

Storm Water Management Plan For Priority Projects (Major SWMP)

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:	KVAAS TPM
Permit Number (Land Development Projects):	TPM 20747
Work Authorization Number (CIP only):	
Applicant:	KVAAS RAMONA ASSOCIATES, LLC
Applicant's Address:	8812 LA MESA BLVD., LA MESA 91941
Plan Prepare By (Leave blank if same as applicant):	CREW ENGINEERING & SURVEYING 5725 KEARNY VILLA RD., STE. D SAN DIEGO, CA. 92123
Date:	8/29/08
Revision Date (If applicable):	

The County of San Diego Watershed Protection, Storm Water Management, and Discharge Control Ordinance (WPO) (Ordinance No. 9424) 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
	YES	NO	

Instructions for a Major SWMP can be downloaded at

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

PROJECT DESCRIPTION

Please provide a brief description of the project in the following box. Please include:

- Project Location
- Project Description
- Physical Features (Topography)
- Surrounding Land Use
- Proposed Project Land Use
- Location of dry weather flows (year-round flows in streams, or creeks) within project limits, if applicable.

The Project is located South of Mesa Estates Road at Rainbird Road and Mykrantz Truck Trail in the Barona Mesa area. The owner, Kvaas Ramona Associates, LLC, seeks to subdivide The Northwest Quarter of the Southwest Quarter and the West Half of the Northeast Quarter of the Southwest Quarter of Section 4, Township 14 South, Range 2 East, San Bernardino Meridian, in the County of San Diego, State of California into four parcels and a Designated Remainder, all of which will be 12.0 ± acres. The natural watershed in the Barona Mesa area is predominantly soils type C and vegetated with Broad Leaf Chaparral. The area has mild slopes, gently rolling terrain and well defined natural drainage courses. The entire area drains Northwesterly to the San Vicente Creek, offsite to the north of the subject property. This particular site has gentle to mild slopes from the Southeast to the Northwest. Hills South and East of the property and two well defined drainage swales that run East to West define the drainage onsite. The surrounding land use is single family residential with large lots to the North, East and West, and vacant to the South. Within the project limits there are no 303(d) impaired receiving water bodies, High Risk areas, Regional Board special requirements, and no evidence of there being any contaminated or hazardous soils. The drilling of deep borings on the property on March 14, 2003 indicated that the depth to groundwater was greater than 15-feet in the area of the proposed septic systems.

PRIORITY DEVELOPMENT PROJECT DETERMINATION

Please check the box that best describes the project. Does the project meet one of the following criteria?

Table 1

PRIORITY DEVELOPMENT PROJECT	YES	NO
Redevelopment that creates or adds at least 5,000 net square feet of additional impervious surface area		X
Residential development of more than 10 units		X
Commercial developments with a land area for development of greater than 1 acre		X
Heavy industrial development with a land area for development of greater than 1 acre		X
Automotive repair shop(s)		X
Restaurants, where the land area for development is greater than 5,000 square feet		X
Hillside development, in an area with known erosive soil conditions, where there will be grading on any natural slope that is twenty-five percent or greater, if the development creates 5,000 square feet or more of impervious surface		X
Environmentally Sensitive Areas (ESA): 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.		X
Parking Lots 5,000 square feet or more or with 15 parking spaces or more and potentially exposed to urban runoff		X
Streets, roads, highways, and freeways which would create a new paved surface that is 5,000 square feet or greater	X	
Retail Gasoline Outlets (RGO) that meet the following criteria: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day.		X

Limited Exclusion: Trenching and resurfacing work associated with utility projects are not considered Priority Development Projects. Parking lots, buildings and other structures associated with utility projects are subject to the WPO requirements if one or more of the criteria above are met.

If you answered **NO** to all the questions, then **STOP**. Please complete a Minor SWMP for your project.

If you answered **YES** to any of the questions, please continue.

HYDROMODIFICATION DETERMINATION

The following questions provide a guide to collecting information relevant to hydromodification management issues.

Table 2

	QUESTIONS	YES	NO	Information
1.	Will the proposed project disturb 50 or more acres of land? (Including all phases of development)		X	If YES, continue to 2. If NO, go to 6.
2.	Would the project site discharge directly into channels that are concrete-lined or significantly hardened such as with rip-rap, sackcrete, etc, downstream to their outfall into bays or the ocean?			If NO, continue to 3. If YES, go to 6.
3.	Would the project site discharge directly into underground storm drains discharging directly to bays or the ocean?			If NO, continue to 4. If YES, go to 6.
4.	Would the project site discharge directly to a channel (lined or un-lined) and the combined impervious surfaces downstream from the project site to discharge at the ocean or bay are 70% or greater?			If NO, continue to 5. If YES, go to 6.
5.	Project is required to manage hydromodification impacts.			Hydromodification Management Required as described in Section 67.812 b(4) of the WPO.
6.	Project is not required to manage hydromodification impacts.			Hydromodification Exempt. Keep on file.

An exemption is potentially available for projects that are required (No. 5. in Table 2 above) to manage hydromodification impacts: The project proponent may conduct an independent geomorphic study to determine the project's full hydromodification impact. The study must incorporate sediment transport modeling across the range of geomorphically-significant flows and demonstrate to the County's satisfaction that the project flows and sediment reductions will not detrimentally affect the receiving water to qualify for the exemption.

STORMWATER QUALITY DETERMINATION

The following questions provide a guide to collecting information relevant to project stormwater quality issues. Please provide the following information in a printed report accompanying this form. (SEE PROJECT DESCRIPTION ON PAGE 2)

Table 3

	QUESTIONS	COMPLETED	NA
1.	Describe the topography of the project area.	X	
2.	Describe the local land use within the project area and adjacent areas.	X	
3.	Evaluate the presence of dry weather flow.	X	
4.	Determine the receiving waters that may be affected by the project throughout all phases of development (i.e., construction, maintenance and operation).	X	
5.	For the project limits, list the 303(d) impaired receiving water bodies and their constituents of concern.	X	
6.	Determine if there are any High Risk Areas (which is defined by the presence of municipal or domestic water supply reservoirs or groundwater percolation facilities) within the project limits.	X	
7.	Determine the Regional Board special requirements, including TMDLs, effluent limits, etc.	X	
8.	Determine the general climate of the project area. Identify annual rainfall and rainfall intensity curves.	X	
9.	If considering Treatment BMPs, determine the soil classification, permeability, erodibility, and depth to groundwater.	X	
10.	Determine contaminated or hazardous soils within the project area.	X	

TREATMENT BMPs DETERMINATION

Complete the checklist below to determine if Treatment Best Management Practices (BMPs) are required for the project.

Table 4

No.	CRITERIA	YES	NO	INFORMATION
1.	Is this an emergency project		X	If YES, go to 6. If NO, continue to 2.
2.	Have TMDLs been established for surface waters within the project limit?		X	If YES, go to 5. If NO, continue to 3.
3.	Will the project directly discharge to a 303(d) impaired receiving water body?		X	If YES, go to 5. If NO, continue to 4.
4.	Is this project within the environmentally sensitive areas as defined on the maps in Appendix A of the <i>County of San Diego Standard Urban Storm Water Mitigation Plan for Land Development and Public Improvement Projects</i> ?		X	If YES, continue to 5. If NO, go to 6.
5.	Provide Treatment BMPs for the project.			If YES, go to 7.
6.	Project is not required to provide Treatment BMPs	X		Document for Project Files by referencing this checklist.
7.	End			

Now that the need for a treatment BMPs has been determined, other information is required to complete the SWMP.

WATERSHED

Please check the watershed(s) for the project.

<input type="checkbox"/> San Juan 901	<input type="checkbox"/> Santa Margarita 902	<input type="checkbox"/> San Luis Rey 903	<input type="checkbox"/> Carlsbad 904
<input type="checkbox"/> San Dieguito 905	<input type="checkbox"/> Penasquitos 906	<input checked="" type="checkbox"/> San Diego 907	<input type="checkbox"/> Sweetwater 909
<input type="checkbox"/> Otay 910	<input type="checkbox"/> Tijuana 911	<input type="checkbox"/> Whitewater 719	<input type="checkbox"/> Clark 720
<input type="checkbox"/> West Salton 721	<input type="checkbox"/> Ariza Borrego 722	<input type="checkbox"/> Imperial 723	

Please provide the hydrologic sub-area and number(s)

Number	Name
907.23	GOWER

Please provide the beneficial uses for Inland Surface Waters and Ground Waters.
Beneficial Uses can be obtained from the Water Quality Control Plan for the San Diego Basin, which is available at the Regional Board office or at

SURFACE WATERS	Hydrologic Unit Basin Number															
		MUN	AGR	IND	PROC	GWR	FRESH	POW	RECI	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Inland Surface Waters	907.23	X	X	X	X				X	X		X		X		
Ground Waters	907.23	X	X													

* Excepted from Municipal

X Existing Beneficial Use
0 Potential Beneficial Use

POLLUTANTS OF CONCERN

Using Table 5, 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 5. Anticipated and Potential Pollutants Generated by Land Use Type

<i>PDP Categories</i>	<i>General Pollutant Categories</i>								
	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 ft ²	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.

Note: If other monitoring data that is relevant to the project is available. Please include as Attachment C.

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.

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

Table 6

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:		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?			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 shows to the County official’s satisfaction that advanced treatment is not required

Now that the need for treatment BMPs has been determined, other information is needed to complete the SWMP.

SITE DESIGN

To minimize stormwater impacts, site design measures must be addressed. The following checklist provides options for avoiding or reducing potential impacts during project planning. If YES is checked, it is assumed that the measure was used for this project.

Table 7

	OPTIONS	YES	NO	N/A
1.	Has the project been located and road improvements aligned to avoid or minimize impacts to receiving waters or to increase the preservation of critical (or problematic) areas such as floodplains, steep slopes, wetlands, and areas with erosive or unstable soil conditions?	X		
2.	Is the project designed to minimize impervious footprint?	X		
3.	Is the project conserving natural areas where feasible?	X		
4.	Where landscape is proposed, are rooftops, impervious sidewalks, walkways, trails and patios be drained into adjacent landscaping?	X		
5.	For roadway projects, are structures and bridges be designed or located to reduce work in live streams and minimize construction impacts?			X
6.	Can any of the following methods be utilized to minimize erosion from slopes:			
6.a.	Disturbing existing slopes only when necessary?	X		
6.b.	Minimize cut and fill areas to reduce slope lengths?	X		
6.c.	Incorporating retaining walls to reduce steepness of slopes or to shorten slopes?			X
6.d.	Providing benches or terraces on high cut and fill slopes to reduce concentration of flows?			X
6.e.	Rounding and shaping slopes to reduce concentrated flow?	X		
6.f.	Collecting concentrated flows in stabilized drains and channels?			X

LOW IMPACT DEVELOPMENT (LID)

Each numbered item below is a LID requirement of the WPO. Please check the box(s) under each number that best describes the Low Impact Development BMP(s) selected for this project.

Table 8

1. Conserve natural Areas, Soils, and Vegetation-County LID Handbook 2.2.1
<input type="checkbox"/> Preserve well draining soils (Type A or B) PROJECT IS UNDERLAIN WITH TYPE "C" SOILS.
<input checked="" type="checkbox"/> Preserve Significant Trees
<input type="checkbox"/> Other. Description:
<input type="checkbox"/> 1. Not feasible. State Reason:
2. Minimize Disturbance to Natural Drainages-County LID Handbook 2.2.2
<input checked="" type="checkbox"/> Set-back development envelope from drainages
Restrict heavy construction equipment access to planned green/open space areas
<input type="checkbox"/> Other. Description:
<input type="checkbox"/> 2. Not feasible. State Reason:
3. Minimize and Disconnect Impervious Surfaces (see 5) -County LID Handbook 2.2.3
<input type="checkbox"/> Clustered Lot Design
<input checked="" type="checkbox"/> Items checked in 5?
<input type="checkbox"/> Other. Description:
<input type="checkbox"/> 3. Not feasible. State Reason:
4. Minimize Soil Compaction-County LID Handbook 2.2.4
<input checked="" type="checkbox"/> Restrict heavy construction equipment access to planned green/open space areas
<input checked="" type="checkbox"/> Re-till soils compacted by construction vehicles/equipment
<input checked="" type="checkbox"/> Collect & re-use upper soil layers of development site containing organic materials
<input type="checkbox"/> Other. Description:
<input type="checkbox"/> 4. Not feasible. State Reason:
5. Drain Runoff from Impervious Surfaces to Pervious Areas-County LID Handbook 2.2.5

LID Street & Road Design
<input checked="" type="checkbox"/> Curb-cuts to landscaping NATURAL VEGETATION
<input type="checkbox"/> Rural Swales
<input type="checkbox"/> Concave Median
<input type="checkbox"/> Cul-de-sac Landscaping Design
<input type="checkbox"/> Other. Description:
LID Parking Lot Design N/A
<input type="checkbox"/> Permeable Pavements
<input type="checkbox"/> Curb-cuts to landscaping
<input type="checkbox"/> Other. Description:
LID Driveway, Sidewalk, Bike-path Design
<input type="checkbox"/> Permeable Pavements
<input checked="" type="checkbox"/> Pitch pavements toward landscaping NATURAL VEGETATION
<input type="checkbox"/> Other. Description:
LID Building Design
<input type="checkbox"/> Cisterns & Rain Barrels
<input checked="" type="checkbox"/> Downspout to swale
<input type="checkbox"/> Vegetated Roofs
<input type="checkbox"/> Other. Description:
LID Landscaping Design
<input type="checkbox"/> Soil Amendments
<input checked="" type="checkbox"/> Reuse of Native Soils
<input checked="" type="checkbox"/> Smart Irrigation Systems
<input type="checkbox"/> Street Trees
<input type="checkbox"/> Other. Description:
<input type="checkbox"/> 5. Not feasible. State Reason:

LID Summary

The project addresses Low Impact Development (LID) guidelines as follows: Due to the low density General Plan Designation of the property (0.125 DU/acre), the project is inherently compliant with LID guidelines because a relatively small percentage of the site will be disturbed, thereby conserving natural resources that provide valuable natural functions associated with controlling and filtering stormwater. Impervious surfaces are minimized through the use of minimum paved widths. Runoff from impervious surfaces and pad areas will be directed to natural areas. Distributed, redundant, small-scale controls such as grass-lined self-retained areas, gravel desilting pads and rip rap sumps will be used to treat runoff, and return it to sheet flow to closely match the site's pre-project hydrology.

CHANNELS & DRAINAGES

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

Table 9

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?				If YES go to 6.
3.	Will the project discharge to unlined channels?				If YES go to 6.
4.	Will the project increase potential sediment load of downstream flow?				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?				If YES go to 8.
6.	Review channel lining materials and design for stream bank erosion.				Continue to 7.
7.	Consider channel erosion control measures within the project limits as well as downstream. Consider scour velocity.				Continue to 8.
8.	Include, where appropriate, energy dissipation devices at culverts.				Continue to 9.
9.	Ensure all transitions between culvert outlets/headwalls/wingwalls and channels are smooth to reduce turbulence and scour.				Continue to 10.
10.	Include, if appropriate, detention facilities to reduce peak discharges.				
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.				Continue to 12.
12.	Provide other design principles that are comparable and equally effective.				Continue to 13.
13.	End	X			

SOURCE CONTROL

Please complete the following checklist for Source Control BMPs. If the BMP is not applicable for this project, then check N/A only at the main category.

Table 10

BMP		YES	NO	N/A
1.	Provide Storm Drain System Stenciling and Signage			X
1.a.	All storm drain inlets and catch basins within the project area shall have a stencil or tile placed with prohibitive language (such as: "NO DUMPING – DRAINS TO _____") and/or graphical icons to discourage illegal dumping.			
1.b.	Signs and prohibitive language and/or graphical icons, which prohibit illegal dumping, must be posted at public access points along channels and creeks within the project area.			
2.	Design Outdoors Material Storage Areas to Reduce Pollution Introduction			X
2.a.	This is a detached single-family residential project. Therefore, personal storage areas are exempt from this requirement.			
2.b.	Hazardous materials with the potential to contaminate urban runoff shall either be: (1) placed in an enclosure such as, but not limited to, a cabinet, shed, or similar structure that prevents contact with runoff or spillage to the storm water conveyance system; or (2) protected by secondary containment structures such as berms, dikes, or curbs.			
2.c.	The storage area shall be paved and sufficiently impervious to contain leaks and spills.			
2.d.	The storage area shall have a roof or awning to minimize direct precipitation within the secondary containment area.			
3.	Design Trash Storage Areas to Reduce Pollution Introduction			X
3.a.	Paved with an impervious surface, designed not to allow run-on from adjoining areas, screened or walled to prevent off-site transport of trash; or,			
3.b.	Provide attached lids on all trash containers that exclude rain, or roof or awning to minimize direct precipitation.			
4.	Use Efficient Irrigation Systems & Landscape Design			
	The following methods to reduce excessive irrigation runoff shall be considered, and incorporated and implemented where determined applicable and feasible.			
4.a.	Employing rain shutoff devices to prevent irrigation after precipitation.	X		
4.b.	Designing irrigation systems to each landscape area's specific water requirements.	X		
4.c.	Using flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.	X		
4.d.	Employing other comparable, equally effective, methods to reduce irrigation water runoff.	X		
5.	Private Roads			

BMP		YES	NO	N/A
	The design of private roadway drainage shall use at least one of the following			
5.a.	Rural swale system: street sheet flows to vegetated swale or gravel shoulder, curbs at street corners, culverts under driveways and street crossings.	X		
5.b.	Urban curb/swale system: street slopes to curb, periodic swale inlets drain to vegetated swale/biofilter.			X
5.c.	Dual drainage system: First flush captured in street catch basins and discharged to adjacent vegetated swale or gravel shoulder, high flows connect directly to storm water conveyance system.			X
5.d.	Other methods that are comparable and equally effective within the project.			
6.	Residential Driveways & Guest Parking			
	The design of driveways and private residential parking areas shall use one at least of the following features.			
6.a.	Design driveways with shared access, flared (single lane at street) or wheelstrips (paving only under tires); or, drain into landscaping prior to discharging to the storm water conveyance system.	X		
6.b.	Uncovered temporary or guest parking on private residential lots may be: paved with a permeable surface; or, designed to drain into landscaping prior to discharging to the storm water conveyance system.			X
6.c.	Other features which are comparable and equally effective.			
7.	Dock Areas			X
	Loading/unloading dock areas shall include the following.			
7.a.	Cover loading dock areas, or design drainage to preclude urban run-on and runoff.			
7.b.	Direct connections to storm drains from depressed loading docks (truck wells) are prohibited.			
7.c.	Other features which are comparable and equally effective.			
8.	Maintenance Bays			X
	Maintenance bays shall include the following.			
8.a.	Repair/maintenance bays shall be indoors; or, designed to preclude urban run-on and runoff.			
8.b.	Design a repair/maintenance bay drainage system to capture all wash water, leaks and spills. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm drain system is prohibited. If required by local jurisdiction, obtain an Industrial Waste Discharge Permit.			
8.c.	Other features which are comparable and equally effective.			
9.	Vehicle Wash Areas			X
	Priority projects that include areas for washing/steam cleaning of vehicles shall use the following.			
9.a.	Self-contained; or covered with a roof or overhang.			
9.b.	Equipped with a clarifier or other pretreatment facility.			
9.c.	Properly connected to a sanitary sewer.			
9.d.	Other features which are comparable and equally effective.			

BMP		YES	NO	N/A
10.	Outdoor Processing Areas			X
	Outdoor process equipment operations, such as rock grinding or crushing, painting or coating, grinding or sanding, degreasing or parts cleaning, waste piles, and wastewater and solid waste treatment and disposal, and other operations determined to be a potential threat to water quality by the County shall adhere to the following requirements.			
	10.a. Cover or enclose areas that would be the most significant source of pollutants; or, slope the area toward a dead-end sump; or, discharge to the sanitary sewer system following appropriate treatment in accordance with conditions established by the applicable sewer agency.			
	10.b. Grade or berm area to prevent run-on from surrounding areas.			
	10.c. Installation of storm drains in areas of equipment repair is prohibited.			
	10.d. Other features which are comparable or equally effective.			
11.	Equipment Wash Areas			X
	Outdoor equipment/accessory washing and steam cleaning activities shall be.			
	11.a. Be self-contained; or covered with a roof or overhang.			
	11.b. Be equipped with a clarifier, grease trap or other pretreatment facility, as appropriate			
	11.c. Be properly connected to a sanitary sewer.			
	11.d. Other features which are comparable or equally effective.			
12.	Parking Areas			X
	The following design concepts shall be considered, and incorporated and implemented where determined applicable and feasible by the County.			
	12.a. Where landscaping is proposed in parking areas, incorporate landscape areas into the drainage design.			
	12.b. Overflow parking (parking stalls provided in excess of the County's minimum parking requirements) may be constructed with permeable paving.			
	12.c. Other design concepts that are comparable and equally effective.			
13.	Fueling Area			X
	Non-retail fuel dispensing areas shall contain the following.			
	13.a. Overhanging roof structure or canopy. The cover's minimum dimensions must be equal to or greater than the area within the grade break. The cover must not drain onto the fuel dispensing area and the downspouts must be routed to prevent drainage across the fueling area. The fueling area shall drain to the project's treatment control BMP(s) prior to discharging to the storm water conveyance system.			
	13.b. Paved with Portland cement concrete (or equivalent smooth impervious surface). The use of asphalt concrete shall be prohibited.			
	13.c. Have an appropriate slope to prevent ponding, and must be separated from the rest of the site by a grade break that prevents run-on of urban runoff.			

BMP		YES	NO	N/A
13.d.	At a minimum, the concrete fuel dispensing area must extend 6.5 feet (2.0 meters) from the corner of each fuel dispenser, or the length at which the hose and nozzle assembly may be operated plus 1 foot (0.3 meter), whichever is less.			

Please list other project specific Source Control BMPs in the following box. Write N/A if there are none. N/A

TREATMENT CONTROL

To select a structural treatment BMP using Treatment Control BMP Selection Matrix (Table 11), each priority project shall compare the list of pollutants for which the downstream receiving waters are impaired (if any), with the pollutants anticipated to be generated by the project (as identified in Table 5). Any pollutants identified by Table 5, which are also causing a Clean Water Act section 303(d) impairment of the receiving waters of the project, shall be considered primary pollutants of concern. Priority projects that are anticipated to generate a primary pollutant of concern shall select a single or combination of stormwater BMPs from Table 11, which **maximizes pollutant removal** for the particular primary pollutant(s) of concern.

Priority development projects that are **not** anticipated to generate a pollutant for which the receiving water is CWA 303(d) impaired shall select a single or combination of stormwater BMPs from Table 11, which are effective for pollutant removal of the identified secondary pollutants of concern, consistent with the "maximum extent practicable" standard.

Table 11. Treatment Control BMP Selection Matrix

Pollutants of Concern	Bioretention Facilities (LID)*	Settling Basins (Dry Ponds)	Wet Ponds and Wetlands	Infiltration Facilities or Practices (LID)*	Media Filters	High-rate biofilters	High-rate media filters	Trash Racks & Hydro-dynamic Devices
Coarse Sediment and Trash	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
Pollutants that tend to be dissolved following treatment	Medium	Low	Medium	High	Low	Low	Low	Low

*Additional information is available in the County of San Diego LID Handbook.

NOTES ON POLLUTANTS OF CONCERN:

In Table 12, Pollutants of Concern are grouped as gross pollutants, pollutants that tend to associate with fine particles, and pollutants that remain dissolved.

Table 12

Pollutant	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	
Nutrients		X	X
Heavy Metals		X	
Organic Compounds		X	
Trash & Debris	X		
Oxygen Demanding		X	
Bacteria		X	
Oil & Grease		X	
Pesticides		X	

A Treatment BMP must address runoff from developed areas. Please provide the post-construction water quality values for the project. Label outfalls on the BMP map. The Water Quality peak rate of discharge flow (Q_{WQ}) and the Water Quality storage volume (V_{WQ}) is dependent on the type of treatment BMP selected for the project.

Outfall	Tributary Area -(acres) SF	Q_{WQ} (cfs)	V_{WQ} (ft ³)
TYPICAL PAD	15,000	—	225 *

* SEE CALCULATIONS ON PG. 22

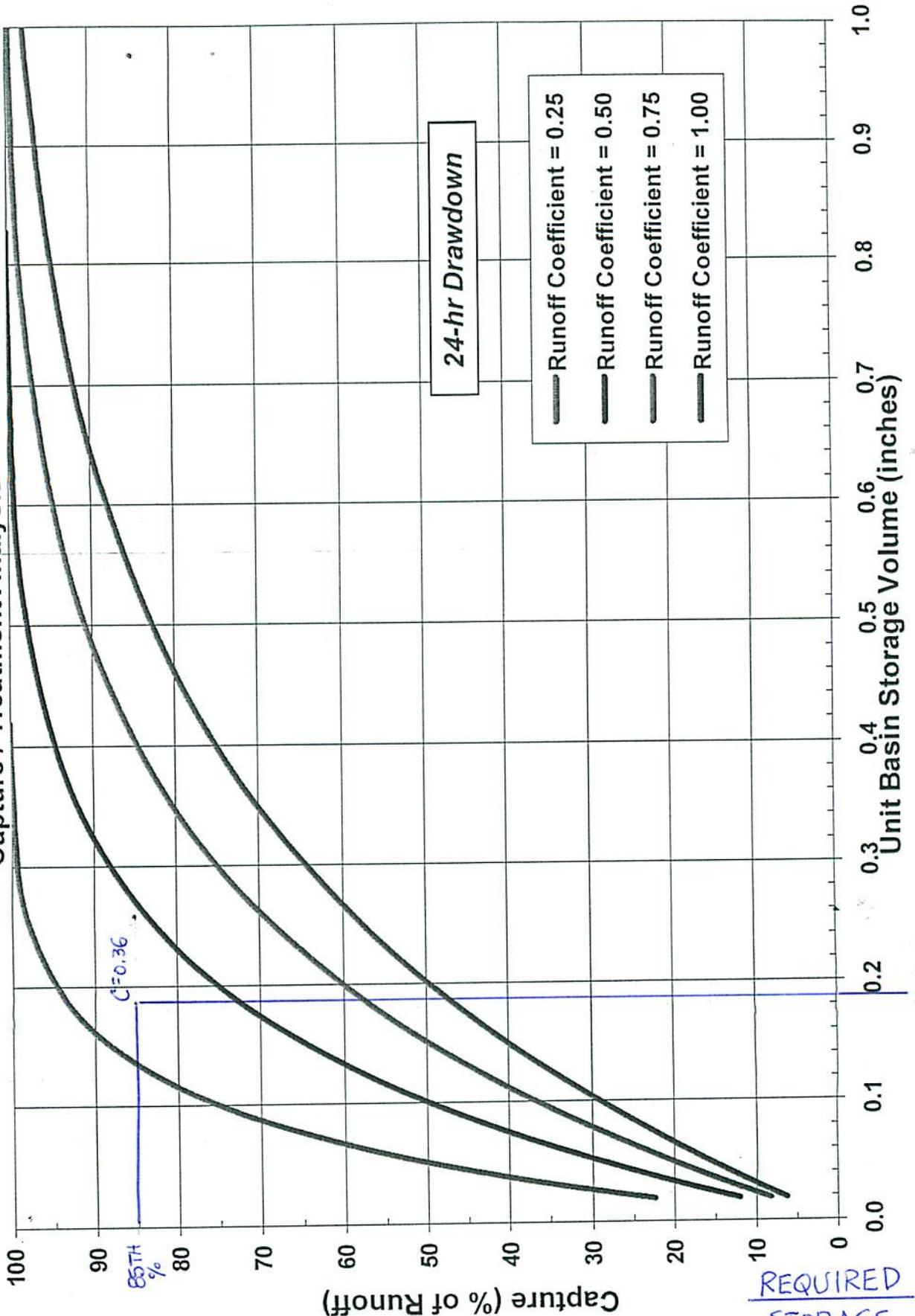
EACH LOT SHALL RECEIVE: 2 SELF-RETAINED AREAS @ 34 CF EA **
 10 GRAVEL DESILTING PADS @ 6.5 CF EA **
 + 2 RIP RAP SUMPS @ 47.2 CF EA **

 = 221.4 CF > 225 CF REQ'D.

** SEE APPENDIX E FOR ENGINEERING CALCULATIONS FOR THE BMP'S.

San Diego WSO Airport (7740) - San Diego County, California

Capture / Treatment Analysis



$$0.18 \text{ IN} \times 15000 \text{ SF} \times \frac{1 \text{ FT.}}{12 \text{ IN.}} =$$

225 CF STORAGE VOLUME

REQUIRED STORAGE VOLUME

CASQA

Please check the box(s) that best describes the Treatment BMP(s) selected for this project.

Biofilters
<input type="checkbox"/> Bioretention swale
<input type="checkbox"/> Stormwater Planter Box (open-bottomed)
<input type="checkbox"/> Stormwater Flow-Through Planter (sealed bottom)
<input type="checkbox"/> Bioretention Area
<input type="checkbox"/> Vegetated Roofs/Modules/Walls
Detention Basins
<input type="checkbox"/> Extended/dry detention basin with grass/vegetated lining
<input type="checkbox"/> Extended/dry detention basin with impervious lining
Infiltration Basins
<input checked="" type="checkbox"/> Infiltration basin GRASS LINED SELF-RETAINED AREAS
<input checked="" type="checkbox"/> Infiltration trench RIP RAP SUMPS / GRAVEL DESILTATION PADS
<input type="checkbox"/> Dry well
<input type="checkbox"/> Permeable Paving
<input type="checkbox"/> Gravel
<input type="checkbox"/> Permeable asphalt
<input type="checkbox"/> Pervious concrete
<input type="checkbox"/> Unit pavers, ungrouted, set on sand or gravel
<input type="checkbox"/> Subsurface reservoir bed
Wet Ponds or Wetlands
<input type="checkbox"/> Wet pond/basin (permanent pool)
<input type="checkbox"/> Constructed wetland
Filtration
<input type="checkbox"/> Media filtration
<input type="checkbox"/> Sand filtration
Hydrodynamic Separator Systems
<input type="checkbox"/> Swirl Concentrator
<input type="checkbox"/> Cyclone Separator
Trash Racks and Screens

	COMPLETED	NO
Include Treatment Datasheet as Attachment E. The datasheet should include the following:		
1. Description of how treatment BMP was designed. Provide a description for each type of treatment BMP.	X	
2. Engineering calculations for the BMP(s)	X	

Please describe why the selected treatment BMP(s) was selected for this project. For projects utilizing a low performing BMP, please provide a detailed explanation.

Rip rap sumps and gravel desilting pads are hybrid devices that provide for energy dissipation, detention, and allow infiltration. In these detention devices, water is temporarily detained under quiescent conditions, allowing sediment and particulates to settle out. Also, it allows for infiltration into the ground and thus reduces the overall discharge. Also, these devices remove litter, settleable solids (debris), and total suspended solids (TSS). Pollutants, such as heavy metals, that are attached (adsorbed) to the settled particulate matter will also be removed. A conceptual schematic of a rip rap sump is shown in attachment E.

Self-Retaining areas on the building pad, in conjunction with the rip rap sumps and gravel desilting pads, are designed to retain the 85th percentile annual rainfall without producing any runoff. By retaining and infiltrating storm water runoff they use the natural filtering abilities of vegetation and soil to remove pollutants.

MAINTENANCE

Please check the box that best describes the maintenance mechanism(s) for this project. Guidelines for each category are located in Chapter 5, Section 5.2 of the County SUSMP.

CATEGORY	SELECTED	
	YES	NO
First	X	
Second ¹		
Third ¹		
Fourth		

Note:

1. Projects in Category 2 or 3 may choose to establish or be included in a Stormwater Maintenance Assessment District for the long-term maintenance of treatment BMPs.

ATTACHMENTS

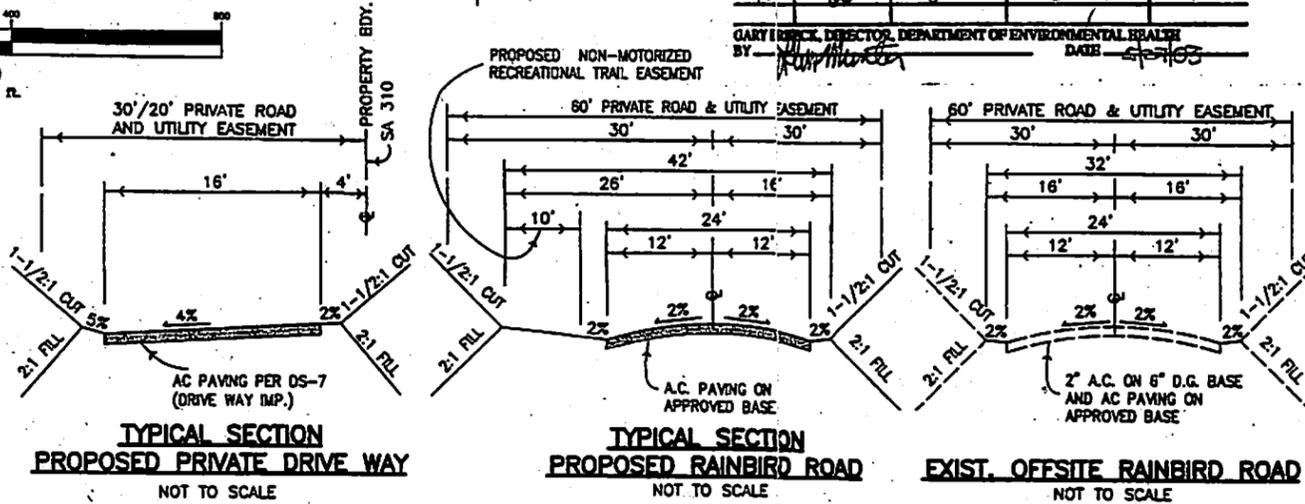
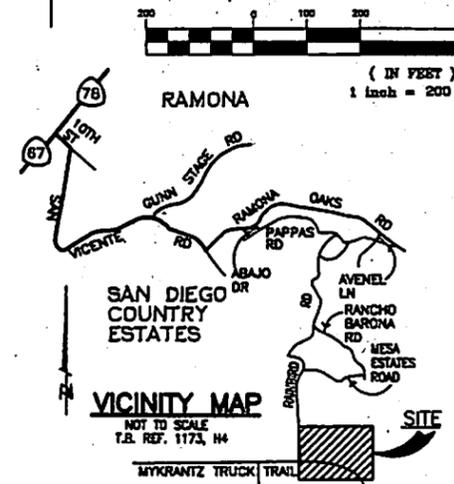
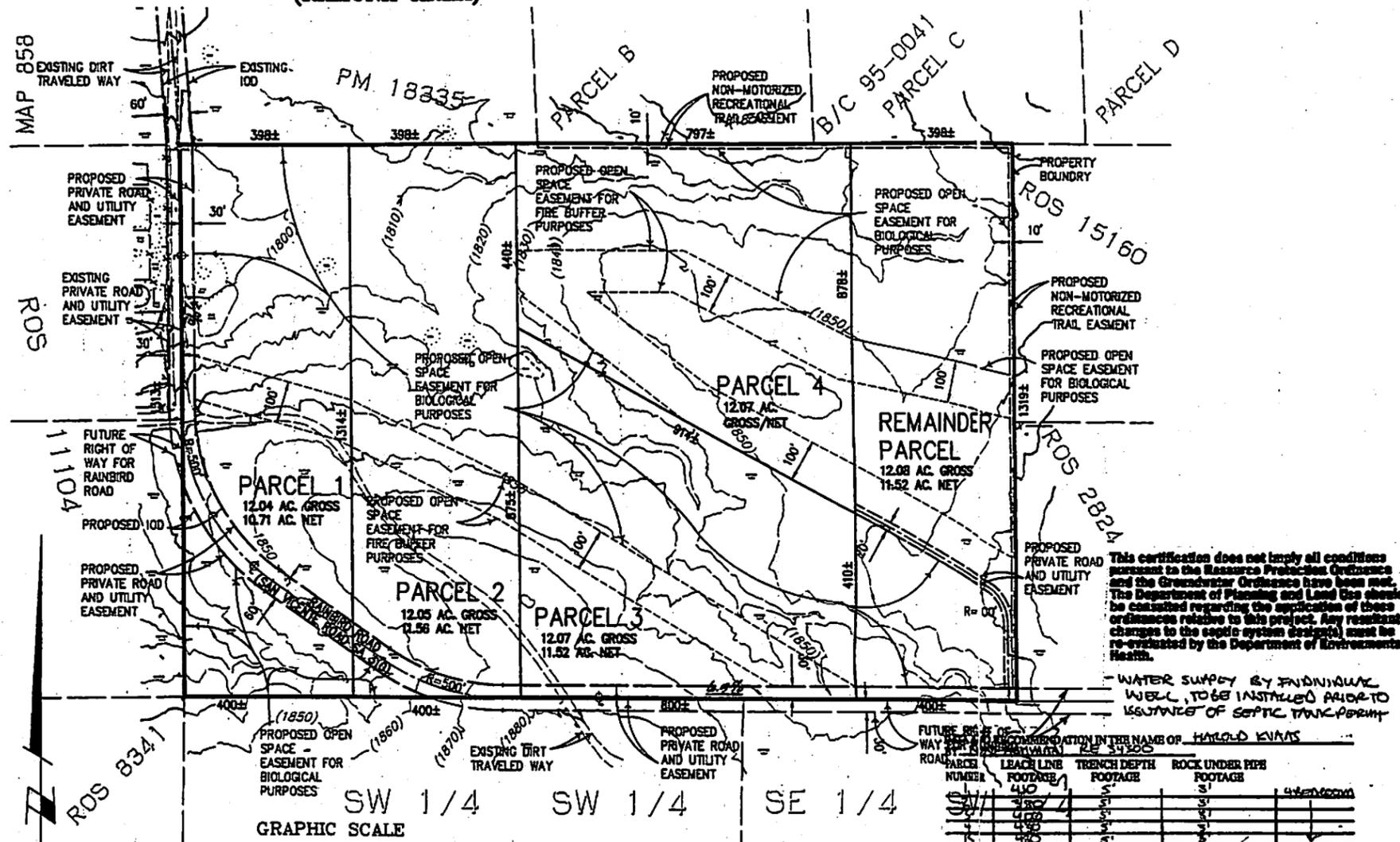
Please include the following attachments.

ATTACHMENT		COMPLETED	N/A
A	Project Location Map	X	
B	Site Map	X	
C	Relevant Monitoring Data		X
D	LID and Treatment BMP Location Map	X	
E	Treatment BMP Datasheets	X	
F	Operation and Maintenance Program for Treatment BMPs	X	
G	Fiscal Resources		X
H	Certification Sheet	X	
I	Addendum		

Note: Attachments A and B may be combined.

TENTATIVE PARCEL MAP

(RAMONA AREA)



LAND DIVISION STATEMENT OWNER'S CERTIFICATE

WE HEREBY CERTIFY THAT WE ARE THE RECORD OWNERS, AS SHOWN ON THE LATEST EQUALIZED COUNTY ASSESSMENT, OF THE PROPERTY SHOWN ON THE TENTATIVE PARCEL MAP. ALL OF OUR CONTIGUOUS OWNERSHIP WITHIN AND BEYOND THE BOUNDARIES OF THE TENTATIVE PARCEL MAP IS SHOWN. THE BASIS OF CREATION OF THE LOTS IN OUR OWNERSHIP IS INDICATED ON THE TENTATIVE PARCEL MAP. WE UNDERSTAND THAT PROPERTY IS CONSIDERED AS CONTIGUOUS EVEN IF IT IS SEPARATED BY ROADS, STREETS, UTILITY EASEMENTS OR RAILROAD RIGHTS-OF-WAY. "FREEWAY" AS DEFINED IN SECTION 23.5 OF THE STREETS AND HIGHWAYS CODE, SHALL NOT BE CONSIDERED AS ROADS OR STREETS.

WE FURTHER CERTIFY THAT WE WILL NOT, BY THIS APPLICATION, CREATE OR CAUSE TO BE CREATED, OR WILL NOT HAVE PARTICIPATED IN THE CREATION OF MORE THAN FOUR PARCELS ON CONTIGUOUS PROPERTY UNLESS SUCH CONTIGUOUS PARCELS WERE CREATED BY MAJOR SUBDIVISION. FOR PURPOSES OF THIS CERTIFICATION, THE TERM "PARTICIPATED" MEANS HAVING COOPERATED WITH OR ACTED IN A PLANNING, COORDINATING, OR DECISION-MAKING CAPACITY IN ANY FORMAL OR INFORMAL ASSOCIATION OR PARTNERSHIP FOR THE PURPOSE OF DIVIDING REAL PROPERTY.

WE CERTIFY UNDER PENALTY OF PERJURY THAT THE FOREGOING IS TRUE AND CORRECT
EXECUTED THIS 23 DAY OF May, 2003
AT SAN DIEGO, CALIFORNIA

OWNER: **Kvaas Ramona Associates, LLC**
SIGNATURE: *[Signature]*
HAROLD KVAAS, MANAGER

KVAAS RAMONA ASSOCIATES, LLC,
A LIMITED LIABILITY COMPANY
C/O KVAAS MANAGEMENT CO., INC.
8812 LA MESA BLVD.
LA MESA CA, 91941
PHONE: 619-466-5885

- COMPLETE TAX ASSESSOR'S NUMBERS ARE: 331-040-22, 331-040-21
- STATUS OF EXISTING LEGAL ACCESS TO SUBJECT PROPERTY FROM A PUBLICLY MAINTAINED ROAD, (I.E. RECORDED EASEMENT, UNRECORDED EASEMENT - IDENTIFY AND SPECIFY WIDTH.) EXIST. 60' PRIVATE ROAD ESM'T RAINBIRD ROAD, PROPOSED 60' PRIVATE ROAD ESM'T RAINBIRD ROAD, PROPOSED 20' PRIVATE ROAD EASEMENTS.
- EXISTING ZONING OF EACH LOT IS: A70 (4)
- GENERAL OR COMMUNITY PLAN DESIGNATION IS: MULTIPLE RURAL 18
- PROPOSED USE OF EACH LOT IS: SINGLE FAMILY RESIDENCE
- SOURCE OF DOMESTIC POTABLE WATER SUPPLY FOR EACH LOT IS: PRIVATE WELLS
- DISTRICT OR AGENCY PROVIDING FIRE PROTECTION TO SUBJECT PROPERTY IS: RURAL FIRE PROTECTION DISTRICT
- SOURCE OF EXISTING TOPO: PHOTO GEODETIC CORPORATION PHOTOGRAPHY DATED: JUNE 28, 2002
- NO GRADING IS ANTICIPATED AT THIS TIME.
- SEWER DISTRICT: PRIVATE SEPTIC SYSTEMS
- SCHOOL DISTRICTS: RAMONA UNIFIED HIGH SCHOOL DISTRICT
RAMONA UNIFIED ELEMENTARY SCHOOL DISTRICT
- SOLAR STATEMENT: ALL LOTS WITHIN THIS SUBDIVISION ARE A MINIMUM OF 100 SQUARE FEET OF SOLAR ACCESS FOR EACH FUTURE DWELLING/COMMERCIAL/INDUSTRIAL UNIT ALLOWED BY THIS SUBDIVISION.
- SITE ADDRESS: VACANT PARCEL EAST OF RAINBIRD ROAD AND SOUTH OF MESA ESTATES ROAD WITH MYKRANTZ TRUCK TRAIL PASSING THROUGH THE SOUTHWESTERLY CORNER OF PARCEL.
- LEGAL DESCRIPTION: THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER AND THE WEST HALF OF THE NORTH EAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 4, TOWNSHIP 14 SOUTH, RANGE 2 EAST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA
- REGIONAL PLAN CATEGORY: RDA
- SUBREGIONAL/COMMUNITY PLAN: RAMONA
- TAX RATE AREA: 65081

TENTATIVE PARCEL MAP PREPARED BY:
CREW ENGINEERING AND SURVEYING

5725 KEARNY VILLA ROAD, STE. "D"
SAN DIEGO, CA. 92123
(858) 571-0555

BY: *[Signature]*
RONALD C. ASHMAN R.C.E. 34300

ZONE	
USE REGULATIONS	A70
ANIMAL REGULATIONS	L
DENSITY	0.25
LOT SIZE	4 ACRES
BUILDING TYPE	C
MAXIMUM FLOOR AREA	---
FLOOR AREA RATIO	---
HEIGHT	G
LOT COVERAGE	---
SETBACK	C
OPEN SPACE	---
SPECIAL AREA REGULATIONS	---

BY: SR DATE: 2-14-03

ATTACHMENT AIB

ATTACHMENT E

Bio-Filters

Bio-filtration swales are vegetated channels that receive directed flow and convey storm water. Bio-filtration strips, also known as vegetated buffer strips, are vegetated sections of land over which storm water flows as overland sheet flow. A schematic illustration of bio-filter is shown in Figure 3.3.1.

Pollutants are removed by filtration through the grass, sedimentation, adsorption to soil particles, and infiltration through the soil. Swales and strips are mainly effective at removing debris and solid particles, although some dissolved constituents are removed by adsorption onto the soil.

Appropriate Applications and Siting Constraints:

Swales and strips should be considered wherever site conditions and climate allow vegetation to be established and where flow velocities are not high enough to cause scour. Even where strips cannot be sited to accept directed sheet flow, vegetated areas provide treatment of rainfall and reduce the overall impervious surface.

FACTORS AFFECTING PRELIMINARY DESIGN:

Swales have two design goals: 1) maximize treatment, 2) provide adequate hydraulic function for flood routing, adequate drainage and scour prevention. Treatment is maximized by designing the flow of water through the swale to be as shallow and long as site constraints allow. No minimum dimensions are required for treatment purposes, as this could exclude swales from consideration at some sites. Swales should also be sized as a conveyance system calculated according to County procedures for flood routing and scour.

To maximize treatment efficiency, strips should be designed to be as long (in the direction of flow) and as flat as the site will allow. No minimum lengths or maximum slopes are required for treatment purposes. The area to be used for the strip should be free of gullies or rills that can concentrate overland flow and cause erosion.

Vegetation mixes appropriate for various climates and locations will be developed by District landscape staff. Table 3.3.1 summarizes preliminary design factors for bio-filtration.

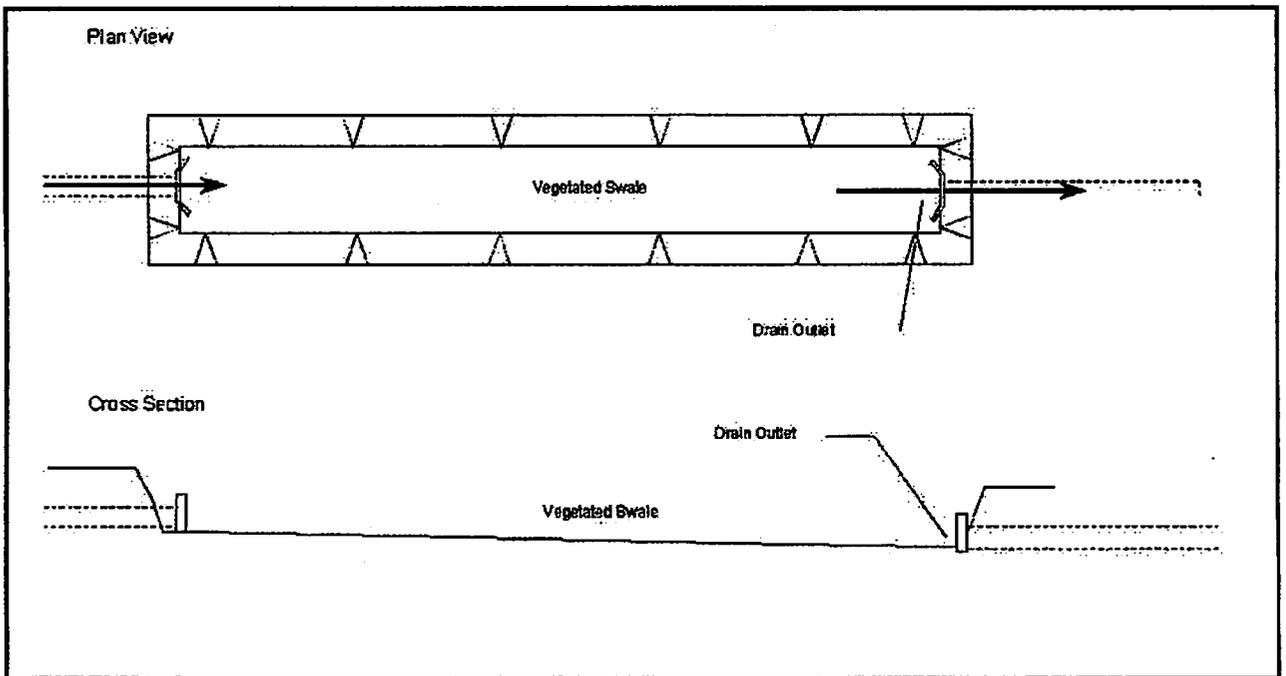
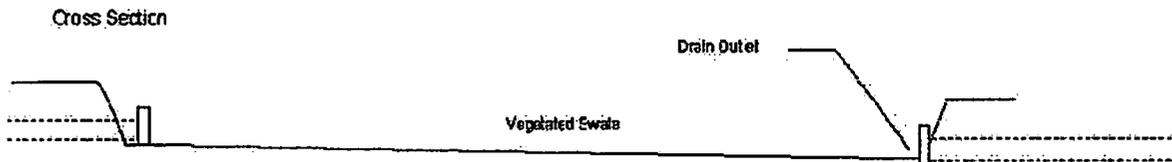
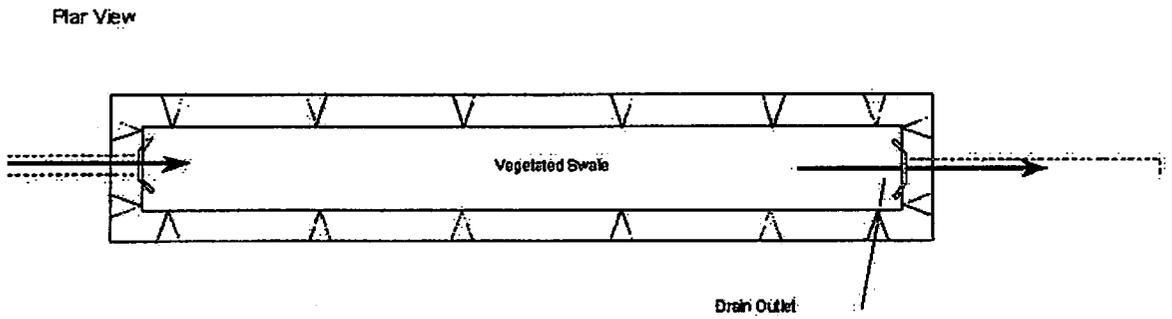


Figure 3.3.1
Example of Bio-filter Schematic

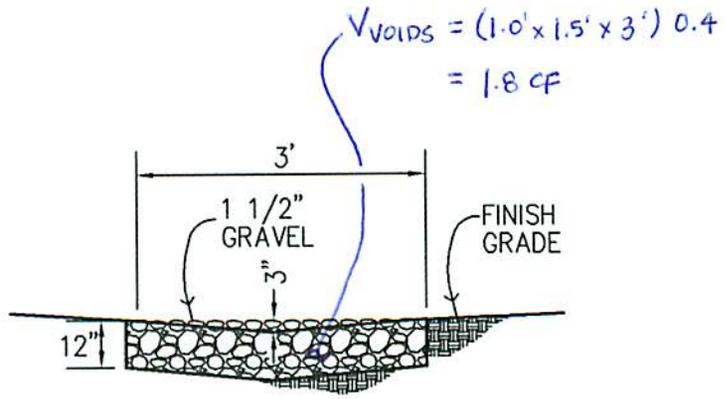
Table 3.3.1: Summary Of Bio-filtration Design Factors (Strips And Swales)

Description	Applications/Siting	Preliminary Design Factors
<p>Swales are vegetated channels that receive and convey storm water.</p> <p>Strips are vegetated buffer strips over which storm water flows as sheet flow.</p> <p>Treatment Mechanisms:</p> <ul style="list-style-type: none"> • Filtration through the grass • Sedimentation • Adsorption to soil particles • Infiltration <p>Pollutants removed:</p> <ul style="list-style-type: none"> • Debris and solid particles • Some dissolved constituents 	<ul style="list-style-type: none"> • Site conditions and climate allow vegetation to be established • Flow velocities not high enough to cause scour 	<ul style="list-style-type: none"> • Swales sized as a conveyance system (per County flood routing and scour procedures) • Swale water depth as shallow as the site will permit • Strips sized as long (in direction of flow) and flat as the site allows • Strips should be free of gullies or rills • No minimum dimensions or slope restrictions for treatment purposes • Vegetation mix appropriate for climates and location

Rip Rap Sumps and Gravel Desilting Pads

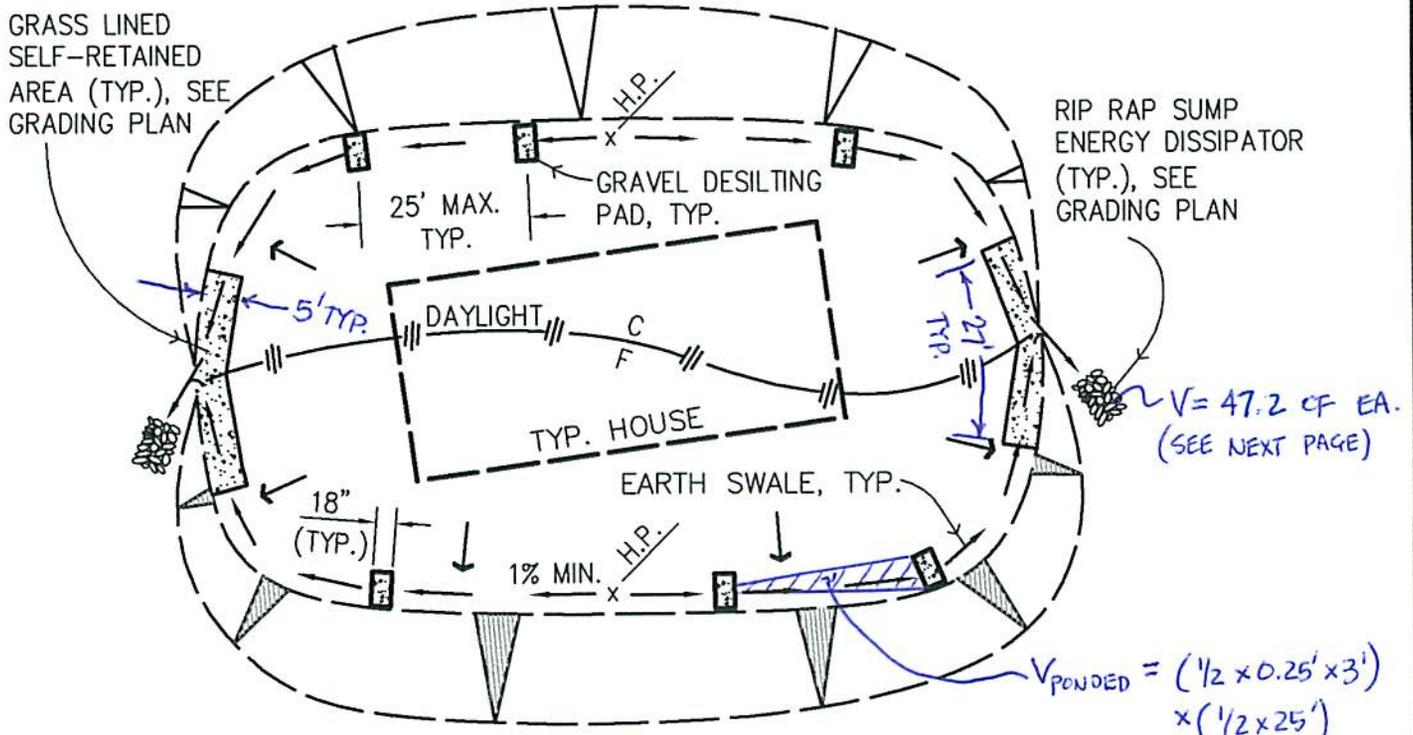
Rip rap sumps and gravel desilting pads are detention devices where the water is temporarily detained under quiescent conditions, allowing sediment and particulates to settle out. Also, it allows for infiltration into the ground and thus reduces the overall discharge. A conceptual schematic of a rip rap sump is shown on sheet 2 of the Preliminary Grading Plan

Detention devices remove litter, settleable solids (debris), and total suspended solids (TSS). Pollutants, such as heavy metals, that are attached (adsorbed) to the settled particulate matter will also be removed.



NOTE:
INSTALL GRAVEL
DESILTING PADS IN
EARTH SWALE AT
25' MAX. O.C.

DETAIL OF GRAVEL DESILTING PAD



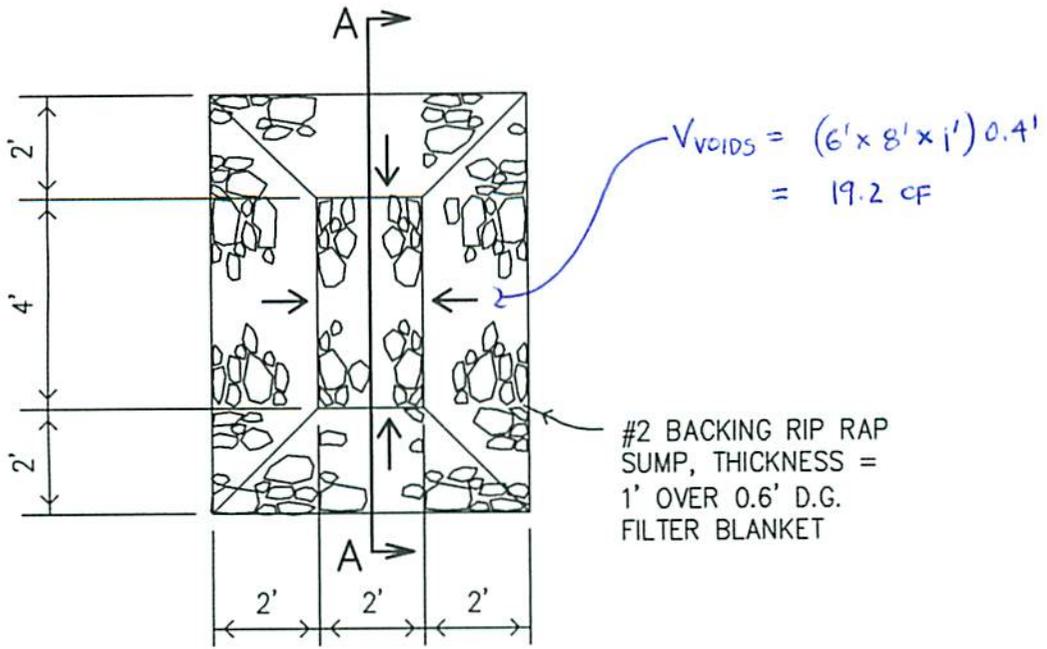
NOTE:
NO ROOF DRAIN PIPING OFF PAD. ALLOW WATER TO OVERLAND
FLOW FROM DOWNSPOUT/SPLASHBLOCK THROUGH YARD.

TYPICAL PAD DRAINAGE DETAIL

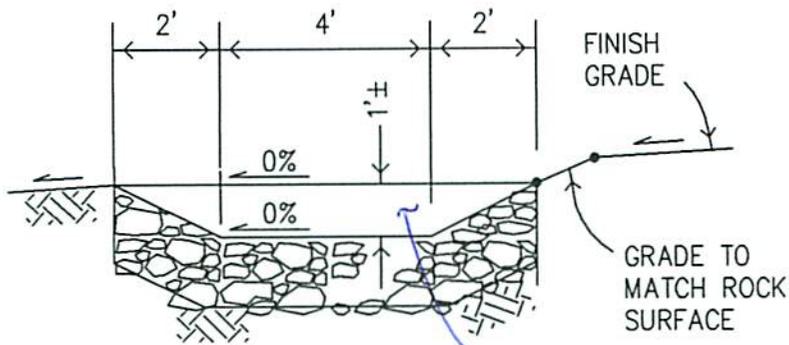
NO SCALE

VOLUME OF DESILTING PAD = $V_{VOIDS} + V_{POUNDED} = 6.5 \text{ CF EA}$

VOLUME OF SELF RETAINED AREA = $\frac{1}{2} \times 5' \times 0.5' \times 27' = 34 \text{ CF EA}$



PLAN



$V_{\text{FREEBOARD}} = (2 \text{ FT} \times 4 \text{ FT} \times 1 \text{ FT}) + (15 \text{ FT} \times 20 \text{ FT}) = 28 \text{ CF}$

SECTION A-A

DETAIL - RIP RAP SUMP

NOT TO SCALE

$V_{\text{TOTAL}} = V_{\text{FB}} + V_{\text{VOIDS}}$
 $= 28 \text{ CF} + 19.2 \text{ CF}$
 $= \boxed{47.2 \text{ CF EA.}}$

ATTACHMENT F

Maintenance Responsibility

The BMPs for this project have been chosen and designed to require the minimum maintenance after the project construction is complete. The developer will be responsible for maintenance of the BMPs until construction is complete. Permit enforcement activities by the County of San Diego and the RWQCB will provide assurance that ongoing maintenance will be performed during the construction process. The individual property owners will become responsible for the BMPs situated on their property.

Maintenance Activities per BMPs

Over time the at-grade gravel filtering pads may become ineffective due to filling with trapped sediment. At that time the pads should be replaced by the installation of an additional pad adjacent to the ineffective pad. Anticipated replacement frequency is replacement every 5 years. Estimated replacement cost \$100.00 per pad or \$500.00 per lot.

Vegetative cover on the building sites needed for soil stabilization will be maintained by the individual homeowners. The vegetation in the graded swales will be maintained by the individual homeowners in the normal course of landscape maintenance for their lot. The cost of maintenance if contracted separately could be approximately \$1000.00 per year per lot. Vegetation in the natural swales will remain in its natural condition.

Rip rap sump energy dissipaters should be inspected and maintained on a yearly basis along with the rest of the private road and drainage system. Debris and excess sediment accumulation should be removed yearly before the rainy season and after every major storm event. Design service life of the private drainage system is 25 years. The energy dissipaters may need replacement at the same time as the other improved portions of the storm drain system. Estimated yearly maintenance cost is \$100 per dissipater. Estimated replacement cost for the dissipaters on site is \$15,000.00. All estimates are current dollars and may change with inflation or other economic factors.

ATTACHMENT H

Conclusion

The increase in developed runoff after construction of this project is insignificant and will not result in any substantial erosion or siltation onsite due to the energy dissipation devices proposed. Including rock filters around the house pad and rip rap sumps and grass lined swales at the exit points of the pad. The drainage pattern of the site will not significantly change due to the construction of this project.

The combination of the proposed construction and post-construction BMP's will reduce, to the maximum extent practicable, the expected pollutants and will not adversely impact the beneficial uses or water quality of the receiving waters.

This Stormwater Management Plan has been prepared under the direction of the following Registered Civil Engineer. The Registered Civil Engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.



CREW ENGINEERING AND SURVEYING

5725 KEARNY VILLA ROAD, SUITE D
SAN DIEGO, CALIFORNIA 92123
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Ronald C. Ashman 9/08

RONALD C. ASHMAN, R.C.E. 34300
EXPIRES SEPTEMBER 30, 2009