



Construction Site Stormwater Compliance

Presentation for CALBIG
September 21, 2016

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LEED-AP, Bay-Friendly Qualified Professional
*on behalf of the San Mateo Countywide Water
Pollution Prevention Program*

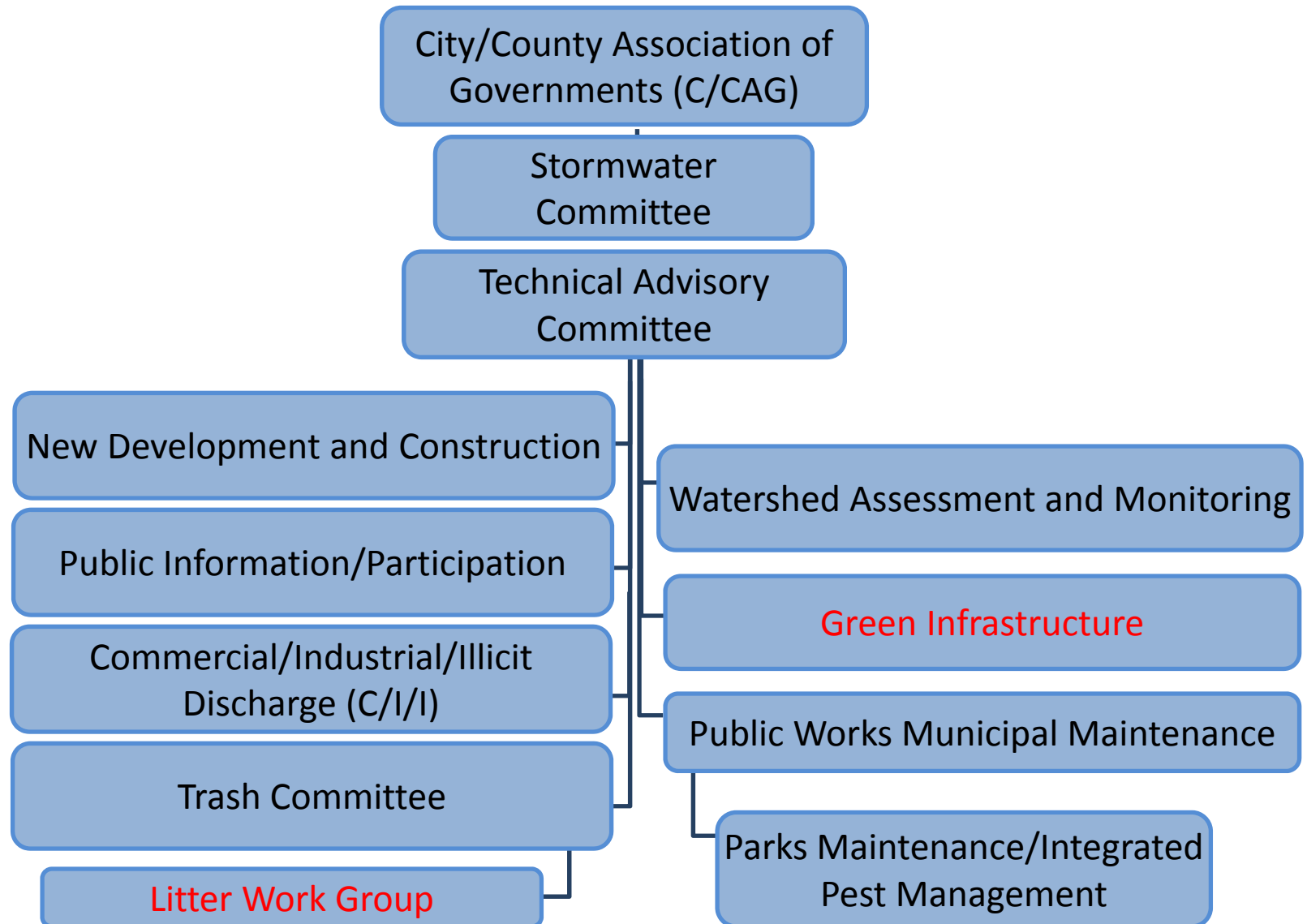
Outline of Presentation

- What is SMCWPPP?
- Overview of Stormwater Regulations
- MRP Construction Site Inspection Requirements
- Stormwater Inspection Documentation and Tracking
- Construction Site Best Management Practices
- Resources

Overview of SMCWPPP

- San Mateo Countywide Water Pollution Prevention Program
- Program of City/County Association of Governments of San Mateo County (C/CAG)
- 20 Cities/Towns plus County and Flood Control District
- Assist Municipalities with Countywide Stormwater Permit Compliance Activities
- Matt Fabry, Program Coordinator
- Website – www.flowstobay.org

San Mateo Countywide Water Pollution Prevention Program Organizational Structure



Stormwater Regulations

Federal




State



Regional



Municipal Regional Permit


State SW Construction
General Permit

Local

City/County Construction Site
Control Program

Construction Sites
disturb ≥ 1 acre

Construction Sites
disturb < 1 acre

Statewide Construction Activities General Permit

- Contains requirements for site

- BMPs,
- inspections,
- sampling,
- SWPPP,
- reporting,
- QSP/QSD

Rain Event Action Plan (REAP)			
Date:		WDID Number:	
Date Rain Predicted to Occur:		Predicted % chance of rain:	
Site Information:			
Site Name, City and Zip Code:		Project Risk Level: <input type="checkbox"/> Risk Level 1 <input type="checkbox"/> Risk Level 2	
Site Stormwater Manager Information:			
Name, Company, Emergency Phone Number (a)(7):			
Erosion and Sediment Control Contractor - Labor Force contracted for the site:			
Name, Company, Emergency Phone Number (a)(7):			
Stormwater Sampling Agent:			
Name, Company, Emergency Phone Number (a)(7):			
Current Phase of Construction			
Check ALL the boxes below that apply to your site.			
<input type="checkbox"/> Grading and Land Development	<input type="checkbox"/> Vertical Construction	<input type="checkbox"/> Inactive Site	
<input type="checkbox"/> Streets and Utilities	<input type="checkbox"/> Final Landscaping and Site Stabilization	<input type="checkbox"/> Other:	
Activities Associated with Current Phase(s)			
Check ALL the boxes below that apply to your site (some apply to all phases).			
Grading and Land Development:			
<input type="checkbox"/> Demolition	<input type="checkbox"/> Vegetation Removal	<input type="checkbox"/> Vegetation Salvage/Harvest	
<input type="checkbox"/> Rough Grade	<input type="checkbox"/> Finish Grade	<input type="checkbox"/> Erosion Control	
<input type="checkbox"/> Soil Amendment(s)	<input type="checkbox"/> Erosion Control (_____)	<input type="checkbox"/> Soil Testing	
<input type="checkbox"/> Rock Crushing	<input type="checkbox"/> Erosion and Sediment Control	<input type="checkbox"/> Surveying	
<input type="checkbox"/> Equip. Maintenance/Fueling	<input type="checkbox"/> Material Delivery and Storage	<input type="checkbox"/> Other:	
Streets and Utilities:			
<input type="checkbox"/> Finish Grade	<input type="checkbox"/> Utility Install: water/sewer/gas	<input type="checkbox"/> Paving Operations	
<input type="checkbox"/> Equip. Maintenance/Fueling	<input type="checkbox"/> Storm Drain Installation	<input type="checkbox"/> Material Delivery & Storage	
<input type="checkbox"/> Curb and Gutter/Concrete Pour	<input type="checkbox"/> Masonry	<input type="checkbox"/> Other:	
Vertical Construction:			
<input type="checkbox"/> Framing	<input type="checkbox"/> Carpentry	<input type="checkbox"/> Concrete/Forms/Foundation	
<input type="checkbox"/> Masonry	<input type="checkbox"/> Electrical	<input type="checkbox"/> Painting	
<input type="checkbox"/> Drywall/Interior Walls	<input type="checkbox"/> Plumbing	<input type="checkbox"/> Shoring	
<input type="checkbox"/> Equip. Maintenance/Fueling	<input type="checkbox"/> HVAC	<input type="checkbox"/> Tile	
<input type="checkbox"/> Exterior Siding	<input type="checkbox"/> Insulation	<input type="checkbox"/> Landscaping & Irrigation	
<input type="checkbox"/> Flooring	<input type="checkbox"/> Roofing	<input type="checkbox"/> Other:	
Final Landscaping & Site Stabilization:			
<input type="checkbox"/> Stabilization	<input type="checkbox"/> Vegetation Establishment	<input type="checkbox"/> E&S Control BMP Removal	
<input type="checkbox"/> Finish Grade	<input type="checkbox"/> Storage Yard/Material Removal	<input type="checkbox"/> Landscape Installation	
<input type="checkbox"/> Painting and Touch-Up	<input type="checkbox"/> Irrigation System Testing	<input type="checkbox"/> Other:	
<input type="checkbox"/> Drainage Inlet Shields	<input type="checkbox"/> Inlet Filtration	<input type="checkbox"/> Perm. Water Quality Ponds	
<input type="checkbox"/> Other:	<input type="checkbox"/> Other:	<input type="checkbox"/> Other:	
Inactive Construction Sites:			
<input type="checkbox"/> E & S Control Device Installation	<input type="checkbox"/> Routine Site Inspection	<input type="checkbox"/> Trash Removal	
<input type="checkbox"/> E & S Control Device Maintenance	<input type="checkbox"/> Street Sweeping	<input type="checkbox"/> Other:	

- Compliance inspections/enforcement by State or Regional Water Board staff



What do you need to know about the Construction General Permit (CGP)?

- Reviewing SWPPP, QSP inspection records, sampling results, etc. may help inform your MRP inspection
- Public projects ≥ 1 acre must file for coverage under the CGP - will you be involved?
- Overall site compliance reflects on your inspection program
 - You inspect for compliance with local SW ordinance
 - Regional Board staff inspects for compliance with CGP

Municipal Regional Permit (MRP)

- Regional permit regulating municipal stormwater systems
 - Requires a Construction Site Control Program
- 1st MRP adopted in December 2009
- Permit renewed in November 2015
 - Minor changes to Construction Program requirements



MRP Site Inspections

- Construction Site SW Inspections (C.6)
 - During the construction phase
 - Inspect temporary BMPs
- SW Treatment System Inspections (C.3)
 - **Recommended** during construction
 - **Required** at completion of construction
 - Inspect permanent BMPs for on-going operation and maintenance SW treatment or hydromodification controls

Construction Site Inspection Requirements

Big Picture Requirements...

- Implement a construction site inspection and control program **at all construction sites**
- Prevent discharges of pollutants and impacts on receiving waters
- When does this apply?
—All year long!

Minimum Inspection Requirements

- During the wet season, the following sites must have stormwater inspections at least once per month:
 - sites disturbing ≥ 1 acre
 - “high priority” sites
 - **NEW:** “Hillside Sites” over 5,000 sq. ft.
- Inspect both Public (e.g. CIP projects) & Private sites



Minimum Inspection Requirements

- What is a high priority site?
 - Identified by your municipality
 - Generally, site with < 1 acre of land disturbance that
 - Has a steep slope and/or,
 - Is adjacent to a creek



Minimum Inspection Requirements

- Reissued Permit new requirement
 - Monthly inspections during wet season
 - Added “Hillside Sites”
 - What is a hillside site?
 - Identified by your municipality
 - Hillside development maps or criteria
- OR
- $\geq 15\%$ slope
 - Disturbs $\geq 5,000$ sf

MRP Construction Site Inspection Requirements

When is the wet season?

October 1st – April 30th



Construction Site Inspections

- When construction ends during wet season:
 - Continue stormwater inspections until site is fully stabilized.
 - If stabilizing with vegetation, assume “fully stabilized” when there is 70% vegetative cover.
 - Note “last” inspection on form and in tracking system
 - Verify ALL temporary BMPs are removed (e.g. storm drain inlet protection that may be down the street, straw wattles on vegetated slopes.)



Construction Site Inspections

- For every required stormwater inspection, there must be a completed inspection report form.



Construction Site Inspections

- For sites that require monthly wet season inspections, data from the stormwater inspection form must be:
 - Tracked (in spreadsheet or database), and
 - Reported (in Annual Report).



Construction Site Inspections

- Tracking table is not submitted in Annual Report but is the basis for Annual Report data summaries
- Regional Board can request tracking table at any time
- Inspection tables should match summaries in Annual Report

Enter 1 per inspection	Enter 1 for each site	ANSWER ONCE PER SITE: (enter 1 for "Yes")			Site Name (Ref 2) ¹	Inspectn Date (Ref 1)	Weather During Inspectn (Ref 1a)	Problems Observed (Ref 9-15)						
		Disturbs ≥ 1 acre? (Ref 6)	Hillside Site? (Ref 7a)	High Priority Site? (Ref 7)				Erosion Control	Sediment Control	Run-on & Runoff	Active Treatmt	Site Management	Non Stormwtr Mgt	Illicit Discharge
1	1				EXAMPLE: Nirvana Estates	EXAMPLE: 12/12/09	EXAMPLE: Light Rain	1	1	1	1	1	1	1



Inspection Forms

Stormwater Inspection Forms

FAILURE TO CORRECT VIOLATION(S) within 10 business days (or as specified in this notice) may result in PENALTIES described on page 2!

 SAN MATEO COUNTYWIDE
Water Pollution
Prevention Program

CONSTRUCTION SITE INSPECTION REPORT

1. Inspection Date: _____

1a. Current weather conditions: _____

2. Name of Project: _____

2a. Project No./Permit No. _____

3. Project Address: _____

4. Inspection Type: ☐ Routine ☐ Follow-up ☐ Other

5. Permit Type: ☐ Building Permit ☐ Grading Permit ☐ Site Development ☐ CIP Project

6. Project disturb > 1 acre? ____ (Y/N - If Yes, inspect monthly during wet season.)

NOI Required: ____ (Y/N) SWPPP dated ____/____/____

Project covered under statewide Construction General Permit? ____ (Y/N)

SWPPP on site? ____ (Y/N)

7. High Priority Site (significant threat to water quality)? ____ 7.a Hillside Site? ____ (Y/N - If Yes, inspect monthly during wet season.)

8. Project Type: ☐ Residential ☐ Commercial/Industrial ☐ Institutional ☐ Landscaping
☐ Utility (water, sewer, PG&E) ☐ Grading ☐ Demolition ☐ Street Improvement ☐ Other: _____

9. Erosion Control Measures: _____
Inspection Finding
(A / NM / P / NA)*

Location on site/Comments

☐ Jute Netting/Fiber Blankets

Stormwater Inspection Form

- Document Problems in 6 BMP categories:

- Erosion control
- Run-on and run-off control
- Sediment control
- Active treatment systems (as needed)
- Good site management
- Non-stormwater management

- Findings of

- Adequate
- Needs Maintenance
- Problems
- Not Applicable

Erosion & Sediment Control

- Erosion control
 - First line of defense
 - Prevent soil movement by wind and water
- Sediment control
 - Second line of defense
 - Remove soil before it leaves the site
- Temporary or Permanent Controls
- Remove temporary BMPs at completion

Erosion Control

9. Erosion Control Measures:

Inspection Finding
(A / NM / P / NA)*

Location on site/Comments

<input type="checkbox"/> Jute Netting/Fiber Blankets		
<input type="checkbox"/> Mulch		
<input type="checkbox"/> Hydroseed/Soil binder/Compost blanket		
<input type="checkbox"/> Mark Areas to be Preserved		
<input type="checkbox"/> Tree Protection Fencing		
<input type="checkbox"/> Riparian Area Barrier		



Sediment Control

10. Sediment Control Measures

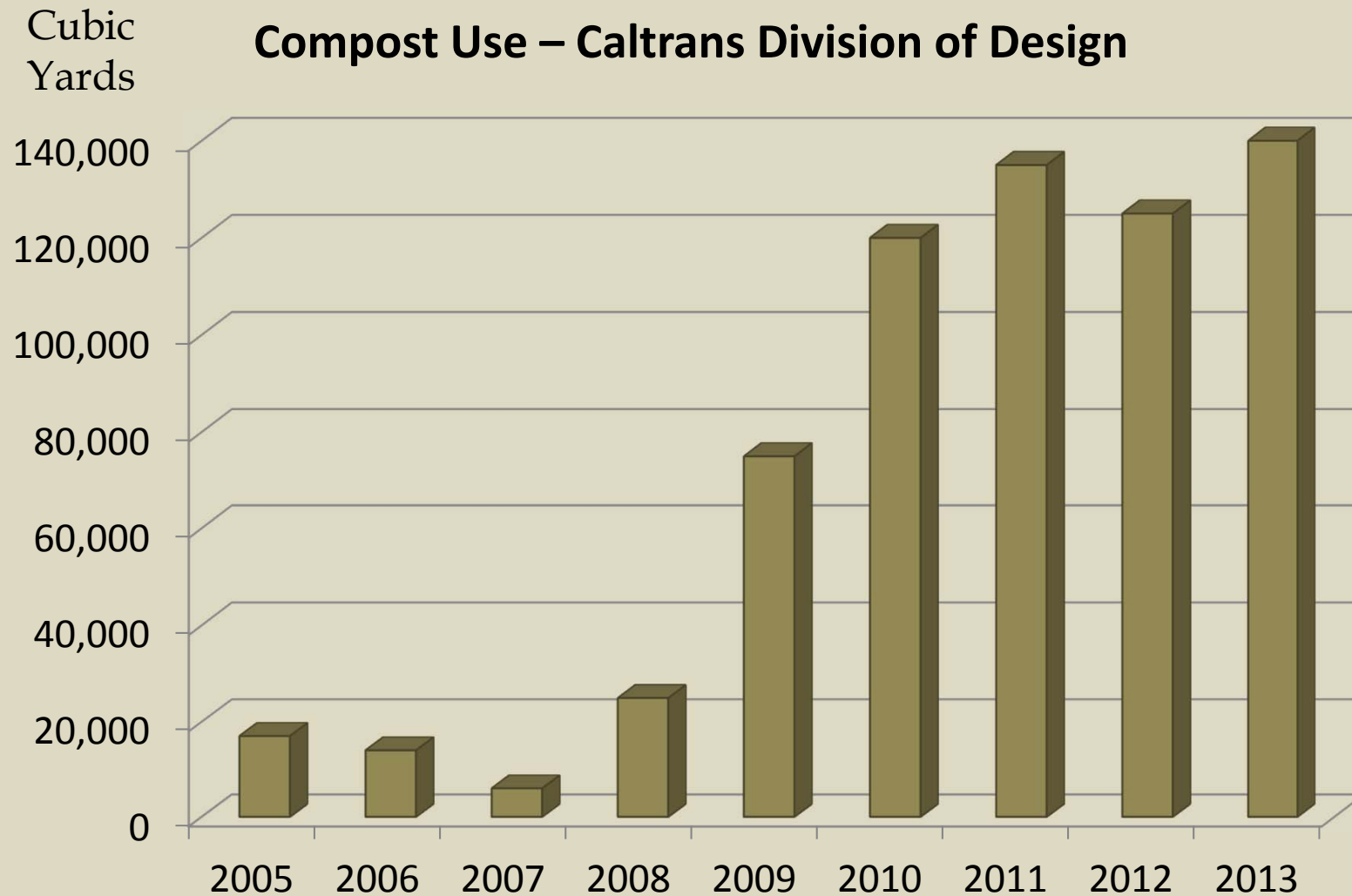
- | | | |
|--|--|--|
| <input type="checkbox"/> Stabilized construction entrance | | |
| <input type="checkbox"/> Street Sweeping | | |
| <input type="checkbox"/> Dust Control | | |
| <input type="checkbox"/> Wattles / Fiber Rolls / Compost Socks | | |
| <input type="checkbox"/> Silt Fences / Compost Berms | | |
| <input type="checkbox"/> Sedimentation Basin | | |
| <input type="checkbox"/> Check Dams | | |
| <input type="checkbox"/> Inlet Filters (Gravel bags) | | |
| <input type="checkbox"/> Earth Dikes / Drainage Swales | | |





Compost-based Construction Site BMPs and Experience from Caltrans

Compost Use Trends



Over 540% increase in use from 2008.

Scientific Characteristics of Compost

- ❑ Reduces storm water runoff volume and velocity by:
 - Increasing infiltration rates.
 - Improving soil water holding capacity. Up to 4 inches per hour.
 - Enhancing soil structural properties - soil structure, porosity and texture.

- ❑ Promotes long term vegetation establishment by:
 - Improving plant rooting depth.
 - Improving soil chemical properties - providing proper pH, carbon, nitrogen, potassium and phosphorus levels.
 - Enhancing soil biology - activity by bacteria, mycorrhizal fungi, nematodes, protozoa, microarthropod and earthworms.
 - Increasing soil nutrient levels and nutrient cycling.

Using Compost for Erosion Control

Results from 2 Years of Observations of
Compost Performance on a Highway
Project in Monterey County, California



Caltrans Landscape Architecture Department



Prunedale Improvement Project



45,000 cubic yards of compost covering over 108 acres.

Existing Site Conditions



Aromas Sand Soil - Highly erosive cross-bedded sand with clayey layers.

Temporary Erosion Control Applications

Fiber Rolls and BFM



Erosion Control Applications

Linear Sediment Barriers – Fiber Rolls



Erosion Control Performance Comparisons

BFM with and without Compost



Erosion Control Performance Comparisons

Compost vs. BFM and Fiber Rolls



Erosion Control Applications

Compost Blanket, Hydroseed, Coir Netting



Erosion Control Applications

Compost Blanket, Hydroseed, Coir Netting



Six Months Later

Erosion Control Applications

Compost Blanket and Chipped Material



Erosion Control Applications

Linear Sediment Barriers – Compost Berms



Erosion Control Applications

Linear Sediment Barriers – Compost Berms



Netting installed over the compost berm

Erosion Control Applications

Linear Sediment Barriers – Compost Socks



← Cotton Sock

← Burlap Sock



← 6 Months After Installation



Compost
socks in
urban area
protecting
stockpiles.



Socks can
be filled
with mulch
or compost.
Inspect
materials
inside socks
for trash.

What else should you know about the MRP?

- Provision C.13.a. manage waste generated from cleaning/treating copper architectural features during construction
- SMCWPPP BMP Fact Sheet



Requirements for Architectural Copper

Protect water quality during installation, cleaning, treating, and washing!

Copper from Buildings May Harm Aquatic Life

Copper can harm aquatic life in San Francisco Bay. Water that comes into contact with architectural copper may contribute to impacts, especially during installation, cleaning, treating, or washing. Patination solutions that are used to obtain the desired shade of green or brown typically contain acids. After treatment, when the copper is rinsed to remove these acids, the rinse water is a source of pollutants. Municipalities prohibit discharges to the storm drain of water used in the installation, cleaning, treating and washing of architectural copper.



Building with copper flashing, gutter and drainpipe.

Use Best Management Practices (BMPs)

The following Best Management Practices (BMPs) must be implemented to prevent prohibited discharges to storm drains.

During Installation

- If possible, purchase copper materials that have been pre-patinated at the factory.
- If patination is done on-site, implement one or more of the following BMPs:
 - Discharge the rinse water to landscaping. Ensure that the rinse water does not flow to the street or storm drain. Block off storm drain inlet if needed.
 - Collect rinse water in a tank and pump to the sanitary sewer. Contact your local sanitary sewer agency before discharging to the sanitary sewer.
 - Collect the rinse water in a tank and haul off-site for proper disposal.
- Consider coating the copper materials with an impervious coating that prevents further corrosion and runoff. This will also maintain the desired color for a longer time, requiring less maintenance.



Storm drain inlet is blocked to prevent prohibited discharge. The water must be pumped and disposed of properly.

During Maintenance

Implement the following BMPs during routine maintenance activities, such as power washing the roof, re-patination or re-application of impervious coating:

- Block storm drain inlets as needed to prevent runoff from entering storm drains.
- Discharge the wash water to landscaping or to the sanitary sewer (with permission from the local sanitary sewer agency). If this is not an option, haul the wash water off-site for proper disposal.

Protect the Bay/Ocean and yourself!

If you are responsible for a discharge to the storm drain of non-stormwater generated by installing, cleaning, treating or washing copper architectural features, you are in violation of the municipal stormwater ordinance and may be subject to a fine.



Photo credit: Don Edwards National Wildlife Sanctuary

Contact Information

The San Mateo Countywide Water Pollution Prevention Program lists municipal stormwater contacts at www.flowstobay.org (click on "Business", then "New Development", then "local permitting agency").

FINAL February 29, 2012

What else should you know about the MRP?

- Provision C.3.h Stormwater Treatment Systems Operation & Maintenance (O&M) Verification Inspections
 - Permanent Stormwater Controls
 - Inspect stormwater treatment measures
 - At completion of installation & once every 5 years.



What else should you know about the MRP?

- SW Treatment Systems O&M Inspections continued..
 - Post construction BMPs (SW treatment systems) should NOT be used during the construction phase
 - Likely not designed to handle sediment loading of active construction sites
 - If installed should be protected
 - Ground may need to be marked to protect from soil compaction due to vehicle traffic
 - Communicate with C.3 inspector – may not be obvious during completion inspection that the BMP has been impacted



Resources

Resources...



- SMCWPPP Construction BMP Resources
 - <http://www.flowstobay.org/construction>
- CASQA Construction BMP Handbook Portal
 - available on web by subscription
 - contact your agency stormwater coordinator for information on how to access the portal
 - www.casqa.org

SMCWPPP Website

- www.flowstobay.org
- At Work tab – choose Construction Sites
- At Work tab – choose Brochures
- About Our Program – choose Presentations for training material
- Members only New Development webpage

Construction | Flowstobay... x +

www.flowstobay.org/construction

Google

SAN MATEO COUNTYWIDE Water Pollution Prevention Program

Community Business Municipalities

GET INVOLVED!

f t YouTube

Sign Up For Our Newsletter!


Email*


Sign up for our biannual newsletter to get the latest Pollution Prevention information.


Subscribe

[Contact Form Generator](#)

Participate In An Event

 **HHW Collection Event (San Mateo)**
September 25, 08 am to 02 pm
[MORE INFO >](#)

 **Weed Warriors (SSF)**
September 26, 09 am to 12 pm
[MORE INFO >](#)

 **HHW Collection Event (San Mateo)**
September 26, 08 am to 02 pm
[MORE INFO >](#)

Construction

Soil, cement wash, asphalt, oil and other hazardous debris from construction sites can make their way into the San Mateo County storm drain system, and flow untreated into local creeks, the San Francisco Bay, and the Pacific Ocean. This page provides resources to help project applicants include construction stormwater controls in development project designs. These resources are organized in the following sections:


- [Construction Best Management Practice \(BMP\) Tips](#)
- [Construction BMP Brochures](#)
- [Creek and Wetland Permitting](#)
- [Forms and Checklists](#)
- [Posters](#)
- [Additional Information](#)

Construction BMP Tips

Follow these best management practices to prevent pollution, protect public health and avoid fines or legal action:

Store Materials Safely: Keep construction materials and debris away from the street, gutter and storm drains. Cover exposed stockpiles of soil, sand or gravel and excavated material with plastic sheeting, protected from rain, wind and runoff.

Preventing Erosion: [Riparian Erosion and Sediment Control brochure](#). Avoid excavation or grading during wet weather. Plant temporary vegetation or add hydro mulch on slopes where construction is not immediately planned and permanent



Construction BMP Outreach Materials

- Construction BMP Plan Sheet
- Fresh Concrete & Mortar Application
- Earth-Moving Activities
- General Construction & Site Supervision
- Heavy Equipment Operation
- Landscaping, Gardening, & Pool Maintenance
- Roadwork and Paving

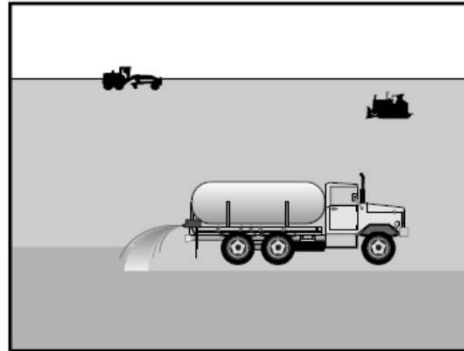
Construction BMP Outreach Materials

- Painting and Application of Solvents and Adhesives
- Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction-Related Activities (BASMAA)
- Building Demolition and Mercury Hazards
- Stormwater Construction Poster

CASQA BMP Fact Sheets

Soil Binders

EC-5



Categories

EC	Erosion Control	<input checked="" type="checkbox"/>
SE	Sediment Control	
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-3 Hydraulic Mulch
- EC-4 Hydroseeding
- EC-6 Straw Mulch
- EC-7 Geotextiles and Mats
- EC-8 Wood Mulching

Description and Purpose

Soil binding consists of application and maintenance of a soil stabilizer to exposed soil surfaces. Soil binders are materials applied to the soil surface to temporarily prevent water and wind induced erosion of exposed soils on construction sites.

Suitable Applications

Soil binders are typically applied to disturbed areas requiring temporary protection. Because soil binders, when used as a stand-alone practice, can often be incorporated into the soil, they are a good alternative to mulches in areas where grading activities will soon resume. Soil binders are commonly used in the following areas:

- Rough graded soils that will be inactive for a short period of time
- Soil stockpiles
- Temporary haul roads prior to placement of crushed rock
- Compacted soil road base
- Construction staging, materials storage, and layout areas

Limitations

- Soil binders are temporary in nature and may need reapplication.



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