



**STORM WATER MITIGATION PLAN (SWMitP)  
REQUIREMENTS**

**STORM WATER  
MITIGATION PLAN**

**Permit No. PUD or TSM or BP**

**Name of Project**

**PROJECT ADDRESS**

**APN: 000-000-00**

**Prepared By**

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***For***

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**Date**



# STORM WATER MITIGATION PLAN (SWMitP) REQUIREMENTS

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## **STORM WATER MITIGATION PLAN (SWMitP) REQUIREMENTS**

### **ATTACHMENTS**

- A. Location Map
- B. Project Map
- C. Post-Construction BMP Map
- D. BMP Datasheets for proprietary controls (only)
- E. Hydrology Calculations/Copy of Hydrology Study



# STORM WATER MITIGATION PLAN (SWMitP) REQUIREMENTS

ATTENTION: DIRECTIONS ARE CONTAINED in BRACKETS [ ]

## 1.0 INTRODUCTION

A Storm Water Mitigation Plan (SWMitP) is required under the City of El Cajon Municipal Code 16.60 and Municipal Permit Order 2007-01. The purpose of this SWMitP is to address the water quantity and quality from the proposed project. Best Management Practices (BMPs) applied address long-term solutions to water quality. [Identify the source of the BMPs: Caltrans or CASQA or proprietary. Attach only proprietary BMPs. Provide specifications for all BMPs. Provide calculations and justifications for BMPs]. This SWMitP is also intended to ensure the effectiveness of the BMPs through proper maintenance that is based on long-term fiscal planning. The SWMitP is subject to revisions as needed by the engineer.

### 1.1 PROJECT DESCRIPTION

[Provide and discuss project location, topography, run-on and runoff issues, and unique conditions]

[Provide location map]

[Complete the following table for all applicable categories. Designations provided are highly recommended by the San Diego County Copermittees. There may also be others – provide explanation of pollutant sources]

**TABLE 1-1 (Check all that apply)**

<b>Priority Project Categories</b>	
>10 SFR	
>1 acre Commercial	
Automotive	
Restaurants	
Hillside Development > 5,000 sq ft	
Parking Lots > 5,000 sq ft or > 15 spaces	
Streets, roads, highways, freeways that create new paved surface > 5000 sq ft	
Retail Gas Outlets	



## STORM WATER MITIGATION PLAN (SWMitP) REQUIREMENTS

### 1.2 HYDROLOGIC UNIT CONTRIBUTION

#### **Water Quantity**

[The 10-year flood is the design storm used for calculating peak flows and the 100-year rain event is used to demonstrate flooding. Discuss the types of surfaces rain water that will flow over on the project and a general approach to minimizing impervious areas, directly connect impervious areas, retaining natural areas, and use of porous surfaces]

#### **Water Quality**

[Major channels/discharge points identified by the City are: Broadway Channel; Washington Channel, Third Street Lateral, County Ditch, and Fletcher Parkway which drain to Forester Creek AND Fanita Channel that directly discharge to the San Diego River. Both are 303(d) listed. The City considers the pollutants identified to be of concern for the entire length of the waterbodies. Discuss pollutants and how the project may affect water quality.]

## 2.0 WATER QUALITY ENVIRONMENT

#### **Terms for Use in Calculations**

*% Impervious* – the amount of square footage covered by pavement (concrete or asphalt, buildings, roofs, patios, and sidewalks. Includes future paved areas depending on size of lot such as proposed patio and RV parking.

*Runoff Coefficient* – calculate using % impervious and known soil type.

*Time of Concentration* – the amount of time for the first drop of water at the furthest point within a basin to travel to the discharge point without turning more than 45 degrees in a natural-lined conveyance.

*Flow Length* – the path water from the furthest point to discharge point without turning more than 45 degrees in a natural-lined conveyance.

### 2.1 PRE-CONSTRUCTION CONDITIONS AND FLOW

[Describe the pre-construction conditions such as: not paved, never developed, previously a gas station, etc.; grading requirements if applicable; how the site currently flows, direction of flow, the calculation used for flow.]

[Provide the total area and actual percent impervious for the project area.]

[Describe each parameter in the calculation and how the value used was chosen. Use runoff coefficients that reflect the true imperviousness of the project area and not the land use coefficients.]

[Use maps to indicate the parameter's location on the project site.]

[Calculate Q to the nearest 0.1 CFS.]



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### 2.2 POST-CONSTRUCTION CONDITIONS AND FLOW

[Describe the post-construction conditions such as: paved, fully developed, development is a restaurant; final grading; how the site flows, direction of flow, the calculation used for flow.]

[Provide the percent impervious for the developed property.]

[Describe each parameter in the calculation and how the value used was chosen. Use runoff coefficients that reflect the true imperviousness of the project area and not the land use coefficients.]

[Use maps to indicate the above characteristics, detail schematics of post-construction BMPs (plan and cross-section views) and location of post-construction BMPs on the project site.]

[Summarize the affects of the project on the flow (increased, decreased, fully mitigated, etc.) and on downstream hydrology. Downstream assessments must address City of El Cajon discharge to the jurisdictional line at the City of Santee.]

[Compute rainfall runoff characteristics from the project area including, at a minimum, peak flow rates, flow velocity, runoff volume, time of concentration, and retention volume (All calculations may be provided as Attachment E).]

[Calculate Q to the nearest 0.1 CFS.]

[Provide formulas, actual calculations, and a table with pre- and post-construction flows without the incorporation of any post-construction BMPs. Then add the post-construction BMP detainment flows.]

[Complete the following tables. At the minimum, provide justification of implementation and when not feasible for design and source controls.]

#### SUSMP FORM

SUSMP Development or Re-Development (Circle)

SUSMP Triggers (list all applicable categories): \_\_\_\_\_

Address: \_\_\_\_\_

Pre-Q: \_\_\_\_\_ Post – Q: \_\_\_\_\_

Maintenance

Plan/Notes: \_\_\_\_\_

Apply all General Site Design and at least one of each control. (Please note that all of the following General Site Design and control items have to be considered and applied to the



## STORM WATER MITIGATION PLAN (SWMitP) REQUIREMENTS

project. Explain what Best Management Practices (BMPs) were implemented to achieve the General Site Design and controls or justify why the item was not feasible for this project).

[Provide reasoning for how any Design, Source, or Treatment Controls were applied]

[Provide Justifications for any Design, Source, or Treatment Controls not applied]

General Site Design	Applied	Justification
1. Control Peak runoff rates (Required)		
2. Minimize impervious areas (Required)		
3. Conserve Natural Areas (Required)		
4. Protect slopes and channels (Required)		
5. Minimize effective imperviousness (Required)		
6. Construct low traffic areas (walkways, trails, patios, parking lots, alleys, etc.) of permeable surfaces		
7. Maximize canopy interception by preserving existing trees and shrubs		
8. Preserve natural drainage systems		
9. Minimize Directly Connected Impervious Areas (DCIAs) [Drain rooftops, sidewalks, walkways, trails and patios to landscaping]		
10. Other		



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Source Controls <sup>1</sup>	Applied	Justification
1. Storm drain message and signage (Required)		
2. Outdoor storage area design (Required)		
3. Trash storage area design Must be secured, bermed, and covered. (Required and in accordance with California Fire Code section 1103.2.2)		
4. Use efficient irrigation systems & landscape design		
5. Incorporate requirements of the applicable priority project category:  a. Loading/unloading dock area design (Required) b. Repair/maintenance bay design (Required) c. Vehicle/Equipment/Accessory washing area (Required) d. Fueling area design (Required) e. Private Roads f. Residential Driveways & Guest Parking g. Outdoor Processing Areas h. Parking Areas i. Roadways j. Hillside Landscaping		
6. Proof of control measure maintenance (Required)		
7. Other		



## STORM WATER MITIGATION PLAN (SWMitP) REQUIREMENTS

Treatment Controls (Require two controls, at a minimum) <sup>1</sup>	Applied	Justification
1. Inlet Filters <sup>2</sup>		
2. Grass strip filter		
3. Grass swale filter		
4. Extended detention basin		
5. Wet detention basin		
6. Constructed wetland		
7. Sand filter		
8. Hydrodynamic Separator		
9. Infiltration basin or trench		
10. Media filter		
11. Proprietary controls		
12. Other		

1. Proposed source and treatment controls need to be shown in the grading/drainage plan along with engineering details and/or specifications
2. Not to be used alone.



## STORM WATER MITIGATION PLAN (SWMitP) REQUIREMENTS

### 3.0 POLLUTANTS

#### 3.1 POLLUTANTS GENERATED from AFTER CONSTRUCTION ACTIVITIES AND BMPs APPLIED TO MITIGATE

**Terms**

*Activity* – any action taking place outdoors or resultant liquid/solid is disposed outdoors.

*Pollutants* – sediment (dirt); metals (from dirt, paint, or chemicals); organic material (vegetation or food); grease; petroleum; sewage; detergents/soap; fertilizers; pesticides; trash/debris, and toxics (acids, corrosives).

*Post-Construction BMPs* – Design controls, Source controls, Treatment structures

*Effectiveness* – Based on manufacturer, industry; government; or other private studies. List Source.

**TABLE 3-1 (Highlight Pollutants from Categories in Table 1-1)**

Priority Project Categories	Sediment	Nutrient	Heavy Metals	Org Cpds	Trash & Debris	ODS	Oil & Grease	Bacteria & Viruses	Pesticides
>10 SFR	X	X			X	X	X	X	X
>1 Acre Commercial	P	P		P	X	P	X	P	P
Automotive			X	X	X		X		
Restaurants					X	X	X	X	
Hillside Development	X	X			X	X	X		X
Parking Lots	P	P	X		X	P	X		P
New Streets > 5000 sq. ft.	X	P	X		X	P	X		P
> 5,000 sq ft Redevelopment	X	P	P	P	X	P	P	P	P
Retail Gas Outlet			X	X	X		X		
X- anticipated P – Potential ODS – Oxygen Demanding Substances									

**TABLE 3-2 (Highlight the combination of BMPs for the Project that most effectively treats the Pollutants from Table 3-1) Efficiencies are in (%)**

Pollutants	BMPs
Sediment	Biofilters (Medium) Detention Basins (High) Infiltration Basins (High) Wet Ponds or Wetlands (High) Inlet Filters (Low) Filtration (High) Hydrodynamic Systems (Medium)



## STORM WATER MITIGATION PLAN (SWMitP) REQUIREMENTS

Nutrients	Biofilters (Low) Detention Basins (Medium) Infiltration Basins (Medium) Wet Ponds or Wetlands (Medium) Inlet Filters (Low) Filtration (Medium) Hydrodynamic Systems (Medium)
Metals	Biofilters (Medium) Detention Basins (Medium) Infiltration Basins (Medium) Wet Ponds or Wetlands (High) Inlet Filters (Low) Filtration (High) Hydrodynamic Systems (Low)
Organic Compounds	Biofilters (Unknown) Detention Basins (Unknown) Infiltration Basins (Unknown) Wet Ponds or Wetlands (Medium) Inlet Filters (Low) Filtration (Medium) Hydrodynamic Systems (Low)
Trash and Debris	Biofilters (Low) Detention Basins (High) Infiltration Basins (Unknown) Wet Ponds or Wetlands (High) Inlet Filters (Medium) Filtration (High) Hydrodynamic Systems (Medium)
Oxygen Depleting Substances	Biofilters (Low) Detention Basins (Medium) Infiltration Basins (Medium) Wet Ponds or Wetlands (Medium) Inlet Filters (Low) Filtration (Medium) Hydrodynamic Systems (Low)
Oil & Grease	Biofilters (Medium) Detention Basins (Medium) Infiltration Basins (Unknown) Wet Ponds or Wetlands (Unknown) Inlet Filters (Low) Filtration (High) Hydrodynamic Systems (Low)
Bacteria	Biofilters (Unknown) Detention Basins (Unknown)



## STORM WATER MITIGATION PLAN (SWMitP) REQUIREMENTS

	Infiltration Basins (High) Wet Ponds or Wetlands (High) Inlet Filters (Low) Filtration (Medium) Hydrodynamic Systems (Low)
Pesticides	Biofilters (Unknown) Detention Basins (Unknown) Infiltration Basins (Unknown) Wet Ponds or Wetlands (Low) Inlet Filters (Low) Filtration (Unknown) Hydrodynamic Systems (Low)

### 4.0 CONSTRUCTION AND POST-CONSTRUCTION BMPS

#### 4.1 CONSTRUCTION BMPS

[Provide a table with the **ALL** the activities, pollutants, and BMPs for construction activities. An example is provided below.]

**EXAMPLE TABLE 4-1**

ACTIVITY	POLLUTANTS	CONSTRUCTION BMP	EFFECTIVENESS
Entrance/Exit of Project Site	Sediment	TC-1	High (CASQA)
Pouring Concrete	Metals; pH	WM-8	High (CASQA)
Port-o-Let	Bacteria; Organics	WM-9 (Modified with secondary containment and strapped to a secure source to prevent tipping)	High (CASQA)

#### 4.2 POST-CONSTRUCTION BMPS

[Describe the soil type and characteristics of that soil type.]

[List the post-construction BMPs that will be used.]

[Identify the pollutants associated with each BMP.]

[Describe the effectiveness of the BMP or Treatment Train (multiple BMPs) with the pollutants.]

[Provide a Table with this information. An example is provided below]



## STORM WATER MITIGATION PLAN (SWMitP) REQUIREMENTS

**EXAMPLE TABLE 4-2**

ACTIVITY	POLLUTANTS	POST-CONSTRUCTION BMP	EFFECTIVENESS
Residential -Car Washing	ODS; Sediment	Source control - Capture, Contain, Collect	Low or High (EPA)
Commercial – Power washing sidewalks/driveways	Sediment; oil&grease; bacteria	Source control - Capture, Contain, Collect	Low or High (Regional Board)
Commercial – Car rinsing	Sediment; oil&grease; metals	Source control - Capture, Contain, Collect	Low or High (County of San Diego)
Residential/Commercial – Over watering/Over spray	Nutrients; pesticides	Source Control – IPM Treatment control – Infiltration basin	Low or High (Caltrans)
Residential/Commercial – Landscaping Maintenance	ODS; sediment	Source control - Sweeping	Low or High

### 5.0 TREATMENT BMPS

Treatment BMPs are designed to treat to the 85<sup>th</sup> percentile of the design storm.

[List the Treatment BMPs incorporated into the site design in a Table. Provide Efficiencies. Show on BMP map with engineering details.]

[Show calculations to verify the treatment to the 85<sup>th</sup> percentile.]

### 6.0 LOW-IMPACT DEVELOPMENT (LID)

The project design must incorporate Low Impact Development (LID) Best Management Practices (BMPs) for compliance with the California Regional Water Quality Control Board (San Diego Region) Order No. R9-2007-0001. An electronic copy of the County of San Diego Low Impact Development Handbook can be found online at:

<http://www.co.san-diego.ca.us/dplu/docs/LID-Handbook.pdf>

### 7.0 MAINTENANCE

#### 7.1 CONSTRUCTION BMPs

Maintenance of construction BMPs starts at the time of soil disturbance and continues through the life of the project, until a 70% coverage of disturbed areas is established.

[Describe how maintenance of BMPs will be accomplished]



## STORM WATER MITIGATION PLAN (SWMitP) REQUIREMENTS

### 7.2 POST-CONSTRUCTION BMPs

Post-construction BMPs are to remain with the property and be maintained in perpetuity to the engineered functionality.

[Discuss financial responsibility of maintenance]

[Provide BMP Facilities Agreement to be recorded with Grant Deed.]

[Provide a table listing each post-construction BMP, the responsible party, frequency of maintenance, any special conditions, verification of maintenance, fiscal responsibility. An example table is provided below]

**TABLE 7-1**

<b>POST-CONSTRUCTION BMP</b>	<b>Responsible Party</b>	<b>Maintenance Frequency</b>	<b>Verification of Maintenance</b>	<b>Fiscally Responsible Party</b>	<b>Special Conditions</b>
Trash Enclosure (Source Control)	Business Owner or Property Owner or HOA	Weekly	Daily	Business Owner or Property Owner or HOA	Use Mop to clean
Engineered Vegetative Detention Area	Business Owner or Property Owner or HOA	Quarterly	Monthly	Business Owner or Property Owner or HOA	Mulch grass; Use little to no fertilizers or pesticides
Storm Water Filter Insert	Business Owner or Property Owner or HOA	At least Semi-Annually (October 1 <sup>st</sup> and April 30 <sup>th</sup> )	Quarterly	Business Owner or Property Owner or HOA	Keep Clean
3-stage Clarifier	Business Owner or Property Owner	Semi-Annually (October 1 <sup>st</sup> and April 30 <sup>th</sup> ) Or Determined by use	Quarterly	Business Owner or Property Owner or HOA	Discharge to Sanitary sewer with wastewater permit or to storm drain with approved monitoring plan.



## **STORM WATER MITIGATION PLAN (SWMitP) REQUIREMENTS**

### **8.0 SUMMARY/CONCLUSIONS**

[Summarize the site conditions and flow before and after construction; the use of post-construction BMPs and their maintenance; and the fiscal responsibility of post construction BMPs.]

[Provide a table with pre-construction peak flow, post-construction flow without BMPs, and post-construction flow with post-construction BMPs.]



## **STORM WATER MITIGATION PLAN (SWMitP) REQUIREMENTS**

### **CERTIFICATION**

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

***REGISTERED CIVIL ENGINEER  
JOHN C. ENGINEER DATE***

***REGISTERED ENGINEER'S SEAL***



**STORM WATER MITIGATION PLAN (SWMitP)  
REQUIREMENTS**

**ATTACHMENT A  
LOCATION MAP**

USE A LOCATION MAP THAT SHOWS SURROUNDING TOPOGRAPHY.



## **STORM WATER MITIGATION PLAN (SWMitP) REQUIREMENTS**

# **ATTACHMENT B PROJECT MAP**

USE A SITE MAP TO SHOW THE PLACEMENT OF THE PROJECT COMPONENTS WITH DRAINAGE ARROWS.



## **STORM WATER MITIGATION PLAN (SWMitP) REQUIREMENTS**

# **ATTACHMENT C Post-Construction BMP MAP**

INDICATE THE LOCATIONS OF SITE DESIGN, SOURCE AND TREATMENT CONTROL BMPS TO THE EXTENT POSSIBLE

PROVIDE ENGINEERING SPECIFICATIONS AND DETAILS (HEIGHT, WIDTH, DEPTH, CONFIGURATION, VOLUME, FLOW) OF THESE POST-CONSTRUCTION BMPS ON THE MAP



**STORM WATER MITIGATION PLAN (SWMitP)  
REQUIREMENTS**

**ATTACHMENT D**

**Post-Construction BMP DATASHEETS**

PROVIDE THE DATASHEETS FOR EACH POST-CONSTRUCTION BMP  
USED TO MITIGATE FLOW OR TREAT RUNOFF.



## **STORM WATER MITIGATION PLAN (SWMitP) REQUIREMENTS**

# **ATTACHMENT E**

## **Hydrology Calculations**

PROVIDE HYDROLOGY CALCULATIONS OR A COPY OF THE HYDROLOGY STUDY.

COMPUTE RAINFALL RUNOFF CHARACTERISTICS FROM THE PROJECT AREA INCLUDING, AT A MINIMUM, PEAK FLOW RATES, FLOW VELOCITY, RUNOFF VOLUME, TIME OF CONCENTRATION, AND RETENTION VOLUME