STORAGE	27 0.67 0 0
LID-1	DRAIN	0.1334 0.5 3 6

[LID\_USAGE]

Subcatchment	LID Process	Number	Area	Width	InitSatur	FromImperv	ToPerv	Report File
POC1APRBasin1	LID-1	1	249599	0	0	100	0	

[OUTFALLS]

Name	Invert Elev.	Outfall Type	Stage/Table Time Series	Tide Gate

Fanita Ranch POC1A PR  
NO

[DIVIDERS]	Invert El ev.	Diverted Link	Divi der Type	Parameters				
POC1APR	0	FREE						
DI V-1	0	HIGH-FLOWS	CUTOFF	3.39319	0	0	0	0

[STORAGE]	Invert El ev.	Max. Depth	Ini t. Depth	Storage Curve	Curve Params	Ponded Area	Evap. Frac.	Infi ltration
BASI N-1	0	4.75	0	TABULAR	BASI N-1	306140	0	

[CONDUITS]	Inlet Node	Outlet Node	Length	Manning N	Inlet Offset	Outlet Offset	Ini t. Flow	Max. Flow
HIGH-FLOWS	DI V-1	BASI N-1	10	0.01	0	0	0	0
LOW-FLOWS	DI V-1	POC1APR	10	0.01	0	0	0	0

[OUTLETS]	Inlet Node	Outlet Node	Outflow Height	Outlet Type	Qcoeff/QTable	Qexpon	Flap Gate
OUTLET-1	BASI N-1	POC1APR	0	TABULAR/DEPTH	OUT-1		NO

[XSECTIONS]	Shape	Geom1	Geom2	Geom3	Geom4	Barrels
HIGH-FLOWS	DUMMY	0	0	0	0	1
LOW-FLOWS	DUMMY	0	0	0	0	1

[LOSSES]	Inlet	Outlet	Average	Flap Gate

[CURVES]	Type	X-Value	Y-Value
OUT-1	Rating	0.000	0.000
OUT-1		0.042	0.048
OUT-1		0.083	0.137
OUT-1		0.125	0.251
OUT-1		0.167	0.387
OUT-1		0.208	0.529
OUT-1		0.250	0.611
OUT-1		0.292	0.683
OUT-1		0.333	0.748
OUT-1		0.375	0.808
OUT-1		0.417	0.864
OUT-1		0.458	0.916
OUT-1		0.500	0.966
OUT-1		0.542	1.013
OUT-1		0.583	1.058
OUT-1		0.625	1.101
OUT-1		0.667	1.142
OUT-1		0.708	1.183
OUT-1		0.750	1.221
OUT-1		0.792	1.259
OUT-1		0.833	1.295
OUT-1		0.875	1.331
OUT-1		0.917	1.365
OUT-1		0.958	1.399
OUT-1		1.000	1.432
OUT-1		1.042	1.464
OUT-1		1.083	1.496
OUT-1		1.125	1.527
OUT-1		1.167	1.557
OUT-1		1.208	1.586
OUT-1		1.250	1.616
OUT-1		1.292	1.644
OUT-1		1.333	1.672
OUT-1		1.375	1.700
OUT-1		1.417	1.727
OUT-1		1.458	1.754
OUT-1		1.500	1.780
OUT-1		1.542	1.806
OUT-1		1.583	1.832
OUT-1		1.625	1.857
OUT-1		1.667	1.882
OUT-1		1.708	1.907
OUT-1		1.750	1.931
OUT-1		1.792	1.955
OUT-1		1.833	1.979
OUT-1		1.875	2.002
OUT-1		1.917	2.025

Fani ta Ranch POC1A PR

OUT-1	1.958	2.048
OUT-1	2.000	2.071
OUT-1	2.042	2.093
OUT-1	2.083	2.115
OUT-1	2.125	2.137
OUT-1	2.167	2.159
OUT-1	2.208	2.180
OUT-1	2.250	2.202
OUT-1	2.292	2.223
OUT-1	2.333	2.244
OUT-1	2.375	2.264
OUT-1	2.417	2.285
OUT-1	2.458	2.305
OUT-1	2.500	2.325
OUT-1	2.542	2.345
OUT-1	2.583	2.365
OUT-1	2.625	2.385
OUT-1	2.667	2.404
OUT-1	2.708	2.423
OUT-1	2.750	2.443
OUT-1	2.792	2.462
OUT-1	2.833	2.480
OUT-1	2.875	2.499
OUT-1	2.917	2.518
OUT-1	2.958	2.536
OUT-1	3.000	2.555
OUT-1	3.042	2.573
OUT-1	3.083	2.591
OUT-1	3.125	2.609
OUT-1	3.167	2.626
OUT-1	3.208	2.644
OUT-1	3.250	2.662
OUT-1	3.292	2.679
OUT-1	3.333	2.697
OUT-1	3.375	2.714
OUT-1	3.417	2.731
OUT-1	3.458	2.748
OUT-1	3.500	2.765
OUT-1	3.542	3.203
OUT-1	3.583	3.992
OUT-1	3.625	5.007
OUT-1	3.667	6.206
OUT-1	3.708	7.564
OUT-1	3.750	9.064
OUT-1	3.792	10.693
OUT-1	3.833	12.442
OUT-1	3.875	14.303
OUT-1	3.917	16.269
OUT-1	3.958	18.335
OUT-1	4.000	20.496
OUT-1	4.042	22.749
OUT-1	4.083	25.090
OUT-1	4.125	27.515
OUT-1	4.167	30.021
OUT-1	4.208	32.607
OUT-1	4.250	35.269
OUT-1	4.292	38.006
OUT-1	4.333	40.816
OUT-1	4.375	43.696
OUT-1	4.417	46.645
OUT-1	4.458	49.661
OUT-1	4.500	52.743
OUT-1	4.542	55.890
OUT-1	4.583	59.100
OUT-1	4.625	62.372
OUT-1	4.667	65.705
OUT-1	4.708	69.098
OUT-1	4.750	72.549

BASIN-1	Storage	0.00	260983
BASIN-1		0.25	263285
BASIN-1		0.75	267913
BASIN-1		1.25	272575
BASIN-1		1.75	277270
BASIN-1		2.25	281999
BASIN-1		2.75	286760
BASIN-1		3.25	291555
BASIN-1		3.75	296384
BASIN-1		4.25	301245
BASIN-1		4.75	306140

[TIMESERIES]

```
;; Name      Date      Time      Value
;;-----
```

San Vicente Rain Gage from San Diego County  
 SanVicente FILE "P:\Acad\7033 Hunsaker San Diego\03 Fani ta Ranch\REC SWMM\rainfal I\_sanvicente.dat"

[REPORT]  
 INPUT NO

CONTROLS NO  
 SUBCATCHMENTS ALL  
 NODES ALL  
 LINKS ALL

[TAGS]

[MAP]  
 DIMENSIONS -115.361 3531.612 1589.934 5654.960  
 Units None

[COORDINATES]

Node	X-Coord	Y-Coord
POC1APR	903.735	4116.432
DIV-1	903.735	4741.740
BASIN-1	-180.432	4741.740

[VERTICES]

Link	X-Coord	Y-Coord
------	---------	---------

[Polygons]

Subcatchment	X-Coord	Y-Coord
POC1ADevArea-C	165.962	5443.525
POC1ADevArea-D	1529.043	5416.533
POC1APRBasin1	897.746	4956.140
POC1APRBypass-C	216.324	3938.737
POC1APRBypass-D	1632.512	3967.978

[SYMBOLS]

Gage	X-Coord	Y-Coord
SanVicente	1729.232	4699.004

## **POC 1B**

Flow Duration Curve (Pass-Fail) Results

List of the “n” largest Peaks: Pre-Development and Post-Development Conditions

Elevation vs. Area Curves and Elevations vs. Discharge Curves to be used in SWMM

DMA and SWMM Input Data (Existing and Proposed Models)



Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
38	57.679	51	1.66E-02	7	2.28E-03	14%	Pass
39	59.006	49	1.60E-02	5	1.63E-03	10%	Pass
40	60.334	47	1.53E-02	4	1.30E-03	9%	Pass
41	61.661	46	1.50E-02	4	1.30E-03	9%	Pass
42	62.988	46	1.50E-02	4	1.30E-03	9%	Pass
43	64.315	42	1.37E-02	4	1.30E-03	10%	Pass
44	65.643	42	1.37E-02	4	1.30E-03	10%	Pass
45	66.970	40	1.30E-02	3	9.78E-04	8%	Pass
46	68.297	40	1.30E-02	3	9.78E-04	8%	Pass
47	69.624	36	1.17E-02	3	9.78E-04	8%	Pass
48	70.952	34	1.11E-02	3	9.78E-04	9%	Pass
49	72.279	32	1.04E-02	3	9.78E-04	9%	Pass
50	73.606	30	9.78E-03	2	6.52E-04	7%	Pass
51	74.933	26	8.47E-03	2	6.52E-04	8%	Pass
52	76.261	24	7.82E-03	2	6.52E-04	8%	Pass
53	77.588	24	7.82E-03	2	6.52E-04	8%	Pass
54	78.915	23	7.50E-03	2	6.52E-04	9%	Pass
55	80.242	23	7.50E-03	2	6.52E-04	9%	Pass
56	81.569	22	7.17E-03	2	6.52E-04	9%	Pass
57	82.897	21	6.84E-03	2	6.52E-04	10%	Pass
58	84.224	20	6.52E-03	2	6.52E-04	10%	Pass
59	85.551	20	6.52E-03	2	6.52E-04	10%	Pass
60	86.878	19	6.19E-03	2	6.52E-04	11%	Pass
61	88.206	19	6.19E-03	1	3.26E-04	5%	Pass
62	89.533	18	5.87E-03	1	3.26E-04	6%	Pass
63	90.860	18	5.87E-03	0	0.00E+00	0%	Pass
64	92.187	18	5.87E-03	0	0.00E+00	0%	Pass
65	93.515	18	5.87E-03	0	0.00E+00	0%	Pass
66	94.842	16	5.21E-03	0	0.00E+00	0%	Pass
67	96.169	15	4.89E-03	0	0.00E+00	0%	Pass
68	97.496	15	4.89E-03	0	0.00E+00	0%	Pass
69	98.824	15	4.89E-03	0	0.00E+00	0%	Pass
70	100.151	15	4.89E-03	0	0.00E+00	0%	Pass
71	101.478	15	4.89E-03	0	0.00E+00	0%	Pass
72	102.805	15	4.89E-03	0	0.00E+00	0%	Pass
73	104.133	14	4.56E-03	0	0.00E+00	0%	Pass
74	105.460	14	4.56E-03	0	0.00E+00	0%	Pass
75	106.787	13	4.24E-03	0	0.00E+00	0%	Pass
76	108.114	13	4.24E-03	0	0.00E+00	0%	Pass
77	109.442	12	3.91E-03	0	0.00E+00	0%	Pass
78	110.769	12	3.91E-03	0	0.00E+00	0%	Pass
79	112.096	11	3.59E-03	0	0.00E+00	0%	Pass
80	113.423	9	2.93E-03	0	0.00E+00	0%	Pass
81	114.751	9	2.93E-03	0	0.00E+00	0%	Pass
82	116.078	8	2.61E-03	0	0.00E+00	0%	Pass
83	117.405	8	2.61E-03	0	0.00E+00	0%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
84	118.732	8	2.61E-03	0	0.00E+00	0%	Pass
85	120.060	8	2.61E-03	0	0.00E+00	0%	Pass
86	121.387	8	2.61E-03	0	0.00E+00	0%	Pass
87	122.714	6	1.96E-03	0	0.00E+00	0%	Pass
88	124.041	6	1.96E-03	0	0.00E+00	0%	Pass
89	125.368	6	1.96E-03	0	0.00E+00	0%	Pass
90	126.696	6	1.96E-03	0	0.00E+00	0%	Pass
91	128.023	4	1.30E-03	0	0.00E+00	0%	Pass
92	129.350	4	1.30E-03	0	0.00E+00	0%	Pass
93	130.677	4	1.30E-03	0	0.00E+00	0%	Pass
94	132.005	4	1.30E-03	0	0.00E+00	0%	Pass
95	133.332	4	1.30E-03	0	0.00E+00	0%	Pass
96	134.659	4	1.30E-03	0	0.00E+00	0%	Pass
97	135.986	4	1.30E-03	0	0.00E+00	0%	Pass
98	137.314	4	1.30E-03	0	0.00E+00	0%	Pass
99	138.641	4	1.30E-03	0	0.00E+00	0%	Pass
100	139.968	3	9.78E-04	0	0.00E+00	0%	Pass

**Peak Flows calculated with Cunnane Plotting Position**

Return Period (years)	Pre-dev. Q (cfs)	Post-Dev. Q (cfs)	Reduction (cfs)
10	139.968	66.147	73.821
9	134.870	63.431	71.439
8	129.741	60.446	69.295
7	127.650	59.207	68.444
6	125.663	58.630	67.033
5	118.876	56.384	62.493
4	113.311	53.535	59.777
3	108.860	50.387	58.473
2	85.712	41.919	43.793

**List of Peak events and Determination of P2 and P10 (Pre-Development)**

**Fanita Ranch POC 1B - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>139.97</b>	<b>145.12</b>					
<b>9</b>	<b>134.87</b>	<b>138.86</b>	61.63	2/16/1998	35	1.03	1.02
<b>8</b>	<b>129.74</b>	<b>132.80</b>	65.88	10/28/1974	34	1.06	1.05
<b>7</b>	<b>127.65</b>	<b>127.85</b>	68.45	10/10/1986	33	1.09	1.08
<b>6</b>	<b>125.66</b>	<b>127.31</b>	68.46	1/9/1980	32	1.13	1.11
<b>5</b>	<b>118.88</b>	<b>120.44</b>	68.90	1/13/1993	31	1.16	1.15
<b>4</b>	<b>113.31</b>	<b>113.40</b>	69.06	2/25/2003	30	1.20	1.19
<b>3</b>	<b>108.86</b>	<b>109.30</b>	70.36	2/12/2003	29	1.24	1.23
<b>2</b>	<b>85.71</b>	<b>85.71</b>	71.95	12/4/1974	28	1.29	1.28
			72.25	1/18/1993	27	1.33	1.32
			73.98	2/16/1980	26	1.38	1.38
			74.16	3/4/1978	25	1.44	1.43
			74.23	2/18/1980	24	1.50	1.49
			74.58	10/27/2004	23	1.57	1.56
			78.35	4/18/1995	22	1.64	1.63
			81.02	3/6/1975	21	1.71	1.71
			82.18	2/15/1992	20	1.80	1.80
			83.31	2/21/2005	19	1.89	1.89
			85.71	3/2/1983	18	2.00	2.00
			89.15	8/17/1977	17	2.12	2.12
			94.81	3/1/1983	16	2.25	2.26
			96.16	1/31/1979	15	2.40	2.41
			103.85	2/19/1993	14	2.57	2.59
			106.25	2/13/1998	13	2.77	2.79
			109.30	10/20/2004	12	3.00	3.03
			111.59	10/18/2004	11	3.27	3.32
			112.98	2/6/1992	10	3.60	3.67
			113.40	2/2/1998	9	4.00	4.09
			115.63	1/29/1980	8	4.50	4.63
			121.81	1/9/2005	7	5.14	5.33
			127.31	2/7/1998	6	6.00	6.29
			127.96	10/31/1987	5	7.20	7.65
			138.86	9/10/1976	4	9.00	9.78
			157.63	10/22/1976	3	12.00	13.54
			190.27	2/20/1980	2	18.00	22.00
			198.40	1/4/1978	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

**List of Peak events and Determination of P2 and P10 (Post-Development)**

**Fanita Ranch POC 1B - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>66.15</b>	<b>67.98</b>					
9	63.43	65.75	29.073	1/11/2005	35	1.03	1.02
8	60.45	62.23	29.159	3/5/1995	34	1.06	1.05
7	59.21	59.34	30.169	10/19/2004	33	1.09	1.08
6	58.63	58.99	31.275	1/13/1993	32	1.13	1.11
5	56.38	57.14	32.172	12/4/1974	31	1.16	1.15
4	53.53	53.57	32.356	3/6/1975	30	1.20	1.19
3	50.39	50.39	33.129	1/9/1980	29	1.24	1.23
2	41.92	41.92	33.238	2/12/2003	28	1.29	1.28
			33.504	2/25/2003	27	1.33	1.32
			33.74	10/28/1974	26	1.38	1.38
			34.431	1/18/1993	25	1.44	1.43
			35.475	2/16/1980	24	1.50	1.49
			35.745	4/18/1995	23	1.57	1.56
			35.924	2/18/1980	22	1.64	1.63
			36.053	3/4/1978	21	1.71	1.71
			36.577	2/15/1992	20	1.80	1.80
			40.334	2/21/2005	19	1.89	1.89
			41.919	3/2/1983	18	2.00	2.00
			44.267	8/17/1977	17	2.12	2.12
			44.389	3/1/1983	16	2.25	2.26
			45.815	2/19/1993	15	2.40	2.41
			47.879	1/31/1979	14	2.57	2.59
			50.378	2/6/1992	13	2.77	2.79
			50.388	2/13/1998	12	3.00	3.03
			53.321	10/20/2004	11	3.27	3.32
			53.412	10/18/2004	10	3.60	3.67
			53.569	2/2/1998	9	4.00	4.09
			54.818	1/29/1980	8	4.50	4.63
			57.8	1/9/2005	7	5.14	5.33
			58.986	10/31/1987	6	6.00	6.29
			59.408	2/7/1998	5	7.20	7.65
			65.752	9/10/1976	4	9.00	9.78
			72.431	10/22/1976	3	12.00	13.54
			87.967	1/4/1978	2	18.00	22.00
			90.42	2/20/1980	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

## BMP 1A

ABMP **249599** sq-ft

Cg **0.61**

Dorif **10** in

Aorifice 0.54542 sq-ft

C<sub>SWMM</sub> **0.1334**

3.775854

H-gravel **2** ft

**24** in

19 in

H-design 1.583 ft

Q<sub>orif-classic</sub> 3.35959 cfs

Q<sub>orif-SWMM</sub> 3.35959 cfs

Qdiversion **3.39319** cfs

Qinf: 28.8888 cfs

**0.1 Q2 EX** **0.109**

Fani ta Ranch POC1B EX

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          00:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   00:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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 0.06 0.08 .11 .16 .18 .21 .21 .2 .16 .12 .08 .06
DRY_ONLY NO
    
```

[RAINGAGES]

```

; Name Rain Type Time Intrvl Snow Catch Data Source
-----
SanViente INTENSITY 1:00 1.0 TIMESERIES SanViente
    
```

[SUBCATCHMENTS]

Name	Raingage	Outlet	Total Area	Pcnt. Imperv	Width	Pcnt. Slope	Curb Length	Snow Pack
POC1BExArea-C	SanViente	POC1BEx	112.55	0	21887	8.5	0	
POC1BExArea-D	SanViente	POC1BEx	115.17	0	22396	8.5	0	

[SUBAREAS]

Subcatchment	N-Imperv	N-Perv	S-Imperv	S-Perv	PctZero	RouteTo	PctRouted
POC1BExArea-C	0.012	0.05	0.05	0.10	25	OUTLET	
POC1BExArea-D	0.012	0.05	0.05	0.10	25	OUTLET	

[INFILTRATION]

Subcatchment	Suction	HydCon	IMDmax
POC1BExArea-C	6	0.10	0.32
POC1BExArea-D	9	0.025	0.33

[OUTFALLS]

Name	Invert Elev.	Outfall Type	Stage/Table Time Series	Tide Gate
POC1BEx	0	FREE		NO

[TIMESERIES]

```

; Name Date Time Value
-----
From County
SanViente FILE "P:\Acad\7033 Hunsaker San Diego\03 Fani ta Ranch\REC SWMM\rainfall_sanviente.dat"
    
```

[REPORT]

```

INPUT NO
CONTROLS NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL
    
```

[TAGS]

[MAP]

```

DIMENSIONS 1704.023 3892.971 2497.996 5750.430
Units None
    
```

[COORDINATES]

```

; Node X-Coord Y-Coord
-----
    
```

Fani ta Ranch POC1B EX

POC1BEx 1740.113 3977.401

[VERTICES]

:: Link X-Coord Y-Coord  
::-----

[Polygons]

:: Subcatchment X-Coord Y-Coord  
::-----

POC1BExArea-C 1824.388 5545.795  
POC1BExArea-D 2461.906 5551.698

[SYMBOLS]

:: Gage X-Coord Y-Coord  
::-----  
SanViente 2384.000 5666.000

POST\_POC-1B

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION        GREEN_AMPT
FLOW_ROUTING         KINWAVE
START_DATE           01/03/1973
START_TIME           05:00:00
REPORT_START_DATE    05/24/1973
REPORT_START_TIME    05:00:00
END_DATE             05/23/2008
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             00:15:00
DRY_STEP             04:00:00
ROUTING_STEP         0:01:00
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      0.06  .08  .11  .16  .18  .21  .21  .200  .16  .12  .08  .06
DRY_ONLY     NO
    
```

[RAINGAGES]

```

;;
;;Name      Rain      Time      Snow      Data
;;Type      Type      Intrvl   Catch    Source
;;-----
SanVicente  INTENSITY 1:00   1.0     TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

;;
;;Name      Raingage      Outlet      Total      Pcnt.      Pcnt.      Curb      Snow
;;Type      Type      Intrvl   Catch    Source
;;-----
POC1BDevArea-C  SanVicente  POC1BPRBasin  43.45  69.3  13665  1.2  0
;Developed Area Tributary to Basin 1
POC1BDevArea-D  SanVicente  POC1BPRBasin  113.94  69.3  35959  1.2  0
POC1BPRBasin    SanVicente  DIV-1         5.73   0     10     0.0  0
POC1BPRBypass-C SanVicente  POC1BPR       79.94  0     15575  6.4  0
POC1BPRBypass-D SanVicente  POC1BPR       24.01  0     4669   8.3  0
    
```

[SUBAREAS]

```

;;Subcatchment  N-Imperv  N-Perv  S-Imperv  S-Perv  PctZero  RouteTo  PctRouted
;;-----
POC1BDevArea-C  0.012    0.05   0.05     0.10   25       OUTLET
POC1BDevArea-D  0.012    0.05   0.05     0.10   25       OUTLET
POC1BPRBasin    0.012    0.05   0.05     0.10   25       OUTLET
POC1BPRBypass-C 0.012    0.05   0.05     0.10   25       OUTLET
POC1BPRBypass-D 0.012    0.05   0.05     0.10   25       OUTLET
    
```

[INFILTRATION]

```

;;Subcatchment  Suction  HydCon  IMDmax
;;-----
POC1BDevArea-C  6        0.075   0.32
POC1BDevArea-D  9        0.01875 0.33
POC1BPRBasin    7.47     0.06    0.32
POC1BPRBypass-C 6        0.10    0.32
POC1BPRBypass-D 9        0.025   0.33
    
```

POST\_POC-1B

[LID\_CONTROLS]

```

;;
;;----- Type/Layer Parameters -----
LID-1 BC
LID-1 SURFACE 13.53 0.05 0 0 5
LID-1 SOIL 24 0.4 0.2 0.1 5 5 1.5
LID-1 STORAGE 27 0.67 0 0
LID-1 DRAIN 0.1334 0.5 3 6
  
```

[LID\_USAGE]

```

;;Subcatchment LID Process Number Area Width InitSatur FromImprv ToPerv Report File
;;-----
POC1BPRBasin LID-1 1 249599 0 0 100 0
  
```

[OUTFALLS]

```

;;
;;----- Invert Outfall Stage/Table Tide
;;Name Elev. Type Time Series Gate
;;-----
POC1BPR 0 FREE NO
  
```

[DIVIDERS]

```

;;
;;----- Invert Diverted Divider
;;Name Elev. Link Type Parameters
;;-----
DIV-1 0 HIGH-FLOWS CUTOFF 3.39319 0 0 0 0
  
```

[STORAGE]

```

;;
;;----- Invert Max. Init. Storage Curve Ponded Evap.
;;Name Elev. Depth Depth Curve Params Area Frac. Infiltration
Parameters
;;-----
BASIN-1 0 4.75 0 TABULAR BASIN-1 306140 0
  
```

[CONDUITS]

```

;;
;;----- Inlet Outlet Manning Inlet Outlet Init. Max.
;;Name Node Node Length N Offset Offset Flow Flow
;;-----
HIGH-FLOWS DIV-1 BASIN-1 10 0.01 0 0 0 0
LOW-FLOWS DIV-1 POC1BPR 10 0.01 0 0 0 0
  
```

[OUTLETS]

```

;;
;;----- Inlet Outlet Outflow Outlet Qcoeff/ Flap
;;Name Node Node Height Type QTable Qexpon Gate
;;-----
OUTLET-1 BASIN-1 POC1BPR 0 TABULAR/DEPTH OUT-1 NO
  
```

[XSECTIONS]

```

;;Link Shape Geom1 Geom2 Geom3 Geom4 Barrels
;;-----
HIGH-FLOWS DUMMY 0 0 0 0 1
LOW-FLOWS DUMMY 0 0 0 0 1
  
```

[LOSSES]

```

;;Link Inlet Outlet Average Flap Gate
;;-----
  
```

[CURVES]

```

;;Name Type X-Value Y-Value
;;-----
OUT-1 Rating 0.000 0.000
OUT-1 0.042 0.048
OUT-1 0.083 0.137
OUT-1 0.125 0.251
OUT-1 0.167 0.387
OUT-1 0.208 0.529
OUT-1 0.250 0.611
OUT-1 0.292 0.683
OUT-1 0.333 0.748
OUT-1 0.375 0.808
OUT-1 0.417 0.864
  
```

## POST\_POC-1B

OUT-1	0.458	0.916
OUT-1	0.500	0.966
OUT-1	0.542	1.013
OUT-1	0.583	1.058
OUT-1	0.625	1.101
OUT-1	0.667	1.142
OUT-1	0.708	1.183
OUT-1	0.750	1.221
OUT-1	0.792	1.259
OUT-1	0.833	1.295
OUT-1	0.875	1.331
OUT-1	0.917	1.365
OUT-1	0.958	1.399
OUT-1	1.000	1.432
OUT-1	1.042	1.464
OUT-1	1.083	1.496
OUT-1	1.125	1.527
OUT-1	1.167	1.557
OUT-1	1.208	1.586
OUT-1	1.250	1.616
OUT-1	1.292	1.644
OUT-1	1.333	1.672
OUT-1	1.375	1.700
OUT-1	1.417	1.727
OUT-1	1.458	1.754
OUT-1	1.500	1.780
OUT-1	1.542	1.806
OUT-1	1.583	1.832
OUT-1	1.625	1.857
OUT-1	1.667	1.882
OUT-1	1.708	1.907
OUT-1	1.750	1.931
OUT-1	1.792	1.955
OUT-1	1.833	1.979
OUT-1	1.875	2.002
OUT-1	1.917	2.025
OUT-1	1.958	2.048
OUT-1	2.000	2.071
OUT-1	2.042	2.093
OUT-1	2.083	2.115
OUT-1	2.125	2.137
OUT-1	2.167	2.159
OUT-1	2.208	2.180
OUT-1	2.250	2.202
OUT-1	2.292	2.223
OUT-1	2.333	2.244
OUT-1	2.375	2.264
OUT-1	2.417	2.285
OUT-1	2.458	2.305
OUT-1	2.500	2.325
OUT-1	2.542	2.345
OUT-1	2.583	2.365
OUT-1	2.625	2.385
OUT-1	2.667	2.404
OUT-1	2.708	2.423
OUT-1	2.750	2.443
OUT-1	2.792	2.462
OUT-1	2.833	2.480
OUT-1	2.875	2.499
OUT-1	2.917	2.518
OUT-1	2.958	2.536
OUT-1	3.000	2.555
OUT-1	3.042	2.573
OUT-1	3.083	2.591
OUT-1	3.125	2.609
OUT-1	3.167	2.626
OUT-1	3.208	2.644
OUT-1	3.250	2.662
OUT-1	3.292	2.679
OUT-1	3.333	2.697
OUT-1	3.375	2.714

POST\_POC-1B

OUT-1	3.417	2.731
OUT-1	3.458	2.748
OUT-1	3.500	2.765
OUT-1	3.542	3.203
OUT-1	3.583	3.992
OUT-1	3.625	5.007
OUT-1	3.667	6.206
OUT-1	3.708	7.564
OUT-1	3.750	9.064
OUT-1	3.792	10.693
OUT-1	3.833	12.442
OUT-1	3.875	14.303
OUT-1	3.917	16.269
OUT-1	3.958	18.335
OUT-1	4.000	20.496
OUT-1	4.042	22.749
OUT-1	4.083	25.090
OUT-1	4.125	27.515
OUT-1	4.167	30.021
OUT-1	4.208	32.607
OUT-1	4.250	35.269
OUT-1	4.292	38.006
OUT-1	4.333	40.816
OUT-1	4.375	43.696
OUT-1	4.417	46.645
OUT-1	4.458	49.661
OUT-1	4.500	52.743
OUT-1	4.542	55.890
OUT-1	4.583	59.100
OUT-1	4.625	62.372
OUT-1	4.667	65.705
OUT-1	4.708	69.098
OUT-1	4.750	72.549

BASIN-1	Storage	0.00	260983
BASIN-1		0.25	263285
BASIN-1		0.75	267913
BASIN-1		1.25	272575
BASIN-1		1.75	277270
BASIN-1		2.25	281999
BASIN-1		2.75	286760
BASIN-1		3.25	291555
BASIN-1		3.75	296384
BASIN-1		4.25	301245
BASIN-1		4.75	306140

[TIMESERIES]

```

;Name      Date      Time      Value
;-----

```

```

;San Vicente Rain Gage from San Diego County
SanVicente      FILE "P:\Acad\7033 Hunsaker San Diego\03 Fanita Ranch\REC SWMM\rainfall_sanvicente.dat"

```

[REPORT]

```

INPUT      NO
CONTROLS   NO
SUBCATCHMENTS ALL
NODES      ALL
LINKS      ALL

```

[TAGS]

[MAP]

```

DIMENSIONS -115.361 3531.612 1589.934 5654.960
Units      None

```

[COORDINATES]

```

;Node      X-Coord      Y-Coord
;-----
POC1BPR    901.486      4123.180
DIV-1      901.486      4833.962
BASIN-1    48.998       4833.962

```

# POST\_POC-1B

## [VERTICES]

;;Link	X-Coord	Y-Coord
;;-----	-----	-----

## [Polygons]

;;Subcatchment	X-Coord	Y-Coord
;;-----	-----	-----
POC1BDevArea-C	165.962	5443.525
POC1BDevArea-D	1529.043	5416.533
POC1BPRBasin	897.746	4956.140
POC1BPRBypass-C	216.324	3938.737
POC1BPRBypass-D	1632.512	3967.978

## [SYMBOLS]

;;Gage	X-Coord	Y-Coord
;;-----	-----	-----
SanVicente	1729.232	4699.004

## **POC 2A&B**

Flow Duration Curve (Pass-Fail) Results

List of the “n” largest Peaks: Pre-Development and Post-Development Conditions

Elevation vs. Area Curves and Elevations vs. Discharge Curves to be used in SWMM

DMA and SWMM Input Data (Existing and Proposed Models)

### Flow Duration Curve Data for Fanita Ranch POC-2A , Santee, CA

Q2 = 87.749 cfs Fraction 10 %  
 Q10 = 141.32 cfs  
 Step = 1.3388 cfs  
 Count = 306816 hours  
 35.00 years

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
1	8.775	537	1.75E-01	587	1.91E-01	109%	Pass
2	10.114	491	1.60E-01	462	1.51E-01	94%	Pass
3	11.453	458	1.49E-01	391	1.27E-01	85%	Pass
4	12.791	422	1.38E-01	328	1.07E-01	78%	Pass
5	14.130	398	1.30E-01	283	9.22E-02	71%	Pass
6	15.469	381	1.24E-01	249	8.12E-02	65%	Pass
7	16.808	365	1.19E-01	235	7.66E-02	64%	Pass
8	18.147	341	1.11E-01	209	6.81E-02	61%	Pass
9	19.485	316	1.03E-01	196	6.39E-02	62%	Pass
10	20.824	278	9.06E-02	185	6.03E-02	67%	Pass
11	22.163	258	8.41E-02	173	5.64E-02	67%	Pass
12	23.502	231	7.53E-02	159	5.18E-02	69%	Pass
13	24.841	223	7.27E-02	145	4.73E-02	65%	Pass
14	26.179	215	7.01E-02	137	4.47E-02	64%	Pass
15	27.518	205	6.68E-02	131	4.27E-02	64%	Pass
16	28.857	189	6.16E-02	126	4.11E-02	67%	Pass
17	30.196	177	5.77E-02	118	3.85E-02	67%	Pass
18	31.535	156	5.08E-02	111	3.62E-02	71%	Pass
19	32.873	145	4.73E-02	108	3.52E-02	74%	Pass
20	34.212	140	4.56E-02	106	3.45E-02	76%	Pass
21	35.551	136	4.43E-02	99	3.23E-02	73%	Pass
22	36.890	133	4.33E-02	90	2.93E-02	68%	Pass
23	38.229	126	4.11E-02	81	2.64E-02	64%	Pass
24	39.567	123	4.01E-02	72	2.35E-02	59%	Pass
25	40.906	119	3.88E-02	65	2.12E-02	55%	Pass
26	42.245	113	3.68E-02	61	1.99E-02	54%	Pass
27	43.584	109	3.55E-02	58	1.89E-02	53%	Pass
28	44.923	107	3.49E-02	55	1.79E-02	51%	Pass
29	46.262	103	3.36E-02	53	1.73E-02	51%	Pass
30	47.600	99	3.23E-02	50	1.63E-02	51%	Pass
31	48.939	92	3.00E-02	48	1.56E-02	52%	Pass
32	50.278	89	2.90E-02	47	1.53E-02	53%	Pass
33	51.617	75	2.44E-02	43	1.40E-02	57%	Pass
34	52.956	68	2.22E-02	40	1.30E-02	59%	Pass
35	54.294	61	1.99E-02	37	1.21E-02	61%	Pass
36	55.633	56	1.83E-02	35	1.14E-02	63%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
37	56.972	54	1.76E-02	32	1.04E-02	59%	Pass
38	58.311	51	1.66E-02	30	9.78E-03	59%	Pass
39	59.650	49	1.60E-02	30	9.78E-03	61%	Pass
40	60.988	49	1.60E-02	29	9.45E-03	59%	Pass
41	62.327	48	1.56E-02	28	9.13E-03	58%	Pass
42	63.666	47	1.53E-02	28	9.13E-03	60%	Pass
43	65.005	45	1.47E-02	27	8.80E-03	60%	Pass
44	66.344	41	1.34E-02	26	8.47E-03	63%	Pass
45	67.682	41	1.34E-02	25	8.15E-03	61%	Pass
46	69.021	40	1.30E-02	23	7.50E-03	58%	Pass
47	70.360	38	1.24E-02	23	7.50E-03	61%	Pass
48	71.699	37	1.21E-02	23	7.50E-03	62%	Pass
49	73.038	34	1.11E-02	22	7.17E-03	65%	Pass
50	74.376	34	1.11E-02	22	7.17E-03	65%	Pass
51	75.715	29	9.45E-03	22	7.17E-03	76%	Pass
52	77.054	27	8.80E-03	20	6.52E-03	74%	Pass
53	78.393	25	8.15E-03	18	5.87E-03	72%	Pass
54	79.732	25	8.15E-03	17	5.54E-03	68%	Pass
55	81.070	24	7.82E-03	16	5.21E-03	67%	Pass
56	82.409	23	7.50E-03	15	4.89E-03	65%	Pass
57	83.748	23	7.50E-03	13	4.24E-03	57%	Pass
58	85.087	22	7.17E-03	12	3.91E-03	55%	Pass
59	86.426	21	6.84E-03	11	3.59E-03	52%	Pass
60	87.765	19	6.19E-03	10	3.26E-03	53%	Pass
61	89.103	19	6.19E-03	8	2.61E-03	42%	Pass
62	90.442	18	5.87E-03	8	2.61E-03	44%	Pass
63	91.781	18	5.87E-03	7	2.28E-03	39%	Pass
64	93.120	18	5.87E-03	6	1.96E-03	33%	Pass
65	94.459	18	5.87E-03	6	1.96E-03	33%	Pass
66	95.797	18	5.87E-03	6	1.96E-03	33%	Pass
67	97.136	16	5.21E-03	6	1.96E-03	38%	Pass
68	98.475	15	4.89E-03	6	1.96E-03	40%	Pass
69	99.814	15	4.89E-03	5	1.63E-03	33%	Pass
70	101.153	15	4.89E-03	4	1.30E-03	27%	Pass
71	102.491	15	4.89E-03	4	1.30E-03	27%	Pass
72	103.830	15	4.89E-03	4	1.30E-03	27%	Pass
73	105.169	15	4.89E-03	4	1.30E-03	27%	Pass
74	106.508	15	4.89E-03	4	1.30E-03	27%	Pass
75	107.847	15	4.89E-03	4	1.30E-03	27%	Pass
76	109.185	13	4.24E-03	4	1.30E-03	31%	Pass
77	110.524	13	4.24E-03	4	1.30E-03	31%	Pass
78	111.863	11	3.59E-03	4	1.30E-03	36%	Pass
79	113.202	11	3.59E-03	4	1.30E-03	36%	Pass
80	114.541	11	3.59E-03	4	1.30E-03	36%	Pass
81	115.879	10	3.26E-03	4	1.30E-03	40%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
82	117.218	9	2.93E-03	4	1.30E-03	44%	Pass
83	118.557	8	2.61E-03	4	1.30E-03	50%	Pass
84	119.896	8	2.61E-03	4	1.30E-03	50%	Pass
85	121.235	8	2.61E-03	3	9.78E-04	38%	Pass
86	122.574	8	2.61E-03	3	9.78E-04	38%	Pass
87	123.912	8	2.61E-03	3	9.78E-04	38%	Pass
88	125.251	7	2.28E-03	3	9.78E-04	43%	Pass
89	126.590	7	2.28E-03	3	9.78E-04	43%	Pass
90	127.929	6	1.96E-03	3	9.78E-04	50%	Pass
91	129.268	6	1.96E-03	3	9.78E-04	50%	Pass
92	130.606	4	1.30E-03	3	9.78E-04	75%	Pass
93	131.945	4	1.30E-03	3	9.78E-04	75%	Pass
94	133.284	4	1.30E-03	3	9.78E-04	75%	Pass
95	134.623	4	1.30E-03	3	9.78E-04	75%	Pass
96	135.962	4	1.30E-03	2	6.52E-04	50%	Pass
97	137.300	4	1.30E-03	1	3.26E-04	25%	Pass
98	138.639	4	1.30E-03	1	3.26E-04	25%	Pass
99	139.978	4	1.30E-03	1	3.26E-04	25%	Pass
100	141.317	3	9.78E-04	0	0.00E+00	0%	Pass

**Peak Flows calculated with Cunnane Plotting Position**

Return Period (years)	Pre-dev. Q (cfs)	Post-Dev. Q (cfs)	Reduction (cfs)
10	141.317	121.370	19.947
9	136.428	113.149	23.279
8	131.779	103.721	28.058
7	129.877	96.584	33.293
6	127.889	91.865	36.024
5	121.044	89.388	31.656
4	116.491	87.091	29.401
3	110.395	80.992	29.403
2	87.749	67.774	19.975

## Flow Duration Curve Data for Fanita Ranch POC-2B , Santee, CA

Q2 = 163.558 cfs Fraction 10 %  
 Q10 = 267.88 cfs  
 Step = 2.5407 cfs  
 Count = 306816 hours  
 35.00 years

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
1	16.356	488	1.59E-01	516	1.68E-01	106%	Pass
2	18.896	446	1.45E-01	397	1.29E-01	89%	Pass
3	21.437	408	1.33E-01	344	1.12E-01	84%	Pass
4	23.978	384	1.25E-01	296	9.65E-02	77%	Pass
5	26.519	364	1.19E-01	259	8.44E-02	71%	Pass
6	29.059	339	1.10E-01	230	7.50E-02	68%	Pass
7	31.600	310	1.01E-01	211	6.88E-02	68%	Pass
8	34.141	278	9.06E-02	190	6.19E-02	68%	Pass
9	36.681	244	7.95E-02	175	5.70E-02	72%	Pass
10	39.222	230	7.50E-02	161	5.25E-02	70%	Pass
11	41.763	218	7.11E-02	150	4.89E-02	69%	Pass
12	44.303	213	6.94E-02	137	4.47E-02	64%	Pass
13	46.844	203	6.62E-02	131	4.27E-02	65%	Pass
14	49.385	187	6.09E-02	117	3.81E-02	63%	Pass
15	51.925	174	5.67E-02	110	3.59E-02	63%	Pass
16	54.466	159	5.18E-02	101	3.29E-02	64%	Pass
17	57.007	141	4.60E-02	96	3.13E-02	68%	Pass
18	59.547	136	4.43E-02	89	2.90E-02	65%	Pass
19	62.088	133	4.33E-02	86	2.80E-02	65%	Pass
20	64.629	132	4.30E-02	81	2.64E-02	61%	Pass
21	67.169	128	4.17E-02	76	2.48E-02	59%	Pass
22	69.710	122	3.98E-02	65	2.12E-02	53%	Pass
23	72.251	117	3.81E-02	59	1.92E-02	50%	Pass
24	74.791	113	3.68E-02	56	1.83E-02	50%	Pass
25	77.332	111	3.62E-02	56	1.83E-02	50%	Pass
26	79.873	110	3.59E-02	56	1.83E-02	51%	Pass
27	82.413	106	3.45E-02	54	1.76E-02	51%	Pass
28	84.954	100	3.26E-02	51	1.66E-02	51%	Pass
29	87.495	95	3.10E-02	48	1.56E-02	51%	Pass
30	90.035	93	3.03E-02	47	1.53E-02	51%	Pass
31	92.576	84	2.74E-02	46	1.50E-02	55%	Pass
32	95.117	73	2.38E-02	46	1.50E-02	63%	Pass
33	97.657	66	2.15E-02	45	1.47E-02	68%	Pass
34	100.198	58	1.89E-02	42	1.37E-02	72%	Pass
35	102.739	56	1.83E-02	38	1.24E-02	68%	Pass
36	105.279	51	1.66E-02	37	1.21E-02	73%	Pass
37	107.820	51	1.66E-02	35	1.14E-02	69%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
38	110.361	50	1.63E-02	33	1.08E-02	66%	Pass
39	112.902	49	1.60E-02	29	9.45E-03	59%	Pass
40	115.442	47	1.53E-02	26	8.47E-03	55%	Pass
41	117.983	46	1.50E-02	26	8.47E-03	57%	Pass
42	120.524	46	1.50E-02	23	7.50E-03	50%	Pass
43	123.064	42	1.37E-02	21	6.84E-03	50%	Pass
44	125.605	42	1.37E-02	20	6.52E-03	48%	Pass
45	128.146	40	1.30E-02	20	6.52E-03	50%	Pass
46	130.686	39	1.27E-02	19	6.19E-03	49%	Pass
47	133.227	36	1.17E-02	17	5.54E-03	47%	Pass
48	135.768	34	1.11E-02	17	5.54E-03	50%	Pass
49	138.308	32	1.04E-02	16	5.21E-03	50%	Pass
50	140.849	30	9.78E-03	16	5.21E-03	53%	Pass
51	143.390	26	8.47E-03	15	4.89E-03	58%	Pass
52	145.930	24	7.82E-03	15	4.89E-03	63%	Pass
53	148.471	24	7.82E-03	15	4.89E-03	63%	Pass
54	151.012	23	7.50E-03	15	4.89E-03	65%	Pass
55	153.552	23	7.50E-03	15	4.89E-03	65%	Pass
56	156.093	22	7.17E-03	14	4.56E-03	64%	Pass
57	158.634	21	6.84E-03	13	4.24E-03	62%	Pass
58	161.174	20	6.52E-03	13	4.24E-03	65%	Pass
59	163.715	19	6.19E-03	11	3.59E-03	58%	Pass
60	166.256	19	6.19E-03	11	3.59E-03	58%	Pass
61	168.796	19	6.19E-03	9	2.93E-03	47%	Pass
62	171.337	18	5.87E-03	8	2.61E-03	44%	Pass
63	173.878	18	5.87E-03	7	2.28E-03	39%	Pass
64	176.418	18	5.87E-03	7	2.28E-03	39%	Pass
65	178.959	18	5.87E-03	7	2.28E-03	39%	Pass
66	181.500	16	5.21E-03	7	2.28E-03	44%	Pass
67	184.040	15	4.89E-03	5	1.63E-03	33%	Pass
68	186.581	15	4.89E-03	5	1.63E-03	33%	Pass
69	189.122	15	4.89E-03	5	1.63E-03	33%	Pass
70	191.663	15	4.89E-03	5	1.63E-03	33%	Pass
71	194.203	15	4.89E-03	5	1.63E-03	33%	Pass
72	196.744	15	4.89E-03	5	1.63E-03	33%	Pass
73	199.285	14	4.56E-03	5	1.63E-03	36%	Pass
74	201.825	14	4.56E-03	4	1.30E-03	29%	Pass
75	204.366	13	4.24E-03	4	1.30E-03	31%	Pass
76	206.907	13	4.24E-03	4	1.30E-03	31%	Pass
77	209.447	12	3.91E-03	4	1.30E-03	33%	Pass
78	211.988	12	3.91E-03	4	1.30E-03	33%	Pass
79	214.529	11	3.59E-03	4	1.30E-03	36%	Pass
80	217.069	9	2.93E-03	4	1.30E-03	44%	Pass
81	219.610	9	2.93E-03	4	1.30E-03	44%	Pass
82	222.151	8	2.61E-03	4	1.30E-03	50%	Pass
83	224.691	8	2.61E-03	4	1.30E-03	50%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
84	227.232	8	2.61E-03	4	1.30E-03	50%	Pass
85	229.773	8	2.61E-03	4	1.30E-03	50%	Pass
86	232.313	8	2.61E-03	4	1.30E-03	50%	Pass
87	234.854	6	1.96E-03	3	9.78E-04	50%	Pass
88	237.395	6	1.96E-03	3	9.78E-04	50%	Pass
89	239.935	6	1.96E-03	2	6.52E-04	33%	Pass
90	242.476	6	1.96E-03	2	6.52E-04	33%	Pass
91	245.017	4	1.30E-03	2	6.52E-04	50%	Pass
92	247.557	4	1.30E-03	2	6.52E-04	50%	Pass
93	250.098	4	1.30E-03	2	6.52E-04	50%	Pass
94	252.639	4	1.30E-03	2	6.52E-04	50%	Pass
95	255.179	4	1.30E-03	2	6.52E-04	50%	Pass
96	257.720	4	1.30E-03	2	6.52E-04	50%	Pass
97	260.261	4	1.30E-03	2	6.52E-04	50%	Pass
98	262.801	4	1.30E-03	2	6.52E-04	50%	Pass
99	265.342	4	1.30E-03	2	6.52E-04	50%	Pass
100	267.883	3	9.78E-04	2	6.52E-04	67%	Pass

**Peak Flows calculated with Cunnane Plotting Position**

Return Period (years)	Pre-dev. Q (cfs)	Post-Dev. Q (cfs)	Reduction (cfs)
10	267.883	233.747	34.135
9	258.037	215.095	42.942
8	248.065	191.598	56.467
7	244.015	177.647	66.368
6	240.219	170.139	70.080
5	227.239	165.570	61.669
4	216.577	158.274	58.302
3	208.220	130.135	78.086
2	163.558	113.351	50.207

**List of Peak events and Determination of P2 and P10 (Pre-Development)**

**Fanita Ranch POC 2A - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>141.32</b>	<b>147.22</b>					
<b>9</b>	<b>136.43</b>	<b>140.04</b>	64.071	2/15/1986	35	1.03	1.02
<b>8</b>	<b>131.78</b>	<b>134.55</b>	65.993	10/28/1974	34	1.06	1.05
<b>7</b>	<b>129.88</b>	<b>130.06</b>	69.644	1/9/1980	33	1.09	1.08
<b>6</b>	<b>127.89</b>	<b>129.57</b>	70.262	2/25/2003	32	1.13	1.11
<b>5</b>	<b>121.04</b>	<b>122.61</b>	72.018	1/13/1993	31	1.16	1.15
<b>4</b>	<b>116.49</b>	<b>116.87</b>	72.247	2/12/2003	30	1.20	1.19
<b>3</b>	<b>110.40</b>	<b>110.80</b>	72.995	10/10/1986	29	1.24	1.23
<b>2</b>	<b>87.75</b>	<b>87.75</b>	74.938	1/18/1993	28	1.29	1.28
			75.125	12/4/1974	27	1.33	1.32
			75.43	2/16/1980	26	1.38	1.38
			75.959	2/18/1980	25	1.44	1.43
			75.964	3/4/1978	24	1.50	1.49
			80.354	4/18/1995	23	1.57	1.56
			81.688	10/27/2004	22	1.64	1.63
			84.504	2/15/1992	21	1.71	1.71
			85.292	2/21/2005	20	1.80	1.80
			86.769	3/6/1975	19	1.89	1.89
			87.749	3/2/1983	18	2.00	2.00
			89.466	8/17/1977	17	2.12	2.12
			96.908	3/1/1983	16	2.25	2.26
			97.939	1/31/1979	15	2.40	2.41
			107.91	2/13/1998	14	2.57	2.59
			107.961	2/19/1993	13	2.77	2.79
			110.802	10/20/2004	12	3.00	3.03
			111.821	10/18/2004	11	3.27	3.32
			115.145	2/2/1998	10	3.60	3.67
			116.867	2/6/1992	9	4.00	4.09
			117.8	1/29/1980	8	4.50	4.63
			123.979	1/9/2005	7	5.14	5.33
			129.565	2/7/1998	6	6.00	6.29
			130.162	10/31/1987	5	7.20	7.65
			140.044	9/10/1976	4	9.00	9.78
			161.584	10/22/1976	3	12.00	13.54
			192.603	2/20/1980	2	18.00	22.00
			202.629	1/4/1978	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

**List of Peak events and Determination of P2 and P10 (Post-Development)**

**Fanita Ranch POC 2A - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>121.37</b>	<b>125.49</b>					
9	113.15	120.48	48.173	1/13/1993	35	1.03	1.02
8	103.72	109.35	50.815	1/9/1980	34	1.06	1.05
7	96.58	99.09	51.244	1/18/1993	33	1.09	1.08
6	91.86	92.36	51.467	2/25/2003	32	1.13	1.11
5	89.39	90.09	51.57	2/12/2003	31	1.16	1.15
4	87.09	87.87	51.632	10/28/1974	30	1.20	1.19
3	80.99	81.19	52.748	12/4/1974	29	1.24	1.23
2	67.77	67.77	53.379	3/4/1978	28	1.29	1.28
			54.106	3/6/1975	27	1.33	1.32
			54.845	2/16/1980	26	1.38	1.38
			55.686	2/18/1980	25	1.44	1.43
			56.206	4/18/1995	24	1.50	1.49
			57.442	2/15/1992	23	1.57	1.56
			57.765	10/27/2004	22	1.64	1.63
			60.799	1/29/1980	21	1.71	1.71
			62.184	2/21/2005	20	1.80	1.80
			66.192	3/5/1995	19	1.89	1.89
			67.774	3/1/1983	18	2.00	2.00
			67.993	8/17/1977	17	2.12	2.12
			71.867	2/19/1993	16	2.25	2.26
			77.928	2/13/1998	15	2.40	2.41
			79.481	2/6/1992	14	2.57	2.59
			79.807	10/20/2004	13	2.77	2.79
			81.190	10/18/2004	12	3.00	3.03
			83.049	2/2/1998	11	3.27	3.32
			84.294	1/29/1980	10	3.60	3.67
			87.871	3/3/1983	9	4.00	4.09
			87.922	1/9/2005	8	4.50	4.63
			90.714	10/31/1987	7	5.14	5.33
			92.358	2/7/1998	6	6.00	6.29
			100.442	9/10/1976	5	7.20	7.65
			120.482	1/31/1979	4	9.00	9.78
			135.514	2/20/1980	3	12.00	13.54
			136.445	1/4/1978	2	18.00	22.00
			140.865	10/22/1976	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

**List of Peak events and Determination of P2 and P10 (Pre-Development)**

**Fanita Ranch POC 2B - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>267.88</b>	<b>277.58</b>					
<b>9</b>	<b>258.04</b>	<b>265.79</b>	117.483	2/16/1998	35	1.03	1.02
<b>8</b>	<b>248.06</b>	<b>254.02</b>	126.076	10/28/1974	34	1.06	1.05
<b>7</b>	<b>244.02</b>	<b>244.39</b>	130.033	10/10/1986	33	1.09	1.08
<b>6</b>	<b>240.22</b>	<b>243.38</b>	130.872	1/9/1980	32	1.13	1.11
<b>5</b>	<b>227.24</b>	<b>230.22</b>	131.145	1/13/1993	31	1.16	1.15
<b>4</b>	<b>216.58</b>	<b>216.84</b>	131.948	2/25/2003	30	1.20	1.19
<b>3</b>	<b>208.22</b>	<b>209.07</b>	134.219	2/12/2003	29	1.24	1.23
<b>2</b>	<b>163.56</b>	<b>163.56</b>	137.128	12/4/1974	28	1.29	1.28
			137.747	1/18/1993	27	1.33	1.32
			141.183	2/16/1980	26	1.38	1.38
			141.243	10/27/2004	25	1.44	1.43
			141.527	3/4/1978	24	1.50	1.49
			141.619	2/18/1980	23	1.57	1.56
			149.457	4/18/1995	22	1.64	1.63
			153.83	3/6/1975	21	1.71	1.71
			156.789	2/15/1992	20	1.80	1.80
			158.973	2/21/2005	19	1.89	1.89
			163.558	3/2/1983	18	2.00	2.00
			170.734	8/17/1977	17	2.12	2.12
			181.039	3/1/1983	16	2.25	2.26
			183.755	1/31/1979	15	2.40	2.41
			197.988	2/19/1993	14	2.57	2.59
			203.135	2/13/1998	13	2.77	2.79
			209.07	10/20/2004	12	3.00	3.03
			213.847	10/18/2004	11	3.27	3.32
			215.618	2/6/1992	10	3.60	3.67
			216.844	2/2/1998	9	4.00	4.09
			221.042	1/29/1980	8	4.50	4.63
			232.846	1/9/2005	7	5.14	5.33
			243.379	2/7/1998	6	6.00	6.29
			244.596	10/31/1987	5	7.20	7.65
			265.793	9/10/1976	4	9.00	9.78
			301.159	10/22/1976	3	12.00	13.54
			364.153	2/20/1980	2	18.00	22.00
			379.093	1/4/1978	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

**List of Peak events and Determination of P2 and P10 (Post-Development)**

**Fanita Ranch POC 2B - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>233.75</b>	<b>235.50</b>					
9	215.09	233.37	70.381	2/15/1992	35	1.03	1.02
8	191.60	205.62	71.507	1/16/1993	34	1.06	1.05
7	177.65	181.41	72.276	1/7/1993	33	1.09	1.08
6	170.14	171.32	73.731	1/8/1993	32	1.13	1.11
5	165.57	166.54	83.435	3/1/1983	31	1.16	1.15
4	158.27	162.78	84.834	8/17/1977	30	1.20	1.19
3	130.13	131.17	85.545	3/1/1991	29	1.24	1.23
2	113.35	113.35	89.511	2/19/1993	28	1.29	1.28
			96.872	2/13/1998	27	1.33	1.32
			98.080	10/18/2004	26	1.38	1.38
			99.137	2/6/1992	25	1.44	1.43
			103.048	2/2/1998	24	1.50	1.49
			106.499	1/11/2005	23	1.57	1.56
			110.402	10/31/1987	22	1.64	1.63
			111.200	2/18/1980	21	1.71	1.71
			112.119	2/9/1976	20	1.80	1.80
			113.075	1/11/1980	19	1.89	1.89
			113.351	1/15/1978	18	2.00	2.00
			114.217	2/7/1998	17	2.12	2.12
			120.436	2/23/2005	16	2.25	2.26
			121.046	2/15/1986	15	2.40	2.41
			122.222	9/10/1976	14	2.57	2.59
			123.958	12/29/2004	13	2.77	2.79
			131.167	10/27/2004	12	3.00	3.03
			131.940	1/29/1980	11	3.27	3.32
			142.130	3/5/1995	10	3.60	3.67
			162.780	10/20/2004	9	4.00	4.09
			163.564	1/4/1978	8	4.50	4.63
			167.385	1/9/2005	7	5.14	5.33
			171.320	2/21/2005	6	6.00	6.29
			183.425	3/3/1983	5	7.20	7.65
			233.370	1/29/1980	4	9.00	9.78
			239.750	1/31/1979	3	12.00	13.54
			314.040	10/22/1976	2	18.00	22.00
			366.407	2/20/1980	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

## BMPs for POC-2A & 2B (Basins 2, 3, 4 & 5)

	Basin 2	Basin 3	Basin 4	Basin 5
Area at elev. 0:	31487	73756	132246	338354
Area at elev. 0.25:	33123	75203	133687	340718
(a) <b>Volume at elev. 0.25:</b>	<b>3231</b>	<b>7448</b>	<b>13297</b>	<b>33954</b>
BMP elevation (in):	24	21	6	0
(b) <b>Area at BMP elev:</b>	<b>44124</b>	<b>83668</b>	<b>135127</b>	<b>338354</b>
Volume at BMP elev:	70934	126647	46898	0
Riser invert elevation (in):	33	30	28	19.2
Area at riser invert:	48597	87758	145692	353484
(c) <b>Volume at riser elev:</b>	<b>105713</b>	<b>190936</b>	<b>304316</b>	<b>502540</b>

<i>Effective depth (in), WQ (12·c/b):</i>	28.75	27.38	27.02	17.82
<i>Eff depth (in), SWMM (12[c-a]/b):</i>	27.87	26.32	25.84	16.62

**BMP POC 2A & 2B PR Basin 2**

ABMP	<b>44124.0</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>4.33</b> in
Aorifice	0.10226 sq-ft
C <sub>SWMM</sub>	<b>0.14148</b> 0.662209
H-gravel	<b>1.75</b> ft <b>21</b> in
	18.835 in
H-design	1.570 ft
Q <sub>orif-classic</sub>	0.62715 cfs
Q <sub>orif-SWMM</sub>	0.62715 cfs
Qdiversion	<b>0.63342</b> cfs
Qinf:	2.0428 cfs
<b>0.1 Q2 EX</b>	<b>14.563</b>

**BMP POC 2A & 2B PR Basin 3**

ABMP	<b>83668.0</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2 of 5.333</b> in
Aorifice	0.31024 sq-ft
C <sub>SWMM</sub>	<b>0.22636</b> 2.009057
H-gravel	<b>1.75</b> ft <b>21</b> in
	18.3335 in
H-design	1.528 ft
Q <sub>orif-classic</sub>	1.87718 cfs
Q <sub>orif-SWMM</sub>	1.87718 cfs
Qdiversion	<b>1.89595</b> cfs
Qinf:	3.8735 cfs
<b>0.1 Q2 EX</b>	<b>14.563</b>

**BMP POC 2A & 2B PR Basin 4**

ABMP	<b>135127.0</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2 of 7.5</b> in
Aorifice	0.61359 sq-ft
C <sub>SWMM</sub>	<b>0.27721</b> 3.973486
H-gravel	<b>1.75</b> ft <b>21</b> in
	17.25 in
H-design	1.438 ft
Q <sub>orif-classic</sub>	3.60128 cfs
Q <sub>orif-SWMM</sub>	3.60128 cfs
Qdiversion	<b>3.63729</b> cfs
Qinf:	6.2559 cfs
<b>0.1 Q2 EX</b>	<b>14.563</b>

**BMP POC 2A & 2B PR Basin 5**

ABMP	<b>338354.0</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2 of 9</b> in
Aorifice	0.88357 sq-ft
C <sub>SWMM</sub>	<b>0.15942</b> 6.116883
H-gravel	<b>2</b> ft <b>24</b> in
	19.5 in
H-design	1.625 ft
Q <sub>orif-classic</sub>	5.51368 cfs
Q <sub>orif-SWMM</sub>	5.51368 cfs
Qdiversion	<b>5.56882</b> cfs
Qinf:	15.6645 cfs
<b>0.1 Q2 EX</b>	<b>14.563</b>

Fani ta Ranch POC2A EX

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          00:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   00:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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 0.06 0.08 0.11 0.16 0.18 0.21 0.21 0.2 0.16 0.12 0.08 0.06
DRY_ONLY NO
    
```

[RAINGAGES]

```

; Name Rain Type Time Intrvl Snow Catch Data Source
-----
SanVicente INTENSITY 1:00 1.0 TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

Name	Raingage	Outlet	Total Area	Pcnt. Imperv	Width	Pcnt. Slope	Curb Length	Snow Pack
DMA-2B-1-A Existing Area	SanVicente	POC-2B	1.03	0	200	9.0	0	
DMA-2B-1-C	SanVicente	POC-2B	129.31	0	25146	9.0	0	
DMA-2B-1-D	SanVicente	POC-2B	77.36	0	15044	9.0	0	
DMA-2A-1-C	SanVicente	POC-2A	91.93	0	17877	8.7	0	
DMA-2A-1-D	SanVicente	POC-2A	136.94	0	26630	8.7	0	

[SUBAREAS]

Subcatchment	N-Imperv	N-Perv	S-Imperv	S-Perv	PctZero	RouteTo	PctRouted
DMA-2B-1-A	0.012	0.05	0.05	0.10	25	OUTLET	
DMA-2B-1-C	0.012	0.05	0.05	0.10	25	OUTLET	
DMA-2B-1-D	0.012	0.05	0.05	0.10	25	OUTLET	
DMA-2A-1-C	0.012	0.05	0.05	0.10	25	OUTLET	
DMA-2A-1-D	0.012	0.05	0.05	0.10	25	OUTLET	

[INFILTRATION]

Subcatchment	Suction	HydCon	IMDmax
DMA-2B-1-A	1.5	0.30	0.30
DMA-2B-1-C	6	0.10	0.32
DMA-2B-1-D	9	0.025	0.33
DMA-2A-1-C	6	0.10	0.32
DMA-2A-1-D	9	0.025	0.33

[JUNCTIONS]

Name	Invert Elev.	Max. Depth	Init. Depth	Surcharge Depth	Ponded Area
POC-2A	0	0	0	0	0

[OUTFALLS]

Name	Invert Elev.	Outfall Type	Stage/Table Time Series	Tide Gate
POC-2B	0	FREE		NO

[CONDUITS]

Name	Inlet Node	Outlet Node	Length	Manning N	Inlet Offset	Outlet Offset	Init. Flow	Max. Flow
DUMMY	POC-2A	POC-2B	10	0.01	0	0	0	0

Fanita Ranch POC2A EX

[XSECTIONS]

Link	Shape	Geom1	Geom2	Geom3	Geom4	Barrels
DUMMY	DUMMY	0	0	0	0	1

[LOSSES]

Link	Inlet	Outlet	Average	Flap Gate
------	-------	--------	---------	-----------

[TIMESERIES]

Name	Date	Time	Value
From County SanViente	FILE "P:\Acad\7033 Hunsaker San Diego\03 Fanita Ranch\REC SWMM\raifal_sanviente.dat"		

[REPORT]

INPUT NO  
 CONTROLS NO  
 SUBCATCHMENTS ALL  
 NODES ALL  
 LINKS ALL

[TAGS]

[MAP]

DIMENSIONS 2946.441 3947.736 4050.169 5097.550  
 Units None

[COORDINATES]

Node	X-Coord	Y-Coord
POC-2A	3500.000	4500.000
POC-2B	3499.522	3996.405

[VERTICES]

Link	X-Coord	Y-Coord
------	---------	---------

[Polygons]

Subcatchment	X-Coord	Y-Coord
DMA-2B-1-A	3000.000	4500.000
DMA-2B-1-C	4000.000	4500.000
DMA-2B-1-D	4000.000	4000.000
DMA-2A-1-C	2996.610	5045.286
DMA-2A-1-D	4000.000	5000.000

[SYMBOLS]

Gage	X-Coord	Y-Coord
SanViente	3000.000	4000.000

POST\_POC-2B

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION        GREEN_AMPT
FLOW_ROUTING         KINWAVE
START_DATE           01/03/1973
START_TIME           05:00:00
REPORT_START_DATE    05/24/1973
REPORT_START_TIME    05:00:00
END_DATE             05/23/2008
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             00:15:00
DRY_STEP             04:00:00
ROUTING_STEP         0:01:00
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     0.06  .08  .11  .16  .18  .21  .21  .200  .16  .12  .08  .06
DRY_ONLY    NO
    
```

[RAINGAGES]

```

;;
;;Name      Rain      Time      Snow      Data
;;Name      Type      Intrvl   Catch    Source
;;-----
SanVicente  INTENSITY 1:00   1.0     TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

;;
;;Name      Raingage      Outlet      Total      Pcnt.      Pcnt.      Curb      Snow
;;Name      Raingage      Outlet      Area      Imperv      Width      Slope      Length      Pack
;;-----
;Developed Area Tributary to Basin 2
POC2ADev2Area-C SanVicente POC2APRBasin2 18.35 58.7 5285 2.3 0
POC2ADev2Area-D SanVicente POC2APRBasin2 0.09 58.7 26 2.3 0
POC2APRBasin2 SanVicente POC2APR 1.0129 0 224 0 0
POC2ADev3Area-C SanVicente POC2APRBasin3 10.34 64.2 3120 2.6 0
POC2ADev3Area-D SanVicente POC2APRBasin3 26.91 64.2 8120 2.6 0
POC2APRBasin3 SanVicente POC2APR 1.921 0 224 0 0
POC2ADev4Area-C SanVicente POC2APRBasin4 5.19 58.5 1494 3 0
POC2ADev4Area-D SanVicente POC2APRBasin4 80.61 58.5 23187 3 0
POC2APRBasin4 SanVicente POC2APR 3.1021 0 224 0 0
;Additional area not tributary to basin
POC2APRByypass-C SanVicente POC2APR 104.61 0 20343 8.6 0
POC2APRByypass-D SanVicente POC2APR 52.84 0 10275 8.6 0
POC2BDev5Area-C SanVicente POC2BPRBasin5 44.53 67.6 13832 6.7 0
POC2BDev5Area-D SanVicente POC2BPRBasin5 180.29 63.16 53927 6.7 0
POC2BPRBasin5 SanVicente POC2-B-PR 7.7675 0 10 0 0
POC2BPRByypass-A SanVicente POC2-B-PR 1.03 0 200 3.7 0
POC2BPRByypass-C SanVicente POC2-B-PR 15.00 0 2917 3.7 0
POC2BPRByypass-D SanVicente POC2-B-PR 12.74 0 2477 2.1 0
    
```

[SUBAREAS]

```

;;Subcatchment N-Imperv N-Perv S-Imperv S-Perv PctZero RouteTo PctRouted
;;-----
POC2ADev2Area-C 0.012 0.05 0.05 0.1 25 OUTLET
POC2ADev2Area-D 0.012 0.05 0.05 0.1 25 OUTLET
    
```

POST\_POC-2B

POC2APRBasin2	0.012	0.05	0.05	0.1	25	OUTLET
POC2ADev3Area-C	0.012	0.05	0.05	0.1	25	OUTLET
POC2ADev3Area-D	0.012	0.05	0.05	0.1	25	OUTLET
POC2APRBasin3	0.012	0.05	0.05	0.1	25	OUTLET
POC2ADev4Area-C	0.012	0.05	0.05	0.1	25	OUTLET
POC2ADev4Area-D	0.012	0.05	0.05	0.1	25	OUTLET
POC2APRBasin4	0.012	0.05	0.05	0.1	25	OUTLET
POC2APRBypass-C	0.012	0.05	0.05	0.1	25	OUTLET
POC2APRBypass-D	0.012	0.05	0.05	0.1	25	OUTLET
POC2BDev5Area-C	0.012	0.05	0.05	0.1	25	OUTLET
POC2BDev5Area-D	0.012	0.05	0.05	0.1	25	OUTLET
POC2BPRBasin5	0.012	0.05	0.05	0.1	25	OUTLET
POC2BPRBypass-A	0.012	0.05	0.05	0.1	25	OUTLET
POC2BPRBypass-C	0.012	0.05	0.05	0.1	25	OUTLET
POC2BPRBypass-D	0.012	0.05	0.05	0.1	25	OUTLET

[INFILTRATION]

;;Subcatchment	Suction	HydCon	IMDmax
POC2ADev2Area-C	6	0.075	0.32
POC2ADev2Area-D	9	0.01875	0.33
POC2APRBasin2	6	0.075	0.32
POC2ADev3Area-C	6	0.075	0.32
POC2ADev3Area-D	9	0.01875	0.33
POC2APRBasin3	6	0.075	0.32
POC2ADev4Area-C	6	0.075	0.32
POC2ADev4Area-D	9	0.01875	0.33
POC2APRBasin4	7.71	0.043	0.326
POC2APRBypass-C	6	0.10	0.32
POC2APRBypass-D	9	0.025	0.33
POC2BDev5Area-C	6	0.075	0.32
POC2BDev5Area-D	9	0.01875	0.33
POC2BPRBasin5	7.88	0.24	0.33
POC2BPRBypass-A	1.5	0.30	0.30
POC2BPRBypass-C	6	0.10	0.32
POC2BPRBypass-D	9	0.025	0.33

[LID\_CONTROLS]

;;	Type/Layer	Parameters
LID-2	BC	
LID-2	SURFACE	28.75 0.05 0 0 5
LID-2	SOIL	24 0.4 0.2 0.1 5 5 1.5
LID-2	STORAGE	24 .67 0 0
LID-2	DRAIN	0.14148 0.5 3 6
LID-3	BC	
LID-3	SURFACE	27.38 0.05 0 0 5
LID-3	SOIL	24 0.4 0.2 0.1 5 5 1.5
LID-3	STORAGE	24 0.67 0 0
LID-3	DRAIN	0.226365 0.5 3 6
LID-4	BC	
LID-4	SURFACE	27.02 0.05 0 0 5
LID-4	SOIL	27 0.4 0.2 0.1 5 5 1.5
LID-4	STORAGE	24 0.67 0 0
LID-4	DRAIN	0.277206 0.5 3 6
LID-5	BC	
LID-5	SURFACE	17.82 0.05 0 0 5
LID-5	SOIL	24 0.4 0.2 0.1 5 5 1.5
LID-5	STORAGE	27 0.67 0 0
LID-5	DRAIN	0.159418 0.5 3 6

[LID\_USAGE]

;;Subcatchment	LID Process	Number	Area	Width	InitSatur	FromImprv	ToPerv	Report File
POC2APRBasin2	LID-2	1	44124	0	0	100	0	
POC2APRBasin3	LID-3	1	83668	0	0	100	0	
POC2APRBasin4	LID-4	1	135127	0	0	100	0	
POC2BPRBasin5	LID-5	1	338354	0	0	100	0	

POST\_POC-2B

[JUNCTIONS]

```
;;
;;Name          Invert      Max.      Init.      Surcharge  Pondered
;;              Elev.       Depth    Depth     Depth      Area
;;-----
POC2APR         0           0         0          0          0
```

[OUTFALLS]

```
;;
;;Name          Invert      Outfall    Stage/Table  Tide
;;              Elev.       Type       Time Series  Gate
;;-----
POC2-B-PR       0           FREE       NO           NO
```

[CONDUITS]

```
;;
;;Name          Inlet      Outlet      Length      Manning    Inlet      Outlet      Init.      Max.
;;              Node       Node        Length      N          Offset     Offset     Flow       Flow
;;-----
DUMMY           POC2APR   POC2-B-PR  10          0.01      0         0         0         0
```

[XSECTIONS]

```
;;Link         Shape      Geom1      Geom2      Geom3      Geom4      Barrels
;;-----
DUMMY          DUMMY     0          0          0          0          1
```

[LOSSES]

```
;;Link         Inlet      Outlet      Average      Flap Gate
;;-----
```

[TIMESERIES]

```
;;Name         Date       Time       Value
;;-----
;San Vicente Rain Gage from San Diego County
SanVicente     FILE "P:\Acad\7033 Hunsaker San Diego\03 Fanita Ranch\REC SWMM\rainfall_sanvicente.dat"
```

[REPORT]

```
INPUT          NO
CONTROLS       NO
SUBCATCHMENTS ALL
NODES          ALL
LINKS          ALL
```

[TAGS]

[MAP]

```
DIMENSIONS -652.550 3448.390 2670.020 6121.505
Units      None
```

[COORDINATES]

```
;;Node         X-Coord      Y-Coord
;;-----
POC2APR        1000.000     4750.000
POC2-B-PR      1000.240     4227.105
```

[VERTICES]

```
;;Link         X-Coord      Y-Coord
;;-----
```

[Polygons]

```
;;Subcatchment X-Coord      Y-Coord
;;-----
POC2ADev2Area-C -132.385     6000.000
POC2ADev2Area-D -497.724     5532.514
POC2APRBasin2   146.134     5378.973
POC2ADev3Area-C 514.371     6000.000
POC2ADev3Area-D 1359.113     6000.000
POC2APRBasin3   968.538     5713.083
POC2ADev4Area-C 2012.469     6000.000
POC2ADev4Area-D 2500.835     5375.106
POC2APRBasin4   2014.668     5364.106
POC2APRBypass-C -500.000     4750.000
POC2APRBypass-D 2500.000     4750.000
```

## POST\_POC-2B

POC2BDev5Area-C	2499.982	4250.000
POC2BDev5Area-D	2518.994	3619.978
POC2BPRBasin5	2213.733	3802.794
POC2BPRBypass-A	-501.524	4178.453
POC2BPRBypass-C	-501.524	3648.496
POC2BPRBypass-D	1012.300	3603.342

### [SYMBOLS]

;;Gage	X-Coord	Y-Coord
;;-----	-----	-----
SanVicente	450.000	3600.000

### **POC 3**

Flow Duration Curve (Pass-Fail) Results

List of the “n” largest Peaks: Pre-Development and Post-Development Conditions  
Elevation vs. Area Curves and Elevations vs. Discharge Curves to be used in SWMM  
DMA and SWMM Input Data (Existing and Proposed Models)



Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
37	63.998	83	2.71E-02	46	1.50E-02	55%	Pass
38	65.464	73	2.38E-02	44	1.43E-02	60%	Pass
39	66.929	66	2.15E-02	43	1.40E-02	65%	Pass
40	68.395	64	2.09E-02	41	1.34E-02	64%	Pass
41	69.861	60	1.96E-02	37	1.21E-02	62%	Pass
42	71.326	55	1.79E-02	36	1.17E-02	65%	Pass
43	72.792	51	1.66E-02	33	1.08E-02	65%	Pass
44	74.258	50	1.63E-02	30	9.78E-03	60%	Pass
45	75.723	45	1.47E-02	28	9.13E-03	62%	Pass
46	77.189	45	1.47E-02	28	9.13E-03	62%	Pass
47	78.655	44	1.43E-02	28	9.13E-03	64%	Pass
48	80.120	42	1.37E-02	28	9.13E-03	67%	Pass
49	81.586	42	1.37E-02	26	8.47E-03	62%	Pass
50	83.051	41	1.34E-02	25	8.15E-03	61%	Pass
51	84.517	40	1.30E-02	24	7.82E-03	60%	Pass
52	85.983	39	1.27E-02	24	7.82E-03	62%	Pass
53	87.448	37	1.21E-02	22	7.17E-03	59%	Pass
54	88.914	33	1.08E-02	21	6.84E-03	64%	Pass
55	90.380	31	1.01E-02	20	6.52E-03	65%	Pass
56	91.845	28	9.13E-03	18	5.87E-03	64%	Pass
57	93.311	27	8.80E-03	18	5.87E-03	67%	Pass
58	94.777	25	8.15E-03	16	5.21E-03	64%	Pass
59	96.242	25	8.15E-03	16	5.21E-03	64%	Pass
60	97.708	24	7.82E-03	16	5.21E-03	67%	Pass
61	99.174	23	7.50E-03	14	4.56E-03	61%	Pass
62	100.639	21	6.84E-03	13	4.24E-03	62%	Pass
63	102.105	21	6.84E-03	13	4.24E-03	62%	Pass
64	103.571	20	6.52E-03	12	3.91E-03	60%	Pass
65	105.036	20	6.52E-03	12	3.91E-03	60%	Pass
66	106.502	20	6.52E-03	12	3.91E-03	60%	Pass
67	107.967	20	6.52E-03	11	3.59E-03	55%	Pass
68	109.433	20	6.52E-03	9	2.93E-03	45%	Pass
69	110.899	20	6.52E-03	9	2.93E-03	45%	Pass
70	112.364	18	5.87E-03	9	2.93E-03	50%	Pass
71	113.830	17	5.54E-03	7	2.28E-03	41%	Pass
72	115.296	17	5.54E-03	6	1.96E-03	35%	Pass
73	116.761	17	5.54E-03	5	1.63E-03	29%	Pass
74	118.227	17	5.54E-03	5	1.63E-03	29%	Pass
75	119.693	14	4.56E-03	4	1.30E-03	29%	Pass
76	121.158	14	4.56E-03	3	9.78E-04	21%	Pass
77	122.624	13	4.24E-03	3	9.78E-04	23%	Pass
78	124.090	13	4.24E-03	3	9.78E-04	23%	Pass
79	125.555	12	3.91E-03	3	9.78E-04	25%	Pass
80	127.021	12	3.91E-03	3	9.78E-04	25%	Pass
81	128.487	12	3.91E-03	3	9.78E-04	25%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
82	129.952	12	3.91E-03	3	9.78E-04	25%	Pass
83	131.418	11	3.59E-03	3	9.78E-04	27%	Pass
84	132.883	11	3.59E-03	3	9.78E-04	27%	Pass
85	134.349	10	3.26E-03	3	9.78E-04	30%	Pass
86	135.815	9	2.93E-03	3	9.78E-04	33%	Pass
87	137.280	9	2.93E-03	3	9.78E-04	33%	Pass
88	138.746	9	2.93E-03	3	9.78E-04	33%	Pass
89	140.212	9	2.93E-03	3	9.78E-04	33%	Pass
90	141.677	9	2.93E-03	3	9.78E-04	33%	Pass
91	143.143	7	2.28E-03	3	9.78E-04	43%	Pass
92	144.609	7	2.28E-03	3	9.78E-04	43%	Pass
93	146.074	7	2.28E-03	3	9.78E-04	43%	Pass
94	147.540	7	2.28E-03	3	9.78E-04	43%	Pass
95	149.006	5	1.63E-03	2	6.52E-04	40%	Pass
96	150.471	5	1.63E-03	2	6.52E-04	40%	Pass
97	151.937	5	1.63E-03	2	6.52E-04	40%	Pass
98	153.403	5	1.63E-03	2	6.52E-04	40%	Pass
99	154.868	4	1.30E-03	2	6.52E-04	50%	Pass
100	156.334	4	1.30E-03	2	6.52E-04	50%	Pass

**Peak Flows calculated with Cunnane Plotting Position**

Return Period (years)	Pre-dev. Q (cfs)	Post-Dev. Q (cfs)	Reduction (cfs)
10	156.334	120.095	36.238
9	152.135	117.509	34.626
8	149.465	116.485	32.980
7	148.342	115.177	33.165
6	146.355	113.656	32.699
5	142.030	112.462	29.568
4	134.900	108.312	26.588
3	124.248	100.226	24.022
2	112.348	87.744	24.604

**List of Peak events and Determination of P2 and P10 (Pre-Development)**

**Fanita Ranch POC 3 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>156.33</b>	<b>166.18</b>					
<b>9</b>	<b>152.14</b>	<b>154.21</b>	79.939	2/25/2003	35	1.03	1.02
<b>8</b>	<b>149.46</b>	<b>151.06</b>	85.484	2/12/2003	34	1.06	1.05
<b>7</b>	<b>148.34</b>	<b>148.47</b>	86.927	2/16/1980	33	1.09	1.08
<b>6</b>	<b>146.35</b>	<b>148.13</b>	87.713	4/23/1980	32	1.13	1.11
<b>5</b>	<b>142.03</b>	<b>142.13</b>	88.141	2/15/1986	31	1.16	1.15
<b>4</b>	<b>134.90</b>	<b>135.19</b>	88.737	2/18/1980	30	1.20	1.19
<b>3</b>	<b>124.25</b>	<b>124.56</b>	88.946	3/4/1978	29	1.24	1.23
<b>2</b>	<b>112.35</b>	<b>112.35</b>	90.842	12/28/1977	28	1.29	1.28
			90.981	1/13/1993	27	1.33	1.32
			91.726	1/18/1993	26	1.38	1.38
			94.556	12/4/1974	25	1.44	1.43
			94.644	4/18/1995	24	1.50	1.49
			96.383	8/17/1977	23	1.57	1.56
			98.381	10/10/1986	22	1.64	1.63
			99.877	2/21/2005	21	1.71	1.71
			100.558	2/15/1992	20	1.80	1.80
			102.749	3/2/1983	19	1.89	1.89
			112.348	1/31/1979	18	2.00	2.00
			112.746	3/1/1983	17	2.12	2.12
			118.743	3/6/1975	16	2.25	2.26
			119.489	10/27/2004	15	2.40	2.41
			119.543	10/18/2004	14	2.57	2.59
			122.36	2/13/1998	13	2.77	2.79
			124.564	10/20/2004	12	3.00	3.03
			130.41	2/2/1998	11	3.27	3.32
			133.863	2/19/1993	10	3.60	3.67
			135.19	1/29/1980	9	4.00	4.09
			141.825	1/9/2005	8	4.50	4.63
			142.215	2/6/1992	7	5.14	5.33
			148.129	2/7/1998	6	6.00	6.29
			148.536	10/31/1987	5	7.20	7.65
			154.212	9/10/1976	4	9.00	9.78
			190.12	10/22/1976	3	12.00	13.54
			215.411	2/20/1980	2	18.00	22.00
			234.937	1/4/1978	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

**List of Peak events and Determination of P2 and P10 (Post-Development)**

**Fanita Ranch POC 3 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>120.10</b>	<b>128.40</b>					
9	117.51	118.31	66.30	2/12/2003	35	1.03	1.02
8	116.49	117.10	67.83	2/15/1986	34	1.06	1.05
7	115.18	115.80	67.83	3/5/1995	33	1.09	1.08
6	113.66	114.13	68.54	3/4/1978	32	1.13	1.11
5	112.46	112.50	68.67	2/16/1980	31	1.16	1.15
4	108.31	108.72	68.74	1/29/1980	30	1.20	1.19
3	100.23	100.57	69.00	12/28/1977	29	1.24	1.23
2	87.74	87.74	71.32	1/13/1993	28	1.29	1.28
			71.45	1/18/1993	27	1.33	1.32
			71.58	2/18/1980	26	1.38	1.38
			72.67	4/18/1995	25	1.44	1.43
			73.51	2/15/1992	24	1.50	1.49
			74.16	12/4/1974	23	1.57	1.56
			74.46	8/17/1977	22	1.64	1.63
			74.92	10/10/1986	21	1.71	1.71
			80.21	2/21/2005	20	1.80	1.80
			86.61	3/3/1983	19	1.89	1.89
			87.74	3/1/1983	18	2.00	2.00
			89.40	10/27/2004	17	2.12	2.12
			90.43	3/6/1975	16	2.25	2.26
			90.86	10/18/2004	15	2.40	2.41
			94.33	2/13/1998	14	2.57	2.59
			98.18	10/20/2004	13	2.77	2.79
			100.57	2/2/1998	12	3.00	3.03
			102.69	2/19/1993	11	3.27	3.32
			106.85	1/29/1980	10	3.60	3.67
			108.72	2/6/1992	9	4.00	4.09
			112.38	1/31/1979	8	4.50	4.63
			112.54	1/9/2005	7	5.14	5.33
			114.13	10/31/1987	6	6.00	6.29
			116.13	2/7/1998	5	7.20	7.65
			118.31	9/10/1976	4	9.00	9.78
			148.59	10/22/1976	3	12.00	13.54
			169.76	2/20/1980	2	18.00	22.00
			179.39	1/4/1978	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

### Basin 3 Stage Storage

<b>Elevation *</b> <b>(Feet)</b>	<b>Area</b> <b>(sq-ft)</b>
0.000	134075
0.250	135718
0.500	137363
0.750	139010
1.000	140658
1.250	142308
1.500	143961
1.750	145615
2.000	147270
2.250	148928
2.500	150588
2.750	152249
3.000	153912
3.250	155577
3.500	157244
3.750	158913
4.000	160584
4.250	162256
4.500	163930
4.750	165607

\* Elevation Measured above the first surface outlet.

### POC-3 Pond Stage Storage

<b>Elevation *</b> <b>(Feet)</b>	<b>Area</b> <b>(sq-ft)</b>
0.000	0
0.500	1176
1.500	4851
3.500	11571
5.500	22279
8.500	45893

### Outlet structure for Discharge of Basin 3

#### Discharge vs Elevation Table

Low orifice	1.000 "	Lower slot		Lower Weir	
Number of orif:	0	Number of slots:	1	Number of weirs:	0
Cg-low:	0.62	Invert:	0.00 ft	Invert:	0.00
		B	4.750 ft	B:	0.00
Middle orifice	1 "	h <sub>slot</sub>	0.167 ft		
Number of orif:	0	Upper slot		Emergency weir	
Cg-middle:	0.62	Number of slots:	1	Invert:	3.583 ft
invert elev:	0.000 ft	Invert:	2.75 ft	W:	20.00 ft
		B:	6.00 ft		
		h <sub>slot</sub>	0.500 ft		

h* (ft)	H/D-low -	H/D-mid -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qslot-low (cfs)	Qslot-upp (cfs)	Qweir (cfs)	Qemerg (cfs)	Qtot (cfs)
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.042	0.500	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.125	0.000	0.000	0.000	0.125
0.083	1.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.354	0.000	0.000	0.000	0.354
0.125	1.500	1.500	0.000	0.000	0.000	0.000	0.000	0.000	0.651	0.000	0.000	0.000	0.651
0.167	2.000	2.000	0.000	0.000	0.000	0.000	0.000	0.000	1.002	0.000	0.000	0.000	1.002
0.208	2.500	2.500	0.000	0.000	0.000	0.000	0.000	0.000	1.370	0.000	0.000	0.000	1.370
0.250	3.000	3.000	0.000	0.000	0.000	0.000	0.000	0.000	1.582	0.000	0.000	0.000	1.582
0.292	3.500	3.500	0.000	0.000	0.000	0.000	0.000	0.000	1.769	0.000	0.000	0.000	1.769
0.333	4.000	4.000	0.000	0.000	0.000	0.000	0.000	0.000	1.938	0.000	0.000	0.000	1.938
0.375	4.500	4.500	0.000	0.000	0.000	0.000	0.000	0.000	2.093	0.000	0.000	0.000	2.093
0.417	5.000	5.000	0.000	0.000	0.000	0.000	0.000	0.000	2.237	0.000	0.000	0.000	2.237
0.458	5.500	5.500	0.000	0.000	0.000	0.000	0.000	0.000	2.373	0.000	0.000	0.000	2.373
0.500	6.000	6.000	0.000	0.000	0.000	0.000	0.000	0.000	2.502	0.000	0.000	0.000	2.502
0.542	6.500	6.500	0.000	0.000	0.000	0.000	0.000	0.000	2.624	0.000	0.000	0.000	2.624
0.583	7.000	7.000	0.000	0.000	0.000	0.000	0.000	0.000	2.740	0.000	0.000	0.000	2.740
0.625	7.500	7.500	0.000	0.000	0.000	0.000	0.000	0.000	2.852	0.000	0.000	0.000	2.852
0.667	8.000	8.000	0.000	0.000	0.000	0.000	0.000	0.000	2.960	0.000	0.000	0.000	2.960
0.708	8.500	8.500	0.000	0.000	0.000	0.000	0.000	0.000	3.064	0.000	0.000	0.000	3.064
0.750	9.000	9.000	0.000	0.000	0.000	0.000	0.000	0.000	3.164	0.000	0.000	0.000	3.164
0.792	9.500	9.500	0.000	0.000	0.000	0.000	0.000	0.000	3.262	0.000	0.000	0.000	3.262
0.833	10.000	10.000	0.000	0.000	0.000	0.000	0.000	0.000	3.356	0.000	0.000	0.000	3.356
0.875	10.500	10.500	0.000	0.000	0.000	0.000	0.000	0.000	3.448	0.000	0.000	0.000	3.448
0.917	11.000	11.000	0.000	0.000	0.000	0.000	0.000	0.000	3.538	0.000	0.000	0.000	3.538
0.958	11.500	11.500	0.000	0.000	0.000	0.000	0.000	0.000	3.625	0.000	0.000	0.000	3.625
1.000	12.000	12.000	0.000	0.000	0.000	0.000	0.000	0.000	3.710	0.000	0.000	0.000	3.710
1.042	12.500	12.500	0.000	0.000	0.000	0.000	0.000	0.000	3.794	0.000	0.000	0.000	3.794
1.083	13.000	13.000	0.000	0.000	0.000	0.000	0.000	0.000	3.875	0.000	0.000	0.000	3.875
1.125	13.500	13.500	0.000	0.000	0.000	0.000	0.000	0.000	3.955	0.000	0.000	0.000	3.955
1.167	14.000	14.000	0.000	0.000	0.000	0.000	0.000	0.000	4.034	0.000	0.000	0.000	4.034
1.208	14.500	14.500	0.000	0.000	0.000	0.000	0.000	0.000	4.110	0.000	0.000	0.000	4.110
1.250	15.000	15.000	0.000	0.000	0.000	0.000	0.000	0.000	4.186	0.000	0.000	0.000	4.186
1.292	15.500	15.500	0.000	0.000	0.000	0.000	0.000	0.000	4.260	0.000	0.000	0.000	4.260
1.333	16.000	16.000	0.000	0.000	0.000	0.000	0.000	0.000	4.333	0.000	0.000	0.000	4.333
1.375	16.500	16.500	0.000	0.000	0.000	0.000	0.000	0.000	4.404	0.000	0.000	0.000	4.404
1.417	17.000	17.000	0.000	0.000	0.000	0.000	0.000	0.000	4.475	0.000	0.000	0.000	4.475
1.458	17.500	17.500	0.000	0.000	0.000	0.000	0.000	0.000	4.544	0.000	0.000	0.000	4.544
1.500	18.000	18.000	0.000	0.000	0.000	0.000	0.000	0.000	4.613	0.000	0.000	0.000	4.613
1.542	18.500	18.500	0.000	0.000	0.000	0.000	0.000	0.000	4.680	0.000	0.000	0.000	4.680
1.583	19.000	19.000	0.000	0.000	0.000	0.000	0.000	0.000	4.746	0.000	0.000	0.000	4.746
1.625	19.500	19.500	0.000	0.000	0.000	0.000	0.000	0.000	4.812	0.000	0.000	0.000	4.812
1.667	20.000	20.000	0.000	0.000	0.000	0.000	0.000	0.000	4.876	0.000	0.000	0.000	4.876
1.708	20.500	20.500	0.000	0.000	0.000	0.000	0.000	0.000	4.940	0.000	0.000	0.000	4.940
1.750	21.000	21.000	0.000	0.000	0.000	0.000	0.000	0.000	5.003	0.000	0.000	0.000	5.003
1.792	21.500	21.500	0.000	0.000	0.000	0.000	0.000	0.000	5.065	0.000	0.000	0.000	5.065
1.833	22.000	22.000	0.000	0.000	0.000	0.000	0.000	0.000	5.127	0.000	0.000	0.000	5.127
1.875	22.500	22.500	0.000	0.000	0.000	0.000	0.000	0.000	5.187	0.000	0.000	0.000	5.187
1.917	23.000	23.000	0.000	0.000	0.000	0.000	0.000	0.000	5.247	0.000	0.000	0.000	5.247
1.958	23.500	23.500	0.000	0.000	0.000	0.000	0.000	0.000	5.307	0.000	0.000	0.000	5.307
2.000	24.000	24.000	0.000	0.000	0.000	0.000	0.000	0.000	5.365	0.000	0.000	0.000	5.365
2.042	24.500	24.500	0.000	0.000	0.000	0.000	0.000	0.000	5.423	0.000	0.000	0.000	5.423
2.083	25.000	25.000	0.000	0.000	0.000	0.000	0.000	0.000	5.481	0.000	0.000	0.000	5.481
2.125	25.500	25.500	0.000	0.000	0.000	0.000	0.000	0.000	5.537	0.000	0.000	0.000	5.537
2.167	26.000	26.000	0.000	0.000	0.000	0.000	0.000	0.000	5.594	0.000	0.000	0.000	5.594
2.208	26.500	26.500	0.000	0.000	0.000	0.000	0.000	0.000	5.649	0.000	0.000	0.000	5.649
2.250	27.000	27.000	0.000	0.000	0.000	0.000	0.000	0.000	5.704	0.000	0.000	0.000	5.704
2.292	27.500	27.500	0.000	0.000	0.000	0.000	0.000	0.000	5.759	0.000	0.000	0.000	5.759
2.333	28.000	28.000	0.000	0.000	0.000	0.000	0.000	0.000	5.813	0.000	0.000	0.000	5.813
2.375	28.500	28.500	0.000	0.000	0.000	0.000	0.000	0.000	5.867	0.000	0.000	0.000	5.867
2.417	29.000	29.000	0.000	0.000	0.000	0.000	0.000	0.000	5.920	0.000	0.000	0.000	5.920
2.458	29.500	29.500	0.000	0.000	0.000	0.000	0.000	0.000	5.972	0.000	0.000	0.000	5.972

2.500	30.000	30.000	0.000	0.000	0.000	0.000	0.000	0.000	6.025	0.000	0.000	0.000	6.025
2.542	30.500	30.500	0.000	0.000	0.000	0.000	0.000	0.000	6.076	0.000	0.000	0.000	6.076
2.583	31.000	31.000	0.000	0.000	0.000	0.000	0.000	0.000	6.128	0.000	0.000	0.000	6.128
2.625	31.500	31.500	0.000	0.000	0.000	0.000	0.000	0.000	6.178	0.000	0.000	0.000	6.178
2.667	32.000	32.000	0.000	0.000	0.000	0.000	0.000	0.000	6.229	0.000	0.000	0.000	6.229
2.708	32.500	32.500	0.000	0.000	0.000	0.000	0.000	0.000	6.279	0.000	0.000	0.000	6.279
2.750	33.000	33.000	0.000	0.000	0.000	0.000	0.000	0.000	6.328	0.000	0.000	0.000	6.328
2.792	33.500	33.500	0.000	0.000	0.000	0.000	0.000	0.000	6.378	0.158	0.000	0.000	6.536
2.833	34.000	34.000	0.000	0.000	0.000	0.000	0.000	0.000	6.427	0.447	0.000	0.000	6.874
2.875	34.500	34.500	0.000	0.000	0.000	0.000	0.000	0.000	6.475	0.822	0.000	0.000	7.297
2.917	35.000	35.000	0.000	0.000	0.000	0.000	0.000	0.000	6.523	1.266	0.000	0.000	7.789
2.958	35.500	35.500	0.000	0.000	0.000	0.000	0.000	0.000	6.571	1.769	0.000	0.000	8.340
3.000	36.000	36.000	0.000	0.000	0.000	0.000	0.000	0.000	6.618	2.325	0.000	0.000	8.943
3.042	36.500	36.500	0.000	0.000	0.000	0.000	0.000	0.000	6.666	2.930	0.000	0.000	9.595
3.083	37.000	37.000	0.000	0.000	0.000	0.000	0.000	0.000	6.712	3.580	0.000	0.000	10.292
3.125	37.500	37.500	0.000	0.000	0.000	0.000	0.000	0.000	6.759	4.271	0.000	0.000	11.030
3.167	38.000	38.000	0.000	0.000	0.000	0.000	0.000	0.000	6.805	5.003	0.000	0.000	11.808
3.208	38.500	38.500	0.000	0.000	0.000	0.000	0.000	0.000	6.851	5.771	0.000	0.000	12.622
3.250	39.000	39.000	0.000	0.000	0.000	0.000	0.000	0.000	6.896	6.576	0.000	0.000	13.472
3.292	39.500	39.500	0.000	0.000	0.000	0.000	0.000	0.000	6.942	7.415	0.000	0.000	14.357
3.333	40.000	40.000	0.000	0.000	0.000	0.000	0.000	0.000	6.986	8.287	0.000	0.000	15.273
3.375	40.500	40.500	0.000	0.000	0.000	0.000	0.000	0.000	7.031	8.993	0.000	0.000	16.024
3.417	41.000	41.000	0.000	0.000	0.000	0.000	0.000	0.000	7.075	9.480	0.000	0.000	16.555
3.458	41.500	41.500	0.000	0.000	0.000	0.000	0.000	0.000	7.120	9.942	0.000	0.000	17.062
3.500	42.000	42.000	0.000	0.000	0.000	0.000	0.000	0.000	7.163	10.384	0.000	0.000	17.548
3.542	42.500	42.500	0.000	0.000	0.000	0.000	0.000	0.000	7.207	10.808	0.000	0.000	18.015
3.583	43.000	43.000	0.000	0.000	0.000	0.000	0.000	0.000	7.250	11.216	0.000	0.000	18.467
3.625	43.500	43.500	0.000	0.000	0.000	0.000	0.000	0.000	7.293	11.610	0.000	0.527	19.431
3.667	44.000	44.000	0.000	0.000	0.000	0.000	0.000	0.000	7.336	11.991	0.000	1.491	20.818
3.708	44.500	44.500	0.000	0.000	0.000	0.000	0.000	0.000	7.379	12.360	0.000	2.740	22.478
3.750	45.000	45.000	0.000	0.000	0.000	0.000	0.000	0.000	7.421	12.718	0.000	4.219	24.358
3.792	45.500	45.500	0.000	0.000	0.000	0.000	0.000	0.000	7.463	13.067	0.000	5.896	26.425
3.833	46.000	46.000	0.000	0.000	0.000	0.000	0.000	0.000	7.505	13.406	0.000	7.750	28.661
3.875	46.500	46.500	0.000	0.000	0.000	0.000	0.000	0.000	7.546	13.737	0.000	9.766	31.050
3.917	47.000	47.000	0.000	0.000	0.000	0.000	0.000	0.000	7.588	14.060	0.000	11.932	33.580
3.958	47.500	47.500	0.000	0.000	0.000	0.000	0.000	0.000	7.629	14.376	0.000	14.238	36.243
4.000	48.000	48.000	0.000	0.000	0.000	0.000	0.000	0.000	7.670	14.686	0.000	16.675	39.031
4.042	48.500	48.500	0.000	0.000	0.000	0.000	0.000	0.000	7.710	14.989	0.000	19.238	41.937
4.083	49.000	49.000	0.000	0.000	0.000	0.000	0.000	0.000	7.751	15.285	0.000	21.920	44.956
4.125	49.500	49.500	0.000	0.000	0.000	0.000	0.000	0.000	7.791	15.577	0.000	24.717	48.084
4.167	50.000	50.000	0.000	0.000	0.000	0.000	0.000	0.000	7.831	15.862	0.000	27.623	51.316
4.208	50.500	50.500	0.000	0.000	0.000	0.000	0.000	0.000	7.871	16.143	0.000	30.635	54.649
4.250	51.000	51.000	0.000	0.000	0.000	0.000	0.000	0.000	7.911	16.419	0.000	33.749	58.078
4.292	51.500	51.500	0.000	0.000	0.000	0.000	0.000	0.000	7.950	16.690	0.000	36.961	61.602
4.333	52.000	52.000	0.000	0.000	0.000	0.000	0.000	0.000	7.989	16.958	0.000	40.270	65.217
4.375	52.500	52.500	0.000	0.000	0.000	0.000	0.000	0.000	8.028	17.220	0.000	43.672	68.921
4.417	53.000	53.000	0.000	0.000	0.000	0.000	0.000	0.000	8.067	17.479	0.000	47.165	72.712
4.458	53.500	53.500	0.000	0.000	0.000	0.000	0.000	0.000	8.106	17.735	0.000	50.746	76.587
4.500	54.000	54.000	0.000	0.000	0.000	0.000	0.000	0.000	8.144	17.986	0.000	54.414	80.544
4.542	54.500	54.500	0.000	0.000	0.000	0.000	0.000	0.000	8.183	18.234	0.000	58.166	84.583
4.583	55.000	55.000	0.000	0.000	0.000	0.000	0.000	0.000	8.221	18.479	0.000	62.000	88.700
4.625	55.500	55.500	0.000	0.000	0.000	0.000	0.000	0.000	8.259	18.721	0.000	65.915	92.895
4.667	56.000	56.000	0.000	0.000	0.000	0.000	0.000	0.000	8.297	18.959	0.000	69.909	97.165
4.708	56.500	56.500	0.000	0.000	0.000	0.000	0.000	0.000	8.334	19.195	0.000	73.981	101.510
4.750	57.000	57.000	0.000	0.000	0.000	0.000	0.000	0.000	8.372	19.427	0.000	78.129	105.928



## BMP POC 3 PR

ABMP	<b>134075.2</b> sq-ft	
Cg	<b>0.61</b>	
Dorif	<b>4.5</b> in	6.36
Aorifice	0.11045 sq-ft	
C <sub>SWMM</sub>	<b>0.05029</b>	0.1006 (2 French)
	0.715228	
H-gravel	<b>1.75</b> ft	
	<b>21</b> in	
	18.75 in	
H-design	1.563 ft	
Q <sub>orif-classic</sub>	0.67583 cfs	
Q <sub>orif-SWMM</sub>	0.67583 cfs	
Qdiversion	<b>0.68258</b> cfs	1.3652 (2 French)
Qinf:	6.2072 cfs	
<b>0.1 Q2 EX</b>	<b>14.563</b>	

Fani ta Ranch POC3 EX

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          00:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   00:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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     0.06  0.08  0.11  .16  .18  .21  .21  .2  .16  .12  .08  .06
DRY_ONLY    NO
    
```

[RAINGAGES]

```

; Name      Rain Type   Time Intrvl  Snow Catch  Data Source
-----
SanViente  INTENSITY 1:00     1.0         TIMESERIES SanViente
    
```

[SUBCATCHMENTS]

```

; Name      Raingage      Outlet      Total Area  Pcnt. Imperv  Width  Pcnt. Slope  Curb Length  Snow Pack
-----
DMA-3-1-D  SanViente          POC-3       248.32     0             48289    7.3         0
    
```

[SUBAREAS]

```

; Subcatchment N-Imperv  N-Perv   S-Imperv  S-Perv   PctZero  RouteTo  PctRouted
-----
DMA-3-1-D     0.012    0.05    0.05     0.10    25       OUTLET
    
```

[INFILTRATION]

```

; Subcatchment Suction  HydCon   IMDmax
-----
DMA-3-1-D     9        0.025    0.33
    
```

[OUTFALLS]

```

; Name      Invert Elev.  Outfall Type  Stage/Table Time Series  Tide Gate
-----
POC-3       0        FREE                NO
    
```

[TIMESERIES]

```

; Name      Date      Time      Value
-----
From County SanViente  FILE "P:\Acad\7033 Hunsaker San Diego\03 Fani ta Ranch\REC SWMM\rainfall_sanviente.dat"
    
```

[REPORT]

```

INPUT          NO
CONTROLS       NO
SUBCATCHMENTS ALL
NODES          ALL
LINKS          ALL
    
```

[TAGS]

[MAP]

```

DIMENSIONS 809.042 4649.019 2610.432 5687.510
Units      None
    
```

[COORDINATES]

```

; Node      X-Coord      Y-Coord
-----
POC-3       1703.884     4696.131
    
```

[VERTICES]

Fani ta Ranch POC3 EX

```
:: Link          X-Coord          Y-Coord
::-----
```

[Polygons]

```
:: Subcatchment X-Coord          Y-Coord
::-----
```

```
DMA-3-1-D      1555.150          5445.500
```

[SYMBOLS]

```
:: Gage         X-Coord          Y-Coord
::-----
```

```
SanViente     1651.201          5640.306
```

POST\_DEV\_POC-3

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION        GREEN_AMPT
FLOW_ROUTING         KINWAVE
START_DATE           01/03/1973
START_TIME           05:00:00
REPORT_START_DATE    05/24/1973
REPORT_START_TIME    05:00:00
END_DATE             05/23/2008
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             00:15:00
DRY_STEP             04:00:00
ROUTING_STEP         0:01:00
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      0.06  0.08  0.110  0.16  0.18  0.21  0.21  0.2  0.16  0.12  0.08  0.06
DRY_ONLY     NO
    
```

[RAINGAGES]

```

;;
;;Name      Rain      Time      Snow      Data
;;Name      Type      Intrvl   Catch     Source
;;-----
SanVicente  INTENSITY 1:00   1.0      TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

;;
;;Name      Raingage      Outlet      Total      Pcnt.      Pcnt.      Curb      Snow
;;Name      Raingage      Outlet      Area       Imperv      Width     Slope     Length     Pack
;;-----
;Developed Area Tributary to Basin 6
POC3DevArea-C SanVicente  POC3PRBasin  0.71      66.9      219      4.2      0
POC3DevArea-D SanVicente  POC3PRBasin  117.63    66.9      37585    4.2      0
POC3PRBasin   SanVicente  Div-3        3.078     0         10       0         0
POC3PRBypass-D SanVicente  Pond         188.82    0         35928    7.3      0
    
```

[SUBAREAS]

```

;;Subcatchment  N-Imperv  N-Perv  S-Imperv  S-Perv  PctZero  RouteTo  PctRouted
;;-----
POC3DevArea-C  0.012    0.05   0.05     0.1     25       OUTLET
POC3DevArea-D  0.012    0.05   0.05     0.1     25       OUTLET
POC3PRBasin    0.012    0.05   0.05     0.1     25       OUTLET
POC3PRBypass-D 0.012    0.05   0.05     0.1     25       OUTLET
    
```

[INFILTRATION]

```

;;Subcatchment  Suction  HydCon  IMDmax
;;-----
POC3DevArea-C  6        0.075  0.32
POC3DevArea-D  9        0.01875 0.33
POC3PRBasin    7.70    0.24   0.32
POC3PRBypass-D 9        0.025  0.33
    
```

[LID\_CONTROLS]

```

;;
;;Type/Layer Parameters
;;-----
    
```

POST\_DEV\_POC-3

LID-6	BC								
LID-6	SURFACE	18.44	0.05	0	0	5			
LID-6	SOIL	27	0.4	0.2	0.1	5	5	1.5	
LID-6	STORAGE	27	0.67	0.025	0				
LID-6	DRAIN	0.1006	0.5	6	6				

[LID\_USAGE]

;;Subcatchment	LID Process	Number	Area	Width	InitSatur	FromImprv	ToPerv	Report File
POC3PRBasin	LID-6	1	134075	0	1	100	0	

[OUTFALLS]

;;Name	Invert Elev.	Outfall Type	Stage/Table Time Series	Tide Gate
POC3PR	0	FREE		NO

[DIVIDERS]

;;Name	Invert Elev.	Diverted Link	Divider Type	Parameters
Div-3	0	Bypass-1	CUTOFF	1.3652 0 0 0 0

[STORAGE]

;;Name	Invert Elev.	Max. Depth	Init. Depth	Storage Curve	Curve Params	Ponded Area	Evap. Frac.	Infiltration
POC3PRStorage	0	4.75	0	TABULAR	POC3Storage	165607	1	
Pond	0	8.5	0	TABULAR	Pond	45893	1	

[CONDUITS]

;;Name	Inlet Node	Outlet Node	Length	Manning N	Inlet Offset	Outlet Offset	Init. Flow	Max. Flow
Bypass-1	Div-3	POC3PRStorage	10	0.01	0	0	0	0
UNDERDRAIN	Div-3	POC3PR	1	0.01	0	0	0	0

[OUTLETS]

;;Name	Inlet Node	Outlet Node	Outflow Height	Outlet Type	Qcoeff/QTable	Qexpon	Flap Gate
OUT-3	POC3PRStorage	POC3PR	0	TABULAR/DEPTH	POC-3-Discharge		NO
66-inch	Pond	POC3PR	0	TABULAR/DEPTH	66-inch		NO

[XSECTIONS]

;;Link	Shape	Geom1	Geom2	Geom3	Geom4	Barrels
Bypass-1	DUMMY	0	0	0	0	1
UNDERDRAIN	DUMMY	0	0	0	0	1

[LOSSES]

;;Link	Inlet	Outlet	Average	Flap Gate
--------	-------	--------	---------	-----------

[CURVES]

;;Name	Type	X-Value	Y-Value
POC-3-Discharge	Rating	0.000	0.000
POC-3-Discharge		0.042	0.079
POC-3-Discharge		0.083	0.224
POC-3-Discharge		0.125	0.411
POC-3-Discharge		0.167	0.633
POC-3-Discharge		0.208	0.865
POC-3-Discharge		0.250	0.999
POC-3-Discharge		0.292	1.117
POC-3-Discharge		0.333	1.224
POC-3-Discharge		0.375	1.322
POC-3-Discharge		0.417	1.413

## POST\_DEV\_POC-3

POC-3-Discharge	0.458	1.499
POC-3-Discharge	0.500	1.580
POC-3-Discharge	0.542	1.657
POC-3-Discharge	0.583	1.731
POC-3-Discharge	0.625	1.801
POC-3-Discharge	0.667	1.869
POC-3-Discharge	0.708	1.935
POC-3-Discharge	0.750	1.998
POC-3-Discharge	0.792	2.060
POC-3-Discharge	0.833	2.120
POC-3-Discharge	0.875	2.178
POC-3-Discharge	0.917	2.234
POC-3-Discharge	0.958	2.290
POC-3-Discharge	1.000	2.343
POC-3-Discharge	1.042	2.396
POC-3-Discharge	1.083	2.448
POC-3-Discharge	1.125	2.498
POC-3-Discharge	1.167	2.548
POC-3-Discharge	1.208	2.596
POC-3-Discharge	1.250	2.644
POC-3-Discharge	1.292	2.691
POC-3-Discharge	1.333	2.737
POC-3-Discharge	1.375	2.782
POC-3-Discharge	1.417	2.826
POC-3-Discharge	1.458	2.870
POC-3-Discharge	1.500	2.913
POC-3-Discharge	1.542	2.956
POC-3-Discharge	1.583	2.998
POC-3-Discharge	1.625	3.039
POC-3-Discharge	1.667	3.080
POC-3-Discharge	1.708	3.120
POC-3-Discharge	1.750	3.160
POC-3-Discharge	1.792	3.199
POC-3-Discharge	1.833	3.238
POC-3-Discharge	1.875	3.276
POC-3-Discharge	1.917	3.314
POC-3-Discharge	1.958	3.352
POC-3-Discharge	2.000	3.389
POC-3-Discharge	2.042	3.425
POC-3-Discharge	2.083	3.461
POC-3-Discharge	2.125	3.497
POC-3-Discharge	2.167	3.533
POC-3-Discharge	2.208	3.568
POC-3-Discharge	2.250	3.603
POC-3-Discharge	2.292	3.637
POC-3-Discharge	2.333	3.671
POC-3-Discharge	2.375	3.705
POC-3-Discharge	2.417	3.739
POC-3-Discharge	2.458	3.772
POC-3-Discharge	2.500	3.805
POC-3-Discharge	2.542	3.838
POC-3-Discharge	2.583	3.870
POC-3-Discharge	2.625	3.902
POC-3-Discharge	2.667	3.934
POC-3-Discharge	2.708	4.177
POC-3-Discharge	2.750	4.594
POC-3-Discharge	2.792	5.124
POC-3-Discharge	2.833	5.746
POC-3-Discharge	2.875	6.448
POC-3-Discharge	2.917	7.220
POC-3-Discharge	2.958	8.057
POC-3-Discharge	3.000	8.953
POC-3-Discharge	3.042	9.905
POC-3-Discharge	3.083	10.910
POC-3-Discharge	3.125	11.964
POC-3-Discharge	3.167	13.066
POC-3-Discharge	3.208	14.213
POC-3-Discharge	3.250	15.405
POC-3-Discharge	3.292	16.375
POC-3-Discharge	3.333	17.052
POC-3-Discharge	3.375	17.697

POST\_DEV\_POC-3

POC-3-Discharge	3.417	18.314
POC-3-Discharge	3.458	18.908
POC-3-Discharge	3.500	19.479
POC-3-Discharge	3.542	20.032
POC-3-Discharge	3.583	20.567
POC-3-Discharge	3.625	21.613
POC-3-Discharge	3.667	23.082
POC-3-Discharge	3.708	24.822
POC-3-Discharge	3.750	26.780
POC-3-Discharge	3.792	28.925
POC-3-Discharge	3.833	31.237
POC-3-Discharge	3.875	33.701
POC-3-Discharge	3.917	36.305
POC-3-Discharge	3.958	39.040
POC-3-Discharge	4.000	41.900
POC-3-Discharge	4.042	44.877
POC-3-Discharge	4.083	47.965
POC-3-Discharge	4.125	51.161
POC-3-Discharge	4.167	54.461
POC-3-Discharge	4.208	57.860
POC-3-Discharge	4.250	61.355
POC-3-Discharge	4.292	64.943
POC-3-Discharge	4.333	68.622
POC-3-Discharge	4.375	72.389
POC-3-Discharge	4.417	76.242
POC-3-Discharge	4.458	80.178
POC-3-Discharge	4.500	84.196
POC-3-Discharge	4.542	88.295
POC-3-Discharge	4.583	92.471
POC-3-Discharge	4.625	96.724
POC-3-Discharge	4.667	101.052
POC-3-Discharge	4.708	105.454
POC-3-Discharge	4.750	109.929

66-inch	Rating	0.000	0.000
66-inch		0.250	0.525
66-inch		0.500	2.021
66-inch		0.750	4.462
66-inch		1.000	7.823
66-inch		1.250	12.073
66-inch		1.500	17.181
66-inch		1.750	23.115
66-inch		2.000	29.838
66-inch		2.250	37.316
66-inch		2.500	45.509
66-inch		2.750	54.378
66-inch		3.000	63.883
66-inch		3.250	73.980
66-inch		3.500	84.629
66-inch		3.750	95.784
66-inch		4.000	107.401
66-inch		4.250	119.436
66-inch		4.500	131.842
66-inch		4.750	144.574
66-inch		5.000	157.586
66-inch		5.250	170.832
66-inch		5.500	184.266
66-inch		5.750	197.841
66-inch		6.000	211.513
66-inch		6.250	217.582
66-inch		6.500	225.218
66-inch		6.750	232.604
66-inch		7.000	239.763
66-inch		7.250	246.714
66-inch		7.500	253.475
66-inch		7.750	260.060
66-inch		8.000	266.482
66-inch		8.250	272.753
66-inch		8.500	278.883

POC3Storage	Storage	0.00	134075
-------------	---------	------	--------

POST\_DEV\_POC-3

POC3Storage	0.25	135718
POC3Storage	0.50	137363
POC3Storage	0.75	139010
POC3Storage	1.00	140658
POC3Storage	1.25	142308
POC3Storage	1.50	143961
POC3Storage	1.75	145615
POC3Storage	2.00	147270
POC3Storage	2.25	148928
POC3Storage	2.50	150588
POC3Storage	2.75	152249
POC3Storage	3.00	153912
POC3Storage	3.25	155577
POC3Storage	3.50	157244
POC3Storage	3.75	158913
POC3Storage	4.00	160584
POC3Storage	4.25	162256
POC3Storage	4.50	163930
POC3Storage	4.75	165607

Pond	Storage	0	0
Pond		0.5	1176
Pond		1.5	4851
Pond		3.5	11571
Pond		5.5	22279
Pond		8.5	45893

[TIMESERIES]

```

;;Name      Date      Time      Value
;-----
;San Vicente Rain Gage from San Diego County
SanVicente  FILE "P:\Acad\7033 Hunsaker San Diego\03 Fanita Ranch\REC SWMM\rainfall_sanvicente.dat"
    
```

[REPORT]

```

INPUT      NO
CONTROLS   NO
SUBCATCHMENTS ALL
NODES      ALL
LINKS      ALL
    
```

[TAGS]

```

[MAP]
DIMENSIONS 414.268 3830.807 1582.494 5299.070
Units      None
    
```

[COORDINATES]

;;Node	X-Coord	Y-Coord
;;-----	-----	-----
POC3PR	954.831	3981.677
Div-3	953.853	4434.530
POC3PRStorage	262.694	4434.288
Pond	1364.701	4359.024

[VERTICES]

;;Link	X-Coord	Y-Coord
;;-----	-----	-----

[Polygons]

;;Subcatchment	X-Coord	Y-Coord
;;-----	-----	-----
POC3DevArea-C	467.369	5232.331
POC3DevArea-D	1313.987	5189.353
POC3PRBasin	950.233	4655.380
POC3PRBypass-D	1592.998	4575.383

[SYMBOLS]

;;Gage	X-Coord	Y-Coord
;;-----	-----	-----
SanVicente	912.218	5104.320

## **POC 4A**

Flow Duration Curve (Pass-Fail) Results

List of the “n” largest Peaks: Pre-Development and Post-Development Conditions  
Elevation vs. Area Curves and Elevations vs. Discharge Curves to be used in SWMM  
SWMM Input Data (Existing and Proposed Models)



Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
37	11.278	86	2.80E-02	55	1.79E-02	64%	Pass
38	11.537	77	2.51E-02	51	1.66E-02	66%	Pass
39	11.795	70	2.28E-02	51	1.66E-02	73%	Pass
40	12.053	66	2.15E-02	45	1.47E-02	68%	Pass
41	12.312	60	1.96E-02	45	1.47E-02	75%	Pass
42	12.570	55	1.79E-02	44	1.43E-02	80%	Pass
43	12.828	51	1.66E-02	42	1.37E-02	82%	Pass
44	13.087	51	1.66E-02	41	1.34E-02	80%	Pass
45	13.345	46	1.50E-02	40	1.30E-02	87%	Pass
46	13.603	45	1.47E-02	39	1.27E-02	87%	Pass
47	13.862	44	1.43E-02	37	1.21E-02	84%	Pass
48	14.120	43	1.40E-02	32	1.04E-02	74%	Pass
49	14.378	42	1.37E-02	31	1.01E-02	74%	Pass
50	14.636	41	1.34E-02	28	9.13E-03	68%	Pass
51	14.895	40	1.30E-02	27	8.80E-03	68%	Pass
52	15.153	39	1.27E-02	25	8.15E-03	64%	Pass
53	15.411	37	1.21E-02	24	7.82E-03	65%	Pass
54	15.670	33	1.08E-02	23	7.50E-03	70%	Pass
55	15.928	31	1.01E-02	21	6.84E-03	68%	Pass
56	16.186	29	9.45E-03	21	6.84E-03	72%	Pass
57	16.445	27	8.80E-03	20	6.52E-03	74%	Pass
58	16.703	25	8.15E-03	20	6.52E-03	80%	Pass
59	16.961	25	8.15E-03	20	6.52E-03	80%	Pass
60	17.220	24	7.82E-03	20	6.52E-03	83%	Pass
61	17.478	23	7.50E-03	20	6.52E-03	87%	Pass
62	17.736	21	6.84E-03	19	6.19E-03	90%	Pass
63	17.995	21	6.84E-03	17	5.54E-03	81%	Pass
64	18.253	20	6.52E-03	17	5.54E-03	85%	Pass
65	18.511	20	6.52E-03	17	5.54E-03	85%	Pass
66	18.769	20	6.52E-03	17	5.54E-03	85%	Pass
67	19.028	20	6.52E-03	14	4.56E-03	70%	Pass
68	19.286	20	6.52E-03	14	4.56E-03	70%	Pass
69	19.544	20	6.52E-03	13	4.24E-03	65%	Pass
70	19.803	18	5.87E-03	12	3.91E-03	67%	Pass
71	20.061	17	5.54E-03	12	3.91E-03	71%	Pass
72	20.319	17	5.54E-03	12	3.91E-03	71%	Pass
73	20.578	17	5.54E-03	12	3.91E-03	71%	Pass
74	20.836	17	5.54E-03	11	3.59E-03	65%	Pass
75	21.094	16	5.21E-03	11	3.59E-03	69%	Pass
76	21.353	14	4.56E-03	10	3.26E-03	71%	Pass
77	21.611	13	4.24E-03	9	2.93E-03	69%	Pass
78	21.869	13	4.24E-03	9	2.93E-03	69%	Pass
79	22.128	12	3.91E-03	9	2.93E-03	75%	Pass
80	22.386	12	3.91E-03	9	2.93E-03	75%	Pass
81	22.644	12	3.91E-03	7	2.28E-03	58%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
82	22.902	12	3.91E-03	7	2.28E-03	58%	Pass
83	23.161	11	3.59E-03	7	2.28E-03	64%	Pass
84	23.419	11	3.59E-03	7	2.28E-03	64%	Pass
85	23.677	10	3.26E-03	5	1.63E-03	50%	Pass
86	23.936	9	2.93E-03	5	1.63E-03	56%	Pass
87	24.194	9	2.93E-03	5	1.63E-03	56%	Pass
88	24.452	9	2.93E-03	4	1.30E-03	44%	Pass
89	24.711	9	2.93E-03	4	1.30E-03	44%	Pass
90	24.969	9	2.93E-03	4	1.30E-03	44%	Pass
91	25.227	7	2.28E-03	3	9.78E-04	43%	Pass
92	25.486	7	2.28E-03	3	9.78E-04	43%	Pass
93	25.744	7	2.28E-03	3	9.78E-04	43%	Pass
94	26.002	7	2.28E-03	3	9.78E-04	43%	Pass
95	26.260	5	1.63E-03	3	9.78E-04	60%	Pass
96	26.519	5	1.63E-03	3	9.78E-04	60%	Pass
97	26.777	5	1.63E-03	3	9.78E-04	60%	Pass
98	27.035	5	1.63E-03	3	9.78E-04	60%	Pass
99	27.294	4	1.30E-03	3	9.78E-04	75%	Pass
100	27.552	4	1.30E-03	3	9.78E-04	75%	Pass

**Peak Flows calculated with Cunnane Plotting Position**

Return Period (years)	Pre-dev. Q (cfs)	Post-Dev. Q (cfs)	Reduction (cfs)
10	27.552	24.742	2.810
9	26.808	24.074	2.734
8	26.332	23.647	2.685
7	26.132	23.468	2.664
6	25.793	23.163	2.629
5	25.039	22.485	2.553
4	23.777	21.353	2.424
3	21.916	19.681	2.235
2	19.792	17.774	2.018

**List of Peak events and Determination of P2 and P10 (Pre-Development)**

**Fanita Ranch POC 4A - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>27.55</b>	<b>29.29</b>					
<b>9</b>	<b>26.81</b>	<b>27.18</b>	14.163	2/25/2003	35	1.03	1.02
<b>8</b>	<b>26.33</b>	<b>26.62</b>	15.068	2/12/2003	34	1.06	1.05
<b>7</b>	<b>26.13</b>	<b>26.15</b>	15.313	2/16/1980	33	1.09	1.08
<b>6</b>	<b>25.79</b>	<b>26.09</b>	15.538	2/15/1986	32	1.13	1.11
<b>5</b>	<b>25.04</b>	<b>25.07</b>	15.611	4/23/1980	31	1.16	1.15
<b>4</b>	<b>23.78</b>	<b>23.83</b>	15.635	2/18/1980	30	1.20	1.19
<b>3</b>	<b>21.92</b>	<b>21.98</b>	15.708	3/4/1978	29	1.24	1.23
<b>2</b>	<b>19.79</b>	<b>19.79</b>	16.031	1/13/1993	28	1.29	1.28
			16.11	12/28/1977	27	1.33	1.32
			16.263	1/18/1993	26	1.38	1.38
			16.676	12/4/1974	25	1.44	1.43
			16.694	4/18/1995	24	1.50	1.49
			16.993	8/17/1977	23	1.57	1.56
			17.425	10/10/1986	22	1.64	1.63
			17.595	2/21/2005	21	1.71	1.71
			17.721	2/15/1992	20	1.80	1.80
			18.101	3/2/1983	19	1.89	1.89
			19.792	1/31/1979	18	2.00	2.00
			19.864	3/1/1983	17	2.12	2.12
			20.987	3/6/1975	16	2.25	2.26
			21.12	10/18/2004	15	2.40	2.41
			21.147	10/27/2004	14	2.57	2.59
			21.559	2/13/1998	13	2.77	2.79
			21.976	10/20/2004	12	3.00	3.03
			22.976	2/2/1998	11	3.27	3.32
			23.607	2/19/1993	10	3.60	3.67
			23.825	1/29/1980	9	4.00	4.09
			24.982	1/9/2005	8	4.50	4.63
			25.09	2/6/1992	7	5.14	5.33
			26.094	2/7/1998	6	6.00	6.29
			26.167	10/31/1987	5	7.20	7.65
			27.178	9/10/1976	4	9.00	9.78
			33.508	10/22/1976	3	12.00	13.54
			37.943	2/20/1980	2	18.00	22.00
			41.397	1/4/1978	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

**List of Peak events and Determination of P2 and P10 (Post-Development)  
Fanita Ranch POC 4A - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>24.74</b>	<b>26.30</b>					
9	24.07	24.41	12.719	2/25/2003	35	1.03	1.02
8	23.65	23.90	13.532	2/12/2003	34	1.06	1.05
7	23.47	23.49	13.751	2/16/1980	33	1.09	1.08
6	23.16	23.43	13.953	2/15/1986	32	1.13	1.11
5	22.49	22.51	14.02	4/23/1980	31	1.16	1.15
4	21.35	21.40	14.041	2/18/1980	30	1.20	1.19
3	19.68	19.74	14.107	3/4/1978	29	1.24	1.23
2	17.77	17.77	14.397	1/13/1993	28	1.29	1.28
			14.467	12/28/1977	27	1.33	1.32
			14.605	1/18/1993	26	1.38	1.38
			14.976	12/4/1974	25	1.44	1.43
			14.992	4/18/1995	24	1.50	1.49
			15.260	8/17/1977	23	1.57	1.56
			15.648	10/10/1986	22	1.64	1.63
			15.801	2/21/2005	21	1.71	1.71
			15.914	2/15/1992	20	1.80	1.80
			16.255	3/2/1983	19	1.89	1.89
			17.774	1/31/1979	18	2.00	2.00
			17.839	3/1/1983	17	2.12	2.12
			18.847	3/6/1975	16	2.25	2.26
			18.967	10/18/2004	15	2.40	2.41
			18.991	10/27/2004	14	2.57	2.59
			19.361	2/13/1998	13	2.77	2.79
			19.735	10/20/2004	12	3.00	3.03
			20.633	2/2/1998	11	3.27	3.32
			21.200	2/19/1993	10	3.60	3.67
			21.396	1/29/1980	9	4.00	4.09
			22.434	1/9/2005	8	4.50	4.63
			22.532	2/6/1992	7	5.14	5.33
			23.434	2/7/1998	6	6.00	6.29
			23.499	10/31/1987	5	7.20	7.65
			24.406	9/10/1976	4	9.00	9.78
			30.091	10/22/1976	3	12.00	13.54
			34.074	2/20/1980	2	18.00	22.00
			37.176	1/4/1978	1	36.00	58.67

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

Fani ta Ranch POC4A EX

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          00:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   00:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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 0.06 0.08 0.11 .16 .18 .21 .21 .2 .16 .12 .08 .06
DRY_ONLY NO
    
```

[RAINGAGES]

```

; Name Rain Type Time Intrvl Snow Catch Data Source
-----
SanViente INTENSITY 1:00 1.0 TIMESERIES SanViente
    
```

[SUBCATCHMENTS]

```

; Name Raingage Outlet Total Area Pcnt. Imperv Width Pcnt. Slope Curb Length Snow Pack
-----
POC4AExArea-D SanViente POC4AEx 43.74 0 8506 13.5 0
    
```

[SUBAREAS]

```

; Subcatchment N-Imperv N-Perv S-Imperv S-Perv PctZero RouteTo PctRouted
-----
POC4AExArea-D 0.012 0.05 0.05 0.10 25 OUTLET
    
```

[INFILTRATION]

```

; Subcatchment Suction HydCon IMDmax
-----
POC4AExArea-D 9 0.025 0.33
    
```

[OUTFALLS]

```

; Name Invert Elev. Outfall Type Stage/Table Time Series Tide Gate
-----
POC4AEx 0 FREE NO
    
```

[TIMESERIES]

```

; Name Date Time Value
-----
From County SanViente
SanViente FILE "P:\Acad\7033 Hunsaker San Diego\03 Fani ta Ranch\REC SWMM\rainfall_sanviente.dat"
    
```

[REPORT]

```

INPUT NO
CONTROLS NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL
    
```

[TAGS]

[MAP]

```

DIMENSIONS 809.042 4649.019 2610.432 5687.510
Units None
    
```

[COORDINATES]

```

; Node X-Coord Y-Coord
-----
POC4AEx 1700.270 4696.223
    
```

[VERTICES]

Fani ta Ranch POC4A EX

```
:: Link          X-Coord          Y-Coord
::-----
```

[Polygons]

```
:: Subcatchment X-Coord          Y-Coord
::-----
```

```
POC4AExArea-D  2052.383          5618.158
```

[SYMBOLS]

```
:: Gage          X-Coord          Y-Coord
::-----
```

```
SanViente      1651.201          5640.306
```

Fani ta Ranch POC4A PR

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          00:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   00:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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 0.06 0.08 0.11 .16 .18 .21 .21 .2 .16 .12 .08 .06
DRY_ONLY NO
    
```

[RAINGAGES]

```

; Name Rain Type Time Intrvl Snow Catch Data Source
-----
SanVicente INTENSITY 1:00 1.0 TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

; Name Raingage Outlet Total Area Pcnt. Imperv Width Pcnt. Slope Curb Length Snow Pack
-----
POC4APrDevArea-D SanVicente POC4APr 39.28 0 7639 13.5 0
    
```

[SUBAREAS]

```

; Subcatchment N-Imperv N-Perv S-Imperv S-Perv PctZero RouteTo PctRouted
-----
POC4APrDevArea-D 0.012 0.05 0.05 0.10 25 OUTLET
    
```

[INFILTRATION]

```

; Subcatchment Suction HydCon IMDmax
-----
POC4APrDevArea-D 9 0.025 0.33
    
```

[OUTFALLS]

```

; Name Invert Elev. Outfall Type Stage/Table Time Series Tide Gate
-----
POC4APr 0 FREE NO
    
```

[TIMESERIES]

```

; Name Date Time Value
-----
From County SanVicente FILE "P:\Acad\7033 Hunsaker San Diego\03 Fani ta Ranch\REC SWMM\rainfall_sanvicente.dat"
    
```

[REPORT]

```

INPUT NO
CONTROLS NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL
    
```

[TAGS]

[MAP]

```

DIMENSIONS 809.042 4649.019 2610.432 5687.510
Units None
    
```

[COORDINATES]

```

; Node X-Coord Y-Coord
-----
POC4APr 1700.270 4696.223
    
```

[VERTICES]

Fanita Ranch POC4A PR

```
:: Link          X-Coord          Y-Coord  
::-----
```

[Polygons]

```
:: Subcatchment X-Coord          Y-Coord  
::-----
```

```
POC4APrDevArea-D 2052.383          5618.158
```

[SYMBOLS]

```
:: Gage          X-Coord          Y-Coord  
::-----
```

```
SanVicente       1651.201          5640.306
```

## POC 4B

Flow Duration Curve (Pass-Fail) Results

List of the “n” largest Peaks: Pre-Development and Post-Development Conditions

SWMM Input Data (Existing and Proposed Models)



Interval	Existing Condition			Detention Basin Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
39	45.082	35	7.00E-03	30	6.00E-03	86%	Pass
40	46.144	34	6.80E-03	29	5.80E-03	85%	Pass
41	47.207	32	6.40E-03	28	5.60E-03	88%	Pass
42	48.270	30	6.00E-03	26	5.20E-03	87%	Pass
43	49.332	29	5.80E-03	23	4.60E-03	79%	Pass
44	50.395	29	5.80E-03	21	4.20E-03	72%	Pass
45	51.458	29	5.80E-03	18	3.60E-03	62%	Pass
46	52.520	26	5.20E-03	16	3.20E-03	62%	Pass
47	53.583	25	5.00E-03	13	2.60E-03	52%	Pass
48	54.646	23	4.60E-03	11	2.20E-03	48%	Pass
49	55.708	22	4.40E-03	10	2.00E-03	45%	Pass
50	56.771	21	4.20E-03	10	2.00E-03	48%	Pass
51	57.834	20	4.00E-03	10	2.00E-03	50%	Pass
52	58.896	18	3.60E-03	10	2.00E-03	56%	Pass
53	59.959	18	3.60E-03	10	2.00E-03	56%	Pass
54	61.022	17	3.40E-03	10	2.00E-03	59%	Pass
55	62.084	17	3.40E-03	10	2.00E-03	59%	Pass
56	63.147	17	3.40E-03	9	1.80E-03	53%	Pass
57	64.210	15	3.00E-03	9	1.80E-03	60%	Pass
58	65.272	15	3.00E-03	8	1.60E-03	53%	Pass
59	66.335	15	3.00E-03	7	1.40E-03	47%	Pass
60	67.398	15	3.00E-03	7	1.40E-03	47%	Pass
61	68.460	14	2.80E-03	7	1.40E-03	50%	Pass
62	69.523	13	2.60E-03	7	1.40E-03	54%	Pass
63	70.586	12	2.40E-03	6	1.20E-03	50%	Pass
64	71.648	12	2.40E-03	6	1.20E-03	50%	Pass
65	72.711	12	2.40E-03	6	1.20E-03	50%	Pass
66	73.773	12	2.40E-03	6	1.20E-03	50%	Pass
67	74.836	12	2.40E-03	6	1.20E-03	50%	Pass
68	75.899	12	2.40E-03	5	1.00E-03	42%	Pass
69	76.961	10	2.00E-03	5	1.00E-03	50%	Pass
70	78.024	9	1.80E-03	5	1.00E-03	56%	Pass
71	79.087	8	1.60E-03	5	1.00E-03	63%	Pass
72	80.149	8	1.60E-03	5	1.00E-03	63%	Pass
73	81.212	7	1.40E-03	5	1.00E-03	71%	Pass
74	82.275	7	1.40E-03	5	1.00E-03	71%	Pass
75	83.337	6	1.20E-03	5	1.00E-03	83%	Pass
76	84.400	6	1.20E-03	5	1.00E-03	83%	Pass
77	85.463	6	1.20E-03	5	1.00E-03	83%	Pass
78	86.525	6	1.20E-03	5	1.00E-03	83%	Pass
79	87.588	5	1.00E-03	4	8.01E-04	80%	Pass
80	88.651	5	1.00E-03	4	8.01E-04	80%	Pass
81	89.713	5	1.00E-03	3	6.00E-04	60%	Pass
82	90.776	5	1.00E-03	3	6.00E-04	60%	Pass
83	91.839	5	1.00E-03	3	6.00E-04	60%	Pass
84	92.901	4	8.01E-04	3	6.00E-04	75%	Pass

Interval	Existing Condition			Detention Basin Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
85	93.964	4	8.01E-04	3	6.00E-04	75%	Pass
86	95.027	4	8.01E-04	2	4.00E-04	50%	Pass
87	96.089	4	8.01E-04	2	4.00E-04	50%	Pass
88	97.152	4	8.01E-04	2	4.00E-04	50%	Pass
89	98.215	4	8.01E-04	2	4.00E-04	50%	Pass
90	99.277	4	8.01E-04	2	4.00E-04	50%	Pass
91	100.340	4	8.01E-04	2	4.00E-04	50%	Pass
92	101.402	4	8.01E-04	2	4.00E-04	50%	Pass
93	102.465	4	8.01E-04	1	2.00E-04	25%	Pass
94	103.528	4	8.01E-04	1	2.00E-04	25%	Pass
95	104.590	4	8.01E-04	1	2.00E-04	25%	Pass
96	105.653	4	8.01E-04	1	2.00E-04	25%	Pass
97	106.716	4	8.01E-04	1	2.00E-04	25%	Pass
98	107.778	4	8.01E-04	1	2.00E-04	25%	Pass
99	108.841	4	8.01E-04	1	2.00E-04	25%	Pass
100	109.904	3	6.00E-04	1	2.00E-04	33%	Pass

**Peak Flows calculated with Cunnane Plotting Position**

Return Period	Pre-dev. Q	Post-Dev. Q	Reduction
10	109.904	76.803	33.101
9	103.131	73.547	29.584
8	94.813	70.804	24.009
7	89.495	67.588	21.908
6	85.043	64.228	20.815
5	79.734	58.902	20.832
4	75.404	54.339	21.065
3	60.659	52.411	8.248
2	47.010	37.050	9.960





Fani ta Ranch POC4B EX

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          00:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   00:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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 0.06 0.08 0.11 .16 .18 .21 .21 .2 .16 .12 .08 .06
DRY_ONLY NO
    
```

[RAINGAGES]

```

; Name Rain Type Time Intrvl Snow Catch Data Source
-----
SanVicente INTENSITY 1:00 1.0 TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

Name	Raingage	Outlet	Total Area	Pcnt. Imperv	Width	Pcnt. Slope	Curb Length	Snow Pack
Existing Area								
POC4BExArea-A	SanVicente	POC4BEx	1.33	0	259	1.3	0	
POC4BExArea-D	SanVicente	POC4BEx	14.12	0	2746	11.8	0	

[SUBAREAS]

Subcatchment	N-Imperv	N-Perv	S-Imperv	S-Perv	PctZero	RouteTo	PctRouted
POC4BExArea-A	0.012	0.05	0.05	0.10	25	OUTLET	
POC4BExArea-D	0.012	0.05	0.05	0.10	25	OUTLET	

[INFILTRATION]

Subcatchment	Suction	HydCon	IMDmax
POC4BExArea-A	1.5	0.30	0.3
POC4BExArea-D	9	0.025	0.33

[OUTFALLS]

Name	Invert Elev.	Outfall Type	Stage/Table Time Series	Tide Gate
POC4BEx	0	FREE		NO

[TIMESERIES]

```

; Name Date Time Value
-----
From County
SanVicente FILE "R:\1284\Hyd\CALCS\TM\SWM\raifal_sanvicente.dat"
    
```

[REPORT]

```

INPUT NO
CONTROLS NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL
    
```

[TAGS]

[MAP]

```

DIMENSIONS 809.042 4649.019 2610.432 5687.510
Units None
    
```

[COORDINATES]

```

; Node X-Coord Y-Coord
    
```

Fani ta Ranch POC4B EX

;;-----  
POC4BEx 1700.270 4696.223

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

[Polygons]  
;; Subcatchment X-Coord Y-Coord  
;;-----

POC4BExArea-A 1294.381 5578.167  
POC4BExArea-D 2052.383 5618.158

[SYMBOLS]  
;; Gage X-Coord Y-Coord  
;;-----

SanVicente 1651.201 5640.306

Fani ta Ranch POC4B PR

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          00:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   00:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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 0.06 0.08 0.11 .16 .18 .21 .21 .2 .16 .12 .08 .06
DRY_ONLY NO
    
```

[RAINGAGES]

```

; Name Rain Type Time Intrvl Snow Catch Data Source
-----
SanVicente INTENSITY 1:00 1.0 TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

; Name Raingage Outlet Total Area Pcnt. Imperv Width Pcnt. Slope Curb Length Snow Pack
-----
POC4B-PR-A SanVicente POC4B-PR 1.33 0 259 1.3 0
POC4B-PR-D SanVicente POC4B-PR 10.61 0 2063 4.8 0
    
```

[SUBAREAS]

```

; Subcatchment N-Imperv N-Perv S-Imperv S-Perv PctZero RouteTo PctRouted
-----
POC4B-PR-A 0.012 0.05 0.05 0.10 25 OUTLET
POC4B-PR-D 0.012 0.05 0.05 0.10 25 OUTLET
    
```

[INFILTRATION]

```

; Subcatchment Suction HydCon IMDmax
-----
POC4B-PR-A 1.5 0.30 0.3
POC4B-PR-D 9 0.025 0.33
    
```

[OUTFALLS]

```

; Name Invert Elev. Outfall Type Stage/Table Time Series Tide Gate
-----
POC4B-PR 0 FREE NO
    
```

[TIMESERIES]

```

; Name Date Time Value
-----
From County SanVicente FILE "R:\1284\Hyd\CALCS\TM\SWMM\rainfall_sanvicente.dat"
    
```

[REPORT]

```

INPUT NO
CONTROLS NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL
    
```

[TAGS]

[MAP]

```

DIMENSIONS 809.042 4649.019 2610.432 5687.510
Units None
    
```

[COORDINATES]

```

; Node X-Coord Y-Coord
-----
    
```

Fani ta Ranch POC4B PR

POC4B-PR 1700.270 4696.223

[VERTICES]

:: Link X-Coord Y-Coord  
::-----

[Polygons]

:: Subcatchment X-Coord Y-Coord  
::-----

POC4B-PR-A 1294.381 5578.167  
POC4B-PR-D 2052.383 5618.158

[SYMBOLS]

:: Gage X-Coord Y-Coord  
::-----  
SanViente 1651.201 5640.306

## **POC 10A**

Flow Duration Curve (Pass-Fail) Results

List of the “n” largest Peaks: Pre-Development and Post-Development Conditions  
Elevation vs. Area Curves and Elevations vs. Discharge Curves to be used in SWMM  
oWMM Input Data (Existing and Proposed Models)



Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
37	21.133	85	2.77E-02	25	8.15E-03	29%	Pass
38	21.617	77	2.51E-02	24	7.82E-03	31%	Pass
39	22.101	70	2.28E-02	23	7.50E-03	33%	Pass
40	22.585	66	2.15E-02	21	6.84E-03	32%	Pass
41	23.069	60	1.96E-02	20	6.52E-03	33%	Pass
42	23.553	55	1.79E-02	20	6.52E-03	36%	Pass
43	24.037	51	1.66E-02	20	6.52E-03	39%	Pass
44	24.521	51	1.66E-02	20	6.52E-03	39%	Pass
45	25.005	46	1.50E-02	18	5.87E-03	39%	Pass
46	25.489	45	1.47E-02	17	5.54E-03	38%	Pass
47	25.973	44	1.43E-02	17	5.54E-03	39%	Pass
48	26.457	43	1.40E-02	17	5.54E-03	40%	Pass
49	26.941	42	1.37E-02	14	4.56E-03	33%	Pass
50	27.425	41	1.34E-02	13	4.24E-03	32%	Pass
51	27.909	40	1.30E-02	12	3.91E-03	30%	Pass
52	28.393	39	1.27E-02	12	3.91E-03	31%	Pass
53	28.877	37	1.21E-02	12	3.91E-03	32%	Pass
54	29.361	33	1.08E-02	11	3.59E-03	33%	Pass
55	29.845	31	1.01E-02	10	3.26E-03	32%	Pass
56	30.329	29	9.45E-03	9	2.93E-03	31%	Pass
57	30.813	27	8.80E-03	9	2.93E-03	33%	Pass
58	31.297	25	8.15E-03	9	2.93E-03	36%	Pass
59	31.781	25	8.15E-03	7	2.28E-03	28%	Pass
60	32.265	24	7.82E-03	7	2.28E-03	29%	Pass
61	32.749	23	7.50E-03	7	2.28E-03	30%	Pass
62	33.233	21	6.84E-03	5	1.63E-03	24%	Pass
63	33.717	21	6.84E-03	5	1.63E-03	24%	Pass
64	34.201	20	6.52E-03	5	1.63E-03	25%	Pass
65	34.685	20	6.52E-03	4	1.30E-03	20%	Pass
66	35.169	20	6.52E-03	4	1.30E-03	20%	Pass
67	35.653	20	6.52E-03	3	9.78E-04	15%	Pass
68	36.137	20	6.52E-03	3	9.78E-04	15%	Pass
69	36.621	20	6.52E-03	3	9.78E-04	15%	Pass
70	37.105	18	5.87E-03	3	9.78E-04	17%	Pass
71	37.589	17	5.54E-03	3	9.78E-04	18%	Pass
72	38.073	17	5.54E-03	3	9.78E-04	18%	Pass
73	38.557	17	5.54E-03	3	9.78E-04	18%	Pass
74	39.041	17	5.54E-03	3	9.78E-04	18%	Pass
75	39.525	16	5.21E-03	3	9.78E-04	19%	Pass
76	40.009	14	4.56E-03	3	9.78E-04	21%	Pass
77	40.493	13	4.24E-03	3	9.78E-04	23%	Pass
78	40.977	13	4.24E-03	3	9.78E-04	23%	Pass
79	41.461	12	3.91E-03	3	9.78E-04	25%	Pass
80	41.945	12	3.91E-03	3	9.78E-04	25%	Pass
81	42.429	12	3.91E-03	2	6.52E-04	17%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
82	42.913	12	3.91E-03	2	6.52E-04	17%	Pass
83	43.397	11	3.59E-03	2	6.52E-04	18%	Pass
84	43.881	11	3.59E-03	2	6.52E-04	18%	Pass
85	44.365	10	3.26E-03	2	6.52E-04	20%	Pass
86	44.849	9	2.93E-03	2	6.52E-04	22%	Pass
87	45.333	9	2.93E-03	2	6.52E-04	22%	Pass
88	45.817	9	2.93E-03	2	6.52E-04	22%	Pass
89	46.301	9	2.93E-03	2	6.52E-04	22%	Pass
90	46.785	9	2.93E-03	2	6.52E-04	22%	Pass
91	47.269	7	2.28E-03	2	6.52E-04	29%	Pass
92	47.753	7	2.28E-03	2	6.52E-04	29%	Pass
93	48.237	7	2.28E-03	1	3.26E-04	14%	Pass
94	48.721	7	2.28E-03	1	3.26E-04	14%	Pass
95	49.205	5	1.63E-03	1	3.26E-04	20%	Pass
96	49.689	5	1.63E-03	1	3.26E-04	20%	Pass
97	50.173	5	1.63E-03	1	3.26E-04	20%	Pass
98	50.657	5	1.63E-03	1	3.26E-04	20%	Pass
99	51.141	4	1.30E-03	1	3.26E-04	25%	Pass
100	51.625	4	1.30E-03	1	3.26E-04	25%	Pass

**Peak Flows calculated with Cunnane Plotting Position**

Return Period (years)	Pre-dev. Q (cfs)	Post-Dev. Q (cfs)	Reduction (cfs)
10	51.625	34.798	16.827
9	50.232	33.860	16.372
8	49.342	33.261	16.080
7	48.967	33.009	15.958
6	48.331	32.578	15.752
5	46.916	31.624	15.292
4	44.554	30.032	14.521
3	41.064	27.678	13.386
2	37.086	25.000	12.086

**List of Peak events and Determination of P2 and P10 (Pre-Development)**

**Fanita Ranch POC 10A - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>51.62</b>	<b>54.88</b>					
<b>9</b>	<b>50.23</b>	<b>50.92</b>	26.533	2/25/2003	35	1.03	1.02
<b>8</b>	<b>49.34</b>	<b>49.87</b>	28.234	2/12/2003	34	1.06	1.05
<b>7</b>	<b>48.97</b>	<b>49.01</b>	28.693	2/16/1980	33	1.09	1.08
<b>6</b>	<b>48.33</b>	<b>48.90</b>	29.114	2/15/1986	32	1.13	1.11
<b>5</b>	<b>46.92</b>	<b>46.97</b>	29.240	4/23/1980	31	1.16	1.15
<b>4</b>	<b>44.55</b>	<b>44.64</b>	29.297	2/18/1980	30	1.20	1.19
<b>3</b>	<b>41.06</b>	<b>41.18</b>	29.432	3/4/1978	29	1.24	1.23
<b>2</b>	<b>37.09</b>	<b>37.09</b>	30.040	1/13/1993	28	1.29	1.28
			30.180	12/28/1977	27	1.33	1.32
			30.466	1/18/1993	26	1.38	1.38
			31.246	12/4/1974	25	1.44	1.43
			31.274	4/18/1995	24	1.50	1.49
			31.840	8/17/1977	23	1.57	1.56
			32.644	10/10/1986	22	1.64	1.63
			32.970	2/21/2005	21	1.71	1.71
			33.204	2/15/1992	20	1.80	1.80
			33.917	3/2/1983	19	1.89	1.89
			37.086	1/31/1979	18	2.00	2.00
			37.221	3/1/1983	17	2.12	2.12
			39.320	3/6/1975	16	2.25	2.26
			39.571	10/18/2004	15	2.40	2.41
			39.618	10/27/2004	14	2.57	2.59
			40.397	2/13/1998	13	2.77	2.79
			41.176	10/20/2004	12	3.00	3.03
			43.052	2/2/1998	11	3.27	3.32
			44.233	2/19/1993	10	3.60	3.67
			44.643	1/29/1980	9	4.00	4.09
			46.811	1/9/2005	8	4.50	4.63
			47.011	2/6/1992	7	5.14	5.33
			48.896	2/7/1998	6	6.00	6.29
			49.032	10/31/1987	5	7.20	7.65
			50.924	9/10/1976	4	9.00	9.78
			62.785	10/22/1976	3	12.00	13.54
			71.098	2/20/1980	2	18.00	22.00
			77.568	1/4/1978	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

**List of Peak events and Determination of P2 and P10 (Post-Development)  
Fanita Ranch POC 10A - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>34.80</b>	<b>36.99</b>					
9	33.86	34.33	17.87	2/25/2003	35	1.03	1.02
8	33.26	33.62	19.03	2/12/2003	34	1.06	1.05
7	33.01	33.04	19.34	2/16/1980	33	1.09	1.08
6	32.58	32.96	19.62	2/15/1986	32	1.13	1.11
5	31.62	31.66	19.69	4/23/1980	31	1.16	1.15
4	30.03	30.09	19.75	2/18/1980	30	1.20	1.19
3	27.68	27.75	19.84	3/4/1978	29	1.24	1.23
2	25.00	25.00	20.25	1/13/1993	28	1.29	1.28
			20.33	12/28/1977	27	1.33	1.32
			20.52	1/18/1993	26	1.38	1.38
			21.055	12/4/1974	25	1.44	1.43
			21.079	4/18/1995	24	1.50	1.49
			21.462	8/17/1977	23	1.57	1.56
			21.991	10/10/1986	22	1.64	1.63
			22.225	2/21/2005	21	1.71	1.71
			22.383	2/15/1992	20	1.80	1.80
			22.863	3/2/1983	19	1.89	1.89
			25.000	1/31/1979	18	2.00	2.00
			25.091	3/1/1983	17	2.12	2.12
			26.495	3/6/1975	16	2.25	2.26
			26.666	10/18/2004	15	2.40	2.41
			26.691	10/27/2004	14	2.57	2.59
			27.232	2/13/1998	13	2.77	2.79
			27.753	10/20/2004	12	3.00	3.03
			29.021	2/2/1998	11	3.27	3.32
			29.814	2/19/1993	10	3.60	3.67
			30.093	1/29/1980	9	4.00	4.09
			31.556	1/9/2005	8	4.50	4.63
			31.685	2/6/1992	7	5.14	5.33
			32.961	2/7/1998	6	6.00	6.29
			33.053	10/31/1987	5	7.20	7.65
			34.326	9/10/1976	4	9.00	9.78
			42.320	10/22/1976	3	12.00	13.54
			47.928	2/20/1980	2	18.00	22.00
			52.287	1/4/1978	1	36.00	58.67

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

Fani ta Ranch POC10A EX

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          00:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   00:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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 0.06 0.08 0.11 .16 .18 .21 .21 .2 .16 .12 .08 .06
DRY_ONLY NO
    
```

[RAINGAGES]

```

; Name Rain Type Time Intrvl Snow Catch Data Source
-----
SanViente INTENSITY 1:00 1.0 TIMESERIES SanViente
    
```

[SUBCATCHMENTS]

```

; Name Raingage Outlet Total Area Pcnt. Imperv Width Pcnt. Slope Curb Length Snow Pack
-----
POC10AExArea-D SanViente POC10AEx 81.96 0 15939 13.0 0
    
```

[SUBAREAS]

```

; Subcatchment N-Imperv N-Perv S-Imperv S-Perv PctZero RouteTo PctRouted
-----
POC10AExArea-D 0.012 0.05 0.05 0.10 25 OUTLET
    
```

[INFILTRATION]

```

; Subcatchment Suction HydCon IMDmax
-----
POC10AExArea-D 9 0.025 0.33
    
```

[OUTFALLS]

```

; Name Invert Elev. Outfall Type Stage/Table Time Series Tide Gate
-----
POC10AEx 0 FREE NO
    
```

[TIMESERIES]

```

; Name Date Time Value
-----
From County SanViente FILE "P:\Acad\7033 Hunsaker San Diego\03 Fani ta Ranch\REC SWMM\rainfall_sanviente.dat"
    
```

[REPORT]

```

INPUT NO
CONTROLS NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL
    
```

[TAGS]

[MAP]

```

DIMENSIONS 809.042 4649.019 2610.432 5687.510
Units None
    
```

[COORDINATES]

```

; Node X-Coord Y-Coord
-----
POC10AEx 1700.270 4696.223
    
```

[VERTICES]

```
:: Link          X-Coord          Y-Coord  
::-----
```

[Polygons]

```
:: Subcatchment X-Coord          Y-Coord  
::-----
```

```
POC10AExArea-D  2052. 383          5618. 158
```

[SYMBOLS]

```
:: Gage          X-Coord          Y-Coord  
::-----
```

```
SanVi cente     1651. 201          5640. 306
```

Fani ta Ranch POC10A PR

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          00:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   00:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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     0.06  0.08  0.11  .16  .18  .21  .21  .2  .16  .12  .08  .06
DRY_ONLY    NO
    
```

[RAINGAGES]

```

; Name      Rain Type   Time Intrvl  Snow Catch  Data Source
-----
SanViente  INTENSITY 1:00    1.0    TIMESERIES SanViente
    
```

[SUBCATCHMENTS]

```

; Name      Raingage      Outlet      Total Area  Pcnt. Imperv  Width  Pcnt. Slope  Curb Length  Snow Pack
-----
POC10APrDevArea-D SanViente      POC10APr      55.25    0      10744    11.7    0
    
```

[SUBAREAS]

```

; Subcatchment  N-Imperv  N-Perv  S-Imperv  S-Perv  PctZero  RouteTo  PctRouted
-----
POC10APrDevArea-D 0.012    0.05    0.05    0.10    25      OUTLET
    
```

[INFILTRATION]

```

; Subcatchment  Suction  HydCon  IMDmax
-----
POC10APrDevArea-D 9      0.025    0.33
    
```

[OUTFALLS]

```

; Name      Invert Elev.  Outfall Type  Stage/Table Time Series  Tide Gate
-----
POC10APr    0      FREE      NO
    
```

[TIMESERIES]

```

; Name      Date      Time      Value
-----
From County SanViente      FILE "P:\Acad\7033 Hunsaker San Diego\03 Fani ta Ranch\REC SWMM\rainfall_sanviente.dat"
    
```

[REPORT]

```

INPUT          NO
CONTROLS       NO
SUBCATCHMENTS ALL
NODES          ALL
LINKS          ALL
    
```

[TAGS]

[MAP]

```

DIMENSIONS 809.042 4649.019 2610.432 5687.510
Units      None
    
```

[COORDINATES]

```

; Node      X-Coord      Y-Coord
-----
POC10APr    1700.270    4696.223
    
```

[VERTICES]

```
:: Link          X-Coord      Y-Coord
::-----
```

[Polygons]

```
:: Subcatchment X-Coord      Y-Coord
::-----
```

```
POC10APrDevArea-D 2052.383      5618.158
```

[SYMBOLS]

```
:: Gage          X-Coord      Y-Coord
::-----
```

```
SanViente         1651.201      5640.306
```

## POC 10B

Flow Duration Curve (Pass-Fail) Results

List of the “n” largest Peaks: Pre-Development and Post-Development Conditions

SWMM Input Data (Existing and Proposed Models)

### Flow Duration Curve Data for Fanita Ranch POC-10B , Santee, CA

Q2 = 1.941 cfs Fraction 10 %  
 Q10 = 2.70 cfs  
 Step = 0.0253 cfs  
 Count = 306816 hours  
 35.00 years

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
1	0.194	717	2.34E-01	696	2.27E-01	97%	Pass
2	0.219	654	2.13E-01	615	2.00E-01	94%	Pass
3	0.245	603	1.97E-01	588	1.92E-01	98%	Pass
4	0.270	555	1.81E-01	541	1.76E-01	97%	Pass
5	0.295	528	1.72E-01	502	1.64E-01	95%	Pass
6	0.321	509	1.66E-01	483	1.57E-01	95%	Pass
7	0.346	483	1.57E-01	449	1.46E-01	93%	Pass
8	0.371	448	1.46E-01	419	1.37E-01	94%	Pass
9	0.397	428	1.39E-01	395	1.29E-01	92%	Pass
10	0.422	411	1.34E-01	375	1.22E-01	91%	Pass
11	0.447	399	1.30E-01	348	1.13E-01	87%	Pass
12	0.473	392	1.28E-01	296	9.65E-02	76%	Pass
13	0.498	380	1.24E-01	246	8.02E-02	65%	Pass
14	0.524	362	1.18E-01	216	7.04E-02	60%	Pass
15	0.549	344	1.12E-01	210	6.84E-02	61%	Pass
16	0.574	328	1.07E-01	195	6.36E-02	59%	Pass
17	0.600	314	1.02E-01	187	6.09E-02	60%	Pass
18	0.625	290	9.45E-02	176	5.74E-02	61%	Pass
19	0.650	269	8.77E-02	165	5.38E-02	61%	Pass
20	0.676	246	8.02E-02	151	4.92E-02	61%	Pass
21	0.701	226	7.37E-02	133	4.33E-02	59%	Pass
22	0.726	207	6.75E-02	123	4.01E-02	59%	Pass
23	0.752	191	6.23E-02	115	3.75E-02	60%	Pass
24	0.777	184	6.00E-02	104	3.39E-02	57%	Pass
25	0.802	178	5.80E-02	86	2.80E-02	48%	Pass
26	0.828	172	5.61E-02	79	2.57E-02	46%	Pass
27	0.853	164	5.35E-02	72	2.35E-02	44%	Pass
28	0.878	157	5.12E-02	61	1.99E-02	39%	Pass
29	0.904	151	4.92E-02	56	1.83E-02	37%	Pass
30	0.929	143	4.66E-02	50	1.63E-02	35%	Pass
31	0.954	136	4.43E-02	45	1.47E-02	33%	Pass
32	0.980	130	4.24E-02	43	1.40E-02	33%	Pass
33	1.005	127	4.14E-02	43	1.40E-02	34%	Pass
34	1.030	121	3.94E-02	39	1.27E-02	32%	Pass
35	1.056	115	3.75E-02	37	1.21E-02	32%	Pass
36	1.081	104	3.39E-02	32	1.04E-02	31%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
37	1.106	89	2.90E-02	27	8.80E-03	30%	Pass
38	1.132	79	2.57E-02	27	8.80E-03	34%	Pass
39	1.157	71	2.31E-02	27	8.80E-03	38%	Pass
40	1.182	67	2.18E-02	26	8.47E-03	39%	Pass
41	1.208	60	1.96E-02	21	6.84E-03	35%	Pass
42	1.233	55	1.79E-02	20	6.52E-03	36%	Pass
43	1.258	51	1.66E-02	20	6.52E-03	39%	Pass
44	1.284	51	1.66E-02	20	6.52E-03	39%	Pass
45	1.309	46	1.50E-02	19	6.19E-03	41%	Pass
46	1.334	45	1.47E-02	18	5.87E-03	40%	Pass
47	1.360	44	1.43E-02	17	5.54E-03	39%	Pass
48	1.385	44	1.43E-02	17	5.54E-03	39%	Pass
49	1.410	42	1.37E-02	17	5.54E-03	40%	Pass
50	1.436	41	1.34E-02	17	5.54E-03	41%	Pass
51	1.461	40	1.30E-02	17	5.54E-03	43%	Pass
52	1.486	39	1.27E-02	14	4.56E-03	36%	Pass
53	1.512	37	1.21E-02	12	3.91E-03	32%	Pass
54	1.537	33	1.08E-02	12	3.91E-03	36%	Pass
55	1.562	31	1.01E-02	11	3.59E-03	35%	Pass
56	1.588	29	9.45E-03	11	3.59E-03	38%	Pass
57	1.613	27	8.80E-03	11	3.59E-03	41%	Pass
58	1.638	25	8.15E-03	9	2.93E-03	36%	Pass
59	1.664	25	8.15E-03	9	2.93E-03	36%	Pass
60	1.689	24	7.82E-03	8	2.61E-03	33%	Pass
61	1.714	23	7.50E-03	8	2.61E-03	35%	Pass
62	1.740	21	6.84E-03	8	2.61E-03	38%	Pass
63	1.765	21	6.84E-03	6	1.96E-03	29%	Pass
64	1.791	20	6.52E-03	5	1.63E-03	25%	Pass
65	1.816	20	6.52E-03	5	1.63E-03	25%	Pass
66	1.841	20	6.52E-03	5	1.63E-03	25%	Pass
67	1.867	20	6.52E-03	4	1.30E-03	20%	Pass
68	1.892	20	6.52E-03	4	1.30E-03	20%	Pass
69	1.917	20	6.52E-03	4	1.30E-03	20%	Pass
70	1.943	18	5.87E-03	4	1.30E-03	22%	Pass
71	1.968	17	5.54E-03	3	9.78E-04	18%	Pass
72	1.993	17	5.54E-03	3	9.78E-04	18%	Pass
73	2.019	17	5.54E-03	3	9.78E-04	18%	Pass
74	2.044	17	5.54E-03	3	9.78E-04	18%	Pass
75	2.069	16	5.21E-03	3	9.78E-04	19%	Pass
76	2.095	14	4.56E-03	3	9.78E-04	21%	Pass
77	2.120	13	4.24E-03	3	9.78E-04	23%	Pass
78	2.145	13	4.24E-03	3	9.78E-04	23%	Pass
79	2.171	12	3.91E-03	3	9.78E-04	25%	Pass
80	2.196	12	3.91E-03	3	9.78E-04	25%	Pass
81	2.221	12	3.91E-03	3	9.78E-04	25%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
82	2.247	12	3.91E-03	3	9.78E-04	25%	Pass
83	2.272	11	3.59E-03	3	9.78E-04	27%	Pass
84	2.297	11	3.59E-03	3	9.78E-04	27%	Pass
85	2.323	10	3.26E-03	2	6.52E-04	20%	Pass
86	2.348	9	2.93E-03	2	6.52E-04	22%	Pass
87	2.373	9	2.93E-03	2	6.52E-04	22%	Pass
88	2.399	9	2.93E-03	2	6.52E-04	22%	Pass
89	2.424	9	2.93E-03	2	6.52E-04	22%	Pass
90	2.449	9	2.93E-03	2	6.52E-04	22%	Pass
91	2.475	7	2.28E-03	2	6.52E-04	29%	Pass
92	2.500	7	2.28E-03	2	6.52E-04	29%	Pass
93	2.525	7	2.28E-03	2	6.52E-04	29%	Pass
94	2.551	7	2.28E-03	2	6.52E-04	29%	Pass
95	2.576	5	1.63E-03	1	3.26E-04	20%	Pass
96	2.601	5	1.63E-03	1	3.26E-04	20%	Pass
97	2.627	5	1.63E-03	1	3.26E-04	20%	Pass
98	2.652	5	1.63E-03	1	3.26E-04	20%	Pass
99	2.677	4	1.30E-03	1	3.26E-04	25%	Pass
100	2.703	4	1.30E-03	1	3.26E-04	25%	Pass

**Peak Flows calculated with Cunnane Plotting Position**

Return Period (years)	Pre-dev. Q (cfs)	Post-Dev. Q (cfs)	Reduction (cfs)
10	2.703	1.892	0.811
9	2.629	1.833	0.796
8	2.582	1.791	0.792
7	2.563	1.766	0.797
6	2.530	1.751	0.779
5	2.456	1.716	0.740
4	2.332	1.624	0.708
3	2.150	1.503	0.647
2	1.941	1.287	0.654

**List of Peak events and Determination of P2 and P10 (Pre-Development)**

**Fanita Ranch POC 10B - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
10	2.70	2.87					
9	2.63	2.67	1.392	2/25/2003	35	1.03	1.02
8	2.58	2.61	1.478	2/12/2003	34	1.06	1.05
7	2.56	2.56	1.502	2/16/1980	33	1.09	1.08
6	2.53	2.56	1.525	2/15/1986	32	1.13	1.11
5	2.46	2.46	1.533	2/18/1980	31	1.16	1.15
4	2.33	2.34	1.537	4/23/1980	30	1.20	1.19
3	2.15	2.16	1.542	3/4/1978	29	1.24	1.23
2	1.94	1.94	1.572	1/13/1993	28	1.29	1.28
			1.583	12/28/1977	27	1.33	1.32
			1.598	1/18/1993	26	1.38	1.38
			1.637	12/4/1974	25	1.44	1.43
			1.638	4/18/1995	24	1.50	1.49
			1.668	8/17/1977	23	1.57	1.56
			1.712	10/10/1986	22	1.64	1.63
			1.726	2/21/2005	21	1.71	1.71
			1.738	2/15/1992	20	1.80	1.80
			1.775	3/2/1983	19	1.89	1.89
			1.941	1/31/1979	18	2.00	2.00
			1.948	3/1/1983	17	2.12	2.12
			2.061	3/6/1975	16	2.25	2.26
			2.074	10/18/2004	15	2.40	2.41
			2.078	10/27/2004	14	2.57	2.59
			2.115	2/13/1998	13	2.77	2.79
			2.156	10/20/2004	12	3.00	3.03
			2.253	2/2/1998	11	3.27	3.32
			2.316	2/19/1993	10	3.60	3.67
			2.337	1/29/1980	9	4.00	4.09
			2.45	1/9/2005	8	4.50	4.63
			2.462	2/6/1992	7	5.14	5.33
			2.559	2/7/1998	6	6.00	6.29
			2.566	10/31/1987	5	7.20	7.65
			2.666	9/10/1976	4	9.00	9.78
			3.288	10/22/1976	3	12.00	13.54
			3.721	2/20/1980	2	18.00	22.00
			4.061	1/4/1978	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

**List of Peak events and Determination of P2 and P10 (Post-Development)**  
**Fanita Ranch POC 10B - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>1.89</b>	<b>2.01</b>					
9	1.83	1.87	1.012	1/9/1980	35	1.03	1.02
8	1.79	1.82	1.012	10/14/2006	34	1.06	1.05
7	1.77	1.77	1.042	4/18/1995	33	1.09	1.08
6	1.75	1.75	1.057	2/16/1980	32	1.13	1.11
5	1.72	1.73	1.071	2/18/1980	31	1.16	1.15
4	1.62	1.62	1.074	3/4/1978	30	1.20	1.19
3	1.50	1.50	1.088	2/15/1986	29	1.24	1.23
2	1.29	1.29	1.091	1/13/1993	28	1.29	1.28
			1.099	12/28/1977	27	1.33	1.32
			1.106	1/18/1993	26	1.38	1.38
			1.164	4/23/1980	25	1.44	1.43
			1.183	3/2/1983	24	1.50	1.49
			1.194	8/17/1977	23	1.57	1.56
			1.195	12/4/1974	22	1.64	1.63
			1.198	2/21/2005	21	1.71	1.71
			1.206	2/15/1992	20	1.80	1.80
			1.227	10/10/1986	19	1.89	1.89
			1.287	3/1/1983	18	2.00	2.00
			1.349	1/31/1979	17	2.12	2.12
			1.471	2/13/1998	16	2.25	2.26
			1.481	10/18/2004	15	2.40	2.41
			1.483	10/27/2004	14	2.57	2.59
			1.496	10/20/2004	13	2.77	2.79
			1.504	3/6/1975	12	3.00	3.03
			1.562	2/2/1998	11	3.27	3.32
			1.624	1/29/1980	10	3.60	3.67
			1.624	2/19/1993	9	4.00	4.09
			1.685	1/9/2005	8	4.50	4.63
			1.744	2/6/1992	7	5.14	5.33
			1.754	2/7/1998	6	6.00	6.29
			1.776	10/31/1987	5	7.20	7.65
			1.866	9/10/1976	4	9.00	9.78
			2.306	10/22/1976	3	12.00	13.54
			2.551	2/20/1980	2	18.00	22.00
			2.725	1/4/1978	1	36.00	58.67

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

Fani ta Ranch POC10B EX

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          00:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   00:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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 0.06 0.08 0.11 .16 .18 .21 .21 .2 .16 .12 .08 .06
DRY_ONLY NO
    
```

[RAINGAGES]

```

; Name Rain Type Time Intrvl Snow Catch Data Source
-----
SanViente INTENSITY 1:00 1.0 TIMESERIES SanViente
    
```

[SUBCATCHMENTS]

```

; Name Raingage Outlet Total Area Pcnt. Imperv Width Pcnt. Slope Curb Length Snow Pack
-----
POC10BExArea-D SanViente POC10BEX 5.35 0 1040 27.15 0
    
```

[SUBAREAS]

```

; Subcatchment N-Imperv N-Perv S-Imperv S-Perv PctZero RouteTo PctRouted
-----
POC10BExArea-D 0.012 0.05 0.05 0.10 25 OUTLET
    
```

[INFILTRATION]

```

; Subcatchment Suction HydCon IMDmax
-----
POC10BExArea-D 9 0.025 0.33
    
```

[OUTFALLS]

```

; Name Invert Elev. Outfall Type Stage/Table Time Series Tide Gate
-----
POC10BEX 0 FREE NO
    
```

[TIMESERIES]

```

; Name Date Time Value
-----
From County SanViente FILE "P:\Acad\7033 Hunsaker San Diego\03 Fani ta Ranch\REC SWMM\rainfall_sanviente.dat"
    
```

[REPORT]

```

INPUT NO
CONTROLS NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL
    
```

[TAGS]

[MAP]

```

DIMENSIONS 809.042 4649.019 2610.432 5687.510
Units None
    
```

[COORDINATES]

```

; Node X-Coord Y-Coord
-----
POC10BEX 1679.484 4695.223
    
```

[VERTICES]

```
:: Link          X-Coord          Y-Coord  
::-----
```

[Polygons]

```
:: Subcatchment X-Coord          Y-Coord  
::-----
```

```
POC10BExArea-D 1668.483          5493.893
```

[SYMBOLS]

```
:: Gage          X-Coord          Y-Coord  
::-----
```

```
SanViente       1651.201          5640.306
```

Fani ta Ranch POC10B PR

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          00:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   00:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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 0.06 0.08 0.11 .16 .18 .21 .21 .2 .16 .12 .08 .06
DRY_ONLY NO
    
```

[RAINGAGES]

```

; Name Rain Type Time Intrvl Snow Catch Data Source
-----
SanViente INTENSITY 1:00 1.0 TIMESERIES SanViente
    
```

[SUBCATCHMENTS]

Name	Raingage	Outlet	Total Area	Pcnt. Imperv	Width	Pcnt. Slope	Curb Length	Snow Pack
10B-CUT-SLOPE	SanViente	POC10BPr	1.59	0	309	67	0	
10B-FILL-SLOPE	SanViente	POC10BPr	1.90	0	369	50	0	

[SUBAREAS]

Subcatchment	N-Imperv	N-Perv	S-Imperv	S-Perv	PctZero	RouteTo	PctRouted
10B-CUT-SLOPE	0.012	0.05	0.05	0.10	25	OUTLET	
10B-FILL-SLOPE	0.012	0.05	0.05	0.10	25	OUTLET	

[INFILTRATION]

Subcatchment	Suction	HydCon	IMDmax
10B-CUT-SLOPE	9	0.01875	0.33
10B-FILL-SLOPE	9	0.01875	0.33

[OUTFALLS]

Name	Invert Elev.	Outfall Type	Stage/Table Time Series	Tide Gate
POC10BPr	0	FREE		NO

[TIMESERIES]

```

; Name Date Time Value
-----
From County
SanViente FILE "P:\Acad\7033 Hunsaker San Diego\03 Fani ta Ranch\REC SWMM\rainfall_sanviente.dat"
    
```

[REPORT]

```

INPUT NO
CONTROLS NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL
    
```

[TAGS]

[MAP]

```

DIMENSIONS 1278.609 5219.744 1965.949 5660.333
Units None
    
```

[COORDINATES]

```

; Node X-Coord Y-Coord
-----
    
```

Fani ta Ranch POC10B PR

POC10BPr 1653.082 5239.771

[VERTICES]

```
:: Link X-Coord Y-Coord
:: -----
```

[Polygons]

```
:: Subcatchment X-Coord Y-Coord
:: -----
```

10B-CUT-SLOPE 1582.374 5447.506  
10B-FILL-SLOPE 1724.259 5450.306

[SYMBOLS]

```
:: Gage X-Coord Y-Coord
:: -----
```

SanVicente 1651.201 5640.306

## **POC 10C**

Flow Duration Curve (Pass-Fail) Results

List of the “n” largest Peaks: Pre-Development and Post-Development Conditions

SWMM Input Data (Existing and Proposed Models)

### Flow Duration Curve Data for Fanita Ranch POC-10C , Santee, CA

Q2 = 2.421 cfs Fraction 10 %  
 Q10 = 3.37 cfs  
 Step = 0.0316 cfs  
 Count = 306816 hours  
 35.00 years

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
1	0.242	719	2.34E-01	675	2.20E-01	94%	Pass
2	0.274	659	2.15E-01	610	1.99E-01	93%	Pass
3	0.305	612	1.99E-01	570	1.86E-01	93%	Pass
4	0.337	561	1.83E-01	518	1.69E-01	92%	Pass
5	0.369	529	1.72E-01	495	1.61E-01	94%	Pass
6	0.400	513	1.67E-01	464	1.51E-01	90%	Pass
7	0.432	491	1.60E-01	435	1.42E-01	89%	Pass
8	0.463	455	1.48E-01	400	1.30E-01	88%	Pass
9	0.495	430	1.40E-01	389	1.27E-01	90%	Pass
10	0.527	415	1.35E-01	354	1.15E-01	85%	Pass
11	0.558	403	1.31E-01	312	1.02E-01	77%	Pass
12	0.590	393	1.28E-01	259	8.44E-02	66%	Pass
13	0.621	383	1.25E-01	218	7.11E-02	57%	Pass
14	0.653	368	1.20E-01	211	6.88E-02	57%	Pass
15	0.685	350	1.14E-01	197	6.42E-02	56%	Pass
16	0.716	332	1.08E-01	187	6.09E-02	56%	Pass
17	0.748	317	1.03E-01	177	5.77E-02	56%	Pass
18	0.779	292	9.52E-02	165	5.38E-02	57%	Pass
19	0.811	272	8.87E-02	151	4.92E-02	56%	Pass
20	0.843	248	8.08E-02	132	4.30E-02	53%	Pass
21	0.874	227	7.40E-02	121	3.94E-02	53%	Pass
22	0.906	209	6.81E-02	114	3.72E-02	55%	Pass
23	0.937	192	6.26E-02	102	3.32E-02	53%	Pass
24	0.969	186	6.06E-02	82	2.67E-02	44%	Pass
25	1.001	179	5.83E-02	79	2.57E-02	44%	Pass
26	1.032	174	5.67E-02	69	2.25E-02	40%	Pass
27	1.064	167	5.44E-02	59	1.92E-02	35%	Pass
28	1.095	157	5.12E-02	54	1.76E-02	34%	Pass
29	1.127	153	4.99E-02	50	1.63E-02	33%	Pass
30	1.159	144	4.69E-02	43	1.40E-02	30%	Pass
31	1.190	137	4.47E-02	43	1.40E-02	31%	Pass
32	1.222	131	4.27E-02	40	1.30E-02	31%	Pass
33	1.253	128	4.17E-02	38	1.24E-02	30%	Pass
34	1.285	122	3.98E-02	33	1.08E-02	27%	Pass
35	1.317	116	3.78E-02	29	9.45E-03	25%	Pass
36	1.348	105	3.42E-02	27	8.80E-03	26%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
37	1.380	91	2.97E-02	27	8.80E-03	30%	Pass
38	1.411	80	2.61E-02	26	8.47E-03	33%	Pass
39	1.443	74	2.41E-02	22	7.17E-03	30%	Pass
40	1.475	67	2.18E-02	20	6.52E-03	30%	Pass
41	1.506	60	1.96E-02	20	6.52E-03	33%	Pass
42	1.538	55	1.79E-02	20	6.52E-03	36%	Pass
43	1.569	51	1.66E-02	19	6.19E-03	37%	Pass
44	1.601	51	1.66E-02	18	5.87E-03	35%	Pass
45	1.633	47	1.53E-02	17	5.54E-03	36%	Pass
46	1.664	45	1.47E-02	17	5.54E-03	38%	Pass
47	1.696	44	1.43E-02	17	5.54E-03	39%	Pass
48	1.727	44	1.43E-02	17	5.54E-03	39%	Pass
49	1.759	42	1.37E-02	17	5.54E-03	40%	Pass
50	1.791	41	1.34E-02	14	4.56E-03	34%	Pass
51	1.822	40	1.30E-02	12	3.91E-03	30%	Pass
52	1.854	39	1.27E-02	12	3.91E-03	31%	Pass
53	1.885	37	1.21E-02	11	3.59E-03	30%	Pass
54	1.917	34	1.11E-02	11	3.59E-03	32%	Pass
55	1.949	31	1.01E-02	9	2.93E-03	29%	Pass
56	1.980	29	9.45E-03	9	2.93E-03	31%	Pass
57	2.012	27	8.80E-03	9	2.93E-03	33%	Pass
58	2.043	25	8.15E-03	8	2.61E-03	32%	Pass
59	2.075	25	8.15E-03	8	2.61E-03	32%	Pass
60	2.107	24	7.82E-03	6	1.96E-03	25%	Pass
61	2.138	23	7.50E-03	5	1.63E-03	22%	Pass
62	2.170	21	6.84E-03	5	1.63E-03	24%	Pass
63	2.201	21	6.84E-03	5	1.63E-03	24%	Pass
64	2.233	20	6.52E-03	5	1.63E-03	25%	Pass
65	2.265	20	6.52E-03	4	1.30E-03	20%	Pass
66	2.296	20	6.52E-03	4	1.30E-03	20%	Pass
67	2.328	20	6.52E-03	4	1.30E-03	20%	Pass
68	2.359	20	6.52E-03	3	9.78E-04	15%	Pass
69	2.391	20	6.52E-03	3	9.78E-04	15%	Pass
70	2.423	18	5.87E-03	3	9.78E-04	17%	Pass
71	2.454	17	5.54E-03	3	9.78E-04	18%	Pass
72	2.486	17	5.54E-03	3	9.78E-04	18%	Pass
73	2.518	17	5.54E-03	3	9.78E-04	18%	Pass
74	2.549	17	5.54E-03	3	9.78E-04	18%	Pass
75	2.581	16	5.21E-03	3	9.78E-04	19%	Pass
76	2.612	14	4.56E-03	3	9.78E-04	21%	Pass
77	2.644	13	4.24E-03	3	9.78E-04	23%	Pass
78	2.676	13	4.24E-03	3	9.78E-04	23%	Pass
79	2.707	12	3.91E-03	3	9.78E-04	25%	Pass
80	2.739	12	3.91E-03	3	9.78E-04	25%	Pass
81	2.770	12	3.91E-03	2	6.52E-04	17%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
82	2.802	12	3.91E-03	2	6.52E-04	17%	Pass
83	2.834	11	3.59E-03	2	6.52E-04	18%	Pass
84	2.865	11	3.59E-03	2	6.52E-04	18%	Pass
85	2.897	10	3.26E-03	2	6.52E-04	20%	Pass
86	2.928	9	2.93E-03	2	6.52E-04	22%	Pass
87	2.960	9	2.93E-03	2	6.52E-04	22%	Pass
88	2.992	9	2.93E-03	2	6.52E-04	22%	Pass
89	3.023	9	2.93E-03	2	6.52E-04	22%	Pass
90	3.055	9	2.93E-03	2	6.52E-04	22%	Pass
91	3.086	7	2.28E-03	1	3.26E-04	14%	Pass
92	3.118	7	2.28E-03	1	3.26E-04	14%	Pass
93	3.150	7	2.28E-03	1	3.26E-04	14%	Pass
94	3.181	7	2.28E-03	1	3.26E-04	14%	Pass
95	3.213	5	1.63E-03	1	3.26E-04	20%	Pass
96	3.244	5	1.63E-03	1	3.26E-04	20%	Pass
97	3.276	5	1.63E-03	0	0.00E+00	0%	Pass
98	3.308	5	1.63E-03	0	0.00E+00	0%	Pass
99	3.339	4	1.30E-03	0	0.00E+00	0%	Pass
100	3.371	4	1.30E-03	0	0.00E+00	0%	Pass

**Peak Flows calculated with Cunnane Plotting Position**

Return Period (years)	Pre-dev. Q (cfs)	Post-Dev. Q (cfs)	Reduction (cfs)
10	3.371	2.269	1.102
9	3.279	2.198	1.081
8	3.220	2.148	1.073
7	3.196	2.118	1.079
6	3.156	2.100	1.055
5	3.063	2.058	1.006
4	2.909	1.947	0.962
3	2.682	1.802	0.880
2	2.421	1.544	0.877

**List of Peak events and Determination of P2 and P10 (Pre-Development)**

**Fanita Ranch POC 10C - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>3.37</b>	<b>3.58</b>					
<b>9</b>	<b>3.28</b>	<b>3.33</b>	1.736	2/25/2003	35	1.03	1.02
<b>8</b>	<b>3.22</b>	<b>3.26</b>	1.843	2/12/2003	34	1.06	1.05
<b>7</b>	<b>3.20</b>	<b>3.20</b>	1.873	2/16/1980	33	1.09	1.08
<b>6</b>	<b>3.16</b>	<b>3.19</b>	1.902	2/15/1986	32	1.13	1.11
<b>5</b>	<b>3.06</b>	<b>3.07</b>	1.912	2/18/1980	31	1.16	1.15
<b>4</b>	<b>2.91</b>	<b>2.91</b>	1.919	4/23/1980	30	1.20	1.19
<b>3</b>	<b>2.68</b>	<b>2.69</b>	1.923	3/4/1978	29	1.24	1.23
<b>2</b>	<b>2.42</b>	<b>2.42</b>	1.961	1/13/1993	28	1.29	1.28
			1.976	12/28/1977	27	1.33	1.32
			1.994	1/18/1993	26	1.38	1.38
			2.042	12/4/1974	25	1.44	1.43
			2.043	4/18/1995	24	1.50	1.49
			2.08	8/17/1977	23	1.57	1.56
			2.136	10/10/1986	22	1.64	1.63
			2.152	2/21/2005	21	1.71	1.71
			2.168	2/15/1992	20	1.80	1.80
			2.214	3/2/1983	19	1.89	1.89
			2.421	1/31/1979	18	2.00	2.00
			2.43	3/1/1983	17	2.12	2.12
			2.571	3/6/1975	16	2.25	2.26
			2.587	10/18/2004	15	2.40	2.41
			2.592	10/27/2004	14	2.57	2.59
			2.637	2/13/1998	13	2.77	2.79
			2.689	10/20/2004	12	3.00	3.03
			2.81	2/2/1998	11	3.27	3.32
			2.889	2/19/1993	10	3.60	3.67
			2.914	1/29/1980	9	4.00	4.09
			3.055	1/9/2005	8	4.50	4.63
			3.071	2/6/1992	7	5.14	5.33
			3.192	2/7/1998	6	6.00	6.29
			3.2	10/31/1987	5	7.20	7.65
			3.325	9/10/1976	4	9.00	9.78
			4.1	10/22/1976	3	12.00	13.54
			4.64	2/20/1980	2	18.00	22.00
			5.064	1/4/1978	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

**List of Peak events and Determination of P2 and P10 (Post-Development)**

**Fanita Ranch POC 10C - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>2.27</b>	<b>2.41</b>					
<b>9</b>	<b>2.20</b>	<b>2.24</b>	1.21	10/14/2006	35	1.03	1.02
<b>8</b>	<b>2.15</b>	<b>2.18</b>	1.21	1/9/1980	34	1.06	1.05
<b>7</b>	<b>2.12</b>	<b>2.13</b>	1.25	4/18/1995	33	1.09	1.08
<b>6</b>	<b>2.10</b>	<b>2.10</b>	1.27	2/16/1980	32	1.13	1.11
<b>5</b>	<b>2.06</b>	<b>2.08</b>	1.28	2/18/1980	31	1.16	1.15
<b>4</b>	<b>1.95</b>	<b>1.95</b>	1.29	3/4/1978	30	1.20	1.19
<b>3</b>	<b>1.80</b>	<b>1.80</b>	1.31	2/15/1986	29	1.24	1.23
<b>2</b>	<b>1.54</b>	<b>1.54</b>	1.31	1/13/1993	28	1.29	1.28
			1.32	12/28/1977	27	1.33	1.32
			1.33	1/18/1993	26	1.38	1.38
			1.40	4/23/1980	25	1.44	1.43
			1.42	3/2/1983	24	1.50	1.49
			1.43	8/17/1977	23	1.57	1.56
			1.43	12/4/1974	22	1.64	1.63
			1.44	2/21/2005	21	1.71	1.71
			1.45	2/15/1992	20	1.80	1.80
			1.47	10/10/1986	19	1.89	1.89
			1.54	3/1/1983	18	2.00	2.00
			1.62	1/31/1979	17	2.12	2.12
			1.76	2/13/1998	16	2.25	2.26
			1.78	10/18/2004	15	2.40	2.41
			1.78	10/27/2004	14	2.57	2.59
			1.79	10/20/2004	13	2.77	2.79
			1.80	3/6/1975	12	3.00	3.03
			1.87	2/2/1998	11	3.27	3.32
			1.95	1/29/1980	10	3.60	3.67
			1.95	2/19/1993	9	4.00	4.09
			2.02	1/9/2005	8	4.50	4.63
			2.09	2/6/1992	7	5.14	5.33
			2.10	2/7/1998	6	6.00	6.29
			2.13	10/31/1987	5	7.20	7.65
			2.24	9/10/1976	4	9.00	9.78
			2.77	10/22/1976	3	12.00	13.54
			3.06	2/20/1980	2	18.00	22.00
			3.27	1/4/1978	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

Fani ta Ranch POC10C EX

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          00:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   00:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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 0.06 0.08 0.11 .16 .18 .21 .21 .2 .16 .12 .08 .06
DRY_ONLY NO
    
```

[RAINGAGES]

```

; Name Rain Type Time Intrvl Snow Catch Data Source
-----
SanVicente INTENSITY 1:00 1.0 TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

; Name Raingage Outlet Total Area Pcnt. Imperv Width Pcnt. Slope Curb Length Snow Pack
-----
POC10CEXArea-D SanVicente POC10CEX 4.29 0 834 22.01 0
    
```

[SUBAREAS]

```

; Subcatchment N-Imperv N-Perv S-Imperv S-Perv PctZero RouteTo PctRouted
-----
POC10CEXArea-D 0.012 0.05 0.05 0.10 25 OUTLET
    
```

[INFILTRATION]

```

; Subcatchment Suction HydCon IMDmax
-----
POC10CEXArea-D 9 0.025 0.33
    
```

[OUTFALLS]

```

; Name Invert Elev. Outfall Type Stage/Table Time Series Tide Gate
-----
POC10CEX 0 FREE NO
    
```

[TIMESERIES]

```

; Name Date Time Value
-----
From County SanVicente FILE "P:\Acad\7033 Hunsaker San Diego\03 Fani ta Ranch\REC SWMM\rainfall_sanvicente.dat"
    
```

[REPORT]

```

INPUT NO
CONTROLS NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL
    
```

[TAGS]

[MAP]

```

DIMENSIONS 809.042 4649.019 2610.432 5687.510
Units None
    
```

[COORDINATES]

```

; Node X-Coord Y-Coord
-----
POC10CEX 1679.484 4695.223
    
```

[VERTICES]

```
:: Link          X-Coord          Y-Coord
:: -----
```

[Polygons]

```
:: Subcatchment X-Coord          Y-Coord
:: -----
```

```
POC10CEXArea-D  1668.483          5493.893
```

[SYMBOLS]

```
:: Gage          X-Coord          Y-Coord
:: -----
```

```
SanViente       1651.201          5640.306
```

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          00:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   00:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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 0.06 0.08 0.11 .16 .18 .21 .21 .2 .16 .12 .08 .06
DRY_ONLY NO
    
```

[RAINGAGES]

```

; Name Rain Type Time Intrvl Snow Catch Data Source
-----
SanVicente INTENSITY 1:00 1.0 TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

Name	Raingage	Outlet	Total Area	Pcnt. Imperv	Width	Pcnt. Slope	Curb Length	Snow Pack
10C-CUT-SLOPE	SanVicente	POC10CPr	1.56	0	303	67	0	
10C-FILL-SLOPE	SanVicente	POC10CPr	1.35	0	263	50	0	

[SUBAREAS]

Subcatchment	N-Imperv	N-Perv	S-Imperv	S-Perv	PctZero	RouteTo	PctRouted
10C-CUT-SLOPE	0.012	0.05	0.05	0.10	25	OUTLET	
10C-FILL-SLOPE	0.012	0.05	0.05	0.10	25	OUTLET	

[INFILTRATION]

Subcatchment	Suction	HydCon	IMDmax
10C-CUT-SLOPE	9	0.01875	0.33
10C-FILL-SLOPE	9	0.01875	0.33

[OUTFALLS]

Name	Invert Elev.	Outfall Type	Stage/Table Time Series	Tide Gate
POC10CPr	0	FREE		NO

[TIMESERIES]

```

; Name Date Time Value
-----
From County SanVicente FILE "P:\Acad\7033 Hunsaker San Diego\03 Fani ta Ranch\REC SWMM\rainfall_sanvicente.dat"
    
```

[REPORT]

```

INPUT NO
CONTROLS NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL
    
```

[TAGS]

[MAP]

```

DIMENSIONS 1278.609 5219.744 1965.949 5660.333
Units None
    
```

[COORDINATES]

```

; Node X-Coord Y-Coord
-----
    
```

Fani ta Ranch POC10C PR

POC10CPr 1653.082 5239.771

[VERTICES]

:: Link X-Coord Y-Coord  
::-----

[Polygons]

:: Subcatchment X-Coord Y-Coord  
::-----

10C-CUT-SLOPE 1496.496 5482.511  
10C-FILL-SLOPE 1767.197 5475.510

[SYMBOLS]

:: Gage X-Coord Y-Coord  
::-----

SanVicente 1651.201 5640.306

## **POC 10D**

Flow Duration Curve (Pass-Fail) Results

List of the “n” largest Peaks: Pre-Development and Post-Development Conditions  
Elevation vs. Area Curves and Elevations vs. Discharge Curves to be used in SWMM  
SWMM Input Data (Existing and Proposed Models)

## Flow Duration Curve Data for Fanita Ranch POC-10D , Santee, CA

Q2 = 7.620 cfs Fraction 10 %  
 Q10 = 10.61 cfs  
 Step = 0.0995 cfs  
 Count = 306816 hours  
 35.00 years

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
1	0.762	685	2.23E-01	754	2.46E-01	110%	Pass
2	0.861	617	2.01E-01	652	2.13E-01	106%	Pass
3	0.961	575	1.87E-01	600	1.96E-01	104%	Pass
4	1.060	534	1.74E-01	558	1.82E-01	104%	Pass
5	1.160	506	1.65E-01	512	1.67E-01	101%	Pass
6	1.259	484	1.58E-01	482	1.57E-01	100%	Pass
7	1.359	455	1.48E-01	457	1.49E-01	100%	Pass
8	1.458	431	1.40E-01	418	1.36E-01	97%	Pass
9	1.558	408	1.33E-01	399	1.30E-01	98%	Pass
10	1.657	398	1.30E-01	370	1.21E-01	93%	Pass
11	1.757	387	1.26E-01	346	1.13E-01	89%	Pass
12	1.856	371	1.21E-01	306	9.97E-02	82%	Pass
13	1.956	354	1.15E-01	258	8.41E-02	73%	Pass
14	2.055	337	1.10E-01	225	7.33E-02	67%	Pass
15	2.154	322	1.05E-01	209	6.81E-02	65%	Pass
16	2.254	311	1.01E-01	196	6.39E-02	63%	Pass
17	2.353	283	9.22E-02	185	6.03E-02	65%	Pass
18	2.453	259	8.44E-02	171	5.57E-02	66%	Pass
19	2.552	237	7.72E-02	163	5.31E-02	69%	Pass
20	2.652	220	7.17E-02	148	4.82E-02	67%	Pass
21	2.751	197	6.42E-02	137	4.47E-02	70%	Pass
22	2.851	186	6.06E-02	126	4.11E-02	68%	Pass
23	2.950	178	5.80E-02	120	3.91E-02	67%	Pass
24	3.050	173	5.64E-02	111	3.62E-02	64%	Pass
25	3.149	163	5.31E-02	90	2.93E-02	55%	Pass
26	3.249	159	5.18E-02	80	2.61E-02	50%	Pass
27	3.348	152	4.95E-02	70	2.28E-02	46%	Pass
28	3.447	144	4.69E-02	66	2.15E-02	46%	Pass
29	3.547	139	4.53E-02	58	1.89E-02	42%	Pass
30	3.646	131	4.27E-02	53	1.73E-02	40%	Pass
31	3.746	125	4.07E-02	46	1.50E-02	37%	Pass
32	3.845	119	3.88E-02	43	1.40E-02	36%	Pass
33	3.945	114	3.72E-02	42	1.37E-02	37%	Pass
34	4.044	104	3.39E-02	39	1.27E-02	38%	Pass
35	4.144	92	3.00E-02	38	1.24E-02	41%	Pass
36	4.243	81	2.64E-02	37	1.21E-02	46%	Pass
37	4.343	72	2.35E-02	30	9.78E-03	42%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
38	4.442	68	2.22E-02	27	8.80E-03	40%	Pass
39	4.542	62	2.02E-02	26	8.47E-03	42%	Pass
40	4.641	59	1.92E-02	26	8.47E-03	44%	Pass
41	4.740	53	1.73E-02	25	8.15E-03	47%	Pass
42	4.840	51	1.66E-02	21	6.84E-03	41%	Pass
43	4.939	48	1.56E-02	20	6.52E-03	42%	Pass
44	5.039	48	1.56E-02	20	6.52E-03	42%	Pass
45	5.138	45	1.47E-02	20	6.52E-03	44%	Pass
46	5.238	44	1.43E-02	20	6.52E-03	45%	Pass
47	5.337	44	1.43E-02	18	5.87E-03	41%	Pass
48	5.437	42	1.37E-02	17	5.54E-03	40%	Pass
49	5.536	40	1.30E-02	17	5.54E-03	43%	Pass
50	5.636	40	1.30E-02	17	5.54E-03	43%	Pass
51	5.735	40	1.30E-02	17	5.54E-03	43%	Pass
52	5.835	37	1.21E-02	15	4.89E-03	41%	Pass
53	5.934	34	1.11E-02	13	4.24E-03	38%	Pass
54	6.033	31	1.01E-02	12	3.91E-03	39%	Pass
55	6.133	30	9.78E-03	12	3.91E-03	40%	Pass
56	6.232	28	9.13E-03	11	3.59E-03	39%	Pass
57	6.332	26	8.47E-03	11	3.59E-03	42%	Pass
58	6.431	25	8.15E-03	11	3.59E-03	44%	Pass
59	6.531	24	7.82E-03	9	2.93E-03	38%	Pass
60	6.630	23	7.50E-03	9	2.93E-03	39%	Pass
61	6.730	23	7.50E-03	9	2.93E-03	39%	Pass
62	6.829	21	6.84E-03	8	2.61E-03	38%	Pass
63	6.929	21	6.84E-03	8	2.61E-03	38%	Pass
64	7.028	20	6.52E-03	5	1.63E-03	25%	Pass
65	7.128	20	6.52E-03	5	1.63E-03	25%	Pass
66	7.227	20	6.52E-03	5	1.63E-03	25%	Pass
67	7.326	20	6.52E-03	5	1.63E-03	25%	Pass
68	7.426	20	6.52E-03	4	1.30E-03	20%	Pass
69	7.525	20	6.52E-03	4	1.30E-03	20%	Pass
70	7.625	18	5.87E-03	4	1.30E-03	22%	Pass
71	7.724	17	5.54E-03	3	9.78E-04	18%	Pass
72	7.824	16	5.21E-03	3	9.78E-04	19%	Pass
73	7.923	16	5.21E-03	3	9.78E-04	19%	Pass
74	8.023	16	5.21E-03	3	9.78E-04	19%	Pass
75	8.122	15	4.89E-03	3	9.78E-04	20%	Pass
76	8.222	15	4.89E-03	3	9.78E-04	20%	Pass
77	8.321	14	4.56E-03	3	9.78E-04	21%	Pass
78	8.421	13	4.24E-03	3	9.78E-04	23%	Pass
79	8.520	13	4.24E-03	3	9.78E-04	23%	Pass
80	8.619	12	3.91E-03	3	9.78E-04	25%	Pass
81	8.719	12	3.91E-03	3	9.78E-04	25%	Pass
82	8.818	12	3.91E-03	3	9.78E-04	25%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
83	8.918	11	3.59E-03	3	9.78E-04	27%	Pass
84	9.017	11	3.59E-03	3	9.78E-04	27%	Pass
85	9.117	11	3.59E-03	3	9.78E-04	27%	Pass
86	9.216	9	2.93E-03	2	6.52E-04	22%	Pass
87	9.316	9	2.93E-03	2	6.52E-04	22%	Pass
88	9.415	9	2.93E-03	2	6.52E-04	22%	Pass
89	9.515	9	2.93E-03	2	6.52E-04	22%	Pass
90	9.614	9	2.93E-03	2	6.52E-04	22%	Pass
91	9.714	8	2.61E-03	2	6.52E-04	25%	Pass
92	9.813	8	2.61E-03	2	6.52E-04	25%	Pass
93	9.912	7	2.28E-03	2	6.52E-04	29%	Pass
94	10.012	7	2.28E-03	2	6.52E-04	29%	Pass
95	10.111	7	2.28E-03	2	6.52E-04	29%	Pass
96	10.211	5	1.63E-03	1	3.26E-04	20%	Pass
97	10.310	5	1.63E-03	1	3.26E-04	20%	Pass
98	10.410	5	1.63E-03	1	3.26E-04	20%	Pass
99	10.509	4	1.30E-03	1	3.26E-04	25%	Pass
100	10.609	4	1.30E-03	1	3.26E-04	25%	Pass

**Peak Flows calculated with Cunnane Plotting Position**

Return Period (years)	Pre-dev. Q (cfs)	Post-Dev. Q (cfs)	Reduction (cfs)
10	10.609	8.831	1.778
9	10.351	8.374	1.977
8	10.213	7.816	2.397
7	10.142	7.504	2.638
6	10.027	7.267	2.760
5	9.752	7.014	2.738
4	9.175	6.906	2.270
3	8.500	6.398	2.102
2	7.620	5.768	1.852

**List of Peak events and Determination of P2 and P10 (Pre-Development)**

**Fanita Ranch POC 10D - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>10.61</b>	<b>11.30</b>					
<b>9</b>	<b>10.35</b>	<b>10.46</b>	5.428	2/25/2003	35	1.03	1.02
<b>8</b>	<b>10.21</b>	<b>10.30</b>	5.738	2/15/1986	34	1.06	1.05
<b>7</b>	<b>10.14</b>	<b>10.16</b>	5.744	2/12/2003	33	1.09	1.08
<b>6</b>	<b>10.03</b>	<b>10.12</b>	5.767	4/23/1980	32	1.13	1.11
<b>5</b>	<b>9.75</b>	<b>9.79</b>	5.881	2/16/1980	31	1.16	1.15
<b>4</b>	<b>9.18</b>	<b>9.18</b>	5.950	12/28/1977	30	1.20	1.19
<b>3</b>	<b>8.50</b>	<b>8.53</b>	5.985	2/18/1980	29	1.24	1.23
<b>2</b>	<b>7.62</b>	<b>7.62</b>	6.011	3/4/1978	28	1.29	1.28
			6.133	1/13/1993	27	1.33	1.32
			6.154	1/18/1993	26	1.38	1.38
			6.287	12/4/1974	25	1.44	1.43
			6.427	4/18/1995	24	1.50	1.49
			6.435	10/10/1986	23	1.57	1.56
			6.575	8/17/1977	22	1.64	1.63
			6.766	2/21/2005	21	1.71	1.71
			6.810	2/15/1992	20	1.80	1.80
			6.956	3/2/1983	19	1.89	1.89
			7.620	1/31/1979	18	2.00	2.00
			7.650	3/1/1983	17	2.12	2.12
			7.810	10/27/2004	16	2.25	2.26
			8.111	3/6/1975	15	2.40	2.41
			8.256	10/18/2004	14	2.57	2.59
			8.349	2/13/1998	13	2.77	2.79
			8.525	10/20/2004	12	3.00	3.03
			8.907	2/2/1998	11	3.27	3.32
			9.173	1/29/1980	10	3.60	3.67
			9.176	2/19/1993	9	4.00	4.09
			9.681	1/9/2005	8	4.50	4.63
			9.817	2/6/1992	7	5.14	5.33
			10.117	2/7/1998	6	6.00	6.29
			10.165	10/31/1987	5	7.20	7.65
			10.459	9/10/1976	4	9.00	9.78
			12.992	10/22/1976	3	12.00	13.54
			14.817	2/20/1980	2	18.00	22.00
			15.962	1/4/1978	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

**List of Peak events and Determination of P2 and P10 (Post-Development)**

**Fanita Ranch POC 10D - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>8.83</b>	<b>8.94</b>					
9	8.37	8.81	4.26	3/4/1978	35	1.03	1.02
8	7.82	8.15	4.29	2/9/1976	34	1.06	1.05
7	7.50	7.58	4.30	1/13/1993	33	1.09	1.08
6	7.27	7.38	4.36	1/29/1980	32	1.13	1.11
5	7.01	7.01	4.38	1/11/1980	31	1.16	1.15
4	6.91	6.93	4.42	1/18/1993	30	1.20	1.19
3	6.40	6.43	4.45	4/23/1980	29	1.24	1.23
2	5.77	5.77	4.56	3/5/1995	28	1.29	1.28
			4.71	12/4/1974	27	1.33	1.32
			4.74	2/15/1992	26	1.38	1.38
			4.75	12/29/2004	25	1.44	1.43
			4.75	8/17/1977	24	1.50	1.49
			4.75	2/23/2005	23	1.57	1.56
			4.81	2/21/2005	22	1.64	1.63
			4.81	10/10/1986	21	1.71	1.71
			5.29	3/1/1983	20	1.80	1.80
			5.30	2/18/1980	19	1.89	1.89
			5.77	10/27/2004	18	2.00	2.00
			5.83	2/13/1998	17	2.12	2.12
			5.88	10/18/2004	16	2.25	2.26
			5.90	3/6/1975	15	2.40	2.41
			6.01	10/20/2004	14	2.57	2.59
			6.19	2/2/1998	13	2.77	2.79
			6.43	2/19/1993	12	3.00	3.03
			6.49	1/29/1980	11	3.27	3.32
			6.804	3/2/1983	10	3.60	3.67
			6.934	2/6/1992	9	4.00	4.09
			7.013	2/7/1998	8	4.50	4.63
			7.015	10/31/1987	7	5.14	5.33
			7.375	9/10/1976	6	6.00	6.29
			7.622	1/31/1979	5	7.20	7.65
			8.808	1/9/2005	4	9.00	9.78
			9.195	10/22/1976	3	12.00	13.54
			10.763	1/4/1978	2	18.00	22.00
			14.306	2/20/1980	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

## Basin 10D Stage Storage

<b>Elevation *</b> <b>(Feet)</b>	<b>Area</b> <b>(sq-ft)</b>
0.000	7816
0.250	8025
0.500	8233
0.750	8441
1.000	8649
1.250	8858
1.500	9066
1.750	9274

**\* Elevation Measured above the first surface outlet.**

## Outlet structure for Discharge of Basin 10D

### Discharge vs Elevation Table

Low orifice	0.875 "	Lower slot		Lower Weir	
Number of orif:	1	Number of slots:	0	Number of weirs:	0
Cg-low:	0.61	Invert:	0.33 ft	Invert:	0.00
		B	0.250 ft	B:	0.00
Middle orifice	1.500 "	$h_{slot}$	0.083 ft		
Number of orif:	1	Upper slot		Emergency weir	
Cg-middle:	0.61	Number of slots:	0	Invert:	1.500 ft
invert elev:	0.333 ft	Invert:	0.00 ft	W:	12.00 ft
		B:	0.00 ft		
		$h_{slot}$	0.000 ft		

h* (ft)	H/D-low -	H/D-mid -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qslot-low (cfs)	Qslot-upp (cfs)	Qweir (cfs)	Qemerg (cfs)	Qtot (cfs)
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.042	0.571	0.000	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
0.083	1.143	0.000	0.004	0.005	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004
0.125	1.714	0.000	0.006	0.008	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006
0.167	2.286	0.000	0.007	0.010	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007
0.208	2.857	0.000	0.008	0.010	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008
0.250	3.429	0.000	0.009	0.011	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009
0.292	4.000	0.000	0.010	0.017	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
0.333	4.571	0.000	0.011	0.037	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011
0.375	5.143	0.333	0.012	0.083	0.012	0.000	0.002	0.002	0.000	0.000	0.000	0.000	0.014
0.417	5.714	0.667	0.013	0.126	0.013	0.009	0.007	0.007	0.000	0.000	0.000	0.000	0.020
0.458	6.286	1.000	0.013	0.133	0.013	0.015	0.014	0.014	0.000	0.000	0.000	0.000	0.028
0.500	6.857	1.333	0.014	0.139	0.014	0.019	0.022	0.019	0.000	0.000	0.000	0.000	0.033
0.542	7.429	1.667	0.015	0.145	0.015	0.023	0.029	0.023	0.000	0.000	0.000	0.000	0.037
0.583	8.000	2.000	0.015	0.151	0.015	0.026	0.035	0.026	0.000	0.000	0.000	0.000	0.041
0.625	8.571	2.333	0.016	0.157	0.016	0.029	0.038	0.029	0.000	0.000	0.000	0.000	0.044
0.667	9.143	2.667	0.016	0.162	0.016	0.031	0.039	0.031	0.000	0.000	0.000	0.000	0.047
0.708	9.714	3.000	0.017	0.168	0.017	0.034	0.039	0.034	0.000	0.000	0.000	0.000	0.050
0.750	10.286	3.333	0.017	0.173	0.017	0.036	0.041	0.036	0.000	0.000	0.000	0.000	0.053
0.792	10.857	3.667	0.018	0.178	0.018	0.038	0.048	0.038	0.000	0.000	0.000	0.000	0.056
0.833	11.429	4.000	0.018	0.182	0.018	0.040	0.065	0.040	0.000	0.000	0.000	0.000	0.058
0.875	12.000	4.333	0.019	0.187	0.019	0.042	0.100	0.042	0.000	0.000	0.000	0.000	0.060
0.917	12.571	4.667	0.019	0.192	0.019	0.043	0.163	0.043	0.000	0.000	0.000	0.000	0.063
0.958	13.143	5.000	0.020	0.196	0.020	0.045	0.263	0.045	0.000	0.000	0.000	0.000	0.065
1.000	13.714	5.333	0.020	0.201	0.020	0.047	0.416	0.047	0.000	0.000	0.000	0.000	0.067
1.042	14.286	5.667	0.020	0.205	0.020	0.048	0.637	0.048	0.000	0.000	0.000	0.000	0.069
1.083	14.857	6.000	0.021	0.209	0.021	0.050	0.947	0.050	0.000	0.000	0.000	0.000	0.071
1.125	15.429	6.333	0.021	0.213	0.021	0.051	1.368	0.051	0.000	0.000	0.000	0.000	0.073
1.167	16.000	6.667	0.022	0.217	0.022	0.053	1.927	0.053	0.000	0.000	0.000	0.000	0.074
1.208	16.571	7.000	0.022	0.221	0.022	0.054	2.652	0.054	0.000	0.000	0.000	0.000	0.076
1.250	17.143	7.333	0.023	0.225	0.023	0.056	3.577	0.056	0.000	0.000	0.000	0.000	0.078
1.292	17.714	7.667	0.023	0.229	0.023	0.057	4.739	0.057	0.000	0.000	0.000	0.000	0.080
1.333	18.286	8.000	0.023	0.233	0.023	0.058	6.181	0.058	0.000	0.000	0.000	0.000	0.081
1.375	18.857	8.333	0.024	0.237	0.024	0.059	7.947	0.059	0.000	0.000	0.000	0.000	0.083
1.417	19.429	8.667	0.024	0.240	0.024	0.061	10.090	0.061	0.000	0.000	0.000	0.000	0.085
1.458	20.000	9.000	0.024	0.244	0.024	0.062	12.664	0.062	0.000	0.000	0.000	0.000	0.086
1.500	20.571	9.333	0.025	0.247	0.025	0.063	15.730	0.063	0.000	0.000	0.000	0.000	0.088
1.542	21.143	9.667	0.025	0.251	0.025	0.064	19.354	0.064	0.000	0.000	0.000	0.316	0.406
1.583	21.714	10.000	0.025	0.254	0.025	0.065	23.608	0.065	0.000	0.000	0.000	0.895	0.986
1.625	22.286	10.333	0.026	0.258	0.026	0.067	28.569	0.067	0.000	0.000	0.000	1.644	1.736
1.667	22.857	10.667	0.026	0.261	0.026	0.068	34.320	0.068	0.000	0.000	0.000	2.531	2.625
1.708	23.429	11.000	0.026	0.264	0.026	0.069	40.951	0.069	0.000	0.000	0.000	3.537	3.633
1.750	24.000	11.333	0.027	0.268	0.027	0.070	48.558	0.070	0.000	0.000	0.000	4.650	4.747

## BMP POC 10D

ABMP	<b>6775.0</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>1.13</b> in
Aorifice	0.00690 sq-ft
C <sub>SWMM</sub>	<b>0.06220</b>
	0.041386
H-gravel	<b>1.5</b> ft <b>18</b> in
	17.4375 in
H-design	1.453 ft
Q <sub>orif-classic</sub>	0.04073 cfs
Q <sub>orif-SWMM</sub>	0.04073 cfs
Qdiversion	<b>0.04114</b> cfs
Qinf:	0.3137 cfs
<b>0.1 Q2 EX</b>	<b>14.563</b>

Fani ta Ranch POC10D EX

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          00:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   00:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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 0.06 0.08 0.11 .16 .18 .21 .21 .2 .16 .12 .08 .06
DRY_ONLY NO
    
```

[RAINGAGES]

```

; Name Rain Type Time Intrvl Snow Catch Data Source
-----
SanViente INTENSITY 1:00 1.0 TIMESERIES SanViente
    
```

[SUBCATCHMENTS]

Name	Raingage	Outlet	Total Area	Pcnt. Imperv	Width	Pcnt. Slope	Curb Length	Snow Pack
POC10DExArea-D	SanViente	POC10DEx	16.15	0	3141	14.10	0	
POC10DExArea-C	SanViente	POC10DEx	1.15	0	224	14.10	0	

[SUBAREAS]

Subcatchment	N-Imperv	N-Perv	S-Imperv	S-Perv	PctZero	RouteTo	PctRouted
POC10DExArea-D	0.012	0.05	0.05	0.10	25	OUTLET	
POC10DExArea-C	0.012	0.05	0.05	0.10	25	OUTLET	

[INFILTRATION]

Subcatchment	Suction	HydCon	IMDmax
POC10DExArea-D	9	0.025	0.33
POC10DExArea-C	3.0	0.2	0.31

[OUTFALLS]

Name	Invert Elev.	Outfall Type	Stage/Table Time Series	Tide Gate
POC10DEx	0	FREE		NO

[TIMESERIES]

```

; Name Date Time Value
-----
From County
SanViente FILE "P:\Acad\7033 Hunsaker San Diego\03 Fani ta Ranch\REC SWMM\rainfall_sanviente.dat"
    
```

[REPORT]

```

INPUT NO
CONTROLS NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL
    
```

[TAGS]

[MAP]

```

DIMENSIONS 809.042 4649.019 2610.432 5687.510
Units None
    
```

[COORDINATES]

```

; Node X-Coord Y-Coord
-----
    
```

Fani ta Ranch POC10D EX

POC10DEx 1679.484 4695.223

[VERTICES]

:: Link X-Coord Y-Coord  
::-----

[Polygons]

:: Subcatchment X-Coord Y-Coord  
::-----

POC10DExArea-D 1862.239 5498.598  
POC10DExArea-C 1486.525 5489.099

[SYMBOLS]

:: Gage X-Coord Y-Coord  
::-----  
SanVicente 1651.201 5640.306

POST\_DEV\_POC-10D

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION        GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          00:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   00:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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      0.06  0.08  0.11  .16  .18  .21  .21  .2  .16  .12  .08  .06
DRY_ONLY     NO
    
```

[RAINGAGES]

```

;;
;;Name      Rain      Time      Snow      Data
;;Name      Type      Intrvl   Catch     Source
;;-----
SanVicente  INTENSITY 1:00   1.0      TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

;;
;;Name      Raingage      Outlet      Total      Pcnt.      Pcnt.      Curb      Snow
;;Name      Raingage      Outlet      Area      Imperv      Width      Slope      Length      Pack
;;-----
10C-CUT-SLOPE  SanVicente  POC10CPr   1.56      0          303      67          0
10C-FILL-SLOPE  SanVicente  POC10CPr   1.35      0          263      50          0
10B-CUT-SLOPE  SanVicente  POC10BPr   1.59      0          309      67          0
10B-FILL-SLOPE  SanVicente  POC10BPr   1.90      0          369      50          0
10D-ROAD-B      SanVicente  BMP-10a-B  0.372     86.8       139      20          0
10D-ROAD-D      SanVicente  BMP-10a-B  4.223     85          1551     20          0
10D-CUT-D       SanVicente  POC10DPr   0.540     0          105      67          0
10D-FILL-B      SanVicente  POC10DPr   0.410     0          80        50          0
BMP-10a-B       SanVicente  10D-DIV    0.1635    0          10        0          0
10D-FILL-D      SanVicente  POC10DPr   4.210     0          819      50          0
    
```

[SUBAREAS]

```

;;Subcatchment  N-Imperv  N-Perv      S-Imperv  S-Perv      PctZero  RouteTo  PctRouted
;;-----
10C-CUT-SLOPE  0.012     0.05        0.05      0.10        25       OUTLET
10C-FILL-SLOPE  0.012     0.05        0.05      0.10        25       OUTLET
10B-CUT-SLOPE  0.012     0.05        0.05      0.10        25       OUTLET
10B-FILL-SLOPE  0.012     0.05        0.05      0.10        25       OUTLET
10D-ROAD-B      0.012     0.05        0.05      0.10        25       OUTLET
10D-ROAD-D      0.012     0.05        0.05      0.10        25       OUTLET
10D-CUT-D       0.012     0.05        0.05      0.10        25       OUTLET
10D-FILL-B      0.012     0.05        0.05      0.10        25       OUTLET
BMP-10a-B       0.012     0.05        0.05      0.10        25       OUTLET
10D-FILL-D      0.012     0.05        0.05      0.10        25       OUTLET
    
```

POST\_DEV\_POC-10D

[INFILTRATION]

;;Subcatchment	Suction	HydCon	IMDmax
10C-CUT-SLOPE	9	0.01875	0.33
10C-FILL-SLOPE	9	0.01875	0.33
10B-CUT-SLOPE	9	0.01875	0.33
10B-FILL-SLOPE	9	0.01875	0.33
10D-ROAD-B	3	0.15	0.31
10D-ROAD-D	9	0.01875	0.33
10D-CUT-D	9	0.01875	0.33
10D-FILL-B	3	0.15	0.31
BMP-10a-B	3	0.15	0.31
10D-FILL-D	9	0.01875	0.33

[LID\_CONTROLS]

;;	Type/Layer	Parameters						
LID-10D	BC							
LID-10D	SURFACE	8.67	0.05	0	0	5		
LID-10D	SOIL	24	0.4	0.2	0.1	5	5	1.5
LID-10D	STORAGE	30	0.67	0.15	0			
LID-10D	DRAIN	0.04675	0.5	9	6			

[LID\_USAGE]

;;Subcatchment	LID Process	Number	Area	Width	InitSatur	FromImprv	ToPerv	Report File
BMP-10a-B	LID-10D	1	7122	0	0	100	0	

[JUNCTIONS]

;;	Invert Elev.	Max. Depth	Init. Depth	Surcharge Depth	Ponded Area
POC10BPr	0	0	0	0	0
POC10CPr	0	0	0	0	0

[OUTFALLS]

;;	Invert Elev.	Outfall Type	Stage/Table Time Series	Tide Gate
POC10DPr	0	FREE		NO

[DIVIDERS]

;;	Invert Elev.	Diverted Link	Divider Type	Parameters				
10D-DIV	0	BYPASS	CUTOFF	0.03256	0	0	0	0

[STORAGE]

;;	Invert Elev.	Max. Depth	Init. Depth	Storage Curve	Curve Params	Ponded Area	Evap. Frac.	Infiltration
BASIN-10a	0	1.75	0	TABULAR	BASIN-10D	9274	1	

[CONDUITS]

;;	Inlet Node	Outlet Node	Length	Manning N	Inlet Offset	Outlet Offset	Init. Flow	Max. Flow
BYPASS	10D-DIV	BASIN-10a	10	0.01	0	0	0	0
10B-10D	POC10BPr	POC10DPr	10	0.01	0	0	0	0
10C-10D	POC10CPr	POC10DPr	10	0.01	0	0	0	0
UDRAIN	10D-DIV	POC10DPr	10	0.01	0	0	0	0

[OUTLETS]

;;	Inlet Node	Outlet Node	Outflow Height	Outlet Type	Qcoeff/QTable	Qexpon	Flap Gate
BMP-10a-OUT	BASIN-10a	POC10DPr	0	TABULAR/DEPTH	BMP-10D-OUT		NO

[XSECTIONS]

POST\_DEV\_POC-10D

;;Link	Shape	Geom1	Geom2	Geom3	Geom4	Barrels
BYPASS	DUMMY	0	0	0	0	1
10B-10D	DUMMY	0	0	0	0	1
10C-10D	DUMMY	0	0	0	0	1
UDRAIN	DUMMY	0	0	0	0	1

[LOSSES]

;;Link	Inlet	Outlet	Average	Flap Gate

[CURVES]

;;Name	Type	X-Value	Y-Value
BMP-10D-OUT	Rating	0.000	0.000
BMP-10D-OUT		0.042	0.001
BMP-10D-OUT		0.083	0.004
BMP-10D-OUT		0.125	0.006
BMP-10D-OUT		0.167	0.007
BMP-10D-OUT		0.208	0.008
BMP-10D-OUT		0.250	0.009
BMP-10D-OUT		0.292	0.010
BMP-10D-OUT		0.333	0.011
BMP-10D-OUT		0.375	0.014
BMP-10D-OUT		0.417	0.020
BMP-10D-OUT		0.458	0.028
BMP-10D-OUT		0.500	0.033
BMP-10D-OUT		0.542	0.037
BMP-10D-OUT		0.583	0.041
BMP-10D-OUT		0.625	0.044
BMP-10D-OUT		0.667	0.047
BMP-10D-OUT		0.708	0.050
BMP-10D-OUT		0.750	0.053
BMP-10D-OUT		0.792	0.056
BMP-10D-OUT		0.833	0.058
BMP-10D-OUT		0.875	0.060
BMP-10D-OUT		0.917	0.063
BMP-10D-OUT		0.958	0.065
BMP-10D-OUT		1.000	0.067
BMP-10D-OUT		1.042	0.069
BMP-10D-OUT		1.083	0.071
BMP-10D-OUT		1.125	0.073
BMP-10D-OUT		1.167	0.074
BMP-10D-OUT		1.208	0.076
BMP-10D-OUT		1.250	0.078
BMP-10D-OUT		1.292	0.080
BMP-10D-OUT		1.333	0.081
BMP-10D-OUT		1.375	0.083
BMP-10D-OUT		1.417	0.085
BMP-10D-OUT		1.458	0.086
BMP-10D-OUT		1.500	0.088
BMP-10D-OUT		1.542	0.406
BMP-10D-OUT		1.583	0.986
BMP-10D-OUT		1.625	1.736
BMP-10D-OUT		1.667	2.625
BMP-10D-OUT		1.708	3.633
BMP-10D-OUT		1.750	4.747

BASIN-10D	Storage	0.00	7816
BASIN-10D		0.25	8025
BASIN-10D		0.50	8233
BASIN-10D		0.75	8441
BASIN-10D		1.00	8649
BASIN-10D		1.25	8858
BASIN-10D		1.50	9066
BASIN-10D		1.75	9274

[TIMESERIES]

;;Name	Date	Time	Value
;From County			

# POST\_DEV\_POC-10D

SanVicente FILE "P:\Acad\7033 Hunsaker San Diego\03 Fanita Ranch\REC SWMM\rainfall\_sanvicente.dat"

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

[TAGS]

[MAP]  
DIMENSIONS 1278.609 5219.744 1965.949 5660.333  
Units None

[COORDINATES]  
;;Node X-Coord Y-Coord  
;;-----  
POC10BPr 1310.000 5500.000  
POC10CPr 1490.000 5500.000  
POC10DPr 1400.000 5400.000  
10D-DIV 1750.000 5500.000  
BASIN-10a 1750.000 5400.000

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

[Polygons]  
;;Subcatchment X-Coord Y-Coord  
;;-----  
10C-CUT-SLOPE 1430.000 5600.000  
10C-FILL-SLOPE 1550.000 5600.000  
10B-CUT-SLOPE 1250.000 5600.000  
10B-FILL-SLOPE 1340.000 5600.000  
10D-ROAD-B 1700.000 5600.000  
10D-ROAD-D 1800.000 5600.000  
10D-CUT-D 1300.000 5300.000  
10D-FILL-B 1500.000 5300.000  
BMP-10a-B 1750.000 5550.000  
10D-FILL-D 1400.000 5300.000

[SYMBOLS]  
;;Gage X-Coord Y-Coord  
;;-----  
SanVicente 1651.201 5640.306

## **POC 10E**

Flow Duration Curve (Pass-Fail) Results

List of the “n” largest Peaks: Pre-Development and Post-Development Conditions  
Elevation vs. Area Curves and Elevations vs. Discharge Curves to be used in SWMM  
SWMM Input Data (Existing and Proposed Models)

## Flow Duration Curve Data for Fanita Ranch POC-10E , Santee, CA

Q2 = 0.755 cfs Fraction 10 %  
 Q10 = 1.18 cfs  
 Step = 0.0111 cfs  
 Count = 306816 hours  
 35.00 years

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
1	0.076	487	1.59E-01	492	1.60E-01	101%	Pass
2	0.087	438	1.43E-01	199	6.49E-02	45%	Pass
3	0.098	408	1.33E-01	169	5.51E-02	41%	Pass
4	0.109	387	1.26E-01	155	5.05E-02	40%	Pass
5	0.120	359	1.17E-01	138	4.50E-02	38%	Pass
6	0.131	326	1.06E-01	119	3.88E-02	37%	Pass
7	0.142	300	9.78E-02	112	3.65E-02	37%	Pass
8	0.153	257	8.38E-02	105	3.42E-02	41%	Pass
9	0.165	227	7.40E-02	95	3.10E-02	42%	Pass
10	0.176	203	6.62E-02	90	2.93E-02	44%	Pass
11	0.187	191	6.23E-02	83	2.71E-02	43%	Pass
12	0.198	175	5.70E-02	81	2.64E-02	46%	Pass
13	0.209	164	5.35E-02	79	2.57E-02	48%	Pass
14	0.220	151	4.92E-02	73	2.38E-02	48%	Pass
15	0.231	147	4.79E-02	67	2.18E-02	46%	Pass
16	0.243	138	4.50E-02	66	2.15E-02	48%	Pass
17	0.254	130	4.24E-02	63	2.05E-02	48%	Pass
18	0.265	124	4.04E-02	58	1.89E-02	47%	Pass
19	0.276	117	3.81E-02	57	1.86E-02	49%	Pass
20	0.287	111	3.62E-02	46	1.50E-02	41%	Pass
21	0.298	102	3.32E-02	46	1.50E-02	45%	Pass
22	0.309	99	3.23E-02	46	1.50E-02	46%	Pass
23	0.321	97	3.16E-02	46	1.50E-02	47%	Pass
24	0.332	97	3.16E-02	46	1.50E-02	47%	Pass
25	0.343	96	3.13E-02	46	1.50E-02	48%	Pass
26	0.354	90	2.93E-02	46	1.50E-02	51%	Pass
27	0.365	82	2.67E-02	46	1.50E-02	56%	Pass
28	0.376	79	2.57E-02	43	1.40E-02	54%	Pass
29	0.387	75	2.44E-02	43	1.40E-02	57%	Pass
30	0.399	67	2.18E-02	42	1.37E-02	63%	Pass
31	0.410	66	2.15E-02	42	1.37E-02	64%	Pass
32	0.421	61	1.99E-02	42	1.37E-02	69%	Pass
33	0.432	55	1.79E-02	42	1.37E-02	76%	Pass
34	0.443	53	1.73E-02	42	1.37E-02	79%	Pass
35	0.454	49	1.60E-02	41	1.34E-02	84%	Pass
36	0.465	49	1.60E-02	41	1.34E-02	84%	Pass
37	0.477	48	1.56E-02	40	1.30E-02	83%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
38	0.488	47	1.53E-02	36	1.17E-02	77%	Pass
39	0.499	46	1.50E-02	28	9.13E-03	61%	Pass
40	0.510	45	1.47E-02	26	8.47E-03	58%	Pass
41	0.521	45	1.47E-02	26	8.47E-03	58%	Pass
42	0.532	42	1.37E-02	26	8.47E-03	62%	Pass
43	0.543	40	1.30E-02	26	8.47E-03	65%	Pass
44	0.555	39	1.27E-02	26	8.47E-03	67%	Pass
45	0.566	39	1.27E-02	26	8.47E-03	67%	Pass
46	0.577	35	1.14E-02	26	8.47E-03	74%	Pass
47	0.588	34	1.11E-02	26	8.47E-03	76%	Pass
48	0.599	34	1.11E-02	26	8.47E-03	76%	Pass
49	0.610	31	1.01E-02	26	8.47E-03	84%	Pass
50	0.621	31	1.01E-02	24	7.82E-03	77%	Pass
51	0.633	28	9.13E-03	24	7.82E-03	86%	Pass
52	0.644	25	8.15E-03	24	7.82E-03	96%	Pass
53	0.655	23	7.50E-03	24	7.82E-03	104%	Pass
54	0.666	23	7.50E-03	24	7.82E-03	104%	Pass
55	0.677	22	7.17E-03	24	7.82E-03	109%	Pass
56	0.688	22	7.17E-03	24	7.82E-03	109%	Pass
57	0.699	22	7.17E-03	24	7.82E-03	109%	Pass
58	0.711	22	7.17E-03	22	7.17E-03	100%	Pass
59	0.722	22	7.17E-03	22	7.17E-03	100%	Pass
60	0.733	21	6.84E-03	22	7.17E-03	105%	Pass
61	0.744	20	6.52E-03	20	6.52E-03	100%	Pass
62	0.755	19	6.19E-03	19	6.19E-03	100%	Pass
63	0.766	19	6.19E-03	19	6.19E-03	100%	Pass
64	0.777	18	5.87E-03	18	5.87E-03	100%	Pass
65	0.789	18	5.87E-03	17	5.54E-03	94%	Pass
66	0.800	18	5.87E-03	17	5.54E-03	94%	Pass
67	0.811	17	5.54E-03	16	5.21E-03	94%	Pass
68	0.822	15	4.89E-03	16	5.21E-03	107%	Pass
69	0.833	15	4.89E-03	16	5.21E-03	107%	Pass
70	0.844	15	4.89E-03	15	4.89E-03	100%	Pass
71	0.855	15	4.89E-03	13	4.24E-03	87%	Pass
72	0.867	15	4.89E-03	13	4.24E-03	87%	Pass
73	0.878	15	4.89E-03	12	3.91E-03	80%	Pass
74	0.889	15	4.89E-03	12	3.91E-03	80%	Pass
75	0.900	15	4.89E-03	12	3.91E-03	80%	Pass
76	0.911	15	4.89E-03	12	3.91E-03	80%	Pass
77	0.922	15	4.89E-03	12	3.91E-03	80%	Pass
78	0.933	14	4.56E-03	12	3.91E-03	86%	Pass
79	0.945	14	4.56E-03	11	3.59E-03	79%	Pass
80	0.956	13	4.24E-03	11	3.59E-03	85%	Pass
81	0.967	13	4.24E-03	11	3.59E-03	85%	Pass
82	0.978	13	4.24E-03	8	2.61E-03	62%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
83	0.989	12	3.91E-03	8	2.61E-03	67%	Pass
84	1.000	10	3.26E-03	7	2.28E-03	70%	Pass
85	1.011	10	3.26E-03	7	2.28E-03	70%	Pass
86	1.023	10	3.26E-03	7	2.28E-03	70%	Pass
87	1.034	10	3.26E-03	7	2.28E-03	70%	Pass
88	1.045	9	2.93E-03	7	2.28E-03	78%	Pass
89	1.056	9	2.93E-03	7	2.28E-03	78%	Pass
90	1.067	9	2.93E-03	7	2.28E-03	78%	Pass
91	1.078	8	2.61E-03	7	2.28E-03	88%	Pass
92	1.089	8	2.61E-03	7	2.28E-03	88%	Pass
93	1.101	8	2.61E-03	7	2.28E-03	88%	Pass
94	1.112	8	2.61E-03	5	1.63E-03	63%	Pass
95	1.123	7	2.28E-03	3	9.78E-04	43%	Pass
96	1.134	6	1.96E-03	3	9.78E-04	50%	Pass
97	1.145	5	1.63E-03	3	9.78E-04	60%	Pass
98	1.156	5	1.63E-03	3	9.78E-04	60%	Pass
99	1.167	3	9.78E-04	3	9.78E-04	100%	Pass
100	1.179	3	9.78E-04	3	9.78E-04	100%	Pass

**Peak Flows calculated with Cunnane Plotting Position**

Return Period (years)	Pre-dev. Q (cfs)	Post-Dev. Q (cfs)	Reduction (cfs)
10	1.179	1.135	0.044
9	1.162	1.066	0.096
8	1.161	0.999	0.162
7	1.146	0.976	0.170
6	1.126	0.963	0.162
5	1.095	0.902	0.193
4	1.028	0.855	0.173
3	0.975	0.598	0.378
2	0.755	0.389	0.366

**List of Peak events and Determination of P2 and P10 (Pre-Development)**

**Fanita Ranch POC 10E - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>1.18</b>	<b>1.26</b>					
<b>9</b>	<b>1.16</b>	<b>1.16</b>	0.502	10/28/1974	35	1.03	1.02
<b>8</b>	<b>1.16</b>	<b>1.16</b>	0.529	12/25/2003	34	1.06	1.05
<b>7</b>	<b>1.15</b>	<b>1.16</b>	0.569	10/10/1986	33	1.09	1.08
<b>6</b>	<b>1.13</b>	<b>1.13</b>	0.571	1/13/1993	32	1.13	1.11
<b>5</b>	<b>1.09</b>	<b>1.11</b>	0.573	1/9/1980	31	1.16	1.15
<b>4</b>	<b>1.03</b>	<b>1.04</b>	0.575	2/25/2003	30	1.20	1.19
<b>3</b>	<b>0.98</b>	<b>0.98</b>	0.583	2/12/2003	29	1.24	1.23
<b>2</b>	<b>0.76</b>	<b>0.76</b>	0.604	1/18/1993	28	1.29	1.28
			0.622	3/4/1978	27	1.33	1.32
			0.625	2/18/1980	26	1.38	1.38
			0.626	2/16/1980	25	1.44	1.43
			0.635	12/4/1974	24	1.50	1.49
			0.646	4/18/1995	23	1.57	1.56
			0.646	10/27/2004	22	1.64	1.63
			0.677	2/15/1992	21	1.71	1.71
			0.723	2/21/2005	20	1.80	1.80
			0.733	3/2/1983	19	1.89	1.89
			0.755	3/6/1975	18	2.00	2.00
			0.771	8/17/1977	17	2.12	2.12
			0.815	3/1/1983	16	2.25	2.26
			0.819	1/31/1979	15	2.40	2.41
			0.923	2/13/1998	14	2.57	2.59
			0.954	10/20/2004	13	2.77	2.79
			0.979	10/18/2004	12	3.00	3.03
			0.99	2/2/1998	11	3.27	3.32
			0.991	1/29/1980	10	3.60	3.67
			1.038	2/19/1993	9	4.00	4.09
			1.069	1/9/2005	8	4.50	4.63
			1.118	2/7/1998	7	5.14	5.33
			1.129	10/31/1987	6	6.00	6.29
			1.161	9/10/1976	5	7.20	7.65
			1.162	2/6/1992	4	9.00	9.78
			1.442	10/22/1976	3	12.00	13.54
			1.702	2/20/1980	2	18.00	22.00
			1.729	1/4/1978	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

**List of Peak events and Determination of P2 and P10 (Post-Development)  
Fanita Ranch POC 10E - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>1.14</b>	<b>1.21</b>					
9	1.07	1.12	0.161	2/18/1980	35	1.03	1.02
8	1.00	1.04	0.162	12/4/1974	34	1.06	1.05
7	0.98	0.98	0.169	3/1/1983	33	1.09	1.08
6	0.96	0.98	0.175	2/21/2005	32	1.13	1.11
5	0.90	0.92	0.18	10/18/2004	31	1.16	1.15
4	0.86	0.86	0.189	8/17/1977	30	1.20	1.19
3	0.60	0.61	0.208	2/13/1998	29	1.24	1.23
2	0.39	0.39	0.212	10/31/1987	28	1.29	1.28
			0.218	2/2/1998	27	1.33	1.32
			0.223	9/10/1976	26	1.38	1.38
			0.22	2/19/1993	25	1.44	1.43
			0.24	2/7/1998	24	1.50	1.49
			0.25	1/4/1978	23	1.57	1.56
			0.25	2/6/1992	22	1.64	1.63
			0.28	1/10/2005	21	1.71	1.71
			0.29	1/16/1993	20	1.80	1.80
			0.29	1/16/1993	19	1.89	1.89
			0.39	1/7/1993	18	2.00	2.00
			0.45	2/15/1986	17	2.12	2.12
			0.48	2/9/1976	16	2.25	2.26
			0.50	1/15/1978	15	2.40	2.41
			0.50	1/8/1993	14	2.57	2.59
			0.50	1/11/2005	13	2.77	2.79
			0.61	3/1/1991	12	3.00	3.03
			0.80	1/29/1980	11	3.27	3.32
			0.86	3/5/1995	10	3.60	3.67
			0.86	12/29/2004	9	4.00	4.09
			0.87	2/23/2005	8	4.50	4.63
			0.93	10/27/2004	7	5.14	5.33
			0.98	10/20/2004	6	6.00	6.29
			0.98	10/20/2004	5	7.20	7.65
			1.12	3/3/1983	4	9.00	9.78
			1.41	1/31/1979	3	12.00	13.54
			1.89	10/22/1976	2	18.00	22.00
			2.63	2/20/1980	1	36.00	58.67

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

### BMP-10E Stage-Elevation-Volume

h (ft)	A (sq-ft)	V (cu-ft)	
0	2112	0	
0.083	2164	71.3	
0.167	2217	144.3	
0.250	2269	219.1	mulch elevation
0.333	2321	410.3	
0.417	2374	605.9	
0.500	2426	805.9	
0.583	2478	1010.2	
0.667	2530	1218.9	
0.750	2583	1432.0	
0.833	2635	1649.4	
0.917	2687	1871.1	
1.000	2740	2097.2	
1.083	2792	2327.7	
1.167	2844	2562.5	
1.250	2896	2801.7	
1.333	2949	3045.3	
1.417	3001	3293.2	
1.500	3053	3545.4	
1.583	3105	3802.0	
1.667	3158	4063.0	
1.750	3210	4328.3	BMP elevation
1.833	3262	4598.0	
1.917	3315	4872.0	
2.000	3367	5150.4	
2.083	3419	5433.2	
2.167	3471	5720.3	
2.250	3524	6011.7	
2.333	3576	6307.5	
2.417	3628	6607.7	
2.500	3681	6912.2	
2.583	3733	7221.1	
2.667	3785	7534.4	
2.750	3837	7852.0	
2.833	3890	8173.9	
2.917	3942	8500.2	
3.000	3994	8830.9	Riser elevation
3.083	4046	9165.9	
3.167	4099	9505.3	
3.250	4151	9849.1	

Effective depth: 33.01 inches  
 WQ depth: 32.19 inches

Fani ta Ranch POC10E EX

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          00:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   00:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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 0.06 0.08 0.11 .16 .18 .21 .21 .2 .16 .12 .08 .06
DRY_ONLY NO
    
```

[RAINGAGES]

```

; Name Rain Type Time Intrvl Snow Catch Data Source
-----
SanVicente INTENSITY 1:00 1.0 TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

; Name Raingage Outlet Total Area Pcnt. Imperv Width Pcnt. Slope Curb Length Snow Pack
-----
DMA-10E-B SanVicente POC-10E 1.11 0 216 9 0
DMA-10E-D SanVicente POC-10E 1.00 0 195 10 0
    
```

[SUBAREAS]

```

; Subcatchment N-Imperv N-Perv S-Imperv S-Perv PctZero RouteTo PctRouted
-----
DMA-10E-B 0.012 0.05 0.05 0.10 25 OUTLET
DMA-10E-D 0.012 0.05 0.05 0.10 25 OUTLET
    
```

[INFILTRATION]

```

; Subcatchment Suction HydCon IMDmax
-----
DMA-10E-B 3.0 0.15 0.31
DMA-10E-D 9 0.025 0.33
    
```

[OUTFALLS]

```

; Name Invert Elev. Outfall Type Stage/Table Time Series Tide Gate
-----
POC-10E 0 FREE NO
    
```

[TIMESERIES]

```

; Name Date Time Value
-----
From County SanVicente FILE "P:\Acad\7033 Hunsaker San Diego\03 Fani ta Ranch\REC SWMM\rainfall_sanvicente.dat"
    
```

[REPORT]

```

INPUT NO
CONTROLS NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL
    
```

[TAGS]

[MAP]

```

DIMENSIONS 1490.000 4975.000 1710.000 5525.000
Units None
    
```

[COORDINATES]

```

; Node X-Coord Y-Coord
-----
    
```

Fani ta Ranch POC10E EX

POC-10E 1600.000 5000.000

[VERTICES]

:: Link X-Coord Y-Coord  
:: -----

[Polygons]

:: Subcatchment X-Coord Y-Coord  
:: -----

DMA-10E-B 1500.000 5250.000

DMA-10E-D 1700.000 5250.000

[SYMBOLS]

:: Gage X-Coord Y-Coord  
:: -----

SanVicente 1600.000 5500.000

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          05:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   05:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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 0.06 0.08 0.110 0.16 0.18 0.21 0.21 0.2 0.16 0.12 0.08 0.06
DRY_ONLY NO
    
```

[RAINGAGES]

```

:: Name Rain Type Time Intrvl Snow Catch Data Source
-----
SanVicente INTENSITY 1:00 1.0 TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

Name	Raingage	Outlet	Total Area	Pcnt. Imperv	Width	Pcnt. Slope	Curb Length	Snow Pack
DMA-10E-B-Road	SanVicente	BMP10E-B	0.6564	87.8	244	40	0	
DMA-10E-D-slope	SanVicente	BMP10E-B	0.61	0	118	50	0	
DMA-16D-ROAD	SanVicente	BMP10E-B	1.34	85	492	40	0	
DMA-10E-B-slope	SanVicente	POC10EPR	0.26	0	51	50	0	
BMP10E-B	SanVicente	POC10EPR	0.07369	0	10	0	0	
DMA-10E-2-slope-by	SanVicente	POC10EPR	0.07	0	14	50	0	

[SUBAREAS]

Subcatchment	N-Imperv	N-Perv	S-Imperv	S-Perv	PctZero	RouteTo	PctRouted
DMA-10E-B-Road	0.012	0.05	0.05	0.10	25	OUTLET	
DMA-10E-D-slope	0.012	0.05	0.05	0.10	25	OUTLET	
DMA-16D-ROAD	0.012	0.05	0.05	0.10	25	OUTLET	
DMA-10E-B-slope	0.012	0.05	0.05	0.10	25	OUTLET	
BMP10E-B	0.012	0.05	0.05	0.10	25	OUTLET	
DMA-10E-2-slope-by	0.012	0.05	0.05	0.10	25	OUTLET	

[INFILTRATION]

Subcatchment	Suction	HydCon	IMDmax
DMA-10E-B-Road	3	0.15	0.31
DMA-10E-D-slope	9	0.01875	0.33
DMA-16D-ROAD	9	0.01875	0.33
DMA-10E-B-slope	3	0.15	0.31
BMP10E-B	3.0	0.15	0.31
DMA-10E-2-slope-by	9	0.01875	0.33

[LID\_CONTROLS]

Type/Layer	Parameters
BR10E	BC
BR10E	SURFACE 33 0.0 0.0 0.0 5
BR10E	SOIL 24 0.4 0.2 0.1 5.0 5.0 1.5
BR10E	STORAGE 27 0.67 0.15 0
BR10E	DRAIN 0.25324 0.5 12 6

[LID\_USAGE]

Subcatchment	LID Process	Number	Area	Width	Ini tSatur	FromImprv	ToPerv	Report File
BMP10E-B	BR10E	1	3210	0	0	100	0	

[OUTFALLS]

```

:: Invert Outfall Stage/Tabl e Tide
    
```

```

Fani ta Ranch POC10E PR
:: Name          El ev.      Type          Time Series  Gate
-----
POC10EPR        0           FREE          -----
NO

```

[TIMESERIES]

```

:: Name          Date          Time          Value
-----
San Vi cente Rain Gage from San Di ego County
SanVi cente     FILE "P:\Acad\7033 Hunsaker San Di ego\03 Fani ta Ranch\REC SWMM\rainfal l_sanvi cente. dat"

```

[REPORT]

```

INPUT          NO
CONTROLS       NO
SUBCATCHMENTS ALL
NODES          ALL
LINKS          ALL

```

[TAGS]

[MAP]

```

DI MENS IONS  670.000 3937.500 1330.000 5312.500
Uni ts        None

```

[COORDINATES]

```

:: Node          X-Coord          Y-Coord
-----
POC10EPR        1000.000         4000.000

```

[VERTICES]

```

:: Li nk          X-Coord          Y-Coord
-----

```

[Pol ygons]

```

:: Subcatchment  X-Coord          Y-Coord
-----
DMA-10E-B-Road  700.000          5000.000
DMA-10E-D-sl ope 611.753          4500.800
DMA-16D-ROAD    1300.000         5000.000
DMA-10E-B-sl ope 700.000          4000.000
BMP10E-B        1000.000         4500.000
DMA-10E-2-sl ope-by 1300.000        4000.000

```

[SYMBOLS]

```

:: Gage          X-Coord          Y-Coord
-----
SanVi cente     1000.000         5250.000

```

## POC 11

Flow Duration Curve (Pass-Fail) Results

List of the “n” largest Peaks: Pre-Development and Post-Development Conditions  
Elevation vs. Area Curves and Elevations vs. Discharge Curves to be used in SWMM  
SWMM Input Data (Existing and Proposed Models)



Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
37	8.351	90	2.93E-02	23	7.50E-03	26%	Pass
38	8.542	79	2.57E-02	22	7.17E-03	28%	Pass
39	8.733	71	2.31E-02	20	6.52E-03	28%	Pass
40	8.925	67	2.18E-02	18	5.87E-03	27%	Pass
41	9.116	60	1.96E-02	16	5.21E-03	27%	Pass
42	9.307	55	1.79E-02	16	5.21E-03	29%	Pass
43	9.499	51	1.66E-02	13	4.24E-03	25%	Pass
44	9.690	51	1.66E-02	11	3.59E-03	22%	Pass
45	9.881	47	1.53E-02	9	2.93E-03	19%	Pass
46	10.072	45	1.47E-02	8	2.61E-03	18%	Pass
47	10.264	44	1.43E-02	8	2.61E-03	18%	Pass
48	10.455	44	1.43E-02	7	2.28E-03	16%	Pass
49	10.646	42	1.37E-02	6	1.96E-03	14%	Pass
50	10.837	41	1.34E-02	6	1.96E-03	15%	Pass
51	11.029	40	1.30E-02	6	1.96E-03	15%	Pass
52	11.220	39	1.27E-02	6	1.96E-03	15%	Pass
53	11.411	37	1.21E-02	6	1.96E-03	16%	Pass
54	11.603	34	1.11E-02	6	1.96E-03	18%	Pass
55	11.794	31	1.01E-02	6	1.96E-03	19%	Pass
56	11.985	29	9.45E-03	6	1.96E-03	21%	Pass
57	12.176	27	8.80E-03	6	1.96E-03	22%	Pass
58	12.368	25	8.15E-03	6	1.96E-03	24%	Pass
59	12.559	25	8.15E-03	6	1.96E-03	24%	Pass
60	12.750	24	7.82E-03	6	1.96E-03	25%	Pass
61	12.941	23	7.50E-03	5	1.63E-03	22%	Pass
62	13.133	21	6.84E-03	5	1.63E-03	24%	Pass
63	13.324	21	6.84E-03	4	1.30E-03	19%	Pass
64	13.515	20	6.52E-03	4	1.30E-03	20%	Pass
65	13.707	20	6.52E-03	4	1.30E-03	20%	Pass
66	13.898	20	6.52E-03	4	1.30E-03	20%	Pass
67	14.089	20	6.52E-03	4	1.30E-03	20%	Pass
68	14.280	20	6.52E-03	3	9.78E-04	15%	Pass
69	14.472	20	6.52E-03	3	9.78E-04	15%	Pass
70	14.663	18	5.87E-03	3	9.78E-04	17%	Pass
71	14.854	17	5.54E-03	3	9.78E-04	18%	Pass
72	15.045	17	5.54E-03	3	9.78E-04	18%	Pass
73	15.237	17	5.54E-03	3	9.78E-04	18%	Pass
74	15.428	17	5.54E-03	3	9.78E-04	18%	Pass
75	15.619	16	5.21E-03	3	9.78E-04	19%	Pass
76	15.811	14	4.56E-03	3	9.78E-04	21%	Pass
77	16.002	13	4.24E-03	3	9.78E-04	23%	Pass
78	16.193	13	4.24E-03	3	9.78E-04	23%	Pass
79	16.384	12	3.91E-03	2	6.52E-04	17%	Pass
80	16.576	12	3.91E-03	2	6.52E-04	17%	Pass
81	16.767	12	3.91E-03	2	6.52E-04	17%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
82	16.958	12	3.91E-03	2	6.52E-04	17%	Pass
83	17.149	11	3.59E-03	2	6.52E-04	18%	Pass
84	17.341	11	3.59E-03	2	6.52E-04	18%	Pass
85	17.532	10	3.26E-03	2	6.52E-04	20%	Pass
86	17.723	9	2.93E-03	2	6.52E-04	22%	Pass
87	17.915	9	2.93E-03	2	6.52E-04	22%	Pass
88	18.106	9	2.93E-03	2	6.52E-04	22%	Pass
89	18.297	9	2.93E-03	2	6.52E-04	22%	Pass
90	18.488	9	2.93E-03	2	6.52E-04	22%	Pass
91	18.680	7	2.28E-03	2	6.52E-04	29%	Pass
92	18.871	7	2.28E-03	2	6.52E-04	29%	Pass
93	19.062	7	2.28E-03	2	6.52E-04	29%	Pass
94	19.253	7	2.28E-03	2	6.52E-04	29%	Pass
95	19.445	5	1.63E-03	2	6.52E-04	40%	Pass
96	19.636	5	1.63E-03	2	6.52E-04	40%	Pass
97	19.827	5	1.63E-03	2	6.52E-04	40%	Pass
98	20.019	5	1.63E-03	2	6.52E-04	40%	Pass
99	20.210	4	1.30E-03	2	6.52E-04	50%	Pass
100	20.401	4	1.30E-03	2	6.52E-04	50%	Pass

**Peak Flows calculated with Cunnane Plotting Position**

Return Period (years)	Pre-dev. Q (cfs)	Post-Dev. Q (cfs)	Reduction (cfs)
10	20.401	14.243	6.158
9	19.848	13.803	6.045
8	19.493	13.407	6.086
7	19.344	11.945	7.399
6	19.097	10.478	8.620
5	18.541	10.200	8.340
4	17.604	9.810	7.793
3	16.227	9.382	6.846
2	14.651	8.654	5.997

**List of Peak events and Determination of P2 and P10 (Pre-Development)**

**Fanita Ranch POC 11 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>20.40</b>	<b>21.69</b>					
<b>9</b>	<b>19.85</b>	<b>20.12</b>	10.505	2/25/2003	35	1.03	1.02
<b>8</b>	<b>19.49</b>	<b>19.70</b>	11.156	2/12/2003	34	1.06	1.05
<b>7</b>	<b>19.34</b>	<b>19.36</b>	11.334	2/16/1980	33	1.09	1.08
<b>6</b>	<b>19.10</b>	<b>19.32</b>	11.512	2/15/1986	32	1.13	1.11
<b>5</b>	<b>18.54</b>	<b>18.56</b>	11.574	2/18/1980	31	1.16	1.15
<b>4</b>	<b>17.60</b>	<b>17.64</b>	11.603	4/23/1980	30	1.20	1.19
<b>3</b>	<b>16.23</b>	<b>16.27</b>	11.636	3/4/1978	29	1.24	1.23
<b>2</b>	<b>14.65</b>	<b>14.65</b>	11.868	1/13/1993	28	1.29	1.28
			11.952	12/28/1977	27	1.33	1.32
			12.064	1/18/1993	26	1.38	1.38
			12.354	12/4/1974	25	1.44	1.43
			12.365	4/18/1995	24	1.50	1.49
			12.589	8/17/1977	23	1.57	1.56
			12.923	10/10/1986	22	1.64	1.63
			13.025	2/21/2005	21	1.71	1.71
			13.119	2/15/1992	20	1.80	1.80
			13.4	3/2/1983	19	1.89	1.89
			14.651	1/31/1979	18	2.00	2.00
			14.706	3/1/1983	17	2.12	2.12
			15.555	3/6/1975	16	2.25	2.26
			15.651	10/18/2004	15	2.40	2.41
			15.683	10/27/2004	14	2.57	2.59
			15.96	2/13/1998	13	2.77	2.79
			16.272	10/20/2004	12	3.00	3.03
			17.008	2/2/1998	11	3.27	3.32
			17.481	2/19/1993	10	3.60	3.67
			17.638	1/29/1980	9	4.00	4.09
			18.493	1/9/2005	8	4.50	4.63
			18.584	2/6/1992	7	5.14	5.33
			19.317	2/7/1998	6	6.00	6.29
			19.369	10/31/1987	5	7.20	7.65
			20.124	9/10/1976	4	9.00	9.78
			24.814	10/22/1976	3	12.00	13.54
			28.086	2/20/1980	2	18.00	22.00
			30.65	1/4/1978	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

**List of Peak events and Determination of P2 and P10 (Post-Development)**

**Fanita Ranch POC 11 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>14.24</b>	<b>14.86</b>					
9	13.80	14.11	6.55	1/15/1978	35	1.03	1.02
8	13.41	13.64	6.57	4/18/1995	34	1.06	1.05
7	11.95	12.81	6.70	2/8/1976	33	1.09	1.08
6	10.48	10.50	6.78	10/28/1974	32	1.13	1.11
5	10.20	10.33	6.82	2/10/1978	31	1.16	1.15
4	9.81	9.87	6.88	12/29/2004	30	1.20	1.19
3	9.38	9.39	6.95	1/13/1993	29	1.24	1.23
2	8.65	8.65	7.01	1/11/2005	28	1.29	1.28
			7.20	2/15/1992	27	1.33	1.32
			7.31	3/5/1995	26	1.38	1.38
			7.36	2/18/1980	25	1.44	1.43
			7.42	2/16/1980	24	1.50	1.49
			7.65	8/17/1977	23	1.57	1.56
			7.72	3/6/1975	22	1.64	1.63
			7.77	10/18/2004	21	1.71	1.71
			8.05	12/4/1974	20	1.80	1.80
			8.16	3/1/1983	19	1.89	1.89
			8.65	3/2/1983	18	2.00	2.00
			8.77	2/19/1993	17	2.12	2.12
			8.87	2/13/1998	16	2.25	2.26
			8.93	2/6/1992	15	2.40	2.41
			8.95	2/21/2005	14	2.57	2.59
			9.34	1/29/1980	13	2.77	2.79
			9.39	2/2/1998	12	3.00	3.03
			9.46	10/27/2004	11	3.27	3.32
			9.58	2/15/1986	10	3.60	3.67
			9.87	10/20/2004	9	4.00	4.09
			9.94	10/31/1987	8	4.50	4.63
			10.44	2/7/1998	7	5.14	5.33
			10.50	9/10/1976	6	6.00	6.29
			13.27	1/4/1978	5	7.20	7.65
			14.11	1/31/1979	4	9.00	9.78
			16.35	1/9/2005	3	12.00	13.54
			23.95	10/22/1976	2	18.00	22.00
			24.55	2/20/1980	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.



## Outlet structure for Discharge of Pond 11

### Discharge vs Elevation Table

Low orifice	1.000 "	Lower slot		Lower Weir	
Number of orif:	0	Number of slots:	1	Number of weirs:	0
Cg-low:	0.62	Invert:	0.00 ft	Invert:	0.00
		B	3.000 ft	B:	0.00
Middle orifice	1 "	h <sub>slot</sub>	0.167 ft		
Number of orif:	0	Upper slot		Emergency weir	
Cg-middle:	0.62	Number of slots:	0	Invert:	6.000 ft
invert elev:	0.000 ft	Invert:	0.00 ft	W:	16.00 ft
		B:	0.00 ft		
		h <sub>slot</sub>	0.000 ft		

h* (ft)	H/D-low -	H/D-mid -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qslot-low (cfs)	Qslot-upp (cfs)	Qweir (cfs)	Qemerg (cfs)	Qtot (cfs)
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.042	0.500	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.079	0.000	0.000	0.000	0.079
0.083	1.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.224	0.000	0.000	0.000	0.224
0.125	1.500	1.500	0.000	0.000	0.000	0.000	0.000	0.000	0.411	0.000	0.000	0.000	0.411
0.167	2.000	2.000	0.000	0.000	0.000	0.000	0.000	0.000	0.633	0.000	0.000	0.000	0.633
0.208	2.500	2.500	0.000	0.000	0.000	0.000	0.000	0.000	0.865	0.000	0.000	0.000	0.865
0.250	3.000	3.000	0.000	0.000	0.000	0.000	0.000	0.000	0.999	0.000	0.000	0.000	0.999
0.292	3.500	3.500	0.000	0.000	0.000	0.000	0.000	0.000	1.117	0.000	0.000	0.000	1.117
0.333	4.000	4.000	0.000	0.000	0.000	0.000	0.000	0.000	1.224	0.000	0.000	0.000	1.224
0.375	4.500	4.500	0.000	0.000	0.000	0.000	0.000	0.000	1.322	0.000	0.000	0.000	1.322
0.417	5.000	5.000	0.000	0.000	0.000	0.000	0.000	0.000	1.413	0.000	0.000	0.000	1.413
0.458	5.500	5.500	0.000	0.000	0.000	0.000	0.000	0.000	1.499	0.000	0.000	0.000	1.499
0.500	6.000	6.000	0.000	0.000	0.000	0.000	0.000	0.000	1.580	0.000	0.000	0.000	1.580
0.542	6.500	6.500	0.000	0.000	0.000	0.000	0.000	0.000	1.657	0.000	0.000	0.000	1.657
0.583	7.000	7.000	0.000	0.000	0.000	0.000	0.000	0.000	1.731	0.000	0.000	0.000	1.731
0.625	7.500	7.500	0.000	0.000	0.000	0.000	0.000	0.000	1.801	0.000	0.000	0.000	1.801
0.667	8.000	8.000	0.000	0.000	0.000	0.000	0.000	0.000	1.869	0.000	0.000	0.000	1.869
0.708	8.500	8.500	0.000	0.000	0.000	0.000	0.000	0.000	1.935	0.000	0.000	0.000	1.935
0.750	9.000	9.000	0.000	0.000	0.000	0.000	0.000	0.000	1.998	0.000	0.000	0.000	1.998
0.792	9.500	9.500	0.000	0.000	0.000	0.000	0.000	0.000	2.060	0.000	0.000	0.000	2.060
0.833	10.000	10.000	0.000	0.000	0.000	0.000	0.000	0.000	2.120	0.000	0.000	0.000	2.120
0.875	10.500	10.500	0.000	0.000	0.000	0.000	0.000	0.000	2.178	0.000	0.000	0.000	2.178
0.917	11.000	11.000	0.000	0.000	0.000	0.000	0.000	0.000	2.234	0.000	0.000	0.000	2.234
0.958	11.500	11.500	0.000	0.000	0.000	0.000	0.000	0.000	2.290	0.000	0.000	0.000	2.290
1.000	12.000	12.000	0.000	0.000	0.000	0.000	0.000	0.000	2.343	0.000	0.000	0.000	2.343
1.042	12.500	12.500	0.000	0.000	0.000	0.000	0.000	0.000	2.396	0.000	0.000	0.000	2.396
1.083	13.000	13.000	0.000	0.000	0.000	0.000	0.000	0.000	2.448	0.000	0.000	0.000	2.448
1.125	13.500	13.500	0.000	0.000	0.000	0.000	0.000	0.000	2.498	0.000	0.000	0.000	2.498
1.167	14.000	14.000	0.000	0.000	0.000	0.000	0.000	0.000	2.548	0.000	0.000	0.000	2.548
1.208	14.500	14.500	0.000	0.000	0.000	0.000	0.000	0.000	2.596	0.000	0.000	0.000	2.596
1.250	15.000	15.000	0.000	0.000	0.000	0.000	0.000	0.000	2.644	0.000	0.000	0.000	2.644
1.292	15.500	15.500	0.000	0.000	0.000	0.000	0.000	0.000	2.691	0.000	0.000	0.000	2.691
1.333	16.000	16.000	0.000	0.000	0.000	0.000	0.000	0.000	2.737	0.000	0.000	0.000	2.737
1.375	16.500	16.500	0.000	0.000	0.000	0.000	0.000	0.000	2.782	0.000	0.000	0.000	2.782
1.417	17.000	17.000	0.000	0.000	0.000	0.000	0.000	0.000	2.826	0.000	0.000	0.000	2.826
1.458	17.500	17.500	0.000	0.000	0.000	0.000	0.000	0.000	2.870	0.000	0.000	0.000	2.870
1.500	18.000	18.000	0.000	0.000	0.000	0.000	0.000	0.000	2.913	0.000	0.000	0.000	2.913
1.542	18.500	18.500	0.000	0.000	0.000	0.000	0.000	0.000	2.956	0.000	0.000	0.000	2.956
1.583	19.000	19.000	0.000	0.000	0.000	0.000	0.000	0.000	2.998	0.000	0.000	0.000	2.998
1.625	19.500	19.500	0.000	0.000	0.000	0.000	0.000	0.000	3.039	0.000	0.000	0.000	3.039
1.667	20.000	20.000	0.000	0.000	0.000	0.000	0.000	0.000	3.080	0.000	0.000	0.000	3.080
1.708	20.500	20.500	0.000	0.000	0.000	0.000	0.000	0.000	3.120	0.000	0.000	0.000	3.120
1.750	21.000	21.000	0.000	0.000	0.000	0.000	0.000	0.000	3.160	0.000	0.000	0.000	3.160
1.792	21.500	21.500	0.000	0.000	0.000	0.000	0.000	0.000	3.199	0.000	0.000	0.000	3.199
1.833	22.000	22.000	0.000	0.000	0.000	0.000	0.000	0.000	3.238	0.000	0.000	0.000	3.238
1.875	22.500	22.500	0.000	0.000	0.000	0.000	0.000	0.000	3.276	0.000	0.000	0.000	3.276
1.917	23.000	23.000	0.000	0.000	0.000	0.000	0.000	0.000	3.314	0.000	0.000	0.000	3.314
1.958	23.500	23.500	0.000	0.000	0.000	0.000	0.000	0.000	3.352	0.000	0.000	0.000	3.352
2.000	24.000	24.000	0.000	0.000	0.000	0.000	0.000	0.000	3.389	0.000	0.000	0.000	3.389
2.042	24.500	24.500	0.000	0.000	0.000	0.000	0.000	0.000	3.425	0.000	0.000	0.000	3.425
2.083	25.000	25.000	0.000	0.000	0.000	0.000	0.000	0.000	3.461	0.000	0.000	0.000	3.461
2.125	25.500	25.500	0.000	0.000	0.000	0.000	0.000	0.000	3.497	0.000	0.000	0.000	3.497
2.167	26.000	26.000	0.000	0.000	0.000	0.000	0.000	0.000	3.533	0.000	0.000	0.000	3.533
2.208	26.500	26.500	0.000	0.000	0.000	0.000	0.000	0.000	3.568	0.000	0.000	0.000	3.568

2.250	27.000	27.000	0.000	0.000	0.000	0.000	0.000	0.000	3.603	0.000	0.000	0.000	3.603
2.292	27.500	27.500	0.000	0.000	0.000	0.000	0.000	0.000	3.637	0.000	0.000	0.000	3.637
2.333	28.000	28.000	0.000	0.000	0.000	0.000	0.000	0.000	3.671	0.000	0.000	0.000	3.671
2.375	28.500	28.500	0.000	0.000	0.000	0.000	0.000	0.000	3.705	0.000	0.000	0.000	3.705
2.417	29.000	29.000	0.000	0.000	0.000	0.000	0.000	0.000	3.739	0.000	0.000	0.000	3.739
2.458	29.500	29.500	0.000	0.000	0.000	0.000	0.000	0.000	3.772	0.000	0.000	0.000	3.772
2.500	30.000	30.000	0.000	0.000	0.000	0.000	0.000	0.000	3.805	0.000	0.000	0.000	3.805
2.542	30.500	30.500	0.000	0.000	0.000	0.000	0.000	0.000	3.838	0.000	0.000	0.000	3.838
2.583	31.000	31.000	0.000	0.000	0.000	0.000	0.000	0.000	3.870	0.000	0.000	0.000	3.870
2.625	31.500	31.500	0.000	0.000	0.000	0.000	0.000	0.000	3.902	0.000	0.000	0.000	3.902
2.667	32.000	32.000	0.000	0.000	0.000	0.000	0.000	0.000	3.934	0.000	0.000	0.000	3.934
2.708	32.500	32.500	0.000	0.000	0.000	0.000	0.000	0.000	3.966	0.000	0.000	0.000	3.966
2.750	33.000	33.000	0.000	0.000	0.000	0.000	0.000	0.000	3.997	0.000	0.000	0.000	3.997
2.792	33.500	33.500	0.000	0.000	0.000	0.000	0.000	0.000	4.028	0.000	0.000	0.000	4.028
2.833	34.000	34.000	0.000	0.000	0.000	0.000	0.000	0.000	4.059	0.000	0.000	0.000	4.059
2.875	34.500	34.500	0.000	0.000	0.000	0.000	0.000	0.000	4.090	0.000	0.000	0.000	4.090
2.917	35.000	35.000	0.000	0.000	0.000	0.000	0.000	0.000	4.120	0.000	0.000	0.000	4.120
2.958	35.500	35.500	0.000	0.000	0.000	0.000	0.000	0.000	4.150	0.000	0.000	0.000	4.150
3.000	36.000	36.000	0.000	0.000	0.000	0.000	0.000	0.000	4.180	0.000	0.000	0.000	4.180
3.042	36.500	36.500	0.000	0.000	0.000	0.000	0.000	0.000	4.210	0.000	0.000	0.000	4.210
3.083	37.000	37.000	0.000	0.000	0.000	0.000	0.000	0.000	4.239	0.000	0.000	0.000	4.239
3.125	37.500	37.500	0.000	0.000	0.000	0.000	0.000	0.000	4.269	0.000	0.000	0.000	4.269
3.167	38.000	38.000	0.000	0.000	0.000	0.000	0.000	0.000	4.298	0.000	0.000	0.000	4.298
3.208	38.500	38.500	0.000	0.000	0.000	0.000	0.000	0.000	4.327	0.000	0.000	0.000	4.327
3.250	39.000	39.000	0.000	0.000	0.000	0.000	0.000	0.000	4.356	0.000	0.000	0.000	4.356
3.292	39.500	39.500	0.000	0.000	0.000	0.000	0.000	0.000	4.384	0.000	0.000	0.000	4.384
3.333	40.000	40.000	0.000	0.000	0.000	0.000	0.000	0.000	4.412	0.000	0.000	0.000	4.412
3.375	40.500	40.500	0.000	0.000	0.000	0.000	0.000	0.000	4.441	0.000	0.000	0.000	4.441
3.417	41.000	41.000	0.000	0.000	0.000	0.000	0.000	0.000	4.469	0.000	0.000	0.000	4.469
3.458	41.500	41.500	0.000	0.000	0.000	0.000	0.000	0.000	4.497	0.000	0.000	0.000	4.497
3.500	42.000	42.000	0.000	0.000	0.000	0.000	0.000	0.000	4.524	0.000	0.000	0.000	4.524
3.542	42.500	42.500	0.000	0.000	0.000	0.000	0.000	0.000	4.552	0.000	0.000	0.000	4.552
3.583	43.000	43.000	0.000	0.000	0.000	0.000	0.000	0.000	4.579	0.000	0.000	0.000	4.579
3.625	43.500	43.500	0.000	0.000	0.000	0.000	0.000	0.000	4.606	0.000	0.000	0.000	4.606
3.667	44.000	44.000	0.000	0.000	0.000	0.000	0.000	0.000	4.633	0.000	0.000	0.000	4.633
3.708	44.500	44.500	0.000	0.000	0.000	0.000	0.000	0.000	4.660	0.000	0.000	0.000	4.660
3.750	45.000	45.000	0.000	0.000	0.000	0.000	0.000	0.000	4.687	0.000	0.000	0.000	4.687
3.792	45.500	45.500	0.000	0.000	0.000	0.000	0.000	0.000	4.713	0.000	0.000	0.000	4.713
3.833	46.000	46.000	0.000	0.000	0.000	0.000	0.000	0.000	4.740	0.000	0.000	0.000	4.740
3.875	46.500	46.500	0.000	0.000	0.000	0.000	0.000	0.000	4.766	0.000	0.000	0.000	4.766
3.917	47.000	47.000	0.000	0.000	0.000	0.000	0.000	0.000	4.792	0.000	0.000	0.000	4.792
3.958	47.500	47.500	0.000	0.000	0.000	0.000	0.000	0.000	4.818	0.000	0.000	0.000	4.818
4.000	48.000	48.000	0.000	0.000	0.000	0.000	0.000	0.000	4.844	0.000	0.000	0.000	4.844
4.042	48.500	48.500	0.000	0.000	0.000	0.000	0.000	0.000	4.870	0.000	0.000	0.000	4.870
4.083	49.000	49.000	0.000	0.000	0.000	0.000	0.000	0.000	4.895	0.000	0.000	0.000	4.895
4.125	49.500	49.500	0.000	0.000	0.000	0.000	0.000	0.000	4.921	0.000	0.000	0.000	4.921
4.167	50.000	50.000	0.000	0.000	0.000	0.000	0.000	0.000	4.946	0.000	0.000	0.000	4.946
4.208	50.500	50.500	0.000	0.000	0.000	0.000	0.000	0.000	4.971	0.000	0.000	0.000	4.971
4.250	51.000	51.000	0.000	0.000	0.000	0.000	0.000	0.000	4.996	0.000	0.000	0.000	4.996
4.292	51.500	51.500	0.000	0.000	0.000	0.000	0.000	0.000	5.021	0.000	0.000	0.000	5.021
4.333	52.000	52.000	0.000	0.000	0.000	0.000	0.000	0.000	5.046	0.000	0.000	0.000	5.046
4.375	52.500	52.500	0.000	0.000	0.000	0.000	0.000	0.000	5.071	0.000	0.000	0.000	5.071
4.417	53.000	53.000	0.000	0.000	0.000	0.000	0.000	0.000	5.095	0.000	0.000	0.000	5.095
4.458	53.500	53.500	0.000	0.000	0.000	0.000	0.000	0.000	5.120	0.000	0.000	0.000	5.120
4.500	54.000	54.000	0.000	0.000	0.000	0.000	0.000	0.000	5.144	0.000	0.000	0.000	5.144
4.542	54.500	54.500	0.000	0.000	0.000	0.000	0.000	0.000	5.168	0.000	0.000	0.000	5.168
4.583	55.000	55.000	0.000	0.000	0.000	0.000	0.000	0.000	5.192	0.000	0.000	0.000	5.192
4.625	55.500	55.500	0.000	0.000	0.000	0.000	0.000	0.000	5.216	0.000	0.000	0.000	5.216
4.667	56.000	56.000	0.000	0.000	0.000	0.000	0.000	0.000	5.240	0.000	0.000	0.000	5.240
4.708	56.500	56.500	0.000	0.000	0.000	0.000	0.000	0.000	5.264	0.000	0.000	0.000	5.264
4.750	57.000	57.000	0.000	0.000	0.000	0.000	0.000	0.000	5.287	0.000	0.000	0.000	5.287
4.792	57.500	57.500	0.000	0.000	0.000	0.000	0.000	0.000	5.311	0.000	0.000	0.000	5.311
4.833	58.000	58.000	0.000	0.000	0.000	0.000	0.000	0.000	5.334	0.000	0.000	0.000	5.334
4.875	58.500	58.500	0.000	0.000	0.000	0.000	0.000	0.000	5.358	0.000	0.000	0.000	5.358
4.917	59.000	59.000	0.000	0.000	0.000	0.000	0.000	0.000	5.381	0.000	0.000	0.000	5.381
4.958	59.500	59.500	0.000	0.000	0.000	0.000	0.000	0.000	5.404	0.000	0.000	0.000	5.404
5.000	60.000	60.000	0.000	0.000	0.000	0.000	0.000	0.000	5.427	0.000	0.000	0.000	5.427
5.042	60.500	60.500	0.000	0.000	0.000	0.000	0.000	0.000	5.450	0.000	0.000	0.000	5.450
5.083	61.000	61.000	0.000	0.000	0.000	0.000	0.000	0.000	5.473	0.000	0.000	0.000	5.473
5.125	61.500	61.500	0.000	0.000	0.000	0.000	0.000	0.000	5.496	0.000	0.000	0.000	5.496
5.167	62.000	62.000	0.000	0.000	0.000	0.000	0.000	0.000	5.518	0.000	0.000	0.000	5.518

5.208	62.500	62.500	0.000	0.000	0.000	0.000	0.000	0.000	5.541	0.000	0.000	0.000	5.541
5.250	63.000	63.000	0.000	0.000	0.000	0.000	0.000	0.000	5.563	0.000	0.000	0.000	5.563
5.292	63.500	63.500	0.000	0.000	0.000	0.000	0.000	0.000	5.586	0.000	0.000	0.000	5.586
5.333	64.000	64.000	0.000	0.000	0.000	0.000	0.000	0.000	5.608	0.000	0.000	0.000	5.608
5.375	64.500	64.500	0.000	0.000	0.000	0.000	0.000	0.000	5.630	0.000	0.000	0.000	5.630
5.417	65.000	65.000	0.000	0.000	0.000	0.000	0.000	0.000	5.653	0.000	0.000	0.000	5.653
5.458	65.500	65.500	0.000	0.000	0.000	0.000	0.000	0.000	5.675	0.000	0.000	0.000	5.675
5.500	66.000	66.000	0.000	0.000	0.000	0.000	0.000	0.000	5.697	0.000	0.000	0.000	5.697
5.542	66.500	66.500	0.000	0.000	0.000	0.000	0.000	0.000	5.718	0.000	0.000	0.000	5.718
5.583	67.000	67.000	0.000	0.000	0.000	0.000	0.000	0.000	5.740	0.000	0.000	0.000	5.740
5.625	67.500	67.500	0.000	0.000	0.000	0.000	0.000	0.000	5.762	0.000	0.000	0.000	5.762
5.667	68.000	68.000	0.000	0.000	0.000	0.000	0.000	0.000	5.783	0.000	0.000	0.000	5.783
5.708	68.500	68.500	0.000	0.000	0.000	0.000	0.000	0.000	5.805	0.000	0.000	0.000	5.805
5.750	69.000	69.000	0.000	0.000	0.000	0.000	0.000	0.000	5.826	0.000	0.000	0.000	5.826
5.792	69.500	69.500	0.000	0.000	0.000	0.000	0.000	0.000	5.848	0.000	0.000	0.000	5.848
5.833	70.000	70.000	0.000	0.000	0.000	0.000	0.000	0.000	5.869	0.000	0.000	0.000	5.869
5.875	70.500	70.500	0.000	0.000	0.000	0.000	0.000	0.000	5.890	0.000	0.000	0.000	5.890
5.917	71.000	71.000	0.000	0.000	0.000	0.000	0.000	0.000	5.912	0.000	0.000	0.000	5.912
5.958	71.500	71.500	0.000	0.000	0.000	0.000	0.000	0.000	5.933	0.000	0.000	0.000	5.933
6.000	72.000	72.000	0.000	0.000	0.000	0.000	0.000	0.000	5.954	0.000	0.000	0.000	5.954
6.042	72.500	72.500	0.000	0.000	0.000	0.000	0.000	0.000	5.975	0.000	0.000	0.422	6.396
6.083	73.000	73.000	0.000	0.000	0.000	0.000	0.000	0.000	5.995	0.000	0.000	1.193	7.189
6.125	73.500	73.500	0.000	0.000	0.000	0.000	0.000	0.000	6.016	0.000	0.000	2.192	8.208
6.167	74.000	74.000	0.000	0.000	0.000	0.000	0.000	0.000	6.037	0.000	0.000	3.375	9.412
6.208	74.500	74.500	0.000	0.000	0.000	0.000	0.000	0.000	6.058	0.000	0.000	4.716	10.774
6.250	75.000	75.000	0.000	0.000	0.000	0.000	0.000	0.000	6.078	0.000	0.000	6.200	12.278
6.292	75.500	75.500	0.000	0.000	0.000	0.000	0.000	0.000	6.099	0.000	0.000	7.813	13.911
6.333	76.000	76.000	0.000	0.000	0.000	0.000	0.000	0.000	6.119	0.000	0.000	9.546	15.665
6.375	76.500	76.500	0.000	0.000	0.000	0.000	0.000	0.000	6.139	0.000	0.000	11.390	17.530
6.417	77.000	77.000	0.000	0.000	0.000	0.000	0.000	0.000	6.160	0.000	0.000	13.340	19.500
6.458	77.500	77.500	0.000	0.000	0.000	0.000	0.000	0.000	6.180	0.000	0.000	15.391	21.570
6.500	78.000	78.000	0.000	0.000	0.000	0.000	0.000	0.000	6.200	0.000	0.000	17.536	23.736
6.542	78.500	78.500	0.000	0.000	0.000	0.000	0.000	0.000	6.220	0.000	0.000	19.773	25.994
6.583	79.000	79.000	0.000	0.000	0.000	0.000	0.000	0.000	6.240	0.000	0.000	22.098	28.338
6.625	79.500	79.500	0.000	0.000	0.000	0.000	0.000	0.000	6.260	0.000	0.000	24.508	30.768
6.667	80.000	80.000	0.000	0.000	0.000	0.000	0.000	0.000	6.280	0.000	0.000	26.999	33.279
6.708	80.500	80.500	0.000	0.000	0.000	0.000	0.000	0.000	6.300	0.000	0.000	29.569	35.869
6.750	81.000	81.000	0.000	0.000	0.000	0.000	0.000	0.000	6.320	0.000	0.000	32.216	38.536
6.792	81.500	81.500	0.000	0.000	0.000	0.000	0.000	0.000	6.339	0.000	0.000	34.938	41.277
6.833	82.000	82.000	0.000	0.000	0.000	0.000	0.000	0.000	6.359	0.000	0.000	37.732	44.091
6.875	82.500	82.500	0.000	0.000	0.000	0.000	0.000	0.000	6.379	0.000	0.000	40.597	46.976
6.917	83.000	83.000	0.000	0.000	0.000	0.000	0.000	0.000	6.398	0.000	0.000	43.531	49.929
6.958	83.500	83.500	0.000	0.000	0.000	0.000	0.000	0.000	6.418	0.000	0.000	46.533	52.950
7.000	84.000	84.000	0.000	0.000	0.000	0.000	0.000	0.000	6.437	0.000	0.000	49.600	56.037
7.042	84.500	84.500	0.000	0.000	0.000	0.000	0.000	0.000	6.456	0.000	0.000	52.732	59.189
7.083	85.000	85.000	0.000	0.000	0.000	0.000	0.000	0.000	6.476	0.000	0.000	55.927	62.403
7.125	85.500	85.500	0.000	0.000	0.000	0.000	0.000	0.000	6.495	0.000	0.000	59.185	65.680
7.167	86.000	86.000	0.000	0.000	0.000	0.000	0.000	0.000	6.514	0.000	0.000	62.503	69.017
7.208	86.500	86.500	0.000	0.000	0.000	0.000	0.000	0.000	6.533	0.000	0.000	65.881	72.415
7.250	87.000	87.000	0.000	0.000	0.000	0.000	0.000	0.000	6.552	0.000	0.000	69.318	75.871
7.292	87.500	87.500	0.000	0.000	0.000	0.000	0.000	0.000	6.571	0.000	0.000	72.813	79.384
7.333	88.000	88.000	0.000	0.000	0.000	0.000	0.000	0.000	6.590	0.000	0.000	76.364	82.955
7.375	88.500	88.500	0.000	0.000	0.000	0.000	0.000	0.000	6.609	0.000	0.000	79.972	86.581
7.417	89.000	89.000	0.000	0.000	0.000	0.000	0.000	0.000	6.628	0.000	0.000	83.634	90.262
7.458	89.500	89.500	0.000	0.000	0.000	0.000	0.000	0.000	6.647	0.000	0.000	87.351	93.998
7.500	90.000	90.000	0.000	0.000	0.000	0.000	0.000	0.000	6.666	0.000	0.000	91.121	97.787
7.542	90.500	90.500	0.000	0.000	0.000	0.000	0.000	0.000	6.684	0.000	0.000	94.944	101.628
7.583	91.000	91.000	0.000	0.000	0.000	0.000	0.000	0.000	6.703	0.000	0.000	98.555	105.258
7.625	91.500	91.500	0.000	0.000	0.000	0.000	0.000	0.000	6.722	0.000	0.000	99.843	106.565
7.667	92.000	92.000	0.000	0.000	0.000	0.000	0.000	0.000	6.740	0.000	0.000	101.115	107.856
7.708	92.500	92.500	0.000	0.000	0.000	0.000	0.000	0.000	6.759	0.000	0.000	102.371	109.130
7.750	93.000	93.000	0.000	0.000	0.000	0.000	0.000	0.000	6.777	0.000	0.000	103.612	110.390
7.792	93.500	93.500	0.000	0.000	0.000	0.000	0.000	0.000	6.796	0.000	0.000	104.839	111.634
7.833	94.000	94.000	0.000	0.000	0.000	0.000	0.000	0.000	6.814	0.000	0.000	106.051	112.865
7.875	94.500	94.500	0.000	0.000	0.000	0.000	0.000	0.000	6.832	0.000	0.000	107.249	114.081
7.917	95.000	95.000	0.000	0.000	0.000	0.000	0.000	0.000	6.850	0.000	0.000	108.434	115.285
7.958	95.500	95.500	0.000	0.000	0.000	0.000	0.000	0.000	6.869	0.000	0.000	109.606	116.475
8.000	96.000	96.000	0.000	0.000	0.000	0.000	0.000	0.000	6.887	0.000	0.000	110.766	117.653
8.042	96.500	96.500	0.000	0.000	0.000	0.000	0.000	0.000	6.905	0.000	0.000	111.914	118.819
8.083	97.000	97.000	0.000	0.000	0.000	0.000	0.000	0.000	6.923	0.000	0.000	113.050	119.973
8.125	97.500	97.500	0.000	0.000	0.000	0.000	0.000	0.000	6.941	0.000	0.000	114.175	121.116

8.167	98.000	98.000	0.000	0.000	0.000	0.000	0.000	0.000	6.959	0.000	0.000	115.289	122.248
8.208	98.500	98.500	0.000	0.000	0.000	0.000	0.000	0.000	6.977	0.000	0.000	116.393	123.369
8.250	99.000	99.000	0.000	0.000	0.000	0.000	0.000	0.000	6.995	0.000	0.000	117.485	124.480
8.292	99.500	99.500	0.000	0.000	0.000	0.000	0.000	0.000	7.012	0.000	0.000	118.568	125.581
8.333	100.000	100.000	0.000	0.000	0.000	0.000	0.000	0.000	7.030	0.000	0.000	119.641	126.672
8.375	100.500	100.500	0.000	0.000	0.000	0.000	0.000	0.000	7.048	0.000	0.000	120.705	127.753
8.417	101.000	101.000	0.000	0.000	0.000	0.000	0.000	0.000	7.066	0.000	0.000	121.759	128.825
8.458	101.500	101.500	0.000	0.000	0.000	0.000	0.000	0.000	7.083	0.000	0.000	122.804	129.887
8.500	102.000	102.000	0.000	0.000	0.000	0.000	0.000	0.000	7.101	0.000	0.000	123.841	130.941
8.542	102.500	102.500	0.000	0.000	0.000	0.000	0.000	0.000	7.118	0.000	0.000	124.868	131.987
8.583	103.000	103.000	0.000	0.000	0.000	0.000	0.000	0.000	7.136	0.000	0.000	125.888	133.024
8.625	103.500	103.500	0.000	0.000	0.000	0.000	0.000	0.000	7.153	0.000	0.000	126.899	134.052
8.667	104.000	104.000	0.000	0.000	0.000	0.000	0.000	0.000	7.171	0.000	0.000	127.902	135.073
8.708	104.500	104.500	0.000	0.000	0.000	0.000	0.000	0.000	7.188	0.000	0.000	128.897	136.086
8.750	105.000	105.000	0.000	0.000	0.000	0.000	0.000	0.000	7.206	0.000	0.000	129.885	137.091
8.792	105.500	105.500	0.000	0.000	0.000	0.000	0.000	0.000	7.223	0.000	0.000	130.865	138.088
8.833	106.000	106.000	0.000	0.000	0.000	0.000	0.000	0.000	7.240	0.000	0.000	131.838	139.078
8.875	106.500	106.500	0.000	0.000	0.000	0.000	0.000	0.000	7.257	0.000	0.000	132.804	140.062
8.917	107.000	107.000	0.000	0.000	0.000	0.000	0.000	0.000	7.275	0.000	0.000	133.763	141.038
8.958	107.500	107.500	0.000	0.000	0.000	0.000	0.000	0.000	7.292	0.000	0.000	134.715	142.007
9.000	108.000	108.000	0.000	0.000	0.000	0.000	0.000	0.000	7.309	0.000	0.000	135.660	142.969
9.042	108.500	108.500	0.000	0.000	0.000	0.000	0.000	0.000	7.326	0.000	0.000	136.599	143.925
9.083	109.000	109.000	0.000	0.000	0.000	0.000	0.000	0.000	7.343	0.000	0.000	137.532	144.875
9.125	109.500	109.500	0.000	0.000	0.000	0.000	0.000	0.000	7.360	0.000	0.000	138.458	145.818
9.167	110.000	110.000	0.000	0.000	0.000	0.000	0.000	0.000	7.377	0.000	0.000	139.378	146.755
9.208	110.500	110.500	0.000	0.000	0.000	0.000	0.000	0.000	7.394	0.000	0.000	140.292	147.686
9.250	111.000	111.000	0.000	0.000	0.000	0.000	0.000	0.000	7.411	0.000	0.000	141.200	148.610
9.292	111.500	111.500	0.000	0.000	0.000	0.000	0.000	0.000	7.427	0.000	0.000	142.102	149.529
9.333	112.000	112.000	0.000	0.000	0.000	0.000	0.000	0.000	7.444	0.000	0.000	142.999	150.443
9.375	112.500	112.500	0.000	0.000	0.000	0.000	0.000	0.000	7.461	0.000	0.000	143.890	151.351
9.417	113.000	113.000	0.000	0.000	0.000	0.000	0.000	0.000	7.478	0.000	0.000	144.775	152.253
9.458	113.500	113.500	0.000	0.000	0.000	0.000	0.000	0.000	7.494	0.000	0.000	145.655	153.150
9.500	114.000	114.000	0.000	0.000	0.000	0.000	0.000	0.000	7.511	0.000	0.000	146.530	154.041
9.542	114.500	114.500	0.000	0.000	0.000	0.000	0.000	0.000	7.527	0.000	0.000	147.400	154.927
9.583	115.000	115.000	0.000	0.000	0.000	0.000	0.000	0.000	7.544	0.000	0.000	148.264	155.808
9.625	115.500	115.500	0.000	0.000	0.000	0.000	0.000	0.000	7.561	0.000	0.000	149.124	156.684
9.667	116.000	116.000	0.000	0.000	0.000	0.000	0.000	0.000	7.577	0.000	0.000	149.978	157.555
9.708	116.500	116.500	0.000	0.000	0.000	0.000	0.000	0.000	7.594	0.000	0.000	150.828	158.422
9.750	117.000	117.000	0.000	0.000	0.000	0.000	0.000	0.000	7.610	0.000	0.000	151.673	159.283
9.792	117.500	117.500	0.000	0.000	0.000	0.000	0.000	0.000	7.626	0.000	0.000	152.513	160.140
9.833	118.000	118.000	0.000	0.000	0.000	0.000	0.000	0.000	7.643	0.000	0.000	153.349	160.992
9.875	118.500	118.500	0.000	0.000	0.000	0.000	0.000	0.000	7.659	0.000	0.000	154.180	161.839
9.917	119.000	119.000	0.000	0.000	0.000	0.000	0.000	0.000	7.675	0.000	0.000	155.007	162.682
9.958	119.500	119.500	0.000	0.000	0.000	0.000	0.000	0.000	7.692	0.000	0.000	155.829	163.521
10.000	120.000	120.000	0.000	0.000	0.000	0.000	0.000	0.000	7.708	0.000	0.000	156.647	164.355

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          00:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   00:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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     0.06  0.08  0.11  .16  .18  .21  .21  .2  .16  .12  .08  .06
DRY_ONLY    NO
    
```

[RAINGAGES]

```

; Name      Rain Type   Time Intrvl  Snow Catch  Data Source
-----
SanViente  INTENSITY 1:00     1.0        TIMESERIES SanViente
    
```

[SUBCATCHMENTS]

```

; Name      Raingage      Outlet      Total Area  Pcnt. Imperv  Width  Pcnt. Slope  Curb Length  Snow Pack
-----
DMA-11-D    SanViente      POC-11      32.38       0             6296   22.5         0
    
```

[SUBAREAS]

```

; Subcatchment N-Imperv  N-Perv   S-Imperv  S-Perv   PctZero  RouteTo  PctRouted
-----
DMA-11-D      0.012    0.05    0.05     0.10    25       OUTLET
    
```

[INFILTRATION]

```

; Subcatchment Suction  HydCon   IMDmax
-----
DMA-11-D      9        0.025    0.33
    
```

[OUTFALLS]

```

; Name      Invert Elev.  Outfall Type  Stage/Table Time Series  Tide Gate
-----
POC-11     0        FREE                NO
    
```

[TIMESERIES]

```

; Name      Date      Time      Value
-----
From County SanViente  FILE "P:\Acad\7033 Hunsaker San Diego\03 Fani ta Ranch\REC SWMM\rainfall_sanviente.dat"
    
```

[REPORT]

```

INPUT          NO
CONTROLS       NO
SUBCATCHMENTS ALL
NODES          ALL
LINKS          ALL
    
```

[TAGS]

[MAP]

```

DIMENSIONS 1417.500 4990.000 1582.500 5210.000
Units      None
    
```

[COORDINATES]

```

; Node      X-Coord      Y-Coord
-----
POC-11     1500.000     5000.000
    
```

[VERTICES]

```
:: Link          X-Coord          Y-Coord  
::-----
```

[Polygons]

```
:: Subcatchment X-Coord          Y-Coord  
::-----
```

```
DMA-11-D        1500.000          5100.000
```

[SYMBOLS]

```
:: Gage          X-Coord          Y-Coord  
::-----
```

```
SanVi cente    1500.000          5200.000
```

Fani ta Ranch POC11 PR

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          05:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   05:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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      0.06  0.08  0.110  0.16  0.18  0.21  0.21  0.2  0.16  0.12  0.08  0.06
DRY_ONLY     NO
    
```

[RAINGAGES]

```

:: Name      Rain Type   Time Intrvl  Snow Catch  Data Source
-----
SanVicente  INTENSITY 1:00     1.0        TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

Name	Raingage	Outlet	Total Area	Pcnt. Imperv	Width	Pcnt. Slope	Curb Length	Snow Pack
DMA-11-D-Road	SanVicente	BASIN-11	0.83	85	295	40	0	
BY-WEST	SanVicente	POC11	5.17	0	1005	58	0	
DMA-11-CUT	SanVicente	BASIN-11	1.20	0	234	67	0	
BY-EAST	SanVicente	POC11	2.59	0	504	58	0	
DMA-11	SanVicente	BASIN-11	21.85	2.1	222	20	0	

[SUBAREAS]

Subcatchment	N-Imperv	N-Perv	S-Imperv	S-Perv	PctZero	RouteTo	PctRouted
DMA-11-D-Road	0.012	0.05	0.05	0.10	25	OUTLET	
BY-WEST	0.012	0.05	0.05	0.10	25	OUTLET	
DMA-11-CUT	0.012	0.05	0.05	0.10	25	OUTLET	
BY-EAST	0.012	0.05	0.05	0.10	25	OUTLET	
DMA-11	0.012	0.05	0.05	0.10	25	OUTLET	

[INFILTRATION]

Subcatchment	Suction	HydCon	IMDmax
DMA-11-D-Road	9	0.01875	0.33
BY-WEST	9	0.025	0.33
DMA-11-CUT	9	0.01875	0.33
BY-EAST	9	0.025	0.33
DMA-11	9	0.01875	0.33

[OUTFALLS]

Name	Invert Elev.	Outfall Type	Stage/Table Time Series	Tide Gate
POC11	0	FREE		NO

[STORAGE]

Name	Invert Elev.	Max. Depth	Init. Depth	Storage Curve	Curve Params	Ponded Area	Evap. Frac.	Infiltration
BASIN-11	0	10	0	TABULAR	BASIN-11	9569	1	

[OUTLETS]

Name	Inlet Node	Outlet Node	Outflow Height	Outlet Type	Qcoeff/QTable	Qexpon	Flap Gate
OUTLET	BASIN-11	POC11	0	TABULAR/HEAD	OUT-11		NO

Fani ta Ranch POC11 PR

[CURVES]	Type	X-Val ue	Y-Val ue
OUT-11	Rati ng	0.000	0.000
OUT-11		0.042	0.079
OUT-11		0.083	0.224
OUT-11		0.125	0.411
OUT-11		0.167	0.633
OUT-11		0.208	0.865
OUT-11		0.250	0.999
OUT-11		0.292	1.117
OUT-11		0.333	1.224
OUT-11		0.375	1.322
OUT-11		0.417	1.413
OUT-11		0.458	1.499
OUT-11		0.500	1.580
OUT-11		0.542	1.657
OUT-11		0.583	1.731
OUT-11		0.625	1.801
OUT-11		0.667	1.869
OUT-11		0.708	1.935
OUT-11		0.750	1.998
OUT-11		0.792	2.060
OUT-11		0.833	2.120
OUT-11		0.875	2.178
OUT-11		0.917	2.234
OUT-11		0.958	2.290
OUT-11		1.000	2.343
OUT-11		1.042	2.396
OUT-11		1.083	2.448
OUT-11		1.125	2.498
OUT-11		1.167	2.548
OUT-11		1.208	2.596
OUT-11		1.250	2.644
OUT-11		1.292	2.691
OUT-11		1.333	2.737
OUT-11		1.375	2.782
OUT-11		1.417	2.826
OUT-11		1.458	2.870
OUT-11		1.500	2.913
OUT-11		1.542	2.956
OUT-11		1.583	2.998
OUT-11		1.625	3.039
OUT-11		1.667	3.080
OUT-11		1.708	3.120
OUT-11		1.750	3.160
OUT-11		1.792	3.199
OUT-11		1.833	3.238
OUT-11		1.875	3.276
OUT-11		1.917	3.314
OUT-11		1.958	3.352
OUT-11		2.000	3.389
OUT-11		2.042	3.425
OUT-11		2.083	3.461
OUT-11		2.125	3.497
OUT-11		2.167	3.533
OUT-11		2.208	3.568
OUT-11		2.250	3.603
OUT-11		2.292	3.637
OUT-11		2.333	3.671
OUT-11		2.375	3.705
OUT-11		2.417	3.739
OUT-11		2.458	3.772
OUT-11		2.500	3.805
OUT-11		2.542	3.838
OUT-11		2.583	3.870
OUT-11		2.625	3.902
OUT-11		2.667	3.934
OUT-11		2.708	3.966
OUT-11		2.750	3.997
OUT-11		2.792	4.028
OUT-11		2.833	4.059
OUT-11		2.875	4.090
OUT-11		2.917	4.120
OUT-11		2.958	4.150
OUT-11		3.000	4.180
OUT-11		3.042	4.210
OUT-11		3.083	4.239
OUT-11		3.125	4.269
OUT-11		3.167	4.298
OUT-11		3.208	4.327
OUT-11		3.250	4.356
OUT-11		3.292	4.384
OUT-11		3.333	4.412
OUT-11		3.375	4.441
OUT-11		3.417	4.469
OUT-11		3.458	4.497
OUT-11		3.500	4.524

Fani ta Ranch POC11 PR

OUT-11	3. 542	4. 552
OUT-11	3. 583	4. 579
OUT-11	3. 625	4. 606
OUT-11	3. 667	4. 633
OUT-11	3. 708	4. 660
OUT-11	3. 750	4. 687
OUT-11	3. 792	4. 713
OUT-11	3. 833	4. 740
OUT-11	3. 875	4. 766
OUT-11	3. 917	4. 792
OUT-11	3. 958	4. 818
OUT-11	4. 000	4. 844
OUT-11	4. 042	4. 870
OUT-11	4. 083	4. 895
OUT-11	4. 125	4. 921
OUT-11	4. 167	4. 946
OUT-11	4. 208	4. 971
OUT-11	4. 250	4. 996
OUT-11	4. 292	5. 021
OUT-11	4. 333	5. 046
OUT-11	4. 375	5. 071
OUT-11	4. 417	5. 095
OUT-11	4. 458	5. 120
OUT-11	4. 500	5. 144
OUT-11	4. 542	5. 168
OUT-11	4. 583	5. 192
OUT-11	4. 625	5. 216
OUT-11	4. 667	5. 240
OUT-11	4. 708	5. 264
OUT-11	4. 750	5. 287
OUT-11	4. 792	5. 311
OUT-11	4. 833	5. 334
OUT-11	4. 875	5. 358
OUT-11	4. 917	5. 381
OUT-11	4. 958	5. 404
OUT-11	5. 000	5. 427
OUT-11	5. 042	5. 450
OUT-11	5. 083	5. 473
OUT-11	5. 125	5. 496
OUT-11	5. 167	5. 518
OUT-11	5. 208	5. 541
OUT-11	5. 250	5. 563
OUT-11	5. 292	5. 586
OUT-11	5. 333	5. 608
OUT-11	5. 375	5. 630
OUT-11	5. 417	5. 653
OUT-11	5. 458	5. 675
OUT-11	5. 500	5. 697
OUT-11	5. 542	5. 718
OUT-11	5. 583	5. 740
OUT-11	5. 625	5. 762
OUT-11	5. 667	5. 783
OUT-11	5. 708	5. 805
OUT-11	5. 750	5. 826
OUT-11	5. 792	5. 848
OUT-11	5. 833	5. 869
OUT-11	5. 875	5. 890
OUT-11	5. 917	5. 912
OUT-11	5. 958	5. 933
OUT-11	6. 000	5. 954
OUT-11	6. 042	6. 396
OUT-11	6. 083	7. 189
OUT-11	6. 125	8. 208
OUT-11	6. 167	9. 412
OUT-11	6. 208	10. 774
OUT-11	6. 250	12. 278
OUT-11	6. 292	13. 911
OUT-11	6. 333	15. 665
OUT-11	6. 375	17. 530
OUT-11	6. 417	19. 500
OUT-11	6. 458	21. 570
OUT-11	6. 500	23. 736
OUT-11	6. 542	25. 994
OUT-11	6. 583	28. 338
OUT-11	6. 625	30. 768
OUT-11	6. 667	33. 279
OUT-11	6. 708	35. 869
OUT-11	6. 750	38. 536
OUT-11	6. 792	41. 277
OUT-11	6. 833	44. 091
OUT-11	6. 875	46. 976
OUT-11	6. 917	49. 929
OUT-11	6. 958	52. 950
OUT-11	7. 000	56. 037
OUT-11	7. 042	59. 189
OUT-11	7. 083	62. 403
OUT-11	7. 125	65. 680
OUT-11	7. 167	69. 017
OUT-11	7. 208	72. 415

Fani ta Ranch POC11 PR

OUT-11	7.250	75.871
OUT-11	7.292	79.384
OUT-11	7.333	82.955
OUT-11	7.375	86.581
OUT-11	7.417	90.262
OUT-11	7.458	93.998
OUT-11	7.500	97.787
OUT-11	7.542	101.628
OUT-11	7.583	105.258
OUT-11	7.625	106.565
OUT-11	7.667	107.856
OUT-11	7.708	109.130
OUT-11	7.750	110.390
OUT-11	7.792	111.634
OUT-11	7.833	112.865
OUT-11	7.875	114.081
OUT-11	7.917	115.285
OUT-11	7.958	116.475
OUT-11	8.000	117.653
OUT-11	8.042	118.819
OUT-11	8.083	119.973
OUT-11	8.125	121.116
OUT-11	8.167	122.248
OUT-11	8.208	123.369
OUT-11	8.250	124.480
OUT-11	8.292	125.581
OUT-11	8.333	126.672
OUT-11	8.375	127.753
OUT-11	8.417	128.825
OUT-11	8.458	129.887
OUT-11	8.500	130.941
OUT-11	8.542	131.987
OUT-11	8.583	133.024
OUT-11	8.625	134.052
OUT-11	8.667	135.073
OUT-11	8.708	136.086
OUT-11	8.750	137.091
OUT-11	8.792	138.088
OUT-11	8.833	139.078
OUT-11	8.875	140.062
OUT-11	8.917	141.038
OUT-11	8.958	142.007
OUT-11	9.000	142.969
OUT-11	9.042	143.925
OUT-11	9.083	144.875
OUT-11	9.125	145.818
OUT-11	9.167	146.755
OUT-11	9.208	147.686
OUT-11	9.250	148.610
OUT-11	9.292	149.529
OUT-11	9.333	150.443
OUT-11	9.375	151.351
OUT-11	9.417	152.253
OUT-11	9.458	153.150
OUT-11	9.500	154.041
OUT-11	9.542	154.927
OUT-11	9.583	155.808
OUT-11	9.625	156.684
OUT-11	9.667	157.555
OUT-11	9.708	158.422
OUT-11	9.750	159.283
OUT-11	9.792	160.140
OUT-11	9.833	160.992
OUT-11	9.875	161.839
OUT-11	9.917	162.682
OUT-11	9.958	163.521
OUT-11	10.000	164.355

BASIN-11	Storage	0	742
BASIN-11		10	9569

[TIMESERIES]

;; Name	Date	Time	Value
-----			
San Vicente Rain Gage from San Diego County			
SanVicente	FILE	"P:\Acad\7033 Hunsaker San Diego\03 Fani ta Ranch\REC SWMM\rainfall_sanvicente.dat"	

[REPORT]

INPUT NO  
 CONTROLS NO  
 SUBCATCHMENTS ALL  
 NODES ALL  
 LINKS ALL

[TAGS]

[MAP]  
 DIMENSIONS 670.000 3937.500 1330.000 5312.500  
 Units None

Fani ta Ranch POC11 PR

[COORDINATES]

:: Node	X-Coord	Y-Coord
POC11	1000.000	4000.000
BASIN-11	1000.000	4500.000

[VERTICES]

:: Link	X-Coord	Y-Coord
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[Polygons]

:: Subcatchment	X-Coord	Y-Coord
DMA-11-D-Road	700.000	5000.000
BY-WEST	1300.000	4000.000
DMA-11-CUT	1300.000	5000.000
BY-EAST	700.000	4000.000
DMA-11	1000.000	5000.000

[SYMBOLS]

:: Gage	X-Coord	Y-Coord
SanVicente	1000.000	5250.000

## POC 12

Flow Duration Curve (Pass-Fail) Results

List of the “n” largest Peaks: Pre-Development and Post-Development Conditions  
Elevation vs. Area Curves and Elevations vs. Discharge Curves to be used in SWMM  
SWMM Input Data (Existing and Proposed Models)

### Flow Duration Curve Data for Fanita Ranch POC-12 , Santee, CA

Q2 = 5.434 cfs Fraction 10 %  
 Q10 = 7.57 cfs  
 Step = 0.0710 cfs  
 Count = 306816 hours  
 35.00 years

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
1	0.543	719	2.34E-01	716	2.33E-01	100%	Pass
2	0.614	660	2.15E-01	642	2.09E-01	97%	Pass
3	0.685	612	1.99E-01	614	2.00E-01	100%	Pass
4	0.756	561	1.83E-01	582	1.90E-01	104%	Pass
5	0.827	529	1.72E-01	541	1.76E-01	102%	Pass
6	0.898	514	1.68E-01	499	1.63E-01	97%	Pass
7	0.969	492	1.60E-01	474	1.54E-01	96%	Pass
8	1.040	455	1.48E-01	455	1.48E-01	100%	Pass
9	1.111	430	1.40E-01	433	1.41E-01	101%	Pass
10	1.182	415	1.35E-01	412	1.34E-01	99%	Pass
11	1.253	404	1.32E-01	401	1.31E-01	99%	Pass
12	1.324	393	1.28E-01	389	1.27E-01	99%	Pass
13	1.395	383	1.25E-01	376	1.23E-01	98%	Pass
14	1.466	368	1.20E-01	356	1.16E-01	97%	Pass
15	1.537	350	1.14E-01	341	1.11E-01	97%	Pass
16	1.608	333	1.09E-01	329	1.07E-01	99%	Pass
17	1.679	317	1.03E-01	318	1.04E-01	100%	Pass
18	1.750	292	9.52E-02	303	9.88E-02	104%	Pass
19	1.821	272	8.87E-02	287	9.35E-02	106%	Pass
20	1.892	248	8.08E-02	254	8.28E-02	102%	Pass
21	1.962	227	7.40E-02	235	7.66E-02	104%	Pass
22	2.033	209	6.81E-02	207	6.75E-02	99%	Pass
23	2.104	193	6.29E-02	196	6.39E-02	102%	Pass
24	2.175	186	6.06E-02	190	6.19E-02	102%	Pass
25	2.246	179	5.83E-02	182	5.93E-02	102%	Pass
26	2.317	174	5.67E-02	170	5.54E-02	98%	Pass
27	2.388	167	5.44E-02	163	5.31E-02	98%	Pass
28	2.459	157	5.12E-02	154	5.02E-02	98%	Pass
29	2.530	153	4.99E-02	149	4.86E-02	97%	Pass
30	2.601	144	4.69E-02	146	4.76E-02	101%	Pass
31	2.672	137	4.47E-02	139	4.53E-02	101%	Pass
32	2.743	131	4.27E-02	130	4.24E-02	99%	Pass
33	2.814	128	4.17E-02	122	3.98E-02	95%	Pass
34	2.885	122	3.98E-02	112	3.65E-02	92%	Pass
35	2.956	116	3.78E-02	101	3.29E-02	87%	Pass
36	3.027	106	3.45E-02	94	3.06E-02	89%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
37	3.098	91	2.97E-02	82	2.67E-02	90%	Pass
38	3.169	80	2.61E-02	74	2.41E-02	93%	Pass
39	3.240	75	2.44E-02	70	2.28E-02	93%	Pass
40	3.311	67	2.18E-02	67	2.18E-02	100%	Pass
41	3.382	60	1.96E-02	61	1.99E-02	102%	Pass
42	3.453	55	1.79E-02	58	1.89E-02	105%	Pass
43	3.523	51	1.66E-02	54	1.76E-02	106%	Pass
44	3.594	51	1.66E-02	46	1.50E-02	90%	Pass
45	3.665	47	1.53E-02	43	1.40E-02	91%	Pass
46	3.736	45	1.47E-02	42	1.37E-02	93%	Pass
47	3.807	44	1.43E-02	40	1.30E-02	91%	Pass
48	3.878	44	1.43E-02	38	1.24E-02	86%	Pass
49	3.949	42	1.37E-02	36	1.17E-02	86%	Pass
50	4.020	41	1.34E-02	35	1.14E-02	85%	Pass
51	4.091	40	1.30E-02	33	1.08E-02	83%	Pass
52	4.162	39	1.27E-02	29	9.45E-03	74%	Pass
53	4.233	37	1.21E-02	27	8.80E-03	73%	Pass
54	4.304	34	1.11E-02	26	8.47E-03	76%	Pass
55	4.375	31	1.01E-02	26	8.47E-03	84%	Pass
56	4.446	29	9.45E-03	25	8.15E-03	86%	Pass
57	4.517	27	8.80E-03	23	7.50E-03	85%	Pass
58	4.588	25	8.15E-03	20	6.52E-03	80%	Pass
59	4.659	25	8.15E-03	19	6.19E-03	76%	Pass
60	4.730	24	7.82E-03	19	6.19E-03	79%	Pass
61	4.801	23	7.50E-03	19	6.19E-03	83%	Pass
62	4.872	21	6.84E-03	19	6.19E-03	90%	Pass
63	4.943	21	6.84E-03	18	5.87E-03	86%	Pass
64	5.013	20	6.52E-03	18	5.87E-03	90%	Pass
65	5.084	20	6.52E-03	18	5.87E-03	90%	Pass
66	5.155	20	6.52E-03	18	5.87E-03	90%	Pass
67	5.226	20	6.52E-03	18	5.87E-03	90%	Pass
68	5.297	20	6.52E-03	17	5.54E-03	85%	Pass
69	5.368	20	6.52E-03	17	5.54E-03	85%	Pass
70	5.439	18	5.87E-03	17	5.54E-03	94%	Pass
71	5.510	17	5.54E-03	17	5.54E-03	100%	Pass
72	5.581	17	5.54E-03	17	5.54E-03	100%	Pass
73	5.652	17	5.54E-03	16	5.21E-03	94%	Pass
74	5.723	17	5.54E-03	16	5.21E-03	94%	Pass
75	5.794	16	5.21E-03	14	4.56E-03	88%	Pass
76	5.865	14	4.56E-03	13	4.24E-03	93%	Pass
77	5.936	13	4.24E-03	12	3.91E-03	92%	Pass
78	6.007	13	4.24E-03	12	3.91E-03	92%	Pass
79	6.078	12	3.91E-03	12	3.91E-03	100%	Pass
80	6.149	12	3.91E-03	12	3.91E-03	100%	Pass
81	6.220	12	3.91E-03	11	3.59E-03	92%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
82	6.291	12	3.91E-03	11	3.59E-03	92%	Pass
83	6.362	11	3.59E-03	11	3.59E-03	100%	Pass
84	6.433	11	3.59E-03	9	2.93E-03	82%	Pass
85	6.504	10	3.26E-03	9	2.93E-03	90%	Pass
86	6.574	9	2.93E-03	9	2.93E-03	100%	Pass
87	6.645	9	2.93E-03	8	2.61E-03	89%	Pass
88	6.716	9	2.93E-03	8	2.61E-03	89%	Pass
89	6.787	9	2.93E-03	8	2.61E-03	89%	Pass
90	6.858	9	2.93E-03	8	2.61E-03	89%	Pass
91	6.929	7	2.28E-03	6	1.96E-03	86%	Pass
92	7.000	7	2.28E-03	5	1.63E-03	71%	Pass
93	7.071	7	2.28E-03	5	1.63E-03	71%	Pass
94	7.142	7	2.28E-03	5	1.63E-03	71%	Pass
95	7.213	5	1.63E-03	5	1.63E-03	100%	Pass
96	7.284	5	1.63E-03	5	1.63E-03	100%	Pass
97	7.355	5	1.63E-03	4	1.30E-03	80%	Pass
98	7.426	5	1.63E-03	4	1.30E-03	80%	Pass
99	7.497	4	1.30E-03	4	1.30E-03	100%	Pass
100	7.568	4	1.30E-03	4	1.30E-03	100%	Pass

**Peak Flows calculated with Cunnane Plotting Position**

Return Period (years)	Pre-dev. Q (cfs)	Post-Dev. Q (cfs)	Reduction (cfs)
10	7.568	7.449	0.118
9	7.362	7.204	0.157
8	7.229	7.024	0.205
7	7.174	6.932	0.243
6	7.084	6.897	0.187
5	6.877	6.760	0.118
4	6.529	6.407	0.122
3	6.018	5.863	0.156
2	5.434	4.888	0.546

**List of Peak events and Determination of P2 and P10 (Pre-Development)**

**Fanita Ranch POC 12 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>7.57</b>	<b>8.05</b>					
<b>9</b>	<b>7.36</b>	<b>7.47</b>	3.898	2/25/2003	35	1.03	1.02
<b>8</b>	<b>7.23</b>	<b>7.31</b>	4.138	2/12/2003	34	1.06	1.05
<b>7</b>	<b>7.17</b>	<b>7.18</b>	4.204	2/16/1980	33	1.09	1.08
<b>6</b>	<b>7.08</b>	<b>7.17</b>	4.271	2/15/1986	32	1.13	1.11
<b>5</b>	<b>6.88</b>	<b>6.89</b>	4.293	2/18/1980	31	1.16	1.15
<b>4</b>	<b>6.53</b>	<b>6.54</b>	4.308	4/23/1980	30	1.20	1.19
<b>3</b>	<b>6.02</b>	<b>6.04</b>	4.316	3/4/1978	29	1.24	1.23
<b>2</b>	<b>5.43</b>	<b>5.43</b>	4.402	1/13/1993	28	1.29	1.28
			4.435	12/28/1977	27	1.33	1.32
			4.476	1/18/1993	26	1.38	1.38
			4.583	12/4/1974	25	1.44	1.43
			4.587	4/18/1995	24	1.50	1.49
			4.67	8/17/1977	23	1.57	1.56
			4.795	10/10/1986	22	1.64	1.63
			4.831	2/21/2005	21	1.71	1.71
			4.866	2/15/1992	20	1.80	1.80
			4.97	3/2/1983	19	1.89	1.89
			5.434	1/31/1979	18	2.00	2.00
			5.454	3/1/1983	17	2.12	2.12
			5.771	3/6/1975	16	2.25	2.26
			5.807	10/18/2004	15	2.40	2.41
			5.82	10/27/2004	14	2.57	2.59
			5.919	2/13/1998	13	2.77	2.79
			6.035	10/20/2004	12	3.00	3.03
			6.308	2/2/1998	11	3.27	3.32
			6.484	2/19/1993	10	3.60	3.67
			6.542	1/29/1980	9	4.00	4.09
			6.859	1/9/2005	8	4.50	4.63
			6.894	2/6/1992	7	5.14	5.33
			7.165	2/7/1998	6	6.00	6.29
			7.183	10/31/1987	5	7.20	7.65
			7.465	9/10/1976	4	9.00	9.78
			9.205	10/22/1976	3	12.00	13.54
			10.416	2/20/1980	2	18.00	22.00
			11.369	1/4/1978	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

**List of Peak events and Determination of P2 and P10 (Post-Development)  
Fanita Ranch POC 12 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>7.45</b>	<b>7.93</b>					
9	7.20	7.35	3.61	5/1/1978	35	1.03	1.02
8	7.02	7.13	3.70	3/5/2005	34	1.06	1.05
7	6.93	6.95	3.83	12/28/1977	33	1.09	1.08
6	6.90	6.90	3.85	1/18/1993	32	1.13	1.11
5	6.76	6.83	3.94	4/18/1995	31	1.16	1.15
4	6.41	6.41	3.99	3/4/1978	30	1.20	1.19
3	5.86	5.87	4.03	4/23/1980	29	1.24	1.23
2	4.89	4.89	4.09	2/16/1980	28	1.29	1.28
			4.10	2/18/1980	27	1.33	1.32
			4.13	1/13/1993	26	1.38	1.38
			4.20	2/15/1986	25	1.44	1.43
			4.25	10/10/1986	24	1.50	1.49
			4.46	2/15/1992	23	1.57	1.56
			4.50	8/17/1977	22	1.64	1.63
			4.53	12/4/1974	21	1.71	1.71
			4.55	2/21/2005	20	1.80	1.80
			4.59	3/2/1983	19	1.89	1.89
			4.89	3/1/1983	18	2.00	2.00
			5.23	10/27/2004	17	2.12	2.12
			5.60	1/31/1979	16	2.25	2.26
			5.74	10/20/2004	15	2.40	2.41
			5.79	10/18/2004	14	2.57	2.59
			5.80	2/13/1998	13	2.77	2.79
			5.87	3/6/1975	12	3.00	3.03
			6.16	2/2/1998	11	3.27	3.32
			6.39	2/19/1993	10	3.60	3.67
			6.41	1/29/1980	9	4.00	4.09
			6.62	1/9/2005	8	4.50	4.63
			6.89	2/7/1998	7	5.14	5.33
			6.90	2/6/1992	6	6.00	6.29
			6.96	10/31/1987	5	7.20	7.65
			7.35	9/10/1976	4	9.00	9.78
			9.11	10/22/1976	3	12.00	13.54
			9.98	2/20/1980	2	18.00	22.00
			10.67	1/4/1978	1	36.00	58.67

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

Basin 12	
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Stage	Area
0	203
6	3534

## Outlet structure for Discharge of Basin 12

### Discharge vs Elevation Table

Low orifice	1.000 "	Lower slot		Lower Weir		*Note: h = head above t lowest surface discharge case h = 0 ft refers to 1.
Number of orif:	0	Number of slots:	1	Number of weirs:	0	
Cg-low:	0.62	Invert:	0.00 ft	Invert:	0.00	
		B	0.500 ft	B:	0.00	
Middle orifice	1 "	h <sub>slot</sub>	0.167 ft			
Number of orif:	0					
Cg-middle:	0.62	Upper slot		Emergency weir		
invert elev:	0.000 ft	Number of slots:	1	Invert:	4.000 ft	
		Invert:	2.00 ft	W:	16.00 ft	
		B:	1.25 ft			
		h <sub>slot</sub>	0.500 ft			

h* (ft)	H/D-low -	H/D-mid -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qslot-low (cfs)	Qslot-upp (cfs)	Qweir (cfs)	Qemerg (cfs)	Qtot (cfs)
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.042	0.500	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.013	0.000	0.000	0.000	0.013
0.083	1.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.037	0.000	0.000	0.000	0.037
0.125	1.500	1.500	0.000	0.000	0.000	0.000	0.000	0.000	0.069	0.000	0.000	0.000	0.069
0.167	2.000	2.000	0.000	0.000	0.000	0.000	0.000	0.000	0.105	0.000	0.000	0.000	0.105
0.208	2.500	2.500	0.000	0.000	0.000	0.000	0.000	0.000	0.144	0.000	0.000	0.000	0.144
0.250	3.000	3.000	0.000	0.000	0.000	0.000	0.000	0.000	0.167	0.000	0.000	0.000	0.167
0.292	3.500	3.500	0.000	0.000	0.000	0.000	0.000	0.000	0.186	0.000	0.000	0.000	0.186
0.333	4.000	4.000	0.000	0.000	0.000	0.000	0.000	0.000	0.204	0.000	0.000	0.000	0.204
0.375	4.500	4.500	0.000	0.000	0.000	0.000	0.000	0.000	0.220	0.000	0.000	0.000	0.220
0.417	5.000	5.000	0.000	0.000	0.000	0.000	0.000	0.000	0.236	0.000	0.000	0.000	0.236
0.458	5.500	5.500	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250
0.500	6.000	6.000	0.000	0.000	0.000	0.000	0.000	0.000	0.263	0.000	0.000	0.000	0.263
0.542	6.500	6.500	0.000	0.000	0.000	0.000	0.000	0.000	0.276	0.000	0.000	0.000	0.276
0.583	7.000	7.000	0.000	0.000	0.000	0.000	0.000	0.000	0.288	0.000	0.000	0.000	0.288
0.625	7.500	7.500	0.000	0.000	0.000	0.000	0.000	0.000	0.300	0.000	0.000	0.000	0.300
0.667	8.000	8.000	0.000	0.000	0.000	0.000	0.000	0.000	0.312	0.000	0.000	0.000	0.312
0.708	8.500	8.500	0.000	0.000	0.000	0.000	0.000	0.000	0.323	0.000	0.000	0.000	0.323
0.750	9.000	9.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333	0.000	0.000	0.000	0.333
0.792	9.500	9.500	0.000	0.000	0.000	0.000	0.000	0.000	0.343	0.000	0.000	0.000	0.343
0.833	10.000	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.353	0.000	0.000	0.000	0.353
0.875	10.500	10.500	0.000	0.000	0.000	0.000	0.000	0.000	0.363	0.000	0.000	0.000	0.363
0.917	11.000	11.000	0.000	0.000	0.000	0.000	0.000	0.000	0.372	0.000	0.000	0.000	0.372
0.958	11.500	11.500	0.000	0.000	0.000	0.000	0.000	0.000	0.382	0.000	0.000	0.000	0.382
1.000	12.000	12.000	0.000	0.000	0.000	0.000	0.000	0.000	0.391	0.000	0.000	0.000	0.391
1.042	12.500	12.500	0.000	0.000	0.000	0.000	0.000	0.000	0.399	0.000	0.000	0.000	0.399
1.083	13.000	13.000	0.000	0.000	0.000	0.000	0.000	0.000	0.408	0.000	0.000	0.000	0.408
1.125	13.500	13.500	0.000	0.000	0.000	0.000	0.000	0.000	0.416	0.000	0.000	0.000	0.416
1.167	14.000	14.000	0.000	0.000	0.000	0.000	0.000	0.000	0.425	0.000	0.000	0.000	0.425
1.208	14.500	14.500	0.000	0.000	0.000	0.000	0.000	0.000	0.433	0.000	0.000	0.000	0.433
1.250	15.000	15.000	0.000	0.000	0.000	0.000	0.000	0.000	0.441	0.000	0.000	0.000	0.441
1.292	15.500	15.500	0.000	0.000	0.000	0.000	0.000	0.000	0.448	0.000	0.000	0.000	0.448
1.333	16.000	16.000	0.000	0.000	0.000	0.000	0.000	0.000	0.456	0.000	0.000	0.000	0.456
1.375	16.500	16.500	0.000	0.000	0.000	0.000	0.000	0.000	0.464	0.000	0.000	0.000	0.464
1.417	17.000	17.000	0.000	0.000	0.000	0.000	0.000	0.000	0.471	0.000	0.000	0.000	0.471
1.458	17.500	17.500	0.000	0.000	0.000	0.000	0.000	0.000	0.478	0.000	0.000	0.000	0.478
1.500	18.000	18.000	0.000	0.000	0.000	0.000	0.000	0.000	0.486	0.000	0.000	0.000	0.486
1.542	18.500	18.500	0.000	0.000	0.000	0.000	0.000	0.000	0.493	0.000	0.000	0.000	0.493
1.583	19.000	19.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.500
1.625	19.500	19.500	0.000	0.000	0.000	0.000	0.000	0.000	0.507	0.000	0.000	0.000	0.507
1.667	20.000	20.000	0.000	0.000	0.000	0.000	0.000	0.000	0.513	0.000	0.000	0.000	0.513
1.708	20.500	20.500	0.000	0.000	0.000	0.000	0.000	0.000	0.520	0.000	0.000	0.000	0.520
1.750	21.000	21.000	0.000	0.000	0.000	0.000	0.000	0.000	0.527	0.000	0.000	0.000	0.527
1.792	21.500	21.500	0.000	0.000	0.000	0.000	0.000	0.000	0.533	0.000	0.000	0.000	0.533
1.833	22.000	22.000	0.000	0.000	0.000	0.000	0.000	0.000	0.540	0.000	0.000	0.000	0.540
1.875	22.500	22.500	0.000	0.000	0.000	0.000	0.000	0.000	0.546	0.000	0.000	0.000	0.546
1.917	23.000	23.000	0.000	0.000	0.000	0.000	0.000	0.000	0.552	0.000	0.000	0.000	0.552
1.958	23.500	23.500	0.000	0.000	0.000	0.000	0.000	0.000	0.559	0.000	0.000	0.000	0.559
2.000	24.000	24.000	0.000	0.000	0.000	0.000	0.000	0.000	0.565	0.000	0.000	0.000	0.565
2.042	24.500	24.500	0.000	0.000	0.000	0.000	0.000	0.000	0.571	0.033	0.000	0.000	0.604
2.083	25.000	25.000	0.000	0.000	0.000	0.000	0.000	0.000	0.577	0.093	0.000	0.000	0.670
2.125	25.500	25.500	0.000	0.000	0.000	0.000	0.000	0.000	0.583	0.171	0.000	0.000	0.754
2.167	26.000	26.000	0.000	0.000	0.000	0.000	0.000	0.000	0.589	0.264	0.000	0.000	0.852
2.208	26.500	26.500	0.000	0.000	0.000	0.000	0.000	0.000	0.595	0.368	0.000	0.000	0.963

2.250	27.000	27.000	0.000	0.000	0.000	0.000	0.000	0.000	0.600	0.484	0.000	0.000	1.085
2.292	27.500	27.500	0.000	0.000	0.000	0.000	0.000	0.000	0.606	0.610	0.000	0.000	1.217
2.333	28.000	28.000	0.000	0.000	0.000	0.000	0.000	0.000	0.612	0.746	0.000	0.000	1.358
2.375	28.500	28.500	0.000	0.000	0.000	0.000	0.000	0.000	0.618	0.890	0.000	0.000	1.507
2.417	29.000	29.000	0.000	0.000	0.000	0.000	0.000	0.000	0.623	1.042	0.000	0.000	1.665
2.458	29.500	29.500	0.000	0.000	0.000	0.000	0.000	0.000	0.629	1.202	0.000	0.000	1.831
2.500	30.000	30.000	0.000	0.000	0.000	0.000	0.000	0.000	0.634	1.370	0.000	0.000	2.004
2.542	30.500	30.500	0.000	0.000	0.000	0.000	0.000	0.000	0.640	1.545	0.000	0.000	2.184
2.583	31.000	31.000	0.000	0.000	0.000	0.000	0.000	0.000	0.645	1.726	0.000	0.000	2.371
2.625	31.500	31.500	0.000	0.000	0.000	0.000	0.000	0.000	0.650	1.874	0.000	0.000	2.524
2.667	32.000	32.000	0.000	0.000	0.000	0.000	0.000	0.000	0.656	1.975	0.000	0.000	2.631
2.708	32.500	32.500	0.000	0.000	0.000	0.000	0.000	0.000	0.661	2.071	0.000	0.000	2.732
2.750	33.000	33.000	0.000	0.000	0.000	0.000	0.000	0.000	0.666	2.163	0.000	0.000	2.830
2.792	33.500	33.500	0.000	0.000	0.000	0.000	0.000	0.000	0.671	2.252	0.000	0.000	2.923
2.833	34.000	34.000	0.000	0.000	0.000	0.000	0.000	0.000	0.676	2.337	0.000	0.000	3.013
2.875	34.500	34.500	0.000	0.000	0.000	0.000	0.000	0.000	0.682	2.419	0.000	0.000	3.100
2.917	35.000	35.000	0.000	0.000	0.000	0.000	0.000	0.000	0.687	2.498	0.000	0.000	3.185
2.958	35.500	35.500	0.000	0.000	0.000	0.000	0.000	0.000	0.692	2.575	0.000	0.000	3.267
3.000	36.000	36.000	0.000	0.000	0.000	0.000	0.000	0.000	0.697	2.650	0.000	0.000	3.346
3.042	36.500	36.500	0.000	0.000	0.000	0.000	0.000	0.000	0.702	2.722	0.000	0.000	3.424
3.083	37.000	37.000	0.000	0.000	0.000	0.000	0.000	0.000	0.707	2.793	0.000	0.000	3.500
3.125	37.500	37.500	0.000	0.000	0.000	0.000	0.000	0.000	0.711	2.862	0.000	0.000	3.573
3.167	38.000	38.000	0.000	0.000	0.000	0.000	0.000	0.000	0.716	2.929	0.000	0.000	3.646
3.208	38.500	38.500	0.000	0.000	0.000	0.000	0.000	0.000	0.721	2.995	0.000	0.000	3.716
3.250	39.000	39.000	0.000	0.000	0.000	0.000	0.000	0.000	0.726	3.060	0.000	0.000	3.785
3.292	39.500	39.500	0.000	0.000	0.000	0.000	0.000	0.000	0.731	3.123	0.000	0.000	3.853
3.333	40.000	40.000	0.000	0.000	0.000	0.000	0.000	0.000	0.735	3.184	0.000	0.000	3.920
3.375	40.500	40.500	0.000	0.000	0.000	0.000	0.000	0.000	0.740	3.245	0.000	0.000	3.985
3.417	41.000	41.000	0.000	0.000	0.000	0.000	0.000	0.000	0.745	3.305	0.000	0.000	4.049
3.458	41.500	41.500	0.000	0.000	0.000	0.000	0.000	0.000	0.749	3.363	0.000	0.000	4.113
3.500	42.000	42.000	0.000	0.000	0.000	0.000	0.000	0.000	0.754	3.421	0.000	0.000	4.175
3.542	42.500	42.500	0.000	0.000	0.000	0.000	0.000	0.000	0.759	3.477	0.000	0.000	4.236
3.583	43.000	43.000	0.000	0.000	0.000	0.000	0.000	0.000	0.763	3.533	0.000	0.000	4.296
3.625	43.500	43.500	0.000	0.000	0.000	0.000	0.000	0.000	0.768	3.588	0.000	0.000	4.355
3.667	44.000	44.000	0.000	0.000	0.000	0.000	0.000	0.000	0.772	3.642	0.000	0.000	4.414
3.708	44.500	44.500	0.000	0.000	0.000	0.000	0.000	0.000	0.777	3.695	0.000	0.000	4.471
3.750	45.000	45.000	0.000	0.000	0.000	0.000	0.000	0.000	0.781	3.747	0.000	0.000	4.528
3.792	45.500	45.500	0.000	0.000	0.000	0.000	0.000	0.000	0.786	3.799	0.000	0.000	4.584
3.833	46.000	46.000	0.000	0.000	0.000	0.000	0.000	0.000	0.790	3.850	0.000	0.000	4.640
3.875	46.500	46.500	0.000	0.000	0.000	0.000	0.000	0.000	0.794	3.900	0.000	0.000	4.694
3.917	47.000	47.000	0.000	0.000	0.000	0.000	0.000	0.000	0.799	3.950	0.000	0.000	4.749
3.958	47.500	47.500	0.000	0.000	0.000	0.000	0.000	0.000	0.803	3.999	0.000	0.000	4.802
4.000	48.000	48.000	0.000	0.000	0.000	0.000	0.000	0.000	0.807	4.047	0.000	0.000	4.855
4.042	48.500	48.500	0.000	0.000	0.000	0.000	0.000	0.000	0.812	4.095	0.000	0.422	5.329
4.083	49.000	49.000	0.000	0.000	0.000	0.000	0.000	0.000	0.816	4.143	0.000	1.193	6.152
4.125	49.500	49.500	0.000	0.000	0.000	0.000	0.000	0.000	0.820	4.189	0.000	2.192	7.202
4.167	50.000	50.000	0.000	0.000	0.000	0.000	0.000	0.000	0.824	4.236	0.000	3.375	8.435
4.208	50.500	50.500	0.000	0.000	0.000	0.000	0.000	0.000	0.829	4.282	0.000	4.716	9.827
4.250	51.000	51.000	0.000	0.000	0.000	0.000	0.000	0.000	0.833	4.327	0.000	6.200	11.360
4.292	51.500	51.500	0.000	0.000	0.000	0.000	0.000	0.000	0.837	4.372	0.000	7.813	13.021
4.333	52.000	52.000	0.000	0.000	0.000	0.000	0.000	0.000	0.841	4.416	0.000	9.546	14.803
4.375	52.500	52.500	0.000	0.000	0.000	0.000	0.000	0.000	0.845	4.460	0.000	11.390	16.695
4.417	53.000	53.000	0.000	0.000	0.000	0.000	0.000	0.000	0.849	4.503	0.000	13.340	18.693
4.458	53.500	53.500	0.000	0.000	0.000	0.000	0.000	0.000	0.853	4.547	0.000	15.391	20.790
4.500	54.000	54.000	0.000	0.000	0.000	0.000	0.000	0.000	0.857	4.589	0.000	17.536	22.983
4.542	54.500	54.500	0.000	0.000	0.000	0.000	0.000	0.000	0.861	4.632	0.000	19.773	25.266
4.583	55.000	55.000	0.000	0.000	0.000	0.000	0.000	0.000	0.865	4.673	0.000	22.098	27.637
4.625	55.500	55.500	0.000	0.000	0.000	0.000	0.000	0.000	0.869	4.715	0.000	24.508	30.092
4.667	56.000	56.000	0.000	0.000	0.000	0.000	0.000	0.000	0.873	4.756	0.000	26.999	32.628
4.708	56.500	56.500	0.000	0.000	0.000	0.000	0.000	0.000	0.877	4.797	0.000	29.569	35.243
4.750	57.000	57.000	0.000	0.000	0.000	0.000	0.000	0.000	0.881	4.838	0.000	32.216	37.935
4.792	57.500	57.500	0.000	0.000	0.000	0.000	0.000	0.000	0.885	4.878	0.000	34.938	40.701
4.833	58.000	58.000	0.000	0.000	0.000	0.000	0.000	0.000	0.889	4.917	0.000	37.732	43.539
4.875	58.500	58.500	0.000	0.000	0.000	0.000	0.000	0.000	0.893	4.957	0.000	40.597	46.447
4.917	59.000	59.000	0.000	0.000	0.000	0.000	0.000	0.000	0.897	4.996	0.000	43.531	49.424
4.958	59.500	59.500	0.000	0.000	0.000	0.000	0.000	0.000	0.901	5.035	0.000	46.533	52.468
5.000	60.000	60.000	0.000	0.000	0.000	0.000	0.000	0.000	0.905	5.074	0.000	49.600	55.578
5.042	60.500	60.500	0.000	0.000	0.000	0.000	0.000	0.000	0.908	5.112	0.000	52.732	58.752
5.083	61.000	61.000	0.000	0.000	0.000	0.000	0.000	0.000	0.912	5.150	0.000	55.927	61.990
5.125	61.500	61.500	0.000	0.000	0.000	0.000	0.000	0.000	0.916	5.188	0.000	59.185	65.288
5.167	62.000	62.000	0.000	0.000	0.000	0.000	0.000	0.000	0.920	5.225	0.000	62.503	68.648



[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING       KINWAVE
START_DATE          01/03/1973
START_TIME          00:00:00
REPORT_START_DATE  05/24/1973
REPORT_START_TIME  00:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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     0.06  0.08  0.11  .16  .18  .21  .21  .2  .16  .12  .08  .06
DRY_ONLY    NO
    
```

[RAINGAGES]

```

; Name      Rain Type   Time Intrvl  Snow Catch  Data Source
-----
SanViente  INTENSITY 1:00      1.0         TIMESERIES SanViente
    
```

[SUBCATCHMENTS]

```

; Name      Raingage      Outlet      Total Area  Pcnt. Imperv  Width  Pcnt. Slope  Curb Length  Snow Pack
-----
DMA-12-D    SanViente      POC-12      12.01       0             2335   27.9        0
    
```

[SUBAREAS]

```

; Subcatchment  N-Imperv  N-Perv  S-Imperv  S-Perv  PctZero  RouteTo  PctRouted
-----
DMA-12-D        0.012    0.05    0.05     0.10    25       OUTLET
    
```

[INFILTRATION]

```

; Subcatchment  Suction  HydCon  IMDmax
-----
DMA-12-D        9         0.025   0.33
    
```

[OUTFALLS]

```

; Name      Invert Elev.  Outfall Type  Stage/Table Time Series  Tide Gate
-----
POC-12      0         FREE                NO
    
```

[TIMESERIES]

```

; Name      Date      Time      Value
-----
From County SanViente  FILE "P:\Acad\7033 Hunsaker San Diego\03 Fani ta Ranch\REC SWMM\rainfall_sanviente.dat"
    
```

[REPORT]

```

INPUT          NO
CONTROLS       NO
SUBCATCHMENTS ALL
NODES          ALL
LINKS          ALL
    
```

[TAGS]

[MAP]

```

DIMENSIONS 1417.500 4990.000 1582.500 5210.000
Units      None
    
```

[COORDINATES]

```

; Node      X-Coord      Y-Coord
-----
POC-12      1500.000     5000.000
    
```

[VERTICES]

Fani ta Ranch POC12 EX

```
:: Link          X-Coord          Y-Coord  
::-----
```

[Polygons]

```
:: Subcatchment X-Coord          Y-Coord  
::-----
```

```
DMA-12-D        1500.000          5100.000
```

[SYMBOLS]

```
:: Gage          X-Coord          Y-Coord  
::-----
```

```
SanVi cente    1500.000          5200.000
```

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          05:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   05:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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 0.06 0.08 0.110 0.16 0.18 0.21 0.21 0.2 0.16 0.12 0.08 0.06
DRY_ONLY NO
    
```

[RAINGAGES]

```

; Name Rain Type Time Intrvl Snow Catch Data Source
-----
SanVicente INTENSITY 1:00 1.0 TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

Name	Raingage	Outlet	Total Area	Pcnt. Imperv	Width	Pcnt. Slope	Curb Length	Snow Pack
DMA-12-D-Road	SanVicente	BASIN-12	1.07	85	305	40	0	
DMA-12-CUT	SanVicente	BASIN-12	0.95	0	215	67	0	
DMA-12	SanVicente	BASIN-12	9.99	6.65	2018	20	0	

[SUBAREAS]

Subcatchment	N-Imperv	N-Perv	S-Imperv	S-Perv	PctZero	RouteTo	PctRouted
DMA-12-D-Road	0.012	0.05	0.05	0.10	25	OUTLET	
DMA-12-CUT	0.012	0.05	0.05	0.10	25	OUTLET	
DMA-12	0.012	0.05	0.05	0.10	25	OUTLET	

[INFILTRATION]

Subcatchment	Suction	HydCon	IMDmax
DMA-12-D-Road	9	0.01875	0.33
DMA-12-CUT	9	0.01875	0.33
DMA-12	9	0.01875	0.33

[OUTFALLS]

Name	Invert Elev.	Outfall Type	Stage/Table Time Series	Tide Gate
POC12	0	FREE		NO

[STORAGE]

Name Parameters	Invert Elev.	Max. Depth	Init. Depth	Storage Curve	Curve Params	Ponded Area	Evap. Frac.	Infiltration
Basin #12								
BASIN-12	0	6	0	TABULAR	BASIN-12	3534	1	

[OUTLETS]

Name	Inlet Node	Outlet Node	Outflow Height	Outlet Type	Qcoeff/QTable	Qexpon	Flap Gate
OUTLET	BASIN-12	POC12	0	TABULAR/HEAD	OUT-12		NO

[CURVES]

Name	Type	X-Value	Y-Value
OUT-12	Rating	0.000	0.000

Fani ta Ranch POC12 PR

OUT-12	0.042	0.013
OUT-12	0.083	0.037
OUT-12	0.125	0.069
OUT-12	0.167	0.105
OUT-12	0.208	0.144
OUT-12	0.250	0.167
OUT-12	0.292	0.186
OUT-12	0.333	0.204
OUT-12	0.375	0.220
OUT-12	0.417	0.236
OUT-12	0.458	0.250
OUT-12	0.500	0.263
OUT-12	0.542	0.276
OUT-12	0.583	0.288
OUT-12	0.625	0.300
OUT-12	0.667	0.312
OUT-12	0.708	0.323
OUT-12	0.750	0.333
OUT-12	0.792	0.343
OUT-12	0.833	0.353
OUT-12	0.875	0.363
OUT-12	0.917	0.372
OUT-12	0.958	0.382
OUT-12	1.000	0.391
OUT-12	1.042	0.399
OUT-12	1.083	0.408
OUT-12	1.125	0.416
OUT-12	1.167	0.425
OUT-12	1.208	0.433
OUT-12	1.250	0.441
OUT-12	1.292	0.448
OUT-12	1.333	0.456
OUT-12	1.375	0.464
OUT-12	1.417	0.471
OUT-12	1.458	0.478
OUT-12	1.500	0.486
OUT-12	1.542	0.493
OUT-12	1.583	0.500
OUT-12	1.625	0.507
OUT-12	1.667	0.513
OUT-12	1.708	0.520
OUT-12	1.750	0.527
OUT-12	1.792	0.533
OUT-12	1.833	0.540
OUT-12	1.875	0.546
OUT-12	1.917	0.552
OUT-12	1.958	0.559
OUT-12	2.000	0.565
OUT-12	2.042	0.604
OUT-12	2.083	0.670
OUT-12	2.125	0.754
OUT-12	2.167	0.852
OUT-12	2.208	0.963
OUT-12	2.250	1.085
OUT-12	2.292	1.217
OUT-12	2.333	1.358
OUT-12	2.375	1.507
OUT-12	2.417	1.665
OUT-12	2.458	1.831
OUT-12	2.500	2.004
OUT-12	2.542	2.184
OUT-12	2.583	2.371
OUT-12	2.625	2.524
OUT-12	2.667	2.631
OUT-12	2.708	2.732
OUT-12	2.750	2.830
OUT-12	2.792	2.923
OUT-12	2.833	3.013
OUT-12	2.875	3.100
OUT-12	2.917	3.185
OUT-12	2.958	3.267
OUT-12	3.000	3.346
OUT-12	3.042	3.424
OUT-12	3.083	3.500
OUT-12	3.125	3.573
OUT-12	3.167	3.646
OUT-12	3.208	3.716
OUT-12	3.250	3.785
OUT-12	3.292	3.853
OUT-12	3.333	3.920
OUT-12	3.375	3.985
OUT-12	3.417	4.049
OUT-12	3.458	4.113
OUT-12	3.500	4.175
OUT-12	3.542	4.236
OUT-12	3.583	4.296
OUT-12	3.625	4.355
OUT-12	3.667	4.414
OUT-12	3.708	4.471

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OUT-12	3.750	4.528
OUT-12	3.792	4.584
OUT-12	3.833	4.640
OUT-12	3.875	4.694
OUT-12	3.917	4.749
OUT-12	3.958	4.802
OUT-12	4.000	4.855
OUT-12	4.042	5.329
OUT-12	4.083	6.152
OUT-12	4.125	7.202
OUT-12	4.167	8.435
OUT-12	4.208	9.827
OUT-12	4.250	11.360
OUT-12	4.292	13.021
OUT-12	4.333	14.803
OUT-12	4.375	16.695
OUT-12	4.417	18.693
OUT-12	4.458	20.790
OUT-12	4.500	22.983
OUT-12	4.542	25.266
OUT-12	4.583	27.637
OUT-12	4.625	30.092
OUT-12	4.667	32.628
OUT-12	4.708	35.243
OUT-12	4.750	37.935
OUT-12	4.792	40.701
OUT-12	4.833	43.539
OUT-12	4.875	46.447
OUT-12	4.917	49.424
OUT-12	4.958	52.468
OUT-12	5.000	55.578
OUT-12	5.042	58.752
OUT-12	5.083	61.990
OUT-12	5.125	65.288
OUT-12	5.167	68.648
OUT-12	5.208	72.067
OUT-12	5.250	75.545
OUT-12	5.292	79.080
OUT-12	5.333	82.671
OUT-12	5.375	86.319
OUT-12	5.417	90.021
OUT-12	5.458	93.777
OUT-12	5.500	97.586
OUT-12	5.542	101.448
OUT-12	5.583	105.098
OUT-12	5.625	106.424
OUT-12	5.667	107.735
OUT-12	5.708	109.029
OUT-12	5.750	110.307
OUT-12	5.792	111.571
OUT-12	5.833	112.820
OUT-12	5.875	114.056
OUT-12	5.917	115.278
OUT-12	5.958	116.487
OUT-12	6.000	117.683

BASIN-12	Storage	0	203
BASIN-12		6	3534

[TIMESERIES]

:: Name	Date	Time	Value
-----			
San Vicente Rain Gage from San Diego County			
SanVicente	FILE	"P:\Acad\7033 Hunsaker San Diego\03 Fani ta Ranch\REC SWMM\rainfall_sanvicente.dat"	

[REPORT]

INPUT NO  
 CONTROLS NO  
 SUBCATCHMENTS ALL  
 NODES ALL  
 LINKS ALL

[TAGS]

[MAP]

DIMENSIONS 670.000 3937.500 1330.000 5312.500  
 Units None

[COORDINATES]

:: Node	X-Coord	Y-Coord
-----		
POC12	1000.000	4000.000
BASIN-12	1000.000	4500.000

[VERTICES]

:: Link	X-Coord	Y-Coord
-----		

[Polygons]

Fani ta Ranch POC12 PR

:: Subcatchment	X-Coord	Y-Coord
DMA-12-D-Road	700.000	5000.000
DMA-12-CUT	1300.000	5000.000
DMA-12	1000.000	5000.000

[SYMBOLS]

:: Gage	X-Coord	Y-Coord
SanVi cente	1000.000	5250.000

## POC 13

Flow Duration Curve (Pass-Fail) Results

List of the “n” largest Peaks: Pre-Development and Post-Development Conditions  
Elevation vs. Area Curves and Elevations vs. Discharge Curves to be used in SWMM  
DMA and SWMM Input Data (Existing and Proposed Models)

### Flow Duration Curve Data for Fanita Ranch POC-13 , Santee, CA

Q2 = 0.923 cfs Fraction 10 %  
 Q10 = 1.29 cfs  
 Step = 0.0121 cfs  
 Count = 306816 hours  
 35.00 years

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
1	0.092	714	2.33E-01	749	2.44E-01	105%	Pass
2	0.104	648	2.11E-01	702	2.29E-01	108%	Pass
3	0.116	596	1.94E-01	657	2.14E-01	110%	Pass
4	0.128	554	1.81E-01	611	1.99E-01	110%	Pass
5	0.141	525	1.71E-01	565	1.84E-01	108%	Pass
6	0.153	498	1.62E-01	502	1.64E-01	101%	Pass
7	0.165	479	1.56E-01	456	1.49E-01	95%	Pass
8	0.177	446	1.45E-01	395	1.29E-01	89%	Pass
9	0.189	425	1.39E-01	349	1.14E-01	82%	Pass
10	0.201	409	1.33E-01	326	1.06E-01	80%	Pass
11	0.213	398	1.30E-01	299	9.75E-02	75%	Pass
12	0.225	391	1.27E-01	276	9.00E-02	71%	Pass
13	0.237	373	1.22E-01	246	8.02E-02	66%	Pass
14	0.249	358	1.17E-01	225	7.33E-02	63%	Pass
15	0.261	340	1.11E-01	214	6.97E-02	63%	Pass
16	0.273	326	1.06E-01	199	6.49E-02	61%	Pass
17	0.285	314	1.02E-01	189	6.16E-02	60%	Pass
18	0.297	288	9.39E-02	169	5.51E-02	59%	Pass
19	0.309	265	8.64E-02	159	5.18E-02	60%	Pass
20	0.321	242	7.89E-02	151	4.92E-02	62%	Pass
21	0.333	222	7.24E-02	144	4.69E-02	65%	Pass
22	0.345	205	6.68E-02	138	4.50E-02	67%	Pass
23	0.357	188	6.13E-02	133	4.33E-02	71%	Pass
24	0.369	182	5.93E-02	128	4.17E-02	70%	Pass
25	0.382	176	5.74E-02	119	3.88E-02	68%	Pass
26	0.394	172	5.61E-02	103	3.36E-02	60%	Pass
27	0.406	161	5.25E-02	90	2.93E-02	56%	Pass
28	0.418	156	5.08E-02	75	2.44E-02	48%	Pass
29	0.430	150	4.89E-02	73	2.38E-02	49%	Pass
30	0.442	143	4.66E-02	73	2.38E-02	51%	Pass
31	0.454	136	4.43E-02	72	2.35E-02	53%	Pass
32	0.466	130	4.24E-02	72	2.35E-02	55%	Pass
33	0.478	125	4.07E-02	68	2.22E-02	54%	Pass
34	0.490	119	3.88E-02	67	2.18E-02	56%	Pass
35	0.502	114	3.72E-02	62	2.02E-02	54%	Pass
36	0.514	102	3.32E-02	62	2.02E-02	61%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
37	0.526	87	2.84E-02	61	1.99E-02	70%	Pass
38	0.538	78	2.54E-02	60	1.96E-02	77%	Pass
39	0.550	71	2.31E-02	59	1.92E-02	83%	Pass
40	0.562	66	2.15E-02	58	1.89E-02	88%	Pass
41	0.574	60	1.96E-02	55	1.79E-02	92%	Pass
42	0.586	55	1.79E-02	53	1.73E-02	96%	Pass
43	0.598	51	1.66E-02	47	1.53E-02	92%	Pass
44	0.611	51	1.66E-02	46	1.50E-02	90%	Pass
45	0.623	46	1.50E-02	40	1.30E-02	87%	Pass
46	0.635	45	1.47E-02	34	1.11E-02	76%	Pass
47	0.647	44	1.43E-02	33	1.08E-02	75%	Pass
48	0.659	43	1.40E-02	29	9.45E-03	67%	Pass
49	0.671	42	1.37E-02	29	9.45E-03	69%	Pass
50	0.683	41	1.34E-02	26	8.47E-03	63%	Pass
51	0.695	40	1.30E-02	25	8.15E-03	63%	Pass
52	0.707	39	1.27E-02	25	8.15E-03	64%	Pass
53	0.719	37	1.21E-02	25	8.15E-03	68%	Pass
54	0.731	33	1.08E-02	21	6.84E-03	64%	Pass
55	0.743	31	1.01E-02	19	6.19E-03	61%	Pass
56	0.755	29	9.45E-03	17	5.54E-03	59%	Pass
57	0.767	27	8.80E-03	16	5.21E-03	59%	Pass
58	0.779	25	8.15E-03	16	5.21E-03	64%	Pass
59	0.791	25	8.15E-03	16	5.21E-03	64%	Pass
60	0.803	24	7.82E-03	16	5.21E-03	67%	Pass
61	0.815	23	7.50E-03	16	5.21E-03	70%	Pass
62	0.827	21	6.84E-03	16	5.21E-03	76%	Pass
63	0.840	21	6.84E-03	15	4.89E-03	71%	Pass
64	0.852	20	6.52E-03	12	3.91E-03	60%	Pass
65	0.864	20	6.52E-03	12	3.91E-03	60%	Pass
66	0.876	20	6.52E-03	12	3.91E-03	60%	Pass
67	0.888	20	6.52E-03	12	3.91E-03	60%	Pass
68	0.900	20	6.52E-03	11	3.59E-03	55%	Pass
69	0.912	20	6.52E-03	11	3.59E-03	55%	Pass
70	0.924	18	5.87E-03	11	3.59E-03	61%	Pass
71	0.936	17	5.54E-03	9	2.93E-03	53%	Pass
72	0.948	17	5.54E-03	8	2.61E-03	47%	Pass
73	0.960	17	5.54E-03	7	2.28E-03	41%	Pass
74	0.972	17	5.54E-03	7	2.28E-03	41%	Pass
75	0.984	16	5.21E-03	7	2.28E-03	44%	Pass
76	0.996	14	4.56E-03	7	2.28E-03	50%	Pass
77	1.008	13	4.24E-03	7	2.28E-03	54%	Pass
78	1.020	13	4.24E-03	7	2.28E-03	54%	Pass
79	1.032	12	3.91E-03	7	2.28E-03	58%	Pass
80	1.044	12	3.91E-03	7	2.28E-03	58%	Pass
81	1.056	12	3.91E-03	5	1.63E-03	42%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
82	1.068	12	3.91E-03	5	1.63E-03	42%	Pass
83	1.081	11	3.59E-03	5	1.63E-03	45%	Pass
84	1.093	11	3.59E-03	5	1.63E-03	45%	Pass
85	1.105	10	3.26E-03	5	1.63E-03	50%	Pass
86	1.117	9	2.93E-03	5	1.63E-03	56%	Pass
87	1.129	9	2.93E-03	5	1.63E-03	56%	Pass
88	1.141	9	2.93E-03	5	1.63E-03	56%	Pass
89	1.153	9	2.93E-03	5	1.63E-03	56%	Pass
90	1.165	9	2.93E-03	5	1.63E-03	56%	Pass
91	1.177	7	2.28E-03	5	1.63E-03	71%	Pass
92	1.189	7	2.28E-03	5	1.63E-03	71%	Pass
93	1.201	7	2.28E-03	5	1.63E-03	71%	Pass
94	1.213	7	2.28E-03	5	1.63E-03	71%	Pass
95	1.225	5	1.63E-03	4	1.30E-03	80%	Pass
96	1.237	5	1.63E-03	4	1.30E-03	80%	Pass
97	1.249	5	1.63E-03	3	9.78E-04	60%	Pass
98	1.261	5	1.63E-03	3	9.78E-04	60%	Pass
99	1.273	4	1.30E-03	3	9.78E-04	75%	Pass
100	1.285	4	1.30E-03	2	6.52E-04	50%	Pass

**Peak Flows calculated with Cunnane Plotting Position**

Return Period (years)	Pre-dev. Q (cfs)	Post-Dev. Q (cfs)	Reduction (cfs)
10	1.285	1.245	0.040
9	1.250	1.235	0.015
8	1.228	1.225	0.002
7	1.219	1.143	0.076
6	1.203	1.053	0.150
5	1.168	0.994	0.174
4	1.109	0.921	0.188
3	1.022	0.735	0.287
2	0.923	0.674	0.249

**List of Peak events and Determination of P2 and P10 (Pre-Development)**

**Fanita Ranch POC 13 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>1.29</b>	<b>1.37</b>					
<b>9</b>	<b>1.25</b>	<b>1.27</b>	0.661	2/25/2003	35	1.03	1.02
<b>8</b>	<b>1.23</b>	<b>1.24</b>	0.703	2/12/2003	34	1.06	1.05
<b>7</b>	<b>1.22</b>	<b>1.22</b>	0.714	2/16/1980	33	1.09	1.08
<b>6</b>	<b>1.20</b>	<b>1.22</b>	0.725	2/15/1986	32	1.13	1.11
<b>5</b>	<b>1.17</b>	<b>1.17</b>	0.729	2/18/1980	31	1.16	1.15
<b>4</b>	<b>1.11</b>	<b>1.11</b>	0.73	4/23/1980	30	1.20	1.19
<b>3</b>	<b>1.02</b>	<b>1.03</b>	0.733	3/4/1978	29	1.24	1.23
<b>2</b>	<b>0.92</b>	<b>0.92</b>	0.748	1/13/1993	28	1.29	1.28
			0.752	12/28/1977	27	1.33	1.32
			0.76	1/18/1993	26	1.38	1.38
			0.778	12/4/1974	25	1.44	1.43
			0.779	4/18/1995	24	1.50	1.49
			0.793	8/17/1977	23	1.57	1.56
			0.814	10/10/1986	22	1.64	1.63
			0.821	2/21/2005	21	1.71	1.71
			0.827	2/15/1992	20	1.80	1.80
			0.844	3/2/1983	19	1.89	1.89
			0.923	1/31/1979	18	2.00	2.00
			0.926	3/1/1983	17	2.12	2.12
			0.98	3/6/1975	16	2.25	2.26
			0.986	10/18/2004	15	2.40	2.41
			0.987	10/27/2004	14	2.57	2.59
			1.006	2/13/1998	13	2.77	2.79
			1.025	10/20/2004	12	3.00	3.03
			1.072	2/2/1998	11	3.27	3.32
			1.101	2/19/1993	10	3.60	3.67
			1.111	1/29/1980	9	4.00	4.09
			1.165	1/9/2005	8	4.50	4.63
			1.171	2/6/1992	7	5.14	5.33
			1.217	2/7/1998	6	6.00	6.29
			1.22	10/31/1987	5	7.20	7.65
			1.268	9/10/1976	4	9.00	9.78
			1.563	10/22/1976	3	12.00	13.54
			1.77	2/20/1980	2	18.00	22.00
			1.931	1/4/1978	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

**List of Peak events and Determination of P2 and P10 (Post-Development)**

**Fanita Ranch POC 13 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>1.25</b>	<b>1.25</b>					
9	1.24	1.24	0.524	2/2/1998	35	1.03	1.02
8	1.23	1.23	0.528	1/7/2008	34	1.06	1.05
7	1.14	1.19	0.543	2/19/1993	33	1.09	1.08
6	1.05	1.06	0.571	1/18/1993	32	1.13	1.11
5	0.99	1.02	0.582	2/6/1992	31	1.16	1.15
4	0.92	0.93	0.589	10/31/1987	30	1.20	1.19
3	0.74	0.74	0.608	12/4/1974	29	1.24	1.23
2	0.67	0.67	0.62	2/8/1976	28	1.29	1.28
			0.62	2/9/1976	27	1.33	1.32
			0.62	9/10/1976	26	1.38	1.38
			0.63	1/29/1980	25	1.44	1.43
			0.63	1/11/1980	24	1.50	1.49
			0.63	2/19/1980	23	1.57	1.56
			0.63	1/15/1978	22	1.64	1.63
			0.65	2/16/1980	21	1.71	1.71
			0.66	3/5/1995	20	1.80	1.80
			0.67	3/1/1983	19	1.89	1.89
			0.67	1/11/2005	18	2.00	2.00
			0.68	2/23/2005	17	2.12	2.12
			0.69	11/25/1985	16	2.25	2.26
			0.73	10/27/2004	15	2.40	2.41
			0.73	10/27/2004	14	2.57	2.59
			0.73	12/29/2004	13	2.77	2.79
			0.74	2/15/1986	12	3.00	3.03
			0.84	2/18/1980	11	3.27	3.32
			0.89	1/4/1978	10	3.60	3.67
			0.93	2/21/2005	9	4.00	4.09
			0.94	3/2/1983	8	4.50	4.63
			1.05	10/20/2004	7	5.14	5.33
			1.06	1/31/1979	6	6.00	6.29
			1.22	1/29/1980	5	7.20	7.65
			1.24	2/7/1998	4	9.00	9.78
			1.28	1/9/2005	3	12.00	13.54
			1.68	10/22/1976	2	18.00	22.00
			1.81	2/20/1980	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

Vault 13

Stage	Area
0	1,365
6	1,365

### Outlet structure for Discharge of Basin 13

#### Discharge vs Elevation Table

Low orifice	0.688 "	Lower slot		Lower Weir		*Note: h = head above the invert of the lowest surface discharge opening.
Number of orif:	1	Number of slots:	0	Number of weirs:	0	
Cg-low:	0.62	Invert:	0.00 ft	Invert:	0.00	
		B	0.000 ft	B:	0.00	
Middle orifice	1 "	h <sub>slot</sub>	0.000 ft			
Number of orif:	0	Upper slot		Emergency weir		
Cg-middle:	0.62	Number of slots:	1	Invert:	5.500 ft	
invert elev:	0.000 ft	Invert:	4.00 ft	W:	4.00 ft	
		B:	1.000 ft			
		h <sub>slot</sub>	0.208 ft			

h* (ft)	H/D-low	H/D-mid	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qslot-low (cfs)	Qslot-upp (cfs)	Qweir (cfs)	Qemerg (cfs)	Qtot (cfs)
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.083	1.455	1.000	0.003	0.004	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003
0.167	2.909	2.000	0.005	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
0.250	4.364	3.000	0.006	0.015	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006
0.333	5.818	4.000	0.007	0.071	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007
0.417	7.273	5.000	0.008	0.080	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008
0.500	8.727	6.000	0.009	0.088	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009
0.583	10.182	7.000	0.010	0.096	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
0.667	11.636	8.000	0.010	0.102	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
0.750	13.091	9.000	0.011	0.109	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011
0.833	14.545	10.000	0.012	0.115	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012
0.917	16.000	11.000	0.012	0.121	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012
1.000	17.455	12.000	0.013	0.126	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.013
1.083	18.909	13.000	0.013	0.132	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.013
1.167	20.364	14.000	0.014	0.137	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.014
1.250	21.818	15.000	0.014	0.142	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.014
1.333	23.273	16.000	0.015	0.147	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015
1.417	24.727	17.000	0.015	0.151	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015
1.500	26.182	18.000	0.016	0.156	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.016
1.583	27.636	19.000	0.016	0.160	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.016
1.667	29.091	20.000	0.016	0.164	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.016
1.750	30.545	21.000	0.017	0.168	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017
1.833	32.000	22.000	0.017	0.172	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017
1.917	33.455	23.000	0.018	0.176	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018
2.000	34.909	24.000	0.018	0.180	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018
2.083	36.364	25.000	0.018	0.184	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018
2.167	37.818	26.000	0.019	0.188	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.019
2.250	39.273	27.000	0.019	0.191	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.019
2.333	40.727	28.000	0.019	0.195	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.019
2.417	42.182	29.000	0.020	0.198	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020
2.500	43.636	30.000	0.020	0.202	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020
2.583	45.091	31.000	0.021	0.205	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.021
2.667	46.545	32.000	0.021	0.208	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.021
2.750	48.000	33.000	0.021	0.212	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.021
2.833	49.455	34.000	0.021	0.215	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.021
2.917	50.909	35.000	0.022	0.218	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.022
3.000	52.364	36.000	0.022	0.221	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.022
3.083	53.818	37.000	0.022	0.224	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.022
3.167	55.273	38.000	0.023	0.227	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.023
3.250	56.727	39.000	0.023	0.230	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.023
3.333	58.182	40.000	0.023	0.233	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.023
3.417	59.636	41.000	0.024	0.236	0.024	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.024
3.500	61.091	42.000	0.024	0.239	0.024	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.024
3.583	62.545	43.000	0.024	0.242	0.024	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.024
3.667	64.000	44.000	0.024	0.245	0.024	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.024
3.750	65.455	45.000	0.025	0.247	0.025	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.025
3.833	66.909	46.000	0.025	0.250	0.025	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.025
3.917	68.364	47.000	0.025	0.253	0.025	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.025
4.000	69.818	48.000	0.026	0.256	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.026
4.083	71.273	49.000	0.026	0.258	0.026	0.000	0.000	0.000	0.000	0.075	0.000	0.000	0.100
4.167	72.727	50.000	0.026	0.261	0.026	0.000	0.000	0.000	0.000	0.211	0.000	0.000	0.237
4.250	74.182	51.000	0.026	0.264	0.026	0.000	0.000	0.000	0.000	0.388	0.000	0.000	0.414
4.333	75.636	52.000	0.027	0.266	0.027	0.000	0.000	0.000	0.000	0.488	0.000	0.000	0.515
4.417	77.091	53.000	0.027	0.269	0.027	0.000	0.000	0.000	0.000	0.570	0.000	0.000	0.597
4.500	78.545	54.000	0.027	0.271	0.027	0.000	0.000	0.000	0.000	0.642	0.000	0.000	0.669
4.583	80.000	55.000	0.027	0.274	0.027	0.000	0.000	0.000	0.000	0.706	0.000	0.000	0.733
4.667	81.455	56.000	0.028	0.276	0.028	0.000	0.000	0.000	0.000	0.765	0.000	0.000	0.793

4.750	82.909	57.000	0.028	0.279	0.028	0.000	0.000	0.000	0.000	0.820	0.000	0.000	0.847
4.833	84.364	58.000	0.028	0.281	0.028	0.000	0.000	0.000	0.000	0.871	0.000	0.000	0.899
4.917	85.818	59.000	0.028	0.284	0.028	0.000	0.000	0.000	0.000	0.919	0.000	0.000	0.948
5.000	87.273	60.000	0.029	0.286	0.029	0.000	0.000	0.000	0.000	0.965	0.000	0.000	0.994
5.083	88.727	61.000	0.029	0.288	0.029	0.000	0.000	0.000	0.000	1.009	0.000	0.000	1.038
5.167	90.182	62.000	0.029	0.291	0.029	0.000	0.000	0.000	0.000	1.051	0.000	0.000	1.080
5.250	91.636	63.000	0.029	0.293	0.029	0.000	0.000	0.000	0.000	1.092	0.000	0.000	1.121
5.333	93.091	64.000	0.030	0.295	0.030	0.000	0.000	0.000	0.000	1.131	0.000	0.000	1.160
5.417	94.545	65.000	0.030	0.298	0.030	0.000	0.000	0.000	0.000	1.168	0.000	0.000	1.198
5.500	96.000	66.000	0.030	0.300	0.030	0.000	0.000	0.000	0.000	1.205	0.000	0.000	1.235
5.583	97.455	67.000	0.030	0.302	0.030	0.000	0.000	0.000	0.000	1.240	0.000	0.298	1.569
5.667	98.909	68.000	0.030	0.305	0.030	0.000	0.000	0.000	0.000	1.275	0.000	0.844	2.149
5.750	100.364	69.000	0.031	0.307	0.031	0.000	0.000	0.000	0.000	1.308	0.000	1.550	2.889
5.833	101.818	70.000	0.031	0.309	0.031	0.000	0.000	0.000	0.000	1.341	0.000	2.386	3.758
5.917	103.273	71.000	0.031	0.311	0.031	0.000	0.000	0.000	0.000	1.373	0.000	3.160	4.564
6.000	104.727	72.000	0.031	0.313	0.031	0.000	0.000	0.000	0.000	1.404	0.000	3.461	4.897

Fani ta Ranch POC13 EX

[TITLE]  
Fani ta Ranch POC13 EX

[OPTI ONS]  
 FLOW\_UNI TS CFS  
 INFILTRATI ON GREEN\_AMPT  
 FLOW\_ROUTI NG KINWAVE  
 START\_DATE 01/03/1973  
 START\_TIME 00: 00: 00  
 REPORT\_START\_DATE 05/24/1973  
 REPORT\_START\_TIME 00: 00: 00  
 END\_DATE 05/23/2008  
 END\_TIME 23: 00: 00  
 SWEEP\_START 01/01  
 SWEEP\_END 12/31  
 DRY\_DAYS 0  
 REPORT\_STEP 01: 00: 00  
 WET\_STEP 00: 15: 00  
 DRY\_STEP 04: 00: 00  
 ROUTI NG\_STEP 0: 01: 00  
 ALLOW\_PONDI NG NO  
 I NERTI AL\_DAMPI NG PARTI AL  
 VARI ABLE\_STEP 0. 75  
 LENGTHENI NG\_STEP 0  
 MI N\_SURFAREA 0  
 NORMAL\_FLOW\_LI MI TED BOTH  
 SKI P\_STEADY\_STATE NO  
 FORCE\_MAI N\_EQUATI ON H-W  
 LI NK\_OFFSETS DEPTH  
 MI N\_SLOPE 0

[EVAPORATI ON]  
 ; Type Parameters  
 -----  
 MONTHLY 0.06 0.08 0.11 .16 .18 .21 .21 .2 .16 .12 .08 .06  
 DRY\_ONLY NO

[RAI NGAGES]  
 ; Name Rai n Time Snow Data  
 ; Type Type Intrvl Catch Source  
 -----  
 SanVi cente INTENSI TY 1: 00 1.0 TIMESERI ES SanVi cente

[SUBCATCHMENTS]  
 ; Name Rai ngage Outl et Total Pcnt. Pcnt. Curb Snow  
 ; Area Imperv Width Slope Length Pack  
 -----  
 DMA-13-D SanVi cente POC-13 2.04 0 397 17.82 0

[SUBAREAS]  
 ; Subcatchment N-Imperv N-Perv S-Imperv S-Perv PctZero RouteTo PctRouted  
 -----  
 DMA-13-D 0.012 0.05 0.05 0.10 25 OUTLET

[I NFI LTRATI ON]  
 ; Subcatchment Sucti on HydCon I MDmax  
 -----  
 DMA-13-D 9 0.025 0.33

[OUTFALLS]  
 ; Name Invert Outfall Stage/Table Tide  
 ; Elev. Type Time Series Gate  
 -----  
 POC-13 0 FREE NO

[TIMESERI ES]  
 ; Name Date Time Value  
 -----  
 ; From County  
 SanVi cente FILE "P:\Acad\7033 Hunsaker San Di ego\03 Fani ta Ranch\REC SWMM\rainfall\_sanvi cente. dat"

[REPORT]  
 I NPUT NO  
 CONTROLS NO  
 SUBCATCHMENTS ALL  
 NODES ALL  
 LI NKS ALL

[TAGS]

[MAP]  
 DI MENSIO NS 1559.250 4975.000 1740.750 5525.000  
 Uni ts None

[COORDI NATES]  
 ; Node X-Coord Y-Coord  
 -----  
 POC-13 1650.000 5000.000

Fani ta Ranch POC13 EX

[VERTICES]

;; Link	X-Coord	Y-Coord
;; -----	-----	-----

[Polygons]

;; Subcatchment	X-Coord	Y-Coord
;; -----	-----	-----
DMA-13-D	1650.000	5250.000

[SYMBOLS]

;; Gage	X-Coord	Y-Coord
;; -----	-----	-----
SanVi cente	1650.000	5500.000

Fani ta Ranch POC13 PR

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          05:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   05:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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      0.06  0.08  0.110  0.16  0.18  0.21  0.21  0.2  0.16  0.12  0.08  0.06
DRY_ONLY     NO
    
```

[RAINGAGES]

```

:: Name      Rain Type   Time Intrvl  Snow Catch  Data Source
-----
SanViente   INTENSITY 1:00      1.0         TIMESERIES SanViente
    
```

[SUBCATCHMENTS]

```

:: Name      Raingage      Outlet      Total Area  Pcnt. Imperv  Width  Pcnt. Slope  Curb Length  Snow Pack
-----
DMA-13D-Road SanViente      VAULT-13    1.29        85          474      24          0
DMA-13D-SLOPE SanViente      POC13PR     0.93         0           181      67          0
    
```

[SUBAREAS]

```

:: Subcatchment N-Imperv  N-Perv   S-Imperv  S-Perv   PctZero  RouteTo  PctRouted
-----
DMA-13D-Road   0.012    0.05    0.05     0.1      25       OUTLET
DMA-13D-SLOPE 0.012    0.05    0.05     0.1      25       OUTLET
    
```

[INFILTRATION]

```

:: Subcatchment Suction  HydCon  IMDmax
-----
DMA-13D-Road   9        0.01875 0.33
DMA-13D-SLOPE 9        0.01875 0.33
    
```

[OUTFALLS]

```

:: Name      Invert Elev.  Outfall Type  Stage/Table Time Series  Tide Gate
-----
POC13PR     0        FREE          NO
    
```

[STORAGE]

```

:: Name      Invert Elev.  Max. Depth  Init. Depth  Storage Curve  Curve Params  Ponded Area  Evap. Frac.  Infiltration
-----
VAULT-13    0        6        0          TABULAR      VAULT13          1365      0
    
```

[OUTLETS]

```

:: Name      Inlet Node      Outlet Node      Outflow Height  Outlet Type      Qcoeff/QTable  Qexpon  Flap Gate
-----
VAULT-13    VAULT-13    POC13PR          0          TABULAR/DEPTH    OUT-13          NO
    
```

[CURVES]

```

:: Name      Type      X-Value  Y-Value
-----
OUT-13      Rating    0.000    0.000
OUT-13      Rating    0.083    0.003
OUT-13      Rating    0.167    0.005
OUT-13      Rating    0.250    0.006
OUT-13      Rating    0.333    0.007
    
```

Fani ta Ranch POC13 PR

OUT-13	0.417	0.008
OUT-13	0.500	0.009
OUT-13	0.583	0.010
OUT-13	0.667	0.010
OUT-13	0.750	0.011
OUT-13	0.833	0.012
OUT-13	0.917	0.012
OUT-13	1.000	0.013
OUT-13	1.083	0.013
OUT-13	1.167	0.014
OUT-13	1.250	0.014
OUT-13	1.333	0.015
OUT-13	1.417	0.015
OUT-13	1.500	0.016
OUT-13	1.583	0.016
OUT-13	1.667	0.016
OUT-13	1.750	0.017
OUT-13	1.833	0.017
OUT-13	1.917	0.018
OUT-13	2.000	0.018
OUT-13	2.083	0.018
OUT-13	2.167	0.019
OUT-13	2.250	0.019
OUT-13	2.333	0.019
OUT-13	2.417	0.020
OUT-13	2.500	0.020
OUT-13	2.583	0.021
OUT-13	2.667	0.021
OUT-13	2.750	0.021
OUT-13	2.833	0.021
OUT-13	2.917	0.022
OUT-13	3.000	0.022
OUT-13	3.083	0.022
OUT-13	3.167	0.023
OUT-13	3.250	0.023
OUT-13	3.333	0.023
OUT-13	3.417	0.024
OUT-13	3.500	0.024
OUT-13	3.583	0.024
OUT-13	3.667	0.024
OUT-13	3.750	0.025
OUT-13	3.833	0.025
OUT-13	3.917	0.025
OUT-13	4.000	0.026
OUT-13	4.083	0.100
OUT-13	4.167	0.237
OUT-13	4.250	0.414
OUT-13	4.333	0.515
OUT-13	4.417	0.597
OUT-13	4.500	0.669
OUT-13	4.583	0.733
OUT-13	4.667	0.793
OUT-13	4.750	0.847
OUT-13	4.833	0.899
OUT-13	4.917	0.948
OUT-13	5.000	0.994
OUT-13	5.083	1.038
OUT-13	5.167	1.080
OUT-13	5.250	1.121
OUT-13	5.333	1.160
OUT-13	5.417	1.198
OUT-13	5.500	1.235
OUT-13	5.583	1.569
OUT-13	5.667	2.149
OUT-13	5.750	2.889
OUT-13	5.833	3.758
OUT-13	5.917	4.564
OUT-13	6.000	4.897

VAULT13	Storage	0	1365
VAULT13		6	1365

[TIMESERIES]

;; Name Date Time Value

-----  
 ; San Vicente Rain Gage from San Diego County  
 SanVicente FILE "P:\Acad\7033 Hunsaker San Diego\03 Fani ta Ranch\REC SWMM\rainfal I\_sanvicente.dat"

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

[TAGS]

[MAP]  
 DIMENSIONS 885.000 3945.000 1215.000 5155.000

Uni ts        None

[COORDINATES]		
Node	X-Coord	Y-Coord
POC13PR	900.000	4000.000
VAULT-13	900.000	4400.000
[VERTICES]		
Link	X-Coord	Y-Coord
[Polygons]		
Subcatchment	X-Coord	Y-Coord
DMA-13D-Road	900.000	4800.000
DMA-13D-SLOPE	1200.000	4000.000
[SYMBOLS]		
Gage	X-Coord	Y-Coord
SanVicente	900.000	5100.000

## POC 14

Flow Duration Curve (Pass-Fail) Results

List of the “n” largest Peaks: Pre-Development and Post-Development Conditions

SWMM Input Data (Existing and Proposed Models)

### Flow Duration Curve Data for Fanita Ranch POC-14 , Santee, CA

Q2 = 0.629 cfs Fraction 10 %  
 Q10 = 0.88 cfs  
 Step = 0.0082 cfs  
 Count = 306816 hours  
 35.00 years

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
1	0.063	715	2.33E-01	576	1.88E-01	81%	Pass
2	0.071	643	2.10E-01	527	1.72E-01	82%	Pass
3	0.079	594	1.94E-01	484	1.58E-01	81%	Pass
4	0.088	553	1.80E-01	460	1.50E-01	83%	Pass
5	0.096	525	1.71E-01	426	1.39E-01	81%	Pass
6	0.104	500	1.63E-01	394	1.28E-01	79%	Pass
7	0.112	474	1.54E-01	371	1.21E-01	78%	Pass
8	0.120	445	1.45E-01	339	1.10E-01	76%	Pass
9	0.129	424	1.38E-01	287	9.35E-02	68%	Pass
10	0.137	407	1.33E-01	243	7.92E-02	60%	Pass
11	0.145	397	1.29E-01	213	6.94E-02	54%	Pass
12	0.153	388	1.26E-01	201	6.55E-02	52%	Pass
13	0.161	370	1.21E-01	186	6.06E-02	50%	Pass
14	0.170	357	1.16E-01	172	5.61E-02	48%	Pass
15	0.178	340	1.11E-01	162	5.28E-02	48%	Pass
16	0.186	324	1.06E-01	145	4.73E-02	45%	Pass
17	0.194	313	1.02E-01	131	4.27E-02	42%	Pass
18	0.203	287	9.35E-02	116	3.78E-02	40%	Pass
19	0.211	266	8.67E-02	107	3.49E-02	40%	Pass
20	0.219	244	7.95E-02	88	2.87E-02	36%	Pass
21	0.227	222	7.24E-02	79	2.57E-02	36%	Pass
22	0.235	205	6.68E-02	72	2.35E-02	35%	Pass
23	0.244	188	6.13E-02	59	1.92E-02	31%	Pass
24	0.252	182	5.93E-02	52	1.69E-02	29%	Pass
25	0.260	176	5.74E-02	48	1.56E-02	27%	Pass
26	0.268	172	5.61E-02	41	1.34E-02	24%	Pass
27	0.276	161	5.25E-02	41	1.34E-02	25%	Pass
28	0.285	156	5.08E-02	39	1.27E-02	25%	Pass
29	0.293	150	4.89E-02	35	1.14E-02	23%	Pass
30	0.301	142	4.63E-02	29	9.45E-03	20%	Pass
31	0.309	135	4.40E-02	27	8.80E-03	20%	Pass
32	0.317	130	4.24E-02	27	8.80E-03	21%	Pass
33	0.326	124	4.04E-02	25	8.15E-03	20%	Pass
34	0.334	119	3.88E-02	21	6.84E-03	18%	Pass
35	0.342	114	3.72E-02	20	6.52E-03	18%	Pass
36	0.350	102	3.32E-02	20	6.52E-03	20%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
37	0.359	86	2.80E-02	19	6.19E-03	22%	Pass
38	0.367	78	2.54E-02	18	5.87E-03	23%	Pass
39	0.375	71	2.31E-02	17	5.54E-03	24%	Pass
40	0.383	66	2.15E-02	17	5.54E-03	26%	Pass
41	0.391	60	1.96E-02	17	5.54E-03	28%	Pass
42	0.400	55	1.79E-02	17	5.54E-03	31%	Pass
43	0.408	51	1.66E-02	14	4.56E-03	27%	Pass
44	0.416	51	1.66E-02	12	3.91E-03	24%	Pass
45	0.424	46	1.50E-02	12	3.91E-03	26%	Pass
46	0.432	45	1.47E-02	11	3.59E-03	24%	Pass
47	0.441	44	1.43E-02	11	3.59E-03	25%	Pass
48	0.449	43	1.40E-02	9	2.93E-03	21%	Pass
49	0.457	42	1.37E-02	9	2.93E-03	21%	Pass
50	0.465	41	1.34E-02	8	2.61E-03	20%	Pass
51	0.473	40	1.30E-02	8	2.61E-03	20%	Pass
52	0.482	39	1.27E-02	7	2.28E-03	18%	Pass
53	0.490	37	1.21E-02	5	1.63E-03	14%	Pass
54	0.498	33	1.08E-02	5	1.63E-03	15%	Pass
55	0.506	31	1.01E-02	5	1.63E-03	16%	Pass
56	0.515	29	9.45E-03	4	1.30E-03	14%	Pass
57	0.523	27	8.80E-03	4	1.30E-03	15%	Pass
58	0.531	26	8.47E-03	4	1.30E-03	15%	Pass
59	0.539	25	8.15E-03	3	9.78E-04	12%	Pass
60	0.547	24	7.82E-03	3	9.78E-04	13%	Pass
61	0.556	23	7.50E-03	3	9.78E-04	13%	Pass
62	0.564	21	6.84E-03	3	9.78E-04	14%	Pass
63	0.572	21	6.84E-03	3	9.78E-04	14%	Pass
64	0.580	20	6.52E-03	3	9.78E-04	15%	Pass
65	0.588	20	6.52E-03	3	9.78E-04	15%	Pass
66	0.597	20	6.52E-03	3	9.78E-04	15%	Pass
67	0.605	20	6.52E-03	3	9.78E-04	15%	Pass
68	0.613	20	6.52E-03	3	9.78E-04	15%	Pass
69	0.621	20	6.52E-03	3	9.78E-04	15%	Pass
70	0.630	18	5.87E-03	3	9.78E-04	17%	Pass
71	0.638	17	5.54E-03	2	6.52E-04	12%	Pass
72	0.646	17	5.54E-03	2	6.52E-04	12%	Pass
73	0.654	17	5.54E-03	2	6.52E-04	12%	Pass
74	0.662	17	5.54E-03	2	6.52E-04	12%	Pass
75	0.671	16	5.21E-03	2	6.52E-04	13%	Pass
76	0.679	14	4.56E-03	2	6.52E-04	14%	Pass
77	0.687	13	4.24E-03	2	6.52E-04	15%	Pass
78	0.695	13	4.24E-03	2	6.52E-04	15%	Pass
79	0.703	12	3.91E-03	1	3.26E-04	8%	Pass
80	0.712	12	3.91E-03	1	3.26E-04	8%	Pass
81	0.720	12	3.91E-03	1	3.26E-04	8%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
82	0.728	12	3.91E-03	1	3.26E-04	8%	Pass
83	0.736	11	3.59E-03	1	3.26E-04	9%	Pass
84	0.744	11	3.59E-03	1	3.26E-04	9%	Pass
85	0.753	10	3.26E-03	0	0.00E+00	0%	Pass
86	0.761	9	2.93E-03	0	0.00E+00	0%	Pass
87	0.769	9	2.93E-03	0	0.00E+00	0%	Pass
88	0.777	9	2.93E-03	0	0.00E+00	0%	Pass
89	0.786	9	2.93E-03	0	0.00E+00	0%	Pass
90	0.794	9	2.93E-03	0	0.00E+00	0%	Pass
91	0.802	7	2.28E-03	0	0.00E+00	0%	Pass
92	0.810	7	2.28E-03	0	0.00E+00	0%	Pass
93	0.818	7	2.28E-03	0	0.00E+00	0%	Pass
94	0.827	7	2.28E-03	0	0.00E+00	0%	Pass
95	0.835	5	1.63E-03	0	0.00E+00	0%	Pass
96	0.843	5	1.63E-03	0	0.00E+00	0%	Pass
97	0.851	5	1.63E-03	0	0.00E+00	0%	Pass
98	0.859	5	1.63E-03	0	0.00E+00	0%	Pass
99	0.868	4	1.30E-03	0	0.00E+00	0%	Pass
100	0.876	4	1.30E-03	0	0.00E+00	0%	Pass

**Peak Flows calculated with Cunnane Plotting Position**

Return Period (years)	Pre-dev. Q (cfs)	Post-Dev. Q (cfs)	Reduction (cfs)
10	0.876	0.520	0.356
9	0.852	0.504	0.348
8	0.837	0.492	0.345
7	0.831	0.485	0.345
6	0.820	0.481	0.339
5	0.796	0.471	0.325
4	0.755	0.446	0.309
3	0.696	0.413	0.283
2	0.629	0.354	0.275

**List of Peak events and Determination of P2 and P10 (Pre-Development)**

**Fanita Ranch POC 14 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>0.88</b>	<b>0.93</b>					
<b>9</b>	<b>0.85</b>	<b>0.86</b>	0.451	2/25/2003	35	1.03	1.02
<b>8</b>	<b>0.84</b>	<b>0.85</b>	0.479	2/12/2003	34	1.06	1.05
<b>7</b>	<b>0.83</b>	<b>0.83</b>	0.487	2/16/1980	33	1.09	1.08
<b>6</b>	<b>0.82</b>	<b>0.83</b>	0.494	2/15/1986	32	1.13	1.11
<b>5</b>	<b>0.80</b>	<b>0.80</b>	0.497	2/18/1980	31	1.16	1.15
<b>4</b>	<b>0.76</b>	<b>0.76</b>	0.497	4/23/1980	30	1.20	1.19
<b>3</b>	<b>0.70</b>	<b>0.70</b>	0.499	3/4/1978	29	1.24	1.23
<b>2</b>	<b>0.63</b>	<b>0.63</b>	0.509	1/13/1993	28	1.29	1.28
			0.513	12/28/1977	27	1.33	1.32
			0.517	1/18/1993	26	1.38	1.38
			0.53	12/4/1974	25	1.44	1.43
			0.531	4/18/1995	24	1.50	1.49
			0.54	8/17/1977	23	1.57	1.56
			0.554	10/10/1986	22	1.64	1.63
			0.559	2/21/2005	21	1.71	1.71
			0.563	2/15/1992	20	1.80	1.80
			0.575	3/2/1983	19	1.89	1.89
			0.629	1/31/1979	18	2.00	2.00
			0.631	3/1/1983	17	2.12	2.12
			0.667	3/6/1975	16	2.25	2.26
			0.672	10/18/2004	15	2.40	2.41
			0.673	10/27/2004	14	2.57	2.59
			0.685	2/13/1998	13	2.77	2.79
			0.698	10/20/2004	12	3.00	3.03
			0.73	2/2/1998	11	3.27	3.32
			0.75	2/19/1993	10	3.60	3.67
			0.757	1/29/1980	9	4.00	4.09
			0.794	1/9/2005	8	4.50	4.63
			0.798	2/6/1992	7	5.14	5.33
			0.829	2/7/1998	6	6.00	6.29
			0.832	10/31/1987	5	7.20	7.65
			0.864	9/10/1976	4	9.00	9.78
			1.065	10/22/1976	3	12.00	13.54
			1.206	2/20/1980	2	18.00	22.00
			1.316	1/4/1978	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

**List of Peak events and Determination of P2 and P10 (Post-Development)  
Fanita Ranch POC 14 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>0.52</b>	<b>0.55</b>					
9	0.50	0.51	0.266	3/6/1980	35	1.03	1.02
8	0.49	0.50	0.277	1/9/1980	34	1.06	1.05
7	0.49	0.49	0.286	4/18/1995	33	1.09	1.08
6	0.48	0.48	0.291	2/16/1980	32	1.13	1.11
5	0.47	0.48	0.294	2/18/1980	31	1.16	1.15
4	0.45	0.45	0.295	3/4/1978	30	1.20	1.19
3	0.41	0.41	0.299	2/15/1986	29	1.24	1.23
2	0.35	0.35	0.3	1/13/1993	28	1.29	1.28
			0.302	12/28/1977	27	1.33	1.32
			0.303	1/18/1993	26	1.38	1.38
			0.32	4/23/1980	25	1.44	1.43
			0.33	3/2/1983	24	1.50	1.49
			0.33	12/4/1974	23	1.57	1.56
			0.33	8/17/1977	22	1.64	1.63
			0.33	2/21/2005	21	1.71	1.71
			0.33	2/15/1992	20	1.80	1.80
			0.34	10/10/1986	19	1.89	1.89
			0.35	3/1/1983	18	2.00	2.00
			0.37	1/31/1979	17	2.12	2.12
			0.40	2/13/1998	16	2.25	2.26
			0.41	10/18/2004	15	2.40	2.41
			0.41	10/27/2004	14	2.57	2.59
			0.41	10/20/2004	13	2.77	2.79
			0.41	3/6/1975	12	3.00	3.03
			0.43	2/2/1998	11	3.27	3.32
			0.45	1/29/1980	10	3.60	3.67
			0.45	2/19/1993	9	4.00	4.09
			0.46	1/9/2005	8	4.50	4.63
			0.48	2/6/1992	7	5.14	5.33
			0.48	2/7/1998	6	6.00	6.29
			0.49	10/31/1987	5	7.20	7.65
			0.51	9/10/1976	4	9.00	9.78
			0.63	10/22/1976	3	12.00	13.54
			0.70	2/20/1980	2	18.00	22.00
			0.75	1/4/1978	1	36.00	58.67

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

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          00:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   00:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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 0.06 0.08 0.11 .16 .18 .21 .21 .2 .16 .12 .08 .06
DRY_ONLY NO
    
```

[RAINGAGES]

```

; Name Rain Type Time Intrvl Snow Catch Data Source
-----
SanViente INTENSITY 1:00 1.0 TIMESERIES SanViente
    
```

[SUBCATCHMENTS]

```

; Name Raingage Outlet Total Area Pcnt. Imperv Width Pcnt. Slope Curb Length Snow Pack
-----
DMA-14-D SanViente POC-14 1.39 0 270 17.16 0
    
```

[SUBAREAS]

```

; Subcatchment N-Imperv N-Perv S-Imperv S-Perv PctZero RouteTo PctRouted
-----
DMA-14-D 0.012 0.05 0.05 0.10 25 OUTLET
    
```

[INFILTRATION]

```

; Subcatchment Suction HydCon IMDmax
-----
DMA-14-D 9 0.025 0.33
    
```

[OUTFALLS]

```

; Name Invert Elev. Outfall Type Stage/Table Time Series Tide Gate
-----
POC-14 0 FREE NO
    
```

[TIMESERIES]

```

; Name Date Time Value
-----
From County SanViente FILE "P:\Acad\7033 Hunsaker San Diego\03 Fani ta Ranch\REC SWMM\rainfall_sanviente.dat"
    
```

[REPORT]

```

INPUT NO
CONTROLS NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL
    
```

[TAGS]

[MAP]

```

DIMENSIONS 1559.250 5125.000 1740.750 5675.000
Units None
    
```

[COORDINATES]

```

; Node X-Coord Y-Coord
-----
POC-14 1650.000 5150.000
    
```

[VERTICES]

```
:: Link          X-Coord          Y-Coord  
::-----
```

[Polygons]

```
:: Subcatchment X-Coord          Y-Coord  
::-----
```

```
DMA-14-D        1650.000          5400.000
```

[SYMBOLS]

```
:: Gage          X-Coord          Y-Coord  
::-----
```

```
SanVi cente    1650.000          5650.000
```

[TITLE]

```

[OPTIONS]
FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          00:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   00:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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      0.06  0.08  0.11  .16  .18  .21  .21  .2  .16  .12  .08  .06
DRY_ONLY     NO
    
```

[RAINGAGES]

```

;; Name      Rain Type   Time Intrvl  Snow Catch  Data Source
-----
SanVicente  INTENSITY 1:00      1.0         TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

;; Name      Raingage      Outlet      Total Area  Pcnt. Imperv  Width  Pcnt. Slope  Curb Length  Snow Pack
-----
DMA-14-D    SanVicente    POC-14PR    0.80        0             156    17.16       0
    
```

[SUBAREAS]

```

;; Subcatchment  N-Imperv  N-Perv  S-Imperv  S-Perv  PctZero  RouteTo  PctRouted
-----
DMA-14-D        0.012    0.05    0.05     0.10    25       OUTLET
    
```

[INFILTRATION]

```

;; Subcatchment  Suction  HydCon  IMDmax
-----
DMA-14-D        9         0.01875  0.33
    
```

[OUTFALLS]

```

;; Name      Invert Elev.  Outfall Type  Stage/Table Time Series  Tide Gate
-----
POC-14PR    0         FREE                NO
    
```

[TIMESERIES]

```

;; Name      Date      Time      Value
-----
From County SanVicente  FILE "P:\Acad\7033 Hunsaker San Diego\03 Fani ta Ranch\REC SWMM\rainfall_sanvicente.dat"
    
```

[REPORT]

```

INPUT          NO
CONTROLS       NO
SUBCATCHMENTS ALL
NODES          ALL
LINKS          ALL
    
```

[TAGS]

```

[MAP]
DIMENSIONS 1559.250 5125.000 1740.750 5675.000
Units      None
    
```

[COORDINATES]

```

;; Node      X-Coord      Y-Coord
-----
POC-14PR    1650.000     5150.000
    
```

[VERTICES]

```
:: Link          X-Coord          Y-Coord  
::-----
```

[Polygons]

```
:: Subcatchment X-Coord          Y-Coord  
::-----
```

```
DMA-14-D        1650.000          5400.000
```

[SYMBOLS]

```
:: Gage          X-Coord          Y-Coord  
::-----
```

```
SanVi cente    1650.000          5650.000
```

## POC 15

Flow Duration Curve (Pass-Fail) Results

List of the “n” largest Peaks: Pre-Development and Post-Development Conditions  
Elevation vs. Area Curves and Elevations vs. Discharge Curves to be used in SWMM  
SWMM Input Data (Existing and Proposed Models)

### Flow Duration Curve Data for Fanita Ranch POC-15 , Santee, CA

Q2 = 0.421 cfs Fraction 10 %  
 Q10 = 0.59 cfs  
 Step = 0.0055 cfs  
 Count = 306816 hours  
 35.00 years

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
1	0.042	712	2.32E-01	620	2.02E-01	87%	Pass
2	0.048	651	2.12E-01	531	1.73E-01	82%	Pass
3	0.053	595	1.94E-01	465	1.52E-01	78%	Pass
4	0.059	554	1.81E-01	421	1.37E-01	76%	Pass
5	0.064	526	1.71E-01	385	1.25E-01	73%	Pass
6	0.070	503	1.64E-01	371	1.21E-01	74%	Pass
7	0.075	475	1.55E-01	356	1.16E-01	75%	Pass
8	0.081	446	1.45E-01	342	1.11E-01	77%	Pass
9	0.086	425	1.39E-01	329	1.07E-01	77%	Pass
10	0.092	410	1.34E-01	316	1.03E-01	77%	Pass
11	0.097	397	1.29E-01	303	9.88E-02	76%	Pass
12	0.103	391	1.27E-01	291	9.48E-02	74%	Pass
13	0.108	372	1.21E-01	277	9.03E-02	74%	Pass
14	0.114	361	1.18E-01	263	8.57E-02	73%	Pass
15	0.119	340	1.11E-01	251	8.18E-02	74%	Pass
16	0.125	327	1.07E-01	237	7.72E-02	72%	Pass
17	0.130	314	1.02E-01	223	7.27E-02	71%	Pass
18	0.135	290	9.45E-02	216	7.04E-02	74%	Pass
19	0.141	270	8.80E-02	209	6.81E-02	77%	Pass
20	0.146	245	7.99E-02	197	6.42E-02	80%	Pass
21	0.152	226	7.37E-02	187	6.09E-02	83%	Pass
22	0.157	205	6.68E-02	179	5.83E-02	87%	Pass
23	0.163	191	6.23E-02	172	5.61E-02	90%	Pass
24	0.168	183	5.96E-02	159	5.18E-02	87%	Pass
25	0.174	178	5.80E-02	148	4.82E-02	83%	Pass
26	0.179	172	5.61E-02	139	4.53E-02	81%	Pass
27	0.185	163	5.31E-02	130	4.24E-02	80%	Pass
28	0.190	157	5.12E-02	121	3.94E-02	77%	Pass
29	0.196	151	4.92E-02	115	3.75E-02	76%	Pass
30	0.201	143	4.66E-02	107	3.49E-02	75%	Pass
31	0.207	136	4.43E-02	101	3.29E-02	74%	Pass
32	0.212	130	4.24E-02	90	2.93E-02	69%	Pass
33	0.218	127	4.14E-02	81	2.64E-02	64%	Pass
34	0.223	121	3.94E-02	74	2.41E-02	61%	Pass
35	0.229	114	3.72E-02	70	2.28E-02	61%	Pass
36	0.234	103	3.36E-02	66	2.15E-02	64%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
37	0.240	90	2.93E-02	62	2.02E-02	69%	Pass
38	0.245	78	2.54E-02	56	1.83E-02	72%	Pass
39	0.251	71	2.31E-02	52	1.69E-02	73%	Pass
40	0.256	66	2.15E-02	46	1.50E-02	70%	Pass
41	0.262	60	1.96E-02	44	1.43E-02	73%	Pass
42	0.267	55	1.79E-02	43	1.40E-02	78%	Pass
43	0.273	51	1.66E-02	36	1.17E-02	71%	Pass
44	0.278	51	1.66E-02	34	1.11E-02	67%	Pass
45	0.284	47	1.53E-02	31	1.01E-02	66%	Pass
46	0.289	45	1.47E-02	27	8.80E-03	60%	Pass
47	0.295	44	1.43E-02	25	8.15E-03	57%	Pass
48	0.300	43	1.40E-02	21	6.84E-03	49%	Pass
49	0.306	42	1.37E-02	21	6.84E-03	50%	Pass
50	0.311	41	1.34E-02	20	6.52E-03	49%	Pass
51	0.317	40	1.30E-02	19	6.19E-03	48%	Pass
52	0.322	39	1.27E-02	17	5.54E-03	44%	Pass
53	0.328	37	1.21E-02	17	5.54E-03	46%	Pass
54	0.333	33	1.08E-02	12	3.91E-03	36%	Pass
55	0.339	31	1.01E-02	11	3.59E-03	35%	Pass
56	0.344	29	9.45E-03	9	2.93E-03	31%	Pass
57	0.350	27	8.80E-03	9	2.93E-03	33%	Pass
58	0.355	25	8.15E-03	9	2.93E-03	36%	Pass
59	0.361	25	8.15E-03	7	2.28E-03	28%	Pass
60	0.366	24	7.82E-03	6	1.96E-03	25%	Pass
61	0.372	23	7.50E-03	5	1.63E-03	22%	Pass
62	0.377	21	6.84E-03	5	1.63E-03	24%	Pass
63	0.383	21	6.84E-03	5	1.63E-03	24%	Pass
64	0.388	20	6.52E-03	5	1.63E-03	25%	Pass
65	0.394	20	6.52E-03	4	1.30E-03	20%	Pass
66	0.399	20	6.52E-03	4	1.30E-03	20%	Pass
67	0.405	20	6.52E-03	4	1.30E-03	20%	Pass
68	0.410	20	6.52E-03	3	9.78E-04	15%	Pass
69	0.416	20	6.52E-03	3	9.78E-04	15%	Pass
70	0.421	18	5.87E-03	3	9.78E-04	17%	Pass
71	0.427	17	5.54E-03	3	9.78E-04	18%	Pass
72	0.432	17	5.54E-03	3	9.78E-04	18%	Pass
73	0.438	17	5.54E-03	3	9.78E-04	18%	Pass
74	0.443	17	5.54E-03	3	9.78E-04	18%	Pass
75	0.449	16	5.21E-03	3	9.78E-04	19%	Pass
76	0.454	14	4.56E-03	3	9.78E-04	21%	Pass
77	0.460	13	4.24E-03	3	9.78E-04	23%	Pass
78	0.465	13	4.24E-03	3	9.78E-04	23%	Pass
79	0.471	12	3.91E-03	3	9.78E-04	25%	Pass
80	0.476	12	3.91E-03	3	9.78E-04	25%	Pass
81	0.482	12	3.91E-03	3	9.78E-04	25%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
82	0.487	12	3.91E-03	3	9.78E-04	25%	Pass
83	0.493	11	3.59E-03	2	6.52E-04	18%	Pass
84	0.498	11	3.59E-03	2	6.52E-04	18%	Pass
85	0.504	10	3.26E-03	2	6.52E-04	20%	Pass
86	0.509	9	2.93E-03	2	6.52E-04	22%	Pass
87	0.515	9	2.93E-03	2	6.52E-04	22%	Pass
88	0.520	9	2.93E-03	2	6.52E-04	22%	Pass
89	0.526	9	2.93E-03	2	6.52E-04	22%	Pass
90	0.531	8	2.61E-03	2	6.52E-04	25%	Pass
91	0.537	7	2.28E-03	2	6.52E-04	29%	Pass
92	0.542	7	2.28E-03	2	6.52E-04	29%	Pass
93	0.548	7	2.28E-03	2	6.52E-04	29%	Pass
94	0.553	7	2.28E-03	2	6.52E-04	29%	Pass
95	0.559	5	1.63E-03	2	6.52E-04	40%	Pass
96	0.564	5	1.63E-03	2	6.52E-04	40%	Pass
97	0.569	5	1.63E-03	2	6.52E-04	40%	Pass
98	0.575	5	1.63E-03	2	6.52E-04	40%	Pass
99	0.580	4	1.30E-03	2	6.52E-04	50%	Pass
100	0.586	4	1.30E-03	2	6.52E-04	50%	Pass

**Peak Flows calculated with Cunnane Plotting Position**

Return Period (years)	Pre-dev. Q (cfs)	Post-Dev. Q (cfs)	Reduction (cfs)
10	0.586	0.392	0.194
9	0.570	0.381	0.189
8	0.560	0.368	0.192
7	0.556	0.361	0.195
6	0.549	0.358	0.191
5	0.533	0.349	0.183
4	0.506	0.337	0.169
3	0.466	0.321	0.145
2	0.421	0.272	0.149

**List of Peak events and Determination of P2 and P10 (Pre-Development)**

**Fanita Ranch POC 15 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>0.59</b>	<b>0.62</b>					
<b>9</b>	<b>0.57</b>	<b>0.58</b>	0.302	2/25/2003	35	1.03	1.02
<b>8</b>	<b>0.56</b>	<b>0.57</b>	0.32	2/12/2003	34	1.06	1.05
<b>7</b>	<b>0.56</b>	<b>0.56</b>	0.326	2/16/1980	33	1.09	1.08
<b>6</b>	<b>0.55</b>	<b>0.56</b>	0.331	2/15/1986	32	1.13	1.11
<b>5</b>	<b>0.53</b>	<b>0.53</b>	0.332	2/18/1980	31	1.16	1.15
<b>4</b>	<b>0.51</b>	<b>0.51</b>	0.333	4/23/1980	30	1.20	1.19
<b>3</b>	<b>0.47</b>	<b>0.47</b>	0.334	3/4/1978	29	1.24	1.23
<b>2</b>	<b>0.42</b>	<b>0.42</b>	0.341	1/13/1993	28	1.29	1.28
			0.343	12/28/1977	27	1.33	1.32
			0.346	1/18/1993	26	1.38	1.38
			0.355	12/4/1974	25	1.44	1.43
			0.355	4/18/1995	24	1.50	1.49
			0.362	8/17/1977	23	1.57	1.56
			0.371	10/10/1986	22	1.64	1.63
			0.374	2/21/2005	21	1.71	1.71
			0.377	2/15/1992	20	1.80	1.80
			0.385	3/2/1983	19	1.89	1.89
			0.421	1/31/1979	18	2.00	2.00
			0.422	3/1/1983	17	2.12	2.12
			0.447	3/6/1975	16	2.25	2.26
			0.449	10/18/2004	15	2.40	2.41
			0.45	10/27/2004	14	2.57	2.59
			0.458	2/13/1998	13	2.77	2.79
			0.467	10/20/2004	12	3.00	3.03
			0.489	2/2/1998	11	3.27	3.32
			0.502	2/19/1993	10	3.60	3.67
			0.507	1/29/1980	9	4.00	4.09
			0.531	1/9/2005	8	4.50	4.63
			0.534	2/6/1992	7	5.14	5.33
			0.555	2/7/1998	6	6.00	6.29
			0.556	10/31/1987	5	7.20	7.65
			0.578	9/10/1976	4	9.00	9.78
			0.713	10/22/1976	3	12.00	13.54
			0.807	2/20/1980	2	18.00	22.00
			0.88	1/4/1978	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

**List of Peak events and Determination of P2 and P10 (Post-Development)  
Fanita Ranch POC 15 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>0.39</b>	<b>0.40</b>					
9	0.38	0.39	0.21	12/7/1992	35	1.03	1.02
8	0.37	0.38	0.22	3/1/1983	34	1.06	1.05
7	0.36	0.36	0.22	3/6/1980	33	1.09	1.08
6	0.36	0.36	0.22	1/16/1993	32	1.13	1.11
5	0.35	0.35	0.23	2/19/1993	31	1.16	1.15
4	0.34	0.34	0.24	2/23/2005	30	1.20	1.19
3	0.32	0.32	0.24	8/17/1977	29	1.24	1.23
2	0.27	0.27	0.24	3/1/1991	28	1.29	1.28
			0.24	2/13/1998	27	1.33	1.32
			0.24	10/28/1974	26	1.38	1.38
			0.24	1/11/2005	25	1.44	1.43
			0.25	11/25/1985	24	1.50	1.49
			0.25	2/8/1976	23	1.57	1.56
			0.26	1/11/1980	22	1.64	1.63
			0.27	2/18/1980	21	1.71	1.71
			0.27	1/15/1978	20	1.80	1.80
			0.27	2/6/1992	19	1.89	1.89
			0.27	1/29/1980	18	2.00	2.00
			0.28	2/2/1998	17	2.12	2.12
			0.29	9/10/1976	16	2.25	2.26
			0.30	12/4/1974	15	2.40	2.41
			0.30	12/29/2004	14	2.57	2.59
			0.31	3/5/1995	13	2.77	2.79
			0.32	1/4/1978	12	3.00	3.03
			0.33	2/15/1986	11	3.27	3.32
			0.33	3/2/1983	10	3.60	3.67
			0.34	10/27/2004	9	4.00	4.09
			0.34	2/21/2005	8	4.50	4.63
			0.36	2/7/1998	7	5.14	5.33
			0.36	1/29/1980	6	6.00	6.29
			0.36	10/20/2004	5	7.20	7.65
			0.39	1/9/2005	4	9.00	9.78
			0.41	1/31/1979	3	12.00	13.54
			0.90	2/20/1980	2	18.00	22.00
			1.07	10/22/1976	1	36.00	58.67

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

POC-15

Stage	Area (sq.ft.)
0	900
6	900

## Outlet structure for Discharge of Basin 15

### Discharge vs Elevation Table

Low orifice	0.825 "	Lower slot		Lower Weir		*Note: h = head above the invert of the lowest surface discharge opening.
Number of orif:	1	Number of slots:	0	Number of weirs:	0	
Cg-low:	0.62	Invert:	0.00 ft	Invert:	0.00	
		B	0.000 ft	B:	0.00	
Middle orifice	1 "	h <sub>slot</sub>	0.000 ft			
Number of orif:	0	Upper slot		Emergency weir		
Cg-middle:	0.62	Number of slots:	1	Invert:	5.500 ft	
invert elev:	0.000 ft	Invert:	3.00 ft	W:	4.00 ft	
		B:	0.333 ft			
		h <sub>slot</sub>	0.125 ft			

h* (ft)	H/D-low -	H/D-mid -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qslot-low (cfs)	Qslot-upp (cfs)	Qweir (cfs)	Qemerg (cfs)	Qtot (cfs)
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.083	1.212	1.000	0.004	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004
0.167	2.424	2.000	0.007	0.009	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007
0.250	3.636	3.000	0.009	0.010	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009
0.333	4.848	4.000	0.010	0.048	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
0.417	6.061	5.000	0.011	0.114	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011
0.500	7.273	6.000	0.013	0.126	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.013
0.583	8.485	7.000	0.014	0.137	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.014
0.667	9.697	8.000	0.015	0.147	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015
0.750	10.909	9.000	0.016	0.156	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.016
0.833	12.121	10.000	0.017	0.165	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017
0.917	13.333	11.000	0.017	0.173	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017
1.000	14.545	12.000	0.018	0.181	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018
1.083	15.758	13.000	0.019	0.189	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.019
1.167	16.970	14.000	0.020	0.197	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020
1.250	18.182	15.000	0.020	0.204	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020
1.333	19.394	16.000	0.021	0.211	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.021
1.417	20.606	17.000	0.022	0.217	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.022
1.500	21.818	18.000	0.022	0.224	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.022
1.583	23.030	19.000	0.023	0.230	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.023
1.667	24.242	20.000	0.024	0.236	0.024	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.024
1.750	25.455	21.000	0.024	0.242	0.024	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.024
1.833	26.667	22.000	0.025	0.248	0.025	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.025
1.917	27.879	23.000	0.025	0.253	0.025	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.025
2.000	29.091	24.000	0.026	0.259	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.026
2.083	30.303	25.000	0.026	0.264	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.026
2.167	31.515	26.000	0.027	0.270	0.027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.027
2.250	32.727	27.000	0.027	0.275	0.027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.027
2.333	33.939	28.000	0.028	0.280	0.028	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.028
2.417	35.152	29.000	0.029	0.285	0.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.029
2.500	36.364	30.000	0.029	0.290	0.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.029
2.583	37.576	31.000	0.029	0.295	0.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.029
2.667	38.788	32.000	0.030	0.300	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030
2.750	40.000	33.000	0.030	0.304	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030
2.833	41.212	34.000	0.031	0.309	0.031	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.031
2.917	42.424	35.000	0.031	0.314	0.031	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.031
3.000	43.636	36.000	0.032	0.318	0.032	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.032
3.083	44.848	37.000	0.032	0.323	0.032	0.000	0.000	0.000	0.000	0.025	0.000	0.000	0.057
3.167	46.061	38.000	0.033	0.327	0.033	0.000	0.000	0.000	0.000	0.066	0.000	0.000	0.099
3.250	47.273	39.000	0.033	0.331	0.033	0.000	0.000	0.000	0.000	0.088	0.000	0.000	0.121
3.333	48.485	40.000	0.034	0.335	0.034	0.000	0.000	0.000	0.000	0.106	0.000	0.000	0.140
3.417	49.697	41.000	0.034	0.340	0.034	0.000	0.000	0.000	0.000	0.121	0.000	0.000	0.155
3.500	50.909	42.000	0.034	0.344	0.034	0.000	0.000	0.000	0.000	0.135	0.000	0.000	0.169
3.583	52.121	43.000	0.035	0.348	0.035	0.000	0.000	0.000	0.000	0.147	0.000	0.000	0.182
3.667	53.333	44.000	0.035	0.352	0.035	0.000	0.000	0.000	0.000	0.159	0.000	0.000	0.194
3.750	54.545	45.000	0.036	0.356	0.036	0.000	0.000	0.000	0.000	0.169	0.000	0.000	0.205
3.833	55.758	46.000	0.036	0.360	0.036	0.000	0.000	0.000	0.000	0.179	0.000	0.000	0.215
3.917	56.970	47.000	0.036	0.364	0.036	0.000	0.000	0.000	0.000	0.189	0.000	0.000	0.225
4.000	58.182	48.000	0.037	0.368	0.037	0.000	0.000	0.000	0.000	0.197	0.000	0.000	0.234
4.083	59.394	49.000	0.037	0.372	0.037	0.000	0.000	0.000	0.000	0.206	0.000	0.000	0.243
4.167	60.606	50.000	0.038	0.375	0.038	0.000	0.000	0.000	0.000	0.214	0.000	0.000	0.252
4.250	61.818	51.000	0.038	0.379	0.038	0.000	0.000	0.000	0.000	0.222	0.000	0.000	0.260
4.333	63.030	52.000	0.038	0.383	0.038	0.000	0.000	0.000	0.000	0.230	0.000	0.000	0.268
4.417	64.242	53.000	0.039	0.387	0.039	0.000	0.000	0.000	0.000	0.237	0.000	0.000	0.276
4.500	65.455	54.000	0.039	0.390	0.039	0.000	0.000	0.000	0.000	0.245	0.000	0.000	0.284
4.583	66.667	55.000	0.039	0.394	0.039	0.000	0.000	0.000	0.000	0.252	0.000	0.000	0.291
4.667	67.879	56.000	0.040	0.398	0.040	0.000	0.000	0.000	0.000	0.258	0.000	0.000	0.298

4.750	69.091	57.000	0.040	0.401	0.040	0.000	0.000	0.000	0.000	0.265	0.000	0.000	0.305
4.833	70.303	58.000	0.040	0.405	0.040	0.000	0.000	0.000	0.000	0.271	0.000	0.000	0.312
4.917	71.515	59.000	0.041	0.408	0.041	0.000	0.000	0.000	0.000	0.278	0.000	0.000	0.319
5.000	72.727	60.000	0.041	0.412	0.041	0.000	0.000	0.000	0.000	0.284	0.000	0.000	0.325
5.083	73.939	61.000	0.042	0.415	0.042	0.000	0.000	0.000	0.000	0.290	0.000	0.000	0.331
5.167	75.152	62.000	0.042	0.418	0.042	0.000	0.000	0.000	0.000	0.296	0.000	0.000	0.338
5.250	76.364	63.000	0.042	0.422	0.042	0.000	0.000	0.000	0.000	0.302	0.000	0.000	0.344
5.333	77.576	64.000	0.043	0.425	0.043	0.000	0.000	0.000	0.000	0.307	0.000	0.000	0.350
5.417	78.788	65.000	0.043	0.429	0.043	0.000	0.000	0.000	0.000	0.313	0.000	0.000	0.356
5.500	80.000	66.000	0.043	0.432	0.043	0.000	0.000	0.000	0.000	0.318	0.000	0.000	0.362
5.583	81.212	67.000	0.044	0.435	0.044	0.000	0.000	0.000	0.000	0.324	0.000	0.298	0.666
5.667	82.424	68.000	0.044	0.438	0.044	0.000	0.000	0.000	0.000	0.329	0.000	0.844	1.217
5.750	83.636	69.000	0.044	0.442	0.044	0.000	0.000	0.000	0.000	0.334	0.000	1.550	1.929
5.833	84.848	70.000	0.044	0.445	0.044	0.000	0.000	0.000	0.000	0.340	0.000	2.386	2.770
5.917	86.061	71.000	0.045	0.448	0.045	0.000	0.000	0.000	0.000	0.345	0.000	3.160	3.549
6.000	87.273	72.000	0.045	0.451	0.045	0.000	0.000	0.000	0.000	0.350	0.000	3.461	3.856

[TITLE]

```

[OPTIONS]
FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          00:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   00:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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      0.06  0.08  0.11  .16  .18  .21  .21  .2  .16  .12  .08  .06
DRY_ONLY     NO
    
```

[RAINGAGES]

```

;; Name      Rain Type   Time Intrvl  Snow Catch  Data Source
-----
SanViente   INTENSITY 1:00      1.0         TIMESERIES SanViente
    
```

[SUBCATCHMENTS]

```

;; Name      Raingage      Outlet      Total Area  Pcnt. Imperv  Width  Pcnt. Slope  Curb Length  Snow Pack
-----
DMA-15-D    SanViente      POC-15      0.93        0             181    19.34        0
    
```

[SUBAREAS]

```

;; Subcatchment N-Imperv  N-Perv   S-Imperv  S-Perv   PctZero  RouteTo  PctRouted
-----
DMA-15-D       0.012    0.05    0.05     0.10    25       OUTLET
    
```

[INFILTRATION]

```

;; Subcatchment Suction  HydCon   IMDmax
-----
DMA-15-D       9         0.025    0.33
    
```

[OUTFALLS]

```

;; Name      Invert Elev.  Outfall Type  Stage/Table Time Series  Tide Gate
-----
POC-15      0         FREE                NO
    
```

[TIMESERIES]

```

;; Name      Date      Time      Value
-----
From County SanViente  FILE "P:\Acad\7033 Hunsaker San Diego\03 Fani ta Ranch\REC SWMM\rainfall_sanviente.dat"
    
```

[REPORT]

```

INPUT          NO
CONTROLS       NO
SUBCATCHMENTS ALL
NODES          ALL
LINKS          ALL
    
```

[TAGS]

```

[MAP]
DIMENSIONS 1559.250 4990.000 1740.750 5210.000
Units      None
    
```

[COORDINATES]

```

;; Node      X-Coord      Y-Coord
-----
POC-15      1650.000     5000.000
    
```

[VERTICES]

```
:: Link          X-Coord          Y-Coord  
::-----
```

[Polygons]

```
:: Subcatchment X-Coord          Y-Coord  
::-----
```

```
DMA-15-D        1650.000          5100.000
```

[SYMBOLS]

```
:: Gage          X-Coord          Y-Coord  
::-----
```

```
SanViente       1650.000          5200.000
```

Fani ta Ranch POC15 PR

[TITLE]

[OPTIONS]  
 FLOW\_UNITS CFS  
 INFILTRATION GREEN\_AMPT  
 FLOW\_ROUTING KINWAVE  
 START\_DATE 01/03/1973  
 START\_TIME 05:00:00  
 REPORT\_START\_DATE 05/24/1973  
 REPORT\_START\_TIME 05:00:00  
 END\_DATE 05/23/2008  
 END\_TIME 23:00:00  
 SWEEP\_START 01/01  
 SWEEP\_END 12/31  
 DRY\_DAYS 0  
 REPORT\_STEP 01:00:00  
 WET\_STEP 00:15:00  
 DRY\_STEP 04:00:00  
 ROUTING\_STEP 0:01:00  
 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 0.06 0.08 0.110 0.16 0.18 0.21 0.21 0.2 0.16 0.12 0.08 0.06  
 DRY\_ONLY NO

[RAINGAGES]

:: Name Rain Type Time Intrvl Snow Catch Data Source  
 -----  
 SanVicente INTENSITY 1:00 1.0 TIMESERIES SanVicente

[SUBCATCHMENTS]

Name	Raingage	Outlet	Total Area	Pcnt. Imperv	Width	Pcnt. Slope	Curb Length	Snow Pack
DMA-15D-CUT	SanVicente	VAULT-15	0.37	0	136	67	0	
DMA-15D-FILL	SanVicente	POC15PR	0.11	0	21	50	0	
DMA-15D-ROAD	SanVicente	VAULT-15	0.78	85	286	24	0	

[SUBAREAS]

Subcatchment	N-Imperv	N-Perv	S-Imperv	S-Perv	PctZero	RouteTo	PctRouted
DMA-15D-CUT	0.012	0.05	0.05	0.1	25	OUTLET	
DMA-15D-FILL	0.012	0.05	0.05	0.1	25	OUTLET	
DMA-15D-ROAD	0.012	0.05	0.05	0.1	25	OUTLET	

[INFILTRATION]

Subcatchment	Suction	HydCon	IMDmax
DMA-15D-CUT	9	0.01875	0.33
DMA-15D-FILL	9	0.01875	0.33
DMA-15D-ROAD	9	0.01875	0.33

[OUTFALLS]

Name	Invert Elev.	Outfall Type	Stage/Table Time Series	Tide Gate
POC15PR	0	FREE		NO

[STORAGE]

Name Parameters	Invert Elev.	Max. Depth	Init. Depth	Storage Curve	Curve Params	Ponded Area	Evap. Frac.	Infiltration
VAULT-15	0	6	0	TABULAR	VAULT-16	700	0	

[OUTLETS]

Name	Inlet Node	Outlet Node	Outflow Height	Outlet Type	Qcoeff/QTable	Qexpon	Flap Gate
VAULT-15	VAULT-15	POC15PR	0	TABULAR/DEPTH	OUT-15		NO

[CURVES]

Name	Type	X-Value	Y-Value
OUT-15	Rating	0.000	0.000
OUT-15		0.083	0.004

Fani ta Ranch POC15 PR

OUT-15	0.167	0.007
OUT-15	0.250	0.009
OUT-15	0.333	0.010
OUT-15	0.417	0.011
OUT-15	0.500	0.013
OUT-15	0.583	0.014
OUT-15	0.667	0.015
OUT-15	0.750	0.016
OUT-15	0.833	0.017
OUT-15	0.917	0.017
OUT-15	1.000	0.018
OUT-15	1.083	0.019
OUT-15	1.167	0.020
OUT-15	1.250	0.020
OUT-15	1.333	0.021
OUT-15	1.417	0.022
OUT-15	1.500	0.022
OUT-15	1.583	0.023
OUT-15	1.667	0.024
OUT-15	1.750	0.024
OUT-15	1.833	0.025
OUT-15	1.917	0.025
OUT-15	2.000	0.026
OUT-15	2.083	0.026
OUT-15	2.167	0.027
OUT-15	2.250	0.027
OUT-15	2.333	0.028
OUT-15	2.417	0.029
OUT-15	2.500	0.029
OUT-15	2.583	0.029
OUT-15	2.667	0.030
OUT-15	2.750	0.030
OUT-15	2.833	0.031
OUT-15	2.917	0.031
OUT-15	3.000	0.032
OUT-15	3.083	0.057
OUT-15	3.167	0.099
OUT-15	3.250	0.121
OUT-15	3.333	0.140
OUT-15	3.417	0.155
OUT-15	3.500	0.169
OUT-15	3.583	0.182
OUT-15	3.667	0.194
OUT-15	3.750	0.205
OUT-15	3.833	0.215
OUT-15	3.917	0.225
OUT-15	4.000	0.234
OUT-15	4.083	0.243
OUT-15	4.167	0.252
OUT-15	4.250	0.260
OUT-15	4.333	0.268
OUT-15	4.417	0.276
OUT-15	4.500	0.284
OUT-15	4.583	0.291
OUT-15	4.667	0.298
OUT-15	4.750	0.305
OUT-15	4.833	0.312
OUT-15	4.917	0.319
OUT-15	5.000	0.325
OUT-15	5.083	0.331
OUT-15	5.167	0.338
OUT-15	5.250	0.344
OUT-15	5.333	0.350
OUT-15	5.417	0.356
OUT-15	5.500	0.362
OUT-15	5.583	0.666
OUT-15	5.667	1.217
OUT-15	5.750	1.929
OUT-15	5.833	2.770
OUT-15	5.917	3.549
OUT-15	6.000	3.856

VAULT-16	Storage	0	700
VAULT-16		6	700

[TIMESERIES]

Name	Date	Time	Value
-----			
San Vicente Rain Gage from San Diego County			
SanVicente	FILE "P:\Acad\7033 Hunsaker	San Diego\03 Fani ta Ranch\REC SWMM\rainfal I_sanvi cente. dat"	

[REPORT]

INPUT NO  
 CONTROLS NO  
 SUBCATCHMENTS ALL  
 NODES ALL  
 LINKS ALL

[TAGS]

Fani ta Ranch POC15 PR

[MAP]  
DI MENS IONS 780.000 3962.500 1220.000 4787.500  
Uni ts None

[COORDI NATES]  
;; Node X-Coord Y-Coord  
-----  
POC15PR 950.000 4000.000  
VAULT-15 950.000 4250.000

[VERTI CES]  
;; Li nk X-Coord Y-Coord  
-----

[Pol ygons]  
;; Subcatchment X-Coord Y-Coord  
-----  
DMA-15D-CUT 800.000 4500.000  
DMA-15D-FI LL 1200.000 4000.000  
DMA-15D-ROAD 1100.000 4500.000

[SYMBOLS]  
;; Gage X-Coord Y-Coord  
-----  
SanVi cente 950.000 4750.000

## POC 16

Flow Duration Curve (Pass-Fail) Results

List of the “n” largest Peaks: Pre-Development and Post-Development Conditions  
Elevation vs. Area Curves and Elevations vs. Discharge Curves to be used in SWMM  
SWMM Input Data (Existing and Proposed Models)

### Flow Duration Curve Data for Fanita Ranch POC-16 , Santee, CA

Q2 = 0.397 cfs Fraction 10 %  
 Q10 = 0.56 cfs  
 Step = 0.0053 cfs  
 Count = 306816 hours  
 35.00 years

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
1	0.040	646	2.11E-01	676	2.20E-01	105%	Pass
2	0.045	595	1.94E-01	608	1.98E-01	102%	Pass
3	0.050	537	1.75E-01	528	1.72E-01	98%	Pass
4	0.056	518	1.69E-01	473	1.54E-01	91%	Pass
5	0.061	500	1.63E-01	414	1.35E-01	83%	Pass
6	0.066	457	1.49E-01	365	1.19E-01	80%	Pass
7	0.071	429	1.40E-01	326	1.06E-01	76%	Pass
8	0.077	416	1.36E-01	298	9.71E-02	72%	Pass
9	0.082	405	1.32E-01	275	8.96E-02	68%	Pass
10	0.087	387	1.26E-01	245	7.99E-02	63%	Pass
11	0.093	376	1.23E-01	224	7.30E-02	60%	Pass
12	0.098	354	1.15E-01	208	6.78E-02	59%	Pass
13	0.103	330	1.08E-01	192	6.26E-02	58%	Pass
14	0.108	312	1.02E-01	178	5.80E-02	57%	Pass
15	0.114	294	9.58E-02	171	5.57E-02	58%	Pass
16	0.119	270	8.80E-02	165	5.38E-02	61%	Pass
17	0.124	240	7.82E-02	154	5.02E-02	64%	Pass
18	0.129	219	7.14E-02	140	4.56E-02	64%	Pass
19	0.135	202	6.58E-02	135	4.40E-02	67%	Pass
20	0.140	188	6.13E-02	122	3.98E-02	65%	Pass
21	0.145	181	5.90E-02	119	3.88E-02	66%	Pass
22	0.151	176	5.74E-02	112	3.65E-02	64%	Pass
23	0.156	167	5.44E-02	107	3.49E-02	64%	Pass
24	0.161	164	5.35E-02	98	3.19E-02	60%	Pass
25	0.166	155	5.05E-02	89	2.90E-02	57%	Pass
26	0.172	150	4.89E-02	80	2.61E-02	53%	Pass
27	0.177	142	4.63E-02	74	2.41E-02	52%	Pass
28	0.182	134	4.37E-02	68	2.22E-02	51%	Pass
29	0.188	129	4.20E-02	66	2.15E-02	51%	Pass
30	0.193	121	3.94E-02	64	2.09E-02	53%	Pass
31	0.198	114	3.72E-02	56	1.83E-02	49%	Pass
32	0.203	108	3.52E-02	54	1.76E-02	50%	Pass
33	0.209	104	3.39E-02	52	1.69E-02	50%	Pass
34	0.214	98	3.19E-02	47	1.53E-02	48%	Pass
35	0.219	85	2.77E-02	46	1.50E-02	54%	Pass
36	0.225	76	2.48E-02	45	1.47E-02	59%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
37	0.230	69	2.25E-02	42	1.37E-02	61%	Pass
38	0.235	62	2.02E-02	39	1.27E-02	63%	Pass
39	0.240	59	1.92E-02	37	1.21E-02	63%	Pass
40	0.246	56	1.83E-02	36	1.17E-02	64%	Pass
41	0.251	50	1.63E-02	33	1.08E-02	66%	Pass
42	0.256	50	1.63E-02	31	1.01E-02	62%	Pass
43	0.262	48	1.56E-02	28	9.13E-03	58%	Pass
44	0.267	45	1.47E-02	26	8.47E-03	58%	Pass
45	0.272	43	1.40E-02	26	8.47E-03	60%	Pass
46	0.277	43	1.40E-02	25	8.15E-03	58%	Pass
47	0.283	43	1.40E-02	22	7.17E-03	51%	Pass
48	0.288	41	1.34E-02	21	6.84E-03	51%	Pass
49	0.293	40	1.30E-02	18	5.87E-03	45%	Pass
50	0.299	37	1.21E-02	15	4.89E-03	41%	Pass
51	0.304	36	1.17E-02	13	4.24E-03	36%	Pass
52	0.309	33	1.08E-02	13	4.24E-03	39%	Pass
53	0.314	30	9.78E-03	12	3.91E-03	40%	Pass
54	0.320	29	9.45E-03	12	3.91E-03	41%	Pass
55	0.325	28	9.13E-03	11	3.59E-03	39%	Pass
56	0.330	26	8.47E-03	9	2.93E-03	35%	Pass
57	0.335	24	7.82E-03	9	2.93E-03	38%	Pass
58	0.341	24	7.82E-03	7	2.28E-03	29%	Pass
59	0.346	24	7.82E-03	7	2.28E-03	29%	Pass
60	0.351	22	7.17E-03	6	1.96E-03	27%	Pass
61	0.357	21	6.84E-03	6	1.96E-03	29%	Pass
62	0.362	20	6.52E-03	6	1.96E-03	30%	Pass
63	0.367	20	6.52E-03	6	1.96E-03	30%	Pass
64	0.372	20	6.52E-03	6	1.96E-03	30%	Pass
65	0.378	20	6.52E-03	6	1.96E-03	30%	Pass
66	0.383	20	6.52E-03	6	1.96E-03	30%	Pass
67	0.388	20	6.52E-03	6	1.96E-03	30%	Pass
68	0.394	20	6.52E-03	5	1.63E-03	25%	Pass
69	0.399	16	5.21E-03	5	1.63E-03	31%	Pass
70	0.404	15	4.89E-03	5	1.63E-03	33%	Pass
71	0.409	15	4.89E-03	4	1.30E-03	27%	Pass
72	0.415	15	4.89E-03	4	1.30E-03	27%	Pass
73	0.420	15	4.89E-03	3	9.78E-04	20%	Pass
74	0.425	15	4.89E-03	3	9.78E-04	20%	Pass
75	0.431	15	4.89E-03	3	9.78E-04	20%	Pass
76	0.436	15	4.89E-03	3	9.78E-04	20%	Pass
77	0.441	13	4.24E-03	3	9.78E-04	23%	Pass
78	0.446	12	3.91E-03	3	9.78E-04	25%	Pass
79	0.452	12	3.91E-03	3	9.78E-04	25%	Pass
80	0.457	12	3.91E-03	3	9.78E-04	25%	Pass
81	0.462	11	3.59E-03	3	9.78E-04	27%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
82	0.468	10	3.26E-03	3	9.78E-04	30%	Pass
83	0.473	10	3.26E-03	3	9.78E-04	30%	Pass
84	0.478	10	3.26E-03	3	9.78E-04	30%	Pass
85	0.483	9	2.93E-03	3	9.78E-04	33%	Pass
86	0.489	9	2.93E-03	3	9.78E-04	33%	Pass
87	0.494	9	2.93E-03	3	9.78E-04	33%	Pass
88	0.499	8	2.61E-03	3	9.78E-04	38%	Pass
89	0.505	7	2.28E-03	3	9.78E-04	43%	Pass
90	0.510	7	2.28E-03	3	9.78E-04	43%	Pass
91	0.515	7	2.28E-03	2	6.52E-04	29%	Pass
92	0.520	7	2.28E-03	2	6.52E-04	29%	Pass
93	0.526	7	2.28E-03	2	6.52E-04	29%	Pass
94	0.531	5	1.63E-03	2	6.52E-04	40%	Pass
95	0.536	5	1.63E-03	2	6.52E-04	40%	Pass
96	0.541	5	1.63E-03	2	6.52E-04	40%	Pass
97	0.547	4	1.30E-03	2	6.52E-04	50%	Pass
98	0.552	4	1.30E-03	2	6.52E-04	50%	Pass
99	0.557	3	9.78E-04	2	6.52E-04	67%	Pass
100	0.563	3	9.78E-04	2	6.52E-04	67%	Pass

**Peak Flows calculated with Cunnane Plotting Position**

Return Period (years)	Pre-dev. Q (cfs)	Post-Dev. Q (cfs)	Reduction (cfs)
10	0.563	0.415	0.147
9	0.545	0.402	0.143
8	0.532	0.393	0.139
7	0.527	0.370	0.156
6	0.519	0.346	0.173
5	0.499	0.333	0.165
4	0.476	0.310	0.166
3	0.445	0.291	0.154
2	0.397	0.248	0.149

**List of Peak events and Determination of P2 and P10 (Pre-Development)**

**Fanita Ranch POC 16 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>0.56</b>	<b>0.59</b>					
<b>9</b>	<b>0.55</b>	<b>0.56</b>	0.286	1/9/1980	35	1.03	1.02
<b>8</b>	<b>0.53</b>	<b>0.54</b>	0.287	2/25/2003	34	1.06	1.05
<b>7</b>	<b>0.53</b>	<b>0.53</b>	0.295	2/15/1986	33	1.09	1.08
<b>6</b>	<b>0.52</b>	<b>0.53</b>	0.296	12/28/1977	32	1.13	1.11
<b>5</b>	<b>0.50</b>	<b>0.50</b>	0.300	2/12/2003	31	1.16	1.15
<b>4</b>	<b>0.48</b>	<b>0.48</b>	0.307	2/16/1980	30	1.20	1.19
<b>3</b>	<b>0.44</b>	<b>0.45</b>	0.312	2/18/1980	29	1.24	1.23
<b>2</b>	<b>0.40</b>	<b>0.40</b>	0.312	1/13/1993	28	1.29	1.28
			0.314	3/4/1978	27	1.33	1.32
			0.321	1/18/1993	26	1.38	1.38
			0.325	12/4/1974	25	1.44	1.43
			0.333	10/10/1986	24	1.50	1.49
			0.333	4/18/1995	23	1.57	1.56
			0.351	8/17/1977	22	1.64	1.63
			0.351	2/21/2005	21	1.71	1.71
			0.352	2/15/1992	20	1.80	1.80
			0.361	3/2/1983	19	1.89	1.89
			0.397	3/1/1983	18	2.00	2.00
			0.397	10/27/2004	17	2.12	2.12
			0.398	1/31/1979	16	2.25	2.26
			0.399	3/6/1975	15	2.40	2.41
			0.436	2/13/1998	14	2.57	2.59
			0.437	10/18/2004	13	2.77	2.79
			0.446	10/20/2004	12	3.00	3.03
			0.461	2/19/1993	11	3.27	3.32
			0.464	2/2/1998	10	3.60	3.67
			0.479	1/29/1980	9	4.00	4.09
			0.494	2/6/1992	8	4.50	4.63
			0.503	1/9/2005	7	5.14	5.33
			0.526	2/7/1998	6	6.00	6.29
			0.527	10/31/1987	5	7.20	7.65
			0.556	9/10/1976	4	9.00	9.78
			0.668	10/22/1976	3	12.00	13.54
			0.771	2/20/1980	2	18.00	22.00
			0.830	1/4/1978	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

**List of Peak events and Determination of P2 and P10 (Post-Development)  
Fanita Ranch POC 16 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>0.42</b>	<b>0.44</b>					
9	0.40	0.41	0.172	1/18/1993	35	1.03	1.02
8	0.39	0.40	0.179	3/1/1978	34	1.06	1.05
7	0.37	0.38	0.179	2/19/1993	33	1.09	1.08
6	0.35	0.35	0.179	2/2/1998	32	1.13	1.11
5	0.33	0.34	0.189	1/7/1993	31	1.16	1.15
4	0.31	0.31	0.193	2/6/1992	30	1.20	1.19
3	0.29	0.29	0.194	1/16/1993	29	1.24	1.23
2	0.25	0.25	0.195	10/19/2004	28	1.29	1.28
			0.198	10/31/1987	27	1.33	1.32
			0.203	9/10/1976	26	1.38	1.38
			0.205	11/25/1985	25	1.44	1.43
			0.206	12/4/1974	24	1.50	1.49
			0.214	2/19/1980	23	1.57	1.56
			0.216	3/1/1991	22	1.64	1.63
			0.235	1/11/2005	21	1.71	1.71
			0.242	2/8/1976	20	1.80	1.80
			0.246	2/23/2005	19	1.89	1.89
			0.248	1/15/1978	18	2.00	2.00
			0.251	1/11/1980	17	2.12	2.12
			0.260	1/29/1980	16	2.25	2.26
			0.278	2/15/1986	15	2.40	2.41
			0.285	12/29/2004	14	2.57	2.59
			0.289	3/5/1995	13	2.77	2.79
			0.291	1/4/1978	12	3.00	3.03
			0.291	10/27/2004	11	3.27	3.32
			0.295	2/18/1980	10	3.60	3.67
			0.314	2/21/2005	9	4.00	4.09
			0.327	2/7/1998	8	4.50	4.63
			0.339	10/20/2004	7	5.14	5.33
			0.349	3/2/1983	6	6.00	6.29
			0.390	1/29/1980	5	7.20	7.65
			0.409	1/9/2005	4	9.00	9.78
			0.515	1/31/1979	3	12.00	13.54
			0.892	10/22/1976	2	18.00	22.00
			0.960	2/20/1980	1	36.00	58.67

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

Vault 16	
Stage	Area (sq.ft.)
0	800
6	800

## Outlet structure for Discharge of Basin 16

### Discharge vs Elevation Table

Low orifice	0.625 "	Lower slot		Lower Weir	
Number of orif:	1	Number of slots:	1	Number of weirs:	0
Cg-low:	0.62	Invert:	4.00 ft	Invert:	0.00
		B	0.333 ft	B:	0.00
Middle orifice	1 "	$h_{slot}$	0.125 ft		
Number of orif:	0	Upper slot		Emergency weir	
Cg-middle:	0.62	Number of slots:	0	Invert:	5.500 ft
invert elev:	0.000 ft	Invert:	0.00 ft	W:	4.00 ft
		B:	0.00 ft		
		$h_{slot}$	0.000 ft		

h* (ft)	H/D-low -	H/D-mid -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qslot-low (cfs)	Qslot-upp (cfs)	Qweir (cfs)	Qemerg (cfs)	Qtot (cfs)
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.083	1.600	1.000	0.003	0.003	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003
0.167	3.200	2.000	0.004	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004
0.250	4.800	3.000	0.005	0.022	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
0.333	6.400	4.000	0.006	0.059	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006
0.417	8.000	5.000	0.007	0.066	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007
0.500	9.600	6.000	0.007	0.073	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007
0.583	11.200	7.000	0.008	0.079	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008
0.667	12.800	8.000	0.008	0.085	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008
0.750	14.400	9.000	0.009	0.090	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009
0.833	16.000	10.000	0.010	0.095	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
0.917	17.600	11.000	0.010	0.100	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
1.000	19.200	12.000	0.010	0.105	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
1.083	20.800	13.000	0.011	0.109	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011
1.167	22.400	14.000	0.011	0.113	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011
1.250	24.000	15.000	0.012	0.117	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012
1.333	25.600	16.000	0.012	0.121	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012
1.417	27.200	17.000	0.013	0.125	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.013
1.500	28.800	18.000	0.013	0.129	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.013
1.583	30.400	19.000	0.013	0.132	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.013
1.667	32.000	20.000	0.014	0.136	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.014
1.750	33.600	21.000	0.014	0.139	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.014
1.833	35.200	22.000	0.014	0.143	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.014
1.917	36.800	23.000	0.015	0.146	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015
2.000	38.400	24.000	0.015	0.149	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015
2.083	40.000	25.000	0.015	0.152	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015
2.167	41.600	26.000	0.016	0.155	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.016
2.250	43.200	27.000	0.016	0.158	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.016
2.333	44.800	28.000	0.016	0.161	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.016
2.417	46.400	29.000	0.016	0.164	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.016
2.500	48.000	30.000	0.017	0.167	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017
2.583	49.600	31.000	0.017	0.170	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017
2.667	51.200	32.000	0.017	0.172	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017
2.750	52.800	33.000	0.017	0.175	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017
2.833	54.400	34.000	0.018	0.178	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018
2.917	56.000	35.000	0.018	0.180	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018
3.000	57.600	36.000	0.018	0.183	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018
3.083	59.200	37.000	0.019	0.185	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.019
3.167	60.800	38.000	0.019	0.188	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.019
3.250	62.400	39.000	0.019	0.190	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.019
3.333	64.000	40.000	0.019	0.193	0.019	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.019
3.417	65.600	41.000	0.020	0.195	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020
3.500	67.200	42.000	0.020	0.198	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020
3.583	68.800	43.000	0.020	0.200	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020
3.667	70.400	44.000	0.020	0.202	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020
3.750	72.000	45.000	0.020	0.205	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020
3.833	73.600	46.000	0.021	0.207	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.021
3.917	75.200	47.000	0.021	0.209	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.021
4.000	76.800	48.000	0.021	0.211	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.021
4.083	78.400	49.000	0.021	0.214	0.021	0.000	0.000	0.000	0.025	0.000	0.000	0.000	0.046
4.167	80.000	50.000	0.022	0.216	0.022	0.000	0.000	0.000	0.066	0.000	0.000	0.000	0.087

4.250	81.600	51.000	0.022	0.218	0.022	0.000	0.000	0.000	0.088	0.000	0.000	0.000	0.110
4.333	83.200	52.000	0.022	0.220	0.022	0.000	0.000	0.000	0.106	0.000	0.000	0.000	0.128
4.417	84.800	53.000	0.022	0.222	0.022	0.000	0.000	0.000	0.121	0.000	0.000	0.000	0.144
4.500	86.400	54.000	0.022	0.224	0.022	0.000	0.000	0.000	0.135	0.000	0.000	0.000	0.157
4.583	88.000	55.000	0.023	0.226	0.023	0.000	0.000	0.000	0.147	0.000	0.000	0.000	0.170
4.667	89.600	56.000	0.023	0.228	0.023	0.000	0.000	0.000	0.159	0.000	0.000	0.000	0.181
4.750	91.200	57.000	0.023	0.230	0.023	0.000	0.000	0.000	0.169	0.000	0.000	0.000	0.192
4.833	92.800	58.000	0.023	0.232	0.023	0.000	0.000	0.000	0.179	0.000	0.000	0.000	0.202
4.917	94.400	59.000	0.023	0.234	0.023	0.000	0.000	0.000	0.189	0.000	0.000	0.000	0.212
5.000	96.000	60.000	0.024	0.236	0.024	0.000	0.000	0.000	0.197	0.000	0.000	0.000	0.221
5.083	97.600	61.000	0.024	0.238	0.024	0.000	0.000	0.000	0.206	0.000	0.000	0.000	0.230
5.167	99.200	62.000	0.024	0.240	0.024	0.000	0.000	0.000	0.214	0.000	0.000	0.000	0.238
5.250	100.800	63.000	0.024	0.242	0.024	0.000	0.000	0.000	0.222	0.000	0.000	0.000	0.246
5.333	102.400	64.000	0.024	0.244	0.024	0.000	0.000	0.000	0.230	0.000	0.000	0.000	0.254
5.417	104.000	65.000	0.025	0.246	0.025	0.000	0.000	0.000	0.237	0.000	0.000	0.000	0.262
5.500	105.600	66.000	0.025	0.248	0.025	0.000	0.000	0.000	0.245	0.000	0.000	0.000	0.269
5.583	107.200	67.000	0.025	0.250	0.025	0.000	0.000	0.000	0.252	0.000	0.000	0.298	0.575
5.667	108.800	68.000	0.025	0.252	0.025	0.000	0.000	0.000	0.258	0.000	0.000	0.844	1.127
5.750	110.400	69.000	0.025	0.254	0.025	0.000	0.000	0.000	0.265	0.000	0.000	1.550	1.840
5.833	112.000	70.000	0.026	0.255	0.026	0.000	0.000	0.000	0.271	0.000	0.000	2.386	2.683
5.917	113.600	71.000	0.026	0.257	0.026	0.000	0.000	0.000	0.278	0.000	0.000	3.160	3.463
6.000	115.200	72.000	0.026	0.259	0.026	0.000	0.000	0.000	0.284	0.000	0.000	3.461	3.771

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING       KINWAVE
START_DATE         01/03/1973
START_TIME         00:00:00
REPORT_START_DATE  05/24/1973
REPORT_START_TIME  00:00:00
END_DATE           05/23/2008
END_TIME           23:00:00
SWEEP_START        01/01
SWEEP_END          12/31
DRY_DAYS           0
REPORT_STEP        01:00:00
WET_STEP           00:15:00
DRY_STEP           04:00:00
ROUTING_STEP       0:01:00
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]

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; Type Parameters
-----
MONTHLY 0.06 0.08 0.11 .16 .18 .21 .21 .2 .16 .12 .08 .06
DRY_ONLY NO
    
```

[RAINGAGES]

```

; Name Rain Type Time Intrvl Snow Catch Data Source
-----
SanVicente INTENSITY 1:00 1.0 TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

Name	Raingage	Outlet	Total Area	Pcnt. Imperv	Width	Pcnt. Slope	Curb Length	Snow Pack
DMA-16-C	SanVicente	POC-16	0.15	0	29	31.33	0	
DMA-16-D	SanVicente	POC-16	0.75	0	146	31.33	0	

[SUBAREAS]

Subcatchment	N-Imperv	N-Perv	S-Imperv	S-Perv	PctZero	RouteTo	PctRouted
DMA-16-C	0.012	0.05	0.05	0.10	25	OUTLET	
DMA-16-D	0.012	0.05	0.05	0.10	25	OUTLET	

[INFILTRATION]

Subcatchment	Suction	HydCon	IMDmax
DMA-16-C	6	0.10	0.32
DMA-16-D	9	0.025	0.33

[OUTFALLS]

Name	Invert Elev.	Outfall Type	Stage/Table Time Series	Tide Gate
POC-16	0	FREE		NO

[TIMESERIES]

```

; Name Date Time Value
-----
From County
SanVicente FILE "P:\Acad\7033 Hunsaker San Diego\03 Fani ta Ranch\REC SWMM\rainfall_sanvicente.dat"
    
```

[REPORT]

```

INPUT NO
CONTROLS NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL
    
```

[TAGS]

[MAP]

```

DIMENSIONS 1422.337 5064.960 1851.924 5667.703
Units None
    
```

[COORDINATES]

```

; Node X-Coord Y-Coord
-----
    
```

Fani ta Ranch POC16 EX

POC-16            1634.380            5092.358

[VERTICES]

:: Link            X-Coord            Y-Coord  
::-----

[Polygons]

:: Subcatchment   X-Coord            Y-Coord  
::-----

DMA-16-C           1441.864            5455.390  
DMA-16-D           1832.398            5450.989

[SYMBOLS]

:: Gage            X-Coord            Y-Coord  
::-----

SanVicente        1651.201            5640.306

Fanita Ranch POC16 PR

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          05:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   05:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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      0.06  0.08  0.110  0.16  0.18  0.21  0.21  0.2  0.16  0.12  0.08  0.06
DRY_ONLY     NO
    
```

[RAINGAGES]

```

:: Name      Rain Type   Time Intrvl  Snow Catch  Data Source
-----
SanVicente  INTENSITY 1:00    1.0    TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

:: Name      Raingage      Outlet      Total Area  Pcnt. Imperv  Width  Pcnt. Slope  Curb Length  Snow Pack
-----
DMA-16C-Road SanVicente  VAULT-16    0.14    85    51    40    0
DMA-16D-SLOPE SanVicente  POC16PR     0.23    0    45    58    0
DMA-16D-ROAD  SanVicente  VAULT-16    0.64    85    235   40    0
DMA-16C-SLOPE SanVicente  POC16PR     0.07    0    14    58    0
    
```

[SUBAREAS]

```

:: Subcatchment  N-Imperv  N-Perv  S-Imperv  S-Perv  PctZero  RouteTo  PctRouted
-----
DMA-16C-Road    0.012    0.05    0.05    0.1    25    OUTLET
DMA-16D-SLOPE  0.012    0.05    0.05    0.1    25    OUTLET
DMA-16D-ROAD    0.012    0.05    0.05    0.1    25    OUTLET
DMA-16C-SLOPE  0.012    0.05    0.05    0.1    25    OUTLET
    
```

[INFILTRATION]

```

:: Subcatchment  Suction  HydCon  IMDmax
-----
DMA-16C-Road    6        0.075  0.32
DMA-16D-SLOPE  9        0.01875 0.33
DMA-16D-ROAD    9        0.01875 0.33
DMA-16C-SLOPE  6        0.075  0.32
    
```

[OUTFALLS]

```

:: Name      Invert Elev.  Outfall Type  Stage/Table Time Series  Tide Gate
-----
POC16PR     0      FREE      NO
    
```

[STORAGE]

```

:: Name      Invert Elev.  Max. Depth  Init. Depth  Storage Curve  Curve Params  Ponded Area  Evap. Frac.  Infiltration
-----
VAULT-16    0      6      0      TABULAR  VAULT-16      800  0
    
```

[OUTLETS]

```

:: Name      Inlet Node      Outlet Node      Outflow Height  Outlet Type      Qcoeff/QTable  Qexpon  Flap Gate
-----
VAULT-16    VAULT-16    POC16PR          0      TABULAR/DEPTH    OUT-16      NO
    
```

[CURVES]

```

:: Name      Type      X-Value  Y-Value
    
```

OUT-16	Rati ng	0.000	0.000
OUT-16		0.083	0.003
OUT-16		0.167	0.004
OUT-16		0.250	0.005
OUT-16		0.333	0.006
OUT-16		0.417	0.007
OUT-16		0.500	0.007
OUT-16		0.583	0.008
OUT-16		0.667	0.008
OUT-16		0.750	0.009
OUT-16		0.833	0.010
OUT-16		0.917	0.010
OUT-16		1.000	0.010
OUT-16		1.083	0.011
OUT-16		1.167	0.011
OUT-16		1.250	0.012
OUT-16		1.333	0.012
OUT-16		1.417	0.013
OUT-16		1.500	0.013
OUT-16		1.583	0.013
OUT-16		1.667	0.014
OUT-16		1.750	0.014
OUT-16		1.833	0.014
OUT-16		1.917	0.015
OUT-16		2.000	0.015
OUT-16		2.083	0.015
OUT-16		2.167	0.016
OUT-16		2.250	0.016
OUT-16		2.333	0.016
OUT-16		2.417	0.016
OUT-16		2.500	0.017
OUT-16		2.583	0.017
OUT-16		2.667	0.017
OUT-16		2.750	0.017
OUT-16		2.833	0.018
OUT-16		2.917	0.018
OUT-16		3.000	0.018
OUT-16		3.083	0.019
OUT-16		3.167	0.019
OUT-16		3.250	0.019
OUT-16		3.333	0.019
OUT-16		3.417	0.020
OUT-16		3.500	0.020
OUT-16		3.583	0.020
OUT-16		3.667	0.020
OUT-16		3.750	0.020
OUT-16		3.833	0.021
OUT-16		3.917	0.021
OUT-16		4.000	0.021
OUT-16		4.083	0.046
OUT-16		4.167	0.087
OUT-16		4.250	0.110
OUT-16		4.333	0.128
OUT-16		4.417	0.144
OUT-16		4.500	0.157
OUT-16		4.583	0.170
OUT-16		4.667	0.181
OUT-16		4.750	0.192
OUT-16		4.833	0.202
OUT-16		4.917	0.212
OUT-16		5.000	0.221
OUT-16		5.083	0.230
OUT-16		5.167	0.238
OUT-16		5.250	0.246
OUT-16		5.333	0.254
OUT-16		5.417	0.262
OUT-16		5.500	0.269
OUT-16		5.583	0.575
OUT-16		5.667	1.127
OUT-16		5.750	1.840
OUT-16		5.833	2.683
OUT-16		5.917	3.463
OUT-16		6.000	3.771

VAULT-16	Storage	0	800
VAULT-16		6	800

[TIMESERIES]

;; Name Date Time Value

San Vicente Rain Gage from San Diego County  
 SanVicente FILE "P:\Acad\7033 Hunsaker San Diego\03 Fani ta Ranch\REC SWMM\rainfal I\_sanvicente.dat"

[REPORT]  
 INPUT NO  
 CONTROLS NO  
 SUBCATCHMENTS ALL  
 NODES ALL

LI NKS ALL

[TAGS]

[MAP]

DI MENS IONS 414.268 3830.807 1582.494 5299.070  
 Uni ts None

[COORDI NATES]

:: Node	X-Coord	Y-Coord
POC16PR	954.831	3981.677
VAULT-16	955.609	4426.511

[VERTI CES]

:: Li nk	X-Coord	Y-Coord
----------	---------	---------

[Pol ygons]

:: Subcatchment	X-Coord	Y-Coord
DMA-16C-Road	600.986	4890.009
DMA-16D-SLOPE	1244.906	4420.290
DMA-16D-ROAD	1319.564	4896.231
DMA-16C-SLOPE	652.313	4420.290

[SYMBOLS]

:: Gage	X-Coord	Y-Coord
SanVi cente	912.218	5104.320

## POC 17

Flow Duration Curve (Pass-Fail) Results

List of the “n” largest Peaks: Pre-Development and Post-Development Conditions  
Elevation vs. Area Curves and Elevations vs. Discharge Curves to be used in SWMM  
SWMM Input Data (Existing and Proposed Models)



Interval	Existing Condition			Detention Basin Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
37	111.093	76	1.52E-02	27	5.40E-03	36%	Pass
38	113.641	69	1.38E-02	25	5.00E-03	36%	Pass
39	116.188	66	1.32E-02	24	4.80E-03	36%	Pass
40	118.735	61	1.22E-02	21	4.20E-03	34%	Pass
41	121.282	57	1.14E-02	20	4.00E-03	35%	Pass
42	123.830	53	1.06E-02	19	3.80E-03	36%	Pass
43	126.377	52	1.04E-02	19	3.80E-03	37%	Pass
44	128.924	50	1.00E-02	16	3.20E-03	32%	Pass
45	131.471	47	9.41E-03	16	3.20E-03	34%	Pass
46	134.019	45	9.01E-03	15	3.00E-03	33%	Pass
47	136.566	44	8.81E-03	13	2.60E-03	30%	Pass
48	139.113	43	8.61E-03	12	2.40E-03	28%	Pass
49	141.660	42	8.41E-03	11	2.20E-03	26%	Pass
50	144.208	41	8.21E-03	11	2.20E-03	27%	Pass
51	146.755	39	7.81E-03	9	1.80E-03	23%	Pass
52	149.302	36	7.20E-03	9	1.80E-03	25%	Pass
53	151.849	32	6.40E-03	9	1.80E-03	28%	Pass
54	154.397	31	6.20E-03	9	1.80E-03	29%	Pass
55	156.944	28	5.60E-03	7	1.40E-03	25%	Pass
56	159.491	27	5.40E-03	5	1.00E-03	19%	Pass
57	162.038	26	5.20E-03	5	1.00E-03	19%	Pass
58	164.586	25	5.00E-03	3	6.00E-04	12%	Pass
59	167.133	24	4.80E-03	3	6.00E-04	13%	Pass
60	169.680	23	4.60E-03	3	6.00E-04	13%	Pass
61	172.227	21	4.20E-03	3	6.00E-04	14%	Pass
62	174.775	21	4.20E-03	3	6.00E-04	14%	Pass
63	177.322	20	4.00E-03	3	6.00E-04	15%	Pass
64	179.869	20	4.00E-03	3	6.00E-04	15%	Pass
65	182.416	20	4.00E-03	3	6.00E-04	15%	Pass
66	184.964	20	4.00E-03	3	6.00E-04	15%	Pass
67	187.511	20	4.00E-03	3	6.00E-04	15%	Pass
68	190.058	20	4.00E-03	3	6.00E-04	15%	Pass
69	192.606	19	3.80E-03	3	6.00E-04	16%	Pass
70	195.153	17	3.40E-03	3	6.00E-04	18%	Pass
71	197.700	17	3.40E-03	3	6.00E-04	18%	Pass
72	200.247	17	3.40E-03	3	6.00E-04	18%	Pass
73	202.795	16	3.20E-03	3	6.00E-04	19%	Pass
74	205.342	15	3.00E-03	3	6.00E-04	20%	Pass
75	207.889	14	2.80E-03	3	6.00E-04	21%	Pass
76	210.436	14	2.80E-03	2	4.00E-04	14%	Pass
77	212.984	13	2.60E-03	2	4.00E-04	15%	Pass
78	215.531	13	2.60E-03	2	4.00E-04	15%	Pass
79	218.078	12	2.40E-03	2	4.00E-04	17%	Pass
80	220.625	12	2.40E-03	2	4.00E-04	17%	Pass
81	223.173	12	2.40E-03	2	4.00E-04	17%	Pass

Interval	Existing Condition			Detention Basin Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
82	225.720	12	2.40E-03	2	4.00E-04	17%	Pass
83	228.267	11	2.20E-03	2	4.00E-04	18%	Pass
84	230.814	11	2.20E-03	2	4.00E-04	18%	Pass
85	233.362	10	2.00E-03	2	4.00E-04	20%	Pass
86	235.909	9	1.80E-03	2	4.00E-04	22%	Pass
87	238.456	9	1.80E-03	1	2.00E-04	11%	Pass
88	241.003	9	1.80E-03	1	2.00E-04	11%	Pass
89	243.551	9	1.80E-03	1	2.00E-04	11%	Pass
90	246.098	9	1.80E-03	0	0.00E+00	0%	Pass
91	248.645	7	1.40E-03	0	0.00E+00	0%	Pass
92	251.192	7	1.40E-03	0	0.00E+00	0%	Pass
93	253.740	7	1.40E-03	0	0.00E+00	0%	Pass
94	256.287	7	1.40E-03	0	0.00E+00	0%	Pass
95	258.834	5	1.00E-03	0	0.00E+00	0%	Pass
96	261.381	5	1.00E-03	0	0.00E+00	0%	Pass
97	263.929	5	1.00E-03	0	0.00E+00	0%	Pass
98	266.476	5	1.00E-03	0	0.00E+00	0%	Pass
99	269.023	4	8.01E-04	0	0.00E+00	0%	Pass
100	271.571	4	8.01E-04	0	0.00E+00	0%	Pass

Peak Flows calculated with Cunnane Plotting Position

Return Period	Pre-dev. Q	Post-Dev. Q	Reduction
10	271.571	165.865	105.706
9	263.958	162.975	100.983
8	259.159	162.712	96.447
7	257.270	160.902	96.369
6	254.420	157.904	96.516
5	247.741	155.082	92.660
4	234.201	145.567	88.634
3	215.102	135.477	79.625
2	193.920	118.280	75.640

List of Peak events and Determination of P2 and P10 (Pre-Development)

T	Cunnane	Weibull	Peaks	Date	Position	Period of Return	
						Weibull	Cunnane
10	271.57	289.58	145.3	3/16/1954	35	1.03	1.02
9	263.96	267.69	145.81	2/11/1959	34	1.06	1.05
8	259.16	262.02	148.35	12/2/1961	33	1.09	1.08
7	257.27	257.41	148.68	1/21/1964	32	1.13	1.11
6	254.42	248.05	150.37	11/16/1965	31	1.16	1.15
5	247.74	234.67	151.41	11/17/1972	30	1.20	1.19
4	234.20	215.66	151.49	3/20/1973	29	1.24	1.23
3	215.10	193.92	154.29	1/6/1977	28	1.29	1.28
2	193.92	155.24	155.24	1/14/1978	27	1.33	1.32
		155.82	155.82	3/11/1978	26	1.38	1.38
		161.38	161.38	11/25/1985	25	1.44	1.43
		163.33	163.33	1/18/1952	24	1.50	1.49
		166.33	166.33	12/18/1967	23	1.57	1.56
		167.24	167.24	1/14/1969	22	1.64	1.63
		170.97	170.97	2/6/1969	21	1.71	1.71
		172.14	172.14	2/17/1971	20	1.80	1.80
		175.92	175.92	2/8/1976	19	1.89	1.89
		193.92	193.92	12/31/1976	18	2.00	2.00
		194.87	194.87	5/8/1977	17	2.12	2.12
		202.66	202.66	1/6/1979	16	2.25	2.26
		203.28	203.28	3/1/1981	15	2.40	2.41
		207.13	207.13	3/17/1982	14	2.57	2.59
		211.76	211.76	3/24/1983	13	2.77	2.79
		215.66	215.66	11/25/1983	12	3.00	3.03
		226.17	226.17	1/18/1993	11	3.27	3.32
		232.52	232.52	3/11/1995	10	3.60	3.67
		234.67	234.67	12/28/2004	9	4.00	4.09
		247.09	247.09	2/21/2005	8	4.50	4.63
		248.33	248.33	2/21/2005	7	5.14	5.33
		257.03	257.03	2/3/1958	6	6.00	6.29
		257.49	257.49	3/6/1975	5	7.20	7.65
		267.69	267.69	2/25/1981	4	9.00	9.78
		333.36	333.36	3/1/1983	3	12.00	13.54
		377.71	377.71	11/17/1986	2	18.00	22.00
		407.37	407.37	12/4/1987	1	36.00	58.67

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

List of Peak events and Determination of P2 and P10 (Post-Development)

T	Cunnane	Weibull				Period of Return	
10	165.86	178.32	Peaks	Date	Position	Weibull	Cunnane
9	162.98	163.18	88.32	1/13/1952	35	1.03	1.02
8	162.71	162.87	89.52	1/18/1952	34	1.06	1.05
7	160.90	162.02	89.54	1/18/1952	33	1.09	1.08
6	157.90	159.02	89.88	12/20/1952	32	1.13	1.11
5	155.08	155.20	91.97	1/10/1955	31	1.16	1.15
4	145.57	145.63	92.21	1/7/1957	30	1.20	1.19
3	135.48	136.13	93.48	1/20/1962	29	1.24	1.23
2	118.28	118.28	94.68	4/8/1965	28	1.29	1.28
			94.78	3/22/1954	27	1.33	1.32
			96.39	12/5/1957	26	1.38	1.38
			98.58	1/12/1960	25	1.44	1.43
			99.27	12/2/1961	24	1.50	1.49
			100.23	11/20/1963	23	1.57	1.56
			102.15	12/5/1966	22	1.64	1.63
			105.61	1/14/1969	21	1.71	1.71
			114.83	12/21/2002	20	1.80	1.80
			117	2/14/2003	19	1.89	1.89
			118.28	2/22/2004	18	2.00	2.00
			121.19	3/7/1952	17	2.12	2.12
			127.66	3/16/1958	16	2.25	2.26
			128.57	3/1/1981	15	2.40	2.41
			128.67	3/17/1982	14	2.57	2.59
			131.57	2/2/1983	13	2.77	2.79
			136.13	3/1/1983	12	3.00	3.03
			137.83	11/25/1985	11	3.27	3.32
			145.34	3/1/1991	10	3.60	3.67
			145.63	2/19/1993	9	4.00	4.09
			154.84	3/11/1995	8	4.50	4.63
			155.3	3/11/1995	7	5.14	5.33
			159.02	2/3/1998	6	6.00	6.29
			162.62	2/8/1998	5	7.20	7.65
			163.18	2/12/2003	4	9.00	9.78
			208.61	3/5/2005	3	12.00	13.54
			238.08	12/30/1951	2	18.00	22.00
			246.03	3/16/1952	1	36.00	58.67

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

Ofiste Basin POC17 Stage- Area	
Stage	Area
0	875
10	5704

Basin #17 Discharge

Discharge vs Elevation Table

Low orifice height:	7.5 "	Top orifice:	8 "
Low orifice width:	72 "		
Number:	0	Number:	0
Cg-low:	0.61	Cg-low:	0.61
invert elev*:	0.00 ft	invert elev*:	0.00 ft
Middle orifice:	3 "	Emergency inlet:	
number of orif:	1	Rim height*:	4.00 ft
Cg-middle:	0.61	Xsect. Area	16.00 sq ft
invert elev*:	0.00 ft	Circumference	16.00 ft

<--- 4' x 4'

WQ Ponding Depth = 0 inches

\*- Invert Elevations above and h below are relative to Bottom of Basin

Qdiversion for ponding depth= 0.00 feet  
0.000 cfs

h* (ft)	H/D-low	H/D-mid	H/D-top	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qtop-orif (cfs)	Qtop-weir (cfs)	Qtot-top (cfs)	Qemerg (cfs)	Qotriser (cfs)	Qtot (cfs)	Basin h (actual)
0.0	0.00	0.00	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
0.1	0.16	0.40	0.15	0.000	0.000	0.000	0.000	0.016	0.016	0.000	0.000	0.000	0.000	0.000	0.016	0.10
0.2	0.32	0.80	0.30	0.000	0.000	0.000	0.066	0.056	0.056	0.000	0.000	0.000	0.000	0.000	0.056	0.20
0.3	0.48	1.20	0.45	0.000	0.000	0.000	0.101	0.108	0.101	0.000	0.000	0.000	0.000	0.000	0.101	0.30
0.4	0.64	1.60	0.60	0.000	0.000	0.000	0.126	0.158	0.126	0.000	0.000	0.000	0.000	0.000	0.126	0.40
0.5	0.80	2.00	0.75	0.000	0.000	0.000	0.147	0.195	0.147	0.000	0.000	0.000	0.000	0.000	0.147	0.50
0.6	0.96	2.40	0.90	0.000	0.000	0.000	0.166	0.215	0.166	0.000	0.000	0.000	0.000	0.000	0.166	0.60
0.7	1.12	2.80	1.05	0.000	0.000	0.000	0.182	0.220	0.182	0.000	0.000	0.000	0.000	0.000	0.182	0.70
0.8	1.28	3.20	1.20	0.000	0.000	0.000	0.197	0.224	0.197	0.000	0.000	0.000	0.000	0.000	0.197	0.80
0.9	1.44	3.60	1.35	0.000	0.000	0.000	0.212	0.258	0.212	0.000	0.000	0.000	0.000	0.000	0.212	0.90
1.0	1.60	4.00	1.50	0.000	0.000	0.000	0.225	0.369	0.225	0.000	0.000	0.000	0.000	0.000	0.225	1.00
1.1	1.76	4.40	1.65	0.000	0.000	0.000	0.237	0.624	0.237	0.000	0.000	0.000	0.000	0.000	0.237	1.10
1.2	1.92	4.80	1.80	0.000	0.000	0.000	0.249	1.117	0.249	0.000	0.000	0.000	0.000	0.000	0.249	1.20
1.3	2.08	5.20	1.95	0.000	0.000	0.000	0.260	1.965	0.260	0.000	0.000	0.000	0.000	0.000	0.260	1.30
1.4	2.24	5.60	2.10	0.000	0.000	0.000	0.271	3.318	0.271	0.000	0.000	0.000	0.000	0.000	0.271	1.40
1.5	2.40	6.00	2.25	0.000	0.000	0.000	0.282	5.359	0.282	0.000	0.000	0.000	0.000	0.000	0.282	1.50
1.6	2.56	6.40	2.40	0.000	0.000	0.000	0.292	8.305	0.292	0.000	0.000	0.000	0.000	0.000	0.292	1.60
1.7	2.72	6.80	2.55	0.000	0.000	0.000	0.302	12.416	0.302	0.000	0.000	0.000	0.000	0.000	0.302	1.70
1.8	2.88	7.20	2.70	0.000	0.000	0.000	0.311	17.990	0.311	0.000	0.000	0.000	0.000	0.000	0.311	1.80
1.9	3.04	7.60	2.85	0.000	0.000	0.000	0.320	25.375	0.320	0.000	0.000	0.000	0.000	0.000	0.320	1.90
2.0	3.20	8.00	3.00	0.000	0.000	0.000	0.329	34.963	0.329	0.000	0.000	0.000	0.000	0.000	0.329	2.00
2.1	3.36	8.40	3.15	0.000	0.000	0.000	0.338	47.201	0.338	0.000	0.000	0.000	0.000	0.000	0.338	2.10
2.2	3.52	8.80	3.30	0.000	0.000	0.000	0.346	62.590	0.346	0.000	0.000	0.000	0.000	0.000	0.346	2.20
2.3	3.68	9.20	3.45	0.000	0.000	0.000	0.354	81.687	0.354	0.000	0.000	0.000	0.000	0.000	0.354	2.30
2.4	3.84	9.60	3.60	0.000	0.000	0.000	0.362	105.112	0.362	0.000	0.000	0.000	0.000	0.000	0.362	2.40
2.5	4.00	10.00	3.75	0.000	0.000	0.000	0.370	133.548	0.370	0.000	0.000	0.000	0.000	0.000	0.370	2.50
2.6	4.16	10.40	3.90	0.000	0.000	0.000	0.378	167.745	0.378	0.000	0.000	0.000	0.000	0.000	0.378	2.60
2.7	4.32	10.80	4.05	0.000	0.000	0.000	0.386	208.523	0.386	0.000	0.000	0.000	0.000	0.000	0.386	2.70
2.8	4.48	11.20	4.20	0.000	0.000	0.000	0.393	256.775	0.393	0.000	0.000	0.000	0.000	0.000	0.393	2.80
2.9	4.64	11.60	4.35	0.000	0.000	0.000	0.400	313.470	0.400	0.000	0.000	0.000	0.000	0.000	0.400	2.90
3.0	4.80	12.00	4.50	0.000	0.000	0.000	0.407	379.658	0.407	0.000	0.000	0.000	0.000	0.000	0.407	3.00
3.1	4.96	12.40	4.65	0.000	0.000	0.000	0.414	456.469	0.414	0.000	0.000	0.000	0.000	0.000	0.414	3.10
3.2	5.12	12.80	4.80	0.000	0.000	0.000	0.421	545.119	0.421	0.000	0.000	0.000	0.000	0.000	0.421	3.20
3.3	5.28	13.20	4.95	0.000	0.000	0.000	0.428	646.915	0.428	0.000	0.000	0.000	0.000	0.000	0.428	3.30
3.4	5.44	13.60	5.10	0.000	0.000	0.000	0.435	763.251	0.435	0.000	0.000	0.000	0.000	0.000	0.435	3.40
3.5	5.60	14.00	5.25	0.000	0.000	0.000	0.441	895.620	0.441	0.000	0.000	0.000	0.000	0.000	0.441	3.50
3.6	5.76	14.40	5.40	0.000	0.000	0.000	0.448	1045.610	0.448	0.000	0.000	0.000	0.000	0.000	0.448	3.60
3.7	5.92	14.80	5.55	0.000	0.000	0.000	0.454	1214.911	0.454	0.000	0.000	0.000	0.000	0.000	0.454	3.70
3.8	6.08	15.20	5.70	0.000	0.000	0.000	0.461	1405.316	0.461	0.000	0.000	0.000	0.000	0.000	0.461	3.80
3.9	6.24	15.60	5.85	0.000	0.000	0.000	0.467	1618.727	0.467	0.000	0.000	0.000	0.000	0.000	0.467	3.90
4.0	6.40	16.00	6.00	0.000	0.000	0.000	0.473	1857.153	0.473	0.000	0.000	0.000	0.000	0.000	0.473	4.00
4.1	6.56	16.40	6.15	0.000	0.000	0.000	0.479	2122.719	0.479	0.000	0.000	0.000	1.568	2.048	2.048	4.10
4.2	6.72	16.80	6.30	0.000	0.000	0.000	0.485	2417.664	0.485	0.000	0.000	0.000	4.436	4.921	4.921	4.20
4.3	6.88	17.20	6.45	0.000	0.000	0.000	0.491	2744.347	0.491	0.000	0.000	0.000	8.150	8.641	8.641	4.30
4.4	7.04	17.60	6.60	0.000	0.000	0.000	0.497	3105.250	0.497	0.000	0.000	0.000	12.548	13.045	13.045	4.40
4.5	7.20	18.00	6.75	0.000	0.000	0.000	0.503	3502.979	0.503	0.000	0.000	0.000	17.536	18.039	18.039	4.50
4.6	7.36	18.40	6.90	0.000	0.000	0.000	0.508	3940.271	0.508	0.000	0.000	0.000	23.052	23.560	23.560	4.60
4.7	7.52	18.80	7.05	0.000	0.000	0.000	0.514	4419.990	0.514	0.000	0.000	0.000	29.049	29.563	29.563	4.70
4.8	7.68	19.20	7.20	0.000	0.000	0.000	0.520	4945.140	0.520	0.000	0.000	0.000	35.491	36.010	36.010	4.80
4.9	7.84	19.60	7.35	0.000	0.000	0.000	0.525	5518.859	0.525	0.000	0.000	0.000	42.349	42.874	42.874	4.90
5.0	8.00	20.00	7.50	0.000	0.000	0.000	0.531	6144.428	0.531	0.000	0.000	0.000	49.600	50.131	50.131	5.00
5.1	8.16	20.40	7.65	0.000	0.000	0.000	0.536	6825.269	0.536	0.000	0.000	0.000	57.223	57.759	57.759	5.10
5.2	8.32	20.80	7.80	0.000	0.000	0.000	0.541	7564.954	0.541	0.000	0.000	0.000	65.201	65.742	65.742	5.20
5.3	8.48	21.20	7.95	0.000	0.000	0.000	0.547	8367.202	0.547	0.000	0.000	0.000	73.519	74.065	74.065	5.30
5.4	8.64	21.60	8.10	0.000	0.000	0.000	0.552	9235.889	0.552	0.000	0.000	0.000	82.163	82.714	82.714	5.40
5.5	8.80	22.00	8.25	0.000	0.000	0.000	0.557	10175.044	0.557	0.000	0.000	0.000	91.121	91.678	91.678	5.50
5.6	8.96	22.40	8.40	0.000	0.000	0.000	0.562	11188.856	0.562	0.000	0.000	0.000	99.072	99.635	99.635	5.60
5.7	9.12	22.80	8.55	0.000	0.000	0.000	0.567	12281.676	0.567	0.000	0.000	0.000	102.122	102.689	102.689	5.70
5.8	9.28	23.20	8.70	0.000	0.000	0.000	0.572	13458.022	0.572	0.000	0.000	0.000	105.082	105.655	105.655	5.80
5.9	9.44	23.60	8.85	0.000	0.000	0.000	0.577	14722.577	0.577	0.000	0.000	0.000	107.962	108.539	108.539	5.90
6.0	9.60	24.00	9.00	0.000	0.000	0.000	0.582	16080.200	0.582	0.000	0.000	0.000	110.766	111.349	111.349	6.00
6.1	9.76	24.40	9.15	0.000	0.000	0.000	0.587	17535.921	0.587	0.000	0.000	0.000	113.502	114.089	114.089	6.10
6.2	9.92	24.80	9.30	0.000	0.000	0.000	0.592	19094.950	0.592	0.000	0.000	0.000	116.173	116.765	116.765	6.20
6.3	10.08	25.20	9.45	0.000	0.000	0.000	0.597	20762.676	0.597	0.000	0.000	0.000	118.784	119.381	119.381	6.30
6.4	10.24	25.60	9.60	0.000	0.000	0.000	0.602	22544.672	0.602	0.000	0.000	0.000	121.338	121.940	121.940	6.40
6.5	10.40	26.00	9.75	0.000	0.000	0.000	0.607	24446.699	0.607	0.000	0.000	0.000	123.841	124.447	124.447	6.50
6.6																

7.2	11.52	28.80	10.80	0.000	0.000	0.000	0.639	41646.303	0.639	0.000	0.000	0.000	140.110	140.749	140.749	7.20
7.3	11.68	29.20	10.95	0.000	0.000	0.000	0.644	44739.395	0.644	0.000	0.000	0.000	142.282	142.926	142.926	7.30
7.4	11.84	29.60	11.10	0.000	0.000	0.000	0.648	48013.280	0.648	0.000	0.000	0.000	144.422	145.070	145.070	7.40
7.5	12.00	30.00	11.25	0.000	0.000	0.000	0.653	51475.755	0.653	0.000	0.000	0.000	146.530	147.183	147.183	7.50
7.6	12.16	30.40	11.40	0.000	0.000	0.000	0.657	55134.840	0.657	0.000	0.000	0.000	148.609	149.266	149.266	7.60
7.7	12.32	30.80	11.55	0.000	0.000	0.000	0.661	58998.778	0.661	0.000	0.000	0.000	150.658	151.320	151.320	7.70
7.8	12.48	31.20	11.70	0.000	0.000	0.000	0.666	63076.038	0.666	0.000	0.000	0.000	152.681	153.347	153.347	7.80
7.9	12.64	31.60	11.85	0.000	0.000	0.000	0.670	67375.320	0.670	0.000	0.000	0.000	154.677	155.347	155.347	7.90
8.0	12.80	32.00	12.00	0.000	0.000	0.000	0.674	71905.557	0.674	0.000	0.000	0.000	156.647	157.322	157.322	8.00
8.1	12.96	32.40	12.15	0.000	0.000	0.000	0.679	76675.918	0.679	0.000	0.000	0.000	158.593	159.272	159.272	8.10
8.2	13.12	32.80	12.30	0.000	0.000	0.000	0.683	81695.810	0.683	0.000	0.000	0.000	160.516	161.198	161.198	8.20
8.3	13.28	33.20	12.45	0.000	0.000	0.000	0.687	86974.885	0.687	0.000	0.000	0.000	162.415	163.102	163.102	8.30
8.4	13.44	33.60	12.60	0.000	0.000	0.000	0.691	92523.036	0.691	0.000	0.000	0.000	164.293	164.984	164.984	8.40
8.5	13.60	34.00	12.75	0.000	0.000	0.000	0.695	98350.409	0.695	0.000	0.000	0.000	166.149	166.845	166.845	8.50
8.6	13.76	34.40	12.90	0.000	0.000	0.000	0.700	104467.398	0.700	0.000	0.000	0.000	167.985	168.685	168.685	8.60
8.7	13.92	34.80	13.05	0.000	0.000	0.000	0.704	110884.653	0.704	0.000	0.000	0.000	169.802	170.505	170.505	8.70
8.8	14.08	35.20	13.20	0.000	0.000	0.000	0.708	117613.082	0.708	0.000	0.000	0.000	171.598	172.306	172.306	8.80
8.9	14.24	35.60	13.35	0.000	0.000	0.000	0.712	124663.853	0.712	0.000	0.000	0.000	173.377	174.089	174.089	8.90
9.0	14.40	36.00	13.50	0.000	0.000	0.000	0.716	132048.398	0.716	0.000	0.000	0.000	175.137	175.853	175.853	9.00
9.1	14.56	36.40	13.65	0.000	0.000	0.000	0.720	139778.416	0.720	0.000	0.000	0.000	176.880	177.600	177.600	9.10
9.2	14.72	36.80	13.80	0.000	0.000	0.000	0.724	147865.875	0.724	0.000	0.000	0.000	178.605	179.329	179.329	9.20
9.3	14.88	37.20	13.95	0.000	0.000	0.000	0.728	156323.016	0.728	0.000	0.000	0.000	180.315	181.042	181.042	9.30
9.4	15.04	37.60	14.10	0.000	0.000	0.000	0.732	165162.359	0.732	0.000	0.000	0.000	182.008	182.739	182.739	9.40
9.5	15.20	38.00	14.25	0.000	0.000	0.000	0.736	174396.698	0.736	0.000	0.000	0.000	183.685	184.421	184.421	9.50
9.6	15.36	38.40	14.40	0.000	0.000	0.000	0.740	184039.113	0.740	0.000	0.000	0.000	185.348	186.087	186.087	9.60
9.7	15.52	38.80	14.55	0.000	0.000	0.000	0.744	194102.969	0.744	0.000	0.000	0.000	186.995	187.739	187.739	9.70
9.8	15.68	39.20	14.70	0.000	0.000	0.000	0.747	204601.919	0.747	0.000	0.000	0.000	188.628	189.376	189.376	9.80
9.9	15.84	39.60	14.85	0.000	0.000	0.000	0.751	215549.905	0.751	0.000	0.000	0.000	190.247	190.999	190.999	9.90
10.0	16.00	40.00	15.00	0.000	0.000	0.000	0.755	226961.167	0.755	0.000	0.000	0.000	191.853	192.608	192.608	10.00

### Outlet structure for Discharge of Detention Basin 6

Low orifice: **1** " Lower slot  
 Number: 0 Invert: 0.00 ft Emergency Weir  
 Cg-low: 0.62 B 5.00 ft Invert: 3.583 ft  
 Middle orifice: **1** " h 0.167 ft B: 36 ft  
 number of orif: 0 Upper slot  
 Cg-middle: 0.62 Invert: 2.50 ft  
 invert elev: 0.75 ft B: 7.00 ft  
 h 0.500 ft

LID 2.378 cfs  
 H 3 ft

h (ft)	H/D-low	H/D-mid	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qslot-low (cfs)	Qslot-upp (cfs)	Qemer (cfs)	Qtot (cfs)
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.083	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.372	0.000	0.000	0.372
0.167	2.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.054	0.000	0.000	1.054
0.250	3.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.665	0.000	0.000	1.665
0.333	4.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.039	0.000	0.000	2.039
0.417	5.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.355	0.000	0.000	2.355
0.500	6.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.633	0.000	0.000	2.633
0.583	7.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.884	0.000	0.000	2.884
0.667	8.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.115	0.000	0.000	3.115
0.750	9.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.331	0.000	0.000	3.331
0.833	10.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	3.533	0.000	0.000	3.533
0.917	11.000	2.000	0.000	0.000	0.000	0.000	0.000	0.000	3.724	0.000	0.000	3.724
1.000	12.000	3.000	0.000	0.000	0.000	0.000	0.000	0.000	3.905	0.000	0.000	3.905
1.083	13.000	4.000	0.000	0.000	0.000	0.000	0.000	0.000	4.079	0.000	0.000	4.079
1.167	14.000	5.000	0.000	0.000	0.000	0.000	0.000	0.000	4.246	0.000	0.000	4.246
1.250	15.000	6.000	0.000	0.000	0.000	0.000	0.000	0.000	4.406	0.000	0.000	4.406
1.333	16.000	7.000	0.000	0.000	0.000	0.000	0.000	0.000	4.561	0.000	0.000	4.561
1.417	17.000	8.000	0.000	0.000	0.000	0.000	0.000	0.000	4.710	0.000	0.000	4.710
1.500	18.000	9.000	0.000	0.000	0.000	0.000	0.000	0.000	4.855	0.000	0.000	4.855
1.583	19.000	10.000	0.000	0.000	0.000	0.000	0.000	0.000	4.996	0.000	0.000	4.996
1.667	20.000	11.000	0.000	0.000	0.000	0.000	0.000	0.000	5.133	0.000	0.000	5.133
1.750	21.000	12.000	0.000	0.000	0.000	0.000	0.000	0.000	5.266	0.000	0.000	5.266
1.833	22.000	13.000	0.000	0.000	0.000	0.000	0.000	0.000	5.396	0.000	0.000	5.396
1.917	23.000	14.000	0.000	0.000	0.000	0.000	0.000	0.000	5.523	0.000	0.000	5.523
2.000	24.000	15.000	0.000	0.000	0.000	0.000	0.000	0.000	5.647	0.000	0.000	5.647
2.083	25.000	16.000	0.000	0.000	0.000	0.000	0.000	0.000	5.769	0.000	0.000	5.769
2.167	26.000	17.000	0.000	0.000	0.000	0.000	0.000	0.000	5.888	0.000	0.000	5.888
2.250	27.000	18.000	0.000	0.000	0.000	0.000	0.000	0.000	6.005	0.000	0.000	6.005
2.333	28.000	19.000	0.000	0.000	0.000	0.000	0.000	0.000	6.119	0.000	0.000	6.119
2.417	29.000	20.000	0.000	0.000	0.000	0.000	0.000	0.000	6.231	0.000	0.000	6.231
2.500	30.000	21.000	0.000	0.000	0.000	0.000	0.000	0.000	6.341	0.000	0.000	6.341
2.583	31.000	22.000	0.000	0.000	0.000	0.000	0.000	0.000	6.450	0.522	0.000	6.972
2.667	32.000	23.000	0.000	0.000	0.000	0.000	0.000	0.000	6.557	1.476	0.000	8.033
2.750	33.000	24.000	0.000	0.000	0.000	0.000	0.000	0.000	6.661	2.713	0.000	9.374
2.833	34.000	25.000	0.000	0.000	0.000	0.000	0.000	0.000	6.765	4.176	0.000	10.941
2.917	35.000	26.000	0.000	0.000	0.000	0.000	0.000	0.000	6.866	5.836	0.000	12.703
3.000	36.000	27.000	0.000	0.000	0.000	0.000	0.000	0.000	6.967	7.672	0.000	14.639
3.083	37.000	28.000	0.000	0.000	0.000	0.000	0.000	0.000	7.066	9.668	0.000	16.733
3.167	38.000	29.000	0.000	0.000	0.000	0.000	0.000	0.000	7.163	11.059	0.000	18.222
3.250	39.000	30.000	0.000	0.000	0.000	0.000	0.000	0.000	7.259	12.115	0.000	19.374
3.333	40.000	31.000	0.000	0.000	0.000	0.000	0.000	0.000	7.354	13.086	0.000	20.440
3.417	41.000	32.000	0.000	0.000	0.000	0.000	0.000	0.000	7.448	13.989	0.000	21.437
3.500	42.000	33.000	0.000	0.000	0.000	0.000	0.000	0.000	7.540	14.838	0.000	22.378
3.583	43.000	34.000	0.000	0.000	0.000	0.000	0.000	0.000	7.632	15.640	0.001	23.273
3.667	44.000	35.000	0.000	0.000	0.000	0.000	0.000	0.000	7.722	16.404	2.701	26.827
3.750	45.000	36.000	0.000	0.000	0.000	0.000	0.000	0.000	7.811	17.133	7.616	32.561
3.833	46.000	37.000	0.000	0.000	0.000	0.000	0.000	0.000	7.900	17.833	13.978	39.710
3.917	47.000	38.000	0.000	0.000	0.000	0.000	0.000	0.000	7.987	18.506	21.510	48.003
4.000	48.000	39.000	0.000	0.000	0.000	0.000	0.000	0.000	8.073	19.156	30.052	57.280
4.083	49.000	40.000	0.000	0.000	0.000	0.000	0.000	0.000	8.159	19.784	39.496	67.438
4.167	50.000	41.000	0.000	0.000	0.000	0.000	0.000	0.000	8.243	20.393	49.764	78.399
4.250	51.000	42.000	0.000	0.000	0.000	0.000	0.000	0.000	8.327	20.984	60.793	90.104
4.333	52.000	43.000	0.000	0.000	0.000	0.000	0.000	0.000	8.410	21.559	72.535	102.503

# Fanita Ranch POC 17 EX

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION       GREEN_AMPT
FLOW_ROUTING       KINWAVE
START_DATE         01/03/1973
START_TIME         00:00:00
REPORT_START_DATE  05/24/1973
REPORT_START_TIME  00:00:00
END_DATE           05/23/2008
END_TIME           23:00:00
SWEEP_START        01/01
SWEEP_END          12/31
DRY_DAYS           0
REPORT_STEP        01:00:00
WET_STEP           00:15:00
DRY_STEP           04:00:00
ROUTING_STEP       0:01:00
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      0.06   0.08   0.11   .16   .18   .21   .21   .2   .16   .12   .08   .06
DRY_ONLY     NO
    
```

[RAINGAGES]

```

;;
;;Name      Rain      Time      Snow      Data
;;Type      Intrvl  Catch     Source
;;-----
SanVicente  INTENSITY 1:00    1.0      TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

;;
;;Name      Raingage      Outlet      Total      Pcnt.      Pcnt.      Curb      Snow
;;Type      Area          Imperv      Width      Slope      Length      Pack
;;-----
POC17ExArea-D  SanVicente  POC17Ex    423.84    0          82422     5.7      0
POC17ExArea-A  SanVicente  POC17Ex    17.26     0          3356      1.1      0
    
```

[SUBAREAS]

```

;;Subcatchment  N-Imperv  N-Perv      S-Imperv  S-Perv      PctZero  RouteTo  PctRouted
;;-----
POC17ExArea-D  0.012     0.05        0.05      0.10        25        OUTLET
POC17ExArea-A  0.012     0.05        0.05      .10          25        OUTLET
    
```

[INFILTRATION]

```

;;Subcatchment  Suction  HydCon      IMDmax
;;-----
POC17ExArea-D  9         0.025       0.33
POC17ExArea-A  1.5       .30         .30
    
```

[OUTFALLS]

```

;;
;;Name      Invert      Outfall      Stage/Table      Tide
;;Elev.     Type        Time Series     Gate
;;-----
POC17Ex     0           FREE         NO
    
```

[TIMESERIES]

```

;;Name      Date      Time      Value
;;-----
;From County
    
```

# Fanita Ranch POC 17 EX

SanVicente FILE "R:\1284\Hyd\CALCS\TM\SWMM\rainfall\_sanvicente.dat"

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

[TAGS]

[MAP]  
DIMENSIONS 809.042 4649.019 2610.432 5687.510  
Units None

[COORDINATES]  
;;Node X-Coord Y-Coord  
;;-----  
POC17Ex 1700.270 4696.223

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

[Polygons]  
;;Subcatchment X-Coord Y-Coord  
;;-----  
POC17ExArea-D 1555.150 5445.500  
POC17ExArea-A 1881.555 5444.098

[SYMBOLS]  
;;Gage X-Coord Y-Coord  
;;-----  
SanVicente 1651.201 5640.306

# Fanita Ranch POC17 PR

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION        GREEN_AMPT
FLOW_ROUTING         KINWAVE
START_DATE           01/03/1973
START_TIME           05:00:00
REPORT_START_DATE    05/24/1973
REPORT_START_TIME    05:00:00
END_DATE             05/23/2008
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             00:15:00
DRY_STEP             04:00:00
ROUTING_STEP         0:01:00
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      0.06   0.08   0.110  0.16   0.18   0.21   0.21   0.2   0.16   0.12   0.08   0.06
DRY_ONLY     NO
    
```

[RAINGAGES]

```

;;
;;Name      Rain      Time      Snow      Data
;;-----
SanVicente  INTENSITY 1:00   1.0     TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

;;
;;Name      Raingage      Outlet      Total      Pcnt.      Pcnt.      Curb      Snow
;;-----
;Developed Area Tributary to Basin 6
POC3DevArea-C  SanVicente  POC3PRBasin  0.71      66.9      219      4.2      0
POC3DevArea-D  SanVicente  POC3PRBasin  122.06    66.9      37696    4.2      0
POC3PRBasin    SanVicente  Div-3        3.025     0         588      0         0
    
```

# Fanita Ranch POC17 PR

POC17PRBypass-D	SanVicente	POC17PR	229.99	1.5	45103	5.5	0
POC17PRBypass-A	SanVicente	POC17PR	17.26	0	3356	1.1	0
POC17PRBasin-D	SanVicente	POC17PRBasin	75.42	0	14666	11.0	0
POC17PRBasin	SanVicente	Div-17	5	25	500	0.5	0

```
[SUBAREAS]
;;Subcatchment  N-Imperv  N-Perv  S-Imperv  S-Perv  PctZero  RouteTo  PctRouted
;-----
```

POC3DevArea-C	0.012	0.05	0.05	0.1	25	OUTLET	
POC3DevArea-D	0.012	0.05	0.05	0.1	25	OUTLET	
POC3PRBasin	0.012	0.05	0.05	0.1	25	OUTLET	
POC17PRBypass-D	0.012	0.05	0.05	0.1	25	OUTLET	
POC17PRBypass-A	0.012	0.05	0.05	.10	25	OUTLET	
POC17PRBasin-D	0.012	0.05	0.05	0.1	25	OUTLET	
POC17PRBasin	0.05	0.05	0.1	24	25	OUTLET	

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

POC3DevArea-C	6	0.075	0.32
POC3DevArea-D	9	0.01875	0.33
POC3PRBasin	7.70	0.24	0.32
POC17PRBypass-D	9	0.025	0.33
POC17PRBypass-A	1.5	.30	0.30
POC17PRBasin-D	9	.025	.33
POC17PRBasin	7.70	0.24	0.32

```
[LID_CONTROLS]
;; Type/Layer Parameters
;-----
```

LID-6	BC							
LID-6	SURFACE	19.01	0.05	0	0	5		
LID-6	SOIL	24	0.4	0.2	0.1	5	5	1.5
LID-6	STORAGE	25.5	0.67	0	0			
LID-6	DRAIN	0.16817	0.5	3	6			
LID-17	BC							
LID-17	SURFACE	12	0.05	0	0	5		
LID-17	SOIL	18	0.4	0.2	0.1	5	5	1.5
LID-17	STORAGE	12	0.67	0	0			
LID-17	DRAIN	1.5221	0.5	3	6			

```
[LID_USAGE]
;;Subcatchment  LID Process  Number  Area  Width  InitSatur  FromImprv  ToPerv  Report File
;-----
```

POC3PRBasin	LID-6	1	131766	0	1	100	0	
POC17PRBasin	LID-17	1	875	0	1	100	0	

```
[JUNCTIONS]
;; Invert  Max.  Init.  Surcharge  Ponded
```

# Fanita Ranch POC17 PR

```

;;Name      Elev.      Depth      Depth      Depth      Area
-----
JPOC3PR     0          0          0          0          0

[OUTFALLS]
;;
;;Name      Elev.      Outfall    Stage/Table  Tide
;;         Elev.      Type       Time Series  Gate
-----
POC17PR     0          FREE       NO          NO

[DIVIDERS]
;;
;;Name      Elev.      Diverted   Divider     Parameters
;;         Elev.      Link      Type        Parameters
-----
Div-3       0          Bypass-1  CUTOFF      2.378      0          0          0          0
Div-17     0          Bypass-17 CUTOFF      5          0          0          0          0

[STORAGE]
;;
;;Name      Elev.      Max.       Init.       Storage     Curve       Ponded   Evap.
;;         Elev.      Depth     Depth     Curve       Params      Area     Frac.   Infiltration Paramet
-----
;Basin #6
POC3PRStorage 452      4.75      0          TABULAR     POC3Storage 138219  1
;Basin17
Basin17      435      10        0          TABULAR     POC17Storage 875    1

[CONDUITS]
;;
;;Name      Inlet      Outlet     Length      Manning     Inlet      Outlet     Init.     Max.
;;         Node       Node      Length      N           Offset     Offset     Flow      Flow
-----
Bypass-1    Div-3      POC3PRStorage 1          0.01       0          0          0          0
3           Div-3      JPOC3PR     1          0.01       0          0          0          0
4           JPOC3PR   POC17PR     400        0.01       0          0          0          0
Bypass-17  Div-17    Basin17     1          0.01       0          0          0          0
6           Div-17    POC17PR     1          0.01       0          0          0          0

[OUTLETS]
;;
;;Name      Inlet      Outlet     Outflow     Outlet      Qcoeff/    Qexpon     Flap
;;         Node       Node      Height      Type        QTable     Qexpon     Gate
-----
1           POC3PRStorage JPOC3PR   0          TABULAR/DEPTH POCdischarge NO
2           Basin17      POC17PR   0          TABULAR/DEPTH POCBasin17  NO

[XSECTIONS]
;;
;;Link      Shape      Geom1      Geom2      Geom3      Geom4      Barrels
-----
Bypass-1    DUMMY     0          0          0          0          1
3           DUMMY     0          0          0          0          1
4           DUMMY     0          0          0          0          1
Bypass-17  DUMMY     0          0          0          0          1

```

# Fanita Ranch POC17 PR

6                    DUMMY                    0                    0                    0                    0                    1

```
[LOSSES]
;;Link                Inlet                Outlet                Average                Flap Gate
;;-----
```

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

POCDischarge	Rating	X-Value	Y-Value
POCDischarge	Rating	0	0
POCDischarge		0.083	0.372
POCDischarge		0.167	1.054
POCDischarge		0.25	1.665
POCDischarge		0.333	2.039
POCDischarge		0.417	2.355
POCDischarge		0.5	2.633
POCDischarge		0.583	2.884
POCDischarge		0.667	3.115
POCDischarge		0.75	3.331
POCDischarge		0.833	3.533
POCDischarge		0.917	3.724
POCDischarge		1	3.905
POCDischarge		1.083	4.079
POCDischarge		1.167	4.246
POCDischarge		1.25	4.406
POCDischarge		1.333	4.561
POCDischarge		1.417	4.71
POCDischarge		1.5	4.855
POCDischarge		1.583	4.996
POCDischarge		1.667	5.133
POCDischarge		1.75	5.266
POCDischarge		1.833	5.396
POCDischarge		1.917	5.523
POCDischarge		2	5.647
POCDischarge		2.083	5.769
POCDischarge		2.167	5.888
POCDischarge		2.25	6.005
POCDischarge		2.333	6.119
POCDischarge		2.417	6.231
POCDischarge		2.5	6.341
POCDischarge		2.583	6.972
POCDischarge		2.667	8.033
POCDischarge		2.75	9.374
POCDischarge		2.833	10.941
POCDischarge		2.917	12.703
POCDischarge		3	14.639
POCDischarge		3.083	16.733
POCDischarge		3.167	18.222
POCDischarge		3.25	19.374
POCDischarge		3.333	20.44

## Fanita Ranch POC17 PR

POCDischarge		3.417	21.437
POCDischarge		3.5	22.378
POCDischarge		3.583	23.273
POCDischarge		3.667	26.827
POCDischarge		3.75	32.561
POCDischarge		3.833	39.71
POCDischarge		3.917	48.003
POCDischarge		4	57.28
POCDischarge		4.083	67.438
POCDischarge		4.167	78.399
POCDischarge		4.25	90.104
POCDischarge		4.333	102.503
POCBasin17	Rating	0.0	0.041
POCBasin17		0.1	0.056
POCBasin17		0.2	0.096
POCBasin17		0.3	0.141
POCBasin17		0.4	0.167
POCBasin17		0.5	0.188
POCBasin17		0.6	0.206
POCBasin17		0.7	0.223
POCBasin17		0.8	0.238
POCBasin17		0.9	0.252
POCBasin17		1.0	0.265
POCBasin17		1.1	0.278
POCBasin17		1.2	0.290
POCBasin17		1.3	0.301
POCBasin17		1.4	0.312
POCBasin17		1.5	0.322
POCBasin17		1.6	0.332
POCBasin17		1.7	0.342
POCBasin17		1.8	0.352
POCBasin17		1.9	0.361
POCBasin17		2.0	0.370
POCBasin17		2.1	0.378
POCBasin17		2.2	0.387
POCBasin17		2.3	0.395
POCBasin17		2.4	0.403
POCBasin17		2.5	0.411
POCBasin17		2.6	0.419
POCBasin17		2.7	0.426
POCBasin17		2.8	0.434
POCBasin17		2.9	0.441
POCBasin17		3.0	0.448
POCBasin17		3.1	2.023
POCBasin17		3.2	4.898
POCBasin17		3.3	8.619
POCBasin17		3.4	13.023
POCBasin17		3.5	18.018
POCBasin17		3.6	23.540

## Fanita Ranch POC17 PR

POCBasin17	3.7	29.544
POCBasin17	3.8	35.992
POCBasin17	3.9	42.857
POCBasin17	4.0	50.114
POCBasin17	4.1	57.743
POCBasin17	4.2	65.726
POCBasin17	4.3	74.050
POCBasin17	4.4	82.700
POCBasin17	4.5	91.664
POCBasin17	4.6	99.621
POCBasin17	4.7	102.676
POCBasin17	4.8	105.642
POCBasin17	4.9	108.527
POCBasin17	5.0	111.337
POCBasin17	5.1	114.078
POCBasin17	5.2	116.755
POCBasin17	5.3	119.371
POCBasin17	5.4	121.931
POCBasin17	5.5	124.438
POCBasin17	5.6	126.896
POCBasin17	5.7	129.307
POCBasin17	5.8	131.673
POCBasin17	5.9	133.998
POCBasin17	6.0	136.283
POCBasin17	6.1	138.531
POCBasin17	6.2	140.742
POCBasin17	6.3	142.920
POCBasin17	6.4	145.064
POCBasin17	6.5	147.177
POCBasin17	6.6	149.261
POCBasin17	6.7	151.315
POCBasin17	6.8	153.342
POCBasin17	6.9	155.343
POCBasin17	7.0	157.318
POCBasin17	7.1	159.268
POCBasin17	7.2	161.195
POCBasin17	7.3	163.099
POCBasin17	7.4	164.982
POCBasin17	7.5	166.843
POCBasin17	7.6	168.683
POCBasin17	7.7	170.503
POCBasin17	7.8	172.305
POCBasin17	7.9	174.087
POCBasin17	8.0	175.852
POCBasin17	8.1	177.599
POCBasin17	8.2	179.329
POCBasin17	8.3	181.042
POCBasin17	8.4	182.739
POCBasin17	8.5	184.421
POCBasin17	8.6	186.088

# Fanita Ranch POC17 PR

POCBasin17		8.7	187.739
POCBasin17		8.8	189.377
POCBasin17		8.9	191.000
POCBasin17		9.0	192.609
POCBasin17		9.1	194.205
POCBasin17		9.2	195.789
POCBasin17		9.3	197.359
POCBasin17		9.4	198.917
POCBasin17		9.5	200.463
POCBasin17		9.6	201.997
POCBasin17		9.7	203.520
POCBasin17		9.8	205.031
POCBasin17		9.9	206.531
POCBasin17		10.0	208.020

POC3Storage	Storage	0	142555
POC3Storage		4.333	171332

POC17Storage	Storage	0	875
POC17Storage		10	5704

```
[TIMESERIES]
;Name      Date      Time      Value
;-----
;San Vicente Rain Gage from San Diego County
SanVicente      FILE "R:\1284\Hyd\CALCS\TM\SWMM\rainfall_sanvicente.dat"
```

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

```
[TAGS]
```

```
[MAP]
DIMENSIONS 349.270 3828.099 1585.590 5355.944
Units      None
```

```
[COORDINATES]
;Node      X-Coord      Y-Coord
;-----
JPOC3PR      951.722      4223.288
POC17PR      951.823      3893.813
Div-3        950.068      4431.631
Div-17       1332.301     4101.539
POC3PRStorage 774.796      4347.302
Basin17      1316.920     3956.274
```

## Fanita Ranch POC17 PR

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

```

```
[Polygons]
;;Subcatchment  X-Coord      Y-Coord
;;-----
POC3DevArea-C   467.369      5232.331
POC3DevArea-D   1313.987     5189.353
POC3PRBasin     950.068      4606.903
POC17PRBypass-D 391.613      4099.168
POC17PRBypass-A 711.968      4169.811
POC17PRBasin-D 1441.391     4270.024
POC17PRBasin    1366.481     4157.936

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[SYMBOLS]
;;Gage      X-Coord      Y-Coord
;;-----
SanVicente  939.380      5286.496

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## POC 18

Flow Duration Curve (Pass-Fail) Results

List of the “n” largest Peaks: Pre-Development and Post-Development Conditions  
Elevation vs. Area Curves and Elevations vs. Discharge Curves to be used in SWMM  
SWMM Input Data (Existing and Proposed Models)



Interval	Existing Condition			Detention Basin Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
37	55.038	77	1.54E-02	70	1.40E-02	91%	Pass
38	56.304	76	1.52E-02	65	1.30E-02	86%	Pass
39	57.571	67	1.34E-02	64	1.28E-02	96%	Pass
40	58.837	59	1.18E-02	60	1.20E-02	102%	Pass
41	60.104	55	1.10E-02	60	1.20E-02	109%	Pass
42	61.370	51	1.02E-02	55	1.10E-02	108%	Pass
43	62.637	51	1.02E-02	50	1.00E-02	98%	Pass
44	63.903	47	9.41E-03	48	9.61E-03	102%	Pass
45	65.170	44	8.81E-03	46	9.21E-03	105%	Pass
46	66.436	44	8.81E-03	43	8.61E-03	98%	Pass
47	67.703	42	8.41E-03	42	8.41E-03	100%	Pass
48	68.969	41	8.21E-03	42	8.41E-03	102%	Pass
49	70.236	40	8.01E-03	41	8.21E-03	103%	Pass
50	71.502	39	7.81E-03	40	8.01E-03	103%	Pass
51	72.769	37	7.40E-03	39	7.81E-03	105%	Pass
52	74.035	33	6.60E-03	33	6.60E-03	100%	Pass
53	75.302	32	6.40E-03	30	6.00E-03	94%	Pass
54	76.568	27	5.40E-03	29	5.80E-03	107%	Pass
55	77.835	27	5.40E-03	28	5.60E-03	104%	Pass
56	79.101	26	5.20E-03	26	5.20E-03	100%	Pass
57	80.368	26	5.20E-03	25	5.00E-03	96%	Pass
58	81.634	25	5.00E-03	25	5.00E-03	100%	Pass
59	82.901	23	4.60E-03	25	5.00E-03	109%	Pass
60	84.168	21	4.20E-03	22	4.40E-03	105%	Pass
61	85.434	20	4.00E-03	22	4.40E-03	110%	Pass
62	86.701	20	4.00E-03	21	4.20E-03	105%	Pass
63	87.967	20	4.00E-03	20	4.00E-03	100%	Pass
64	89.234	20	4.00E-03	20	4.00E-03	100%	Pass
65	90.500	20	4.00E-03	20	4.00E-03	100%	Pass
66	91.767	20	4.00E-03	20	4.00E-03	100%	Pass
67	93.033	20	4.00E-03	18	3.60E-03	90%	Pass
68	94.300	19	3.80E-03	16	3.20E-03	84%	Pass
69	95.566	18	3.60E-03	16	3.20E-03	89%	Pass
70	96.833	17	3.40E-03	15	3.00E-03	88%	Pass
71	98.099	17	3.40E-03	14	2.80E-03	82%	Pass
72	99.366	17	3.40E-03	13	2.60E-03	76%	Pass
73	100.632	17	3.40E-03	13	2.60E-03	76%	Pass
74	101.899	15	3.00E-03	12	2.40E-03	80%	Pass
75	103.165	15	3.00E-03	12	2.40E-03	80%	Pass
76	104.432	14	2.80E-03	12	2.40E-03	86%	Pass
77	105.698	13	2.60E-03	12	2.40E-03	92%	Pass
78	106.965	12	2.40E-03	12	2.40E-03	100%	Pass
79	108.231	12	2.40E-03	10	2.00E-03	83%	Pass
80	109.498	12	2.40E-03	10	2.00E-03	83%	Pass
81	110.764	12	2.40E-03	9	1.80E-03	75%	Pass

Interval	Existing Condition			Detention Basin Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
82	112.031	11	2.20E-03	9	1.80E-03	82%	Pass
83	113.297	11	2.20E-03	9	1.80E-03	82%	Pass
84	114.564	11	2.20E-03	8	1.60E-03	73%	Pass
85	115.830	10	2.00E-03	8	1.60E-03	80%	Pass
86	117.097	9	1.80E-03	8	1.60E-03	89%	Pass
87	118.363	9	1.80E-03	8	1.60E-03	89%	Pass
88	119.630	9	1.80E-03	6	1.20E-03	67%	Pass
89	120.896	9	1.80E-03	5	1.00E-03	56%	Pass
90	122.163	8	1.60E-03	5	1.00E-03	63%	Pass
91	123.430	8	1.60E-03	5	1.00E-03	63%	Pass
92	124.696	8	1.60E-03	4	8.01E-04	50%	Pass
93	125.963	7	1.40E-03	3	6.00E-04	43%	Pass
94	127.229	5	1.00E-03	3	6.00E-04	60%	Pass
95	128.496	5	1.00E-03	3	6.00E-04	60%	Pass
96	129.762	5	1.00E-03	3	6.00E-04	60%	Pass
97	131.029	5	1.00E-03	3	6.00E-04	60%	Pass
98	132.295	5	1.00E-03	3	6.00E-04	60%	Pass
99	133.562	4	8.01E-04	3	6.00E-04	75%	Pass
100	134.828	4	8.01E-04	3	6.00E-04	75%	Pass

List of Peak events and Determination of P2 and P10 (Pre-Development)

T	Cunnane	Weibull	Peaks	Date	Position	Period of Return	
						Weibull	Cunnane
10	134.83	144.43	67.33	3/16/1954	35	1.03	1.02
9	127.49	129.26	70.73	2/11/1959	34	1.06	1.05
8	126.33	126.41	72.19	12/2/1961	33	1.09	1.08
7	125.86	126.18	73.52	1/21/1964	32	1.13	1.11
6	123.43	124.33	73.84	11/16/1965	31	1.16	1.15
5	116.00	116.16	74.01	11/17/1972	30	1.20	1.19
4	106.56	106.88	75.08	3/20/1973	29	1.24	1.23
3	94.43	94.43	75.49	1/6/1977	28	1.29	1.28
			75.94	1/14/1978	27	1.33	1.32
			76.09	3/11/1978	26	1.38	1.38
			78.78	11/25/1985	25	1.44	1.43
			80.56	1/18/1952	24	1.50	1.49
			82.61	12/18/1967	23	1.57	1.56
			82.79	1/14/1969	22	1.64	1.63
			83.16	2/6/1969	21	1.71	1.71
			83.63	2/17/1971	20	1.80	1.80
			85.24	2/8/1976	19	1.89	1.89
			94.43	12/31/1976	18	2.00	2.00
			96.1	5/8/1977	17	2.12	2.12
			100.99	1/6/1979	16	2.25	2.26
			101.04	3/1/1981	15	2.40	2.41
			104.32	3/17/1982	14	2.57	2.59
			104.64	3/24/1983	13	2.77	2.79
			106.88	11/25/1983	12	3.00	3.03
			111.49	1/18/1993	11	3.27	3.32
			115.44	3/11/1995	10	3.60	3.67
			116.16	12/28/2004	9	4.00	4.09
			121.57	2/21/2005	8	4.50	4.63
			125.12	2/21/2005	7	5.14	5.33
			126.18	2/3/1958	6	6.00	6.29
			126.46	3/6/1975	5	7.20	7.65
			132.76	2/25/1981	4	9.00	9.78
			167.76	3/1/1983	3	12.00	13.54
			186.93	11/17/1986	2	18.00	22.00
			200.24	12/4/1987	1	36.00	58.67

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

List of Peak events and Determination of P2 and P10 (Post-Development)

T	Cunnane	Weibull				Period of Return	
10	127.42	136.27	Peaks	Date	Position	Weibull	Cunnane
9	123.71	125.51	66.77	1/13/1952	35	1.03	1.02
8	121.40	122.78	71.83	1/18/1952	34	1.06	1.05
7	119.99	120.39	72.78	1/18/1952	33	1.09	1.08
6	119.18	119.33	73.16	12/20/1952	32	1.13	1.11
5	116.31	117.65	73.17	1/10/1955	31	1.16	1.15
4	109.87	110.36	73.42	1/7/1957	30	1.20	1.19
3	101.11	101.53	73.7	1/20/1962	29	1.24	1.23
2	92.41	92.41	74.78	4/8/1965	28	1.29	1.28
			75.2	3/22/1954	27	1.33	1.32
			75.9	12/5/1957	26	1.38	1.38
			78.42	1/12/1960	25	1.44	1.43
			78.72	12/2/1961	24	1.50	1.49
			79.5	11/20/1963	23	1.57	1.56
			83.09	12/5/1966	22	1.64	1.63
			83.89	1/14/1969	21	1.71	1.71
			84.07	12/21/2002	20	1.80	1.80
			85.98	2/14/2003	19	1.89	1.89
			92.41	2/22/2004	18	2.00	2.00
			93.36	3/7/1952	17	2.12	2.12
			93.84	3/16/1958	16	2.25	2.26
			96	3/1/1981	15	2.40	2.41
			96.87	3/17/1982	14	2.57	2.59
			98.61	2/2/1983	13	2.77	2.79
			101.53	3/1/1983	12	3.00	3.03
			106.97	11/25/1985	11	3.27	3.32
			108.12	3/1/1991	10	3.60	3.67
			110.36	2/19/1993	9	4.00	4.09
			113.54	3/11/1995	8	4.50	4.63
			118.82	3/11/1995	7	5.14	5.33
			119.33	2/3/1998	6	6.00	6.29
			120.6	2/8/1998	5	7.20	7.65
			125.51	2/12/2003	4	9.00	9.78
			157.78	3/5/2005	3	12.00	13.54
			164.2	12/30/1951	2	18.00	22.00
			167.28	3/16/1952	1	36.00	58.67

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

POC 18 : STAGE STORAGE OF OFFISTE EXISTING NATURAL BASIN AT END OF BIRCHCREST BLVD.

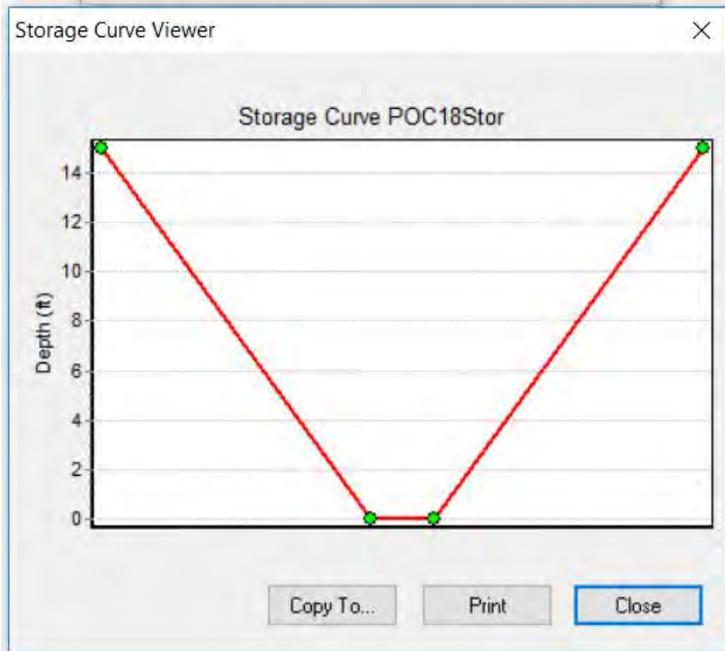
Storage Curve Editor

Curve Name  
POC18Stor

Description

	Depth (ft)	Area (ft2)
1	0	437
2	15	37900
3		
4		
5		
6		
7		
8		
9		

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



Basin #18 Discharge

Discharge vs Elevation Table

Low orifice:	10 "	Top orifice:	3 "
Number:	1	Number:	0
Cg-low:	0.61	Cg-low:	0.61
Invert elev:	0.00 ft	Invert elev:	6.00 ft
Middle orifice:	6 "	Emergency inlet:	
number of orif:	0	Rim depth:	6.00 ft
Cg-middle:	0.61	Area:	9.00 sq ft
Invert elev:	4.50 ft	Circumference:	12 ft

← 3' x 3'

h (ft)	H/D-low	H/D-mid	H/D-top	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qtop-orif (cfs)	Qtop-weir (cfs)	Qtot-top (cfs)	Qemerg (cfs)	Qtot (cfs)
0.0	0.00	0.00	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.1	0.12	0.00	0.00	0.000	0.031	0.031	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.031
0.2	0.24	0.00	0.00	0.000	0.120	0.120	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.120
0.3	0.36	0.00	0.00	0.000	0.262	0.262	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.262
0.4	0.48	0.00	0.00	0.000	0.450	0.450	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.450
0.5	0.60	0.00	0.00	0.771	0.680	0.680	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.680
0.6	0.72	0.00	0.00	1.143	0.943	0.943	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.943
0.7	0.84	0.00	0.00	1.421	1.232	1.232	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.232
0.8	0.96	0.00	0.00	1.653	1.541	1.541	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.541
0.9	1.08	0.00	0.00	1.856	1.861	1.861	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.861
1.0	1.20	0.00	0.00	2.039	2.184	2.039	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.039
1.1	1.32	0.00	0.00	2.207	2.505	2.207	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.207
1.2	1.44	0.00	0.00	2.363	2.815	2.363	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.363
1.3	1.56	0.00	0.00	2.509	3.109	2.509	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.509
1.4	1.68	0.00	0.00	2.648	3.380	2.648	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.648
1.5	1.80	0.00	0.00	2.779	3.625	2.779	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.779
1.6	1.92	0.00	0.00	2.904	3.840	2.904	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.904
1.7	2.04	0.00	0.00	3.025	4.021	3.025	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.025
1.8	2.16	0.00	0.00	3.140	4.168	3.140	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.140
1.9	2.28	0.00	0.00	3.252	4.281	3.252	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.252
2.0	2.40	0.00	0.00	3.360	4.362	3.360	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.360
2.1	2.52	0.00	0.00	3.464	4.414	3.464	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.464
2.2	2.64	0.00	0.00	3.565	4.442	3.565	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.565
2.3	2.76	0.00	0.00	3.664	4.455	3.664	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.664
2.4	2.88	0.00	0.00	3.760	4.462	3.760	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.760
2.5	3.00	0.00	0.00	3.854	4.475	3.854	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.854
2.6	3.12	0.00	0.00	3.945	4.509	3.945	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.945
2.7	3.24	0.00	0.00	4.034	4.580	4.034	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.034
2.8	3.36	0.00	0.00	4.122	4.710	4.122	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.122
2.9	3.48	0.00	0.00	4.207	4.922	4.207	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.207
3.0	3.60	0.00	0.00	4.291	5.240	4.291	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.291
3.1	3.72	0.00	0.00	4.374	5.696	4.374	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.374
3.2	3.84	0.00	0.00	4.454	6.322	4.454	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.454
3.3	3.96	0.00	0.00	4.534	7.154	4.534	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.534
3.4	4.08	0.00	0.00	4.612	8.234	4.612	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.612
3.5	4.20	0.00	0.00	4.688	9.603	4.688	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.688
3.6	4.32	0.00	0.00	4.764	11.312	4.764	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.764
3.7	4.44	0.00	0.00	4.838	13.413	4.838	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.838
3.8	4.56	0.00	0.00	4.911	15.961	4.911	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.911
3.9	4.68	0.00	0.00	4.983	19.019	4.983	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.983
4.0	4.80	0.00	0.00	5.054	22.651	5.054	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.054
4.1	4.92	0.00	0.00	5.124	26.930	5.124	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.124
4.2	5.04	0.00	0.00	5.193	31.929	5.193	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.193
4.3	5.16	0.00	0.00	5.261	37.731	5.261	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.261
4.4	5.28	0.00	0.00	5.329	44.420	5.329	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.329
4.5	5.40	0.00	0.00	5.395	52.088	5.395	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.395
4.6	5.52	0.20	0.00	5.461	60.832	5.461	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.461
4.7	5.64	0.40	0.00	5.526	70.754	5.526	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.526
4.8	5.76	0.60	0.00	5.590	81.963	5.590	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.590
4.9	5.88	0.80	0.00	5.653	94.574	5.653	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.653
5.0	6.00	1.00	0.00	5.716	108.706	5.716	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.716
5.1	6.12	1.20	0.00	5.778	124.487	5.778	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.778
5.2	6.24	1.40	0.00	5.839	142.049	5.839	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.839
5.3	6.36	1.60	0.00	5.900	161.534	5.900	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.900
5.4	6.48	1.80	0.00	5.960	183.087	5.960	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.960
5.5	6.60	2.00	0.00	6.020	206.862	6.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.020
5.6	6.72	2.20	0.00	6.079	233.020	6.079	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.079
5.7	6.84	2.40	0.00	6.137	261.729	6.137	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.137
5.8	6.96	2.60	0.00	6.195	293.164	6.195	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.195
5.9	7.08	2.80	0.00	6.252	327.507	6.252	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.252
6.0	7.20	3.00	0.00	6.309	364.950	6.309	0.000	0.000	0.000	0.000	0.000	0.000	0.000	6.309
6.1	7.32	3.20	0.40	6.365	405.691	6.365	0.000	0.000	0.000	0.000	0.000	0.000	1.176	7.541
6.2	7.44	3.40	0.80	6.421	449.935	6.421	0.000	0.000	0.000	0.000	0.000	0.000	3.327	9.748

6.3	7.56	3.60	1.20	6.476	497.897	6.476	0.000	0.000	0.000	0.000	0.000	0.000	6.113	12.589
6.4	7.68	3.80	1.60	6.531	549.800	6.531	0.000	0.000	0.000	0.000	0.000	0.000	9.411	15.942
6.5	7.80	4.00	2.00	6.585	605.874	6.585	0.000	0.000	0.000	0.000	0.000	0.000	13.152	19.737
6.6	7.92	4.20	2.40	6.639	666.361	6.639	0.000	0.000	0.000	0.000	0.000	0.000	17.289	23.928
6.7	8.04	4.40	2.80	6.693	731.507	6.693	0.000	0.000	0.000	0.000	0.000	0.000	21.787	28.479
6.8	8.16	4.60	3.20	6.746	801.570	6.746	0.000	0.000	0.000	0.000	0.000	0.000	26.618	33.364
6.9	8.28	4.80	3.60	6.798	876.8	6.798	0.000	0.000	0.000	0.000	0.000	0.000	31.762	38.560
7.0	8.40	5.00	4.00	6.851	957.5	6.851	0.000	0.000	0.000	0.000	0.000	0.000	37.200	44.051
7.1	8.52	5.20	4.40	6.902	1044.0	6.902	0.000	0.000	0.000	0.000	0.000	0.000	42.917	49.820
7.2	8.64	5.40	4.80	6.954	1136.5	6.954	0.000	0.000	0.000	0.000	0.000	0.000	48.262	55.216
7.3	8.76	5.60	5.20	7.005	1235.3	7.005	0.000	0.000	0.000	0.000	0.000	0.000	50.233	57.238
7.4	8.88	5.80	5.60	7.056	1340.8	7.056	0.000	0.000	0.000	0.000	0.000	0.000	52.129	59.185
7.5	9.00	6.00	6.00	7.106	1453.2	7.106	0.000	0.000	0.000	0.000	0.000	0.000	53.959	61.065
7.6	9.12	6.20	6.40	7.156	1573.0	7.156	0.000	0.000	0.000	0.000	0.000	0.000	55.728	62.884
7.7	9.24	6.40	6.80	7.206	1700.5	7.206	0.000	0.000	0.000	0.000	0.000	0.000	57.443	64.649
7.8	9.36	6.60	7.20	7.255	1835.9	7.255	0.000	0.000	0.000	0.000	0.000	0.000	59.109	66.364
7.9	9.48	6.80	7.60	7.304	1979.7	7.304	0.000	0.000	0.000	0.000	0.000	0.000	60.728	68.032
8.0	9.60	7.00	8.00	7.352	2132.3	7.352	0.000	0.000	0.000	0.000	0.000	0.000	62.306	69.658
8.1	9.72	7.20	8.40	7.401	2294.0	7.401	0.000	0.000	0.000	0.000	0.000	0.000	63.845	71.245
8.2	9.84	7.40	8.80	7.449	2465.3	7.449	0.000	0.000	0.000	0.000	0.000	0.000	65.347	72.796
8.3	9.96	7.60	9.20	7.496	2646.5	7.496	0.000	0.000	0.000	0.000	0.000	0.000	66.816	74.312
8.4	10.08	7.80	9.60	7.544	2838.0	7.544	0.000	0.000	0.000	0.000	0.000	0.000	68.253	75.797
8.5	10.20	8.00	10.00	7.591	3040.4	7.591	0.000	0.000	0.000	0.000	0.000	0.000	69.660	77.251
8.6	10.32	8.20	10.40	7.638	3254.0	7.638	0.000	0.000	0.000	0.000	0.000	0.000	71.040	78.678
8.7	10.44	8.40	10.80	7.684	3479.3	7.684	0.000	0.000	0.000	0.000	0.000	0.000	72.393	80.077
8.8	10.56	8.60	11.20	7.731	3716.8	7.731	0.000	0.000	0.000	0.000	0.000	0.000	73.722	81.452
8.9	10.68	8.80	11.60	7.776	3966.9	7.776	0.000	0.000	0.000	0.000	0.000	0.000	75.026	82.803
9.0	10.80	9.00	12.00	7.822	4230.1	7.822	0.000	0.000	0.000	0.000	0.000	0.000	76.309	84.131
9.1	10.92	9.20	12.40	7.868	4507.0	7.868	0.000	0.000	0.000	0.000	0.000	0.000	77.570	85.438
9.2	11.04	9.40	12.80	7.913	4798.0	7.913	0.000	0.000	0.000	0.000	0.000	0.000	78.812	86.724
9.3	11.16	9.60	13.20	7.958	5103.7	7.958	0.000	0.000	0.000	0.000	0.000	0.000	80.034	87.991
9.4	11.28	9.80	13.60	8.002	5424.6	8.002	0.000	0.000	0.000	0.000	0.000	0.000	81.237	89.240
9.5	11.40	10.00	14.00	8.047	5761.3	8.047	0.000	0.000	0.000	0.000	0.000	0.000	82.423	90.470
9.6	11.52	10.20	14.40	8.091	6114.3	8.091	0.000	0.000	0.000	0.000	0.000	0.000	83.592	91.683
9.7	11.64	10.40	14.80	8.135	6484.3	8.135	0.000	0.000	0.000	0.000	0.000	0.000	84.745	92.880
9.8	11.76	10.60	15.20	8.179	6871.8	8.179	0.000	0.000	0.000	0.000	0.000	0.000	85.883	94.062
9.9	11.88	10.80	15.60	8.222	7277.4	8.222	0.000	0.000	0.000	0.000	0.000	0.000	87.006	95.228
10.0	12.00	11.00	16.00	8.265	7701.8	8.265	0.000	0.000	0.000	0.000	0.000	0.000	88.114	96.379
10.1	12.12	11.20	16.40	8.308	8145.5	8.308	0.000	0.000	0.000	0.000	0.000	0.000	89.209	97.517
10.2	12.24	11.40	16.80	8.351	8609.3	8.351	0.000	0.000	0.000	0.000	0.000	0.000	90.290	98.641
10.3	12.36	11.60	17.20	8.394	9093.7	8.394	0.000	0.000	0.000	0.000	0.000	0.000	91.359	99.752
10.4	12.48	11.80	17.60	8.436	9599.6	8.436	0.000	0.000	0.000	0.000	0.000	0.000	92.415	100.851
10.5	12.60	12.00	18.00	8.478	10127.5	8.478	0.000	0.000	0.000	0.000	0.000	0.000	93.459	101.937
10.6	12.72	12.20	18.40	8.520	10678.2	8.520	0.000	0.000	0.000	0.000	0.000	0.000	94.492	103.012
10.7	12.84	12.40	18.80	8.562	11252.4	8.562	0.000	0.000	0.000	0.000	0.000	0.000	95.513	104.075
10.8	12.96	12.60	19.20	8.603	11850.8	8.603	0.000	0.000	0.000	0.000	0.000	0.000	96.524	105.127
10.9	13.08	12.80	19.60	8.645	12474.2	8.645	0.000	0.000	0.000	0.000	0.000	0.000	97.524	106.169
11.0	13.20	13.00	20.00	8.686	13123.3	8.686	0.000	0.000	0.000	0.000	0.000	0.000	98.515	107.200
11.1	13.32	13.20	20.40	8.727	13799.0	8.727	0.000	0.000	0.000	0.000	0.000	0.000	99.495	108.222
11.2	13.44	13.40	20.80	8.768	14502.0	8.768	0.000	0.000	0.000	0.000	0.000	0.000	100.465	109.233
11.3	13.56	13.60	21.20	8.808	15233.2	8.808	0.000	0.000	0.000	0.000	0.000	0.000	101.427	110.235
11.4	13.68	13.80	21.60	8.848	15993.3	8.848	0.000	0.000	0.000	0.000	0.000	0.000	102.379	111.228
11.5	13.80	14.00	22.00	8.889	16783.3	8.889	0.000	0.000	0.000	0.000	0.000	0.000	103.323	112.212
11.6	13.92	14.20	22.40	8.929	17604.0	8.929	0.000	0.000	0.000	0.000	0.000	0.000	104.258	113.187
11.7	14.04	14.40	22.80	8.968	18456.2	8.968	0.000	0.000	0.000	0.000	0.000	0.000	105.185	114.153
11.8	14.16	14.60	23.20	9.008	19340.9	9.008	0.000	0.000	0.000	0.000	0.000	0.000	106.103	115.112
11.9	14.28	14.80	23.60	9.048	20258.9	9.048	0.000	0.000	0.000	0.000	0.000	0.000	107.014	116.062
12.0	14.40	15.00	24.00	9.087	21211.3	9.087	0.000	0.000	0.000	0.000	0.000	0.000	107.917	117.004
12.1	14.52	15.20	24.40	9.126	22198.8	9.126	0.000	0.000	0.000	0.000	0.000	0.000	108.813	117.939
12.2	14.64	15.40	24.80	9.165	23222.6	9.165	0.000	0.000	0.000	0.000	0.000	0.000	109.701	118.866
12.3	14.76	15.60	25.20	9.204	24283.6	9.204	0.000	0.000	0.000	0.000	0.000	0.000	110.582	119.786
12.4	14.88	15.80	25.60	9.242	25382.8	9.242	0.000	0.000	0.000	0.000	0.000	0.000	111.456	120.699
12.5	15.00	16.00	26.00	9.281	26521.1	9.281	0.000	0.000	0.000	0.000	0.000	0.000	112.324	121.605
12.6	15.12	16.20	26.40	9.319	27699.7	9.319	0.000	0.000	0.000	0.000	0.000	0.000	113.185	122.504
12.7	15.24	16.40	26.80	9.357	28919.5	9.357	0.000	0.000	0.000	0.000	0.000	0.000	114.039	123.396
12.8	15.36	16.60	27.20	9.395	30181.7	9.395	0.000	0.000	0.000	0.000	0.000	0.000	114.887	124.282
12.9	15.48	16.80	27.60	9.433	31487.4	9.433	0.000	0.000	0.000	0.000	0.000	0.000	115.728	125.162
13.0	15.60	17.00	28.00	9.471	32837.5	9.471	0.000	0.000	0.000	0.000	0.000	0.000	116.564	126.035
13.1	15.72	17.20	28.40	9.509	34233.3	9.509	0.000	0.000	0.000	0.000	0.000	0.000	117.394	126.902
13.2	15.84	17.40	28.80	9.546	35676.0	9.546	0.000	0.000	0.000	0.000	0.000	0.000	118.217	127.763
13.3	15.96	17.60	29.20	9.583	37166.5	9.583	0.000	0.000	0.000	0.000	0.000	0.000	119.036	128.619
13.4	16.08	17.80	29.60	9.620	38706.2	9.620	0.000	0.000	0.000	0.000	0.000	0.000	119.848	129.468
13.5	16.20	18.00	30.00	9.657	40296.3	9.657	0.000	0.000	0.000	0.000	0.000	0.000	120.655	130.313
13.6	16.32	18.20	30.40	9.694	41937.9	9.694	0.000	0.000	0.000	0.000	0.000	0.000	121.457	131.151
13.7	16.44	18.40	30.80	9.731	43632.3	9.731	0.000	0.000	0.000	0.000	0.000	0.000	122.253	131.984
13.8	16.56	18.60	31.20	9.767	45380.7	9.767	0.000	0.000	0.000	0.000	0.000	0.000	123.045	132.812
13.9	16.68	18.80	31.60	9.804	47184.4	9.804	0.000	0.000	0.000	0.000	0.000	0.000	123.831	133.635
14.0	16.80	19.00	32.00	9.840	49044.8	9.840	0.000	0.000	0.000	0.000	0.000	0.000	124.612	134.452
14.1	16.92	19.20	32.40	9.876	50963.1	9.876	0.000	0.000	0.000	0.000</				



# Fanita Ranch POC18 EX

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION        GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          00:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   00:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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      0.06  0.08  0.11  .16  .18  .21  .21  .2  .16  .12  .08  .06
DRY_ONLY     NO
    
```

[RAINGAGES]

```

;;
;;Name      Rain      Time      Snow      Data
;;-----
SanVicente  INTENSITY 1:00  1.0  TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

;;
;;Name      Raingage      Outlet      Total      Pcnt.      Pcnt.      Curb      Snow
;;-----
POC18ExArea-D  SanVicente  POC18EX  167.55  0  32582  13.5  0
POC18EXARE-A  SanVicente  POC18EX  16.25  0  3160  1.4  0
POC18ExDev-A  SanVicente  POC18EX  3.37  70  1070  2.9  0
POC18ExDev-D  SanVicente  POC18EX  32.82  70  10420  2.9  0
    
```

# Fanita Ranch POC18 EX

```

[SUBAREAS]
;;Subcatchment  N-Imperv  N-Perv  S-Imperv  S-Perv  PctZero  RouteTo  PctRouted
;;-----
POC18ExArea-D  0.012  0.05  0.05  0.10  25  OUTLET
POC18EXARE-A  0.012  0.05  0.05  .10  25  OUTLET
POC18ExDev-A  .012  .05  .05  .10  25  OUTLET
POC18ExDev-D  0.012  .05  0.05  .10  25  OUTLET

[INFILTRATION]
;;Subcatchment  Suction  HydCon  IMDmax
;;-----
POC18ExArea-D  9  0.025  0.33
POC18EXARE-A  1.5  .30  .30
POC18ExDev-A  1.5  0.3  0.30
POC18ExDev-D  9  .025  .33

[OUTFALLS]
;;          Invert  Outfall  Stage/Table  Tide
;;Name     Elev.   Type     Time Series  Gate
;;-----
POC18EX    0          FREE          NO

[TIMESERIES]
;;Name      Date      Time      Value
;;-----
;From County
SanVicente  FILE "R:\1284\Hyd\CALCS\TM\SWMM\rainfall_sanvicente.dat"

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

[TAGS]

[MAP]
DIMENSIONS 809.042 4649.019 2610.432 5687.510
Units      None

[COORDINATES]
;;Node      X-Coord      Y-Coord
;;-----
POC18EX    1932.729    4845.808

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

```

# Fanita Ranch POC18 EX

```
[Polygons]
;;Subcatchment X-Coord Y-Coord
;;-----
POC18ExArea-D 1555.150 5445.500
POC18EXARE-A 1306.774 5451.802
POC18ExDev-A 1904.669 5419.442
POC18ExDev-D 2166.634 5359.344

[SYMBOLS]
;;Gage X-Coord Y-Coord
;;-----
SanVicente 1651.201 5640.306
```

# Fanita Ranch POC 18 PR

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION        GREEN_AMPT
FLOW_ROUTING         KINWAVE
START_DATE           01/03/1973
START_TIME           00:00:00
REPORT_START_DATE    05/24/1973
REPORT_START_TIME    00:00:00
END_DATE             05/23/2008
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             00:15:00
DRY_STEP             04:00:00
ROUTING_STEP         0:01:00
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      0.06   0.08   0.11   .16   .18   .21   .21   .2   .16   .12   .08   .06
DRY_ONLY     NO
    
```

[RAINGAGES]

```

;;
;;Name      Rain      Time      Snow      Data
;;Type      Intrvl  Catch     Source
;;-----
SanVicente  INTENSITY 1:00    1.0      TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

;;
;;Name      Raingage      Outlet      Total      Pcnt.      Pcnt.      Curb      Snow
;;Type      Area          Imperv      Width      Slope      Length      Pack
;;-----
POC18PRNew-D  SanVicente  Junction    2.89      0          562        1.4      0
POC18PRNew-A  SanVicente  Junction    8.71      50.9       2359       1.4      0
POC17ExDev-A  SanVicente  Junction    3.37      70         1070       2.9      0
POC18ExDev-D  SanVicente  Junction    32.82     70         10420      2.9      0
POC18PRBypass-A SanVicente  POC18PR    7.54      0          1466       1.4      0
POC18PRNat-D  SanVicente  POC18Basin 164.66    0          32020     13.5     0
    
```

[SUBAREAS]

```

;;Subcatchment  N-Imperv  N-Perv      S-Imperv  S-Perv      PctZero  RouteTo  PctRouted
;;-----
POC18PRNew-D    0.012     0.05        0.05      0.10        25        OUTLET
POC18PRNew-A    0.012     0.05        0.05      .10         25        OUTLET
POC17ExDev-A    .012      .05         .05       .10         25        OUTLET
POC18ExDev-D    0.012     .05         0.05     .10         25        OUTLET
POC18PRBypass-A 0.012     0.05        0.05     0.10        25        OUTLET
POC18PRNat-D    0.012     .05         .05       0.10        25        OUTLET
    
```

[INFILTRATION]

```

;;Subcatchment  Suction  HydCon      IMDmax
;;-----
POC18PRNew-D    9        0.025       0.33
POC18PRNew-A    1.5      .30         .30
POC17ExDev-A    1.5      0.3         0.30
POC18ExDev-D    9        .025        .33
POC18PRBypass-A 1.5      0.30       0.30
    
```

# Fanita Ranch POC 18 PR

POC18PRNat-D      9.0            0.025          0.33

```
[JUNCTIONS]
;;
;;Name            Invert        Max.        Init.        Surcharge    Poded
;;                Elev.        Depth        Depth        Depth        Area
;;-----
Junction        0            11          0            0            0
```

```
[OUTFALLS]
;;
;;Name            Invert        Outfall      Stage/Table    Tide
;;                Elev.        Type        Time Series    Gate
;;-----
POC18PR        0            FREE                            NO
```

```
[STORAGE]
;;
;;Name            Invert        Max.        Init.        Storage        Curve                    Poded    Evap.
;;                Elev.        Depth        Depth        Curve        Params                    Area    Frac.    Infiltration Parameters
;;-----
POC18Basin     0            20          0            TABULAR        POC18Stor                    437    0
```

```
[CONDUITS]
;;
;;Name            Inlet            Outlet                    Manning    Inlet        Outlet        Init.        Max.
;;                Node            Node                    N        Offset        Offset        Flow        Flow
;;-----
Pipe            Junction        POC18PR                    0.01      0            0            0            0
```

```
[OUTLETS]
;;
;;Name            Inlet            Outlet                    Outflow    Outlet        Qcoeff/                    Qexpon        Flap
;;                Node            Node                    Height      Type        QTable                               Gate
;;-----
BasinDisch     POC18Basin     Junction                    0            TABULAR/DEPTH    BasinDisch                    NO
```

```
[XSECTIONS]
;;Link            Shape            Geom1            Geom2        Geom3        Geom4        Barrels
;;-----
Pipe            DUMMY            0            0            0            0            1
```

```
[LOSSES]
;;Link            Inlet            Outlet            Average        Flap Gate
;;-----
```

```
[CURVES]
;;Name            Type            X-Value        Y-Value
;;-----
BasinDisch     Rating        0.0            0.000
BasinDisch                0.1            0.031
BasinDisch                0.2            0.120
BasinDisch                0.3            0.262
BasinDisch                0.4            0.450
BasinDisch                0.5            0.680
BasinDisch                0.6            0.943
BasinDisch                0.7            1.232
BasinDisch                0.8            1.541
BasinDisch                0.9            1.861
BasinDisch                1.0            2.039
BasinDisch                1.1            2.207
BasinDisch                1.2            2.363
BasinDisch                1.3            2.509
BasinDisch                1.4            2.648
BasinDisch                1.5            2.779
BasinDisch                1.6            2.904
BasinDisch                1.7            3.025
BasinDisch                1.8            3.140
BasinDisch                1.9            3.252
BasinDisch                2.0            3.360
BasinDisch                2.1            3.464
BasinDisch                2.2            3.565
BasinDisch                2.3            3.664
BasinDisch                2.4            3.760
BasinDisch                2.5            3.854
BasinDisch                2.6            3.945
```

## Fanita Ranch POC 18 PR

BasinDisch	2.7	4.034
BasinDisch	2.8	4.122
BasinDisch	2.9	4.207
BasinDisch	3.0	4.291
BasinDisch	3.1	4.374
BasinDisch	3.2	4.454
BasinDisch	3.3	4.534
BasinDisch	3.4	4.612
BasinDisch	3.5	4.688
BasinDisch	3.6	4.764
BasinDisch	3.7	4.838
BasinDisch	3.8	4.911
BasinDisch	3.9	4.983
BasinDisch	4.0	5.054
BasinDisch	4.1	5.124
BasinDisch	4.2	5.193
BasinDisch	4.3	5.261
BasinDisch	4.4	5.329
BasinDisch	4.5	5.395
BasinDisch	4.6	5.461
BasinDisch	4.7	5.526
BasinDisch	4.8	5.590
BasinDisch	4.9	5.653
BasinDisch	5.0	5.716
BasinDisch	5.1	5.778
BasinDisch	5.2	5.839
BasinDisch	5.3	5.900
BasinDisch	5.4	5.960
BasinDisch	5.5	6.020
BasinDisch	5.6	6.079
BasinDisch	5.7	6.137
BasinDisch	5.8	6.195
BasinDisch	5.9	6.252
BasinDisch	6.0	6.309
BasinDisch	6.1	7.541
BasinDisch	6.2	9.748
BasinDisch	6.3	12.589
BasinDisch	6.4	15.942
BasinDisch	6.5	19.737
BasinDisch	6.6	23.928
BasinDisch	6.7	28.479
BasinDisch	6.8	33.364
BasinDisch	6.9	38.560
BasinDisch	7.0	44.051
BasinDisch	7.1	49.820
BasinDisch	7.2	55.216
BasinDisch	7.3	57.238
BasinDisch	7.4	59.185
BasinDisch	7.5	61.065
BasinDisch	7.6	62.884
BasinDisch	7.7	64.649
BasinDisch	7.8	66.364
BasinDisch	7.9	68.032
BasinDisch	8.0	69.658
BasinDisch	8.1	71.245
BasinDisch	8.2	72.796
BasinDisch	8.3	74.312
BasinDisch	8.4	75.797
BasinDisch	8.5	77.251
BasinDisch	8.6	78.678
BasinDisch	8.7	80.077
BasinDisch	8.8	81.452
BasinDisch	8.9	82.803
BasinDisch	9.0	84.131
BasinDisch	9.1	85.438
BasinDisch	9.2	86.724
BasinDisch	9.3	87.991
BasinDisch	9.4	89.240
BasinDisch	9.5	90.470
BasinDisch	9.6	91.683
BasinDisch	9.7	92.880

## Fanita Ranch POC 18 PR

BasinDisch	9.8	94.062
BasinDisch	9.9	95.228
BasinDisch	10.0	96.379
BasinDisch	10.1	97.517
BasinDisch	10.2	98.641
BasinDisch	10.3	99.752
BasinDisch	10.4	100.851
BasinDisch	10.5	101.937
BasinDisch	10.6	103.012
BasinDisch	10.7	104.075
BasinDisch	10.8	105.127
BasinDisch	10.9	106.169
BasinDisch	11.0	107.200
BasinDisch	11.1	108.222
BasinDisch	11.2	109.233
BasinDisch	11.3	110.235
BasinDisch	11.4	111.228
BasinDisch	11.5	112.212
BasinDisch	11.6	113.187
BasinDisch	11.7	114.153
BasinDisch	11.8	115.112
BasinDisch	11.9	116.062
BasinDisch	12.0	117.004
BasinDisch	12.1	117.939
BasinDisch	12.2	118.866
BasinDisch	12.3	119.786
BasinDisch	12.4	120.699
BasinDisch	12.5	121.605
BasinDisch	12.6	122.504
BasinDisch	12.7	123.396
BasinDisch	12.8	124.282
BasinDisch	12.9	125.162
BasinDisch	13.0	126.035
BasinDisch	13.1	126.902
BasinDisch	13.2	127.763
BasinDisch	13.3	128.619
BasinDisch	13.4	129.468
BasinDisch	13.5	130.313
BasinDisch	13.6	131.151
BasinDisch	13.7	131.984
BasinDisch	13.8	132.812
BasinDisch	13.9	133.635
BasinDisch	14.0	134.452
BasinDisch	14.1	135.265
BasinDisch	14.2	136.073
BasinDisch	14.3	136.875
BasinDisch	14.4	137.673
BasinDisch	14.5	138.467
BasinDisch	14.6	139.256
BasinDisch	14.7	140.040
BasinDisch	14.8	140.820
BasinDisch	14.9	141.596
BasinDisch	15.0	142.367
BasinDisch	15.1	143.134
BasinDisch	15.2	143.897
BasinDisch	15.3	144.656
BasinDisch	15.4	145.411
BasinDisch	15.5	146.162
BasinDisch	15.6	146.909
BasinDisch	15.7	147.653
BasinDisch	15.8	148.392
BasinDisch	15.9	149.128
BasinDisch	16.0	149.860
BasinDisch	16.1	150.589
BasinDisch	16.2	151.314
BasinDisch	16.3	152.036
BasinDisch	16.4	152.754
BasinDisch	16.5	153.469
BasinDisch	16.6	154.180
BasinDisch	16.7	154.888
BasinDisch	16.8	155.593

## Fanita Ranch POC 18 PR

BasinDisch	16.9	156.295
BasinDisch	17.0	156.993
BasinDisch	17.1	157.689
BasinDisch	17.2	158.381
BasinDisch	17.3	159.070
BasinDisch	17.4	159.757
BasinDisch	17.5	160.440
BasinDisch	17.6	161.120
BasinDisch	17.7	161.798
BasinDisch	17.8	162.473
BasinDisch	17.9	163.145
BasinDisch	18.0	163.814
BasinDisch	18.1	164.480
BasinDisch	18.2	165.144
BasinDisch	18.3	165.805
BasinDisch	18.4	166.463
BasinDisch	18.5	167.119
BasinDisch	18.6	167.772
BasinDisch	18.7	168.423
BasinDisch	18.8	169.071
BasinDisch	18.9	169.716
BasinDisch	19.0	170.360
BasinDisch	19.1	171.000
BasinDisch	19.2	171.639
BasinDisch	19.3	172.275
BasinDisch	19.4	172.908
BasinDisch	19.5	173.539
BasinDisch	19.6	174.168
BasinDisch	19.7	174.795
BasinDisch	19.8	175.419
BasinDisch	19.9	176.042
BasinDisch	20.0	176.662

POC18Stor	Storage	0	437
POC18Stor		15	37900

```
[TIMESERIES]
;Name      Date      Time      Value
;-----
;From County
SanVicente      FILE "R:\1284\Hyd\CALCS\TM\SWM\rainfall_sanvicente.dat"
```

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

[TAGS]

```
[MAP]
DIMENSIONS 809.042 4649.019 2610.432 5687.510
Units      None
```

```
[COORDINATES]
;Node      X-Coord      Y-Coord
;-----
Junction   1691.736      4987.008
POC18PR    1663.181      4761.058
POC18Basin 2023.211      5054.048
```

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

```
[Polygons]
;Subcatchment X-Coord      Y-Coord
;-----
POC18PRNew-D 1555.150      5445.500
POC18PRNew-A 1306.774      5451.802
```

## Fanita Ranch POC 18 PR

POC17ExDev-A	1904.669	5419.442
POC18ExDev-D	2166.634	5359.344
POC18PRBypass-A	1364.821	4850.086
POC18PRNat-D	2156.256	5077.891

[SYMBOLS]

;;Gage	X-Coord	Y-Coord
;;-----	-----	-----
SanVicente	1651.201	5640.306

## **POC RV1**

Flow Duration Curve (Pass-Fail) Results

List of the “n” largest Peaks: Pre-Development and Post-Development Conditions

Elevation vs. Area Curves and Elevations vs. Discharge Curves to be used in SWMM

DMA and SWMM Input Data (Existing and Proposed Models)

### Flow Duration Curve Data for Fanita Ranch POC-RV1 , Santee, CA

Q2 = 1.928 cfs Fraction 10 %  
 Q10 = 2.86 cfs  
 Step = 0.0269 cfs  
 Count = 306811 hours  
 35.00 years

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
1	0.193	795	2.59E-01	284	9.26E-02	36%	Pass
2	0.220	735	2.40E-01	279	9.09E-02	38%	Pass
3	0.247	685	2.23E-01	268	8.74E-02	39%	Pass
4	0.274	640	2.09E-01	260	8.47E-02	41%	Pass
5	0.301	591	1.93E-01	237	7.72E-02	40%	Pass
6	0.327	528	1.72E-01	219	7.14E-02	41%	Pass
7	0.354	491	1.60E-01	209	6.81E-02	43%	Pass
8	0.381	462	1.51E-01	199	6.49E-02	43%	Pass
9	0.408	431	1.40E-01	192	6.26E-02	45%	Pass
10	0.435	411	1.34E-01	186	6.06E-02	45%	Pass
11	0.462	393	1.28E-01	171	5.57E-02	44%	Pass
12	0.489	377	1.23E-01	155	5.05E-02	41%	Pass
13	0.516	363	1.18E-01	152	4.95E-02	42%	Pass
14	0.543	350	1.14E-01	151	4.92E-02	43%	Pass
15	0.570	331	1.08E-01	151	4.92E-02	46%	Pass
16	0.597	309	1.01E-01	149	4.86E-02	48%	Pass
17	0.624	291	9.48E-02	139	4.53E-02	48%	Pass
18	0.651	270	8.80E-02	132	4.30E-02	49%	Pass
19	0.678	248	8.08E-02	127	4.14E-02	51%	Pass
20	0.705	225	7.33E-02	126	4.11E-02	56%	Pass
21	0.731	205	6.68E-02	121	3.94E-02	59%	Pass
22	0.758	183	5.96E-02	119	3.88E-02	65%	Pass
23	0.785	172	5.61E-02	114	3.72E-02	66%	Pass
24	0.812	167	5.44E-02	96	3.13E-02	57%	Pass
25	0.839	157	5.12E-02	79	2.57E-02	50%	Pass
26	0.866	150	4.89E-02	75	2.44E-02	50%	Pass
27	0.893	145	4.73E-02	73	2.38E-02	50%	Pass
28	0.920	137	4.47E-02	73	2.38E-02	53%	Pass
29	0.947	134	4.37E-02	71	2.31E-02	53%	Pass
30	0.974	125	4.07E-02	68	2.22E-02	54%	Pass
31	1.001	121	3.94E-02	62	2.02E-02	51%	Pass
32	1.028	113	3.68E-02	62	2.02E-02	55%	Pass
33	1.055	104	3.39E-02	60	1.96E-02	58%	Pass
34	1.082	98	3.19E-02	58	1.89E-02	59%	Pass
35	1.108	94	3.06E-02	58	1.89E-02	62%	Pass
36	1.135	86	2.80E-02	56	1.83E-02	65%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
37	1.162	80	2.61E-02	54	1.76E-02	68%	Pass
38	1.189	71	2.31E-02	48	1.56E-02	68%	Pass
39	1.216	65	2.12E-02	45	1.47E-02	69%	Pass
40	1.243	62	2.02E-02	45	1.47E-02	73%	Pass
41	1.270	61	1.99E-02	39	1.27E-02	64%	Pass
42	1.297	58	1.89E-02	37	1.21E-02	64%	Pass
43	1.324	54	1.76E-02	37	1.21E-02	69%	Pass
44	1.351	48	1.56E-02	34	1.11E-02	71%	Pass
45	1.378	45	1.47E-02	33	1.08E-02	73%	Pass
46	1.405	42	1.37E-02	32	1.04E-02	76%	Pass
47	1.432	40	1.30E-02	32	1.04E-02	80%	Pass
48	1.459	40	1.30E-02	32	1.04E-02	80%	Pass
49	1.486	40	1.30E-02	27	8.80E-03	68%	Pass
50	1.512	38	1.24E-02	21	6.84E-03	55%	Pass
51	1.539	36	1.17E-02	21	6.84E-03	58%	Pass
52	1.566	36	1.17E-02	20	6.52E-03	56%	Pass
53	1.593	31	1.01E-02	20	6.52E-03	65%	Pass
54	1.620	29	9.45E-03	20	6.52E-03	69%	Pass
55	1.647	27	8.80E-03	20	6.52E-03	74%	Pass
56	1.674	26	8.47E-03	19	6.19E-03	73%	Pass
57	1.701	26	8.47E-03	18	5.87E-03	69%	Pass
58	1.728	25	8.15E-03	14	4.56E-03	56%	Pass
59	1.755	25	8.15E-03	14	4.56E-03	56%	Pass
60	1.782	25	8.15E-03	14	4.56E-03	56%	Pass
61	1.809	21	6.84E-03	14	4.56E-03	67%	Pass
62	1.836	20	6.52E-03	14	4.56E-03	70%	Pass
63	1.863	20	6.52E-03	14	4.56E-03	70%	Pass
64	1.890	19	6.19E-03	13	4.24E-03	68%	Pass
65	1.916	19	6.19E-03	11	3.59E-03	58%	Pass
66	1.943	18	5.87E-03	11	3.59E-03	61%	Pass
67	1.970	18	5.87E-03	11	3.59E-03	61%	Pass
68	1.997	18	5.87E-03	10	3.26E-03	56%	Pass
69	2.024	18	5.87E-03	10	3.26E-03	56%	Pass
70	2.051	17	5.54E-03	9	2.93E-03	53%	Pass
71	2.078	17	5.54E-03	9	2.93E-03	53%	Pass
72	2.105	17	5.54E-03	9	2.93E-03	53%	Pass
73	2.132	16	5.21E-03	9	2.93E-03	56%	Pass
74	2.159	15	4.89E-03	7	2.28E-03	47%	Pass
75	2.186	13	4.24E-03	7	2.28E-03	54%	Pass
76	2.213	13	4.24E-03	7	2.28E-03	54%	Pass
77	2.240	12	3.91E-03	7	2.28E-03	58%	Pass
78	2.267	12	3.91E-03	7	2.28E-03	58%	Pass
79	2.293	12	3.91E-03	7	2.28E-03	58%	Pass
80	2.320	12	3.91E-03	7	2.28E-03	58%	Pass
81	2.347	12	3.91E-03	7	2.28E-03	58%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
82	2.374	11	3.59E-03	7	2.28E-03	64%	Pass
83	2.401	11	3.59E-03	6	1.96E-03	55%	Pass
84	2.428	9	2.93E-03	6	1.96E-03	67%	Pass
85	2.455	9	2.93E-03	6	1.96E-03	67%	Pass
86	2.482	9	2.93E-03	6	1.96E-03	67%	Pass
87	2.509	9	2.93E-03	6	1.96E-03	67%	Pass
88	2.536	9	2.93E-03	6	1.96E-03	67%	Pass
89	2.563	7	2.28E-03	6	1.96E-03	86%	Pass
90	2.590	7	2.28E-03	5	1.63E-03	71%	Pass
91	2.617	7	2.28E-03	5	1.63E-03	71%	Pass
92	2.644	7	2.28E-03	5	1.63E-03	71%	Pass
93	2.671	6	1.96E-03	5	1.63E-03	83%	Pass
94	2.697	5	1.63E-03	5	1.63E-03	100%	Pass
95	2.724	5	1.63E-03	3	9.78E-04	60%	Pass
96	2.751	5	1.63E-03	3	9.78E-04	60%	Pass
97	2.778	5	1.63E-03	3	9.78E-04	60%	Pass
98	2.805	5	1.63E-03	3	9.78E-04	60%	Pass
99	2.832	4	1.30E-03	3	9.78E-04	75%	Pass
100	2.859	4	1.30E-03	3	9.78E-04	75%	Pass

**Peak Flows calculated with Cunnane Plotting Position**

Return Period (years)	Pre-dev. Q (cfs)	Post-Dev. Q (cfs)	Reduction (cfs)
10	2.859	2.780	0.079
9	2.767	2.714	0.053
8	2.701	2.707	-0.006
7	2.666	2.648	0.018
6	2.624	2.528	0.096
5	2.556	2.281	0.275
4	2.421	2.119	0.303
3	2.206	1.901	0.305
2	1.928	1.484	0.444

**List of Peak events and Determination of P2 and P10 (Pre-Development)**

**Fanita Ranch POC RV1 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>2.86</b>	<b>3.05</b>					
<b>9</b>	<b>2.77</b>	<b>2.82</b>	1.368	5/1/1978	35	1.03	1.02
<b>8</b>	<b>2.70</b>	<b>2.74</b>	1.411	3/5/2005	34	1.06	1.05
<b>7</b>	<b>2.67</b>	<b>2.67</b>	1.487	12/28/1977	33	1.09	1.08
<b>6</b>	<b>2.62</b>	<b>2.65</b>	1.5	1/18/1993	32	1.13	1.11
<b>5</b>	<b>2.56</b>	<b>2.56</b>	1.521	4/18/1995	31	1.16	1.15
<b>4</b>	<b>2.42</b>	<b>2.43</b>	1.572	3/4/1978	30	1.20	1.19
<b>3</b>	<b>2.21</b>	<b>2.21</b>	1.578	4/23/1980	29	1.24	1.23
<b>2</b>	<b>1.93</b>	<b>1.93</b>	1.6	2/16/1980	28	1.29	1.28
			1.611	2/18/1980	27	1.33	1.32
			1.633	1/13/1993	26	1.38	1.38
			1.64	2/15/1986	25	1.44	1.43
			1.708	10/10/1986	24	1.50	1.49
			1.785	8/17/1977	23	1.57	1.56
			1.792	3/2/1983	22	1.64	1.63
			1.794	12/4/1974	21	1.71	1.71
			1.798	2/15/1992	20	1.80	1.80
			1.815	2/21/2005	19	1.89	1.89
			1.928	3/1/1983	18	2.00	2.00
			2.048	1/31/1979	17	2.12	2.12
			2.112	10/27/2004	16	2.25	2.26
			2.139	10/18/2004	15	2.40	2.41
			2.159	3/6/1975	14	2.57	2.59
			2.159	10/20/2004	13	2.77	2.79
			2.214	2/13/1998	12	3.00	3.03
			2.355	2/2/1998	11	3.27	3.32
			2.408	2/19/1993	10	3.60	3.67
			2.425	1/29/1980	9	4.00	4.09
			2.551	2/6/1992	8	4.50	4.63
			2.56	1/9/2005	7	5.14	5.33
			2.652	2/7/1998	6	6.00	6.29
			2.678	10/31/1987	5	7.20	7.65
			2.819	9/10/1976	4	9.00	9.78
			3.497	10/22/1976	3	12.00	13.54
			3.869	2/20/1980	2	18.00	22.00
			4.092	1/4/1978	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

**List of Peak events and Determination of P2 and P10 (Post-Development)  
Fanita Ranch POC RV1 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>2.78</b>	<b>3.06</b>					
<b>9</b>	<b>2.71</b>	<b>2.72</b>	1.11	3/5/2005	35	1.03	1.02
<b>8</b>	<b>2.71</b>	<b>2.71</b>	1.11	10/10/1986	34	1.06	1.05
<b>7</b>	<b>2.65</b>	<b>2.68</b>	1.17	12/7/1992	33	1.09	1.08
<b>6</b>	<b>2.53</b>	<b>2.59</b>	1.18	2/10/1978	32	1.13	1.11
<b>5</b>	<b>2.28</b>	<b>2.34</b>	1.19	1/11/2005	31	1.16	1.15
<b>4</b>	<b>2.12</b>	<b>2.14</b>	1.20	3/6/1980	30	1.20	1.19
<b>3</b>	<b>1.90</b>	<b>1.90</b>	1.26	2/8/1976	29	1.24	1.23
<b>2</b>	<b>1.48</b>	<b>1.48</b>	1.27	2/18/1980	28	1.29	1.28
			1.27	1/29/1980	27	1.33	1.32
			1.27	1/11/1980	26	1.38	1.38
			1.27	1/15/1978	25	1.44	1.43
			1.29	11/12/2003	24	1.50	1.49
			1.33	3/5/1995	23	1.57	1.56
			1.37	2/23/2005	22	1.64	1.63
			1.47	11/22/1996	21	1.71	1.71
			1.48	10/28/1974	20	1.80	1.80
			1.48	10/27/2004	19	1.89	1.89
			1.48	10/31/1987	18	2.00	2.00
			1.49	11/25/1985	17	2.12	2.12
			1.50	12/29/2004	16	2.25	2.26
			1.51	10/20/2004	15	2.40	2.41
			1.65	2/15/1986	14	2.57	2.59
			1.90	3/2/1983	13	2.77	2.79
			1.90	2/21/2005	12	3.00	3.03
			1.98	8/17/1977	11	3.27	3.32
			2.049	12/4/1974	10	3.60	3.67
			2.138	2/2/1998	9	4.00	4.09
			2.157	1/31/1979	8	4.50	4.63
			2.393	1/9/2005	7	5.14	5.33
			2.586	1/29/1980	6	6.00	6.29
			2.704	9/10/1976	5	7.20	7.65
			2.72	2/7/1998	4	9.00	9.78
			3.731	10/22/1976	3	12.00	13.54
			3.89	1/4/1978	2	18.00	22.00
			3.933	2/20/1980	1	36.00	58.67

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

**BMP RV1**

ABMP	<b>4950</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2.4375</b> in
Aorifice	0.03241 sq-ft
C <sub>SWMM</sub>	<b>0.3996</b> 0.194283
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	13.78125 in 1.148 ft
Q <sub>orif-classic</sub>	0.17000 cfs
Q <sub>orif-SWMM</sub>	0.17000 cfs
Qdiversion	<b>0.17170</b> cfs
Qinf:	0.5729 cfs
<b>0.1 Q2 EX</b>	<b>0.271</b>

**BMP RV2**

ABMP	<b>3250</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>1.875</b> in
Aorifice	0.01917 sq-ft
C <sub>SWMM</sub>	<b>0.3602</b> 0.11496
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	14.0625 in 1.172 ft
Q <sub>orif-classic</sub>	0.10161 cfs
Q <sub>orif-SWMM</sub>	0.10161 cfs
Qdiversion	<b>0.10263</b> cfs
Qinf:	0.3762 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**BMP RV3**

ABMP	<b>3900</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2.125</b> in
Aorifice	0.02463 sq-ft
C <sub>SWMM</sub>	<b>0.3855</b> 0.14766
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	13.9375 in 1.161 ft
Q <sub>orif-classic</sub>	0.12993 cfs
Q <sub>orif-SWMM</sub>	0.12993 cfs
Qdiversion	<b>0.13123</b> cfs
Qinf:	0.4514 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**BMP RV4**

ABMP	<b>3950</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2.125</b> in
Aorifice	0.02463 sq-ft
C <sub>SWMM</sub>	<b>0.3806</b> 0.14766
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	13.9375 in 1.161 ft
Q <sub>orif-classic</sub>	0.12993 cfs
Q <sub>orif-SWMM</sub>	0.12993 cfs
Qdiversion	<b>0.13123</b> cfs
Qinf:	0.4572 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**BMP RV5**

ABMP	<b>6200</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2.5625</b> in
Aorifice	0.03581 sq-ft
C <sub>SWMM</sub>	<b>0.3526</b> 0.214721
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	13.71875 in 1.143 ft
Q <sub>orif-classic</sub>	0.18745 cfs
Q <sub>orif-SWMM</sub>	0.18745 cfs
Qdiversion	<b>0.18933</b> cfs
Qinf:	0.7176 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**BMP RV6**

ABMP	<b>3250</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>1.875</b> in
Aorifice	0.01917 sq-ft
C <sub>SWMM</sub>	<b>0.3602</b> 0.11496
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	14.0625 in 1.172 ft
Q <sub>orif-classic</sub>	0.10161 cfs
Q <sub>orif-SWMM</sub>	0.10161 cfs
Qdiversion	<b>0.10263</b> cfs
Qinf:	0.3762 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**STAGE STORAGE & DRAWDOWN CALCULATIONS**

**BASIN 1 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	4950.0	0.00
1	4950.0	4950.00
2	4950.0	9900.00
3	4950.0	14850.00
4	4950.0	19800.00
5	4950.0	24750.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 16.02 hrs  
 Drawdown Time Using LID Flow of 0.1717 cfs

**BASIN 2 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	3250.0	0.00
1	3250.0	3250.00
2	3250.0	6500.00
3	3250.0	9750.00
4	3250.0	13000.00
5	3250.0	16250.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 17.59 hrs  
 Drawdown Time Using LID Flow of 0.10263 cfs

**BASIN 3 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	3900.0	0.00
1	3900.0	3900.00
2	3900.0	7800.00
3	3900.0	11700.00
4	3900.0	15600.00
5	3900.0	19500.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 16.51 hrs  
 Drawdown Time Using LID Flow of 0.13123 cfs

**BASIN 4 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	3950.0	0.00
1	3950.0	3950.00
2	3950.0	7900.00
3	3950.0	11850.00
4	3950.0	15800.00
5	3950.0	19750.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 16.72 hrs  
 Drawdown Time Using LID Flow of 0.13123 cfs

**BASIN 5 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	6200.0	0.00
1	6200.0	6200.00
2	6200.0	12400.00
3	6200.0	18600.00
4	6200.0	24800.00
5	6200.0	31000.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 18.19 hrs  
 Drawdown Time Using LID Flow of 0.18933 cfs

**BASIN 6 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	3250.0	0.00
1	3250.0	3250.00
2	3250.0	6500.00
3	3250.0	9750.00
4	3250.0	13000.00
5	3250.0	16250.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 17.59 hrs  
 Drawdown Time Using LID Flow of 0.10263 cfs

PRE\_DEV\_RV-1

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION        GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          05:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   05:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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      0.06 .08 .11 .16 .18 .21 .21 .200 .16 .12 .08 .06
DRY_ONLY     NO
    
```

[RAINGAGES]

```

;;
;;Name      Rain      Time      Snow      Data
;;Name      Type      Intrvl   Catch    Source
;;-----
SanVicente  INTENSITY 1:00   1.0     TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

;;
;;Name      Raingage      Outlet      Total      Pcnt.      Pcnt.      Curb      Snow
;;Name      Type      Intrvl   Catch    Area      Imperv    Width    Slope    Length    Pack
;;-----
RV1-PRE     SanVicente      POC-RV1     4.43      0          861       1         0
    
```

[SUBAREAS]

```

;;Subcatchment  N-Imperv  N-Perv  S-Imperv  S-Perv  PctZero  RouteTo  PctRouted
;;-----
RV1-PRE         0.012    0.05   0.05     0.10   25       OUTLET
    
```

[INFILTRATION]

```

;;Subcatchment  Suction  HydCon  IMDmax
;;-----
RV1-PRE         9        0.01875 0.33
    
```

[OUTFALLS]

```

;;
;;Name      Invert      Outfall      Stage/Table      Tide
;;Name      Elev.       Type         Time Series      Gate
;;-----
POC-RV1     0           FREE         NO
    
```

[TIMESERIES]

```

;;Name      Date      Time      Value
;;-----
;San Vicente Rain Gage from San Diego County
SanVicente  FILE "P:\Acad\7033 Hunsaker San Diego\03 Fanita Ranch\REC SWMM\rainfall_sanvicente.dat"
    
```

[REPORT]

# PRE\_DEV\_RV-1

INPUT NO  
CONTROLS NO  
SUBCATCHMENTS ALL  
NODES ALL  
LINKS ALL

[TAGS]

[MAP]

DIMENSIONS -115.361 3531.612 1589.934 5654.960  
Units None

[COORDINATES]

;;Node	X-Coord	Y-Coord
POC-RV1	903.735	4116.432

[VERTICES]

;;Link	X-Coord	Y-Coord
--------	---------	---------

[Polygons]

;;Subcatchment	X-Coord	Y-Coord
RV1-PRE	897.746	4956.140

[SYMBOLS]

;;Gage	X-Coord	Y-Coord
SanVicente	1729.232	4699.004

POST\_DEV\_RV-1

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION        GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          05:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   05:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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      0.06   .08   .11   .16   .18   .21   .21   .200   .16   .12   .08   .06
DRY_ONLY     NO
    
```

[RAINGAGES]

```

;;          Rain      Time  Snow  Data
;;Name      Type      Intrvl Catch Source
;;-----
SanVicente  INTENSITY 1:00   1.0   TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

;;
;;Name      Raingage      Outlet      Total      Pcnt.      Pcnt.      Curb      Snow
;;-----      -----      -----      Area      Imperv      Width      Slope      Length      Pack
RV1-PRE     SanVicente      BR-RV1      4.316     61.58     1290      1          0
BR-RV1      SanVicente      POC-RV1     0.113636  0          10        0          0
    
```

[SUBAREAS]

```

;;Subcatchment  N-Imperv  N-Perv  S-Imperv  S-Perv  PctZero  RouteTo  PctRouted
;;-----
RV1-PRE         0.012    0.05   0.05     0.10   25       OUTLET
BR-RV1          0.012    0.05   0.05     0.10   25       OUTLET
    
```

[INFILTRATION]

```

;;Subcatchment  Suction  HydCon  IMDmax
;;-----
RV1-PRE         9        0.01875  0.33
BR-RV1          9        0.01875  0.33
    
```

[LID\_CONTROLS]

POST\_DEV\_RV-1

;; Type/Layer Parameters

```

;;-----
BR-RV1 BC
BR-RV1 SURFACE 10.2 0.0 0.0 0.0 5
BR-RV1 SOIL 18 0.4 0.2 0.1 5 5 1.5
BR-RV1 STORAGE 18 0.67 0 0
BR-RV1 DRAIN 0.3996 0.5 3 6
  
```

[LID\_USAGE]

```

;;Subcatchment LID Process Number Area Width InitSatur FromImprv ToPerv Report File
;;-----
BR-RV1 BR-RV1 1 4950 0 0 100 0
  
```

[OUTFALLS]

```

;; Invert Outfall Stage/Table Tide
;;Name Elev. Type Time Series Gate
;;-----
POC-RV1 0 FREE NO
  
```

[TIMESERIES]

```

;;Name Date Time Value
;;-----
;San Vicente Rain Gage from San Diego County
SanVicente FILE "P:\Acad\7033 Hunsaker San Diego\03 Fanita Ranch\REC SWMM\rainfall_sanvicente.dat"
  
```

[REPORT]

```

INPUT NO
CONTROLS NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL
  
```

[TAGS]

[MAP]

```

DIMENSIONS -115.361 3531.612 1589.934 5654.960
Units None
  
```

[COORDINATES]

```

;;Node X-Coord Y-Coord
;;-----
POC-RV1 903.735 4116.432
  
```

[VERTICES]

```

;;Link X-Coord Y-Coord
;;-----
  
```

[Polygons]

```

;;Subcatchment X-Coord Y-Coord
;;-----
RV1-PRE 897.746 4956.140
BR-RV1 900.497 4740.337
  
```

[SYMBOLS]

```

;;Gage X-Coord Y-Coord
;;-----
SanVicente 1729.232 4699.004
  
```

## **POC RV2**

Flow Duration Curve (Pass-Fail) Results

List of the “n” largest Peaks: Pre-Development and Post-Development Conditions

Elevation vs. Area Curves and Elevations vs. Discharge Curves to be used in SWMM

DMA and SWMM Input Data (Existing and Proposed Models)

### Flow Duration Curve Data for Fanita Ranch POC-RV2 , Santee, CA

Q2 = 1.262 cfs Fraction 10 %  
 Q10 = 1.87 cfs  
 Step = 0.0176 cfs  
 Count = 306811 hours  
 35.00 years

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
1	0.126	794	2.59E-01	317	1.03E-01	40%	Pass
2	0.144	735	2.40E-01	314	1.02E-01	43%	Pass
3	0.161	685	2.23E-01	302	9.84E-02	44%	Pass
4	0.179	640	2.09E-01	286	9.32E-02	45%	Pass
5	0.197	592	1.93E-01	263	8.57E-02	44%	Pass
6	0.214	528	1.72E-01	236	7.69E-02	45%	Pass
7	0.232	491	1.60E-01	224	7.30E-02	46%	Pass
8	0.250	462	1.51E-01	212	6.91E-02	46%	Pass
9	0.267	431	1.40E-01	202	6.58E-02	47%	Pass
10	0.285	411	1.34E-01	197	6.42E-02	48%	Pass
11	0.303	393	1.28E-01	180	5.87E-02	46%	Pass
12	0.320	377	1.23E-01	163	5.31E-02	43%	Pass
13	0.338	363	1.18E-01	158	5.15E-02	44%	Pass
14	0.355	350	1.14E-01	156	5.08E-02	45%	Pass
15	0.373	330	1.08E-01	156	5.08E-02	47%	Pass
16	0.391	309	1.01E-01	156	5.08E-02	50%	Pass
17	0.408	290	9.45E-02	147	4.79E-02	51%	Pass
18	0.426	270	8.80E-02	139	4.53E-02	51%	Pass
19	0.444	248	8.08E-02	132	4.30E-02	53%	Pass
20	0.461	225	7.33E-02	131	4.27E-02	58%	Pass
21	0.479	206	6.71E-02	127	4.14E-02	62%	Pass
22	0.497	183	5.96E-02	122	3.98E-02	67%	Pass
23	0.514	172	5.61E-02	122	3.98E-02	71%	Pass
24	0.532	167	5.44E-02	104	3.39E-02	62%	Pass
25	0.549	157	5.12E-02	85	2.77E-02	54%	Pass
26	0.567	150	4.89E-02	77	2.51E-02	51%	Pass
27	0.585	145	4.73E-02	77	2.51E-02	53%	Pass
28	0.602	137	4.47E-02	77	2.51E-02	56%	Pass
29	0.620	133	4.33E-02	76	2.48E-02	57%	Pass
30	0.638	125	4.07E-02	73	2.38E-02	58%	Pass
31	0.655	120	3.91E-02	68	2.22E-02	57%	Pass
32	0.673	113	3.68E-02	67	2.18E-02	59%	Pass
33	0.691	104	3.39E-02	67	2.18E-02	64%	Pass
34	0.708	98	3.19E-02	66	2.15E-02	67%	Pass
35	0.726	94	3.06E-02	63	2.05E-02	67%	Pass
36	0.743	86	2.80E-02	61	1.99E-02	71%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
37	0.761	79	2.57E-02	60	1.96E-02	76%	Pass
38	0.779	71	2.31E-02	56	1.83E-02	79%	Pass
39	0.796	65	2.12E-02	48	1.56E-02	74%	Pass
40	0.814	62	2.02E-02	47	1.53E-02	76%	Pass
41	0.832	61	1.99E-02	44	1.43E-02	72%	Pass
42	0.849	57	1.86E-02	39	1.27E-02	68%	Pass
43	0.867	54	1.76E-02	38	1.24E-02	70%	Pass
44	0.885	48	1.56E-02	35	1.14E-02	73%	Pass
45	0.902	45	1.47E-02	35	1.14E-02	78%	Pass
46	0.920	42	1.37E-02	34	1.11E-02	81%	Pass
47	0.937	40	1.30E-02	32	1.04E-02	80%	Pass
48	0.955	40	1.30E-02	32	1.04E-02	80%	Pass
49	0.973	40	1.30E-02	32	1.04E-02	80%	Pass
50	0.990	38	1.24E-02	24	7.82E-03	63%	Pass
51	1.008	36	1.17E-02	21	6.84E-03	58%	Pass
52	1.026	36	1.17E-02	20	6.52E-03	56%	Pass
53	1.043	31	1.01E-02	20	6.52E-03	65%	Pass
54	1.061	29	9.45E-03	20	6.52E-03	69%	Pass
55	1.079	27	8.80E-03	20	6.52E-03	74%	Pass
56	1.096	26	8.47E-03	19	6.19E-03	73%	Pass
57	1.114	26	8.47E-03	18	5.87E-03	69%	Pass
58	1.131	25	8.15E-03	16	5.21E-03	64%	Pass
59	1.149	25	8.15E-03	14	4.56E-03	56%	Pass
60	1.167	25	8.15E-03	14	4.56E-03	56%	Pass
61	1.184	21	6.84E-03	14	4.56E-03	67%	Pass
62	1.202	20	6.52E-03	14	4.56E-03	70%	Pass
63	1.220	20	6.52E-03	14	4.56E-03	70%	Pass
64	1.237	19	6.19E-03	14	4.56E-03	74%	Pass
65	1.255	19	6.19E-03	14	4.56E-03	74%	Pass
66	1.273	18	5.87E-03	11	3.59E-03	61%	Pass
67	1.290	18	5.87E-03	11	3.59E-03	61%	Pass
68	1.308	18	5.87E-03	11	3.59E-03	61%	Pass
69	1.325	18	5.87E-03	11	3.59E-03	61%	Pass
70	1.343	17	5.54E-03	10	3.26E-03	59%	Pass
71	1.361	17	5.54E-03	9	2.93E-03	53%	Pass
72	1.378	17	5.54E-03	9	2.93E-03	53%	Pass
73	1.396	16	5.21E-03	9	2.93E-03	56%	Pass
74	1.414	14	4.56E-03	9	2.93E-03	64%	Pass
75	1.431	13	4.24E-03	8	2.61E-03	62%	Pass
76	1.449	13	4.24E-03	8	2.61E-03	62%	Pass
77	1.467	12	3.91E-03	8	2.61E-03	67%	Pass
78	1.484	12	3.91E-03	8	2.61E-03	67%	Pass
79	1.502	12	3.91E-03	8	2.61E-03	67%	Pass
80	1.519	12	3.91E-03	8	2.61E-03	67%	Pass
81	1.537	12	3.91E-03	8	2.61E-03	67%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
82	1.555	11	3.59E-03	8	2.61E-03	73%	Pass
83	1.572	11	3.59E-03	8	2.61E-03	73%	Pass
84	1.590	9	2.93E-03	8	2.61E-03	89%	Pass
85	1.608	9	2.93E-03	8	2.61E-03	89%	Pass
86	1.625	9	2.93E-03	7	2.28E-03	78%	Pass
87	1.643	9	2.93E-03	7	2.28E-03	78%	Pass
88	1.661	9	2.93E-03	7	2.28E-03	78%	Pass
89	1.678	7	2.28E-03	7	2.28E-03	100%	Pass
90	1.696	7	2.28E-03	6	1.96E-03	86%	Pass
91	1.713	7	2.28E-03	5	1.63E-03	71%	Pass
92	1.731	7	2.28E-03	5	1.63E-03	71%	Pass
93	1.749	6	1.96E-03	5	1.63E-03	83%	Pass
94	1.766	5	1.63E-03	5	1.63E-03	100%	Pass
95	1.784	5	1.63E-03	4	1.30E-03	80%	Pass
96	1.802	5	1.63E-03	3	9.78E-04	60%	Pass
97	1.819	5	1.63E-03	3	9.78E-04	60%	Pass
98	1.837	5	1.63E-03	3	9.78E-04	60%	Pass
99	1.855	4	1.30E-03	3	9.78E-04	75%	Pass
100	1.872	4	1.30E-03	3	9.78E-04	75%	Pass

**Peak Flows calculated with Cunnane Plotting Position**

Return Period (years)	Pre-dev. Q (cfs)	Post-Dev. Q (cfs)	Reduction (cfs)
10	1.872	0.794	1.079
9	1.812	0.794	1.018
8	1.768	0.794	0.974
7	1.745	0.813	0.932
6	1.718	0.835	0.884
5	1.673	0.838	0.835
4	1.585	0.840	0.746
3	1.444	0.884	0.560
2	1.262	0.987	0.275

**List of Peak events and Determination of P2 and P10 (Post-Development)  
Fanita Ranch POCRV2 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>0.79</b>	<b>0.79</b>					
9	0.79	0.79	2.614	2/20/1980	35	1.03	1.02
8	0.79	0.79	2.566	1/4/1978	34	1.06	1.05
7	0.81	0.80	2.473	10/22/1976	33	1.09	1.08
6	0.83	0.83	1.798	2/7/1998	32	1.13	1.11
5	0.84	0.84	1.779	9/10/1976	31	1.16	1.15
4	0.84	0.84	1.709	1/29/1980	30	1.20	1.19
3	0.88	0.88	1.693	1/9/2005	29	1.24	1.23
2	0.99	0.99	1.623	2/2/1998	28	1.29	1.28
			1.425	1/31/1979	27	1.33	1.32
			1.355	12/4/1974	26	1.38	1.38
			1.33	8/17/1977	25	1.44	1.43
			1.26	3/2/1983	24	1.50	1.49
			1.26	2/21/2005	23	1.57	1.56
			1.10	2/15/1986	22	1.64	1.63
			1.00	10/31/1987	21	1.71	1.71
			1.00	10/20/2004	20	1.80	1.80
			0.99	12/29/2004	19	1.89	1.89
			0.99	11/25/1985	18	2.00	2.00
			0.98	10/28/1974	17	2.12	2.12
			0.98	10/27/2004	16	2.25	2.26
			0.97	11/22/1996	15	2.40	2.41
			0.92	2/13/1998	14	2.57	2.59
			0.90	2/23/2005	13	2.77	2.79
			0.88	3/5/1995	12	3.00	3.03
			0.86	11/12/2003	11	3.27	3.32
			0.84	1/15/1978	10	3.60	3.67
			0.84	1/11/1980	9	4.00	4.09
			0.84	1/29/1980	8	4.50	4.63
			0.84	2/18/1980	7	5.14	5.33
			0.83	2/8/1976	6	6.00	6.29
			0.79	3/6/1980	5	7.20	7.65
			0.79	2/6/1992	4	9.00	9.78
			0.79	2/10/1978	3	12.00	13.54
			0.78	1/11/2005	2	18.00	22.00
			0.77	12/7/1992	1	36.00	58.67

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

**List of Peak events and Determination of P2 and P10 (Pre-Development)**

**Fanita Ranch POC RV2 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>1.87</b>	<b>1.99</b>					
<b>9</b>	<b>1.81</b>	<b>1.85</b>	0.896	5/1/1978	35	1.03	1.02
<b>8</b>	<b>1.77</b>	<b>1.79</b>	0.924	3/5/2005	34	1.06	1.05
<b>7</b>	<b>1.74</b>	<b>1.75</b>	0.974	12/28/1977	33	1.09	1.08
<b>6</b>	<b>1.72</b>	<b>1.74</b>	0.982	1/18/1993	32	1.13	1.11
<b>5</b>	<b>1.67</b>	<b>1.67</b>	0.996	4/18/1995	31	1.16	1.15
<b>4</b>	<b>1.59</b>	<b>1.59</b>	1.029	3/4/1978	30	1.20	1.19
<b>3</b>	<b>1.44</b>	<b>1.45</b>	1.033	4/23/1980	29	1.24	1.23
<b>2</b>	<b>1.26</b>	<b>1.26</b>	1.047	2/16/1980	28	1.29	1.28
			1.055	2/18/1980	27	1.33	1.32
			1.069	1/13/1993	26	1.38	1.38
			1.074	2/15/1986	25	1.44	1.43
			1.119	10/10/1986	24	1.50	1.49
			1.168	8/17/1977	23	1.57	1.56
			1.173	3/2/1983	22	1.64	1.63
			1.175	12/4/1974	21	1.71	1.71
			1.177	2/15/1992	20	1.80	1.80
			1.188	2/21/2005	19	1.89	1.89
			1.262	3/1/1983	18	2.00	2.00
			1.34	1/31/1979	17	2.12	2.12
			1.383	10/27/2004	16	2.25	2.26
			1.4	10/18/2004	15	2.40	2.41
			1.413	10/20/2004	14	2.57	2.59
			1.414	3/6/1975	13	2.77	2.79
			1.449	2/13/1998	12	3.00	3.03
			1.542	2/2/1998	11	3.27	3.32
			1.576	2/19/1993	10	3.60	3.67
			1.588	1/29/1980	9	4.00	4.09
			1.67	2/6/1992	8	4.50	4.63
			1.676	1/9/2005	7	5.14	5.33
			1.736	2/7/1998	6	6.00	6.29
			1.753	10/31/1987	5	7.20	7.65
			1.846	9/10/1976	4	9.00	9.78
			2.289	10/22/1976	3	12.00	13.54
			2.532	2/20/1980	2	18.00	22.00
			2.679	1/4/1978	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

**BMP RV1**

ABMP	<b>4950</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2.4375</b> in
Aorifice	0.03241 sq-ft
C <sub>SWMM</sub>	<b>0.3996</b> 0.194283
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	13.78125 in 1.148 ft
Q <sub>orif-classic</sub>	0.17000 cfs
Q <sub>orif-SWMM</sub>	0.17000 cfs
Qdiversion	<b>0.17170</b> cfs
Qinf:	0.5729 cfs
<b>0.1 Q2 EX</b>	<b>0.271</b>

**BMP RV2**

ABMP	<b>3250</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>1.875</b> in
Aorifice	0.01917 sq-ft
C <sub>SWMM</sub>	<b>0.3602</b> 0.11496
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	14.0625 in 1.172 ft
Q <sub>orif-classic</sub>	0.10161 cfs
Q <sub>orif-SWMM</sub>	0.10161 cfs
Qdiversion	<b>0.10263</b> cfs
Qinf:	0.3762 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**BMP RV3**

ABMP	<b>3900</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2.125</b> in
Aorifice	0.02463 sq-ft
C <sub>SWMM</sub>	<b>0.3855</b> 0.14766
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	13.9375 in 1.161 ft
Q <sub>orif-classic</sub>	0.12993 cfs
Q <sub>orif-SWMM</sub>	0.12993 cfs
Qdiversion	<b>0.13123</b> cfs
Qinf:	0.4514 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**BMP RV4**

ABMP	<b>3950</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2.125</b> in
Aorifice	0.02463 sq-ft
C <sub>SWMM</sub>	<b>0.3806</b> 0.14766
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	13.9375 in 1.161 ft
Q <sub>orif-classic</sub>	0.12993 cfs
Q <sub>orif-SWMM</sub>	0.12993 cfs
Qdiversion	<b>0.13123</b> cfs
Qinf:	0.4572 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**BMP RV5**

ABMP	<b>6200</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2.5625</b> in
Aorifice	0.03581 sq-ft
C <sub>SWMM</sub>	<b>0.3526</b> 0.214721
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	13.71875 in 1.143 ft
Q <sub>orif-classic</sub>	0.18745 cfs
Q <sub>orif-SWMM</sub>	0.18745 cfs
Qdiversion	<b>0.18933</b> cfs
Qinf:	0.7176 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**BMP RV6**

ABMP	<b>3250</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>1.875</b> in
Aorifice	0.01917 sq-ft
C <sub>SWMM</sub>	<b>0.3602</b> 0.11496
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	14.0625 in 1.172 ft
Q <sub>orif-classic</sub>	0.10161 cfs
Q <sub>orif-SWMM</sub>	0.10161 cfs
Qdiversion	<b>0.10263</b> cfs
Qinf:	0.3762 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**STAGE STORAGE & DRAWDOWN CALCULATIONS**

**BASIN 1 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	4950.0	0.00
1	4950.0	4950.00
2	4950.0	9900.00
3	4950.0	14850.00
4	4950.0	19800.00
5	4950.0	24750.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 16.02 hrs  
 Drawdown Time Using LID Flow of 0.1717 cfs

**BASIN 2 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	3250.0	0.00
1	3250.0	3250.00
2	3250.0	6500.00
3	3250.0	9750.00
4	3250.0	13000.00
5	3250.0	16250.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 17.59 hrs  
 Drawdown Time Using LID Flow of 0.10263 cfs

**BASIN 3 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	3900.0	0.00
1	3900.0	3900.00
2	3900.0	7800.00
3	3900.0	11700.00
4	3900.0	15600.00
5	3900.0	19500.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 16.51 hrs  
 Drawdown Time Using LID Flow of 0.13123 cfs

**BASIN 4 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	3950.0	0.00
1	3950.0	3950.00
2	3950.0	7900.00
3	3950.0	11850.00
4	3950.0	15800.00
5	3950.0	19750.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 16.72 hrs  
 Drawdown Time Using LID Flow of 0.13123 cfs

**BASIN 5 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	6200.0	0.00
1	6200.0	6200.00
2	6200.0	12400.00
3	6200.0	18600.00
4	6200.0	24800.00
5	6200.0	31000.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 18.19 hrs  
 Drawdown Time Using LID Flow of 0.18933 cfs

**BASIN 6 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	3250.0	0.00
1	3250.0	3250.00
2	3250.0	6500.00
3	3250.0	9750.00
4	3250.0	13000.00
5	3250.0	16250.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 17.59 hrs  
 Drawdown Time Using LID Flow of 0.10263 cfs

PRE\_DEV\_RV-2

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION        GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE           01/03/1973
START_TIME           05:00:00
REPORT_START_DATE    05/24/1973
REPORT_START_TIME    05:00:00
END_DATE             05/23/2008
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             00:15:00
DRY_STEP             04:00:00
ROUTING_STEP         0:01:00
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      0.06  .08  .11  .16  .18  .21  .21  .200  .16  .12  .08  .06
DRY_ONLY     NO
    
```

[RAINGAGES]

```

;;
;;Name      Rain      Time      Snow      Data
;;Name      Type      Intrvl   Catch     Source
;;-----
SanVicente  INTENSITY 1:00   1.0      TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

;;
;;Name      Raingage      Outlet      Total      Pcnt.      Pcnt.      Curb      Snow
;;Name      Raingage      Outlet      Area       Imperv     Width     Slope     Length     Pack
;;-----
RV2-PRE     SanVicente      POC-RV2     2.9        0          564       1         0
    
```

[SUBAREAS]

```

;;Subcatchment  N-Imperv  N-Perv  S-Imperv  S-Perv  PctZero  RouteTo  PctRouted
;;-----
RV2-PRE         0.012    0.05   0.05     0.10   25       OUTLET
    
```

[INFILTRATION]

```

;;Subcatchment  Suction  HydCon  IMDmax
;;-----
RV2-PRE         9        0.01875  0.33
    
```

[OUTFALLS]

```

;;
;;Name      Invert      Outfall      Stage/Table      Tide
;;Name      Elev.       Type         Time Series      Gate
;;-----
POC-RV2     0           FREE         NO
    
```

[TIMESERIES]

```

;;Name      Date      Time      Value
;;-----
;San Vicente Rain Gage from San Diego County
SanVicente  FILE "P:\Acad\7033 Hunsaker San Diego\03 Fanita Ranch\REC SWMM\rainfall_sanvicente.dat"
    
```

[REPORT]

## PRE\_DEV\_RV-2

INPUT NO  
CONTROLS NO  
SUBCATCHMENTS ALL  
NODES ALL  
LINKS ALL

[TAGS]

[MAP]

DIMENSIONS -115.361 3531.612 1589.934 5654.960  
Units None

[COORDINATES]

;;Node	X-Coord	Y-Coord
POC-RV2	903.735	4116.432

[VERTICES]

;;Link	X-Coord	Y-Coord
--------	---------	---------

[Polygons]

;;Subcatchment	X-Coord	Y-Coord
RV2-PRE	897.746	4956.140

[SYMBOLS]

;;Gage	X-Coord	Y-Coord
SanVicente	1729.232	4699.004

POST\_DEV\_RV-2

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION        GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE           01/03/1973
START_TIME           05:00:00
REPORT_START_DATE    05/24/1973
REPORT_START_TIME    05:00:00
END_DATE             05/23/2008
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             00:15:00
DRY_STEP             04:00:00
ROUTING_STEP         0:01:00
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     0.06  .08  .11  .16  .18  .21  .21  .200  .16  .12  .08  .06
DRY_ONLY    NO
    
```

[RAINGAGES]

```

;;
;;Name      Rain      Time      Snow      Data
;;Name      Type      Intrvl   Catch     Source
;;-----
SanVicente  INTENSITY 1:00   1.0      TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

;;
;;Name      Raingage      Outlet      Total      Pcnt.      Pcnt.      Curb      Snow
;;Name      Raingage      Outlet      Area       Imperv     Width     Slope     Length     Pack
;;-----
DMA-RV2     SanVicente      BR-RV2      2.8525     61.58     844       1         0
BR-RV2     SanVicente      POC-RV1     0.07461    0         10        0         0
    
```

[SUBAREAS]

```

;;Subcatchment  N-Imperv  N-Perv  S-Imperv  S-Perv  PctZero  RouteTo  PctRouted
;;-----
DMA-RV2        0.012    0.05   0.05     0.10   25       OUTLET
BR-RV2        0.012    0.05   0.05     0.10   25       OUTLET
    
```

[INFILTRATION]

```

;;Subcatchment  Suction  HydCon  IMDmax
;;-----
DMA-RV2        9        0.01875  0.33
BR-RV2        9        0.01875  0.33
    
```

[LID\_CONTROLS]

```

;;
;;Type/Layer  Parameters
;;-----
BR-RV2        BC
BR-RV2        SURFACE  10.2    0.0     0.0     0.0     5
BR-RV2        SOIL     18      0.4     0.2     0.1     5         5         1.5
BR-RV2        STORAGE  18      0.67    0       0
BR-RV2        DRAIN    0.3602  0.5     3       6
    
```

[LID\_USAGE]

POST\_DEV\_RV-2

Subcatchment	LID Process	Number	Area	Width	InitSatur	FromImprv	ToPerv	Report File
BR-RV2	BR-RV2	1	3250	0	0	100	0	

[OUTFALLS]

Name	Invert Elev.	Outfall Type	Stage/Table Time Series	Tide Gate
POC-RV1	0	FREE		NO

[TIMESERIES]

Name	Date	Time	Value
San Vicente Rain Gage from San Diego County			
SanVicente	FILE "P:\Acad\7033 Hunsaker San Diego\03 Fanita Ranch\REC SWMM\rainfall_sanvicente.dat"		

[REPORT]

INPUT NO  
 CONTROLS NO  
 SUBCATCHMENTS ALL  
 NODES ALL  
 LINKS ALL

[TAGS]

[MAP]

DIMENSIONS -115.361 3531.612 1589.934 5654.960  
 Units None

[COORDINATES]

Node	X-Coord	Y-Coord
POC-RV1	903.735	4116.432

[VERTICES]

Link	X-Coord	Y-Coord
------	---------	---------

[Polygons]

Subcatchment	X-Coord	Y-Coord
DMA-RV2	897.746	4956.140
BR-RV2	900.497	4740.337

[SYMBOLS]

Gage	X-Coord	Y-Coord
SanVicente	1729.232	4699.004

## **POC RV3**

Flow Duration Curve (Pass-Fail) Results

List of the “n” largest Peaks: Pre-Development and Post-Development Conditions

Elevation vs. Area Curves and Elevations vs. Discharge Curves to be used in SWMM

DMA and SWMM Input Data (Existing and Proposed Models)

## Flow Duration Curve Data for Fanita Ranch POC-RV3 , Santee, CA

Q2 = 1.511 cfs Fraction 10 %  
 Q10 = 2.24 cfs  
 Step = 0.0211 cfs  
 Count = 306811 hours  
 35.00 years

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
1	0.151	793	2.58E-01	288	9.39E-02	36%	Pass
2	0.172	734	2.39E-01	284	9.26E-02	39%	Pass
3	0.193	684	2.23E-01	273	8.90E-02	40%	Pass
4	0.214	640	2.09E-01	267	8.70E-02	42%	Pass
5	0.235	592	1.93E-01	243	7.92E-02	41%	Pass
6	0.257	528	1.72E-01	223	7.27E-02	42%	Pass
7	0.278	491	1.60E-01	211	6.88E-02	43%	Pass
8	0.299	462	1.51E-01	202	6.58E-02	44%	Pass
9	0.320	433	1.41E-01	195	6.36E-02	45%	Pass
10	0.341	411	1.34E-01	189	6.16E-02	46%	Pass
11	0.362	393	1.28E-01	173	5.64E-02	44%	Pass
12	0.383	377	1.23E-01	157	5.12E-02	42%	Pass
13	0.404	362	1.18E-01	153	4.99E-02	42%	Pass
14	0.425	349	1.14E-01	150	4.89E-02	43%	Pass
15	0.446	330	1.08E-01	150	4.89E-02	45%	Pass
16	0.468	309	1.01E-01	149	4.86E-02	48%	Pass
17	0.489	291	9.48E-02	139	4.53E-02	48%	Pass
18	0.510	270	8.80E-02	133	4.33E-02	49%	Pass
19	0.531	249	8.12E-02	128	4.17E-02	51%	Pass
20	0.552	226	7.37E-02	127	4.14E-02	56%	Pass
21	0.573	206	6.71E-02	121	3.94E-02	59%	Pass
22	0.594	183	5.96E-02	119	3.88E-02	65%	Pass
23	0.615	172	5.61E-02	116	3.78E-02	67%	Pass
24	0.636	167	5.44E-02	97	3.16E-02	58%	Pass
25	0.657	157	5.12E-02	80	2.61E-02	51%	Pass
26	0.678	150	4.89E-02	76	2.48E-02	51%	Pass
27	0.700	145	4.73E-02	75	2.44E-02	52%	Pass
28	0.721	137	4.47E-02	74	2.41E-02	54%	Pass
29	0.742	134	4.37E-02	71	2.31E-02	53%	Pass
30	0.763	125	4.07E-02	68	2.22E-02	54%	Pass
31	0.784	121	3.94E-02	62	2.02E-02	51%	Pass
32	0.805	113	3.68E-02	62	2.02E-02	55%	Pass
33	0.826	104	3.39E-02	61	1.99E-02	59%	Pass
34	0.847	98	3.19E-02	59	1.92E-02	60%	Pass
35	0.868	94	3.06E-02	59	1.92E-02	63%	Pass
36	0.889	86	2.80E-02	56	1.83E-02	65%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
37	0.910	80	2.61E-02	54	1.76E-02	68%	Pass
38	0.932	71	2.31E-02	48	1.56E-02	68%	Pass
39	0.953	65	2.12E-02	45	1.47E-02	69%	Pass
40	0.974	62	2.02E-02	45	1.47E-02	73%	Pass
41	0.995	61	1.99E-02	40	1.30E-02	66%	Pass
42	1.016	58	1.89E-02	37	1.21E-02	64%	Pass
43	1.037	54	1.76E-02	37	1.21E-02	69%	Pass
44	1.058	48	1.56E-02	34	1.11E-02	71%	Pass
45	1.079	45	1.47E-02	33	1.08E-02	73%	Pass
46	1.100	42	1.37E-02	32	1.04E-02	76%	Pass
47	1.121	40	1.30E-02	32	1.04E-02	80%	Pass
48	1.143	40	1.30E-02	31	1.01E-02	78%	Pass
49	1.164	40	1.30E-02	27	8.80E-03	68%	Pass
50	1.185	38	1.24E-02	21	6.84E-03	55%	Pass
51	1.206	36	1.17E-02	21	6.84E-03	58%	Pass
52	1.227	36	1.17E-02	20	6.52E-03	56%	Pass
53	1.248	31	1.01E-02	20	6.52E-03	65%	Pass
54	1.269	29	9.45E-03	20	6.52E-03	69%	Pass
55	1.290	27	8.80E-03	20	6.52E-03	74%	Pass
56	1.311	26	8.47E-03	19	6.19E-03	73%	Pass
57	1.332	26	8.47E-03	18	5.87E-03	69%	Pass
58	1.353	25	8.15E-03	14	4.56E-03	56%	Pass
59	1.375	25	8.15E-03	14	4.56E-03	56%	Pass
60	1.396	25	8.15E-03	14	4.56E-03	56%	Pass
61	1.417	21	6.84E-03	14	4.56E-03	67%	Pass
62	1.438	20	6.52E-03	14	4.56E-03	70%	Pass
63	1.459	20	6.52E-03	13	4.24E-03	65%	Pass
64	1.480	19	6.19E-03	13	4.24E-03	68%	Pass
65	1.501	19	6.19E-03	11	3.59E-03	58%	Pass
66	1.522	18	5.87E-03	11	3.59E-03	61%	Pass
67	1.543	18	5.87E-03	11	3.59E-03	61%	Pass
68	1.564	18	5.87E-03	10	3.26E-03	56%	Pass
69	1.585	18	5.87E-03	10	3.26E-03	56%	Pass
70	1.607	17	5.54E-03	9	2.93E-03	53%	Pass
71	1.628	17	5.54E-03	9	2.93E-03	53%	Pass
72	1.649	17	5.54E-03	9	2.93E-03	53%	Pass
73	1.670	16	5.21E-03	9	2.93E-03	56%	Pass
74	1.691	15	4.89E-03	8	2.61E-03	53%	Pass
75	1.712	13	4.24E-03	7	2.28E-03	54%	Pass
76	1.733	13	4.24E-03	7	2.28E-03	54%	Pass
77	1.754	12	3.91E-03	7	2.28E-03	58%	Pass
78	1.775	12	3.91E-03	7	2.28E-03	58%	Pass
79	1.796	12	3.91E-03	7	2.28E-03	58%	Pass
80	1.818	12	3.91E-03	7	2.28E-03	58%	Pass
81	1.839	12	3.91E-03	7	2.28E-03	58%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
82	1.860	11	3.59E-03	7	2.28E-03	64%	Pass
83	1.881	11	3.59E-03	7	2.28E-03	64%	Pass
84	1.902	9	2.93E-03	6	1.96E-03	67%	Pass
85	1.923	9	2.93E-03	6	1.96E-03	67%	Pass
86	1.944	9	2.93E-03	6	1.96E-03	67%	Pass
87	1.965	9	2.93E-03	6	1.96E-03	67%	Pass
88	1.986	9	2.93E-03	6	1.96E-03	67%	Pass
89	2.007	7	2.28E-03	6	1.96E-03	86%	Pass
90	2.028	7	2.28E-03	5	1.63E-03	71%	Pass
91	2.050	7	2.28E-03	5	1.63E-03	71%	Pass
92	2.071	7	2.28E-03	5	1.63E-03	71%	Pass
93	2.092	6	1.96E-03	5	1.63E-03	83%	Pass
94	2.113	5	1.63E-03	5	1.63E-03	100%	Pass
95	2.134	5	1.63E-03	3	9.78E-04	60%	Pass
96	2.155	5	1.63E-03	3	9.78E-04	60%	Pass
97	2.176	5	1.63E-03	3	9.78E-04	60%	Pass
98	2.197	5	1.63E-03	3	9.78E-04	60%	Pass
99	2.218	4	1.30E-03	3	9.78E-04	75%	Pass
100	2.239	4	1.30E-03	3	9.78E-04	75%	Pass

**Peak Flows calculated with Cunnane Plotting Position**

Return Period (years)	Pre-dev. Q (cfs)	Post-Dev. Q (cfs)	Reduction (cfs)
10	2.239	2.178	0.062
9	2.167	2.124	0.043
8	2.115	2.116	-0.001
7	2.087	2.071	0.016
6	2.056	1.988	0.068
5	2.003	1.808	0.195
4	1.897	1.671	0.225
3	1.728	1.490	0.238
2	1.511	1.162	0.349

**List of Peak events and Determination of P2 and P10 (Post-Development)  
Fanita Ranch POCR3 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>2.18</b>	<b>2.40</b>					
9	2.12	2.13	0.87	10/10/1986	35	1.03	1.02
8	2.12	2.12	0.87	2/13/1998	34	1.06	1.05
7	2.07	2.10	0.92	12/7/1992	33	1.09	1.08
6	1.99	2.03	0.93	2/10/1978	32	1.13	1.11
5	1.81	1.86	0.93	1/11/2005	31	1.16	1.15
4	1.67	1.69	0.94	3/6/1980	30	1.20	1.19
3	1.49	1.49	0.99	2/8/1976	29	1.24	1.23
2	1.16	1.16	0.99	2/18/1980	28	1.29	1.28
			0.99	1/29/1980	27	1.33	1.32
			1.00	1/11/1980	26	1.38	1.38
			1.00	1/15/1978	25	1.44	1.43
			1.01	11/12/2003	24	1.50	1.49
			1.04	3/5/1995	23	1.57	1.56
			1.07	2/23/2005	22	1.64	1.63
			1.13	10/31/1987	21	1.71	1.71
			1.15	11/22/1996	20	1.80	1.80
			1.16	10/28/1974	19	1.89	1.89
			1.16	10/27/2004	18	2.00	2.00
			1.17	11/25/1985	17	2.12	2.12
			1.17	12/29/2004	16	2.25	2.26
			1.18	10/20/2004	15	2.40	2.41
			1.29	2/15/1986	14	2.57	2.59
			1.49	2/21/2005	13	2.77	2.79
			1.49	3/2/1983	12	3.00	3.03
			1.56	8/17/1977	11	3.27	3.32
			1.605	12/4/1974	10	3.60	3.67
			1.69	1/31/1979	9	4.00	4.09
			1.706	2/2/1998	8	4.50	4.63
			1.9	1/9/2005	7	5.14	5.33
			2.026	1/29/1980	6	6.00	6.29
			2.113	9/10/1976	5	7.20	7.65
			2.131	2/7/1998	4	9.00	9.78
			2.923	10/22/1976	3	12.00	13.54
			3.042	1/4/1978	2	18.00	22.00
			3.089	2/20/1980	1	36.00	58.67

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

**List of Peak events and Determination of P2 and P10 (Pre-Development)**

**Fanita Ranch POC RV3 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>2.24</b>	<b>2.39</b>					
<b>9</b>	<b>2.17</b>	<b>2.21</b>	1.072	5/1/1978	35	1.03	1.02
<b>8</b>	<b>2.12</b>	<b>2.15</b>	1.106	3/5/2005	34	1.06	1.05
<b>7</b>	<b>2.09</b>	<b>2.09</b>	1.165	12/28/1977	33	1.09	1.08
<b>6</b>	<b>2.06</b>	<b>2.08</b>	1.175	1/18/1993	32	1.13	1.11
<b>5</b>	<b>2.00</b>	<b>2.00</b>	1.192	4/18/1995	31	1.16	1.15
<b>4</b>	<b>1.90</b>	<b>1.90</b>	1.232	3/4/1978	30	1.20	1.19
<b>3</b>	<b>1.73</b>	<b>1.73</b>	1.236	4/23/1980	29	1.24	1.23
<b>2</b>	<b>1.51</b>	<b>1.51</b>	1.253	2/16/1980	28	1.29	1.28
			1.262	2/18/1980	27	1.33	1.32
			1.279	1/13/1993	26	1.38	1.38
			1.285	2/15/1986	25	1.44	1.43
			1.338	10/10/1986	24	1.50	1.49
			1.398	8/17/1977	23	1.57	1.56
			1.404	3/2/1983	22	1.64	1.63
			1.405	12/4/1974	21	1.71	1.71
			1.409	2/15/1992	20	1.80	1.80
			1.422	2/21/2005	19	1.89	1.89
			1.511	3/1/1983	18	2.00	2.00
			1.604	1/31/1979	17	2.12	2.12
			1.655	10/27/2004	16	2.25	2.26
			1.675	10/18/2004	15	2.40	2.41
			1.691	3/6/1975	14	2.57	2.59
			1.691	10/20/2004	13	2.77	2.79
			1.734	2/13/1998	12	3.00	3.03
			1.845	2/2/1998	11	3.27	3.32
			1.886	2/19/1993	10	3.60	3.67
			1.9	1/29/1980	9	4.00	4.09
			1.999	2/6/1992	8	4.50	4.63
			2.006	1/9/2005	7	5.14	5.33
			2.077	2/7/1998	6	6.00	6.29
			2.097	10/31/1987	5	7.20	7.65
			2.208	9/10/1976	4	9.00	9.78
			2.739	10/22/1976	3	12.00	13.54
			3.03	2/20/1980	2	18.00	22.00
			3.205	1/4/1978	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

**BMP RV1**

ABMP	<b>4950</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2.4375</b> in
Aorifice	0.03241 sq-ft
C <sub>SWMM</sub>	<b>0.3996</b> 0.194283
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	13.78125 in 1.148 ft
Q <sub>orif-classic</sub>	0.17000 cfs
Q <sub>orif-SWMM</sub>	0.17000 cfs
Qdiversion	<b>0.17170</b> cfs
Qinf:	0.5729 cfs
<b>0.1 Q2 EX</b>	<b>0.271</b>

**BMP RV2**

ABMP	<b>3250</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>1.875</b> in
Aorifice	0.01917 sq-ft
C <sub>SWMM</sub>	<b>0.3602</b> 0.11496
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	14.0625 in 1.172 ft
Q <sub>orif-classic</sub>	0.10161 cfs
Q <sub>orif-SWMM</sub>	0.10161 cfs
Qdiversion	<b>0.10263</b> cfs
Qinf:	0.3762 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**BMP RV3**

ABMP	<b>3900</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2.125</b> in
Aorifice	0.02463 sq-ft
C <sub>SWMM</sub>	<b>0.3855</b> 0.14766
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	13.9375 in 1.161 ft
Q <sub>orif-classic</sub>	0.12993 cfs
Q <sub>orif-SWMM</sub>	0.12993 cfs
Qdiversion	<b>0.13123</b> cfs
Qinf:	0.4514 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**BMP RV4**

ABMP	<b>3950</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2.125</b> in
Aorifice	0.02463 sq-ft
C <sub>SWMM</sub>	<b>0.3806</b> 0.14766
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	13.9375 in 1.161 ft
Q <sub>orif-classic</sub>	0.12993 cfs
Q <sub>orif-SWMM</sub>	0.12993 cfs
Qdiversion	<b>0.13123</b> cfs
Qinf:	0.4572 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**BMP RV5**

ABMP	<b>6200</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2.5625</b> in
Aorifice	0.03581 sq-ft
C <sub>SWMM</sub>	<b>0.3526</b> 0.214721
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	13.71875 in 1.143 ft
Q <sub>orif-classic</sub>	0.18745 cfs
Q <sub>orif-SWMM</sub>	0.18745 cfs
Qdiversion	<b>0.18933</b> cfs
Qinf:	0.7176 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**BMP RV6**

ABMP	<b>3250</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>1.875</b> in
Aorifice	0.01917 sq-ft
C <sub>SWMM</sub>	<b>0.3602</b> 0.11496
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	14.0625 in 1.172 ft
Q <sub>orif-classic</sub>	0.10161 cfs
Q <sub>orif-SWMM</sub>	0.10161 cfs
Qdiversion	<b>0.10263</b> cfs
Qinf:	0.3762 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**STAGE STORAGE & DRAWDOWN CALCULATIONS**

**BASIN 1 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	4950.0	0.00
1	4950.0	4950.00
2	4950.0	9900.00
3	4950.0	14850.00
4	4950.0	19800.00
5	4950.0	24750.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 16.02 hrs  
 Drawdown Time Using LID Flow of 0.1717 cfs

**BASIN 2 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	3250.0	0.00
1	3250.0	3250.00
2	3250.0	6500.00
3	3250.0	9750.00
4	3250.0	13000.00
5	3250.0	16250.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 17.59 hrs  
 Drawdown Time Using LID Flow of 0.10263 cfs

**BASIN 3 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	3900.0	0.00
1	3900.0	3900.00
2	3900.0	7800.00
3	3900.0	11700.00
4	3900.0	15600.00
5	3900.0	19500.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 16.51 hrs  
 Drawdown Time Using LID Flow of 0.13123 cfs

**BASIN 4 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	3950.0	0.00
1	3950.0	3950.00
2	3950.0	7900.00
3	3950.0	11850.00
4	3950.0	15800.00
5	3950.0	19750.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 16.72 hrs  
 Drawdown Time Using LID Flow of 0.13123 cfs

**BASIN 5 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	6200.0	0.00
1	6200.0	6200.00
2	6200.0	12400.00
3	6200.0	18600.00
4	6200.0	24800.00
5	6200.0	31000.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 18.19 hrs  
 Drawdown Time Using LID Flow of 0.18933 cfs

**BASIN 6 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	3250.0	0.00
1	3250.0	3250.00
2	3250.0	6500.00
3	3250.0	9750.00
4	3250.0	13000.00
5	3250.0	16250.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 17.59 hrs  
 Drawdown Time Using LID Flow of 0.10263 cfs

PRE\_DEV\_RV-3

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION        GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          05:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   05:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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      0.06 .08 .11 .16 .18 .21 .21 .200 .16 .12 .08 .06
DRY_ONLY     NO
    
```

[RAINGAGES]

```

;;
;;Name      Rain      Time      Snow      Data
;;Name      Type      Intrvl   Catch     Source
;;-----
SanVicente  INTENSITY 1:00   1.0      TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

;;
;;Name      Raingage      Outlet      Total      Pcnt.      Pcnt.      Curb      Snow
;;Name      Raingage      Outlet      Area       Imperv     Width     Slope     Length     Pack
;;-----
RV3-PRE     SanVicente      POC-RV3     3.47       0          675       1         0
    
```

[SUBAREAS]

```

;;Subcatchment  N-Imperv  N-Perv  S-Imperv  S-Perv  PctZero  RouteTo  PctRouted
;;-----
RV3-PRE         0.012    0.05   0.05     0.10   25       OUTLET
    
```

[INFILTRATION]

```

;;Subcatchment  Suction  HydCon  IMDmax
;;-----
RV3-PRE         9        0.01875 0.33
    
```

[OUTFALLS]

```

;;
;;Name      Invert      Outfall      Stage/Table      Tide
;;Name      Elev.       Type         Time Series     Gate
;;-----
POC-RV3     0          FREE         NO
    
```

[TIMESERIES]

```

;;Name      Date      Time      Value
;;-----
;San Vicente Rain Gage from San Diego County
SanVicente  FILE "P:\Acad\7033 Hunsaker San Diego\03 Fanita Ranch\REC SWMM\rainfall_sanvicente.dat"
    
```

[REPORT]

# PRE\_DEV\_RV-3

INPUT NO  
CONTROLS NO  
SUBCATCHMENTS ALL  
NODES ALL  
LINKS ALL

[TAGS]

[MAP]

DIMENSIONS -115.361 3531.612 1589.934 5654.960  
Units None

[COORDINATES]

;;Node	X-Coord	Y-Coord
POC-RV3	903.735	4116.432

[VERTICES]

;;Link	X-Coord	Y-Coord
--------	---------	---------

[Polygons]

;;Subcatchment	X-Coord	Y-Coord
RV3-PRE	897.746	4956.140

[SYMBOLS]

;;Gage	X-Coord	Y-Coord
SanVicente	1729.232	4699.004

POST\_DEV\_RV-3

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION        GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE          01/03/1973
START_TIME          05:00:00
REPORT_START_DATE   05/24/1973
REPORT_START_TIME   05:00:00
END_DATE            05/23/2008
END_TIME            23:00:00
SWEEP_START         01/01
SWEEP_END           12/31
DRY_DAYS            0
REPORT_STEP         01:00:00
WET_STEP            00:15:00
DRY_STEP            04:00:00
ROUTING_STEP        0:01:00
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     0.06  .08  .11  .16  .18  .21  .21  .200  .16  .12  .08  .06
DRY_ONLY    NO
    
```

[RAINGAGES]

```

;;
;;Name      Rain      Time      Snow      Data
;;Name      Type      Intrvl   Catch     Source
;;-----
SanVicente  INTENSITY 1:00   1.0      TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

;;
;;Name      Raingage      Outlet      Total      Pcnt.      Pcnt.      Curb      Snow
;;Name      Raingage      Outlet      Area       Imperv      Width     Slope     Length     Pack
;;-----
DMA-RV3     SanVicente      BR-RV3      3.38       61.59      1010      1         0
BR-RV3     SanVicente      POC-RV3     0.089532  0           10        0         0
    
```

[SUBAREAS]

```

;;Subcatchment  N-Imperv  N-Perv  S-Imperv  S-Perv  PctZero  RouteTo  PctRouted
;;-----
DMA-RV3         0.012    0.05    0.05     0.10    25       OUTLET
BR-RV3          0.012    0.05    0.05     0.10    25       OUTLET
    
```

[INFILTRATION]

```

;;Subcatchment  Suction  HydCon  IMDmax
;;-----
DMA-RV3         9        0.01875  0.33
BR-RV3          9        0.01875  0.33
    
```

[LID\_CONTROLS]

```

;;
;;Type/Layer  Parameters
;;-----
BR-RV3        BC
BR-RV3        SURFACE  10.2    0.0     0.0     0.0     5
BR-RV3        SOIL     18      0.4     0.2     0.1     5         5         1.5
BR-RV3        STORAGE  18      0.67    0        0
BR-RV3        DRAIN   0.3855  0.5     3        6
    
```

[LID\_USAGE]

POST\_DEV\_RV-3

Subcatchment	LID Process	Number	Area	Width	InitSatur	FromImprv	ToPerv	Report File
BR-RV3	BR-RV3	1	3900	0	0	100	0	

[OUTFALLS]

Name	Invert Elev.	Outfall Type	Stage/Table Time Series	Tide Gate
POC-RV3	0	FREE		NO

[TIMESERIES]

Name	Date	Time	Value
San Vicente Rain Gage from San Diego County			
SanVicente	FILE	"P:\Acad\7033 Hunsaker San Diego\03 Fanita Ranch\REC SWMM\rainfall_sanvicente.dat"	

[REPORT]

INPUT NO  
 CONTROLS NO  
 SUBCATCHMENTS ALL  
 NODES ALL  
 LINKS ALL

[TAGS]

[MAP]

DIMENSIONS -115.361 3531.612 1589.934 5654.960  
 Units None

[COORDINATES]

Node	X-Coord	Y-Coord
POC-RV3	903.735	4116.432

[VERTICES]

Link	X-Coord	Y-Coord
------	---------	---------

[Polygons]

Subcatchment	X-Coord	Y-Coord
DMA-RV3	897.746	4956.140
BR-RV3	900.497	4740.337

[SYMBOLS]

Gage	X-Coord	Y-Coord
SanVicente	1729.232	4699.004

## **POC RV4**

Flow Duration Curve (Pass-Fail) Results

List of the “n” largest Peaks: Pre-Development and Post-Development Conditions

Elevation vs. Area Curves and Elevations vs. Discharge Curves to be used in SWMM

DMA and SWMM Input Data (Existing and Proposed Models)

### Flow Duration Curve Data for Fanita Ranch POC-RV4 , Santee, CA

Q2 = 1.541 cfs Fraction 10 %  
 Q10 = 2.28 cfs  
 Step = 0.0215 cfs  
 Count = 306811 hours  
 35.00 years

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
1	0.154	794	2.59E-01	300	9.78E-02	38%	Pass
2	0.176	734	2.39E-01	294	9.58E-02	40%	Pass
3	0.197	684	2.23E-01	280	9.13E-02	41%	Pass
4	0.219	640	2.09E-01	271	8.83E-02	42%	Pass
5	0.240	591	1.93E-01	246	8.02E-02	42%	Pass
6	0.262	528	1.72E-01	225	7.33E-02	43%	Pass
7	0.283	491	1.60E-01	214	6.97E-02	44%	Pass
8	0.305	462	1.51E-01	203	6.62E-02	44%	Pass
9	0.326	431	1.40E-01	196	6.39E-02	45%	Pass
10	0.348	411	1.34E-01	191	6.23E-02	46%	Pass
11	0.369	393	1.28E-01	175	5.70E-02	45%	Pass
12	0.391	379	1.24E-01	159	5.18E-02	42%	Pass
13	0.412	362	1.18E-01	155	5.05E-02	43%	Pass
14	0.434	350	1.14E-01	154	5.02E-02	44%	Pass
15	0.455	330	1.08E-01	153	4.99E-02	46%	Pass
16	0.477	309	1.01E-01	152	4.95E-02	49%	Pass
17	0.498	289	9.42E-02	141	4.60E-02	49%	Pass
18	0.520	270	8.80E-02	134	4.37E-02	50%	Pass
19	0.542	248	8.08E-02	131	4.27E-02	53%	Pass
20	0.563	225	7.33E-02	131	4.27E-02	58%	Pass
21	0.585	205	6.68E-02	125	4.07E-02	61%	Pass
22	0.606	183	5.96E-02	122	3.98E-02	67%	Pass
23	0.628	172	5.61E-02	117	3.81E-02	68%	Pass
24	0.649	167	5.44E-02	97	3.16E-02	58%	Pass
25	0.671	157	5.12E-02	81	2.64E-02	52%	Pass
26	0.692	150	4.89E-02	77	2.51E-02	51%	Pass
27	0.714	145	4.73E-02	76	2.48E-02	52%	Pass
28	0.735	137	4.47E-02	76	2.48E-02	55%	Pass
29	0.757	134	4.37E-02	74	2.41E-02	55%	Pass
30	0.778	125	4.07E-02	71	2.31E-02	57%	Pass
31	0.800	121	3.94E-02	65	2.12E-02	54%	Pass
32	0.821	113	3.68E-02	64	2.09E-02	57%	Pass
33	0.843	104	3.39E-02	63	2.05E-02	61%	Pass
34	0.864	98	3.19E-02	60	1.96E-02	61%	Pass
35	0.886	94	3.06E-02	60	1.96E-02	64%	Pass
36	0.907	86	2.80E-02	57	1.86E-02	66%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
37	0.929	80	2.61E-02	55	1.79E-02	69%	Pass
38	0.950	71	2.31E-02	49	1.60E-02	69%	Pass
39	0.972	65	2.12E-02	46	1.50E-02	71%	Pass
40	0.994	62	2.02E-02	45	1.47E-02	73%	Pass
41	1.015	61	1.99E-02	39	1.27E-02	64%	Pass
42	1.037	58	1.89E-02	37	1.21E-02	64%	Pass
43	1.058	54	1.76E-02	37	1.21E-02	69%	Pass
44	1.080	48	1.56E-02	34	1.11E-02	71%	Pass
45	1.101	45	1.47E-02	33	1.08E-02	73%	Pass
46	1.123	42	1.37E-02	32	1.04E-02	76%	Pass
47	1.144	40	1.30E-02	32	1.04E-02	80%	Pass
48	1.166	40	1.30E-02	32	1.04E-02	80%	Pass
49	1.187	40	1.30E-02	28	9.13E-03	70%	Pass
50	1.209	38	1.24E-02	21	6.84E-03	55%	Pass
51	1.230	36	1.17E-02	21	6.84E-03	58%	Pass
52	1.252	36	1.17E-02	20	6.52E-03	56%	Pass
53	1.273	31	1.01E-02	20	6.52E-03	65%	Pass
54	1.295	29	9.45E-03	20	6.52E-03	69%	Pass
55	1.316	27	8.80E-03	20	6.52E-03	74%	Pass
56	1.338	26	8.47E-03	19	6.19E-03	73%	Pass
57	1.359	26	8.47E-03	18	5.87E-03	69%	Pass
58	1.381	25	8.15E-03	14	4.56E-03	56%	Pass
59	1.402	25	8.15E-03	14	4.56E-03	56%	Pass
60	1.424	25	8.15E-03	14	4.56E-03	56%	Pass
61	1.446	21	6.84E-03	14	4.56E-03	67%	Pass
62	1.467	20	6.52E-03	14	4.56E-03	70%	Pass
63	1.489	20	6.52E-03	14	4.56E-03	70%	Pass
64	1.510	19	6.19E-03	13	4.24E-03	68%	Pass
65	1.532	19	6.19E-03	11	3.59E-03	58%	Pass
66	1.553	18	5.87E-03	11	3.59E-03	61%	Pass
67	1.575	18	5.87E-03	11	3.59E-03	61%	Pass
68	1.596	18	5.87E-03	10	3.26E-03	56%	Pass
69	1.618	18	5.87E-03	10	3.26E-03	56%	Pass
70	1.639	17	5.54E-03	9	2.93E-03	53%	Pass
71	1.661	17	5.54E-03	9	2.93E-03	53%	Pass
72	1.682	17	5.54E-03	9	2.93E-03	53%	Pass
73	1.704	16	5.21E-03	9	2.93E-03	56%	Pass
74	1.725	13	4.24E-03	8	2.61E-03	62%	Pass
75	1.747	13	4.24E-03	8	2.61E-03	62%	Pass
76	1.768	13	4.24E-03	8	2.61E-03	62%	Pass
77	1.790	12	3.91E-03	8	2.61E-03	67%	Pass
78	1.811	12	3.91E-03	8	2.61E-03	67%	Pass
79	1.833	12	3.91E-03	7	2.28E-03	58%	Pass
80	1.854	12	3.91E-03	7	2.28E-03	58%	Pass
81	1.876	12	3.91E-03	7	2.28E-03	58%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
82	1.898	11	3.59E-03	7	2.28E-03	64%	Pass
83	1.919	11	3.59E-03	7	2.28E-03	64%	Pass
84	1.941	9	2.93E-03	7	2.28E-03	78%	Pass
85	1.962	9	2.93E-03	7	2.28E-03	78%	Pass
86	1.984	9	2.93E-03	6	1.96E-03	67%	Pass
87	2.005	9	2.93E-03	6	1.96E-03	67%	Pass
88	2.027	9	2.93E-03	6	1.96E-03	67%	Pass
89	2.048	7	2.28E-03	6	1.96E-03	86%	Pass
90	2.070	7	2.28E-03	5	1.63E-03	71%	Pass
91	2.091	7	2.28E-03	5	1.63E-03	71%	Pass
92	2.113	7	2.28E-03	5	1.63E-03	71%	Pass
93	2.134	6	1.96E-03	5	1.63E-03	83%	Pass
94	2.156	5	1.63E-03	5	1.63E-03	100%	Pass
95	2.177	5	1.63E-03	3	9.78E-04	60%	Pass
96	2.199	5	1.63E-03	3	9.78E-04	60%	Pass
97	2.220	5	1.63E-03	3	9.78E-04	60%	Pass
98	2.242	5	1.63E-03	3	9.78E-04	60%	Pass
99	2.263	4	1.30E-03	3	9.78E-04	75%	Pass
100	2.285	4	1.30E-03	3	9.78E-04	75%	Pass

**Peak Flows calculated with Cunnane Plotting Position**

Return Period (years)	Pre-dev. Q (cfs)	Post-Dev. Q (cfs)	Reduction (cfs)
10	2.285	2.222	0.063
9	2.212	2.167	0.044
8	2.158	2.159	0.000
7	2.130	2.114	0.016
6	2.097	2.041	0.056
5	2.043	1.910	0.132
4	1.935	1.705	0.230
3	1.763	1.520	0.243
2	1.541	1.189	0.352

**List of Peak events and Determination of P2 and P10 (Pre-Development)**

**Fanita Ranch POC RV4 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>2.28</b>	<b>2.43</b>					
<b>9</b>	<b>2.21</b>	<b>2.25</b>	1.093	5/1/1978	35	1.03	1.02
<b>8</b>	<b>2.16</b>	<b>2.19</b>	1.128	3/5/2005	34	1.06	1.05
<b>7</b>	<b>2.13</b>	<b>2.14</b>	1.188	12/28/1977	33	1.09	1.08
<b>6</b>	<b>2.10</b>	<b>2.12</b>	1.198	1/18/1993	32	1.13	1.11
<b>5</b>	<b>2.04</b>	<b>2.04</b>	1.216	4/18/1995	31	1.16	1.15
<b>4</b>	<b>1.93</b>	<b>1.94</b>	1.256	3/4/1978	30	1.20	1.19
<b>3</b>	<b>1.76</b>	<b>1.77</b>	1.261	4/23/1980	29	1.24	1.23
<b>2</b>	<b>1.54</b>	<b>1.54</b>	1.278	2/16/1980	28	1.29	1.28
			1.287	2/18/1980	27	1.33	1.32
			1.305	1/13/1993	26	1.38	1.38
			1.311	2/15/1986	25	1.44	1.43
			1.365	10/10/1986	24	1.50	1.49
			1.426	8/17/1977	23	1.57	1.56
			1.432	3/2/1983	22	1.64	1.63
			1.434	12/4/1974	21	1.71	1.71
			1.437	2/15/1992	20	1.80	1.80
			1.45	2/21/2005	19	1.89	1.89
			1.541	3/1/1983	18	2.00	2.00
			1.636	1/31/1979	17	2.12	2.12
			1.688	10/27/2004	16	2.25	2.26
			1.709	10/18/2004	15	2.40	2.41
			1.725	3/6/1975	14	2.57	2.59
			1.725	10/20/2004	13	2.77	2.79
			1.769	2/13/1998	12	3.00	3.03
			1.882	2/2/1998	11	3.27	3.32
			1.924	2/19/1993	10	3.60	3.67
			1.938	1/29/1980	9	4.00	4.09
			2.039	2/6/1992	8	4.50	4.63
			2.046	1/9/2005	7	5.14	5.33
			2.119	2/7/1998	6	6.00	6.29
			2.14	10/31/1987	5	7.20	7.65
			2.253	9/10/1976	4	9.00	9.78
			2.794	10/22/1976	3	12.00	13.54
			3.091	2/20/1980	2	18.00	22.00
			3.27	1/4/1978	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

**List of Peak events and Determination of P2 and P10 (Post-Development)  
Fanita Ranch POCR4 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>2.22</b>	<b>2.44</b>					
9	2.17	2.17	0.89	10/10/1986	35	1.03	1.02
8	2.16	2.16	0.93	12/7/1992	34	1.06	1.05
7	2.11	2.14	0.95	2/10/1978	33	1.09	1.08
6	2.04	2.07	0.95	1/11/2005	32	1.13	1.11
5	1.91	1.95	0.96	3/6/1980	31	1.16	1.15
4	1.71	1.72	0.97	2/13/1998	30	1.20	1.19
3	1.52	1.52	1.01	2/8/1976	29	1.24	1.23
2	1.19	1.19	1.01	2/18/1980	28	1.29	1.28
			1.01	1/29/1980	27	1.33	1.32
			1.02	1/11/1980	26	1.38	1.38
			1.02	1/15/1978	25	1.44	1.43
			1.03	11/12/2003	24	1.50	1.49
			1.07	3/5/1995	23	1.57	1.56
			1.09	2/23/2005	22	1.64	1.63
			1.18	11/22/1996	21	1.71	1.71
			1.18	10/28/1974	20	1.80	1.80
			1.19	10/27/2004	19	1.89	1.89
			1.19	10/31/1987	18	2.00	2.00
			1.19	11/25/1985	17	2.12	2.12
			1.20	12/29/2004	16	2.25	2.26
			1.21	10/20/2004	15	2.40	2.41
			1.32	2/15/1986	14	2.57	2.59
			1.52	2/21/2005	13	2.77	2.79
			1.52	3/2/1983	12	3.00	3.03
			1.59	8/17/1977	11	3.27	3.32
			1.638	12/4/1974	10	3.60	3.67
			1.724	1/31/1979	9	4.00	4.09
			1.832	2/2/1998	8	4.50	4.63
			1.981	1/9/2005	7	5.14	5.33
			2.067	1/29/1980	6	6.00	6.29
			2.156	9/10/1976	5	7.20	7.65
			2.174	2/7/1998	4	9.00	9.78
			2.984	10/22/1976	3	12.00	13.54
			3.106	1/4/1978	2	18.00	22.00
			3.155	2/20/1980	1	36.00	58.67

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

**BMP RV1**

ABMP	<b>4950</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2.4375</b> in
Aorifice	0.03241 sq-ft
C <sub>SWMM</sub>	<b>0.3996</b> 0.194283
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	13.78125 in 1.148 ft
Q <sub>orif-classic</sub>	0.17000 cfs
Q <sub>orif-SWMM</sub>	0.17000 cfs
Qdiversion	<b>0.17170</b> cfs
Qinf:	0.5729 cfs
<b>0.1 Q2 EX</b>	<b>0.271</b>

**BMP RV2**

ABMP	<b>3250</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>1.875</b> in
Aorifice	0.01917 sq-ft
C <sub>SWMM</sub>	<b>0.3602</b> 0.11496
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	14.0625 in 1.172 ft
Q <sub>orif-classic</sub>	0.10161 cfs
Q <sub>orif-SWMM</sub>	0.10161 cfs
Qdiversion	<b>0.10263</b> cfs
Qinf:	0.3762 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**BMP RV3**

ABMP	<b>3900</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2.125</b> in
Aorifice	0.02463 sq-ft
C <sub>SWMM</sub>	<b>0.3855</b> 0.14766
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	13.9375 in 1.161 ft
Q <sub>orif-classic</sub>	0.12993 cfs
Q <sub>orif-SWMM</sub>	0.12993 cfs
Qdiversion	<b>0.13123</b> cfs
Qinf:	0.4514 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**BMP RV4**

ABMP	<b>3950</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2.125</b> in
Aorifice	0.02463 sq-ft
C <sub>SWMM</sub>	<b>0.3806</b> 0.14766
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	13.9375 in 1.161 ft
Q <sub>orif-classic</sub>	0.12993 cfs
Q <sub>orif-SWMM</sub>	0.12993 cfs
Qdiversion	<b>0.13123</b> cfs
Qinf:	0.4572 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**BMP RV5**

ABMP	<b>6200</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2.5625</b> in
Aorifice	0.03581 sq-ft
C <sub>SWMM</sub>	<b>0.3526</b> 0.214721
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	13.71875 in 1.143 ft
Q <sub>orif-classic</sub>	0.18745 cfs
Q <sub>orif-SWMM</sub>	0.18745 cfs
Qdiversion	<b>0.18933</b> cfs
Qinf:	0.7176 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**BMP RV6**

ABMP	<b>3250</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>1.875</b> in
Aorifice	0.01917 sq-ft
C <sub>SWMM</sub>	<b>0.3602</b> 0.11496
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	14.0625 in 1.172 ft
Q <sub>orif-classic</sub>	0.10161 cfs
Q <sub>orif-SWMM</sub>	0.10161 cfs
Qdiversion	<b>0.10263</b> cfs
Qinf:	0.3762 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**STAGE STORAGE & DRAWDOWN CALCULATIONS**

**BASIN 1 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	4950.0	0.00
1	4950.0	4950.00
2	4950.0	9900.00
3	4950.0	14850.00
4	4950.0	19800.00
5	4950.0	24750.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 16.02 hrs  
 Drawdown Time Using LID Flow of 0.1717 cfs

**BASIN 2 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	3250.0	0.00
1	3250.0	3250.00
2	3250.0	6500.00
3	3250.0	9750.00
4	3250.0	13000.00
5	3250.0	16250.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 17.59 hrs  
 Drawdown Time Using LID Flow of 0.10263 cfs

**BASIN 3 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	3900.0	0.00
1	3900.0	3900.00
2	3900.0	7800.00
3	3900.0	11700.00
4	3900.0	15600.00
5	3900.0	19500.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 16.51 hrs  
 Drawdown Time Using LID Flow of 0.13123 cfs

**BASIN 4 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	3950.0	0.00
1	3950.0	3950.00
2	3950.0	7900.00
3	3950.0	11850.00
4	3950.0	15800.00
5	3950.0	19750.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 16.72 hrs  
 Drawdown Time Using LID Flow of 0.13123 cfs

**BASIN 5 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	6200.0	0.00
1	6200.0	6200.00
2	6200.0	12400.00
3	6200.0	18600.00
4	6200.0	24800.00
5	6200.0	31000.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 18.19 hrs  
 Drawdown Time Using LID Flow of 0.18933 cfs

**BASIN 6 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	3250.0	0.00
1	3250.0	3250.00
2	3250.0	6500.00
3	3250.0	9750.00
4	3250.0	13000.00
5	3250.0	16250.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 17.59 hrs  
 Drawdown Time Using LID Flow of 0.10263 cfs

PRE\_DEV\_RV-4

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION        GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE           01/03/1973
START_TIME           05:00:00
REPORT_START_DATE    05/24/1973
REPORT_START_TIME    05:00:00
END_DATE             05/23/2008
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             00:15:00
DRY_STEP             04:00:00
ROUTING_STEP         0:01:00
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      0.06  .08  .11  .16  .18  .21  .21  .200  .16  .12  .08  .06
DRY_ONLY     NO
    
```

[RAINGAGES]

```

;;
;;Name      Rain      Time      Snow      Data
;;Name      Type      Intrvl   Catch     Source
;;-----
SanVicente  INTENSITY 1:00   1.0      TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

;;
;;Name      Raingage      Outlet      Total      Pcnt.      Pcnt.      Curb      Snow
;;Name      Raingage      Outlet      Area       Imperv      Width     Slope     Length     Pack
;;-----
RV4-PRE     SanVicente      POC-RV4     3.54       0           688       1         0
    
```

[SUBAREAS]

```

;;Subcatchment  N-Imperv  N-Perv  S-Imperv  S-Perv  PctZero  RouteTo  PctRouted
;;-----
RV4-PRE         0.012    0.05    0.05     0.10    25       OUTLET
    
```

[INFILTRATION]

```

;;Subcatchment  Suction  HydCon  IMDmax
;;-----
RV4-PRE         9        0.01875  0.33
    
```

[OUTFALLS]

```

;;
;;Name      Invert      Outfall      Stage/Table      Tide
;;Name      Elev.       Type         Time Series     Gate
;;-----
POC-RV4     0           FREE         NO
    
```

[TIMESERIES]

```

;;Name      Date      Time      Value
;;-----
;San Vicente Rain Gage from San Diego County
SanVicente  FILE "P:\Acad\7033 Hunsaker San Diego\03 Fanita Ranch\REC SWMM\rainfall_sanvicente.dat"
    
```

[REPORT]

# PRE\_DEV\_RV-4

INPUT NO  
CONTROLS NO  
SUBCATCHMENTS ALL  
NODES ALL  
LINKS ALL

[TAGS]

[MAP]

DIMENSIONS -115.361 3531.612 1589.934 5654.960  
Units None

[COORDINATES]

;;Node	X-Coord	Y-Coord
POC-RV4	903.735	4116.432

[VERTICES]

;;Link	X-Coord	Y-Coord
--------	---------	---------

[Polygons]

;;Subcatchment	X-Coord	Y-Coord
RV4-PRE	897.746	4956.140

[SYMBOLS]

;;Gage	X-Coord	Y-Coord
SanVicente	1729.232	4699.004

POST\_DEV\_RV-4

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION        GREEN_AMPT
FLOW_ROUTING         KINWAVE
START_DATE           01/03/1973
START_TIME           05:00:00
REPORT_START_DATE    05/24/1973
REPORT_START_TIME    05:00:00
END_DATE             05/23/2008
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             00:15:00
DRY_STEP             04:00:00
ROUTING_STEP         0:01:00
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      0.06  .08  .11  .16  .18  .21  .21  .200  .16  .12  .08  .06
DRY_ONLY     NO
    
```

[RAINGAGES]

```

;;
;;Name      Rain      Time      Snow      Data
;;          Type      Intrvl   Catch     Source
;;-----
SanVicente  INTENSITY 1:00   1.0      TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

;;
;;Name      Raingage      Outlet      Total      Pcnt.      Pcnt.      Curb      Snow
;;          Raingage      Outlet      Area      Imperv      Width      Slope      Length      Pack
;;-----
DMA-RV4     SanVicente      BR-RV4      3.449     61.58     1031      1          0
BR-RV4     SanVicente      POC-RV4     0.09068   0          10        0          0
    
```

[SUBAREAS]

```

;;Subcatchment  N-Imperv  N-Perv  S-Imperv  S-Perv  PctZero  RouteTo  PctRouted
;;-----
DMA-RV4         0.012    0.05    0.05     0.10    25       OUTLET
BR-RV4         0.012    0.05    0.05     0.10    25       OUTLET
    
```

[INFILTRATION]

```

;;Subcatchment  Suction  HydCon  IMDmax
;;-----
DMA-RV4         9        0.01875  0.33
BR-RV4         9        0.01875  0.33
    
```

[LID\_CONTROLS]

```

;;
;;Type/Layer  Parameters
;;-----
BR-RV4        BC
BR-RV4        SURFACE  10.2    0.0     0.0     0.0     5
BR-RV4        SOIL     18      0.4     0.2     0.1     5          5          1.5
BR-RV4        STORAGE  18      0.67    0        0
BR-RV4        DRAIN    0.3806  0.5     3        6
    
```

[LID\_USAGE]

POST\_DEV\_RV-4

Subcatchment	LID Process	Number	Area	Width	InitSatur	FromImprv	ToPerv	Report File
BR-RV4	BR-RV4	1	3950	0	0	100	0	

[OUTFALLS]

Name	Invert Elev.	Outfall Type	Stage/Table Time Series	Tide Gate
POC-RV4	0	FREE		NO

[TIMESERIES]

Name	Date	Time	Value
San Vicente Rain Gage from San Diego County			
SanVicente	FILE "P:\Acad\7033 Hunsaker San Diego\03 Fanita Ranch\REC SWMM\rainfall_sanvicente.dat"		

[REPORT]

INPUT NO  
 CONTROLS NO  
 SUBCATCHMENTS ALL  
 NODES ALL  
 LINKS ALL

[TAGS]

[MAP]

DIMENSIONS -115.361 3531.612 1589.934 5654.960  
 Units None

[COORDINATES]

Node	X-Coord	Y-Coord
POC-RV4	903.735	4116.432

[VERTICES]

Link	X-Coord	Y-Coord
------	---------	---------

[Polygons]

Subcatchment	X-Coord	Y-Coord
DMA-RV4	897.746	4956.140
BR-RV4	900.497	4740.337

[SYMBOLS]

Gage	X-Coord	Y-Coord
SanVicente	1729.232	4699.004

## **POC RV5**

Flow Duration Curve (Pass-Fail) Results

List of the “n” largest Peaks: Pre-Development and Post-Development Conditions

Elevation vs. Area Curves and Elevations vs. Discharge Curves to be used in SWMM

DMA and SWMM Input Data (Existing and Proposed Models)

### Flow Duration Curve Data for Fanita Ranch POC-RV5 , Santee, CA

Q2 = 2.407 cfs Fraction 10 %  
 Q10 = 3.57 cfs  
 Step = 0.0336 cfs  
 Count = 306811 hours  
 35.00 years

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
1	0.241	794	2.59E-01	314	1.02E-01	40%	Pass
2	0.274	734	2.39E-01	309	1.01E-01	42%	Pass
3	0.308	685	2.23E-01	299	9.75E-02	44%	Pass
4	0.342	640	2.09E-01	283	9.22E-02	44%	Pass
5	0.375	591	1.93E-01	262	8.54E-02	44%	Pass
6	0.409	528	1.72E-01	237	7.72E-02	45%	Pass
7	0.442	491	1.60E-01	226	7.37E-02	46%	Pass
8	0.476	462	1.51E-01	210	6.84E-02	45%	Pass
9	0.510	432	1.41E-01	203	6.62E-02	47%	Pass
10	0.543	411	1.34E-01	198	6.45E-02	48%	Pass
11	0.577	393	1.28E-01	179	5.83E-02	46%	Pass
12	0.611	378	1.23E-01	160	5.21E-02	42%	Pass
13	0.644	362	1.18E-01	157	5.12E-02	43%	Pass
14	0.678	350	1.14E-01	156	5.08E-02	45%	Pass
15	0.711	330	1.08E-01	155	5.05E-02	47%	Pass
16	0.745	309	1.01E-01	154	5.02E-02	50%	Pass
17	0.779	290	9.45E-02	142	4.63E-02	49%	Pass
18	0.812	270	8.80E-02	135	4.40E-02	50%	Pass
19	0.846	248	8.08E-02	131	4.27E-02	53%	Pass
20	0.879	225	7.33E-02	131	4.27E-02	58%	Pass
21	0.913	205	6.68E-02	125	4.07E-02	61%	Pass
22	0.947	183	5.96E-02	122	3.98E-02	67%	Pass
23	0.980	172	5.61E-02	118	3.85E-02	69%	Pass
24	1.014	167	5.44E-02	98	3.19E-02	59%	Pass
25	1.048	157	5.12E-02	81	2.64E-02	52%	Pass
26	1.081	150	4.89E-02	77	2.51E-02	51%	Pass
27	1.115	145	4.73E-02	77	2.51E-02	53%	Pass
28	1.148	137	4.47E-02	77	2.51E-02	56%	Pass
29	1.182	134	4.37E-02	75	2.44E-02	56%	Pass
30	1.216	125	4.07E-02	72	2.35E-02	58%	Pass
31	1.249	120	3.91E-02	68	2.22E-02	57%	Pass
32	1.283	113	3.68E-02	66	2.15E-02	58%	Pass
33	1.317	104	3.39E-02	66	2.15E-02	63%	Pass
34	1.350	98	3.19E-02	65	2.12E-02	66%	Pass
35	1.384	94	3.06E-02	65	2.12E-02	69%	Pass
36	1.417	86	2.80E-02	61	1.99E-02	71%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
37	1.451	80	2.61E-02	56	1.83E-02	70%	Pass
38	1.485	71	2.31E-02	51	1.66E-02	72%	Pass
39	1.518	65	2.12E-02	47	1.53E-02	72%	Pass
40	1.552	62	2.02E-02	46	1.50E-02	74%	Pass
41	1.585	61	1.99E-02	41	1.34E-02	67%	Pass
42	1.619	58	1.89E-02	38	1.24E-02	66%	Pass
43	1.653	54	1.76E-02	38	1.24E-02	70%	Pass
44	1.686	48	1.56E-02	35	1.14E-02	73%	Pass
45	1.720	45	1.47E-02	33	1.08E-02	73%	Pass
46	1.754	42	1.37E-02	33	1.08E-02	79%	Pass
47	1.787	40	1.30E-02	32	1.04E-02	80%	Pass
48	1.821	40	1.30E-02	31	1.01E-02	78%	Pass
49	1.854	40	1.30E-02	28	9.13E-03	70%	Pass
50	1.888	38	1.24E-02	21	6.84E-03	55%	Pass
51	1.922	36	1.17E-02	21	6.84E-03	58%	Pass
52	1.955	36	1.17E-02	20	6.52E-03	56%	Pass
53	1.989	31	1.01E-02	20	6.52E-03	65%	Pass
54	2.023	29	9.45E-03	20	6.52E-03	69%	Pass
55	2.056	27	8.80E-03	20	6.52E-03	74%	Pass
56	2.090	26	8.47E-03	19	6.19E-03	73%	Pass
57	2.123	26	8.47E-03	18	5.87E-03	69%	Pass
58	2.157	25	8.15E-03	15	4.89E-03	60%	Pass
59	2.191	25	8.15E-03	14	4.56E-03	56%	Pass
60	2.224	25	8.15E-03	14	4.56E-03	56%	Pass
61	2.258	21	6.84E-03	14	4.56E-03	67%	Pass
62	2.291	20	6.52E-03	14	4.56E-03	70%	Pass
63	2.325	20	6.52E-03	13	4.24E-03	65%	Pass
64	2.359	19	6.19E-03	13	4.24E-03	68%	Pass
65	2.392	19	6.19E-03	11	3.59E-03	58%	Pass
66	2.426	18	5.87E-03	11	3.59E-03	61%	Pass
67	2.460	18	5.87E-03	11	3.59E-03	61%	Pass
68	2.493	18	5.87E-03	11	3.59E-03	61%	Pass
69	2.527	18	5.87E-03	10	3.26E-03	56%	Pass
70	2.560	17	5.54E-03	9	2.93E-03	53%	Pass
71	2.594	17	5.54E-03	9	2.93E-03	53%	Pass
72	2.628	17	5.54E-03	9	2.93E-03	53%	Pass
73	2.661	16	5.21E-03	9	2.93E-03	56%	Pass
74	2.695	15	4.89E-03	8	2.61E-03	53%	Pass
75	2.729	13	4.24E-03	8	2.61E-03	62%	Pass
76	2.762	13	4.24E-03	8	2.61E-03	62%	Pass
77	2.796	12	3.91E-03	8	2.61E-03	67%	Pass
78	2.829	12	3.91E-03	8	2.61E-03	67%	Pass
79	2.863	12	3.91E-03	8	2.61E-03	67%	Pass
80	2.897	12	3.91E-03	8	2.61E-03	67%	Pass
81	2.930	12	3.91E-03	8	2.61E-03	67%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
82	2.964	11	3.59E-03	8	2.61E-03	73%	Pass
83	2.997	11	3.59E-03	8	2.61E-03	73%	Pass
84	3.031	9	2.93E-03	8	2.61E-03	89%	Pass
85	3.065	9	2.93E-03	8	2.61E-03	89%	Pass
86	3.098	9	2.93E-03	7	2.28E-03	78%	Pass
87	3.132	9	2.93E-03	7	2.28E-03	78%	Pass
88	3.166	9	2.93E-03	7	2.28E-03	78%	Pass
89	3.199	7	2.28E-03	7	2.28E-03	100%	Pass
90	3.233	7	2.28E-03	5	1.63E-03	71%	Pass
91	3.266	7	2.28E-03	5	1.63E-03	71%	Pass
92	3.300	7	2.28E-03	5	1.63E-03	71%	Pass
93	3.334	6	1.96E-03	5	1.63E-03	83%	Pass
94	3.367	5	1.63E-03	4	1.30E-03	80%	Pass
95	3.401	5	1.63E-03	3	9.78E-04	60%	Pass
96	3.435	5	1.63E-03	3	9.78E-04	60%	Pass
97	3.468	5	1.63E-03	3	9.78E-04	60%	Pass
98	3.502	5	1.63E-03	3	9.78E-04	60%	Pass
99	3.535	4	1.30E-03	3	9.78E-04	75%	Pass
100	3.569	4	1.30E-03	3	9.78E-04	75%	Pass

**Peak Flows calculated with Cunnane Plotting Position**

Return Period (years)	Pre-dev. Q (cfs)	Post-Dev. Q (cfs)	Reduction (cfs)
10	3.569	3.472	0.097
9	3.454	3.382	0.072
8	3.371	3.363	0.008
7	3.327	3.295	0.031
6	3.276	3.222	0.054
5	3.191	3.139	0.052
4	3.022	2.664	0.358
3	2.754	2.378	0.376
2	2.407	1.855	0.552

**List of Peak events and Determination of P2 and P10 (Pre-Development)**

**Fanita Ranch POC RV5 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>3.57</b>	<b>3.80</b>					
<b>9</b>	<b>3.45</b>	<b>3.52</b>	1.708	5/1/1978	35	1.03	1.02
<b>8</b>	<b>3.37</b>	<b>3.42</b>	1.762	3/5/2005	34	1.06	1.05
<b>7</b>	<b>3.33</b>	<b>3.34</b>	1.857	12/28/1977	33	1.09	1.08
<b>6</b>	<b>3.28</b>	<b>3.31</b>	1.872	1/18/1993	32	1.13	1.11
<b>5</b>	<b>3.19</b>	<b>3.19</b>	1.899	4/18/1995	31	1.16	1.15
<b>4</b>	<b>3.02</b>	<b>3.03</b>	1.962	3/4/1978	30	1.20	1.19
<b>3</b>	<b>2.75</b>	<b>2.76</b>	1.969	4/23/1980	29	1.24	1.23
<b>2</b>	<b>2.41</b>	<b>2.41</b>	1.997	2/16/1980	28	1.29	1.28
			2.011	2/18/1980	27	1.33	1.32
			2.038	1/13/1993	26	1.38	1.38
			2.047	2/15/1986	25	1.44	1.43
			2.133	10/10/1986	24	1.50	1.49
			2.228	8/17/1977	23	1.57	1.56
			2.237	3/2/1983	22	1.64	1.63
			2.24	12/4/1974	21	1.71	1.71
			2.245	2/15/1992	20	1.80	1.80
			2.266	2/21/2005	19	1.89	1.89
			2.407	3/1/1983	18	2.00	2.00
			2.556	1/31/1979	17	2.12	2.12
			2.637	10/27/2004	16	2.25	2.26
			2.67	10/18/2004	15	2.40	2.41
			2.695	3/6/1975	14	2.57	2.59
			2.695	10/20/2004	13	2.77	2.79
			2.764	2/13/1998	12	3.00	3.03
			2.939	2/2/1998	11	3.27	3.32
			3.006	2/19/1993	10	3.60	3.67
			3.027	1/29/1980	9	4.00	4.09
			3.185	2/6/1992	8	4.50	4.63
			3.196	1/9/2005	7	5.14	5.33
			3.31	2/7/1998	6	6.00	6.29
			3.342	10/31/1987	5	7.20	7.65
			3.519	9/10/1976	4	9.00	9.78
			4.365	10/22/1976	3	12.00	13.54
			4.829	2/20/1980	2	18.00	22.00
			5.108	1/4/1978	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

**List of Peak events and Determination of P2 and P10 (Post-Development)  
Fanita Ranch POCRV5 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>3.47</b>	<b>3.82</b>					
<b>9</b>	<b>3.38</b>	<b>3.40</b>	1.44	2/6/1992	35	1.03	1.02
<b>8</b>	<b>3.36</b>	<b>3.37</b>	1.46	12/7/1992	34	1.06	1.05
<b>7</b>	<b>3.30</b>	<b>3.33</b>	1.48	1/11/2005	33	1.09	1.08
<b>6</b>	<b>3.22</b>	<b>3.23</b>	1.49	2/10/1978	32	1.13	1.11
<b>5</b>	<b>3.14</b>	<b>3.17</b>	1.50	3/6/1980	31	1.16	1.15
<b>4</b>	<b>2.66</b>	<b>2.69</b>	1.57	2/8/1976	30	1.20	1.19
<b>3</b>	<b>2.38</b>	<b>2.38</b>	1.58	2/18/1980	29	1.24	1.23
<b>2</b>	<b>1.86</b>	<b>1.86</b>	1.58	1/29/1980	28	1.29	1.28
			1.59	1/11/1980	27	1.33	1.32
			1.59	1/15/1978	26	1.38	1.38
			1.61	11/12/2003	25	1.44	1.43
			1.67	3/5/1995	24	1.50	1.49
			1.70	2/13/1998	23	1.57	1.56
			1.71	2/23/2005	22	1.64	1.63
			1.81	10/31/1987	21	1.71	1.71
			1.84	11/22/1996	20	1.80	1.80
			1.85	10/27/2004	19	1.89	1.89
			1.86	10/28/1974	18	2.00	2.00
			1.86	11/25/1985	17	2.12	2.12
			1.87	12/29/2004	16	2.25	2.26
			1.89	10/20/2004	15	2.40	2.41
			2.07	2/15/1986	14	2.57	2.59
			2.37	2/21/2005	13	2.77	2.79
			2.38	3/2/1983	12	3.00	3.03
			2.50	8/17/1977	11	3.27	3.32
			2.56	12/4/1974	10	3.60	3.67
			2.693	1/31/1979	9	4.00	4.09
			3.066	2/2/1998	8	4.50	4.63
			3.205	1/9/2005	7	5.14	5.33
			3.229	1/29/1980	6	6.00	6.29
			3.356	9/10/1976	5	7.20	7.65
			3.397	2/7/1998	4	9.00	9.78
			4.669	10/22/1976	3	12.00	13.54
			4.841	1/4/1978	2	18.00	22.00
			4.939	2/20/1980	1	36.00	58.67

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

**BMP RV1**

ABMP	<b>4950</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2.4375</b> in
Aorifice	0.03241 sq-ft
C <sub>SWMM</sub>	<b>0.3996</b> 0.194283
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	13.78125 in 1.148 ft
Q <sub>orif-classic</sub>	0.17000 cfs
Q <sub>orif-SWMM</sub>	0.17000 cfs
Qdiversion	<b>0.17170</b> cfs
Qinf:	0.5729 cfs
<b>0.1 Q2 EX</b>	<b>0.271</b>

**BMP RV2**

ABMP	<b>3250</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>1.875</b> in
Aorifice	0.01917 sq-ft
C <sub>SWMM</sub>	<b>0.3602</b> 0.11496
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	14.0625 in 1.172 ft
Q <sub>orif-classic</sub>	0.10161 cfs
Q <sub>orif-SWMM</sub>	0.10161 cfs
Qdiversion	<b>0.10263</b> cfs
Qinf:	0.3762 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**BMP RV3**

ABMP	<b>3900</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2.125</b> in
Aorifice	0.02463 sq-ft
C <sub>SWMM</sub>	<b>0.3855</b> 0.14766
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	13.9375 in 1.161 ft
Q <sub>orif-classic</sub>	0.12993 cfs
Q <sub>orif-SWMM</sub>	0.12993 cfs
Qdiversion	<b>0.13123</b> cfs
Qinf:	0.4514 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**BMP RV4**

ABMP	<b>3950</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2.125</b> in
Aorifice	0.02463 sq-ft
C <sub>SWMM</sub>	<b>0.3806</b> 0.14766
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	13.9375 in 1.161 ft
Q <sub>orif-classic</sub>	0.12993 cfs
Q <sub>orif-SWMM</sub>	0.12993 cfs
Qdiversion	<b>0.13123</b> cfs
Qinf:	0.4572 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**BMP RV5**

ABMP	<b>6200</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2.5625</b> in
Aorifice	0.03581 sq-ft
C <sub>SWMM</sub>	<b>0.3526</b> 0.214721
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	13.71875 in 1.143 ft
Q <sub>orif-classic</sub>	0.18745 cfs
Q <sub>orif-SWMM</sub>	0.18745 cfs
Qdiversion	<b>0.18933</b> cfs
Qinf:	0.7176 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**BMP RV6**

ABMP	<b>3250</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>1.875</b> in
Aorifice	0.01917 sq-ft
C <sub>SWMM</sub>	<b>0.3602</b> 0.11496
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	14.0625 in 1.172 ft
Q <sub>orif-classic</sub>	0.10161 cfs
Q <sub>orif-SWMM</sub>	0.10161 cfs
Qdiversion	<b>0.10263</b> cfs
Qinf:	0.3762 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**STAGE STORAGE & DRAWDOWN CALCULATIONS**

**BASIN 1 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	4950.0	0.00
1	4950.0	4950.00
2	4950.0	9900.00
3	4950.0	14850.00
4	4950.0	19800.00
5	4950.0	24750.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 16.02 hrs  
 Drawdown Time Using LID Flow of 0.1717 cfs

**BASIN 2 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	3250.0	0.00
1	3250.0	3250.00
2	3250.0	6500.00
3	3250.0	9750.00
4	3250.0	13000.00
5	3250.0	16250.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 17.59 hrs  
 Drawdown Time Using LID Flow of 0.10263 cfs

**BASIN 3 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	3900.0	0.00
1	3900.0	3900.00
2	3900.0	7800.00
3	3900.0	11700.00
4	3900.0	15600.00
5	3900.0	19500.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 16.51 hrs  
 Drawdown Time Using LID Flow of 0.13123 cfs

**BASIN 4 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	3950.0	0.00
1	3950.0	3950.00
2	3950.0	7900.00
3	3950.0	11850.00
4	3950.0	15800.00
5	3950.0	19750.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 16.72 hrs  
 Drawdown Time Using LID Flow of 0.13123 cfs

**BASIN 5 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	6200.0	0.00
1	6200.0	6200.00
2	6200.0	12400.00
3	6200.0	18600.00
4	6200.0	24800.00
5	6200.0	31000.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 18.19 hrs  
 Drawdown Time Using LID Flow of 0.18933 cfs

**BASIN 6 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	3250.0	0.00
1	3250.0	3250.00
2	3250.0	6500.00
3	3250.0	9750.00
4	3250.0	13000.00
5	3250.0	16250.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 17.59 hrs  
 Drawdown Time Using LID Flow of 0.10263 cfs

PRE\_DEV\_RV-5

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION        GREEN_AMPT
FLOW_ROUTING         KINWAVE
START_DATE           01/03/1973
START_TIME           05:00:00
REPORT_START_DATE    05/24/1973
REPORT_START_TIME    05:00:00
END_DATE             05/23/2008
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             00:15:00
DRY_STEP             04:00:00
ROUTING_STEP         0:01:00
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      0.06  .08  .11  .16  .18  .21  .21  .200  .16  .12  .08  .06
DRY_ONLY     NO
    
```

[RAINGAGES]

```

;;
;;Name      Rain      Time      Snow      Data
;;Name      Type      Intrvl   Catch    Source
;;-----
SanVicente  INTENSITY 1:00   1.0     TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

;;
;;Name      Raingage      Outlet      Total      Pcnt.      Pcnt.      Curb      Snow
;;Name      Raingage      Outlet      Area       Imperv      Width      Slope     Length    Pack
;;-----
RV5-PRE     SanVicente      POC-RV5     5.53       0           1075      1         0
    
```

[SUBAREAS]

```

;;Subcatchment  N-Imperv  N-Perv  S-Imperv  S-Perv  PctZero  RouteTo  PctRouted
;;-----
RV5-PRE         0.012    0.05   0.05     0.10   25       OUTLET
    
```

[INFILTRATION]

```

;;Subcatchment  Suction  HydCon  IMDmax
;;-----
RV5-PRE         9        0.01875  0.33
    
```

[OUTFALLS]

```

;;
;;Name      Invert      Outfall      Stage/Table      Tide
;;Name      Elev.       Type         Time Series      Gate
;;-----
POC-RV5     0           FREE         NO
    
```

[TIMESERIES]

```

;;Name      Date      Time      Value
;;-----
;San Vicente Rain Gage from San Diego County
SanVicente  FILE "P:\Acad\7033 Hunsaker San Diego\03 Fanita Ranch\REC SWMM\rainfall_sanvicente.dat"
    
```

[REPORT]

PRE\_DEV\_RV-5

INPUT NO  
CONTROLS NO  
SUBCATCHMENTS ALL  
NODES ALL  
LINKS ALL

[TAGS]

[MAP]

DIMENSIONS -115.361 3531.612 1589.934 5654.960  
Units None

[COORDINATES]

;;Node	X-Coord	Y-Coord
POC-RV5	903.735	4116.432

[VERTICES]

;;Link	X-Coord	Y-Coord
--------	---------	---------

[Polygons]

;;Subcatchment	X-Coord	Y-Coord
RV5-PRE	897.746	4956.140

[SYMBOLS]

;;Gage	X-Coord	Y-Coord
SanVicente	1729.232	4699.004

POST\_DEV\_RV-5

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION        GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE           01/03/1973
START_TIME           05:00:00
REPORT_START_DATE    05/24/1973
REPORT_START_TIME    05:00:00
END_DATE             05/23/2008
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             00:15:00
DRY_STEP             04:00:00
ROUTING_STEP         0:01:00
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      0.06  .08  .11  .16  .18  .21  .21  .200  .16  .12  .08  .06
DRY_ONLY     NO
    
```

[RAINGAGES]

```

;;
;;Name      Rain      Time      Snow      Data
;;Type      Intrvl  Catch     Source
;;-----
SanVicente  INTENSITY 1:00  1.0      TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

;;
;;Name      Raingage      Outlet      Total      Pcnt.      Pcnt.      Curb      Snow
;;Type      Intrvl  Catch     Area      Imperv     Width     Slope     Length     Pack
;;-----
DMA-RV5     SanVicente  BR-RV5     5.388     61.59     1610     1         0
BR-RV5     SanVicente  POC-RV5    0.142332  0         10        0         0
    
```

[SUBAREAS]

```

;;Subcatchment  N-Imperv  N-Perv  S-Imperv  S-Perv  PctZero  RouteTo  PctRouted
;;-----
DMA-RV5         0.012    0.05   0.05     0.10    25       OUTLET
BR-RV5         0.012    0.05   0.05     0.10    25       OUTLET
    
```

[INFILTRATION]

```

;;Subcatchment  Suction  HydCon  IMDmax
;;-----
DMA-RV5         9        0.01875  0.33
BR-RV5         9        0.01875  0.33
    
```

[LID\_CONTROLS]

```

;;
;;Type/Layer  Parameters
;;-----
BR-RV5        BC
BR-RV5        SURFACE  10.2    0.0     0.0     0.0     5
BR-RV5        SOIL     18      0.4     0.2     0.1     5         5         1.5
BR-RV5        STORAGE  18      0.67    0        0
BR-RV5        DRAIN   0.3526  0.5     3        6
    
```

[LID\_USAGE]

POST\_DEV\_RV-5

Subcatchment	LID Process	Number	Area	Width	InitSatur	FromImprv	ToPerv	Report File
BR-RV5	BR-RV5	1	6200	0	0	100	0	

[OUTFALLS]

Name	Invert Elev.	Outfall Type	Stage/Table Time Series	Tide Gate
POC-RV5	0	FREE		NO

[TIMESERIES]

Name	Date	Time	Value
San Vicente Rain Gage from San Diego County			
SanVicente	FILE	"P:\Acad\7033 Hunsaker San Diego\03 Fanita Ranch\REC SWMM\rainfall_sanvicente.dat"	

[REPORT]

INPUT NO  
 CONTROLS NO  
 SUBCATCHMENTS ALL  
 NODES ALL  
 LINKS ALL

[TAGS]

[MAP]

DIMENSIONS -115.361 3531.612 1589.934 5654.960  
 Units None

[COORDINATES]

Node	X-Coord	Y-Coord
POC-RV5	903.735	4116.432

[VERTICES]

Link	X-Coord	Y-Coord
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[Polygons]

Subcatchment	X-Coord	Y-Coord
DMA-RV5	897.746	4956.140
BR-RV5	900.497	4740.337

[SYMBOLS]

Gage	X-Coord	Y-Coord
SanVicente	1729.232	4699.004

## **POC RV6**

Flow Duration Curve (Pass-Fail) Results

List of the “n” largest Peaks: Pre-Development and Post-Development Conditions

Elevation vs. Area Curves and Elevations vs. Discharge Curves to be used in SWMM

DMA and SWMM Input Data (Existing and Proposed Models)

### Flow Duration Curve Data for Fanita Ranch POC-RV6 , Santee, CA

Q2 = 1.267 cfs Fraction 10 %  
 Q10 = 1.88 cfs  
 Step = 0.0177 cfs  
 Count = 306811 hours  
 35.00 years

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
1	0.127	794	2.59E-01	312	1.02E-01	39%	Pass
2	0.144	734	2.39E-01	307	1.00E-01	42%	Pass
3	0.162	684	2.23E-01	294	9.58E-02	43%	Pass
4	0.180	640	2.09E-01	281	9.16E-02	44%	Pass
5	0.197	591	1.93E-01	258	8.41E-02	44%	Pass
6	0.215	528	1.72E-01	232	7.56E-02	44%	Pass
7	0.233	491	1.60E-01	223	7.27E-02	45%	Pass
8	0.251	462	1.51E-01	210	6.84E-02	45%	Pass
9	0.268	431	1.40E-01	202	6.58E-02	47%	Pass
10	0.286	411	1.34E-01	196	6.39E-02	48%	Pass
11	0.304	393	1.28E-01	176	5.74E-02	45%	Pass
12	0.321	378	1.23E-01	160	5.21E-02	42%	Pass
13	0.339	361	1.18E-01	157	5.12E-02	43%	Pass
14	0.357	350	1.14E-01	156	5.08E-02	45%	Pass
15	0.374	330	1.08E-01	155	5.05E-02	47%	Pass
16	0.392	309	1.01E-01	153	4.99E-02	50%	Pass
17	0.410	291	9.48E-02	143	4.66E-02	49%	Pass
18	0.427	270	8.80E-02	135	4.40E-02	50%	Pass
19	0.445	247	8.05E-02	131	4.27E-02	53%	Pass
20	0.463	226	7.37E-02	131	4.27E-02	58%	Pass
21	0.481	205	6.68E-02	125	4.07E-02	61%	Pass
22	0.498	183	5.96E-02	122	3.98E-02	67%	Pass
23	0.516	172	5.61E-02	118	3.85E-02	69%	Pass
24	0.534	167	5.44E-02	98	3.19E-02	59%	Pass
25	0.551	157	5.12E-02	81	2.64E-02	52%	Pass
26	0.569	150	4.89E-02	77	2.51E-02	51%	Pass
27	0.587	145	4.73E-02	77	2.51E-02	53%	Pass
28	0.604	137	4.47E-02	76	2.48E-02	55%	Pass
29	0.622	133	4.33E-02	75	2.44E-02	56%	Pass
30	0.640	125	4.07E-02	72	2.35E-02	58%	Pass
31	0.657	121	3.94E-02	68	2.22E-02	56%	Pass
32	0.675	113	3.68E-02	67	2.18E-02	59%	Pass
33	0.693	104	3.39E-02	66	2.15E-02	63%	Pass
34	0.711	98	3.19E-02	65	2.12E-02	66%	Pass
35	0.728	94	3.06E-02	62	2.02E-02	66%	Pass
36	0.746	87	2.84E-02	60	1.96E-02	69%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
37	0.764	80	2.61E-02	55	1.79E-02	69%	Pass
38	0.781	71	2.31E-02	50	1.63E-02	70%	Pass
39	0.799	65	2.12E-02	47	1.53E-02	72%	Pass
40	0.817	62	2.02E-02	46	1.50E-02	74%	Pass
41	0.834	61	1.99E-02	40	1.30E-02	66%	Pass
42	0.852	57	1.86E-02	38	1.24E-02	67%	Pass
43	0.870	54	1.76E-02	38	1.24E-02	70%	Pass
44	0.887	48	1.56E-02	34	1.11E-02	71%	Pass
45	0.905	45	1.47E-02	33	1.08E-02	73%	Pass
46	0.923	42	1.37E-02	33	1.08E-02	79%	Pass
47	0.941	40	1.30E-02	32	1.04E-02	80%	Pass
48	0.958	40	1.30E-02	32	1.04E-02	80%	Pass
49	0.976	40	1.30E-02	28	9.13E-03	70%	Pass
50	0.994	38	1.24E-02	21	6.84E-03	55%	Pass
51	1.011	36	1.17E-02	21	6.84E-03	58%	Pass
52	1.029	36	1.17E-02	20	6.52E-03	56%	Pass
53	1.047	31	1.01E-02	20	6.52E-03	65%	Pass
54	1.064	29	9.45E-03	20	6.52E-03	69%	Pass
55	1.082	27	8.80E-03	20	6.52E-03	74%	Pass
56	1.100	26	8.47E-03	19	6.19E-03	73%	Pass
57	1.118	26	8.47E-03	18	5.87E-03	69%	Pass
58	1.135	25	8.15E-03	14	4.56E-03	56%	Pass
59	1.153	25	8.15E-03	14	4.56E-03	56%	Pass
60	1.171	25	8.15E-03	14	4.56E-03	56%	Pass
61	1.188	21	6.84E-03	14	4.56E-03	67%	Pass
62	1.206	20	6.52E-03	14	4.56E-03	70%	Pass
63	1.224	20	6.52E-03	14	4.56E-03	70%	Pass
64	1.241	19	6.19E-03	13	4.24E-03	68%	Pass
65	1.259	19	6.19E-03	11	3.59E-03	58%	Pass
66	1.277	18	5.87E-03	11	3.59E-03	61%	Pass
67	1.294	18	5.87E-03	11	3.59E-03	61%	Pass
68	1.312	18	5.87E-03	11	3.59E-03	61%	Pass
69	1.330	18	5.87E-03	10	3.26E-03	56%	Pass
70	1.348	17	5.54E-03	9	2.93E-03	53%	Pass
71	1.365	17	5.54E-03	9	2.93E-03	53%	Pass
72	1.383	17	5.54E-03	9	2.93E-03	53%	Pass
73	1.401	16	5.21E-03	9	2.93E-03	56%	Pass
74	1.418	13	4.24E-03	8	2.61E-03	62%	Pass
75	1.436	13	4.24E-03	8	2.61E-03	62%	Pass
76	1.454	13	4.24E-03	8	2.61E-03	62%	Pass
77	1.471	12	3.91E-03	8	2.61E-03	67%	Pass
78	1.489	12	3.91E-03	8	2.61E-03	67%	Pass
79	1.507	12	3.91E-03	8	2.61E-03	67%	Pass
80	1.524	12	3.91E-03	8	2.61E-03	67%	Pass
81	1.542	12	3.91E-03	8	2.61E-03	67%	Pass

Interval	Existing Condition			Detention Optimized			Pass or Fail?
	Q (cfs)	Hours > Q	% time	Hours>Q	% time	Post/Pre	
82	1.560	11	3.59E-03	8	2.61E-03	73%	Pass
83	1.578	11	3.59E-03	8	2.61E-03	73%	Pass
84	1.595	9	2.93E-03	8	2.61E-03	89%	Pass
85	1.613	9	2.93E-03	7	2.28E-03	78%	Pass
86	1.631	9	2.93E-03	7	2.28E-03	78%	Pass
87	1.648	9	2.93E-03	7	2.28E-03	78%	Pass
88	1.666	9	2.93E-03	7	2.28E-03	78%	Pass
89	1.684	7	2.28E-03	6	1.96E-03	86%	Pass
90	1.701	7	2.28E-03	5	1.63E-03	71%	Pass
91	1.719	7	2.28E-03	5	1.63E-03	71%	Pass
92	1.737	7	2.28E-03	5	1.63E-03	71%	Pass
93	1.754	6	1.96E-03	5	1.63E-03	83%	Pass
94	1.772	5	1.63E-03	4	1.30E-03	80%	Pass
95	1.790	5	1.63E-03	3	9.78E-04	60%	Pass
96	1.808	5	1.63E-03	3	9.78E-04	60%	Pass
97	1.825	5	1.63E-03	3	9.78E-04	60%	Pass
98	1.843	5	1.63E-03	3	9.78E-04	60%	Pass
99	1.861	4	1.30E-03	3	9.78E-04	75%	Pass
100	1.878	4	1.30E-03	3	9.78E-04	75%	Pass

**Peak Flows calculated with Cunnane Plotting Position**

Return Period (years)	Pre-dev. Q (cfs)	Post-Dev. Q (cfs)	Reduction (cfs)
10	1.878	1.827	0.052
9	1.818	1.780	0.038
8	1.774	1.771	0.003
7	1.751	1.735	0.016
6	1.724	1.694	0.030
5	1.679	1.646	0.033
4	1.591	1.402	0.189
3	1.449	1.251	0.198
2	1.267	0.976	0.291

**List of Peak events and Determination of P2 and P10 (Pre-Development)**

**Fanita Ranch POC RV6 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>1.88</b>	<b>2.00</b>					
<b>9</b>	<b>1.82</b>	<b>1.85</b>	0.899	5/1/1978	35	1.03	1.02
<b>8</b>	<b>1.77</b>	<b>1.80</b>	0.927	3/5/2005	34	1.06	1.05
<b>7</b>	<b>1.75</b>	<b>1.76</b>	0.977	12/28/1977	33	1.09	1.08
<b>6</b>	<b>1.72</b>	<b>1.74</b>	0.985	1/18/1993	32	1.13	1.11
<b>5</b>	<b>1.68</b>	<b>1.68</b>	0.999	4/18/1995	31	1.16	1.15
<b>4</b>	<b>1.59</b>	<b>1.59</b>	1.033	3/4/1978	30	1.20	1.19
<b>3</b>	<b>1.45</b>	<b>1.45</b>	1.037	4/23/1980	29	1.24	1.23
<b>2</b>	<b>1.27</b>	<b>1.27</b>	1.051	2/16/1980	28	1.29	1.28
			1.058	2/18/1980	27	1.33	1.32
			1.072	1/13/1993	26	1.38	1.38
			1.077	2/15/1986	25	1.44	1.43
			1.122	10/10/1986	24	1.50	1.49
			1.172	8/17/1977	23	1.57	1.56
			1.177	3/2/1983	22	1.64	1.63
			1.179	12/4/1974	21	1.71	1.71
			1.181	2/15/1992	20	1.80	1.80
			1.192	2/21/2005	19	1.89	1.89
			1.267	3/1/1983	18	2.00	2.00
			1.345	1/31/1979	17	2.12	2.12
			1.388	10/27/2004	16	2.25	2.26
			1.405	10/18/2004	15	2.40	2.41
			1.418	3/6/1975	14	2.57	2.59
			1.418	10/20/2004	13	2.77	2.79
			1.454	2/13/1998	12	3.00	3.03
			1.547	2/2/1998	11	3.27	3.32
			1.582	2/19/1993	10	3.60	3.67
			1.593	1/29/1980	9	4.00	4.09
			1.676	2/6/1992	8	4.50	4.63
			1.682	1/9/2005	7	5.14	5.33
			1.742	2/7/1998	6	6.00	6.29
			1.759	10/31/1987	5	7.20	7.65
			1.852	9/10/1976	4	9.00	9.78
			2.297	10/22/1976	3	12.00	13.54
			2.541	2/20/1980	2	18.00	22.00
			2.688	1/4/1978	1	36.00	58.67

Note:

Cunnane is the preferred method by the HMP permit.

**List of Peak events and Determination of P2 and P10 (Post-Development)  
Fanita Ranch POCR6 - Santee, CA**

T (Year)	Cunnane (cfs)	Weibull (cfs)	Peaks (cfs)	Date	Posit	Period of Return (Years)	
						Weibull	Cunnane
<b>10</b>	<b>1.83</b>	<b>2.01</b>					
9	1.78	1.79	0.75	2/6/1992	35	1.03	1.02
8	1.77	1.78	0.77	12/7/1992	34	1.06	1.05
7	1.74	1.76	0.78	1/11/2005	33	1.09	1.08
6	1.69	1.70	0.78	2/10/1978	32	1.13	1.11
5	1.65	1.67	0.79	3/6/1980	31	1.16	1.15
4	1.40	1.42	0.83	2/8/1976	30	1.20	1.19
3	1.25	1.25	0.83	1/29/1980	29	1.24	1.23
2	0.98	0.98	0.83	2/18/1980	28	1.29	1.28
			0.83	1/11/1980	27	1.33	1.32
			0.84	1/15/1978	26	1.38	1.38
			0.85	11/12/2003	25	1.44	1.43
			0.88	3/5/1995	24	1.50	1.49
			0.88	2/13/1998	23	1.57	1.56
			0.90	2/23/2005	22	1.64	1.63
			0.97	11/22/1996	21	1.71	1.71
			0.97	10/31/1987	20	1.80	1.80
			0.97	10/27/2004	19	1.89	1.89
			0.98	10/28/1974	18	2.00	2.00
			0.98	11/25/1985	17	2.12	2.12
			0.98	12/29/2004	16	2.25	2.26
			0.99	10/20/2004	15	2.40	2.41
			1.09	2/15/1986	14	2.57	2.59
			1.25	2/21/2005	13	2.77	2.79
			1.25	3/2/1983	12	3.00	3.03
			1.32	8/17/1977	11	3.27	3.32
			1.347	12/4/1974	10	3.60	3.67
			1.417	1/31/1979	9	4.00	4.09
			1.606	2/2/1998	8	4.50	4.63
			1.683	1/9/2005	7	5.14	5.33
			1.699	1/29/1980	6	6.00	6.29
			1.768	9/10/1976	5	7.20	7.65
			1.787	2/7/1998	4	9.00	9.78
			2.456	10/22/1976	3	12.00	13.54
			2.549	1/4/1978	2	18.00	22.00
			2.598	2/20/1980	1	36.00	58.67

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

**BMP RV1**

ABMP	<b>4950</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2.4375</b> in
Aorifice	0.03241 sq-ft
C <sub>SWMM</sub>	<b>0.3996</b> 0.194283
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	13.78125 in 1.148 ft
Q <sub>orif-classic</sub>	0.17000 cfs
Q <sub>orif-SWMM</sub>	0.17000 cfs
Qdiversion	<b>0.17170</b> cfs
Qinf:	0.5729 cfs
<b>0.1 Q2 EX</b>	<b>0.271</b>

**BMP RV2**

ABMP	<b>3250</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>1.875</b> in
Aorifice	0.01917 sq-ft
C <sub>SWMM</sub>	<b>0.3602</b> 0.11496
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	14.0625 in 1.172 ft
Q <sub>orif-classic</sub>	0.10161 cfs
Q <sub>orif-SWMM</sub>	0.10161 cfs
Qdiversion	<b>0.10263</b> cfs
Qinf:	0.3762 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**BMP RV3**

ABMP	<b>3900</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2.125</b> in
Aorifice	0.02463 sq-ft
C <sub>SWMM</sub>	<b>0.3855</b> 0.14766
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	13.9375 in 1.161 ft
Q <sub>orif-classic</sub>	0.12993 cfs
Q <sub>orif-SWMM</sub>	0.12993 cfs
Qdiversion	<b>0.13123</b> cfs
Qinf:	0.4514 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**BMP RV4**

ABMP	<b>3950</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2.125</b> in
Aorifice	0.02463 sq-ft
C <sub>SWMM</sub>	<b>0.3806</b> 0.14766
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	13.9375 in 1.161 ft
Q <sub>orif-classic</sub>	0.12993 cfs
Q <sub>orif-SWMM</sub>	0.12993 cfs
Qdiversion	<b>0.13123</b> cfs
Qinf:	0.4572 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**BMP RV5**

ABMP	<b>6200</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>2.5625</b> in
Aorifice	0.03581 sq-ft
C <sub>SWMM</sub>	<b>0.3526</b> 0.214721
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	13.71875 in 1.143 ft
Q <sub>orif-classic</sub>	0.18745 cfs
Q <sub>orif-SWMM</sub>	0.18745 cfs
Qdiversion	<b>0.18933</b> cfs
Qinf:	0.7176 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**BMP RV6**

ABMP	<b>3250</b> sq-ft
Cg	<b>0.61</b>
Dorif	<b>1.875</b> in
Aorifice	0.01917 sq-ft
C <sub>SWMM</sub>	<b>0.3602</b> 0.11496
H-gravel	<b>1.5</b> ft <b>18</b> in
H-design	14.0625 in 1.172 ft
Q <sub>orif-classic</sub>	0.10161 cfs
Q <sub>orif-SWMM</sub>	0.10161 cfs
Qdiversion	<b>0.10263</b> cfs
Qinf:	0.3762 cfs
<b>0.1 Q2 EX</b>	<b>0.109</b>

**STAGE STORAGE & DRAWDOWN CALCULATIONS**

**BASIN 1 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	4950.0	0.00
1	4950.0	4950.00
2	4950.0	9900.00
3	4950.0	14850.00
4	4950.0	19800.00
5	4950.0	24750.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 16.02 hrs  
 Drawdown Time Using LID Flow of 0.1717 cfs

**BASIN 2 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	3250.0	0.00
1	3250.0	3250.00
2	3250.0	6500.00
3	3250.0	9750.00
4	3250.0	13000.00
5	3250.0	16250.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 17.59 hrs  
 Drawdown Time Using LID Flow of 0.10263 cfs

**BASIN 3 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	3900.0	0.00
1	3900.0	3900.00
2	3900.0	7800.00
3	3900.0	11700.00
4	3900.0	15600.00
5	3900.0	19500.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 16.51 hrs  
 Drawdown Time Using LID Flow of 0.13123 cfs

**BASIN 4 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	3950.0	0.00
1	3950.0	3950.00
2	3950.0	7900.00
3	3950.0	11850.00
4	3950.0	15800.00
5	3950.0	19750.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 16.72 hrs  
 Drawdown Time Using LID Flow of 0.13123 cfs

**BASIN 5 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	6200.0	0.00
1	6200.0	6200.00
2	6200.0	12400.00
3	6200.0	18600.00
4	6200.0	24800.00
5	6200.0	31000.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 18.19 hrs  
 Drawdown Time Using LID Flow of 0.18933 cfs

**BASIN 6 STAGE-STORAGE**

Elev (ft)	Area (ft <sup>2</sup> )	Volume (ft <sup>3</sup> )
0	3250.0	0.00
1	3250.0	3250.00
2	3250.0	6500.00
3	3250.0	9750.00
4	3250.0	13000.00
5	3250.0	16250.00

Effective Depth **12.000** in  
**Including 3" Mulch** **10.20** in  
 Drawdown Time 17.59 hrs  
 Drawdown Time Using LID Flow of 0.10263 cfs

PRE\_DEV\_RV-6

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION        GREEN_AMPT
FLOW_ROUTING        KINWAVE
START_DATE           01/03/1973
START_TIME           05:00:00
REPORT_START_DATE    05/24/1973
REPORT_START_TIME    05:00:00
END_DATE             05/23/2008
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             00:15:00
DRY_STEP             04:00:00
ROUTING_STEP         0:01:00
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      0.06  .08  .11  .16  .18  .21  .21  .200  .16  .12  .08  .06
DRY_ONLY     NO
    
```

[RAINGAGES]

```

;;
;;Name      Rain      Time      Snow      Data
;;Name      Type      Intrvl   Catch     Source
;;-----
SanVicente  INTENSITY 1:00   1.0      TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

;;
;;Name      Raingage      Outlet      Total      Pcnt.      Pcnt.      Curb      Snow
;;Name      Raingage      Outlet      Area       Imperv     Width     Slope     Length     Pack
;;-----
RV6-PRE     SanVicente      POC-RV6     2.91       0          566       1         0
    
```

[SUBAREAS]

```

;;Subcatchment  N-Imperv  N-Perv  S-Imperv  S-Perv  PctZero  RouteTo  PctRouted
;;-----
RV6-PRE         0.012    0.05   0.05     0.10   25       OUTLET
    
```

[INFILTRATION]

```

;;Subcatchment  Suction  HydCon  IMDmax
;;-----
RV6-PRE         9        0.01875  0.33
    
```

[OUTFALLS]

```

;;
;;Name      Invert      Outfall      Stage/Table      Tide
;;Name      Elev.       Type         Time Series     Gate
;;-----
POC-RV6     0           FREE         NO
    
```

[TIMESERIES]

```

;;Name      Date      Time      Value
;;-----
;San Vicente Rain Gage from San Diego County
SanVicente  FILE "P:\Acad\7033 Hunsaker San Diego\03 Fanita Ranch\REC SWMM\rainfall_sanvicente.dat"
    
```

[REPORT]

# PRE\_DEV\_RV-6

INPUT NO  
CONTROLS NO  
SUBCATCHMENTS ALL  
NODES ALL  
LINKS ALL

[TAGS]

[MAP]

DIMENSIONS -115.361 3531.612 1589.934 5654.960  
Units None

[COORDINATES]

;;Node	X-Coord	Y-Coord
POC-RV6	903.735	4116.432

[VERTICES]

;;Link	X-Coord	Y-Coord
--------	---------	---------

[Polygons]

;;Subcatchment	X-Coord	Y-Coord
RV6-PRE	897.746	4956.140

[SYMBOLS]

;;Gage	X-Coord	Y-Coord
SanVicente	1729.232	4699.004

POST\_DEV\_RV-6

[TITLE]

[OPTIONS]

```

FLOW_UNITS          CFS
INFILTRATION        GREEN_AMPT
FLOW_ROUTING         KINWAVE
START_DATE           01/03/1973
START_TIME           05:00:00
REPORT_START_DATE    05/24/1973
REPORT_START_TIME    05:00:00
END_DATE             05/23/2008
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             00:15:00
DRY_STEP             04:00:00
ROUTING_STEP         0:01:00
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      0.06  .08  .11  .16  .18  .21  .21  .200  .16  .12  .08  .06
DRY_ONLY     NO
    
```

[RAINGAGES]

```

;;
;;Name      Rain      Time      Snow      Data
;;Name      Type      Intrvl   Catch     Source
;;-----
SanVicente  INTENSITY 1:00   1.0      TIMESERIES SanVicente
    
```

[SUBCATCHMENTS]

```

;;
;;Name      Raingage      Outlet      Total      Pcnt.      Pcnt.      Curb      Snow
;;Name      Raingage      Outlet      Area       Imperv     Width     Slope     Length     Pack
;;-----
DMA-RV6     SanVicente      BR-RV6      2.835     61.58     847       1         0
BR-RV6     SanVicente      POC-RV6     0.07461   0         10        0         0
    
```

[SUBAREAS]

```

;;Subcatchment  N-Imperv  N-Perv  S-Imperv  S-Perv  PctZero  RouteTo  PctRouted
;;-----
DMA-RV6         0.012    0.05   0.05     0.10   25       OUTLET
BR-RV6         0.012    0.05   0.05     0.10   25       OUTLET
    
```

[INFILTRATION]

```

;;Subcatchment  Suction  HydCon  IMDmax
;;-----
DMA-RV6         9        0.01875  0.33
BR-RV6         9        0.01875  0.33
    
```

[LID\_CONTROLS]

```

;;
;;Type/Layer  Parameters
;;-----
BR-RV6        BC
BR-RV6        SURFACE  10.2    0.0     0.0     0.0     5
BR-RV6        SOIL     18      0.4     0.2     0.1     5         5         1.5
BR-RV6        STORAGE  18      0.67    0        0
BR-RV6        DRAIN   0.3602  0.5     3        6
    
```

[LID\_USAGE]

POST\_DEV\_RV-6

Subcatchment	LID Process	Number	Area	Width	InitSatur	FromImprv	ToPerv	Report File
BR-RV6	BR-RV6	1	3250	0	0	100	0	

[OUTFALLS]

Name	Invert Elev.	Outfall Type	Stage/Table Time Series	Tide Gate
POC-RV6	0	FREE		NO

[TIMESERIES]

Name	Date	Time	Value
San Vicente Rain Gage from San Diego County			
SanVicente	FILE "P:\Acad\7033 Hunsaker San Diego\03 Fanita Ranch\REC SWMM\rainfall_sanvicente.dat"		

[REPORT]

INPUT NO  
 CONTROLS NO  
 SUBCATCHMENTS ALL  
 NODES ALL  
 LINKS ALL

[TAGS]

[MAP]

DIMENSIONS -115.361 3531.612 1589.934 5654.960  
 Units None

[COORDINATES]

Node	X-Coord	Y-Coord
POC-RV6	903.735	4116.432

[VERTICES]

Link	X-Coord	Y-Coord
------	---------	---------

[Polygons]

Subcatchment	X-Coord	Y-Coord
DMA-RV6	897.746	4956.140
BR-RV6	900.497	4740.337

[SYMBOLS]

Gage	X-Coord	Y-Coord
SanVicente	1729.232	4699.004

**ATTACHMENT 2b**  
**MANAGEMENT OF CRITICAL COARSE SEDIMENT YIELD AREAS**

---

***THIS SECTION SUBMITTED AS STAND-ALONE STUDY.  
REFER TO TECHNICAL MEMORANDUM: ANALYSIS  
OF PCCSYAs FOR FANITA RANCH, PREPARED BY REC  
CONSULTANTS, SEPTEMBER 2019***

---

**ATTACHMENT 2c**  
**GEOMORPHIC ASSESSMENT OF RECEIVING CHANNELS**

---

***GEOMORPHIC ASSESSMENT OF RECEIVING  
CHANNELS WAS NOT PREPARED FOR THIS PROJECT.  
FLOW CONTROL FACILITIES WERE DESIGN TO  
COMPLY WITH LOW-FLOW TRHESHOLD OF 0.1Q2.***

---

**ATTACHMENT 2d**  
**FLOW CONTROL FACILITY DESIGN**

ATTACHMENT 2e  
VECTOR CONTROL PLAN

THIS SECTION NOT APPLICABLE AS  
BASINS WILL DEWATER WITHIN 96HRS.

**ATTACHMENT 3**  
**Structural BMP Maintenance Information**

*This is the cover sheet for Attachment 3.*

**Indicate which Items are Included behind this cover sheet:**

<b>Attachment Sequence</b>	<b>Contents</b>	<b>Checklist</b>
Attachment 3a	Structural BMP Maintenance Thresholds and Actions (Required)	<input checked="" type="checkbox"/> Included  See Structural BMP Maintenance Information Checklist on the back of this Attachment cover sheet.
Attachment 3b	Draft Maintenance Agreement (when applicable)	<input type="checkbox"/> Included <input checked="" type="checkbox"/> Not Applicable

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

**Preliminary Design / Planning / CEQA level submittal:**

Attachment 3a must identify:

- Typical maintenance indicators and actions for proposed structural BMP(s) based on Section 7.7 of the BMP Design Manual

Attachment 3b is not required for preliminary design / planning / CEQA level submittal.

**Final Design level submittal:**

Attachment 3a must identify:

- Specific maintenance indicators and actions for proposed structural BMP(s). This shall be based on Section 7.7 of the BMP 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 private entity operation and maintenance, Attachment 3b shall include a draft maintenance agreement in the local jurisdiction's standard format (PDP applicant to contact the [City Engineer] to obtain the current maintenance agreement forms).

**ATTACHMENT 3a**  
**STRUCTURAL BMP MAINTENANCE THRESHOLDS**

**BMP: BIORETENTION BASIN MAINTENANCE ACTIVITIES**

<b>ROUTINE ACTION</b>	<b>MAINTENANCE INDICATOR</b>	<b>FIELD MEASUREMENT</b>	<b>MEASUREMENT FREQUENCY</b>	<b>MAINTENANCE ACTIVITY</b>	<b>Frequency (# times/yr)</b>
Vegetation Management for Aesthetics (optional)	Average vegetation height greater than 12-inches, emergence of trees or woody vegetation	Visual observation and random measurements throughout the side slope area	Annually, prior to start of wet season, and after wet season	Cut vegetation to an average height of 6-inches and remove trimmings. Remove any trees, or woody vegetation	1
Soil Repair	Evidence of erosion in slopes and especially in barren spots	Visual observation	Annually, and prior to start of wet season, and after wet season	Reseed/revegetate barren spots prior to wet season. Fill in holes and/or rills, revegetate as well.	1
Standing Water	Standing water for more than 96 hrs	Visual observation	Annually, 96 hours after a target storm (0.60 in) event	Drain facility. Corrective action prior to wet season. Consult engineers if immediate solution is not evident.	1
Trash and Debris	Trash and Debris present	Visual observation	Monthly, especially prior to start of wet season	Remove and dispose of trash and debris	12
Sediment Management	Sediment depth exceeds 3 to 4 inches of sediment accumulation.	Catch basin must include notches to indicate depth at which cleaning is required. Measure depth at apparent maximum and minimum accumulation of sediment with any type of measuring device. Calculate average depth by adding the two values and dividing the two.	Annually, prior to start of wet season, and at the end of wet season	Remove and properly dispose of sediment. Regrade if necessary. (expected every 2 years)	0.5
General Maintenance Inspection	Inlet structures, outlet structures, side slopes or other features damaged, significant erosion, burrows, emergence of trees or woody vegetation, graffiti or vandalism, fence damage, etc.	Visual observation	Annually, prior to start of wet season	Corrective action prior to wet season. Consult engineers if immediate solution is not evident.	1
Storm Drain Signage	Evidence of deterioration	Visual observation	As required, estimated as every two years prior to wet season	Re-apply stencil if required. Recondition signage if needed	0.5
Reporting	N/A	N/A	Due to City by September of each year	Party responsible for BMP maintenance will receive a form in the mail each year. They are required to complete and return the form, verifying that they are performing all necessary routine maintenance of treatment control BMPs on their property	1

**BMP: DETENTION BASIN MAINTENANCE ACTIVITIES**

<b>ROUTINE ACTION</b>	<b>MAINTENANCE INDICATOR</b>	<b>FIELD MEASUREMENT</b>	<b>MEASUREMENT FREQUENCY</b>	<b>MAINTENANCE ACTIVITY</b>	<b>Frequency (# times/yr)</b>
Vegetation Management for Aesthetics (optional)	Average vegetation height greater than 12-inches, emergence of trees or woody vegetation	Visual observation and random measurements throughout the side slope area	Annually, prior to start of wet season, and after wet season	Cut vegetation to an average height of 6-inches and remove trimmings. Remove any trees, or woody vegetation	1
Soil Repair	Evidence of erosion in slopes and especially in barren spots	Visual observation	Annually, and prior to start of wet season, and after wet season	Reseed/revegetate barren spots prior to wet season. Fill in holes and/or rills, revegetate as well.	1
Standing Water	Standing water for more than 96 hrs	Visual observation	Annually, 96 hours after a target storm (0.60 in) event	Drain facility. Corrective action prior to wet season. Consult engineers if immediate solution is not evident.	1
Trash and Debris	Trash and Debris present	Visual observation	Monthly, especially prior to start of wet season	Remove and dispose of trash and debris	12
Sediment Management	Sediment depth exceeds 3 to 4 inches of sediment accumulation.	Catch basin must include notches to indicate depth at which cleaning is required. Measure depth at apparent maximum and minimum accumulation of sediment with any type of measuring device. Calculate average depth by adding the two values and dividing the two.	Annually, prior to start of wet season, and at the end of wet season	Remove and properly dispose of sediment. Regrade if necessary. (expected every 2 years)	0.5
General Maintenance Inspection	Inlet structures, outlet structures, side slopes or other features damaged, significant erosion, burrows, emergence of trees or woody vegetation, graffiti or vandalism, fence damage, etc.	Visual observation	Annually, prior to start of wet season	Corrective action prior to wet season. Consult engineers if immediate solution is not evident.	1
Storm Drain Signage	Evidence of deterioration	Visual observation	As required, estimated as every two years prior to wet season	Re-apply stencil if required. Recondition signage if needed	0.5
Reporting	N/A	N/A	Due to City by September of each year	Party responsible for BMP maintenance will receive a form in the mail each year. They are required to complete and return the form, verifying that they are performing all necessary routine maintenance of treatment control BMPs on their property	1



# Modular Wetlands<sup>®</sup> System Linear

A Stormwater Biofiltration Solution



# OVERVIEW

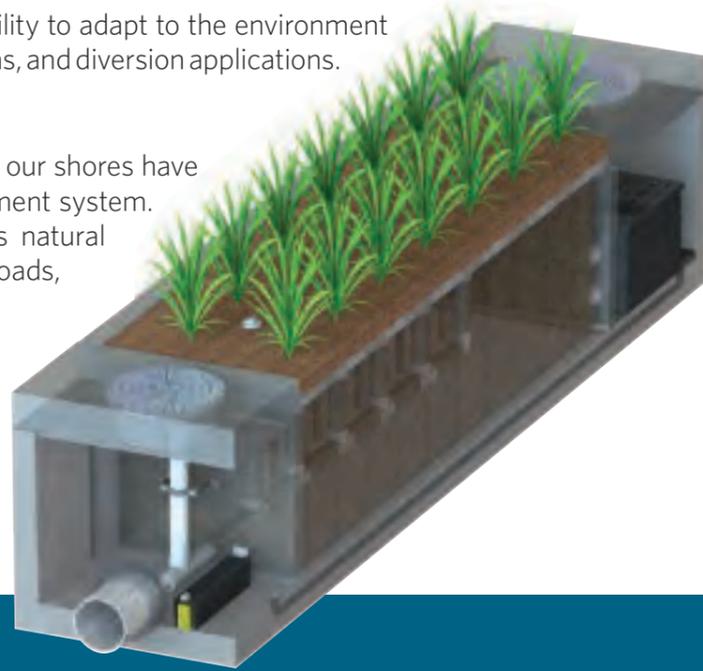
The Bio Clean Modular Wetlands® System Linear represents a pioneering breakthrough in stormwater technology as the only biofiltration system to utilize patented horizontal flow, allowing for a smaller footprint, higher treatment capacity, and a wide range of versatility. While most biofilters use little or no pretreatment, the Modular Wetlands® incorporates an advanced pretreatment chamber that includes separation and pre-filter cartridges. In this chamber, sediment and hydrocarbons are removed from runoff before entering the biofiltration chamber, reducing maintenance costs and improving performance.

Horizontal flow also gives the system the unique ability to adapt to the environment through a variety of configurations, bypass orientations, and diversion applications.

## The Urban Impact

For hundreds of years, natural wetlands surrounding our shores have played an integral role as nature's stormwater treatment system. But as cities grow and develop, our environment's natural filtration systems are blanketed with impervious roads, rooftops, and parking lots.

Bio Clean understands this loss and has spent years re-establishing nature's presence in urban areas, and rejuvenating waterways with the Modular Wetlands® System Linear.



# PERFORMANCE

The Modular Wetlands® continues to outperform other treatment methods with superior pollutant removal for TSS, heavy metals, nutrients, hydrocarbons, and bacteria. Since 2007 the Modular Wetlands® has been field tested on numerous sites across the country and is proven to effectively remove pollutants through a combination of physical, chemical, and biological filtration processes. In fact, the Modular Wetlands® harnesses some of the same biological processes found in natural wetlands in order to collect, transform, and remove even the most harmful pollutants.

<b>66%</b> REMOVAL OF DISSOLVED ZINC	<b>69%</b> REMOVAL OF TOTAL ZINC	<b>38%</b> REMOVAL OF DISSOLVED COPPER	<b>64%</b> REMOVAL OF TOTAL PHOSPHORUS	
<b>45%</b> REMOVAL OF NITROGEN	<b>50%</b> REMOVAL OF TOTAL COPPER	<b>95%</b> REMOVAL OF MOTOR OIL	<b>67%</b> REMOVAL OF ORTHO PHOSPHORUS	<b>85%</b> REMOVAL OF TSS

# APPROVALS

The Modular Wetlands® System Linear has successfully met years of challenging technical reviews and testing from some of the most prestigious and demanding agencies in the nation and perhaps the world. Here is a list of some of the most high-profile approvals, certifications, and verifications from around the country.



## Washington State Department of Ecology TAPE Approved

The MWS Linear is approved for General Use Level Designation (GULD) for Basic, Enhanced, and Phosphorus treatment at 1 gpm/ft<sup>2</sup> loading rate. The highest performing BMP on the market for all main pollutant categories.



## California Water Resources Control Board, Full Capture Certification

The Modular Wetlands® System is the first biofiltration system to receive certification as a full capture trash treatment control device.



## Virginia Department of Environmental Quality, Assignment

The Virginia Department of Environmental Quality assigned the MWS Linear the highest phosphorus removal rating for manufactured treatment devices to meet the new Virginia Stormwater Management Program (VSMP) regulation technical criteria.



## Maryland Department of the Environment, Approved ESD

Granted Environmental Site Design (ESD) status for new construction, redevelopment, and retrofitting when designed in accordance with the design manual.



## MASTEP Evaluation

The University of Massachusetts at Amherst - Water Resources Research Center issued a technical evaluation report noting removal rates up to 84% TSS, 70% total phosphorus, 68.5% total zinc, and more.



## Rhode Island Department of Environmental Management, Approved BMP

Approved as an authorized BMP and noted to achieve the following minimum removal efficiencies: 85% TSS, 60% pathogens, 30% total phosphorus, and 30% total nitrogen.

# ADVANTAGES

- HORIZONTAL FLOW BIOFILTRATION
- GREATER FILTER SURFACE AREA
- PRETREATMENT CHAMBER
- PATENTED PERIMETER VOID AREA
- FLOW CONTROL
- NO DEPRESSED PLANTER AREA
- AUTO DRAINDOWN MEANS NO MOSQUITO VECTOR

# OPERATION

The Modular Wetlands® System Linear is the most efficient and versatile biofiltration system on the market, and it is the only system with horizontal flow which:

- Improves performance
- Reduces footprint
- Minimizes maintenance

Figure 1 & Figure 2 illustrate the invaluable benefits of horizontal flow and the multiple treatment stages.

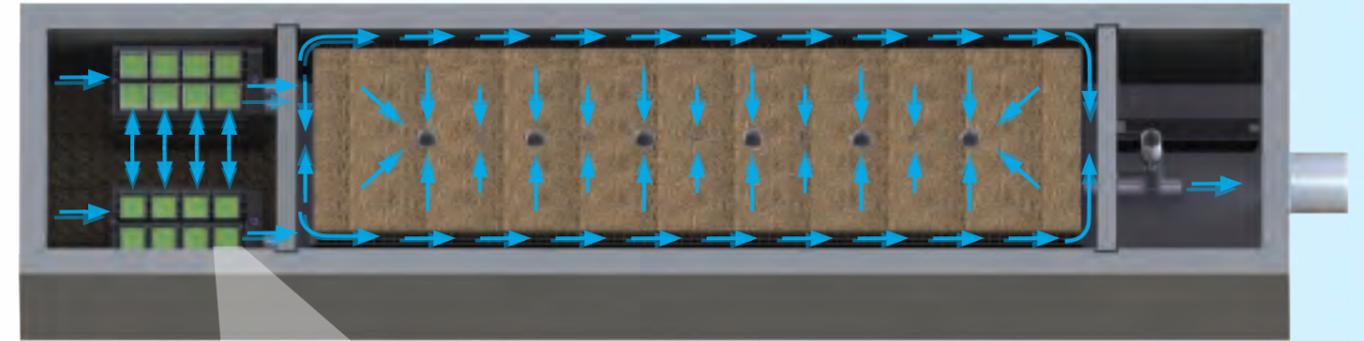


Figure 2,  
Top View

2x to 3x more surface area than traditional downward flow bioretention systems.

## 1 PRETREATMENT

### SEPARATION

- Trash, sediment, and debris are separated before entering the pre-filter cartridges
- Designed for easy maintenance access

### PRE-FILTER CARTRIDGES

- Over 25 sq. ft. of surface area per cartridge
- Utilizes BioMediaGREEN™ filter material
- Removes over 80% of TSS and 90% of hydrocarbons
- Prevents pollutants that cause clogging from migrating to the biofiltration chamber

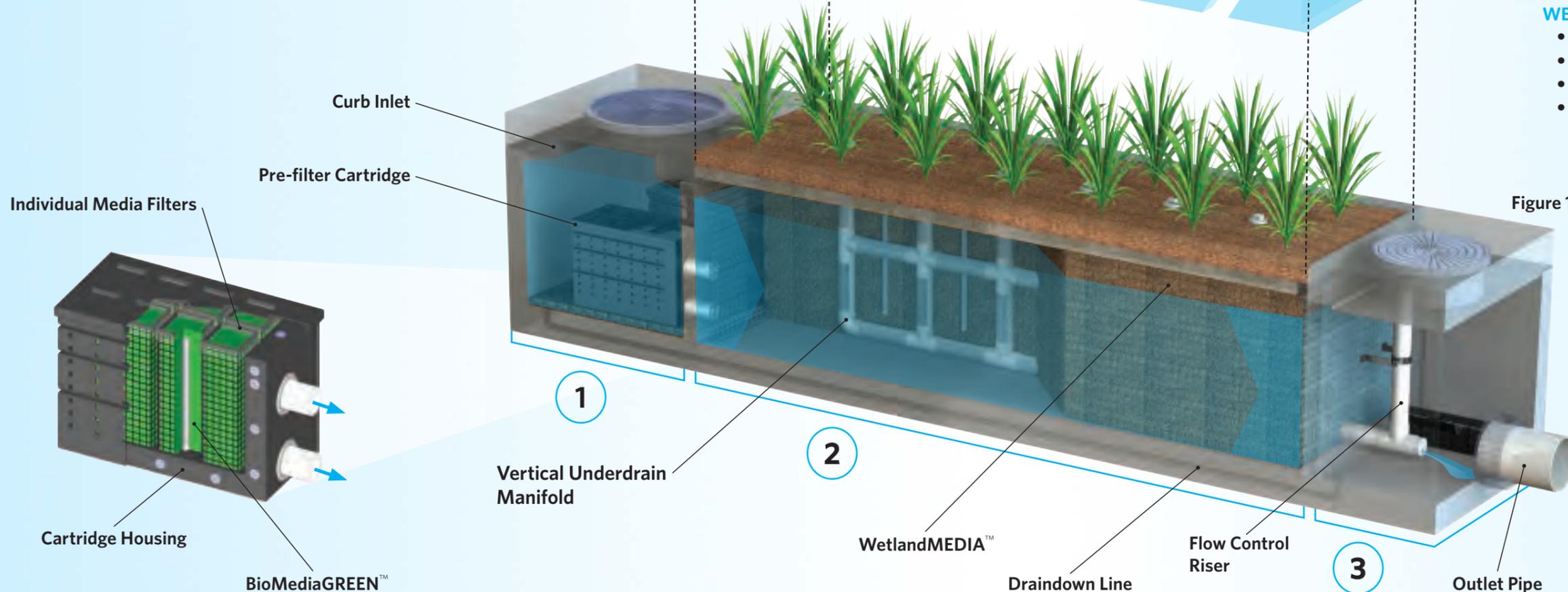


Figure 1

## 2 BIOFILTRATION

### HORIZONTAL FLOW

- Less clogging than downward flow biofilters
- Water flow is subsurface
- Improves biological filtration

### PATENTED PERIMETER VOID AREA

- Vertically extends void area between the walls and the WetlandMEDIA™ on all four sides
- Maximizes surface area of the media for higher treatment capacity

### WETLANDMEDIA

- Contains no organics and removes phosphorus
- Greater surface area and 48% void space
- Maximum evapotranspiration
- High ion exchange capacity and lightweight

## 3 DISCHARGE

### FLOW CONTROL

- Orifice plate controls flow of water through WetlandMEDIA™ to a level lower than the media's capacity
- Extends the life of the media and improves performance

### DRAINDOWN FILTER

- The draindown is an optional feature that completely drains the pretreatment chamber
- Water that drains from the pretreatment chamber between storm events will be treated



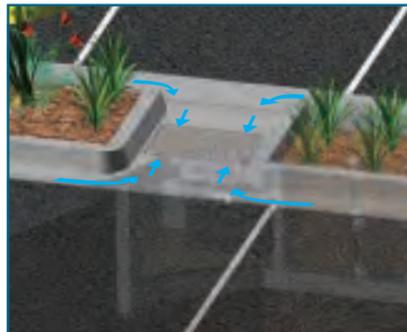
# CONFIGURATIONS

The Modular Wetlands® System Linear is the preferred biofiltration system of civil engineers across the country due to its versatile design. This highly versatile system has available “pipe-in” options on most models, along with built-in curb or grated inlets for simple integration into your storm drain design.



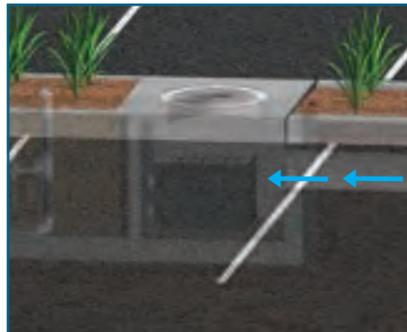
## CURB TYPE

The Curb Type configuration accepts sheet flow through a curb opening and is commonly used along roadways and parking lots. It can be used in sump or flow-by conditions. Length of curb opening varies based on model and size.



## GRATE TYPE

The Grate Type configuration offers the same features and benefits as the Curb Type but with a grated/drop inlet above the systems pretreatment chamber. It has the added benefit of allowing pedestrian access over the inlet. ADA-compliant grates are available to assure easy and safe access. The Grate Type can also be used in scenarios where runoff needs to be intercepted on both sides of landscape islands.



## VAULT TYPE

The system’s patented horizontal flow biofilter is able to accept inflow pipes directly into the pretreatment chamber, meaning the Modular Wetlands® can be used in end-of-the-line installations. This greatly improves feasibility over typical decentralized designs that are required with other biofiltration/bioretenion systems. Another benefit of the “pipe-in” design is the ability to install the system downstream of underground detention systems to meet water quality volume requirements.



## DOWNSPOUT TYPE

The Downspout Type is a variation of the Vault Type and is designed to accept a vertical downspout pipe from rooftop and podium areas. Some models have the option of utilizing an internal bypass, simplifying the overall design. The system can be installed as a raised planter, and the exterior can be stuccoed or covered with other finishes to match the look of adjacent buildings.

# ORIENTATIONS

## SIDE-BY-SIDE

The Side-By-Side orientation places the pretreatment and discharge chamber adjacent to one another with the biofiltration chamber running parallel on either side. This minimizes the system length, providing a highly compact footprint. It has been proven useful in situations such as streets with directly adjacent sidewalks, as half of the system can be placed under that sidewalk. This orientation also offers internal bypass options as discussed below.



## END-TO-END

The End-To-End orientation places the pretreatment and discharge chambers on opposite ends of the biofiltration chamber, therefore minimizing the width of the system to 5 ft. (outside dimension). This orientation is perfect for linear projects and street retrofits where existing utilities and sidewalks limit the amount of space available for installation. One limitation of this orientation is that bypass must be external.



# BYPASS

## INTERNAL BYPASS WEIR (SIDE-BY-SIDE ONLY)

The Side-By-Side orientation places the pretreatment and discharge chambers adjacent to one another allowing for integration of internal bypass. The wall between these chambers can act as a bypass weir when flows exceed the system’s treatment capacity, thus allowing bypass from the pretreatment chamber directly to the discharge chamber.

## EXTERNAL DIVERSION WEIR STRUCTURE

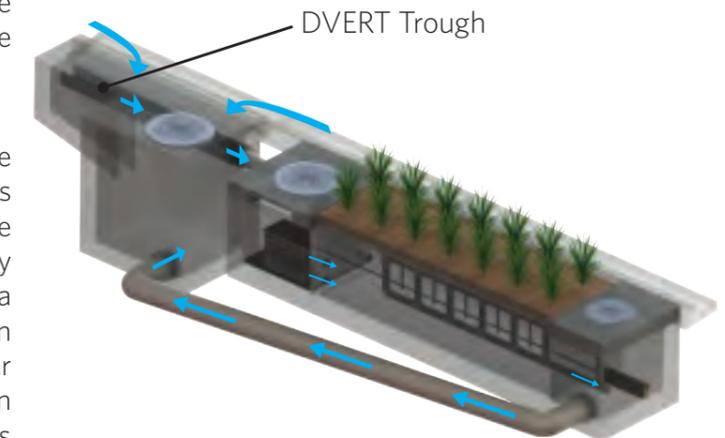
This traditional offline diversion method can be used with the Modular Wetlands® in scenarios where runoff is being piped to the system. These simple and effective structures are generally configured with two outflow pipes. The first is a smaller pipe on the upstream side of the diversion weir - to divert low flows over to the Modular Wetlands® for treatment. The second is the main pipe that receives water once the system has exceeded treatment capacity and water flows over the weir.

## FLOW-BY-DESIGN

This method is one in which the system is placed just upstream of a standard curb or grate inlet to intercept the first flush. Higher flows simply pass by the Modular Wetlands® and into the standard inlet downstream.

## DVERT LOW FLOW DIVERSION

This simple yet innovative diversion trough can be installed in existing or new curb and grate inlets to divert the first flush to the Modular Wetlands® via pipe. It works similar to a rain gutter and is installed just below the opening into the inlet. It captures the low flows and channels them over



to a connecting pipe exiting out the wall of the inlet and leading to the MWS Linear. The DVERT is perfect for retrofit and green street applications that allow the Modular Wetlands® to be installed anywhere space is available.

# SPECIFICATIONS

## FLOW-BASED DESIGNS

The Modular Wetlands® System Linear can be used in stand-alone applications to meet treatment flow requirements. Since the Modular Wetlands® is the only biofiltration system that can accept inflow pipes several feet below the surface, it can be used not only in decentralized design applications but also as a large central end-of-the-line application for maximum feasibility.

MODEL #	DIMENSIONS	WETLAND MEDIA SURFACE AREA (sq. ft.)	TREATMENT FLOW RATE (cfs)
MWS-L-4-4	4' x 4'	23	0.052
MWS-L-4-6	4' x 6'	32	0.073
MWS-L-4-8	4' x 8'	50	0.115
MWS-L-4-13	4' x 13'	63	0.144
MWS-L-4-15	4' x 15'	76	0.175
MWS-L-4-17	4' x 17'	90	0.206
MWS-L-4-19	4' x 19'	103	0.237
MWS-L-4-21	4' x 21'	117	0.268
MWS-L-6-8	7' x 9'	64	0.147
MWS-L-8-8	8' x 8'	100	0.230
MWS-L-8-12	8' x 12'	151	0.346
MWS-L-8-16	8' x 16'	201	0.462
MWS-L-8-20	9' x 21'	252	0.577
MWS-L-8-24	9' x 25'	302	0.693
MWS-L-10-20	10' x 20'	302	0.693

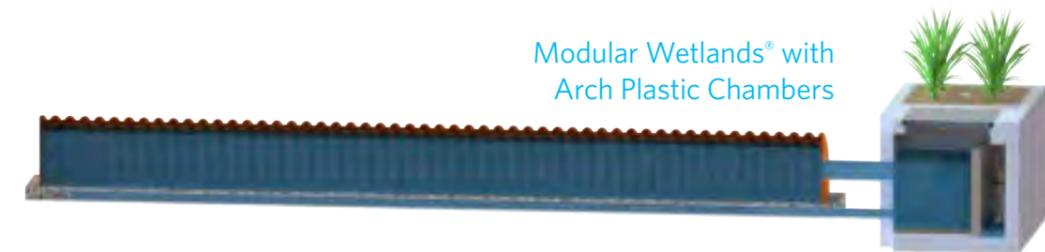
# VOLUME-BASED DESIGNS

## HORIZONTAL FLOW BIOFILTRATION ADVANTAGE



Modular Wetlands® with Box Culvert Prestorage

The Modular Wetlands® System Linear offers a unique advantage in the world of biofiltration due to its exclusive horizontal flow design: Volume-Based Design. No other biofilter has the ability to be placed downstream of detention ponds, extended dry detention basins, underground storage systems and permeable paver reservoirs. The systems horizontal flow configuration and built-in orifice control allows it to be installed with just 6" of fall between inlet and outlet pipe for a simple connection to projects with shallow downstream tie-in points. In the example above, the Modular Wetlands® is installed downstream of underground box culvert storage. Designed for the water quality volume, the Modular Wetlands® will treat and discharge the required volume within local draindown time requirements.



Modular Wetlands® with Arch Plastic Chambers

### DESIGN SUPPORT

Bio Clean engineers are trained to provide you with superior support for all volume sizing configurations throughout the country. Our vast knowledge of state and local regulations allow us to quickly and efficiently size a system to maximize feasibility. Volume control and hydromodification regulations are expanding the need to decrease the cost and size of your biofiltration system. Bio Clean will help you realize these cost savings with the Modular Wetlands®, the only biofilter than can be used downstream of storage BMPs.

## ADVANTAGES

- LOWER COST THAN FLOW-BASED DESIGN
- BUILT-IN ORIFICE CONTROL STRUCTURE
- MEETS LID REQUIREMENTS
- WORKS WITH DEEP INSTALLATIONS

# APPLICATIONS

The Modular Wetlands® System Linear has been successfully used on numerous new construction and retrofit projects. The system's superior versatility makes it beneficial for a wide range of stormwater and waste water applications - treating rooftops, streetscapes, parking lots, and industrial sites.



## INDUSTRIAL

Many states enforce strict regulations for discharges from industrial sites. The Modular Wetlands® has helped various sites meet difficult EPA-mandated effluent limits for dissolved metals and other pollutants.



## RESIDENTIAL

Low to high density developments can benefit from the versatile design of the Modular Wetlands®. The system can be used in both decentralized LID design and cost-effective end-of-the-line configurations.



## STREETS

Street applications can be challenging due to limited space. The Modular Wetlands® is very adaptable, and it offers the smallest footprint to work around the constraints of existing utilities on retrofit projects.



## PARKING LOTS

Parking lots are designed to maximize space and the Modular Wetlands® 4 ft. standard planter width allows for easy integration into parking lot islands and other landscape medians.



## COMMERCIAL

Compared to bioretention systems, the Modular Wetlands® can treat far more area in less space, meeting treatment and volume control requirements.



## MIXED USE

The Modular Wetlands® can be installed as a raised planter to treat runoff from rooftops or patios, making it perfect for sustainable "live-work" spaces.

**More applications include:**

- Agriculture
- Reuse
- Low Impact Development
- Waste Water

# PLANT SELECTION

Abundant plants, trees, and grasses bring value and an aesthetic benefit to any urban setting, but those in the Modular Wetlands® System Linear do even more - they increase pollutant removal. What's not seen, but very important, is that below grade, the stormwater runoff/flow is being subjected to nature's secret weapon: a dynamic physical, chemical, and biological process working to break down and remove non-point source pollutants. The flow rate is controlled in the Modular Wetlands®, giving the plants more contact time so that pollutants are more successfully decomposed, volatilized, and incorporated into the biomass of the Modular Wetlands'® micro/macro flora and fauna.



A wide range of plants are suitable for use in the Modular Wetlands®, but selections vary by location and climate. View suitable plants by visiting [biocleanenvironmental.com/plants](http://biocleanenvironmental.com/plants).

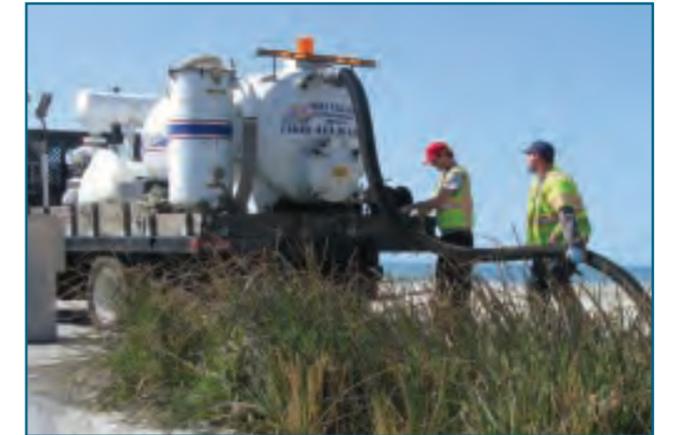
# INSTALLATION



The Modular Wetlands® is simple, easy to install, and has a space-efficient design that offers lower excavation and installation costs compared to traditional tree-box type systems. The structure of the system resembles precast catch basin or utility vaults and is installed in a similar fashion.

The system is delivered fully assembled for quick installation. Generally, the structure can be unloaded and set in place in 15 minutes. Our experienced team of field technicians is available to supervise installations and provide technical support.

# MAINTENANCE



Reduce your maintenance costs, man hours, and materials with the Modular Wetlands®. Unlike other biofiltration systems that provide no pretreatment, the Modular Wetlands® is a self-contained treatment train which incorporates simple and effective pretreatment.

Maintenance requirements for the biofilter itself are almost completely eliminated, as the pretreatment chamber removes and isolates trash, sediments, and hydrocarbons. What's left is the simple maintenance of an easily accessible pretreatment chamber that can be cleaned by hand or with a standard vac truck. Only periodic replacement of low-cost media in the pre-filter cartridges is required for long-term operation, and there is absolutely no need to replace expensive biofiltration media.



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**ATTACHMENT 3b**  
**DRAFT MAINTENANCE AGREEMENT**

THIS SECTION NOT APPLICABLE AT  
VESTING TENTATIVE MAP LEVEL.  
MAINTENANCE AGREEMENT WILL BE  
EXECUTED UPON FINAL ENGINEERING.

## ATTACHMENT 4

### Copy of Plan Sheets Showing Permanent Storm Water BMPs

This is the cover sheet for Attachment 4.

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 Form I-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 the [City Engineer]
- 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 shall be provided. Photocopies of general brochures are not acceptable.

**PLEASE REFER TO ATTACHED  
VESTING TENTATIVE MAP FOR  
FANIITA RANCH**