PALOMINO RIDGE

COUNTY OF SAN DIEGO
TRACT 3639

COUNTY OF SAN DIEGO
TRACT 3639

EX. BLDG.

RANCHO EL CAJON TR 8

VISTA DRIVE

JENNINGS

PRIVATE STREET 'A'

PRIVATE STREET 'B'

DMA "A"

BMP (A)
4,531 SF (R)
4,650 SF (P)

BLOSSOM VALLEY ROAD

EX. 30" SD

EX. 18" SD

EXISTING EARTHEN CHANNEL TO BE FILLED

EX. 44"X72" SD

EXISTING HEADWALL

LAKE JENNINGS PARK ROAD

EX. INLET

RANCHO DEL VILLA

OLD HIGHWAY 8

LEGEND:

FLOW DIRECTION	
DMA BOUNDARY	
BMP AREA DESIGNATION	BMP (A)
REQUIRED AREA FOR LID	4,531 SF (R)
PROVIDED AREA FOR LID	4,549 SF (P)
BMP AREA LOCATION	
INTERIOR AREA DRAINING INTO BMP	
SELF TREATING AREA	

40 20 0 40 80 120

SCALE: 1" = 40'

REVISIONS			
NO.	DESCRIPTION	DATE	APP'D

R·E·C Consultants, Inc.

Civil Engineering · Environmental
Land Surveying

2442 Second Avenue
San Diego, CA 92101
(619)232-9200 (619)232-9210 Fax

DATE: 03-18-2014
SCALE: –
DRAWN: –
CHECKED: –

SHEET TITLE: BMP/DMA EXHIBIT

PROJECT: LAKE JENNINGS PARK ROAD
LAKESIDE, CA

SHEET 1 OF 1 SHEETS

SAVE DATE 6/12/2014 -- PLOT DATE 6/23/2014 -- FILE NAME P:\Acad\681-LAKE JENNINGS\Civil\Reports\SWMP\DMA Exhibit.dwg

ATTACHMENT D

Sizing Design Calculations and TC-BMP/LID Design Details

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

From Chapter 4 County SUSMP:

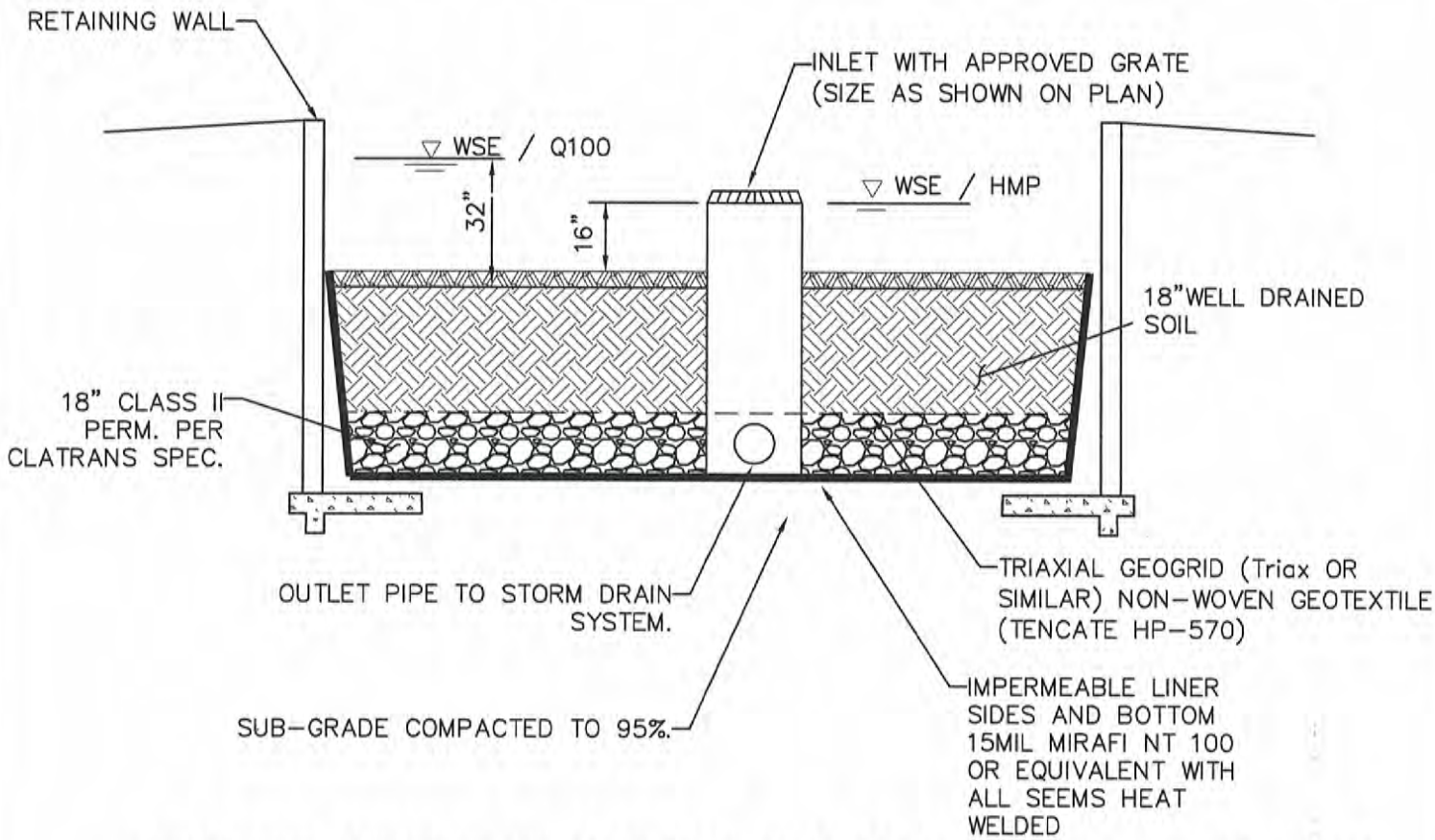
DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area X Runoff factor		IMP			
A	100842	Impervious[1]	1	100842	IMP Sizing factor		Minimum Area	Proposed Area	
A	124363	pervious	0.1	12436.3					
Total				**113278**	**0.04**		4531	**4650**	**IMP Area**

(1) Impervious area for total site was determined using an average of 45% impervious area of total site area (impervious surfaces i.e. future building, roads and sidewalks.)

BMP		DIMENSIONS						
	Amended Soil (in)	Gravel (in)	Lower Orif. Dia (in)	Total Surface Depth [5] (in)	Riser Diameter (in)	Riser Height (in)	WQ 85TH Percentile Area, (ft2)	WQ Volume (ft3)
1	18	18	1.75	36	10	16	4,650	9,627

85th percentile required area corresponds to approximately 4% of the impervious area plus 0.4% of the pervious area draining to the IMP (simplified SUSMP equation)

See attachment H – Preliminary Hydromodification Analysis including bioretention sizing and details.



BIORETENTION ENGINEERED SOIL LAYER SHALL BE 85-88% SAND, 8-12% FINES (SILT & CLAY) 3-5% ORGANIC MATTER. PERCOLATION RATE 5-10in/hr MINIMUM SUSTAINED

BIORETENTION DETAIL FOR IMP

SECTION A-A

NTS

R·E·C Consultants, Inc.
Civil Engineering Environmental
Land Surveying
2442 Second Avenue
San Diego, CA 92101
(619)232-9200 (619)232-9210 Fax

ATTACHMENT E

Geotechnical Certification Sheet

The design of stormwater treatment and other control measures proposed in this plan requiring specific soil infiltration characteristics and/or geological conditions has been reviewed and approved by a registered Civil Engineer, Geotechnical Engineer, or Geologist in the State of California.

_____ _____

Name and registration # Date

ATTACHMENT F

Maintenance Plan

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

I. Inspection maintenance Log and Self-verification Forms

The proposed Bioretention facility shall be inspected and maintained according to the County of San Diego SUSMP LID Fact sheets.

See Attachment 1

II. Updates, Revisions and Errata

This is a living document and should be updated and revised as needed during the life of the project.

III. Introduction

The project consist of 5.17 Acres of Single Family Units, the following LID measure will be incorporated into the design of the project.

1. Onsite Bioretention facility will treat the runoff for water quality and flow control for the Single Family residential pads as-well as for the proposed private roads.

IV. Responsibility for Maintenance

Owner:

TOR Investments, L.P.
1000 Pioneer Way
El Cajon, CA 92020
Telephone: (619) 440-7424

Operation and Maintenance Agreement

See Attachment 2 (TBD if needed)

Maintenance Funding

The proposed detention basin (category 2 BMP) requires the creation and execution of an agreement by the owner(s) to maintain the facility as well as an access easement and annual inspection fee determined by the County of San Diego.

BMP maintenance Agreement with Easement and Covenant: An agreement will be entered into with the County of San Diego, which will function three ways.

a) It will commit the land to being used only for purposes of the BMP;

b) It will include an agreement by the landowner, to maintain the BMP in accordance with the maintenance plan (this obligation would be passed on to future purchasers or successors of the landowner, as a covenant); and

c) It will include an easement giving the County the right to enter onto the land (and any necessary adjacent land needed for access) to maintain the BMP.

Funding:

Developer would provide the County with security to substantiate the maintenance agreement; security would remain in place for an interim period of five years. The amount of the security would equal the estimated cost of 2 years of maintenance activities. The security can be a Cash Deposit, Letter of Credit or other from acceptable to the County. If at any time, owners fail to maintain the BMP and the County must perform any of the maintenance activities, then owners shall pay all of County's cost incurred in performing the maintenance as defined in the maintenance agreement.

Training Program

The current owner and subsequent ownership individual and/or groups must read the project SWMP to get informed on the operation and maintenance of the different post construction BMPs. The report will list possible operational problems that the owner should rectify as soon as possible.

I. Summary of Drainage Areas and Stormwater Facilities

See BMP Site Map Attachment C and attachment 3 for depictions of pervious and impervious areas and drainage patterns.

See Attachment 3

Treatment and Flow-Control Facilities

The project proposes the use of a linear bioretention facility.

Bioretention is a terrestrial-based, water quality and water quantity control practice using the chemical, biological, and physical properties of plants, microbes, and soils for removal of pollutants from stormwater runoff. Some of the processes that may take place in a bioretention facility include sedimentation, adsorption, filtration, volatilization, ion exchange, decomposition, phytoremediation, bioremediation, and storage capacity. Bioretention can also be designed to mimic predevelopment hydrology.

See Attachment 4

II. Facility Documentation

Included Copy of Site Plan showing location of TC BMPs

See Attachment 4

III. Maintenance Schedule

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

See Attachments 1, 3 & 4

Important Note- 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.

- 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.

Attachment 1

BIORETENTION CELLS

Most of the newly created impervious surfaces will drain to the proposed *Bioretention cells*. The proposed bioretention facilities will detain the runoff in a surface reservoir, filter it through plant roots and a biologically active soil mix and through a gravel layer and then partially infiltrate it into the ground. The site soils are not that permeable therefore an under drain will convey treated runoff to the proposed storm drain.

Operation and Maintenance (Bioretention Cell)

The proper functioning of the bioretention cells depends on their long-term maintenance. While maintenance is relatively minimal and similar to regular landscaped areas, extra care must be taken to maintain the area's pollutant removal and infiltration capacity. This is accomplished by maintaining soil structure, caring for soil invertebrates, mulching as needed, and periodic removal of debris.

General Maintenance

- *Trash and Debris*. During each inspection and maintenance visit to the site, debris and trash removal will be conducted to reduce the potential for outlet pipes and other components from becoming clogged and inoperable during storm events.

- *Sediment Removal*. Sediment accumulation, as part of the operation and maintenance program at a bioretention cell will be monitored once a month during the dry season and after every large storm (0.50 inch). Specifically, if sediment reaches a level at or near plant height, or could interfere with flow or operation, the sediment will be removed. If accumulation of debris or sediment is determined to be the cause of decline in design performance, prompt action (i.e., within ten working days) will be taken to restore the self-retaining area to design performance standards. Actions will include using additional fill and vegetation and/or removing accumulated sediment to correct channeling or ponding. Characterization and Appropriate disposal of sediment will comply with applicable local, county, state, or federal requirements.

- *Removal of Standing Water*. Standing water must be removed if it contributes to the development of aquatic plant communities or mosquito breeding areas.

- *Damage to structural components such as weirs, inlet, or outlet structures. Obstructed inlet or outlet structure. Damage to check dam.* Repair or replace all damaged structural components as needed. Repair side slopes as needed due to erosion. Examine cell height to ensure a minimum of 9" at all times.

Inspection Frequency and Requirements

Frequency

- Prior to rainy season (Oct. 1st) Annually.
- Once a month at a minimum.
- 72 hours (for drawdown time) after every large storm (after every storm monitored or those storms with more than 0.50 inch of precipitation.)
- On a weekly basis during extended periods of wet weather.

Requirements (Visual Observation)

- Inspect the bioretention area for proper drawdown or evidence of clogging
- Inspect for debris accumulation.
- Inspect for accumulated sediment around yard drains.
- Inspect low flow outlet orifice for clogging.

Maintenance Frequency and Requirements

Frequency

- Once a month at a minimum during peak growing season (late spring and early fall).

Requirements

- Removal of debris and sediment accumulation.
- Check condition of soil mix and replace as necessary
- Check condition of the outlet pipe and replace if cracked or damaged.
- Remove debris and sediment around and inside the low flow outlet orifice.

STORM DRAIN STENCILING

- In order to discourage deliberate waste dumping, the four proposed grated inlets shall be stenciled and clearly marked with the following sign *"No Dumping! Flows to Ocean"*
- Place the message in a visible area within the exposed concrete face of the catch basin.

General Maintenance

- Legibility of markers or signs should be maintained.
- Remove accumulated debris or sediment around the catch basin to prevent blockage of message.

Inspection/Maintenance Frequency and Requrements

Frequency

- Inspect once a year at a minimum and replace marker if necessary.

Requirements (Visual Observation)

- Inspect for accumulated sediment or debris around catch basins.
- Inspect for discoloring of message.

PRIVATE TREATMENT CONTROL BMP
OPERATION AND MAINTENANCE VERIFICATION FORM
BIORETENTION FACILITIES, VEGETATED SWALES & HIGHER RATE BIOFILTERS

1. Transcribe the following information from your notification letter and make corrections as necessary:

Permit No.: _____

BMP Location: _____

Responsible Party: _____

Phone Number: ( ) _____ **Email:** _____

Responsible Party Address: _____

Number Street Name & Suffix City/Zip

☐ *Check here for Address or phone number change*

2. Using the Table below, please describe the inspections and maintenance activities that have been conducted during the fiscal year (July 1 – June 30), and date(s) maintenance was performed. Under "Results of Inspection," indicate whether maintenance was required based on each inspection, and if so, what type of maintenance. If maintenance was required, provide the date maintenance was conducted and a description of the maintenance. ***REFER TO THE BACK OF THIS SHEET FOR MORE INFORMATION DESCRIBING TYPICAL MAINTENANCE INDICATORS AND MAINTENANCE ACTIVITIES.*** *If no maintenance was required based on the inspection results, state "no maintenance required."*

What To Look For?	Date Inspected	Results of Inspection: Work needed? (Yes/No)	Date Maintenance Completed and Description of Maintenance Conducted
Accumulation of Sediment, Litter, Grease			
Standing Water Erosion Overgrown Vegetation			
Poor Vegetation Establishment			
Structural Damage			

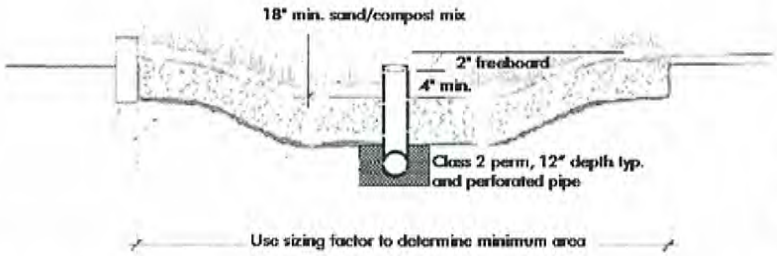
3. Attach copies of available supporting documents (photographs, copies of maintenance contracts, and/or maintenance records).

4. Sign the bottom of the form and return to:

County of San Diego Watershed Protection Program
Treatment Control BMP Tracking
5201 Ruffin Road, Suite P, MS 0326
San Diego, CA 92123 ***OR***
Email: Watersheds@sdcounty.ca.gov

_____

Signature of Responsible Party **Print Name** **Date**



Bioretention facility configured for treatment-only requirements. Bioretention facilities can rectangular, linear, or nearly any shape.

Bioretention detains runoff in a surface reservoir, filters it through plant roots and a biologically active soil mix, and then infiltrates it into the ground. Where native soils are less permeable, an underdrain conveys treated runoff to storm drain or surface drainage.

Bioretention facilities can be configured in nearly any shape. When configured as linear **swales**, they can convey high flows while percolating and treating lower flows.

Bioretention facilities can be configured as in-ground or above-ground planter boxes, with the bottom open to allow infiltration to native soils underneath. If infiltration cannot be allowed, use the sizing factors and criteria for the Flow-Through Planter.

► CRITERIA

For development projects subject only to runoff treatment requirements, the following criteria apply:

Parameter	Criterion
Soil mix depth	18 inches minimum
Soil mix minimum percolation rate	5 inches per hour minimum sustained (10 inches per hour initial rate recommended)
Soil mix surface area	0.04 times tributary impervious area (or equivalent)

Best Uses

- Commercial areas
- Residential subdivisions
- Industrial developments
- Roadways
- Parking lots
- Fit in setbacks, medians, and other landscaped areas

Advantages

- Can be any shape
- Low maintenance
- Can be landscaped

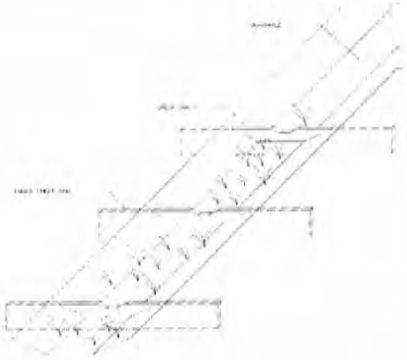
Limitations

- Require 4% of tributary impervious square footage
- Typically requires 3-4 feet of head
- Irrigation typically required

Parameter	Criterion
Surface reservoir depth	6 inches minimum; may be sloped to 4 inches where adjoining walkways.
Underdrain	Required in Group "C" and "D" soils. Perforated pipe embedded in gravel ("Class 2 permeable" recommended), connected to storm drain or other accepted discharge point.

► DETAILS

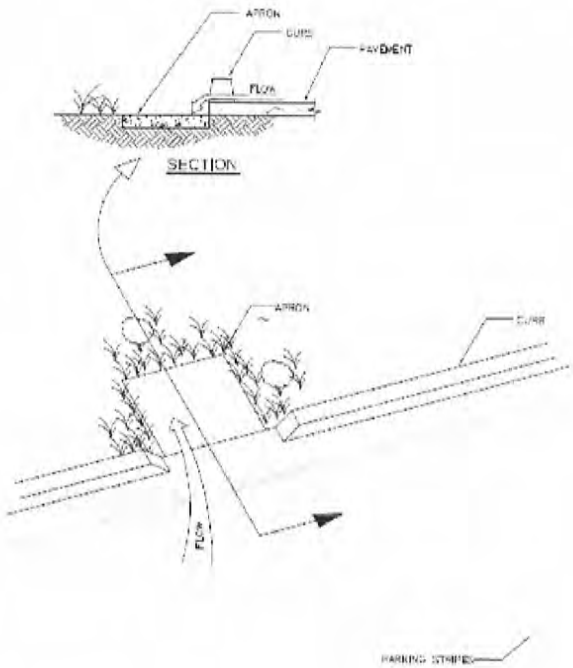
Plan. On the surface, a bioretention facility should be one level, shallow basin—or a series of basins. As runoff enters each basin, it should flood and fill throughout before runoff overflows to the outlet or to the next downstream basin. This will help prevent movement of surface mulch and soil mix.



Use check dams for linear bioretention facilities (swales) on a slope.

In a linear swale, check dams should be placed so that the lip of each dam is at least as high as the toe of the next upstream dam. A similar principle applies to bioretention facilities built as terraced roadway shoulders.

Inlets. Paved areas draining to the facility should be graded, and inlets should be placed, so that runoff remains as sheet flow or as dispersed as possible. Curb cuts should be wide (12" is recommended) to avoid clogging with leaves or debris. Allow for a minimum reveal of 4"-6" between the inlet and soil mix elevations to ensure turf or mulch buildup does not block the inlet. In addition, place an apron of stone or concrete, a foot square or larger, inside each inlet to prevent vegetation from growing up and blocking the inlet.



Where runoff is collected in pipes or gutters and conveyed to the facility, protect the landscaping from high-velocity flows with energy-dissipating rocks. In larger installations, provide cobble-lined channels to better distribute flows throughout the facility.

Upturned pipe outlets can be used to dissipate energy when runoff is piped from roofs and upgradient paved areas.

Soil mix. The required soil mix is similar to a loamy sand. It must maintain a minimum percolation rate of 5" per hour throughout the life of the facility, and it must be suitable for maintaining plant life. Typically, on-site soils will not be suitable due to clay content.

Storage and drainage layer. "Class 2 permeable," Caltrans specification 68-1.025, is recommended. Open-graded crushed rock, washed, may be used, but requires 4"-6" washed pea gravel be substituted at the top of the crushed rock gravel layers. **Do not use filter fabric** to separate the soil mix from the gravel drainage layer or the gravel drainage layer from the native soil.

Underdrains. No underdrain is required where native soils beneath the facility are Hydrologic Soil Group A or B. For treatment-only facilities where native soils are Group C or D, a

perforated pipe must be bedded in the gravel layer and must terminate at a storm drain or other approved discharge point.

Outlets. In treatment-only facilities, outlets must be set high enough to ensure the surface reservoir fills and the entire surface area of soil mix is flooded before the outlet elevation is reached. In swales, this can be achieved with appropriately placed check dams.

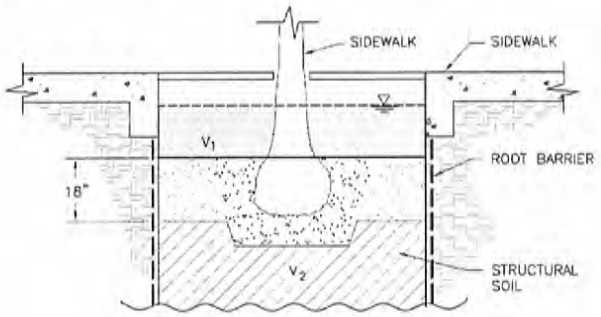
The outlet should be designed to exclude floating mulch and debris.

Vaults, utility boxes and light standards. It is best to locate utilities outside the bioretention facility—in adjacent walkways or in a separate area set aside for this purpose. If utility structures are to be placed within the facility, the locations should be anticipated and adjustments made to ensure the minimum bioretention surface area and volumes are achieved. Leaving the final locations to each individual utility can produce a haphazard, unaesthetic appearance and make the bioretention facility more difficult to maintain.

Emergency overflow. The site grading plan should anticipate extreme events and potential clogging of the overflow and route emergency overflows safely.

Trees. Bioretention areas can accommodate small or large trees. There is no need to subtract the area taken up by roots from the effective area of the facility. Extensive tree roots maintain soil permeability and help retain runoff. Normal maintenance of a bioretention facility should not affect tree lifespan.

The bioretention facility can be integrated with a tree pit of the required depth and filled with structural soil. If a root barrier is used, it can be located to allow tree roots to spread throughout the bioretention facility while protecting adjacent pavement. Locations and planting elevations should be selected to avoid blocking the facility's inlets and outlets.



Bioretention facility configured as a tree well.
The root barrier is optional.

► APPLICATIONS

Multi-purpose landscaped areas. Bioretention facilities are easily adapted to serve multiple purposes. The loamy sand soil mix will support turf or a plant palette suitable to the location and a well-drained soil.

Example landscape treatments:

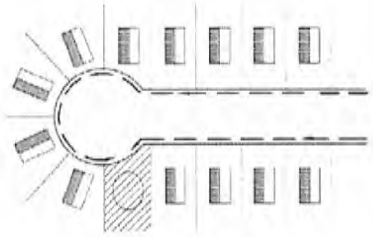
- Lawn with sloped transition to adjacent landscaping.
- Swale in setback area
- Swale in parking median
- Lawn with hardscaped edge treatment
- Decorative garden with formal or informal plantings
- Traffic island with low-maintenance landscaping
- Raised planter with seating
- Bioretention on a terraced slope

Bioretention facility configured as a recessed decorative lawn with hardscaped edge.

Bioretention facility configured and planted as a lawn/ play area.

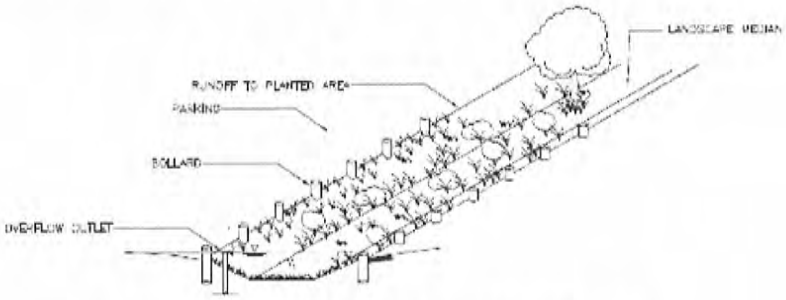
Residential subdivisions. Some subdivisions are designed to drain roofs and driveways to the streets (in the conventional manner) and then drain the streets to bioretention areas, with one bioretention area for each 1 to 6 lots, depending on subdivision layout and topography.

If allowed by the local jurisdiction, bioretention areas can be placed on a separate, dedicated parcel with joint ownership.



Bioretention facility receiving drainage from individual lots and the street in a residential subdivision.

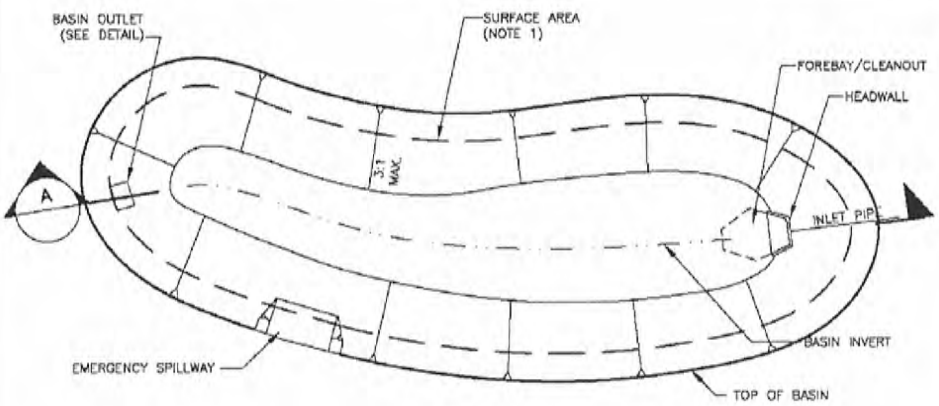
Sloped sites. Bioretention facilities must be constructed as a basin, or series of basins, with the circumference of each basin set level. It may be necessary to add curbs or low retaining walls.



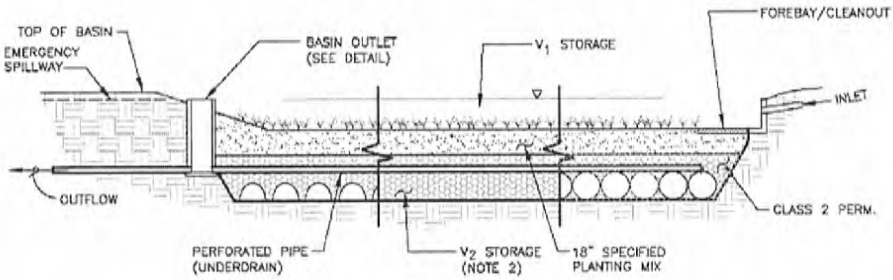
Bioretention facility configured as a parking median.
Note use of bollards in place of curbs, eliminating the need for curb cuts.

Design Checklist for Bioretention

- ☐ Volume or depth of surface reservoir meets or exceeds minimum.
- ☐ 18" depth "loamy sand" soil mix with minimum long-term percolation rate of 5"/hour.
- ☐ Area of soil mix meets or exceeds minimum.
- ☐ Perforated pipe underdrain bedded in "Class 2 perm" with connection and sufficient head to storm drain or discharge point (except in "A" or "B" soils).
- ☐ No filter fabric.
- ☐ Underdrain has a clean-out port consisting of a vertical, rigid, non-perforated PVC pipe, with a minimum diameter of 6 inches and a watertight cap.
- ☐ Location and footprint of facility are shown on site plan and landscaping plan.
- ☐ Bioretention area is designed as a basin (level edges) or a series of basins, and grading plan is consistent with these elevations. If facility is designed as a swale, check dams are set so the lip of each dam is at least as high as the toe of the next upstream dam.
- ☐ Inlets are 12" wide, have 4"-6" reveal and an apron or other provision to prevent blockage when vegetation grows in, and energy dissipation as needed.
- ☐ Overflow connected to a downstream storm drain or approved discharge point.
- ☐ Emergency spillage will be safely conveyed overland.
- ☐ Plantings are suitable to the climate and a well-drained soil.
- ☐ Irrigation system with connection to water supply.
- ☐ Vaults, utility boxes, and light standards are located outside the minimum soil mix surface area.
- ☐ When excavating, avoid smearing of the soils on bottom and side slopes. Minimize compaction of native soils and "rip" soils if clayey and/or compacted. Protect the area from construction site runoff.



PLAN VIEW
NOT TO SCALE

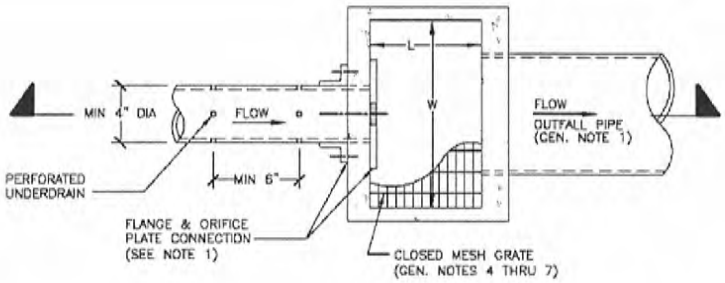


A SECTION
NOT TO SCALE

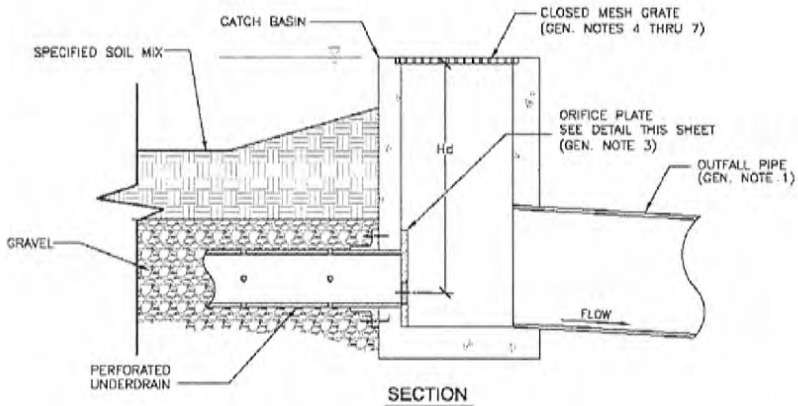
NOTE

1. SURFACE AREA LIMIT DETERMINED BY EXTENT OF SPECIFIED PLANTING MIX, WHICH IS GOVERNED BY THE OUTLET SPILL ELEVATION. FOR REQUIRED SURFACE AREA REFER TO THE FACTORS AND EQUATIONS IN THE STORMWATER C.3 GUIDEBOOK.
2. V_2 STORAGE ACCOMPLISHED WITH INFILTRATION ARCHES, PERFORATED PIPES, CLASS 2 PERM OR OTHER AT THE DESIGNERS DISCRETION.

Bioretention Facility

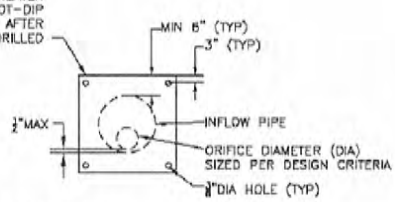


PLAN
N.T.S.



SECTION
N.T.S.

ORIFICE PLATE: MIN SQUARE DIMENSIONS 1.0 FT GREATER THAN PIPE DIA. HOT-DIP GALVANIZED PLATE AFTER HOLES HAVE BEEN DRILLED



FLOW CONTROL ORIFICE PLATE

NOTE

1. ORIFICE PLATE & FLANGE CONNECTION TO CONCRETE SHALL BE FITTED WITH 30 DUROMETER NEOPRENE RING.

Bioretention Facility Outlet Detail - A

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Attachment 2

Table 5.1 Determination of Appropriate Maintenance Mechanism(s)

Increased risk, complexity, cost or other maintenance factors				
	(Private Responsibility)		(Public Responsibility)	
	First Category	Second Category	Third Category	Fourth Category
Importance of Maintenance	Minimal maintenance; inherent in BMP or property stewardship. Minimum, annual maintenance verification is required	Need to make sure private owners maintain, and provide County ability to step in & perform maintenance through easement	Warrants County Flood Control to assume responsibility, with funding related to project	County responsibility for maintenance and funding (beyond project)
Typical BMPs	Vegetated Swales; Bioretention; Flow-through Planter; Cistern with Bioretention; Trash Racks; Private Road Drain Inserts.	[First category plus:] Settling Basins; Infiltration Devices; Media Filters; High-rate Biofilters; Hydrodynamic Separator Systems.	[Second category plus:] Settling Basins; Wet Ponds and Constructed Wetlands.	Any County owned and maintained treatment control BMP.
Mechanisms	1. Stormwater Ordinance* requirement [section 67.813(a)&(b)], with code enforcement 2. Nuisance abatement with costs charged back to property owner 3. Condition in ongoing permit such as a Major Use Permit (if project has MUP) 4. Notice to new purchasers [67.813(e)] 5. Subdivision public report "white papers" to include notice of maintenance responsibility		1. Easement dedication to FCD. 2. Inclusion into a watershed specific Community Facility District (CFD) or individual formation of benefit area/CFD 3. County Flood Control maintenance documentation	1. Land owned or dedicated to County or Flood Control District (FCD). 2. FCD / County maintenance documentation
	6. Recorded Maintenance Notification	6. Recorded easement agreement with covenant binding on successors		
Funding Source(s)	None necessary	Security (Cash deposit, Letter of Credit, or other acceptable to County) for interim period. Agreement for security to contain provisions for release or refund, if not used.	Start-up interim: Developer fee covering 24 months of costs Permanent: FCD Tax Assessment per FCD Act Sec 105-17.5	Varies: gas tax for BMP in road ROW, Transnet for CIP projects, Special funding or General funding for others.

* County of San Diego Watershed Protection, Stormwater Management, and Discharge Control Ordinance (S.D.Co.Code Sec. 67.801 et seq.)

RECORDING REQUESTED BY:

WHEN RECORDED MAIL TO:

(property owner)

SPACE ABOVE THIS LINE FOR RECORDER'S USE

MAINTENANCE NOTIFICATION AGREEMENT FOR CATEGORY 1 STORMWATER TREATMENT CONTROL BMP's

THIS AGREEMENT is made on the _____ day of _____, 20_____.
_____, the Owner(s) of the hereinafter described real property:
Address_____ Post Office _____ Zip Code _____
Assessor Parcel No.(s) _____

List, identify, locate (plan/drawing number) and describe the TC BMP(s)

_____

_____

Owner(s) of the above property acknowledge the existence of the stormwater Treatment Control Best Management Practice (TC BMP) structure(s) on the said property. Perpetual maintenance of the TC BMP(s) is the requirement of the State NPDES Permit, Order No. R9-2007-0001, Section D.1.d.(6) and the County of San Diego Watershed Protection Ordinance (WPO) Ordinance No. 10096 Section 67.812 through Section 67.814, and County Standard Urban Stormwater Mitigation Plan (SUSMP) Chapter 5. In consideration of the requirement to construct and maintain TC BMP(s), as conditioned by Discretionary Permit, Grading Permit, and/or Building Permit (as may be applicable), I/we hereby covenant and agree that:

1. I/We are the owner(s) of the existing (or to be constructed concurrently) premises located on the above described property.
2. I/We shall take the responsibility for the perpetual maintenance of the TC BMP(s) as listed above in accordance with the maintenance plan and in compliance with County's self inspection reporting and verification for as long as I/we have ownership of said property(ies).
3. I/We shall cooperate with and allow the County staff to come onto said property(ies) and perform inspection duties as prescribed by local and state regulators.
4. I/We shall inform future buyer(s) or successors of said property(ies) of the existence and perpetual maintenance requirement responsibilities for TC BMP(s) as listed above and to ensure that such responsibility shall transfer to the future owner(s).
5. I/We will abide by all of the requirements and standards of Section 67.812 through Section 67.814 of the WPO (or renumbering thereof) as it exists on the date of this Agreement, and which hereby is incorporated herein by reference.

This Agreement shall run with the land. If the subject property is conveyed to any other person, firm, or corporation, the instrument that conveys title or any interest in or to said property, or any portion thereof, shall contain a provision transferring maintenance responsibility for TC BMP(s) to the successive owner according to the terms of this Agreement. Any violation of this Agreement is grounds for the County to impose penalties upon the property owner as prescribed in County Code of Regulatory Ordinances, Title 1, Division 8, Chapter 1 Administrative Citations §§18.101-18.116.

_____ _____
Owner(s) Signature(s)

_____ _____
Print Owner(s) Name(s) and Title

STATE OF CALIFORNIA)
COUNTY OF _____)

On _____ before me, _____Notary Public, personally appeared _____ who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.
I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.
WITNESS my hand and official seal.

Signature _____

Attachment 3

REVISIONS			
NO.	DESCRIPTION	DATE	APP'D

R·E·C Consultants, Inc.
Civil Engineering · Environmental
Land Surveying
2442 Second Avenue
San Diego, CA 92101
(619)232-9200 (619)232-9210 Fax

DATE: 06-24-2014
SCALE: -
DRAWN: -
CHECKED: -

SHEET TITLE: BMP/DMA EXHIBIT

PROJECT: LAKE JENNINGS PARK ROAD
LAKESIDE, CA

SHEET 1 OF 1 SHEETS

Attachment 4

REVISIONS			
NO.	DESCRIPTION	DATE	APP'D

R·E·C Consultants, Inc

Civil Engineering · Environmental
Land Surveying
2442 Second Avenue
San Diego, CA 92101
(619)232-9200 (619)232-9210 Fax

DATE: 06-24-2014
SCALE: -
DRAWN: -
CHECKED: -

SHEET TITLE: BMP/DMA EXHIBIT

PROJECT: LAKE JENNINGS PARK ROAD
LAKESIDE, CA

SHEET 1 OF 1 SHEETS

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 recorded plans match the approved TCBMPs in the most current SWMP. TCBMP Certification must be completed and verified for permit closure.

DEPARTMENT OF PUBLIC WORKS

County of San Diego

Treatment Control BMP Certification for DPW Permitted Land Development Projects

Permit Number (e.g. L-grading) _____ HSU

Watershed_____

Project

Name_____

Location / Address

_____

Maintenance Notification/Agreement No.:

_____

Responsible Party for Construction Phase

Developer's Name:

_____

Address:

_____

City _____ State

_____Zip_____

Email Address:

_____

Phone Number:

_____

Engineer of Work:

_____

Engineer's Phone Number:

_____

Responsible Party for Ongoing Maintenance

Owner's

Name(s)*_____

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.

Treatment Control BMPs (TCBMPs)[1,2] (List all from SWMP)		
Lot Number Or Location	**Description/Type**	**Sheet**

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 Applicant to submit to PDCI:

- Copy of the final accepted SWMP and any accepted addendum.
- Copy of the most current plan showing the Stormwater TCBMP Table, plans/cross-section sheets of the TCBMPs and the location of each verified as-built TCBMP.
- Photograph of each TCBMP.
- Copy of the approved TCBMP maintenance agreement and associated security

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

Please sign your name and seal. [SEAL]

Professional Engineer's Printed Name:

_____

Professional Engineer's Signed Name:

_____

Date: _____

COUNTY - OFFICIAL USE ONLY:

For PDCI:

PDCI Inspector: _____

Date Project has/expects to close: _____

Date Certification received from EOW: _____

By signing below, PDCI Inspector concurs that every noted TCBMP has been installed per plan.

PDCI Inspector's Signature: _____ Date: _____

FOR WPP:

Date Received from PDCI: _____

WPP Submittal Reviewer:_____

WPP Reviewer concurs that the information provided for the following TCBMPs is acceptable to enter into the TCBMP Maintenance verification inventory:

List **acceptable** TCBMPs:

WPP Reviewer's Signature: _____ Date: _____

- ○ Provide a copy of the certification sheet to DPLU.

ATTACHMENT H

Preliminary HMP Study

(Contact County staff to determine if this should be a separate report from the Major SWMP)

TECHNICAL MEMORANDUM:
SUMMARY OF SWMM MODELING FOR HYDROMODIFICATION COMPLIANCE AT THE LAKE JENNINGS PARK ROAD NEW RESIDENTIAL DEVELOPMENT, LAKESIDE, CA

INTRODUCTION

This memorandum summarizes the approach used to model the proposed residential development project site at Lake Jennings Park Road, using the Environmental Protection Agency (EPA) Storm Water Management Model 5.0 (SWMM). SWMM models were prepared for the pre and post-developed conditions at the site in order to determine if the proposed LID bioretention facilities have sufficient volume to meet the current Hydromodification Management Plan (HMP) requirements from the San Diego Regional Water Quality Control Board (SDRWQCB).

SWMM MODEL DEVELOPMENT

The residential project proposes 18 units on the currently vacant property. One (1) bioretention cell will provide the volume necessary to satisfy water quality; hydromodification and flood control conditions, although only hydromodification compliance is analyzed in this report. Two (2) SWMM models were prepared for this study: the first for the pre-development and the second for the post-developed conditions. The project site drains to one (1) Point of Compliance (POC) located to the south end of the project site (see Figure 1 for pre-development conditions and Figure 2 for post-development conditions). A more detailed explanation of the subareas and points of compliance are added in the HMP modeling section.

Regarding SWMM, it was used since we have found it to be more comparable to San Diego area watersheds than the alternative San Diego Hydrology Model (SDHM). For both SWMM models, flow duration curves were prepared to determine if the proposed HMP facilities are sufficient to meet the current HMP requirements.

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

Evaporation for the site was modeled using average monthly values from the County hourly dataset. The site was modeled as with Type C hydrologic soil as this is the existing soil determined from the NRCS Soil Survey. Other SWMM inputs for the subareas are discussed in the appendices to this document, where the selection of the parameters is explained in detail.

This study recommends the use of the Oceanside Station. (County Wide Approved SUSMP HMP Tables and the Brown & Caldwell Calculator use this station). Oceanside is one of the best station to use for continuous simulation modeling in San Diego County has it displays a very low percentage of aggregation, disaggregation, high precision and has negligible imported data problems (it is the best rainfall station after San Diego Lindbergh).

HMP MODELING

EXISTING CONDITIONS

There is one (1) sub-drainage areas (Drainage Management Areas, DMAs) in pre-development conditions and one (1) POC. (See location of POC in Figure 1).

DEVELOPED CONDITIONS

Storm water runoff from the proposed project site is routed to a single POC located to the south of the project site near Lake Jennings Park Road (See location of POC in Figure 2). Runoff from the developed project site is drained to a single onsite receiving bioretention LID BMP. Once flows are routed via the proposed LID BMP, all flows are then conveyed via storm drain to the aforementioned POC. A very small portion of the project site consisting of undisturbed land drains directly to the adjacent right of way.

All offsite upstream flows are by passed around via a proposed 24" RCP and included for the existing and proposed SWMM models.

It is assumed all storm water quality requirements for the project will be met by the bioretention LID BMPs (the minimum required treatment footprint area is met by the proposed BMP design of DMA-1 or as the volume provided for water quality treatment is larger than the runoff volume generated by the 85th percentile storm event). However, detailed water quality requirements are not discussed within this technical memo. For further information in regards to storm water quality requirements for the project, please refer to the site specific Storm Water Management Plan (SWMP).

TABLE 1 – SUMMARY OF DEVELOPED CONDITIONS

DMA	Tributary Area, A (Ac) (2)	Impervious Percentage, Ip	Slope	WQ 85th Percentile(1)	
				Area Required (ft^2)	Area Provided (ft^2)
DMA 1	4.33	53.5%	2.0%	4,385	4,550
DMA 2 BYPASS(3)	21.47	18.0%	16.5%	NA	NA

(1): 85th percentile required area corresponds to approximately 4% of the impervious area plus 0.4% of the pervious area draining to the IMP (simplified SUSMP equation)

(2): Impervious percentage may refer to the total DMA area (as in this Table) or to the contributing area excluding the IMP (as in the SWMM model, to avoid double-counting of areas)

(3): Area bypasses IMP includes upstream development.

A single LID bioretention basin is located within the project site and is responsible for handling hydromodification requirements for the project site. In developed conditions, the basin will have a surface depth of 3 feet and a riser spillway structure (see dimensions in Table 2). Flows will then discharge from the basin via a low flow orifice outlet within the gravel layer. The riser structure will act as a spillway such that peak flows can be safely discharged to the receiving storm drain system once the soil of the bioretention is saturated and excess of runoff is occurring.