

# **STORM WATER POLLUTION PREVENTION PLAN**

**For**

**SAN DIEGO SHIPYARD SEDIMENT REMEDIATION PROJECT  
S-LANE SEDIMENT MANAGEMENT AREA (SMA)  
*RISK LEVEL 1***

**Project Address:**

S-Lane, San Diego, California 92113

**Prepared for:**

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**September 2013**

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# Qualified SWPPP Developer

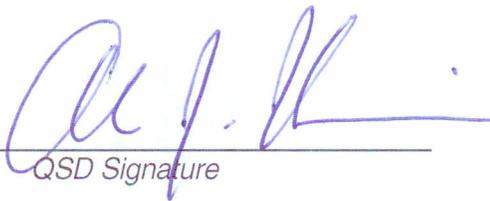
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## Approval and Certification of the Stormwater Pollution Prevention Plan

Project Name: San Diego Shipyard Sediment Remediation Project  
S-Lane Sediment Management Area (SMA)

Project Number/ID: \_\_\_\_\_

"This Storm Water Pollution Prevention Plan and Attachments were prepared under my direction to meet the requirements of the California Construction General Permit (SWRCB Orders No. 2009-009-DWQ as amended by Order 2010-0014-DWQ). I certify that I am a Qualified SWPPP Developer in good standing as of the date signed below."

  
\_\_\_\_\_  
*QSD Signature*

9-1-13  
\_\_\_\_\_  
*Date*

Alan J. Klein  
\_\_\_\_\_  
*QSD Name*

23117  
\_\_\_\_\_  
*QSD Certificate Number*

Senior Environmental Scientist, Padre  
Associates, Inc.  
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*Telephone Number*

aklein@padreinc.com  
\_\_\_\_\_  
*Email*

# Legally Responsible Person

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## Approval and Certification of the Stormwater Pollution Prevention Plan

Project Name: San Diego Shipyard Sediment Remediation Project  
S-Lane Sediment Management Area (SMA)

Project Number/ID: \_\_\_\_\_

"I certify under penalty of law that this document and all Attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

San Diego Bay Environmental Restoration Fund –  
South c/o de maximis, inc.

\_\_\_\_\_  
*Legally Responsible Person*

\_\_\_\_\_  
*Signature of Authorized Representative of Legally  
Responsible Person or Approved Signatory*

\_\_\_\_\_  
*Date*

R. Tom Dorsey

(865) 691-5052

\_\_\_\_\_  
*Name of Authorized Representative of Legally  
Responsible Person or Approved Signatory*

\_\_\_\_\_  
*Telephone Number*

# Amendment Log

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Project Name: San Diego Shipyard Sediment Remediation Project,  
S-Lane Sediment Management Area (SMA)

Project Number/ID: \_\_\_\_\_

Amendment No.	Date	Brief Description of Amendment, include section and page number	Prepared and Approved By
			Name: QSD#

# Section 1 SWPPP Requirements

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## 1.1 INTRODUCTION

The San Diego Shipyard Sediment Remediation Project, S-Lane Sediment Management Area (SMA) comprises approximately 1.6 acres located adjacent to and north of Chollas Creek, and west of Harbor Drive and Ward Road, in San Diego, San Diego County, California (Project Site). The property is owned by the U.S. Navy and is being sub-leased to National Steel and Shipbuilding Company (NASSCO). Site maps and site plans of the Project Site are presented in **Appendix B**.

This Stormwater Pollution Prevention Plan (SWPPP) is designed to comply with California's General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (General Permit) Order No. 2009-0009-DWQ as amended by Order No. 2010-0014-DWQ (NPDES No.CAS000002) issued by the State Water Resources Control Board (State Water Board). This SWPPP has been prepared following the SWPPP Template provided on the California Stormwater Quality Association Stormwater *Best Management Practice Handbook Portal: Construction* (CASQA, 2010). In accordance with the General Permit, Section XIV, this SWPPP is designed to address the following:

- Pollutants and their sources, including sources of sediment associated with construction, construction site erosion and other activities associated with construction activity are controlled;
- Where not otherwise required to be under a Regional Water Quality Control Board (Regional Water Board) permit, all non-stormwater discharges are identified and either eliminated, controlled, or treated; and
- Site BMPs are effective and result in the reduction or elimination of pollutants in stormwater discharges and authorized non-stormwater discharges from construction activity to the Best Available Technology/Best Control Technology (BAT/BCT) standard.

## 1.2 PERMIT REGISTRATION DOCUMENTS

Required Permit Registration Documents (PRDs) shall be submitted to the State Water Board via the Stormwater Multi Application and Report Tracking System (SMARTS) by the Legally Responsible Person (LRP), or authorized personnel (i.e., Approved Signatory) under the direction of the LRP. The project-specific PRDs include:

1. Notice of Intent (NOI);
2. Risk Assessment (Construction Site Sediment and Receiving Water Risk Determination);
3. Signed Certificate Statement (LRP Certification is provided electronically with SMARTS PRD submittal);
4. Post Construction Water Balance
5. Site Maps;
6. Annual Fee; and
7. SWPPP.

A copy of the submitted PRDs are presented in **Appendix C** along with the Waste Discharge Identification (WDID) confirmation.

### 1.3 SWPPP AVAILABILITY AND IMPLEMENTATION

The discharger shall make the SWPPP available at the construction site during working hours (see Section 7.5 of CSMP for working hours) while construction is occurring and shall be made available upon request by a State or Municipal inspector. When the original SWPPP is retained by a crewmember in a construction vehicle and is not currently at the construction site, current copies of the BMPs and map/drawing will be left with the field crew and the original SWPPP shall be made available via a request by radio/telephone. (CGP Section XIV.C)

The SWPPP shall be implemented concurrently with the start of ground disturbing activities.

### 1.4 SWPPP AMENDMENTS

The SWPPP should be revised when:

- If there is a General Permit violation.
- When there is a reduction or increase in total disturbed acreage (General Permit Section II Part C).
- BMPs do not meet the objectives of reducing or eliminating pollutants in stormwater discharges.

Additionally, the SWPPP shall be amended when:

- There is a change in construction or operations which may affect the discharge of pollutants to surface waters, groundwater(s), or a municipal separate storm sewer system (MS4);
- When there is a change in the project duration that changes the project's risk level; or
- When deemed necessary by the QSD. The QSD has determined that the changes listed in **Table 1.1** can be field determined by a Qualified SWPPP Practioner (QSP). All other changes shall be made by the QSD as formal amendments to the SWPPP.

The following items shall be included in each amendment:

- Who requested the amendment;
- The location of proposed change;
- The reason for change;
- The original BMP proposed, if any; and
- The new BMP proposed.

Amendment shall be logged at the front of the SWPPP and certification kept in **Appendix D**. The SWPPP text shall be revised replaced, and/or hand annotated as necessary to properly convey the amendment. SWPPP amendments must be made by a QSD. The following changes have been designated by the QSD as "to be field determined" and constitute minor changes that the QSP may implement based on field conditions.

**Table 1.1 List of Changes to be Field Determined**

Candidate changes for field location or determination by QSP <sup>(1)</sup>	Check changes that can be field located or field determined by QSP
Increase quantity of an Erosion or Sediment Control Measure	√
Relocate/Add stockpiles or stored materials	√
Relocate or add toilets	√
Relocate vehicle storage and/or fueling locations	√
Relocate areas for waste storage	√
Relocate water storage and/or water transfer location	√
Changes to access points (entrance/exits)	√
Change type of Erosion or Sediment Control Measure	√
Changes to location of erosion or sediment control	√
Minor changes to schedule or phases	√
Changes in construction materials	√
<i>(1) Any field changes not identified for field location or field determination by QSP must be approved by QSD</i>	

## 1.5 RETENTION OF RECORDS

Paper or electronic records of documents required by this SWPPP shall be retained for a minimum of three years from the date generated or date submitted, whichever is later in accordance with the General Permit. These records shall be available at the Site until construction is complete. Records assisting in the determination of compliance with the General Permit shall be made available within a reasonable time, to the Regional Water Board, State Water Board or U.S. Environmental Protection Agency (EPA) upon request. Requests by the Regional Water Board for retention of records for a period longer than three years shall be adhered to.

## 1.6 REQUIRED NON-COMPLIANCE REPORTING

The Discharger must report to the San Diego Water Board any noncompliance which may endanger human health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the incident and its cause, the period of the noncompliance including exact dates and times; and if the noncompliance has not been corrected, the anticipated time it is expected to continue, and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The San Diego Water Board may waive the above-required written report under this provision on a case by case basis if an oral report has been received within 24 hours

## **1.7 ANNUAL REPORT**

The General Permit requires all projects that are enrolled for more than one continuous three month period to submit information and annually certify that their site is in compliance with these requirements. The primary purpose of this requirement is to provide information needed for overall program evaluation and public information.

An annual report, for the reporting year of July 1 – June 30, must be completed, by September 1 of each year until a NOT has been filed in the SWRCB's SMARTS database. The QSP is responsible for submitting the annual report information to the LRP by August 1 of each year. The LRP will review the report information for completeness and accuracy and upload the required information to the SWRCB's SMARTS database by September 1 of each year. Use the Annual Report form in [Appendix E](#) to prepare the Annual Report submittal to the LRP.

## **1.8 CHANGES TO PERMIT COVERAGE**

The General Permit allows for the reduction or increase of the total acreage covered under the General Permit when: a portion of the project is complete and/or conditions for termination of coverage have been met; when ownership of a portion of the project is purchased by a different entity; or when new acreage is added to the project.

Modified PRDs shall be filed electronically within 30 days of a reduction or increase in total disturbed area if a change in permit covered acreage is to be sought. The SWPPP shall be modified appropriately, shall be logged at the front of the SWPPP and certification of SWPPP amendments are to be kept in [Appendix D](#). Updated PRDs submitted electronically via SMARTS can be found in [Appendix F](#).

## **1.9 NOTICE OF TERMINATION**

A Notice of Termination (NOT) must be submitted electronically by the LRP via SMARTS to terminate coverage under the General Permit. The NOT must include a final Site Map and representative photographs of the project site that demonstrate final stabilization has been achieved. The NOT shall be submitted within 90 days of completion of construction. The Regional Water Board will consider a construction site complete when the conditions of the General Permit, Section II.D have been met.

- The site will not pose any additional sediment discharge risk than it did prior to the commencement of construction activity.
- There is no potential for construction related stormwater pollution.
- All elements of the SWPPP have been completed and final stabilization has been reached.
- Construction materials and waste have been properly disposed. An Annual Report has been filed for project longer than three (3) months.
- The site is in compliance with all local stormwater management requirements.

## Section 2 Project Information

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### 2.1 PROJECT AND SITE DESCRIPTION

#### 2.1.1 Site Description

The San Diego Shipyard Sediment Remediation Project, S-Lane Sediment Management Area (SMA) is located along the eastern shore of central San Diego Bay. This site is not located within the planning jurisdiction of the San Diego Unified Port District. The sediment staging area is referenced as the S-Lane Parcel and comprises approximately 1.6 acres located adjacent and north of Chollas Creek, and west of Harbor Drive and Ward Road, in San Diego, San Diego County, California (Project Site). The Project Site boundaries are presented in Plate 2, located in **Appendix B**.

The Project Site is referenced by the County of San Diego as Assessor's Parcel Number (APN): 760-024-07. The latitude and longitude presented below is from near the central portion of the Project Site:

- Latitude (North) 32° 41' 17.4942" (32.688193)
- Longitude (West) -117° 7' 50.6526" (-117.130737)

#### 2.1.2 Existing Conditions

The Project Site consists of approximately 1.6 acres of developed property utilized for the storage of ship building materials and equipment. There are no building structures located on the property and the surface area consists of concrete and asphalt. There are no vegetated areas or exposed soils located on the Project Site. The Project Site will be cleared of all ship building materials and equipment prior to the start of construction. There are no known or reported sources of soil and/or groundwater contamination at the Project Site.

#### 2.1.3 Existing Drainage

The Project Site is located on the eastern shore of San Diego Bay at an approximate elevation of 11 feet above mean sea level (msl). The Project Site is relatively flat and all onsite stormwater is collected and discharged to the city sewer system. There is no stormwater run-on and/or stormwater run-off. Existing drainage patterns are presented on Plate 3, located in **Appendix B**.

#### 2.1.4 Geology and Groundwater

The project site lies above the Bay Point geological formation. The Bay Point Formation is a widespread and well exposed area in the area adjacent to the present day coastline. The Bay Point Formation is predominantly composed of marine and non-marine, poorly consolidated, fine- and medium grained, pale brown fossiliferous sandstone (CDMG, 1975).

Soils located beneath the project site are identified as Urban Land (Ur). Urban land consists of closely built –up areas in cities. Buildings, streets, and sidewalks cover almost the entire surface area. The soil has been so altered by urban works that soil identification is not always feasible. It is anticipated that the soil beneath the project site consists of a variable thickness of man-made fill, over “bay mud” that sits on marine sandstone and siltstone (Soil Survey, San Diego, 1973).

The project site lies within the Chollas hydrologic subarea (8.22) of the San Diego Mesa hydrologic area, which is part of the Pueblo San Diego Hydrologic unit. According to the Regional Water Quality Control Board (RWQCB), groundwater in this subarea has no designated beneficial use. Historically, water levels have been measured at depths of approximately 6- to 8-feet bgs, near the middle of the man-made fill layer. Both “bay mud” and bay point sediments are saturated (Shaw, 2006).

### **2.1.5 Project Description**

The proposed San Diego Shipyard Sediment Remediation Project, South Shipyard Remediation Area (Project Site), addresses the sediment cleanup within the National Steel and Shipbuilding Company’s (NASSCO) water area as identified in Cleanup and Abatement Order (CAO) No. R9-2012- 0024, dated March 2012. The Project Site is located within the planning jurisdiction of the San Diego Unified Port District (Port District) and is identified as District 4 in the certified Port Master Plan.

Discharges of metals and other pollutant wastes to San Diego Bay over the years have resulted in the accumulation of pollutants in marine sediments along the eastern shore of the central San Diego Bay in San Diego, California. Mechanical dredging and landfill disposal was selected as the remedial action for cleanup of the remedial footprint. Dredging will occur within approximately 5.0 acres of the 46-acre offshore site and is expected to generate approximately 52,600 cubic-yards (CY) of contaminated marine sediment.

In summary, dredged sediment will be off-loaded from haul barges directly into waiting trucks, and off-hauled to the appropriate landfill disposal facility. Wastewater generated from dredged sediment dewatering activities will be containerized; sampled for waste characterization; treated (if necessary); and discharged into the community sewer system, where it will be treated at the Point Loma Wastewater Treatment Plant (WWTP) and discharged through the existing marine outfall. Wastewater not meeting sanitary sewer criteria will be removed from the site by a licensed waste hauler and taken to a facility for further treatment and/or disposal.

### **2.1.6 Developed Condition**

Upon completion of the sediment dredging project the Project Site will be returned to its original condition, including surface water flow and stormwater conveyance system. Post construction drainage patterns and conveyance systems will be returned to their pre-construction conditions.

## 2.2 PERMITS AND GOVERNING DOCUMENTS

In addition to the General Permit, the following documents have been taken into account while preparing this SWPPP

- Regional Water Quality Control Board (RWQCB) Waste Discharge Requirements
- Air Quality Regulations
- Clean Water Act Section 401 Water Quality Certifications and anticipated requirements of the 404 Permit.

## 2.3 STORMWATER RUN-ON FROM OFFSITE AREAS

The Project Site is designed such that there is no stormwater run-on from offsite areas.

## 2.4 FINDINGS OF THE CONSTRUCTION SITE SEDIMENT AND RECEIVING WATER RISK DETERMINATION

A construction site risk assessment has been performed for the project and the resultant risk level is Risk Level 1.

The risk level was determined through the use of EPA's Construction Rainfall Erosivity Waiver Factsheet and SMARTS was used to calculate the project erosion estimate (R\*K\*LS). The risk level is based on project duration, location, proximity to impaired receiving waters and soil conditions. A copy of the Risk Level determination submitted on SMARTS with the PRDs is included in [Appendix C](#).

Table 2.2 and Table 2.3 summarize the sediment and receiving water risk factors and document the sources of information used to derive the factors.

**Table 2.2 Summary of Sediment Risk**

RUSLE Factor	Value	Method for establishing value
R	37.1	EPA's Construction Rainfall Erosivity Waiver Factsheet
K	0.32	Directly from SMARTS
LS	0.29	Directly from SMARTS
<b>Total Predicted Sediment Loss (tons/acre)</b>		<b>3.44</b>
<b>Overall Sediment Risk</b> Low Sediment Risk < 15 tons/ acre Medium Sediment Risk >= 15 and < 75 tons/acre High Sediment Risk >= 75 tons/acre		<input checked="" type="checkbox"/> <b>Low</b> <input type="checkbox"/> <b>Medium</b> <input type="checkbox"/> <b>High</b>

Runoff from the project site discharges will be directed to a catch basin with sump pump. The discharge will be stored in aboveground tanks, sampled, treated (if necessary) and discharged in the City of San Diego's sewer system and ultimately the City's wastewater treatment facility.

**Table 2.3 Summary of Receiving Water Risk**

Receiving Water Name	303(d) Listed for Sediment Related Pollutant <sup>(1)</sup>	TMDL for Sediment Related Pollutant <sup>(1)</sup>	Beneficial Uses of COLD, SPAWN, and MIGRATORY <sup>(1)</sup>
San Diego Bay	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>Overall Receiving Water Risk</b>			<input checked="" type="checkbox"/> <b>Low</b> <input type="checkbox"/> <b>High</b>
(1) If yes is selected for any option the Receiving Water Risk is High			

The combination of a “Low” Sediment Risk factor and a “Low” Receiving Water Risk factor, results in a site determination of Risk Level 1.

**Risk Level 1**

Risk Level 1 sites are subject to the narrative effluent limitations specified in the General Permit. The narrative effluent limitations require stormwater discharges associated with construction activity to minimize or prevent pollutants in stormwater and authorized non-stormwater through the use of controls, structures, and best management practices. This SWPPP has been prepared to address Risk Level 1 requirements (Construction General Permit, Attachment C).

## **2.5 CONSTRUCTION SCHEDULE**

The site sediment risk was determined based on construction taking place between September 17, 2013 and March 31, 2014, and assumes a 2 calendar year (2013/2014) construction time. Modification or extension of the schedule (start and end dates) may affect risk determination and permit requirements. The LRP shall contact the QSD if the schedule changes during construction to address potential impact to the SWPPP. The estimated schedule for planned work can be found in [Appendix G](#).

## **2.6 POTENTIAL CONSTRUCTION ACTIVITY AND POLLUTANT SOURCES**

Appendix G includes a list of construction activities and associated materials that are anticipated to be used onsite. These activities and associated materials will or could potentially contribute pollutants, other than sediment, to stormwater runoff.

The anticipated activities and associated pollutants were used in Section 3 to select the Best Management Practices for the project. Location of anticipated pollutants and associated BMPs are presented on Plate 4, located in [Appendix B](#).

For sampling requirements for non-visible pollutants associated with construction activity please refer to Section 7.7.1. For a full and complete list of onsite pollutants, refer to the Material Safety Data Sheets (MSDS), which are retained onsite at the construction trailer.

## **2.7 IDENTIFICATION OF NON-STORMWATER DISCHARGES**

Non-stormwater discharges consist of discharges which do not originate from precipitation events. The General Permit provides allowances for specified non-stormwater discharges that do not cause erosion or carry other pollutants.

Non-stormwater discharges into storm drainage systems or waterways, which are not authorized under the General Permit and listed in the SWPPP, or authorized under a separate NPDES permit, are prohibited.

Non-stormwater discharges that are authorized from this project site include the following:

- Cleaning of vehicles and equipment with potable water; and
- Dust Control.

These authorized non-stormwater discharges will be managed with the stormwater and non-stormwater BMPs described in Section 3 of this SWPPP and will be minimized by the QSP.

Activities at this site that may result in unauthorized non-stormwater discharges include:

- Fueling of vehicles and equipment; and
- Maintenance of vehicles and equipment.

Steps will be taken, including the implementation of appropriate BMPs, to ensure that unauthorized discharges are eliminated, controlled, disposed, or treated on-site.

Discharges of construction materials and wastes, such as fuel or paint, resulting from dumping, spills, or direct contact with rainwater or stormwater runoff, are also prohibited.

No discharges other than to the City of San Diego sewer system has been authorized by the San Diego Regional Water Quality Control Board WDR Order No. R9-2013-0093.

## **2.8 REQUIRED SITE MAP INFORMATION**

The construction project's Site Map(s) showing the project location, surface water boundaries, geographic features, construction site perimeter and general topography and other requirements identified in Attachment B of the General Permit is located in **Appendix B**. Table 2.6 identifies Map or Sheet Nos. where required elements are illustrated.

**Table 2.6 Required Map Information**

<b>Included on Plate No.<sup>(1)</sup></b>	<b>Required Element</b>
Plate 1	Site Vicinity Map
Plate 2	Site Plan
Plate 4	Construction site boundaries
Plate 3	Drainage areas
NA	Discharge locations
NA	Sampling locations
NA	Areas of soil disturbance (temporary or permanent)
NA	Active areas of soil disturbance (cut or fill; and soil stockpiles)
NA	Locations of runoff BMPs
NA	Locations of erosion control BMPs
Plate 4	Locations of sediment control BMPs
NA	ATS location (if applicable)
NA	Locations of sensitive habitats, watercourses, or other features which are not to be disturbed
NA	Locations of all post construction BMPs
Plate 4	Waste storage areas
Plate 4	Vehicle storage areas
Plate 4	Material storage areas
Plate 4	Entrance and Exits
Plate 4	Fueling Locations

Notes: (1) Indicate maps or drawings that information is included on (e.g., Vicinity Map, Site Map, Drainage Plans, Grading Plans, Progress Maps, etc.)

NA – not applicable

## Section 3 Best Management Practices

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### 3.1 SCHEDULE FOR BMP IMPLEMENTATION

The schedule for deployment of BMPs is identified in Table 3.1 below. BMPs must be implemented, modified, and maintained to reflect the phase of construction and the weather conditions. BMPs can be added or delineated based on the phase of work and changing site conditions.

**Table 3.1 BMP Implementation Schedule**

	<b>BMP</b>	<b>Implementation</b>
<b>Erosion Control</b>	EC-1, Scheduling	Pre-Construction
<b>Sediment Control</b>	SE-3, Sediment Trap	Pre-Construction
	SE-5, Fiber Rolls	Pre Construction
	SE-6, Gravel Bag Berm	Pre Construction
	SE-7, Street Sweeping	During Construction
	SE-8, Sand Bag Barrier	Pre-Construction
	SE-10, Storm Drain Inlet Protection	Pre-Construction
<b>Tracking Control</b>	TC-1, Stabilized Construction Entrance/Exit	Pre-Construction
	TC-3, Entrance/Outlet Tire Wash	During Construction
<b>Wind Erosion</b>	WE-1, Wind Erosion Control	During Construction

### **3.1.1 Good Site Management “Housekeeping”**

Good site management (i.e., "housekeeping") measures shall be implemented to reduce or prevent pollutants in storm water discharges and authorized non-storm water discharges. Housekeeping measures shall be implemented for the management of construction materials that could potentially be a threat to water quality if discharged; waste materials; vehicle storage and maintenance, and landscape materials (if applicable).

## **3.2 EROSION AND SEDIMENT CONTROL**

Erosion and sediment controls are required by the General Permit to provide effective reduction or elimination of sediment related pollutants in stormwater discharges and authorized non-stormwater discharges from the Site. Applicable BMPs are identified in this section for erosion control, sediment control, tracking control, and wind erosion control.

### **3.2.1 Erosion Control**

Erosion control, also referred to as soil stabilization, consists of source control measures that are designed to prevent soil particles from detaching and becoming transported in stormwater runoff. Erosion control BMPs protect the soil surface by covering and/or binding soil particles.

The entire area of the construction project is covered by asphalt/concrete. There will be no exposed soil or vegetation areas at the Project Site. There is a potential that dredged sediment maybe temporarily stockpiled at the Project Site.

The BMPs selected to be implemented to control erosion on the construction site are presented in Table 3.2 and Fact Sheets for the selected temporary erosion control BMPs are provided in [Appendix I](#).

**Table 3.2 Erosion Control BMPs**

<b>CASQA Fact Sheet</b>	<b>BMP Name</b>	<b>Selected BMP for this SWPPP</b>
EC-1	Scheduling	Yes
EC-2	Preservation of Existing Vegetation	
EC-3	Hydraulic Mulch	
EC-4	Hydroseed	
EC-5	Soil Binders	
EC-6	Straw Mulch	
EC-7	Geotextiles and Mats	
EC-8	Wood Mulching	
EC-9	Earth Dike and Drainage Swales	
EC-10	Velocity Dissipation Devices	
EC-11	Slope Drains	
EC-12	Stream Bank Stabilization	
EC-14	Compost Blankets	
EC-15	Soil Preparation-Roughening	
EC-16	Non-Vegetated Stabilization	
WE-1	Wind Erosion Control	Yes

These temporary erosion control BMPs shall be implemented in conformance with the following guidelines and as outlined in the BMP Factsheets provided in **Appendix I**. If there is a conflict between documents, the Site Map will prevail over narrative in the body of the SWPPP or guidance in the BMP Fact Sheets. Site specific details in the Site Map prevail over standard details included in the Site Map. The narrative in the body of the SWPPP prevails over guidance in the BMP Fact Sheets.

### **EC-1, Scheduling**

The Contractor will schedule construction activities with the incorporation of both soil stabilization and sediment control measure BMPs to reduce the discharge of pollutants to storm drain facilities or watercourses. The schedule will limit exposure of disturbed soil to wind, rain, and stormwater run-on and run-off and minimize soil disturbance activities.

### **WE-1, Wind Erosion Control**

There is a potential that dredged sediment maybe temporarily stockpiled at the Project Site. The Contractor will implement this BMP to alleviate nuisance dust and wind erosion.

### **3.2.2 Sediment Controls**

Sediment controls are temporary or permanent structural measures that are intended to complement the selected erosion control measures and reduce sediment discharges from active construction areas. Sediment controls are designed to intercept and settle out soil particles that have been detached and transported by the force of water.

The BMPs selected to be implemented to control sediment on the construction site are presented in Table 3.3 and Fact Sheets for the selected temporary sediment control BMPs are provided in **Appendix I**.

**Table 3.3 Sediment Control BMPs**

CASQA Fact Sheet	BMP Name	Selected BMP for this SWPPP
SE-1	Silt Fence	
SE-2	Sediment Basin	
SE-3	Sediment Trap	Yes
SE-4	Check Dams	
SE-5	Fiber Rolls	Yes
SE-6	Gravel Bag Berm	Yes
SE-7	Street Sweeping	Yes
SE-8	Sandbag Barrier	Yes
SE-9	Straw Bale Barrier	
SE-10	Storm Drain Inlet Protection	Yes
SE-11	Active Treatment System	
SE-12	Temporary Silt Dike	
SE-13	Compost Sock and Berm	
SE-14	Biofilter Bags	
TC-1	Stabilized Construction Entrance and Exit	Yes
TC-2	Stabilized Construction Roadway	
TC-3	Entrance Outlet Tire Wash	Yes

**SE-3, Sediment Trap**

A sediment trap will be constructed within a low drainage area designed to collect all run-off at the Project Site. The sediment trap will be used as a ponding area to collect run-off from rain-fall and gravity dewatering of stockpiled dredged sediment. A sump pump will be used to transfer water from the collection trap to water storage tanks. Sediment will be removed from the trap and added to the stockpile.

**SE-5, Fiber Rolls**

Fiber rolls strategically placed can intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide removal of sediment from the runoff. Fiber rolls can be used as a form of storm drain inlet protection. Where applicable and appropriate, the Contractor will place fiber rolls in accordance with the BMP factsheets in the SWPPP.

**SE-6, Gravel Bag Berm**

A gravel bag berm can intercept sheet flow and pond sheet flow runoff, allowing sediment to settle out, and release runoff slowly as sheet flow, preventing erosion. Gravel bag berms may be suitable as a linear sediment control measure: as sediment traps at culvert/pipe outlets; along the perimeter of a site; around temporary stockpiles and spoils areas; and as small check dams. Gravel bag berms are similar to sand bag barriers, but more porous. Where applicable

and appropriate, the Contractor will place gravel bags in accordance with the BMP factsheets in the SWPPP.

### **SE-7, Street Sweeping and Vacuuming**

Sweeping and vacuuming removes sediment from streets and roadways, and prevents sediment from the project site from entering storm drains or receiving waters. Sweeping and vacuuming will be conducted anywhere sediment is tracked from the project site onto public or private paved streets and roads, typically at points of egress.

### **SE-8, Sandbag Barrier**

A sandbag barrier is a series of sand-filled bags placed on a level contour to intercept or to divert sheet flows. Sandbags can be used as a linear sediment control measure: around temporary stockpiles; as sediment traps; and along the perimeter of a site. Where applicable and appropriate, the Contractor will place sandbag barriers in accordance with the BMP factsheets in the SWPPP.

### **SE-10, Storm Drain Inlet Protection**

There are no storm drain inlets located within the Project Site boundaries. However, storm drains located in adjacent streets may need protecting. Storm drain inlet protection consists of a sediment filter or an impounding area in, around or upstream of a storm drain, drop inlet, or curb inlet. Storm drain inlet protection measures temporarily pond runoff before it enters the storm drain, allowing sediment to settle. Every storm drain inlet receiving runoff from unstabilized or otherwise active work areas should be protected. Frequent maintenance is required.

### **SE-11, Active Treatment Systems**

Active treatment systems (ATS) can be used to remove fine suspended sediments from stormwater runoff, thus reducing turbidity and associated pollutants and improving water quality. ATS should be considered where discharges to sediment and turbidity sensitive waters cannot be avoided using traditional BMPs. ATS can be designed as batch treatment systems using ponds or portable trailer-mounted tanks, or as flow-through systems using any number of proprietary designed systems.

### **TC-1, Stabilized Construction Entrance/ Exit**

The Contractor will install and maintain the stabilized construction entrances and exits to reduce the tracking of mud and dirt onto public roads by construction vehicles in accordance with the BMP factsheets in the SWPPP. This BMP should be used in conjunction with street sweeping on adjacent public right of way (as needed).

### **TC-3, Entrance/Outlet Tire Wash**

A tire wash will be used to remove sediment from tires and undercarriages and to prevent sediment from being transported onto public roadways. The tire wash is typically located at stabilized construction outlets/exits to public roadways.

### **3.3 NON-STORMWATER CONTROLS AND WASTE AND MATERIALS MANAGEMENT**

#### **3.3.1 Non-Stormwater Controls**

Non-stormwater discharges into storm drainage systems or waterways, which are not authorized under the General Permit, are prohibited. Non-stormwater discharges for which a separate NPDES permit is required by the local Regional Water Board are prohibited unless coverage under the separate NPDES permit has been obtained for the discharge. The selection of non-stormwater BMPs is based on the list of construction activities with a potential for non-stormwater discharges identified in Section 2.7 of this SWPPP.

The following non-stormwater control BMP selection table indicates the BMPs that shall be implemented to control sediment on the construction site. Fact Sheets for temporary non-stormwater control BMPs are provided in [Appendix I](#).

**Table 3.4 Non-Stormwater BMPs**

<b>CASQA Fact Sheet</b>	<b>BMP Name</b>	<b>Selected BMP for this SWPPP</b>
NS-1	Water Conservation Practices	Yes
NS-2	Dewatering Operation	Yes
NS-3	Paving and Grinding Operation	
NS-4	Temporary Stream Crossing	
NS-5	Clear Water Diversion	
NS-6	Illicit Connection- Illegal Discharge Connection	
NS-7	Potable Water Irrigation Discharge Detection	
NS-8	Vehicle and Equipment Cleaning	Yes
NS-9	Vehicle and Equipment Fueling	Yes
NS-10	Vehicle and Equipment Maintenance	Yes
NS-11	Pile Driving Operation	
NS-12	Concrete Curing	
NS-13	Concrete Finishing	
NS-14	Material and Equipment Use Over Water	Yes
NS-15	Demolition Removal Adjacent to Water	
NS-16	Temporary Batch Plants	

Non-stormwater BMPs shall be implemented in conformance with the following guidelines and in accordance with the BMP Fact Sheets provided in **Appendix I**. If there is a conflict between documents, the Site Map will prevail over narrative in the body of the SWPPP or guidance in the BMP Fact Sheets. Site specific details in the Site Map prevail over standard details included in the Site Map. The narrative in the body of the SWPPP prevails over guidance in the BMP Fact Sheets.

#### **NS-1, Water Conservation Practices**

The Contractor will implement water conservation practices when water is used on the project site. The Contractor will ensure any leakage will be repaired promptly and that all water equipment will be kept in proper working condition. The disposal of any rinse or wash water or materials on impervious or pervious site surfaces or into the storm drain system is prohibited.

#### **NS-2, Dewatering Operation**

Dewatering operations are practices that manage the discharge of pollutants when non-stormwater and accumulated precipitation (stormwater) must be removed from a work location to proceed with construction work or to provide vector control. Dewatering operations will require, and should comply with applicable local project-specific permits and regulations. This project will require a sanitary sewer discharge permit from the City of San Diego, Public Utilities Department.

#### **NS-8, Vehicle and Equipment Cleaning**

Vehicle and equipment cleaning will be performed prior to removing vehicles and equipment from the site. Vehicle and equipment cleaning pertains only to dry cleaning methods such as with rags, brooms, and other similar methods. Employees and Contractors can clean vehicles and equipment with steam or water; however, the liquids will be fully contained, monitored and disposed of properly.

#### **NS-9, Vehicle and Equipment Fueling**

The Contractor will use a fuel truck to perform vehicle and equipment fueling within the designated areas, which will be level ground and at least 50 feet away from the closest drain inlet or surface water drainage. During vehicle and equipment fueling activities, spill kits will be available and drip pans will be used to capture leaks when possible. Spills will be cleaned up immediately and the resulting materials will be disposed of appropriately.

#### **NS-10, Vehicle and Equipment Maintenance**

This BMP pertains to light lubrication and greasing of equipment onsite. Consistent with vehicle and equipment fueling, these activities will be performed within the designated area. Spill prevention measures will be implemented to prevent the discharge of vehicle and equipment fluids to the ground, storm drains or surface waters. Spills will be cleaned up immediately and the resulting materials will be disposed of appropriately.

#### **NS-14, Material Over Water**

The procedures listed in this BMP should be implemented for construction materials and wastes (solid and liquid), soil or dredging materials, or any other materials that may cause or contribute to exceedances of water quality standards. Dredge and fill activities are regulated by the US Army Corps of Engineers and Regional Boards under Section 404/402 of the Clean Water Act.

### 3.3.2 Materials Management and Waste Management

Materials management control practices consist of implementing procedural and structural BMPs for handling, storing and using construction materials to prevent the release of those materials into stormwater discharges. The amount and type of construction materials to be utilized at the Site will depend upon the type of construction and the length of the construction period. The materials may be used continuously, such as fuel for vehicles and equipment, or the materials may be used for a discrete period, such as soil binders for temporary stabilization.

Waste management consist of implementing procedural and structural BMPs for handling, storing and ensuring proper disposal of wastes to prevent the release of those wastes into stormwater discharges. If applicable to the project site, waste management should be conducted in accordance with the Project's Construction Waste Management Plan.

Materials and waste management pollution control BMPs shall be implemented to minimize stormwater contact with construction materials, wastes and service areas; and to prevent materials and wastes from being discharged off-site. The primary mechanisms for stormwater contact that shall be addressed include:

- Direct contact with precipitation
- Contact with stormwater run-on and runoff
- Wind dispersion of loose materials
- Direct discharge to the storm drain system through spills or dumping
- Extended contact with some materials and wastes, such as asphalt cold mix and treated wood products, which can leach pollutants into stormwater.

A list of construction activities is provided in Section 2.6. The following Materials and Waste Management BMP selection table indicates the BMPs that shall be implemented to handle materials and control construction site wastes associated with these construction activities. Fact Sheets for Materials and Waste Management BMPs are provided in [Appendix I](#).

**Table 3.5 Materials Management BMPs**

CASQA Fact Sheet	BMP Name	Selected BMP for this SWPPP
WM-01	Material Delivery and Storage	Yes
WM-02	Material Use	Yes
WM-03	Stockpile Management	Yes
WM-04	Spill Prevention and Control	Yes
WM-05	Solid Waste Management	Yes
WM-06	Hazardous Waste Management	Yes
WM-07	Contaminated Soil Management	Yes
WM-08	Concrete Waste Management	Yes (as needed)
WM-09	Sanitary-Septic Waste Management	Yes
WM-10	Liquid Waste Management	Yes

Material management BMPs shall be implemented in conformance with the following guidelines and in accordance with the BMP Fact Sheets provided in **Appendix I**. If there is a conflict between documents, the Site Map will prevail over narrative in the body of the SWPPP or guidance in the BMP Fact Sheets. Site specific details in the Site Map prevail over standard details included in the Site Map. The narrative in the body of the SWPPP prevails over guidance in the BMP Fact Sheets.

**WM-1, Material Delivery and Storage**

Materials used in the operation of heavy equipment will be brought to the site via trucks designed to deliver and store the specific material being used (e.g., diesel fuel, lubricants, etc.). Construction materials brought onsite will be stored in a specific area located away from offsite runoff and outside drainage areas. Employees involved will be educated on the proper material delivery and storage practices for each material used.

**WM-2, Material Use**

The Contractor will prevent misuse and overuse of materials. Proper amounts of materials will be prepared for each work shift to avoid generating excess. MSDS sheets, material inventory

and emergency contacts will be maintained in the onsite construction office. Spill kits will be kept on site for immediate use.

### **WM-3, Stockpile Management**

The Contractor will stockpile excavated materials at designated areas located within the construction site, and with the appropriate BMPs in place.

### **WM-4, Spill Prevention and Control**

The Contractor will ensure that materials are sealed and secured on level ground to minimize the possibility of a spill. Spill kits will be available onsite for control in the event of a spill, in addition construction personnel should be trained to recognize a significant spill for each material that is used, and the dangers and appropriate response for major and minor spills. Chemicals will be stored in watertight containers with appropriate secondary containment to prevent any spillage or leakage; or will be stored in a completely enclosed storage shed

### **WM-5, Solid Waste Management**

Solid waste will primarily consist of general construction litter. Wherever possible, solid waste will be loaded directly into trucks or bins for offsite disposal. The QSP will monitor solid waste storage and disposal procedures onsite. Waste disposal containers will be covered (with UV resistant plastics, if deemed necessary or acceptable) at the end of every business day and during rain events. Discharges from the waste disposal containers to the stormwater drainage system are to be prevented.

### **WM-6, Hazardous Waste Management**

This BMP applies to all construction projects. Potential hazardous wastes associated with construction projects include the following: petroleum products, asphalt products, concrete curing compounds, pesticides, palliatives, acids, septic wastes, paints, stains, solvents, wood preservatives, and roofing tar. Hazardous wastes are defined by regulation in California Code of Regulations, Title 22 Division 4.5, or listed in 40 Code of Federal Regulations (CFR) Parts 110, 117, 261, or 302. During this construction project, soils impacted by historic mine and mill operations that might exceed Title 22 or 40 CFR hazardous waste thresholds may also be encountered. The Contractor will practice material handling procedures consistent with this BMP to prevent or reduced the discharge of pollutants to stormwater from hazardous waste through proper material use, waste disposal, and training of employees and subcontractors.

### **WM-7, Contaminated Soil Management**

Contaminated soil is not anticipated to be encountered in the identified construction areas. However, if contaminated soil is identified it will be contained, covered (if stockpiled) and left in place, or disposed of in accordance with instructions from the site operations project manager. Waste management, transport, and disposal will be conducted in accordance with State and Federal regulations. Contractor and subcontractor employees will be instructed to recognize evidence of contaminated soils, such as buried debris, discolored soils, and petroleum and chemical odors.

### **WM-8, Concrete Waste Management (as needed)**

The Contractor will construct a below or above grade concrete washout facility and maintain when concrete is poured. The size of the washout will be sized so that it will provide more than sufficient volume to contain concrete washout waste.

### **WM-9, Sanitary-Septic Waste Management**

The Contractor will maintain portable toilets for onsite use during the initial phases of the project. The portable toilets will be located within the construction site, and will be located on level ground, away from the concentrated flow of traffic, and a minimum of 50 feet away from drainage facilities and watercourses. Portable toilets shall also be tied down or staked with rebar hooks into the ground to prevent tipping from wind or vandals. Weekly maintenance will be provided by a licensed sanitary/sewer waste hauler and waste will be disposed offsite.

### **WM-10, Liquid Waste Management**

Liquid waste management includes the procedures and practices to prevent discharge of pollutants to the storm drain system or to watercourses as a result of the creation, collection, and disposal of non-hazardous liquid wastes. Liquid waste management does not apply to dewatering operations (NS-2), solid waste management (WM-5), hazardous wastes (WM-6), or concrete slurry residue (WM-8). Liquid wastes generated as part of an operational procedure, such as water-laden dredged material and drilling mud, should be contained and not allowed to flow into drainage channels or receiving waters.

## **3.4 POST CONSTRUCTION STORMWATER MANAGEMENT MEASURES**

Post construction BMPs are permanent measures installed during construction, designed to reduce or eliminate pollutant discharges from the site after construction is completed.

This site is located in an area subject to a Phase I or Phase II Municipal Separate Storm Sewer System (MS4) permit approved Stormwater Management Plan.  Yes  No

All post construction stormwater will be collected and discharged to the city sewer system (as was the scenario pre-construction). There is no change in the water balance from pre-construction to post construction.

The following source control post construction BMPs to comply with General Permit Section XIII.B and local requirements have been identified for the site:

- Good Site Management “Housekeeping”

The post construction BMPs that are described above shall be funded and maintained by the Property Owner and/or current tenant.

## Section 4 BMP Inspection and Maintenance, and Rain Event Action Plans (REAPS)

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### 4.1 BMP INSPECTION AND MAINTENANCE

The General Permit requires routine weekly inspections of BMPs, along with inspections before, during, and after qualifying rain events. A BMP inspection checklist must be filled out for inspections and maintained on-site with the SWPPP. The inspection checklist includes the necessary information covered in Section 7.6. A blank inspection checklist can be found in [Appendix J](#). Completed checklists shall be kept in CSMP Attachment 2 “Monitoring Records.

BMPs shall be maintained regularly to ensure proper and effective functionality. If necessary, corrective actions shall be implemented within 72 hours of identified deficiencies and associated amendments to the SWPPP shall be prepared by the QSD.

Specific details for maintenance, inspection, and repair of Construction Site BMPs can be found in the BMP Factsheets in [Appendix I](#).

### 4.2 RAIN EVENT ACTION PLANS

Rain Event Action Plans (REAPs) are not required for Risk Level 1 Projects.

## Section 5 Training

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[Appendix M](#) identifies the QSPs for the project. To promote stormwater management awareness specific for this project, periodic training of job-site personnel shall be included as part of routine project meetings (e.g. daily/weekly tailgate safety meetings), or task specific trainings as needed.

The QSP shall be responsible for providing this information at the meetings, and subsequently completing the training logs shown in [Appendix L](#), which identifies the site-specific stormwater topics covered as well as the names of site personnel who attended the meeting. Tasks may be delegated to trained employees by the QSP provided adequate supervision and oversight is provided. Training shall correspond to the specific task delegated including: SWPPP implementation; BMP inspection and maintenance; and record keeping.

Documentation of training activities (formal and informal) is retained in SWPPP [Appendix L](#).

## Section 6 Responsible Parties and Operators

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### 6.1 RESPONSIBLE PARTIES

Approved Signatories who are responsible for SWPPP implementation and have authority to sign permit-related documents are listed below. Written authorizations from the LRP for these individuals are provided in [Appendix M](#). The Approved Signatories assigned to this project are:

Name	Title	Phone Number
Dean Charles	Project Manager	(858) 705-2635
Michael Palmer	Project Manager	(619) 546-8377

QSPs identified for the project are identified in [Appendix M](#). The QSP shall have primary responsibility and significant authority for the implementation, maintenance and inspection/monitoring of SWPPP requirements. The QSP will be available at all times throughout the duration of the project. Duties of the QSP include but are not limited to:

- Implementing all elements of the General Permit and SWPPP, including but not limited to:
  - Ensuring all BMPs are implemented, inspected, and properly maintained;
  - Performing non-stormwater and stormwater visual observations and inspections;
  - Performing non-stormwater and storm sampling and analysis, as required;
  - Performing routine inspections and observations;
  - Implementing non-stormwater management, and materials and waste management activities such as: monitoring discharges; general Site clean-up; vehicle and equipment cleaning, fueling and maintenance; spill control; ensuring that no materials other than stormwater are discharged in quantities which will have an adverse effect on receiving waters or storm drain systems; etc.;
- The QSP may delegate these inspections and activities to an appropriately trained employee, but shall ensure adequacy and adequate deployment.
- Ensuring elimination of unauthorized discharges.
- The QSPs shall be assigned authority by the LRP to mobilize crews in order to make immediate repairs to the control measures.
- Coordinate with the Contractor(s) to assure all of the necessary corrections/repairs are made immediately and that the project complies with the SWPPP, the General Permit and approved plans at all times.
- Notifying the LRP or Authorized Signatory immediately of off-site discharges or other non-compliance events.

## 6.2 CONTRACTOR LIST

### Contractor(s)

Name: Chad Carpenter  
Title: Contractor Project Manager  
Company: R.E. STAITE Engineering  
Address: 2145 East Belt Street, San Diego, CA 92113  
Phone Number: (619) 233-0178  
Number (24/7):

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Name: Ali Meeks  
Title: Project Staff  
Company: Anchor QEA, LLC  
Address: 27201 Puertas Rd, Ste 350, Mission Viejo, CA 92691  
Phone Number: (949) 347-2780  
Number (24/7): (206) 779-9425

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Name: Lijun Xu, P.E., QSD/QSP  
Title: Senior Engineer  
Company: AMEC Environment & Infrastructure  
Address: 9177 Sky Park Ct., San Diego, CA 92123  
Phone Number: (858) 514-7792  
Number (24/7): (858) 366-3589

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Name:  
Title:  
Company:  
Address:  
Phone Number:  
Number (24/7):

# Section 7 Construction Site Monitoring Program

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## 7.1 Purpose

This Construction Site Monitoring Program was developed to address the following objectives:

1. To determine whether non-visible pollutants are present at the construction site and are causing or contributing to exceedances of water quality objectives;
2. To determine whether immediate corrective actions, additional Best Management Practices (BMP) implementation, or SWPPP revisions are necessary to reduce pollutants in stormwater discharges and authorized non-stormwater discharges;
3. To determine whether BMPs included in the SWPPP are effective in preventing or reducing pollutants in stormwater discharges and authorized non-stormwater discharges.

## 7.2 Applicability of Permit Requirements

This project has been determined to be a Risk Level 1 project. The General Permit identifies the following types of monitoring as being applicable for a Risk Level 1 project.

### ***Risk Level 1***

- Visual inspections of Best Management Practices (BMPs);
- Visual monitoring of the site related to qualifying storm events;
- Visual monitoring of the site for non-stormwater discharges;
- Sampling and analysis of construction site runoff for non-visible pollutants when applicable;
- Sampling and analysis of construction site runoff as required by the Regional Water Board when applicable;
- Sampling and analysis of non-stormwater discharges;
- Sampling and analysis of construction site runoff for non-visible pollutants when applicable;
- Sampling and analysis of non-stormwater discharges when applicable; and
- Bioassessment monitoring if applicable.

## 7.3. Weather and Rain Event Tracking

Visual monitoring and inspections requirements of the General Permit are triggered by a qualifying rain event. The General Permit defines a qualifying rain event as any event that produces ½ inch of precipitation. A minimum of 48 hours of dry weather will be used to distinguish between separate qualifying storm events.

### 7.3.1 Weather Tracking

The QSP should daily consult the National Oceanographic and Atmospheric Administration (NOAA) for the weather forecasts. These forecasts can be obtained at <http://www.srh.noaa.gov/>. Weather reports should be printed and maintained with the SWPPP in **CSMP Attachment 1 "Weather Reports"**. If rain is forecasted the QSP shall perform a Pre-Rain Event "BMP Inspection Report", are included in Appendix J.

### 7.3.2 Rain Gauges

The QSP shall install one rain gauge(s) on the project site. Locate the gauge in an open area away from obstructions such as trees or overhangs. Mount the gauge on a post at a height of 3 to 5 feet with the gauge extending several inches beyond the post. Make sure that the top of the gauge is level. Make sure the post is not in an area where rainwater can indirectly splash from sheds, equipment, trailers, etc.

The rain gauge(s) shall be read daily during normal site scheduled hours. The rain gauge should be read at approximately the same time every day and the date and time of each reading recorded. Log rain gauge readings in **CSMP Attachment 1 "Weather Records"**. Follow the rain gauge instructions to obtain accurate measurements.

Once the rain gauge reading has been recorded, accumulated rain shall be emptied and the gauge reset. For comparison with the site rain gauge, the nearest appropriate governmental rain gauge(s) is the San Diego River at Fashion Valley weather station ([www.cnfrc.noaa.gov](http://www.cnfrc.noaa.gov)).

### 7.4 Monitoring Locations

The Project Site has been designed such that there is no stormwater run-off. Therefore visual monitoring of the Project Site boundaries will be conducted to confirm that there are no unintended discharges of stormwater. The Project Site boundaries are presented on Plate 4 in **Appendix B**. Monitoring locations are described in the Sections 7.6 and 7.7.

Whenever changes in the construction site might affect the appropriateness of sampling locations, the sampling locations shall be revised accordingly. All such revisions shall be implemented as soon as feasible and the SWPPP amended. Temporary changes that result in a one-time additional sampling location do not require a SWPPP amendment.

### 7.5 Safety and Monitoring Exemptions

Safety practices for sample collection will be in accordance with the **[ENTER TITLE AND PUBLICATION DATE OF CONTRACTOR'S HEALTH AND SAFETY PLAN FOR THE PROJECT OR PROVIDE SPECIFIC REQUIREMENTS IN THIS SECTION]**. A summary of the safety requirements that apply to sampling personnel is provided below.

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

This project is not required to collect samples or conduct visual observations (inspections) under the following conditions:

- During dangerous weather conditions such as flooding and electrical storms.
- Outside of scheduled site business hours.

Scheduled site business hours are: **24 hrs per day / 7 days per week**.

If monitoring (visual monitoring or sample collection) of the site is unsafe because of the dangerous conditions noted above then the QSP shall document the conditions for why an exception to performing the monitoring was necessary. The exemption documentation shall be filed in **CSMP Attachment 2 "Monitoring Records"**.

## **7.6 Visual Monitoring**

Visual monitoring includes observations and inspections. Inspections of BMPs are required to identify and record BMPs that need maintenance to operate effectively, that have failed, or that could fail to operate as intended. Visual observations of the site are required to observe storm water drainage areas to identify any spills, leaks, or uncontrolled pollutant sources.

Table 7.1 identifies the required frequency of visual observations and inspections. Inspections and observations will be conducted at the locations identified in Section 7.6.3.

**Table 7.1 Summary of Visual Monitoring and Inspections**

Type of Inspection	Frequency
<i>Routine Inspections</i>	
All BMPs Inspected	Weekly <sup>1</sup>
Bermed/impervious perimeter barriers	Daily <sup>2</sup>
SE-10: Storm Drain Inlet Protection	Daily <sup>2</sup>
TC-1: Stabilized Construction Entrance and Exit	Daily <sup>2</sup>
WE-1: Wind Erosion Control (stockpiles)	Daily <sup>2</sup>
Non-Stormwater Discharge Observations	Daily during daylight hours
<i>Rain Event Triggered Inspections</i>	
Site Inspections Prior to a Qualifying Event	Within 48 hours of a qualifying event <sup>2</sup>
BMP Inspections During an Extended Storm Event	Every 24-hour period of a rain event <sup>2</sup>
Site Inspections Following a Qualifying Event	Within 48 hours of a qualifying event <sup>2</sup>
<p><sup>1</sup> Most BMPs must be inspected weekly; those identified below must be inspected more frequently.</p> <p><sup>2</sup> Inspections are only required during scheduled site operating hours. Note however, these inspections are required daily regardless of the amount of precipitation.</p>	

**7.6.1 Routine Observations and Inspections**

Routine site inspections and visual monitoring are necessary to ensure that the project is in compliance with the requirements of the Construction General Permit.

**7.6.1.1 Routine BMP Inspections**

Inspections of BMPs are conducted to identify and record:

- BMPs that are properly installed;
- BMPs that need maintenance to operate effectively;
- BMPs that have failed; or
- BMPs that could fail to operate as intended.

**7.6.1.2 Non-Stormwater Discharge Observations**

Each drainage area will be inspected for the presence of or indications of prior unauthorized and authorized non-stormwater discharges. Inspections will record:

- Presence or evidence of any non-stormwater discharge (authorized or unauthorized);
- Pollutant characteristics (floating and suspended material, sheen, discoloration, turbidity, odor, etc.); and
- Source of discharge.

## **7.6.2 Rain-Event Triggered Observations and Inspections**

Visual observations of the site and inspections of BMPs are required prior to a qualifying rain event; following a qualifying rain event, and every 24-hour period during a qualifying rain event. Pre-rain inspections will be conducted after consulting NOAA and determining that a precipitation event with a 50% or greater probability of precipitation has been predicted.

### **7.6.2.1 Visual Observations Prior to a Forecasted Qualifying Rain Event**

Within 48-hours prior to a qualifying event a stormwater visual monitoring site inspection will include observations of the following locations:

- Stormwater drainage areas to identify any spills, leaks, or uncontrolled pollutant sources;
- BMPs to identify if they have been properly implemented;
- Any stormwater storage and containment areas to detect leaks and ensure maintenance of adequate freeboard.

BMP inspections and visual monitoring will be triggered by a NOAA prediction of rain in the project area.

### **7.6.2.2 BMP Inspections During an Extended Storm Event**

During an extended rain event BMP inspections will be conducted to identify and record:

- BMPs that are properly installed;
- BMPs that need maintenance to operate effectively;
- BMPs that have failed; or
- BMPs that could fail to operate as intended.

If the construction site is not accessible during the rain event, the visual inspections shall be performed at all relevant outfalls, discharge points, downstream locations. The inspections should record any projected maintenance activities.

### **7.6.2.2 Visual Observations Following a Qualifying Rain Event**

Within 48 hours following a qualifying rain event (0.5 inches of rain) a stormwater visual monitoring site inspection is required to observe:

- Stormwater drainage areas to identify any spills, leaks, or uncontrolled pollutant sources;
- BMPs to identify if they have been properly designed, implemented, and effective;
- Need for additional BMPs;
- Any stormwater storage and containment areas to detect leaks and ensure maintenance of adequate freeboard; and
- Discharge of stored or contained rain water.

## **7.6.3 Visual Monitoring Procedures**

Visual monitoring shall be conducted by the QSP or staff trained by and under the supervision of the QSP.

The name(s) and contact number(s) of the site visual monitoring personnel are listed below and their training qualifications are provided in **Appendix L**.

Assigned inspector: Ali Meeks, Anchor QEA      Contact phone: (206) 779-9425

Alternate inspector: **NAME OF INSPECTOR** Contact phone: **TELEPHONE NUMBER**

Stormwater observations shall be documented on the *Visual Inspection Field Log Sheet* (see **CSMP Attachment 3 “Example Forms”**). BMP inspections shall be documented on the site specific BMP inspection checklist. Any photographs used to document observations will be referenced on stormwater site inspection report and maintained with the Monitoring Records in Attachment 2.

The QSP shall within **3-5 days** of the inspection submit copies of the completed inspection report to the Construction Site Manager and the QSD of Record.

The completed reports will be kept in **CSMP Attachment 2 “Monitoring Records”**.

#### **7.6.4 Visual Monitoring Follow-Up and Reporting**

Correction of deficiencies identified by the observations or inspections, including required repairs or maintenance of BMPs, shall be initiated and completed as soon as possible.

If identified deficiencies require design changes, including additional BMPs, the implementation of changes will be initiated within 72 hours of identification and be completed as soon as possible. When design changes to BMPs are required, the SWPPP shall be amended to reflect the changes.

Deficiencies identified in site inspection reports and correction of deficiencies will be tracked on the *Inspection Field Log Sheet* or *BMP Inspection Report* and shall be submitted to the QSP and shall be kept in **CSMP Attachment 2 “Monitoring Records”**.

The QSP shall within **3-5 days** of the inspection submit copies of the completed *Inspection Field Log Sheet* or *BMP Inspection Report* with the corrective actions to Construction Site Manager and the QSD of Record.

Results of visual monitoring must be summarized and reported in the Annual Report.

#### **7.6.5 Visual Monitoring Locations**

The inspections and observations identified in Sections 7.6.1 and 7.6.2 will be conducted at the locations identified in this section.

The sediment containment area, truck staging area, truck loading area, and truck washing area all drain to one location on the Project Site. The drainage water is collected and pumped to a water storage tank. The drainage area is presented on Plate 3 and the water storage tanks are presented on Plate 4, located in **Appendix B**.

### **7.7 Water Quality Sampling and Analysis**

Water quality sampling and analysis serves to demonstrate the project is in compliance with discharge prohibitions. This project is classified as Risk Level 1 and shall perform water quality sampling and analysis for non-visible pollutants.

#### **7.7.1 Sampling and Analysis Plan for Non-Visible Pollutants in Stormwater Runoff Discharges**

This Sampling and Analysis Plan for Non-Visible Pollutants describes the sampling and analysis strategy and schedule for monitoring non-visible pollutants in stormwater runoff discharges from the project site.

Sampling for non-visible pollutants will be conducted when (1) a breach, leakage, malfunction, or spill is observed; and (2) the leak or spill has not been cleaned up prior to the rain event; and

(3) there is the potential for discharge of non-visible pollutants to surface waters or drainage system.

The following construction materials, wastes, or activities, as identified in Section 2.6, are potential sources of non-visible pollutants to stormwater discharges from the project. Storage, use, and operational locations are shown on Plate 4, located in **Appendix B**.

- Heavy Equipment
- Portable Toilets
- Addition of cement slurry (or other absorbent additives) to sediment

The following existing site features, as identified in Section 2.6, are potential sources of non-visible pollutants to stormwater discharges from the project.

- None

The following soil amendments have the potential to change the chemical properties, engineering properties, or erosion resistance of the soil and will be used on the project site.

- None

The project has the potential to receive stormwater run-on from the following locations with the potential to contribute non-visible pollutants to stormwater discharges from the project.

- None

#### 7.7.1.1 *Sampling Schedule*

The Project Site has been designed to eliminate both stormwater and/or non-stormwater discharges (other than to the City Sewer System). In the event of an accidental discharge the following sampling schedule will be implemented.

Samples for the potential non-visible pollutant(s) and a sufficiently large unaffected background sample shall be collected during the first two hours of discharge from rain events that result in a sufficient discharge for sample collection. Samples shall be collected during the site's scheduled hours and shall be collected regardless of the time of year and phase of the construction.

Collection of discharge samples for non-visible pollutant monitoring will be triggered if/when any of the following conditions are observed during site inspections conducted prior to or during a rain event.

- Materials or wastes containing potential non-visible pollutants are not stored under watertight conditions. Watertight conditions are defined as (1) storage in a watertight container, (2) storage under a watertight roof or within a building, or (3) protected by temporary cover and containment that prevents stormwater contact and runoff from the storage area.

- Materials or wastes containing potential non-visible pollutants are stored under watertight conditions, but (1) a breach, malfunction, leakage, or spill is observed, (2) the leak or spill is not cleaned up prior to the rain event, and (3) there is the potential for discharge of non-visible pollutants to surface waters or a storm drain system.
- A construction activity, including but not limited to those in Section 2.6, with the potential to contribute non-visible pollutants (1) was occurring during or within 24 hours prior to the rain event, (2) BMPs were observed to be breached, malfunctioning, or improperly implemented, and (3) there is the potential for discharge of non-visible pollutants to surface waters or a storm drain system.
- Soil amendments that have the potential to change the chemical properties, engineering properties, or erosion resistance of the soil have been applied, and there is the potential for discharge of non-visible pollutants to surface waters or a storm drain system.
- Stormwater runoff from an area contaminated by historical usage of the site has been observed to combine with stormwater runoff from the site, and there is the potential for discharge of non-visible pollutants to surface waters or a storm drain system.

#### 7.7.1.2 *Sampling Locations*

The Project Site has been designed to eliminate both stormwater and non-stormwater discharges (other than to the City Sewer System), therefore there are no designated sampling location(s) on the Project Site. Samples will be collected at the point of off-site discharge should such an unintended event occur.

#### 7.7.1.3 *Monitoring Preparation*

Non-visible pollutant samples will be collected by:

Contractor	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Consultant	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Laboratory	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

Samples on the project site will be collected by the following contractor sampling personnel:

Name/Telephone Number: Ali Meeks, Anchor QEA, (206) 779-9425

Alternate(s)/Telephone Number: [REDACTED]

An adequate stock of monitoring supplies and equipment for monitoring non-visible pollutants will be available on the project site prior to a sampling event. Monitoring supplies and equipment will be stored in a cool temperature environment that will not come into contact with rain or direct sunlight. Sampling personnel will be available to collect samples in accordance with the sampling schedule. Supplies maintained at the project site will include, but are not limited to, clean powder-free nitrile gloves, sample collection equipment, coolers, appropriate number and volume of sample bottles, identification labels, re-sealable storage bags, paper towels, personal rain gear, ice, and *Effluent Sampling Field Log Sheets* and Chain of Custody (CoC) forms, which are provided in **CSMP Attachment 3 "Example Forms"**.

Samples on the project site will be collected by the following environmental consultants:

Company Name: Anchor QEA  
 Street Address: 27201 Puerta Road, Ste 350  
 City, State Zip: Mission Viejo, CA 92691  
 Telephone Number: (949) 347-2780  
 Point of Contact: Michael Whelan  
 Name of Sampler(s): Ali Meeks  
 Name of Alternate(s): [REDACTED]

The QSP or his/her designee will contact the analytical laboratory and/or the environmental sampling consultant 24 hours prior to a predicted rain event or for an unpredicted event, as soon as a rain event begins if one of the triggering conditions is identified during an inspection to ensure that adequate sample collection personnel and supplies for monitoring non-visible pollutants are available and will be mobilized to collect samples on the project site in accordance with the sampling schedule.

*7.7.1.4 Analytical Constituents*

Table 7.2 lists the specific sources and types of potential non-visible pollutants on the project site and the water quality indicator constituent(s) for that pollutant.

**Table 7.2 Potential Non-Visible Pollutants and Water Quality Indicator Constituents**

<b>Pollutant Source</b>	<b>Pollutant</b>	<b>Water Quality Indicator Constituent</b>
Heavy Equipment	Solvents, metals	VOCs, SVOCs, and Heavy Metals
Portable Toilets	Chemicals, Disinfectants	BOD, pH
Sediment Additives	Cement, fly ash	pH, metals (Al, Ca, V, Zn)
Asphalt Work	Petroleum	TPH

7.7.1.5 *Sample Collection*

Samples of discharge shall be collected at locations determined by observed breaches, malfunctions, leakages, spills, operational areas, soil amendment application areas, and historical site usage areas that triggered the sampling event.

Grab samples shall be collected and preserved in accordance with the methods identified in the Table, "Sample Collection, Preservation and Analysis for Monitoring Non-Visible Pollutants" provided in Section 7.7.1.6. Only the QSP, or personnel trained in water quality sampling under the direction of the QSP shall collect samples.

Sample collection and handling requirements are described in Section 7.7.7.

7.7.1.6 *Sample Analysis*

Samples shall be analyzed using the analytical methods identified in the Table 7.3.

Samples will be analyzed by:

Laboratory Name: Calscience Environmental Laboratories, Inc.  
Street Address: 7440 Lincoln Way  
City, State Zip: Garden Grove, CA 92841-1432  
Telephone Number: (714) 895-5494  
Point of Contact: XXXXXXXXXX  
ELAP Certification Number: #2803

Samples will be delivered to the laboratory by:

Driven by Contractor	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Picked up by Laboratory Courier	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Shipped	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

**Table 7.3 Sample Collection, Preservation and Analysis for Monitoring Non-Visible Pollutants**

Constituent	Analytical Method	Minimum Sample Volume	Sample Containers	Sample Preservation	Reporting Limit	Maximum Holding Time
TPH Extractables (diesel/oil)	EPA Method 8015M	1 Liter	Glass Amber	HCl / store at 4 deg C	0.5 mg/L	14 days
VOCs	EPA Method 8260B	40 mL x3	VOA-glass	HCl / store at 4 deg C	1 ug/L	14 days
SVOCs	EPA Method 8270	1 Liter	Glass Amber	HNO3; store at 4 deg C	10 ug/L	7 days
CAM 17 Metals	EPA Method 6000/7000 series	1 Liter	Glass Amber	Store at 4 deg C	0.1 mg/L	6 months
BOD	SM5210B	1 Liter	Polypropylene	Store at 4 deg C	1 mg/L	48 hours
pH	Field Instrument				pH units	

**7.7.1.7 Data Evaluation and Reporting**

The QSP shall complete an evaluation of the water quality sample analytical results.

Runoff/downgradient results shall be compared with the associated upgradient/unaffected results and any associated run-on results. Should the runoff/downgradient sample show an increased level of the tested analyte relative to the unaffected background sample, which cannot be explained by run-on results, the BMPs, site conditions, and surrounding influences shall be assessed to determine the probable cause for the increase.

As determined by the site and data evaluation, appropriate BMPs shall be repaired or modified to mitigate discharges of non-visible pollutant concentrations. Any revisions to the BMPs shall be recorded as an amendment to the SWPPP.

The General Permit prohibits the storm water discharges that contain hazardous substances equal to or in excess of reportable quantities established in 40 C.F.R. §§ 117.3 and 302.4. The results of any non-stormwater discharge results that indicate the presence of a hazardous substance in excess of established reportable quantities shall be immediately reported to the Regional Water Board and other agencies as required by 40 C.F.R. §§ 117.3 and 302.4.

Results of non-visible pollutant monitoring shall be reported in the Annual Report.

**7.7.2 Sampling and Analysis Plan for pH and Turbidity in Stormwater Runoff Discharges**

Sampling and analysis of runoff for pH and turbidity is not required for Risk Level 1 projects.

**7.7.3 Additional Monitoring Following an NEL Exceedance**

This project is not subject to NELs.

**7.7.4 Sampling and Analysis Plan for Non-Stormwater Discharges**

This project is not subject to the non-stormwater sampling and analysis requirements of the General Permit because it is a Risk Level 1 project.

**7.7.5 Sampling and Analysis Plan for Other Pollutants Required by the Regional Water Board**

The Regional Water Board has not specified monitoring for additional pollutants.

**7.7.6 Training of Sampling Personnel**

Sampling personnel shall be trained to collect, maintain, and ship samples in accordance with the Surface Water Ambient Monitoring Program (SWAMP) 2008 Quality Assurance Program Plan (QAPP). Training records of designated contractor sampling personnel are provided in Appendix L.

The stormwater sampler(s) and alternate(s) have received the following stormwater sampling training:

<b>Name</b>	<b>Training</b>
Ali Meeks, Anchor QEA	INSERT LIST OF TRAINING COURSES
Alternate	INSERT LIST OF TRAINING COURSES

The stormwater sampler(s) and alternates have the following stormwater sampling experience:

<b>Name</b>	<b>Experience</b>
Ali Meeks, Anchor QEA	INSERT LIST OF STORMWATER SAMPLING EXPERIENCE
Alternate	INSERT LIST OF STORMWATER SAMPLING EXPERIENCE

### **7.7.7 Sample Collection and Handling**

#### **7.7.7.1 Sample Collection**

Samples shall be collected at the designated sampling locations shown on the Site Maps and listed in the preceding sections. Samples shall be collected, maintained and shipped in accordance with the SWAMP 2008 Quality Assurance Program Plan (QAPP).

Grab samples shall be collected and preserved in accordance with the methods identified in preceding sections.

To maintain sample integrity and prevent cross-contamination, sample collection personnel shall follow the protocols below.

- Collect samples (for laboratory analysis) only in analytical laboratory-provided sample containers;
- Wear clean, powder-free nitrile gloves when collecting samples;
- Change gloves whenever something not known to be clean has been touched;
- Change gloves between sites;
- Decontaminate all equipment (e.g. bucket, tubing) prior to sample collection using a trisodium phosphate water wash, distilled water rinse, and final rinse with distilled water. (Dispose of wash and rinse water appropriately, i.e., do not discharge to storm drain or receiving water). Do not decontaminate laboratory provided sample containers;
- Do not smoke during sampling events;
- Never sample near a running vehicle;
- Do not park vehicles in the immediate sample collection area (even non-running vehicles);
- Do not eat or drink during sample collection; and
- Do not breathe, sneeze, or cough in the direction of an open sample container.

The most important aspect of grab sampling is to collect a sample that represents the entire runoff stream. Typically, samples are collected by dipping the collection container in the runoff flow paths and streams as noted below.

- i. For small streams and flow paths, simply dip the bottle facing upstream until full.
- ii. For larger stream that can be safely accessed, collect a sample in the middle of the flow stream by directly dipping the mouth of the bottle. Once again making sure that the opening of the bottle is facing upstream as to avoid any contamination by the sampler.
- iii. For larger streams that cannot be safely waded, pole-samplers may be needed to safely access the representative flow.
- iv. Avoid collecting samples from ponded, sluggish or stagnant water.
- v. Avoid collecting samples directly downstream from a bridge as the samples can be affected by the bridge structure or runoff from the road surface.

Note, that depending upon the specific analytical test, some containers may contain preservatives. These containers should **never** be dipped into the stream, but filled indirectly from the collection container.

#### 7.7.7.2 Sample Handling

Turbidity and pH measurements must be conducted immediately. Do not store turbidity or pH samples for later measurement.

Samples for laboratory analysis must be handled as follows. Immediately following sample collection:

- Cap sample containers;
- Complete sample container labels;
- Sealed containers in a re-sealable storage bag;
- Place sample containers into an ice-chilled cooler;
- Document sample information on the *Effluent Sampling Field Log Sheet*; and
- Complete the CoC.

All samples for laboratory analysis must be maintained between 0-6 degrees Celsius during delivery to the laboratory. Samples must be kept on ice, or refrigerated, from sample collection through delivery to the laboratory. Place samples to be shipped inside coolers with ice. Make sure the sample bottles are well packaged to prevent breakage and secure cooler lids with packaging tape.

Ship samples that will be laboratory analyzed to the analytical laboratory right away. Hold times are measured from the time the sample is collected to the time the sample is analyzed. The General Permit requires that samples be received by the analytical laboratory within 48 hours of the physical sampling (unless required sooner by the analytical laboratory).

Laboratory Name: Calscience Environmental Laboratories, Inc.  
Address: 7440 Lincoln Way  
City, State Zip: Garden Grove, CA 92841-7501  
Telephone Number: (714) 895-5494  
Point of Contact: [REDACTED]

#### 7.7.7.3 Sample Documentation Procedures

All original data documented on sample bottle identification labels, *Effluent Sampling Field Log Sheet*, and CoCs shall be recorded using waterproof ink. These shall be considered accountable documents. If an error is made on an accountable document, the individual shall make corrections by lining through the error and entering the correct information. The erroneous information shall not be obliterated. All corrections shall be initialed and dated.

Duplicate samples shall be identified consistent with the numbering system for other samples to prevent the laboratory from identifying duplicate samples. Duplicate samples shall be identified in the *Effluent Sampling Field Log Sheet*.

Sample documentation procedures include the following:

Sample Bottle Identification Labels: Sampling personnel shall attach an identification label to each sample bottle. Sample identification shall uniquely identify each sample location.

Field Log Sheets: Sampling personnel shall complete the *Effluent Sampling Field Log Sheet* and *Receiving Water Sampling Field Log Sheet* for each sampling event, as appropriate.

Chain of Custody: Sampling personnel shall complete the CoC for each sampling event for which samples are collected for laboratory analysis. The sampler will sign the CoC when the sample(s) is turned over to the testing laboratory or courier.

## **7.8 Active Treatment System Monitoring**

An Active Treatment System (ATS) will be deployed on the site?

Yes  No

This project does not require a project specific Sampling and Analysis Plan for an ATS because deployment of an ATS is not planned. A Sampling and Analysis Plan will be prepared in the event an ATS is required.

## **7.9 Bioassessment Monitoring**

This project is not subject to bioassessment monitoring because it is not a Risk Level 3 project.

## **7.10 Watershed Monitoring Option**

This project is not participating in a watershed monitoring option.

## **7.11 Quality Assurance and Quality Control**

An effective Quality Assurance and Quality Control (QA/QC) plan shall be implemented as part of the CSMP to ensure that analytical data can be used with confidence. QA/QC procedures to be initiated include the following:

- Field logs;
- Clean sampling techniques;
- CoCs;
- QA/QC Samples; and
- Data verification.

Each of these procedures is discussed in more detail in the following sections.

### **7.11.1 Field Logs**

The purpose of field logs is to record sampling information and field observations during monitoring that may explain any uncharacteristic analytical results. Sampling information to be included in the field log include the date and time of water quality sample collection, sampling personnel, sample container identification numbers, and types of samples that were collected. Field observations should be noted in the field log for any abnormalities at the sampling location (color, odor, BMPs, etc.). Field measurements for pH and turbidity should also be recorded in the field log. A Visual Inspection Field Log, an Effluent Sampling Field Log Sheet, and a Receiving Water Sampling Field Log Sheet are included in **CSMP Attachment 3 "Example Forms"**.

### **7.11.2 Clean Sampling Techniques**

Clean sampling techniques involve the use of certified clean containers for sample collection and clean powder-free nitrile gloves during sample collection and handling. As discussed in

Section 7.7.7, adoption of a clean sampling approach will minimize the chance of field contamination and questionable data results.

### **7.11.3 Chain of Custody**

The sample CoC is an important documentation step that tracks samples from collection through analysis to ensure the validity of the sample. Sample CoC procedures include the following:

- Proper labeling of samples;
- Use of CoC forms for all samples; and
- Prompt sample delivery to the analytical laboratory.

Analytical laboratories usually provide CoC forms to be filled out for sample containers. An example CoC is included in CSMP Attachment 3 "Example Forms".

### **7.11.4 QA/QC Samples**

QA/QC samples provide an indication of the accuracy and precision of the sample collection; sample handling; field measurements; and analytical laboratory methods. The following types of QA/QC will be conducted for this project:

- Field Duplicates at a frequency of 10% and/or 1 duplicate minimum per sampling event (Required for all sampling plans with field measurements or laboratory analysis)
- Equipment Blanks at a frequency of 1 sample per sampling event (Only needed if equipment used to collect samples could add the pollutants to sample)
- Field Blanks at a frequency of 1 sample per sampling event (Only required if sampling method calls for field blanks)
- Travel Blanks at a frequency of 1 sample per sampling event (Required for sampling plans that include VOC laboratory analysis)

#### **7.11.4.1 Field Duplicates**

Field duplicates provide verification of laboratory or field analysis and sample collection. Duplicate samples shall be collected, handled, and analyzed using the same protocols as primary samples. The sample location where field duplicates are collected shall be randomly selected from the discharge locations. Duplicate samples shall be collected immediately after the primary sample has been collected. Duplicate samples must be collected in the same manner and as close in time as possible to the original sample. Duplicate samples shall not influence any evaluations or conclusion.

#### **7.11.4.2 Equipment Blanks**

Equipment blanks provide verification that equipment has not introduced a pollutant into the sample. Equipment blanks are typically collected when:

- New equipment is used;
- Equipment that has been cleaned after use at a contaminated site;
- Equipment that is not dedicated for surface water sampling is used; or
- Whenever a new lot of filters is used when sampling metals.

#### 7.11.4.3 *Field Blanks*

Field blanks assess potential sample contamination levels that occur during field sampling activities. De-ionized water field blanks are taken to the field, transferred to the appropriate container, and treated the same as the corresponding sample type during the course of a sampling event.

#### 7.11.4.4 *Travel Blanks*

Travel blanks assess the potential for cross-contamination of volatile constituents between sample containers during shipment from the field to the laboratory. De-ionized water blanks are taken along for the trip and held unopened in the same cooler with the VOC samples.

### **7.11.5 *Data Verification***

After results are received from the analytical laboratory, the QSP shall verify the data to ensure that it is complete, accurate, and the appropriate QA/QC requirements were met. Data must be verified as soon as the data reports are received. Data verification shall include:

- Check the CoC and laboratory reports.  
*Make sure all requested analyses were performed and all samples are accounted for in the reports.*
- Check laboratory reports to make sure hold times were met and that the reporting levels meet or are lower than the reporting levels agreed to in the contract.
- Check data for outlier values and follow up with the laboratory.  
*Occasionally typographical errors, unit reporting errors, or incomplete results are reported and should be easily detected. These errors need to be identified, clarified, and corrected quickly by the laboratory. The QSP should especially note data that is an order of magnitude or more different than similar locations, or is inconsistent with previous data from the same location.*
- Check laboratory QA/QC results.  
*EPA establishes QA/QC checks and acceptable criteria for laboratory analyses. These data are typically reported along with the sample results. The QSP shall evaluate the reported QA/QC data to check for contamination (method, field, and equipment blanks), precision (laboratory matrix spike duplicates), and accuracy (matrix spikes and laboratory control samples). When QA/QC checks are outside acceptable ranges, the laboratory must flag the data, and usually provides an explanation of the potential impact to the sample results.*
- Check the data set for outlier values and, accordingly, confirm results and re-analyze samples where appropriate.  
*Sample re-analysis should only be undertaken when it appears that some part of the QA/QC resulted in a value out of the accepted range. Sample results may not be discounted unless the analytical laboratory identifies the required QA/QC criteria were not met and confirms this in writing.*

Field data including inspections and observations must be verified as soon as the field logs are received, typically at the end of the sampling event. Field data verification shall include:

- Check field logs to make sure all required measurements were completed and appropriately documented;
- Check reported values that appear out of the typical range or inconsistent;  
Follow-up immediately to identify potential reporting or equipment problems, if appropriate, recalibrate equipment after sampling;
- Verify equipment calibrations;

- Review observations noted on the field logs; and
- Review notations of any errors and actions taken to correct the equipment or recording errors.

## **7.12 Records Retention**

All records of stormwater monitoring information and copies of reports (including Annual Reports) must be retained for a period of at least three years from date of submittal or longer if required by the Regional Water Board.

Results of visual monitoring, field measurements, and laboratory analyses must be kept in the SWPPP along with CoCs, and other documentation related to the monitoring.

Records are to be kept onsite while construction is ongoing. Records to be retained include:

- The date, place, and time of inspections, sampling, visual observations, and/or measurements, including precipitation;
- The individual(s) who performed the inspections, sampling, visual observation, and/or field measurements;
- The date and approximate time of field measurements and laboratory analyses;
- The individual(s) who performed the laboratory analyses;
- A summary of all analytical results, the method detection limits and reporting limits, and the analytical techniques or methods used;
- Rain gauge readings from site inspections;
- QA/QC records and results;
- Calibration records;
- Visual observation and sample collection exemption records;
- The records of any corrective actions and follow-up activities that resulted from analytical results, visual observations, or inspections; and
- NAL Exceedance Reports; and
- NEL Violation Reports (if applicable).

## Section 8    References

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Anchor QEA, Basis of Design Memorandum *San Diego Shipyard Sediment Site – South Shipyard*, June 2013.

Anchor QEA, *Remedial Action Plan San Diego Shipyard Sediment Site, Cleanup and Abatement Order No. R9-2012-0024*, Revised October 2012.

California Regional Water Quality Control Board, San Diego Region, Waste Discharge Requirements, Order No. R9-2013-0093.

Calscience Environmental Laboratories, Inc., Garden Grove, CA, (714) 895-5494

CASQA 2009, *Stormwater BMP Handbook Portal: Construction*, November 2009, [www.casqa.org](http://www.casqa.org)

National Oceanographic and Atmospheric Administration (NOAA); <http://www.srh.noaa.gov/>.

State Water Resources Control Board, Surface Water Ambient Monitoring Program, Field Methods Course . Available on-line at: [http://water101.waterboards.ca.gov/swamp/qapp\\_advisor/FieldMethods/start.html](http://water101.waterboards.ca.gov/swamp/qapp_advisor/FieldMethods/start.html).

State Water Resources Control Board (2009). Order 2009-0009-DWQ, NPDES General Permit No. CAS000002: National Pollutant Discharges Elimination System (NPDES) California General Permit for Storm Water Discharge Associated with Construction and Land Disturbing Activities. Available on-line at: [http://www.waterboards.ca.gov/water\\_issues/programs/stormwater/construction.shtml](http://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.shtml).

State Water Resources Control Board (2010). Order 2010-0014-DWQ, NPDES General Permit No. CAS000002: National Pollutant Discharges Elimination System (NPDES) California General Permit for Storm Water Discharge Associated with Construction and Land Disturbing Activities. Available on-line at: [http://www.waterboards.ca.gov/water\\_issues/programs/stormwater/construction.shtml](http://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.shtml).

# Attachments and Appendices

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# CSMP Attachment 1: Weather Reports

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## **INSTRUCTIONS**

Place printed NOAA weather forecasts in this Attachment.

## CSMP Attachment 2: Monitoring Records

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## **INSTRUCTIONS**

Place completed BMP Inspection Forms, Visual Monitoring, Effluent Sampling and Receiving Water Field Logs, Monitoring Exceptions, and NAL/NEL Exceedance Reports in this Attachment.

# CSMP Attachment 3: Example Forms

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## **INSTRUCTIONS**

Place example forms and check lists, e.g., Rain Gauge Logs, Field Logs, NAL/NEL Exceedance Reports, CoCs, in this Attachment.



**Risk Level 1, 2, 3  
Visual Inspection Field Log Sheet**

Date and Time of Inspection:				Report Date:		
Inspection Type:	<input type="checkbox"/> Weekly	<input type="checkbox"/> Before predicted rain	<input type="checkbox"/> During rain event	<input type="checkbox"/> Following qualifying rain event	<input type="checkbox"/> Contained stormwater release	<input type="checkbox"/> Quarterly non-stormwater

**Site Information**

Construction Site Name:	
Construction stage and completed activities:	Approximate area of exposed site:

**Weather and Observations**

Date Rain Predicted to Occur:		Predicted % chance of rain:	
Estimate storm beginning: _____ (date and time)	Estimate storm duration: _____ (hours)	Estimate time since last storm: _____ (days or hours)	Rain gauge reading: _____ (inches)

Observations: If yes identify location

Odors	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Floating material	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Suspended Material	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Sheen	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Discolorations	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Turbidity	Yes <input type="checkbox"/>	No <input type="checkbox"/>

**Site Inspections**

Outfalls or BMPs Evaluated	Deficiencies Noted
(add additional sheets or attached detailed BMP Inspection Checklists)	
Photos Taken:	Yes <input type="checkbox"/> No <input type="checkbox"/> Photo Reference IDs:

**Corrective Actions Identified (note if SWPPP/REAP change is needed)**

--

**Inspector Information**

Inspector Name:	Inspector Title:
Signature:	Date:

**Risk Level 2  
Effluent Sampling Field Log Sheets**

Construction Site Name:	Date:	Time Start:
-------------------------	-------	-------------

Sampler:

Sampling Event Type:	<input type="checkbox"/> Stormwater	<input type="checkbox"/> Non-stormwater	<input type="checkbox"/> Non-visible pollutant
----------------------	-------------------------------------	---	--

**Field Meter Calibration**

pH Meter ID No./Desc.:	Turbidity Meter ID No./Desc.:
Calibration Date/Time:	Calibration Date/Time:

**Field pH and Turbidity Measurements**

Discharge Location Description	pH	Turbidity	Time

**Grab Samples Collected**

Discharge Location Description	Sample Type	Time

Additional Sampling Notes:

Time End:

**Risk Level 3  
Effluent Sampling Field Log Sheets**

Construction Site Name:	Date:	Time Start:
-------------------------	-------	-------------

Sampler:

Sampling Event Type:	<input type="checkbox"/> Stormwater	<input type="checkbox"/> Non-stormwater	<input type="checkbox"/> Non-visible pollutant	<input type="checkbox"/> Post NEL Exceedance
----------------------	-------------------------------------	---	--	--

**Field Meter Calibration**

pH Meter ID No./Desc.:	Turbidity Meter ID No./Desc.:
Calibration Date/Time:	Calibration Date/Time:

**Field pH and Turbidity Measurements**

Discharge Location Description	pH	Turbidity	Time

**Grab Samples Collected**

Discharge Location Description	SSC	Other (specify)	Time

Additional Sampling Notes:

Time End:

**Risk Level 3  
Receiving Water Sampling Field Log Sheets**

Construction Site Name:	Date:	Time Start:
-------------------------	-------	-------------

Sampler:

**Receiving Water Description and Observations**

Receiving Water Name/ID:

Observations:

Odors                      Yes     No

Floating material      Yes     No

Suspended Material    Yes     No

Sheen                     Yes     No

Discolorations         Yes     No

Turbidity                Yes     No

**Field Meter Calibration**

pH Meter ID No./Desc.:	Turbidity Meter ID No./Desc.:
------------------------	-------------------------------

Calibration Date/Time:	Calibration Date/Time:
------------------------	------------------------

**Field pH and Turbidity Measurements and SSC Grab Sample**

**Upstream Location**

Type	Result	Time	Notes
pH			
Turbidity			
SSC	Collected Yes <input type="checkbox"/> No <input type="checkbox"/>		

**Downstream Location**

Type	Result	Time	Notes
pH			
Turbidity			
SSC	Collected Yes <input type="checkbox"/> No <input type="checkbox"/>		

Additional Sampling Notes:

Time End:

NAL or NEL Exceedance Evaluation Summary Report		Page ___ of ___
Project Name		
Project WDID		
Project Location		
Date of Exceedance		
Type of Exceedance	NAL Daily Average <input type="checkbox"/> pH <input type="checkbox"/> Turbidity NEL Daily Average <input type="checkbox"/> pH <input type="checkbox"/> Turbidity  <input type="checkbox"/> Other (specify) _____	
Measurement or Analytical Method	<input type="checkbox"/> Field meter (Sensitivity: _____) <input type="checkbox"/> Lab method (specify) _____ (Reporting Limit: _____) (MDL: _____)	
Calculated Daily Average	<input type="checkbox"/> pH _ pH units <input type="checkbox"/> Turbidity __ NTU	
Rain Gauge Measurement	_____ inches	
Compliance Storm Event	_____ inches (5-year, 24-hour event)	
Visual Observations on Day of Exceedance		

<p><b>Description of BMPs in Place at Time of Event</b></p>	
<p><b>Initial Assessment of Cause</b></p>	
<p><b>Corrective Actions Taken (deployed after exceedance)</b></p>	
<p><b>Additional Corrective Actions Proposed</b></p>	
<p><b>Report Completed By</b></p>	<p>_____</p> <p><b>(Print Name, Title)</b></p>
<p><b>Signature</b></p>	<p>_____</p>

**CHAIN-OF-CUSTODY**

**DATE:**

**Lab ID:**

<b>DESTINATION LAB:</b> ATTN: ADDRESS: Office Phone: Cell Phone:							<b>REQUESTED ANALYSIS</b>				<b>Notes:</b>	
							<b>SAMPLED BY:</b>					
							<b>Contact:</b>					
<b>Project Name</b>												
<b>Client Sample ID</b>	<b>Sample Date</b>	<b>Sample Time</b>	<b>Sample Matrix</b>	<b>Container</b>								
			<b>#</b>	<b>Type</b>	<b>Pres.</b>							
SENDER COMMENTS:							<b>RELINQUISHED BY</b>					
							Signature:					
							Print:					
							Company:					
Date:				TIME:								
LABORATORY COMMENTS:							<b>RECEIVED BY</b>					
							Signature:					
							Print:					
							Company:					
Date:				TIME:								

## CSMP Attachment 4: Field Meter Instructions

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## **INSTRUCTIONS**

Place instructions for field meters that will be used by contractor personnel in this Attachment.

# CSMP Attachment 5: Supplemental Information

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## **INSTRUCTIONS**

Place documents related to Regional Board required monitoring, watershed monitoring option approval, and bioassessment exception approval in this Attachment.

## *Appendix A: Calculations*

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## CALCULATIONS

SAN DIEGO SHIPYARD SEDIMENT REMEDIATION PROJECT  
S-LANE SEDIMENT MANAGEMENT AREA (SMA)

RISK DETERMINATION  
R FACTOR

Since the EPA's online rainfall erosivity factor calculator is currently under construction, the EPA's Construction Rainfall Erosivity Waiver Fact Sheet is used as guidance to determine R. Figures and Tables referenced here are from the EPA's Construction Rainfall Erosivity Waiver Fact Sheet.

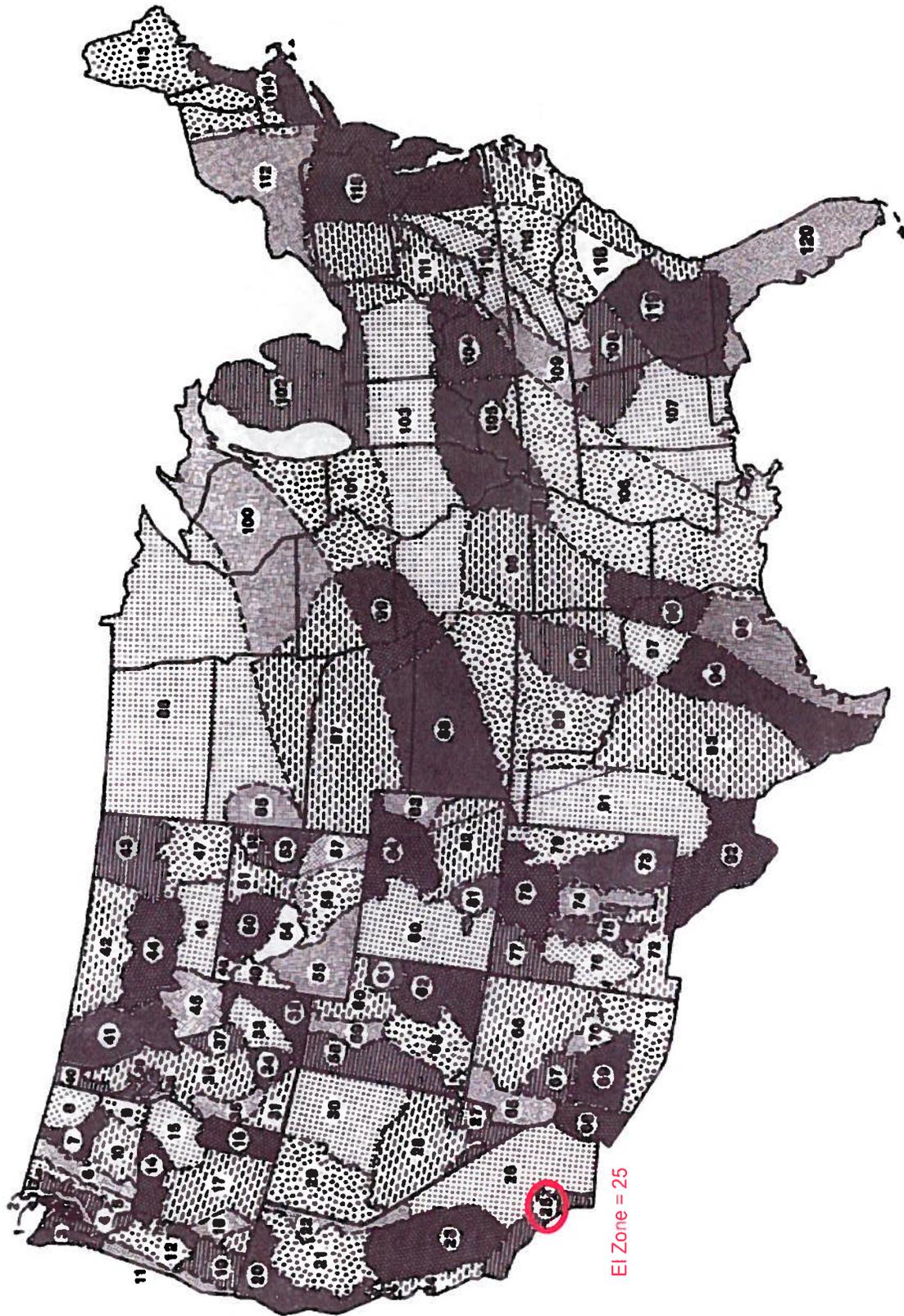
Figure 1: Erosivity Index Zone Map  
EI Zone = 25

Table 1: Erosivity Index  
Construction Time (September 15, 2013 to March 31, 2014)

The difference between Sept. 15, 2013 and Dec. 31 2013 =  $100 - 65.3 = 34.7$   
The difference between Jan. 1 2013 and Dec. 31 2013 =  $100 - 0 = 100$   
The difference between Jan.1 2014 and June 30 2014 =  $50.6 - 0 = 50.6$   
Total = 185.3 (% EI)

Figure 4: Isoerodent Map of California  
Annual Erosion Index = 20  
R = %EI x Annual Erosion Index  
R =  $185.3\% \times 20$   
**R = 37.06**

Figure 1. Erosivity Index Zone Map



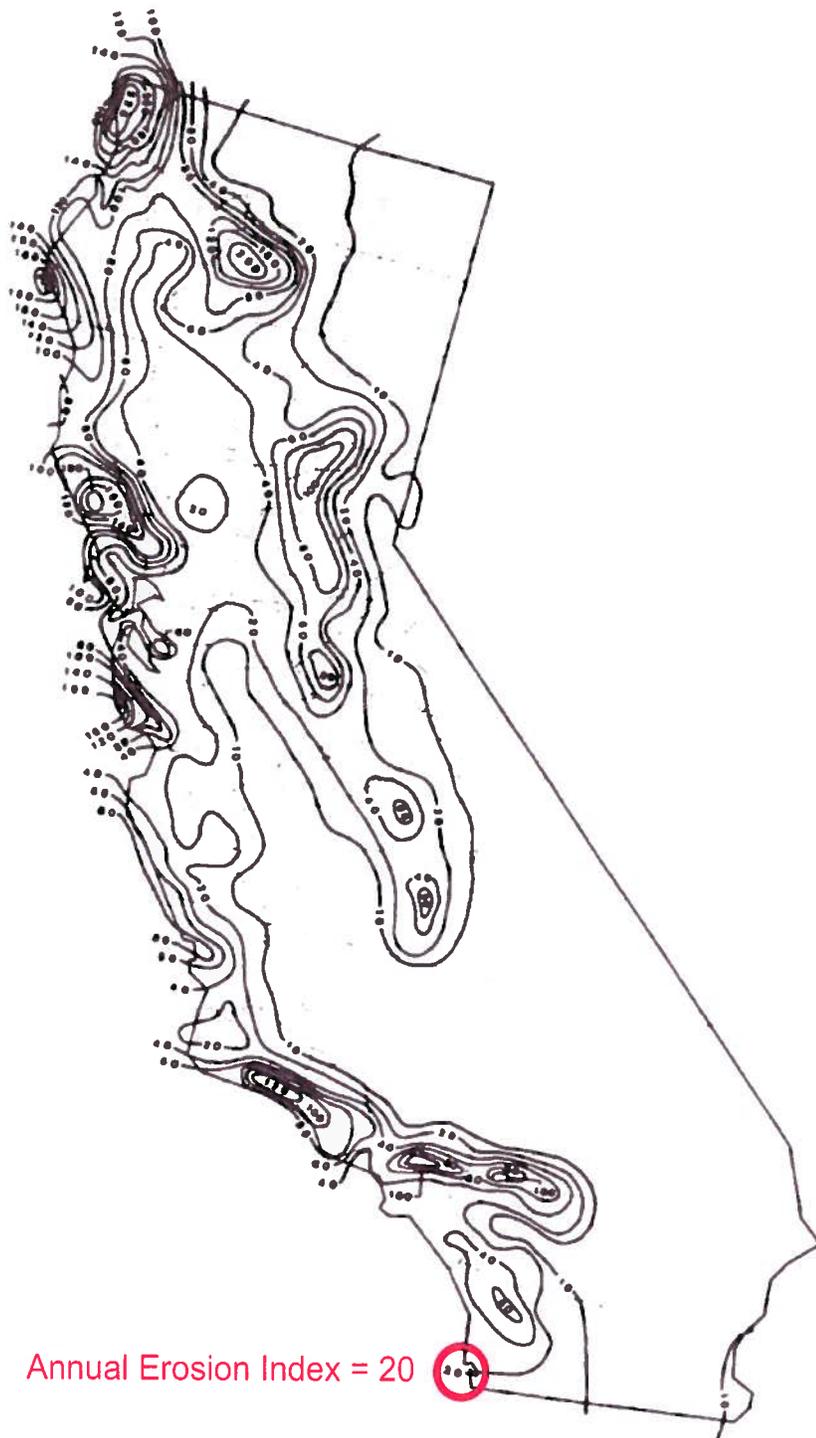
**Table 1. Erosivity Index (%EI Values extracted from USDA Manual 703)**

All values are at the end of the day listed below - Linear interpolation between dates is acceptable.  
EI as a percentage of Average Annual R Value Computed for Geographic Areas Shown in Figure 1

Month	Jan 1	Jan 16	Jan 31	Feb 15	Feb 28	Mar 1	Mar 16	Mar 31	Apr 15	Apr 30	May 15	May 30	Jun 14	Jun 29	Jul 14	Jul 29	Aug 13	Aug 28	Sept 12	Sept 27	Oct 12	Oct 27	Nov 11	Nov 26	Dec 11	Dec 31	
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	4.3	8.3	12.8	17.3	21.6	25.1	28.5	30.9	34.9	39.1	42.6	45.4	48.2	50.8	53	56	60.8	66.8	71	75.7	82	89.1	95.2	100	100	100
3	0	4.3	8.3	12.8	17.3	21.6	25.1	28.5	30.9	34.9	39.1	42.6	45.4	48.2	50.8	53	56	60.8	66.8	71	75.7	82	89.1	95.2	100	100	100
4	0	3.9	7.9	12.6	17.4	21.6	25.2	28.7	31.9	35.1	38.2	42.0	44.9	46.7	48.2	50.1	53.1	56.6	62.2	67.9	75.2	83.5	90.5	96.0	100	100	100
5	0	2.3	3.6	4.7	6.0	7.7	10.7	13.9	17.8	21.2	24.5	28.1	31.1	33.1	35.3	38.2	43.2	48.7	57.3	67.8	77.9	86.0	91.3	96.9	100	100	100
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	5.4	11.3	18.8	26.3	33.2	37.4	40.7	42.5	44.3	45.4	46.5	47.1	47.4	47.8	48.3	49.4	50.7	53.6	57.5	65.5	76.2	87.4	94.8	100	100	100
12	0	3.5	7.8	14.0	21.1	27.4	31.5	35.0	37.3	39.8	41.9	44.3	45.6	46.3	46.8	47.9	50.0	52.9	57.9	62.3	69.3	81.3	91.5	96.7	100	100	100
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	1.0	2.6	7.4	16.4	23.5	28.0	31.0	33.5	37.0	41.7	48.1	51.1	52.0	52.5	53.6	55.7	57.6	61.1	65.8	74.7	88.0	95.8	98.7	100	100	100
20	0	9.8	18.5	25.4	30.2	35.6	38.9	41.5	42.9	44.0	45.2	48.2	50.8	51.7	52.5	54.6	57.4	58.5	60.1	63.2	69.6	76.7	85.4	92.4	100	100	100
21	0	7.5	13.6	18.1	21.1	24.4	27.0	29.4	31.7	34.6	37.3	39.6	41.6	43.4	45.4	48.1	51.3	53.3	56.6	62.4	72.4	81.3	88.9	94.7	100	100	100
22	0	1.2	1.6	1.6	1.6	1.6	1.6	2.2	3.9	4.6	6.4	14.2	32.8	47.2	58.8	69.1	76.0	82.0	87.1	96.7	99.9	99.9	99.9	99.9	100	100	100
23	0	7.9	15.0	20.9	25.7	31.1	35.7	40.2	43.2	46.2	47.7	48.8	49.4	49.9	50.7	51.8	54.1	57.7	62.8	65.9	70.1	77.3	86.8	93.5	100	100	100
24	0	12.2	23.6	33.0	39.7	47.1	51.7	55.9	57.7	58.6	58.9	59.1	59.1	59.2	59.2	59.3	59.5	60.0	61.4	63.0	66.5	71.8	81.3	89.6	100	100	100
25	0	9.8	20.8	30.2	37.6	45.8	50.6	54.4	56.0	56.8	57.1	57.1	57.2	57.6	58.5	59.8	62.2	65.3	67.5	68.2	69.4	74.8	86.6	93.0	100	100	100
26	0	2.0	5.4	9.8	15.6	21.5	24.7	26.6	27.4	28.0	28.7	29.8	32.5	36.6	44.9	55.4	65.7	72.6	77.8	84.4	89.5	93.9	96.5	98.4	100	100	100
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

From Sept. 2013 to Mar. 2014

Figure 4. Isoerodent Map of California



Note: Units for all maps on this page are hundreds ft<sup>3</sup>on f<sup>2</sup>in(ac•h•yr)<sup>-1</sup>

## Computation Sheet for Determining Runoff Coefficients for (SD Sediment Project – South Area)

$$\text{Total Site Area} = \underline{\quad 1.6 \text{ Acres} \quad} \quad (\text{A})$$

### Existing Site Conditions

$$\text{Impervious Site Area}^1 = \underline{\quad 1.6 \text{ acres} \quad} \quad (\text{B})$$

$$\text{Impervious Site Area Runoff Coefficient}^{2,4} = \underline{\quad 0.95 \quad} \quad (\text{C})$$

$$\text{Pervious Site Area}^3 = \underline{\quad 0.0 \text{ acres} \quad} \quad (\text{D})$$

$$\text{Pervious Site Area Runoff Coefficient}^4 = \underline{\quad 0.5 \quad} \quad (\text{E})$$

$$\text{Existing Site Area Runoff Coefficient} = \underline{\quad 0.95 \quad} \quad (\text{F})$$

$$\frac{(\text{B} \times \text{C}) + (\text{D} \times \text{E})}{(\text{A})}$$

### Proposed Site Conditions (after construction)

$$\text{Impervious Site Area}^1 = \underline{\quad 1.6 \text{ acres} \quad} \quad (\text{G})$$

$$\text{Impervious Site Area Runoff Coefficient}^{2,4} = \underline{\quad 0.95 \quad} \quad (\text{H})$$

$$\text{Pervious Site Area}^3 = \underline{\quad 0.0 \text{ acres} \quad} \quad (\text{I})$$

$$\text{Pervious Site Area Runoff Coefficient}^4 = \underline{\quad 0.5 \quad} \quad (\text{J})$$

$$\text{Existing Site Area Runoff Coefficient} = \underline{\quad 0.95 \quad} \quad (\text{K})$$

$$\frac{(\text{G} \times \text{H}) + (\text{I} \times \text{J})}{(\text{A})}$$

1. Includes paved areas, areas covered by buildings, and other impervious surfaces. The mill complex building itself is considered in this calculation as "impervious" since any rainwater will be diverted into the existing stormwater drainage system and thus will become runoff.

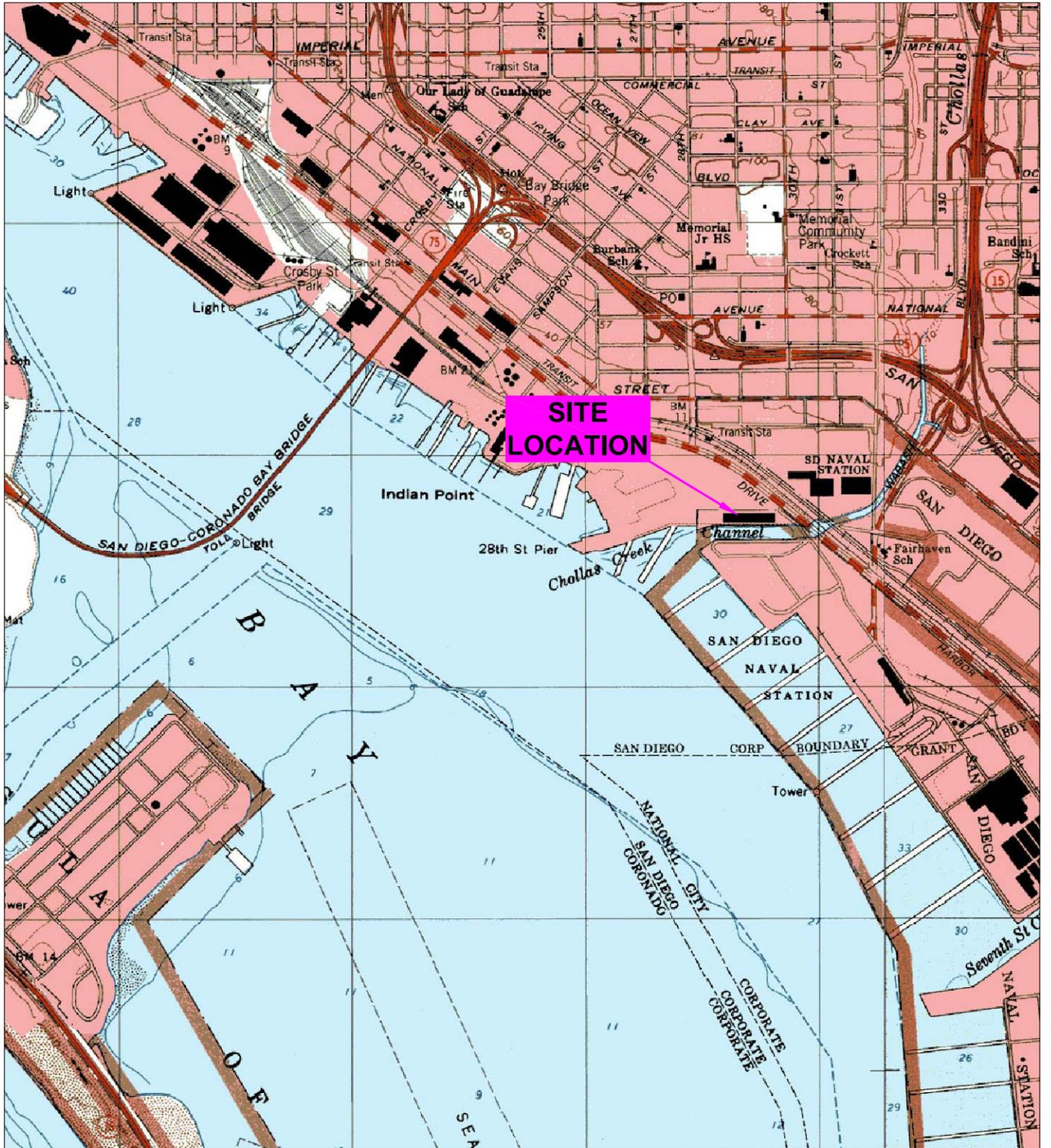
2. Use 0.95 unless lower or higher runoff coefficient can be verified.

3. Includes areas of vegetation, most unpaved or uncovered soil surfaces, and other pervious areas. The large area of the tailing processing facility will receive a 4 inch crushed rock winterization surface which is considered a pervious surface in these calculations.

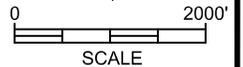
4. Refer to local Hydrology Manual for typical C values.

## *Appendix B: Site Maps*

---



U.S.G.S. 7.5 MINUTE QUADRANGLE  
POINT LOMA, CA 1996



**padre**  
associates, inc.  
ENGINEERS, GEOLOGISTS &  
ENVIRONMENTAL SCIENTISTS

SEDIMENT MANAGEMENT AREA  
SAN DIEGO SHIPYARD SEDIMENT SITE  
S-LANE, SAN DIEGO, CALIFORNIA

PLATE 1  
SITE VICINITY MAP

PROJECT NO. 1202-2141	DATE 8/27/13	DR. BY AC	APP. BY AJK
--------------------------	-----------------	--------------	----------------



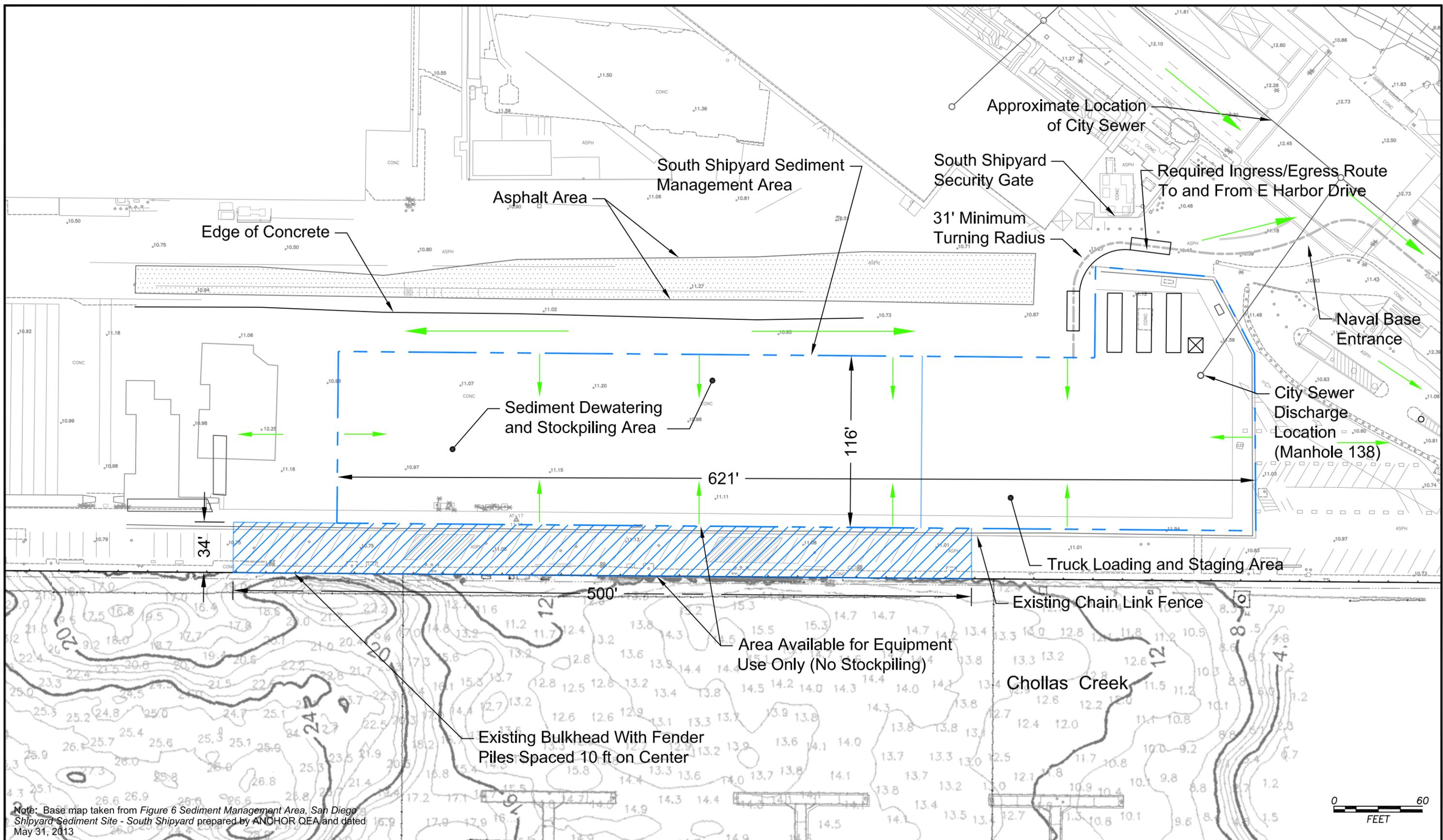
SOURCE: GOOGLE EARTH MAP DATED NOVEMBER 2012

**padre**  
 associates, inc.  
 ENGINEERS, GEOLOGISTS &  
 ENVIRONMENTAL SCIENTISTS

SEDIMENT MANAGEMENT AREA  
 SAN DIEGO SHIPYARD SEDIMENT SITE  
 S-LANE, SAN DIEGO, CALIFORNIA

PROJECT NO. 1202-2141	DATE 8/27/13	DR. BY AC	APP. BY AJK
--------------------------	-----------------	--------------	----------------

PLATE 2  
 SITE PLAN



Note: Base map taken from Figure 6 Sediment Management Area, San Diego Shipyard Sediment Site - South Shipyard prepared by ANCHOR QEA and dated May 31, 2013

**LEGEND:**

	Sediment Management Area
	Drainage Direction



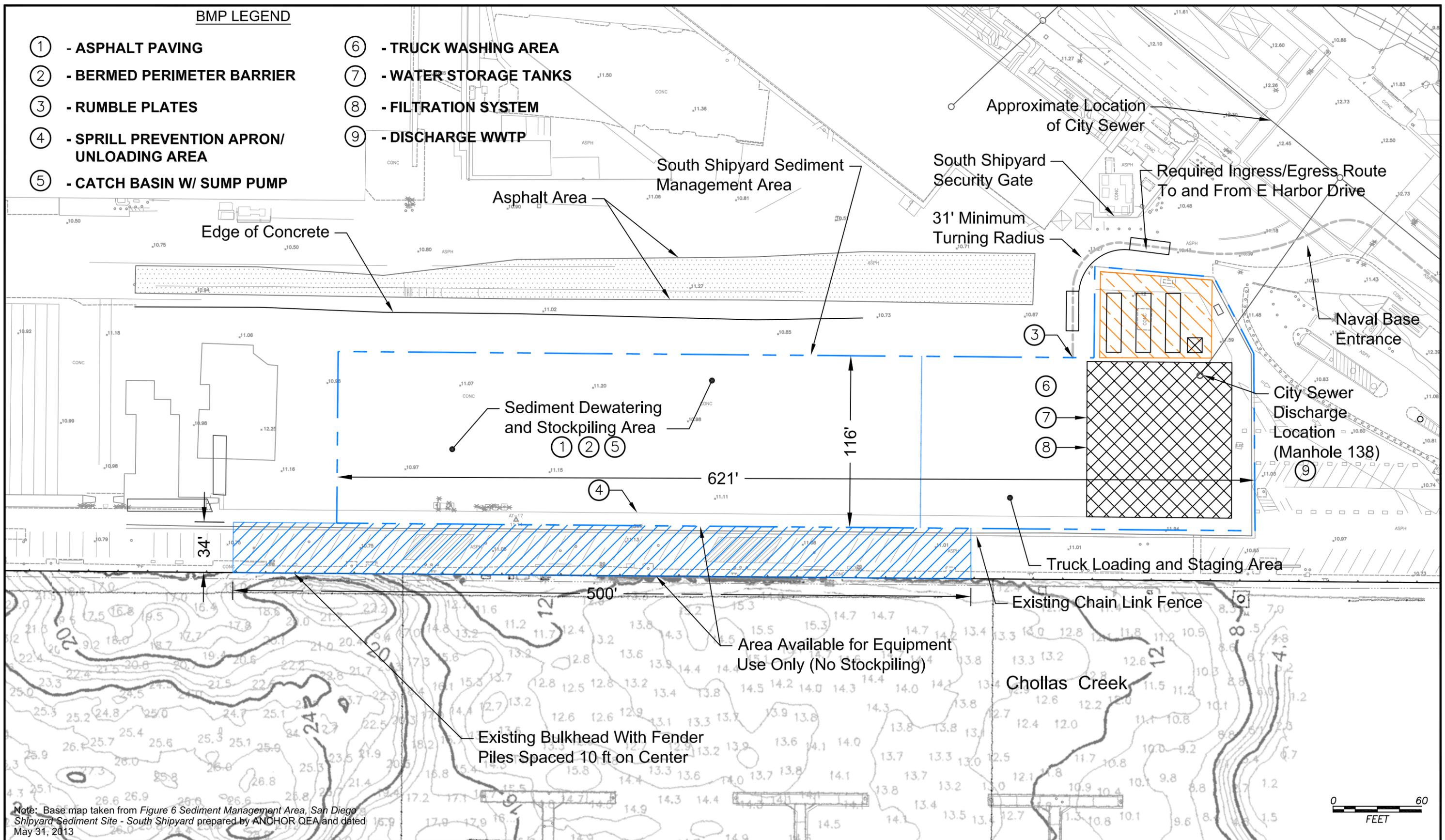
**SEDIMENT MANAGEMENT AREA  
SAN DIEGO SHIPYARD SEDIMENT SITE  
S-LANE, SAN DIEGO, CALIFORNIA**

PROJECT NO. 1202-2141	DATE 8/27/13	DR. BY AC	APP. BY AJK
--------------------------	-----------------	--------------	----------------

**PLATE 3  
DRAINAGE AREAS**

**BMP LEGEND**

- ① - ASPHALT PAVING
- ② - BERMED PERIMETER BARRIER
- ③ - RUMBLE PLATES
- ④ - SPRILL PREVENTION APRON/ UNLOADING AREA
- ⑤ - CATCH BASIN W/ SUMP PUMP
- ⑥ - TRUCK WASHING AREA
- ⑦ - WATER STORAGE TANKS
- ⑧ - FILTRATION SYSTEM
- ⑨ - DISCHARGE WWTP



Note: Base map taken from Figure 6 Sediment Management Area, San Diego Shipyard Sediment Site - South Shipyard prepared by ANCHOR QEA and dated May 31, 2013

**LEGEND:**

	Sediment Management Area		Site Facilities Area
	Temporary Access Area		Chemical and Water Storage and Water Treatment Area



**SEDIMENT MANAGEMENT AREA  
SAN DIEGO SHIPYARD SEDIMENT SITE  
S-LANE, SAN DIEGO, CALIFORNIA**

PROJECT NO. 1202-2141	DATE 8/27/13	DR. BY AC	APP. BY AJK
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**PLATE 4**

**SEDIMENT MANAGEMENT AREA AND BMPs**

## *Appendix C: Permit Registration Documents*

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Permit Registration Documents included in this Appendix

Y/N	Permit Registration Document
	Notice of Intent
	Risk Assessment
	Certification
	Post Construction Water Balance
	Copy of Annual Fee Receipt
	ATS Design Documents
	Site Map, see Appendix B

*Appendix D: SWPPP Amendment Certifications*

---

## INSTRUCTIONS

- *Include certification statements for each SWPPP amendment.*

**SWPPP Amendment No.**

---

Project Name:

---

Project Number:

---

**Qualified SWPPP Developer's Certification of the  
Stormwater Pollution Prevention Plan Amendment**

“This Stormwater Pollution Prevention Plan and attachments were prepared under my direction to meet the requirements of the California Construction General Permit (SWRCB Order No. 2009-009-DWQ as amended by 2010-0014-DWQ). I certify that I am a Qualified SWPPP Developer in good standing as of the date signed below.”

---

QSD's Signature

---

Date

---

QSD Name

---

QSD Certificate Number

---

Title and Affiliation

---

Telephone

---

Address

---

Email

---

*Appendix E: ANNUAL REPORTING*

---

**Project Specific Submittal requirements for  
SMARTS Annual Report  
CA Construction General Permit (Order No. 2009-009-DWQ)**

**Complete and submit to Environmental & Land Use Management by August 1<sup>st</sup> for  
the annual reporting period ending June 30<sup>th</sup>.**

Site: \_\_\_\_\_ WDID No: \_\_\_\_\_

Completed By: \_\_\_\_\_

Date: \_\_\_\_\_

## Checklist of Required Content

	Required Item	SMARTS	Retained on Site
<b>Annual Report Submittal Requirements (Permit Sections XVI and Attachment C.I.9)</b>			
SMARTS Form 1 SMARTS Form 2 SMARTS Form 3	Summary of all violations of the General Permit	X	
SMARTS Form 2 SMARTS Form 3	Summary of all corrective actions taken during the compliance year	X	
SMARTS Form 1 SMARTS Form 2 SMARTS Form 3	Identification of any compliance activities or corrective actions that were not implemented	X	
SMARTS Form 1 Attachment 1	The names of individual(s) who performed the facility inspections, sampling, visual observation (inspections), and/or measurements	X	X
Attachment 2	Inspection Log – Include the date, place, time of facility inspections, sampling, visual observation (inspections), and/or measurements, including precipitation (rain gauge)	X (general question)	X
Attachment 3	The visual observation and sample collection exception records and reports (including precipitation measurements) specified in Attachments C of the General Permit,	X (general question)	X
Attachment 4	Documentation of all training for individuals responsible for all activities associated with compliance with the General Permit,	X (general question)	X
<b>Additional Requirement for Projects that Conducted Non-Visible Pollutant Monitoring</b>			
Attachment 4	A summary and evaluation of all sampling and analysis results from the last three years, including copies of laboratory reports, QA/QC, analytical method(s), method reporting unit(s), and method detection limit(s) of each analytical parameter (analytical results that are less than the method detection limit shall be reported as "less than the method detection limit"),		

**FORM 1***This form is designed to be consistent with SMARTS Form 1*

	Yes, No, N/A, if No provide comment	
<b>STORMWATER POLLUTION PREVENTION PLAN (SWPPP) [CGP Section XIV]</b>		
1. Has a SWPPP been prepared by a Qualified SWPPP Developer (QSD) for the construction project?		
2. Does the SWPPP include a Construction Site Monitoring Program (CSMP) section/element?		
3. Are these documents kept onsite?		
<b>GOOD SITE MANAGEMENT "HOUSEKEEPING" [CGP Attachment C, Section B]</b>		
1. Were required good site management "housekeeping" measures for construction materials fully implemented on-site?		
a. Was an inventory of the products used and/or expected to be used conducted?		
2. Were required good site management "housekeeping" measures for waste management fully implemented on-site?		
a. Is there a spill response and implementation element of the SWPPP?		
3. Were required good site management "housekeeping" measures for vehicle storage and maintenance fully implemented on-site?		
4. Were required good site management "housekeeping" measures for landscape materials fully implemented on-site?		
5. Was a list of potential pollutant sources developed?		
6. Were good site management "housekeeping" measures to control air deposition of site materials and from site operations implemented on-site?		

**FORM 1**

*This form is designed to be consistent with SMARTS Form 1 and shall contain the same information provided via SMARTS for annual reporting*

	Yes, No, N/A, if No provide comment	
<b>NON-STORMWATER MANAGEMENT [CGP Attachment C, Section C]</b>		
1. Were measures to control all non-stormwater discharges during construction implemented?		
2. Were vehicles washed in such a manner as to prevent non-stormwater discharges to surface waters or to MS4 drainage systems?		
3. Were streets cleaned in such a manner as to prevent unauthorized non-stormwater discharges from reaching surface waters or MS4 drainage systems?		
<b>EROSION CONTROLS [CGP Attachment C, Section D]</b>		
1. Were required erosion controls implemented in accordance with the CGP and SWPPP?		
<b>SEDIMENT CONTROLS [CGP Attachment C, Section E]</b>		
1. Were required sediment controls fully implemented on your site?		
<b>H. RUN-ON AND RUN-OFF CONTROLS [CGP Attachment C, Section F]</b>		
1. Was all site run-on and run-off effectively managed?		
<b>Inspection Maintenance and Repair</b>		
1. Were all site inspections, maintenance, and repairs performed or supervised by a Qualified SWPPP Practitioner (QSP)?		
2. Were site inspections conducted weekly and at least once each 24-hour period during extended storm events?		
3. Were post rain event inspections conducted?		
4. Do your inspection forms/ checklists meet the minimum criteria listed in <b>CGP Attachment C, Section G.5</b> ?		

**FORM 1**

*This form is designed to be consistent with SMARTS Form 1 and shall contain the same information provided via SMARTS for annual reporting*

	Yes, No, N/A, if No provide comment	
5. During any site inspection was BMP maintenance or repairs required?		
6. If BMP maintenance/repair or design change was needed, did implementation begin within 72 hours?		
<b>VISUAL MONITORING [CGP Attachment C, Section I.3]</b>		
1. Were all stormwater discharges that occurred at all discharge locations observed within 2 business days (48 hours) after each qualifying rain event (producing precipitation of ½ inch or more at the time of discharge)?		
2. Were all stormwater discharges that occurred from storage or containment systems visually observed prior to discharge?		
3. Were the time, date, and rain gauge reading recorded for each qualifying rain event?		
4. Within 2 business days (48 hours) prior to each predicted qualifying rain event, were visual inspections conducted in compliance with <b>CGP Attachment C, Section I.3.e&amp;f</b> ?		
5. Are all visual inspection records retained on-site?		
<b>Number of Qualifying Rain Events</b>		
<b>STORMWATER SAMPLING [CGP Attachment C, Section I.6]</b>		
For the sampled events, did you collect three samples, at minimum (representative of the flow and characteristics) each day of discharge per qualified event?		
Were grab samples analyzed for pH and/or turbidity? (Analytical data must be entered in the RAW DATA tab in SMARTS)?		
Were Active Treatment System (ATS) effluent samples taken? (Applies to projects that deployed ATS)		
Was receiving water monitoring conducted? (Analytical data must be entered in the RAW DATA tab in SMARTS)		
<b>NON-STORMWATER DISCHARGE MONITORING [CGP Attachment C, Section I.6]</b>		

1. Were all drainage areas monitored for authorized/ unauthorized non-stormwater discharges quarterly? (Complete <b>Form 2</b> )		
2. Did visual observations indicate any authorized/ unauthorized non-stormwater discharges?		
3. Were effluent samples taken of the authorized/ unauthorized non-stormwater discharge? (Analytical data must be entered in the <b>RAW DATA</b> tab in SMARTS)		
4. Were the effluent samples sent to a laboratory certified for such analyses by the State Department of Health Services?		
5. Were unauthorized non-stormwater discharges eliminated?		
<b>L. NON-VISIBLE POLLUTANT MONITORING [CGP Attachment C, Section I.7]</b>		
1. Were any breaches, malfunctions, leakages, or spills observed during a visual inspection?		
2. How many potential discharges of non-visible pollutants were identified?		
3. For each discharge event (of non-visible pollutants), were samples collected in compliance with <b>CGP Attachment C, Section I.7.d</b> ? (Analytical data must be entered in the <b>RAW DATA</b> tab in SMARTS)		
4. For each discharge event was a comparison sample collected (uncontaminated sample that did not come into contact with the pollutant)? (Analytical data must be entered in the <b>RAW DATA</b> tab in SMARTS)		
<b>M. RECORDS [CGP Attachment C, Section I.9]</b>		
1. Are all records of all stormwater monitoring information retained on-site?		
<b>N. TRAINING</b>		
1. Was a Qualified SWPPP Practitioner (QSP) in reasonable charge of SWPPP implementation?		
If <b>Yes</b> , Provide Name and Certificate Number:		
2. Were all individuals conducting BMP installation, inspection, maintenance and repairs trained appropriately?		
3. Are complete training records kept on-site and available upon request?		

**FORM 1**

*This form is designed to be consistent with SMARTS Form 1 and shall contain the same information provided via SMARTS for annual reporting*

	Yes, No, N/A, if No provide comment	
<b>Authorized NSWD</b>		
Were any authorized Non-Stormwater Discharges observed from July-September?		
Were any authorized Non- Stormwater Discharges observed from October-December?		
Were any authorized Non- Stormwater Discharges observed from January-March?		
Were any authorized Non- Stormwater Discharges observed from April-June?		
<b>Unauthorized</b>		
Were any unauthorized Non- Stormwater Discharges observed from July-September?		
Were any unauthorized Non- Stormwater Discharges observed from October-December?		
Were any unauthorized Non- Stormwater Discharges observed from January-March?		
Were any unauthorized Non- Stormwater Discharges observed from April-June?		

**FORM 2**

*This form is designed to be consistent with SMARTS Form 2 and shall contain the same information provided via SMARTS for annual reporting*

<b>Quarter</b>	<b>Date</b>	<b>Authorized or Unauthorized</b>	<b>Source and Location of NSW</b>	<b>Described NSW characteristics at the source</b>	<b>Describe NSW Characteristics at Discharge Location</b>	<b>Described any revised or new BMPs</b>
1						
2						
3						
4						

### FORM 3

*This form is designed to be consistent with SMARTS Form 3 and shall contain the same information provided via SMARTS for annual reporting*

<b>Please enter a general summary of any BMP deficiencies identified for each quarter and the corrective actions taken. Maximum up to 1000 characters.</b>
July - Sept
Oct-Dec
Jan- March
April-June

QSP	
Name:	ID:
Company:	Phone:



*Copies of Inspection Reports to be filed here.*

*Copies of Training Records to be filed here*

*Include: A summary and evaluation of all sampling and analysis results, including copies of laboratory reports, QA/QC, the analytical method(s), method reporting unit(s), and method detection limit(s) of each analytical parameter (analytical results that are less than the method detection limit shall be reported as "less than the method detection limit").*

*Appendix F: Submitted Changes to PRDs*

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## Log of Updated PRDs

The General Permit allows for the reduction or increase of the total acreage covered under the General Permit when a portion of the project is complete and/or conditions for termination of coverage have been met; when ownership of a portion of the project is purchased by a different entity; or when new acreage is added to the project.

Modified PRDs shall be filed electronically within 30 days of a reduction or increase in total disturbed area if a change in permit covered acreage is to be sought. The SWPPP shall be modified appropriately, with revisions and amendments recorded in **Appendix C**. Updated PRDs submitted electronically via SMARTS can be found in this Appendix.

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This appendix includes all of the following updated PRDs (check all that apply):

- Revised Notice of Intent (NOI);
  
- Revised Site Map;
  
- Revised Risk Assessment;
  
- New landowner's information (name, address, phone number, email address); and
  
- New signed certification statement.

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Legally Responsible Person [if organization]

---

Signature of [Authorized Representative of] Legally Responsible Person or Approved Signatory

---

Date

---

Name of [Authorized Representative of] Legally Responsible Person or Approved Signatory

---

Telephone Number

## *Appendix G: Construction Schedule*

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**TABLE G-1 – CONSTRUCTION SCHEDULE**

<b>Construction Phase</b>	<b>Construction Activity</b>	<b>Start Date</b>	<b>End Date</b>
Preparation of Sediment Management Area (SMA)	Site Ingress / Egress	September 1, 2013	September 15, 2013
	Equipment Staging Area	September 1, 2013	September 15, 2013
	Sediment Dewatering and Stockpiling Area	September 1, 2013	September 15, 2013
	Spill Prevention Apron / Unloading Area	September 1, 2013	September 15, 2013
	Installation of Waste Water Treatment System	September 1, 2013	September 15, 2013
	Installation of Truck Washing Area	September 1, 2013	September 15, 2013
Operation of SMA	Sediment Dewatering and Stockpiling	September 15, 2013	March 31, 2014
	Waste Water Discharge Activities	September 15, 2013	March 31, 2014
Site Restoration	Removal of treatment system and BMPs	March 31, 2014	TBD

Notes:

TBD – To be determined

*Appendix H: Construction Activities, Materials Used,  
and Associated Pollutants*

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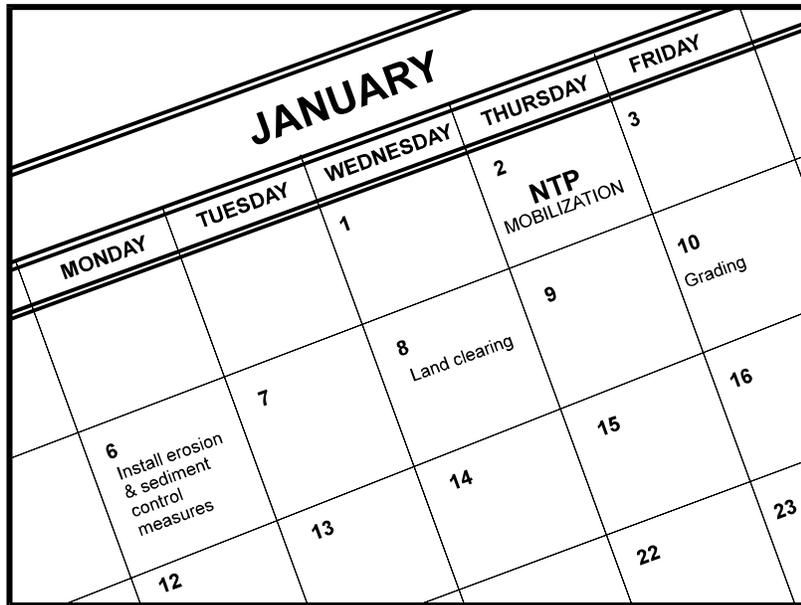
**Table H.1 Construction Activities and Associated Pollutants**

<b>Phase</b>	<b>Activity</b>	<b>Associated Materials or Pollutants</b>	<b>Pollutant Category<sup>(1)</sup></b>
Land Grading and Development	Asphalt paving/curbs	Hot and cold mix asphalt	Oil and Grease
	Concrete paving/curbs	Cement dust and curing compounds	Metals, Synthetic Organics
	BMPs installation	Sand, gravel, straw, plant fiber, plastics	Sediments, Nutrients, gross pollutants
Streets and Utilities Phase	None		
Construction	Solid Waste	Litter, trash, debris	Gross pollutants
	Liquid waste	Wash water	Metals, Synthetic Organics
	Sanitary waste	Portable toilets	Nutrients
Vertical Phase	Vehicle and equipment use	Equipment operation Equipment maintenance Equipment washing Equipment Fueling	Oil and Grease
Landscaping and Site Stabilization Phase	Removal of perimeter barrier	Demolition of asphalt concrete	Metals, Oil and Grease, Synthetic Organics
	Removal of BMPs	Sand, gravel, straw, plant fiber, plastics	Sediments, Nutrients, gross pollutants

<sup>(1)</sup> Categories per CASQA BMP Handbook (i.e., Sediment, Nutrients, Bacteria and Viruses, Oil and Grease, Metals, Synthetic Organics, Pesticides, Gross Pollutants, and Vector Production)

*Appendix I: CASQA Stormwater BMP Handbook  
Portal: Construction Fact Sheets*

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## Description and Purpose

Scheduling is the development of a written plan that includes sequencing of construction activities and the implementation of BMPs such as erosion control and sediment control while taking local climate (rainfall, wind, etc.) into consideration. The purpose is to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking, and to perform the construction activities and control practices in accordance with the planned schedule.

## Suitable Applications

Proper sequencing of construction activities to reduce erosion potential should be incorporated into the schedule of every construction project especially during rainy season. Use of other, more costly yet less effective, erosion and sediment control BMPs may often be reduced through proper construction sequencing.

## Limitations

- Environmental constraints such as nesting season prohibitions reduce the full capabilities of this BMP.

## Implementation

- Avoid rainy periods. Schedule major grading operations during dry months when practical. Allow enough time before rainfall begins to stabilize the soil with vegetation or physical means or to install sediment trapping devices.
- Plan the project and develop a schedule showing each phase of construction. Clearly show how the rainy season relates

## Categories

EC	Erosion Control	<input checked="" type="checkbox"/>
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	<input checked="" type="checkbox"/>
WE	Wind Erosion Control	<input checked="" type="checkbox"/>
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

## Legend:

- Primary Objective
- Secondary Objective

## Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

## Potential Alternatives

None

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to soil disturbing and re-stabilization activities. Incorporate the construction schedule into the SWPPP.

- Include on the schedule, details on the rainy season implementation and deployment of:
  - Erosion control BMPs
  - Sediment control BMPs
  - Tracking control BMPs
  - Wind erosion control BMPs
  - Non-stormwater BMPs
  - Waste management and materials pollution control BMPs
- Include dates for activities that may require non-stormwater discharges such as dewatering, sawcutting, grinding, drilling, boring, crushing, blasting, painting, hydro-demolition, mortar mixing, pavement cleaning, etc.
- Work out the sequencing and timetable for the start and completion of each item such as site clearing and grubbing, grading, excavation, paving, foundation pouring utilities installation, etc., to minimize the active construction area during the rainy season.
  - Sequence trenching activities so that most open portions are closed before new trenching begins.
  - Incorporate staged seeding and re-vegetation of graded slopes as work progresses.
  - Schedule establishment of permanent vegetation during appropriate planting time for specified vegetation.
- Non-active areas should be stabilized as soon as practical after the cessation of soil disturbing activities or one day prior to the onset of precipitation.
- Monitor the weather forecast for rainfall.
- When rainfall is predicted, adjust the construction schedule to allow the implementation of soil stabilization and sediment treatment controls on all disturbed areas prior to the onset of rain.
- Be prepared year round to deploy erosion control and sediment control BMPs. Erosion may be caused during dry seasons by un-seasonal rainfall, wind, and vehicle tracking. Keep the site stabilized year round, and retain and maintain rainy season sediment trapping devices in operational condition.
- Apply permanent erosion control to areas deemed substantially complete during the project's defined seeding window.

## Costs

Construction scheduling to reduce erosion may increase other construction costs due to reduced economies of scale in performing site grading. The cost effectiveness of scheduling techniques should be compared with the other less effective erosion and sedimentation controls to achieve a cost effective balance.

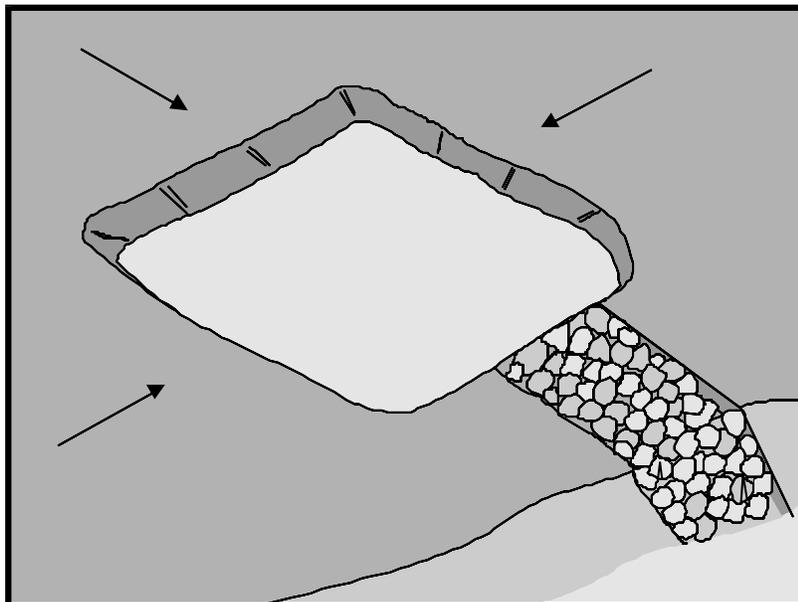
## Inspection and Maintenance

- Verify that work is progressing in accordance with the schedule. If progress deviates, take corrective actions.
- Amend the schedule when changes are warranted.
- Amend the schedule prior to the rainy season to show updated information on the deployment and implementation of construction site BMPs.

## References

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities Developing Pollution Prevention Plans and Best Management Practices (EPA 832-R-92-005), U.S. Environmental Protection Agency, Office of Water, September 1992.



## Description and Purpose

A sediment trap is a containment area where sediment-laden runoff is temporarily detained under quiescent conditions, allowing sediment to settle out or before the runoff is discharged by gravity flow. Sediment traps are formed by excavating or constructing an earthen embankment across a waterway or low drainage area.

Trap design guidance provided in this fact sheet is not intended to guarantee compliance with numeric discharge limits (numeric action levels or numeric effluent limits for turbidity). Compliance with discharge limits requires a thoughtful approach to comprehensive BMP planning, implementation, and maintenance. Therefore, optimally designed and maintained sediment traps should be used in conjunction with a comprehensive system of BMPs.

## Suitable Applications

Sediment traps should be considered for use:

- At the perimeter of the site at locations where sediment-laden runoff is discharged offsite.
- At multiple locations within the project site where sediment control is needed.
- Around or upslope from storm drain inlet protection measures.
- Sediment traps may be used on construction projects where the drainage area is less than 5 acres. Traps would be

## Categories

EC	Erosion Control	
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

## Legend:

- Primary Objective
- Secondary Objective

## Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	<input checked="" type="checkbox"/>
Metals	
Bacteria	
Oil and Grease	
Organics	

## Potential Alternatives

SE-2 Sediment Basin (for larger areas)

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placed where sediment-laden stormwater may enter a storm drain or watercourse. SE-2, Sediment Basins, must be used for drainage areas greater than 5 acres.

- As a supplemental control, sediment traps provide additional protection for a water body or for reducing sediment before it enters a drainage system.

## Limitations

- Requires large surface areas to permit infiltration and settling of sediment.
- Not appropriate for drainage areas greater than 5 acres.
- Only removes large and medium sized particles and requires upstream erosion control.
- Attractive and dangerous to children, requiring protective fencing.
- Conducive to vector production.
- Should not be located in live streams.

## Implementation

### *Design*

A sediment trap is a small temporary ponding area, usually with a gravel outlet, formed by excavation or by construction of an earthen embankment. Its purpose is to collect and store sediment from sites cleared or graded during construction. It is intended for use on small drainage areas with no unusual drainage features and projected for a quick build-out time. It should help in removing coarse sediment from runoff. The trap is a temporary measure with a design life of approximately six months to one year and is to be maintained until the site area is permanently protected against erosion by vegetation and/or structures.

Sediment traps should be used only for small drainage areas. If the contributing drainage area is greater than 5 acres, refer to SE-2, Sediment Basins, or subdivide the catchment area into smaller drainage basins.

Sediment usually must be removed from the trap after each rainfall event. The SWPPP should detail how this sediment is to be disposed, such as in fill areas onsite, or removal to an approved offsite dump. Sediment traps used as perimeter controls should be installed before any land disturbance takes place in the drainage area.

Sediment traps are usually small enough that a failure of the structure would not result in a loss of life, damage to home or buildings, or interruption in the use of public roads or utilities. However, sediment traps are attractive to children and can be dangerous. The following recommendations should be implemented to reduce risks:

- Install continuous fencing around the sediment trap or pond. Consult local ordinances regarding requirements for maintaining health and safety.
- Restrict basin side slopes to 3:1 or flatter.

Sediment trap size depends on the type of soil, size of the drainage area, and desired sediment removal efficiency (see SE-2, Sediment Basin). As a rule of thumb, the larger the basin volume

the greater the sediment removal efficiency. Sizing criteria are typically established under the local grading ordinance or equivalent. The runoff volume from a 2-year storm is a common design criteria for a sediment trap. The sizing criteria below assume that this runoff volume is 0.042 acre-ft/acre (0.5 in. of runoff). While the climatic, topographic, and soil type extremes make it difficult to establish a statewide standard, the following criteria should trap moderate to high amounts of sediment in most areas of California:

- Locate sediment traps as near as practical to areas producing the sediment.
- Trap should be situated according to the following criteria: (1) by excavating a suitable area or where a low embankment can be constructed across a swale, (2) where failure would not cause loss of life or property damage, and (3) to provide access for maintenance, including sediment removal and sediment stockpiling in a protected area.
- Trap should be sized to accommodate a settling zone and sediment storage zone with recommended minimum volumes of 67 yd<sup>3</sup>/acre and 33 yd<sup>3</sup>/acre of contributing drainage area, respectively, based on 0.5 in. of runoff volume over a 24-hour period. In many cases, the size of an individual trap is limited by available space. Multiple traps or additional volume may be required to accommodate specific rainfall, soil, and site conditions.
- Traps with an impounding levee greater than 4.5 ft tall, measured from the lowest point to the impounding area to the highest point of the levee, and traps capable of impounding more than 35,000 ft<sup>3</sup>, should be designed by a Registered Civil Engineer. The design should include maintenance requirements, including sediment and vegetation removal, to ensure continuous function of the trap outlet and bypass structures.
- The outlet pipe or open spillway must be designed to convey anticipated peak flows.
- Use rock or vegetation to protect the trap outlets against erosion.
- Fencing should be provided to prevent unauthorized entry.

## ***Installation***

Sediment traps can be constructed by excavating a depression in the ground or creating an impoundment with a small embankment. Sediment traps should be installed outside the area being graded and should be built prior to the start of the grading activities or removal of vegetation. To minimize the area disturbed by them, sediment traps should be installed in natural depressions or in small swales or drainage ways. The following steps must be followed during installation:

- The area under the embankment must be cleared, grubbed, and stripped of any vegetation and root mat. The pool area should be cleared.
- The fill material for the embankment must be free of roots or other woody vegetation as well as oversized stones, rocks, organic material, or other objectionable material. The embankment may be compacted by traversing with equipment while it is being constructed.
- All cut-and-fill slopes should be 3:1 or flatter.
- When a riser is used, all pipe joints must be watertight.

- When a riser is used, at least the top two-thirds of the riser should be perforated with 0.5 in. diameter holes spaced 8 in. vertically and 10 to 12 in. horizontally. See SE-2, Sediment Basin.
- When an earth or stone outlet is used, the outlet crest elevation should be at least 1 ft below the top of the embankment.
- When crushed stone outlet is used, the crushed stone used in the outlet should meet AASHTO M43, size No. 2 or 24, or its equivalent such as MSHA No. 2. Gravel meeting the above gradation may be used if crushed stone is not available.

## Costs

Average annual cost per installation and maintenance (18 month useful life) is \$0.73 per ft<sup>3</sup> (\$1,300 per drainage acre). Maintenance costs are approximately 20% of installation costs.

## Inspection and Maintenance

- Inspect BMPs in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Inspect outlet area for erosion and stabilize if required.
- Inspect trap banks for seepage and structural soundness, repair as needed.
- Inspect outlet structure and spillway for any damage or obstructions. Repair damage and remove obstructions as needed.
- Inspect fencing for damage and repair as needed.
- Inspect the sediment trap for area of standing water during every visit. Corrective measures should be taken if the BMP does not dewater completely in 96 hours or less to prevent vector production.
- Sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the trap capacity. Sediment removed during maintenance may be incorporated into earthwork on the site or disposed of at an appropriate location.
- Remove vegetation from the sediment trap when first detected to prevent pools of standing water and subsequent vector production.
- BMPs that require dewatering shall be continuously attended while dewatering takes place. Dewatering BMPs per NS-2 shall be implemented at all times during dewatering activities.

## References

Brown, W., and T. Schueler. The Economics of Stormwater BMPs in the Mid-Atlantic Region. Prepared for Chesapeake Research Consortium, Edgewater, MD, by the Center for Watershed Protection, Ellicott City, MD, 1997.

Draft – Sedimentation and Erosion Control, an Inventory of Current Practices, USEPA, April 1990.

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

Metzger, M.E., D.F. Messer, C.L. Beitia, C.M. Myers, and V.L. Kramer, The Dark Side of Stormwater Runoff Management: Disease Vectors Associated with Structural BMPs, 2002.

National Management Measures to Control Nonpoint Source Pollution from Urban Areas, United States Environmental Protection Agency, 2002.

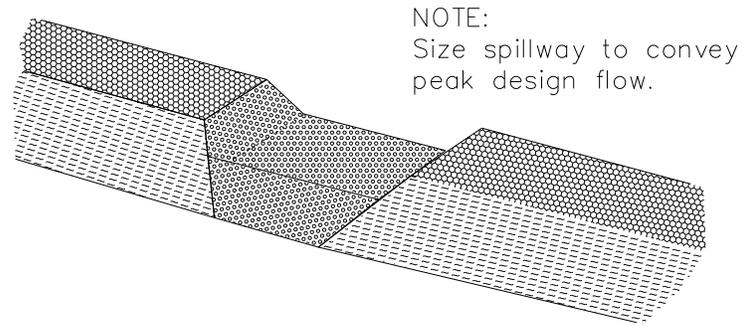
Proposed Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, Work Group-Working Paper, USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management Manual for The Puget Sound Basin, Washington State Department of Ecology, Public Review Draft, 1991.

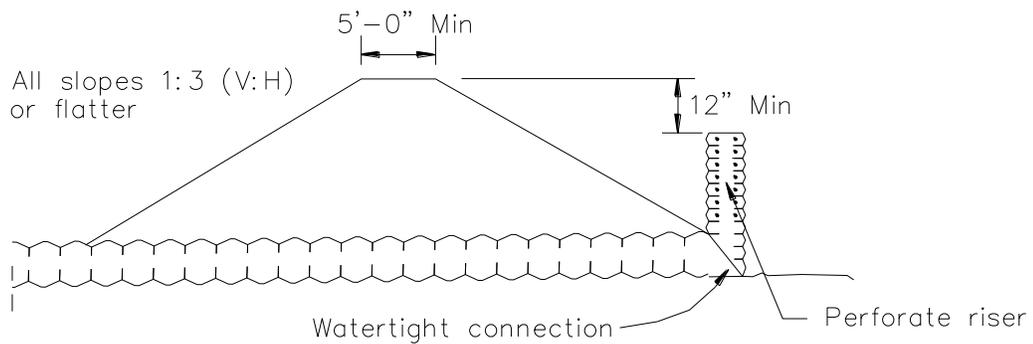
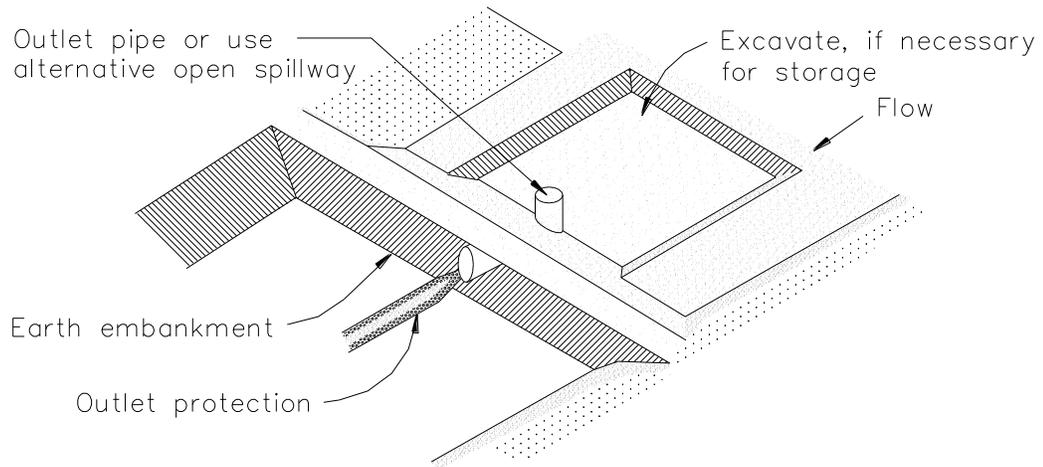
U.S. Environmental Protection Agency (USEPA). Guidance Specifying Management Measures for Nonpoint Pollution in Coastal Waters. EPA 840-B-9-002. U.S. Environmental Protection Agency, Office of Water, Washington, DC, 1993.

Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.



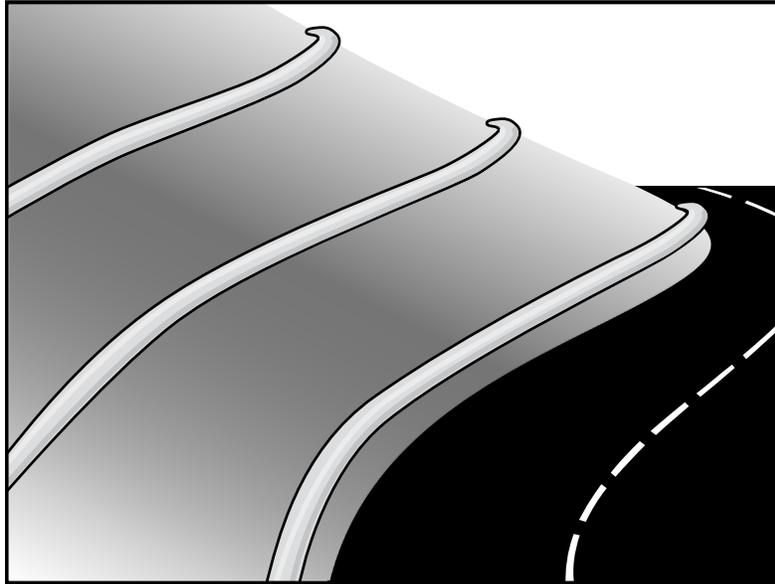
NOTE:  
Size spillway to convey  
peak design flow.

TYPICAL OPEN SPILLWAY



EMBANKMENT SECTION THRU RISER

TYPICAL SEDIMENT TRAP  
NOT TO SCALE



## Description and Purpose

A fiber roll consists of straw, coir, or other biodegradable materials bound into a tight tubular roll wrapped by netting, which can be photodegradable or natural. Additionally, gravel core fiber rolls are available, which contain an imbedded ballast material such as gravel or sand for additional weight when staking the rolls are not feasible (such as use as inlet protection). When fiber rolls are placed at the toe and on the face of slopes along the contours, they intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide removal of sediment from the runoff (through sedimentation). By interrupting the length of a slope, fiber rolls can also reduce sheet and rill erosion until vegetation is established.

## Suitable Applications

Fiber rolls may be suitable:

- Along the toe, top, face, and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.
- At the end of a downward slope where it transitions to a steeper slope.
- Along the perimeter of a project.
- As check dams in unlined ditches with minimal grade.
- Down-slope of exposed soil areas.
- At operational storm drains as a form of inlet protection.

## Categories

EC	Erosion Control	<input checked="" type="checkbox"/>
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

## Legend:

- Primary Category
- Secondary Category

## Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

## Potential Alternatives

- SE-1 Silt Fence
- SE-6 Gravel Bag Berm
- SE-8 Sandbag Barrier
- SE-12 Manufactured Linear Sediment Controls
- SE-14 Biofilter Bags

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- Around temporary stockpiles.

## Limitations

- Fiber rolls are not effective unless trenched in and staked.
- Not intended for use in high flow situations.
- Difficult to move once saturated.
- If not properly staked and trenched in, fiber rolls could be transported by high flows.
- Fiber rolls have a very limited sediment capture zone.
- Fiber rolls should not be used on slopes subject to creep, slumping, or landslide.
- Rolls typically function for 12-24 months depending upon local conditions.

## Implementation

### ***Fiber Roll Materials***

- Fiber rolls should be prefabricated.
- Fiber rolls may come manufactured containing polyacrylamide (PAM), a flocculating agent within the roll. Fiber rolls impregnated with PAM provide additional sediment removal capabilities and should be used in areas with fine, clayey or silty soils to provide additional sediment removal capabilities. Monitoring may be required for these installations.
- Fiber rolls are made from weed free rice straw, flax, or a similar agricultural material bound into a tight tubular roll by netting.
- Typical fiber rolls vary in diameter from 9 in. to 20 in. Larger diameter rolls are available as well.

### ***Installation***

- Locate fiber rolls on level contours spaced as follows:
  - Slope inclination of 4:1 (H:V) or flatter: Fiber rolls should be placed at a maximum interval of 20 ft.
  - Slope inclination between 4:1 and 2:1 (H:V): Fiber Rolls should be placed at a maximum interval of 15 ft. (a closer spacing is more effective).
  - Slope inclination 2:1 (H:V) or greater: Fiber Rolls should be placed at a maximum interval of 10 ft. (a closer spacing is more effective).
- Prepare the slope before beginning installation.
- Dig small trenches across the slope on the contour. The trench depth should be  $\frac{1}{4}$  to  $\frac{1}{3}$  of the thickness of the roll, and the width should equal the roll diameter, in order to provide area to backfill the trench.

- It is critical that rolls are installed perpendicular to water movement, and parallel to the slope contour.
- Start building trenches and installing rolls from the bottom of the slope and work up.
- It is recommended that pilot holes be driven through the fiber roll. Use a straight bar to drive holes through the roll and into the soil for the wooden stakes.
- Turn the ends of the fiber roll up slope to prevent runoff from going around the roll.
- Stake fiber rolls into the trench.
  - Drive stakes at the end of each fiber roll and spaced 4 ft maximum on center.
  - Use wood stakes with a nominal classification of 0.75 by 0.75 in. and minimum length of 24 in.
- If more than one fiber roll is placed in a row, the rolls should be overlapped, not abutted.
- See typical fiber roll installation details at the end of this fact sheet.

## **Removal**

- Fiber rolls can be left in place or removed depending on the type of fiber roll and application (temporary vs. permanent installation). Typically, fiber rolls encased with plastic netting are used for a temporary application because the netting does not biodegrade. Fiber rolls used in a permanent application are typically encased with a biodegradable material and are left in place. Removal of a fiber roll used in a permanent application can result in greater disturbance.
- Temporary installations should only be removed when up gradient areas are stabilized per General Permit requirements, and/or pollutant sources no longer present a hazard. But, they should also be removed before vegetation becomes too mature so that the removal process does not disturb more soil and vegetation than is necessary.

## **Costs**

Material costs for regular fiber rolls range from \$20 - \$30 per 25 ft roll.

Material costs for PAM impregnated fiber rolls range between 7.00-\$9.00 per linear foot, based upon vendor research.

## **Inspection and Maintenance**

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Repair or replace split, torn, unraveling, or slumping fiber rolls.
- If the fiber roll is used as a sediment capture device, or as an erosion control device to maintain sheet flows, sediment that accumulates in the BMP should be periodically removed

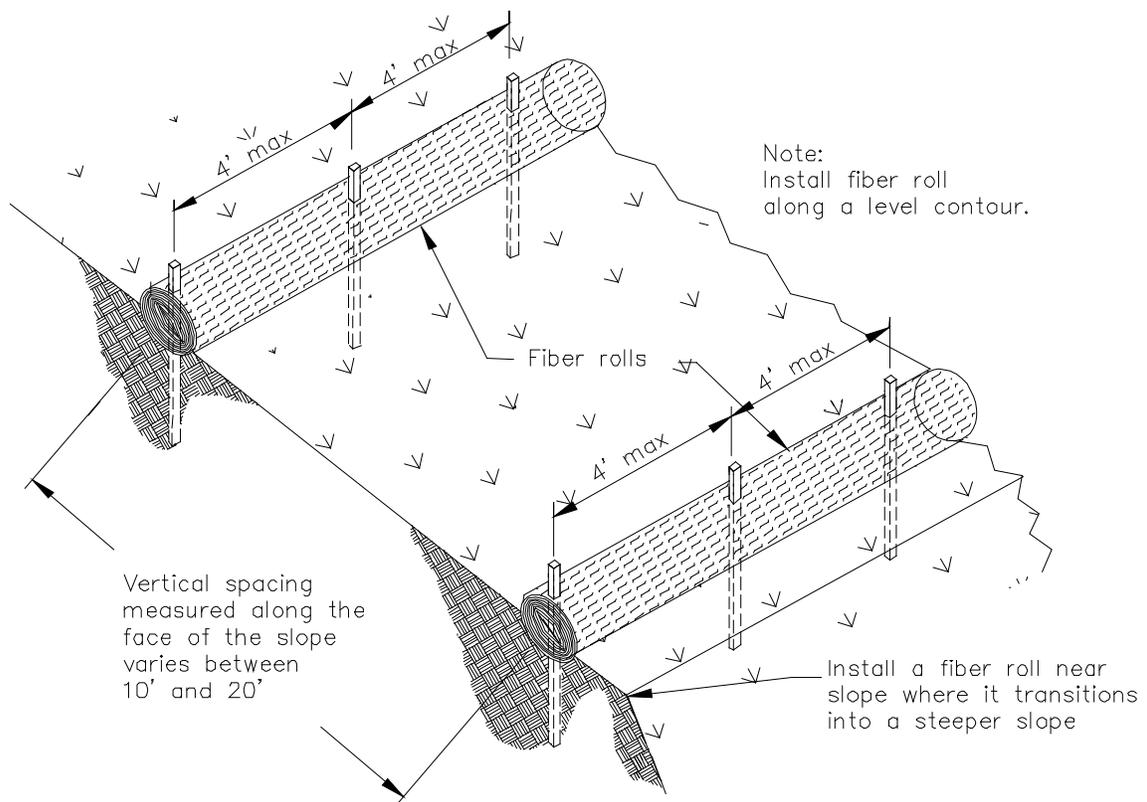
in order to maintain BMP effectiveness. Sediment should be removed when sediment accumulation reaches one-third the designated sediment storage depth.

- If fiber rolls are used for erosion control, such as in a check dam, sediment removal should not be required as long as the system continues to control the grade. Sediment control BMPs will likely be required in conjunction with this type of application.
- Repair any rills or gullies promptly.

## References

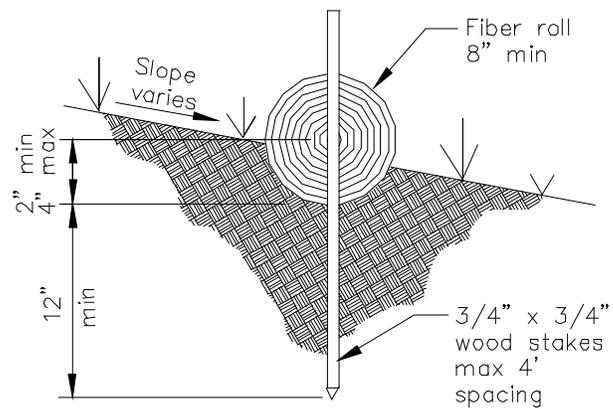
Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.



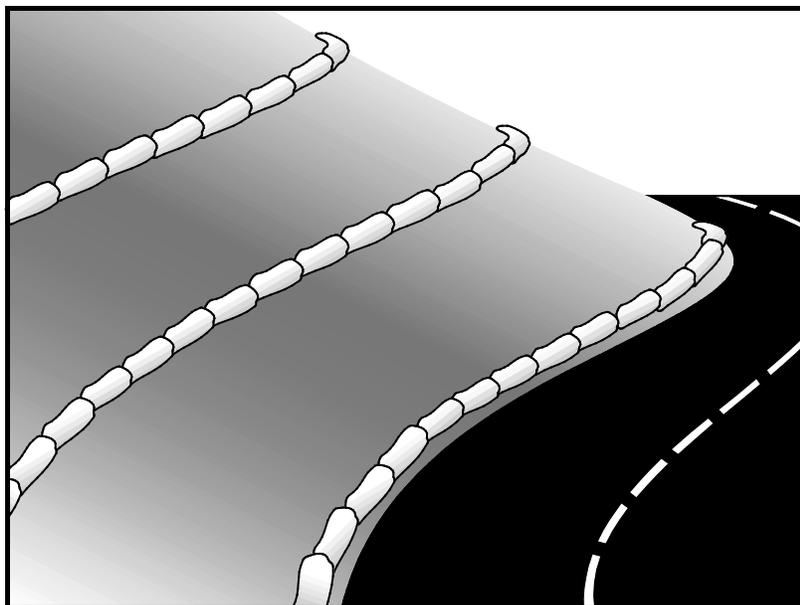
TYPICAL FIBER ROLL INSTALLATION

N.T.S.



ENTRENCHMENT DETAIL

N.T.S.



## Description and Purpose

A gravel bag berm is a series of gravel-filled bags placed on a level contour to intercept sheet flows. Gravel bags pond sheet flow runoff, allowing sediment to settle out, and release runoff slowly as sheet flow, preventing erosion.

## Suitable Applications

Gravel bag berms may be suitable:

- As a linear sediment control measure:
  - Below the toe of slopes and erodible slopes
  - As sediment traps at culvert/pipe outlets
  - Below other small cleared areas
  - Along the perimeter of a site
  - Down slope of exposed soil areas
  - Around temporary stockpiles and spoil areas
  - Parallel to a roadway to keep sediment off paved areas
  - Along streams and channels
- As a linear erosion control measure:
  - Along the face and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.

## Categories

EC	Erosion Control	<input checked="" type="checkbox"/>
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

## Legend:

- Primary Category
- Secondary Category

## Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

## Potential Alternatives

- SE-1 Silt Fence
- SE-5 Fiber Roll
- SE-8 Sandbag Barrier
- SE-12 Temporary Silt Dike
- SE-14 Biofilter Bags

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- At the top of slopes to divert runoff away from disturbed slopes.
- As chevrons (small check dams) across mildly sloped construction roads. For use check dam use in channels, see SE-4, Check Dams.

## Limitations

- Gravel berms may be difficult to remove.
- Removal problems limit their usefulness in landscaped areas.
- Gravel bag berm may not be appropriate for drainage areas greater than 5 acres.
- Runoff will pond upstream of the berm, possibly causing flooding if sufficient space does not exist.
- Degraded gravel bags may rupture when removed, spilling contents.
- Installation can be labor intensive.
- Durability of gravel bags is somewhat limited and bags may need to be replaced when installation is required for longer than 6 months.
- Easily damaged by construction equipment.
- When used to detain concentrated flows, maintenance requirements increase.

## Implementation

### **General**

A gravel bag berm consists of a row of open graded gravel-filled bags placed on a level contour. When appropriately placed, a gravel bag berm intercepts and slows sheet flow runoff, causing temporary ponding. The temporary ponding allows sediment to settle. The open graded gravel in the bags is porous, which allows the ponded runoff to flow slowly through the bags, releasing the runoff as sheet flows. Gravel bag berms also interrupt the slope length and thereby reduce erosion by reducing the tendency of sheet flows to concentrate into rivulets, which erode rills, and ultimately gullies, into disturbed, sloped soils. Gravel bag berms are similar to sand bag barriers, but are more porous. Generally, gravel bag berms should be used in conjunction with temporary soil stabilization controls up slope to provide effective erosion and sediment control.

### **Design and Layout**

- Locate gravel bag berms on level contours.
- When used for slope interruption, the following slope/sheet flow length combinations apply:
  - Slope inclination of 4:1 (H:V) or flatter: Gravel bags should be placed at a maximum interval of 20 ft, with the first row near the slope toe.
  - Slope inclination between 4:1 and 2:1 (H:V): Gravel bags should be placed at a maximum interval of 15 ft. (a closer spacing is more effective), with the first row near the slope toe.

Slope inclination 2:1 (H:V) or greater: Gravel bags should be placed at a maximum interval of 10 ft. (a closer spacing is more effective), with the first row near the slope toe.

- Turn the ends of the gravel bag barriers up slope to prevent runoff from going around the berm.
- Allow sufficient space up slope from the gravel bag berm to allow ponding, and to provide room for sediment storage.
- For installation near the toe of the slope, gravel bag barriers should be set back from the slope toe to facilitate cleaning. Where specific site conditions do not allow for a set-back, the gravel bag barrier may be constructed on the toe of the slope. To prevent flows behind the barrier, bags can be placed perpendicular to a berm to serve as cross barriers.
- Drainage area should not exceed 5 acres.
- In Non-Traffic Areas:
  - Height = 18 in. maximum
  - Top width = 24 in. minimum for three or more layer construction
  - Top width = 12 in. minimum for one or two layer construction
  - Side slopes = 2:1 (H:V) or flatter
- In Construction Traffic Areas:
  - Height = 12 in. maximum
  - Top width = 24 in. minimum for three or more layer construction.
  - Top width = 12 in. minimum for one or two layer construction.
  - Side slopes = 2:1 (H:V) or flatter.
- Butt ends of bags tightly.
- On multiple row, or multiple layer construction, overlap butt joints of adjacent row and row beneath.
- Use a pyramid approach when stacking bags.

## **Materials**

- **Bag Material:** Bags should be woven polypropylene, polyethylene or polyamide fabric or burlap, minimum unit weight of 4 ounces/yd<sup>2</sup>, Mullen burst strength exceeding 300 lb/in<sup>2</sup> in conformance with the requirements in ASTM designation D3786, and ultraviolet stability exceeding 70% in conformance with the requirements in ASTM designation D4355.

- **Bag Size:** Each gravel-filled bag should have a length of 18 in., width of 12 in., thickness of 3 in., and mass of approximately 33 lbs. Bag dimensions are nominal, and may vary based on locally available materials.
- **Fill Material:** Fill material should be 0.5 to 1 in. crushed rock, clean and free from clay, organic matter, and other deleterious material, or other suitable open graded, non-cohesive, porous gravel.

## Costs

Material costs for gravel bags are average and are dependent upon material availability. \$2.50-3.00 per filled gravel bag is standard based upon vendor research.

## Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Gravel bags exposed to sunlight will need to be replaced every two to three months due to degrading of the bags.
- Reshape or replace gravel bags as needed.
- Repair washouts or other damage as needed.
- Sediment that accumulates in the BMP should be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height.
- Remove gravel bag berms when no longer needed and recycle gravel fill whenever possible and properly dispose of bag material. Remove sediment accumulation and clean, re-grade, and stabilize the area.

## References

Handbook of Steel Drainage and Highway Construction, American Iron and Steel Institute, 1983.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Stormwater Pollution Plan Handbook, First Edition, State of California, Department of Transportation Division of New Technology, Materials and Research, October 1992.

Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.



## Description and Purpose

Street sweeping and vacuuming includes use of self-propelled and walk-behind equipment to remove sediment from streets and roadways, and to clean paved surfaces in preparation for final paving. Sweeping and vacuuming prevents sediment from the project site from entering storm drains or receiving waters.

## Suitable Applications

Sweeping and vacuuming are suitable anywhere sediment is tracked from the project site onto public or private paved streets and roads, typically at points of egress. Sweeping and vacuuming are also applicable during preparation of paved surfaces for final paving.

## Limitations

Sweeping and vacuuming may not be effective when sediment is wet or when tracked soil is caked (caked soil may need to be scraped loose).

## Implementation

- Controlling the number of points where vehicles can leave the site will allow sweeping and vacuuming efforts to be focused, and perhaps save money.
- Inspect potential sediment tracking locations daily.
- Visible sediment tracking should be swept or vacuumed on a daily basis.

## Categories

EC	Erosion Control	
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	<input checked="" type="checkbox"/>
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

## Legend:

- Primary Objective
- Secondary Objective

## Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	<input checked="" type="checkbox"/>
Metals	
Bacteria	
Oil and Grease	<input checked="" type="checkbox"/>
Organics	

## Potential Alternatives

None

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- Do not use kick brooms or sweeper attachments. These tend to spread the dirt rather than remove it.
- If not mixed with debris or trash, consider incorporating the removed sediment back into the project

## Costs

Rental rates for self-propelled sweepers vary depending on hopper size and duration of rental. Expect rental rates from \$58/hour (3 yd<sup>3</sup> hopper) to \$88/hour (9 yd<sup>3</sup> hopper), plus operator costs. Hourly production rates vary with the amount of area to be swept and amount of sediment. Match the hopper size to the area and expect sediment load to minimize time spent dumping.

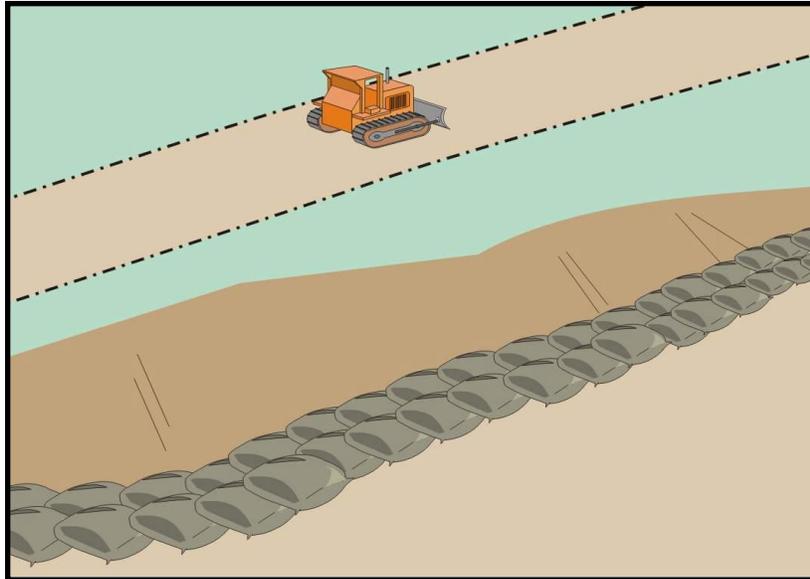
## Inspection and Maintenance

- Inspect BMPs in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- When actively in use, points of ingress and egress must be inspected daily.
- When tracked or spilled sediment is observed outside the construction limits, it must be removed at least daily. More frequent removal, even continuous removal, may be required in some jurisdictions.
- Be careful not to sweep up any unknown substance or any object that may be potentially hazardous.
- Adjust brooms frequently; maximize efficiency of sweeping operations.
- After sweeping is finished, properly dispose of sweeper wastes at an approved dumpsite.

## References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Labor Surcharge and Equipment Rental Rates, State of California Department of Transportation (Caltrans), April 1, 2002 – March 31, 2003.



## Description and Purpose

A sandbag barrier is a series of sand-filled bags placed on a level contour to intercept or to divert sheet flows. Sandbag barriers placed on a level contour pond sheet flow runoff, allowing sediment to settle out.

## Suitable Applications

Sandbag barriers may be a suitable control measure for the applications described below. It is important to consider that sand bags are less porous than gravel bags and ponding or flooding can occur behind the barrier. Also, sand is easily transported by runoff if bags are damaged or ruptured. The SWPPP Preparer should select the location of a sandbag barrier with respect to the potential for flooding, damage, and the ability to maintain the BMP.

- As a linear sediment control measure:
  - Below the toe of slopes and erodible slopes.
  - As sediment traps at culvert/pipe outlets.
  - Below other small cleared areas.
  - Along the perimeter of a site.
  - Down slope of exposed soil areas.
  - Around temporary stockpiles and spoil areas.
  - Parallel to a roadway to keep sediment off paved areas.
  - Along streams and channels.

## Categories

EC	Erosion Control	<input checked="" type="checkbox"/>
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

## Legend:

- Primary Category
- Secondary Category

## Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

## Potential Alternatives

- SE-1 Silt Fence
- SE-5 Fiber Rolls
- SE-6 Gravel Bag Berm
- SE-12 Manufactured Linear Sediment Controls
- SE-14 Biofilter Bags

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- As linear erosion control measure:
  - Along the face and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.
  - At the top of slopes to divert runoff away from disturbed slopes.
  - As check dams across mildly sloped construction roads.

## Limitations

- It is necessary to limit the drainage area upstream of the barrier to 5 acres.
- Sandbags are not intended to be used as filtration devices.
- Easily damaged by construction equipment.
- Degraded sandbags may rupture when removed, spilling sand.
- Installation can be labor intensive.
- Durability of sandbags is somewhat limited and bags will need to be replaced when there are signs of damage or wear.
- Burlap should not be used for sandbags.

## Implementation

### *General*

A sandbag barrier consists of a row of sand-filled bags placed on a level contour. When appropriately placed, a sandbag barrier intercepts and slows sheet flow runoff, causing temporary ponding. The temporary ponding allows sediment to settle. Sand-filled bags have limited porosity, which is further limited as the fine sand tends to quickly plug with sediment, limiting or completely blocking the rate of flow through the barrier. If a porous barrier is desired, consider SE-1, Silt Fence, SE-5, Fiber Rolls, SE-6, Gravel Bag Berms or SE-14, Biofilter Bags. Sandbag barriers also interrupt the slope length and thereby reduce erosion by reducing the tendency of sheet flows to concentrate into rivulets which erode rills, and ultimately gullies, into disturbed, sloped soils. Sandbag barriers are similar to gravel bag berms, but less porous. Generally, sandbag barriers should be used in conjunction with temporary soil stabilization controls up slope to provide effective erosion and sediment control.

### *Design and Layout*

- Locate sandbag barriers on a level contour.
- When used for slope interruption, the following slope/sheet flow length combinations apply:
  - Slope inclination of 4:1 (H:V) or flatter: Sandbags should be placed at a maximum interval of 20 ft, with the first row near the slope toe.
  - Slope inclination between 4:1 and 2:1 (H:V): Sandbags should be placed at a maximum interval of 15 ft. (a closer spacing is more effective), with the first row near the slope toe.

- Slope inclination 2:1 (H:V) or greater: Sandbags should be placed at a maximum interval of 10 ft. (a closer spacing is more effective), with the first row near the slope toe.
- Turn the ends of the sandbag barrier up slope to prevent runoff from going around the barrier.
- Allow sufficient space up slope from the barrier to allow ponding, and to provide room for sediment storage.
- For installation near the toe of the slope, sand bag barriers should be set back from the slope toe to facilitate cleaning. Where specific site conditions do not allow for a set-back, the sand bag barrier may be constructed on the toe of the slope. To prevent flows behind the barrier, bags can be placed perpendicular to a berm to serve as cross barriers.
- Drainage area should not exceed 5 acres.
- Butt ends of bags tightly.
- Overlap butt joints of row beneath with each successive row.
- Use a pyramid approach when stacking bags.
- In non-traffic areas
  - Height = 18 in. maximum
  - Top width = 24 in. minimum for three or more layer construction
  - Side slope = 2:1 (H:V) or flatter
- In construction traffic areas
  - Height = 12 in. maximum
  - Top width = 24 in. minimum for three or more layer construction.
  - Side slopes = 2:1 (H:V) or flatter.
- See typical sandbag barrier installation details at the end of this fact sheet.

## **Materials**

- **Sandbag Material:** Sandbag should be woven polypropylene, polyethylene or polyamide fabric, minimum unit weight of 4 ounces/yd<sup>2</sup>, Mullen burst strength exceeding 300 lb/in<sup>2</sup> in conformance with the requirements in ASTM designation D3786, and ultraviolet stability exceeding 70% in conformance with the requirements in ASTM designation D4355. Use of burlap is not an acceptable substitute, as sand can more easily mobilize out of burlap.
- **Sandbag Size:** Each sand-filled bag should have a length of 18 in., width of 12 in., thickness of 3 in., and mass of approximately 33 lbs. Bag dimensions are nominal, and may vary based on locally available materials.

- **Fill Material:** All sandbag fill material should be non-cohesive, Class 3 (Caltrans Standard Specification, Section 25) or similar permeable material free from clay and deleterious material, such as recycled concrete or asphalt.

## Costs

Empty sandbags cost \$0.25 - \$0.75. Average cost of fill material is \$8 per yd<sup>3</sup>. Additional labor is required to fill the bags. Pre-filled sandbags are more expensive at \$1.50 - \$2.00 per bag. These costs are based upon vendor research.

## Inspection and Maintenance

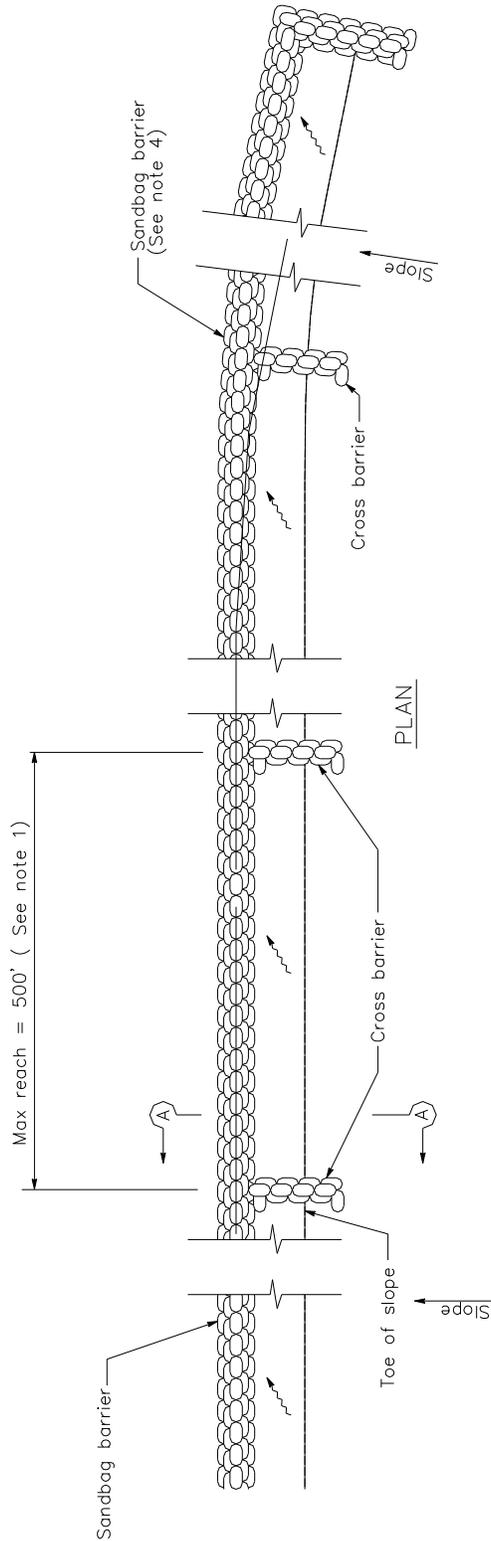
- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Sandbags exposed to sunlight will need to be replaced every two to three months due to degradation of the bags.
- Reshape or replace sandbags as needed.
- Repair washouts or other damage as needed.
- Sediment that accumulates behind the BMP should be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height.
- Remove sandbags when no longer needed and recycle sand fill whenever possible and properly dispose of bag material. Remove sediment accumulation, and clean, re-grade, and stabilize the area.

## References

Standard Specifications for Construction of Local Streets and Roads, California Department of Transportation (Caltrans), July 2002.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

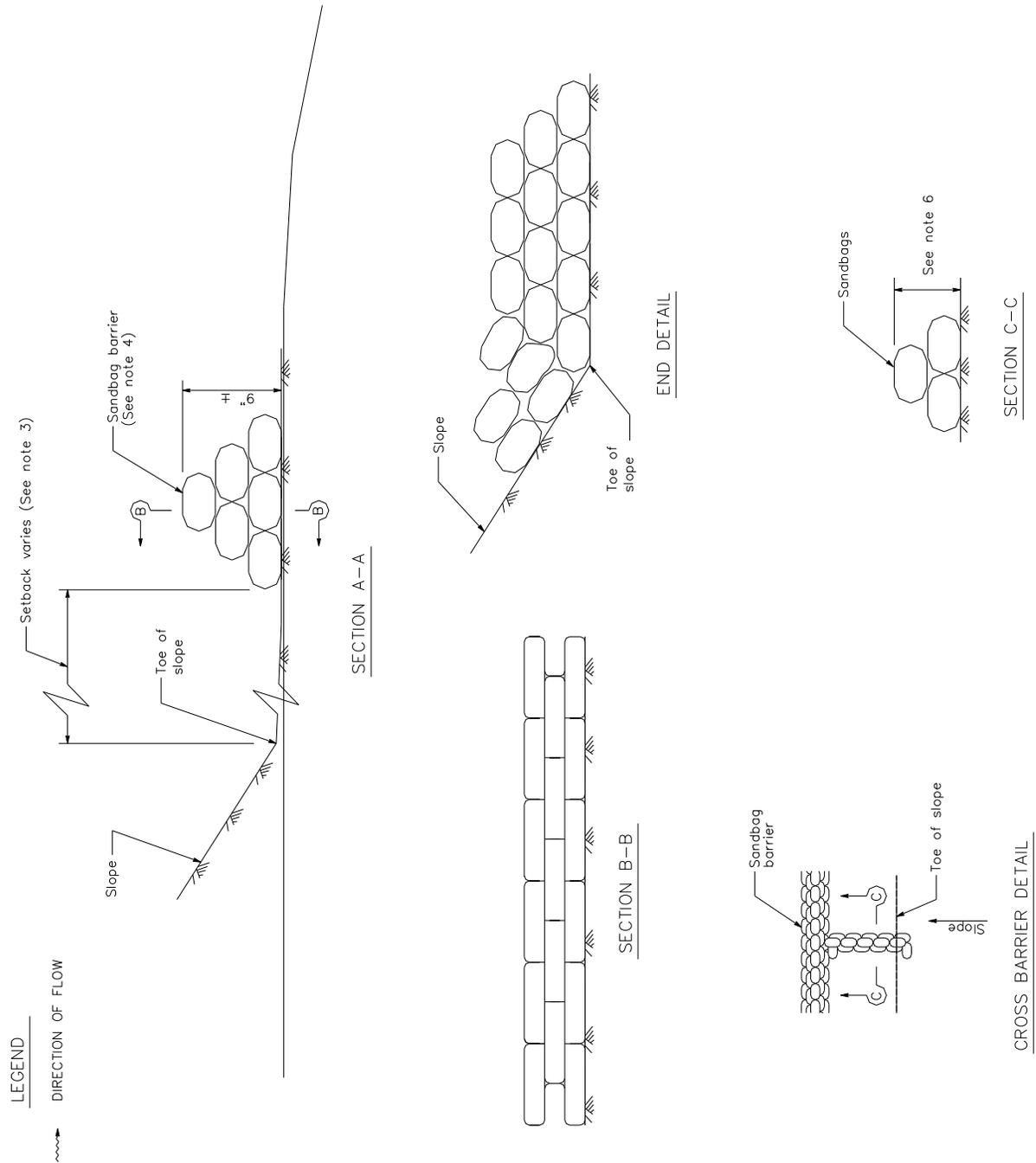
Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.

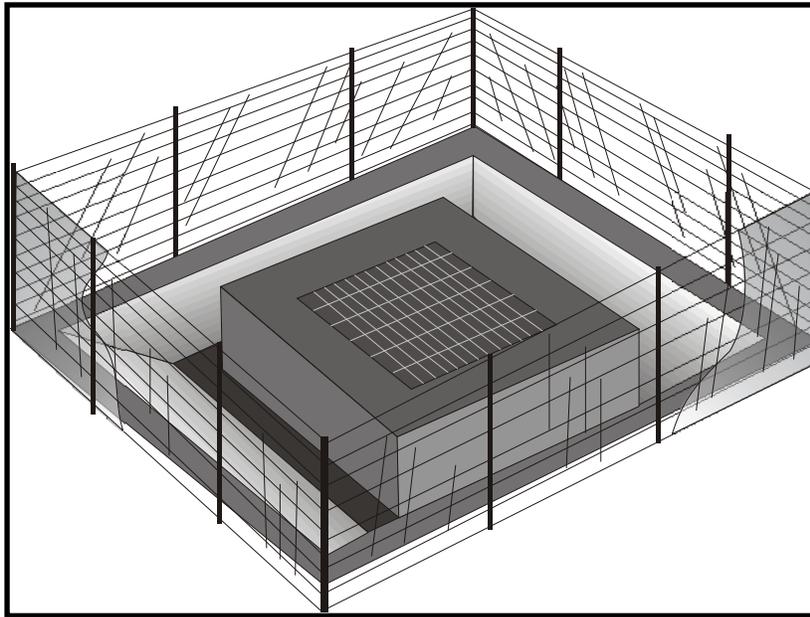


SANDBAG BARRIER

NOTES

1. Construct the length of each reach so that the change in base elevation along the reach does not exceed  $1/2$  the height of the linear barrier. In no case shall the reach length exceed 500'.
2. Place sandbags tightly.
3. Dimension may vary to fit field condition.
4. Sandbag barrier shall be a minimum of 3 bags high.
5. The end of the barrier shall be turned up slope.
6. Cross barriers shall be a min of  $1/2$  and a max of  $2/3$  the height of the linear barrier.
7. Sandbag rows and layers shall be staggered to eliminate gaps.





## Description and Purpose

Storm drain inlet protection consists of a sediment filter or an impounding area in, around or upstream of a storm drain, drop inlet, or curb inlet. Storm drain inlet protection measures temporarily pond runoff before it enters the storm drain, allowing sediment to settle. Some filter configurations also remove sediment by filtering, but usually the ponding action results in the greatest sediment reduction. Temporary geotextile storm drain inserts attach underneath storm drain grates to capture and filter storm water.

## Suitable Applications

- Every storm drain inlet receiving runoff from unstabilized or otherwise active work areas should be protected. Inlet protection should be used in conjunction with other erosion and sediment controls to prevent sediment-laden stormwater and non-stormwater discharges from entering the storm drain system.

## Limitations

- Drainage area should not exceed 1 acre.
- In general straw bales should not be used as inlet protection.
- Requires an adequate area for water to pond without encroaching into portions of the roadway subject to traffic.
- Sediment removal may be inadequate to prevent sediment discharges in high flow conditions or if runoff is heavily sediment laden. If high flow conditions are expected, use

## Categories

EC	Erosion Control	
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

## Legend:

- Primary Category**
- Secondary Category**

## Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	<input checked="" type="checkbox"/>
Metals	
Bacteria	
Oil and Grease	
Organics	

## Potential Alternatives

- SE-1 Silt Fence
- SE-5 Fiber Rolls
- SE-6 Gravel Bag Berm
- SE-8 Sandbag Barrier
- SE-14 Biofilter Bags
- SE-13 Compost Socks and Berms

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other onsite sediment trapping techniques in conjunction with inlet protection.

- Frequent maintenance is required.
- Limit drainage area to 1 acre maximum. For drainage areas larger than 1 acre, runoff should be routed to a sediment-trapping device designed for larger flows. See BMPs SE-2, Sediment Basin, and SE-3, Sediment Traps.
- Excavated drop inlet sediment traps are appropriate where relatively heavy flows are expected, and overflow capability is needed.

## Implementation

### *General*

Inlet control measures presented in this handbook should not be used for inlets draining more than one acre. Runoff from larger disturbed areas should be first routed through SE-2, Sediment Basin or SE-3, Sediment Trap and/or used in conjunction with other drainage control, erosion control, and sediment control BMPs to protect the site. Different types of inlet protection are appropriate for different applications depending on site conditions and the type of inlet. Alternative methods are available in addition to the methods described/shown herein such as prefabricated inlet insert devices, or gutter protection devices.

### *Design and Layout*

Identify existing and planned storm drain inlets that have the potential to receive sediment-laden surface runoff. Determine if storm drain inlet protection is needed and which method to use.

- The key to successful and safe use of storm drain inlet protection devices is to know where runoff that is directed toward the inlet to be protected will pond or be diverted as a result of installing the protection device.
  - Determine the acceptable location and extent of ponding in the vicinity of the drain inlet. The acceptable location and extent of ponding will influence the type and design of the storm drain inlet protection device.
  - Determine the extent of potential runoff diversion caused by the storm drain inlet protection device. Runoff ponded by inlet protection devices may flow around the device and towards the next downstream inlet. In some cases, this is acceptable; in other cases, serious erosion or downstream property damage can be caused by these diversions. The possibility of runoff diversions will influence whether or not storm drain inlet protection is suitable; and, if suitable, the type and design of the device.
- The location and extent of ponding, and the extent of diversion, can usually be controlled through appropriate placement of the inlet protection device. In some cases, moving the inlet protection device a short distance upstream of the actual inlet can provide more efficient sediment control, limit ponding to desired areas, and prevent or control diversions.
- Seven types of inlet protection are presented below. However, it is recognized that other effective methods and proprietary devices exist and may be selected.

- Silt Fence: Appropriate for drainage basins with less than a 5% slope, sheet flows, and flows under 0.5 cfs.
  - Excavated Drop Inlet Sediment Trap: An excavated area around the inlet to trap sediment (SE-3).
  - Gravel bag barrier: Used to create a small sediment trap upstream of inlets on sloped, paved streets. Appropriate for sheet flow or when concentrated flow may exceed 0.5 cfs, and where overtopping is required to prevent flooding.
  - Block and Gravel Filter: Appropriate for flows greater than 0.5 cfs.
  - Temporary Geotextile Storm drain Inserts: Different products provide different features. Refer to manufacturer details for targeted pollutants and additional features.
  - Biofilter Bag Barrier: Used to create a small retention area upstream of inlets and can be located on pavement or soil. Biofilter bags slowly filter runoff allowing sediment to settle out. Appropriate for flows under 0.5 cfs.
  - Compost Socks: Allow filtered run-off to pass through the compost while retaining sediment and potentially other pollutants (SE-13). Appropriate for flows under 1.0 cfs.
- Select the appropriate type of inlet protection and design as referred to or as described in this fact sheet.
  - Provide area around the inlet for water to pond without flooding structures and property.
  - Grates and spaces around all inlets should be sealed to prevent seepage of sediment-laden water.
  - Excavate sediment sumps (where needed) 1 to 2 ft with 2:1 side slopes around the inlet.

## **Installation**

- **DI Protection Type 1 - Silt Fence** - Similar to constructing a silt fence; see BMP SE-1, Silt Fence. Do not place fabric underneath the inlet grate since the collected sediment may fall into the drain inlet when the fabric is removed or replaced and water flow through the grate will be blocked resulting in flooding. See typical Type 1 installation details at the end of this fact sheet.
  1. Excavate a trench approximately 6 in. wide and 6 in. deep along the line of the silt fence inlet protection device.
  2. Place 2 in. by 2 in. wooden stakes around the perimeter of the inlet a maximum of 3 ft apart and drive them at least 18 in. into the ground or 12 in. below the bottom of the trench. The stakes should be at least 48 in.
  3. Lay fabric along bottom of trench, up side of trench, and then up stakes. See SE-1, Silt Fence, for details. The maximum silt fence height around the inlet is 24 in.
  4. Staple the filter fabric (for materials and specifications, see SE-1, Silt Fence) to wooden stakes. Use heavy-duty wire staples at least 1 in. in length.

5. Backfill the trench with gravel or compacted earth all the way around.
- **DI Protection Type 2 - Excavated Drop Inlet Sediment Trap** - Install filter fabric fence in accordance with DI Protection Type 1. Size excavated trap to provide a minimum storage capacity calculated at the rate 67 yd<sup>3</sup>/acre of drainage area. See typical Type 2 installation details at the end of this fact sheet.
  - **DI Protection Type 3 - Gravel bag** - Flow from a severe storm should not overtop the curb. In areas of high clay and silts, use filter fabric and gravel as additional filter media. Construct gravel bags in accordance with SE-6, Gravel Bag Berm. Gravel bags should be used due to their high permeability. See typical Type 3 installation details at the end of this fact sheet.
    1. Construct on gently sloping street.
    2. Leave room upstream of barrier for water to pond and sediment to settle.
    3. Place several layers of gravel bags – overlapping the bags and packing them tightly together.
    4. Leave gap of one bag on the top row to serve as a spillway. Flow from a severe storm (e.g., 10 year storm) should not overtop the curb.
  - **DI Protection Type 4 – Block and Gravel Filter** - Block and gravel filters are suitable for curb inlets commonly used in residential, commercial, and industrial construction. See typical Type 4 installation details at the end of this fact sheet.
    1. Place hardware cloth or comparable wire mesh with 0.5 in. openings over the drop inlet so that the wire extends a minimum of 1 ft beyond each side of the inlet structure. If more than one strip is necessary, overlap the strips. Place woven geotextile over the wire mesh.
    2. Place concrete blocks lengthwise on their sides in a single row around the perimeter of the inlet, so that the open ends face outward, not upward. The ends of adjacent blocks should abut. The height of the barrier can be varied, depending on design needs, by stacking combinations of blocks that are 4 in., 8 in., and 12 in. wide. The row of blocks should be at least 12 in. but no greater than 24 in. high.
    3. Place wire mesh over the outside vertical face (open end) of the concrete blocks to prevent stone from being washed through the blocks. Use hardware cloth or comparable wire mesh with 0.5 in. opening.
    4. Pile washed stone against the wire mesh to the top of the blocks. Use 0.75 to 3 in.
  - **DI Protection Type 5 – Temporary Geotextile Insert (proprietary)** – Many types of temporary inserts are available. Most inserts fit underneath the grate of a drop inlet or inside of a curb inlet and are fastened to the outside of the grate or curb. These inserts are removable and many can be cleaned and reused. Installation of these inserts differs between manufacturers. Please refer to manufacturer instruction for installation of proprietary devices.

- **DI Protection Type 6 - Biofilter bags** – Biofilter bags may be used as a substitute for gravel bags in low-flow situations. Biofilter bags should conform to specifications detailed in SE-14, Biofilter bags.
  1. Construct in a gently sloping area.
  2. Biofilter bags should be placed around inlets to intercept runoff flows.
  3. All bag joints should overlap by 6 in.
  4. Leave room upstream for water to pond and for sediment to settle out.
  5. Stake bags to the ground as described in the following detail. Stakes may be omitted if bags are placed on a paved surface.
- **DI Protection Type 7 – Compost Socks** – A compost sock can be assembled on site by filling a mesh sock (e.g., with a pneumatic blower). Compost socks do not require special trenching compared to other sediment control methods (e.g., silt fence). Compost socks should conform to specification detailed in SE-13, Compost Socks and Berms.

## Costs

- Average annual cost for installation and maintenance of DI Type 1-4 and 6 (one year useful life) is \$200 per inlet.
- Temporary geotextile inserts are proprietary and cost varies by region. These inserts can often be reused and may have greater than 1 year of use if maintained and kept undamaged. Average cost per insert ranges from \$50-75 plus installation, but costs can exceed \$100. This cost does not include maintenance.
- See SE-13 for Compost Sock cost information.

## Inspection and Maintenance

- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Silt Fences. If the fabric becomes clogged, torn, or degrades, it should be replaced. Make sure the stakes are securely driven in the ground and are in good shape (i.e., not bent, cracked, or splintered, and are reasonably perpendicular to the ground). Replace damaged stakes. At a minimum, remove the sediment behind the fabric fence when accumulation reaches one-third the height of the fence or barrier height.
- Gravel Filters. If the gravel becomes clogged with sediment, it should be carefully removed from the inlet and either cleaned or replaced. Since cleaning gravel at a construction site may be difficult, consider using the sediment-laden stone as fill material and put fresh stone around the inlet. Inspect bags for holes, gashes, and snags, and replace bags as needed. Check gravel bags for proper arrangement and displacement.

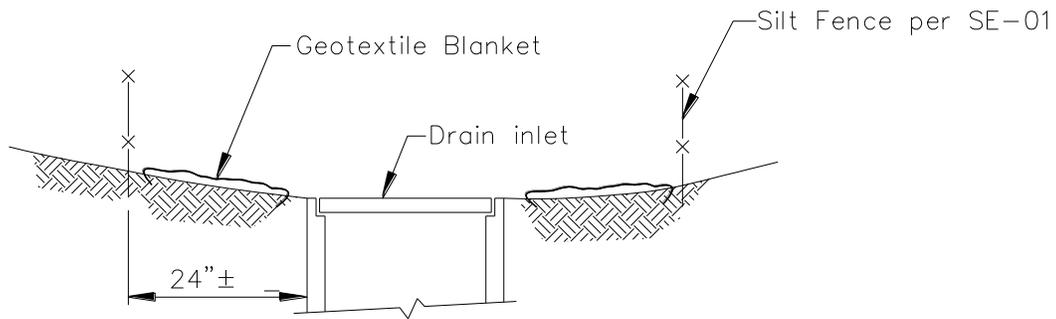
- Sediment that accumulates in the BMP should be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height.
- Inspect and maintain temporary geotextile insert devices according to manufacturer's specifications.
- Remove storm drain inlet protection once the drainage area is stabilized.
  - Clean and regrade area around the inlet and clean the inside of the storm drain inlet, as it should be free of sediment and debris at the time of final inspection.

## References

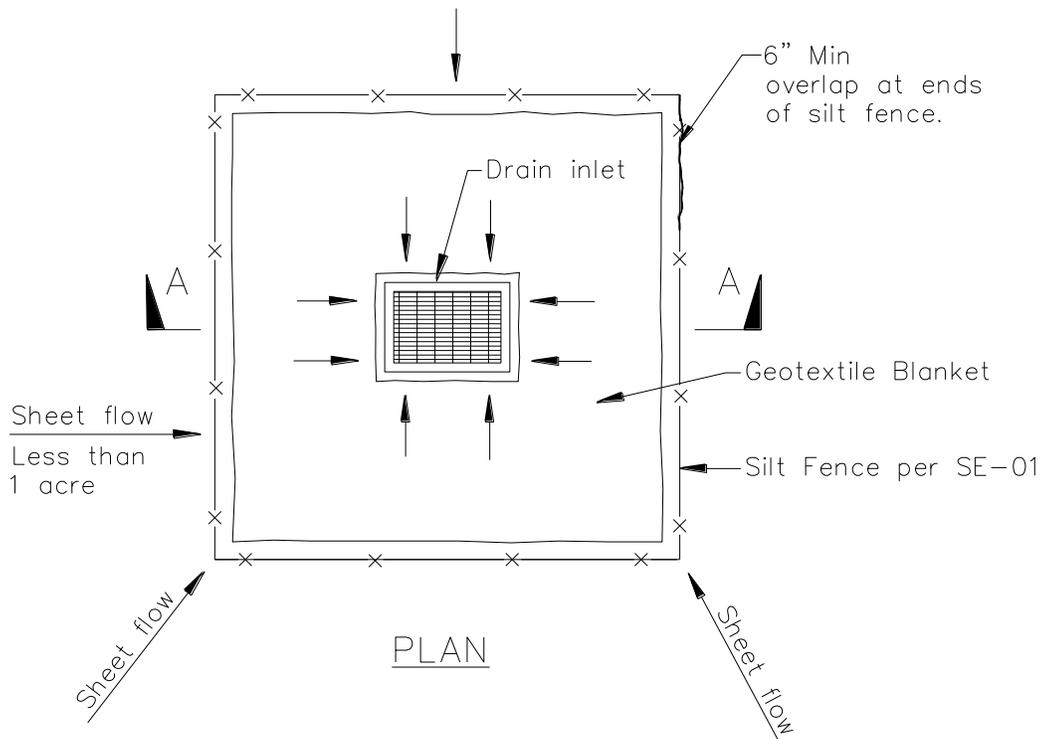
Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

Stormwater Management Manual for The Puget Sound Basin, Washington State Department of Ecology, Public Review Draft, 1991.

Erosion and Sediment Control Manual, Oregon Department of Environmental Quality, February 2005.



SECTION A-A

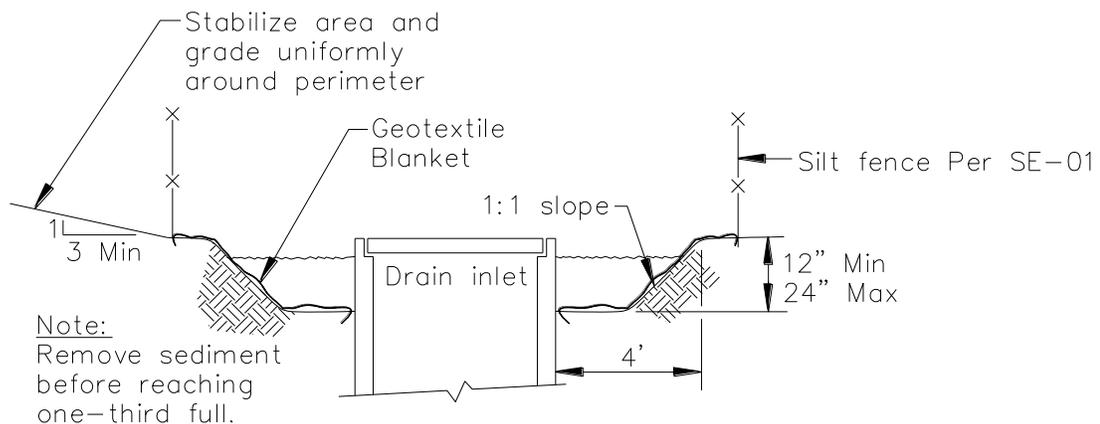


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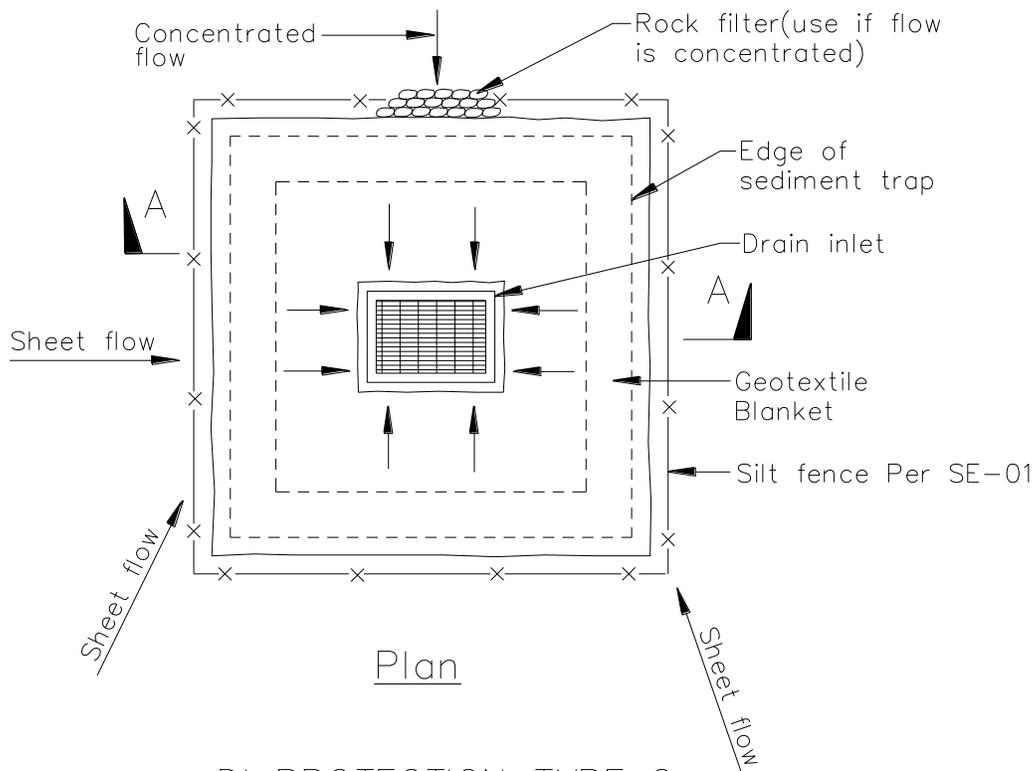
DI PROTECTION TYPE 1  
NOT TO SCALE

NOTES:

1. For use in areas where grading has been completed and final soil stabilization and seeding are pending.
2. Not applicable in paved areas.
3. Not applicable with concentrated flows.



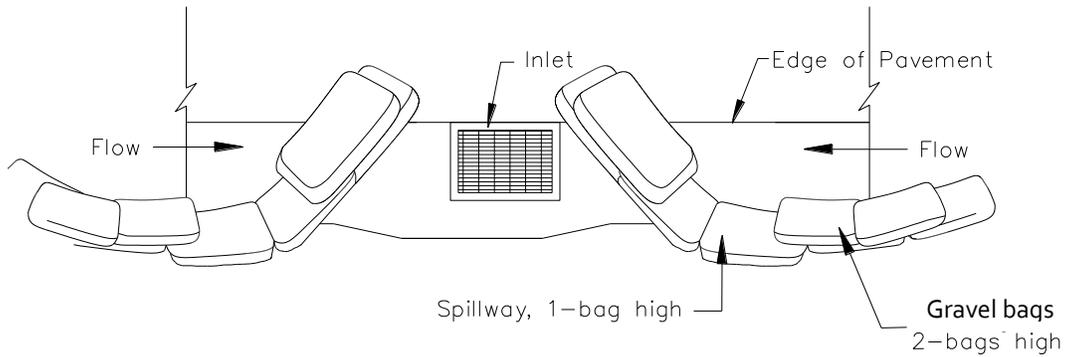
Section A-A



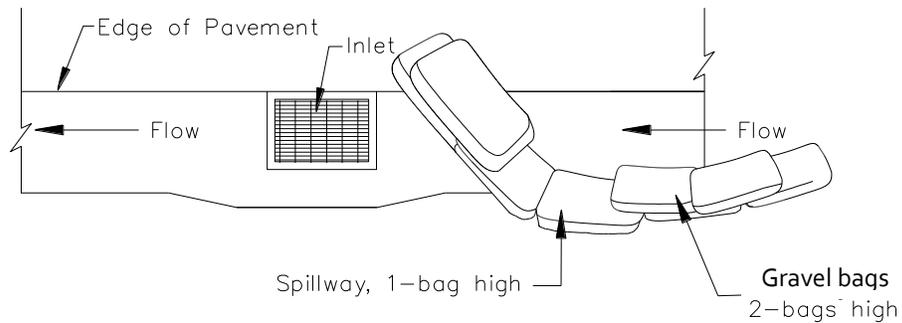
DI PROTECTION TYPE 2  
NOT TO SCALE

### Notes

1. For use in cleared and grubbed and in graded areas.
2. Shape basin so that longest inflow area faces longest length of trap.
3. For concentrated flows, shape basin in 2:1 ratio with length oriented towards direction of flow.



TYPICAL PROTECTION FOR INLET ON SUMP

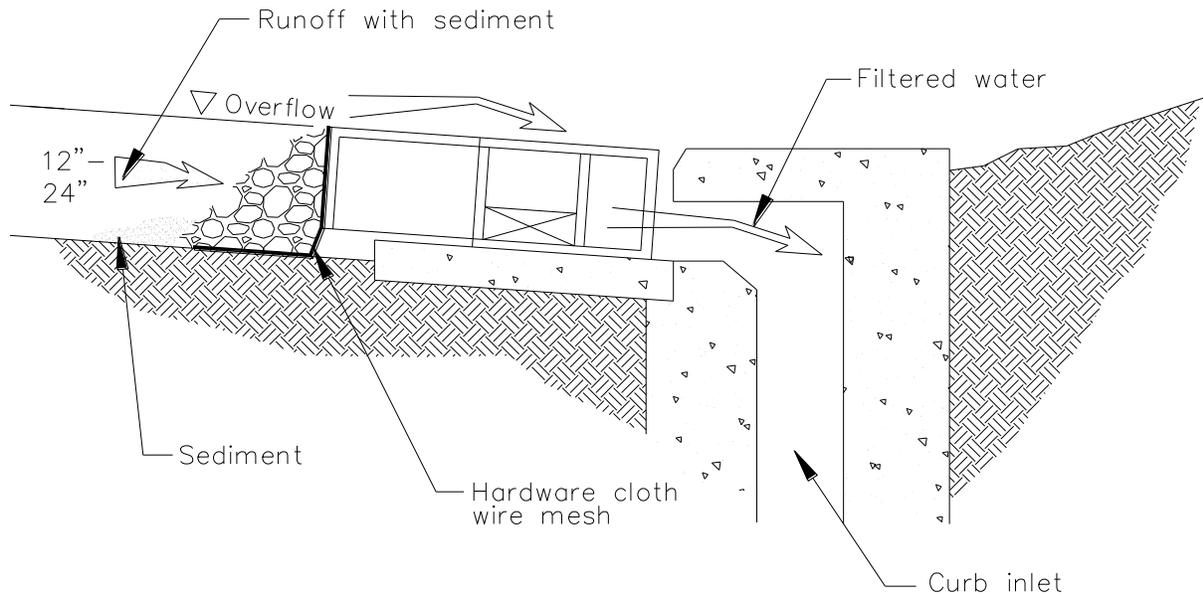
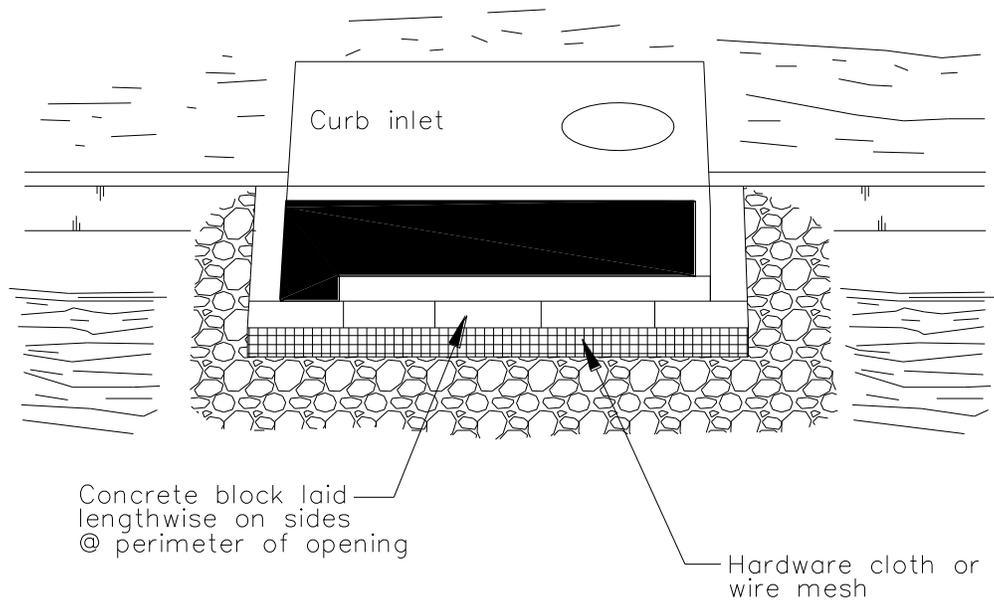


TYPICAL PROTECTION FOR INLET ON GRADE

NOTES:

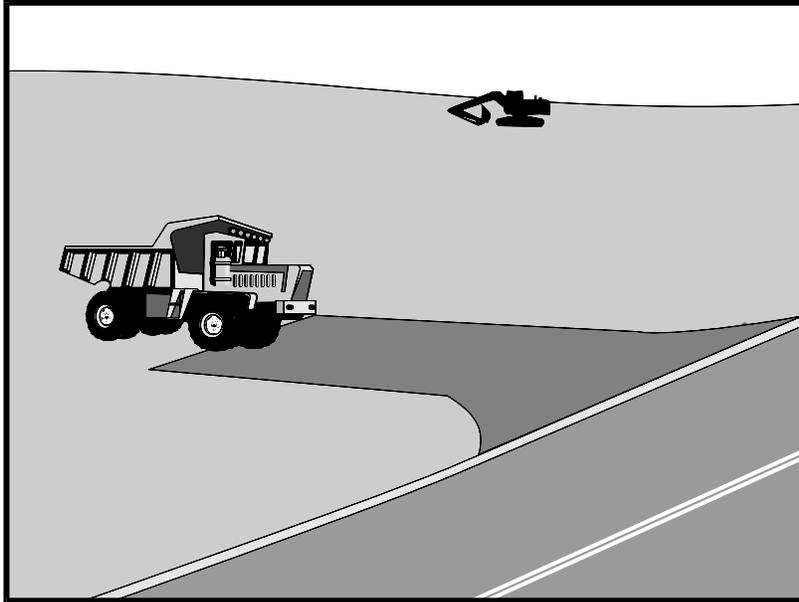
1. Intended for short-term use.
2. Use to inhibit non-storm water flow.
3. Allow for proper maintenance and cleanup.
4. Bags must be removed after adjacent operation is completed
5. Not applicable in areas with high silts and clays without filter fabric.
6. Protection can be effective even if it is not immediately adjacent to the inlet provided that the inlet is protected from potential sources of pollution.

DI PROTECTION TYPE 3  
NOT TO SCALE



DI PROTECTION — TYPE 4  
NOT TO SCALE

# Stabilized Construction Entrance/Exit TC-1



## Description and Purpose

A stabilized construction access is defined by a point of entrance/exit to a construction site that is stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles.

## Suitable Applications

Use at construction sites:

- Where dirt or mud can be tracked onto public roads.
- Adjacent to water bodies.
- Where poor soils are encountered.
- Where dust is a problem during dry weather conditions.

## Limitations

- Entrances and exits require periodic top dressing with additional stones.
- This BMP should be used in conjunction with street sweeping on adjacent public right of way.
- Entrances and exits should be constructed on level ground only.
- Stabilized construction entrances are rather expensive to construct and when a wash rack is included, a sediment trap of some kind must also be provided to collect wash water runoff.

## Categories

EC	Erosion Control	<input checked="" type="checkbox"/>
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	<input checked="" type="checkbox"/>
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

## Legend:

- Primary Objective
- Secondary Objective

## Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

## Potential Alternatives

None

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# Stabilized Construction Entrance/Exit TC-1

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## Implementation

### **General**

A stabilized construction entrance is a pad of aggregate underlain with filter cloth located at any point where traffic will be entering or leaving a construction site to or from a public right of way, street, alley, sidewalk, or parking area. The purpose of a stabilized construction entrance is to reduce or eliminate the tracking of sediment onto public rights of way or streets. Reducing tracking of sediments and other pollutants onto paved roads helps prevent deposition of sediments into local storm drains and production of airborne dust.

Where traffic will be entering or leaving the construction site, a stabilized construction entrance should be used. NPDES permits require that appropriate measures be implemented to prevent tracking of sediments onto paved roadways, where a significant source of sediments is derived from mud and dirt carried out from unpaved roads and construction sites.

Stabilized construction entrances are moderately effective in removing sediment from equipment leaving a construction site. The entrance should be built on level ground. Advantages of the Stabilized Construction Entrance/Exit is that it does remove some sediment from equipment and serves to channel construction traffic in and out of the site at specified locations. Efficiency is greatly increased when a washing rack is included as part of a stabilized construction entrance/exit.

### **Design and Layout**

- Construct on level ground where possible.
- Select 3 to 6 in. diameter stones.
- Use minimum depth of stones of 12 in. or as recommended by soils engineer.
- Construct length of 50 ft or maximum site will allow, and 10 ft minimum width or to accommodate traffic.
- Rumble racks constructed of steel panels with ridges and installed in the stabilized entrance/exit will help remove additional sediment and to keep adjacent streets clean.
- Provide ample turning radii as part of the entrance.
- Limit the points of entrance/exit to the construction site.
- Limit speed of vehicles to control dust.
- Properly grade each construction entrance/exit to prevent runoff from leaving the construction site.
- Route runoff from stabilized entrances/exits through a sediment trapping device before discharge.
- Design stabilized entrance/exit to support heaviest vehicles and equipment that will use it.

# Stabilized Construction Entrance/Exit TC-1

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- Select construction access stabilization (aggregate, asphaltic concrete, concrete) based on longevity, required performance, and site conditions. Do not use asphalt concrete (AC) grindings for stabilized construction access/roadway.
- If aggregate is selected, place crushed aggregate over geotextile fabric to at least 12 in. depth, or place aggregate to a depth recommended by a geotechnical engineer. A crushed aggregate greater than 3 in. but smaller than 6 in. should be used.
- Designate combination or single purpose entrances and exits to the construction site.
- Require that all employees, subcontractors, and suppliers utilize the stabilized construction access.
- Implement SE-7, Street Sweeping and Vacuuming, as needed.
- All exit locations intended to be used for more than a two-week period should have stabilized construction entrance/exit BMPs.

## Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMPs are under way, inspect BMPs in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Inspect local roads adjacent to the site daily. Sweep or vacuum to remove visible accumulated sediment.
- Remove aggregate, separate and dispose of sediment if construction entrance/exit is clogged with sediment.
- Keep all temporary roadway ditches clear.
- Check for damage and repair as needed.
- Replace gravel material when surface voids are visible.
- Remove all sediment deposited on paved roadways within 24 hours.
- Remove gravel and filter fabric at completion of construction

## Costs

Average annual cost for installation and maintenance may vary from \$1,200 to \$4,800 each, averaging \$2,400 per entrance. Costs will increase with addition of washing rack, and sediment trap. With wash rack, costs range from \$1,200 - \$6,000 each, averaging \$3,600 per entrance.

## References

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

# **Stabilized Construction Entrance/Exit TC-1**

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National Management Measures to Control Nonpoint Source Pollution from Urban Areas, USEPA Agency, 2002.

Proposed Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, Work Group Working Paper, USEPA, April 1992.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

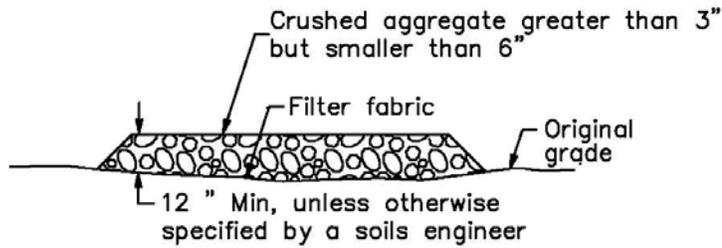
Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Virginia Erosion and Sedimentation Control Handbook, Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation, 1991.

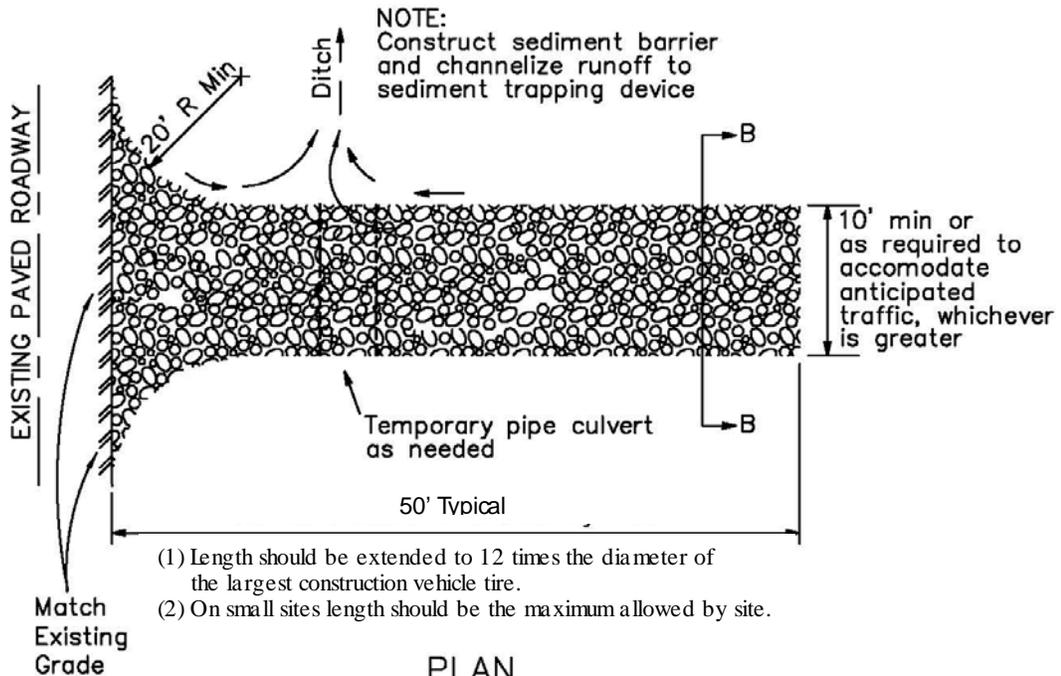
Guidance Specifying Management Measures for Nonpoint Pollution in Coastal Waters, EPA 840-B-9-002, USEPA, Office of Water, Washington, DC, 1993.

Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

# Stabilized Construction Entrance/Exit TC-1

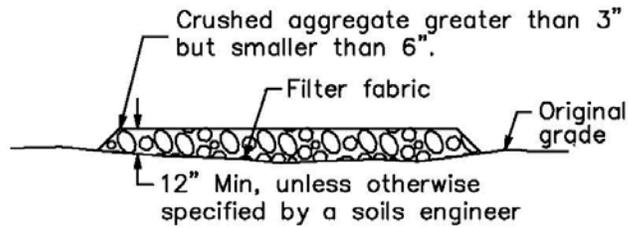


SECTION B-B  
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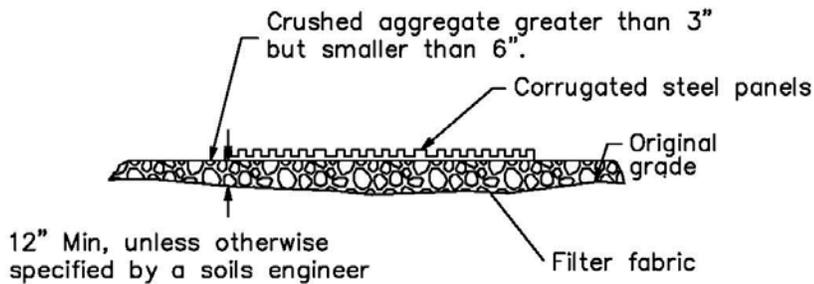


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# Stabilized Construction Entrance/Exit TC-1

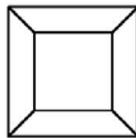


**SECTION B-B**  
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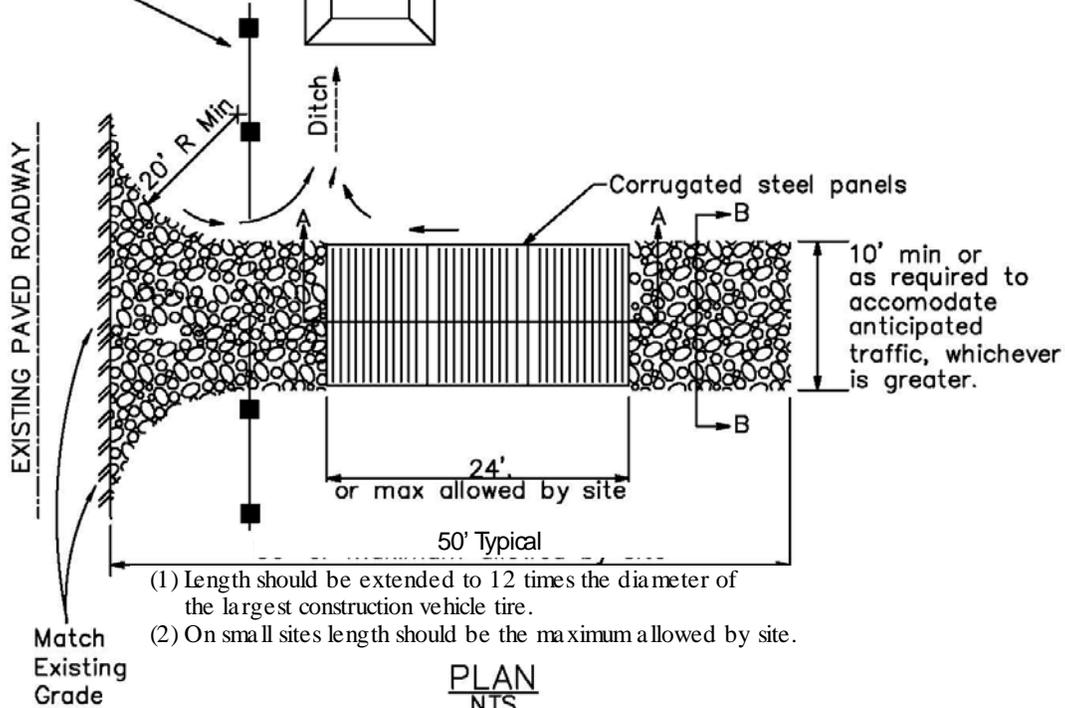


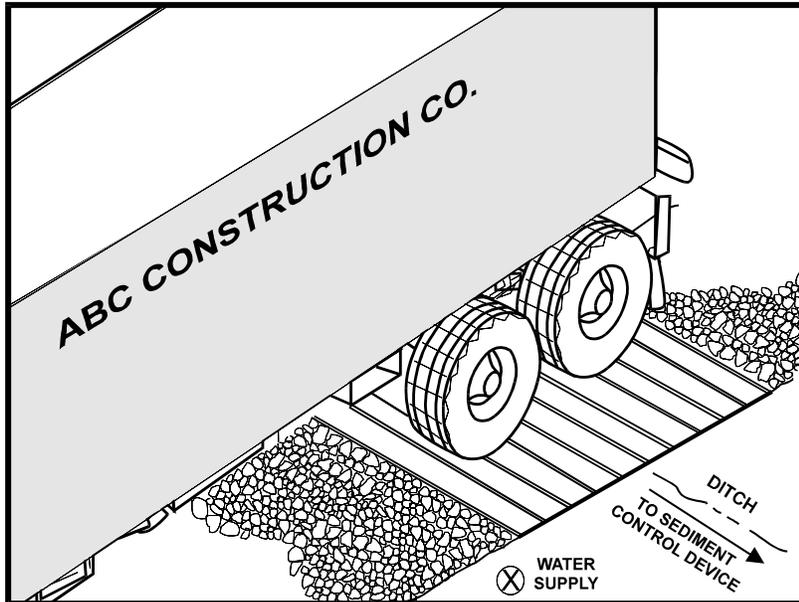
**SECTION A-A**  
NOT TO SCALE

NOTE:  
Construct sediment barrier and channelize runoff to sediment trapping device



Sediment trapping device





## Description and Purpose

A tire wash is an area located at stabilized construction access points to remove sediment from tires and undercarriages and to prevent sediment from being transported onto public roadways.

## Suitable Applications

Tire washes may be used on construction sites where dirt and mud tracking onto public roads by construction vehicles may occur.

## Limitations

- The tire wash requires a supply of wash water.
- A turnout or doublewide exit is required to avoid having entering vehicles drive through the wash area.
- Do not use where wet tire trucks leaving the site leave the road dangerously slick.

## Implementation

- Incorporate with a stabilized construction entrance/exit. See TC-1, Stabilized Construction Entrance/Exit.
- Construct on level ground when possible, on a pad of coarse aggregate greater than 3 in. but smaller than 6 in. A geotextile fabric should be placed below the aggregate.
- Wash rack should be designed and constructed/manufactured for anticipated traffic loads.

## Categories

EC	Erosion Control	
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	<input checked="" type="checkbox"/>
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

## Legend:

- Primary Objective
- Secondary Objective

## Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

## Potential Alternatives

TC-1 Stabilized Construction Entrance/Exit

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- Provide a drainage ditch that will convey the runoff from the wash area to a sediment trapping device. The drainage ditch should be of sufficient grade, width, and depth to carry the wash runoff.
- Use hoses with automatic shutoff nozzles to prevent hoses from being left on.
- Require that all employees, subcontractors, and others that leave the site with mud caked tires and undercarriages to use the wash facility.
- Implement SC-7, Street Sweeping and Vacuuming, as needed.

## Costs

Costs are low for installation of wash rack.

## Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect BMPs in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Inspect BMPs subject to non-stormwater discharge daily while non-stormwater discharges occur.
- Remove accumulated sediment in wash rack and/or sediment trap to maintain system performance.
- Inspect routinely for damage and repair as needed.

## References

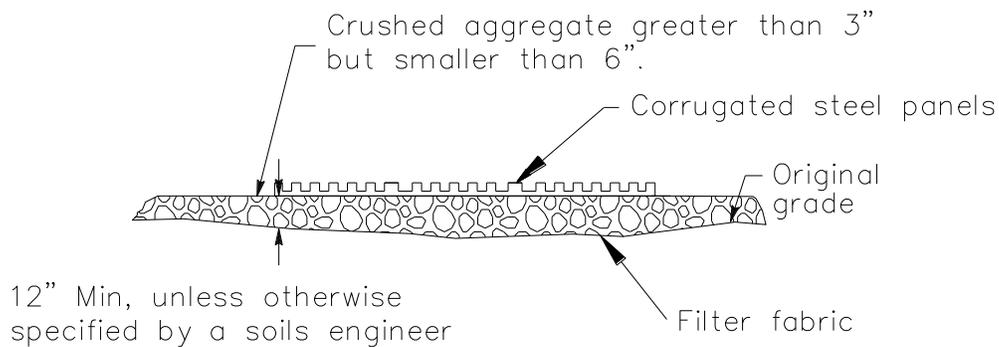
Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Coastal Nonpoint Pollution Control Program; Program Development and Approval Guidance, Working Group, Working Paper; USEPA, April 1992.

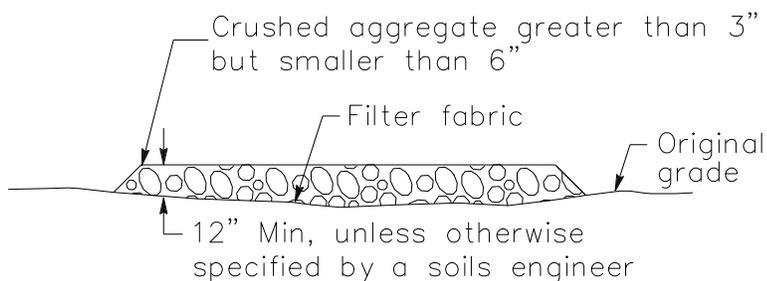
Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

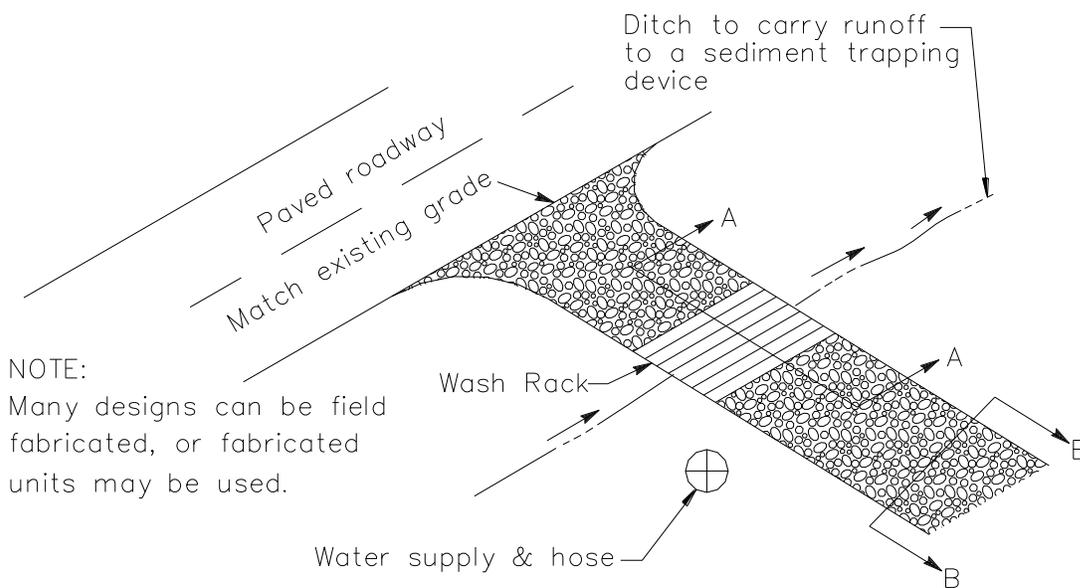
Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.



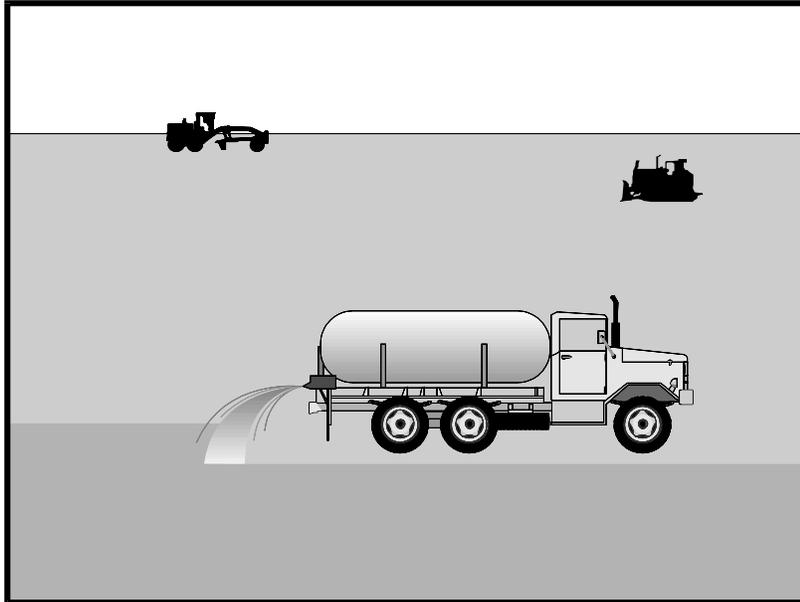
SECTION A-A  
NOT TO SCALE



SECTION B-B  
NTS



TYPICAL TIRE WASH  
NOT TO SCALE



## Description and Purpose

Wind erosion or dust control consists of applying water or other chemical dust suppressants as necessary to prevent or alleviate dust nuisance generated by construction activities. Covering small stockpiles or areas is an alternative to applying water or other dust palliatives.

California’s Mediterranean climate, with a short “wet” season and a typically long, hot “dry” season, allows the soils to thoroughly dry out. During the dry season, construction activities are at their peak, and disturbed and exposed areas are increasingly subject to wind erosion, sediment tracking and dust generated by construction equipment. Site conditions and climate can make dust control more of an erosion problem than water based erosion. Additionally, many local agencies, including Air Quality Management Districts, require dust control and/or dust control permits in order to comply with local nuisance laws, opacity laws (visibility impairment) and the requirements of the Clean Air Act. Wind erosion control is required to be implemented at all construction sites greater than 1 acre by the General Permit.

## Suitable Applications

Most BMPs that provide protection against water-based erosion will also protect against wind-based erosion and dust control requirements required by other agencies will generally meet wind erosion control requirements for water quality protection. Wind erosion control BMPs are suitable during the following construction activities:

## Categories

EC	Erosion Control	
SE	Sediment Control	<input checked="" type="checkbox"/>
TC	Tracking Control	
WE	Wind Erosion Control	<input checked="" type="checkbox"/>
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

## Legend:

- Primary Category
- Secondary Category

## Targeted Constituents

Sediment	<input checked="" type="checkbox"/>
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

## Potential Alternatives

EC-5 Soil Binders

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- Construction vehicle traffic on unpaved roads
- Drilling and blasting activities
- Soils and debris storage piles
- Batch drop from front-end loaders
- Areas with unstabilized soil
- Final grading/site stabilization

## Limitations

- Watering prevents dust only for a short period (generally less than a few hours) and should be applied daily (or more often) to be effective.
- Over watering may cause erosion and track-out.
- Oil or oil-treated subgrade should not be used for dust control because the oil may migrate into drainageways and/or seep into the soil.
- Chemical dust suppression agents may have potential environmental impacts. Selected chemical dust control agents should be environmentally benign.
- Effectiveness of controls depends on soil, temperature, humidity, wind velocity and traffic.
- Chemical dust suppression agents should not be used within 100 feet of wetlands or water bodies.
- Chemically treated subgrades may make the soil water repellent, interfering with long-term infiltration and the vegetation/re-vegetation of the site. Some chemical dust suppressants may be subject to freezing and may contain solvents and should be handled properly.
- In compacted areas, watering and other liquid dust control measures may wash sediment or other constituents into the drainage system.
- If the soil surface has minimal natural moisture, the affected area may need to be pre-wetted so that chemical dust control agents can uniformly penetrate the soil surface.

## Implementation

### ***Dust Control Practices***

Dust control BMPs generally stabilize exposed surfaces and minimize activities that suspend or track dust particles. The following table presents dust control practices that can be applied to varying site conditions that could potentially cause dust. For heavily traveled and disturbed areas, wet suppression (watering), chemical dust suppression, gravel asphalt surfacing, temporary gravel construction entrances, equipment wash-out areas, and haul truck covers can be employed as dust control applications. Permanent or temporary vegetation and mulching can be employed for areas of occasional or no construction traffic. Preventive measures include minimizing surface areas to be disturbed, limiting onsite vehicle traffic to 15 mph or less, and controlling the number and activity of vehicles on a site at any given time.

Chemical dust suppressants include: mulch and fiber based dust palliatives (e.g. paper mulch with gypsum binder), salts and brines (e.g. calcium chloride, magnesium chloride), non-petroleum based organics (e.g. vegetable oil, lignosulfonate), petroleum based organics (e.g. asphalt emulsion, dust oils, petroleum resins), synthetic polymers (e.g. polyvinyl acetate, vinyls, acrylic), clay additives (e.g. bentonite, montmorillonite) and electrochemical products (e.g. enzymes, ionic products).

Site Condition	Dust Control Practices							
	Permanent Vegetation	Mulching	Wet Suppression (Watering)	Chemical Dust Suppression	Gravel or Asphalt	Temporary Gravel Construction Entrances/Equipment Wash Down	Synthetic Covers	Minimize Extent of Disturbed Area
Disturbed Areas not Subject to Traffic	X	X	X	X	X			X
Disturbed Areas Subject to Traffic			X	X	X	X		X
Material Stockpiles		X	X	X			X	X
Demolition			X			X	X	
Clearing/Excavation			X	X				X
Truck Traffic on Unpaved Roads			X	X	X	X	X	
Tracking					X	X		

Additional preventive measures include:

- Schedule construction activities to minimize exposed area (see EC-1, Scheduling).
- Quickly treat exposed soils using water, mulching, chemical dust suppressants, or stone/gravel layering.
- Identify and stabilize key access points prior to commencement of construction.
- Minimize the impact of dust by anticipating the direction of prevailing winds.
- Restrict construction traffic to stabilized roadways within the project site, as practicable.
- Water should be applied by means of pressure-type distributors or pipelines equipped with a spray system or hoses and nozzles that will ensure even distribution.
- All distribution equipment should be equipped with a positive means of shutoff.
- Unless water is applied by means of pipelines, at least one mobile unit should be available at all times to apply water or dust palliative to the project.
- If reclaimed waste water is used, the sources and discharge must meet California Department of Health Services water reclamation criteria and the Regional Water Quality

Control Board (RWQCB) requirements. Non-potable water should not be conveyed in tanks or drain pipes that will be used to convey potable water and there should be no connection between potable and non-potable supplies. Non-potable tanks, pipes, and other conveyances should be marked, "NON-POTABLE WATER - DO NOT DRINK."

- Pave or chemically stabilize access points where unpaved traffic surfaces adjoin paved roads.
- Provide covers for haul trucks transporting materials that contribute to dust.
- Provide for rapid clean up of sediments deposited on paved roads. Furnish stabilized construction road entrances and wheel wash areas.
- Stabilize inactive areas of construction sites using temporary vegetation or chemical stabilization methods.

For chemical stabilization, there are many products available for chemically stabilizing gravel roadways and stockpiles. If chemical stabilization is used, the chemicals should not create any adverse effects on stormwater, plant life, or groundwater and should meet all applicable regulatory requirements.

## Costs

Installation costs for water and chemical dust suppression vary based on the method used and the length of effectiveness. Annual costs may be high since some of these measures are effective for only a few hours to a few days.

## Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities.
- BMPs must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- Check areas protected to ensure coverage.
- Most water-based dust control measures require frequent application, often daily or even multiple times per day. Obtain vendor or independent information on longevity of chemical dust suppressants.

## References

Best Management Practices and Erosion Control Manual for Construction Sites, Flood Control District of Maricopa County, Arizona, September 1992.

California Air Pollution Control Laws, California Air Resources Board, updated annually.

Construction Manual, Chapter 4, Section 10, "Dust Control"; Section 17, "Watering"; and Section 18, "Dust Palliative", California Department of Transportation (Caltrans), July 2001.

Prospects for Attaining the State Ambient Air Quality Standards for Suspended Particulate Matter (PM10), Visibility Reducing Particles, Sulfates, Lead, and Hydrogen Sulfide, California Air Resources Board, April 1991.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

*Appendix J: BMP Inspection Form*

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## INSTRUCTIONS

- *Identify Risk Level, for Risk Level 2 or 3 include highlighted text*

## BMP INSPECTION REPORT

Date and Time of Inspection:		Date Report Written:		
Inspection Type: (Circle one)	Weekly <i>Complete Parts I, II, III and VII</i>	Pre-Storm <i>Complete Parts I, II, III, IV and VII</i>	During Rain Event <i>Complete Parts I, II, III, V, and VII</i>	Post-Storm <i>Complete Parts I, II, III, VI and VII</i>
<b>Part I. General Information</b>				
<b>Site Information</b>				
Construction Site Name:				
Construction stage and completed activities:			Approximate area of site that is exposed:	
Photos Taken: (Circle one)	Yes	No	Photo Reference IDs:	
<b>Weather</b>				
Estimate storm beginning: (date and time)		Estimate storm duration: (hours)		
Estimate time since last storm: (days or hours)		Rain gauge reading and location: (in)		
Is a "Qualifying Event" predicted or did one occur (i.e., 0.5" rain with 48-hrs or greater between events)? (Y/N) If yes, summarize forecast:				
Exemption Documentation (explanation required if inspection could not be conducted). Visual inspections are not required outside of business hours or during dangerous weather conditions such as flooding or electrical storms.				
<b>Inspector Information</b>				
Inspector Name:			Inspector Title:	
Signature:			Date:	

<b>Part II. BMP Observations. Describe deficiencies in Part III.</b>			
<b>Minimum BMPs for Risk Level _____ Sites</b>	<b>Failures or other short comings (yes, no, N/A)</b>	<b>Action Required (yes/no)</b>	<b>Action Implemented (Date)</b>
<b>Good Housekeeping for Construction Materials</b>			
Inventory of products (excluding materials designed to be outdoors)			
Stockpiled construction materials not actively in use are covered and bermed			
All chemicals are stored in watertight containers with appropriate secondary containment, or in a completely enclosed storage shed			
Construction materials are minimally exposed to precipitation			
BMPs preventing the off-site tracking of materials are implemented and properly effective			
<b>Good Housekeeping for Waste Management</b>			
Wash/rinse water and materials are prevented from being disposed into the storm drain system			
Portable toilets are contained to prevent discharges of waste			
Sanitation facilities are clean and with no apparent for leaks and spills			
Equipment is in place to cover waste disposal containers at the end of business day and during rain events			
Discharges from waste disposal containers are prevented from discharging to the storm drain system / receiving water			
Stockpiled waste material is securely protected from wind and rain if not actively in use			
Procedures are in place for addressing hazardous and non-hazardous spills			
Appropriate spill response personnel are assigned and trained			
Equipment and materials for cleanup of spills is available onsite			
Washout areas (e.g., concrete) are contained appropriately to prevent discharge or infiltration into the underlying soil			
<b>Good Housekeeping for Vehicle Storage and Maintenance</b>			
Measures are in place to prevent oil, grease, or fuel from leaking into the ground, storm drains, or surface waters			
All equipment or vehicles are fueled, maintained, and stored in a designated area with appropriate BMPs			
Vehicle and equipment leaks are cleaned immediately and disposed of properly			

<b>Part II. BMP Observations Continued. Describe deficiencies in Part III.</b>			
<b>Minimum BMPs for Risk Level _____ Sites</b>	<b>Adequately designed, implemented and effective (yes, no, N/A)</b>	<b>Action Required (yes/no)</b>	<b>Action Implemented (Date)</b>
<b>Good Housekeeping for Landscape Materials</b>			
Stockpiled landscape materials such as mulches and topsoil are contained and covered when not actively in use			
Erodible landscape material has not been applied 2 days before a forecasted rain event or during an event			
Erodible landscape materials are applied at quantities and rates in accordance with manufacturer recommendations			
Bagged erodible landscape materials are stored on pallets and covered			
<b>Good Housekeeping for Air Deposition of Site Materials</b>			
Good housekeeping measures are implemented onsite to control the air deposition of site materials and from site operations			
<b>Non-Stormwater Management</b>			
Non-Stormwater discharges are properly controlled			
Vehicles are washed in a manner to prevent non-stormwater discharges to surface waters or drainage systems			
Streets are cleaned in a manner to prevent unauthorized non-stormwater discharges to surface waters or drainage systems.			
<b>Erosion Controls</b>			
Wind erosion controls are effectively implemented			
Effective soil cover is provided for disturbed areas inactive (i.e., not scheduled to be disturbed for 14 days) as well as finished slopes, open space, utility backfill, and completed lots			
The use of plastic materials is limited in cases when a more sustainable, environmentally friendly alternative exists.			
<b>Sediment Controls</b>			
Perimeter controls are established and effective at controlling erosion and sediment discharges from the site			
Entrances and exits are stabilized to control erosion and sediment discharges from the site			
Sediment basins are properly maintained			
Linear sediment control along toe of slope, face of slope and at grade breaks (Risk Level 2 & 3 Only)			
Limit construction activity to and from site to entrances and exits that employ effective controls to prevent offsite tracking (Risk Level 2 & 3 Only)			

Ensure all storm, drain inlets and perimeter controls, runoff control BMPs and pollutants controls at entrances and exits are maintained and protected from activities the reduce their effectiveness (Risk Level 2 & 3 Only)			
Inspect all immediate access roads daily (Risk Level 2 & 3 Only)			
<b>Run-On and Run-Off Controls</b>			
Run-on to the site is effectively managed and directed away from all disturbed areas.			
<b>Other</b>			
Are the project SWPPP and BMP plan up to date, available on-site and being properly implemented?			

<b>Part III. Descriptions of BMP Deficiencies</b>		
Deficiency	Repairs Implemented: Note - Repairs must begin within 72 hours of identification and, complete repairs as soon as possible.	
	Start Date	Action
1.		
2.		
3.		
4.		

<b>Part IV. Additional Pre-Storm Observations. Note the presence or absence of floating and suspended materials, sheen, discoloration, turbidity, odors, and source(s) of pollutants(s).</b>	
	Yes, No, N/A
Do stormwater storage and containment areas have adequate freeboard? If no, complete Part III.	
Are drainage areas free of spills, leaks, or uncontrolled pollutant sources? If no, complete Part VII and describe below.	
Notes:	
Are stormwater storage and containment areas free of leaks? If no, complete Parts III and/or VII and describe below.	

Notes:

--	--

**Part V. Additional During Storm Observations. If BMPs cannot be inspected during inclement weather, list the results of visual inspections at all relevant outfalls, discharge points, and downstream locations. Note odors or visible sheen on the surface of discharges. Complete Part VII (Corrective Actions) as needed.**

Outfall, Discharge Point, or Other Downstream Location

Location	Description
Location	Description

**Part VI. Additional Post-Storm Observations.** Visually observe (inspect) stormwater discharges at all discharge locations within two business days (48 hours) after each qualifying rain event, and observe (inspect) the discharge of stored or contained stormwater that is derived from and discharged subsequent to a qualifying rain event producing precipitation of ½ inch or more at the time of discharge. Complete Part VII (Corrective Actions) as needed.

Discharge Location, Storage or Containment Area	Visual Observation

**Part VII. Additional Corrective Actions Required.** Identify additional corrective actions not included with BMP Deficiencies (Part III) above. Note if SWPPP change is required.

Required Actions	Implementation Date

## *Appendix K: Rain Event Action Plan*

---

(if required)

## INSTRUCTIONS

- *QSD should modify the CASQA REAP template for use by the QSP*
- *The QSP will modify the project specific template for each phase/rain event*
- *File REAPs completed by the QSP in this Appendix*

# Rain Event Action Plan (REAP)

<b>Date of REAP</b>		<b>WDID Number:</b>	
<b>Date Rain Predicted to Occur:</b>		<b>Predicted % chance of rain:</b>	

### Predicted Rain Event Triggered Actions

Below is a list of suggested actions and items to review for this project. Each active Trade should check all material storage areas, stockpiles, waste management areas, vehicle and equipment storage and maintenance, areas of active soil disturbance, and areas of active work to ensure the proper implementation of BMPs. Project-wide BMPs should be checked and cross-referenced to the BMP progress map.

Trade or Activity	Suggested action(s) to perform / item(s) to review prior to rain event
<input type="checkbox"/> Information & Scheduling	<input type="checkbox"/> Inform trade supervisors of predicted rain <input type="checkbox"/> Check scheduled activities and reschedule as needed <input type="checkbox"/> Alert erosion/sediment control provider <input type="checkbox"/> Alert sample collection contractor (if applicable) <input type="checkbox"/> Schedule staff for extended rain inspections (including weekends & holidays) <input type="checkbox"/> Check Erosion and Sediment Control (ESC) material stock <input type="checkbox"/> Review BMP progress map <input type="checkbox"/> Other: _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____
<input type="checkbox"/> Material storage areas	<input type="checkbox"/> Material under cover or in sheds (ex: treated woods and metals) <input type="checkbox"/> Perimeter control around stockpiles <input type="checkbox"/> Other: _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____
<input type="checkbox"/> Waste management areas	<input type="checkbox"/> Dumpsters closed <input type="checkbox"/> Drain holes plugged <input type="checkbox"/> Recycling bins covered <input type="checkbox"/> Sanitary stations bermed and protected from tipping <input type="checkbox"/> Other: _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____
<input type="checkbox"/> Trade operations	<input type="checkbox"/> Exterior operations shut down for event (e.g., no concrete pours or paving) <input type="checkbox"/> Soil treatments (e.g., fertilizer) ceased within 24 hours of event <input type="checkbox"/> Materials and equipment (ex: tools) properly stored and covered <input type="checkbox"/> Waste and debris disposed in covered dumpsters or removed from site <input type="checkbox"/> Trenches and excavations protected <input type="checkbox"/> Perimeter controls around disturbed areas <input type="checkbox"/> Fueling and repair areas covered and bermed <input type="checkbox"/> Other: _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____
<input type="checkbox"/> Site ESC BMPs	<input type="checkbox"/> Adequate capacity in sediment basins and traps <input type="checkbox"/> Site perimeter controls in place <input type="checkbox"/> Catch basin and drop inlet protection in place and cleaned <input type="checkbox"/> Temporary erosion controls deployed <input type="checkbox"/> Temporary perimeter controls deployed around disturbed areas and stockpiles <input type="checkbox"/> Roads swept; site ingress and egress points stabilized <input type="checkbox"/> Other: _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____
<input type="checkbox"/> Concrete rinse out area	<input type="checkbox"/> Adequate capacity for rain <input type="checkbox"/> Wash-out bins covered <input type="checkbox"/> Other: _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____
<input type="checkbox"/> Spill and drips	<input type="checkbox"/> All incident spills and drips, including paint, stucco, fuel, and oil cleaned <input type="checkbox"/> Drip pans emptied <input type="checkbox"/> Other: _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____

Continued on next page.

Other / Discussion /  
Diagrams

<input type="checkbox"/>	_____

**Attach a printout of the weather forecast from the NOAA website to the REAP.**

I certify under penalty of law that this Rain Event Action Plan (REAP) will be performed in accordance with the General Permit by me or under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Date: \_\_\_\_\_

Qualified SWPPP Practitioner (Use ink please)

## *Appendix L: Training Reporting Form*

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# Trained Contractor Personnel Log

## Stormwater Management Training Log and Documentation

Project Name: \_\_\_\_\_

WDID #: \_\_\_\_\_

Stormwater Management Topic: (check as appropriate)

- |  |   |
|--|---|
| <input type="checkbox"/> Erosion Control           | <input type="checkbox"/> Sediment Control                                 |
| <input type="checkbox"/> Wind Erosion Control      | <input type="checkbox"/> Tracking Control                                 |
| <input type="checkbox"/> Non-Stormwater Management | <input type="checkbox"/> Waste Management and Materials Pollution Control |
| <input type="checkbox"/> Stormwater Sampling       |   |

Specific Training Objective: \_\_\_\_\_

Location: \_\_\_\_\_

Date: \_\_\_\_\_

Instructor: \_\_\_\_\_

Telephone: \_\_\_\_\_

Course Length (hours): \_\_\_\_\_

### Attendee Roster (Attach additional forms if necessary)

Name	Company	Phone

As needed, add proof of external training (e.g., course completion certificates, credentials for QSP, QSD).

## *Appendix M: Responsible Parties*

---

**Authorization of Approved Signatories**

Project Name: \_\_\_\_\_

WDID #: \_\_\_\_\_

Name of Personnel	Project Role	Company	Signature	Date

\_\_\_\_\_  
LRP's Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
LRP Name and Title

\_\_\_\_\_  
Telephone Number

# Identification of QSP

Project Name: \_\_\_\_\_

WDID #: \_\_\_\_\_

The following are QSPs associated with this project

Name of Personnel <sup>(1)</sup>	Company	Date

(1) If additional QSPs are required on the job site add additional lines and include information here

**OPTIONAL**

## Authorization of Data Submitters

Project Name: \_\_\_\_\_

WDID #: \_\_\_\_\_

Name of Personnel	Project Role	Company	Signature	Date

\_\_\_\_\_  
Approved Signatory's Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Approved Signatory  
Name and Title

\_\_\_\_\_  
Telephone Number

## *Appendix N: Contractors and Subcontractors*

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*Appendix O: Construction General Permit*

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Linda S. Adams  
Secretary for  
Environmental Protection

# State Water Resources Control Board



Arnold Schwarzenegger  
Governor

## Division of Water Quality

1001 I Street • Sacramento, California 95814 • (916) 341-5455  
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Fax (916) 341-5463 • <http://www.waterboards.ca.gov>

### NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES

**ORDER NO. 2010-0014-DWQ  
NPDES NO. CAS000002**

Order No. 2009-0009-DWQ was adopted by the State Water Resources Control Board on:	<b>September 2, 2009</b>
Order No. 2009-0009-DWQ became effective on:	<b>July 1, 2010</b>
Order No. 2009-0009-DWQ shall expire on:	<b>September 2, 2014</b>
This Order, which amends Order No. 2009-0009-DWQ, was adopted by the State Water Resources Control Board on:	<b>November 16, 2010</b>
This Order shall become effective on:	<b>February 14, 2011</b>

IT IS HEREBY ORDERED that this Order amends Order No. 2009-0009-DWQ. Additions to Order No. 2009-0009-DWQ are reflected in [blue-underline](#) text and deletions are reflected in ~~red-strikeout~~ text.

IT IS FURTHER ORDERED that staff are directed to prepare and post a conformed copy of Order No. 2009-0009-DWQ incorporating the revisions made by this Order.

I, Jeanine Townsend, Clerk to the Board, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the State Water Resources Control Board, on **November 16, 2010**.

AYE: Chairman Charles R. Hoppin  
Vice Chair Frances Spivy-Weber  
Board Member Arthur G. Baggett, Jr.  
Board Member Tam M. Doduc

NAY: None

ABSENT: None

ABSTAIN: None

Jeanine Townsend  
Clerk to the Board

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## LIST OF ATTACHMENTS

Attachment A – Linear Underground/Overhead Requirements  
Attachment A.1 – LUP Type Determination  
Attachment A.2 – LUP Permit Registration Documents  
Attachment B – Permit Registration Documents  
Attachment C – Risk Level 1 Requirements  
Attachment D – Risk Level 2 Requirements  
Attachment E – Risk Level 3 Requirements  
Attachment F – Active Treatment System (ATS) Requirements

## LIST OF APPENDICES

Appendix 1 – Risk Determination Worksheet  
Appendix 2 – Post-Construction Water Balance Performance Standard  
Appendix 2.1 – Post-Construction Water Balance Performance Standard Spreadsheet  
Appendix 3 – Bioassessment Monitoring Guidelines  
Appendix 4 – Adopted/Implemented Sediment TMDLs  
Appendix 5 – Glossary  
Appendix 6 – Acronyms  
Appendix 7 – State and Regional Water Resources Control Board Contacts

**STATE WATER RESOURCES CONTROL BOARD  
ORDER NO. 2009-0009-DWQ  
[AS AMENDED BY ORDER NO. 2010-0014-DWQ]  
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM  
GENERAL PERMIT NO. CAS000002**

**WASTE DISCHARGE REQUIREMENTS  
FOR  
DISCHARGES OF STORM WATER RUNOFF ASSOCIATED WITH  
CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES**

**I. FINDINGS**

**A. General Findings**

The State Water Resources Control Board (State Water Board) finds that:

1. The federal Clean Water Act (CWA) prohibits certain discharges of storm water containing pollutants except in compliance with a National Pollutant Discharge Elimination System (NPDES) permit (Title 33 United States Code (U.S.C.) §§ 1311 and 1342(p); also referred to as Clean Water Act (CWA) §§ 301 and 402(p)). The U.S. Environmental Protection Agency (U.S. EPA) promulgates federal regulations to implement the CWA's mandate to control pollutants in storm water runoff discharges. (Title 40 Code of Federal Regulations (C.F.R.) Parts 122, 123, and 124). The federal statutes and regulations require discharges to surface waters comprised of storm water associated with construction activity, including demolition, clearing, grading, and excavation, and other land disturbance activities (except operations that result in disturbance of less than one acre of total land area and which are not part of a larger common plan of development or sale), to obtain coverage under an NPDES permit. The NPDES permit must require implementation of Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) to reduce or eliminate pollutants in storm water runoff. The NPDES permit must also include additional requirements necessary to implement applicable water quality standards.
2. This General Permit authorizes discharges of storm water associated with construction activity so long as the dischargers comply with all requirements, provisions, limitations and prohibitions in the permit. In addition, this General Permit regulates the discharges of storm water associated with construction activities from all Linear

Underground/Overhead Projects resulting in the disturbance of greater than or equal to one acre (Attachment A).

3. This General Permit regulates discharges of pollutants in storm water associated with construction activity (storm water discharges) to waters of the United States from construction sites that disturb one or more acres of land surface, or that are part of a common plan of development or sale that disturbs more than one acre of land surface.
4. This General Permit does not preempt or supersede the authority of local storm water management agencies to prohibit, restrict, or control storm water discharges to municipal separate storm sewer systems or other watercourses within their jurisdictions.
5. This action to adopt a general NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEQA) (Public Resources Code Section 21100, et seq.), pursuant to Section 13389 of the California Water Code.
6. Pursuant to 40 C.F.R. § 131.12 and State Water Board [Resolution No. 68-16](#),<sup>1</sup> which incorporates the requirements of § 131.12 where applicable, the State Water Board finds that discharges in compliance with this General Permit will not result in the lowering of water quality standards, and are therefore consistent with those provisions. Compliance with this General Permit will result in improvements in water quality.
7. This General Permit serves as an NPDES permit in compliance with CWA § 402 and will take effect on July 1, 2010 by the State Water Board provided the Regional Administrator of the U.S. EPA has no objection. If the U.S. EPA Regional Administrator objects to its issuance, the General Permit will not become effective until such objection is withdrawn.
8. Following adoption and upon the effective date of this General Permit, the Regional Water Quality Control Boards (Regional Water Boards) shall enforce the provisions herein.
9. Regional Water Boards establish water quality standards in Basin Plans. The State Water Board establishes water quality standards in various statewide plans, including the California Ocean Plan. U.S. EPA establishes water quality standards in the National Toxic Rule (NTR) and the California Toxic Rule (CTR).

---

<sup>1</sup> Resolution No. 68-16 generally requires that existing water quality be maintained unless degradation is justified based on specific findings.

10. This General Permit does not authorize discharges of fill or dredged material regulated by the U.S. Army Corps of Engineers under CWA § 404 and does not constitute a waiver of water quality certification under CWA § 401.
11. The primary storm water pollutant at construction sites is excess sediment. Excess sediment can cloud the water, which reduces the amount of sunlight reaching aquatic plants, clog fish gills, smother aquatic habitat and spawning areas, and impede navigation in our waterways. Sediment also transports other pollutants such as nutrients, metals, and oils and greases.
12. Construction activities can impact a construction site's runoff sediment supply and transport characteristics. These modifications, which can occur both during and after the construction phase, are a significant cause of degradation of the beneficial uses established for water bodies in California. Dischargers can avoid these effects through better construction site design and activity practices.
13. This General Permit recognizes four distinct phases of construction activities. The phases are Grading and Land Development Phase, Streets and Utilities Phase, Vertical Construction Phase, and Final Landscaping and Site Stabilization Phase. Each phase has activities that can result in different water quality effects from different water quality pollutants. This General Permit also recognizes inactive construction as a category of construction site type.
14. Compliance with any specific limits or requirements contained in this General Permit does not constitute compliance with any other applicable requirements.
15. Following public notice in accordance with State and Federal laws and regulations, the State Water Board heard and considered all comments and testimony in a public hearing on 06/03/2009. The State Water Board has prepared written responses to all significant comments.
16. Construction activities obtaining coverage under the General Permit may have multiple discharges subject to requirements that are specific to general, linear, and/or active treatment system discharge types.
17. The State Water Board may reopen the permit if the U.S. EPA adopts a final effluent limitation guideline for construction activities.

## **B. Activities Covered Under the General Permit**

18. Any construction or demolition activity, including, but not limited to, clearing, grading, grubbing, or excavation, or any other activity that results in a land disturbance of equal to or greater than one acre.
19. Construction activity that results in land surface disturbances of less than one acre if the construction activity is part of a larger common plan of development or the sale of one or more acres of disturbed land surface.
20. Construction activity related to residential, commercial, or industrial development on lands currently used for agriculture including, but not limited to, the construction of buildings related to agriculture that are considered industrial pursuant to U.S. EPA regulations, such as dairy barns or food processing facilities.
21. Construction activity associated with Linear Underground/Overhead Utility Projects (LUPs) including, but not limited to, those activities necessary for the installation of underground and overhead linear facilities (e.g., conduits, substructures, pipelines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment and associated ancillary facilities) and include, but are not limited to, underground utility mark-out, potholing, concrete and asphalt cutting and removal, trenching, excavation, boring and drilling, access road and pole/tower pad and cable/wire pull station, substation construction, substructure installation, construction of tower footings and/or foundations, pole and tower installations, pipeline installations, welding, concrete and/or pavement repair or replacement, and stockpile/borrow locations.
22. Discharges of sediment from construction activities associated with oil and gas exploration, production, processing, or treatment operations or transmission facilities.<sup>2</sup>
23. Storm water discharges from dredge spoil placement that occur outside of U.S. Army Corps of Engineers jurisdiction (upland sites) and that disturb one or more acres of land surface from construction activity are covered by this General Permit. Construction sites that intend to disturb one or more acres of land within the jurisdictional boundaries of

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<sup>2</sup> Pursuant to the Ninth Circuit Court of Appeals' decision in *NRDC v. EPA* (9th Cir. 2008) 526 F.3d 591, and subsequent denial of the U.S. EPA's petition for reconsideration in November 2008, oil and gas construction activities discharging storm water contaminated only with sediment are no longer exempt from the NPDES program.

a CWA § 404 permit should contact the appropriate Regional Water Board to determine whether this permit applies to the site.

**C. Activities Not Covered Under the General Permit**

24. Routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility.
25. Disturbances to land surfaces solely related to agricultural operations such as disking, harrowing, terracing and leveling, and soil preparation.
26. Discharges of storm water from areas on tribal lands; construction on tribal lands is regulated by a federal permit.
27. Construction activity and land disturbance involving discharges of storm water within the Lake Tahoe Hydrologic Unit. The Lahontan Regional Water Board has adopted its own permit to regulate storm water discharges from construction activity in the Lake Tahoe Hydrologic Unit (Regional Water Board 6SLT). Owners of construction sites in this watershed must apply for the Lahontan Regional Water Board permit rather than the statewide Construction General Permit.
28. Construction activity that disturbs less than one acre of land surface, and that is not part of a larger common plan of development or the sale of one or more acres of disturbed land surface.
29. Construction activity covered by an individual NPDES Permit for storm water discharges.
30. Discharges from small (1 to 5 acre) construction activities with an approved Rainfall Erosivity Waiver authorized by U.S. EPA Phase II regulations certifying to the State Board that small construction activity will occur only when the Rainfall Erosivity Factor is less than 5 ("R" in the Revised Universal Soil Loss Equation).
31. Landfill construction activity that is subject to the Industrial General Permit.
32. Construction activity that discharges to Combined Sewer Systems.
33. Conveyances that discharge storm water runoff combined with municipal sewage.
34. Discharges of storm water identified in CWA § 402(l)(2), 33 U.S.C. § 1342(l)(2).

35. Discharges occurring in basins that are not tributary or hydrologically connected to waters of the United States (for more information contact your Regional Water Board).

#### **D. Obtaining and Modifying General Permit Coverage**

36. This General Permit requires all dischargers to electronically file all Permit Registration Documents (PRDs), Notices of Termination (NOT), changes of information, annual reporting, and other compliance documents required by this General Permit through the State Water Board's Storm water Multi-Application and Report Tracking System (SMARTS) website.
37. Any information provided to the Regional Water Board shall comply with the Homeland Security Act and any other federal law that concerns security in the United States; any information that does not comply should not be submitted.
38. This General Permit grants an exception from the Risk Determination requirements for existing sites covered under Water Quality Orders No. 99-08-DWQ, and [No. 2003-0007-DWQ](#). For certain sites, adding additional requirements may not be cost effective. Construction sites covered under Water Quality Order No. 99-08-DWQ shall obtain permit coverage at the Risk Level 1. LUPs covered under Water Quality Order No. 2003-0007-DWQ shall obtain permit coverage as a Type 1 LUP. The Regional Water Boards have the authority to require Risk Determination to be performed on sites currently covered under Water Quality Orders No. 99-08-DWQ and No. 2003-0007-DWQ where they deem it necessary. The State Water Board finds that there are two circumstances when it may be appropriate for the Regional Water Boards to require a discharger that had filed an NOI under State Water Board Order No. 99-08-DWQ to recalculate the site's risk level. These circumstances are: (1) when the discharger has a demonstrated history of noncompliance with State Water Board Order No. 99-08-DWQ or; (2) when the discharger's site poses a significant risk of causing or contributing to an exceedance of a water quality standard without the implementation of the additional Risk Level 2 or 3 requirements.

#### **E. Prohibitions**

39. All discharges are prohibited except for the storm water and non-storm water discharges specifically authorized by this General Permit or another NPDES permit. Non-storm water discharges include a wide variety of sources, including improper dumping, spills, or leakage from storage tanks or transfer areas. Non-storm water discharges may

contribute significant pollutant loads to receiving waters. Measures to control spills, leakage, and dumping, and to prevent illicit connections during construction must be addressed through structural as well as non-structural Best Management Practices (BMPs)<sup>3</sup>. The State Water Board recognizes, however, that certain non-storm water discharges may be necessary for the completion of construction.

40. This General Permit prohibits all discharges which contain a hazardous substance in excess of reportable quantities established in 40 C.F.R. §§ 117.3 and 302.4, unless a separate NPDES Permit has been issued to regulate those discharges.
41. This General Permit incorporates discharge prohibitions contained in water quality control plans, as implemented by the State Water Board and the nine Regional Water Boards.
42. Pursuant to the Ocean Plan, discharges to Areas of Special Biological Significance (ASBS) are prohibited unless covered by an exception that the State Water Board has approved.
43. This General Permit prohibits the discharge of any debris<sup>4</sup> from construction sites. Plastic and other trash materials can cause negative impacts to receiving water beneficial uses. The State Water Board encourages the use of more environmentally safe, biodegradable materials on construction sites to minimize the potential risk to water quality.

## **F. Training**

44. In order to improve compliance with and to maintain consistent enforcement of this General Permit, all dischargers are required to appoint two positions - the Qualified SWPPP Developer (QSD) and the Qualified SWPPP Practitioner (QSP) - who must obtain appropriate training. Together with the key stakeholders, the State and Regional Water Boards are leading the development of this curriculum through a collaborative organization called The Construction General Permit (CGP) Training Team.
45. The Professional Engineers Act (Bus. & Prof. Code section 6700, et seq.) requires that all engineering work must be performed by a California licensed engineer.

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<sup>3</sup> BMPs are scheduling of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to waters of the United States. BMPs also include treatment requirements, operating procedures, and practice to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

<sup>4</sup> Litter, rubble, discarded refuse, and remains of destroyed inorganic anthropogenic waste.

## G. Determining and Reducing Risk

46. The risk of accelerated erosion and sedimentation from wind and water depends on a number of factors, including proximity to receiving water bodies, climate, topography, and soil type.
47. This General Permit requires dischargers to assess the risk level of a site based on both sediment transport and receiving water risk. This General Permit contains requirements for Risk Levels 1, 2 and 3, and LUP Risk Type 1, 2, and 3 (Attachment A). Risk levels are established by determining two factors: first, calculating the site's sediment risk; and second, receiving water risk during periods of soil exposure (i.e. grading and site stabilization). Both factors are used to determine the site-specific Risk Level(s). LUPs can be determined to be Type 1 based on the flowchart in Attachment A.1.
48. Although this General Permit does not mandate specific setback distances, dischargers are encouraged to set back their construction activities from streams and wetlands whenever feasible to reduce the risk of impacting water quality (e.g., natural stream stability and habitat function). Because there is a reduced risk to receiving waters when setbacks are used, this General Permit gives credit to setbacks in the risk determination and post-construction storm water performance standards. The risk calculation and runoff reduction mechanisms in this General Permit are expected to facilitate compliance with any Regional Water Board and local agency setback requirements, and to encourage voluntary setbacks wherever practicable.
49. Rain events can occur at any time of the year in California. Therefore, a Rain Event Action Plan (REAP) is necessary for Risk Level 2 and 3 traditional construction projects (LUPs exempt) to ensure that active construction sites have adequate erosion and sediment controls implemented prior to the onset of a storm event, even if construction is planned only during the dry season.
50. Soil particles smaller than 0.02 millimeters (mm) (i.e., finer than medium silt) do not settle easily using conventional measures for sediment control (i.e., sediment basins). Given their long settling time, dislodging these soils results in a significant risk that fine particles will be released into surface waters and cause unacceptable downstream impacts. If operated correctly, an Active Treatment System (ATS<sup>5</sup>) can prevent or reduce the release of fine particles from construction sites.

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<sup>5</sup> An ATS is a treatment system that employs chemical coagulation, chemical flocculation, or electro coagulation in order to reduce turbidity caused by fine suspended sediment.

Use of an ATS can effectively reduce a site's risk of impacting receiving waters.

51. Dischargers located in a watershed area where a Total Maximum Daily Load (TMDL) has been adopted or approved by the Regional Water Board or U.S. EPA may be required by a separate Regional Water Board action to implement additional BMPs, conduct additional monitoring activities, and/or comply with an applicable waste load allocation and implementation schedule. Such dischargers may also be required to obtain an individual Regional Water Board permit specific to the area.

## **H. Effluent Standards**

52. The State Water Board convened a blue ribbon panel of storm water experts that submitted a report entitled, "The Feasibility of Numeric Effluent Limits Applicable to Discharges of Storm Water Associated with Municipal, Industrial and Construction Activities," dated June 19, 2006. The panel concluded that numeric limits or action levels are technically feasible to control construction storm water discharges, provided that certain conditions are considered. The panel also concluded that numeric effluent limitations (NELs) are feasible for discharges from construction sites that utilize an ATS. The State Water Board has incorporated the expert panel's suggestions into this General Permit, which includes both numeric action levels (NALs) and NELs for pH and turbidity, and special numeric limits for ATS discharges.

### **Numeric Effluent Limitations**

53. Discharges of storm water from construction activities may become contaminated from alkaline construction materials resulting in high pH (greater than pH 7). Alkaline construction materials include, but are not limited to, hydrated lime, concrete, mortar, cement kiln dust (CKD), Portland cement treated base (CTB), fly ash, recycled concrete, and masonry work. This General Permit includes an NEL for pH (6.0-9.0) that applies only at sites that exhibit a "high risk of high pH discharge." A "high risk of high pH discharge" can occur during the complete utilities phase, the complete vertical build phase, and any portion of any phase where significant amounts of materials are placed directly on the land at the site in a manner that could result in significant alterations to the background pH of any discharges.
54. For Risk Level 3 discharges, this General Permit establishes technology-based, numeric effluent limitations (NELs) for turbidity of 500 NTU. Exceedances of the turbidity NEL constitutes a violation of this General Permit.

55. This General Permit establishes a 5 year, 24 hour (expressed in inches of rainfall) Compliance Storm Event exemption from the technology-based NELs for Risk Level 3 dischargers.

**Determining Compliance with Numeric Limitations**

56. This General Permit sets a pH NAL of 6.5 to 8.5, and a turbidity NAL of 250 NTU. The purpose of the NAL and its associated monitoring requirement is to provide operational information regarding the performance of the measures used at the site to minimize the discharge of pollutants and to protect beneficial uses and receiving waters from the adverse effects of construction-related storm water discharges. The NALs in this General Permit for pH and turbidity are not directly enforceable and do not constitute NELs.
57. This General Permit requires dischargers with NAL exceedances to immediately implement additional BMPs and revise their Storm Water Pollution Prevention Plans (SWPPPs) accordingly to either prevent pollutants and authorized non-storm water discharges from contaminating storm water, or to substantially reduce the pollutants to levels consistently below the NALs. NAL exceedances are reported in the State Water Boards SMARTS system, and the discharger is required to provide an NAL Exceedance Report when requested by a Regional Water Board.
58. If run-on is caused by a forest fire or any other natural disaster, then NELs do not apply.
59. Exceedances of the NELs are a violation of this Permit. This General Permit requires dischargers with NEL exceedances to implement additional monitoring, BMPs, and revise their SWPPPs accordingly. Dischargers are required to notify the State and Regional Water Boards of the violation through the State Water Boards SMARTs system, and provide an NEL Violation Report sharing additional information concerning the NEL exceedance.

**I. Receiving Water Limitations**

60. This General Permit requires all enrolled dischargers to determine the receiving waters potentially affected by their discharges and to comply with all applicable water quality standards, including any more stringent standards applicable to a water body.

**J. Sampling, Monitoring, Reporting and Record Keeping**

61. Visual monitoring of storm water and non-storm water discharges is required for all sites subject to this General Permit.

62. Records of all visual monitoring inspections are required to remain on-site during the construction period and for a minimum of three years.
63. For all Risk Level 3 and Risk Level 2 sites, this General Permit requires effluent monitoring for pH and turbidity. Sampling, analysis and monitoring requirements for effluent monitoring for pH and turbidity are contained in this General Permit.
64. Risk Level 3 sites in violation of the Numeric Effluent Limitations contained in this General Permit and with direct discharges to receiving water are required to conduct receiving water monitoring.
65. For Risk Level 3 sites larger than 30 acres and with direct discharges to receiving waters, this General Permit requires bioassessment sampling before and after site completion to determine if significant degradation to the receiving water's biota has occurred. Bioassessment sampling guidelines are contained in this General Permit.
66. A summary and evaluation of the sampling and analysis results will be submitted in the Annual Reports.
67. This General Permit contains sampling, analysis and monitoring requirements for non-visible pollutants at all sites subject to this General Permit.
68. Compliance with the General Permit relies upon dischargers to electronically self-report any discharge violations and to comply with any Regional Water Board enforcement actions.
69. This General Permit requires that all dischargers maintain a paper or electronic copy of all required records for three years from the date generated or date submitted, whichever is last. These records must be available at the construction site until construction is completed. For LUPs, these documents may be retained in a crew member's vehicle and made available upon request.

#### **K. Active Treatment System (ATS) Requirements**

70. Active treatment systems add chemicals to facilitate flocculation, coagulation and filtration of suspended sediment particles. The uncontrolled release of these chemicals to the environment can negatively affect the beneficial uses of receiving waters and/or degrade water quality (e.g., acute and chronic toxicity). Additionally, the batch storage and treatment of storm water through an ATS' can potentially

cause physical impacts on receiving waters if storage volume is inadequate or due to sudden releases of the ATS batches and improperly designed outfalls.

71. If designed, operated and maintained properly an ATS can achieve very high removal rates of suspended sediment (measured as turbidity), albeit at sometimes significantly higher costs than traditional erosion/sediment control practices. As a result, this General Permit establishes NELs consistent with the expected level of typical ATS performance.
72. This General Permit requires discharges of storm water associated with construction activity that undergo active treatment to comply with special operational and effluent limitations to ensure that these discharges do not adversely affect the beneficial uses of the receiving waters or cause degradation of their water quality.
73. For ATS discharges, this General Permit establishes technology-based NELs for turbidity.
74. This General Permit establishes a 10 year, 24 hour (expressed in inches of rainfall) Compliance Storm Event exemption from the technology-based numeric effluent limitations for ATS discharges. Exceedances of the ATS turbidity NEL constitutes a violation of this General Permit.

#### **L. Post-Construction Requirements**

75. This General Permit includes performance standards for post-construction that are consistent with State Water Board [Resolution No. 2005-0006](#), "Resolution Adopting the Concept of Sustainability as a Core Value for State Water Board Programs and Directing Its Incorporation," and [2008-0030](#), "Requiring Sustainable Water Resources Management." The requirement for all construction sites to match pre-project hydrology will help ensure that the physical and biological integrity of aquatic ecosystems are sustained. This "runoff reduction" approach is analogous in principle to Low Impact Development (LID) and will serve to protect related watersheds and waterbodies from both hydrologic-based and pollution impacts associated with the post-construction landscape.
76. LUP projects are not subject to post-construction requirements due to the nature of their construction to return project sites to pre-construction conditions.

### **M. Storm Water Pollution Prevention Plan Requirements**

77. This General Permit requires the development of a site-specific SWPPP. The SWPPP must include the information needed to demonstrate compliance with all requirements of this General Permit, and must be kept on the construction site and be available for review. The discharger shall ensure that a QSD develops the SWPPP.
78. To ensure proper site oversight, this General Permit requires a Qualified SWPPP Practitioner to oversee implementation of the BMPs required to comply with this General Permit.

### **N. Regional Water Board Authorities**

79. Regional Water Boards are responsible for implementation and enforcement of this General Permit. A general approach to permitting is not always suitable for every construction site and environmental circumstances. Therefore, this General Permit recognizes that Regional Water Boards must have some flexibility and authority to alter, approve, exempt, or rescind permit authority granted under this General Permit in order to protect the beneficial uses of our receiving waters and prevent degradation of water quality.

**IT IS HEREBY ORDERED** that all dischargers subject to this General Permit shall comply with the following conditions and requirements (including all conditions and requirements as set forth in Attachments A, B, C, D, E and F)<sup>6</sup>:

## **II. CONDITIONS FOR PERMIT COVERAGE**

### **A. Linear Underground/Overhead Projects (LUPs)**

1. Linear Underground/Overhead Projects (LUPs) include, but are not limited to, any conveyance, pipe, or pipeline for the transportation of any gaseous, liquid (including water and wastewater for domestic municipal services), liquescent, or slurry substance; any cable line or wire for the transmission of electrical energy; any cable line or wire for communications (e.g. telephone, telegraph, radio or television messages); and associated ancillary facilities. Construction activities associated with LUPs include, but are not limited to, (a) those activities necessary for the installation of underground and overhead linear facilities (e.g., conduits, substructures, pipelines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment, and associated ancillary facilities); and include, but are not limited to, (b) underground utility mark-out, potholing, concrete and asphalt cutting and removal, trenching, excavation, boring and drilling, access road and pole/tower pad and cable/wire pull station, substation construction, substructure installation, construction of tower footings and/or foundations, pole and tower installations, pipeline installations, welding, concrete and/ or pavement repair or replacement, and stockpile/borrow locations.
2. The Legally Responsible Person is responsible for obtaining coverage under the General Permit where the construction of pipelines, utility lines, fiber-optic cables, or other linear underground/overhead projects will occur across several properties unless the LUP construction activities are covered under another construction storm water permit.
3. Only LUPs shall comply with the conditions and requirements in Attachment A, A.1 & A.2 of this Order. The balance of this Order is not applicable to LUPs except as indicated in Attachment A.

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<sup>6</sup> These attachments are part of the General Permit itself and are not separate documents that are capable of being updated independently by the State Water Board.

**B. Obtaining Permit Coverage Traditional Construction Sites**

1. The Legally Responsible Person (LRP) (see Special Provisions, Electronic Signature and Certification Requirements, Section IV.I.1) must obtain coverage under this General Permit.
2. To obtain coverage, the LRP must electronically file Permit Registration Documents (PRDs) prior to the commencement of construction activity. Failure to obtain coverage under this General Permit for storm water discharges to waters of the United States is a violation of the CWA and the California Water Code.
3. PRDs shall consist of:
  - a. Notice of Intent (NOI)
  - b. Risk Assessment (Section VIII)
  - c. Site Map
  - d. Storm Water Pollution Prevention Plan (Section XIV)
  - e. Annual Fee
  - f. Signed Certification Statement

Any information provided to the Regional Water Board shall comply with the Homeland Security Act and any other federal law that concerns security in the United States; any information that does not comply should not be submitted.

Attachment B contains additional PRD information. Dischargers must electronically file the PRDs, and mail the appropriate annual fee to the State Water Board.

4. This permit is effective on July 1, 2010.
  - a. **Dischargers Obtaining Coverage On or After July 1, 2010:** All dischargers requiring coverage on or after July 1, 2010, shall electronically file their PRDs prior to the commencement of construction activities, and mail the appropriate annual fee no later than seven days prior to the commencement of construction activities. Permit coverage shall not commence until the PRDs and the annual fee are received by the State Water Board, and a WDID number is assigned and sent by SMARTS.
  - b. **Dischargers Covered Under 99-08-DWQ and 2003-0007-DWQ:** Existing dischargers subject to State Water Board Order No. 99-08-DWQ (existing dischargers) will continue coverage under 99-08-DWQ until July 1, 2010. After July 1, 2010, all NOIs subject to State Water Board Order No. 99-08-DWQ will be terminated.

Existing dischargers shall electronically file their PRDs no later than July 1, 2010. If an existing discharger's site acreage subject to the annual fee has changed, it shall mail a revised annual fee no less than seven days after receiving the revised annual fee notification, **or else lose permit coverage**. All existing dischargers shall be exempt from the risk determination requirements in Section VIII of this General Permit until two years after permit adoption. All existing dischargers are therefore subject to Risk Level 1 requirements regardless of their site's sediment and receiving water risks. However, a Regional Board retains the authority to require an existing discharger to comply with the Section VIII risk determination requirements.

5. The discharger is only considered covered by this General Permit upon receipt of a Waste Discharger Identification (WDID) number assigned and sent by the State Water Board Storm water Multi-Application and Report Tracking System (SMARTS). In order to demonstrate compliance with this General Permit, the discharger must obtain a WDID number and must present documentation of a valid WDID upon demand.
6. During the period this permit is subject to review by the U.S. EPA, the prior permit (State Water Board Order No. 99-08-DWQ) remains in effect. Existing dischargers under the prior permit will continue to have coverage under State Water Board Order No. 99-08-DWQ until this General Permit takes effect on July 1, 2010. Dischargers who complete their projects and electronically file an NOT prior to July 1, 2010, are not required to obtain coverage under this General Permit.
7. Small Construction Rainfall Erosivity Waiver

EPA's Small Construction Erosivity Waiver applies to sites between one and five acres demonstrating that there are no adverse water quality impacts.

Dischargers eligible for a Rainfall Erosivity Waiver based on low erosivity potential shall complete the electronic Notice of Intent (NOI) and Sediment Risk form through the State Water Board's SMARTS system, certifying that the construction activity will take place during a period when the value of the rainfall erosivity factor is less than five. Where the LRP changes or another LRP is added during construction, the new LRP must also submit a waiver certification through the SMARTS system.

If a small construction site continues beyond the projected completion date given on the waiver certification, the LRP shall recalculate the

rainfall erosivity factor for the new project duration and submit this information through the SMARTS system. If the new R factor is below five (5), the discharger shall update through SMARTS all applicable information on the waiver certification and retain a copy of the revised waiver onsite. The LRP shall submit the new waiver certification 30 days prior to the projected completion date listed on the original waiver form to assure exemption from permitting requirements is uninterrupted. If the new R factor is five (5) or above, the LRP shall be required to apply for coverage under this Order.

8. In the case of a public emergency that requires immediate construction activities, a discharger shall submit a brief description of the emergency construction activity within five days of the onset of construction, and then shall submit all PRDs within thirty days.

### **C. Revising Permit Coverage for Change of Acreage or New Ownership**

1. The discharger may reduce or increase the total acreage covered under this General Permit when a portion of the site is complete and/or conditions for termination of coverage have been met (See Section II.D Conditions for Termination of Coverage); when ownership of a portion of the site is sold to a different entity; or when new acreage, subject to this General Permit, is added to the site.
2. Within 30 days of a reduction or increase in total disturbed acreage, the discharger shall electronically file revisions to the PRDs that include:
  - a. A revised NOI indicating the new project size;
  - b. A revised site map showing the acreage of the site completed, acreage currently under construction, acreage sold/transferred or added, and acreage currently stabilized in accordance with the Conditions for Termination of Coverage in Section II.D below.
  - c. SWPPP revisions, as appropriate; and
  - d. Certification that any new landowners have been notified of applicable requirements to obtain General Permit coverage. The certification shall include the name, address, telephone number, and e-mail address of the new landowner.
  - e. If the project acreage has increased, dischargers shall mail payment of revised annual fees within 14 days of receiving the revised annual fee notification.

3. The discharger shall continue coverage under the General Permit for any parcel that has not achieved “Final Stabilization” as defined in Section II.D.
4. When an LRP with active General Permit coverage transfers its LRP status to another person or entity that qualifies as an LRP, the existing LRP shall inform the new LRP of the General Permit’s requirements. In order for the new LRP to continue the construction activity on its parcel of property, the new LRP, or the new LRP’s approved signatory, must submit PRDs in accordance with this General Permit’s requirements.

#### **D. Conditions for Termination of Coverage**

1. Within 90 days of when construction is complete or ownership has been transferred, the discharger shall electronically file a Notice of Termination (NOT), a final site map, and photos through the State Water Boards SMARTS system. Filing a NOT certifies that all General Permit requirements have been met. The Regional Water Board will consider a construction site complete only when all portions of the site have been transferred to a new owner, or all of the following conditions have been met:
  - a. For purposes of “final stabilization,” the site will not pose any additional sediment discharge risk than it did prior to the commencement of construction activity;
  - b. There is no potential for construction-related storm water pollutants to be discharged into site runoff;
  - c. Final stabilization has been reached;
  - d. Construction materials and wastes have been disposed of properly;
  - e. Compliance with the Post-Construction Standards in Section XIII of this General Permit has been demonstrated;
  - f. Post-construction storm water management measures have been installed and a long-term maintenance plan<sup>7</sup> has been established; and
  - g. All construction-related equipment, materials and any temporary BMPs no longer needed are removed from the site.

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<sup>7</sup> For the purposes of this requirement a long-term maintenance plan will be designed for a minimum of five years, and will describe the procedures to ensure that the post-construction storm water management measures are adequately maintained.

2. The discharger shall certify that final stabilization conditions are satisfied in their NOT. Failure to certify shall result in continuation of permit coverage and annual billing.
3. The NOT must demonstrate through photos, RUSLE or RUSLE2, or results of testing and analysis that the site meets all of the conditions above (Section II.D.1) and the final stabilization condition (Section II.D.1.a) is attained by one of the following methods:

- a. "70% final cover method," no computational proof required

**OR:**

- b. "RUSLE or RUSLE2 method," computational proof required

**OR:**

- c. "Custom method", the discharger shall demonstrate in some other manner than a or b, above, that the site complies with the "final stabilization" requirement in Section II.D.1.a.

### III. DISCHARGE PROHIBITIONS

- A.** Dischargers shall not violate any discharge prohibitions contained in applicable Basin Plans or statewide water quality control plans. Waste discharges to Areas of Special Biological Significance (ASBS) are prohibited by the California Ocean Plan, unless granted an exception issued by the State Water Board.
- B.** All discharges are prohibited except for the storm water and non-storm water discharges specifically authorized by this General Permit or another NPDES permit.
- C.** Authorized non-storm water discharges may include those from de-chlorinated potable water sources such as: fire hydrant flushing, irrigation of vegetative erosion control measures, pipe flushing and testing, water to control dust, uncontaminated ground water from dewatering, and other discharges not subject to a separate general NPDES permit adopted by a Regional Water Board. The discharge of non-storm water is authorized under the following conditions:
1. The discharge does not cause or contribute to a violation of any water quality standard;
  2. The discharge does not violate any other provision of this General Permit;
  3. The discharge is not prohibited by the applicable Basin Plan;
  4. The discharger has included and implemented specific BMPs required by this General Permit to prevent or reduce the contact of the non-storm water discharge with construction materials or equipment.
  5. The discharge does not contain toxic constituents in toxic amounts or (other) significant quantities of pollutants;
  6. The discharge is monitored and meets the applicable NALs and NELs; and
  7. The discharger reports the sampling information in the Annual Report.

If any of the above conditions are not satisfied, the discharge is not authorized by this General Permit. The discharger shall notify the Regional Water Board of any anticipated non-storm water discharges not already authorized by this General Permit or another NPDES permit, to determine whether a separate NPDES permit is necessary.

- D.** Debris resulting from construction activities are prohibited from being discharged from construction sites.
- E.** When soil contamination is found or suspected and a responsible party is not identified, or the responsible party fails to promptly take the appropriate action, the discharger shall have those soils sampled and tested to ensure proper handling and public safety measures are implemented. The discharger shall notify the appropriate local, State, and federal agency(ies) when contaminated soil is found at a construction site, and will notify the appropriate Regional Water Board.

## **IV. SPECIAL PROVISIONS**

### **A. Duty to Comply**

1. The discharger shall comply with all of the conditions of this General Permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA) and the Porter-Cologne Water Quality Control Act and is grounds for enforcement action and/or removal from General Permit coverage.
2. The discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if this General Permit has not yet been modified to incorporate the requirement.

### **B. General Permit Actions**

1. This General Permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the discharger for a General Permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not annul any General Permit condition.
2. If any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under Section 307(a) of the CWA for a toxic pollutant which is present in the discharge and that standard or prohibition is more stringent than any limitation on the pollutant in this General Permit, this General Permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition and the dischargers so notified.

### **C. Need to Halt or Reduce Activity Not a Defense**

It shall not be a defense for a discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this General Permit.

### **D. Duty to Mitigate**

The discharger shall take all responsible steps to minimize or prevent any discharge in violation of this General Permit, which has a reasonable likelihood of adversely affecting human health or the environment.

### **E. Proper Operation and Maintenance**

The discharger shall at all times properly operate and maintain any facilities and systems of treatment and control (and related appurtenances) which are installed or used by the discharger to achieve compliance with the conditions of this General Permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance may require the operation of backup or auxiliary facilities or similar systems installed by a discharger when necessary to achieve compliance with the conditions of this General Permit.

### **F. Property Rights**

This General Permit does not convey any property rights of any sort or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor does it authorize any infringement of Federal, State, or local laws or regulations.

### **G. Duty to Maintain Records and Provide Information**

1. The discharger shall maintain a paper or electronic copy of all required records, including a copy of this General Permit, for three years from the date generated or date submitted, whichever is last. These records shall be available at the construction site until construction is completed.
2. The discharger shall furnish the Regional Water Board, State Water Board, or U.S. EPA, within a reasonable time, any requested information to determine compliance with this General Permit. The discharger shall also furnish, upon request, copies of records that are required to be kept by this General Permit.

### **H. Inspection and Entry**

The discharger shall allow the Regional Water Board, State Water Board, U.S. EPA, and/or, in the case of construction sites which discharge through a municipal separate storm sewer, an authorized representative of the municipal operator of the separate storm sewer system receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the discharger's premises at reasonable times where a regulated construction activity is being conducted or where records must be kept under the conditions of this General Permit;

2. Access and copy at reasonable times any records that must be kept under the conditions of this General Permit;
3. Inspect at reasonable times the complete construction site, including any off-site staging areas or material storage areas, and the erosion/sediment controls; and
4. Sample or monitor at reasonable times for the purpose of ensuring General Permit compliance.

#### **I. Electronic Signature and Certification Requirements**

1. All Permit Registration Documents (PRDs) and Notices of Termination (NOTs) shall be electronically signed, certified, and submitted via SMARTS to the State Water Board. Either the Legally Responsible Person (LRP), as defined in Appendix 5 – Glossary, or a person legally authorized to sign and certify PRDs and NOTs on behalf of the LRP (the LRP's Approved Signatory, as defined in Appendix 5 - Glossary) must submit all information electronically via SMARTS.
2. Changes to Authorization. If an Approved Signatory's authorization is no longer accurate, a new authorization satisfying the requirements of paragraph (a) of this section must be submitted via SMARTS prior to or together with any reports, information or applications to be signed by an Approved Signatory.
3. All Annual Reports, or other information required by the General Permit (other than PRDs and NOTs) or requested by the Regional Water Board, State Water Board, U.S. EPA, or local storm water management agency shall be certified and submitted by the LRP or the LRP's Approved Signatory.

#### **J. Certification**

Any person signing documents under Section IV.I above, shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

## **K. Anticipated Noncompliance**

The discharger shall give advance notice to the Regional Water Board and local storm water management agency of any planned changes in the construction activity, which may result in noncompliance with General Permit requirements.

## **L. Bypass**

Bypass<sup>8</sup> is prohibited. The Regional Water Board may take enforcement action against the discharger for bypass unless:

1. Bypass was unavoidable to prevent loss of life, personal injury or severe property damage;<sup>9</sup>
2. There were no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated waste, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that could occur during normal periods of equipment downtime or preventative maintenance;
3. The discharger submitted a notice at least ten days in advance of the need for a bypass to the Regional Water Board; or
4. The discharger may allow a bypass to occur that does not cause effluent limitations to be exceeded, but only if it is for essential maintenance to assure efficient operation. In such a case, the above bypass conditions are not applicable. The discharger shall submit notice of an unanticipated bypass as required.

## **M. Upset**

1. A discharger that wishes to establish the affirmative defense of an upset<sup>10</sup> in an action brought for noncompliance shall demonstrate,

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<sup>8</sup> The intentional diversion of waste streams from any portion of a treatment facility

<sup>9</sup> Severe property damage means substantial physical damage to property, damage to the treatment facilities that causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

<sup>10</sup> An exceptional incident in which there is unintentional and temporary noncompliance the technology based numeric effluent limitations because of factors beyond the reasonable control of the discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

through properly signed, contemporaneous operating logs, or other relevant evidence that:

- a. An upset occurred and that the discharger can identify the cause(s) of the upset
  - b. The treatment facility was being properly operated by the time of the upset
  - c. The discharger submitted notice of the upset as required; and
  - d. The discharger complied with any remedial measures required
2. No determination made before an action of noncompliance occurs, such as during administrative review of claims that noncompliance was caused by an upset, is final administrative action subject to judicial review.
  3. In any enforcement proceeding, the discharger seeking to establish the occurrence of an upset has the burden of proof

#### **N. Penalties for Falsification of Reports**

Section 309(c)(4) of the CWA provides that any person who knowingly makes any false material statement, representation, or certification in any record or other document submitted or required to be maintained under this General Permit, including reports of compliance or noncompliance shall upon conviction, be punished by a fine of not more than \$10,000 or by imprisonment for not more than two years or by both.

#### **O. Oil and Hazardous Substance Liability**

Nothing in this General Permit shall be construed to preclude the institution of any legal action or relieve the discharger from any responsibilities, liabilities, or penalties to which the discharger is or may be subject to under Section 311 of the CWA.

#### **P. Severability**

The provisions of this General Permit are severable; and, if any provision of this General Permit or the application of any provision of this General Permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this General Permit shall not be affected thereby.

#### **Q. Reopener Clause**

This General Permit may be modified, revoked and reissued, or terminated for cause due to promulgation of amended regulations, receipt of U.S. EPA guidance concerning regulated activities, judicial decision, or in accordance with 40 Code of Federal Regulations (CFR) 122.62, 122.63, 122.64, and 124.5.

#### **R. Penalties for Violations of Permit Conditions**

1. Section 309 of the CWA provides significant penalties for any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the CWA or any permit condition or limitation implementing any such section in a permit issued under Section 402. Any person who violates any permit condition of this General Permit is subject to a civil penalty not to exceed \$37,500<sup>11</sup> per calendar day of such violation, as well as any other appropriate sanction provided by Section 309 of the CWA.
2. The Porter-Cologne Water Quality Control Act also provides for civil and criminal penalties, which in some cases are greater than those under the CWA.

#### **S. Transfers**

This General Permit is not transferable.

#### **T. Continuation of Expired Permit**

This General Permit continues in force and effect until a new General Permit is issued or the SWRCB rescinds this General Permit. Only those dischargers authorized to discharge under the expiring General Permit are covered by the continued General Permit.

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<sup>11</sup> May be further adjusted in accordance with the Federal Civil Penalties Inflation Adjustment Act.

## V. EFFLUENT STANDARDS

### A. Narrative Effluent Limitations

1. Storm water discharges and authorized non-storm water discharges regulated by this General Permit shall not contain a hazardous substance equal to or in excess of reportable quantities established in 40 C.F.R. §§ 117.3 and 302.4, unless a separate NPDES Permit has been issued to regulate those discharges.
2. Dischargers shall minimize or prevent pollutants in storm water discharges and authorized non-storm water discharges through the use of controls, structures, and management practices that achieve BAT for toxic and non-conventional pollutants and BCT for conventional pollutants.

### B. Numeric Effluent Limitations (NELs)

**Table 1- Numeric Effluent Limitations, Numeric Action Levels, Test Methods, Detection Limits, and Reporting Units**

Parameter	Test Method	Discharge Type	Min. Detection Limit	Units	Numeric Action Level	Numeric Effluent Limitation
pH	Field test with calibrated portable instrument	Risk Level 2	0.2	pH units	lower NAL = 6.5 upper NAL = 8.5	N/A
		Risk Level 3			lower NAL = 6.5 upper NAL = 8.5	lower NEL = 6.0 upper NEL = 9.0
Turbidity	EPA 0180.1 and/or field test with calibrated portable instrument	Risk Level 2	1	NTU	250 NTU	N/A
		Risk Level 3			250 NTU	500 NTU

#### 1. Numeric Effluent Limitations (NELs):

- a. **Storm Event, Daily Average pH Limits** – For Risk Level 3 dischargers, the pH of storm water and non-storm water discharges

shall be within the ranges specified in Table 1 during any site phase where there is a "high risk of pH discharge."<sup>12</sup>

- b. **Storm Event Daily Average Turbidity Limit** – For Risk Level 3 dischargers, the turbidity of storm water and non-storm water discharges shall not exceed 500 NTU.
2. If daily average sampling results are outside the range of pH NELs (i.e., is below the lower NEL for pH or exceeds the upper NEL for pH) or exceeds the turbidity NEL (as listed in Table 1), the discharger is in violation of this General Permit and shall electronically file monitoring results in violation within 5 business days of obtaining the results.
3. **Compliance Storm Event:**

Discharges of storm water from Risk Level 3 sites shall comply with applicable NELs (above) unless the storm event causing the discharges is determined after the fact to be equal to or larger than the Compliance Storm Event (expressed in inches of rainfall). The Compliance Storm Event for Risk Level 3 discharges is the 5 year, 24 hour storm (expressed in tenths of an inch of rainfall), as determined by using these maps:

<http://www.wrcc.dri.edu/pcpnfreq/nca5y24.gif>  
<http://www.wrcc.dri.edu/pcpnfreq/sca5y24.gif>

Compliance storm event verification shall be done by reporting on-site rain gauge readings as well as nearby governmental rain gauge readings.

4. Dischargers shall not be required to comply with NELs if the site receives run-on from a forest fire or any other natural disaster.

### C. Numeric Action Levels (NALs)

1. For Risk Level 2 and 3 dischargers, the lower storm event average NAL for pH is 6.5 pH units and the upper storm event average NAL for pH is 8.5 pH units. The discharger shall take actions as described below if the discharge is outside of this range of pH values.

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<sup>12</sup> A period of high risk of pH discharge is defined as a project's complete utilities phase, complete vertical build phase, and any portion of any phase where significant amounts of materials are placed directly on the land at the site in a manner that could result in significant alterations of the background pH of the discharges.

2. For Risk Level 2 and 3 dischargers, the NAL storm event daily average for turbidity is 250 NTU. The discharger shall take actions as described below if the discharge is outside of this range of turbidity values.
3. Whenever the results from a storm event daily average indicate that the discharge is below the lower NAL for pH, exceeds the upper NAL for pH, or exceeds the turbidity NAL (as listed in Table 1), the discharger shall conduct a construction site and run-on evaluation to determine whether pollutant source(s) associated with the site's construction activity may have caused or contributed to the NAL exceedance and shall immediately implement corrective actions if they are needed.
4. The site evaluation shall be documented in the SWPPP and specifically address whether the source(s) of the pollutants causing the exceedance of the NAL:
  - a. Are related to the construction activities and whether additional BMPs are required to (1) meet BAT/BCT requirements; (2) reduce or prevent pollutants in storm water discharges from causing exceedances of receiving water objectives; and (3) determine what corrective action(s) were taken or will be taken and with a description of the schedule for completion.

**AND/OR:**

- b. Are related to the run-on associated with the construction site location and whether additional BMPs measures are required to (1) meet BAT/BCT requirements; (2) reduce or prevent pollutants in storm water discharges from causing exceedances of receiving water objectives; and (3) what corrective action(s) were taken or will be taken with a description of the schedule for completion.

## **VI. RECEIVING WATER LIMITATIONS**

- A.** The discharger shall ensure that storm water discharges and authorized non-storm water discharges to any surface or ground water will not adversely affect human health or the environment.
- B.** The discharger shall ensure that storm water discharges and authorized non-storm water discharges will not contain pollutants in quantities that threaten to cause pollution or a public nuisance.
- C.** The discharger shall ensure that storm water discharges and authorized non-storm water discharges will not contain pollutants that cause or contribute to an exceedance of any applicable water quality objectives or water quality standards (collectively, WQS) contained in a Statewide Water Quality Control Plan, the California Toxics Rule, the National Toxics Rule, or the applicable Regional Water Board's Water Quality Control Plan (Basin Plan).
- D.** Dischargers located within the watershed of a CWA § 303(d) impaired water body, for which a TMDL has been approved by the U.S. EPA, shall comply with the approved TMDL if it identifies "construction activity" or land disturbance as a source of the pollution.

## VII. TRAINING QUALIFICATIONS AND CERTIFICATION REQUIREMENTS

### A. General

The discharger shall ensure that all persons responsible for implementing requirements of this General Permit shall be appropriately trained in accordance with this Section. Training should be both formal and informal, occur on an ongoing basis, and should include training offered by recognized governmental agencies or professional organizations. Those responsible for preparing and amending SWPPPs shall comply with the requirements in this Section VII.

The discharger shall provide documentation of all training for persons responsible for implementing the requirements of this General Permit in the Annual Reports.

### B. SWPPP Certification Requirements

1. **Qualified SWPPP Developer:** The discharger shall ensure that SWPPPs are written, amended and certified by a Qualified SWPPP Developer (QSD). A QSD shall have one of the following registrations or certifications, and appropriate experience, as required for:
  - a. A California registered professional civil engineer;
  - b. A California registered professional geologist or engineering geologist;
  - c. A California registered landscape architect;
  - d. A professional hydrologist registered through the American Institute of Hydrology;
  - e. A Certified Professional in Erosion and Sediment Control (CPESC)<sup>TM</sup> registered through Enviro Cert International, Inc.;
  - f. A Certified Professional in Storm Water Quality (CPSWQ)<sup>TM</sup> registered through Enviro Cert International, Inc.; or
  - g. A professional in erosion and sediment control registered through the National Institute for Certification in Engineering Technologies (NICET).

Effective two years after the adoption date of this General Permit, a QSD shall have attended a State Water Board-sponsored or approved QSD training course.

2. The discharger shall list the name and telephone number of the currently designated Qualified SWPPP Developer(s) in the SWPPP.
3. **Qualified SWPPP Practitioner:** The discharger shall ensure that all BMPs required by this General Permit are implemented by a Qualified SWPPP Practitioner (QSP). A QSP is a person responsible for non-storm water and storm water visual observations, sampling and analysis. Effective two years from the date of adoption of this General Permit, a QSP shall be either a QSD or have one of the following certifications:
  - a. A certified erosion, sediment and storm water inspector registered through Enviro Cert International, Inc.; or
  - b. A certified inspector of sediment and erosion control registered through Certified Inspector of Sediment and Erosion Control, Inc.

Effective two years after the adoption date of this General Permit, a QSP shall have attended a State Water Board-sponsored or approved QSP training course.

4. The LRP shall list in the SWPPP, the name of any Approved Signatory, and provide a copy of the written agreement or other mechanism that provides this authority from the LRP in the SWPPP.
5. The discharger shall include, in the SWPPP, a list of names of all contractors, subcontractors, and individuals who will be directed by the Qualified SWPPP Practitioner. This list shall include telephone numbers and work addresses. Specific areas of responsibility of each subcontractor and emergency contact numbers shall also be included.
6. The discharger shall ensure that the SWPPP and each amendment will be signed by the Qualified SWPPP Developer. The discharger shall include a listing of the date of initial preparation and the date of each amendment in the SWPPP.

## VIII. RISK DETERMINATION

The discharger shall calculate the site's sediment risk and receiving water risk during periods of soil exposure (i.e. grading and site stabilization) and use the calculated risks to determine a Risk Level(s) using the methodology in

Appendix 1. For any site that spans two or more planning watersheds,<sup>13</sup> the discharger shall calculate a separate Risk Level for each planning watershed. The discharger shall notify the State Water Board of the site's Risk Level determination(s) and shall include this determination as a part of submitting the PRDs. If a discharger ends up with more than one Risk Level determination, the Regional Water Board may choose to break the project into separate levels of implementation.

## **IX. RISK LEVEL 1 REQUIREMENTS**

Risk Level 1 Dischargers shall comply with the requirements included in Attachment C of this General Permit.

## **X. RISK LEVEL 2 REQUIREMENTS**

Risk Level 2 Dischargers shall comply with the requirements included in Attachment D of this General Permit.

## **XI. RISK LEVEL 3 REQUIREMENTS**

Risk Level 3 Dischargers shall comply with the requirements included in Attachment E of this General Permit.

## **XII. ACTIVE TREATMENT SYSTEMS (ATS)**

Dischargers choosing to implement an ATS on their site shall comply with all of the requirements in Attachment F of this General Permit.

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<sup>13</sup> Planning watershed: defined by the Calwater Watershed documents as a watershed that ranges in size from approximately 3,000 to 10,000 acres <http://cain.ice.ucdavis.edu/calwater/calwfaq.html>, <http://gis.ca.gov/catalog/BrowseRecord.epl?id=22175> .

### **XIII. POST-CONSTRUCTION STANDARDS**

- A.** All dischargers shall comply with the following runoff reduction requirements unless they are located within an area subject to post-construction standards of an active Phase I or II municipal separate storm sewer system (MS4) permit that has an approved Storm Water Management Plan.
1. This provision shall take effect three years from the adoption date of this permit, or later at the discretion of the Executive Officer of the Regional Board.
  2. The discharger shall demonstrate compliance with the requirements of this section by submitting with their NOI a map and worksheets in accordance with the instructions in Appendix 2. The discharger shall use non-structural controls unless the discharger demonstrates that non-structural controls are infeasible or that structural controls will produce greater reduction in water quality impacts.
  3. The discharger shall, through the use of non-structural and structural measures as described in Appendix 2, replicate the pre-project water balance (for this permit, defined as the volume of rainfall that ends up as runoff) for the smallest storms up to the 85<sup>th</sup> percentile storm event (or the smallest storm event that generates runoff, whichever is larger). Dischargers shall inform Regional Water Board staff at least 30 days prior to the use of any structural control measure used to comply with this requirement. Volume that cannot be addressed using non-structural practices shall be captured in structural practices and approved by the Regional Water Board. When seeking Regional Board approval for the use of structural practices, dischargers shall document the infeasibility of using non-structural practices on the project site, or document that there will be fewer water quality impacts through the use of structural practices.
  4. For sites whose disturbed area exceeds two acres, the discharger shall preserve the pre-construction drainage density (miles of stream length per square mile of drainage area) for all drainage areas within the area serving a first order stream<sup>14</sup> or larger stream and ensure that post-project time of runoff concentration is equal or greater than pre-project time of concentration.

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<sup>14</sup> A first order stream is defined as a stream with no tributaries.

- B.** All dischargers shall implement BMPs to reduce pollutants in storm water discharges that are reasonably foreseeable after all construction phases have been completed at the site (Post-construction BMPs).

#### **XIV. SWPPP REQUIREMENTS**

- A.** The discharger shall ensure that the Storm Water Pollution Prevention Plans (SWPPPs) for all traditional project sites are developed and amended or revised by a QSD. The SWPPP shall be designed to address the following objectives:
1. All pollutants and their sources, including sources of sediment associated with construction, construction site erosion and all other activities associated with construction activity are controlled;
  2. Where not otherwise required to be under a Regional Water Board permit, all non-storm water discharges are identified and either eliminated, controlled, or treated;
  3. Site BMPs are effective and result in the reduction or elimination of pollutants in storm water discharges and authorized non-storm water discharges from construction activity to the BAT/BCT standard;
  4. Calculations and design details as well as BMP controls for site run-on are complete and correct, and
  5. Stabilization BMPs installed to reduce or eliminate pollutants after construction are completed.
- B.** To demonstrate compliance with requirements of this General Permit, the QSD shall include information in the SWPPP that supports the conclusions, selections, use, and maintenance of BMPs.
- C.** The discharger shall make the SWPPP available at the construction site during working hours while construction is occurring and shall be made available upon request by a State or Municipal inspector. When the original SWPPP is retained by a crewmember in a construction vehicle and is not currently at the construction site, current copies of the BMPs and map/drawing will be left with the field crew and the original SWPPP shall be made available via a request by radio/telephone.

## **XV. REGIONAL WATER BOARD AUTHORITIES**

- A.** In the case where the Regional Water Board does not agree with the discharger's self-reported risk level (e.g., they determine themselves to be a Level 1 Risk when they are actually a Level 2 Risk site), Regional Water Boards may either direct the discharger to reevaluate the Risk Level(s) for their site or terminate coverage under this General Permit.
- B.** Regional Water Boards may terminate coverage under this General Permit for dischargers who fail to comply with its requirements or where they determine that an individual NPDES permit is appropriate.
- C.** Regional Water Boards may require dischargers to submit a Report of Waste Discharge / NPDES permit application for Regional Water Board consideration of individual requirements.
- D.** Regional Water Boards may require additional Monitoring and Reporting Program Requirements, including sampling and analysis of discharges to sediment-impaired water bodies.
- E.** Regional Water Boards may require dischargers to retain records for more than the three years required by this General Permit.

## **XVI. ANNUAL REPORTING REQUIREMENTS**

- A.** All dischargers shall prepare and electronically submit an Annual Report no later than September 1 of each year.
- B.** The discharger shall certify each Annual Report in accordance with the Special Provisions.
- C.** The discharger shall retain an electronic or paper copy of each Annual Report for a minimum of three years after the date the annual report is filed.
- D.** The discharger shall include storm water monitoring information in the Annual Report consisting of:
  - 1. a summary and evaluation of all sampling and analysis results, including copies of laboratory reports;
  - 2. the analytical method(s), method reporting unit(s), and method detection limit(s) of each analytical parameter (analytical results that are less than the method detection limit shall be reported as "less than the method detection limit");
  - 3. a summary of all corrective actions taken during the compliance year;
  - 4. identification of any compliance activities or corrective actions that were not implemented;
  - 5. a summary of all violations of the General Permit;
  - 6. the names of individual(s) who performed the facility inspections, sampling, visual observation (inspections), and/or measurements;
  - 7. the date, place, time of facility inspections, sampling, visual observation (inspections), and/or measurements, including precipitation (rain gauge); and
  - 8. the visual observation and sample collection exception records and reports specified in Attachments C, D, and E.
- E.** The discharger shall provide training information in the Annual Report consisting of:
  - 1. documentation of all training for individuals responsible for all activities associated with compliance with this General Permit;

2. documentation of all training for individuals responsible for BMP installation, inspection, maintenance, and repair; and
3. documentation of all training for individuals responsible for overseeing, revising, and amending the SWPPP.