# Major Stormwater Management Plan
# (Major SWMP)
# For
# *Aliso Canyon Subdivision*
## Permit Number: PDS2014-TM-5589
## Preparation/Revision Date:

June 2014
Revised: August 2014
October 2014

**Prepared for:**

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The selection, sizing, and preliminary design of stormwater treatment and other control measures in this plan have been prepared under the direction of the following Registered Civil Engineer and meet the requirements of Regional Water Quality Control Board Order R9-2017-0001 and subsequent amendments.


David Wiener, RCE #77285 — 09/29/14
Date

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

| | |
|---|---|
| Project Name: | Aliso Canyon Subdivision |
| Project Location: | Rancho Santa Fe, CA |
| Permit Number (Land Development Projects): | PDS2014-TM-5589 |
| Work Authorization Number (**CIP only**): | |
| Applicant: | Jim McMenamin, Zephyr Partners |
| Applicant's Address: | 700 2nd Street<br>Encinitas, CA 92024 |
| Plan Prepared By (*Leave blank if same as applicant*): | David Wiener, RBF Consulting |
| Preparer's Address: | 5050 Avenida Encinas, STE 260<br>Carlsbad, CA 62008 |
| Date: | June 2014 |

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

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

| Project Stages | Does the SWMP need revisions? | | If YES, Provide Revision Date |
|---|---|---|---|
| | YES | NO | |
| Initial Preparation | x | | June 2014 |
| Revised | | | August 2014 |
| Revised per Hydromodification Mitigation Requirement | | | |
| | | | |
| | | | |

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

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

# STEP 1

## PRIORITY DEVELOPMENT PROJECT DETERMINATION

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

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

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

## STEP 2
## PROJECT STORMWATER QUALITY DETERMINATION

Total Project Site Area ____30.7____ (Acres)

Estimated amount of disturbed acreage: ___8.45_____ (Acres)
(If >1 acre, you must also provide a WDID number from the SWRCB)

WDID: ___TBD

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

A. Total size of project site: ____30.7___ (Acres)

B. Total impervious area (including roof tops) before construction _1.25_ (Acres)

C. Total impervious area (including roof tops) after construction _3.65_ (Acres)

Calculate percent impervious before construction: B/A = __4.1___%
Calculate percent impervious after construction: C/A = __11.9___%

Please provide detailed descriptions regarding the following questions:

## TABLE 2: PROJECT SPECIFIC STORMWATER ANALYSIS

| 1. | Please provide a brief description of the project. |
|---|---|

The project site is located in the community of Rancho Santa Fe within the County of San Diego, California. The project is located just southeast of the intersection of Aliso Canyon Road and Via de las Flores (reference Thomas Bros. 1148-G6). Attachment A provides a location map for the project.

The Aliso Canyon Subdivision project proposes the subdivision of 30.7-acres for a single-family residential development and open space. The development plan includes a total of 9 lots consisting of:

a) 7 - New Single Family Residential lots averaging 2.0 acres each (Lots 1-7)

b) 1 - Existing Single Family Residential lot totaling 8.8 acres (Lot 8)

c) 1 - Existing Pacifica Ranch Drive totaling 1.3 acres (Lot 9)

The development plan will protect the existing non-native wetland areas and recommended buffer zones from future development. Each lot will contain bioretention BMP for storm water quality treatment and hydromodification mitigation of runoff from the developed portion of the lot.

The site is bound on the west side by existing residential development. Along the eastern and northern edges, it is bound by Aliso Canyon Road. Existing Pacific Ranch Drive bisects the property, running north and south. A new private street (Street 'A') is proposed to connect Pacific Ranch Drive to Aliso Canyon Road.

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

The current project conforms to existing Zoning and General Plan designations for 2.0 acre residential lots. The currently proposed Tentative Map is subject to discretionary review and conditional approval by County of San Diego.

The project site is currently used for private residences. Existing single family residential land is located adjacent to the project site. Prior to residential use, the site had been undeveloped.

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

In the existing condition, approximately half of the site flows to the west and half flows to the south. A ridgeline, located approximately through proposed Lots 2, 3, and 8, divides the property into two parts. The highest point of the property is located on proposed Lot 8, at an elevation of approximately 460 feet MSL. The portion of the property draining to the west flows a distance of approximately 1,000 feet to an elevation of approximately 380 feet MSL for an average grade of approximately 8%. The portion of the property draining to the south flows a distance of approximately 1,100 feet to an elevation of approximately 400 feet MSL for an average grade of approximately 5.5%.

The site has little impervious cover under the existing condition. The project will add approximately 2.4 acres of impervious area to the project site. This estimate assumes that each residential unit will contribute 10,000 square feet of impervious area, that there will be approximately 1,100 linear feet of a 30-foot wide private street.

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

No soils report has been prepared at this preliminary stage of the project. Therefore, the Soil Survey for the San Diego Area by the Soil Conservation Service (1973) forms the basis of this discussion.

Per the County of San Diego GIS website, the project contains soil type D.

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

There are no known contaminated soils, fills, or hazardous wastes at the project site.

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

The project site consists of a natural high point at the midpoint of the easterly property line. Approximately half of the site drains to the west from this high point, and half drains to the south. Off-site flows enter the site from the east, west, and south. The only storm drain improvement on site consists of a 30" culvert that directs flow under Pacific Ranch Drive, east to west. Flow traverses the property via natural swales.

The proposed facilities managing runoff from the site include:

- Appropriate grading of pads with vegetated swales to direct runoff away from structures to proposed bioretention areas.
- Culvert under proposed private street (Street 'A') to intercept existing flow and direct it to the south.

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

The selection, design and location of treatment BMPs for the proposed project relied heavily on the project-wide drainage plan. BMP alternatives were evaluated for their relative effectiveness for treating potential pollutants from the project site; technical feasibility; relative costs and benefits; and applicable legal, institutional, and other constraints. Table 12 provides a list of LID and Treatment-Control BMP alternatives and identifies the BMPs selected for the project site.

The project proposes implementing vegetated swales at 1% along the lot perimeters. Nine bioretention basins are also proposed to provide water quality treatment and hydromodification mitigation. Riprap energy dissipaters are proposed at the discharge and concentration points within the bioretention basins. A bioretention swale is proposed to treat the improved portions of Aliso Canyon Road to the east of the site.

| 8. | Is this project within the environmentally sensitive areas as defined on the maps in Appendix A of the *County of San Diego Standard Urban Storm Water Mitigation Plan for Land Development and Public Improvement Projects?* | |
|---|---|---|
| Yes | | No |
| | | ✓ See Figure below |

| 9. | Is this an emergency project? If yes, please provide a description below. | |
|---|---|---|
| Yes | | No |
| | | ✓ |

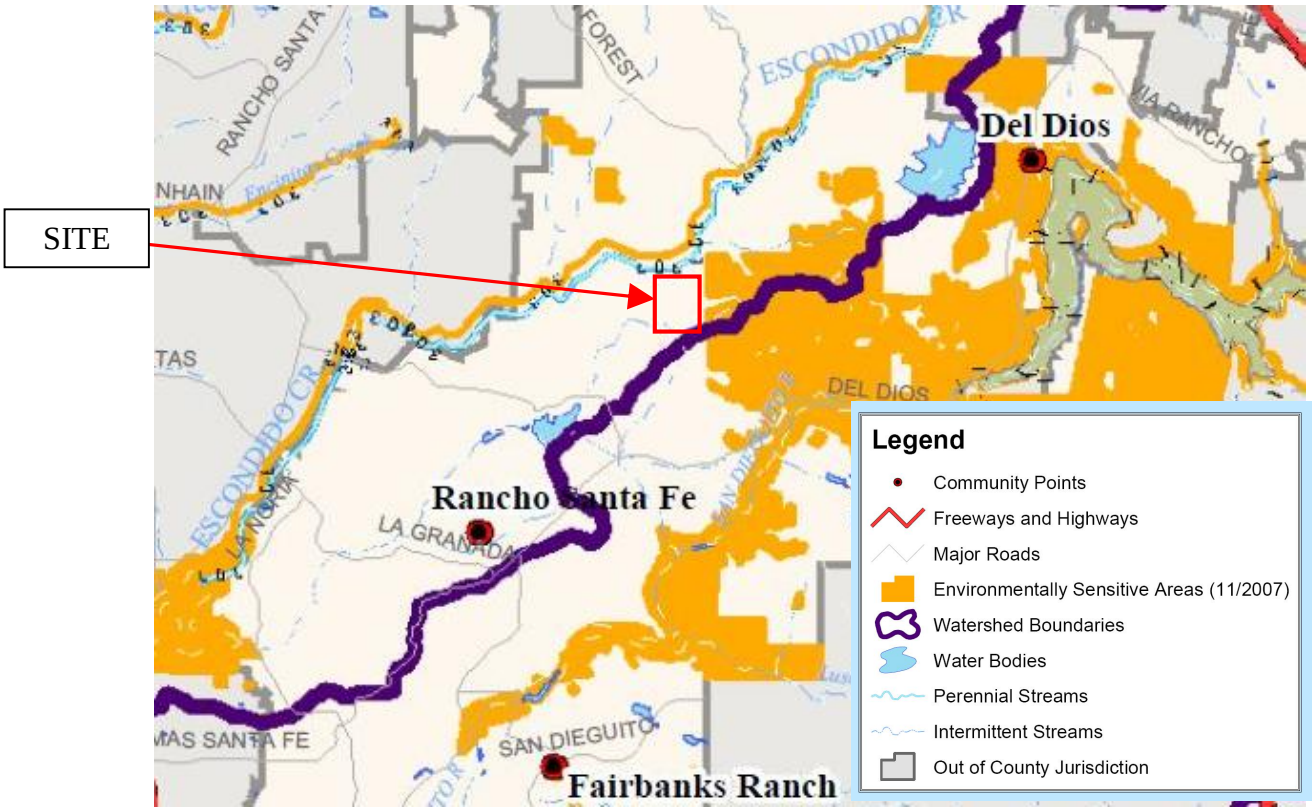


**Figure 1: Environmentally Sensitive Areas**
*(Appendix A – County of San Diego Standard Storm Water Mitigation Plan for Land Development and Public Improvement Projects)*

## CHANNELS & DRAINAGES

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

### TABLE 3: CHANNEL & DRAINAGE ANALYSIS

| No. | CRITERIA | YES | NO | N/A | COMMENTS |
|---|---|---|---|---|---|
| 1. | Will the project include work in channels? | | ✓ | | If YES go to 2<br>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. | | | | Continue to 11. |
| 11. | “Hardening“ natural downstream areas to prevent erosion is not an acceptable technique for protecting channel slopes, unless pre-development conditions are determined to be so erosive that hardening would be required even in the absence of the proposed development. | | | | Continue to 12. |
| 12. | Provide other design principles that are comparable and equally effective. | | | | Continue to 13. |
| 13. | End | ✓ | | | |

**TEMPORARY CONSTRUCTION BMPS**

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

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

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

**EXCEPTIONAL THREAT TO WATER QUALITY DETERMINATION**

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

**TABLE 4: EXCEPTIONAL THREAT TO WATER QUALITY DETERMINATION**

| No. | CRITERIA | YES | NO | INFORMATION |
|---|---|---|---|---|
| 1. | Is all or part of the proposed project site within 200 feet of waters named on the Clean Water Act (CWA) Section 303(d) list of Water Quality Limited Segments as impaired for sedimentation and/or turbidity? Current 303d list may be obtained from the following site: http://www.swrcb.ca.gov/tmdl/docs/303dlists2006/approved/r9_06_303d_reqtmdls.pdf | | ✓ | If YES, continue to 2.<br>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.<br>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.<br>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.<br>If NO, go to 5. |
| 5. | Project is not required to use Advanced Treatment BMPs. | ✓ | | Document for Project Files by referencing this checklist. |
| 6. | Project poses an "exceptional threat to water quality" and is required to use Advanced Treatment BMPs. | | | Advanced Treatment BMPs must be consistent with WPO section 67.811(b)(20)(D) performance criteria |

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

# STEP 3

## HYDROMODIFICATION DETERMINATION

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

### TABLE 5: HYDROMODIFICATION DETERMINATION

| | QUESTIONS | YES | NO | Information |
|---|---|---|---|---|
| 1. | Will the project reduce the pre-project impervious area and are the unmitigated post-project outflows (outflows without detention routing) to each outlet location less as compared to the pre-project condition? | | ✓ | If NO, continue to 2. If YES, go to 7. |
| 2. | Would the project site discharge runoff directly to an exempt receiving water, such as the Pacific Ocean, San Diego Bay, an exempt reservoir, or a tidally-influenced area? | | ✓ | If NO, continue to 3. If YES, go to 7. |
| 3. | Would the project site discharge to a stabilized conveyance system, which has the capacity for the ultimate Q10, and extends to the Pacific Ocean, San Diego Bay, a tidally influenced area, and exempt river reach or reservoir? | | ✓ | If NO, continue to 4. If YES, go to 7 |
| 4. | Does the contributing watershed area to which the project discharges have an impervious area percentage greater than 70 percent? | | ✓ | If NO, continue to 5. If YES, go to 7. |
| 5. | Is this an urban infill project which discharges to an existing hardened or rehabilitated conveyance system that extends beyond the "domain of analysis," where the potential for cumulative impacts in the watershed are low, and the ultimate receiving channel has a "Low" susceptibility to erosion as defined in the SCCWRP channel assessment tool? | | ✓ | If NO, continue to 6. If YES, go to 7. |
| 6. | Project is required to manage hydromodification impacts. | ✓ | | Reference Appendix G "Hydromodification Management Plan" of the County SUSMP. |
| 7. | Project is not required to manage hydromodification impacts. | | | Hydromodification Exempt. Keep on file |

# STEP 4

## POLLUTANTS OF CONCERN DETERMINATION

### WATERSHED

Please check the watershed(s) for the project.

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

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

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

### HYDROLOGIC SUB-AREA NAME AND NUMBER(S)

| Number | Name |
|---|---|
| 905.11 | Rancho Santa Fe |
| 904.61 | San Elijo |

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

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

| RECEIVING WATERS (river, creek, stream, etc.) | Hydrologic Unit Basin Number | Impairment(s) listed [303(d) listed waters or waters with established TMDLs ] List the impairments identified in Table 7. | Distance to Project |
|---|---|---|---|
| **San Dieguito River** | 905.11 | None | 1 mile |
| **Escondido Creek** | 904.61 | None | 1 mile |

http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/303dlists2006/epa/r9_06_303d_reqtmdls.pdf

### GROUND WATERS

| Ground Waters | Hydrologic Unit Basin Number | MUN | AGR | IND | PROC | GWR | FRESH |
|---|---|---|---|---|---|---|---|
| **Solana Beach** | 905.10 | ● | ● | ● | | | |
| **San Elijo** | 904.61 | ○ | ● | ● | | | |
| | | | | | | | |

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

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

### PROJECT ANTICIPATED AND POTENTIAL POLLUTANTS

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

| | ***General Pollutant Categories*** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ***PDP Categories*** | Sediments | Nutrients | Heavy Metals | Organic Compounds | Trash & Debris | Oxygen Demanding Substances | Oil & Grease | Bacteria & Viruses | Pesticides |
| Detached Residential Development | X | X | | | X | X | X | X | X |
| Attached Residential Development | X | X | | | X | P(1) | P(2) | P | X |
| Commercial Development 1 acre or greater | P(1) | P(1) | | P(2) | X | P(5) | X | P(3) | P(5) |
| Heavy industry /industrial development | X | | X | X | X | X | X | | |
| Automotive Repair Shops | | | X | X(4)(5) | X | | X | | |
| Restaurants | | | | | X | X | X | X | |
| Hillside Development >5,000 $ft^2$ | 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.

**PROJECT POLLUTANTS OF CONCERN SUMMARY TABLE**

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

primary pollutants of concern exist, those pollutants identified as anticipated shall be considered secondary pollutants of concern.

### TABLE 7: PROJECT POLLUTANTS OF CONCERN

| Pollutant Category | Anticipated (X) | Potential (P) | Surface Water Impairments |
|---|---|---|---|
| Sediments | X | | N/A |
| Nutrients | X | | Phosphorus, Total Nitrogen as N, |
| Heavy Metals | X | | Selenium |
| Organic Compounds | X | | N/A |
| Trash & Debris | X | | N/A |
| Oxygen Demanding Substances | X | | Dissolved Oxygen |
| Oil & Grease | X | | N/A |
| Bacteria & Viruses | X | | Enterococcus, Fecal Coliform |
| Pesticides | X | | TDS, Polychlorinated Biphenyls (PCBs) |

# STEP 5

## LID AND SITE DESIGN STRATEGIES

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

### TABLE 8: LID AND SITE DESIGN

| |
|---|
| 1. Conserve natural Areas, Soils, and Vegetation |
| ☐ Preserve well draining soils (Type A or B) |
| ☒ Preserve Significant Trees |
| ☒ Preserve critical (or problematic) areas such as floodplains, steep slopes, wetlands, and areas with erosive or unstable soil conditions |
| ☐ Other. Description: |
| 2. Minimize Disturbance to Natural Drainages |
| ☒ Set-back development envelope from drainages |
| ☒ Restrict heavy construction equipment access to planned green/open space areas |
| ☐ Other. Description: |
| 3. Minimize and Disconnect Impervious Surfaces (see 5) |
| ☐ Clustered Lot Design |
| ☒ Items checked in 5? |
| ☐ Other. Description: |
| 4. Minimize Soil Compaction |
| ☒ Restrict heavy construction equipment access to planned green/open space areas |
| ☐ Re-till soils compacted by construction vehicles/equipment |
| ☐ Collect & re-use upper soil layers of development site containing organic Materials |
| ☐ Other. Description: |
| 5. Drain Runoff from Impervious Surfaces to Pervious Areas |
| <u>LID Street & Road Design</u> |
| ☒ Curb-cuts to landscaping |
| ☒ Rural Swales |
| ☐ Concave Median |
| ☐ Cul-de-sac Landscaping Design |
| ☒ Other. Description: Curb-cuts to bioretention areas. |

| |
|---|
| LID Parking Lot Design |
| ☐ Permeable Pavements |
| ☐ Curb-cuts to landscaping |
| ☒ Other. Description: Not applicable |
| LID Driveway, Sidewalk, Bike-path Design |
| ☐ Permeable Pavements (easterly access road) |
| ☒ Pitch pavements toward landscaping |
| ☐ Other. Description: |
| LID Building Design |
| ☐ Cisterns & Rain Barrels |
| ☒ Downspout to swale or landscaping |
| ☐ Vegetated Roofs |
| ☐ Other. Description: |
| LID Landscaping Design |
| ☒ Soil Amendments |
| ☒ Reuse of Native Soils |
| ☒ Smart Irrigation Systems |
| ☐ Street Trees |
| ☐ Other. Description: |
| 6. Minimize erosion from slopes |
| ☒ Disturb existing slopes only when necessary |
| ☐ Minimize cut and fill areas to reduce slope lengths |
| ☐ Incorporate retaining walls to reduce steepness of slopes or to shorten slopes |
| ☒ Provide benches or terraces on high cut and fill slopes to reduce concentration of flows |
| ☒ Rounding and shaping slopes to reduce concentrated flow |
| ☒ Collect concentrated flows in stabilized drains and channels |
| ☐ Other. Description: |

# STEP 6

## SOURCE CONTROL

Please complete the checklist on the following pages to determine Source Control BMPs. Below is instruction on how to use the checklist. (Also see instructions on page 40 of the *SUSMP)*

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

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

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

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

The Source Control BMPs for the proposed project have been selected from the Source Control BMP checklist (pg.25-35). The checklist is based on the potential sources of runoff pollutants. For the project activities, on-site storm drain inlets have been identified as a potential source of runoff pollutants, as well as landscape/outdoor pesticide use, roofing materials and sidewalk areas. The proposed Source Control BMPs have been selected to limit the adverse impacts of these potential sources. Source Control BMPs are as follows:

- All new storm drain inlets/catch basins that are constructed as part of this project will be labeled with the message "No Dumping – Drains to Ocean" or equivalent message as directed by the City. All such labels will be maintained in a legible condition.

- The project includes efficient landscape design, which includes grouping of plants with similar water requirements to reduce excess irrigation runoff and promote surface infiltration. The landscape design also maximizes the use of non-invasive native plant species and plants with low water requirements when possible. The landscape irrigation system will use programmable timers and include automatic valves to shut-off water in case of rapid pressure drop (indicating possible water leaks).

- Roofing material will not be made of copper or other unprotected metals that may leach into stormwater runoff.

- Sidewalks shall be swept regularly to prevent the accumulation of litter and debris.

- Last, a homeowner outreach program and "on-lot treatment" will be used as a Source Control BMP. More detail is provided below Table 9 in regards to the homeowner outreach program and "on-lot treatment" requirements and expectations.

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

**TABLE 9: PROJECT SOURCE CONTROL BMPS**

| *Potential source of runoff pollutants* | *Permanent source control BMPs* | *Operational source control BMPs* |
|---|---|---|
| A. On-site storm drain inlets. | 1. Mark all inlets with the word "No Dumping! Flows to Bay" or similar. | 1. Maintain and periodically repaint and replace inlet markings<br>2. Provide stormwater pollution prevention information to new site owners, lessees, or operators.<br>3. See Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbook. |
| D2. Landscape/ Outdoor Pesticide Use | 1. Preserve existing native trees, shrubs, and ground cover to the maximum extend possible.<br>2. Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.<br>3. Consider using pest-resistant plans, especially adjacent to hardscape.<br>4. To insure successful establishment, select plans appropriate to site soils, slops, climate, sun, wind, rain, land use, air movement, ecological | 1. Maintain landscaping using minimum or no pesticides.<br>2. See Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbook.<br>3. Provide IPM information to new owners, lessees and operators. |
| O. Miscellaneous Drain or Wash Water | 1. Avoid roofing, gutters, and trim made of copper or | |

| | | |
|---|---|---|
| -Roofing, gutters, and trim. | other unprotected metals that may leach into runoff. | |
| P. Plaza, sidewalks and parking lots. | | 1. Plazas, sidewalks, and parking lots shall be swept regularly to prevent the accumulation of litter and debris. Debris from pressure washing shall be collected to prevent entry into the storm drain system. Washwater containing any cleaning agent or degrease shall be collected end discharged to the sanitary sewer and not discharge to a storm drain. |

**Basic Homeowner Outreach Program**

As stated above, one source-control best management practice for residential sites is pollution prevention outreach. The key to a successful outreach campaign is to target a message to a specific audience, such as homeowners. At the sale of the property or lease-signing, the homeowner or tenant will be presented with a brochure to encourage them to develop and implement source-control best management practices. Another strategy is to attach brochures as non-binding but informative parts of private road maintenance or structural BMP maintenance agreements used for ensuring the maintenance of the structural treatment control measures. Primary areas of source-control BMP for homeowners include:

**Lawn and Garden Activities.** Lawn and garden activities can result in contamination of storm water through pesticide, soil, and fertilizer runoff. Proper landscape management, however, can effectively reduce water use and contaminant runoff and enhance the aesthetics of a property. Environmentally friendly landscape management can protect the environment through careful planning and design, routine soil analysis, appropriate plant selection, use of practical turf areas, water use efficiency, use of mulches, and appropriate maintenance. Additional activities that benefit water resources include maintaining healthy plants and lawns and composting lawn wastes. Healthy plants are less susceptible to diseases and insects and therefore require minimal use of pest control measures. To promote healthy plants, it is often beneficial to till composted material into the soil. Recycling of garden wastes by composting is also effective at reducing waste, although compost bins and piles should not be located next to waterways or storm drains because leachate from compost materials can cause contamination.

**Water Conservation Practices.** By making minor changes in water use habits, each household can reduce its water consumption while saving money on water and sewage bills. Homeowners can be made aware of practices like checking regularly for plumbing leaks and checking for water leaks by monitoring their water meters when no water is being used (such as when they go on vacation).

**BASIC HOMEOWNER OUTREACH PROGRAM**

| |
|---|
| ❑ Do not dispose of liquids or other materials to the storm drain system |
| ❑ Report illegal dumping of any substance (liquids, trash, household toxics) to the County's toll free, 24-hour hotline 1-888-846-0800 |
| ❑ Utilize the County Household Toxics Program at (800) 246-1233, for disposal of household toxics |
| ❑ Keep lawn clippings and other landscaping waste out of gutters and streets by placing it with trash for collection or by composting it |
| ❑ Clean up and properly dispose of pet waste. It is best to flush pet waste. Alternatives to flushing are placing into trash or burying it in your yard (at least 3-ft deep). |
| ❑ Observe parking restriction for street sweeping. |
| ❑ Wash automobiles at car washes or on pervious surfaces (lawns) to keep wash water out of the storm drain system. |
| ❑ Avoid excessive or improper use or disposal of fertilizers, pesticides, herbicides, fungicides, cleaning solutions, and automotive and paint products. |
| ❑ Use biodegradable, non-toxic, and less toxic alternative products to the extent possible. |
| ❑ Cover garbage containers and keep them in good repair. |
| ❑ Sweep sidewalks instead of hosing down. |
| ❑ Water lawn properly to reduce runoff. |

*Source: www.co.san-diego.ca.us/deh/stormwater/residential.html*

**Pet Waste Management.** When pet waste is not properly disposed of, it can wash into nearby water bodies or can be carried by runoff into storm drains. Homeowners should be encouraged to dispose of pet waste with regular trash, bury it in their yards, or flush it down the toilet. San Diego County prefers that pet waste be flushed down the drain. Alternatives to flushing include placing pet waste in the trash or burying it at least 3 feet in the ground.

**Trash Management.** Homeowners should be informed about their options for recycling and waste disposal, as well as the consequences of littering. It is especially important to inform residents of proper disposal procedures for household hazardous wastes.

**"On-Lot Treatment"**

"On-lot treatment" describes a series of practices designed to treat runoff from individual residential lots. Their primary purpose is to manage rooftop, driveway and sidewalk

runoff. Managing runoff from these sources helps to disconnect impervious surfaces and to reduce the effect of increased impervious cover in a watershed. The project anticipates using landscaped areas and vegetated swales on each lot to treat runoff.

With few exceptions, some sort of on-lot treatment can be applied to almost all sites. However, while on-site treatment of residential storm water runoff has been encouraged, it has not generally been an option to meet storm water requirements. This practice is changing, as municipalities and other storm water regulators realize the value of these treatment processes. According to the EPA, there are currently at least two jurisdictions that offer "credits" in exchange for the application of on-site storm water management practices. In Denver, Colorado, sites designed with methods to reduce "directly connected impervious cover" are permitted to use a lower site impervious area when computing the required storage of storm water facilities. Likewise, in Maryland, new regulations allow designers to subtract each rooftop that is disconnected from the total site impervious cover when calculating required storage in storm water management practices.

**A. Project Location**

Roof leaders *will be* used on all homes built within the proposed project. Runoff will also be diverted to a pervious area or to a treatment area on each individual lot using site grading, channels or berms, as opposed to flowing directly to the street and thus to the storm drain system. Cisterns and rain barrels, practices that store rooftop runoff, may be used at the discretion of the individual homeowners.

**B. Siting and Design Considerations**

Although most residential lots can incorporate on-lot treatment, the best option for a site depends on both site design constraints and the preferences of the homeowner. Bioretention and vegetated swales need to meet the siting requirements of those practices. The use of cisterns and rain barrels has far fewer site constraints. However, for this practice to be effective, homeowners must have a use for the stored water. These practices are therefore best suited to homeowners who have some active interest in gardening or landscaping.

Although these practices are simple compared with many other post-construction storm water practices, the designs need to incorporate the same basic elements of any other storm water practice. Pretreatment is important to ensure that these practices, such a roof leaders, do not become clogged with leaf debris. Rain barrels and cisterns should also incorporate some sort of pretreatment, such as a mesh filter at the top of the barrel or cistern.

Storage practices should also typically incorporate some type of bypass so that larger storms flow away from the house. In rain barrels or cisterns, this bypass may be a hose set at a high level of the practice and directed away from the practice and building foundation. For vegetated swales and bioretention, an on-line design directs all flows to the management practice, but larger flows generally flow over the practice and are not treated.

**C. Maintenance Requirements**

Bioretention areas and vegetated swales require regular maintenance to ensure that the vegetation remains in good condition. Rain barrels and cisterns require minimal maintenance, but the homeowner needs to ensure that the tank is cleaned out approximately once per year.

**D. Pollutant Removal**

Although the practices used for on-lot applications can have relatively high pollutant removals, it is not clear that these pollutant removal rates can be realized with the relatively low pollutant concentrations entering the practices. One clearly recognizable benefit of many on-lot practices, however, is that they generally promote ground water recharge, either directly through infiltration or indirectly by applying or directing runoff to pervious areas.

**E. Cost Considerations**

The cost burden of on-lot practices is generally born directly by homeowners. However, homeowners can reduce costs for many of these practices by making their own on-lot practice rather than purchasing a commercial product, and maintenance costs are essentially free.

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

| IF THESE SOURCES WILL BE ON THE PROJECT SITE … | … THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs | | |
|---|---|---|---|
| **1**<br>**Potential Sources of Runoff Pollutants** | **2**<br>**Permanent Controls—Show on Source Control Exhibit, Attachment B** | **3**<br>**Permanent Controls—List in Table 9 and Narrative** | **4**<br>**Operational BMPs—Include in Table 9 and Narrative** |
| ❑ **D1.** Need for future indoor & structural pest control | | ❑ Note building design features that discourage entry of pests. | ❑ Provide Integrated Pest Management information to owners, lessees, and operators. |

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

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

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

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

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| ❑ **J. Vehicle and Equipment Cleaning** | ❑ **Show on drawings as appropriate:**<br><br>**(1) Commercial/industrial facilities having vehicle /equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses.**<br><br>**(2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use).**<br><br>**(3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer.**<br><br>**(4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.** | ❑ **If a car wash area is not provided, describe measures taken to discourage on-site car washing and explain how these will be enforced.** | **Describe operational measures to implement the following (if applicable):**<br><br>❑ **Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system.**<br><br>❑ **Car dealerships and similar may rinse cars with water only.**<br><br>✓ **See Fact Sheet SC-21, "Vehicle and Equipment Cleaning," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** |

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|---|---|---|---|
| ❑ **K. Vehicle/Equipment Repair and Maintenance** | ❑ **Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater.**<br><br>❑ **Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas.**<br><br>❑ **Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.** | ❑ **State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area.**<br><br>❑ **State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.**<br><br>❑ **State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.** | **In the SUSMP report, note that all of the following restrictions apply to use the site:**<br><br>❑ **No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains.**<br><br>❑ **No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately.**<br><br>❑ **No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment.** |

| | | | |
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| ❑ **L. Fuel Dispensing Areas** | ❑ **Fueling areas[1] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable.**<br><br>❑ **Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.** | | ❑ **The property owner shall dry sweep the fueling area routinely.**<br><br>❑ **See the Business Guide Sheet, "Automotive Service—Service Stations" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** |

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

| | | | |
|---|---|---|---|
| ❑ **M.** Loading Docks | ❑ Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas should be drained to the sanitary sewer where feasible. Direct connections to storm drains from depressed loading docks are prohibited.<br><br>❑ Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation.<br><br>Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.<br><br>❑ | | ❑ Move loaded and unloaded items indoors as soon as possible.<br><br>❑ See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com |
| ❑ **N.** Fire Sprinkler Test Water | | ❑ Provide a means to drain fire sprinkler test water to the sanitary sewer. | ❑ See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com |

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

# STEP 7

## LID AND TREATMENT CONTROL SELECTION

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

| Will this project be utilizing the unified LID design procedure as described in Chapter 4 of the Local SUSMP? *(If yes, please document in Attachment D following the steps in Chapter 4 of the County SUSMP)* | |
|---|---|
| Yes | No |
| ✓ | |
| If this project is not utilizing the unified LID design procedure, please describe how the alternative treatment facilities will comply with applicable LID criteria, stormwater treatment criteria, and hydromodification management criteria. | |
| | |

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

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

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

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

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

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

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

**TABLE 12: PROJECT LID AND TC-BMPS – BMPs designed to treat stormwater (e.g., LID and hydromod) shall be considered TCBMPs.**

| TCBMP Type | Water Quality Treatment | Hydromodification Flow Control |
|---|---|---|
| **Bioretention Facilites (LID)** | | |
| ☒ Bioretention area | x | x |
| ☐ Flow-through Planter | | |
| ☐ Cistern with Bioretention Facility | | |
| **Basins** | | |
| ☐ Extended/dry detention basin with grass/vegetated lining | | |
| ☐ Extended/dry detention basin with impervious lining | | |
| ☐ Underground Vault | | |
| ☐ Cistern | | |
| **Infiltration Devices (LID)** | | |
| ☐ Infiltration basin | | |
| ☐ Infiltration trench | | |

| | | |
|---|---|---|
| ☐ Other_____ | | |
| **Wet Ponds and Constructed Wetlands** | | |
| ☐ Wet pond/basin (permanent pool) | | |
| ☐ Constructed wetland | | |
| **Vegetated Swales (LID[1])** | | |
| ☒ Vegetated Swale | | |
| **Media Filters** | | |
| ☐ Austin Sand Filter | | |
| ☐ Delaware Sand Filter | | |
| ☐ Multi-Chambered Treatment Train (MCTT) | | |
| **Higher-rate Biofilters** | | |
| ☐ Tree-pit-style unit | | |
| ☐ Other_____ | | |
| **Higher-rate Media Filters** | | |
| ☐ Vault-based filtration unit with replaceable cartridges | | |
| ☐ Other_____ | | |
| **Hydrodynamic Separator Systems** | | |
| ☐ Swirl Concentrator | | |
| ☐ Other_____ | | |
| **Trash Racks** | | |
| ☐ Catch Basin Insert | | |
| ☐ Catch Basin Insert w/ Hydrocarbon boom | | |
| ☐ Other_____ | | |
| **Self-Retaining Areas (LID)** | | |
| ☐ Permeable Pavements | | |
| ☐ Self-Retaining | | |
| ☐ Vegetated Roofs | | |
| | | |

[1] Must be designed per SUSMP "Vegetated Swales" design criteria for water quality treatment credit (p. 102-103).

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

- Create a Construction Plan SWMP Checklist for your project.

Instructions on how to fill out table

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

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

| Stormwater Treatment Control and LID BMP's[1] | | | |
|---|---|---|---|
| Description / Type | Sheet | Maintenance Category | Revisions |
| Vegetated Swales | | 1st Category | |
| Bioretention Areas | | 2nd Category | |
| Riprap Energy Dissipaters (Site/Source Control) | | 2nd Category | |
| (1) BMPs designed to treat stormwater (e.g., LID and hydromod) shall be considered TCBMPs. | | | |

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

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

The selection, design and location of treatment BMPs for the proposed project relied heavily on the project-wide drainage plan. BMP alternatives were evaluated for their relative effectiveness for treating potential pollutants from the project site; technical feasibility; relative costs and benefits; and applicable legal, institutional, and other constraints. Table 12 provides a list of LID and Treatment-Control BMP alternatives and identifies the BMPs selected for the project site.

Of the treatment control options available for this project, wet ponds and constructed wetlands rely on a perennial water source, which is generally difficult to sustain in the project's arid environment. Filtration devices, such as sand filters and media filters, typically have medium to low removal efficiencies for the project's pollutants of concern. An underground sand/media filter is not recommended because of lack of space. Since the proposed project site consists of a generally flat graded pad, implementing several filters for smaller drainage areas is not feasible due to the lack of required head needed to ensure that water passes through the filter.

The Aliso Canyon project proposes implementing vegetated swales at 1% along the lot perimeter. Bioretention basins are also proposed to provide both water quality treatment and hydromodification mitigation. Riprap energy dissipaters are proposed at the discharge and concentration points within the proposed bioretention basins. Two bioretention swales are proposed to treat the improved portion of Aliso Canyon Road to the east.

**Vegetated Swales**
Nutrients are inorganic substances, such as nitrogen and phosphorus, and primary sources of nutrients in urban runoff are fertilizers and eroded soils. The proposed project includes slope areas that will be vegetated to reduce the potential for soil erosion. Landscaped areas between the residential homes will be depressed and vegetated to form swales, which will also reduce soil erosion as well as provide opportunity for nutrient uptake by planted material. The swales have been sized according to the recommendations of the 2003 California New Development BMP Handbook, Fact Sheet TC-30 (refer to Appendix B for sizing calculations). (Refer to **Attachment D** for design calculations).

**Bioretention Areas**
The project proposes bioretention which will benefit both hydromodification mitigation and water quality. Because of the type D soils, bioretention areas are expected to include a sub-grade side wall impermeable liner to prevent lateral migration of runoff, a subgrade section of 12-inches of gravel, 18-inches minimum of engineering media, and a 4-inches of 100% voids (ponding area), and perforated sub-drains with orifice control outlet.

**Bioretention Swale**
The project proposes installation of two bioretention swales to treat runoff from the improved portion of Aliso Canyon Road. The road will be widened to 24-feet for fire access. Runoff from the road will enter vegetated swales running parallel to the roadway. The swales will direct flow into 10-wide bioretention swales at the downstream end. Flow leaving the bioretention swales will enter vegetated swale that either enters a downstream storm drain, or existing natural drainage conveyance.

Notes: In the following table, Outfall is synonymous with the Drainage Management Areas shown in the LID Exhibit in Attachment C. Thus, Outfall 1 is the outfall for DMA #1.
Please provide the sizing design calculations for each Drainage Management Area in Attachment D. Guidelines for design calculations are located in Chapter 4 of the County SUSMP. To assist in these calculations a BMP sizing calculator is available for use at the following location: http://www.projectcleanwater.org/html/wg_susmp.html

# STEP 8

## OPERATION AND MAINTENANCE

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

### TABLE 13: PROJECT BMP CATEGORY

| CATEGORY | SELECTED | | BMP Description |
|---|---|---|---|
| | YES | NO | |
| First[1] | X | | Vegetated swales<br>Bioretention Areas for Lot treatment |
| Second[2] | X | | Bioretention Areas for Street treatment |
| Third[3] | | X | |
| Fourth[4] | | X | |

Note:

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

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

**TABLE 14: PROJECT SPECIFIC LID AND TC-BMPS**

| Treatment Control BMPs (TCBMPs)[1,2] (List all from SWMP) | | |
|---|---|---|
| **Lot Number Or Location** | **Description/Type** | **Sheet** |
| 1 | Bioretention Area | TBD |
| 2 | Bioretention Area | TBD |
| 3 | Bioretention Area | TBD |
| 4 | Bioretention Area | TBD |
| 5 | Bioretention Area | TBD |
| 6 | Bioretention Area | TBD |
| 7 | Bioretention Area | TBD |
| | | |
| | | |

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

* For location of BMP's, see approved Record Plan dated _TBD_, plan TBD sheet _ TBD_.

- Responsible Party for the Construction Phase:

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

Developer's Name: Zephyr Partners

Address: 700 2nd Street

City: Encinitas State: CA Zip: 92024

Email Address: Jim@Zephyrpartners.com

Phone Number: (858) 461-5109

Engineer of Work: Tim Thiele

Engineer's Phone Number: (760) 476-9193

- Responsible Party for Ongoing Maintenance:

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

Owner's Name: David Laughter

Address: P.O. Box 7

City: Rancho Santa Fe State: CA Zip: 92067

Email Address: _____

Phone Number: _____

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

- Funding Source:

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

| |
|---|
| The energy dissipaters and bioretention basins shall be located on each proposed lot (1-8). Individual homeowners are responsible for any maintenance cost that may be associated with on-lot vegetated swales and bioretention areas. |

## ATTACHMENTS

Please include the following attachments.

| ATTACHMENT | | COMPLETED | N/A |
|---|---|---|---|
| A | Project Location Map | ✓ | |
| B | Source Control Exhibit | | ✓ |
| C | Drainage Management Area (DMA) Exhibit | ✓ | |
| D | BMP Sizing Design Calculations(Water Quality and Hydromodification) and TCBMP/IMP Design Details | ✓ | |
| E | Geotechnical Certification Sheet | | ✓ |
| F | Maintenance Plan | ✓ | |
| G | Treatment Control BMP Certification for DPW Permitted Land Development Projects | ✓ | |
| H | HMP Study | ✓ | |
| I | Geomorphic Assessment | | ✓ |
| J | HMP Exemption Documentation | | ✓ |
| K | Addendum | | ✓ |

**Note:** Attachments B and C may be combined.

# ATTACHMENT A

## Project Location Map


**Source: Google Maps**

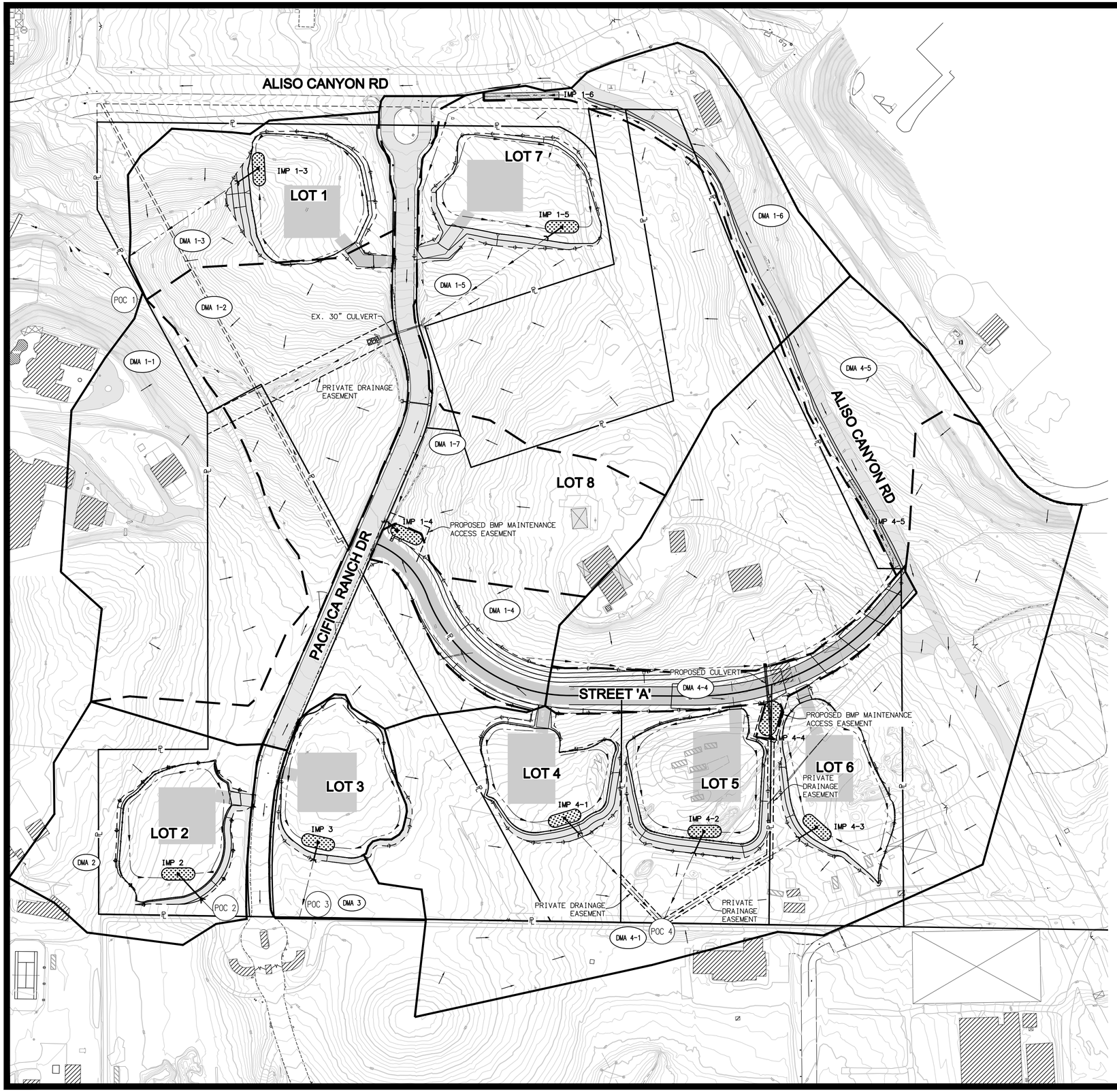
## Aliso Canyon Subdivision

# ATTACHMENT B

## Source Control Exhibit
**(See Attachment C)**

# ATTACHMENT C

## Drainage Management Area (DMA) Exhibit




## LEGEND

PROPERTY LINE

POINT OF COMPLIANCE (POC 1)

DRAINAGE MANAGEMENT AREA (DMA) BOUNDARY (DMA 1)

DMA BOUNDARY

DMA 1 SUBAREA BOUNDARY

BIORETENTION AREA
INTEGRATED MANAGEMENT PRACTICE (IMP)

BIORETENTION SWALE

VEGETATED SWALE

EXISTING IMPERVIOUS AREA

PROPOSED IMPERVIOUS AREA

SOURCE CONTROL BMPS:

1. ON-SITE STORM DRAIN SIGNAGE
2. SELECT DROUGHT TOLERANT PLANTS THAT WILL ALSO SURVIVE SATURATED SOILS WHEN LOCATED IN BIORETENTION AREAS.
3. AVOID ROOFING, GUTTERS, AND TRIM MADE OF COPPER OR OTHER UNPROTECTED METALS THAT MAY LEACH INTO RUNOFF.

TREATMENT CONTROL BMPS:

1. BIORETENTION BASINS
2. ON-LOT VEGETATED SWALES
3. BIORETENTION SWALE (ALISO CANYON ROAD)

LID AND SITE DESIGN STRATEGIES:

1. PRESERVE SIGNIFICANT TREES AND CRITICAL AREAS.
2. SET-BACK DEVELOPMENT ENVELOPE FROM DRAINAGES.
3. THE DRAINAGE CHANNEL TO THE WEST OF THE RESIDENTIAL HOMES WILL PROTECT IN PLACE.
4. RESTRICT HEAVY CONSTRUCTION EQUIPMENT ACCESS TO PLANNED GREEN/OPEN SPACE AREAS.
5. RE-TILL SOILS COMPACTED BY CONSTRUCTION VEHICLES/EQUIPMENT.
6. CURB-CUTS TO LANDSCAPING AND BIORETENTION AREAS.
7. PITCH PAVEMENTS TOWARD LANDSCAPING.
8. DOWNSPOUT TO BIORETENTION.
9. LANDSCAPING DESIGN INCLUDES SOIL AMENDMENTS AND SMART IRRIGATION SYSTEMS.
10. DISTURB EXISTING SLOPES ONLY WHEN NECESSARY.
11. MINIMIZE CUT AND FILL AREAS TO REDUCE SLOPE LENGTHS.
12. INCORPORATE RETAINING WALLS TO REDUCE STEEPNESS OF SLOPES OR TO SHORTEN SLOPES.
13. ROUNDING AND SHAPING SLOPES TO REDUCE CONCENTRATED FLOW.
14. COLLECT CONCENTRATED FLOWS IN STABILIZED DRAINS AND CHANNELS.

# ALISO CANYON SUBDIVISION
# BMP EXHIBIT

RBF CONSULTING
A Tetra Tech Company
5050 AVENIDA ENCINAS, SUITE 200
CARLSBAD, CALIFORNIA 92008-4396
760.476.9193 • FAX 760.476.9198 • www.RBF.com

H:\PDATA\137\13_Aliso Canyon\Admin\Reports\SWMP\CAD\2137718 BMP EXHIBIT.dwg 10/07/14 - 9:55am bwiener

# ATTACHMENT D

## Sizing Design Calculations and TCBMP/LID Design Details

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

**POST-CONSTRUCTION BMP SUMMARY TABLE**

| POC | DMA | Bioretention IMP | Total Area (AC) | Proposed Impervious Area (SF) | WQ Surface Area | | WQ Volume | | Water Quality Compliance Met | Peak Flow | | Detention Volume | | CEQA Compliance Met | HYDROMODIFICATION COMPLIANCE MET |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Required (SF) | Provided (SF) | Required ($ft^3$) | Provided ($ft^3$) | | Existing (cfs) | Proposed (cfs) | Required ($ft^3$) | Provided ($ft^3$) | | |
| 1 | 1-1 | - | 4.09 | 0 | - | - | - | - | - | 40.4 | 39.3 | 6,984 | 7,000 | YES | YES |
| | 1-2 | - | 3.59 | 0 | - | - | - | - | - | | | | | | |
| | 1-3 | IMP 1-3 | 2.21 | 10,000 | 499 | 1,000 | 1,007 | 1,900 | YES | | | | | | |
| | 1-4 | IMP 1-4 | 1.05 | 12,200 | 720 | 1,000 | 1,788 | 1,900 | YES | | | | | | |
| | 1-5 | IMP 1-5 | 6.37 | 10,000 | 506 | 1,000 | 1,037 | 1,900 | YES | | | | | | |
| | 1-6 | IMP 1-6 | 1.76 | 15,340 | 859 | 1,200 | 1,998 | 3,240 | YES | | | | | | |
| | 1-7 | - | 4.11 | 0 | - | - | - | - | - | | | | | | |
| 2 | 2 | IMP 2 | 2.61 | 10,000 | 490 | 1,000 | 1,149 | 2,300 | YES | 4.5 | 3.5 | 1,254 | 2,757 | YES | YES |
| 3 | 3 | IMP 3 | 1.52 | 10,000 | 518 | 1,200 | 1,101 | 2,760 | YES | 1.5 | 1.5 | 3,330 | 3,460 | YES | YES |
| 4 | 4-1 | IMP 4-1 | 15.45 | 10,000 | 476 | 1,000 | 893 | 2,300 | YES | 31.5 | 27.3 | 1,440 | 8,920 | YES | YES |
| | | IMP 4-2 | | 10,000 | 519 | 1,000 | 1,101 | 2,300 | YES | | | | | | |
| | | IMP 4-3 | | 10,000 | 499 | 1,000 | 1,007 | 2,300 | YES | | | | | | |
| | 4-4 | IMP 4-4 | 0.83 | 18,000 | 760 | 1,500 | 1,106 | 3,450 | YES | | | | | | |
| | 4-5 | IMP 4-5 | 1.51 | 17,420 | 894 | 1,250 | 1,851 | 3,375 | YES | | | | | | |

Aliso Canyon
Water Quality Volume Requirement

**Volume Based BMP:**

$$VOL_{WQ} = C * P_{WQ} * A$$

Where:

$VOL_{WQ}$ = Water Quality Volume Requirement (ac*in)
C = Node Runoff Coefficient
$P_{WQ}$ = WQ Rainfall Depth (in), Per Order No. R9-2013-0001, Section 3.c(1)(a): Treat the 24-hour 85th percentile storm event = 0.68 inches
A = Tributary Area (ac) to IMP

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **IMP 1-3** | C = | 0.51 | | **IMP 3** | C = | 0.49 | |
| | $P_{WQ}$ = | 0.68 | (in) | | $P_{WQ}$ = | 0.68 | (in) |
| | A = | 0.80 | (ac) | | A = | 0.91 | (ac) |
| | $VOL_{WQ}$ = | 0.28 | ac-in | | $VOL_{WQ}$ = | 0.30 | ac-in |
| | $VOL_{WQ}$ = | 0.02 | ac-ft | | $VOL_{WQ}$ = | 0.03 | ac-ft |
| | $VOL_{WQ}$ = | 1,007 | $ft^3$ | | $VOL_{WQ}$ = | 1,101 | $ft^3$ |
| **IMP 1-4** | C = | 0.45 | | **IMP 4-1** | C = | 0.54 | |
| | $P_{WQ}$ = | 0.68 | (in) | | $P_{WQ}$ = | 0.68 | (in) |
| | A = | 1.61 | (ac) | | A = | 0.67 | (ac) |
| | $VOL_{WQ}$ = | 0.49 | ac-in | | $VOL_{WQ}$ = | 0.25 | ac-in |
| | $VOL_{WQ}$ = | 0.04 | ac-ft | | $VOL_{WQ}$ = | 0.02 | ac-ft |
| | $VOL_{WQ}$ = | 1,788 | $ft^3$ | | $VOL_{WQ}$ = | 893 | $ft^3$ |
| **IMP 1-5** | C = | 0.50 | | **IMP 4-2** | C = | 0.49 | |
| | $P_{WQ}$ = | 0.68 | (in) | | $P_{WQ}$ = | 0.68 | (in) |
| | A = | 0.84 | (ac) | | A = | 0.91 | (ac) |
| | $VOL_{WQ}$ = | 0.29 | ac-in | | $VOL_{WQ}$ = | 0.30 | ac-in |
| | $VOL_{WQ}$ = | 0.02 | ac-ft | | $VOL_{WQ}$ = | 0.03 | ac-ft |
| | $VOL_{WQ}$ = | 1,037 | $ft^3$ | | $VOL_{WQ}$ = | 1,101 | $ft^3$ |
| **IMP 1-6** | C = | 0.46 | | **IMP 4-3** | C = | 0.51 | |
| | $P_{WQ}$ = | 0.68 | (in) | | $P_{WQ}$ = | 0.68 | (in) |
| | A = | 1.76 | (ac) | | A = | 0.80 | (ac) |
| | $VOL_{WQ}$ = | 0.55 | ac-in | | $VOL_{WQ}$ = | 0.28 | ac-in |
| | $VOL_{WQ}$ = | 0.05 | ac-ft | | $VOL_{WQ}$ = | 0.02 | ac-ft |
| | $VOL_{WQ}$ = | 1,998 | $ft^3$ | | $VOL_{WQ}$ = | 1,007 | $ft^3$ |
| **IMP 2** | C = | 0.48 | | **IMP 4-4** | C = | 0.70 | |
| | $P_{WQ}$ = | 0.68 | (in) | | $P_{WQ}$ = | 0.68 | (in) |
| | A = | 0.97 | (ac) | | A = | 0.64 | (ac) |
| | $VOL_{WQ}$ = | 0.32 | ac-in | | $VOL_{WQ}$ = | 0.30 | ac-in |
| | $VOL_{WQ}$ = | 0.03 | ac-ft | | $VOL_{WQ}$ = | 0.03 | ac-ft |
| | $VOL_{WQ}$ = | 1,149 | $ft^3$ | | $VOL_{WQ}$ = | 1,106 | $ft^3$ |
| | | | | **IMP 4-5** | C = | 0.49 | |
| | | | | | $P_{WQ}$ = | 0.68 | (in) |
| | | | | | A = | 1.53 | (ac) |
| | | | | | $VOL_{WQ}$ = | 0.51 | ac-in |
| | | | | | $VOL_{WQ}$ = | 0.04 | ac-ft |
| | | | | | $VOL_{WQ}$ = | 1,851 | $ft^3$ |

Aliso Canyon Subdivision
IMP Sizing Requirement

**IMP 1-3: Lot 1**

| | Area (square feet) | Post-Project Surface Type | DMA Runoff Factor | DMA Area x Runoff Factor |
|---|---|---|---|---|
| | 10,000 | Impervious | 1.0 | 10,000 |
| | 24,700 | Pervious | 0.1 | 2,470 |
| | | | Total | 12,470 |

| Soil Type: | IMP Name |
|---|---|
| D | 1-3 |

| IMP Sizing Factor (WQ Only) | | Minimum Area | Proposed Area |
|---|---|---|---|
| 0.04 | Bioretention | 499 | 1,000 |

Provided Volume: Bioretention

| | Area ($ft^2$) | Depth (ft) | Percent Void | Volume ($ft^3$) |
|---|---|---|---|---|
| Surface (bottom area) | 1,000 | 0.5 | 100% | 500 |
| Sub-Surface Soil | 1,000 | 3 | 40% | 1,200 |
| Sub-Surface Gravel | 1,000 | 0.5 | 40% | 200 |
| | | | Total | 1,900 |

| **Bioretention Summary** | **Surface Area REQ. $ft^2$** | **Surface Area Provided $ft^2$** | **Volume REQ. $ft^3$** | **Volume Provided $ft^3$** |
|---|---|---|---|---|
| | 499 | 1,000 | 1,007 | 1,900 |

**IMP 1-4: Street A**

| | Area (square feet) | Post-Project Surface Type | DMA Runoff Factor | DMA Area x Runoff Factor |
|---|---|---|---|---|
| | 12,200 | Impervious | 1.0 | 12,200 |
| | 58,000 | Pervious | 0.1 | 5,800 |
| | | | Total | 18,000 |

| Soil Type: | IMP Name |
|---|---|
| D | 1-4 |

| IMP Sizing Factor (WQ Only) | | Minimum Area | Proposed Area |
|---|---|---|---|
| 0.04 | Bioretention | 720 | 1,000 |

Provided Volume: Bioretention

| | Area ($ft^2$) | Depth (ft) | Percent Void | Volume ($ft^3$) |
|---|---|---|---|---|
| Surface (bottom area) | 1,000 | 0.5 | 100% | 500 |
| Sub-Surface Soil | 1,000 | 3 | 40% | 1,200 |
| Sub-Surface Gravel | 1,000 | 0.5 | 40% | 200 |
| | | | Total | 1,900 |

| **Bioretention Summary** | **Surface Area REQ. $ft^2$** | **Surface Area Provided $ft^2$** | **Volume REQ. $ft^3$** | **Volume Provided $ft^3$** |
|---|---|---|---|---|
| | 720 | 1,000 | 1,788 | 1,900 |

Aliso Canyon Subdivision
IMP Sizing Requirement

**IMP 1-5: Lot 7**

| | Area (square feet) | Post-Project Surface Type | DMA Runoff Factor | DMA Area x Runoff Factor |
|---|---|---|---|---|
| | 10,000 | Impervious | 1.0 | 10,000 |
| | 26,522 | Pervious | 0.1 | 2,652 |
| | | | Total | 12,652 |

| Soil Type: | IMP Name |
|---|---|
| D | 1-5 |

| IMP Sizing Factor (WQ Only) | | Minimum Area | Proposed Area |
|---|---|---|---|
| 0.04 | Bioretention | 506 | 1,000 |

Provided Volume: Bioretention

| | Area ($ft^2$) | Depth (ft) | Percent Void | Volume ($ft^3$) |
|---|---|---|---|---|
| Surface (bottom area) | 1,000 | 0.5 | 100% | 500 |
| Sub-Surface Soil | 1,000 | 3 | 40% | 1,200 |
| Sub-Surface Gravel | 1,000 | 0.5 | 40% | 200 |
| | | | Total | 1,900 |

| **Bioretention Summary** | **Surface Area REQ. $ft^2$** | **Surface Area Provided $ft^2$** | **Volume REQ. $ft^3$** | **Volume Provided $ft^3$** |
|---|---|---|---|---|
| | 506 | 1,000 | 1,037 | 1,900 |

**IMP 1-6: Aliso Canyon Road**

| | Area (square feet) | Post-Project Surface Type | DMA Runoff Factor | DMA Area x Runoff Factor |
|---|---|---|---|---|
| | 15,340 | Impervious | 1.0 | 15,340 |
| | 61,325 | Pervious | 0.1 | 6,133 |
| | | | Total | 21,473 |

| Soil Type: | IMP Name |
|---|---|
| D | 1-6 |

| IMP Sizing Factor (WQ Only) | | Minimum Area | Proposed Area |
|---|---|---|---|
| 0.04 | Bioretention | 859 | 1,200 |

Provided Volume: Bioretention

| | Area ($ft^2$) | Depth (ft) | Percent Void | Volume ($ft^3$) |
|---|---|---|---|---|
| Surface (bottom area) | 1,200 | 1.5 | 100% | 1,800 |
| Sub-Surface Soil | 1,200 | 2 | 40% | 960 |
| Sub-Surface Gravel | 1,200 | 1 | 40% | 480 |
| | | | Total | 3,240 |

| **Bioretention Summary** | **Surface Area REQ. $ft^2$** | **Surface Area Provided $ft^2$** | **Volume REQ. $ft^3$** | **Volume Provided $ft^3$** |
|---|---|---|---|---|
| | 859 | 1,200 | 1,998 | 3,240 |

Aliso Canyon Subdivision
IMP Sizing Requirement

**IMP 2: Lot 2**

| | Area (square feet) | Post-Project Surface Type | DMA Runoff Factor | DMA Area x Runoff Factor |
|---|---|---|---|---|
| | 10,000 | Impervious | 1.0 | 10,000 |
| | 22,450 | Pervious | 0.1 | 2,245 |
| | | | Total | 12,245 |

| Soil Type: | IMP Name | | | |
|---|---|---|---|---|
| D | 2 | | | |
| IMP Sizing Factor (WQ Only) | Bioretention | Minimum Area | Proposed Area | |
| 0.04 | | 490 | 1,000 | |

Provided Volume: Bioretention

| | Area ($ft^2$) | Depth (ft) | Percent Void | Volume ($ft^3$) |
|---|---|---|---|---|
| Surface (bottom area) | 1,000 | 0.5 | 100% | 500 |
| Sub-Surface Soil | 1,000 | 4 | 40% | 1,600 |
| Sub-Surface Gravel | 1,000 | 0.5 | 40% | 200 |
| | | | Total | 2,300 |

| | Surface Area REQ. $ft^2$ | Surface Area Provided $ft^2$ | Volume REQ. $ft^3$ | Volume Provided $ft^3$ |
|---|---|---|---|---|
| **Bioretention Summary** | 490 | 1,000 | 1,149 | 2,300 |

**IMP 3: Lot 3**

| | Area (square feet) | Post-Project Surface Type | DMA Runoff Factor | DMA Area x Runoff Factor |
|---|---|---|---|---|
| | 10,000 | Impervious | 1.0 | 10,000 |
| | 29,425 | Pervious | 0.1 | 2,943 |
| | | | Total | 12,943 |

| Soil Type: | IMP Name | | | |
|---|---|---|---|---|
| D | 3 | | | |
| IMP Sizing Factor (WQ Only) | Bioretention | Minimum Area | Proposed Area | |
| 0.04 | | 518 | 1,200 | |

Provided Volume: Bioretention

| | Area ($ft^2$) | Depth (ft) | Percent Void | Volume ($ft^3$) |
|---|---|---|---|---|
| Surface (bottom area) | 1,200 | 0.5 | 100% | 600 |
| Sub-Surface Soil | 1,200 | 4 | 40% | 1,920 |
| Sub-Surface Gravel | 1,200 | 0.5 | 40% | 240 |
| | | | Total | 2,760 |

| | Surface Area REQ. $ft^2$ | Surface Area Provided $ft^2$ | Volume REQ. $ft^3$ | Volume Provided $ft^3$ |
|---|---|---|---|---|
| **Bioretention Summary** | 518 | 1,200 | 1,101 | 2,760 |

Aliso Canyon Subdivision
IMP Sizing Requirement

**IMP 4-1: Lot 4**

| | Area (square feet) | Post-Project Surface Type | DMA Runoff Factor | DMA Area x Runoff Factor |
|---|---|---|---|---|
| | 10,000 | Impervious | 1.0 | 10,000 |
| | 18,965 | Pervious | 0.1 | 1,897 |
| | | | Total | 11,897 |

| Soil Type: | IMP Name |
|---|---|
| D | 4-1 |

| IMP Sizing Factor (WQ Only) | | Minimum Area | Proposed Area |
|---|---|---|---|
| 0.04 | Bioretention | 476 | 1,000 |

Provided Volume: Bioretention

| | Area ($ft^2$) | Depth (ft) | Percent Void | Volume ($ft^3$) |
|---|---|---|---|---|
| Surface (bottom area) | 1,000 | 0.5 | 100% | 500 |
| Sub-Surface Soil | 1,000 | 4 | 40% | 1,600 |
| Sub-Surface Gravel | 1,000 | 0.5 | 40% | 200 |
| | | | Total | 2,300 |

| Bioretention Summary | Surface Area REQ. $ft^2$ | Surface Area Provided $ft^2$ | Volume REQ. $ft^3$ | Volume Provided $ft^3$ |
|---|---|---|---|---|
| | 476 | 1,000 | 893 | 2,300 |

**IMP 4-2: Lot 5**

| | Area (square feet) | Post-Project Surface Type | DMA Runoff Factor | DMA Area x Runoff Factor |
|---|---|---|---|---|
| | 10,000 | Impervious | 1.0 | 10,000 |
| | 29,777 | Pervious | 0.1 | 2,978 |
| | | | Total | 12,978 |

| Soil Type: | IMP Name |
|---|---|
| D | 4-2 |

| IMP Sizing Factor (WQ Only) | | Minimum Area | Proposed Area |
|---|---|---|---|
| 0.04 | Bioretention | 519 | 1,000 |

Provided Volume: Bioretention

| | Area ($ft^2$) | Depth (ft) | Percent Void | Volume ($ft^3$) |
|---|---|---|---|---|
| Surface (bottom area) | 1,000 | 0.5 | 100% | 500 |
| Sub-Surface Soil | 1,000 | 4 | 40% | 1,600 |
| Sub-Surface Gravel | 1,000 | 0.5 | 40% | 200 |
| | | | Total | 2,300 |

| Bioretention Summary | Surface Area REQ. $ft^2$ | Surface Area Provided $ft^2$ | Volume REQ. $ft^3$ | Volume Provided $ft^3$ |
|---|---|---|---|---|
| | 519 | 1,000 | 1,101 | 2,300 |

Aliso Canyon Subdivision
IMP Sizing Requirement

**IMP 4-3: Lot 6**

| | Area (square feet) | Post-Project Surface Type | DMA Runoff Factor | DMA Area x Runoff Factor |
|---|---|---|---|---|
| | 10,000 | Impervious | 1.0 | 10,000 |
| | 24,633 | Pervious | 0.1 | 2,463 |
| | | | Total | 12,463 |

| Soil Type: | IMP Name |
|---|---|
| D | 4-3 |

| IMP Sizing Factor (WQ Only) | | Minimum Area | Proposed Area |
|---|---|---|---|
| 0.04 | Bioretention | 499 | 1,000 |

Provided Volume: Bioretention

| | Area ($ft^2$) | Depth (ft) | Percent Void | Volume ($ft^3$) |
|---|---|---|---|---|
| Surface (bottom area) | 1,000 | 0.5 | 100% | 500 |
| Sub-Surface Soil | 1,000 | 4 | 40% | 1,600 |
| Sub-Surface Gravel | 1,000 | 0.5 | 40% | 200 |
| | | | Total | 2,300 |

| | Surface Area REQ. $ft^2$ | Surface Area Provided $ft^2$ | Volume REQ. $ft^3$ | Volume Provided $ft^3$ |
|---|---|---|---|---|
| **Bioretention Summary** | 499 | 1,000 | 1,007 | 2,300 |

**IMP 4-4: Street A**

| | Area (square feet) | Post-Project Surface Type | DMA Runoff Factor | DMA Area x Runoff Factor |
|---|---|---|---|---|
| | 18,000 | Impervious | 1.0 | 18,000 |
| | 10,000 | Pervious | 0.1 | 1,000 |
| | | | Total | 19,000 |

| Soil Type: | IMP Name |
|---|---|
| D | 4-4 |

| IMP Sizing Factor (WQ Only) | | Minimum Area | Proposed Area |
|---|---|---|---|
| 0.04 | Bioretention | 760 | 1,500 |

Provided Volume: Bioretention

| | Area ($ft^2$) | Depth (ft) | Percent Void | Volume ($ft^3$) |
|---|---|---|---|---|
| Surface (bottom area) | 1,500 | 0.5 | 100% | 750 |
| Sub-Surface Soil | 1,500 | 4 | 40% | 2,400 |
| Sub-Surface Gravel | 1,500 | 0.5 | 40% | 300 |
| | | | Total | 3,450 |

| | Surface Area REQ. $ft^2$ | Surface Area Provided $ft^2$ | Volume REQ. $ft^3$ | Volume Provided $ft^3$ |
|---|---|---|---|---|
| **Bioretention Summary** | 760 | 1,500 | 1,106 | 3,450 |

Aliso Canyon Subdivision
IMP Sizing Requirement

**IMP 4-5: Aliso Canyon Road**

| | Area (square feet) | Post-Project Surface Type | DMA Runoff Factor | DMA Area x Runoff Factor |
|---|---|---|---|---|
| | 17,420 | Impervious | 1.0 | 17,420 |
| | 49,225 | Pervious | 0.1 | 4,923 |
| | | | Total | 22,343 |

| Soil Type: | IMP Name |
|---|---|
| D | 4-5 |

| IMP Sizing Factor (WQ Only) | | Minimum Area | Proposed Area |
|---|---|---|---|
| 0.04 | Bioretention | 894 | 1,250 |

Provided Volume: Bioretention

| | Area ($ft^2$) | Depth (ft) | Percent Void | Volume ($ft^3$) |
|---|---|---|---|---|
| Surface (bottom area) | 1,250 | 1.5 | 100% | 1,875 |
| Sub-Surface Soil | 1,250 | 2 | 40% | 1,000 |
| Sub-Surface Gravel | 1,250 | 1 | 40% | 500 |
| | | | Total | 3,375 |

| Bioretention Summary | **Surface Area REQ. $ft^2$** | **Surface Area Provided $ft^2$** | **Volume REQ. $ft^3$** | **Volume Provided $ft^3$** |
|---|---|---|---|---|
| | 894 | 1,250 | 1,851 | 3,375 |

# 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)**

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

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

II. Updates, Revisions and Errata

III. Introduction

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

IV. Responsibility for Maintenance

A. General

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

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

(3) Reference to Operation and Maintenance Agreement (if any). A copy of the agreement should be attached.

(4) Maintenance Funding

(1) Sources of funds for maintenance

(2) Budget category or line item

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

B. Staff Training Program

C. Records

D. Safety

V. Summary of Drainage Areas and Stormwater Facilities

A. Drainage Areas

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

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

B. Treatment and Flow-Control Facilities

(1) Drawings showing location and type of each facility

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

(1) Area drained and routing of discharge.

(2) Facility type and size

VI. Facility Documentation

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

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

C. Specific operation and maintenance concerns and troubleshooting

VII. Maintenance Schedule or Matrix

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

(1) Routine inspection and maintenance

(2) Annual inspection and maintenance

(3) Inspection and maintenance after major storms

B. Service Agreement Information

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

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

**Maintenance Program for Bioretention Area**

| | |
|---|---|
| **Inspection Frequency/Indications:** | Regular Inspections<br>❑ Before wet season begins (September);<br>❑ Every 60 days during wet season (September-April);<br>❑ After wet season (April).<br>Performance Inspections<br>❑ After rainfall events greater than 0.5 inch |
| **Maintenance Indications Connections** | **Maintenance Activities Connections** |
| ❑ Damage to inlet/outlet, sideslopes, headwall, or other structures | ❑ Repair inlet/outlet structures, side slopes, fences, or other structural elements as needed to maintain performance of the facility. |
| ❑ Over-grown vegetation, emergent woody vegetation and/or weeds | ❑ Trim vegetation to average height of 12 inches and remove trimmings.<br>❑ Remove emergent trees and other vegetation that are not part of bioretention basin plan and weeds<br>❑ Re-seed and re-plan barren areas prior to rainy season<br>❑ Install erosion blanket on barrent spots if re-vegetation is not successful |
| ❑ Sediment accumulation over 3 inches | ❑ Remove sediment accumulation at or near plant height |
| ❑ Trash, debris, and vegetative litter | ❑ Remove trash, debris, and vegetative litter |
| ❑ Rodents or other vectors | ❑ Abate and control rodents as necessary to maintain performance of the facility<br>❑ Drain standing water |
| **Waste Disposal** | Sediment, other pollutants, and all other waste shall be properly disposed of in a licensed landfill or by another appropriate disposal method in accordance with local, state, and federal regulations. |

**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**

**PRIVATE TREATMENT CONTROL BMP**
**OPERATION AND MAINTENANCE VERIFICATION FORM**

# BIORETENTION FACILITIES, VEGETATED SWALES & HIGHER RATE BIOFILTERS-SIDE 2

**This guide sheet provides general indicators for maintenance only and for a wide array of treatment control BMPs. Your developer prepared maintenance plans specifically for your treatment control BMP as an appendix to the Stormwater Management Plan. Also, if you have a manufactured structure, please refer to the manufacturer's maintenance instructions.**

Biofilters include the following :

☐ **Vegetated Filter Strip/Swale** ☐ **Bioswale** ☐ **Bioretention Facility** ☐ **Planter Boxes**
☐ **Manufactered Higher-Flow-Rate Biofilters, such as Tree-Pit-Style Units.**

Routine maintenance is needed to ensure that flow is unobstructed, that erosion is prevented, and that soils are held together by plant roots and are biologically active. Typical maintenance consists of the following:

| **Bioretention BMPs Inspection and Maintenance Checklist** | |
|---|---|
| **Typical Maintenance Indicators** | **Typical Maintenance Actions** |
| Accumulation of sediment (over 2 inches deep or covers vegetation), litter, or debris | Remove and properly dispose of accumulated materials, without damage to the vegetation. Confirm that soil is not clogging and that the area drains after a storm event. Till or replace soil as necessary. |
| Poor vegetation establishment | Ensure vegetation is healthy and dense enough to provide filtering and to protect soils from erosion. Replenish mulch as necessary (if less than 3 inches deep), remove fallen leaves and debris, prune large shrubs or trees, and mow turf areas. |
| Overgrown vegetation—woody vegetation not part of design is present and grass excessively tall (greater than 10 inches) | Mow or trim as appropriate, but not less than the design height of the vegetation (typically 4-6 inches for grass). Confirm that irrigation is adequate and not excessive and that sprays do not directly enter overflow grates. Replace dead plants and remove noxious and invasive weeds. |
| Erosion due to concentrated irrigation flow | Repair/re-seed eroded areas and adjust the irrigation. |
| Erosion due to concentrated stormwater runoff flow | Repair/re-seed eroded areas and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or re-grading where necessary.Remove obstructions and sediment accumulations so water disperses. |
| Standing water (BMP not draining) . If mosquito larvae are present and persistent, contact the San Diego County Vector Control Program at (858) 694-2888. Mosquito larvicides should be applied only when absolutely necessary and then only by a licensed individual or contractor. | Where there is an underdrain, such as in planter boxes and manufactured biofilters, check the underdrain piping to make sure it is intact and unobstructed. Abate any potential vectors by filling holes in the ground in and around the biofilter facility and by insuring that there are no areas where water stands longer than 96 hours following a storm . |
| Obstructed inlet or outlet structure | Clear obstructions. |
| Damage to structural components such as weirs, inlet, or outlet structures | Repair or replace as applicable. |
| Before the wet season and after rain events: remove sediment and debris from screens and overflow drains and downspouts; ensure pumps are functioning, where applicable; check integrity of mosquito screens; and; check that covers are properly seated and locked. | Where cisterns are part of the system |
| **For manufactured high-flow-rate biofilters, see manufacturer's maintenance guidelines** | |

**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:*

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*San Diego, CA 92123* ***OR***
*Email:* Watersheds@sdcounty.ca.gov

_____

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

**PRIVATE TREATMENT CONTROL BMP**
**OPERATION AND MAINTENANCE VERIFICATION FORM**

# BIORETENTION FACILITIES, VEGETATED SWALES & HIGHER RATE BIOFILTERS-SIDE 2

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Routine maintenance is needed to ensure that flow is unobstructed, that erosion is prevented, and that soils are held together by plant roots and are biologically active. Typical maintenance consists of the following:

| **Bioretention BMPs Inspection and Maintenance Checklist** | |
|---|---|
| **Typical Maintenance Indicators** | **Typical Maintenance Actions** |
| Accumulation of sediment (over 2 inches deep or covers vegetation), litter, or debris | Remove and properly dispose of accumulated materials, without damage to the vegetation. Confirm that soil is not clogging and that the area drains after a storm event. Till or replace soil as necessary. |
| Poor vegetation establishment | Ensure vegetation is healthy and dense enough to provide filtering and to protect soils from erosion. Replenish mulch as necessary (if less than 3 inches deep), remove fallen leaves and debris, prune large shrubs or trees, and mow turf areas. |
| Overgrown vegetation—woody vegetation not part of design is present and grass excessively tall (greater than 10 inches) | Mow or trim as appropriate, but not less than the design height of the vegetation (typically 4-6 inches for grass). Confirm that irrigation is adequate and not excessive and that sprays do not directly enter overflow grates. Replace dead plants and remove noxious and invasive weeds. |
| Erosion due to concentrated irrigation flow | Repair/re-seed eroded areas and adjust the irrigation. |
| Erosion due to concentrated stormwater runoff flow | Repair/re-seed eroded areas and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or re-grading where necessary.Remove obstructions and sediment accumulations so water disperses. |
| Standing water (BMP not draining) . If mosquito larvae are present and persistent, contact the San Diego County Vector Control Program at (858) 694-2888. Mosquito larvicides should be applied only when absolutely necessary and then only by a licensed individual or contractor. | Where there is an underdrain, such as in planter boxes and manufactured biofilters, check the underdrain piping to make sure it is intact and unobstructed. Abate any potential vectors by filling holes in the ground in and around the biofilter facility and by insuring that there are no areas where water stands longer than 96 hours following a storm . |
| Obstructed inlet or outlet structure | Clear obstructions. |
| Damage to structural components such as weirs, inlet, or outlet structures | Repair or replace as applicable. |
| Before the wet season and after rain events: remove sediment and debris from screens and overflow drains and downspouts; ensure pumps are functioning, where applicable; check integrity of mosquito screens; and; check that covers are properly seated and locked. | Where cisterns are part of the system |
| **For manufactured high-flow-rate biofilters, see manufacturer's maintenance guidelines** | |

COUNTY OF SAN DIEGO
DEPARTMENT OF PUBLIC WORKS
POST-CONSTRUCTION TRACKING AND
INVENTORY REPORT

## General Project Information

Permit Number_____SWMP Category (Major/Minor) _____
Location / Address _____
Engineer of Work: _____State Registration Number: _____
Company Name: _____
Address: _____
Email Address: _____
Phone Number: _____

Priority Development Project – Step 1: _____

Percent Impervious Before Construction: %_____
Percent Impervious After Construction: %_____

Project Disturbed Area: _____Acres

Hydromodification Management – Step 3:
Yes ☐ or No ☐

Primary or Secondary Pollutants of Concerns – Step 4 *(check all that apply)*

- ☐ Sediment
- ☐ Nutrients
- ☐ Organic Compounds
- ☐ Bacteria and Viruses
- ☐ Trash and Debris
- ☐ Oxygen Demanding Substances
- ☐ Oil and Grease
- ☐ Pesticides

## Project Specific Site Design, LID and Source Control BMPs

*All selected Site Layout Strategies, LID, and Source Control BMPs must be shown on the Plan.*

Site Layout Strategies – Step 5 *(check all that apply)*

- ☐ Limitation of Development Envelope
- ☐ Minimization of imperviousness
- ☐ Setbacks from creeks, wetlands, and riparian habitats
- ☐ Preservation of Natural Drainages
- ☐ Using drainage as a design element

Disperse Runoff from Impervious Surfaces to Pervious – Step 5 *(check all that apply)*

- ☐ Street and Road Design
- ☐ Driveway, Sidewalk, Bikepath Design
- ☐ Landscape Design
- ☐ Parking Lot Design
- ☐ Building Design
- ☐ Direct Runoff to Treatment BMP(s)

Source BMPs – Step 6 *(check all that apply)*

- ☐ Stormdrain Signage and Stenciling
- ☐ Trash Storage Areas
- ☐ Private Road Drainage System
- ☐ Dock Areas
- ☐ Vehicle Wash Areas
- ☐ Equipment Wash Areas
- ☐ Fueling Areas
- ☐ Outdoor Storage Areas
- ☐ Efficient Landscape Irrigation Design
- ☐ Residential Driveways & Guest Parking
- ☐ Maintenance Bays
- ☐ Outdoor Processing Areas
- ☐ Parking Areas

## Post-construction Treatment Control BMP Information

Responsible Party for Maintenance – Step 8:
Name _____ Phone Number (___) _____
Street Number _____ Street Name _____
City _____ State _____ Zip _____
Email Address: _____

Project Maintenance Category (1, 2, 3 or 4): ___

Project Specific Treatment Control BMPs

| BMP Identifier* | BMP Type | BMP Pollutant of Concern Efficiency (H,M,L) – Table 11 | Final Construction Date *(to be completed by County inspector)* | Final Construction Inspector Name *(to be completed by County inspector)* |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

* For location of BMP's, see approved Record Plan dated _____, plan sheet ____.

## Record Plan Certification

I certify that the above items for this project are in substantial conformance with the approved plans. Yes ☐ or No ☐

Please sign your name and seal. [SEAL]

Print Name: _____

Sign Name: _____

# ATTACHMENT G

## Treatment Control BMP Certification for DPW Permitted Land Development Projects

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

# ATTACHMENT H

**Refer to the Hydromodification Mitigation Report, found under separate cover.**

# ATTACHMENT I

## Geomorphic Assessment

**(Contact County staff immediately if you are planning to conduct a Geomorphic Assessment. A Geomorphic Assessment must be performed if the project is using a "Medium" low flow threshold of $0.3Q_2$ or a "High" low flow threshold of $0.5Q_2$.)**

# N/A

# ATTACHMENT J

## HMP Exemption Documentation

**(if applicable)**

N/A