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MAJOR STORMWATER MANAGEMENT PLAN

VALIANO

PDS2013-SP-13-001, PDS2013-GPA-13-011, PDS2013-STP-13-003, PDS2013-TM-5575, PDS2013-REZ-13-001, PDS2013-ER-12-08-002

MARCH 2015

County of San Diego, CA

prepared for:

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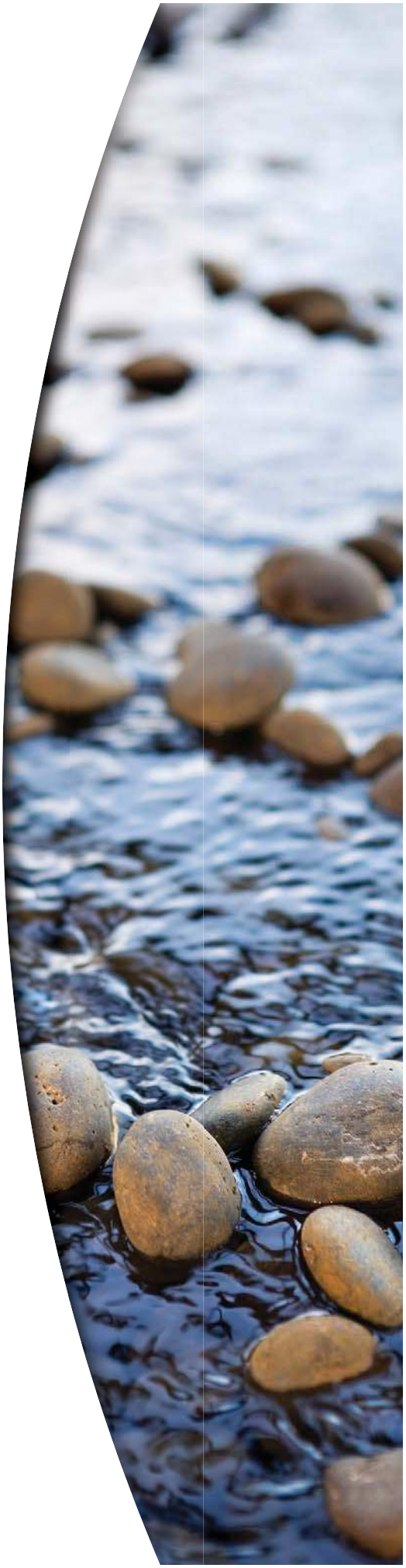

Major Stormwater Management Plan
(Major SWMP)
For
VALIANO

PDS2013-SP-13-001, PDS2013-GPA-13-001, PDS2013-STP-13-003, PDS2013-TM-5575, PDS2013-REZ-13-001, PDS2013-ER-12-08-002

Preparation/Revision Date:

March 2015

Prepared for:

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The selection, sizing, and preliminary design of stormwater treatment and other control measures in this plan have been prepared under the direction of the following Registered Civil Engineer and meet the requirements of Regional Water Quality Control Board Order R9-2007-0001 and subsequent amendments.

Kenneth T. Kozlik, P.E., RCE 71883

3/18/15
Date

The Major Stormwater Management Plan (Major SWMP) must be completed in its entirety and accompany applications to the County for a permit or approval associated with certain types of development projects. To determine whether your project is required to submit a Major or Minor SWMP, please reference the County's Stormwater Intake Form for Development Projects.

Project Name:	Valiano
Project Location/Address:	The site is located within the unincorporated community of "Eden Village", south of Hill Valley Drive, north of Mt. Whitney Road and west of Country Club Dr. See Vicinity Map, AttachmentA
Permit Number (Land Development Projects):	PDS2013-SP-13-001, PDS2013-GPA-13-001, PDS2013-STP-13-003, PDS2013-TM-5575, PDS2013-REZ-13-001, PDS2013-ER-12-08-002
Work Authorization Number (**CIP only**):	
Applicant:	The Eden Hills Project Owner, LLC
Applicant's Address:	2235 Encinitas Boulevard, Suite 216, Encinitas, CA 92014 760.944.7511
Plan Prepared By (*Leave blank if same as applicant*):	Fuscoe Engineering, Inc.
Preparer's Address:	6390 Greenwich Drive, Suite 170, San Diego, CA 92122
Date:	March 2015

The County of San Diego Watershed Protection, Storm Water Management, and Discharge Control Ordinance (WPO) (Ordinance No. 9926) requires all applications for a permit or approval associated with a Land Disturbance Activity to be accompanied by a Storm Water Management Plan (SWMP) (section 67.806.b). The purpose of the SWMP is to describe how the project will minimize the short and long-term impacts on receiving water quality. Projects that meet the criteria for a priority development project are required to prepare a Major SWMP.

Since the SWMP is a living document, revisions may be necessary during various stages of approval by the County. Please provide the approval information requested below.

Project Stages	Does the SWMP need revisions?		If YES, Provide Revision Date	County Reviewer
	YES	NO		

Instructions for a Major SWMP can be downloaded at
http://www.sdcounty.ca.gov/dpw/watersheds/susmp/susmp.html

Completion of the following checklists and attachments will fulfill the requirements of a Major SWMP for the project listed above.

STEP 1

PRIORITY DEVELOPMENT PROJECT DETERMINATION

TABLE 1: IS THE PROJECT IN ANY OF THESE CATEGORIES?

Yes ☑	No ❑	A	Housing subdivisions of 10 or more dwelling units. Examples: single-family homes, multi-family homes, condominiums, and apartments.
Yes ❑	No ☑	B	Commercial—greater than one acre (total disturbed area). Any development other than heavy industry or residential. Examples: hospitals; laboratories and other medical facilities; educational institutions; recreational facilities; municipal facilities; commercial nurseries; multi-apartment buildings; car wash facilities; mini-malls and other business complexes; shopping malls; hotels; office buildings; public warehouses; automotive dealerships; airfields; and other light industrial facilities.
Yes ❑	No ☑	C	Heavy industry—greater than one acre (total disturbed area). Examples: manufacturing plants, food processing plants, metal working facilities, printing plants, and fleet storage areas (bus, truck, etc.).
Yes ❑	No ☑	D	Automotive repair shops. A facility categorized in any one of Standard Industrial Classification (SIC) codes 5013, 5014, 5541, 7532-7534, or 7536-7539.
Yes ❑	No ☑	E	Restaurants. Any facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC code 5812), where the land area for development is greater than 5,000 square feet. Restaurants where land development is less than 5,000 square feet shall meet all SUSMP requirements except for structural treatment BMP and numeric sizing criteria requirements and hydromodification requirements.
Yes ☑	No ❑	F	Hillside development greater than 5,000 square feet. Any development that creates 5,000 square feet of impervious surface and is located in an area with known erosive soil conditions, where the development will grade on any natural slope that is twenty-five percent or greater.
Yes ❑	No ☑	G	Environmentally Sensitive Areas (ESAs). All development located within or directly adjacent to or discharging directly to an ESA (where discharges from the development or redevelopment will enter receiving waters within the ESA), which either creates 2,500 square feet of impervious surface on a proposed project site or increases the area of imperviousness of a proposed project site to 10% or more of its naturally occurring condition. "Directly adjacent" means situated within 200 feet of the ESA. "Discharging directly to" means outflow from a drainage conveyance system that is composed entirely of flows from the subject development or redevelopment site, and not commingled with flows from adjacent lands.
Yes ☑	No ❑	H	Parking lots 5,000 square feet or more or with 15 or more (paved) parking spaces and potentially exposed to urban runoff.
Yes ☑	No ❑	I	Street, roads, highways, and freeways. Any paved surface that is 5,000 square feet or greater used for the transportation of automobiles, trucks, motorcycles, and other vehicles.
Yes ❑	No ☑	J	Retail Gasoline Outlets (RGOs) that are: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day.

To use the table, review each definition A through K. If any of the definitions match, the project is a Priority Development Project. Note some thresholds are defined by square footage of impervious area created; others by the total area of the development. Please see special requirements for previously developed sites and project exemptions on page 6 of the County SUSMP.

STEP 2

PROJECT STORMWATER QUALITY DETERMINATION

Total Project Site Area: 239 Acres

Estimated amount of disturbed area: 125 Acres
(If >1 acre, you must also provide a WDID number from the SWRCB) WDID: _____

Complete A through C and the calculations below to determine the amount of impervious surface on your project before and after construction.

A. Total size of project site: 239 Acres

B. Total impervious area (including roof tops) before construction 0.80 (Acres or ft^2)

C. Total impervious area (including roof tops) after construction 59.8 (Acres or ft^2)

Calculate percent impervious before construction: B/A = 0 %
Calculate percent impervious after construction: C/A = 25 %

Please provide detailed descriptions regarding the following questions:

TABLE 2: PROJECT SPECIFIC STORMWATER ANALYSIS

1.	Please provide a brief description of the project.

The Valiano project proposes to construct 326 single family dwelling units on 6 parcels with a cumulative area of 239 acres in the County of San Diego, California. The existing site consists of flat and mountainous terrain and is located on the southwestern corner of Country Club Drive and Hill Valley Drive. The site is located in the unincorporated community of "Eden Valley", primarily comprised of single family residential and equestrian land uses. Reference the Vicinity Map in Attachment A for a detailed map of the project site.

Private streets within the project consist of one main road that traverses the westerly portion of the project from North to South, and numerous private streets that provide access to the lots within each neighborhood. The two primary access points to the project will be from Eden Valley Lane and Mt. Whitney Road. The southeasterly portion of the project is accessed via private roads from Country Club Drive.

2.	Describe the current and proposed zoning and land use designation.

The existing zoning is Semi-Rural Residential, SR-1 and SR-2. The proposed zoning is tabulated on sheet 3 of the Tentative Map.

3.	Describe the pre-project and post-project topography of the project. (Show on Plan)

The existing topography consists of natural hillsides and areas developed for sparse residential use which includes dirt roads, light pavement, and residential buildings and sheds. The hillside areas generally slope west to east with slopes ratios up to 2 to 1. In general, the flatter areas of the site have light vegetation cover with denser vegetation in the hillside areas.

The proposed topography will include new residential lots, streets, walkways and community recreational areas. In general, the project will maintain the existing west to east slope patterns. The topography will be modified to include cut and fill slopes at a maximum slope ratio of 2 to 1. Landscaping will be included in unpaved graded areas. A larger percentage of the existing hillside areas will be protected as shown in Attachments B and C.

4.	Describe the soil classification, permeability, erodibility, and depth to groundwater for LID and Treatment BMP consideration. (Show on Plan) If infiltration BMPs are proposed, a Geotechnical Engineer must certify infiltration BMPs in Attachment E.

Geotechnical investigations were prepared for the project site by Geocon, dated September 12, 2012 and December 12, 2012. The surficial site soils encountered include undocumented fill, topsoil, colluvium, alluvium, and Terrace Deposits. These were underlain by formational materials consisting of the Santiago Formation, granitic rock, and metamorphic rock. The formational materials were generally encountered at depths of 1-15' below the ground surface. Ground water was encountered at depths of 6-11' in some areas of the site.

According to NRCS data, Hydrologic Soil Groups B, C, and D are present within the project. In order to conservatively size the storm water facilities and in consideration of the shallow bedrock with is present under much of the developed area, Hydrologic Soil Group D is assumed for the entire project.

5.	Describe if contaminated or hazardous soils are within the project area. (Show on Plan)

There are no known contaminated or hazardous soils within the project area.

6.	Describe the existing site drainage and natural hydrologic features. (Show on Plan).

Due to the hillside nature of the site, runoff from the project site splits into several major drainage basins. These basins are delineated in the Hydrology Study and are shown in the Drainage Management Area of Appendix C.

Basin A encompasses the southwesterly corner of the project site, and includes offsite areas to the west of the project. Flows in this basin drain to the south in a natural drainage channel. This channel continues south through agricultural and undeveloped land, including multiple agricultural ponds, before discharging to Escondido Creek south of the project site.

Basin B consists of the south-central and southeasterly portions of the project site. Basin B includes offsite areas to the west of the project boundary and areas adjacent to the southeasterly portion of the project. Runoff from this basin is collected a natural channel which runs roughly southeasterly through the site, and exits the site near the southeasterly corner. From there, the channel runs south to a confluence point with Basin A and eventually to Escondido Creek. Like Basin A, runoff from Basin B flows through agricultural and undeveloped land, including agricultural ponds, on its path the Escondido Creek.

Basin C originates near the high point of the mountains to the west of the project site, and flows easterly through the central portion of the project site. Runoff from Basin C exits the project site at the easterly property line in the central portion of the site. From there, it flows southeasterly to a confluence with Basin B, and then ultimately to Escondido Creek. Basin C consists of undeveloped, agricultural, and residential land. Runoff in Basin C travels primarily through natural and unlined channels, with culverts at road crossings downstream of the project site.

Basin D encompasses the northerly portion of the project site, and drains in an easterly direction. After exiting the project site, runoff flows in a southeasterly direction to an offsite confluence with flows from Basin C, and ultimately to Escondido Creek.

7.	Describe site features and conditions that constrain, or provide opportunities for stormwater control, such as LID features.

The use of certain BMPs is limited due to certain site constraints. Due to the presence of Group C and D soils and shallow bedrock under much of the developed portions of the project, infiltration-based Integrated Management Practices (IMPs) are not feasible for the project site. In addition, the steep hillside slopes limit the use of BMPs which require large footprint areas.		
8.	Is this project within the environmentally sensitive areas as defined on the maps in Appendix A of the *County of San Diego Standard Urban Storm Water Mitigation Plan for Land Development and Public Improvement Projects?*	
Yes		☑No
9.	Is this an emergency project? If yes, please provide a description below.	
Yes		**☑No**

CHANNELS & DRAINAGES

Complete the following checklist to determine if the project includes work in channels.

TABLE 3: CHANNEL& DRAINAGE ANALYSIS

No.	CRITERIA	YES	NO	N/A	COMMENTS
1.	Will the project include work in channels?	X			If YES go to 2 If NO go to 13.
2.	Will the project increase velocity or volume of downstream flow?		X		If YES go to 6.
3.	Will the project discharge to unlined channels?	X			If YES go to. 6.
4.	Will the project increase potential sediment load of downstream flow?		X		If YES go to 6.
5.	Will the project encroach, cross, realign, or cause other hydraulic changes to a stream that may affect downstream channel stability?	X			If YES go to 8.
6.	Review channel lining materials and design for stream bank erosion.		X		Continue to 7.
7.	Consider channel erosion control measures within the project limits as well as downstream. Consider scour velocity.		X		Continue to 8.
8.	Include, where appropriate, energy dissipation devices at culverts.	X			Continue to 9.
9.	Ensure all transitions between culvert outlets/headwalls/wingwalls and channels are smooth to reduce turbulence and scour.	X			Continue to 10.
10.	Include, if appropriate, detention facilities to reduce peak discharges.	X			Continue to 11.
11.	"Hardening" natural downstream areas to prevent erosion is not an acceptable technique for protecting channel slopes, unless pre-development conditions are determined to be so erosive that hardening would be required even in the absence of the proposed development.		X		Continue to 12.
12.	Provide other design principles that are comparable and equally effective.		X		Continue to 13.
13.	End	X			

TEMPORARY CONSTRUCTION BMPS

Please check the construction BMPs that may be implemented during construction of the project. The applicant will be responsible for the placement and maintenance of the BMPs incorporated into the final project design.

- ☑ Silt Fence
- ☑ Fiber Rolls
- ☑ Street Sweeping and Vacuuming
- ☑ Storm Drain Inlet Protection
- ☑ Stockpile Management
- ☑ Solid Waste Management
- ☑ Stabilized Construction Entrance/Exit
- ☑ Dewatering Operations
- ☑ Vehicle and Equipment Maintenance
- ☑ Desilting Basin
- ☑ Gravel Bag Berm
- ☑ Sandbag Barrier
- ☑ Material Delivery and Storage
- ☑ Spill Prevention and Control
- ☑ Concrete Waste Management
- ☑ Water Conservation Practices
- ☑ Paving and Grinding Operations

- ☑ Any minor slopes created incidental to construction and not subject to a major or minor grading permit shall be protected by covering with plastic or tarp prior to a rain event, and shall have vegetative cover reestablished within 180 days of completion of the slope and prior to final building approval.

EXCEPTIONAL THREAT TO WATER QUALITY DETERMINATION

Complete the checklist below to determine if a proposed project will pose an "exceptional threat to water quality," and therefore require Advanced Treatment Best Management Practices during the construction phase.

TABLE 4: EXCEPTIONAL THREAT TO WATER QUALITY DETERMINATION

No.	CRITERIA	YES	NO	INFORMATION
1.	Is all or part of the proposed project site within 200 feet of waters named on the Clean Water Act (CWA) Section 303(d) list of Water Quality Limited Segments as impaired for sedimentation and/or turbidity? Current 303d list may be obtained from the following site: http://www.waterboards.ca.gov/water_issues/programs/tmdl/2010state_ir_reports/category5_report.shtml		X	If YES, continue to 2. If NO, go to 5.
2.	Will the project disturb more than 5 acres, including all phases of the development?			If YES, continue to 3. If NO, go to 5.
3.	Will the project disturb slopes that are steeper than 4:1 (horizontal: vertical) with at least 10 feet of relief, and that drain toward the 303(d) listed receiving water for sedimentation and/or turbidity?			If YES, continue to 4. If NO, go to 5.
4.	Will the project disturb soils with a predominance of USDA-NRCS Erosion factors k_f greater than or equal to 0.4? http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm			If YES, continue to 6. If NO, go to 5.
5.	Project is not required to use Advanced Treatment BMPs.	X		Document for Project Files by referencing this checklist.
6.	Project poses an "exceptional threat to water quality" and is required to use Advanced Treatment BMPs.			Advanced Treatment BMPs must be consistent with WPO section 67.811(b)(20)(D) performance criteria

Exemption potentially available for projects that require advanced treatment: Project proponent may perform a Revised Universal Soil Loss Equation, Version 2 (RUSLE 2), Modified Universal Soil Loss Equation (MUSLE), or similar analysis that demonstrates (to the County official's satisfaction) that advanced treatment is not required.

STEP 3

HYDROMODIFICATION DETERMINATION

The following questions provide a guide to collecting information relevant to hydromodification management plan (HMP) issues. If the project is exempt from the HMP criteria, please provide the supporting documentation in Attachment H. Please reference the full descriptions of the HMP exemptions located in Figure 1-1 of the County SUSMP.

TABLE 5: HYDROMODIFICATION DETERMINATION

	QUESTIONS	YES	NO	Information
1.	Will the project reduce the pre-project impervious area and are the unmitigated post-project outflows (outflows without detention routing) to each outlet location less as compared to the pre-project condition?		X	If NO, continue to 2. If YES, go to 7.
2.	Would the project site discharge runoff directly to an exempt receiving water, such as the Pacific Ocean, San Diego Bay, an exempt reservoir, or a tidally-influenced area?		X	If NO, continue to 3. If YES, go to 7.
3.	Would the project site discharge to a stabilized conveyance system, which has the capacity for the ultimate $Q_{10,}$ and extends to the Pacific Ocean, San Diego Bay, a tidally-influenced area, an exempt river reach or reservoir?		X	If NO, continue to 4. If YES, go to 7.
4.	Does the contributing watershed area to which the project discharges have an impervious area percentage greater than 70 percent?		X	If NO, continue to 5. If YES, go to 7.
5.	Is this an urban infill project which discharges to an existing hardened or rehabilitated conveyance system that extends beyond the "domain of analysis," where the potential for cumulative impacts in the watershed are low, and the ultimate receiving channel has a "Low" susceptibility to erosion as defined in the SCCWRP channel assessment tool?		X	If NO, continue to 6. If YES, go to 7.
6.	Project is required to manage hydromodification impacts.	X		Reference Appendix G "Hydromodification Management Plan" of the County SUSMP.
7.	Project is not required to manage hydromodification impacts.			Hydromodification Exempt. Keep on file.

STEP 4

POLLUTANTS OF CONCERN DETERMINATION

WATERSHED

Please check the watershed(s) for the project.

☐ San Juan 901	☐ Santa Margarita 902	☐ San Luis Rey 903	☑ Carlsbad 904
☐ San Dieguito 905	☐ Penasquitos 906	☐ San Diego 907	☐ Sweetwater 909
☐ Otay 910	☐ Tijuana 911	☐ Whitewater 719*	☐ Clark 720*
☐ West Salton 721*	☐ Anza Borrego 722*	☐ Imperial 723*	

http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/index.shtml

*Projects located fully within these watersheds require only a Minor SWMP.

HYDROLOGIC SUB-AREA NAME AND BASIN NUMBER(S)

Basin Number	Sub-Area Name
904.62	Escondido HSA

http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/index.shtml

RECEIVING WATERS that each project discharge point proposes to discharge to.

RECEIVING WATERS (river, lake, reservoir, etc.)	Hydrologic Unit Basin Number	Impairment(s) listed [303(d) listed waters or waters with established TMDLs]. List the impairments identified in **Table 7**.	Distance to Project
San Elijo Lagoon	904.61	Eutophic, Indicator Bacteria, Sedimentation/Siltation	12.4 Miles
Escondido Creek	904.62	DDT, Enterococcus, Fecal Coliform, Manganese, Phosphate, Selenium, Sulfates, TDS, Toxicity, Total Nitrogen as N	0.8 Miles

GROUND WATERS

Ground Waters	Hydrologic Unit Basin Number	MUN	AGR	IND	PROC	GWR	FRESH
San Elijo	904.61	○	●	●			
Escondido	904.62	●	●	●			

http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/index.shtml

+ Excepted from Municipal ● Existing Beneficial Use ○ Potential Beneficial Use

PROJECT ANTICIPATED AND POTENTIAL POLLUTANTS

Using Table 6, identify pollutants that are anticipated to be generated from the proposed priority project categories. Pollutants associated with any hazardous material sites that have been remediated or are not threatened by the proposed project are not considered a pollutant of concern.

TABLE 6: ANTICIPATED AND POTENTIAL POLLUTANTS GENERATED BY LAND USE TYPE

	General Pollutant Categories								
PDP Categories	Sediments	Nutrients	Heavy Metals	Organic Compounds	Trash & Debris	Oxygen Demanding Substances	Oil & Grease	Bacteria & Viruses	Pesticides
Detached Residential Development	X	X			X	X	X	X	X
Attached Residential Development	X	X			X	P(1)	P(2)	P	X
Commercial Development 1 acre or greater	P(1)	P(1)		P(2)	X	P(5)	X	P(3)	P(5)
Heavy industry /industrial development	X		X	X	X	X	X		
Automotive Repair Shops			X	X(4)(5)	X		X		
Restaurants					X	X	X	X	
Hillside Development >5,000 ft²	X	X			X	X	X		X
Parking Lots	P(1)	P(1)	X		X	P(1)	X		P(1)
Retail Gasoline Outlets			X	X	X	X	X		
Streets, Highways & Freeways	X	P(1)	X	X(4)	X	P(5)	X		

X = anticipated
P = potential
(1) A potential pollutant if landscaping exists on-site.
(2) A potential pollutant if the project includes uncovered parking areas.
(3) A potential pollutant if land use involves food or animal waste products.
(4) Including petroleum hydrocarbons.
(5) Including solvents.

PROJECT POLLUTANTS OF CONCERN SUMMARY TABLE

Please summarize the identified project pollutants-of-concern by checking the appropriate boxes in the table below and list any surface water impairments identified. Pollutants anticipated to be generated by the project, which are also causing impairment of receiving waters, shall be considered the primary pollutants of concern. For projects where no primary pollutants of concern exist, those pollutants identified as anticipated shall be considered secondary pollutants of concern.

TABLE 7: PROJECT POLLUTANTS OF CONCERN

Pollutant Category	**Anticipated (X)**	**Potential (P)**	**Surface Water Impairments (determined by your receiving waters impairments on page 10)**
Sediments	X		X
Nutrients	X		X
Heavy Metals	X		X
Organic Compounds	X		
Trash & Debris	X		
Oxygen Demanding Substances	X		X
Oil & Grease	X		
Bacteria & Viruses	X		X
Pesticides	X		X

STEP 5

LID AND SITE DESIGN STRATEGIES

Each numbered item below is a Low Impact Development (LID) requirement of the WPO. Please check the box(s) under each number that best describes the LID BMP(s) and Site Design Strategies selected for this project. LID BMPs selected on this table will be typically represented as a self-retaining area, self-treating area, pervious pavement and greenroof, which, should be delineated in the Drainage Management Area map in Attachment C.

TABLE 8: LID AND SITE DESIGN

1. Conserve natural Areas, Soils, and Vegetation
☑ Preserve well draining soils (Type A or B)
☑ Preserve Significant Trees
☑ Preserve critical (or problematic) areas such as floodplains, steep slopes, wetlands, and areas with erosive or unstable soil conditions
☐ Other. Description:
2. Minimize Disturbance to Natural Drainages
☑ Set-back development envelope from drainages
☑ Restrict heavy construction equipment access to planned green/open space areas
☐ Other. Description:
3. Minimize and Disconnect Impervious Surfaces (see 5)
☐ Clustered Lot Design
☑ Items checked in 5
☐ Other. Description:
4. Minimize Soil Compaction
☑ Restrict heavy construction equipment access to planned green/open space areas
☐ Re-till soils compacted by construction vehicles/equipment
☑ Collect & re-use upper soil layers of development site containing organic materials
☐ Other. Description:
5. Drain Runoff from Impervious Surfaces to Pervious Areas
<u>LID Street & Road Design</u>
☑ Curb-cuts to landscaping- in recreation area and park
☐ Rural Swales
☐ Concave Median
☐ Cul-de-sac Landscaping Design
☑ Other. Description: Parking on one side only to reduce street width, sidewalk on one side only or no sidewalk

LID Parking Lot Design
☐ Permeable Pavements
☑ Curb-cuts to landscaping- in recreation area and park
☐ Other. Description:
LID Driveway, Sidewalk, Bike-path Design
☑ Permeable Pavements- Hill Valley Road emergency access
☐ Pitch pavements toward landscaping
☑ Other. Description: Sidewalk on one side only or no sidewalk, DG multi-purpose trails
LID Building Design
☐ Cisterns & Rain Barrels
☑ Downspout to swale or landscaping
☐ Vegetated Roofs
☐ Other. Description:
LID Landscaping Design
☐ Soil Amendments
☐ Reuse of Native Soils
☑ Smart Irrigation Systems
☑ Street Trees
☐ Other. Description:
6. Minimize erosion from slopes
☑ Disturb existing slopes only when necessary
☑ Minimize cut and fill areas to reduce slope lengths
☑ Incorporate retaining walls to reduce steepness of slopes or to shorten slopes
☐ Provide benches or terraces on high cut and fill slopes to reduce concentration of flows
☑ Rounding and shaping slopes to reduce concentrated flow
☑ Collect concentrated flows in stabilized drains and channels
☐ Other. Description:

STEP 6

SOURCE CONTROL

Please complete the checklist on the following pages to determine Source Control BMPs. Below is instruction on how to use the checklist. (Also see instructions on page 60 of the *SUSMP)*

1. Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site. Check each box that applies and list in Table 9.

2. Review Column 2 and incorporate all of the corresponding applicable BMPs in your Source Control Exhibit in Attachment B.

3. Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs into Table 9.

4. Use the format in Table 9 below to summarize the project Source Control BMPs. Incorporate all identified Source Control BMPs in your Source Control Exhibit in Attachment B.

TABLE 9: PROJECT SOURCE CONTROL BMPS

Potential source of runoff pollutants	*Permanent source control BMPs*	*Operational source control BMPs*
A. On-site storm drain inlets	Mark all inlets with the words "No Dumping! Flows to Bay" or similar	• Maintain and periodically repaint or replace inlet markings. • Provide stormwater pollution prevention information to new site owners, lessees, or operators. • See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com • Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."
D1. Need for future indoor & structural pest control	Building design features such as sand barriers under floor slabs or metal termite shields shall be implemented to minimize the need for future pest control. As noted in the geotechnical report for this project, slabs will be underlain by a sand layer which will also act as a sand barrier for termites.	Provide Integrated Pest Management information to owners, lessees, and operators.
D2. Landscape/ Outdoor Pesticide Use	• Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. • Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. • Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. • Consider using pest-resistant plants, especially adjacent to hardscape. • To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	• Maintain landscaping using minimum or no pesticides. • See applicable operational BMPs in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at **www.cabmphandbooks.com** • Provide IPM information to new owners, lessees and operators.
G. Refuse Areas	• Refuse from the Wastewater Treatment Plant will be handled and disposed of properly. • Signs will be posted on or near dumpsters with the words "Do Not Dump Hazardous Materials Here" or similar. • Detailed design of refuse areas for the	• An adequate number of receptacles will be provided at the wastewater treatment plan. Receptacle shall be inspected regularly. Leaky receptacles shall be repaired or replaced. Receptacles shall be kept covered. Dumping of liquid or hazardous materials will be prohibited. "No Hazardous

	wastewater treatment will be performed at the time of final design.	Materials" signs shall be posted. Litter will be picked up daily and spills will be cleaned up immediately. Spill control materials will be available onsite. • See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
H. Industrial Processes	• At the Wastewater Treatment Plant, all process activities are to be performed indoors. No processes shall drain to exterior or to storm drains system.	• See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
I. Outdoor Storage of Equipment or Materials	• During final design of the Wastewater Treatment Plant, outdoor storage of equipment or materials may be required. If so, materials shall be stored properly and structural controls will be implemented to prevent pollutants from entering storm drains.	• See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
O. Miscellaneous Drain or Wash Water : Rooftop Equipment; Roofing, gutters, and trim.	• Rooftop mounted equipment with potential to produce pollutants shall be roofed and/or have secondary containment. • Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.	
P. Plazas, sidewalks, and parking lots.		Plazas, sidewalks, and parking lots shall be swept regularly to prevent the accumulation of litter and debris. Debris from pressure washing shall be collected to prevent entry into the storm drain system. Washwater containing any cleaning agent or degreaser shall be collected and discharged to the sanitary sewer and not discharged to a storm drain.

Describe your specific Source Control BMPs in an accompanying narrative, and explain any special conditions or situations that required omitting Source Control BMPs or substituting alternatives.

Storm Drain Signage and Stenciling: All storm drain inlets shall be signed or stenciled with prohibitive language and or graphical icons which prohibit illegal dumping as shown on the Source Control BMP exhibit in Attachment B.

Need for future indoor & structural pest control: Building design features such as sand barriers under floor slabs or metal termite shields shall be implemented to minimize the need for future pest control. As noted in the geotechnical report for this project, slabs will be underlain by a sand layer which will also act as a sand barrier for termites.

Landscape/ Outdoor Pesticide Use: Plants will be chosen which minimize the need for pesticides. Pest resistant plants will be incorporated into the landscape design where feasible.

Existing vegetation will be preserved outside of the grading limits. IPM information will be provided to owners, lessees, and operators.

Roofing and Gutter trim: Roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff shall be avoided.

Plazas, sidewalks, and parking lots: Plazas, sidewalks, and parking lots shall be swept regularly to prevent the accumulation of litter and debris. Debris from pressure washing shall be collected to prevent entry into the storm drain system. Washwater containing any cleaning agent or degreaser shall be collected and discharged to the sanitary sewer and not discharged to a storm drain.

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants – List in Table 9	2 Permanent Controls—Show on Source Control Exhibit, Attachment B	3 Permanent Controls—List in Table 9 and Narrative	4 Operational BMPs—Include in Table 9 and Narrative
☑ A. **On-site storm drain inlets**	☑ **Locations of inlets.**	☑ **Mark all inlets with the words "No Dumping! Flows to Bay" or similar where feasible.**	☑ **Maintain and periodically repaint or replace inlet markings.** ☑ **Provide stormwater pollution prevention information to new site owners, lessees, or operators.** ☑ **See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** ☑ **Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."**
❑ B. **Interior floor drains and elevator shaft sump pumps**		❑ **State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.**	❑ **Inspect and maintain drains to prevent blockages and overflow.**
❑ C. **Interior parking garages**		❑ **State that parking garage floor drains will be plumbed to the sanitary sewer.**	❑ **Inspect and maintain drains to prevent blockages and overflow.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants – List in Table 9	2 Permanent Controls—Show on Source Control Exhibit, Attachment B	3 Permanent Controls—List in Table 9 and Narrative	4 Operational BMPs—Include in Table 9 and Narrative
☑ D1. **Need for future indoor & structural pest control**		☑ **Note building design features that discourage entry of pests.**	☑ **Provide Integrated Pest Management information to owners, lessees, and operators.**
☑ D2. **Landscape/ Outdoor Pesticide Use** **Note: Should be consistent with project landscape plan (if applicable).**	☑ **Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained.** ❑ **Show self-retaining landscape areas, if any.** ☑ **Show stormwater treatment facilities.**	**State that final landscape plans will accomplish all of the following:** ☑ **Preserve existing native trees, shrubs, and ground cover to the maximum extent possible.** ☑ **Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.** ☑ **Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions.** ☑ **Consider using pest-resistant plants, especially adjacent to hardscape.** ☑ **To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.**	☑ **Maintain landscaping using minimum or no pesticides.** ☑ **See applicable operational BMPs in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** ☑ **Provide IPM information to new owners, lessees and operators.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants – List in Table 9	2 Permanent Controls—Show on Source Control Exhibit, Attachment B	3 Permanent Controls—List in Table 9 and Narrative	4 Operational BMPs—Include in Table 9 and Narrative
❑ E. **Pools, spas, ponds, decorative fountains, and other water features.**	❑ **Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet.**	❑ **If the local municipality requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.**	❑ **See applicable operational BMPs in Fact Sheet SC-72, "Fountain and Pool Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**
❑ F. **Food service**	❑ **For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment.** ❑ **On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.**	❑ **Describe the location and features of the designated cleaning area.** ❑ **Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.**	❑

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants – List in Table 9	2 Permanent Controls—Show on Source Control Exhibit, Attachment B	3 Permanent Controls—List in Table 9 and Narrative	4 Operational BMPs—Include in Table 9 and Narrative
☑ G. **Refuse areas – Wastewater Treatment Plant**	☑ **Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas.** ☑ **If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area.** ❑ **Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.**	☑ **State how site refuse will be handled and provide supporting detail to what is shown on plans.** ☑ **State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.**	☑ **State how the following will be implemented:** **Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**
☑ H. **Industrial processes.** **Wastewater Treatment Plant**	☑ **Show process area.**	☑ **If industrial processes are to be located on site, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system."**	☑ **See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants – List in Table 9	2 Permanent Controls—Show on Source Control Exhibit, Attachment B	3 Permanent Controls—List in Table 9 and Narrative	4 Operational BMPs—Include in Table 9 and Narrative
☑ I. **Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)** **Wastewater Treatment Plan**	☑ **Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area.** ☑ **Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults.** ☑ **Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.**	☑ **Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains.** **Where appropriate, reference documentation of compliance with the requirements of local Hazardous Materials Programs for:** ▪ **Hazardous Waste Generation** ▪ **Hazardous Materials Release Response and Inventory** ▪ **California Accidental Release (CalARP)** ▪ **Aboveground Storage Tank** ▪ **Uniform Fire Code Article 80 Section 103(b) & (c) 1991** ▪ **Underground Storage Tank**	☑ **See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

❑ J. Vehicle and Equipment Cleaning None	❑ Show on drawings as appropriate: (1) Commercial/industrial facilities having vehicle /equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses. (2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use). (3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer. (4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.	❑ If a car wash area is not provided, describe measures taken to discourage on-site car washing and explain how these will be enforced.	Describe operational measures to implement the following (if applicable): ❑ Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system. ❑ Car dealerships and similar may rinse cars with water only. ❑ See Fact Sheet SC-21, "Vehicle and Equipment Cleaning," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

❑ K. **Vehicle/Equipment Repair and Maintenance** **None**	❑ **Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater.** ❑ **Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas.** ❑ **Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.**	❑ **State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area.** ❑ **State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.** ❑ **State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.**	**In the SUSMP report, note that all of the following restrictions apply to use the site:** ❑ **No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains.** ❑ **No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately.** ❑ **No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment.**

❑ L. **Fuel Dispensing Areas** **None**	❑ **Fueling areas[1] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable.** ❑ **Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.**		❑ **The property owner shall dry sweep the fueling area routinely.** ❑ **See the Business Guide Sheet, "Automotive Service—Service Stations" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

[1] **The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.**

❑ M. **Loading Docks** **None**	❑ **Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas should be drained to the sanitary sewer where feasible. Direct connections to storm drains from depressed loading docks are prohibited.** ❑ **Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation.** ❑ **Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.**		❑ **Move loaded and unloaded items indoors as soon as possible.** ❑ **See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**
❑ N. **Fire Sprinkler Test Water**		❑ **Provide a means to drain fire sprinkler test water to the sanitary sewer.**	❑ **See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

O. **Miscellaneous Drain or Wash Water** ❑ **Boiler drain lines** ❑ **Condensate drain lines** ☑ **Rooftop equipment** ❑ **Drainage sumps** ☑ **Roofing, gutters, and trim.**		❑ **Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system.** ❑ **Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system.** ☑ **Rooftop mounted equipment with potential to produce pollutants shall be roofed and/or have secondary containment.** ❑ **Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water.** ☑ **Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.**	
☑ P. **Plazas, sidewalks, and parking lots.**			☑ **Plazas, sidewalks, and parking lots shall be swept regularly to prevent the accumulation of litter and debris. Debris from pressure washing shall be collected to prevent entry into the storm drain system. Washwater containing any cleaning agent or degreaser shall be collected and discharged to the sanitary sewer and not discharged to a storm drain.**

STEP 7

LID AND TREATMENT CONTROL SELECTION

A treatment control BMP and/or LID IMP must be selected to treat the project pollutants of concern identified in Table 7 "Project Pollutants of Concern". A treatment control facility with a high or medium pollutant removal efficiency for the project's most significant pollutant of concern shall be selected. It is recommended to use the design procedure in Chapter 4 of the SUSMP to meet NPDES permit LID requirements, treatment requirements, and flow control requirements. If your project does not utilize this approach, the project will need to demonstrate compliance with LID, treatment and hydromodification flow control requirements. Review Chapter 2 "Selection of Stormwater Treatment Facilities" in the SUSMP to assist in determining the appropriate treatment facility for your project.

Will this project be utilizing the unified LID design procedure as described in Chapter 4 of the Local SUSMP? *(If yes, please document in Attachment D following the steps in Chapter 4 of the County SUSMP)*	
❑ Yes	☑ No
If this project is not utilizing the unified LID design procedure, please describe how the alternative treatment facilities will comply with applicable LID criteria, stormwater treatment criteria, and hydromodification management criteria.	
Where space is available, bioretention basins have been provided in accordance with the unified LID design procedure. This is the case in the recreation area and for the Mt. Whitney Road improvements. Where space is not available, extended detention basins have been provided, with an integrated bioretention layer. This bioretention layer is an LID component. The water quality control volume will be captured in the extended detention basin and treated by the bioretention layer prior to discharge. The extended detention basins will also provide hydromodification flow control through the use of an orifice on the subdrain pipe and an outlet structure with upper orifice and a weir. Catch basin inserts will also be provided as pre-treatment upstream of the BMPs described above. Permeable Pavement Self-Retaining Areas will be used for the Hill Valley Road emergency access. This roadway is ideal for permeable pavements, such as pervious concrete, since it will have low traffic volumes and will allow for storm water treatment and hydromodification mitigation within the existing 20' access easement.	

- Indicate the project pollutants of concern (POCs) from Table 7 in Column 2 below.

TABLE 10: GROUPING OF POTENTIAL POLLUTANTS of Concern (POCs) by fate during stormwater treatment

Pollutant	Check Project Specific POCs	Coarse Sediment and Trash	Pollutants that tend to associate with fine particles during treatment	Pollutants that tend to be dissolved following treatment
Sediment	X	X	X	
Nutrients	X	X	X	X
Heavy Metals	X	X	X	
Organic Compounds		X	X	
Trash & Debris		X		
Oxygen Demanding	X	X	X	
Bacteria	X	X	X	
Oil & Grease		X	X	
Pesticides	X	X	X	

- Indicate the treatment facility(s) chosen for this project in the following table.

TABLE 11: GROUPS OF POLLUTANTS and relative effectiveness of treatment facilities

Pollutants of Concern	Bioretention Facilities (LID)	Settling Basins (Dry Ponds)	Wet Ponds and Constructed Wetlands	Infiltration Devices (LID)	Media Filters	Higher-rate biofilters	Higher-rate media filters	Trash Racks & Hydro-dynamic Devices	Vegetated Swales
Coarse Sediment and Trash	High	High	High	High	High	High	High	High	High
Pollutants that tend to associate with fine particles during treatment	High	High	High	High	High	Medium	Medium	Low	Medium
Pollutants that tend to be dissolved following treatment	Medium	Low	Medium	High	Low	Low	Low	Low	Low

- Please check the box(s) that best describes the Treatment Control BMP(s) and/or LID IMP selected for this project. Please check if the treatment facility is designed for water quality or hydromodification flow control. Check both boxes if the facility is designed for both water quality and hydromodification flow control.

TABLE 12: PROJECT TCBMPS - BMPs designed to treat stormwater (e.g., LID and hydromod) shall be considered TCBMPs.

TCBMP Type	Water Quality Treatment	Hydromodification Flow Control
Bioretention Facilites (LID)		
☑ Bioretention area	X	X
☐ Flow-through Planter		
☐ Cistern with Bioretention		
Basins		
☑ Extended/dry detention basin with grass/vegetated lining		X
☐ Extended/dry detention basin with impervious lining		
☐ Underground vault		
☐ Cistern		
Infiltration Devices (LID)		
☐ Infiltration basin		
☐ Infiltration trench		
☐ Other_____		
Wet Ponds and Constructed Wetlands		
☐ Wet pond/basin (permanent pool)		
☐ Constructed wetland		
Vegetated Swales (LID[1])		
☐ Vegetated Swale		
Media Filters		
☐ Austin Sand Filter		
☐ Delaware Sand Filter		
☐ Multi-Chambered Treatment Train (MCTT)		
Higher-rate Biofilters		
☐ Tree-pit-style unit		
☐ Other_____		
Higher-rate Media Filters		
☐ Vault-based filtration unit with replaceable cartridges		
☐ Other_____		
Hydrodynamic Separator Systems		
☐ Swirl Concentrator		
☐ Other_____		
Trash Racks		
☐ Catch Basin Insert		

☑ Catch Basin Insert w/ Hydrocarbon boom[(2)]	X	
□ Other_____		
Self-Retaining Areas (LID)		
☑ Permeable Pavements	X	X
□ Self-Retaining		
□ Vegetated Roof		

[(1)] Must be designed per SUSMP "Vegetated Swales" design criteria for water quality treatment credit (p. 102-103).
[(2)] Trash racks are proposed in a "treatment train" strategy in series with higher performing BMPs

For design guidelines and calculations refer to Chapter 4 "Low Impact Development Design Guide" in the SUSMP. Please show all calculations and design sheets for all treatment control BMPs proposed in Attachment D.

- Create a Construction Plan SWMP Checklist for your project.

Instructions on how to fill out table

1. Number and list each measure or BMP you have specified in your SWMP in Columns 1 and Maintenance Category in Column 3 of the table. Leave Column 2 blank.

2. When you submit construction plans, duplicate the table (by photocopy or electronically). Now fill in Column 2, identifying the plan sheets where the BMPs are shown. List all plan sheets on which the BMP appears. **This table must be shown on the front sheet of the grading and improvement plans.**

Treatment Control BMPs[1]			
Description / Type	Sheet	Maintenance Category	Revisions
Extended Detention Basin 1		2	
Extended Detention Basin 2A		2	
Extended Detention Basin 2B		2	
Extended Detention Basin 2C		2	
Extended Detention Basin 2D		2	
Extended Detention Basin 2E		2	
Extended Detention Basin 3A		2	
Extended Detention Basin 3B		2	
Extended Detention Basin 3C		2	
Extended Detention Basin 3D		2	
Extended Detention Basin 4A		2	
Extended Detention Basin 4B		2	
Extended Detention Basin 5A		2	
Extended Detention Basin 5B		2	

Extended Detention Basin 5C		2	
Extended Detention Basin 5D		2	
Bioretention Basin 2F		2	
Bioretention Basin MW1		2	
Bioretention Basin MW2		2	
Bioretention Basin CC1		2	
Catch Basin Inserts		2	
[1] BMPs designed to treat stormwater (e.g., LID and hydromod) shall be considered TCBMPs.			

*BMP's approved as part of Stormwater Management Plan (SWMP) dated __/__/__ on file with DPW. Any changes to the above BMP's will require SWMP revision and Plan Change approvals.

- Please describe why the chosen treatment control BMP(s) was selected for this project. For projects utilizing a low performing BMP, please provide a **feasibility analysis** that demonstrates utilization of a treatment control BMP with a high or medium removal efficiency ranking is infeasible.

Extended Detention Basins with Bioretention were selected for hydromodification flow control and water quality control. 16 Extended Detention Basin with Bioretention BMPs are proposed as shown on the DMA Exhibit in the Appendix. **Trash Racks** will be used in series with the Extended Detention Basins with Bioretention to provide pre-treatment of stormwater. The Bioretention component, which will treat the full Water Quality Control Volume, has a High removal efficiency of Coarse Sediment, Trash, and Pollutants that tend to associate with fine particles during treatment. These facilities have a medium removal efficiency of pollutants which are dissolved in stormwater (including nutrients). Alternative BMPs which would remove dissolved pollutants at a medium to high rate include Bio-Retention facilities, Infiltrations Practices, and Wet Ponds. Each of these were found to be impractical for most of the project site for the following reasons:

- **Feasibility of Bio-Retention facilities:** Bio-retention facilities without extended detention require a footprint area of 4% of the impervious tributary area. This was found infeasible for the development due to the large required footprint area which is not available in most areas due to the steep hillside slopes, and setbacks from biologically sensitive areas. Bio-Retention facilities are proposed where sufficient flat landscaping areas are provided near the recreational area and for the offsite roads. The extended detention basins provide additional storage of runoff prior to treatment by the bioretention layer, so the footprint of the facility can be minimized.

- **Feasibility of Infiltration Devices:**
  Due to the presence of Group C and D soils and shallow bedrock under much of the developed portions of the project, infiltration devices are not feasible for this project.

- **Feasibility of Wet Ponds:** Wet ponds were not considered a feasible BMP for

this project due to vector control concerns, steep hillside slopes, large required footprint, and the need for base flow or supplemental water.

Bio-retention Facilities have a High removal efficiency of Coarse Sediment, Trash, and Pollutants that tend to associate with fine particles during treatment, which includes all project Pollutants of Concern. These facilities have a medium removal efficiency of pollutants which are dissolved in stormwater (including nutrients). Bio-retention facilities are proposed for this project in the recreation area, for the Mt. Whitney Road and Country Club Drive offsite improvements as shown on the DMA Exhibit. **Trash Racks** will be used in series with the Bio-retention basin where possible to provide pre-treatment of stormwater.

Permeable Pavements are self-retaining LID facilities. The permeable pavements are proposed for the Hill Valley Road emergency access, which will be a low-traffic roadway. The location of the permeable pavement is shown on the DMA Exhibit.

Please provide the sizing design calculations for each Drainage Management Area in Attachment D. Guidelines for design calculations are located in Chapter 4 of the County SUSMP. To assist in these calculations a BMP sizing calculator is available for use at the following location: http://www.projectcleanwater.org/html/wg_susmp.html

STEP 8

OPERATION AND MAINTENANCE

- Please check the box that best describes the maintenance mechanism(s) for this project. The recorded maintenance agreement shall be included in the Maintenance Plan for this project (Attachment F).

TABLE 13: PROJECT BMP CATEGORY

CATEGORY	SELECTED		BMP Description
	YES	NO	
First[1]			Bioretention Basins, Trash Racks, Extended Detention Basins with Bioretention
Second[2]	X		
Third[3]			
Fourth[4]			

Note:

1. A maintenance notification will be required.
2. A recorded maintenance agreement and access easement will be required.
3. The project will be required to establish or be included in a watershed specific Community Facility District (CFD) for long-term maintenance.
4. The developer would be required to dedicate the BMP (and the property on which it is located and any necessary access) to the County.

- Please list all individual Treatment Control BMPs (TCBMPs) incorporated into the project. Please attach the record plan sheets upon completion of project and amend the Major SWMP where appropriate. For each type of TCBMP provide an inspection sheet in Attachment F "Maintenance Plan". Replicate Table 14 in Attachment G once the TCBMP has been constructed.

TABLE 14: PROJECT SPECIFIC LID AND TCBMPS

Treatment Control BMPs (TCBMPs)[1,2] (List all from SWMP)		
Lot Number Or Location	**Description/Type**	**Sheet**
E	Extended Detention Basin 1	
C	Extended Detention Basin 2A	
C	Extended Detention Basin 2B	
C	Extended Detention Basin 2C	
B	Extended Detention Basin 2D	
A	Extended Detention Basin 2E	
E	Extended Detention Basin 3A	
G	Extended Detention Basin 3B	
F	Extended Detention Basin 3C	
F	Extended Detention Basin 3D	
G	Extended Detention Basin 4A	
I	Extended Detention Basin 4B	
J	Extended Detention Basin 5A	
J	Extended Detention Basin 5B	
H	Extended Detention Basin 5C	
J	Extended Detention Basin 5D	
B	Bioretention Basin 2F	
Access Easement	Bioretention Basin MW1	
H	Bioretention Basin MW2	
Country Club	Bioretention Basin CC1	
	Catch Basin Inserts	

[1] All Priority Development Projects (PDPs) require a TCBMP.
[2] BMPs designed to treat stormwater (e.g. LID and hydromod) shall be considered TCBMPs.

* For location of BMP's, see approved Record Plan dated __/__/__, plan (TYPE) sheet _ (#)__

- Responsible Party for the Construction Phase:

Identify the parties responsible for maintenance during the construction phase of the BMPs identified above and Source Controls specified in Attachment B.

Developer's Name: The Eden Hills Project Owner, LLC

Address: 2235 Encinitas Boulevard, Suite 216

City: Encinitas State: CA Zip: 92024

Email Address: _____

Phone Number: (760)-944-7511

Engineer of Work: Kenneth Kozlik, Fuscoe Engineering Inc.

Engineer's Phone Number: (858)554-1500

- Responsible Party for Ongoing Maintenance:

Identify the parties responsible for long-term maintenance of the BMPs identified above and Source Controls specified in Attachment B. Include the appropriate written agreement with the entities responsible for O&M in Attachment F. Please see Chapter 5 "Stormwater Facility Maintenance" of the County SUSMP for appropriate maintenance mechanisms.

Owner's Name: To Be Formed Home Owner's Association

Address: _____

City _____ State _____Zip_____

Email Address: _____

Phone Number: _____

* Note: If a corporation or LLC, provide information for principal partner or Agent for Service of Process. If an HOA, provide information for the Board or property manager at time of project closeout.

- Funding Source:

Provide the funding source or sources for long-term operation and maintenance of each BMP identified above. Please see Chapter 5 "Stormwater Facility Maintenance" of the County SUSMP for the appropriate funding source options. By certifying the Major SWMP the applicant is certifying that the funding responsibilities have been addressed and will be transferred to future owners.

Home Owner's Association

ATTACHMENTS

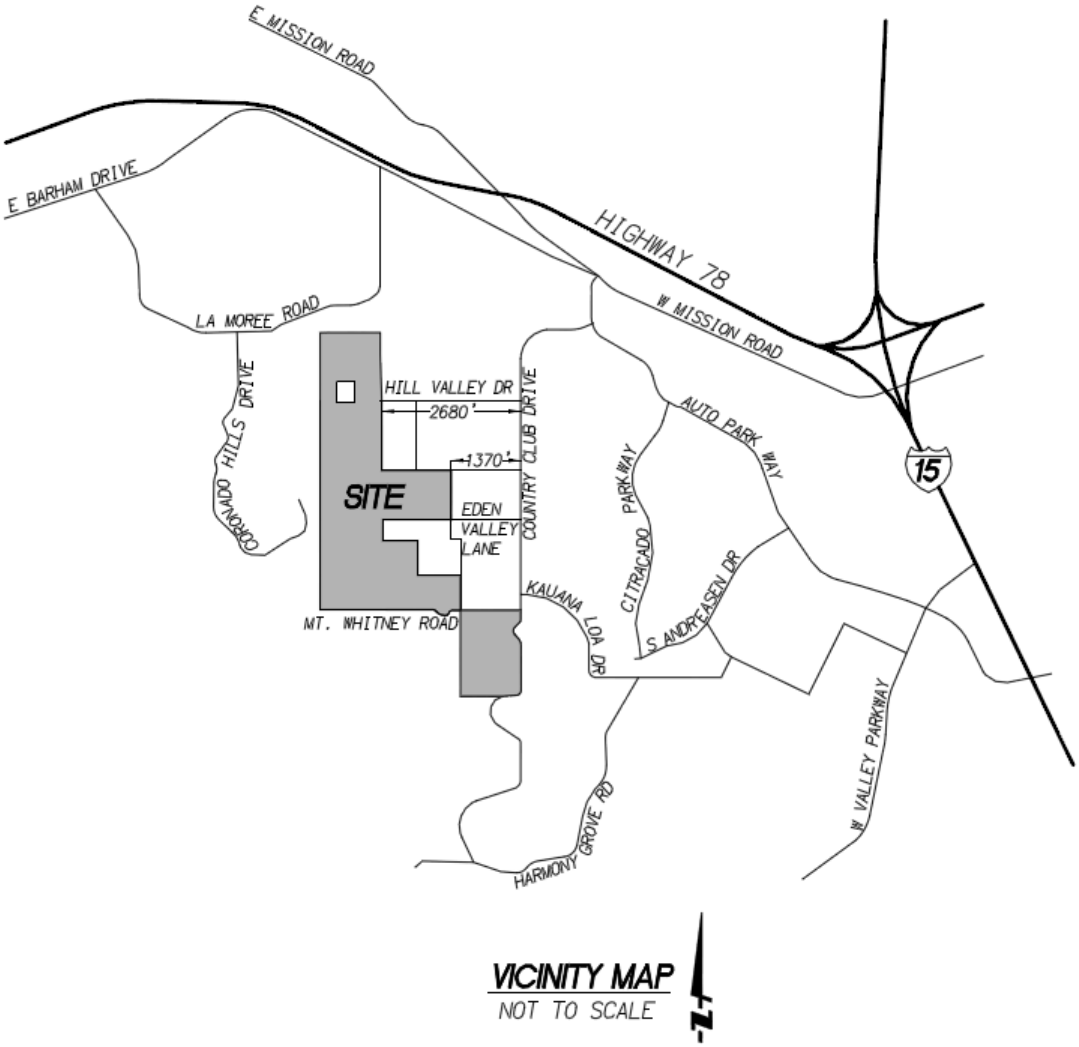
Please include the following attachments.

ATTACHMENT		COMPLETED	N/A
A	Project Location Map	X	
B	Source Control Exhibit	X (Combined With Attachment C)	
C	Drainage Management Area (DMA)Exhibit	X	
D	BMP Sizing Design Calculations (Water Quality and Hydromodification) and TCBMP/IMP Design Details	X	
E	Geotechnical Certification Sheet		X
F	Maintenance Plan	X	
G	Treatment Control BMP Certification (due at project completion)		X
H	HMP Study	X (Separate Study)	
I	Geomorphic Assessment		X
J	HMP Exemption Documentation		X
K	Addendum		X

Note: Attachments B and C may be combined.

ATTACHMENT A

Project Location Map



ATTACHMENT B

Source Control Exhibit
(See Attachment C)

ATTACHMENT C

Drainage Management Area (DMA) Exhibit

COUNTRY CLUB DRIVE AT EDEN VALLEY LANE
POC CC1
NOT TO SCALE

TYPICAL DETAIL - BIORETENTION BASIN
NOT TO SCALE

LEGEND

- PROPERTY LINE
- PROPOSED LOT LINE
- RIGHT-OF-WAY
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED STORM DRAIN
- FLOW DIRECTION
- EXISTING CONDITIONS CONCENTRATED DISCHARGE LOCATION — EX
- PROPOSED DEVELOPED AREAS (70% IMPERVIOUS)
- OFFSITE ROAD AREAS (100% IMPERVIOUS)
- PROPOSED LANDSCAPED AREAS
- SELF-TREATING AREAS
- PROPOSED BMPS
- BASIN BOUNDARY
- POINT OF COMPLIANCE — POC #
- EXTENDED DETENTION BASIN WITH BIORETENTION — EDB
- BIORETENTION BASIN — BIO
- PERMEABLE PAVEMENT — PP
- STORM DRAIN INLET WITH STENCILING/SIGNAGE — SDI
- STORM DRAIN INLET WITH STENCILING/SIGNAGE, TRASH RACK, AND HYDROCARBON BOOM — TR

LID FEATURES

- EXISTING VEGETATION TO BE PRESERVED
- DG MULTIPURPOSE TRAILS
- PERMEABLE PAVEMENT

EXTENDED DETENTION BASIN WITH BIORETENTION DETAILS & REQUIREMENTS

	Subdrain Orifice		Upper Orifice		Weir		
	Dia.	Elev.	Dia.	Elev.	Length	Elev.	Depth
Basin	(in)	(ft)	(in)	(ft)	(ft)	(ft)	(ft)
1	1.4	-2.5	6	2	10.6	4	5
2A	1.3	-2.5	7	1.5	10.6	3	4
2B	1.8	-2.5	10	2	10.6	3	4
2C	2.6	-2.75	12	1.75	10.6	3	4
2D	1.0	-2.5	7	1	10.6	2	3
2E	1.8	-2.5	11	2	10.6	3	4
3A	1.7	-2.5	9	1	10.6	2	3
3B	2.5	-4.5	15	1.5	10.6	3	4
3C	2.1	-3.5	12	1.75	10.6	3	4
3D	2.2	-2.5	14	2	10.6	3	4
4A	1.8	-2.75	11	1.75	10.6	3	4
4B	1.6	-2.5	9	0.5	10.6	1	2
5A	1.8	-2.5	9	1.5	10.6	3	4
5B	1.8	-2.5	10	2	10.6	3	4
5C	1.3	-2.5	12	1.5	10.6	2.5	3
5D	1.3	-2.75	6	2	10.6	3	4

	BMP Calculator Output			IMP Size Provided			Drawdown
	Bottom A	Top A	Volume	Bottom A	Top A	Volume	Time
Basin	(sf)	(sf)	(cf)	(sf)	(sf)	(cf)	(hours)
1	3,375	6,096	23,684	3,897	7,316	28,033	39
2A	3,750	5,965	19,431	6,037	9,196	30,466	36
2B	5,000	8,129	27,258	5,634	9,198	29,664	35
2C	10,000	13,456	46,912	10,936	16,334	54,540	27
2D	3,750	5,363	13,671	4,135	5,950	15,128	42
2E	6,500	9,335	31,672	7,010	10,102	34,224	41
3A	6,000	8,003	21,005	6,594	9,149	23,615	27
3B	7,250	10,230	34,961	7,325	11,362	37,374	18
3C	6,500	9,335	31,672	7,202	10,679	35,762	25
3D	20,000	24,781	98,005	22,060	29,509	103,138	78
4A	5,750	8,432	28,365	6,159	9,034	30,386	34
4B	8,000	9,495	17,495	8,153	9,823	17,976	24
5A	16,000	20,303	72,607	17,846	24,462	84,616	82
5B	5,156	7,710	25,733	5,319	9,657	29,952	33
5C	9,250	11,702	31,428	9,484	12,322	32,709	87
5D	4,750	7,211	23,923	4,888	7,411	24,598	52

BIORETENTION BASIN DETAILS & REQUIREMENTS

	BMP Calculator Output				IMP Size Provided			
	Area	V1	V2	Orifice Dia.	Area	V1	V2	Orifice Dia.
Basin	(sf)	(cf)	(cf)	(in)	(sf)	(cf)	(cf)	(in)
2F	2,927	2,441	1,756	1.0	3,196	2,653	1,918	1.0
MW1	1,868	1,556	1,121	0.8	1,894	1,572	1,136	0.8
MW2	2,095	1,745	1,257	0.9	2,105	1,747	1,263	0.9
CC1*	449	374	269	-	450	510	450	-

* Per sizing factors listed in County SUSMP dated August 2012

FUSCOE ENGINEERING
6390 Greenwich Drive, Suite 170
San Diego, California 92122
tel 858.554.1500 ◦ fax 858.597.0335
www.fuscoe.com

VALIANO
DRAINAGE MANAGEMENT AREA, SOURCE CONTROL AND LID EXHIBIT
COUNTY OF SAN DIEGO, CA

PROJECT NUMBER: 02690-007-02
DATE: FEBRUARY 12, 2015

SCALE: 1" = 150'

150 75 0 150 300 450
GRAPHIC SCALE IN FEET

ATTACHMENT D

Sizing Design Calculations and TCBMP/LID Design Details

(Provide BMP Sizing Calculator results and/or continuous simulation modeling results, if applicable)

Valiano
DMA Data

WQCV Calculations:
Per CASQA BMP Handbook
WQCV= Po * Total Area
Po= a * C * P(85)
a= 1.963 for 48 hour drawdown
C= 0.858i^3 - 0.78i^2 + 0.774i + 0.04
i= Impervious Fraction= Impervious Area/Total Area
P(85)= 0.80 in

			BMP Calculator Input							WQCV Calculations				BMP Size Provided					
DMA	Developed Area	Landscape Area	Pervious Area		Impervious Area		Total Area	Slope	Soil Type	Impervious Fraction i	C	Po	WQCV	Bottom A	A at Upper Orifice	D to Upper Orifice	Gravel Layer Depth	V	% WQCV Treated
	sf	sf	sf	ac	sf	ac	ac					in	cf	sf	sf	ft	ft	cf	
1	121,312	0	36,394	0.84	84,918	1.95	2.78	Steep	D	0.70	0.49	0.78	7,841	3,897	5,180	2.00	1.00	10,636	136%
2A	120,906	29,341	65,613	1.51	84,634	1.94	3.45	Steep	D	0.56	0.38	0.60	7,508	6,037	7,091	1.50	1.00	12,261	163%
2B	224,874	13,965	81,427	1.87	157,412	3.61	5.48	Steep	D	0.66	0.46	0.72	14,282	5,635	7,266	2.00	1.00	15,155	106%
2C	415,659	118,973	243,671	5.59	290,961	6.68	12.27	Steep	D	0.54	0.37	0.58	25,783	10,936	13,114	1.75	1.25	26,512	103%
2D	84,072	15,848	41,070	0.94	58,850	1.35	2.29	Steep	D	0.59	0.40	0.63	5,238	4,135	4,707	1.00	1.00	6,075	116%
2E	254,006	29,474	105,676	2.43	177,804	4.08	6.51	Steep	D	0.63	0.43	0.68	15,964	7,011	8,506	2.00	1.00	18,321	115%
2F*	82,054	0	41,027	0.94	41,027	0.94	1.88	Steep	D	n/a									
3A	151,844	20,889	66,442	1.53	106,291	2.44	3.97	Steep	D	0.62	0.42	0.66	9,513	6,594	7,421	1.00	1.00	9,645	101%
3B	321,766	136,100	232,630	5.34	225,236	5.17	10.51	Steep	D	0.49	0.33	0.52	20,021	7,325	8,861	1.50	3.00	20,930	105%
3C	282,211	66,026	150,689	3.46	197,548	4.54	7.99	Steep	D	0.57	0.38	0.60	17,532	7,202	8,453	1.50	2.00	17,503	100%
3D	497,203	29,040	178,201	4.09	348,042	7.99	12.08	Moderate	D	0.66	0.46	0.72	31,606	22,061	25,814	2.00	1.00	56,699	179%
4A	233,188	24,975	94,931	2.18	163,232	3.75	5.93	Steep	D	0.63	0.43	0.68	14,677	6,159	7,436	1.75	1.25	14,975	102%
4B	97,519	18,297	47,553	1.09	68,263	1.57	2.66	Steep	D	0.59	0.40	0.63	6,076	8,153	9,022	0.50	1.00	7,555	124%
5A	339,934	6,578	108,558	2.49	237,954	5.46	7.95	Steep	D	0.69	0.48	0.76	21,836	17,846	20,176	1.50	1.00	35,655	163%
5B	211,233	0	63,370	1.45	147,863	3.39	4.85	Steep	D	0.70	0.49	0.78	13,653	5,303	7,174	2.00	1.00	14,598	107%
5C	165,030	0	49,509	1.14	115,521	2.65	3.79	Flat	D	0.70	0.49	0.78	10,667	9,484	10,812	1.50	1.00	19,016	178%
5D*	122,860	44,842	81,700	1.88	86,002	1.97	3.85	Moderate	D	0.51	0.35	0.55	7,627	4,888	5,542	1.00	1.25	7,659	100%

Developed Area assumed to be 70% Impervious
* - Recreation Center and Community Park assumed to be 50% Impervious

Offsite Basins

	Existing Impervious Area		New Impervious Area		Total Area			
DMA	sf	ac	sf	ac	sf	ac	Slope	Soil Type
MW1**	14,747	0.34	14,546	0.33	29,293	0.67	Moderate	D
MW2**	21,034	0.48	15,999	0.37	37,033	0.85	Moderate	D

** - Offsite Road Improvements assumed to be 100% Impervious in Proposed Condition

Valiano
Orifice Calculations

Methodology:
BMP Calculator sizes the lower orifice such that the flow through the orifice equals the low flow threshold when the basin is full. Introducing a bioretention component to the bottom of the basin and placing the orifice on the subdrain of the gravel layer changes the amount of head acting on the orifice. Therefore, it is necessary to calculate a new size for the orifce such that the flow rate through the subdrain orifice is also equal to the low flow threshold.

Orifice Equation:
Per Equation 6-12 of the Drainage Design Manual
$Q = Co * Ao * (2gHo)^{0.5}$
Co= 0.6
Ao= $3.14 * (d^2)/4$
g= 32.2 ft/sec^2
Ho= Head acting on orifice

	BMP Calulator				With Bioretention				
	Basin Depth	Orifice Diameter	Ao	Q	Soil Layer	Gravel Layer	Total Head	Ao	Orifice Diameter
DMA	ft	in	sf	cfs	ft	ft	ft	sf	in
1	5.0	1.5	0.0123	0.132	1.50	1.00	7.50	0.0100	1.4
2A	4.0	1.5	0.0123	0.118	1.50	1.00	6.50	0.0096	1.3
2B	4.0	2.0	0.0218	0.210	1.50	1.00	6.50	0.0171	1.8
2C	4.0	3.0	0.0491	0.472	1.50	1.25	6.75	0.0378	2.6
2D	3.0	1.2	0.0079	0.065	1.50	1.00	5.50	0.0058	1.0
2E	4.0	2.0	0.0218	0.210	1.50	1.00	6.50	0.0171	1.8
3A	3.0	2.0	0.0218	0.182	1.50	1.00	5.50	0.0161	1.7
3B	4.0	3.0	0.0491	0.472	1.50	3.00	8.50	0.0337	2.5
3C	4.0	2.5	0.0341	0.328	1.50	2.00	7.50	0.0249	2.1
3D	4.0	2.5	0.0341	0.328	1.50	1.00	6.50	0.0267	2.2
4A	4.0	2.0	0.0218	0.210	1.50	1.25	6.75	0.0168	1.8
4B	2.0	2.0	0.0218	0.148	1.50	1.00	4.50	0.0145	1.6
5A	4.0	2.0	0.0218	0.210	1.50	1.00	6.50	0.0171	1.8
5B	4.0	2.0	0.0218	0.210	1.50	1.00	6.50	0.0171	1.8
5C	3.0	1.5	0.0123	0.102	1.50	1.00	5.50	0.0091	1.3
5D*	4.0	1.5	0.0123	0.118	1.50	1.25	6.75	0.0094	1.3

Project Summary

Project Name	Valiano
Project Applicant	
Jurisdiction	County of San Diego
Parcel (APN)	
Hydrologic Unit	Carlsbad

Compliance Basin Summary

Basin Name:	Valiano Basin 1
Receiving Water:	
Rainfall Basin	Oceanside
Mean Annual Precipitation (inches)	13.3
Project Basin Area (acres):	2.78
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
28782	Drains to Pond	BMP 1	DMA 1 Per	0.84	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)
28791	Drains to Pond	BMP 1	DMA 1 Imp	1.95	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)

Pond Facility Summary

Scenario	Description	Bottom Area (sqft)	Top Area (sqft)	Depth (ft)	Volume (cft)	Low Orifice (in)	Low Invert (ft)	High Orifice (in)	High Invert (ft)	Weir Length (ft)	Weir Invert (ft)	Facility Soil	Drawdown (hrs)
Design A	Basin 1	3375	6098	5	23684.4	1.5	0.00	6.00	2.00	10.6	4.00	D	39.00

Project Summary

Project Name	Valiano
Project Applicant	
Jurisdiction	County of San Diego
Parcel (APN)	
Hydrologic Unit	Carlsbad

Compliance Basin Summary

Basin Name:	Valiano Basin 2A
Receiving Water:	
Rainfall Basin	Oceanside
Mean Annual Precipitation (inches)	13.3
Project Basin Area (acres):	3.45
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
28794	Drains to Pond	BMP 1	DMA 2A Per	1.51	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)
28795	Drains to Pond	BMP 1	DMA 2A Imp	1.94	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)

Pond Facility Summary

Scenario	Description	Bottom Area (sqft)	Top Area (sqft)	Depth (ft)	Volume (cft)	Low Orifice (in)	Low Invert (ft)	High Orifice (in)	High Invert (ft)	Weir Length (ft)	Weir Invert (ft)	Facility Soil	Drawdown (hrs)
Design A	Basin 2A	3750	5965	4	19431.1	1.5	0.00	7.00	1.5	10.6	3.00	D	36.00

Project Summary

Project Name	Valiano
Project Applicant	
Jurisdiction	County of San Diego
Parcel (APN)	
Hydrologic Unit	Carlsbad

Compliance Basin Summary

Basin Name:	Valiano Basin 2B
Receiving Water:	
Rainfall Basin	Oceanside
Mean Annual Precipitation (inches)	13.3
Project Basin Area (acres):	5.48
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
28798	Drains to Pond	BMP 1	DMA 2B Per	1.87	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)
28799	Drains to Pond	BMP 1	DMA 2B Imp	3.61	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)

Pond Facility Summary

Scenario	Description	Bottom Area (sqft)	Top Area (sqft)	Depth (ft)	Volume (cft)	Low Orifice (in)	Low Invert (ft)	High Orifice (in)	High Invert (ft)	Weir Length (ft)	Weir Invert (ft)	Facility Soil	Drawdown (hrs)
Design A	Basin 2B	5500	8129	4	27258.3	2.00	0.00	10.00	2.00	10.6	3.00	D	35.00

Project Summary

Project Name	Valiano
Project Applicant	
Jurisdiction	County of San Diego
Parcel (APN)	
Hydrologic Unit	Carlsbad

Compliance Basin Summary

Basin Name:	Valiano Basin 2C
Receiving Water:	
Rainfall Basin	Oceanside
Mean Annual Precipitation (inches)	13.3
Project Basin Area (acres):	12.27
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
28802	Drains to Pond	BMP 1	DMA 2C Per	5.59	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)
28803	Drains to Pond	BMP 1	DMA 2C Imp	6.68	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)

Pond Facility Summary

Scenario	Description	Bottom Area (sqft)	Top Area (sqft)	Depth (ft)	Volume (cft)	Low Orifice (in)	Low Invert (ft)	High Orifice (in)	High Invert (ft)	Weir Length (ft)	Weir Invert (ft)	Facility Soil	Drawdown (hrs)
Design A	Basin 2C	10000	13456	4	46912.00	3.00	0.00	12.00	1.75	10.6	3.00	A	27.00

Project Summary

Project Name	Valiano
Project Applicant	
Jurisdiction	County of San Diego
Parcel (APN)	
Hydrologic Unit	Carlsbad

Compliance Basin Summary

Basin Name:	Valiano Basin 2D
Receiving Water:	
Rainfall Basin	Oceanside
Mean Annual Precipitation (inches)	13.3
Project Basin Area (acres):	2.29
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
34182	Drains to Pond	BMP 1	DMA 2D Per	0.94	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)
34183	Drains to Pond	BMP 1	DMA 2D Imp	1.35	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)

Pond Facility Summary

Scenario	Description	Bottom Area (sqft)	Top Area (sqft)	Depth (ft)	Volume (cft)	Low Orifice (in)	Low Invert (ft)	High Orifice (in)	High Invert (ft)	Weir Length (ft)	Weir Invert (ft)	Facility Soil	Drawdown (hrs)
Design A	Basin 2D	3750	5363	3	13670.5	1.2	0.00	7.00	1.00	10.6	2.00	D	42.00

Project Summary

Project Name	Valiano
Project Applicant	
Jurisdiction	County of San Diego
Parcel (APN)	
Hydrologic Unit	Carlsbad

Compliance Basin Summary

Basin Name:	Valiano Basin 2E
Receiving Water:	
Rainfall Basin	Oceanside
Mean Annual Precipitation (inches)	13.3
Project Basin Area (acres):	6.51
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
34186	Drains to Pond	BMP 1	DMA 2E Per	2.43	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)
34187	Drains to Pond	BMP 1	DMA 2E Imp	4.08	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)

Pond Facility Summary

Scenario	Description	Bottom Area (sqft)	Top Area (sqft)	Depth (ft)	Volume (cft)	Low Orifice (in)	Low Invert (ft)	High Orifice (in)	High Invert (ft)	Weir Length (ft)	Weir Invert (ft)	Facility Soil	Drawdown (hrs)
Design A	Basin 2E	6500	9335	4	31671.8	2.00	0.00	11.00	2.00	10.6	3.00	D	41.00

Project Summary

Project Name	Valiano
Project Applicant	
Jurisdiction	County of San Diego
Parcel (APN)	
Hydrologic Unit	Carlsbad

Compliance Basin Summary

Basin Name:	Valiano Basin 2F
Receiving Water:	
Rainfall Basin	Oceanside
Mean Annual Precipitation (inches)	13.3
Project Basin Area (acres):	1.88
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
29444	Drains to LID	BMP 1	DMA 2F Per	0.94	Pervious (Pre)	Landscaping	Type D (high runoff - clay soi...	Steep (greater 10%)
29445	Drains to LID	BMP 1	DMA 2F Imp	0.94	Pervious (Pre)	Concrete or asphalt	Type D (high runoff - clay soi...	Steep (greater 10%)

LID Facility Summary

BMP ID	Type	Description	Plan Area (sqft)	Volume 1(cft)	Volume 2(cft)	Orifice Flow (cfs)	Orifice Size (inch)
BMP 1	Bioretention	Bioretention Basin 2F	2927	2441	1756	0.045	1.00

Project Summary

Project Name	Valiano
Project Applicant	
Jurisdiction	County of San Diego
Parcel (APN)	
Hydrologic Unit	Carlsbad

Compliance Basin Summary

Basin Name:	Valiano Basin 3A
Receiving Water:	
Rainfall Basin	Oceanside
Mean Annual Precipitation (inches)	13.3
Project Basin Area (acres):	3.97
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
28821	Drains to Pond	BMP 1	DMA 3A Per	1.53	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)
28822	Drains to Pond	BMP 1	DMA 3A Imp	2.44	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)

Pond Facility Summary

Scenario	Description	Bottom Area (sqft)	Top Area (sqft)	Depth (ft)	Volume (cft)	Low Orifice (in)	Low Invert (ft)	High Orifice (in)	High Invert (ft)	Weir Length (ft)	Weir Invert (ft)	Facility Soil	Drawdown (hrs)
Design A	Basin 3A	6000	8003	3	21004.5	2.00	0.00	9.00	1.00	10.6	2.00	D	27.00

Project Summary

Project Name	Valiano
Project Applicant	
Jurisdiction	County of San Diego
Parcel (APN)	
Hydrologic Unit	Carlsbad

Compliance Basin Summary

Basin Name:	Valiano Basin 3B
Receiving Water:	
Rainfall Basin	Oceanside
Mean Annual Precipitation (inches)	13.3
Project Basin Area (acres):	10.51
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
28825	Drains to Pond	BMP 1	DMA 3B Per	5.34	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)
28826	Drains to Pond	BMP 1	DMA 3B Imp	5.17	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)

Pond Facility Summary

Scenario	Description	Bottom Area (sqft)	Top Area (sqft)	Depth (ft)	Volume (cft)	Low Orifice (in)	Low Invert (ft)	High Orifice (in)	High Invert (ft)	Weir Length (ft)	Weir Invert (ft)	Facility Soil	Drawdown (hrs)
Design A	Basin 3B	7250	10230	4	34961.4	3.00	0.00	15.00	1.5	10.6	3.00	D	18.00

Project Summary

Project Name	Valiano
Project Applicant	
Jurisdiction	County of San Diego
Parcel (APN)	
Hydrologic Unit	Carlsbad

Compliance Basin Summary

Basin Name:	Valiano Basin 3C
Receiving Water:	
Rainfall Basin	Oceanside
Mean Annual Precipitation (inches)	13.3
Project Basin Area (acres):	7.99
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
34190	Drains to Pond	BMP 1	DMA 3C Per	3.46	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)
34191	Drains to Pond	BMP 1	DMA 3C Imp	4.54	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)

Pond Facility Summary

Scenario	Description	Bottom Area (sqft)	Top Area (sqft)	Depth (ft)	Volume (cft)	Low Orifice (in)	Low Invert (ft)	High Orifice (in)	High Invert (ft)	Weir Length (ft)	Weir Invert (ft)	Facility Soil	Drawdown (hrs)
Design A	Basin 3C	6500	9335	4	31671.8	2.5	0.00	12.00	1.75	10.6	3.00	D	25.00

Project Summary

Project Name	Valiano
Project Applicant	
Jurisdiction	County of San Diego
Parcel (APN)	
Hydrologic Unit	Carlsbad

Compliance Basin Summary

Basin Name:	Valiano Basin 3D
Receiving Water:	
Rainfall Basin	Oceanside
Mean Annual Precipitation (inches)	13.3
Project Basin Area (acres):	12.08
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
34194	Drains to Pond	BMP 1	DMA 3D Per	4.09	Pervious (Pre)		Type D (high runoff - clay soi...	Moderate (5 - 10%)
34195	Drains to Pond	BMP 1	DMA 3D Imp	7.99	Pervious (Pre)		Type D (high runoff - clay soi...	Moderate (5 - 10%)

Pond Facility Summary

Scenario	Description	Bottom Area (sqft)	Top Area (sqft)	Depth (ft)	Volume (cft)	Low Orifice (in)	Low Invert (ft)	High Orifice (in)	High Invert (ft)	Weir Length (ft)	Weir Invert (ft)	Facility Soil	Drawdown (hrs)
Design A	Basin 3D	20000	24781	4	89562.9	2.5	0.00	14.00	2.00	10.6	3.00	D	78.00

Project Summary

Project Name	Valiano
Project Applicant	
Jurisdiction	County of San Diego
Parcel (APN)	
Hydrologic Unit	Carlsbad

Compliance Basin Summary

Basin Name:	Valiano Basin 4A
Receiving Water:	
Rainfall Basin	Oceanside
Mean Annual Precipitation (inches)	13.3
Project Basin Area (acres):	5.93
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
28841	Drains to Pond	BMP 1	DMA 4A Per	2.18	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)
28842	Drains to Pond	BMP 1	DMA 4A Imp	3.75	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)

Pond Facility Summary

Scenario	Description	Bottom Area (sqft)	Top Area (sqft)	Depth (ft)	Volume (cft)	Low Orifice (in)	Low Invert (ft)	High Orifice (in)	High Invert (ft)	Weir Length (ft)	Weir Invert (ft)	Facility Soil	Drawdown (hrs)
Design A	Basin 4A	5750	8432	4	28365.0	2.00	0.00	11.00	1.75	10.6	3.00	D	34.00

Project Summary

Project Name	Valiano
Project Applicant	
Jurisdiction	County of San Diego
Parcel (APN)	
Hydrologic Unit	Carlsbad

Compliance Basin Summary

Basin Name:	Valiano Basin 4B
Receiving Water:	
Rainfall Basin	Oceanside
Mean Annual Precipitation (inches)	13.3
Project Basin Area (acres):	2.66
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
28850	Drains to Pond	BMP 1	DMA 4B Per	1.09	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)
28851	Drains to Pond	BMP 1	DMA 4B Imp	1.57	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)

Pond Facility Summary

Scenario	Description	Bottom Area (sqft)	Top Area (sqft)	Depth (ft)	Volume (cft)	Low Orifice (in)	Low Invert (ft)	High Orifice (in)	High Invert (ft)	Weir Length (ft)	Weir Invert (ft)	Facility Soil	Drawdown (hrs)
Design A	Basin 4B	8000	9495	2	17495.0	2.00	0.00	9.00	0.5	10.6	1.00	D	24.00

Project Summary

Project Name	Valiano
Project Applicant	
Jurisdiction	County of San Diego
Parcel (APN)	
Hydrologic Unit	Carlsbad

Compliance Basin Summary

Basin Name:	Valiano Basin 5A
Receiving Water:	
Rainfall Basin	Oceanside
Mean Annual Precipitation (inches)	13.3
Project Basin Area (acres):	7.95
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
28866	Drains to Pond	BMP 1	DMA 5A Per	2.49	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)
28867	Drains to Pond	BMP 1	DMA 5A Imp	5.46	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)

Pond Facility Summary

Scenario	Description	Bottom Area (sqft)	Top Area (sqft)	Depth (ft)	Volume (cft)	Low Orifice (in)	Low Invert (ft)	High Orifice (in)	High Invert (ft)	Weir Length (ft)	Weir Invert (ft)	Facility Soil	Drawdown (hrs)
Design A	Basin 5A	16000	20303	4	72607.4	2.00	0.00	9.00	1.5	10.6	3.00	D	82.00

Project Summary

Project Name	Valiano
Project Applicant	
Jurisdiction	County of San Diego
Parcel (APN)	
Hydrologic Unit	Carlsbad

Compliance Basin Summary

Basin Name:	Valiano Basin 5B
Receiving Water:	
Rainfall Basin	Oceanside
Mean Annual Precipitation (inches)	13.3
Project Basin Area (acres):	4.85
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
34198	Drains to Pond	BMP 1	DMA 5B Per	1.45	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)
34199	Drains to Pond	BMP 1	DMA 5B Imp	3.39	Pervious (Pre)		Type D (high runoff - clay soi...	Steep (greater 10%)

Pond Facility Summary

Scenario	Description	Bottom Area (sqft)	Top Area (sqft)	Depth (ft)	Volume (cft)	Low Orifice (in)	Low Invert (ft)	High Orifice (in)	High Invert (ft)	Weir Length (ft)	Weir Invert (ft)	Facility Soil	Drawdown (hrs)
Design A	Basin 5B	5156	7710	4	25732.6	2.00	0.00	10.00	2.00	10.6	3.00	D	33.00

Project Summary

Project Name	Valiano
Project Applicant	
Jurisdiction	County of San Diego
Parcel (APN)	
Hydrologic Unit	Carlsbad

Compliance Basin Summary

Basin Name:	Valiano Basin 5C
Receiving Water:	
Rainfall Basin	Oceanside
Mean Annual Precipitation (inches)	13.3
Project Basin Area (acres):	3.79
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
34202	Drains to Pond	BMP 1	DMA 5C Per	1.14	Pervious (Pre)		Type D (high runoff - clay soi...	Flat - slope (less ...
34203	Drains to Pond	BMP 1	DMA 5C Imp	2.65	Pervious (Pre)		Type D (high runoff - clay soi...	Flat - slope (less ...

Pond Facility Summary

Scenario	Description	Bottom Area (sqft)	Top Area (sqft)	Depth (ft)	Volume (cft)	Low Orifice (in)	Low Invert (ft)	High Orifice (in)	High Invert (ft)	Weir Length (ft)	Weir Invert (ft)	Facility Soil	Drawdown (hrs)
Design A	Basin 5C	9250	11702	3	31428.3	1.5	0.00	12.00	1.5	10.6	2.5	D	87.00

Project Summary

Project Name	Valiano
Project Applicant	
Jurisdiction	County of San Diego
Parcel (APN)	
Hydrologic Unit	Carlsbad

Compliance Basin Summary

Basin Name:	Valiano Basin 5D
Receiving Water:	Outfall
Rainfall Basin	Oceanside
Mean Annual Precipitation (inches)	13.3
Project Basin Area (acres):	3.85
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
33994	Drains to Pond	BMP 1	DMA 5D Per	1.88	Pervious (Pre)		Type D (high runoff - clay soi...	Moderate (5 - 10%)
33995	Drains to Pond	BMP 1	DMA 5D Imp	1.97	Pervious (Pre)		Type D (high runoff - clay soi...	Moderate (5 - 10%)

Pond Facility Summary

Scenario	Description	Bottom Area (sqft)	Top Area (sqft)	Depth (ft)	Volume (cft)	Low Orifice (in)	Low Invert (ft)	High Orifice (in)	High Invert (ft)	Weir Length (ft)	Weir Invert (ft)	Facility Soil	Drawdown (hrs)
Design A	Basin 5D	4750	7211	4	23922.8	1.5	0.00	6.00	2.00	10.6	3.00	D	52.00

Project Summary

Project Name	Valiano
Project Applicant	
Jurisdiction	County of San Diego
Parcel (APN)	
Hydrologic Unit	Carlsbad

Compliance Basin Summary

Basin Name:	Valiano Offsites
Receiving Water:	
Rainfall Basin	Oceanside
Mean Annual Precipitation (inches)	13.3
Project Basin Area (acres):	2.22
Watershed Area (acres):	0.00
SCCWRP Lateral Channel Susceptiblity (H, M, L):	
SCCWRP Vertifical Channel Susceptiblity (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
34206	Drains to LID	BMP 1	MW1 Existing Impervious	0.34	Impervious (Pre)	Concrete or asphalt	Type D (high runoff - clay soi...	Moderate (5 - 10%)
34208	Drains to LID	BMP 1	MW1 New Impervious	0.33	Pervious (Pre)	Concrete or asphalt	Type D (high runoff - clay soi...	Moderate (5 - 10%)
34209	Drains to LID	BMP 2	MW2 Existing Impervious	0.48	Impervious (Pre)	Concrete or asphalt	Type D (high runoff - clay soi...	Moderate (5 - 10%)
34210	Drains to LID	BMP 2	MW2 New Impervious	0.37	Pervious (Pre)	Concrete or asphalt	Type D (high runoff - clay soi...	Moderate (5 - 10%)

LID Facility Summary

BMP ID	Type	Description	Plan Area (sqft)	Volume 1(cft)	Volume 2(cft)	Orifice Flow (cfs)	Orifice Size (inch)
BMP 1	Bioretention	Basin MW1	1868	1556	1121	0.025	0.8
BMP 2	Bioretention	Basin MW2	2095	1745	1257	0.034	0.9

Country Club Drive
3,450 sf of new pavement

Using sizing factors per County SUSMP dated August 2012
Lower Flow Threshold = 0.1Q2
Soil Group = D
Slope = Flat
Rain Gauge = Oceanside
Sizing Factor A = 0.130
Sizing Factor V1 = 0.1083
Sizing Factor V2 = 0.0780

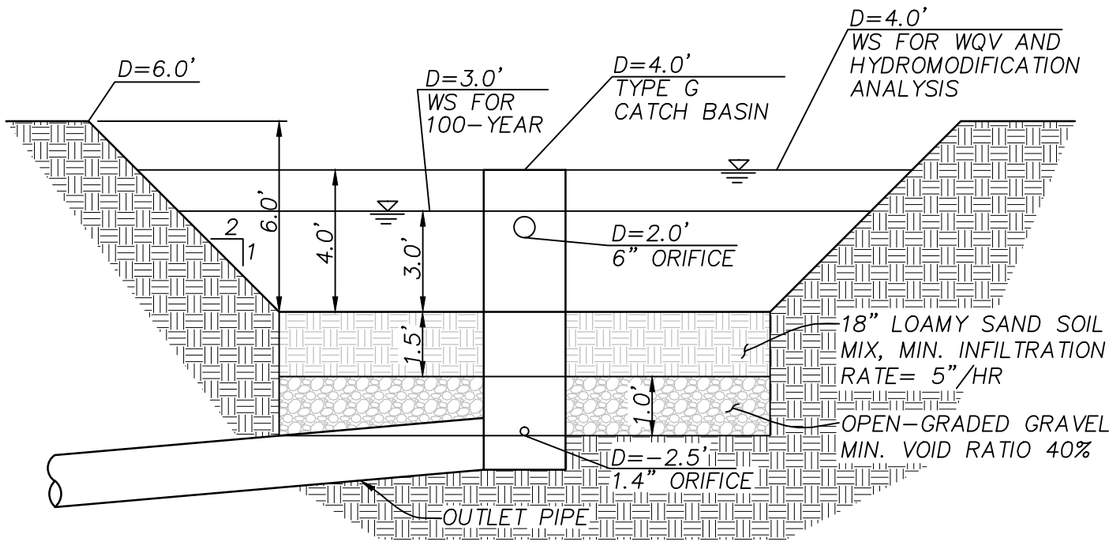
A = 3,450 sf x 0.130 = 449 sf
V1 = 3,450 sf x 0.1083 = 374 cf
V2 = 3,450 sf x 0.0780 = 269 cf

Summary of Results

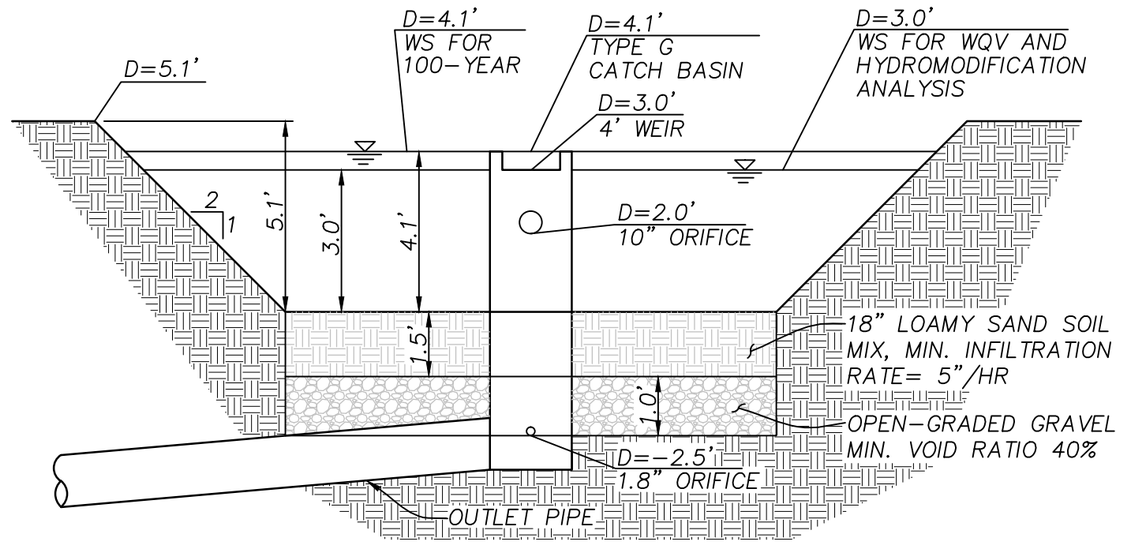
Area Required= 449 sf	Area Provided=450 sf
V1 = 374 cf	V1 Provided=510 cf
V2 = 269 cf	V2 Provided= 450 sf x 2.5 ft x 0.4 = 450 cf

Lower Flow Threshold	Soil Group	Slope	Rain Gauge	A	V1	V2
0.1Q2	D	Steep	Lindbergh	0.115	0.0958	0.0690
0.1Q2	A	Flat	Oceanside	0.070	0.0583	N/A
0.1Q2	A	Moderate	Oceanside	0.065	0.0542	N/A
0.1Q2	A	Steep	Oceanside	0.060	0.0500	N/A
0.1Q2	B	Flat	Oceanside	0.103	0.0854	N/A
0.1Q2	B	Moderate	Oceanside	0.090	0.0750	N/A
0.1Q2	B	Steep	Oceanside	0.075	0.0625	N/A
0.1Q2	C	Flat	Oceanside	0.130	0.1083	0.0780
0.1Q2	C	Moderate	Oceanside	0.130	0.1083	0.0780
0.1Q2	C	Steep	Oceanside	0.110	0.0917	0.0660
0.1Q2	D	Flat	Oceanside	0.130	0.1083	0.0780
0.1Q2	D	Moderate	Oceanside	0.130	0.1083	0.0780
0.1Q2	D	Steep	Oceanside	0.065	0.0542	0.0390
0.1Q2	A	Flat	L Wohlford	0.050	0.0417	N/A
0.1Q2	A	Moderate	L Wohlford	0.045	0.0375	N/A
0.1Q2	A	Steep	L Wohlford	0.040	0.0333	N/A
0.1Q2	B	Flat	L Wohlford	0.090	0.0750	N/A
0.1Q2	B	Moderate	L Wohlford	0.085	0.0708	N/A
0.1Q2	B	Steep	L Wohlford	0.065	0.0542	N/A
0.1Q2	C	Flat	L Wohlford	0.110	0.0917	0.0660
0.1Q2	C	Moderate	L Wohlford	0.110	0.0917	0.0660
0.1Q2	C	Steep	L Wohlford	0.090	0.0750	0.0540
0.1Q2	D	Flat	L Wohlford	0.100	0.0833	0.0600
0.1Q2	D	Moderate	L Wohlford	0.100	0.0833	0.0600
0.1Q2	D	Steep	L Wohlford	0.075	0.0625	0.0450

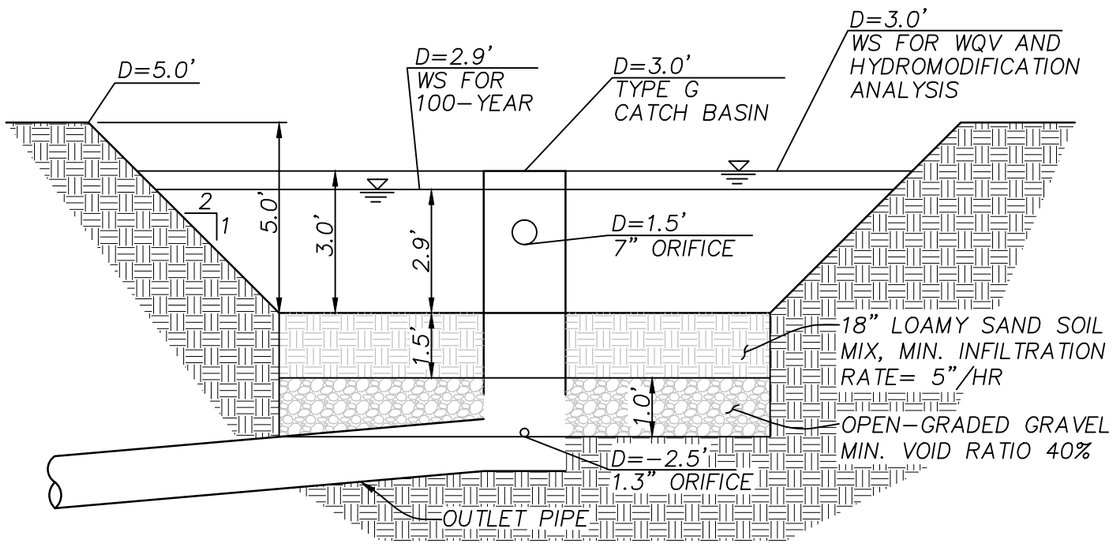
Q_2 = 2-year pre-project flow rate based upon partial duration analysis of long-term hourly rainfall records
Q_{10} = 10-year pre-project flow rate based upon partial duration analysis of long-term hourly rainfall records
A = Surface area sizing factor
V_1 = Surface volume sizing factor: V_1 = (10/12) x A (V_1 is based on 10" of ponding)
V_2 = Subsurface volume sizing factor: V_2= A x 1.5 x 0.4 (storage volume for 1.5' depth with 40% void ratio)



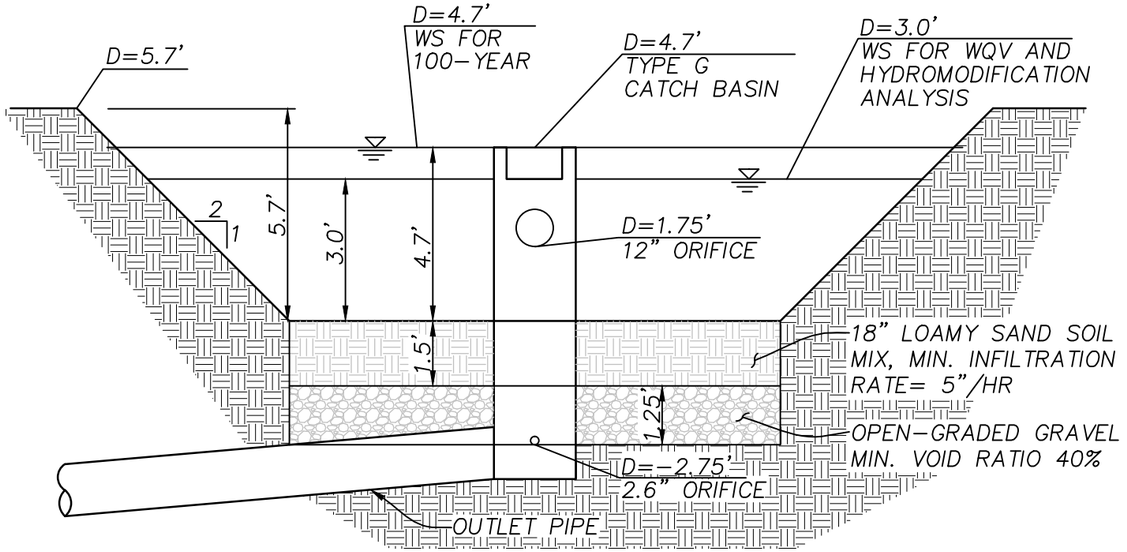
DMA 1



DMA 2B



DMA 2A



DMA 2C

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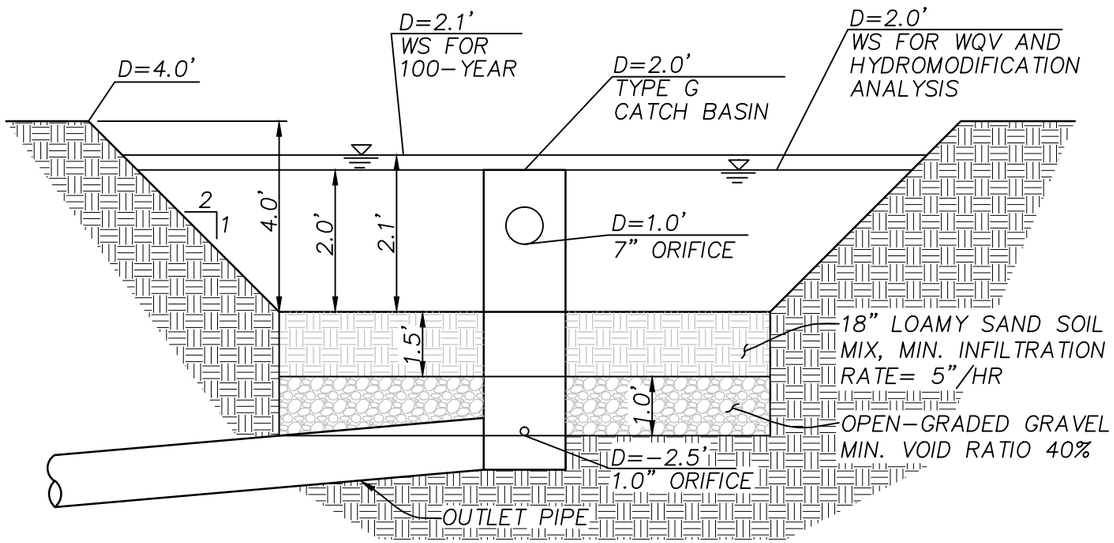
EXTENDED DETENTION BASIN OUTLET STRUCTURE DETAILS

NOT TO SCALE



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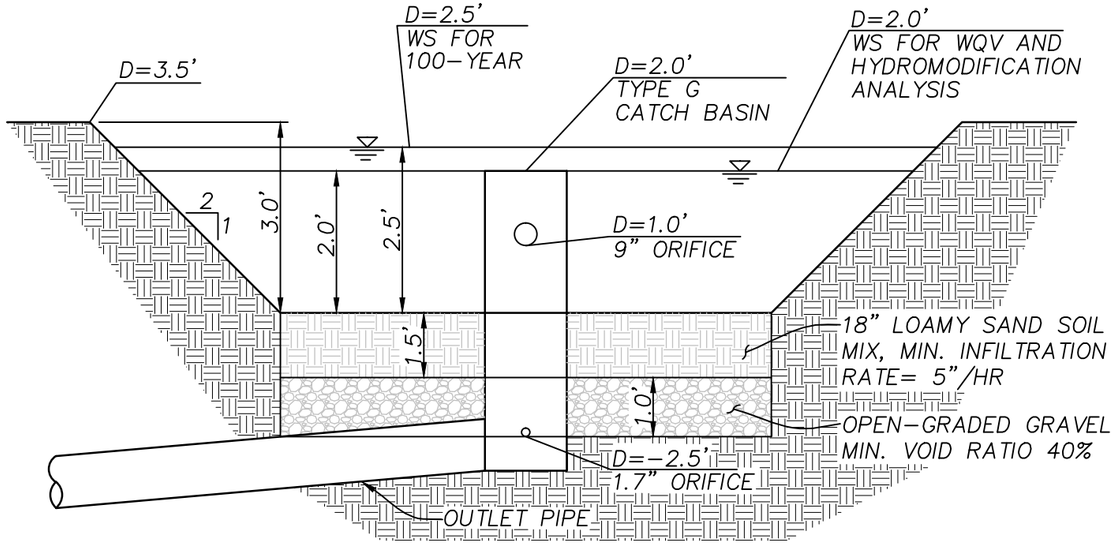

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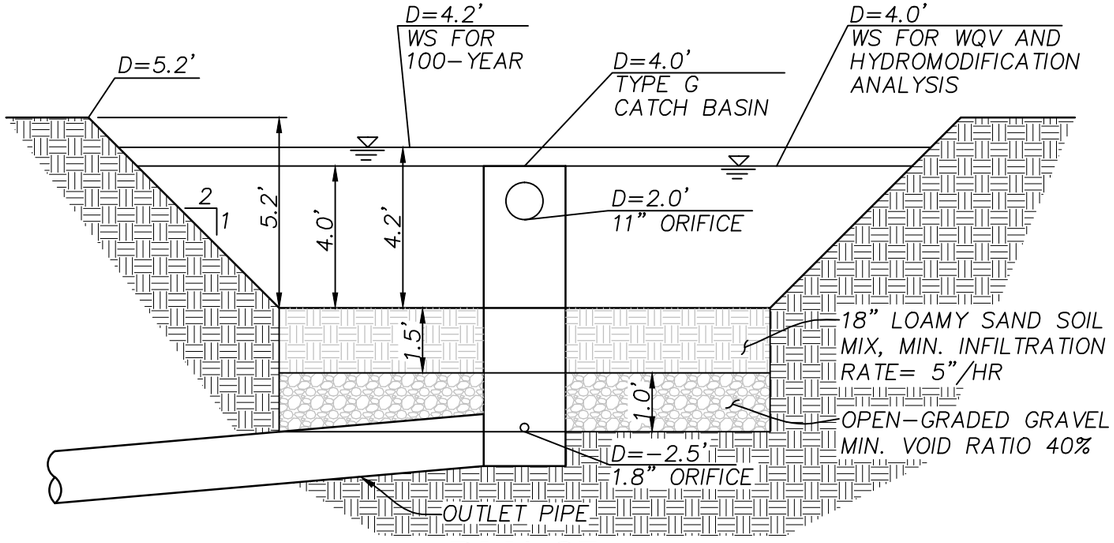

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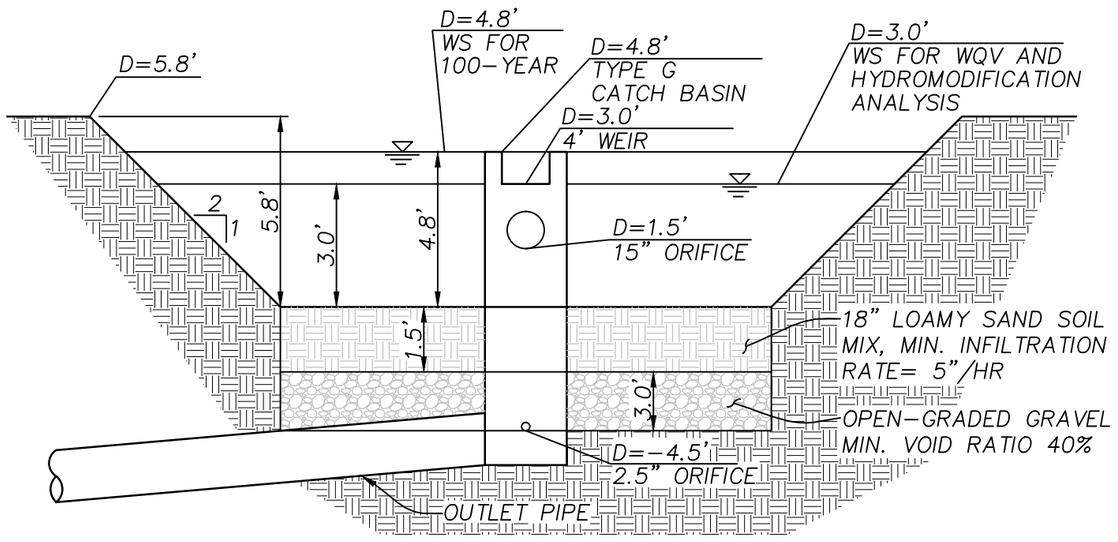

DMA 3B

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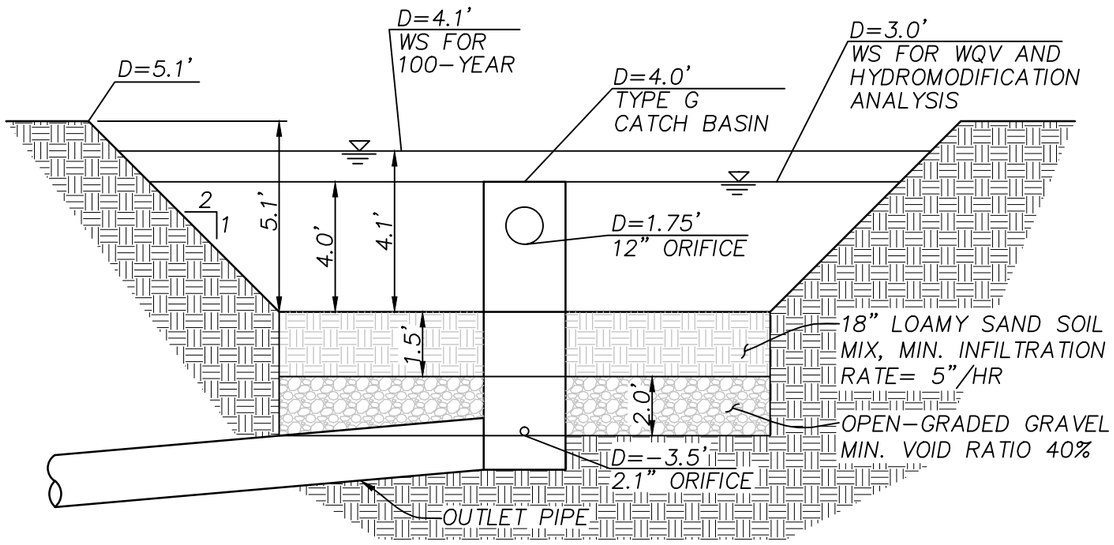
EXTENDED DETENTION BASIN OUTLET STRUCTURE DETAILS

NOT TO SCALE



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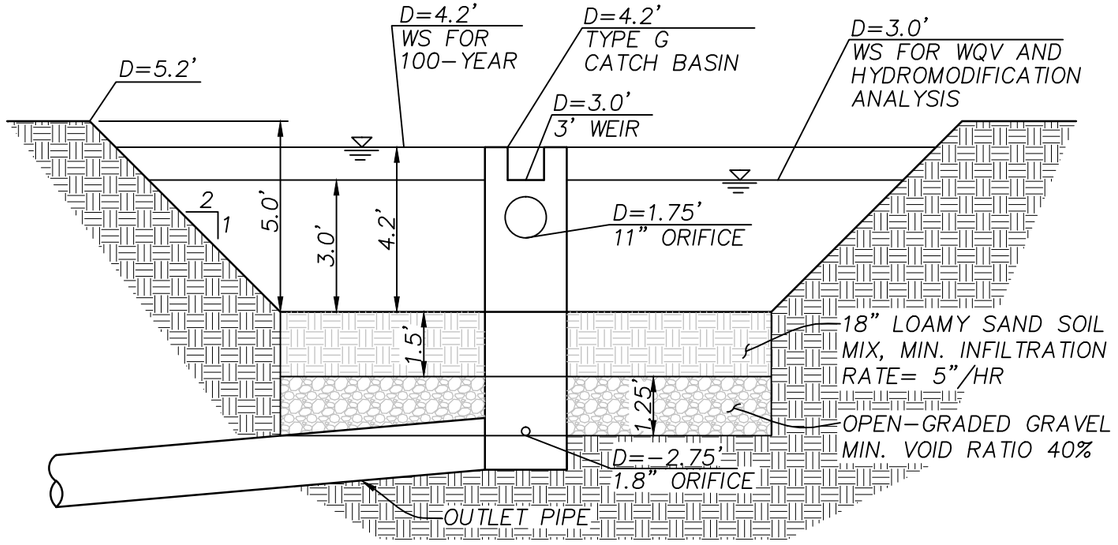

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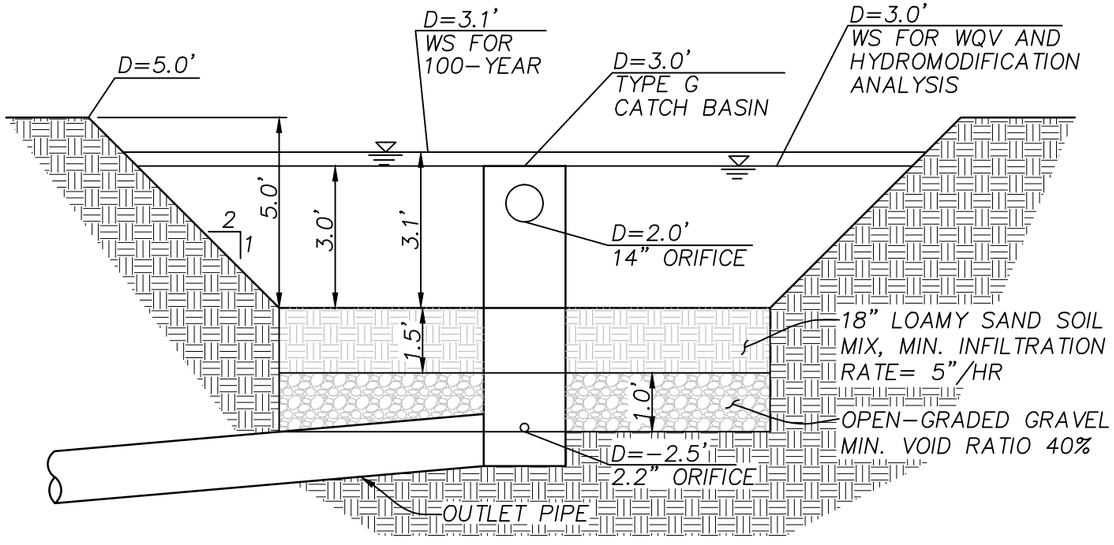

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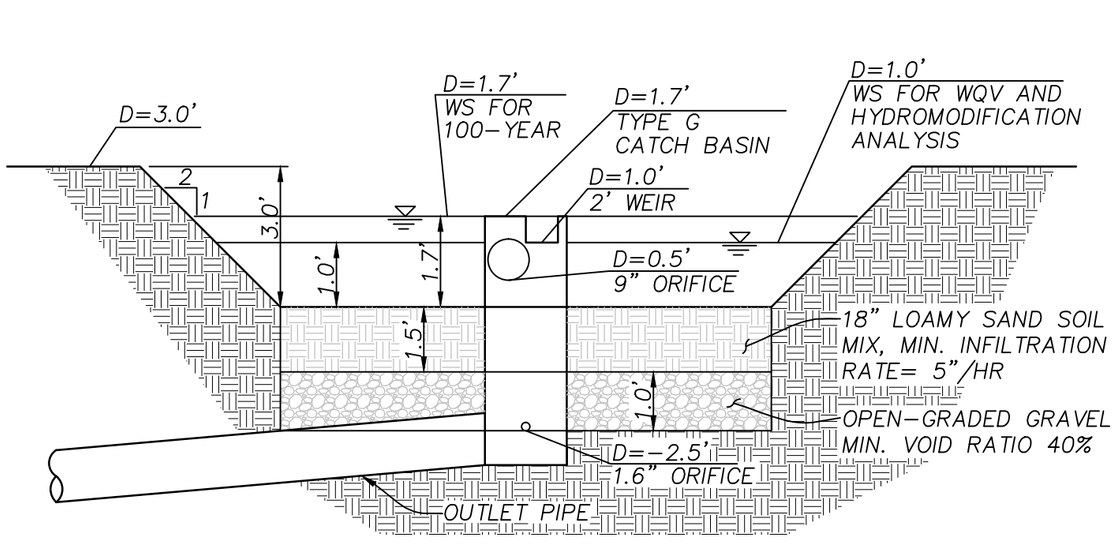

DMA 4B

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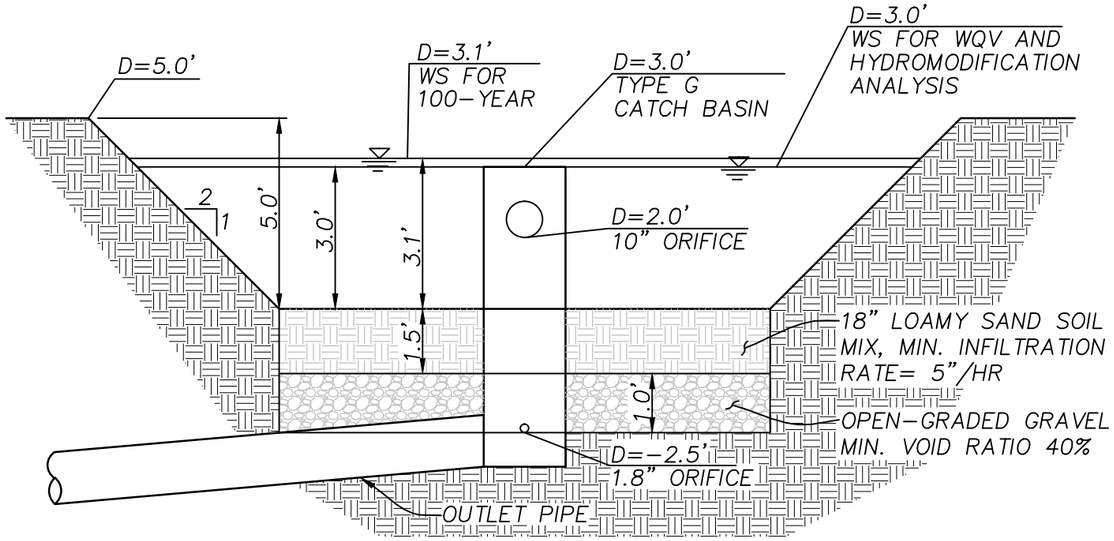
EXTENDED DETENTION BASIN OUTLET STRUCTURE DETAILS

NOT TO SCALE



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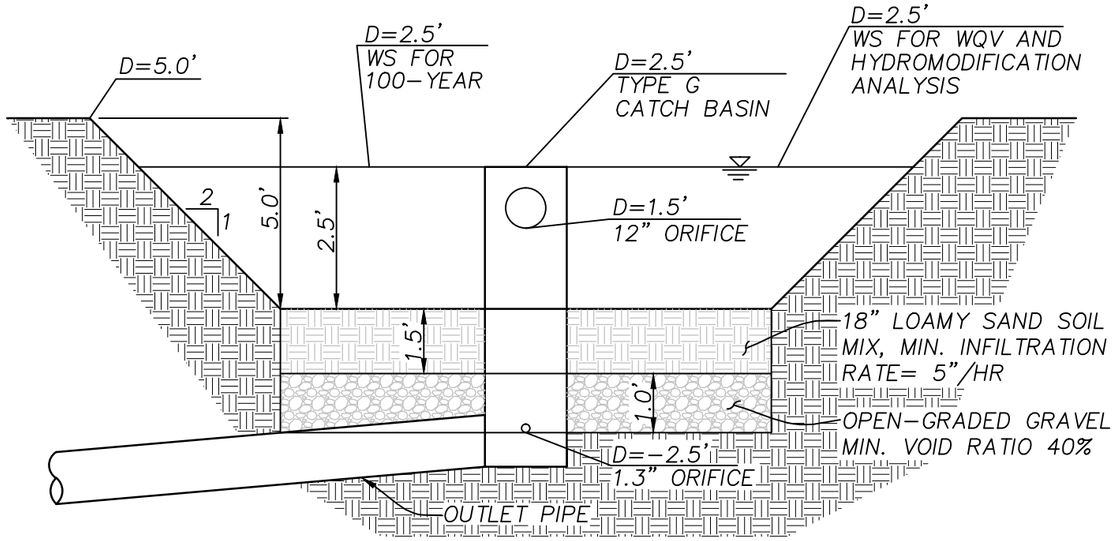

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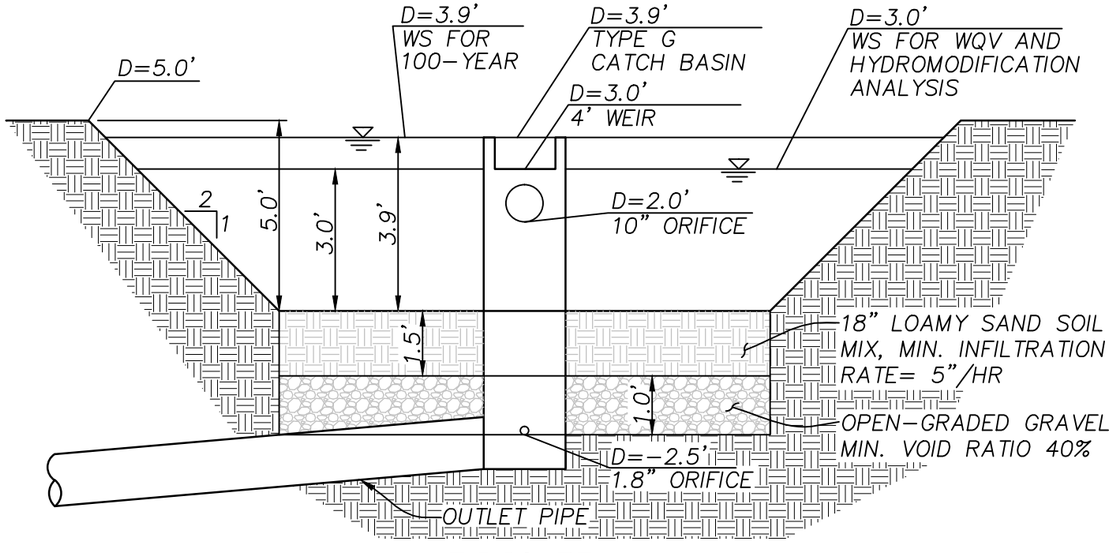

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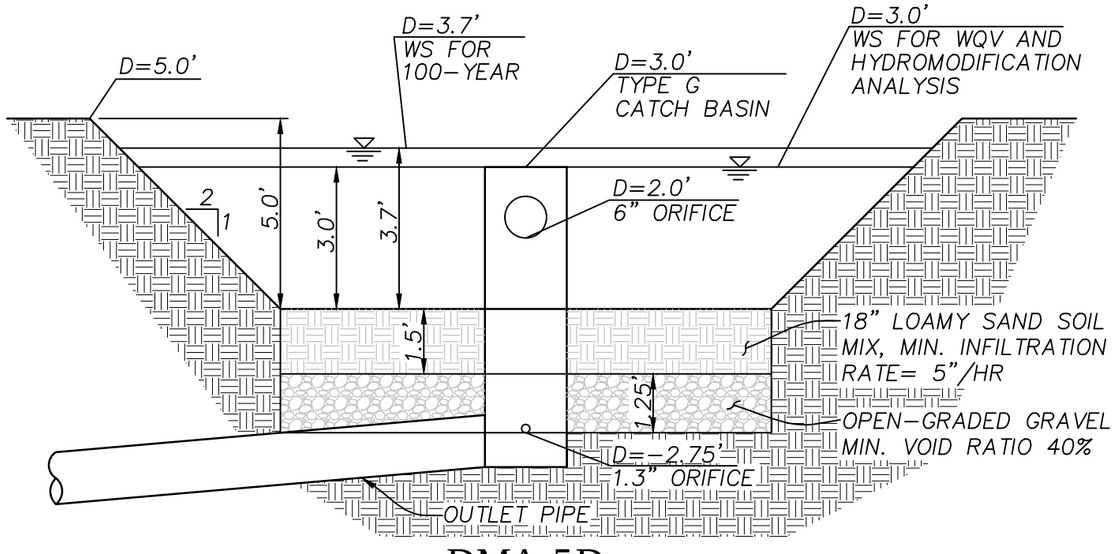

DMA 5D

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EXTENDED DETENTION BASIN OUTLET STRUCTURE DETAILS

NOT TO SCALE

ATTACHMENT E

Geotechnical Certification Sheet

(Not Applicable)

ATTACHMENT F

Maintenance Plan

(Use Chapter 5 of the SUSMP as guidance in developing your Maintenance Plan)

The following is a general outline to create your project specific Maintenance Plan. A Maintenance Plan is a living document and field conditions may require modifications to the Maintenance Plan.

I. Inspection, Maintenance Log and Self-Verification Forms (Examples are provided in Appendix F of the San Diego County SUSMP)

II. Updates, Revisions and Errata

III. Introduction

A. Narrative overview describing the site; drainage areas, routing, and discharge points; and treatment facilities.

IV. Responsibility for Maintenance

A. General

(1) Name and contact information for responsible individual(s).

(2) Organization chart or charts showing organization of the maintenance function and location within the overall organization.

(3) Insert a copy of the recorded maintenance agreement.

(4) Maintenance Funding

(1) Sources of funds for maintenance

(2) Budget category or line item

(3) Description of procedure and process for ensuring adequate funding for maintenance

B. Staff Training Program

C. Records

D. Safety

V. Summary of Drainage Areas and Stormwater Facilities

A. Drainage Areas

(1) Drawings showing pervious and impervious areas (copied or adapted from initial SWMP).

(2) Designation and description of each drainage area and how flow is routed to the corresponding facility.

B. Treatment and Flow-Control Facilities

(1) Drawings showing location and type of each facility

(2) General description of each facility (Consider a table if more than two facilities)

(1) Area drained and routing of discharge.

(2) Facility type and size

VI. Facility Documentation

A. "As-built" drawings of each facility (design drawings in the draft Plan)

B. Manufacturer's data, manuals, and maintenance requirements for pumps, mechanical or electrical equipment, and proprietary facilities (include a "placeholder" in the draft plan for information not yet available).

C. Specific operation and maintenance concerns and troubleshooting

VII. Maintenance Schedule or Matrix

A. Maintenance Schedule for each facility with specific requirements for:

(1) Routine inspection and maintenance

(2) Annual inspection and maintenance

(3) Inspection and maintenance after major storms

B. Service Agreement Information

Assemble and make copies of your maintenance plan. One copy must be submitted to the County, and at least one copy kept on-site. Here are some suggestions for formatting the maintenance plan:

- Format plans to 8½" x 11" to facilitate duplication, filing, and handling.
- Include the revision date in the footer on each page.
- Scan graphics and incorporate with text into a single electronic file. Keep the electronic file backed-up so that copies of the maintenance plan can be made if the hard copy is lost or damaged.

MAINTENANCE PLAN FOR BIO-RETENTION BASIN

1. INSPECTION FREQUENCY

Inspections of the Bio-Retention Basins will occur at a minimum of once a month. Inspections will also occur before and after large storm events or on a weekly basis during periods of wet weather. The rainy season within the jurisdiction of the San Diego Regional Water Quality Control Board is October 1 – April 30. Refer to Attachment D for extended detention basin locations.

2. PREVENTATIVE ACTIONS

The following is a list of actions that will help prevent problems from occurring. They should be done on a routine basis throughout the duration of the project.

VEGETATION CONTROL

Vegetation in the basin should be trimmed and mowed to keep a maximum height of 18 inches. All vegetation clippings should be removed from the basin when trimming and mowing is conducted. Trimming and mowing prevents marsh vegetation from overtaking the basin and creating faunal habitats. It also prevents areas of water stagnation which can create a vector and health problem.

BASIN CLEANING

Trash and debris should be removed from the basin. Special attention should be given to the inlet and outlet structures. A build up of trash and debris in these areas can decrease the efficiency of the basin or make it inoperable during storms.

VECTOR CONTROL

Sediments deposited at the inlet structures should be managed to prevent areas of ponding and possible vector problems. Sediment grading can be accomplished by manually raking the deposits.

FILTER MEDIA AND SEDIMENT REMOVAL

The planter shall be excavated and cleaned, and gravel or soil shall be replaced to correct low infiltration rates. Holes that are not consistent with the design and allow water to flow directly through the planter to the ground shall be plugged. Sediment accumulation shall be hand removed with minimum damage to vegetation using proper erosion control measures. Sediment shall be removed if it is more than 2 inches thick or so thick as to damage or kill vegetation.

EQUIPMENT INSPECTION

All physical components of the basin should be regularly inspected for operability. This includes all valves, fence gates, locks, and access hatches.

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GENERAL CLEANUP

Graffiti will be removed in a timely manner to improve the appearance of the basin. Weeds will be removed around fences and grass trimmed. All landscape clippings and cleaning solvents used to remove graffiti should be properly removed from the basin after cleanup.

3. MAINTENANCE INDICATORS AND CORRECTIVE ACTIONS

The following is a list of indicators that would trigger immediate corrective actions to be taken. Corrective action should be taken within 10 days to ensure that damage does not occur from the extended detension basin not operating efficiently.

BLOCKAGE OF INLETS/OUTLETS

Any blockages from sediment, debris, or vegetation that keep the basin from operating effectively will be removed immediately and properly disposed of. The basin should be able to completely drain within 3-4 hours of a storm event.

STRUCTURAL DAMAGE

If any damage to the structural components of the basin is found, repairs will be made promptly. Designers and contractors will conduct repairs where structural damage has occurred.

EMBANKMENT DAMAGE

Any damage to the embankments and slopes will be repaired quickly so that no erosion will occur.

EROSION DAMAGE

If there is damage due to erosion such as siltation, steps will be taken to prevent further loss of soil and repair any conditions that may cause the basin to not operate effectively. Possible corrective steps include erosion control blankets, riprap, sodding, or reduced flow through the area. Design engineers will be consulted to address erosion problems if the solution is not evident.

FENCE DAMAGE

Timely repair of fences will be done to maintain the security of the site and the safety of residents.

INVASIVE VEGETATION

If necessary, elimination of trees and woody vegetation will be required. Woody vegetation will be removed from embankments.

ANIMAL BURROWS

Animal burrows will be filled and compacted. Further steps may be needed to physically remove the animals if the problem persists. Vector control

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specialists will be consulted regarding possible solutions. This consulting is necessary as the threat of rabies in some areas may necessitate the animals being destroyed rather than relocated.

EQUIPMENT DAMAGE

General corrective maintenance will be done to fix any damage done to the basin or related components. If corrective maintenance is being done to one component, other components will be inspected to see if maintenance is needed.

4. PROPOSED METHOD OF DISPOSING OF SEDIMENT AND POLLUTANTS

Removed sediment materials are not considered hazardous waste and can be disposed of as landscaping material. If it is determined that hazardous waste has been deposited into the basin, the suspected waste will be analyzed to determine proper disposal options.

5. COST ESTIMATE

Based on Appendix H of the County of San Diego's SUSMP, the bio-retention basin will cost approximately $5,000 a year to maintain. A private maintenance company will be hired to maintain them.

6. PROPOSED MECHANISM TO ASSURE MAINTENANCE FUNDING

The bioretention basins are to fall under the 1st category BMP Maintenance Plans per the County of San Diego SUSMP. A maintenance notification will be required.

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Inspected By: _____ Inspection Date: _____

Bio-Retention Basin Location: _____

MAINTENANCE ACTIVITY CHECKLIST

☐ Has trash and debris been removed from the detention basin?

☐ Has the outlet been inspected and debris and sediment removed from it?

☐ Is the sediment 2" deep? If so, have the accumulated materials been removed?

☐ Is Vegetation in the basin taller than 18 inches? If so, was it trimmed and mowed?

☐ Were the banks of the basin inspected for vegetative stabilization?

☐ Do the banks need replanting?

☐ Are there signs of severe erosion in the form of ruts or sediment deposits?

☐ Have the banks been inspected for structural integrity?

☐ Have the fences been inspected?

☐ Is there graffiti? Has it been removed?

☐ Has the grass been trimmed around fences, the basin, outlet structures, and sampling structures?

☐ Have weeds been removed?

☐ Have alluvial deposits created zones of ponded water? If so, were the sediments manually raked to eliminate the ponding zones?

☐ Have all the valves, fence gates, locks, and access hatches been inspected?

☐ Are there any trees or woody vegetation on the embankments? Have they been removed?

☐ Are there any animal burrows? Were they filled and compacted?

☐ Does the bio-retention basin drain completely within 3-4 hours of the storm event? If not was the soil/filter medium replaced or amended to allow the basin to drain within 3-4 hours?

Items Repaired or Replaced:

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MAINTENANCE PLAN FOR EXTENDED DETENTION BASIN

1. INSPECTION FREQUENCY

Inspections of the extended detention basins (EDBs) will occur at a minimum of once a month. Inspections will also occur before and after large storm events or on a weekly basis during periods of wet weather. The rainy season within the jurisdiction of the San Diego Regional Water Quality Control Board is October 1 – April 30. Refer to Attachment D for extended detention basin locations.

2. PREVENTATIVE ACTIONS

The following is a list of actions that will help prevent problems from occurring. They should be done on a routine basis throughout the duration of the project.

VEGETATION CONTROL

Vegetation in the basin should be trimmed and mowed to keep a maximum height of 18 inches. All vegetation clippings should be removed from the basin when trimming and mowing is conducted. Trimming and mowing prevents marsh vegetation from overtaking the basin and creating faunal habitats. It also prevents areas of water stagnation which can create a vector and health problem.

BASIN CLEANING

Trash and debris should be removed from the basin. Special attention should be given to the inlet and outlet structures. A build up of trash and debris in these areas can decrease the efficiency of the basin or make it inoperable during storms.

VECTOR CONTROL

Sediments deposited at the inlet structures should be managed to prevent areas of ponding and possible vector problems. Sediment grading can be accomplished by manually raking the deposits.

REMOVAL OF SEDIMENT ACCUMULATION

Sediments that settle in the basin should be removed when the accumulation grows to a depth of 18 inches or 10% of the basin volume, whichever is less.

EQUIPMENT INSPECTION

All physical components of the basin should be regularly inspected for operability. This includes all valves, fence gates, locks, and access hatches.

GENERAL CLEANUP

Graffiti will be removed in a timely manner to improve the appearance of the basin. Weeds will be removed around fences and grass trimmed. All landscape clippings and cleaning solvents used to remove graffiti should be properly removed from the basin after cleanup.

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3. MAINTENANCE INDICATORS AND CORRECTIVE ACTIONS

The following is a list of indicators that would trigger immediate corrective actions to be taken. Corrective action should be taken within 10 days to ensure that damage does not occur from the extended detension basin not operating efficiently.

BLOCKAGE OF INLETS/OUTLETS

Any blockages from sediment, debris, or vegetation that keep the basin from operating effectively will be removed immediately and properly disposed of. The basin should be able to completely drain within 72 hours after a storm.

STRUCTURAL DAMAGE

If any damage to the structural components of the basin is found, repairs will be made promptly. Designers and contractors will conduct repairs where structural damage has occurred.

EMBANKMENT DAMAGE

Any damage to the embankments and slopes will be repaired quickly so that no erosion will occur.

EROSION DAMAGE

If there is damage due to erosion such as siltation, steps will be taken to prevent further loss of soil and repair any conditions that may cause the basin to not operate effectively. Possible corrective steps include erosion control blankets, riprap, sodding, or reduced flow through the area. Design engineers will be consulted to address erosion problems if the solution is not evident.

FENCE DAMAGE

Timely repair of fences will be done to maintain the security of the site and the safety of residents.

INVASIVE VEGETATION

If necessary, elimination of trees and woody vegetation will be required. Woody vegetation will be removed from embankments.

ANIMAL BURROWS

Animal burrows will be filled and compacted. Further steps may be needed to physically remove the animals if the problem persists. Vector control specialists will be consulted regarding possible solutions. This consulting is necessary as the threat of rabies in some areas may necessitate the animals being destroyed rather than relocated.

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EQUIPMENT DAMAGE

General corrective maintenance will be done to fix any damage done to the basin or related components. If corrective maintenance is being done to one component, other components will be inspected to see if maintenance is needed.

4. PROPOSED METHOD OF DISPOSING OF SEDIMENT AND POLLUTANTS

Removed sediment materials are not considered hazardous waste and can be disposed of as landscaping material. If it is determined that hazardous waste has been deposited into the basin, the suspected waste will be analyzed to determine proper disposal options.

5. COST ESTIMATE

Based on Appendix H of the County of San Diego's SUSMP, each extended detention basin costs approximately $4330 a year to maintain. A private maintenance company will be hired to maintain them.

6. PROPOSED MECHANISM TO ASSURE MAINTENANCE FUNDING

The extended detention basins are to fall under the 2nd category BMP Maintenance Plans per the County of San Diego SUSMP. A recorded maintenance agreement and access easement will be required.

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Inspected By: _____ Inspection Date: _____

Extended Detention Basin Location: _____

MAINTENANCE ACTIVITY CHECKLIST

- ☐ Has trash and debris been removed from the detention basin?
- ☐ Has the outlet riser been inspected and debris and sediment removed from it?
- ☐ Is the sediment 18" deep or volume decreased by 10%? If so, has the accumulated materials been removed?
- ☐ Is Vegetation in the basin taller than 18 inches? If so, was it trimmed and mowed?
- ☐ Were the banks of the basin inspected for vegetative stabilization?
- ☐ Do the banks need replanting?
- ☐ Are there signs of severe erosion in the form of ruts or sediment deposits?
- ☐ Have the banks been inspected for structural integrity?
- ☐ Have the fences been inspected?
- ☐ Is there graffiti? Has it been removed?
- ☐ Has the grass been trimmed around fences, the basin, outlet structures, and sampling structures?
- ☐ Have weeds been removed?
- ☐ Have alluvial deposits created zones of ponded water? If so, were the sediments manually raked to eliminate the ponding zones?
- ☐ Have all the valves, fence gates, locks, and access hatches been inspected?
- ☐ Are there any trees or woody vegetation on the embankments? Have they been removed?
- ☐ Are there any animal burrows? Were they filled and compacted?

Items Repaired or Replaced:

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MAINTENANCE PLAN FOR TRASH RACKS

1. INSPECTION FREQUENCY

Inspections and cleanings of the Trash Racks will occur at a minimum of three times per year. Inspections will also occur before and after the rainy season. The rainy season within the jurisdiction of the San Diego Regional Water Quality Control Board is October 1 – April 30. Refer to Attachment D for extended detention basin locations.

2. PREVENTATIVE ACTIONS

The following is a list of actions that will help prevent problems from occurring.

EQUIPMENT INSPECTION

All physical components of the trash rack should be regularly inspected for operability.

GENERAL CLEANUP

All trash and sediment shall be removed during routine cleanings.

3. MAINTENANCE INDICATORS AND CORRECTIVE ACTIONS

The following is a list of indicators that would trigger immediate corrective actions to be taken. Corrective action should be taken within 10 days.

BLOCKAGE OF INLETS/OUTLETS

Any blockages from sediment, debris, or vegetation that keep the basin from operating effectively will be removed immediately and properly disposed of.

TIMING OF MAINTENANCE

Maintenance activities shall follow the manufacturer recommended 3:3:1 plan. Tri-yearly inspections and cleanings are designed to monitor the filters to ensure proper function of the units. Once per year, prior to the rainy season, the filter medium (boom) should be replaced. If the inspections find that the filter medium is becoming clogged or is not functioning properly, the frequency of cleaning and replacement of the filters should increase.

MAINTENANCE PROCEDURE

The inlet manhole cover(s) and or grate(s) shall be removed and placed to one side. The insert will be cleaned in accordance with the general specifications for maintenance of those devices. Any floatable materials will be removed and disposed of in accordance with local regulations. The standing water shall be checked for clarity, oils and hydrocarbons, and the depth of the collected silt and sediment will be measured. The filter media will be replaced once per year. If sediment level exceeds manufacturer's recommended level for effective operation, an industrial vacuum shall be used to carefully remove all sediment and debris.

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4. PROPOSED METHOD OF DISPOSING OF SEDIMENT AND POLLUTANTS

Removed sediment materials are not considered hazardous waste and can be disposed of as landscaping material. If it is determined that hazardous waste has been deposited into the basin, the suspected waste will be analyzed to determine proper disposal options.

Because the filter media (boom) may likely contain petroleum hydrocarbons, heavy metals and other harmful pollutants, the materials may be treated as an EPA class 2 Waste and properly disposed of.

5. COST ESTIMATE

The BMPs will cost approximately $300 a year each to maintain. A private maintenance company will be hired to maintain them.

6. PROPOSED MECHANISM TO ASSURE MAINTENANCE FUNDING

The trash racks are to fall under the 1st category BMP Maintenance Plans per the County of San Diego SUSMP. A maintenance notification will be required.

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Inspected By: _____ Inspection Date: _____

Bio-Retention Basin Location: _____

MAINTENANCE ACTIVITY CHECKLIST

☐ Has trash and debris been removed from the rack?

☐ Has the boom been replaced?

☐ Has the outlet been inspected and debris and sediment removed from it?

☐ Are the physical components of the trash rack functioning properly?

Items Repaired or Replaced:

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ATTACHMENT G

Treatment Control BMP Certification for DPW Permitted Land Development Projects

After TCBMP construction, complete a TCBMP Certification form to verify with County staff that all constructed TCBMPs on the record plans match the approved TCBMPs in the most current SWMP. TCBMP Certification must be completed and verified for permit closure.

ATTACHMENT H

HMP Study

(Please see the Preliminary Hydromodification Management Study for Valiano, prepared by Fuscoe Engineering)

ATTACHMENT I

Geomorphic Assessment

(Not Applicable)

ATTACHMENT J

HMP Exemption Documentation

(Not Applicable)

ATTACHMENT K

Addendum